Centek Engineering, Inc.
3-2 North Branford Road
Branford, Connecticut 06405
Phone: (203) 488-0580
Fax: (203) 488-8587

Steven L. Levine
Real Estate Consultant

HAND DELIVERED

September 10, 2015

Attorney Melanie Bachman
Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051

Re: New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 298 Ridge Road, Orange

Dear Ms. Bachman:

In order to accommodate technological changes, implement Uniform Mobile Telecommunications System ("UMTS") and/or Long Term Evolution ("LTE") capabilities, and enhance system performance in the State of Connecticut, New Cingular Wireless PCS, LLC ("AT&T") plans to modify the equipment configurations at many of its existing cell sites. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, copies of this letter are being sent to the chief elected official of the municipality in which the affected cell site is located, the property owner of record, and the tower owner or operator.

UMTS technology offers services to mobile computer and phone users anywhere in the world. Based on the Global System for Mobile ("GSM") communication standard, UMTS is the planned worldwide standard for mobile users. UMTS, fully implemented, gives computer and phone users high-speed access to the Internet as they travel. They have the same capabilities even when they roam, through both terrestrial wireless and satellite transmissions.

LTE is a high-performance air interface for cellular mobile communications. It is designed to increase the capacity and speed of mobile telephone networks.

Attached is a summary of the planned modifications, including power density calculations reflecting the change in AT&T's operations at the site. Also included is documentation of the structural sufficiency of the tower to accommodate the revised antenna configuration.

The changes to the facility do not constitute modifications as defined in Connecticut General

Statutes ("C.G.S.") Section 16-50i(d) because the general physical and environmental characteristics of the site will not be significantly changed or altered. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in R.C.S.A. Section 16-50j-72(b)(2).

1. The height of the overall structure will not increase.

2. The proposed changes will not extend the site boundaries.

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

4. The changes will not add radio frequency sending or receiving capability which increases the total radio frequency electromagnetic radiation power density measured at the site boundary to or above the standards adopted by the Federal Communications Commission pursuant to Section 704 of the Telecommunications Act of 1996, as amended, and the State Department of Energy and Environmental Protection, pursuant to Section 22a-162 of the Connecticut General Statutes.

5. The proposed changes will not impair the structural integrity of the facility, as determined in a certification provided by a professional engineer licensed in Connecticut.

For the foregoing reasons, AT&T respectfully submits that the proposed changes at the referenced site constitute exempt modifications under R.C.S.A. Section 16-50j-72(b)(2).

Please feel free to call me at (860) 830-0380 with questions concerning this matter. Thank you for your consideration.

Sincerely,

Steven L. Levine
Real Estate Consultant

cc: Town CEO – Honorable James Zeoli, Town of Orange
Land Owner of Record – Eversource Energy (by email)
Tower Owner / Operator – Eversource Energy (by email)

Attachments

NEW CINGULAR WIRELESS PCS, LLC
Equipment Modification

298 Ridge Road, Orange, CT
Site Number 2267
Prior Decisions: Petition 1063

Tower Owner/Manager: Eversource Energy (fka Connecticut Light & Power Company)

Land Owner of Record: Eversource Energy (fka Connecticut Light & Power Company)

Lease Area: The Ridge Road cell site was approved in 2013 by the Council in Petition 1063 with a Powermount configuration. The attached exhibit from Petition 1063 depicts the approved site boundaries. Since all proposed equipment modifications will occur either on the existing tower structure or within AT&T's existing equipment shelter, the proposed modifications will not extend either AT&T's lease area or the overall site boundaries.

Equipment configuration: 96-ft Electric Transmission Structure #3848 with Powermount

Current and/or approved:
Antenna mounting pole with three T-arms @ 111 ft a.g.l.
Twelve Andrew SBNH-1D6565C antennas @ 111 ft c.l.
Twelve CCI DTMABP7819VG12A TMA's @ 111 ft.
Twenty four runs 1 5/8 inch coax
Backup power generator and storage tank (Propane)
Equipment shelter in wood stockade enclosure

Planned Modifications:
Remove three Andrew antennas.
Install three CCI OPA-65R-LCUU-H8 antennas @ 111 ft c.l.

Power Density:

Worst-case calculations for existing wireless operations at the site indicate a radio frequency electromagnetic radiation power density, measured at ground level beside the tower, of approximately 14.3 % of the standard adopted by the FCC. As depicted in the second table below, the total radio frequency electromagnetic radiation power density following proposed modifications would be approximately 11 % of the standard.

Existing

Carrier & Technology	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm^2)	Standard Limits (mW/cm^2)	Percent of Limit
Other Users *							0.00
AT&T LTE *	111	700	2	500	0.0292	0.4667	6.25
AT&T UMTS *	111	850	2	500	0.0292	0.5667	5.15
AT&T UMTS *	111	1900 Band	2	500	0.0292	1.0000	2.92
Total							**14.3%**

***** Per CSC records.

Proposed

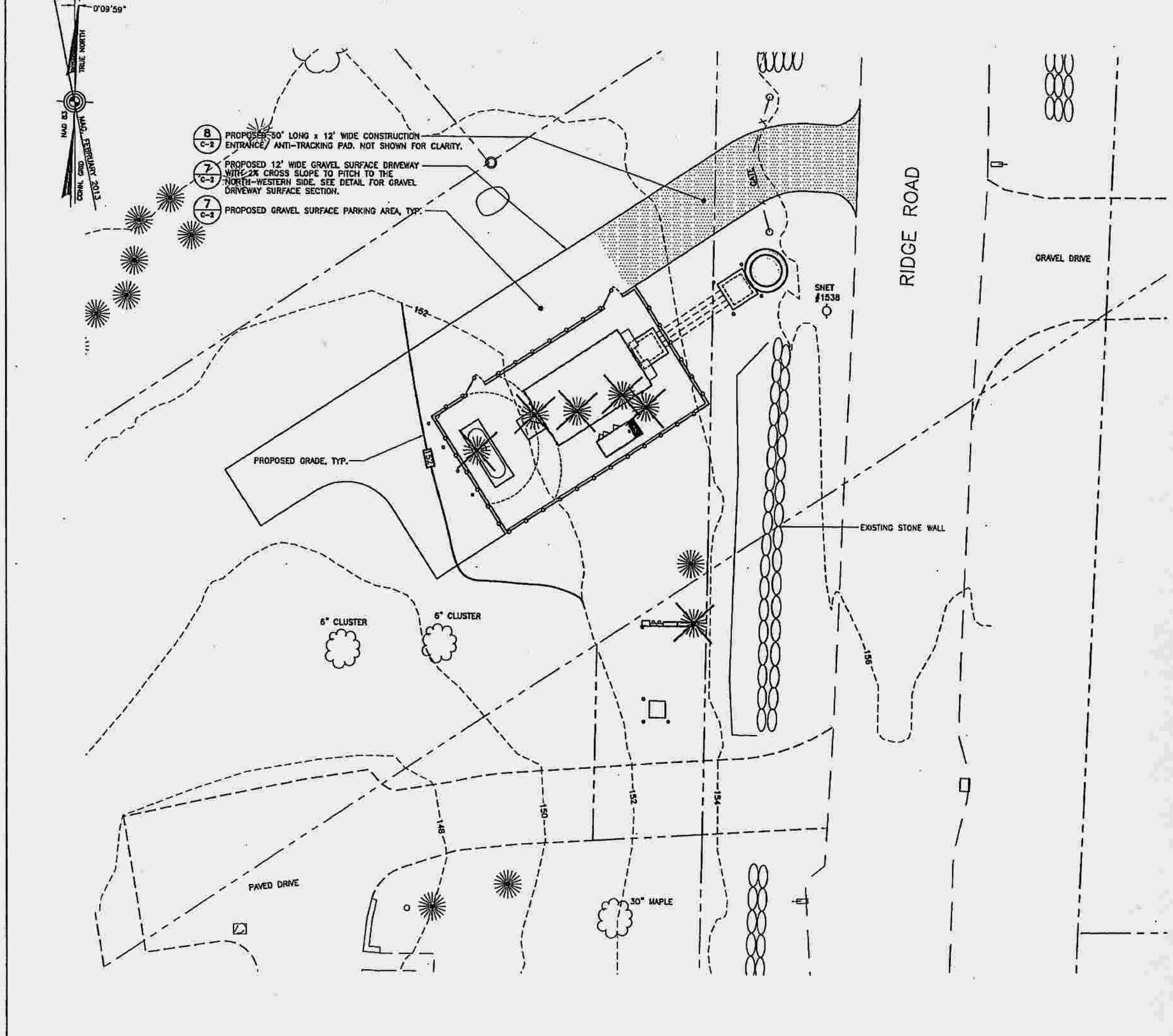
Carrier & Technology	Centerline Ht (feet)	Antenna	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm^2)	Standard Limits (mW/cm^2)	Percent of Limit
Other Users *								0.00
AT&T LTE	111	Andrew	700 Band	1	500	0.0146	0.4667	3.13
AT&T LTE	111	Andrew	1900 Band	1	500	0.0146	1.0000	1.46
AT&T UMTS	111	CCI	880 - 894	2	500	0.0292	0.5867	4.97
AT&T UMTS	111	CCI	1900 Band	1	500	0.0146	1.0000	1.46
Total								**11.0%**

***** Per CSC records

Structural information:

The attached structural analysis (Centek Engineering, Inc., 6/8/15) demonstrates that the tower and foundation have adequate structural capacity to accommodate the proposed equipment modifications.

Excerpt from Petition 1063



1 C-0.2 **SITE PLAN - PROPOSED**
SCALE: 1" = 10'

GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.

SYMBOLS LEGEND

----	PROPERTY LINE
----	EASEMENT LINE (PROPOSED)
----	DRIVE (EXISTING)
——	ACCESS DRIVE (PROPOSED)
-o—o—	FENCE LINE
---650---	CONTOUR LINE
—[650]—	GRADING LINE
	UTILITY POLE
	EXISTING DECIDUOUS TREE
	EXISTING ARBORVITAE TREE
	EXISTING DICIDUOUS TREE TO BE REMOVED
	EXISTING ARBORVITAE TREE TO BE REMOVED

ESTIMATED TREE REMOVAL SUMMARY

TREES PROPOSED TO BE REMOVED IN LOCATION ALONG AT&T 20' WIDE ACCESS EASEMENT =	1
TREES TO BE REMOVED WITHIN AND AROUND THE AT&T LEASE AREA =	5
TOTAL TREES TO BE REMOVED =	6

SURVEY NOTES

THIS SURVEY AND MAP HAS BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20-300B-1 THROUGH 20-300B-20 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES - "MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ENDORSED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPT. 26, 1996. IT IS A BOUNDARY AND TOPOGRAPHIC MAP AND IS BASED UPON A DEPENDENT RESURVEY CONFORMING TO HORIZONTAL ACCURACY CLASS A-2 AND A VERTICAL ACCURACY OF CLASS T-2 AND IS INTENDED TO BE USED TO DEPICT A PROPOSED TELECOMMUNICATION SITE.

THE NORTH ARROW AND BEARINGS ARE BASED UPON THE CONNECTICUT STATE COORDINATE SYSTEM N.A.D. 1983 (CORS 96). THE ELEVATION ARE BASED UPON THE N.G.V.D. OF 1929 AS DETERMINED USING GEOID 12. COORDINATES AND ELEVATIONS WERE DETERMINED FROM RTK GPS OBSERVATIONS MADE ON April 8, 2013 USING SUPERIOR INSTRUMENT'S RTK NETWORK (ORANGE BASE), HAVING THE FOLLOWING VALUES:

LATITUDE = 41°15'15.89404" N
LONGITUDE= 73°00'52.60283" W
ELLIPSOID HEIGHT = -4.143

PARCEL OWNER OF RECORD: THE CONNECTICUT LIGHT AND POWER COMPANY
298 RIDGE ROAD
ORANGE, CT

PARCEL AREA = 1.185 ACRES.

PARCEL IS SUBJECT TO RESTRICTIONS SET FORTH IN A CERTAIN DEED FROM THE ASGROW SEED COMPANY TO ORANGE COUNTRY CLUB, INC. DATED JUNE 9, 1961 AND RECORDED JUNE 12, 1961 IN VOLUME 192 PAGE 300 OF THE TOWN OF ORANGE LAND RECORDS.

PARCEL IS SUBJECT TO POSSIBLE EASEMENT IN FAVOR OF THE SOUTHERN NEW ENGLAND TELEPHONE COMPANY RECORDED AUGUST 15, 1961 IN VOLUME 193 PAGE 451 OF THE TOWN OF ORANGE LAND RECORDS.

PARCEL IS SUBJECT TO POSSIBLE DRAINAGE EASEMENTS AS MAY IN THE FUTURE BE REQUESTED OR REQUIRED BY THE TOWN OF ORANGE, BEING DESCRIBED IN VOLUME 211 PAGE 700 OF THE TOWN OF ORANGE LAND RECORDS.

REFERENCE IS MADE TO THE FOLLOWING MAPS

1.) "COUNTRY CLUB HILLS OWNED AND DEVELOPED BY ASSOCIATED BUILDERS CORPORATION ORANGE, CONNECTICUT, PREPARED BY CHARLES A. CAHN, DATED JUNE 1960.

2.) "LEON A. KATZ ET AL ORANGE CONNECTICUT." PREPARED BY CHARLES A. CAHN, SCALE: 1"=20', DATED JUNE 1961.

NOT ALL IMPROVEMENTS SHOWN.

TO MY KNOWLEDGE AND BELIEF THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON

THIS MAP IS NOT VALID WITHOUT A LIVE SIGNATURE AND SEAL

A. RAFAEL MARTINEZ LLS #18833 DATE

DESIGNED BY:	CFC
DRAWN BY:	HMR
CHK'D BY:	CFC

REV.	DATE	DRAWN BY	CHK'D BY	
2	05/03/13	HMR	CFC	CONSTRUCTION - A-2 SURVEY AND GRADING ADDED
1	04/12/13	HMR	CFC	CONSTRUCTION
0	04/11/13	HMR	CFC	CD - ISSUED FOR CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

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

NEW CINGULAR WIRELESS, LLC
WIRELESS COMMUNICATIONS FACILITY
CTSR1196
MILFORD
CL&P STRUCT. NO. 3848
298 RIDGE ROAD
ORANGE, CT 06477

DATE:	04/11/13
SCALE:	AS NOTED
JOB NO.	13002

SITE PLAN

C-0.2

Sheet No. 5 of 19

EVERSOURCE ENERGY

107 Selden Street
Berlin, CT 06037
(860) 665-6926
michael.green@eversource.com

August 14, 2015

Mr. Tim Burks
Site Acquisition Manager- New England
SAI Communications, Consultant for
AT&T Mobility (a/k/a New Cingular Wireless
500 Enterprise Drive
Rocky Hill, CT 06067

Re: Site Permitting Authorization
298 Ridge Road, Orange, CT
Telecommunications Site

Dear Mr. Burks:

Authorization is hereby given to New Cingular Wireless PCS, LLC (New Cingular), its employees and its duly authorized agents and independent contractors (hereinafter collectively referred to as "New Cingular"), to apply for any and all local municipal, state and federal licenses, permits and approvals, including but not limited to Connecticut Siting Council, building permits, zoning variances, zoning special exceptions, site plan and subdivision approvals, driveway, wetlands and terrain alteration permits, which are or may be necessary or required for New Cingular to construct, operate and maintain a wireless communications system (PCS System), and/or antenna site on the following property over which The Connecticut Light & Power Company (CL&P) has easement rights:

CL&P Structure #3848, FAA #10141359
298 Ridge Road
Orange, Connecticut

The foregoing authorization is given subject to the following conditions:

1. This authorization shall be nonexclusive. Nothing herein shall prevent or restrict CL&P from authorizing any other person or entity to apply for any similar licenses, permits or approvals to construct, operate and maintain any other communication system or facility of any type on the property at any time.

2. This authorization shall not obligate CL&P to pay for or reimburse any costs or expenses or to provide any assistance of any kind in connection with any applications, or bind or obligate CL&P to agree or be responsible for any on-site or off-site improvements, development restrictions, impact fees or assessments, capital improvement charges, bonds or other security, or any other fee, assessment, charge or expense imposed or required as a condition of any license, permit or approval. New Cingular shall be solely and fully responsible for all fees, charges costs and expenses of any kind in connection with any applications. CL&P agrees to reasonably cooperate with New Cingular in signing such applications or other similar documents as may be required in order for New Cingular to apply for any license, permit or approval.

3. This authorization shall not be deemed or construed to grant or transfer to New Cingular any interest in the property, whatsoever, and shall not in any respect obligate or require CL&P to sell, lease or license the Property to New Cingular or otherwise allow New Cingular to use or occupy the property for any purpose, regardless of whether any licenses, permits and approvals applied for by New Cingular for the property are granted. New

Cingular understands and acknowledges that any and all applications filed by New Cingular for the property at New Cingular's sole risk and without any enforceable expectation that the property will be made available for New Cingular's use.

4. New Cingular shall be required to supply to CL&P, free of charge and contemporaneous with New Cingular's filing of same, a complete copy of any and all applications, plans, reports and other public filings made by New Cingular with any local, municipal, state or federal governmental or regulatory officer, agency board, bureau, commission or other person or body for any licenses, permits or approvals for the property, and to keep CL&P fully informed on a regular basis of the status of New Cingualr's applications.

5. This authorization shall automatically expire six (6) months after the date of this letter, unless extended in writing by mutual agreement of CL&P and New Cingular.

Very truly yours,

Michael J. Green

Michael J. Green, Senior Real Estate Analyst
T & D Rights & Survey

AGREED TO ON BEHALF OF New Cingular Wireless PCS, LLC

By: Timothy McBurke
Duly Authorized

Date: 8-16-2015

WIRELESS COMMUNICATIONS FACILITY
CT2267
MILFORD
EVERSOURCE UTILITY STRUCTURE NO. 3848
298 RIDGE ROAD
ORANGE, CT 06477

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2003 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2005 CONNECTICUT SUPPLEMENT AND 2009 AMENDMENTS, INCLUDING THE TIA/EIA-222 REVISION "F" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2005 CONNECTICUT FIRE SAFETY CODE AND 2009 AMENDMENTS, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. THE COMPOUND, TOWER, PRIMARY GROUND RING, ELECTRICAL SERVICE TO THE METER BANK AND TELEPHONE SERVICE TO THE DEMARCATION POINT ARE PROVIDED BY SITE OWNER. AS BUILT FIELD CONDITIONS REGARDING THESE ITEMS SHALL BE CONFIRMED BY THE CONTRACTOR. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
3. 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.
4. 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.
5. 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.
6. 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.
7. 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.
8. 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.
9. 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. MAINTAIN EXISTING BUILDING'S/PROPERTY'S OPERATIONS, COORDINATE WORK WITH BUILDING/PROPERTY OWNER.
10. 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.
11. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
12. 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.
13. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED" ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE AT&T 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.
14. 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.
15. 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.
16. 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.
17. 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.
18. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
19. 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.
20. 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 PRIOR TO ANY EXCAVATION WORK. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
21. CONTRACTOR SHALL COMPLY WITH OWNERS 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: 500 ENTERPRISE DRIVE, ROCKY HILL, CONNECTICUT

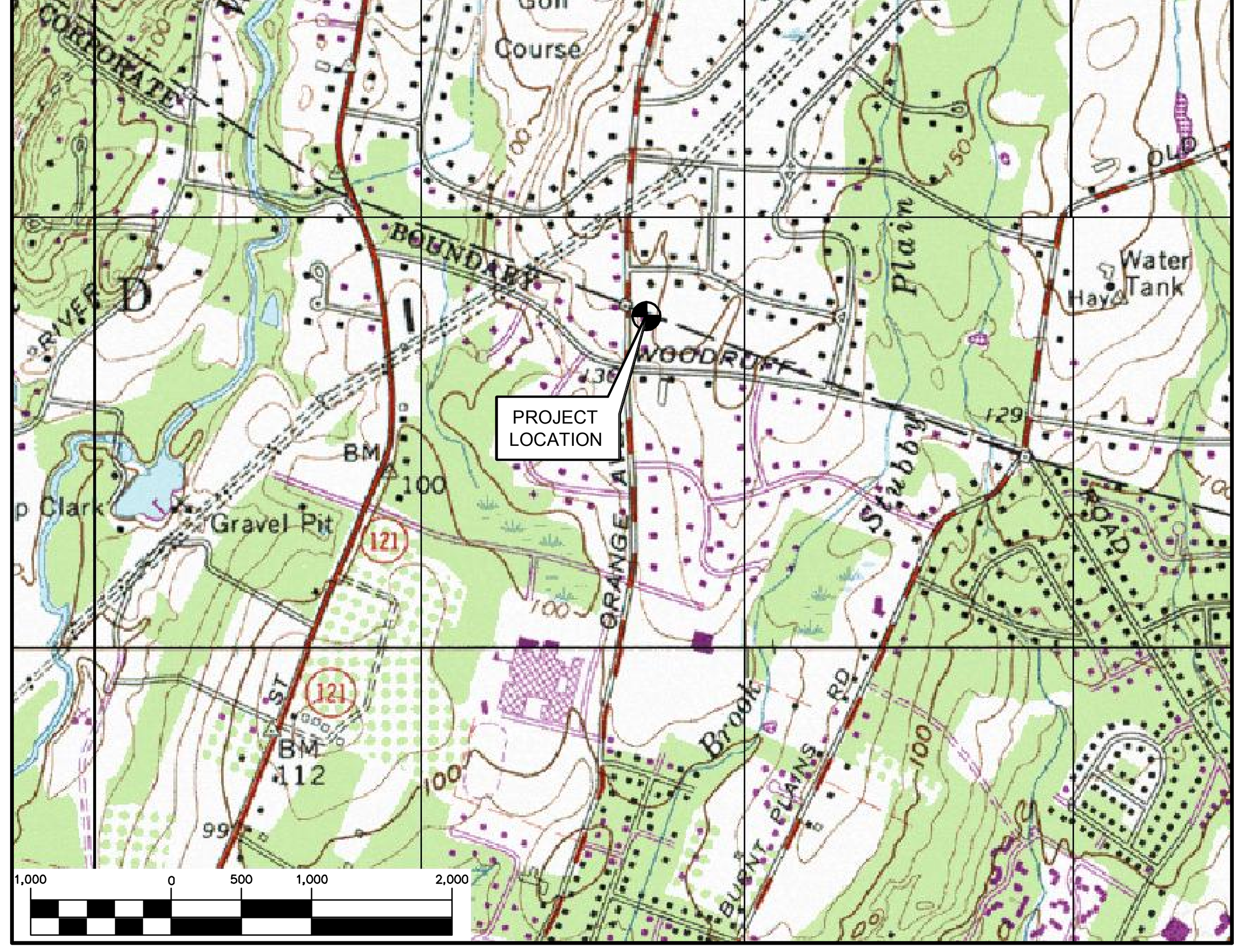
TO: 298 RIDGE ROAD, ORANGE, CONNECTICUT

1.	HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD	0.30 MI
2.	TURN LEFT ONTO CAPITAL BLVD	0.30 MI
3.	TURN LEFT ONTO WEST ST	0.30 MI
4.	TURN LEFT TO MERGE ONTO I-91 S TOWARD NEW HAVEN	9.60 MI
5.	TAKE EXIT 17 FOR CT-15 S/W CROSS PKWY	0.40 MI
6.	MERGE ONTO CT-15 S	23.00 MI
7.	TAKE EXIT 56 TOWARD CT-121/ORANGE	0.10 MI
8.	SLIGHT RIGHT TOWARD GRASSY HILL RD	0.20 MI
9.	TURN RIGHT ONTO GRASSY HILL RD	1.70 MI
10.	TURN LEFT ONTO CLARK LN	0.40 MI
11.	TAKE THE 2ND RIGHT ONTO RIDGE RD	0.40 MI
12.	ARRIVE AT 298 RIDGE RD, ORANGE, CT 06477	

VICINITY MAP

SCALE: 1" = 1000'

NORTH



PROJECT SUMMARY

1. THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:
   A. REMOVE AND REPLACE EXISTING LTE ANTENNA FOR PROPOSED LTE HEXPORT ANTENNA, (1) PER SECTOR.
   B. INSTALL (3) NEW RRUS-11+A2 WITHIN EXISTING EQUIPMENT SHELTER.

PROJECT INFORMATION

AT&T SITE NUMBER:	CT2267
AT&T SITE NAME:	MILFORD
SITE ADDRESS:	CL&P LINE NO. 1685, STRUCT. NO. 3848 298 RIDGE ROAD ORANGE, CT 06477
LESSEE/APPLICANT:	NEW CINGULAR WIRELESS PCS, LLC 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067
ENGINEER:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT. 06405
PROJECT COORDINATES:	LATITUDE: 41°-15'-30.44"N LONGITUDE: 73°-02'-39.30"W GROUND ELEVATION: ±155.5' AMSL COORDINATES AND GROUND ELEVATION REFERENCED FROM FAA 1-A CERTIFICATION PREPARED BY MARTINEZ-COUCH & ASSOCIATES, LLC., DATED APRIL 24, 2013.

SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	1
N-1	NOTES AND SPECIFICATIONS	0
C-1	PLANS, ELEVATION AND DETAILS	0
C-2	LTE 2C EQUIPMENT DETAILS	0
E-1	LTE SCHEMATIC DIAGRAM AND NOTES	0
E-2	LTE WIRING DIAGRAM	0
E-3	TYPICAL ELECTRICAL DETAILS	0

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
1	8/27/15	CAG	LVP	CONSTRUCTION DOCUMENTS – ISSED FOR CLIENT REVIEW
0	6/23/15	CAG	LVP	CONSTRUCTION DOCUMENTS

PROFESSIONAL ENGINEER SEAL

at&t

SAI communications

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

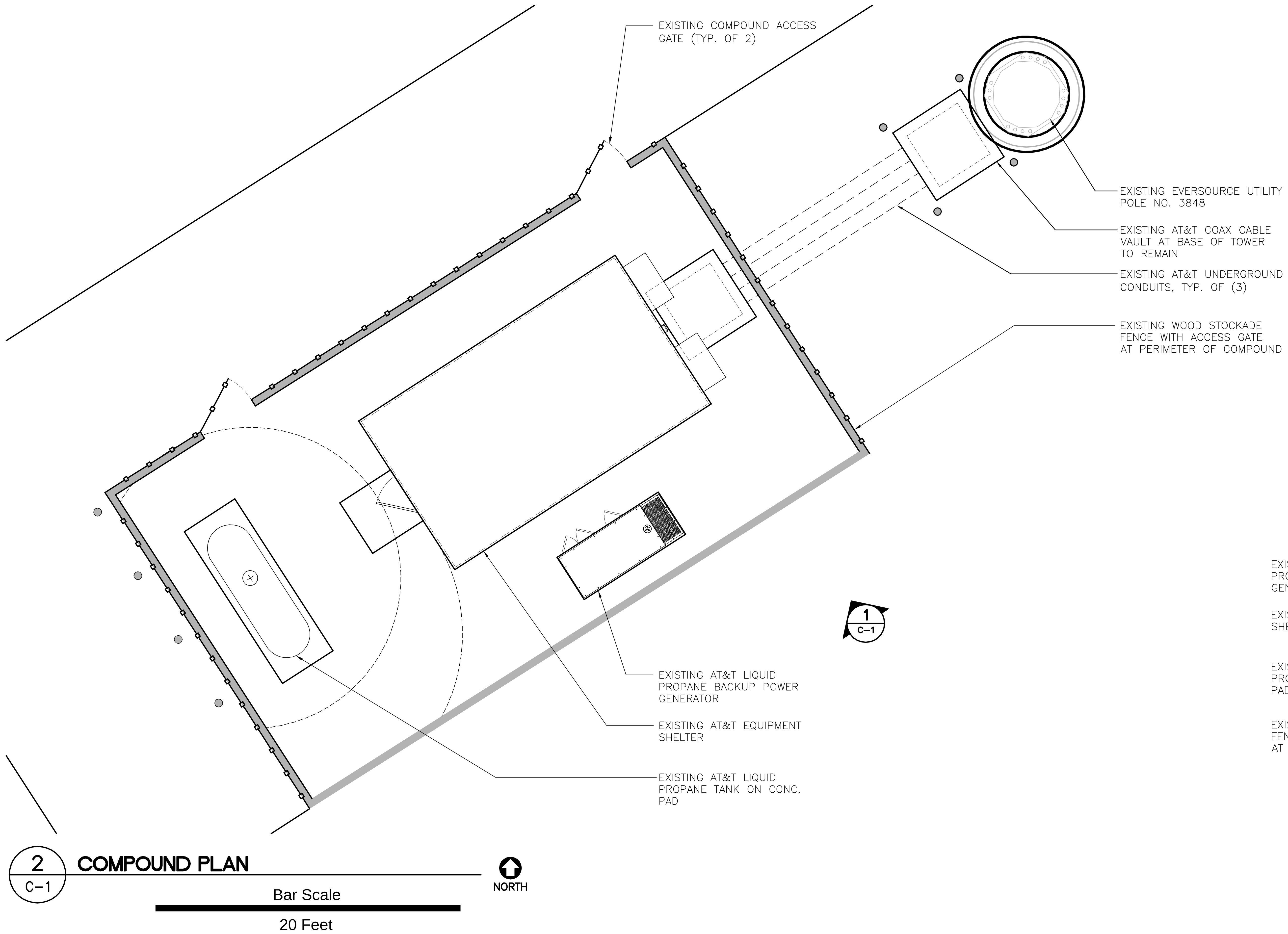
AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
MILFORD
SITE NUMBER: CT2267
298 RIDGE ROAD
ORANGE, CT 06477

DATE: 06/16/15
SCALE: AS NOTED
JOB NO. 15066.000

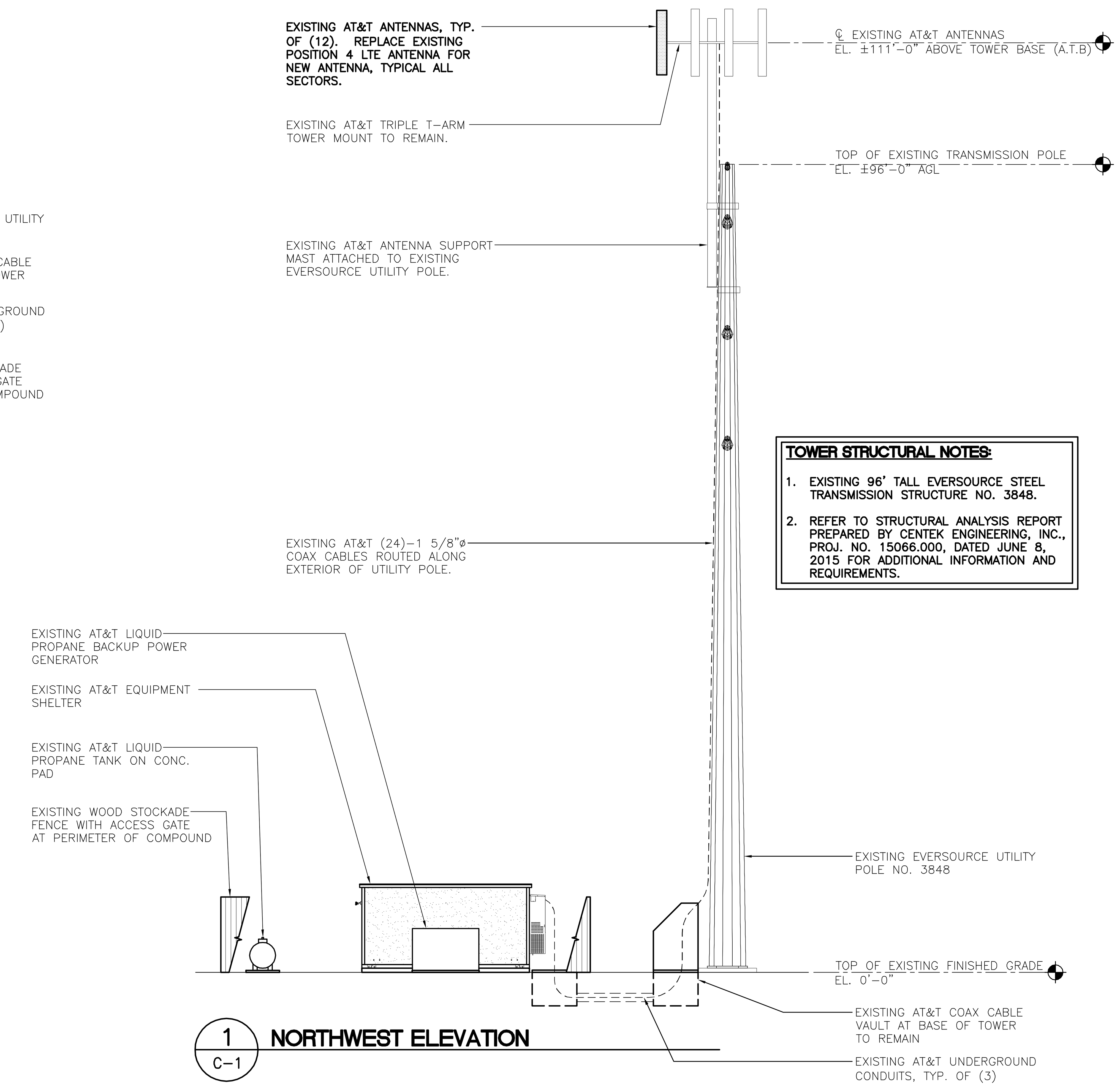
TITLE SHEET

T-1

Sheet No. 1 of 7



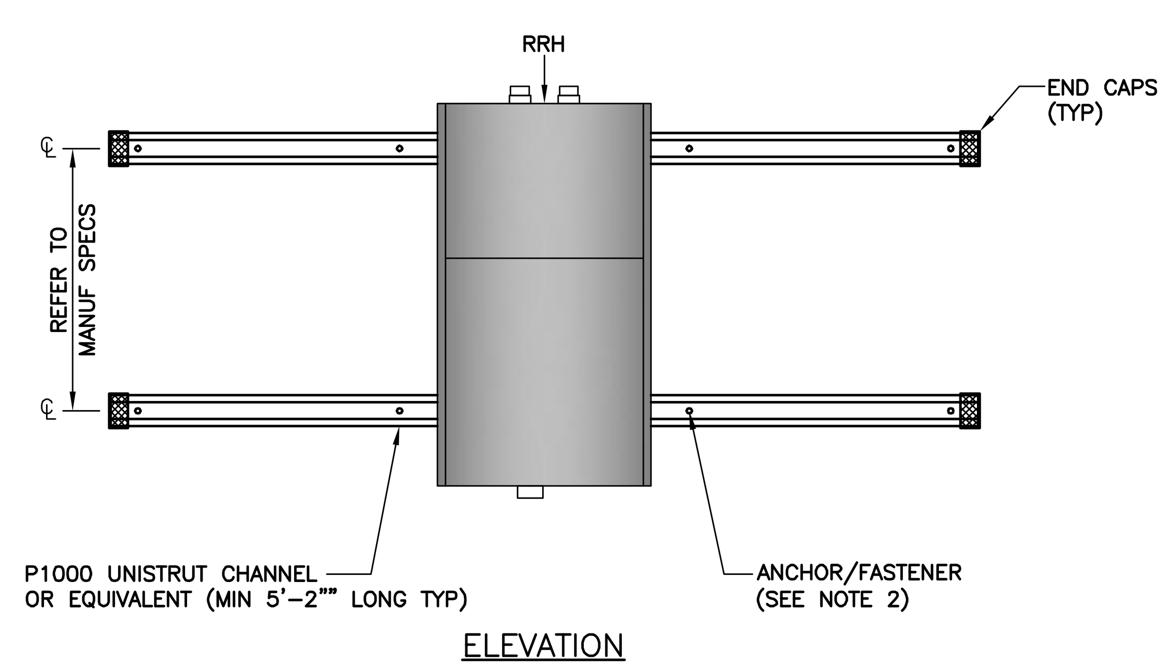
2 C-1 **COMPOUND PLAN**



TOWER STRUCTURAL NOTES:

1. EXISTING 96' TALL EVERSOURCE STEEL TRANSMISSION STRUCTURE NO. 3848.
2. REFER TO STRUCTURAL ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING, INC., PROJ. NO. 15066.000, DATED JUNE 8, 2015 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

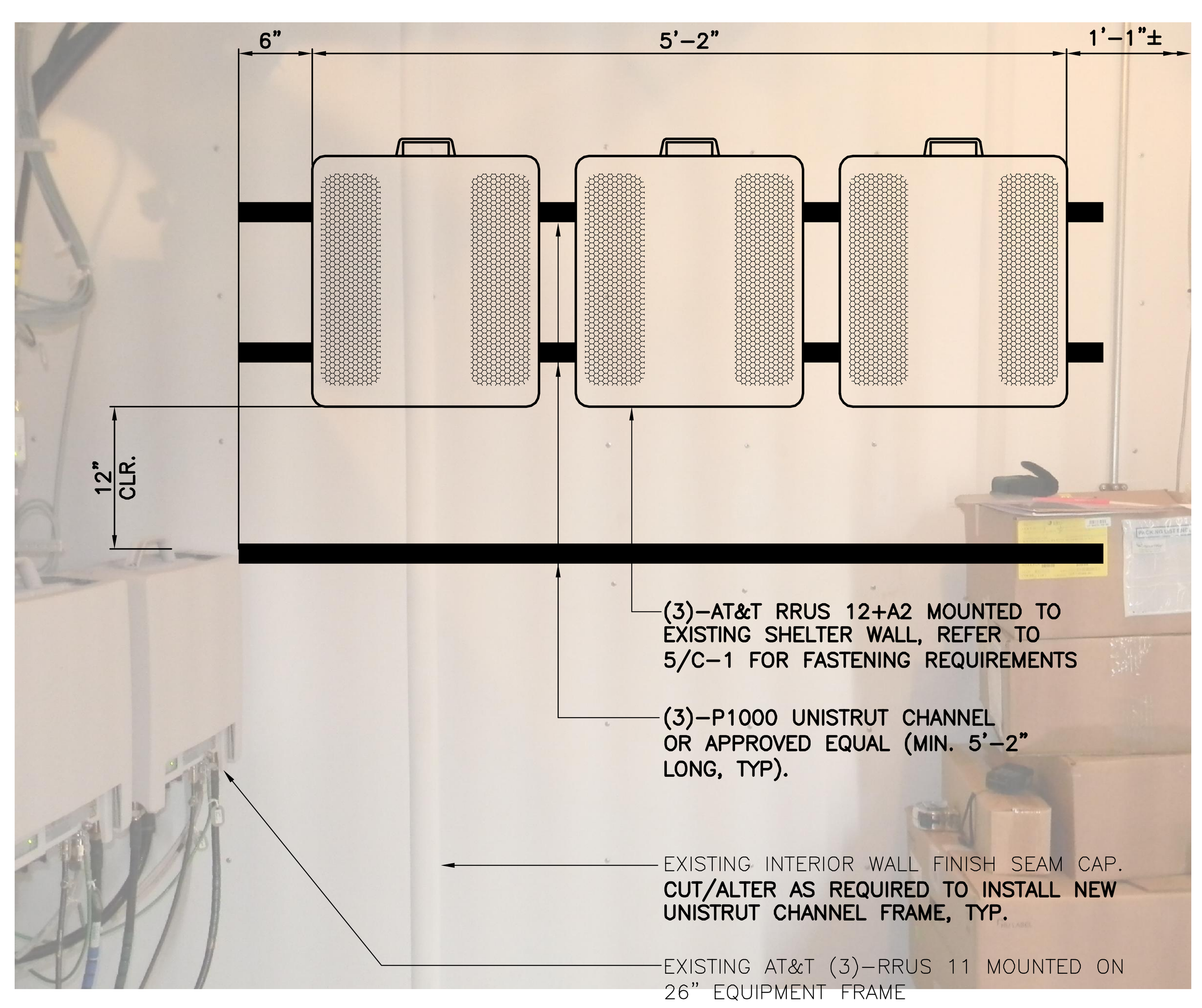
1 C-1 **NORTHWEST ELEVATION**



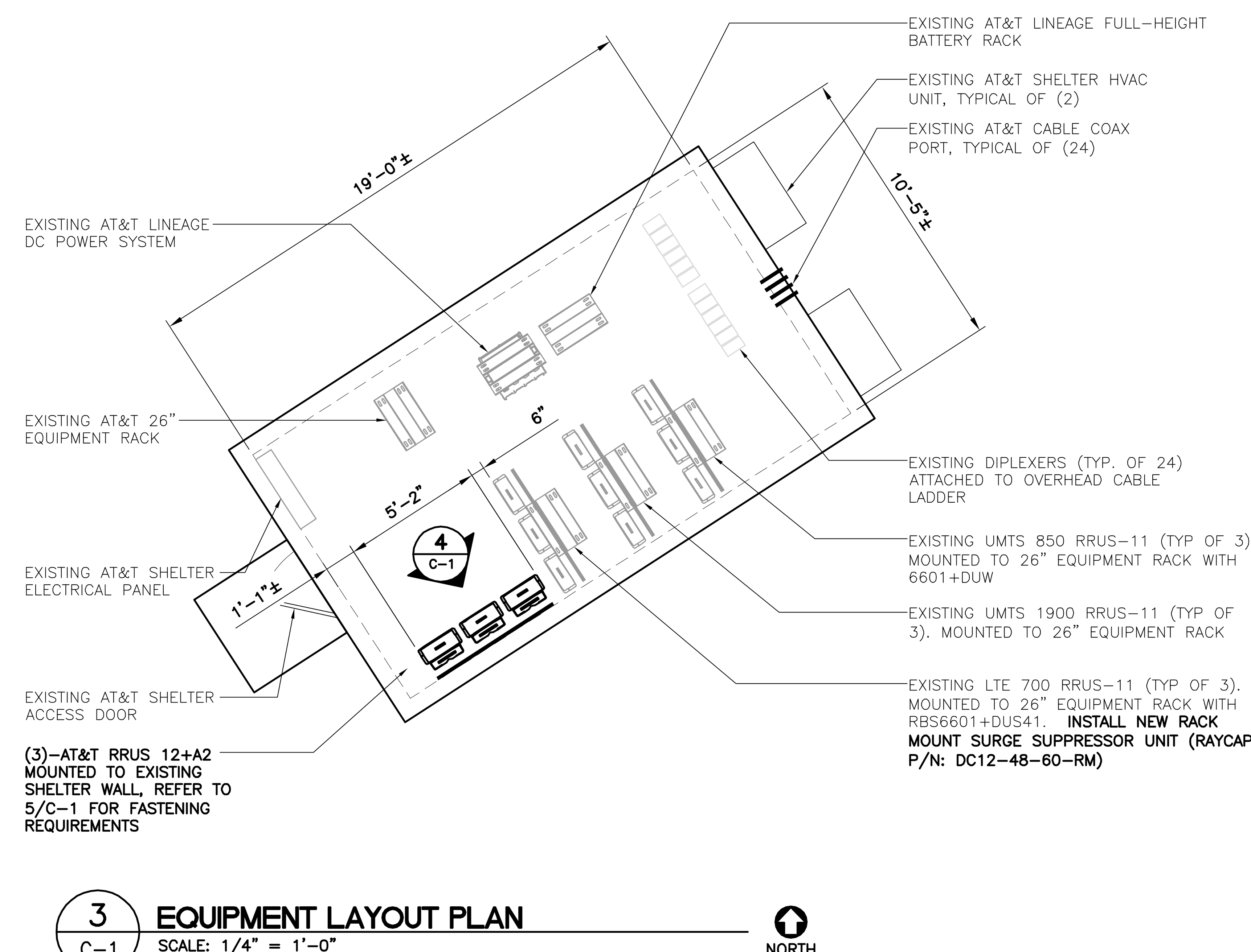
NOTES:

1. INSTALL ANCHORS/FASTENERS A MAXIMUM OF 0'-6" ON CENTERS TOTAL OF (9) FASTENERS PER UNISTRUT.
   - HILTI HTB TOGGLER BOLT 3/8" WITH SRH SCREW.
   - "SRH SCREW" DENOTES 3/8"ø x 2 ½" LONG MACHINE SCREW WITH ROUND HEAD (COMBINATION SLOTTED/PHILLIPS)
2. MOUNT RRU TO UNISTRUT WITH 3/8"ø UNISTRUT BOLTING HARDWARE AND SPRING NUTS. TYPICAL FOUR PER BRACKET.
3. NO PAINTING OF THE RRH OR SOLAR SHIELD IS ALLOWED.

5 C-1 **TYPICAL RRUS MOUNTING DETAILS**
SCALE: 1 1/2" = 1'-0"



4 C-1 **EQUIPMENT ELEVATION**
SCALE: 1" = 1'-0"



3 C-1 **EQUIPMENT LAYOUT PLAN**
SCALE: 1/4" = 1'-0"

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	6/23/15	CAG	LVP	CONSTRUCTION DOCUMENTS – ISSED FOR CLIENT REVIEW

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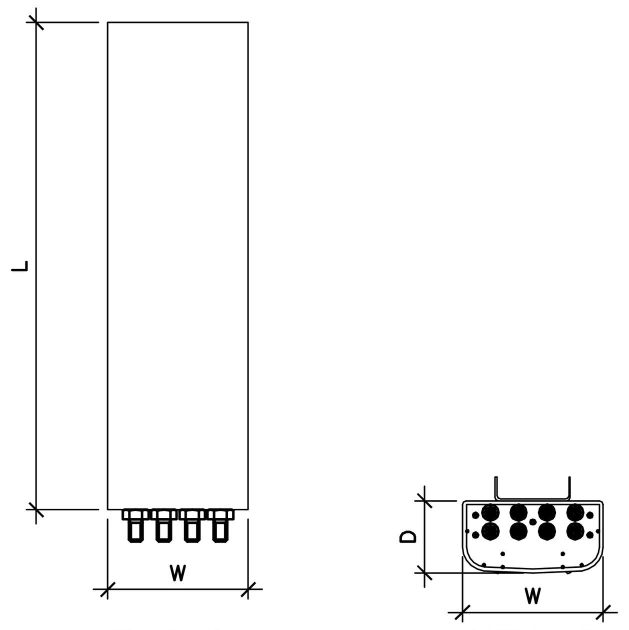
AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
MILFORD
SITE NUMBER: CT2267
298 RIDGE ROAD
ORANGE, CT 06477

DATE: 06/16/15
SCALE: AS NOTED
JOB NO. 15066.000

PLANS, ELEVATION AND DETAILS

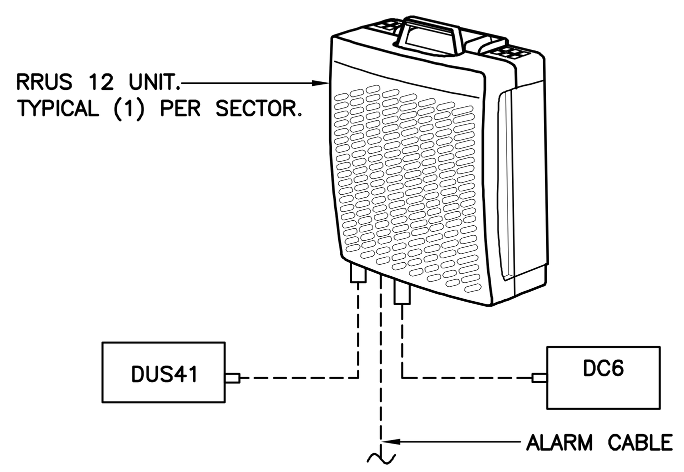
C-1

Sheet No. 3 of 7



ALPHA/BETA/GAMMA ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: CCI MODEL: OPA-65R-LCUU-H8	92.7"L x 14.4"W x 7.0"D	95 LBS.

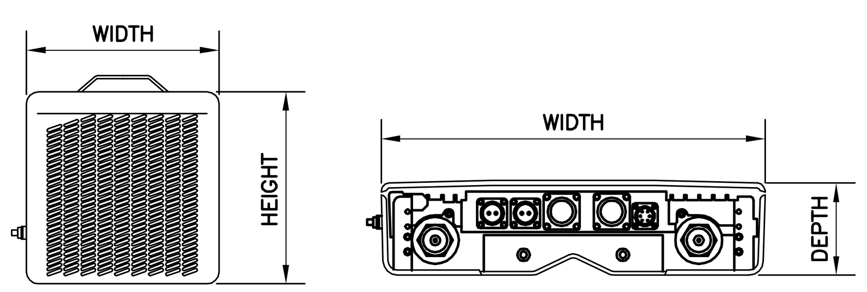
5 C-2 PROPOSED ANTENNA DETAIL
SCALE: 1/2" = 1'-0"



RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS 12	20.4"L x 18.5"W x 7.5"D	50 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.

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

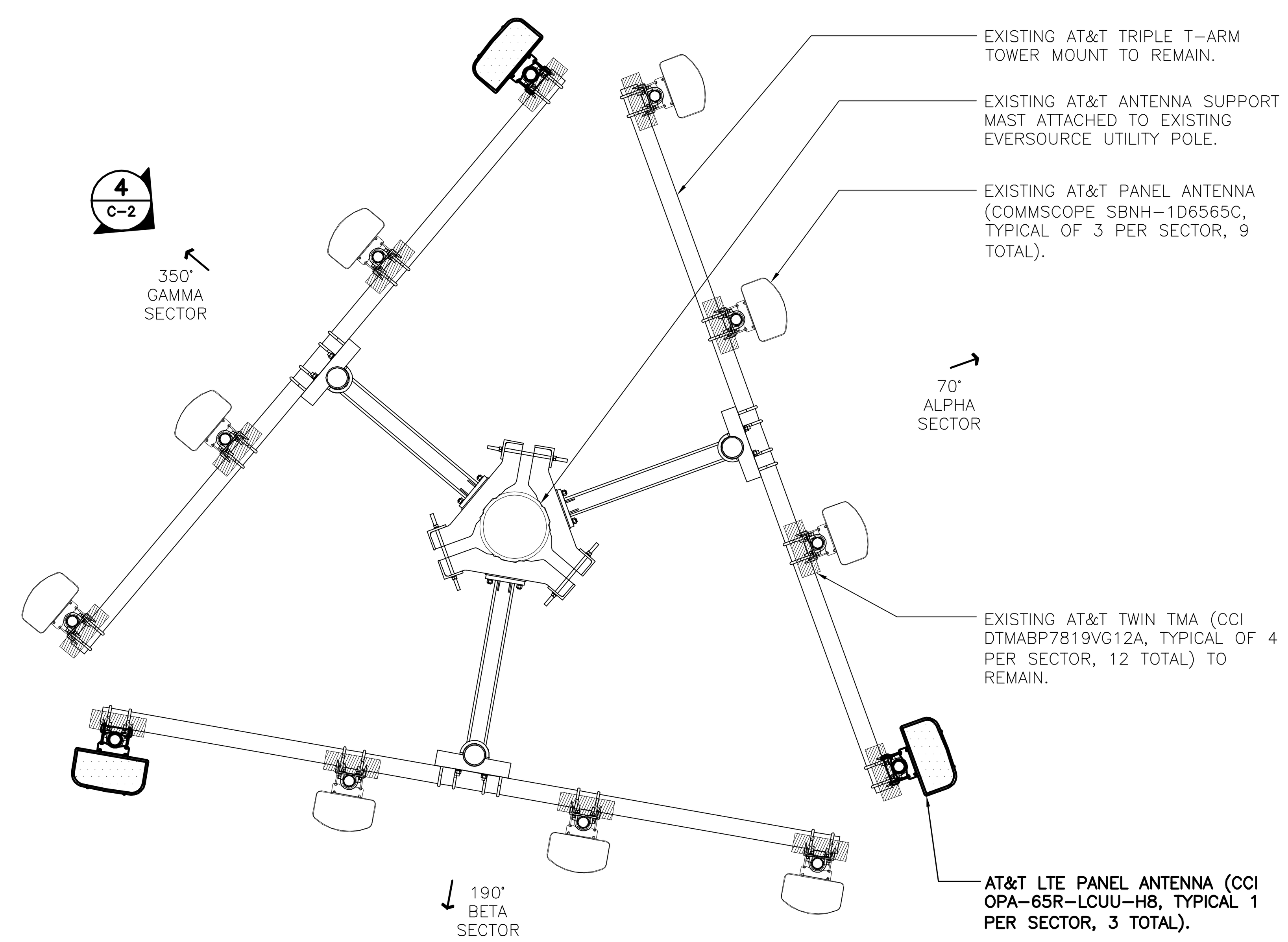
6 C-2 ERICSSON RRUS 12 DETAIL
SCALE: 1" = 1'-0"



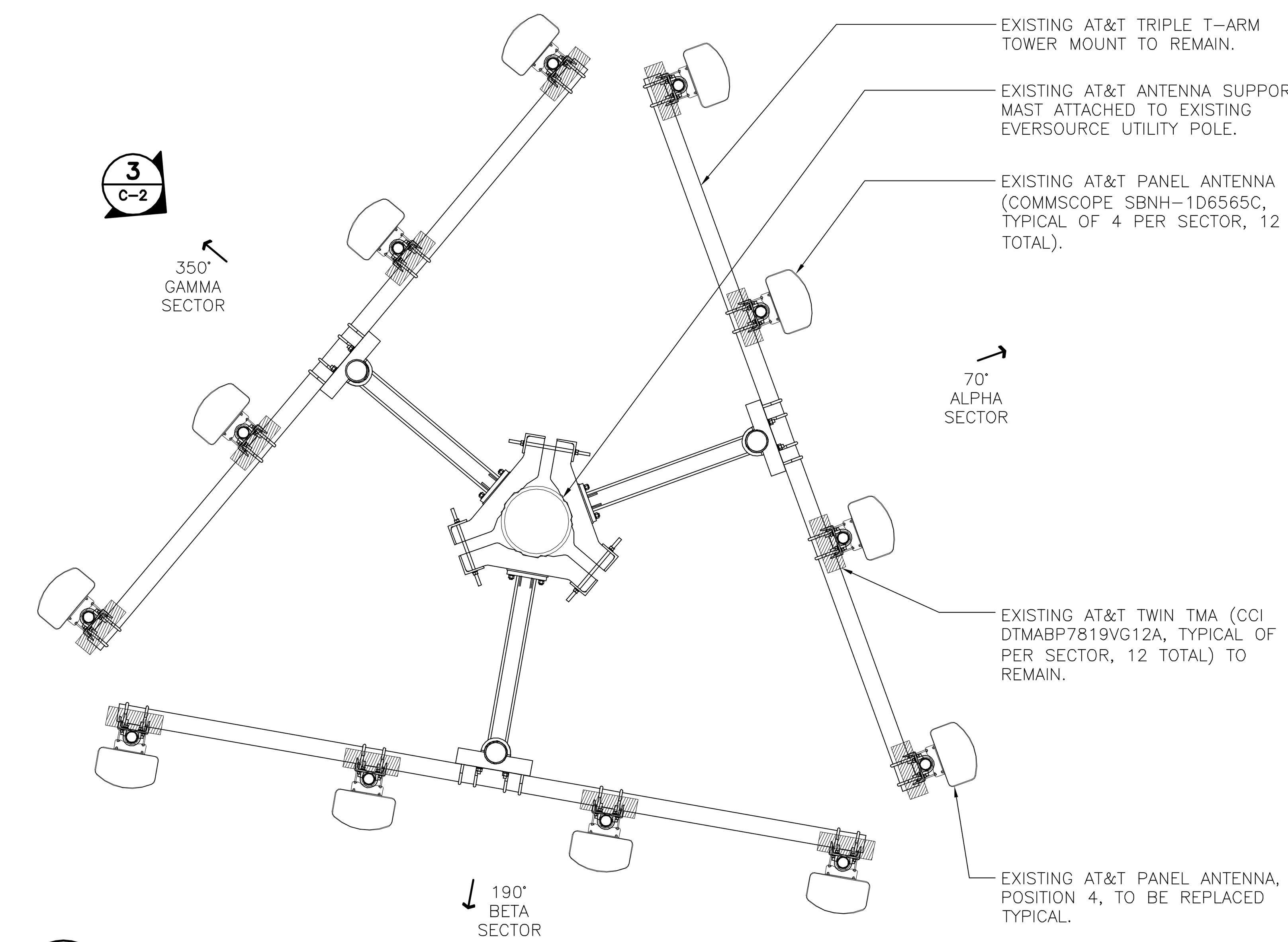
RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS A2	16.42"L x 15.19"W x 3.35"D	22.05 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.

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

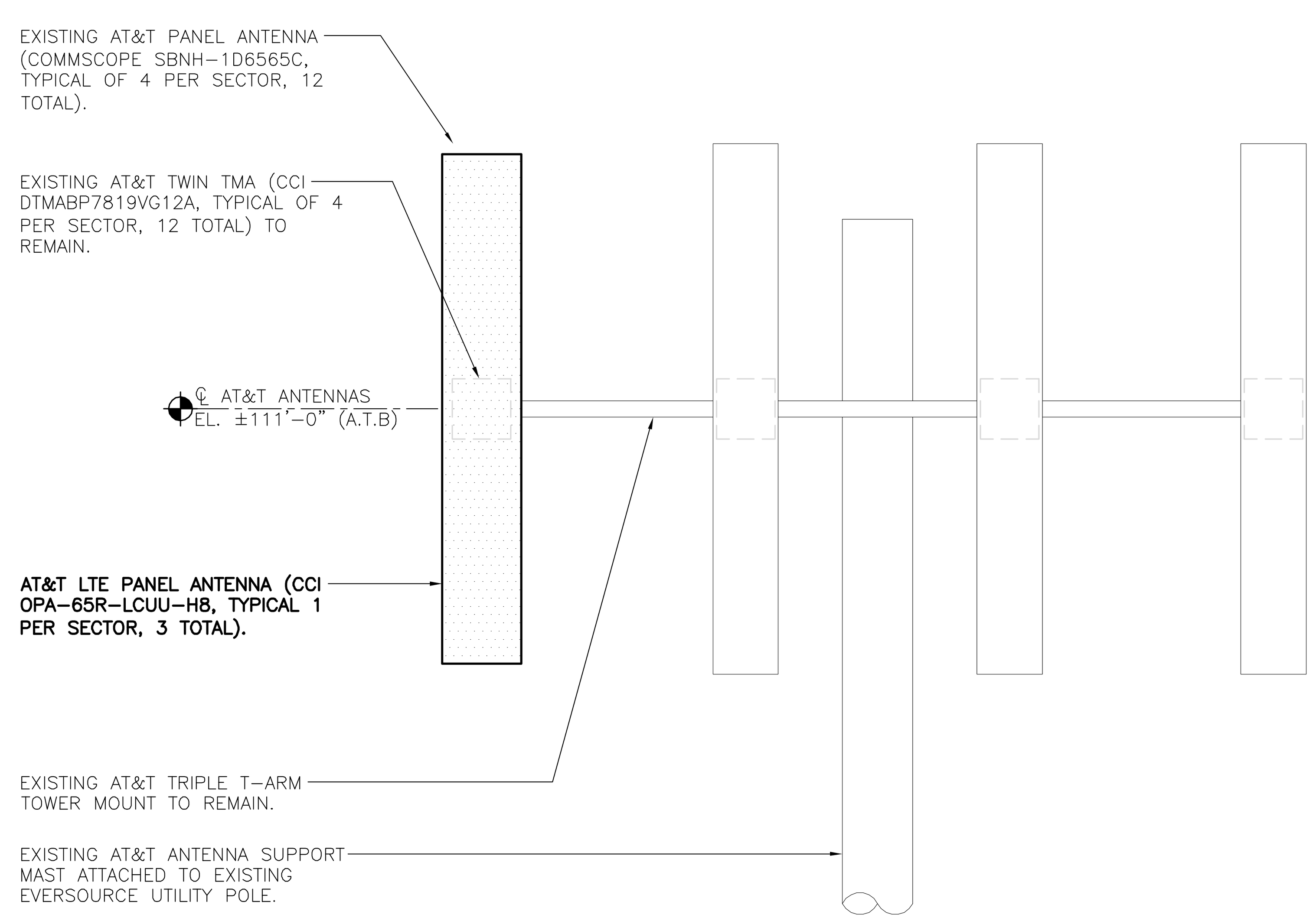
7 C-2 ERICSSON RRUS A2 DETAIL
SCALE: 1" = 1'-0"



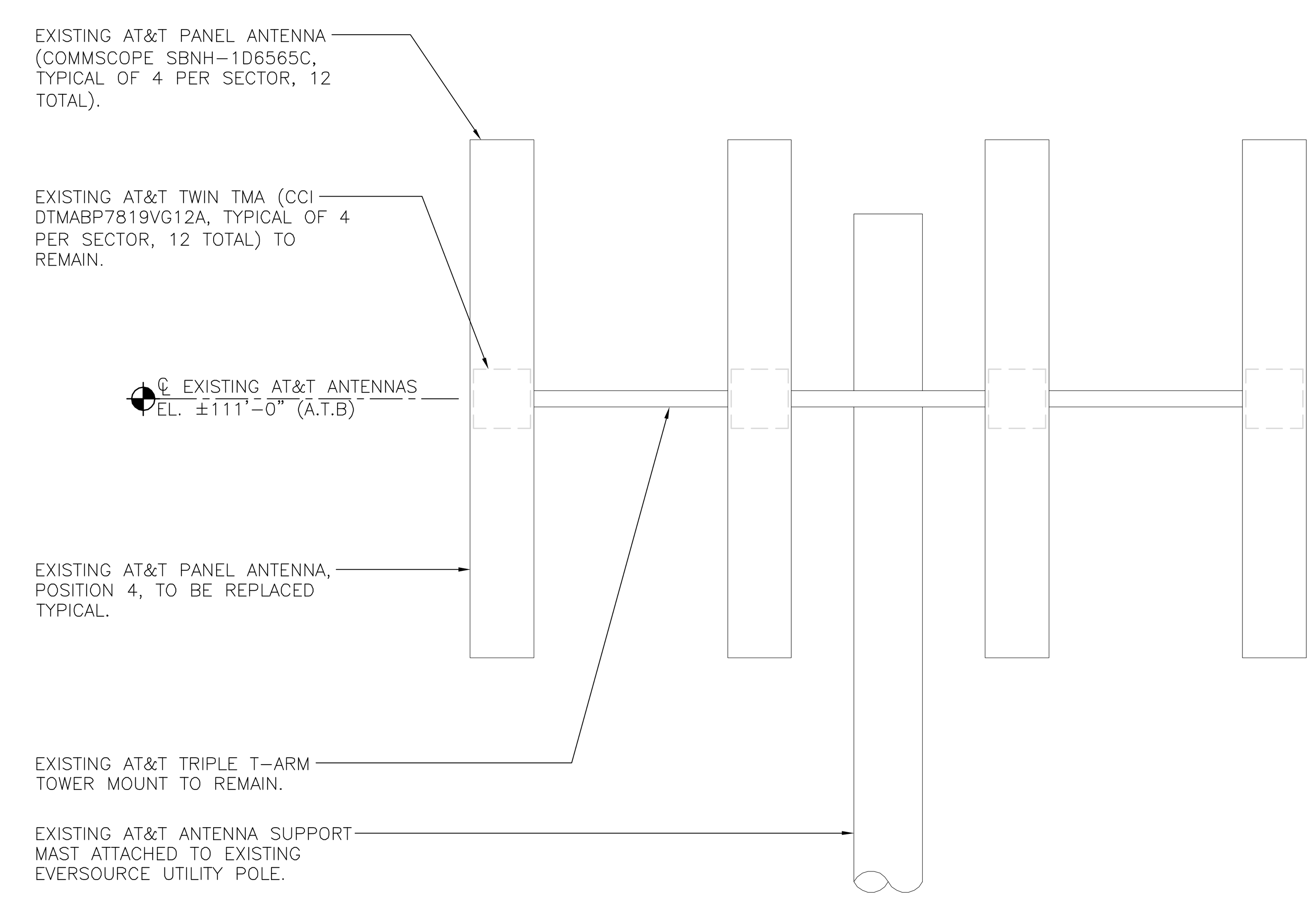
2 C-2 PROPOSED ANTENNA PLAN
SCALE: 1/2" = 1'-0"



1 C-2 EXISTING ANTENNA PLAN
SCALE: 1/2" = 1'-0"



4 C-2 PROPOSED ANTENNA PLAN
SCALE: 1/2" = 1'-0"



3 C-2 EXISTING ANTENNA PLAN
SCALE: 1/2" = 1'-0"

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	6/23/15	CAG	LVP	CONSTRUCTION DOCUMENTS – ISSED FOR CLIENT REVIEW

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AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
MILFORD
SITE NUMBER: CT2267
298 RIDGE ROAD
ORANGE, CT 06477

DATE: 06/16/15
SCALE: AS NOTED
JOB NO. 15066.000

LTE 2C EQUIPMENT DETAILS

C-2

Sheet No. 4 of 7

CENTEK engineering

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Structural Analysis of Antenna Mast and Transmission Pole

AT&T Site Ref: CT2267

Eversource Structure No. 3848
96' Electric Transmission Pole

298 Ridge Road
Orange, CT

CENTEK Project No. 15066.000

Date: June 8, 2015

STATE OF CONNECTICUT
TIMOTHY J. LYNN
No. 29336
LICENSED
PROFESSIONAL ENGINEER

Prepared for:
AT&T Mobility
500 Enterprise Drive, Suite 3A
Rocky Hill, CT 06067

Introduction

The purpose of this report is to analyze the existing 30' long mast and 96' transmission pole located at 298 Ridge Road in Orange, CT for the proposed AT&T Mobility antenna upgrade.

The existing/proposed loads consist of the following:

- AT&T MOBILITY (Existing to Remain):
  Antennas: Nine (9) Andrew SBNH-1D6565C panel antennas and twelve (12) CCI DTMABP7819VG12A TMA's mounted on a Site Pro Triple T-Arm p/n RMV12-496 with a RAD center elevation of 111-ft above grade.
  Coax Cables: Twenty four (24) 1-5/8" ∅ coax cables running on the exterior of the pole as indicated in section 4 of this report.
  Mast: HSS14x0.625 x 30-ft long pipe conforming to ASTM A500 Gr. B (Fy = 42 ksi).
- AT&T MOBILITY (Existing to Remove):
  Antennas: Three (3) Andrew SBNH-1D6565C panel antennas mounted on a Site Pro Triple T-Arm p/n RMV12-496 with a RAD center elevation of 111-ft above grade.
- **AT&T MOBILITY (Proposed):**
  Antennas: Three (3) CCI OPA-65R-LCUU-H8 panel antennas mounted on a Site Pro Triple T-Arm p/n RMV12-496 with a RAD center elevation of 111-ft above grade.

Primary assumptions used in the analysis

- Allowable steel stresses are defined by AISC-ASD 9th edition for design of the PCS Mast and antenna supporting elements.
- ASCE Manual No. 72, "Design of Steel Transmission Pole Structures Second Edition", defines allowable steel stresses for evaluation of the CL&P 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 existing antenna mast was independently completed using the current version of RISA-3D computer program licensed to CENTEK Engineering, Inc.

The existing mast consisting of a HSS14x0.625 x 30-ft long pipe connected at two points to the existing tower was analyzed for its ability to resist loads prescribed by the TIA/EIA standard. Section 5 of this report details these gravity and lateral wind loads. NESC prescribed loads were also applied to the mast structure in order to obtain reactions needed for analyzing the CL&P pole structure. These loads are developed in Section 7 of this report. Load cases and combinations used in RISA-3D for TIA/EIA loading and for NESC/EVERSOURCE loading are listed in report Sections 6 and 8, respectively.

An envelope solution was first made to determine maximum and minimum forces, stresses, and deflections to confirm the selected section as adequate. Additional analyses were then made to determine the NESC forces to be applied to the CL&P pole structure.

The RISA-3D program contains a library of all AISC shapes and corresponding section properties are computed and applied directly within the program. The program's Steel Code Check option was also utilized. The forces calculated in RISA-3D using NESC guidelines were then applied to the CL&P pole using PLS-Pole. Maximum usage for the pole was calculated considering the additional forces from the mast and associated appurtenances.

Design Basis

Our analysis was performed in accordance with TIA/EIA-222-F-1996, ASCE Manual No. 72 – "Design of Steel Transmission Pole Structures Second Edition", NESC C2-2007 and Northeast Utilities Design Criteria.

The CL&P pole structure, considering existing and future conductor and shield wire loading, with the pcs antenna mast was analyzed under two conditions:

- 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 NU Design Criteria Table, NESC C2-2007 ~ Construction Grade B, and ASCE Manual No. 72.

  Load cases considered:

  Load Case 1: NESC Heavy
  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 Speed.………………………………. 110 mph (1)
  Radial Ice Thickness.………………………. 0"

  Load Case 3: NESC Extreme Ice w/ Wind
  Wind Pressure.……………………………….. 6.4 psf
  Radial Ice Thickness.………………………. 0.75"
  Vertical Overload Capacity Factor…………. 1.0
  Wind Overload Capacity Factor……………. 1.0

  Note 1: NESC C2-2007, Section25, Rule 250C: Extreme Wind Loading, 1.25 x Gust Response Factor (wind speed: 3-second gust)

- MAST ASSEMBLY ANALYSIS

Mast, appurtenances and connections to the utility pole were analyzed and designed in accordance with the NU Design Criteria Table, TIA/EIA-222-F, and AISC-ASD standards.

Load cases considered:

Load Case 1:
Wind Speed………………………………... 85 mph (2)
Radial Ice Thickness……………………….. 0”

Load Case 2:
Wind Pressure..……………………………. 75% of 85 mph wind pressure
Radial Ice Thickness……………………….. 0.5”

Note 2: Per NU Mast Design Criteria Exception 1.

Results

- MAST ASSEMBLY

The antenna mast was determined to be structurally **adequate**.

Member	Stress Ratio (% of capacity)	Result
HSS14x0.625 x 30-ft long	69.5% (1)	**PASS**
PCS Mast to Base Plate Weld	86.2% (2)	**PASS**

Note 1 – 1/3 Increase in allowable stress used for mast.
Note 2 – 1/3 increase in allowable stress not used for mast connection.

- 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. 72, “Design of Steel Transmission Pole Structures Second Edition”, for the applied NESC Heavy and Hi-Wind load cases. The detailed analysis results are provided in Section 9 of this report. The analysis results are summarized as follows:

A maximum usage of **77.82%** occurs in the utility pole base plate under the **NESC Extreme Wind** loading condition.

POLE SECTION:

The utility pole was found to be within allowable limits.

Tower Section	Elevation	Stress Ratio (% of capacity)	Result
Tube Number 1	48.5’ - 96.0’ (AGL)	76.18%	**PASS**

BASE PLATE:
The base plate was found to be within allowable limits from the PLS output based on 12 bend lines.

Tower Component	Design Limit	Stress Ratio (percentage of capacity)	Result
Base Plate	Bending	77.82%	**PASS**

- FOUNDATION AND ANCHORS

The existing foundation consists of a 7.0-ft ∅ x 18-ft long reinforced concrete caisson. The base of the tower is connected to the foundation by means of (16) 2.25”∅, ASTM A615 Gr. 75 anchor bolts embedded approximately 7-ft-6-in into the concrete foundation structure. Foundation information was obtained from NUSCO drawing # 01007-60010.

Review of the foundation and anchor design consisted of verification of applied loads obtained from the tower design calculations and code checks of allowable stresses:

<u>BASE REACTIONS:</u>

From PLS-Pole analysis of CL&P pole based on NESC/NU prescribed loads.

Load Case	Shear	Axial	Moment
NESC Heavy Wind	16.19 kips	61.52 kips	1247.79 ft-kips
NESC Extreme Wind	39.63 kips	33.58 kips	3100.12 ft-kips
NESC Extreme Ice w/ Wind	12.01 kips	49.73 kips	934.81 ft-kips

Note 1 – 10% increase applied to tower base reactions per OTRM 051

<u>ANCHOR BOLTS:</u>

The anchor bolts were found to be within allowable limits.

Tower Component	Design Limit	Stress Ratio (% of capacity)	Result
Anchor Bolts	Tension	59.1 %	**PASS**

<u>FOUNDATION:</u>

The foundation with the proposed modifications was found to be within allowable limits.

Foundation	Design Limit	Proposed Loading (1)	Result
Reinforced Concrete Caisson	Moment Capacity	47.4%	**PASS**
	Lateral Deflection	1.86 in.(2)	**PASS**

Note 1: 10% increase to PLS base reactions used in foundation analysis per OTRM 051.
Note 2: Lateral deflection limited to L/100 per OTRM 051 Rev 5 dated 7/19/10. (L/100 = 18*12/100=2.16-in)

<u>Conclusions and Recommendations</u>

This analysis shows that the subject utility pole **<u>is adequate</u>** to support the proposed AT&T equipment installation.

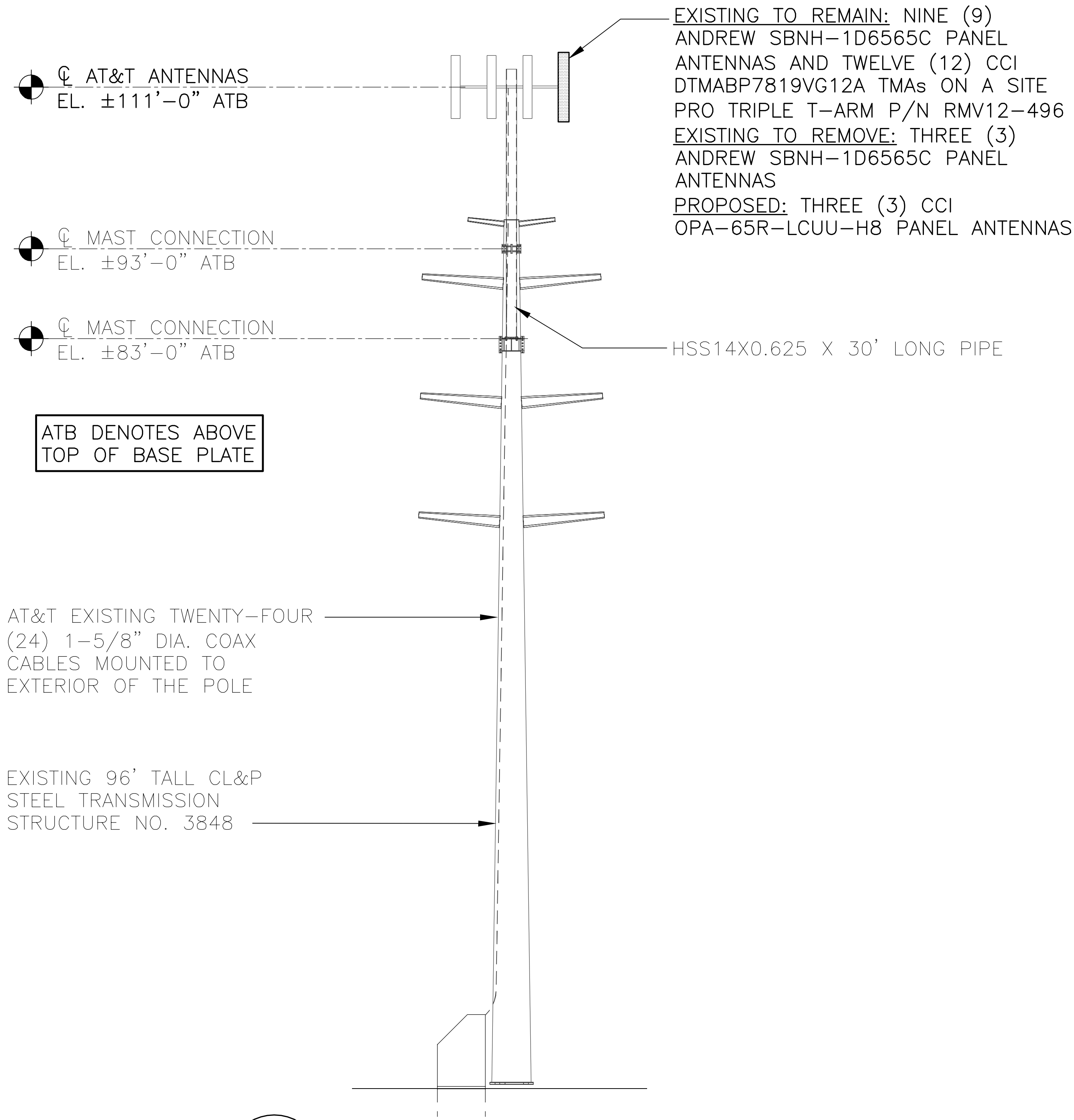
The analysis is based, in part, on the information provided to this office by Eversource and AT&T. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:

Timothy J. Lynn, PE
Structural Engineer

STATE OF CONNECTICUT TIMOTHY J. LYNN No. 29336 LICENSED PROFESSIONAL ENGINEER



1
EL-1

TOWER & MAST ELEVATION

SCALE: NOT TO SCALE

REVISIONS		
00	6/8/15	CONSTRUCTION

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

CT2267
EVERSOURCE 3848

298 RIDGE ROAD
ORANGE, CT 06477

PROJECT NO:	15066.000
DRAWN BY:	TJL
CHECKED BY:	CFC
SCALE:	AS NOTED
DATE:	6/8/15

TOWER AND MAST ELEVATION

EL-1

DWG. 1 OF 1

Centek Engineering, Inc.
3-2 North Branford Road
Branford, Connecticut 06405
Phone: (203) 488-0580
Fax: (203) 488-8587

Steven L. Levine
Real Estate Consultant

September 10, 2015

Honorable James Zeoli
1st Selectman, Town of Orange
Orange Town Hall 617 Orange Center Road
Orange, CT 06477

Re: New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 298 Ridge Road, Orange

Dear Mr. Zeoli:

In order to accommodate technological changes, implement Uniform Mobile Telecommunications System ("UMTS") and Long Term Evolution ("LTE") capabilities, and enhance system performance in the State of Connecticut, New Cingular Wireless PCS, LLC ("AT&T") will be changing its equipment configuration at certain cell sites.

As required by Regulations of Connecticut State Agencies ("R.C.S.A.") Section 16-50j-73, the Connecticut Siting Council has been notified of the changes and will review AT&T's proposal. Please accept this letter as notification under Section 16-50j-73 of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2).

The enclosed Notice fully sets forth the AT&T proposal. However, if you have any questions or require any further information on the plans for the site or the Siting Council's procedures, please contact the undersigned at 860-830-0380 or Ms. Melanie Bachman, Acting Executive Director, Connecticut Siting Council at (860) 827-2935.

Sincerely,

Steven L. Levine
Real Estate Consultant

Enclosure

CENTEK engineering

Centered on Solutions℠

Structural Analysis of Antenna Mast and Transmission Pole

AT&T Site Ref: CT2267

Eversource Structure No. 3848
96’ Electric Transmission Pole

298 Ridge Road
Orange, CT

CENTEK Project No. 15066.000

Date: June 8, 2015

STATE OF CONNECTICUT
TIMOTHY J. LYNN
No. 29336
LICENSED
PROFESSIONAL ENGINEER

Prepared for:
AT&T Mobility
500 Enterprise Drive, Suite 3A
Rocky Hill, CT 06067

Table of Contents

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  Coax Cables: Twenty four (24) 1-5/8" ∅ coax cables running on the exterior of the pole as indicated in section 4 of this report.
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  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 NU Design Criteria Table, NESC C2-2007 ~ Construction Grade B, and ASCE Manual No. 72.

  Load cases considered:

  Load Case 1: NESC Heavy
  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 Speed………………………………… 110 mph (1)
  Radial Ice Thickness………………………. 0"

  Load Case 3: NESC Extreme Ice w/ Wind
  Wind Pressure……………………………….. 6.4 psf
  Radial Ice Thickness………………………. 0.75"
  Vertical Overload Capacity Factor…………. 1.0
  Wind Overload Capacity Factor……………. 1.0

  Note 1: NESC C2-2007, Section25, Rule 250C: Extreme Wind Loading, 1.25 x Gust Response Factor (wind speed: 3-second gust)

- MAST ASSEMBLY ANALYSIS

Mast, appurtenances and connections to the utility pole were analyzed and designed in accordance with the NU Design Criteria Table, TIA/EIA-222-F, and AISC-ASD standards.

Load cases considered:

Load Case 1:
Wind Speed………………………………... 85 mph (2)
Radial Ice Thickness………………………… 0”

Load Case 2:
Wind Pressure..……………………………. 75% of 85 mph wind pressure
Radial Ice Thickness……………………….. 0.5”

Note 2: Per NU Mast Design Criteria Exception 1.

Results

- MAST ASSEMBLY

The antenna mast was determined to be structurally **adequate**.

Member	Stress Ratio (% of capacity)	Result
HSS14x0.625 x 30-ft long	69.5% (1)	**PASS**
PCS Mast to Base Plate Weld	86.2% (2)	**PASS**

Note 1 – 1/3 Increase in allowable stress used for mast.
Note 2 – 1/3 increase in allowable stress not used for mast connection.

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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. 72, “Design of Steel Transmission Pole Structures Second Edition”, for the applied NESC Heavy and Hi-Wind load cases. The detailed analysis results are provided in Section 9 of this report. The analysis results are summarized as follows:

A maximum usage of **77.82%** occurs in the utility pole base plate under the **NESC Extreme Wind** loading condition.

POLE SECTION:

The utility pole was found to be within allowable limits.

Tower Section	Elevation	Stress Ratio (% of capacity)	Result
Tube Number 1	48.5’ - 96.0’ (AGL)	76.18%	**PASS**

BASE PLATE:
The base plate was found to be within allowable limits from the PLS output based on 12 bend lines.

Tower Component	Design Limit	Stress Ratio (percentage of capacity)	Result
Base Plate	Bending	77.82%	**PASS**

- FOUNDATION AND ANCHORS

The existing foundation consists of a 7.0-ft ∅ x 18-ft long reinforced concrete caisson. The base of the tower is connected to the foundation by means of (16) 2.25"∅, ASTM A615 Gr. 75 anchor bolts embedded approximately 7-ft-6-in into the concrete foundation structure. Foundation information was obtained from NUSCO drawing # 01007-60010.

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From PLS-Pole analysis of CL&P pole based on NESC/NU prescribed loads.

Load Case	Shear	Axial	Moment
NESC Heavy Wind	16.19 kips	61.52 kips	1247.79 ft-kips
NESC Extreme Wind	39.63 kips	33.58 kips	3100.12 ft-kips
NESC Extreme Ice w/ Wind	12.01 kips	49.73 kips	934.81 ft-kips

Note 1 – 10% increase applied to tower base reactions per OTRM 051

<u>ANCHOR BOLTS:</u>

The anchor bolts were found to be within allowable limits.

Tower Component	Design Limit	Stress Ratio (% of capacity)	Result
Anchor Bolts	Tension	59.1 %	**PASS**

<u>FOUNDATION:</u>

The foundation with the proposed modifications was found to be within allowable limits.

Foundation	Design Limit	Proposed Loading (1)	Result
Reinforced Concrete Caisson	Moment Capacity	47.4%	**PASS**
	Lateral Deflection	1.86 in.(2)	**PASS**

Note 1: 10% increase to PLS base reactions used in foundation analysis per OTRM 051.
Note 2: Lateral deflection limited to L/100 per OTRM 051 Rev 5 dated 7/19/10. (L/100 = 18*12/100=2.16-in)

<u>*Conclusions and Recommendations*</u>

This analysis shows that the subject utility pole **<u>is adequate</u>** to support the proposed AT&T equipment installation.

The analysis is based, in part, on the information provided to this office by Eversource and AT&T. 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:

STATE OF CONNECTICUT
TIMOTHY J. LYNN
No. 29336
LICENSED
PROFESSIONAL ENGINEER

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 ~ RISA-3D

RISA-3D Structural Analysis Program is an integrated structural analysis and design software package for buildings, bridges, tower structures, etc.

Modeling Features:

- Comprehensive CAD-like graphic drawing/editing capabilities that let you draw, modify and load elements as well as snap, move, rotate, copy, mirror, scale, split, merge, mesh, delete, apply, etc.
- Versatile drawing grids (orthogonal, radial, skewed)
- Universal snaps and object snaps allow drawing without grids
- Versatile general truss generator
- Powerful graphic select/unselect tools including box, line, polygon, invert, criteria, spreadsheet selection, with locking
- Saved selections to quickly recall desired selections
- Modification tools that modify single items or entire selections
- Real spreadsheets with cut, paste, fill, math, sort, find, etc.
- Dynamic synchronization between spreadsheets and views so you can edit or view any data in the plotted views or in the spreadsheets
- Simultaneous view of multiple spreadsheets
- Constant in-stream error checking and data validation
- Unlimited undo/redo capability
- Generation templates for grids, disks, cylinders, cones, arcs, trusses, tanks, hydrostatic loads, etc.
- Support for all units systems & conversions at any time
- Automatic interaction with RISASection libraries
- Import DXF, RISA-2D, STAAD and ProSteel 3D files
- Export DXF, SDNF and ProSteel 3D files

Analysis Features:

- Static analysis and P-Delta effects
- Multiple simultaneous dynamic and response spectra analysis using Gupta, CQC or SRSS mode combinations
- Automatic inclusion of mass offset (5% or user defined) for dynamic analysis
- Physical member modeling that does not require members to be broken up at intermediate joints
- State of the art 3 or 4 node plate/shell elements
- High-end automatic mesh generation — draw a polygon with any number of sides to create a mesh of well-formed quadrilateral (NOT triangular) elements.
- Accurate analysis of tapered wide flanges - web, top and bottom flanges may all taper independently
- Automatic rigid diaphragm modeling
- Area loads with one-way or two-way distributions
- Multiple simultaneous moving loads with standard AASHTO loads and custom moving loads for bridges, cranes, etc.
- Torsional warping calculations for stiffness, stress and design
- Automatic Top of Member offset modeling
- Member end releases & rigid end offsets
- Joint master-slave assignments
- Joints detachable from diaphragms
- Enforced joint displacements
- 1-Way members, for tension only bracing, slipping, etc.

- 1-Way springs, for modeling soils and other effects
- Euler members that take compression up to their buckling load, then turn off.
- Stress calculations on any arbitrary shape
- Inactive members, plates, and diaphragms allows you to quickly remove parts of structures from consideration
- Story drift calculations provide relative drift and ratio to height
- Automatic self-weight calculations for members and plates
- Automatic subgrade soil spring generator

Graphics Features:

- Unlimited simultaneous model view windows
- Extraordinary “true to scale” rendering, even when drawing
- High-speed redraw algorithm for instant refreshing
- Dynamic scrolling stops right where you want
- Plot & print virtually everything with color coding & labeling
- Rotate, zoom, pan, scroll and snap views
- Saved views to quickly restore frequent or desired views
- Full render or wire-frame animations of deflected model and dynamic mode shapes with frame and speed control
- Animation of moving loads with speed control
- High quality customizable graphics printing

Design Features:

- Designs concrete, hot rolled steel, cold formed steel and wood
- ACI 1999/2002, BS 8110-97, CSA A23.3-94, IS456:2000,EC 2-1992 with consistent bar sizes through adjacent spans
- Exact integration of concrete stress distributions using parabolic or rectangular stress blocks
- Concrete beam detailing (Rectangular, T and L)
- Concrete column interaction diagrams
- Steel Design Codes: AISC ASD 9th, LRFD 2nd & 3rd, HSS Specification, CAN/CSA-S16.1-1994 & 2004, BS 5950-1-2000, IS 800-1984, Euro 3-1993 including local shape databases
- AISI 1999 cold formed steel design
- NDS 1991/1997/2001 wood design, including Structural Composite Lumber, multi-ply, full sawn
- Automatic spectra generation for UBC 1997, IBC 2000/2003
- Generation of load combinations: ASCE, UBC, IBC, BOCA, SBC, ACI
- Unbraced lengths for physical members that recognize connecting elements and full lengths of members
- Automatic approximation of K factors
- Tapered wide flange design with either ASD or LRFD codes
- Optimization of member sizes for all materials and all design codes, controlled by standard or user-defined lists of available sizes and criteria such as maximum depths
- Automatic calculation of custom shape properties
- Steel Shapes: AISC, HSS, CAN, ARBED, British, Euro, Indian, Chilean
- Light Gage Shapes: AISI, SSMA, Dale / Incor, Dietrich, Marino\WARE
- Wood Shapes: Complete NDS species/grade database
- Full seamless integration with RISAFoot (Ver 2 or better) for advanced footing design and detailing
- Plate force summation tool

Results Features:

- Graphic presentation of color-coded results and plotted designs
- Color contours of plate stresses and forces with quadratic smoothing, the contours may also be animated
- Spreadsheet results with sorting and filtering of: reactions, member & joint deflections, beam & plate forces/stresses, optimized sizes, code designs, concrete reinforcing, material takeoffs, frequencies and mode shapes
- Standard and user-defined reports
- Graphic member detail reports with force/stress/deflection diagrams and detailed design calculations and expanded diagrams that display magnitudes at any dialed location
- Saved solutions quickly restore analysis and design results.

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

GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM ~ LPILE PLUS

LPILE Plus is a special purpose program based on rational procedures for analyzing a pile under lateral loading. The program computes deflection, shear, bending moment, and soil response with respect to depth in nonlinear soils. Components of the stiffness matrix at the pile head may be computed internally by the program to help the users in their super-structure analysis. Several pile lengths may be automatically checked by the program in order to help the user produce a design with an optimum pile penetration.

Soil behavior is modeled with p-y curves internally generated by the computer program following published recommendations for various types of soils; alternatively, the user can manually introduce other p-y curves. Special procedures are programmed for developing p-y curves for layered soils and for rocks.

Several types of pile-head boundary conditions may be selected, and the properties of the pile can also vary as a function of depth. LPILE Plus has capabilities to compute the ultimate-moment capacity of a pile's section and can provide design information for rebar arrangement. The user may optionally ask the program to generate and take into account nonlinear values of flexural stiffness (EI) which are generated internally based on specified pile dimensions, material properties, and cracked/uncracked concrete behavior.

A single, user-friendly interface written for the Microsoft Windows© environment is provided for the preparation of input, analytical run, and for the graphical observation of data contained in the output file. The program has been written in 32-bit programming codes for compatibility with the latest versions of the Microsoft Windows operating system. The program produces plain-text input and output files that may be observed and/or edited for their inclusion in project reports.

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/EIA-222 covering the design of telecommunications structures specifies a working strength/allowable stress design approach. This approach applies the loads from extreme weather loading conditions, and designs the structure so that it does not exceed some defined percentage of failure strength (allowable stress).

ANSI Standard C2-2007 (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/EIA Standard 222 with two exceptions:

1. An 85 mph extreme wind speed shall be used for locations in all counties throughout the NU system.
2. The allowable stress increase of TIA Section 3.1.1.1 is allowed for mast section, but is disallowed for the mast to CL&P structure connection.
3. The combined wind and ice condition shall consider ½" radial ice in combination with the wind load (0.75 Wi) as specified in TIA section 2.3.16.

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 "NU 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 2007 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

NU Design Criteria

Condition	Standard	Item	Basic Wind Speed V (MPH)	Pressure Q (PSF)	Height Factor Kz	Gust Factor Gh	Load or Stress Factor	Force Coef - Shape Factor
Ice Condition	TIA/EIA	Antenna Mount	TIA	TIA (.75Wi)	TIA	TIA	TIA, Section 3.1.1.1 disallowed for connection design	TIA
Ice Condition	NESC Heavy	Tower/Pole Analysis with antennas extending above top of Tower/Pole (Yield Stress)	------	4	1.00	1.00	2.50	1.6 Flat Surfaces 1.3 Round Surfaces
Ice Condition	NESC Heavy	Tower/Pole Analysis with Antennas below top of Tower/Pole (on two faces)	-----	4	1.00	1.00	2.50	1.6 Flat Surfaces 1.3 Round Surfaces
Ice Condition	NESC Heavy	Conductors:	Conductor loads provided by NU					
High Wind Condtion	TIA/EIA	Antenna Mount	85	TIA	TIA	TIA	TIA, Section 3.1.1.1 disallowed for connection design	TIA
High Wind Condtion	NESC Extreme Wind	Tower/Pole Analysis with antennas extending above top of Tower/Pole	Use NESC C2-2007, Section 25, Rule 250C: Extreme Wind Loading 1.25 x Gust Response Factor Height above ground level based on top of Mast/Antenna					1.6 Flat Surfaces 1.3 Round Surfaces
High Wind Condtion	NESC Extreme Wind	Tower/Pole Analysis with Antennas below top of Tower/Pole	Use NESC C2-2007, Section 25, Rule 250C: Extreme Wind Loading Height above ground level based on top of Tower/Pole					1.6 Flat Surfaces 1.3 Round Surfaces
High Wind Condtion	NESC Extreme Wind	Conductors:	Conductor loads provided by NU					
NESC Extreme Ice with Wind Conditon*		Tower/Pole Analysis with antennas extending above top of Tower/Pole	Use NESC C2-2007, Section 25, Rule 250D: Extreme Ice with Wind Loading 4PSF Wind Load 1.25 x Gust Response Factor Height above ground level based on top of Mast/Antenna					1.6 Flat Surfaces 1.3 Round Surfaces
NESC Extreme Ice with Wind Conditon*		Tower/Pole Analysis with Antennas below top of Tower/Pole	Use NESC C2-2007, Section 25, Rule 250D: Extreme Ice with Wind Loading 4PSF Wind Load Height above ground level based on top of Tower/Pole					1.6 Flat Surfaces 1.3 Round Surfaces
NESC Extreme Ice with Wind Conditon*		Conductors:	Conductor loads provided by NU					

* Only for Structures Installed after 2007

Shape Factor Criteria shall be per TIA Shape Factors.

2) STEP 2 - The electric transmission structure analysis and evaluation shall be performed in accordance with NESC requirements and shall include the mast and antenna loads determined from NESC applied loading conditions (not TIA/EIA Loads) on the structure and mount as specified below, and shall include the wireless communication mast and antenna loads per NESC criteria)

The structure shall be analyzed using yield stress theory in accordance with Attachment A, “NU 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 NU).
c) Electric Transmission Structure
   i) The loads from the wireless communication equipment components based on NESC and NU 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) Shape Factor Multiplier:

NESC Structure Shape	Cd
Polyround (for polygonal steel poles)	1.3
Flat	1.6
Open Lattice	3.2

   iii) When Coaxial Cables are mounted along side 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	1.3

d) The uniform loadings and factors specified for the above components in Attachment A, “NU 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.

   Note: The NESC does not require ice load be included in the supporting structure. (Ice on conductors and shield wire only, and NU will provide these loads).
e) Mast reaction loads shall be evaluated for local effects on the transmission structure members at the attachment points.

PLS-CADD Version 12.30   11:15:02 AM Friday, December 21, 2012
Northeast Utilities System
Project Name: 'c:\cps\pls-cadd\mn345 project final models\prj-dev\imagery\peaserd_eastdevon_final_pls.DON'
Line Title: '345-kV/115-kV 3827, 1640, 1685, 1776, 1497, & 1350'

Criteria Notes:
NESC Heavy per Rule 250B, Page 161
Extreme Wind Loading per Rule 250C, Page 161, Coefficients and Gust Response Factors per Equations in Tables 250-2, 250-3
90 MPH Basic Wind Speed, 3 second Gust Wind Speed, Figure 250-2 Beginning on Page 166
Grade B Construction "Method A" per Table 253-1, Page 173 and Table 261-1A, Page 182
Tension Limits per Rule 261H1, Page 179
Insulator Strength Reduction per Rule 277, Page 188 Should be applied to Insulator Strengths when Modeling Insulators
2002 NESC C2-2002 Criteria File for PLS-CADD Created December 21, 2001

Structure 24277 (just North of Durham Rd) moved 50` south per homeowner request. Structure height increased 5 ft. to maintain ground clearance.
1-27-06 Moved structure 24257 100` NE to accomodate homeowner request.
Homeowner request - Structures 24102 & 3915 were moved 100 ft. North for aesthetic purposes.
Homeowner request - Structure 3910 moved 90 ft. South out of line of sight.
Homeowner requests - Neighborhoods of Salem Rd, Country Ct., & Brookwood Ct. requested 135` typ. split phase.
do not change these areas structure heights.
Homeowner request - Structures 24098 & 3911 moved South to property line.
Structure 3808 raised 10 ft. to meet road clearance requirements
12-5-06: Structure 3807 moved 15 ft. South to avoid existing 3808 guy wires.
3848: Moved 5 ft. South towards 3847 per field request, too close to rock wall and distribution lines.
3848: Moved 5 ft. North back to original spot per email from Jason Cabral. Rock wall will be moved, PAR said there should be no
impact to adjacent distribution lines.
3807: (1-24-07) Moved approx. 20 ft. southwest to get structure away from existing 1640 guy locations to accomodate construction.
3849: (1-24-07) Moved approx. 14 ft. southwest to get structure away from existing 1640 guy locations to accomodate construction.
3888: (1-24-07) Moved approx. 20 ft. north to get structure away from existing 1640 guy locations to accomodate construction.
5-22-07 : Moved structure 24043 20 ft. northeast per homeowner request. This was a field call from Tim Arvin.
6-11-07: Moved structure 3911 5 ft. South to avoid underground utilities to two residences.
10-17-07: Moved structure 24002 46.5 ft. north per field request.
10-24-07: Moved structure 24045 11.75 ft. east per field request.
1-4-08: Moved structure 24091 17 ft. south to avoid underground storm water drainage pipe.

Weather Cases

WC #	Description	Air Density Factor (psf/mph^2)	Wind Vel. (mph)	Wind Pres. (psf)	Wire Ice Thick (in)	Wire Ice Density (lbs/ft^3)	Wire Ice Load (lbs/ft)	Wire Temp (deg F)	Ambient Temp (deg F)	Weather Load Factor	NESC Constant (lbs/ft)	Wire Wind Height Adjust Model	Wire Gust Response Factor
1	NESC Heavy	0.00256	40	4.0	0.50	57.000	0.00	0	0	1.00	0.30	None	1
2	0F 4psf w/ ice	0.00256	40	4.0	0.50	57.000	0.00	0	0	1.00	0.00	None	1
3	0F 4psf w/o ice	0.00256	40	4.0	0.00	0.000	0.00	0	0	1.00	0.00	None	1
4	NESC Ext Wind	0.00256	112	32.1	0.00	0.000	0.00	60	60	1.00	0.00	None	1
5	ASCE Ice/Wind	0.00256	50	6.4	0.75	57.000	0.00	32	32	1.00	0.00	None	1
6	Maximum Operating	0.00256	0	0.0	0.00	0.000	0.00	285	285	1.00	0.00	None	1
7	NESC Blowout 6PSF	0.00256	48	6.0	0.00	0.000	0.00	60	60	1.00	0.00	None	1
8	3# Wind (SWING 1)	0.00256	34	3.0	0.00	0.000	0.00	60	60	1.00	0.00	None	1
9	6# Wind (SWING 2)	0.00256	48	6.0	0.00	0.000	0.00	60	60	1.00	0.00	None	1
10	60 mph Wind (SWING 3)	0.00256	60	9.2	0.00	0.000	0.00	60	60	1.00	0.00	None	1
11	GALLOPING (SWING)	0.00256	28	2.0	0.50	57.000	0.00	32	32	1.00	0.00	None	1
12	GALLOPING (SAG)	0.00256	0	0.0	0.50	57.000	0.00	32	32	1.00	0.00	None	1
13	-20 Deg F	0.00256	0	0.0	0.00	0.000	0.00	-20	-20	1.00	0.00	None	1
14	0 Deg F	0.00256	0	0.0	0.00	0.000	0.00	0	0	1.00	0.00	None	1
15	50 Deg F	0.00256	0	0.0	0.00	0.000	0.00	50	50	1.00	0.00	None	1
16	60 Deg F	0.00256	0	0.0	0.00	0.000	0.00	60	60	1.00	0.00	None	1
17	120 Deg F	0.00256	0	0.0	0.00	0.000	0.00	120	120	1.00	0.00	None	1
18	NU Ice	0.00256	0	0.0	1.00	57.000	0.00	0	0	1.00	0.00	None	1
19	NU Blowout	0.00256	60	9.2	0.00	0.000	0.00	60	60	1.00	0.00	None	1
20	Construction	0.00256	30	2.3	0.00	0.000	0.00	30	30	1.00	0.00	None	1
21	UI Ice	0.00256	56	8.0	0.50	57.000	0.00	0	0	1.00	0.00	None	1
22	NU Extreme Wind 90mph	0.00256	90	20.7	0.00	0.000	0.00	60	60	1.00	0.00	None	1
23	9psf Wind 60 deg F	0.00256	59	9.0	0.00	0.000	0.00	60	60	1.00	0.00	None	1
24	Tower High Wind	0.00256	80	16.4	0.00	0.000	0.00	60	60	1.00	0.00	None	1
25	UI Heavy Ice (Tower)	0.00256	0	0.0	1.50	57.000	0.00	32	32	1.00	0.00	None	1
26	ADSS Survey Temp	0.00256	0	0.0	0.00	0.000	0.00	85	85	1.00	0.00	None	1
27	ADSS 90 Deg Case	0.00256	0	0.0	0.00	0.000	0.00	90	90	1.00	0.00	None	1

Structure Loads Criteria

LC #	WC #	Load Case Description	Cable Condition	Wind Dir.	Bisect Wind Angle	Wire Vert. Load Factor	Wire + Struct. Wind Load Factor	Wire Tension Load Factor	Struct Weight Load Factor	Struct Wind Area Factor	Struct. Wind Load Model	Struct. Ice Thick (in)	Struct. Ice Density (lbs/ft^3)	Pole Tip Deflection Check	Pole Tip Deflect Limit % or (ft)
1	1	NESC Heavy NA+	Load RS	NA+		1.50	2.50	1.65	1.50	1.00	Pre V7 Standard	0.00	0.000	No Limit	0.00
2	1	NESC Heavy NA-	Load RS	NA-		1.50	2.50	1.65	1.50	1.00	Pre V7 Standard	0.00	0.000	No Limit	0.00
3	1	NESC Uplift NA+	Load RS	NA+		1.00	2.50	1.65	1.00	1.00	Pre V7 Standard	0.00	0.000	No Limit	0.00
4	1	NESC Uplift NA-	Load RS	NA-		1.00	2.50	1.65	1.00	1.00	Pre V7 Standard	0.00	0.000	No Limit	0.00
5	4	NESC Ext Wind NA	Load RS	NA+		1.10	1.10	1.10	1.10	1.00	Pre V7 Standard	0.00	0.000	No Limit	0.00
6	4	NESC Ext Wind NA	Load RS	NA-		1.10	1.10	1.10	1.10	1.00	Pre V7 Standard	0.00	0.000	No Limit	0.00
7	1	NESC Ins NA+	Load RS	NA+		1.00	1.00	1.00	1.00	1.00	Pre V7 Standard	0.00	0.000	No Limit	0.00
8	1	NESC Ins NA-	Load RS	NA-		1.00	1.00	1.00	1.00	1.00	Pre V7 Standard	0.00	0.000	No Limit	0.00

9	5	ASCE Ice/Wind NA	Load RS	NA+	1.10	1.10	1.10	1.10	1.00 Pre V7 Standard	0.00	0.000	No Limit	0.00
10	5	ASCE Ice/Wind NA	Load RS	NA-	1.10	1.10	1.10	1.10	1.00 Pre V7 Standard	0.00	0.000	No Limit	0.00
11	18	NU Ice	Load RS	NA+	1.10	1.10	1.10	1.10	1.00 Pre V7 Standard	0.00	0.000	No Limit	0.00
12	24	Tower High Wind	Load RS	NA+	1.10	1.10	1.10	1.10	1.00 Pre V7 Standard	0.00	0.000	No Limit	0.00
13	24	Tower High Wind	Load RS	NA-	1.10	1.10	1.10	1.10	1.00 Pre V7 Standard	0.00	0.000	No Limit	0.00
14	1	Broken SW NA+	Load RS	NA+	1.10	1.10	1.10	1.10	1.00 Pre V7 Standard	0.00	0.000	No Limit	0.00
15	1	Broken SW NA-	Load RS	NA-	1.10	1.10	1.10	1.10	1.00 Pre V7 Standard	0.00	0.000	No Limit	0.00
16	1	Cond SW NA+	Load RS	NA+	1.10	1.10	1.10	1.10	1.00 Pre V7 Standard	0.00	0.000	No Limit	0.00
17	1	Cond SW NA-	Load RS	NA-	1.10	1.10	1.10	1.10	1.00 Pre V7 Standard	0.00	0.000	No Limit	0.00
18	1	Deadend Tower NA	Load RS	NA+	1.00	1.00	1.00	1.00	1.00 Pre V7 Standard	0.00	0.000	No Limit	0.00
19	1	Deadend Tower NA	Load RS	NA-	1.00	1.00	1.00	1.00	1.00 Pre V7 Standard	0.00	0.000	No Limit	0.00
20	25	UI Havey Ice Tow	Load RS	NA+	1.10	1.10	1.10	1.10	1.00 Pre V7 Standard	0.00	0.000	No Limit	0.00
21	25	UI Havey Ice Tow	Load RS	NA-	1.10	1.10	1.10	1.10	1.00 Pre V7 Standard	0.00	0.000	No Limit	0.00

Cable Load Adjustments for each Load Case

LC #	WC #	Load Case Description	Struct Groups On Which To Apply	Command 1 Wire(s) Set: Phase: Side:	Command 1	Command 1 Value (lbs) (deg) (%)
1	1	NESC Heavy NA+	'All'			
2	1	NESC Heavy NA-	'All'			
3	1	NESC Uplift NA+	'All'			
4	1	NESC Uplift NA-	'All'			
5	4	NESC Ext Wind NA	'All'			
6	4	NESC Ext Wind NA	'All'			
7	1	NESC Ins NA+	'All'			
8	1	NESC Ins NA-	'All'			
9	5	ASCE Ice/Wind NA	'All'			
10	5	ASCE Ice/Wind NA	'All'			
11	18	NU Ice	'All'			
12	24	Tower High Wind	'TOWER'			
13	24	Tower High Wind	'TOWER'			
14	1	Broken SW NA+	'TOWER no DE'	1:1:Ahead	# Broken Subconductors	1.0
15	1	Broken SW NA-	'TOWER no DE'	1:1:Ahead	# Broken Subconductors	1.0
16	1	Cond SW NA+	'TOWER no DE'	2:1:Ahead	# Broken Subconductors	1.0
17	1	Cond SW NA-	'TOWER no DE'	2:1:Ahead	# Broken Subconductors	1.0
18	1	Deadend Tower NA	'TOWER has DE'	Ahead Spans	# Broken Subconductors	1.0
19	1	Deadend Tower NA	'TOWER has DE'	Ahead Spans	# Broken Subconductors	1.0
20	25	UI Havey Ice Tow	'TOWER'			
21	25	UI Havey Ice Tow	'TOWER'			

Span and Wire Summary For Structure Range

Span azimuth is measured clockwise from structure transverse axis (0=transverse, 90=back, 270=ahead)
Azimuth of structure transverse axis is 147.3608 (deg) measured clockwise from North.

Str. No.	Str. Name	LC #	WC #	Load Case Description	Set No.	Phase No.	Attach. Joint Labels	Back span Cable Name	Back span Len. (ft)	Back span Azi. (deg)	Back span Horiz. Load (lbs/ft)	Back span Vert. Load (lbs/ft)	Back span Horiz. Tension (lbs)	Ahead span Cable Name	Ahead span Len. (ft)	Ahead span Azi. (deg)	Ahead span Horiz. Load (lbs/ft)	Ahead span Vert. Load (lbs/ft)	Ahead span Horiz. Tension (lbs)
3848	11-cdcsp-02-uwx.095	1	1	NESC Heavy NA+	1	1	GL:E	brugg_57ay104acs-3c_115.wir	387	90	1.37	1.77	10679	brugg_57ay104acs-3c_115.wir	465	270	1.37	1.77	10680
3848	11-cdcsp-02-uwx.095	1	1		2	1	TL	lapwing_tight.wir	387	90	2.09	4.56	22624	lapwing_tight.wir	464	270	2.09	4.56	22624
3848	11-cdcsp-02-uwx.095	1	1		3	1	ML	lapwing_tight.wir	387	90	2.09	4.56	22624	lapwing_tight.wir	464	270	2.09	4.56	22624
3848	11-cdcsp-02-uwx.095	1	1		4	1	BL	lapwing_tight.wir	387	90	2.09	4.56	22624	lapwing_tight.wir	464	270	2.09	4.56	22624
3848	11-cdcsp-02-uwx.095	1	1		5	1	GR:E	19#10_alumoweld_tight.wir	387	90	1.26	1.61	9769	19#10_alumoweld_tight.wir	466	270	1.26	1.61	9770
3848	11-cdcsp-02-uwx.095	1	1		6	1	TR	lapwing_tight.wir	387	90	2.09	4.56	22624	lapwing_tight.wir	466	270	2.09	4.56	22624
3848	11-cdcsp-02-uwx.095	1	1		7	1	MR	lapwing_tight.wir	387	90	2.09	4.56	22624	lapwing_tight.wir	466	270	2.09	4.56	22624
3848	11-cdcsp-02-uwx.095	1	1		8	1	BR	lapwing_tight.wir	387	90	2.09	4.56	22624	lapwing_tight.wir	466	270	2.09	4.56	22624
3848	11-cdcsp-02-uwx.095	2	1	NESC Heavy NA-	1	1	GL:E	brugg_57ay104acs-3c_115.wir	387	90	1.37	1.77	10679	brugg_57ay104acs-3c_115.wir	465	270	1.37	1.77	10680
3848	11-cdcsp-02-uwx.095	2	1		2	1	TL	lapwing_tight.wir	387	90	2.09	4.56	22624	lapwing_tight.wir	464	270	2.09	4.56	22624
3848	11-cdcsp-02-uwx.095	2	1		3	1	ML	lapwing_tight.wir	387	90	2.09	4.56	22624	lapwing_tight.wir	464	270	2.09	4.56	22624
3848	11-cdcsp-02-uwx.095	2	1		4	1	BL	lapwing_tight.wir	387	90	2.09	4.56	22624	lapwing_tight.wir	464	270	2.09	4.56	22624
3848	11-cdcsp-02-uwx.095	2	1		5	1	GR:E	19#10_alumoweld_tight.wir	387	90	1.26	1.61	9769	19#10_alumoweld_tight.wir	466	270	1.26	1.61	9770
3848	11-cdcsp-02-uwx.095	2	1		6	1	TR	lapwing_tight.wir	387	90	2.09	4.56	22624	lapwing_tight.wir	466	270	2.09	4.56	22624
3848	11-cdcsp-02-uwx.095	2	1		7	1	MR	lapwing_tight.wir	387	90	2.09	4.56	22624	lapwing_tight.wir	466	270	2.09	4.56	22624
3848	11-cdcsp-02-uwx.095	2	1		8	1	BR	lapwing_tight.wir	387	90	2.09	4.56	22624	lapwing_tight.wir	466	270	2.09	4.56	22624
3848	11-cdcsp-02-uwx.095	3	1	NESC Uplift NA+	1	1	GL:E	brugg_57ay104acs-3c_115.wir	387	90	1.37	1.18	10679	brugg_57ay104acs-3c_115.wir	465	270	1.37	1.18	10680
3848	11-cdcsp-02-uwx.095	3	1		2	1	TL	lapwing_tight.wir	387	90	2.09	3.04	22624	lapwing_tight.wir	464	270	2.09	3.04	22624
3848	11-cdcsp-02-uwx.095	3	1		3	1	ML	lapwing_tight.wir	387	90	2.09	3.04	22624	lapwing_tight.wir	464	270	2.09	3.04	22624
3848	11-cdcsp-02-uwx.095	3	1		4	1	BL	lapwing_tight.wir	387	90	2.09	3.04	22624	lapwing_tight.wir	464	270	2.09	3.04	22624
3848	11-cdcsp-02-uwx.095	3	1		5	1	GR:E	19#10_alumoweld_tight.wir	387	90	1.26	1.08	9769	19#10_alumoweld_tight.wir	466	270	1.26	1.08	9770
3848	11-cdcsp-02-uwx.095	3	1		6	1	TR	lapwing_tight.wir	387	90	2.09	3.04	22624	lapwing_tight.wir	466	270	2.09	3.04	22624
3848	11-cdcsp-02-uwx.095	3	1		7	1	MR	lapwing_tight.wir	387	90	2.09	3.04	22624	lapwing_tight.wir	466	270	2.09	3.04	22624
3848	11-cdcsp-02-uwx.095	3	1		8	1	BR	lapwing_tight.wir	387	90	2.09	3.04	22624	lapwing_tight.wir	466	270	2.09	3.04	22624
3848	11-cdcsp-02-uwx.095	4	1	NESC Uplift NA-	1	1	GL:E	brugg_57ay104acs-3c_115.wir	387	90	1.37	1.18	10679	brugg_57ay104acs-3c_115.wir	465	270	1.37	1.18	10680
3848	11-cdcsp-02-uwx.095	4	1		2	1	TL	lapwing_tight.wir	387	90	2.09	3.04	22624	lapwing_tight.wir	464	270	2.09	3.04	22624
3848	11-cdcsp-02-uwx.095	4	1		3	1	ML	lapwing_tight.wir	387	90	2.09	3.04	22624	lapwing_tight.wir	464	270	2.09	3.04	22624
3848	11-cdcsp-02-uwx.095	4	1		4	1	BL	lapwing_tight.wir	387	90	2.09	3.04	22624	lapwing_tight.wir	464	270	2.09	3.04	22624
3848	11-cdcsp-02-uwx.095	4	1		5	1	GR:E	19#10_alumoweld_tight.wir	387	90	1.26	1.08	9769	19#10_alumoweld_tight.wir	466	270	1.26	1.08	9770
3848	11-cdcsp-02-uwx.095	4	1		6	1	TR	lapwing_tight.wir	387	90	2.09	3.04	22624	lapwing_tight.wir	466	270	2.09	3.04	22624
3848	11-cdcsp-02-uwx.095	4	1		7	1	MR	lapwing_tight.wir	387	90	2.09	3.04	22624	lapwing_tight.wir	466	270	2.09	3.04	22624
3848	11-cdcsp-02-uwx.095	4	1		8	1	BR	lapwing_tight.wir	387	90	2.09	3.04	22624	lapwing_tight.wir	466	270	2.09	3.04	22624

3848	11-cdcsp-02-uwx.095	5	4	NESC Ext Wind NA	1	1	GL:E	brugg_57ay104acs-3c_115.wir	387	90	1.90	0.52	6836	brugg_57ay104acs-3c_115.wir	465	270	1.90	0.52	6840
3848	11-cdcsp-02-uwx.095	5	4		2	1	TL	lapwing_tight.wir	387	90	4.43	1.97	15223	lapwing_tight.wir	464	270	4.43	1.97	15230
3848	11-cdcsp-02-uwx.095	5	4		3	1	ML	lapwing_tight.wir	387	90	4.43	1.97	15223	lapwing_tight.wir	464	270	4.43	1.97	15230
3848	11-cdcsp-02-uwx.095	5	4		4	1	BL	lapwing_tight.wir	387	90	4.43	1.97	15223	lapwing_tight.wir	464	270	4.43	1.97	15230
3848	11-cdcsp-02-uwx.095	5	4		5	1	GR:E	19#10_alumoweld_tight.wir	387	90	1.50	0.49	5737	19#10_alumoweld_tight.wir	466	270	1.50	0.49	5740
3848	11-cdcsp-02-uwx.095	5	4		6	1	TR	lapwing_tight.wir	387	90	4.43	1.97	15223	lapwing_tight.wir	466	270	4.43	1.97	15230
3848	11-cdcsp-02-uwx.095	5	4		7	1	MR	lapwing_tight.wir	387	90	4.43	1.97	15223	lapwing_tight.wir	466	270	4.43	1.97	15230
3848	11-cdcsp-02-uwx.095	5	4		8	1	BR	lapwing_tight.wir	387	90	4.43	1.97	15223	lapwing_tight.wir	466	270	4.43	1.97	15230
3848	11-cdcsp-02-uwx.095	6	4	NESC Ext Wind NA	1	1	GL:E	brugg_57ay104acs-3c_115.wir	387	90	1.90	0.52	6836	brugg_57ay104acs-3c_115.wir	465	270	1.90	0.52	6840
3848	11-cdcsp-02-uwx.095	6	4		2	1	TL	lapwing_tight.wir	387	90	4.43	1.97	15223	lapwing_tight.wir	464	270	4.43	1.97	15230
3848	11-cdcsp-02-uwx.095	6	4		3	1	ML	lapwing_tight.wir	387	90	4.43	1.97	15223	lapwing_tight.wir	464	270	4.43	1.97	15230
3848	11-cdcsp-02-uwx.095	6	4		4	1	BL	lapwing_tight.wir	387	90	4.43	1.97	15223	lapwing_tight.wir	464	270	4.43	1.97	15230
3848	11-cdcsp-02-uwx.095	6	4		5	1	GR:E	19#10_alumoweld_tight.wir	387	90	1.50	0.49	5737	19#10_alumoweld_tight.wir	466	270	1.50	0.49	5740
3848	11-cdcsp-02-uwx.095	6	4		6	1	TR	lapwing_tight.wir	387	90	4.43	1.97	15223	lapwing_tight.wir	466	270	4.43	1.97	15230
3848	11-cdcsp-02-uwx.095	6	4		7	1	MR	lapwing_tight.wir	387	90	4.43	1.97	15223	lapwing_tight.wir	466	270	4.43	1.97	15230
3848	11-cdcsp-02-uwx.095	6	4		8	1	BR	lapwing_tight.wir	387	90	4.43	1.97	15223	lapwing_tight.wir	466	270	4.43	1.97	15230
3848	11-cdcsp-02-uwx.095	7	1	NESC Ins NA+	1	1	GL:E	brugg_57ay104acs-3c_115.wir	387	90	0.55	1.18	6472	brugg_57ay104acs-3c_115.wir	465	270	0.55	1.18	6473
3848	11-cdcsp-02-uwx.095	7	1		2	1	TL	lapwing_tight.wir	387	90	0.83	3.04	13711	lapwing_tight.wir	464	270	0.83	3.04	13712
3848	11-cdcsp-02-uwx.095	7	1		3	1	ML	lapwing_tight.wir	387	90	0.83	3.04	13711	lapwing_tight.wir	464	270	0.83	3.04	13712
3848	11-cdcsp-02-uwx.095	7	1		4	1	BL	lapwing_tight.wir	387	90	0.83	3.04	13711	lapwing_tight.wir	464	270	0.83	3.04	13712
3848	11-cdcsp-02-uwx.095	7	1		5	1	GR:E	19#10_alumoweld_tight.wir	387	90	0.50	1.08	5921	19#10_alumoweld_tight.wir	466	270	0.50	1.08	5921
3848	11-cdcsp-02-uwx.095	7	1		6	1	TR	lapwing_tight.wir	387	90	0.83	3.04	13711	lapwing_tight.wir	466	270	0.83	3.04	13712
3848	11-cdcsp-02-uwx.095	7	1		7	1	MR	lapwing_tight.wir	387	90	0.83	3.04	13711	lapwing_tight.wir	466	270	0.83	3.04	13712
3848	11-cdcsp-02-uwx.095	7	1		8	1	BR	lapwing_tight.wir	387	90	0.83	3.04	13711	lapwing_tight.wir	466	270	0.83	3.04	13712
3848	11-cdcsp-02-uwx.095	8	1	NESC Ins NA-	1	1	GL:E	brugg_57ay104acs-3c_115.wir	387	90	0.55	1.18	6472	brugg_57ay104acs-3c_115.wir	465	270	0.55	1.18	6473
3848	11-cdcsp-02-uwx.095	8	1		2	1	TL	lapwing_tight.wir	387	90	0.83	3.04	13711	lapwing_tight.wir	464	270	0.83	3.04	13712
3848	11-cdcsp-02-uwx.095	8	1		3	1	ML	lapwing_tight.wir	387	90	0.83	3.04	13711	lapwing_tight.wir	464	270	0.83	3.04	13712
3848	11-cdcsp-02-uwx.095	8	1		4	1	BL	lapwing_tight.wir	387	90	0.83	3.04	13711	lapwing_tight.wir	464	270	0.83	3.04	13712
3848	11-cdcsp-02-uwx.095	8	1		5	1	GR:E	19#10_alumoweld_tight.wir	387	90	0.50	1.08	5921	19#10_alumoweld_tight.wir	466	270	0.50	1.08	5921
3848	11-cdcsp-02-uwx.095	8	1		6	1	TR	lapwing_tight.wir	387	90	0.83	3.04	13711	lapwing_tight.wir	466	270	0.83	3.04	13712
3848	11-cdcsp-02-uwx.095	8	1		7	1	MR	lapwing_tight.wir	387	90	0.83	3.04	13711	lapwing_tight.wir	466	270	0.83	3.04	13712
3848	11-cdcsp-02-uwx.095	8	1		8	1	BR	lapwing_tight.wir	387	90	0.83	3.04	13711	lapwing_tight.wir	466	270	0.83	3.04	13712
3848	11-cdcsp-02-uwx.095	9	5	ASCE Ice/Wind NA	1	1	GL:E	brugg_57ay104acs-3c_115.wir	387	90	1.26	1.95	7952	brugg_57ay104acs-3c_115.wir	465	270	1.26	1.95	7954
3848	11-cdcsp-02-uwx.095	9	5		2	1	TL	lapwing_tight.wir	387	90	1.76	4.28	15791	lapwing_tight.wir	464	270	1.76	4.28	15792
3848	11-cdcsp-02-uwx.095	9	5		3	1	ML	lapwing_tight.wir	387	90	1.76	4.28	15791	lapwing_tight.wir	464	270	1.76	4.28	15792
3848	11-cdcsp-02-uwx.095	9	5		4	1	BL	lapwing_tight.wir	387	90	1.76	4.28	15791	lapwing_tight.wir	464	270	1.76	4.28	15792
3848	11-cdcsp-02-uwx.095	9	5		5	1	GR:E	19#10_alumoweld_tight.wir	387	90	1.18	1.79	7283	19#10_alumoweld_tight.wir	466	270	1.18	1.79	7284
3848	11-cdcsp-02-uwx.095	9	5		6	1	TR	lapwing_tight.wir	387	90	1.76	4.28	15796	lapwing_tight.wir	466	270	1.76	4.28	15797
3848	11-cdcsp-02-uwx.095	9	5		7	1	MR	lapwing_tight.wir	387	90	1.76	4.28	15796	lapwing_tight.wir	466	270	1.76	4.28	15797
3848	11-cdcsp-02-uwx.095	9	5		8	1	BR	lapwing_tight.wir	387	90	1.76	4.28	15796	lapwing_tight.wir	466	270	1.76	4.28	15797
3848	11-cdcsp-02-uwx.095	10	5	ASCE Ice/Wind NA	1	1	GL:E	brugg_57ay104acs-3c_115.wir	387	90	1.26	1.95	7952	brugg_57ay104acs-3c_115.wir	465	270	1.26	1.95	7954
3848	11-cdcsp-02-uwx.095	10	5		2	1	TL	lapwing_tight.wir	387	90	1.76	4.28	15791	lapwing_tight.wir	464	270	1.76	4.28	15792
3848	11-cdcsp-02-uwx.095	10	5		3	1	ML	lapwing_tight.wir	387	90	1.76	4.28	15791	lapwing_tight.wir	464	270	1.76	4.28	15792
3848	11-cdcsp-02-uwx.095	10	5		4	1	BL	lapwing_tight.wir	387	90	1.76	4.28	15791	lapwing_tight.wir	464	270	1.76	4.28	15792
3848	11-cdcsp-02-uwx.095	10	5		5	1	GR:E	19#10_alumoweld_tight.wir	387	90	1.18	1.79	7283	19#10_alumoweld_tight.wir	466	270	1.18	1.79	7284
3848	11-cdcsp-02-uwx.095	10	5		6	1	TR	lapwing_tight.wir	387	90	1.76	4.28	15796	lapwing_tight.wir	466	270	1.76	4.28	15797
3848	11-cdcsp-02-uwx.095	10	5		7	1	MR	lapwing_tight.wir	387	90	1.76	4.28	15796	lapwing_tight.wir	466	270	1.76	4.28	15797
3848	11-cdcsp-02-uwx.095	10	5		8	1	BR	lapwing_tight.wir	387	90	1.76	4.28	15796	lapwing_tight.wir	466	270	1.76	4.28	15797
3848	11-cdcsp-02-uwx.095	11	18	NU Ice	1	1	GL:E	brugg_57ay104acs-3c_115.wir	387	90	0.00	2.77	9310	brugg_57ay104acs-3c_115.wir	465	270	0.00	2.77	9310
3848	11-cdcsp-02-uwx.095	11	18		2	1	TL	lapwing_tight.wir	387	90	0.00	5.40	19169	lapwing_tight.wir	464	270	0.00	5.40	19169
3848	11-cdcsp-02-uwx.095	11	18		3	1	ML	lapwing_tight.wir	387	90	0.00	5.40	19169	lapwing_tight.wir	464	270	0.00	5.40	19169
3848	11-cdcsp-02-uwx.095	11	18		4	1	BL	lapwing_tight.wir	387	90	0.00	5.40	19169	lapwing_tight.wir	464	270	0.00	5.40	19169
3848	11-cdcsp-02-uwx.095	11	18		5	1	GR:E	19#10_alumoweld_tight.wir	387	90	0.00	2.56	8492	19#10_alumoweld_tight.wir	466	270	0.00	2.56	8492
3848	11-cdcsp-02-uwx.095	11	18		6	1	TR	lapwing_tight.wir	387	90	0.00	5.40	19169	lapwing_tight.wir	466	270	0.00	5.40	19169
3848	11-cdcsp-02-uwx.095	11	18		7	1	MR	lapwing_tight.wir	387	90	0.00	5.40	19169	lapwing_tight.wir	466	270	0.00	5.40	19169
3848	11-cdcsp-02-uwx.095	11	18		8	1	BR	lapwing_tight.wir	387	90	0.00	5.40	19169	lapwing_tight.wir	466	270	0.00	5.40	19169

Wire Loads In Span Coordinate System For Structure Range

Wire loads expressed in span coordinate system (Longitudinal axis is line connecting attach. points)
Note: Loads in this report do not include load from counter weights, insulator weight or insulator wind area.

Str. No.	Str. Name	LC #	WC #	Load Case Description	Set No.	Phase No.	Attach. Joint Labels	--Loads from back span- Vert. (lbs)	Trans. (lbs)	Long. (lbs)	-Loads from ahead span- Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Warnings
3848	11-cdcsp-02-uwx.095	1	1	NESC Heavy NA+	1	1	GL:E	696	266	10679	177	319	10680	
3848	11-cdcsp-02-uwx.095	1	1		2	1	TL	1722	404	22624	497	484	22624	
3848	11-cdcsp-02-uwx.095	1	1		3	1	ML	1722	404	22624	497	484	22624	
3848	11-cdcsp-02-uwx.095	1	1		4	1	BL	1722	404	22624	497	484	22624	
3848	11-cdcsp-02-uwx.095	1	1		5	1	GR:E	629	244	9769	165	293	9770	
3848	11-cdcsp-02-uwx.095	1	1		6	1	TR	1722	404	22624	505	487	22624	
3848	11-cdcsp-02-uwx.095	1	1		7	1	MR	1722	404	22624	505	487	22624	
3848	11-cdcsp-02-uwx.095	1	1		8	1	BR	1722	404	22624	505	487	22624	
3848	11-cdcsp-02-uwx.095	2	1	NESC Heavy NA-	1	1	GL:E	696	-266	10679	177	-319	10680	
3848	11-cdcsp-02-uwx.095	2	1		2	1	TL	1722	-404	22624	497	-484	22624	
3848	11-cdcsp-02-uwx.095	2	1		3	1	ML	1722	-404	22624	497	-484	22624	
3848	11-cdcsp-02-uwx.095	2	1		4	1	BL	1722	-404	22624	497	-484	22624	
3848	11-cdcsp-02-uwx.095	2	1		5	1	GR:E	629	-244	9769	165	-293	9770	
3848	11-cdcsp-02-uwx.095	2	1		6	1	TR	1722	-404	22624	505	-487	22624	
3848	11-cdcsp-02-uwx.095	2	1		7	1	MR	1722	-404	22624	505	-487	22624	
3848	11-cdcsp-02-uwx.095	2	1		8	1	BR	1722	-404	22624	505	-487	22624	
3848	11-cdcsp-02-uwx.095	3	1	NESC Uplift NA+	1	1	GL:E	464	266	10679	118	319	10680	
3848	11-cdcsp-02-uwx.095	3	1		2	1	TL	1148	404	22624	331	484	22624	
3848	11-cdcsp-02-uwx.095	3	1		3	1	ML	1148	404	22624	331	484	22624	
3848	11-cdcsp-02-uwx.095	3	1		4	1	BL	1148	404	22624	331	484	22624	
3848	11-cdcsp-02-uwx.095	3	1		5	1	GR:E	420	244	9769	110	293	9770	

3848	11-cdcsp-02-uwx.095	3	1		6	1	TR	1148	404	22624	337	487	22624
3848	11-cdcsp-02-uwx.095	3	1		7	1	MR	1148	404	22624	337	487	22624
3848	11-cdcsp-02-uwx.095	3	1		8	1	BR	1148	404	22624	337	487	22624
3848	11-cdcsp-02-uwx.095	4	1	NESC Uplift NA-	1	1	GL:E	464	-266	10679	118	-319	10680
3848	11-cdcsp-02-uwx.095	4	1		2	1	TL	1148	-404	22624	331	-484	22624
3848	11-cdcsp-02-uwx.095	4	1		3	1	ML	1148	-404	22624	331	-484	22624
3848	11-cdcsp-02-uwx.095	4	1		4	1	BL	1148	-404	22624	331	-484	22624
3848	11-cdcsp-02-uwx.095	4	1		5	1	GR:E	420	-244	9769	110	-293	9770
3848	11-cdcsp-02-uwx.095	4	1		6	1	TR	1148	-404	22624	337	-487	22624
3848	11-cdcsp-02-uwx.095	4	1		7	1	MR	1148	-404	22624	337	-487	22624
3848	11-cdcsp-02-uwx.095	4	1		8	1	BR	1148	-404	22624	337	-487	22624
3848	11-cdcsp-02-uwx.095	5	4	NESC Ext Wind NA	1	1	GL:E	405	368	6836	-84	442	6840
3848	11-cdcsp-02-uwx.095	5	4		2	1	TL	1062	858	15223	3	1029	15230
3848	11-cdcsp-02-uwx.095	5	4		3	1	ML	1062	858	15223	3	1028	15230
3848	11-cdcsp-02-uwx.095	5	4		4	1	BL	1062	858	15223	3	1028	15230
3848	11-cdcsp-02-uwx.095	5	4		5	1	GR:E	352	290	5737	-56	349	5740
3848	11-cdcsp-02-uwx.095	5	4		6	1	TR	1062	858	15223	7	1034	15230
3848	11-cdcsp-02-uwx.095	5	4		7	1	MR	1062	858	15223	7	1034	15230
3848	11-cdcsp-02-uwx.095	5	4		8	1	BR	1062	858	15223	7	1034	15230
3848	11-cdcsp-02-uwx.095	6	4	NESC Ext Wind NA	1	1	GL:E	405	-368	6836	-84	-442	6840
3848	11-cdcsp-02-uwx.095	6	4		2	1	TL	1062	-858	15223	3	-1029	15230
3848	11-cdcsp-02-uwx.095	6	4		3	1	ML	1062	-858	15223	3	-1028	15230
3848	11-cdcsp-02-uwx.095	6	4		4	1	BL	1062	-858	15223	3	-1028	15230
3848	11-cdcsp-02-uwx.095	6	4		5	1	GR:E	352	-290	5737	-56	-349	5740
3848	11-cdcsp-02-uwx.095	6	4		6	1	TR	1062	-858	15223	7	-1034	15230
3848	11-cdcsp-02-uwx.095	6	4		7	1	MR	1062	-858	15223	7	-1034	15230
3848	11-cdcsp-02-uwx.095	6	4		8	1	BR	1062	-858	15223	7	-1034	15230
3848	11-cdcsp-02-uwx.095	7	1	NESC Ins NA+	1	1	GL:E	464	106	6472	118	128	6473
3848	11-cdcsp-02-uwx.095	7	1		2	1	TL	1148	162	13711	331	194	13712
3848	11-cdcsp-02-uwx.095	7	1		3	1	ML	1148	162	13711	331	194	13712
3848	11-cdcsp-02-uwx.095	7	1		4	1	BL	1148	162	13711	331	194	13712
3848	11-cdcsp-02-uwx.095	7	1		5	1	GR:E	420	97	5921	110	117	5921
3848	11-cdcsp-02-uwx.095	7	1		6	1	TR	1148	162	13711	337	195	13712
3848	11-cdcsp-02-uwx.095	7	1		7	1	MR	1148	162	13711	337	195	13712
3848	11-cdcsp-02-uwx.095	7	1		8	1	BR	1148	162	13711	337	195	13712
3848	11-cdcsp-02-uwx.095	8	1	NESC Ins NA-	1	1	GL:E	464	-106	6472	118	-128	6473
3848	11-cdcsp-02-uwx.095	8	1		2	1	TL	1148	-162	13711	331	-194	13712
3848	11-cdcsp-02-uwx.095	8	1		3	1	ML	1148	-162	13711	331	-194	13712
3848	11-cdcsp-02-uwx.095	8	1		4	1	BL	1148	-162	13711	331	-194	13712
3848	11-cdcsp-02-uwx.095	8	1		5	1	GR:E	420	-97	5921	110	-117	5921
3848	11-cdcsp-02-uwx.095	8	1		6	1	TR	1148	-162	13711	337	-195	13712
3848	11-cdcsp-02-uwx.095	8	1		7	1	MR	1148	-162	13711	337	-195	13712
3848	11-cdcsp-02-uwx.095	8	1		8	1	BR	1148	-162	13711	337	-195	13712
3848	11-cdcsp-02-uwx.095	9	5	ASCE Ice/Wind NA	1	1	GL:E	733	244	7952	216	293	7954
3848	11-cdcsp-02-uwx.095	9	5		2	1	TL	1536	342	15791	523	409	15792
3848	11-cdcsp-02-uwx.095	9	5		3	1	ML	1536	342	15791	523	409	15792
3848	11-cdcsp-02-uwx.095	9	5		4	1	BL	1536	342	15791	523	409	15792
3848	11-cdcsp-02-uwx.095	9	5		5	1	GR:E	671	228	7283	199	275	7284
3848	11-cdcsp-02-uwx.095	9	5		6	1	TR	1536	342	15796	530	411	15797
3848	11-cdcsp-02-uwx.095	9	5		7	1	MR	1536	342	15796	530	411	15797
3848	11-cdcsp-02-uwx.095	9	5		8	1	BR	1536	342	15796	530	411	15797
3848	11-cdcsp-02-uwx.095	10	5	ASCE Ice/Wind NA	1	1	GL:E	733	-244	7952	216	-293	7954
3848	11-cdcsp-02-uwx.095	10	5		2	1	TL	1536	-342	15791	523	-409	15792
3848	11-cdcsp-02-uwx.095	10	5		3	1	ML	1536	-342	15791	523	-409	15792
3848	11-cdcsp-02-uwx.095	10	5		4	1	BL	1536	-342	15791	523	-409	15792
3848	11-cdcsp-02-uwx.095	10	5		5	1	GR:E	671	-228	7283	199	-275	7284
3848	11-cdcsp-02-uwx.095	10	5		6	1	TR	1536	-342	15796	530	-411	15797
3848	11-cdcsp-02-uwx.095	10	5		7	1	MR	1536	-342	15796	530	-411	15797
3848	11-cdcsp-02-uwx.095	10	5		8	1	BR	1536	-342	15796	530	-411	15797
3848	11-cdcsp-02-uwx.095	11	18	NU Ice	1	1	GL:E	952	0	9310	366	0	9310
3848	11-cdcsp-02-uwx.095	11	18		2	1	TL	1902	0	19169	680	0	19169
3848	11-cdcsp-02-uwx.095	11	18		3	1	ML	1902	0	19169	680	0	19169
3848	11-cdcsp-02-uwx.095	11	18		4	1	BL	1902	0	19169	680	0	19169
3848	11-cdcsp-02-uwx.095	11	18		5	1	GR:E	875	0	8492	343	0	8492
3848	11-cdcsp-02-uwx.095	11	18		6	1	TR	1902	0	19169	689	0	19169
3848	11-cdcsp-02-uwx.095	11	18		7	1	MR	1902	0	19169	689	0	19169
3848	11-cdcsp-02-uwx.095	11	18		8	1	BR	1902	0	19169	689	0	19169

Wire Loads In Structure Coordinate System For Structure Range

Note: Loads in this report include load from counter weights, insulator weight and insulator wind area.

Str. No.	Str. Name	LC #	WC #	Load Case Description	Set No.	Phase No.	Attach. Joint Labels	----Structure Loads---- Vert. (lbs)	Trans.	Long.	--Loads from back span- Vert. (lbs)	Trans.	Long.	-Loads from ahead span- Vert. (lbs)	Trans.	Long.	Warnings
3848	11-cdcsp-02-uwx.095	1	1	NESC Heavy NA+	1	1	GL:E	872	659	-1	696	302	10678	177	356	-10679	
3848	11-cdcsp-02-uwx.095	1	1		2	1	TL	2369	1055	-1	1797	487	22622	572	568	-22623	
3848	11-cdcsp-02-uwx.095	1	1		3	1	ML	2369	1056	-1	1797	487	22622	572	569	-22623	
3848	11-cdcsp-02-uwx.095	1	1		4	1	BL	2369	1057	-1	1797	487	22622	572	570	-22623	
3848	11-cdcsp-02-uwx.095	1	1		5	1	GR:E	795	603	-1	629	277	9768	165	326	-9769	
3848	11-cdcsp-02-uwx.095	1	1		6	1	TR	2377	1055	-1	1797	487	22622	580	568	-22623	
3848	11-cdcsp-02-uwx.095	1	1		7	1	MR	2377	1054	-1	1797	487	22622	580	567	-22623	
3848	11-cdcsp-02-uwx.095	1	1		8	1	BR	2377	1053	-1	1797	487	22622	580	566	-22623	
3848	11-cdcsp-02-uwx.095	2	1	NESC Heavy NA-	1	1	GL:E	872	-511	-1	696	-229	10680	177	-282	-10681	
3848	11-cdcsp-02-uwx.095	2	1		2	1	TL	2369	-743	-1	1797	-332	22625	572	-411	-22626	
3848	11-cdcsp-02-uwx.095	2	1		3	1	ML	2369	-742	-1	1797	-332	22625	572	-410	-22626	

3848	11-cdcsp-02-uwx.095	2	1		4	1	BL	2369	-741	-1	1797	-332	22625	572	-409	-22626
3848	11-cdcsp-02-uwx.095	2	1		5	1	GR:E	795	-471	-1	629	-210	9770	165	-260	-9771
3848	11-cdcsp-02-uwx.095	2	1		6	1	TR	2377	-748	-1	1797	-332	22625	580	-416	-22626
3848	11-cdcsp-02-uwx.095	2	1		7	1	MR	2377	-749	-1	1797	-332	22625	580	-417	-22626
3848	11-cdcsp-02-uwx.095	2	1		8	1	BR	2377	-750	-1	1797	-332	22625	580	-418	-22626
3848	11-cdcsp-02-uwx.095	3	1	NESC Uplift NA+	1	1	GL:E	582	659	-1	464	302	10678	118	356	-10679
3848	11-cdcsp-02-uwx.095	3	1		2	1	TL	1579	1055	-1	1198	487	22622	381	568	-22623
3848	11-cdcsp-02-uwx.095	3	1		3	1	ML	1579	1056	-1	1198	487	22622	381	569	-22623
3848	11-cdcsp-02-uwx.095	3	1		4	1	BL	1579	1057	-1	1198	487	22622	381	570	-22623
3848	11-cdcsp-02-uwx.095	3	1		5	1	GR:E	530	603	-1	420	277	9768	110	326	-9769
3848	11-cdcsp-02-uwx.095	3	1		6	1	TR	1585	1055	-1	1198	487	22622	387	568	-22623
3848	11-cdcsp-02-uwx.095	3	1		7	1	MR	1585	1054	-1	1198	487	22622	387	567	-22623
3848	11-cdcsp-02-uwx.095	3	1		8	1	BR	1585	1053	-1	1198	487	22622	387	566	-22623
3848	11-cdcsp-02-uwx.095	4	1	NESC Uplift NA-	1	1	GL:E	582	-511	-1	464	-229	10680	118	-282	-10681
3848	11-cdcsp-02-uwx.095	4	1		2	1	TL	1579	-743	-1	1198	-332	22625	381	-411	-22626
3848	11-cdcsp-02-uwx.095	4	1		3	1	ML	1579	-742	-1	1198	-332	22625	381	-410	-22626
3848	11-cdcsp-02-uwx.095	4	1		4	1	BL	1579	-741	-1	1198	-332	22625	381	-409	-22626
3848	11-cdcsp-02-uwx.095	4	1		5	1	GR:E	530	-471	-1	420	-210	9770	110	-260	-9771
3848	11-cdcsp-02-uwx.095	4	1		6	1	TR	1585	-748	-1	1198	-332	22625	387	-416	-22626
3848	11-cdcsp-02-uwx.095	4	1		7	1	MR	1585	-749	-1	1198	-332	22625	387	-417	-22626
3848	11-cdcsp-02-uwx.095	4	1		8	1	BR	1585	-750	-1	1198	-332	22625	387	-418	-22626
3848	11-cdcsp-02-uwx.095	5	4	NESC Ext Wind NA	1	1	GL:E	321	858	-3	405	392	6835	-84	466	-6838
3848	11-cdcsp-02-uwx.095	5	4		2	1	TL	1175	2027	-6	1117	928	15220	58	1099	-15226
3848	11-cdcsp-02-uwx.095	5	4		3	1	ML	1175	2028	-6	1117	928	15220	58	1100	-15226
3848	11-cdcsp-02-uwx.095	5	4		4	1	BL	1175	2028	-6	1117	928	15220	58	1101	-15226
3848	11-cdcsp-02-uwx.095	5	4		5	1	GR:E	296	678	-3	352	310	5736	-56	369	-5739
3848	11-cdcsp-02-uwx.095	5	4		6	1	TR	1179	2030	-7	1117	928	15220	62	1102	-15226
3848	11-cdcsp-02-uwx.095	5	4		7	1	MR	1179	2029	-7	1117	928	15220	62	1102	-15226
3848	11-cdcsp-02-uwx.095	5	4		8	1	BR	1179	2029	-7	1117	928	15220	62	1101	-15226
3848	11-cdcsp-02-uwx.095	6	4	NESC Ext Wind NA	1	1	GL:E	321	-763	-4	405	-345	6838	-84	-418	-6841
3848	11-cdcsp-02-uwx.095	6	4		2	1	TL	1175	-1817	-8	1117	-824	15226	58	-993	-15233
3848	11-cdcsp-02-uwx.095	6	4		3	1	ML	1175	-1816	-8	1117	-824	15226	58	-992	-15233
3848	11-cdcsp-02-uwx.095	6	4		4	1	BL	1175	-1815	-8	1117	-824	15226	58	-992	-15233
3848	11-cdcsp-02-uwx.095	6	4		5	1	GR:E	296	-601	-3	352	-271	5738	-56	-330	-5741
3848	11-cdcsp-02-uwx.095	6	4		6	1	TR	1179	-1824	-8	1117	-823	15226	62	-1000	-15233
3848	11-cdcsp-02-uwx.095	6	4		7	1	MR	1179	-1824	-8	1117	-823	15226	62	-1001	-15233
3848	11-cdcsp-02-uwx.095	6	4		8	1	BR	1179	-1825	-8	1117	-823	15226	62	-1002	-15233
3848	11-cdcsp-02-uwx.095	7	1	NESC Ins NA+	1	1	GL:E	582	279	-1	464	128	6472	118	150	-6472
3848	11-cdcsp-02-uwx.095	7	1		2	1	TL	1579	454	-0	1198	211	13711	381	244	-13711
3848	11-cdcsp-02-uwx.095	7	1		3	1	ML	1579	455	-0	1198	211	13711	381	244	-13711
3848	11-cdcsp-02-uwx.095	7	1		4	1	BL	1579	456	-0	1198	211	13711	381	245	-13711
3848	11-cdcsp-02-uwx.095	7	1		5	1	GR:E	530	255	-1	420	118	5920	110	137	-5921
3848	11-cdcsp-02-uwx.095	7	1		6	1	TR	1585	453	-0	1198	211	13711	387	243	-13711
3848	11-cdcsp-02-uwx.095	7	1		7	1	MR	1585	453	-0	1198	211	13711	387	242	-13711
3848	11-cdcsp-02-uwx.095	7	1		8	1	BR	1585	452	-0	1198	211	13711	387	242	-13711
3848	11-cdcsp-02-uwx.095	8	1	NESC Ins NA-	1	1	GL:E	582	-189	-1	464	-84	6472	118	-105	-6473
3848	11-cdcsp-02-uwx.095	8	1		2	1	TL	1579	-265	-1	1198	-117	13712	381	-148	-13712
3848	11-cdcsp-02-uwx.095	8	1		3	1	ML	1579	-264	-1	1198	-117	13712	381	-147	-13712
3848	11-cdcsp-02-uwx.095	8	1		4	1	BL	1579	-264	-1	1198	-117	13712	381	-147	-13712
3848	11-cdcsp-02-uwx.095	8	1		5	1	GR:E	530	-175	-1	420	-77	5921	110	-97	-5922
3848	11-cdcsp-02-uwx.095	8	1		6	1	TR	1585	-268	-1	1198	-117	13712	387	-151	-13712
3848	11-cdcsp-02-uwx.095	8	1		7	1	MR	1585	-268	-1	1198	-117	13712	387	-151	-13712
3848	11-cdcsp-02-uwx.095	8	1		8	1	BR	1585	-269	-1	1198	-117	13712	387	-152	-13712
3848	11-cdcsp-02-uwx.095	9	5	ASCE Ice/Wind NA	1	1	GL:E	948	592	-1	733	271	7952	216	321	-7953
3848	11-cdcsp-02-uwx.095	9	5		2	1	TL	2169	867	-1	1591	399	15789	578	468	-15790
3848	11-cdcsp-02-uwx.095	9	5		3	1	ML	2168	868	-1	1591	399	15789	578	469	-15790
3848	11-cdcsp-02-uwx.095	9	5		4	1	BL	2168	868	-1	1591	399	15789	578	469	-15790
3848	11-cdcsp-02-uwx.095	9	5		5	1	GR:E	871	552	-1	671	253	7282	199	299	-7283
3848	11-cdcsp-02-uwx.095	9	5		6	1	TR	2176	867	-1	1591	399	15795	585	468	-15796
3848	11-cdcsp-02-uwx.095	9	5		7	1	MR	2176	866	-1	1591	399	15795	585	467	-15796
3848	11-cdcsp-02-uwx.095	9	5		8	1	BR	2176	866	-1	1591	399	15795	585	466	-15796
3848	11-cdcsp-02-uwx.095	10	5	ASCE Ice/Wind NA	1	1	GL:E	948	-482	-1	733	-217	7953	216	-265	-7955
3848	11-cdcsp-02-uwx.095	10	5		2	1	TL	2169	-649	-2	1591	-291	15792	578	-358	-15793
3848	11-cdcsp-02-uwx.095	10	5		3	1	ML	2168	-648	-2	1591	-291	15792	578	-357	-15793
3848	11-cdcsp-02-uwx.095	10	5		4	1	BL	2168	-647	-2	1591	-291	15792	578	-356	-15793
3848	11-cdcsp-02-uwx.095	10	5		5	1	GR:E	871	-454	-1	671	-204	7283	199	-250	-7285
3848	11-cdcsp-02-uwx.095	10	5		6	1	TR	2176	-653	-1	1591	-291	15797	585	-362	-15799
3848	11-cdcsp-02-uwx.095	10	5		7	1	MR	2176	-653	-1	1591	-291	15797	585	-362	-15799
3848	11-cdcsp-02-uwx.095	10	5		8	1	BR	2176	-654	-1	1591	-291	15797	585	-363	-15799
3848	11-cdcsp-02-uwx.095	11	18	NU Ice	1	1	GL:E	1318	64	0	952	32	9310	366	33	-9310
3848	11-cdcsp-02-uwx.095	11	18		2	1	TL	2693	132	0	1957	66	19169	735	67	-19169
3848	11-cdcsp-02-uwx.095	11	18		3	1	ML	2692	133	0	1957	66	19169	735	68	-19169
3848	11-cdcsp-02-uwx.095	11	18		4	1	BL	2692	134	0	1957	66	19169	735	69	-19169
3848	11-cdcsp-02-uwx.095	11	18		5	1	GR:E	1218	58	-0	875	29	8492	343	28	-8492
3848	11-cdcsp-02-uwx.095	11	18		6	1	TR	2701	130	-0	1957	66	19169	744	64	-19169
3848	11-cdcsp-02-uwx.095	11	18		7	1	MR	2702	129	-0	1957	66	19169	744	64	-19169
3848	11-cdcsp-02-uwx.095	11	18		8	1	BR	2702	128	-0	1957	66	19169	744	63	-19169

Wire Load Induced Ground Line Moments For Single Pole Centered At Structure Origin For Structure Range

Note: not applicable to guyed structures or frames. These approximate values do not include nonlinear (P-delta) effects or wind on pole. ??

Str. No.	Str. Name	LC #	WC #	Load Case Description	Vert. Load (kips)	Trans. Shear (kips)	Long. Shear (kips)	Resultant Shear (kips)	Trans. Moment (ft-k)	Long. Moment (ft-k)	Resultant Moment (ft-k)
3848	11-cdcsp-02-uwx.095	1	1	NESC Heavy NA+	15.904	7.591	-0.005	7.591	597.614	-0.430	597.614

3848	11-cdcsp-02-uwx.095	2	1	NESC Heavy NA-	15.904	-5.453	-0.009	5.453	-430.944	-0.749	430.945
3848	11-cdcsp-02-uwx.095	3	1	NESC Uplift NA+	10.603	7.591	-0.005	7.591	597.659	-0.430	597.659
3848	11-cdcsp-02-uwx.095	4	1	NESC Uplift NA-	10.603	-5.453	-0.009	5.453	-430.900	-0.749	430.900
3848	11-cdcsp-02-uwx.095	5	4	NESC Ext Wind NA	7.679	13.708	-0.044	13.708	1064.945	-3.474	1064.950
3848	11-cdcsp-02-uwx.095	6	4	NESC Ext Wind NA	7.679	-12.285	-0.053	12.285	-954.094	-4.098	954.103
3848	11-cdcsp-02-uwx.095	7	1	NESC Ins NA+	10.603	3.257	-0.004	3.257	256.210	-0.293	256.210
3848	11-cdcsp-02-uwx.095	8	1	NESC Ins NA-	10.603	-1.961	-0.005	1.961	-155.214	-0.421	155.214
3848	11-cdcsp-02-uwx.095	9	5	ASCE Ice/Wind NA	14.852	6.347	-0.008	6.347	501.326	-0.675	501.327
3848	11-cdcsp-02-uwx.095	10	5	ASCE Ice/Wind NA	14.852	-4.840	-0.012	4.840	-383.845	-0.949	383.847
3848	11-cdcsp-02-uwx.095	11	18	NU Ice	18.718	0.909	0.000	0.909	70.825	0.000	70.825

Basic factored design wind pressure on structure For Structure Range

Str. No.	Str. Name	LC #	WC #	Load Case Description	Trans. Wind Press. (psf)	Long. Wind Press. (psf)	Notes
3848	11-cdcsp-02-uwx.095	1	1	NESC Heavy NA+	10.0	0.0	
3848	11-cdcsp-02-uwx.095	2	1	NESC Heavy NA-	-10.0	-0.0	
3848	11-cdcsp-02-uwx.095	3	1	NESC Uplift NA+	10.0	0.0	
3848	11-cdcsp-02-uwx.095	4	1	NESC Uplift NA-	-10.0	-0.0	
3848	11-cdcsp-02-uwx.095	5	4	NESC Ext Wind NA	35.3	0.0	
3848	11-cdcsp-02-uwx.095	6	4	NESC Ext Wind NA	-35.3	-0.0	
3848	11-cdcsp-02-uwx.095	7	1	NESC Ins NA+	4.0	0.0	
3848	11-cdcsp-02-uwx.095	8	1	NESC Ins NA-	-4.0	-0.0	
3848	11-cdcsp-02-uwx.095	9	5	ASCE Ice/Wind NA	7.0	0.0	
3848	11-cdcsp-02-uwx.095	10	5	ASCE Ice/Wind NA	-7.0	-0.0	
3848	11-cdcsp-02-uwx.095	11	18	NU Ice	0.0	0.0	

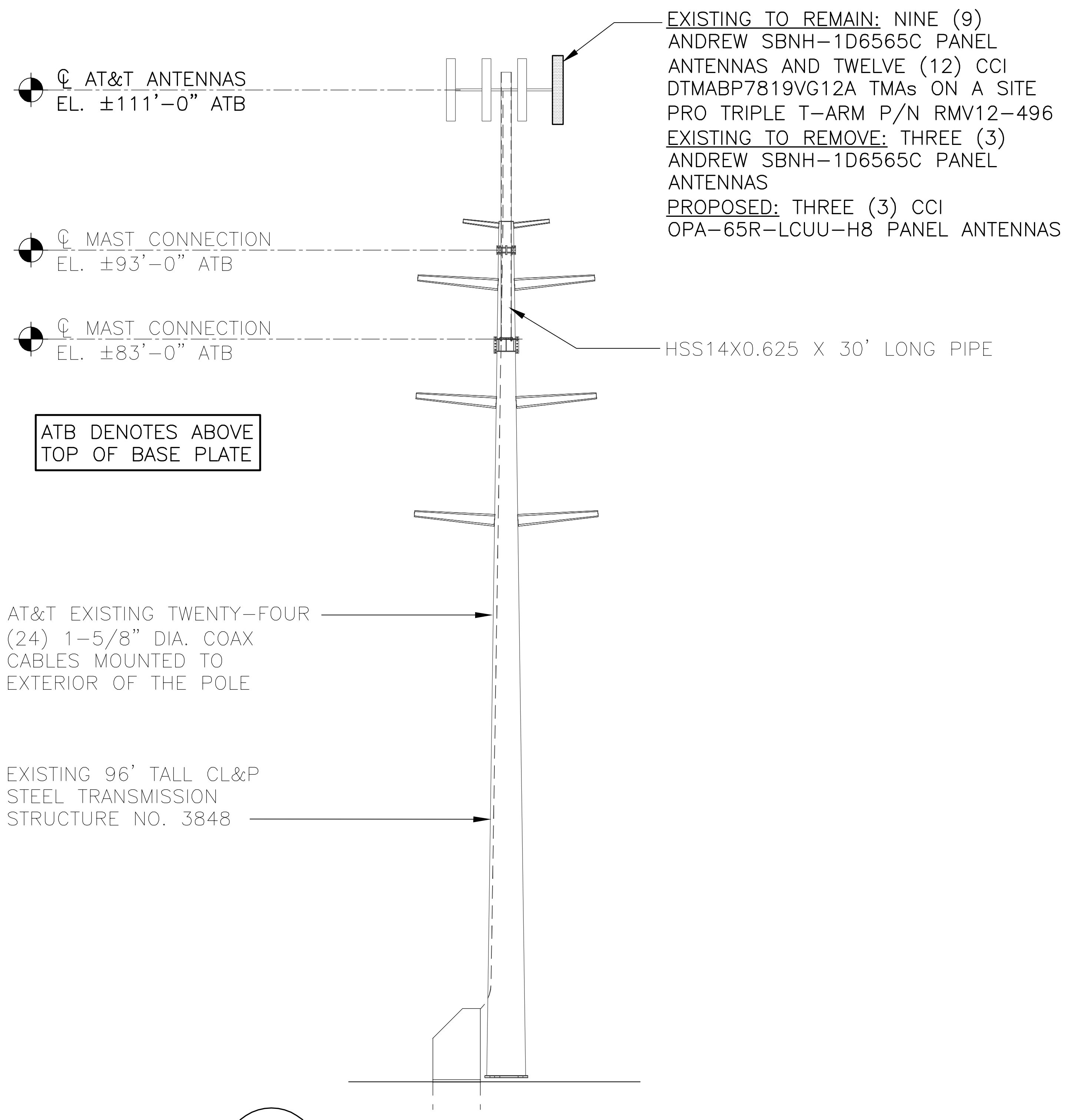
Detailed Manufacturer Loading For Structure Range

Note: Loads in this report include load from counter weights, insulator weight and insulator wind area.

Str. No.	Str. Name	Line Angle (deg)	LC #	WC #	Load Case Description	Set No.	Phase No.	Attach. Joint Labels	Structure Attach X (ft)	Structure Attach Y (ft)	Structure Attach Z (ft)	Height (ft)	Dead End	Wires Per Phase Back	Wires Per Phase Ahead	Structure Loads Vert. (lbs)	Structure Loads Trans. (lbs)	Structure Loads Long. (lbs)	Loads from back span Vert. (lbs)	Loads from back span Trans. (lbs)	Loads from back span Long. (lbs)	Loads from ahead span Vert. (lbs)	Loads from ahead span Trans. (lbs)	Loads from ahead span Long. (lbs)	Warnings	Cable Name	Back span Len. (ft)	Back span Azi. (deg)	Back span Horiz. Load (lbs/ft)	Back span Vert. Load (lbs/ft)	Back span Tension (lbs)	Back span Cable Name	Ahead span Len. (ft)	Ahead span Azi. (deg)	Ahead span Horiz. Load (lbs/ft)	Ahead span Vert. Load (lbs/ft)	Ahead span Tension (lbs)
3848	11-cdcsp-02-uwx.095	0.39	1	1	NESC Heavy NA+	1	1	GL:E	0.0	-4.8	95.0	95.0	N	1	1	872	659	-1	696	302	10678	177	356	-10679		brugg_57ay104acs-3c_115.wir	387	90	1.37	1.77	10679	brugg_57ay104acs-3c_115.wir	465	270	1.37	1.77	10680
3848	11-cdcsp-02-uwx.095	0.39	1	1		2	1	TL	0.0	-9.9	88.5	88.5	N	1	1	2369	1055	-1	1797	487	22622	572	568	-22623		lapwing_tight.wir	387	90	2.09	4.56	22624	lapwing_tight.wir	464	270	2.09	4.56	22624
3848	11-cdcsp-02-uwx.095	0.39	1	1		3	1	ML	0.0	-10.1	75.5	75.5	N	1	1	2369	1056	-1	1797	487	22622	572	569	-22623		lapwing_tight.wir	387	90	2.09	4.56	22624	lapwing_tight.wir	464	270	2.09	4.56	22624
3848	11-cdcsp-02-uwx.095	0.39	1	1		4	1	BL	0.0	-10.2	62.5	62.5	N	1	1	2369	1057	-1	1797	487	22622	572	570	-22623		lapwing_tight.wir	387	90	2.09	4.56	22624	lapwing_tight.wir	464	270	2.09	4.56	22624
3848	11-cdcsp-02-uwx.095	0.39	1	1		5	1	GR:E	0.0	4.8	95.0	95.0	N	1	1	795	603	-1	629	277	9768	165	326	-9769		19#10_alumoweld_tight.wir	387	90	1.26	1.61	9769	19#10_alumoweld_tight.wir	466	270	1.26	1.61	9770
3848	11-cdcsp-02-uwx.095	0.39	1	1		6	1	TR	0.0	9.9	88.5	88.5	N	1	1	2377	1055	-1	1797	487	22622	580	568	-22623		lapwing_tight.wir	387	90	2.09	4.56	22624	lapwing_tight.wir	466	270	2.09	4.56	22624
3848	11-cdcsp-02-uwx.095	0.39	1	1		7	1	MR	0.0	10.1	75.5	75.5	N	1	1	2377	1054	-1	1797	487	22622	580	567	-22623		lapwing_tight.wir	387	90	2.09	4.56	22624	lapwing_tight.wir	466	270	2.09	4.56	22624
3848	11-cdcsp-02-uwx.095	0.39	1	1		8	1	BR	0.0	10.2	62.5	62.5	N	1	1	2377	1053	-1	1797	487	22622	580	566	-22623		lapwing_tight.wir	387	90	2.09	4.56	22624	lapwing_tight.wir	466	270	2.09	4.56	22624
3848	11-cdcsp-02-uwx.095	0.39	2	1	NESC Heavy NA-	1	1	GL:E	0.0	-4.8	95.0	95.0	N	1	1	872	-511	-1	696	-229	10680	177	-282	-10681		brugg_57ay104acs-3c_115.wir	387	90	1.37	1.77	10679	brugg_57ay104acs-3c_115.wir	465	270	1.37	1.77	10680
3848	11-cdcsp-02-uwx.095	0.39	2	1		2	1	TL	0.0	-9.9	88.5	88.5	N	1	1	2369	-743	-1	1797	-332	22625	572	-411	-22626		lapwing_tight.wir	387	90	2.09	4.56	22624	lapwing_tight.wir	464	270	2.09	4.56	22624
3848	11-cdcsp-02-uwx.095	0.39	2	1		3	1	ML	0.0	-10.1	75.5	75.5	N	1	1	2369	-742	-1	1797	-332	22625	572	-410	-22626		lapwing_tight.wir	387	90	2.09	4.56	22624	lapwing_tight.wir	464	270	2.09	4.56	22624
3848	11-cdcsp-02-uwx.095	0.39	2	1		4	1	BL	0.0	-10.2	62.5	62.5	N	1	1	2369	-741	-1	1797	-332	22625	572	-409	-22626		lapwing_tight.wir	387	90	2.09	4.56	22624	lapwing_tight.wir	464	270	2.09	4.56	22624
3848	11-cdcsp-02-uwx.095	0.39	2	1		5	1	GR:E	0.0	4.8	95.0	95.0	N	1	1	795	-471	-1	629	-210	9770	165	-260	-9771		19#10_alumoweld_tight.wir	387	90	1.26	1.61	9769	19#10_alumoweld_tight.wir	466	270	1.26	1.61	9770
3848	11-cdcsp-02-uwx.095	0.39	2	1		6	1	TR	0.0	9.9	88.5	88.5	N	1	1	2377	-748	-1	1797	-332	22625	580	-416	-22626		lapwing_tight.wir	387	90	2.09	4.56	22624	lapwing_tight.wir	466	270	2.09	4.56	22624
3848	11-cdcsp-02-uwx.095	0.39	2	1		7	1	MR	0.0	10.1	75.5	75.5	N	1	1	2377	-749	-1	1797	-332	22625	580	-417	-22626		lapwing_tight.wir	387	90	2.09	4.56	22624	lapwing_tight.wir	466	270	2.09	4.56	22624
3848	11-cdcsp-02-uwx.095	0.39	2	1		8	1	BR	0.0	10.2	62.5	62.5	N	1	1	2377	-750	-1	1797	-332	22625	580	-418	-22626		lapwing_tight.wir	387	90	2.09	4.56	22624	lapwing_tight.wir	466	270	2.09	4.56	22624
3848	11-cdcsp-02-uwx.095	0.39	3	1	NESC Uplift NA+	1	1	GL:E	0.0	-4.8	95.0	95.0	N	1	1	582	659	-1	464	302	10678	118	356	-10679		brugg_57ay104acs-3c_115.wir	387	90	1.37	1.18	10679	brugg_57ay104acs-3c_115.wir	465	270	1.37	1.18	10680
3848	11-cdcsp-02-uwx.095	0.39	3	1		2	1	TL	0.0	-9.9	88.5	88.5	N	1	1	1579	1055	-1	1198	487	22622	381	568	-22623		lapwing_tight.wir	387	90	2.09	3.04	22624	lapwing_tight.wir	464	270	2.09	3.04	22624
3848	11-cdcsp-02-uwx.095	0.39	3	1		3	1	ML	0.0	-10.1	75.5	75.5	N	1	1	1579	1056	-1	1198	487	22622	381	569	-22623		lapwing_tight.wir	387	90	2.09	3.04	22624	lapwing_tight.wir	464	270	2.09	3.04	22624
3848	11-cdcsp-02-uwx.095	0.39	3	1		4	1	BL	0.0	-10.2	62.5	62.5	N	1	1	1579	1057	-1	1198	487	22622	381	570	-22623		lapwing_tight.wir	387	90	2.09	3.04	22624	lapwing_tight.wir	464	270	2.09	3.04	22624

3848	11-cdcsp-02-uwx.095	0.39	3	1	5	1	GR:E	0.0	4.8	95.0	95.0	N	1	1	530	603	-1	420	277	9768	110	326	-9769	19#10_alumoweld_tight.wir
387	90	1.26	1.08	9769	19#10_alumoweld_tight.wir	466	270	1.26	1.08	9770														
3848	11-cdcsp-02-uwx.095	0.39	3	1	6	1	TR	0.0	9.9	88.5	88.5	N	1	1	1585	1055	-1	1198	487	22622	387	568	-22623	lapwing_tight.wir
387	90	2.09	3.04	22624	lapwing_tight.wir	466	270	2.09	3.04	22624														
3848	11-cdcsp-02-uwx.095	0.39	3	1	7	1	MR	0.0	10.1	75.5	75.5	N	1	1	1585	1054	-1	1198	487	22622	387	567	-22623	lapwing_tight.wir
387	90	2.09	3.04	22624	lapwing_tight.wir	466	270	2.09	3.04	22624														
3848	11-cdcsp-02-uwx.095	0.39	3	1	8	1	BR	0.0	10.2	62.5	62.5	N	1	1	1585	1053	-1	1198	487	22622	387	566	-22623	lapwing_tight.wir
387	90	2.09	3.04	22624	lapwing_tight.wir	466	270	2.09	3.04	22624														
3848	11-cdcsp-02-uwx.095	0.39	4	1 NESC Uplift NA-	1	1	GL:E	0.0	-4.8	95.0	95.0	N	1	1	582	-511	-1	464	-229	10680	118	-282	-10681	brugg_57ay104acs-3c_115.wir
387	90	1.37	1.18	10679	brugg_57ay104acs-3c_115.wir	465	270	1.37	1.18	10680														
3848	11-cdcsp-02-uwx.095	0.39	4	1	2	1	TL	0.0	-9.9	88.5	88.5	N	1	1	1579	-743	-1	1198	-332	22625	381	-411	-22626	lapwing_tight.wir
387	90	2.09	3.04	22624	lapwing_tight.wir	464	270	2.09	3.04	22624														
3848	11-cdcsp-02-uwx.095	0.39	4	1	3	1	ML	0.0	-10.1	75.5	75.5	N	1	1	1579	-742	-1	1198	-332	22625	381	-410	-22626	lapwing_tight.wir
387	90	2.09	3.04	22624	lapwing_tight.wir	464	270	2.09	3.04	22624														
3848	11-cdcsp-02-uwx.095	0.39	4	1	4	1	BL	0.0	-10.2	62.5	62.5	N	1	1	1579	-741	-1	1198	-332	22625	381	-409	-22626	lapwing_tight.wir
387	90	2.09	3.04	22624	lapwing_tight.wir	464	270	2.09	3.04	22624														
3848	11-cdcsp-02-uwx.095	0.39	4	1	5	1	GR:E	0.0	4.8	95.0	95.0	N	1	1	530	-471	-1	420	-210	9770	110	-260	-9771	19#10_alumoweld_tight.wir
387	90	1.26	1.08	9769	19#10_alumoweld_tight.wir	466	270	1.26	1.08	9770														
3848	11-cdcsp-02-uwx.095	0.39	4	1	6	1	TR	0.0	9.9	88.5	88.5	N	1	1	1585	-748	-1	1198	-332	22625	387	-416	-22626	lapwing_tight.wir
387	90	2.09	3.04	22624	lapwing_tight.wir	466	270	2.09	3.04	22624														
3848	11-cdcsp-02-uwx.095	0.39	4	1	7	1	MR	0.0	10.1	75.5	75.5	N	1	1	1585	-749	-1	1198	-332	22625	387	-417	-22626	lapwing_tight.wir
387	90	2.09	3.04	22624	lapwing_tight.wir	466	270	2.09	3.04	22624														
3848	11-cdcsp-02-uwx.095	0.39	4	1	8	1	BR	0.0	10.2	62.5	62.5	N	1	1	1585	-750	-1	1198	-332	22625	387	-418	-22626	lapwing_tight.wir
387	90	2.09	3.04	22624	lapwing_tight.wir	466	270	2.09	3.04	22624														
3848	11-cdcsp-02-uwx.095	0.39	5	4 NESC Ext Wind NA	1	1	GL:E	0.0	-4.8	95.0	95.0	N	1	1	321	858	-3	405	392	6835	-84	466	-6838	brugg_57ay104acs-3c_115.wir
387	90	1.90	0.52	6836	brugg_57ay104acs-3c_115.wir	465	270	1.90	0.52	6840														
3848	11-cdcsp-02-uwx.095	0.39	5	4	2	1	TL	0.0	-9.9	88.5	88.5	N	1	1	1175	2027	-6	1117	928	15220	58	1099	-15226	lapwing_tight.wir
387	90	4.43	1.97	15223	lapwing_tight.wir	464	270	4.43	1.97	15230														
3848	11-cdcsp-02-uwx.095	0.39	5	4	3	1	ML	0.0	-10.1	75.5	75.5	N	1	1	1175	2028	-6	1117	928	15220	58	1100	-15226	lapwing_tight.wir
387	90	4.43	1.97	15223	lapwing_tight.wir	464	270	4.43	1.97	15230														
3848	11-cdcsp-02-uwx.095	0.39	5	4	4	1	BL	0.0	-10.2	62.5	62.5	N	1	1	1175	2028	-6	1117	928	15220	58	1101	-15226	lapwing_tight.wir
387	90	4.43	1.97	15223	lapwing_tight.wir	464	270	4.43	1.97	15230														
3848	11-cdcsp-02-uwx.095	0.39	5	4	5	1	GR:E	0.0	4.8	95.0	95.0	N	1	1	296	678	-3	352	310	5736	-56	369	-5739	19#10_alumoweld_tight.wir
387	90	1.50	0.49	5737	19#10_alumoweld_tight.wir	466	270	1.50	0.49	5740														
3848	11-cdcsp-02-uwx.095	0.39	5	4	6	1	TR	0.0	9.9	88.5	88.5	N	1	1	1179	2030	-7	1117	928	15220	62	1102	-15226	lapwing_tight.wir
387	90	4.43	1.97	15223	lapwing_tight.wir	466	270	4.43	1.97	15230														
3848	11-cdcsp-02-uwx.095	0.39	5	4	7	1	MR	0.0	10.1	75.5	75.5	N	1	1	1179	2029	-7	1117	928	15220	62	1102	-15226	lapwing_tight.wir
387	90	4.43	1.97	15223	lapwing_tight.wir	466	270	4.43	1.97	15230														
3848	11-cdcsp-02-uwx.095	0.39	5	4	8	1	BR	0.0	10.2	62.5	62.5	N	1	1	1179	2029	-7	1117	928	15220	62	1101	-15226	lapwing_tight.wir
387	90	4.43	1.97	15223	lapwing_tight.wir	466	270	4.43	1.97	15230														
3848	11-cdcsp-02-uwx.095	0.39	6	4 NESC Ext Wind NA	1	1	GL:E	0.0	-4.8	95.0	95.0	N	1	1	321	-763	-4	405	-345	6838	-84	-418	-6841	brugg_57ay104acs-3c_115.wir
387	90	1.90	0.52	6836	brugg_57ay104acs-3c_115.wir	465	270	1.90	0.52	6840														
3848	11-cdcsp-02-uwx.095	0.39	6	4	2	1	TL	0.0	-9.9	88.5	88.5	N	1	1	1175	-1817	-8	1117	-824	15226	58	-993	-15233	lapwing_tight.wir
387	90	4.43	1.97	15223	lapwing_tight.wir	464	270	4.43	1.97	15230														
3848	11-cdcsp-02-uwx.095	0.39	6	4	3	1	ML	0.0	-10.1	75.5	75.5	N	1	1	1175	-1816	-8	1117	-824	15226	58	-992	-15233	lapwing_tight.wir
387	90	4.43	1.97	15223	lapwing_tight.wir	464	270	4.43	1.97	15230														
3848	11-cdcsp-02-uwx.095	0.39	6	4	4	1	BL	0.0	-10.2	62.5	62.5	N	1	1	1175	-1815	-8	1117	-824	15226	58	-992	-15233	lapwing_tight.wir
387	90	4.43	1.97	15223	lapwing_tight.wir	464	270	4.43	1.97	15230														
3848	11-cdcsp-02-uwx.095	0.39	6	4	5	1	GR:E	0.0	4.8	95.0	95.0	N	1	1	296	-601	-3	352	-271	5738	-56	-330	-5741	19#10_alumoweld_tight.wir
387	90	1.50	0.49	5737	19#10_alumoweld_tight.wir	466	270	1.50	0.49	5740														
3848	11-cdcsp-02-uwx.095	0.39	6	4	6	1	TR	0.0	9.9	88.5	88.5	N	1	1	1179	-1824	-8	1117	-823	15226	62	-1000	-15233	lapwing_tight.wir
387	90	4.43	1.97	15223	lapwing_tight.wir	466	270	4.43	1.97	15230														
3848	11-cdcsp-02-uwx.095	0.39	6	4	7	1	MR	0.0	10.1	75.5	75.5	N	1	1	1179	-1824	-8	1117	-823	15226	62	-1001	-15233	lapwing_tight.wir
387	90	4.43	1.97	15223	lapwing_tight.wir	466	270	4.43	1.97	15230														
3848	11-cdcsp-02-uwx.095	0.39	6	4	8	1	BR	0.0	10.2	62.5	62.5	N	1	1	1179	-1825	-8	1117	-823	15226	62	-1002	-15233	lapwing_tight.wir
387	90	4.43	1.97	15223	lapwing_tight.wir	466	270	4.43	1.97	15230														
3848	11-cdcsp-02-uwx.095	0.39	7	1 NESC Ins NA+	1	1	GL:E	0.0	-4.8	95.0	95.0	N	1	1	582	279	-1	464	128	6472	118	150	-6472	brugg_57ay104acs-3c_115.wir
387	90	0.55	1.18	6472	brugg_57ay104acs-3c_115.wir	465	270	0.55	1.18	6473														
3848	11-cdcsp-02-uwx.095	0.39	7	1	2	1	TL	0.0	-9.9	88.5	88.5	N	1	1	1579	454	-0	1198	211	13711	381	244	-13711	lapwing_tight.wir
387	90	0.83	3.04	13711	lapwing_tight.wir	464	270	0.83	3.04	13712														
3848	11-cdcsp-02-uwx.095	0.39	7	1	3	1	ML	0.0	-10.1	75.5	75.5	N	1	1	1579	455	-0	1198	211	13711	381	244	-13711	lapwing_tight.wir
387	90	0.83	3.04	13711	lapwing_tight.wir	464	270	0.83	3.04	13712														
3848	11-cdcsp-02-uwx.095	0.39	7	1	4	1	BL	0.0	-10.2	62.5	62.5	N	1	1	1579	456	-0	1198	211	13711	381	245	-13711	lapwing_tight.wir
387	90	0.83	3.04	13711	lapwing_tight.wir	464	270	0.83	3.04	13712														
3848	11-cdcsp-02-uwx.095	0.39	7	1	5	1	GR:E	0.0	4.8	95.0	95.0	N	1	1	530	255	-1	420	118	5920	110	137	-5921	19#10_alumoweld_tight.wir
387	90	0.50	1.08	5921	19#10_alumoweld_tight.wir	466	270	0.50	1.08	5921														
3848	11-cdcsp-02-uwx.095	0.39	7	1	6	1	TR	0.0	9.9	88.5	88.5	N	1	1	1585	453	-0	1198	211	13711	387	243	-13711	lapwing_tight.wir
387	90	0.83	3.04	13711	lapwing_tight.wir	466	270	0.83	3.04	13712														
3848	11-cdcsp-02-uwx.095	0.39	7	1	7	1	MR	0.0	10.1	75.5	75.5	N	1	1	1585	453	-0	1198	211	13711	387	242	-13711	lapwing_tight.wir
387	90	0.83	3.04	13711	lapwing_tight.wir	466	270	0.83	3.04	13712														
3848	11-cdcsp-02-uwx.095	0.39	7	1	8	1	BR	0.0	10.2	62.5	62.5	N	1	1	1585	452	-0	1198	211	13711	387	242	-13711	lapwing_tight.wir
387	90	0.83	3.04	13711	lapwing_tight.wir	466	270	0.83	3.04	13712														
3848	11-cdcsp-02-uwx.095	0.39	8	1 NESC Ins NA-	1	1	GL:E	0.0	-4.8	95.0	95.0	N	1	1	582	-189	-1	464	-84	6472	118	-105	-6473	brugg_57ay104acs-3c_115.wir
387	90	0.55	1.18	6472	brugg_57ay104acs-3c_115.wir	465	270	0.55	1.18	6473														
3848	11-cdcsp-02-uwx.095	0.39	8	1	2	1	TL	0.0	-9.9	88.5	88.5	N	1	1	1579	-265	-1	1198	-117	13712	381	-148	-13712	lapwing_tight.wir
387	90	0.83	3.04	13711	lapwing_tight.wir	464	270	0.83	3.04	13712														
3848	11-cdcsp-02-uwx.095	0.39	8	1	3	1	ML	0.0	-10.1	75.5	75.5	N	1	1	1579	-264	-1	1198	-117	13712	381	-147	-13712	lapwing_tight.wir
387	90	0.83	3.04	13711	lapwing_tight.wir	464	270	0.83	3.04	13712														
3848	11-cdcsp-02-uwx.095	0.39	8	1	4	1	BL	0.0	-10.2	62.5	62.5	N	1	1	1579	-264	-1	1198	-117	13712	381	-147	-13712	lapwing_tight.wir
387	90	0.83	3.04	13711	lapwing_tight.wir	464	270	0.83	3.04	13712														
3848	11-cdcsp-02-uwx.095	0.39	8	1	5	1	GR:E	0.0	4.8	95.0	95.0	N	1	1	530	-175	-1	420	-77	5921	110	-97	-5922	19#10_alumoweld_tight.wir
387	90	0.50	1.08	5921	19#10_alumoweld_tight.wir	466	270	0.50	1.08	5921														
3848	11-cdcsp-02-uwx.095	0.39	8	1	6	1	TR	0.0	9.9	88.5	88.5	N	1	1	1585	-268	-1	1198	-117	13712	387	-151	-13712	lapwing_tight.wir
387	90	0.83	3.04	13711	lapwing_tight.wir	466	270	0.83	3.04	13712														
3848	11-cdcsp-02-uwx.095	0.39	8	1	7	1	MR	0.0	10.1	75.5	75.5	N	1	1	1585	-268	-1	1198	-117	13712	387	-151	-13712	lapwing_tight.wir
387	90	0.83	3.04	13711	lapwing_tight.wir	466	270	0.83	3.04	13712														
3848	11-cdcsp-02-uwx.095	0.39	8	1	8	1	BR	0.0	10.2	62.5	62.5	N	1	1	1585	-269	-1	1198	-117	13712	387	-152	-13712	lapwing_tight.wir
387	90	0.83	3.04	13711	lapwing_tight.wir	466	270	0.83	3.04	13712														

3848	11-cdcsp-02-uwx.095	0.39	9	5 ASCE Ice/Wind NA	1	1	GL:E	0.0	-4.8	95.0	95.0	N	1	1	948	592	-1	733	271	7952	216	321	-7953	brugg_57ay104acs-3c_115.wir
387	90	1.26	1.95	7952	brugg_57ay104acs-3c_115.wir	465	270	1.26	1.95	7954														
3848	11-cdcsp-02-uwx.095	0.39	9	5	2	1	TL	0.0	-9.9	88.5	88.5	N	1	1	2169	867	-1	1591	399	15789	578	468	-15790	lapwing_tight.wir
387	90	1.76	4.28	15791	lapwing_tight.wir	464	270	1.76	4.28	15792														
3848	11-cdcsp-02-uwx.095	0.39	9	5	3	1	ML	0.0	-10.1	75.5	75.5	N	1	1	2168	868	-1	1591	399	15789	578	469	-15790	lapwing_tight.wir
387	90	1.76	4.28	15791	lapwing_tight.wir	464	270	1.76	4.28	15792														
3848	11-cdcsp-02-uwx.095	0.39	9	5	4	1	BL	0.0	-10.2	62.5	62.5	N	1	1	2168	868	-1	1591	399	15789	578	469	-15790	lapwing_tight.wir
387	90	1.76	4.28	15791	lapwing_tight.wir	464	270	1.76	4.28	15792														
3848	11-cdcsp-02-uwx.095	0.39	9	5	5	1	GR:E	0.0	4.8	95.0	95.0	N	1	1	871	552	-1	671	253	7282	199	299	-7283	19#10_alumoweld_tight.wir
387	90	1.18	1.79	7283	19#10_alumoweld_tight.wir	466	270	1.18	1.79	7284														
3848	11-cdcsp-02-uwx.095	0.39	9	5	6	1	TR	0.0	9.9	88.5	88.5	N	1	1	2176	867	-1	1591	399	15795	585	468	-15796	lapwing_tight.wir
387	90	1.76	4.28	15796	lapwing_tight.wir	466	270	1.76	4.28	15797														
3848	11-cdcsp-02-uwx.095	0.39	9	5	7	1	MR	0.0	10.1	75.5	75.5	N	1	1	2176	866	-1	1591	399	15795	585	467	-15796	lapwing_tight.wir
387	90	1.76	4.28	15796	lapwing_tight.wir	466	270	1.76	4.28	15797														
3848	11-cdcsp-02-uwx.095	0.39	9	5	8	1	BR	0.0	10.2	62.5	62.5	N	1	1	2176	866	-1	1591	399	15795	585	466	-15796	lapwing_tight.wir
387	90	1.76	4.28	15796	lapwing_tight.wir	466	270	1.76	4.28	15797														
3848	11-cdcsp-02-uwx.095	0.39	10	5 ASCE Ice/Wind NA	1	1	GL:E	0.0	-4.8	95.0	95.0	N	1	1	948	-482	-1	733	-217	7953	216	-265	-7955	brugg_57ay104acs-3c_115.wir
387	90	1.26	1.95	7952	brugg_57ay104acs-3c_115.wir	465	270	1.26	1.95	7954														
3848	11-cdcsp-02-uwx.095	0.39	10	5	2	1	TL	0.0	-9.9	88.5	88.5	N	1	1	2169	-649	-2	1591	-291	15792	578	-358	-15793	lapwing_tight.wir
387	90	1.76	4.28	15791	lapwing_tight.wir	464	270	1.76	4.28	15792														
3848	11-cdcsp-02-uwx.095	0.39	10	5	3	1	ML	0.0	-10.1	75.5	75.5	N	1	1	2168	-648	-2	1591	-291	15792	578	-357	-15793	lapwing_tight.wir
387	90	1.76	4.28	15791	lapwing_tight.wir	464	270	1.76	4.28	15792														
3848	11-cdcsp-02-uwx.095	0.39	10	5	4	1	BL	0.0	-10.2	62.5	62.5	N	1	1	2168	-647	-2	1591	-291	15792	578	-356	-15793	lapwing_tight.wir
387	90	1.76	4.28	15791	lapwing_tight.wir	464	270	1.76	4.28	15792														
3848	11-cdcsp-02-uwx.095	0.39	10	5	5	1	GR:E	0.0	4.8	95.0	95.0	N	1	1	871	-454	-1	671	-204	7283	199	-250	-7285	19#10_alumoweld_tight.wir
387	90	1.18	1.79	7283	19#10_alumoweld_tight.wir	466	270	1.18	1.79	7284														
3848	11-cdcsp-02-uwx.095	0.39	10	5	6	1	TR	0.0	9.9	88.5	88.5	N	1	1	2176	-653	-1	1591	-291	15797	585	-362	-15799	lapwing_tight.wir
387	90	1.76	4.28	15796	lapwing_tight.wir	466	270	1.76	4.28	15797														
3848	11-cdcsp-02-uwx.095	0.39	10	5	7	1	MR	0.0	10.1	75.5	75.5	N	1	1	2176	-653	-1	1591	-291	15797	585	-362	-15799	lapwing_tight.wir
387	90	1.76	4.28	15796	lapwing_tight.wir	466	270	1.76	4.28	15797														
3848	11-cdcsp-02-uwx.095	0.39	10	5	8	1	BR	0.0	10.2	62.5	62.5	N	1	1	2176	-654	-1	1591	-291	15797	585	-363	-15799	lapwing_tight.wir
387	90	1.76	4.28	15796	lapwing_tight.wir	466	270	1.76	4.28	15797														
3848	11-cdcsp-02-uwx.095	0.39	11	18 NU Ice	1	1	GL:E	0.0	-4.8	95.0	95.0	N	1	1	1318	64	0	952	32	9310	366	33	-9310	brugg_57ay104acs-3c_115.wir
387	90	0.00	2.77	9310	brugg_57ay104acs-3c_115.wir	465	270	0.00	2.77	9310														
3848	11-cdcsp-02-uwx.095	0.39	11	18	2	1	TL	0.0	-9.9	88.5	88.5	N	1	1	2693	132	0	1957	66	19169	735	67	-19169	lapwing_tight.wir
387	90	0.00	5.40	19169	lapwing_tight.wir	464	270	0.00	5.40	19169														
3848	11-cdcsp-02-uwx.095	0.39	11	18	3	1	ML	0.0	-10.1	75.5	75.5	N	1	1	2692	133	0	1957	66	19169	735	68	-19169	lapwing_tight.wir
387	90	0.00	5.40	19169	lapwing_tight.wir	464	270	0.00	5.40	19169														
3848	11-cdcsp-02-uwx.095	0.39	11	18	4	1	BL	0.0	-10.2	62.5	62.5	N	1	1	2692	134	0	1957	66	19169	735	69	-19169	lapwing_tight.wir
387	90	0.00	5.40	19169	lapwing_tight.wir	464	270	0.00	5.40	19169														
3848	11-cdcsp-02-uwx.095	0.39	11	18	5	1	GR:E	0.0	4.8	95.0	95.0	N	1	1	1218	58	-0	875	29	8492	343	28	-8492	19#10_alumoweld_tight.wir
387	90	0.00	2.56	8492	19#10_alumoweld_tight.wir	466	270	0.00	2.56	8492														
3848	11-cdcsp-02-uwx.095	0.39	11	18	6	1	TR	0.0	9.9	88.5	88.5	N	1	1	2701	130	-0	1957	66	19169	744	64	-19169	lapwing_tight.wir
387	90	0.00	5.40	19169	lapwing_tight.wir	466	270	0.00	5.40	19169														
3848	11-cdcsp-02-uwx.095	0.39	11	18	7	1	MR	0.0	10.1	75.5	75.5	N	1	1	2702	129	-0	1957	66	19169	744	64	-19169	lapwing_tight.wir
387	90	0.00	5.40	19169	lapwing_tight.wir	466	270	0.00	5.40	19169														
3848	11-cdcsp-02-uwx.095	0.39	11	18	8	1	BR	0.0	10.2	62.5	62.5	N	1	1	2702	128	-0	1957	66	19169	744	63	-19169	lapwing_tight.wir
387	90	0.00	5.40	19169	lapwing_tight.wir	466	270	0.00	5.40	19169														



1 / EL–1 **TOWER & MAST ELEVATION**

SCALE: NOT TO SCALE

REVISIONS		
00	6/8/15	CONSTRUCTION

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

CT2267
EVERSOURCE 3848

298 RIDGE ROAD
ORANGE, CT 06477

PROJECT NO:	15066.000
DRAWN BY:	TJL
CHECKED BY:	CFC
SCALE:	AS NOTED
DATE:	6/8/15

TOWER AND MAST ELEVATION

EL-1

DWG. 1 OF 1

Development of Design Heights, Exposure Coefficients, and Velocity Pressures Per TIA/EIA

Wind Speeds

Basic Wind Speed $V := 85$ mph (User Input per NU Mast Design Criteria Exception 1)

Basic Wind Speed with Ice $V_i := 74$ mph (User Input per TIA/EIA-222-F Section 2.3.16)

Heights above ground level, z

Mast $z_{mast} := 98$ ft (User Input)

AT&T $z_{att} := 111$ ft (User Input)

Mount $z_{mnt} := 111$ ft (User Input)

Coax $z_{coax} := 104$ ft (User Input)

Exposure Coefficients, kz

(per TIA/EIA-222-F Section 2.3.3)

Mast $$Kz_{mast} := \left(\frac{z_{mast}}{33}\right)^{\frac{2}{7}} = 1.365$$

AT&T $$Kz_{att} := \left(\frac{z_{att}}{33}\right)^{\frac{2}{7}} = 1.414$$

Mount $$Kz_{mnt} := \left(\frac{z_{mnt}}{33}\right)^{\frac{2}{7}} = 1.414$$

Coax $$Kz_{coax} := \left(\frac{z_{coax}}{33}\right)^{\frac{2}{7}} = 1.388$$

Velocity Pressure without ice, qz

(per TIA/EIA-222-F Section 2.3.3)

Mast $qz_{mast} := 0.00256 \cdot Kz_{mast} \cdot V^2 = 25.243$

AT&T $qz_{att} := 0.00256 \cdot Kz_{att} \cdot V^2 = 26.157$

Mount $qz_{mnt} := 0.00256 \cdot Kz_{mnt} \cdot V^2 = 26.157$

Coax $qz_{coax} := 0.00256 \cdot Kz_{coax} \cdot V^2 = 25.675$

Velocity Pressure with ice, qzICE

(per TIA/EIA-222-F Section 2.3.3)

Mast $qzICE_{mast} := 0.00256 \cdot Kz_{mast} \cdot V_i^2 = 19.132$

AT&T $qzICE_{att} := 0.00256 \cdot Kz_{att} \cdot V_i^2 = 19.825$

Mount $qzICE_{mnt} := 0.00256 \cdot Kz_{mnt} \cdot V_i^2 = 19.825$

Coax $qzICE_{coax} := 0.00256 \cdot Kz_{coax} \cdot V_i^2 = 19.46$

TIA/EIA Common Factors:

Gust Response Factor = $G_H := 1.69$ (User Input per TIA/EIA-222-F Section 2.3.4)

Radial Ice Thickness = $Ir := 0.50$ in (User Input per TIA/EIA-222-F Section 2.3.1)

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

Development of Wind & Ice Load on PCS Mast (per TIA/EIA-222-F-1996 Criteria)

Mast Data:	(HSS14x0.625)		(User Input)
Mast Shape =	Round		(User Input)
Mast Diameter =	$D_{mast} := 14$	in	(User Input)
Mast Length =	$L_{mast} := 30$	ft	(User Input)
Mast Thickness =	$t_{mast} := 0.625$	in	(User Input)

Mast Aspect Ratio = $Ar_{mast} := \frac{12L_{mast}}{D_{mast}} = 25.7$

Mast Force Coefficient = $Ca_{mast} = 1.2$ (per TIA/EIA-222-F Table 3)

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Mast Projected Surface Area = $A_{mast} := \frac{D_{mast}}{12} = 1.167$ sf/ft

Total Mast Wind Force = $qz_{mast} \cdot G_H \cdot Ca_{mast} \cdot A_{mast} = 60$ plf **BLC 5**

Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{(D_{mast} + 2 \cdot Ir)}{12} = 1.25$ sf/ft

Total Mast Wind Force w/ Ice = $qzICE_{mast} \cdot G_H \cdot Ca_{mast} \cdot AICE_{mast} = 49$ plf **BLC 4**

Gravity Loads (without ice)

Weight of the mast = Self Weight **(Computed internally by Risa-3D)** plf **BLC 1**

Gravity Loads (ice only)

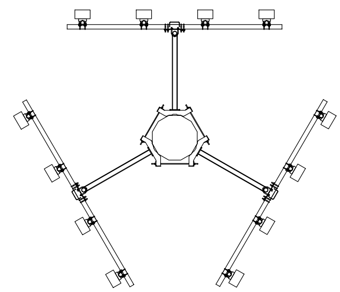
Ice Area per Linear Foot = $Ai_{mast} := \frac{\pi}{4}\left[(D_{mast} + Ir \cdot 2)^2 - D_{mast}^2\right] = 22.8$ sq in

Weight of Ice on Mast = $W_{ICEmast} := Id \cdot \frac{Ai_{mast}}{144} = 9$ plf **BLC 3**

Development of Wind & Ice Load on Antennas

(per TIA/EIA-222-F-1996 Criteria)

Antenna Data:



Antenna Model = Andrew SBNH-1D6565C

Antenna Shape = Round (User Input)

Antenna Height = $L_{ant} := 96.42$ in (User Input)

Antenna Width = $W_{ant} := 11.85$ in (User Input)

Antenna Thickness = $T_{ant} := 7.1$ in (User Input)

Antenna Weight = $WT_{ant} := 60.85$ lbs (User Input)

Number of Antennas = $N_{ant} := 9$ (User Input)

Antenna Aspect Ratio = $Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 8.1$

Antenna Force Coefficient = $Ca_{ant} = 1.44$ (per TIA/EIA-222-F-1996 Table 3)

Wind Load (without ice)

(per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure Applied to All Antennas Simultaneously

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 7.9$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 71.4$ sf

Total Antenna Wind Force = $F_{ant} := qz_{att} \cdot G_H \cdot Ca_{ant} \cdot A_{ant} = 4539$ lbs **BLC 5**

Wind Load (with ice)

(per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure Applied to All Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 8.7$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 78.2$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant} := qzICE_{att} \cdot G_H \cdot Ca_{ant} \cdot A_{ICEant} = 3769$ lbs **BLC 4**

Gravity Load (without ice)

Weight of All Antennas = $WT_{ant} \cdot N_{ant} = 548$ lbs **BLC 2**

Gravity Loads (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 8112$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 1)(W_{ant} + 1)(T_{ant} + 1) - V_{ant} = 2028$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 66$ lbs

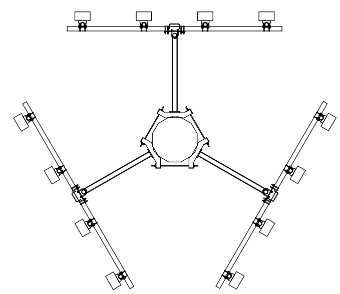
Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 591$ lbs **BLC 3**

Development of Wind & Ice Load on Antennas (per TIA/EIA-222-F-1996 Criteria)

Antenna Data:

Antenna Model = CCI OPA-65R-LCUU-H8

Antenna Shape = Round (User Input)



Antenna Height = $L_{ant} := 92.7$ in (User Input)

Antenna Width = $W_{ant} := 14.4$ in (User Input)

Antenna Thickness = $T_{ant} := 7.0$ in (User Input)

Antenna Weight = $WT_{ant} := 90$ lbs (User Input)

Number of Antennas = $N_{ant} := 3$ (User Input)

Antenna Aspect Ratio = $Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 6.4$

Antenna Force Coefficient = $Ca_{ant} = 1.4$ (per TIA/EIA-222-F-1996 Table 3)

Wind Load (without ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure Applied to All Antennas Simultaneously

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 9.3$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 27.8$ sf

Total Antenna Wind Force = $F_{ant} := qz_{att} \cdot G_H \cdot Ca_{ant} \cdot A_{ant} = 1721$ lbs **BLC 5**

Wind Load (with ice) (per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure Applied to All Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 1) \cdot (W_{ant} + 1)}{144} = 10$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 30.1$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant} := qzICE_{att} \cdot G_H \cdot Ca_{ant} \cdot A_{ICEant} = 1410$ lbs **BLC 4**

Gravity Load (without ice)

Weight of All Antennas = $WT_{ant} \cdot N_{ant} = 270$ lbs **BLC 2**

Gravity Loads (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 9344$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 1)(W_{ant} + 1)(T_{ant} + 1) - V_{ant} = 2200$ cu in

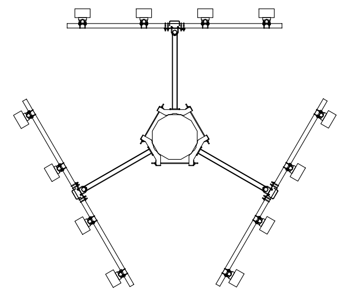
Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 71$ lbs

Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 214$ lbs **BLC 3**

Development of Wind & Ice Load on TMAs

(per TIA/EIA-222-F-1996 Criteria)

TMA Data:



TMA Model = CCI DTMABP7819VG12A

TMA Shape = Flat (User Input)

TMA Height = $L_{tma} := 14.25$ in (User Input)

TMA Width = $W_{tma} := 11.46$ in (User Input)

TMA Thickness = $T_{tma} := 4.17$ in (User Input)

TMA Weight = $WT_{tma} := 20$ lbs (User Input)

Number of TMAs = $N_{tma} := 12$ (User Input)

TMA Aspect Ratio = $Ar_{tma} := \frac{L_{tma}}{W_{tma}} = 1.2$

TMA Force Coefficient = $Ca_{tma} = 1.4$ (per TIA/EIA-222-F-1996 Table 3)

Wind Load (without ice)

(per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure Applied to ALL TMAs Simultaneously

Surface Area for One TMA = $SA_{tma} := \frac{L_{tma} \cdot W_{tma}}{144} = 1.1$ sf

TMA Projected Surface Area = $A_{tma} := SA_{tma} \cdot N_{tma} = 13.6$ sf

Total TMA Wind Force = $F_{tma} := qz_{att} \cdot G_H \cdot Ca_{tma} \cdot A_{tma} = 842$ lbs **BLC 5**

Wind Load (with ice)

(per TIA/EIA-222-F-1996 Section 2.3.2)

Assumes Maximum Possible Wind Pressure Applied to ALL TMAs Simultaneously

Surface Area for One TMA w/ Ice = $SA_{ICEtma} := \frac{\left(L_{tma} + 1\right) \cdot \left(W_{tma} + 1\right)}{144} = 1.3$ sf

TMA Projected Surface Area w/ Ice = $A_{ICEtma} := SA_{ICEtma} \cdot N_{tma} = 15.8$ sf

Total TMA Wind Force w/ Ice = $Fi_{tma} := qzICE_{att} \cdot G_H \cdot Ca_{tma} \cdot A_{ICEtma} = 743$ lbs **BLC 4**

Gravity Load (without ice)

Weight of All TMAs = $WT_{tma} \cdot N_{tma} = 240$ lbs **BLC 2**

Gravity Loads (ice only)

Volume of Each TMA = $V_{tma} := L_{tma} \cdot W_{tma} \cdot T_{tma} = 681$ cu in

Volume of Ice on Each TMA = $V_{ice} := \left(L_{tma} + 1\right)\left(W_{tma} + 1\right) \cdot \left(T_{tma} + 1\right) - V_{tma} = 301$ cu in

Weight of Ice on Each TMA = $W_{ICEtma} := \frac{V_{ice}}{1728} \cdot Id = 10$ lbs

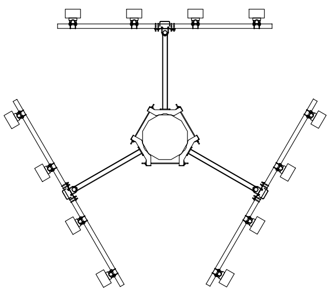
Weight of Ice on All TMAs = $W_{ICEtma} \cdot N_{tma} = 117$ lbs **BLC 3**

Development of Wind & Ice Load on Antenna Mounts

(per TIA/EIA-222-F-1996 Criteria)

Mount Data:

Mount Type: Site Pro Triple T-Arm for 12 Antennas



Mount Shape =	Flat		(User Input)
Mount Area =	$CaA_{mnt} := 23.85$	sq ft	(User Input)
Mount Area w/ Ice =	$CaA_{ICEmnt} := 30.3$	sq ft	(User Input)
Mount Weight =	$WT_{mnt} := 1316$	lbs	(User Input)
Mount Weight w/ Ice =	$WT_{ICEmnt} := 1677$	lbs	(User Input)

Wind Load (without ice)

(per TIA/EIA-222-F-1996 Section 2.3.2)

Total Mount Wind Force = $F_{mnt} := qz_{mnt} \cdot G_H \cdot CaA_{mnt} = 1054$ lbs **BLC 5**

Wind Load (with ice)

(per TIA/EIA-222-F-1996 Section 2.3.2)

Total Mount Wind Force = $Fi_{mnt} := qzICE_{mnt} \cdot G_H \cdot CaA_{ICEmnt} = 1015$ lbs **BLC 4**

Gravity Loads (without ice)

(per TIA/EIA-222-F-1996)

Weight of All Mounts = $WT_{mnt} = 1316$ lbs **BLC 2**

Gravity Loads (ice only)

(per TIA/EIA-222-F-1996)

Weight of Ice on All Mounts = $WT_{ICEmnt} - WT_{mnt} = 361$ lbs **BLC 3**

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

Development of Wind & Ice Load on Coax Cables

per TIA/EIA-222-F-96 Criteria

Coax Cable Data:

Coax Type = HELIAX 1-5/8"

Shape = Round (User Input)

Coax Outside Diameter = $D_{coax} := 1.98$ in (User Input)

Coax Cable Length = $L_{coax} := 10$ ft (User Input)

Weight of Coax per foot = $Wt_{coax} := 1.04$ plf (User Input)

Total Number of Coax = $N_{coax} := 24$ (User Input)

No. of Coax Projecting Outside Face of PCS Mast = $NP_{coax} := 6$ (User Input)

Coax aspect ratio, $Ar_{coax} := \frac{(L_{coax} \cdot 12)}{D_{coax}} = 60.6$

Coax Cable Force Factor Coefficient = $Ca_{coax} = 1.2$ TIA/EIA-222-F-96 Table 3

Wind Load (without ice)

per TIA/EIA-222-F-96 Section 2.3.2

Coax projected surface area = $A_{coax} := \frac{NP_{coax} \cdot D_{coax}}{12} = 1$ sf/ft

Total Coax Wind Force = $F_{coax} := qz_{coax} \cdot G_H \cdot Ca_{coax} \cdot A_{coax} = 52$ plf **BLC 5**

Wind Load (with ice)

per TIA/EIA-222-F-96 Section 2.3.2

Coax projected surface area w/ Ice = $AICE_{coax} := \frac{NP_{coax} \cdot (D_{coax} + 2 \cdot Ir)}{12} = 1.5$ sf/ft

Total Coax Wind Force w/ Ice = $Fi_{coax} := qzICE_{coax} \cdot G_H \cdot Ca_{coax} \cdot AICE_{coax} = 59$ plf **BLC 4**

Gravity Loads (without ice)

Weight of all cables w/o ice $WT_{coax} := Wt_{coax} \cdot N_{coax} = 25$ plf **BLC 2**

Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{coax} := \frac{\pi}{4}\left[(D_{coax} + 2 \cdot Ir)^2 - D_{coax}^{\,2}\right] = 3.9$ sq in

Ice Weight All Coax per foot = $WTi_{coax} := Id \cdot \left(N_{coax} \cdot \frac{Ai_{coax}}{144}\right) = 36$ plf **BLC 3**

CENTEK engineering, INC.
Consulting Engineers
63-2 North Branford Road
Branford, CT 06405
Ph. 203-488-0580 / Fax. 203-488-8587

Subject: **Analysis of TIA/EIA Wind and Ice Loads for Analysis of Mast Only**
Tabulated Load Cases

Location: **Orange, CT**

Date: 6/8/15 Prepared by: T.J.L. Checked by: C.F.C. Job No. 15066.000

Load Case	Description
1	Self Weight (Mast)
2	Weight of Appurtenances
3	Weight of Ice Only
4	TIA/EIA Wind with Ice
5	TIA/EIA Wind

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Subject: **Analysis of TIA/EIA Wind and Ice Loads for Analysis of Mast Only**
Load Combinations Table

Location: **Orange, CT**

Date: 6/8/15 Prepared by: T.J.L. Checked by: C.F.C. Job No. 15066.000

Load Combination	Description	Envelope Soultion	Wind Factor	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	TIA/EIA Wind + Ice		1		1	1	2	1	3	1	4	1		
2	TIA/EIA Wind		1		1	1	2	1	5	1				

Footnotes:
(1) BLC = Basic Load Case

Global

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Increase Nailing Capacity for Wind?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automaticly Iterate Stiffness for Walls?	No
Maximum Iteration Number 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 9th: ASD
RISAConnection Code	AISC 14th(360-10): ASD
Cold Formed Steel Code	AISI 1999: ASD
Wood Code	AF&PA NDS-97: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-02
Masonry Code	ACI 530-05: ASD
Aluminum Code	AA ADM1-05: ASD - Building

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

Global, Continued

Seismic Code	UBC 1997
Seismic Base Elevation (ft)	Not Entered
Add Base Weight?	No
Ct Z	.035
Ct X	.035
T Z (sec)	Not Entered
T X (sec)	Not Entered
R Z	8.5
R X	8.5
Ca	.36
Cv	.54
Nv	1
Occupancy Category	4
Seismic Zone	3
Seismic Detailing Code	ASCE 7-05
Om Z	1
Om X	1
Rho Z	1
Rho X	1

Footing Overturning Safety Factor	1.5
Check Concrete Bearing	No
Footing Concrete Weight (k/ft^3)	0
Footing Concrete f'c (ksi)	3
Footing Concrete Ec (ksi)	4000
Lamda	1
Footing Steel fy (ksi)	60
Minimum Steel	0.0018
Maximum Steel	0.0075
Footing Top Bar	#3
Footing Top Bar Cover (in)	3.5
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 (\1...	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 Design Parameters

	Label	Shape	Leng...	Lbyy[ft]	Lbzz[ft]	Lcomp ...	Lcomp ...	Kyy	Kzz	Cm...	Cm...	Cb	y s...	z s...	Functi...
1	M1	Mast	30												Lateral

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Ru...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Mast	HSS14X.625	Beam	Pipe	A500 Gr.42	Typical	24.5	552	552	1100

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design R...
1	M1	BOTCO...	TOPMA...			Mast	Beam	Pipe	A500 Gr.42	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From D...
1	BOTCONNECTION	0	0	0	0	
2	TOPCONNECTION	0	10	0	0	
3	TOPMAST	0	30	0	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]	Footing
1	BOTCONNECTION	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction	
2	TOPCONNECTION	Reaction		Reaction				

Member Point Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.548	28
2	M1	Y	-.27	28
3	M1	Y	-.24	28
4	M1	Y	-1.316	28

Member Point Loads (BLC 3 : Weight of Ice Only)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.591	28
2	M1	Y	-.214	28
3	M1	Y	-.117	28
4	M1	Y	-.361	28

Member Point Loads (BLC 4 : TIA/EIA Wind with Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	3.769	28
2	M1	X	1.41	28
3	M1	X	.743	28
4	M1	X	1.015	28

Member Point Loads (BLC 5 : TIA/EIA Wind)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	4.539	28
2	M1	X	1.721	28
3	M1	X	.842	28
4	M1	X	1.054	28

Joint Loads and Enforced Displacements

Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*s^2*ft)]
No Data to Print ...			

Member Distributed Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.025	-.025	13	28

Member Distributed Loads (BLC 3 : Weight of Ice Only)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.009	-.009	0	0
2	M1	Y	-.036	-.036	13	28

Member Distributed Loads (BLC 4 : TIA/EIA Wind with Ice)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.049	.049	0	0
2	M1	X	.059	.059	13	28

Member Distributed Loads (BLC 5 : TIA/EIA Wind)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.06	.06	0	0
2	M1	X	.052	.052	13	28

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gra...	Z Grav...	Joint	Point	Distrib...	Area(...	Surfac...
1	Self Weight (Antenna Mast)	None		-1						
2	Weight of Appurtenances	None					4	1		
3	Weight of Ice Only	None					4	2		
4	TIA/EIA Wind with Ice	None					4	2		
5	TIA/EIA Wind	None					4	2		

Load Combinations

	Description	Sol...	PD...	SR...	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	TIA/EIA Wind + Ice	Yes			1	1	2	1	3	1	4	1								
2	TIA/EIA Wind	Yes			1	1	2	1	5	1										
3	Self Weight				1	1														

Envelope Member Section Forces

	Member	Sec		Axial[k]	LC	y Shear...	LC	z Shear...	LC	Torque[...	LC	y-y Mo...	LC	z-z Mo...	LC
1	M1	1	max	7.343	1	-20.805	1	0	1	0	1	0	1	-66.54	1
2			min	5.25	2	-24.115	2	0	1	0	1	0	1	-77.15	2
3		2	max	6.65	1	-21.172	1	0	1	0	1	0	1	105.398	2
4			min	4.625	2	-24.565	2	0	1	0	1	0	1	90.875	1
5		3	max	5.836	1	9.732	2	0	1	0	1	0	1	117.172	2
6			min	3.95	2	8.439	1	0	1	0	1	0	1	100.679	1
7		4	max	4.685	1	8.892	2	0	1	0	1	0	1	47.332	2
8			min	3.137	2	7.629	1	0	1	0	1	0	1	40.424	1
9		5	max	0	1	0	1	0	1	0	1	0	1	0	1
10			min	0	1	0	1	0	1	0	1	0	1	0	1

Envelope Member Section Stresses

	Member	Sec		Axial[ksi]	LC	y Shear[...	LC	z Shear[...	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
1	M1	1	max	.3	1	-1.698	1	0	1	11.74	2	-10.126	1	0	1	0	1
2			min	.214	2	-1.969	2	0	1	10.126	1	-11.74	2	0	1	0	1
3		2	max	.271	1	-1.728	1	0	1	-13.829	1	16.039	2	0	1	0	1
4			min	.189	2	-2.005	2	0	1	-16.039	2	13.829	1	0	1	0	1
5		3	max	.238	1	.794	2	0	1	-15.321	1	17.831	2	0	1	0	1
6			min	.161	2	.689	1	0	1	-17.831	2	15.321	1	0	1	0	1
7		4	max	.191	1	.726	2	0	1	-6.151	1	7.203	2	0	1	0	1
8			min	.128	2	.623	1	0	1	-7.203	2	6.151	1	0	1	0	1
9		5	max	0	1	0	1	0	1	0	1	0	1	0	1	0	1
10			min	0	1	0	1	0	1	0	1	0	1	0	1	0	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	BOTCONNE...	max	24.115	2	7.343	1	0	1	0	1	0	1	-66.54	1
2		min	20.805	1	5.25	2	0	1	0	1	0	1	-77.15	2
3	TOPCONNE...	max	-30.097	1	0	1	0	1	0	1	0	1	0	1
4		min	-34.851	2	0	1	0	1	0	1	0	1	0	1
5	Totals:	max	-9.292	1	7.343	1	0	1						
6		min	-10.736	2	5.25	2	0	1						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation...	LC	Y Rotation...	LC	Z Rotation...	LC
1	BOTCONNEC...	max	0	1	0	2	0	1	0	1	0	1	0	2
2		min	0	2	0	1	0	1	0	1	0	1	0	1
3	TOPCONNEC...	max	0	2	0	2	0	1	0	1	0	1	-3.445e-3	1
4		min	0	1	-.001	1	0	1	0	1	0	1	-3.996e-3	2
5	TOPMAST	max	3.184	2	-.002	2	0	1	0	1	0	1	-1.466e-2	1
6		min	2.739	1	-.003	1	0	1	0	1	0	1	-1.705e-2	2

Envelope AISC ASD Steel Code Checks

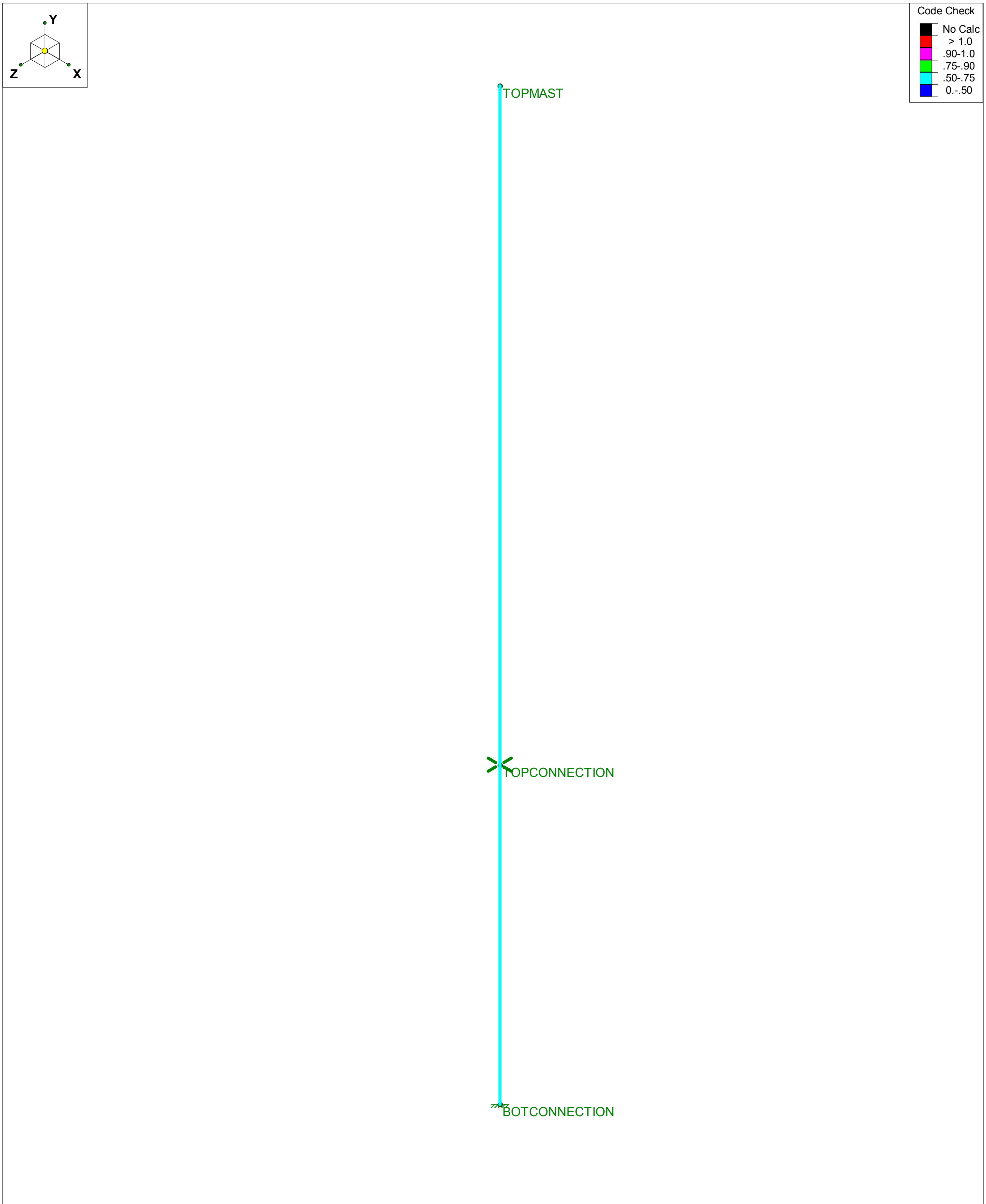
	Me...	Shape	Code Check	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	Fa ...	Ft [...	Fb y-y [ksi]	Fb ...	...	...	AS...
1	M1	HSS14...	.695	10	2	.090	10		2	23...	33...	36.868	36...	1	.6	....	H1-2

Joint Reactions

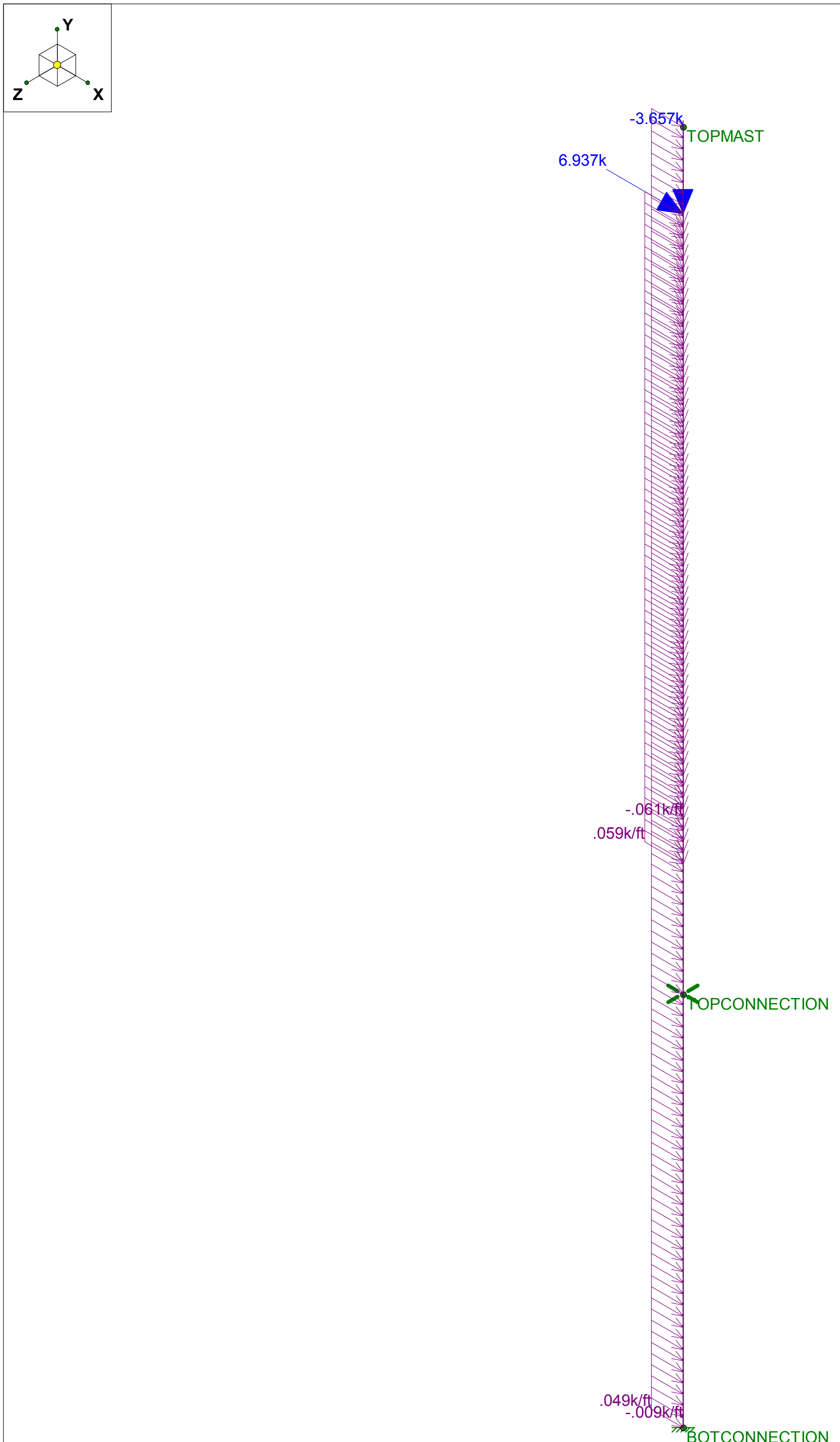
	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	BOTCONNECTION	20.805	7.343	0	0	0	-66.54
2	1	TOPCONNECTION	-30.097	0	0	0	0	0
3	1	Totals:	-9.292	7.343	0			
4	1	COG (ft):	X: 0	Y: 22.16	Z: 0			

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	2	BOTCONNECTION	24.115	5.25	0	0	0	-77.15
2	2	TOPCONNECTION	-34.851	0	0	0	0	0
3	2	Totals:	-10.736	5.25	0			
4	2	COG (ft):	X: 0	Y: 21.271	Z: 0			

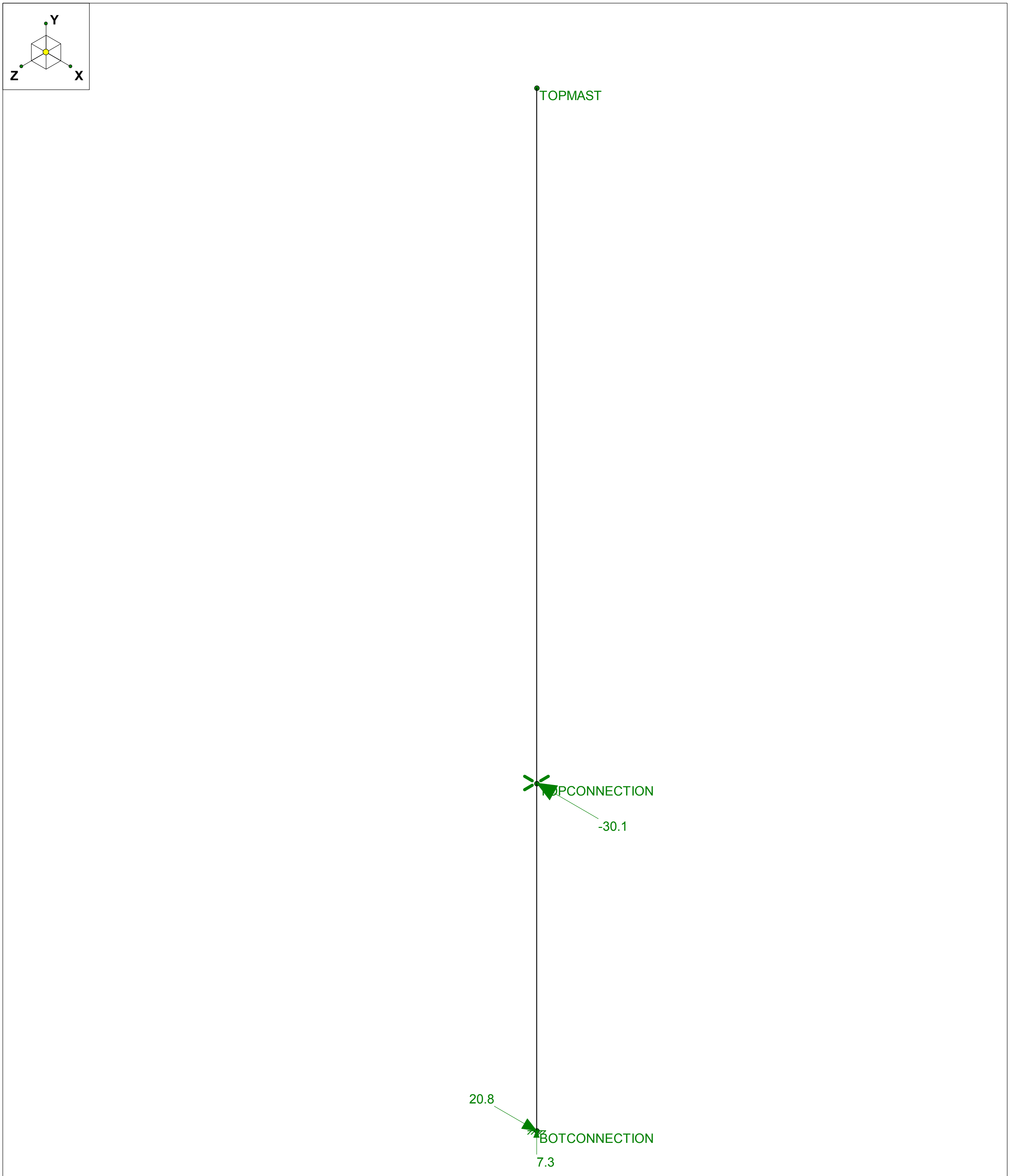


CENTEK Engineering, INC.		
tjl, cfc	Pole # 3848 - Mast	June 8, 2015 at 11:28 AM
15066.000 / AT&T CT2267	Unity Check	EIA-TIA Loads.r3d

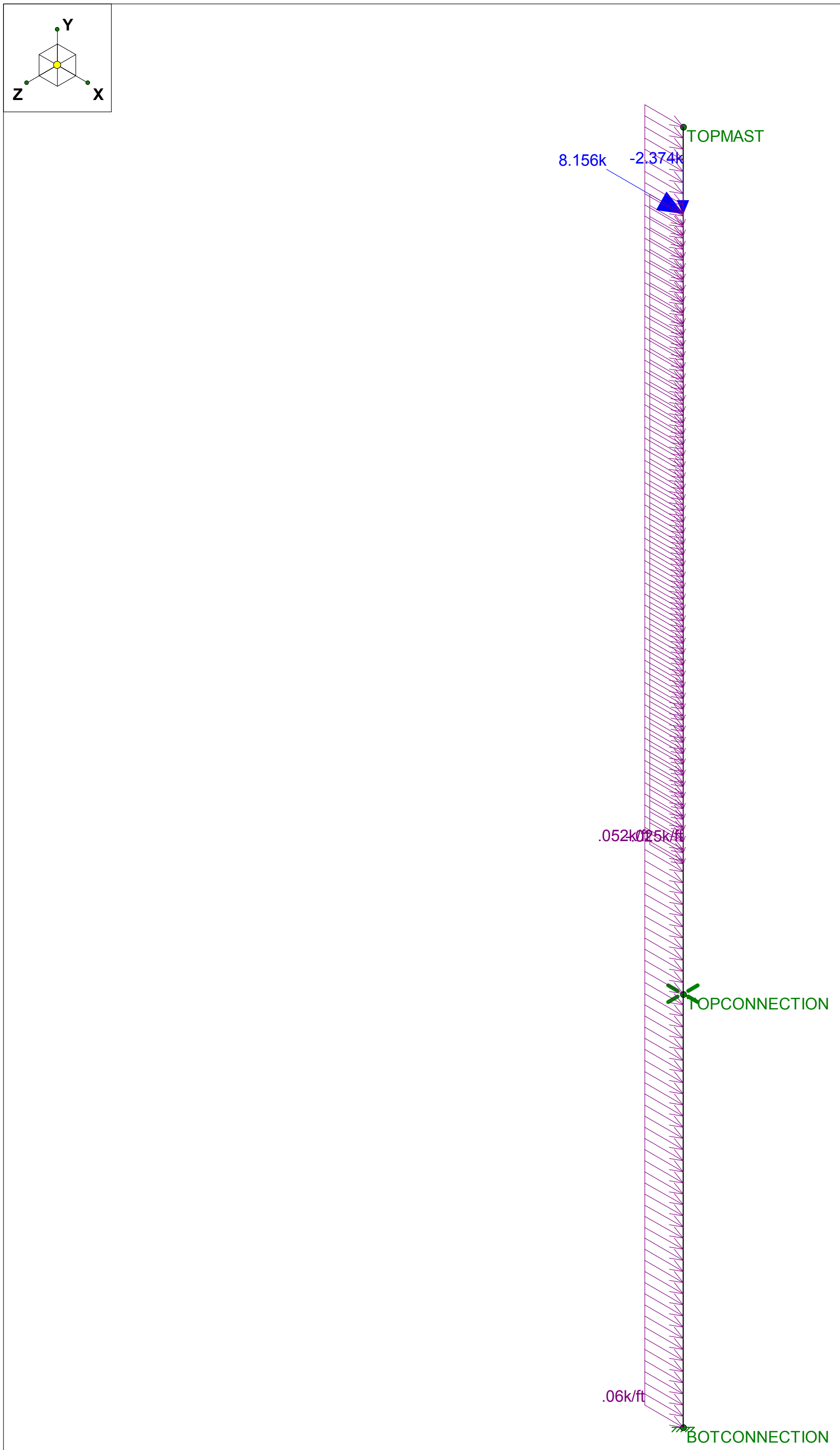


Loads: LC 1, TIA/EIA Wind + Ice

CENTEK Engineering, INC.		
tjl, cfc	Pole # 3848 - Mast	June 8, 2015 at 11:26 AM
15066.000 / AT&T CT2267	LC #1 Loads	EIA-TIA Loads.r3d

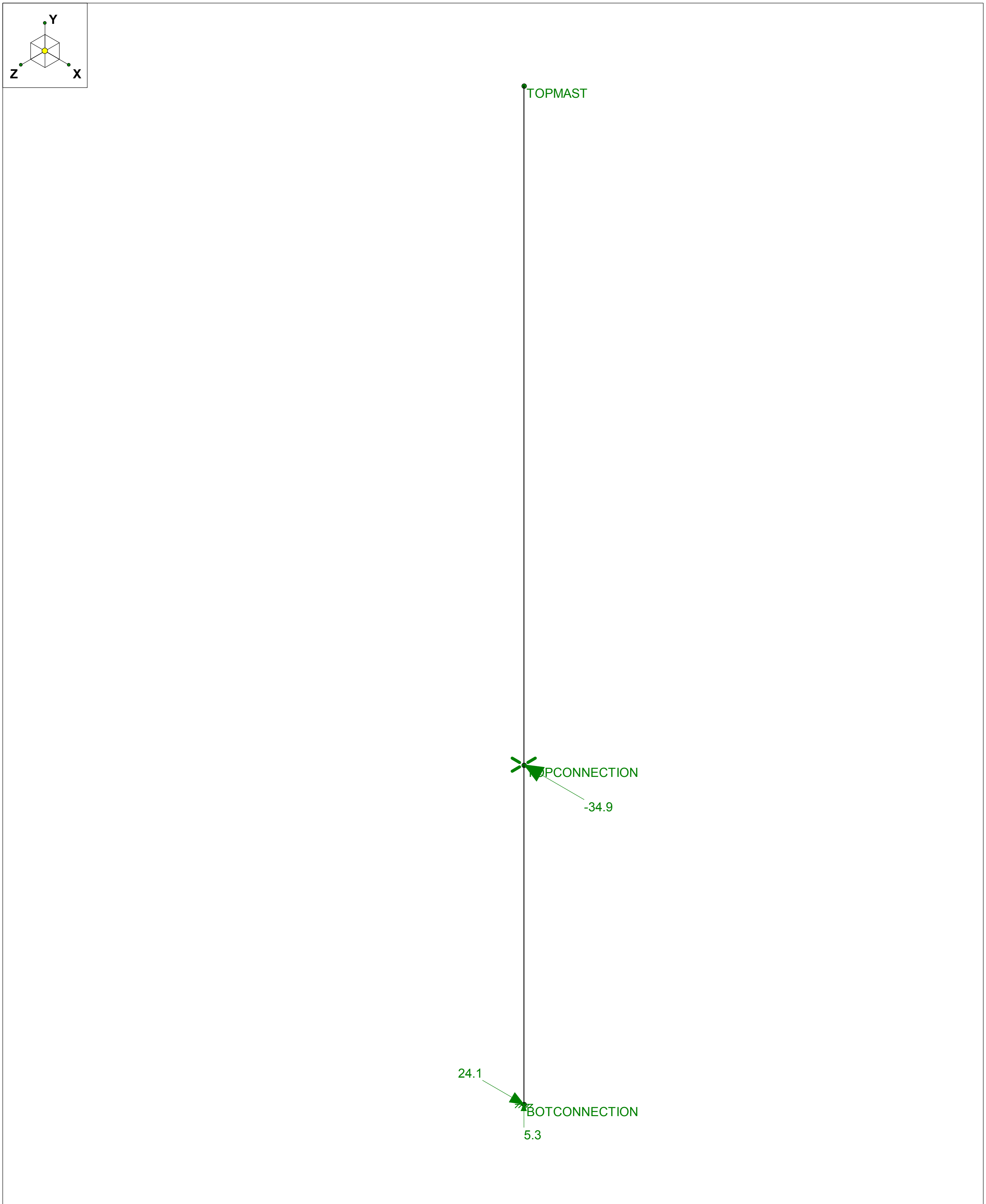


CENTEK Engineering, INC.		
tjl, cfc	Pole # 3848 - Mast	June 8, 2015 at 11:27 AM
15066.000 / AT&T CT2267	LC #1 Reactions	EIA-TIA Loads.r3d



Loads: LC 2, TIA/EIA Wind

CENTEK Engineering, INC.		
tjl, cfc	Pole # 3848 - Mast	June 8, 2015 at 11:26 AM
15066.000 / AT&T CT2267	LC #2 Loads	EIA-TIA Loads.r3d



CENTEK Engineering, INC.		
tjl, cfc	Pole # 3848 - Mast	June 8, 2015 at 11:27 AM
15066.000 / AT&T CT2267	LC #2 Reactions	EIA-TIA Loads.r3d

Mast Top Connection:

Maximum Design Reactions at Brace:

Vertical = $Vert := 0 \cdot kips$ (User Input)

Horizontal = $Horz := 34.9 \cdot kips$ (User Input)

Moment = $Moment := 0$ (User Input)

Bolt Data:

Bolt Grade = A325 (User Input)

Number of Bolts = $n_b := 6$ (User Input)

Bolt Diameter = $d_b := 0.75in$ (User Input)

Allowable Tensile Stress = $F_{t.all} := 45 \cdot ksi$ (User Input)

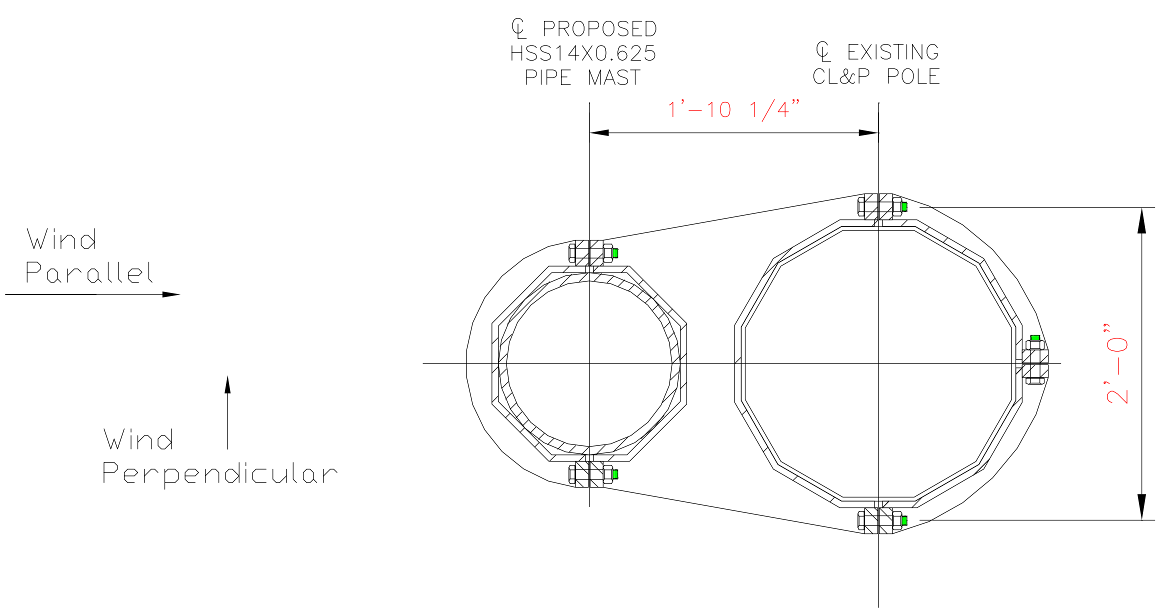
Allowable Shear Stress = $F_{v.all} := 27 \cdot ksi$ (User Input)

Bolt Eccentricity from C.L. Mast = $e := 22.25 \cdot in$ (User Input)

Vetical Spacing Between Top and Bottom Bolts = $S_{vert} := 9 \cdot in$ (User Input)

Horizontal Spacing Between Bolts = $S_{horz} := 24 \cdot in$ (User Input)

Bolt Area = $a_b := \frac{1}{4} \cdot \pi \cdot d_b^{\,2} = 0.442 \cdot in^2$



Check Bolt Stresses:

Wind Acting Parallel to Stiffiner Plate:

Shear Force per Bolt = $F_{v.conn} := \frac{Vert}{n_b} = 0 \cdot kips$

Shear Stress per Bolt = $F_{v.act} := \frac{F_{v.conn}}{a_b} = 0 \cdot ksi$

Condition1 := if$\left(F_{v.act} < F_{v.all}, \text{"OK"}, \text{"Overstressed"}\right)$

Condition1 = "OK"

Allowable Tensile Stress Adjusted for Shear = $F_{t.adj} := \sqrt{F_{t.all}^{\,2} - 4.39 \cdot F_{v.act}^{\,2}} = 45 \cdot ksi$ (AISC 9th Ed. Table J3.3)

Moment From Mast Eccentricity = $M_{par} := Vert \cdot e = 0 \cdot kips \cdot in$

Tension Force = $F_{tension} := Horz = 34.9 \cdot kips$

Tension Force Each Bolt = $F_{tension.bolt} := \frac{F_{tension}}{n_b} + \frac{M_{par}}{S_{vert} \cdot 2} = 5.817 \cdot kips$

Tension Stress Each Bolt = $F_{t.act} := \frac{F_{tension.bolt}}{a_b} = 13.2 \cdot ksi$

Condition2 := if$\left(F_{t.act} < F_{t.adj}, \text{"OK"}, \text{"Overstressed"}\right)$

Condition2 = "OK"

Wind Acting Perpendicular to Stiffiner Plate:

Shear Force per Bolt = $F_{v.conn} := \frac{\sqrt{Vert^2 + Horz^2}}{n_b} = 5.817 \cdot kips$

Shear Stress per Bolt = $F_{v.act} := \frac{F_{v.conn}}{a_b} = 13.166 \cdot ksi$

Condition3 := if$\left(F_{v.act} < F_{v.all}, \text{"OK"}, \text{"Overstressed"}\right)$

Condition3 = "OK"

Allowable Tensile Stress Adjusted for Shear = $F_{t.adj} := \sqrt{F_{t.all}^{\,2} - 4.39 \cdot F_{v.act}^{\,2}} = 35.55 \cdot ksi$ (AISC 9th Ed. Table J3.3)

Moment from Mast Eccentricity = $M_{perp} := Horz \cdot e = 777 \cdot kips \cdot in$

Tension Force per Bolt = $F_{tension.conn} := \frac{M_{perp}}{S_{horz} \cdot 3} + \frac{M_{par}}{S_{vert} \cdot 2} = 10.785 \cdot kips$

Tension Stress Each Bolt = $F_{tension.act} := \frac{F_{tension.conn}}{a_b} = 24.412 \cdot ksi$

Condition4 := if$\left(F_{tension.act} < F_{t.adj}, \text{"OK"}, \text{"Overstressed"}\right)$

Condition4 = "OK"

Mast Connection to Bottom Bracket:

Design Reactions at Brace:

Axial =	$Axial := 5.3 \cdot kips$	(User Input)
Shear =	$Shear := 24.2 \cdot kips$	(User Input)
Moment =	$Moment := 77.2 \cdot kips \cdot ft$	(User Input)

Anchor Bolt Data:

Bolt Grade =	A325	(User Input)
Allowable Shear Stress =	$F_v := 27 \cdot ksi$	(User Input)
Allowable Tension Stress =	$F_T := 45 \cdot ksi$	(User Input)
Total Number of Bolts =	$n_b := 4$	(User Input)
Number of Bolts Tension Side Parallel =	$n_{b.par} := 2$	(User Input)
Number of Bolts Tension Side Diagonal =	$n_{b.diag} := 1$	(User Input)
Bolt Diameter =	$d_b := 1.25in$	(User Input)
Bolt Spacing X Direction =	$S_x := 14 \cdot in$	(User Input)
Bolt Spacing Z Direction =	$S_z := 14 \cdot in$	(User Input)

Base Plate Data:

Base Plate Steel =	A36	(User Input)
Allowable Yield Stress =	$F_y := 36 \cdot ksi$	(User Input)
Base Plate Width =	$Pl_w := 18 \cdot in$	(User Input)
Base Plate Thickness =	$Pl_t := 1.75 \cdot in$	(User Input)
Bolt Edge Distance =	$B_E := 2 \cdot in$	(User Input)
Pole Diameter =	$D_p := 14 \cdot in$	(User Input)

Base Plate Data:

Weld Grade	E70XX	(User Input)
Weld Yield Stress =	$F_{yw} := 70 \cdot ksi$	(User Input)
Weld Size =	$sw := 0.5 \cdot in$	(User Input)

Anchor Bolt Check:

Bolt Area = $a_b := \frac{1}{4} \cdot \pi \cdot d_b^2 = 1.227 \cdot in^2$

Bolt Spacing Diag. Direction = $S_{diag} := \sqrt{S_x^2 + S_z^2} = 19.8 \cdot in$

Actual Shear Stress = $f_v := \frac{Shear}{a_b \cdot n_b} = 4.93 \cdot ksi$

$Condition1 := if(f_v < F_v, \text{"OK"}, \text{"Overstressed"})$

$Condition1 = \text{"OK"}$

Allowable Tensile Stress Adjusted for Shear = $F_{t.adj} := \sqrt{F_T^2 - 4.39 \cdot f_v^2} = 43.798 \cdot ksi$

Tension Load per Bolt Parallel = $T_{par} := \frac{Moment}{S_x \cdot n_{b.par}} - \frac{Axial}{n_b} = 31.76 \cdot kips$

Tension Load per Bolt Diagonal = $T_{diag} := \frac{Moment}{S_{diag} \cdot n_{b.diag}} - \frac{Axial}{n_b} = 45.47 \cdot kips$

Tension per bolt = $T := if(T_{par} > T_{diag}, T_{par}, T_{diag}) = 45.465 \cdot kips$

Actual Tensile Stress = $f_t := \frac{T}{a_b} = 37.05 \cdot ksi$

$Condition2 := if(f_t < F_{t.adj}, \text{"OK"}, \text{"Overstressed"})$

$Condition2 = \text{"OK"}$

Base Plate Check:

Allowable Bending Stress = $F_b := 0.75 \cdot F_y = 27 \cdot ksi$

Plate Bending Width = $Z := (Pl_w \cdot \sqrt{2} - D_p) = 11.46 \cdot in$

Moment Arm = $K := \frac{(S_{diag} - D_p)}{2} = 2.9 \cdot in$

Moment in Base Plate = $M := K \cdot T = 131.83 \cdot kips \cdot in$

Section Modulus = $S_Z := \frac{1}{6} \cdot Z \cdot Pl_t^2 = 5.85 \cdot in^3$

Bending Stress = $f_b := \frac{M}{S_Z} = 22.54 \cdot ksi$

$Condition3 := if(f_b < F_b, \text{"OK"}, \text{"Overstressed"})$

$Condition3 = \text{"OK"}$

Base Plate to PCS Mast Weld Check:

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

Weld Area = $A_w := \frac{\pi}{4} \cdot \left[\left(D_p + 2sw \cdot 0.707\right)^2 - D_p{}^2\right] = 15.94 \cdot in^2$

Weld Moment of Inertia = $I_w := \frac{\pi}{64} \cdot \left[\left(D_p + 2sw \cdot 0.707\right)^4 - D_p{}^4\right] = 410.76 \cdot in^4$

$c := \frac{D_p}{2} + sw \cdot 0.707 = 7.35 \cdot in$

Section Modulus of Weld = $S_w := \frac{I_w}{c} = 55.86 \cdot in^3$

Weld Stress = $f_w := \frac{Moment}{S_w} + \frac{Shear}{A_w} = 18.1 \cdot ksi$

Condition4 := if$\left(f_w < F_w, \text{"OK"}, \text{"Overstressed"}\right)$

Condition4 = "OK"

Mast Bottom Connection:

Maximum Design Reactions at Brace:

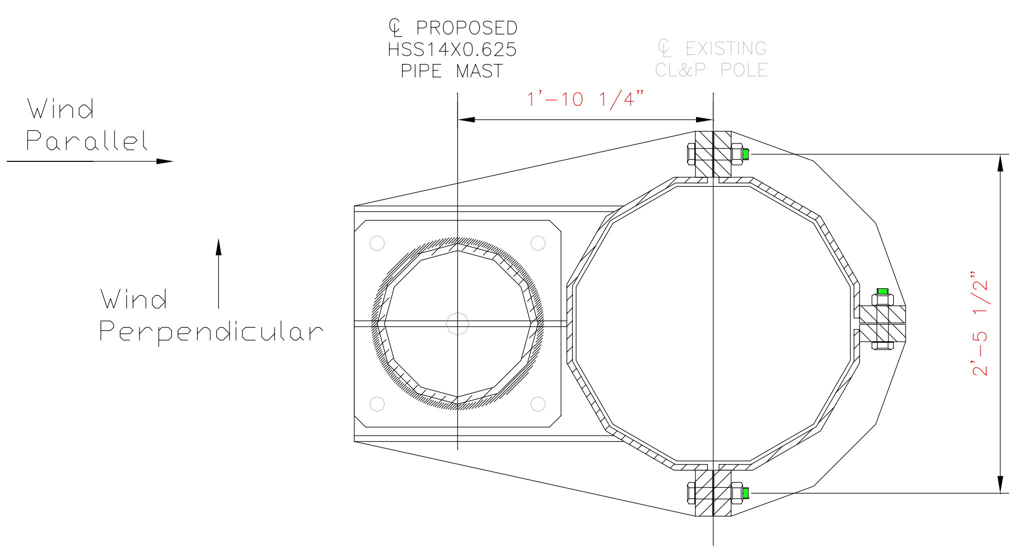
Vertical =	$Vert := 5.3 \cdot kips$	(User Input)
Horizontal =	$Horz := 24.2 \cdot kips$	(User Input)
Moment =	$Moment := 77.2 \cdot ft \cdot kips$	(User Input)

Bolt Data:

Bolt Grade =	A325	(User Input)
Number of Bolts =	$n_b := 12$	(User Input)
Bolt Diameter =	$d_b := 1.0in$	(User Input)
Allowable Tensile Stress =	$F_{t.all} := 45 \cdot ksi$	(User Input)
Allowable Shear Stress =	$F_{v.all} := 27 \cdot ksi$	(User Input)
Bolt Eccentricity from C.L. Mast =	$e := 22.25 \cdot in$	(User Input)
Horizontal Spacing Between Bolts =	$S_{horz} := 29.375 \cdot in$	(User Input)
Vetical Spacing From Plate CL to Bolt 1 =	$S_{vert1} := 2 \cdot in$	(User Input)
Vetical Spacing From Plate CL to Bolt 2 =	$S_{vert2} := 6 \cdot in$	(User Input)
Vetical Spacing From Plate CL to Bolt 3 =	$S_{vert3} := 10 \cdot in$	(User Input)

Bolt Polar Moment of Inertia = $I_p := 2 \cdot S_{vert1}^2 + 2 \cdot S_{vert2}^2 + 2 \cdot S_{vert3}^2 = 280 \cdot in^2$

Bolt Area = $a_b := \frac{1}{4} \cdot \pi \cdot d_b^2 = 0.785 \cdot in^2$



Check Bolt Stresses:

Wind Acting Parallel to Stiffiner Plate:

Shear Force per Bolt = $F_{v.conn} := \frac{Vert}{n_b} = 0.442 \cdot kips$

Shear Stress per Bolt = $F_{v.act} := \frac{F_{v.conn}}{a_b} = 0.562 \cdot ksi$

$Condition1 := if\left(F_{v.act} < F_{v.all}, "OK", "Overstressed"\right)$

$Condition1 = "OK"$

Allowable Tensile Stress Adjusted for Shear = $F_{t.adj} := \sqrt{F_{t.all}^{\,2} - 4.39 \cdot F_{v.act}^{\,2}} = 44.98 \cdot ksi$ (AISC 9th Ed. Table J3.3)

Moment From Mast Eccentricity = $M_{par} := Vert \cdot e + Moment = 1044.3 \cdot kips \cdot in$

Tension Force = $F_{tension} := Horz = 24.2 \cdot kips$

Tension Force Each Bolt = $F_{tension.bolt} := \frac{F_{tension}}{n_b} + \frac{M_{par} \cdot S_{vert3}}{2 \cdot I_p} = 20.665 \cdot kips$

Tension Stress Each Bolt = $F_{t.act} := \frac{F_{tension.bolt}}{a_b} = 26.3 \cdot ksi$

$Condition2 := if\left(F_{t.act} < F_{t.adj}, "OK", "Overstressed"\right)$

$Condition2 = "OK"$

Wind Acting Perpendicular to Stiffiner Plate:

Shear Force per Bolt = $F_{v.conn} := \sqrt{\left(\frac{Vert}{n_b} + \frac{Moment \cdot 2}{S_{horz} \cdot n_b}\right)^2 + \left(\frac{Horz}{n_b}\right)^2} = 6.044 \cdot kips$

Shear Stress per Bolt = $F_{v.act} := \frac{F_{v.conn}}{a_b} = 7.696 \cdot ksi$

$Condition3 := if\left(F_{v.act} < F_{v.all}, "OK", "Overstressed"\right)$

$Condition3 = "OK"$

Allowable Tensile Stress Adjusted for Shear = $F_{t.adj} := \sqrt{F_{t.all}^{\,2} - 4.39 \cdot F_{v.act}^{\,2}} = 42.01 \cdot ksi$ (AISC 9th Ed. Table J3.3)

Moment from Mast Eccentricity = $M_{perp} := Horz \cdot e = 538 \cdot kips \cdot in$

Tension Force per Bolt = $F_{tension.conn} := \frac{M_{perp} \cdot 2}{S_{horz} \cdot n_b} + \frac{Vert \cdot e \cdot S_{vert3}}{2 \cdot I_p} = 5.161 \cdot kips$

Tension Stress Each Bolt = $F_{tension.act} := \frac{F_{tension.conn}}{a_b} = 6.571 \cdot ksi$

$Condition4 := if\left(F_{tension.act} < F_{t.adj}, "OK", "Overstressed"\right)$

$Condition4 = "OK"$

Basic Components

Heavy Wind Pressure =	$p := 4.00$	psf	(User Input NESC 2007 Figure 250-1 & Table 250-1)
Basic Windspeed =	$V := 110$	mph	(User Input NESC 2007 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 = $TME := 113$ ft (User Input)

Multiplier Gust Response Factor = $m := 1.25$ (User Input - Only for NESC Extreme wind case)

NESC Factor = $kv := 1.43$ (User Input from NESC 2007 Table 250-3 equation)

Importance Factor = $I := 1.0$ (User Input from NESC 2007 Section 250.C.2)

Velocity Pressure Coefficient = $Kz := 2.01 \cdot \left(\frac{TME}{900}\right)^{\frac{2}{9.5}} = 1.299$ (NESC 2007 Table 250-2)

Exposure Factor = $Es := 0.346 \left[\frac{33}{(0.67 \cdot TME)}\right]^{\frac{1}{7}} = 0.307$ (NESC 2007 Table 250-3)

Response Term = $Bs := \frac{1}{\left(1 + 0.375 \cdot \frac{TME}{220}\right)} = 0.838$ (NESC 2007 Table 250-3)

Gust Response Factor = $Grf := \frac{\left[1 + \left(2.7 \cdot Es \cdot Bs^{\frac{1}{2}}\right)\right]}{kv^2} = 0.861$ (NESC 2007 Table 250-3)

Wind Pressure = $qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf \cdot I = 34.6$ psf (NESC 2007 Section 250.C.2)

NESC Extreme Ice w/ Wind Components

Heavy Wind Pressure =	$p_{ex} := 6.4$	psf	(User Input NESC 2007 Figure 250-3 & Table 250-4)
Radial Ice Thickness =	$Ir_{ex} := 0.75$	in	(User Input NESC 2007 Figure 250-3)

Shape Factors

NUS Design Criteria Issued April 12, 2007

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 Coax Cables Attached to Outside of Pole =	$Cd_{coax} := 1.6$	(User Input)

Overload Factors

NU Design Criteria Table

Overload Factors for Wind Loads:

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

Overload Factors for Vertical Loads:

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

Development of Wind & Ice Load on PCS Mast

PCS Mast Data: (HSS14x0.625)

Mast Shape =	Round		(User Input)
Mast Diameter =	$D_{mast} := 14$	in	(User Input)
Mast Length =	$L_{mast} := 30$	ft	(User Input)
Mast Thickness =	$t_{mast} := 0.625$	in	(User Input)

Gravity Loads (without ice)

Weight of the mast = Self Weight **(Computed internally by Risa-3D)** plf **BLC 1**

Gravity Loads (ice only)

Ice Area per Linear Foot = $Ai_{mast} := \frac{\pi}{4}\left[\left(D_{mast} + Ir \cdot 2\right)^2 - D_{mast}^{\ 2}\right] = 22.8$ sq in

Weight of Ice on Mast = $W_{ICEmast} := Id \cdot \frac{Ai_{mast}}{144} = 9$ plf **BLC 3**

Gravity Loads (Extreme ice only)

Extreme Ice Area per Linear Foot = $Ai_{ex.mast} := \frac{\pi}{4}\left[\left(D_{mast} + Ir_{ex} \cdot 2\right)^2 - D_{mast}^{\ 2}\right] = 34.8$ sq in

Weight of Extreme Ice on Mast = $W_{ICE.exmast} := Id \cdot \frac{Ai_{ex.mast}}{144} = 14$ plf **BLC 4**

Wind Load (NESC Heavy)

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{\left(D_{mast} + 2 \cdot Ir\right)}{12} = 1.25$ sf/ft

Total Mast Wind Force w/ Ice = $Fi_{mast} := p \cdot Cd_R \cdot AICE_{mast} = 7$ plf **BLC 5**

Wind Load (NESC Extreme)

Mast Projected Surface Area = $A_{mast} := \frac{D_{mast}}{12} = 1.167$ sf/ft

Total Mast Wind Force (Below NU Structure) = $F_{mast} := qz \cdot Cd_R \cdot A_{mast} = 53$ plf **BLC 6**

Total Mast Wind Force (Above NU Structure) = $F_{mast} := qz \cdot Cd_R \cdot A_{mast} \cdot m = 66$ plf **BLC 6**

Wind Load (NESC Extreme Ice w/ Wind)

Mast Projected Surface Area w/ Extreme Ice = $AICE_{ex.mast} := \frac{\left(D_{mast} + 2 \cdot Ir_{ex}\right)}{12} = 1.292$ sf/ft

Total Mast Wind Force w/ Extreme Ice = $Fi_{ex.mast} := p_{ex} \cdot Cd_R \cdot AICE_{ex.mast} = 11$ plf **BLC 7**

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model = Andrew SBNH-1D6565C

Antenna Shape = Flat (User Input)

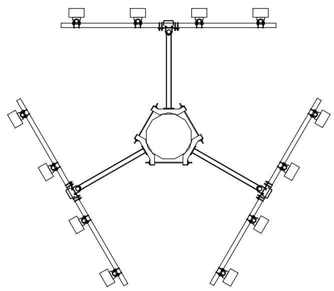
Antenna Height = $L_{ant} := 96.42$ in (User Input)

Antenna Width = $W_{ant} := 11.85$ in (User Input)

Antenna Thickness = $T_{ant} := 7.1$ in (User Input)

Antenna Weight = $WT_{ant} := 60.85$ lbs (User Input)

Number of Antennas = $N_{ant} := 9$ (User Input)



Gravity Load (without ice)

Weight of All Antennas = $WT_{ant} \cdot N_{ant} = 548$ lbs **BLC 2**

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 8112$ cu in

Volume of Ice on Each Antenna = $V_{ice} := \left(L_{ant} + 2 \cdot Ir\right)\left(W_{ant} + 2 \cdot Ir\right)\left(T_{ant} + 2 \cdot Ir\right) - V_{ant} = 2028$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 66$ lbs

Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 591$ lbs **BLC 3**

Gravity Load (Extreme ice only)

Volume of Extreme Ice on Each Antenna = $V_{ice.ex} := \left(L_{ant} + 2 \cdot Ir_{ex}\right)\left(W_{ant} + 2 \cdot Ir_{ex}\right)\left(T_{ant} + 2 \cdot Ir_{ex}\right) - V_{ant} = 3130$ cu in

Weight of Extreme Ice on Each Antenna = $W_{ICE.exant} := \frac{V_{ice.ex}}{1728} \cdot Id = 101$ lbs

Weight of Extreme Ice on All Antennas = $W_{ICE.exant} \cdot N_{ant} = 913$ lbs **BLC 4**

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{\left(L_{ant} + 2 \cdot Ir\right) \cdot \left(W_{ant} + 2 \cdot Ir\right)}{144} = 8.7$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 78.2$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant} := p \cdot Cd_F \cdot A_{ICEant} = 501$ lbs **BLC 5**

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 7.9$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 71.4$ sf

Total Antenna Wind Force = $F_{ant} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 4944$ lbs **BLC 6**

Wind Load (NESC Extreme Ice w/ Wind)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Extreme Ice = $SA_{ICE.exant} := \frac{(L_{ant} + 2 \cdot Ir_{ex}) \cdot (W_{ant} + 2 \cdot Ir_{ex})}{144} = 9.1$ sf

Antenna Projected Surface Area w/ Extreme Ice = $A_{ICE.exant} := SA_{ICE.exant} \cdot N_{ant} = 81.7$ sf

Total Antenna Wind Force w/ Extreme Ice = $Fi_{ex.ant} := p_{ex} \cdot Cd_F \cdot A_{ICE.exant} = 837$ lbs **BLC 7**

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model = CCI OPA-65R-LCUU-H8

Antenna Shape = Flat (User Input)

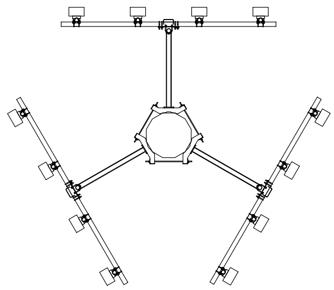
Antenna Height = $L_{ant} := 92.7$ in (User Input)

Antenna Width = $W_{ant} := 14.4$ in (User Input)

Antenna Thickness = $T_{ant} := 7.0$ in (User Input)

Antenna Weight = $WT_{ant} := 90$ lbs (User Input)

Number of Antennas = $N_{ant} := 3$ (User Input)



Gravity Load (without ice)

Weight of All Antennas = $WT_{ant} \cdot N_{ant} = 270$ lbs **BLC 2**

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 9344$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 2 \cdot Ir)(W_{ant} + 2 \cdot Ir)(T_{ant} + 2 \cdot Ir) - V_{ant} = 2200$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 71$ lbs

Weight of Ice on All Antennas = $W_{ICEant} \cdot N_{ant} = 214$ lbs **BLC 3**

Gravity Load (Extreme ice only)

Volume of Extreme Ice on Each Antenna = $V_{ice.ex} := (L_{ant} + 2 \cdot Ir_{ex})(W_{ant} + 2 \cdot Ir_{ex})(T_{ant} + 2 \cdot Ir_{ex}) - V_{ant} = 3387$ cu in

Weight of Extreme Ice on Each Antenna = $W_{ICE.exant} := \frac{V_{ice.ex}}{1728} \cdot Id = 110$ lbs

Weight of Extreme Ice on All Antennas = $W_{ICE.exant} \cdot N_{ant} = 329$ lbs **BLC 4**

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 2 \cdot Ir) \cdot (W_{ant} + 2 \cdot Ir)}{144} = 10$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 30.1$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant} := p \cdot Cd_F \cdot A_{ICEant} = 192$ lbs **BLC 5**

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 9.3$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 27.8$ sf

Total Antenna Wind Force = $F_{ant} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 1925$ lbs **BLC 6**

Wind Load (NESC Extreme Ice w/ Wind)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

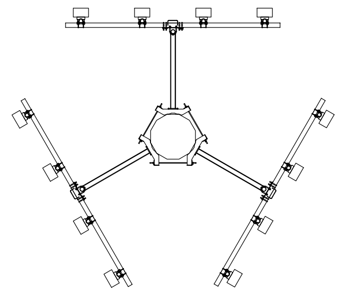
Surface Area for One Antenna w/ Extreme Ice = $SA_{ICE.exant} := \frac{(L_{ant} + 2 \cdot Ir_{ex}) \cdot (W_{ant} + 2 \cdot Ir_{ex})}{144} = 10.4$ sf

Antenna Projected Surface Area w/ Extreme Ice = $A_{ICE.exant} := SA_{ICE.exant} \cdot N_{ant} = 31.2$ sf

Total Antenna Wind Force w/ Extreme Ice = $Fi_{ex.ant} := p_{ex} \cdot Cd_F \cdot A_{ICE.exant} = 320$ lbs **BLC 7**

Development of Wind & Ice Load on TMA's

TMA Data:



TMA Model =	CCI DTMABP7819VG12A		
TMA Shape =	Flat		(User Input)
TMA Height =	$L_{TMA} := 14.25$	in	(User Input)
TMA Width =	$W_{TMA} := 11.46$	in	(User Input)
TMA Thickness =	$T_{TMA} := 4.17$	in	(User Input)
TMA Weight =	$WT_{TMA} := 20$	lbs	(User Input)
Number of TMA's =	$N_{TMA} := 12$		(User Input)

Gravity Load (without ice)

Weight of All TMA's = $WT_{TMA} \cdot N_{TMA} = 240$ lbs **BLC 2**

Gravity Load (ice only)

Volume of Each TMA = $V_{TMA} := L_{TMA} \cdot W_{TMA} \cdot T_{TMA} = 681$ cu in

Volume of Ice on Each TMA = $V_{ice} := \left(L_{TMA} + 2 \cdot Ir\right)\left(W_{TMA} + 2 \cdot Ir\right)\left(T_{TMA} + 2 \cdot Ir\right) - V_{TMA} = 301$ cu in

Weight of Ice on Each TMA = $W_{ICETMA} := \frac{V_{ice}}{1728} \cdot Id = 10$ lbs

Weight of Ice on All TMA's = $W_{ICETMA} \cdot N_{TMA} = 117$ lbs **BLC 3**

Gravity Load (Extreme ice only)

Volume of Extreme Ice on Each TMA = $V_{ice.ex} := \left(L_{TMA} + 2 \cdot Ir_{ex}\right)\left(W_{TMA} + 2 \cdot Ir_{ex}\right)\left(T_{TMA} + 2 \cdot Ir_{ex}\right) - V_{TMA} = 476$ cu in

Weight of Extreme Ice on Each TMA = $W_{ICE.exTMA} := \frac{V_{ice.ex}}{1728} \cdot Id = 15$ lbs

Weight of Extreme Ice on All TMA's = $W_{ICE.exTMA} \cdot N_{TMA} = 185$ lbs **BLC 4**

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all TMA's Simultaneously

Surface Area for One TMA w/ Ice = $SA_{ICETMA} := \frac{\left(L_{TMA} + 2 \cdot Ir\right) \cdot \left(W_{TMA} + 2 \cdot Ir\right)}{144} = 1.3$ sf

TMA Projected Surface Area w/ Ice = $A_{ICETMA} := SA_{ICETMA} \cdot N_{TMA} = 15.8$ sf

Total TMA Wind Force w/ Ice = $Fi_{TMA} := p \cdot Cd_F \cdot A_{ICETMA} = 101$ lbs **BLC 5**

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all TMA's Simultaneously

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

TMA Projected Surface Area = $A_{TMA} := SA_{TMA} \cdot N_{TMA} = 13.6$ sf

Total TMA Wind Force = $F_{TMA} := qz \cdot Cd_F \cdot A_{TMA} \cdot m = 942$ lbs **BLC 6**

Wind Load (NESC Extreme Ice w/ Wind)

Assumes Maximum Possible Wind Pressure Applied to all TMA's Simultaneously

Surface Area for One TMA w/ Extreme Ice = $SA_{ICE.exTMA} := \frac{(L_{TMA} + 2 \cdot Ir_{ex}) \cdot (W_{TMA} + 2 \cdot Ir_{ex})}{144} = 1.4$ sf

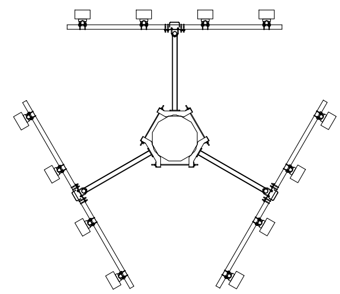
TMA Projected Surface Area w/ Extreme Ice = $A_{ICE.exTMA} := SA_{ICE.exTMA} \cdot N_{TMA} = 17$ sf

Total TMA Wind Force w/ Extreme Ice = $Fi_{ex.TMA} := p_{ex} \cdot Cd_F \cdot A_{ICE.exTMA} = 174$ lbs **BLC 7**

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: Location: Rev. 0: 6/8/15	Load Analysis of Antenna Mast and AT&T Equipment on Pole #3848 Orange, CT Prepared by: T.J.L Checked by: C.F.C. Job No. 15066.000

Development of Wind & Ice Load on Antenna Mounts

Mount Data:



Mount Type: Site Pro Triple T-Arm for 12 Antennas

Mount Shape = Flat

Mount Projected Surface Area = $CdAa := 24.2$ sf (User Input)

Mount Projected Surface Area w/ Ice = $CdAa_{ice} := 30.7$ sf (User Input)

Mount Projected Surface Area w/ Extreme Ice = $CdAa_{ice.ex} := 37.3$ sf (User Input)

Mount Weight = $WT_{mnt} := 1316$ lbs (User Input)

Mount Weight w/ Ice = $WT_{mnt.ice} := 1677$ lbs (User Input)

Mount Weight w/ Extreme Ice = $WT_{mnt.ice.ex} := 2128$ lbs (User Input)

Gravity Loads (without ice)

Weight of All Mounts = $WT_{mnt} = 1316$ lbs **BLC 2**

Gravity Load (ice only)

Weight of Ice on All Mounts = $WT_{mnt.ice} - WT_{mnt} = 361$ lbs **BLC 3**

Gravity Load (Extreme ice only)

Weight of Extreme Ice on All Mounts = $WT_{mnt.ice.ex} - WT_{mnt} = 812$ lbs **BLC 4**

Wind Load (NESC Heavy)

Total Mount Wind Force w/ Ice = $Fi_{mnt} := p \cdot CdAa_{ice} = 123$ lbs **BLC 5**

Wind Load (NESC Extreme)

Total Mount Wind Force = $F_{mnt} := qz \cdot CdAa \cdot m = 1047$ lbs **BLC 6**

Wind Load (NESC Extreme Ice w/ Wind)

Total Mount Wind Force w/ Extreme Ice = $Fi_{ex.mnt} := p_{ex} \cdot CdAa_{ice.ex} = 239$ lbs **BLC 7**

Development of Wind & Ice Load on Coax Cables

Coax Cable Data:

Coax Type = HELIAX 1-5/8"

Shape = Round (User Input)

Coax Outside Diameter = $D_{coax} := 1.98$ in (User Input)

Coax Cable Length = $L_{coax} := 27$ ft (User Input)

Weight of Coax per foot = $Wt_{coax} := 1.04$ plf (User Input)

Total Number of Coax = $N_{coax} := 24$ (User Input)

No. of Coax Projecting Outside Face of PCS Mast = $NP_{coax} := 6$ (User Input)

Gravity Loads (without ice)

Weight of all cables w/o ice = $WT_{coax} := Wt_{coax} \cdot N_{coax} = 25$ plf **BLC 2**

Gravity Load (ice only)

Ice Area per Linear Foot = $Ai_{coax} := \frac{\pi}{4}\left[\left(D_{coax} + 2 \cdot Ir\right)^2 - D_{coax}{}^2\right] = 3.9$ sq in

Ice Weight All Coax per foot = $WTi_{coax} := N_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 36$ plf **BLC 3**

Gravity Loads (Extreme ice only)

Extreme Ice Area per Linear Foot = $Ai_{ex.coax} := \frac{\pi}{4}\left[\left(D_{coax} + 2 \cdot Ir_{ex}\right)^2 - D_{coax}{}^2\right] = 6.4$ sq in

Extreme Ice Weight All Coax per foot = $W_{ICE.excoax} := N_{coax} \cdot Id \cdot \frac{Ai_{ex.coax}}{144} = 60$ plf **BLC 4**

Wind Load (NESC Heavy)

Coax projected surface area w/ Ice = $AICE_{coax} := \frac{NP_{coax} \cdot \left(D_{coax} + 2 \cdot Ir\right)}{12} = 1.5$ sf/ft

Total Coax Wind Force w/ Ice = $Fi_{coax} := p \cdot Cd_{coax} \cdot AICE_{coax} = 10$ plf **BLC 5**

Wind Load (NESC Extreme)

Coax projected surface area = $A_{coax} := \frac{\left(NP_{coax} D_{coax}\right)}{12} = 1$ sf/ft

Total Coax Wind Force (Above NU Structure) = $F_{coax} := qz \cdot Cd_{coax} \cdot A_{coax} \cdot m = 69$ plf **BLC 6**

Wind Load (NESC Extreme Ice w/ Wind)

Coax Projected Surface Area w/ Extreme Ice = $AICE_{ex.coax} := \frac{NP_{coax} \cdot \left(D_{coax} + 2 \cdot Ir_{ex}\right)}{12} = 1.74$ sf/ft

Total Coax Wind Force w/ Extreme Ice = $Fi_{ex.coax} := p_{ex} \cdot Cd_{coax} \cdot AICE_{ex.coax} = 18$ plf **BLC 7**

CENTEK engineering, INC.
Consulting Engineers
63-2 North Branford Road
Branford, CT 06405
Ph. 203-488-0580 / Fax. 203-488-8587

Subject: **Analysis of NESC Wind and Ice Loads for Obtaining Structure Reactions Applied to CL&P Pole Tabulated Load Cases**

Location: **Orange, CT**

Date:6/8/15 Prepared by: T.J.L. Checked by: C.F.C. Job No. 15066.000

Load Case	Description
1	Self Weight (Mast)
2	Weight of Appurtenances
3	Weight of Ice Only
4	Weight of Extreme Ice Only
5	NESC Heavy Wind
6	NESC Extreme Wind
7	NESC Extreme Ice w/ Wind

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Branford, CT 06405
Ph. 203-488-0580 / Fax. 203-488-8587

Subject: **Analysis of NESC Wind and Ice Loads for Obtaining Structure Reactions Applied to CL&P Pole Load Combinations Table**

Location: **Orange, CT**

Date: 6/8/15 Prepared by: T.J.L. Checked by: C.F.C. Job No. 15066.000

Load Combination	Description	Envelope Soultion	Wind Factor	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	NESC Heavy Wind		1		1	1.5	2	1.5	3	1.5	5	2.5		
2	NESC Extreme Wind		1		1	1	2	1	6	1				
3	NESC Extreme Ice w/ Wind		1		1	1	2	1	4	1	7	1		

Footnotes:
(1) BLC = Basic Load Case

Global

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Increase Nailing Capacity for Wind?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automaticly Iterate Stiffness for Walls?	No
Maximum Iteration Number 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 9th: ASD
RISAConnection Code	AISC 14th(360-10): ASD
Cold Formed Steel Code	AISI 1999: ASD
Wood Code	AF&PA NDS-97: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-02
Masonry Code	ACI 530-05: ASD
Aluminum Code	AA ADM1-05: ASD - Building

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

Global, Continued

Seismic Code	UBC 1997
Seismic Base Elevation (ft)	Not Entered
Add Base Weight?	No
Ct Z	.035
Ct X	.035
T Z (sec)	Not Entered
T X (sec)	Not Entered
R Z	8.5
R X	8.5
Ca	.36
Cv	.54
Nv	1
Occupancy Category	4
Seismic Zone	3
Seismic Detailing Code	ASCE 7-05
Om Z	1
Om X	1
Rho Z	1
Rho X	1

Footing Overturning Safety Factor	1.5
Check Concrete Bearing	No
Footing Concrete Weight (k/ft^3)	0
Footing Concrete f'c (ksi)	3
Footing Concrete Ec (ksi)	4000
Lamda	1
Footing Steel fy (ksi)	60
Minimum Steel	0.0018
Maximum Steel	0.0075
Footing Top Bar	#3
Footing Top Bar Cover (in)	3.5
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 (\1...	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 Design Parameters

	Label	Shape	Leng...	Lbyy[ft]	Lbzz[ft]	Lcomp ...	Lcomp ...	Kyy	Kzz	Cm...	Cm...	Cb	y s...	z s...	Functi...
1	M1	Mast	30												Lateral

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Ru...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Mast	HSS14X.625	Beam	Pipe	A500 Gr.42	Typical	24.5	552	552	1100

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design R...
1	M1	BOTCO...	TOPMA...			Mast	Beam	Pipe	A500 Gr.42	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From D...
1	BOTCONNECTION	0	0	0	0	
2	TOPCONNECTION	0	10	0	0	
3	TOPMAST	0	30	0	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]	Footing
1	BOTCONNECTION	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction	
2	TOPCONNECTION	Reaction		Reaction				

Member Point Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.548	28
2	M1	Y	-.27	28
3	M1	Y	-.24	28
4	M1	Y	-1.316	28

Member Point Loads (BLC 3 : Weight of Ice Only)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.591	28
2	M1	Y	-.214	28
3	M1	Y	-.117	28
4	M1	Y	-.361	28

Member Point Loads (BLC 4 : Weight of Extreme Ice Only)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.913	28
2	M1	Y	-.329	28
3	M1	Y	-.185	28
4	M1	Y	-.812	28

Member Point Loads (BLC 5 : NESC Heavy Wind)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.501	28
2	M1	X	.192	28
3	M1	X	.101	28
4	M1	X	.123	28

Member Point Loads (BLC 6 : NESC Extreme Wind)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	4.944	28
2	M1	X	1.925	28
3	M1	X	.942	28
4	M1	X	1.047	28

Member Point Loads (BLC 7 : NESC Extreme Ice w/ Wind)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.837	28
2	M1	X	.32	28
3	M1	X	.174	28
4	M1	X	.239	28

Joint Loads and Enforced Displacements

Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*s^2*ft)]
No Data to Print ...			

Member Distributed Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.025	-.025	13	28

Member Distributed Loads (BLC 3 : Weight of Ice Only)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.009	-.009	0	0
2	M1	Y	-.036	-.036	13	28

Member Distributed Loads (BLC 4 : Weight of Extreme Ice Only)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.014	-.014	0	0
2	M1	Y	-.06	-.06	13	28

Member Distributed Loads (BLC 5 : NESC Heavy Wind)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.007	.007	0	0
2	M1	X	.01	.01	13	28

Member Distributed Loads (BLC 6 : NESC Extreme Wind)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.053	.053	0	13
2	M1	X	.066	.066	13	30

Member Distributed Loads (BLC 6 : NESC Extreme Wind) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
3	M1	X	.069	.069	13	28

Member Distributed Loads (BLC 7 : NESC Extreme Ice w/ Wind)

	Member Label	Direction	Start Magnitude[k/ft,F]	End Magnitude[k/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.011	.011	0	0
2	M1	X	.018	.018	13	28

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gra...	Z Grav...	Joint	Point	Distrib...	Area(...	Surfac...
1	Self Weight (AntennaMast)	None		-1						
2	Weight of Appurtenances	None					4	1		
3	Weight of Ice Only	None					4	2		
4	Weight of Extreme Ice Only	None					4	2		
5	NESC Heavy Wind	None					4	2		
6	NESC Extreme Wind	None					4	3		
7	NESC Extreme Ice w/ Wind	None					4	2		

Load Combinations

	Description	Solve	PD...	SR...	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	NESC Heavy Wind	Yes			1	1.5	2	1.5	3	1.5	5	2.5								
2	NESC Extreme Wind	Yes			1	1	2	1	6	1										
3	NESC Extreme Ice ...	Yes			1	1	2	1	4	1	7	1								
4	Self Weight				1	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	BOTCONNE...	max	26.571	2	11.015	1	0	1	0	1	0	1	-15.394	3
2		min	4.814	3	5.25	2	0	1	0	1	0	1	-84.91	2
3	TOPCONNE...	max	-6.984	3	0	1	0	1	0	1	0	1	0	1
4		min	-38.275	2	0	1	0	1	0	1	0	1	0	1
5	Totals:	max	-2.17	3	11.015	1	0	1						
6		min	-11.704	2	5.25	2	0	1						

Joint Reactions

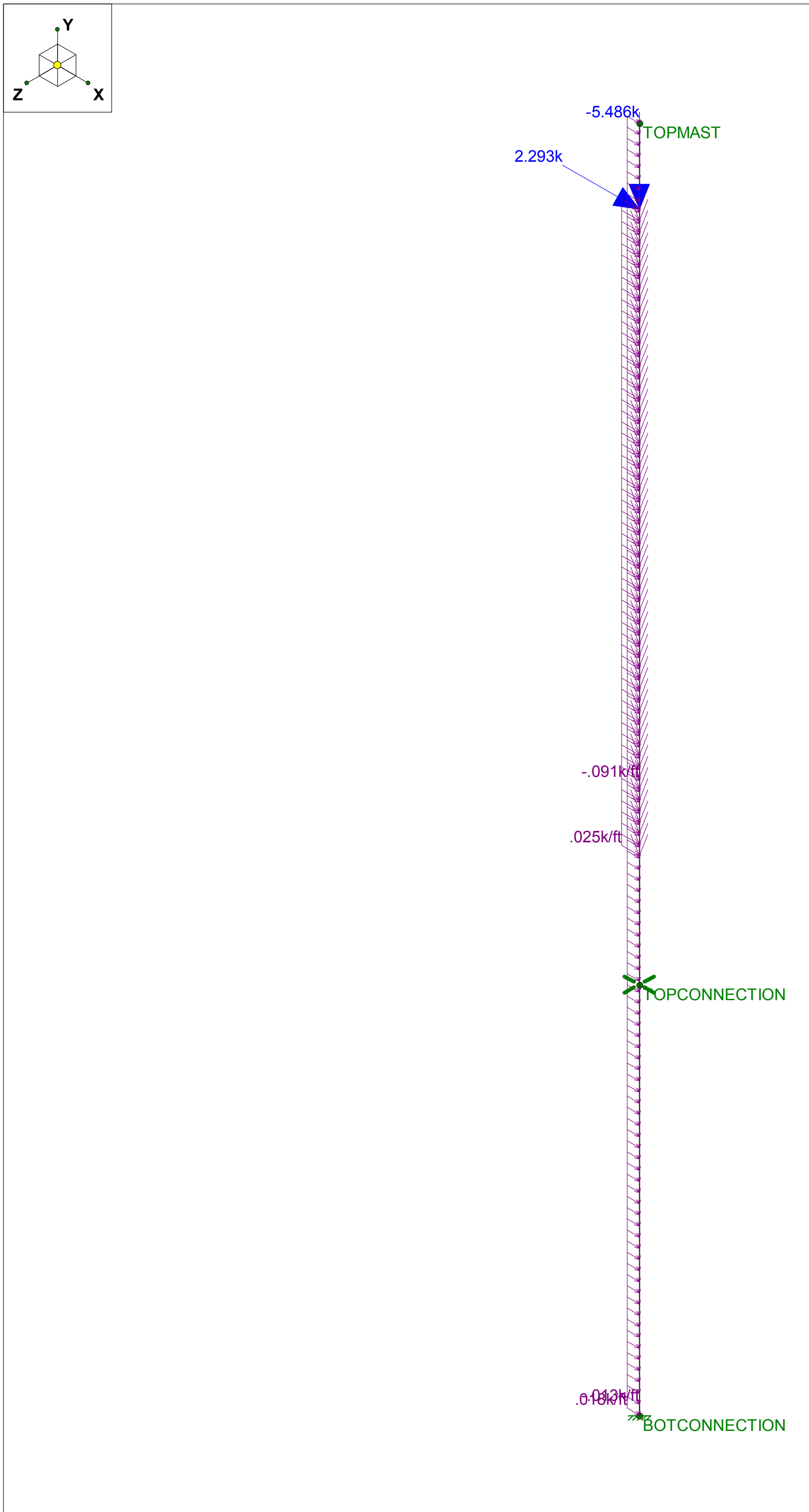
	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	BOTCONNECTION	7.033	11.015	0	0	0	-22.5
2	1	TOPCONNECTION	-10.225	0	0	0	0	0
3	1	Totals:	-3.192	11.015	0			
4	1	COG (ft):	X: 0	Y: 22.16	Z: 0			

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	2	BOTCONNECTION	26.571	5.25	0	0	0	-84.91
2	2	TOPCONNECTION	-38.275	0	0	0	0	0
3	2	Totals:	-11.704	5.25	0			
4	2	COG (ft):	X: 0	Y: 21.271	Z: 0			

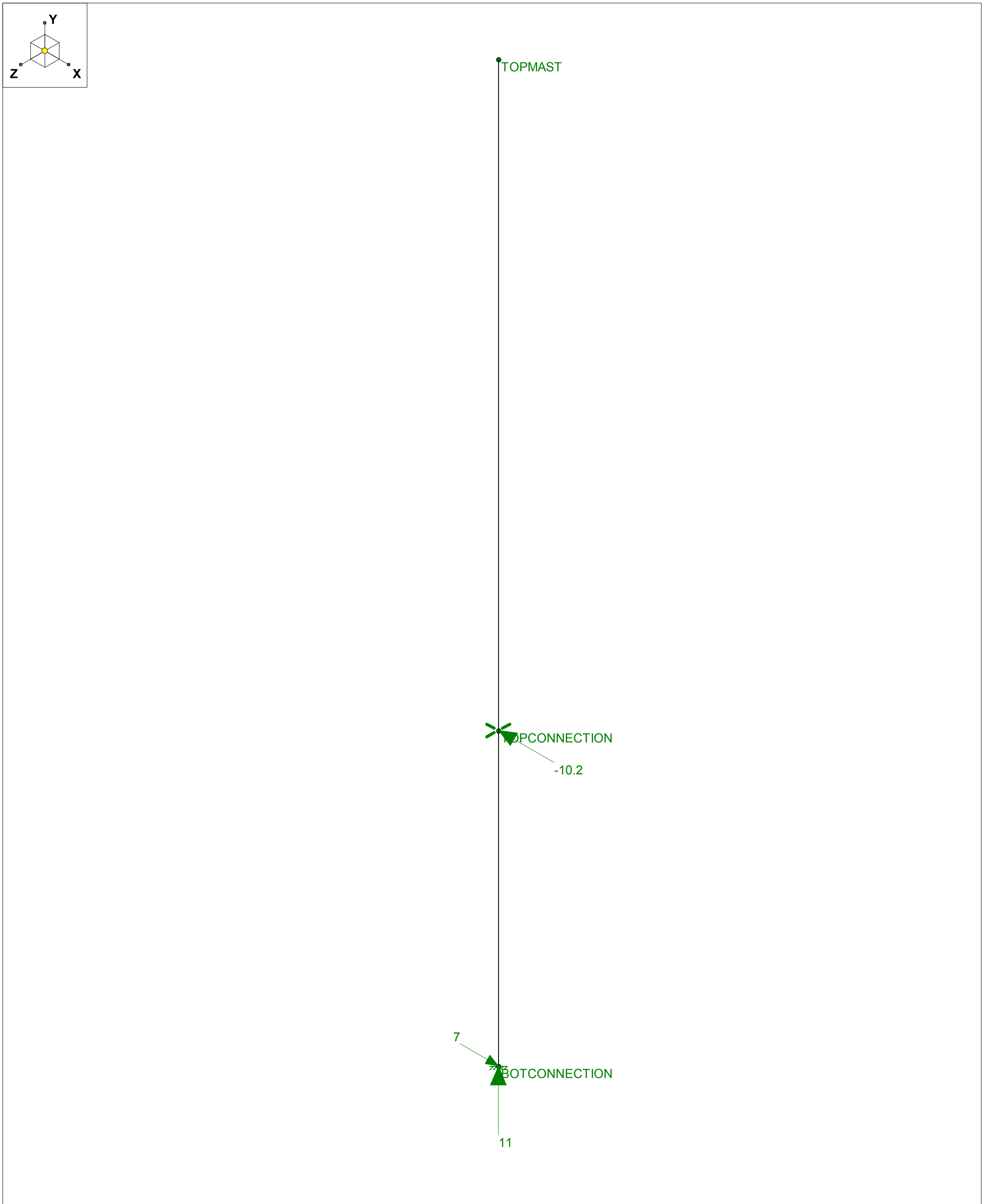
Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	3	BOTCONNECTION	4.814	8.809	0	0	0	-15.394
2	3	TOPCONNECTION	-6.984	0	0	0	0	0
3	3	Totals:	-2.17	8.809	0			
4	3	COG (ft):	X: 0	Y: 22.604	Z: 0			

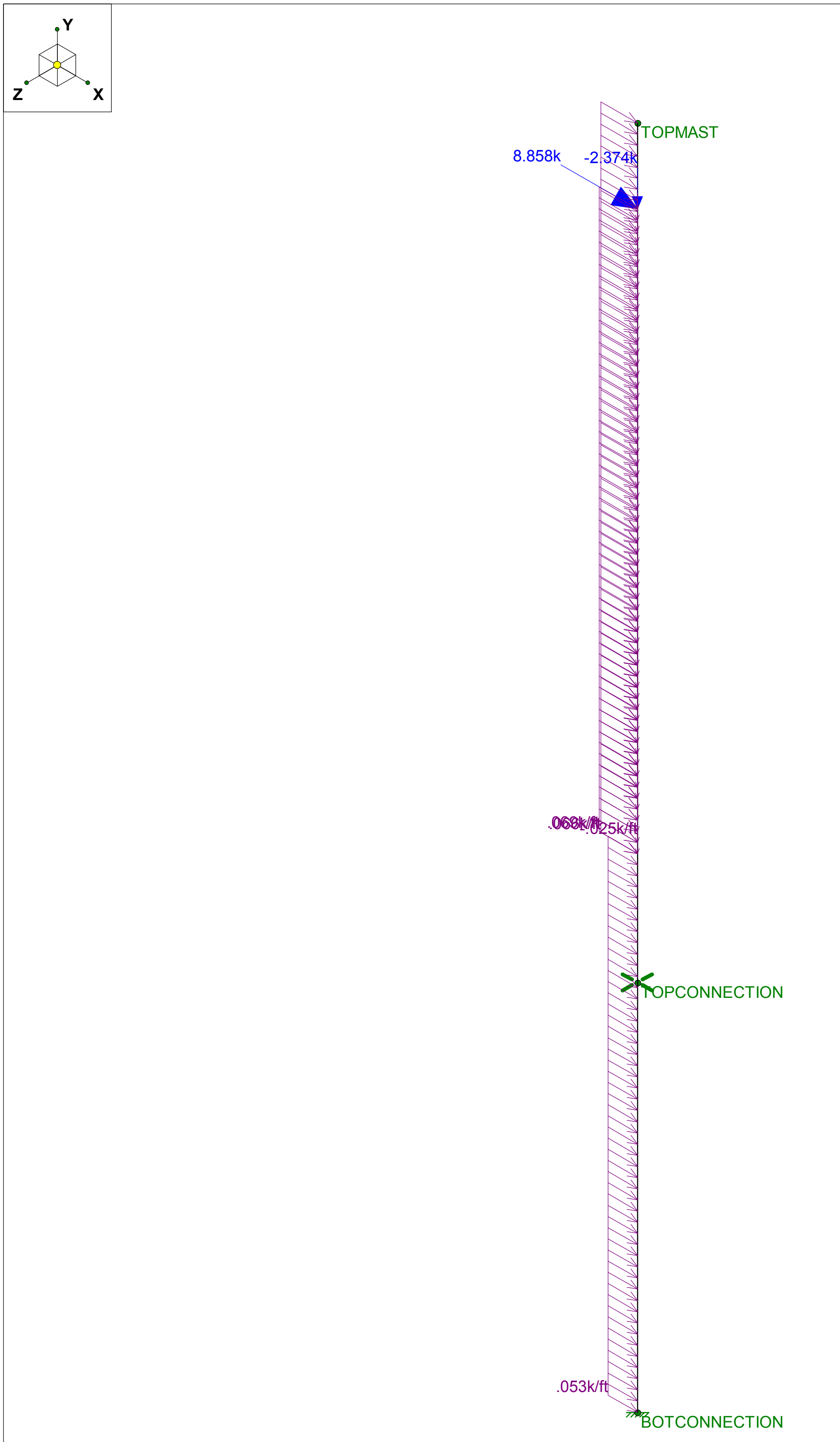


Loads: LC 1, NESC Heavy Wind

CENTEK Engineering, INC.		
tjl, cfc	Pole # 3848 - Mast	June 8, 2015 at 10:20 AM
15066.000/ AT&T CT2267	LC #1 Loads	NESC Loads.r3d



CENTEK Engineering, INC.	Pole # 3848 - Mast	
tjl, cfc		June 8, 2015 at 10:22 AM
15066.000/ AT&T CT2267	LC #1 Reactions	NESC Loads.r3d



Loads: LC 2, NESC Extreme Wind

CENTEK Engineering, INC.		
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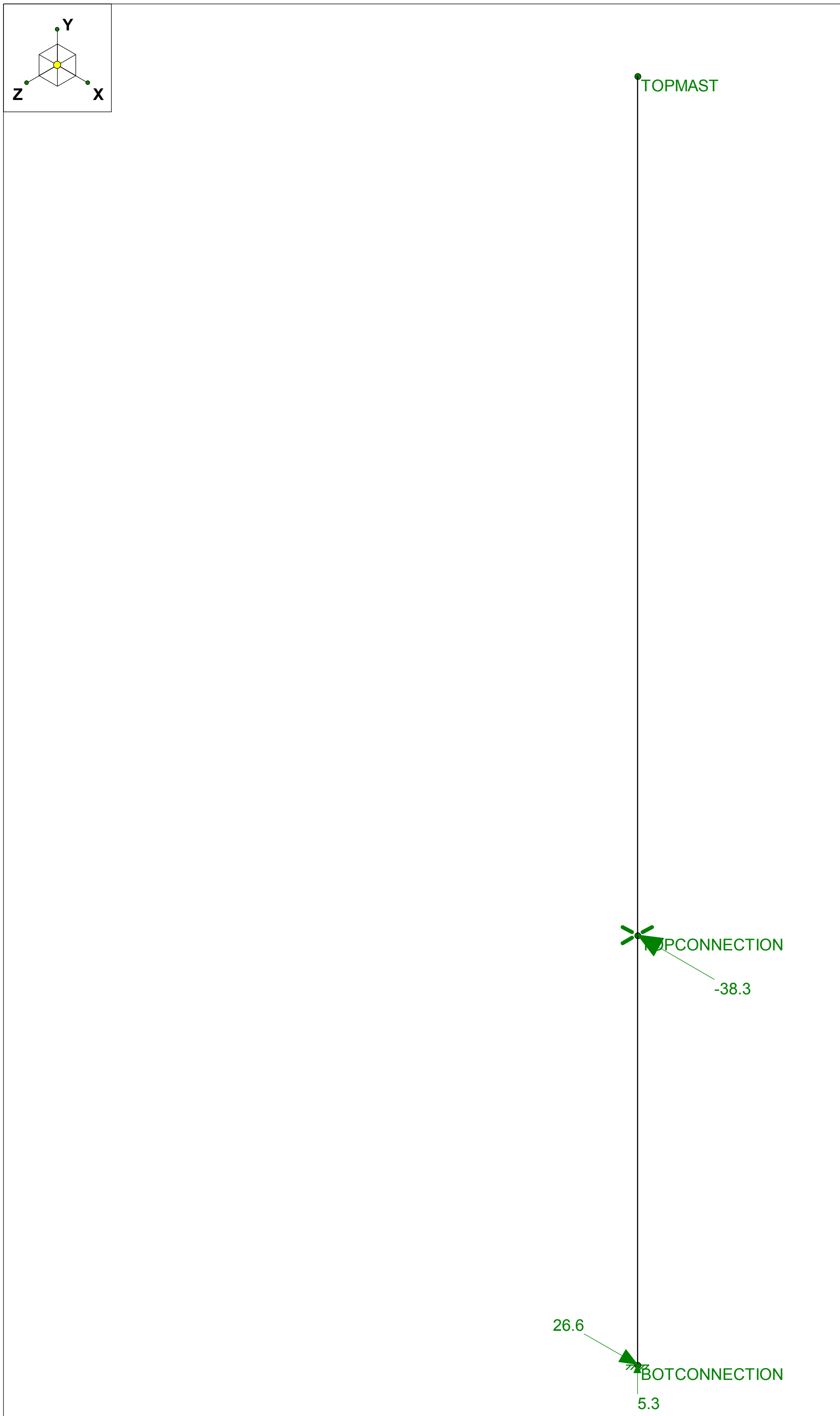
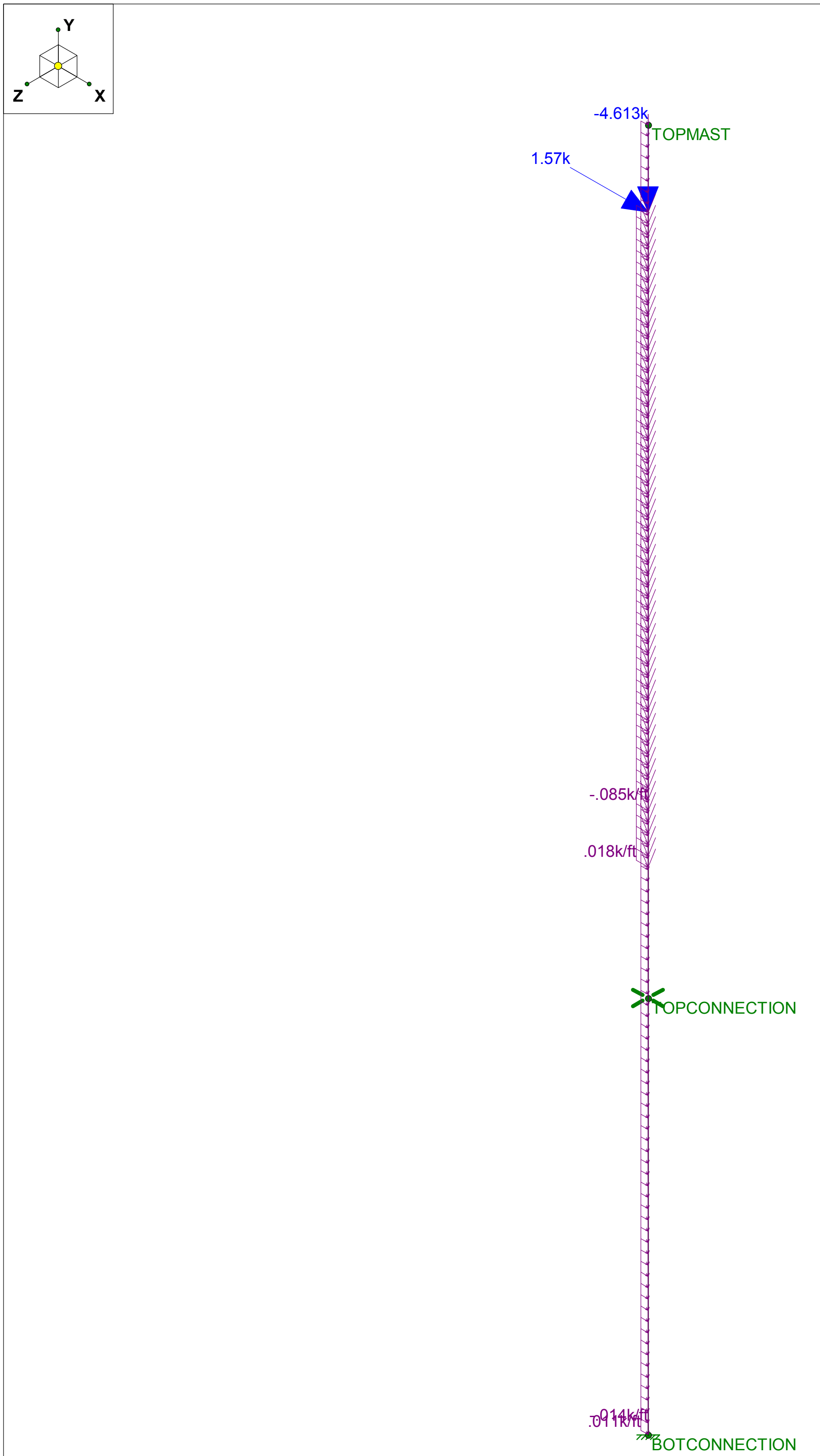
15066.000/ AT&T CT2267	LC #2 Loads	NESC Loads.r3d

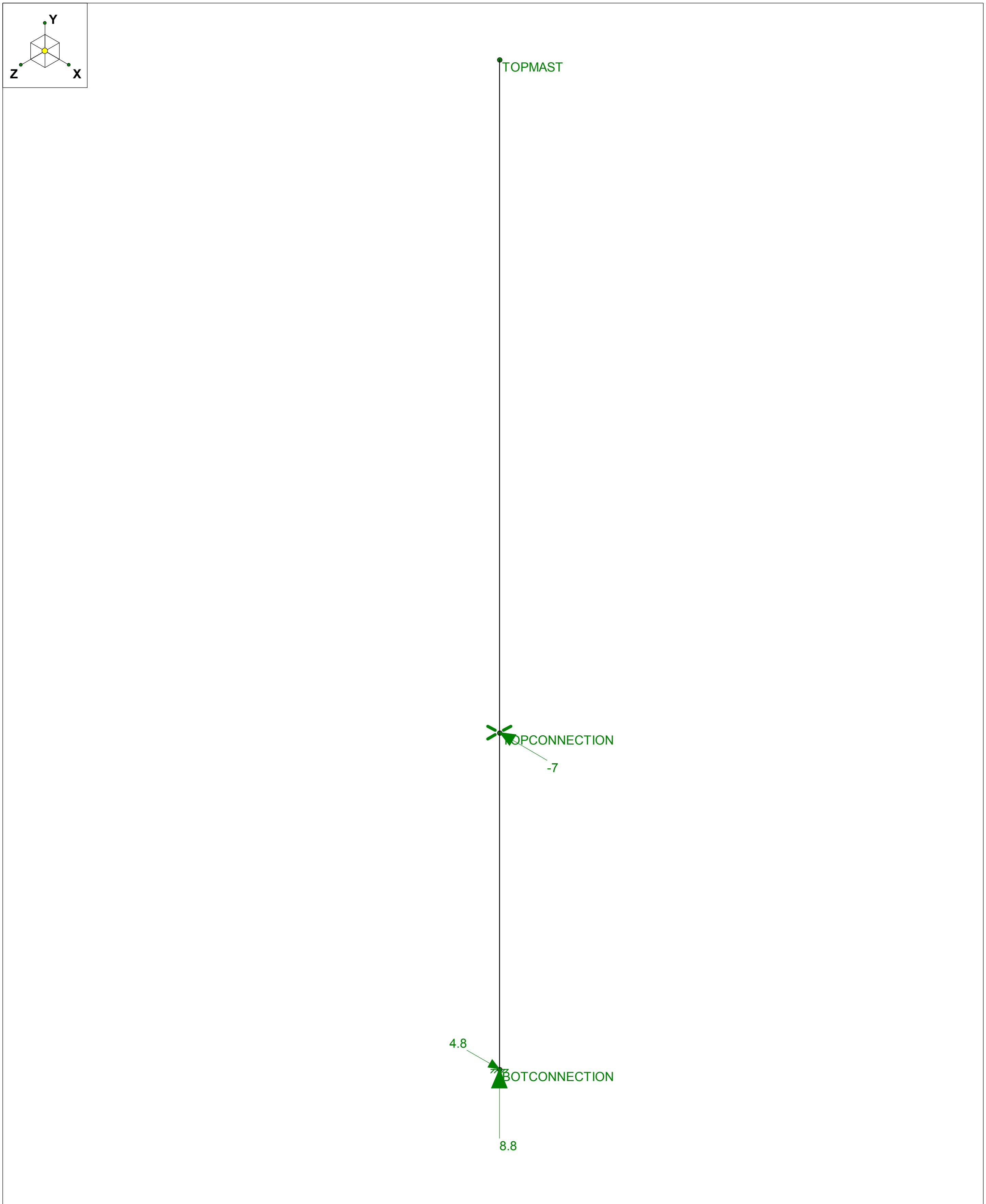


CENTEK Engineering, INC.		
tjl, cfc	Pole # 3848 - Mast	June 8, 2015 at 10:23 AM
15066.000/ AT&T CT2267	LC #2 Reactions	NESC Loads.r3d



Loads: LC 3, NESC Extreme Ice w/ Wind

CENTEK Engineering, INC.		
tjl, cfc	Pole # 3848 - Mast	June 8, 2015 at 10:21 AM
15066.000/ AT&T CT2267	LC #3 Loads	NESC Loads.r3d



CENTEK Engineering, INC.		
tjl, cfc	Pole # 3848 - Mast	June 8, 2015 at 10:23 AM
15066.000/ AT&T CT2267	LC #3 Reactions	NESC Loads.r3d

Coax Cable on CL&P Pole

Distance Between Coax Cable Attach Points =

Coaxial Cable Span $Coax_{Span} := \begin{pmatrix} 15 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \end{pmatrix} \cdot ft$ *(User Input)*

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 = $NP_{coax} := 6$ *(User Input)*

Extreme Wind Pressure = $qz := 34.5 \cdot psf$ *(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 = $p_{ex} := 6.4 \cdot psf$ *(User Input)*

Extreme Radial Ice Thickness = $Ir_{ex} := 0.75 \cdot in$ *(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 = $A := \left(NP_{coax} \cdot D_{coax}\right) = 11.88 \cdot in$

Wind Area with Ice = $A_{ice} := \left(NP_{coax} \cdot D_{coax} + 2 \cdot Ir\right) = 12.88 \cdot in$

Wind Area with Extreme Ice = $A_{ice.ex} := \left(NP_{coax} \cdot D_{coax} + 2 \cdot Ir_{ex}\right) = 13.38 \cdot in$

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 = $Ai_{coax.ex} := \frac{\pi}{4} \cdot \left[\left(D_{coax} + 2 \cdot Ir_{ex}\right)^2 - D_{coax}^2\right] = 0.045\,ft^2$

Weight of Extreme Ice on All Coax Cables = $W_{ice.ex} := Ai_{coax.ex} \cdot Id \cdot N_{coax} = 60.036 \cdot plf$

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 =

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

$$Heavy\_WInd_{Vert} = \begin{pmatrix} 1380 \\ 920 \\ 920 \\ 920 \\ 920 \\ 920 \\ 920 \\ 920 \\ 920 \end{pmatrix} lb \qquad Heavy\_Wind_{Trans} = \begin{pmatrix} 258 \\ 172 \\ 172 \\ 172 \\ 172 \\ 172 \\ 172 \\ 172 \\ 172 \end{pmatrix} lb$$

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 =

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

$$Extreme\_Wind_{Vert} = \begin{pmatrix} 374 \\ 250 \\ 250 \\ 250 \\ 250 \\ 250 \\ 250 \\ 250 \\ 250 \end{pmatrix} lb \qquad Extreme\_Wind_{Trans} = \begin{pmatrix} 820 \\ 546 \\ 546 \\ 546 \\ 546 \\ 546 \\ 546 \\ 546 \\ 546 \end{pmatrix} lb$$

Extreme Ice w/ Wind Vertical Load =

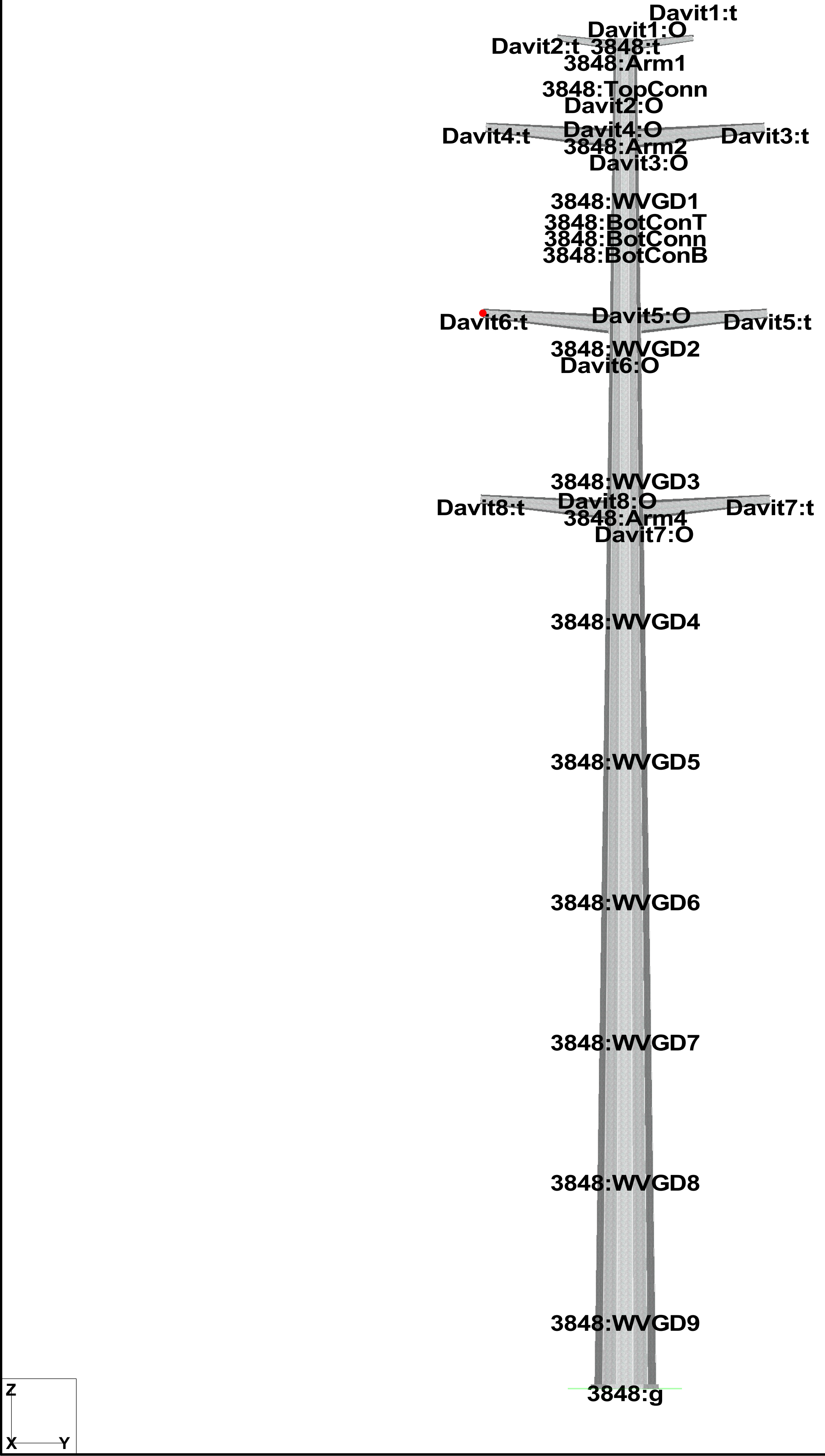
$$Extreme\_Ice_{Vert} := \overrightarrow{\left[\left(N_{coax} \cdot W_{coax} + W_{ice.ex}\right) \cdot Coax_{Span} \cdot OF_{EIV}\right]}$$

Extreme Ice w/ Wind Transverse Load =

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

$$Extreme\_Ice_{Vert} = \begin{pmatrix} 1275 \\ 850 \\ 850 \\ 850 \\ 850 \\ 850 \\ 850 \\ 850 \\ 850 \end{pmatrix} lb \qquad Extreme\_Ice_{Trans} = \begin{pmatrix} 171 \\ 114 \\ 114 \\ 114 \\ 114 \\ 114 \\ 114 \\ 114 \\ 114 \end{pmatrix} lb$$

Centek Engineering Inc, Project: "cl&p structure # 3848"
PLS-POLE Version 12.50, 10:34:17 AM Monday, June 08, 2015
Undeformed geometry displayed



Project Name : 15066.000 - Orange, CT
Project Notes: Pole # 3848/ AT&T - CT2267
Project File : J:\Jobs\1506600.WI\04_Structural\Calcs\PLS-Pole\cl&p structure # 3848.pol
Date run : 10:33:27 AM Monday, June 08, 2015
by : PLS-POLE Version 12.50
Licensed to : Centek Engineering Inc

Successfully performed nonlinear analysis

The model has 0 warnings.

Loads from file: j:\jobs\1506600.wi\04_structural\calcs\pls-pole\cl&p #3848.lca

*** Analysis Results:

Maximum element usage is 77.82% for Base Plate "3848" in load case "NESC Extreme Wind"
Maximum insulator usage is 84.91% for Clamp "Clamp20" in load case "NESC Extreme Wind"

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 Heavy Wind	3848:g	-0.09	-16.19	-61.52	16.19	1247.49	-27.62	1247.79	-0.00	0.00
NESC Extreme Wind	3848:g	0.01	-39.63	-33.58	39.63	3098.95	-85.11	3100.12	-0.04	0.00
NESC Extreme Ice w/ Wind	3848:g	-0.03	-12.01	-49.73	12.01	934.65	-17.30	934.81	-0.00	0.00

Summary of Tip Deflections For All Load Cases:

Note: postive 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 Heavy Wind	3848:t	0.81	19.19	-0.26	19.21	0.10	-1.87	-0.00
NESC Extreme Wind	3848:t	2.82	49.67	-1.53	49.78	0.35	-5.03	-0.01
NESC Extreme Ice w/ Wind	3848:t	0.53	14.34	-0.15	14.35	0.07	-1.39	-0.00

Tubes Summary:

Pole Label	Tube Num.	Weight (lbs)	Load Case	Maximum Usage %	Resultant Moment (ft-k)
3848	1	4530	NESC Extreme Wind	76.18	1218.74
3848	2	3652	NESC Extreme Wind	70.04	1999.32
3848	3	5711	NESC Extreme Wind	75.60	3100.12

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

Summary of Steel Pole Usages:

Steel Pole Label	Maximum Usage %	Load Case	Segment Number	Weight (lbs)
3848	76.18	NESC Extreme Wind	17	16194.8

Summary of Tubular Davit Usages:

Tubular Davit Label	Maximum Usage %	Load Case	Segment Number	Weight (lbs)
Davit1	10.43	NESC Extreme Ice w/ Wind	1	49.5
Davit2	9.76	NESC Extreme Ice w/ Wind	1	49.5
Davit3	10.20	NESC Heavy Wind	1	280.0
Davit4	9.51	NESC Heavy Wind	1	280.0
Davit5	10.21	NESC Heavy Wind	1	280.0
Davit6	9.53	NESC Heavy Wind	1	280.0
Davit7	10.23	NESC Heavy Wind	1	280.0
Davit8	9.56	NESC Heavy Wind	1	280.0

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy Wind	32.95	3848	Base Plate
NESC Extreme Wind	77.82	3848	Base Plate
NESC Extreme Ice w/ Wind	24.74	3848	Base Plate

Summary of Steel Pole Usages by Load Case:

Load Case	Maximum Usage %	Steel Pole Label	Segment Number
NESC Heavy Wind	31.61	3848	28
NESC Extreme Wind	76.18	3848	17
NESC Extreme Ice w/ Wind	23.75	3848	28

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 Heavy Wind	3848	8	16.234	59.218	1247.487	-27.624	19.770	33.710	3	60.595	1.579	32.95
NESC Extreme Wind	3848	8	16.234	31.273	3098.952	-85.115	46.694	79.616	3	143.675	2.426	77.82
NESC Extreme Ice w/ Wind	3848	8	16.234	47.432	934.652	-17.298	14.845	25.312	3	45.511	1.368	24.74

Summary of Tubular Davit Usages by Load Case:

Load Case	Maximum Usage %	Tubular Davit Label	Segment Number
NESC Heavy Wind	10.23	Davit7	1
NESC Extreme Wind	5.49	Davit7	1
NESC Extreme Ice w/ Wind	10.43	Davit1	1

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
Clamp1	Clamp	1.03	NESC Extreme Ice w/ Wind	0.0
Clamp2	Clamp	1.12	NESC Extreme Ice w/ Wind	0.0
Clamp3	Clamp	2.60	NESC Heavy Wind	0.0
Clamp4	Clamp	2.59	NESC Heavy Wind	0.0
Clamp5	Clamp	2.60	NESC Heavy Wind	0.0
Clamp6	Clamp	2.59	NESC Heavy Wind	0.0
Clamp7	Clamp	2.60	NESC Heavy Wind	0.0
Clamp8	Clamp	2.59	NESC Heavy Wind	0.0
Clamp9	Clamp	1.40	NESC Heavy Wind	0.0
Clamp10	Clamp	0.94	NESC Heavy Wind	0.0
Clamp11	Clamp	0.94	NESC Heavy Wind	0.0
Clamp12	Clamp	0.94	NESC Heavy Wind	0.0
Clamp13	Clamp	0.94	NESC Heavy Wind	0.0
Clamp14	Clamp	0.94	NESC Heavy Wind	0.0
Clamp15	Clamp	0.94	NESC Heavy Wind	0.0
Clamp16	Clamp	0.94	NESC Heavy Wind	0.0
Clamp17	Clamp	0.94	NESC Heavy Wind	0.0
Clamp18	Clamp	38.28	NESC Extreme Wind	0.0
Clamp19	Clamp	27.08	NESC Extreme Wind	0.0
Clamp20	Clamp	84.91	NESC Extreme Wind	0.0
Clamp21	Clamp	84.91	NESC Extreme Wind	0.0

*** Weight of structure (lbs):

Weight of Tubular Davit Arms:	1779.3
Weight of Steel Poles:	16194.8
Total:	17974.1

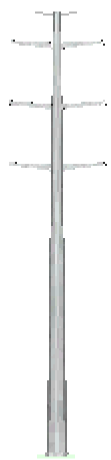
*** End of Report

```
*************************************************************************
*                                                                       *
*                                PLS-POLE                               *
*                   POLE AND FRAME ANALYSIS AND DESIGN                  *
*              Copyright Power Line Systems, Inc. 1999-2011             *
*                                                                       *
*************************************************************************
```

Project Name : 15066.000 - Orange, CT
Project Notes: Pole # 3848/ AT&T - CT2267
Project File : J:\Jobs\1506600.WI\04_Structural\Calcs\PLS-Pole\cl&p structure # 3848.pol
Date run   : 10:33:26 AM Monday, June 08, 2015
by   : PLS-POLE Version 12.50
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 checked with ASCE/SEI 48-05

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	Base Plate	Shape	Tip Diameter	Base Diameter	Taper	Default Drag	Tubes	Modulus of Elasticity	Weight Density	Shape At	Strength Check	Distance From	Ultimate	Ultimate

Label		Length (ft)	(ft)			(in)	(in)	(in/ft)	Coef.		Override (ksi)	Override (lbs/ft^3)	Base	Type	Tip (ft)	Trans. Load (kips)	Long. Load (kips)
CL&P3848	3848	96.00	0	Yes	12F	20	52.53	0	1.3	3 tubes	0	0		Calculated	0.000	0.0000	0.0000

Steel Tubes Properties:

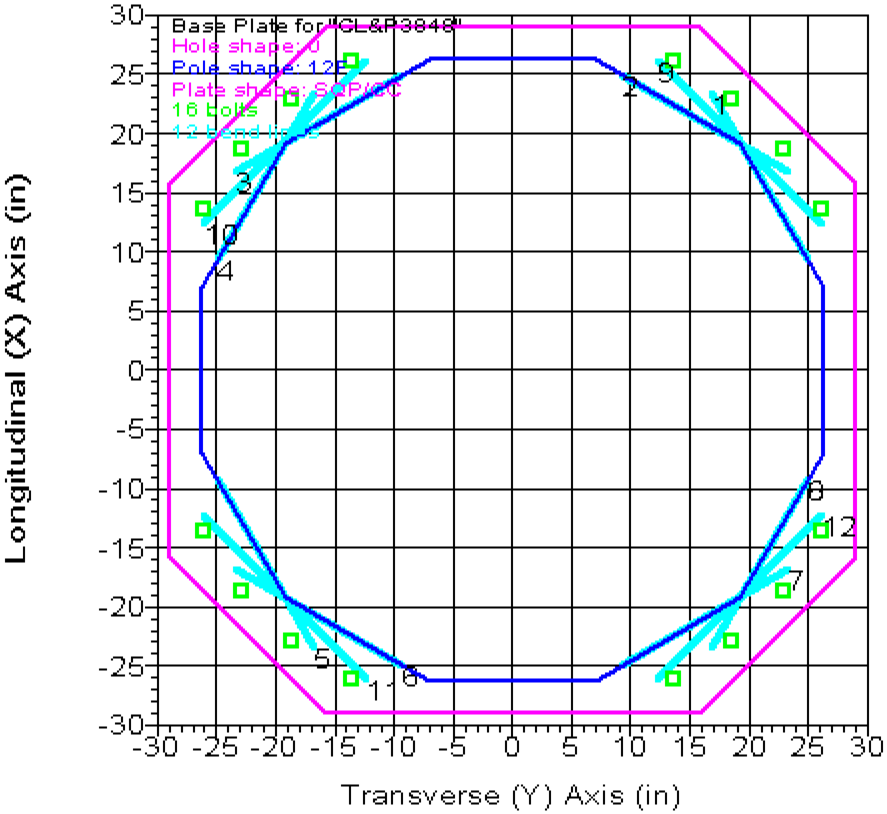
Pole Property	Tube No.	Length (ft)	Thickness (in)	Lap Length (ft)	Lap Factor	Lap Gap (in)	Yield Stress (ksi)	Moment Cap. Override (ft-k)	Tube Weight (lbs)	Center of Gravity (ft)	Calculated Taper (in/ft)	Tube Top Diameter (in)	Tube Bot. Diameter (in)	1.5x Diam. Lap Length (ft)	Actual Overlap (ft)
CL&P3848	1	47.5	0.3125	4.583	0.000	0.000	65.000	0.000	4530	26.08	0.34538	20.00	36.41	4.473	4.583
CL&P3848	2	23.5	0.375	0.000	0.000	0.000	65.000	0.000	3652	12.17	0.34538	34.20	42.31	5.195	0.000
CL&P3848	3	29.583	0.375	0.000	0.000	0.000	65.000	0.000	5711	15.33	0.34538	42.31	52.53	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)
CL&P3848	58.000	SQP/CC	2.750	2302	0.000	0.000	0	490.00	60.000	2.250	59.000	16	27647.55	27647.55

Base Plate Bolt Coordinates for Property "CL&P3848":

Bolt X Coord.	Bolt Y Coord.	Bolt Angle (deg)
0.4619	0.8856	0
0.6314	0.7754	0
0.7754	0.6314	0
0.8856	0.4619	0



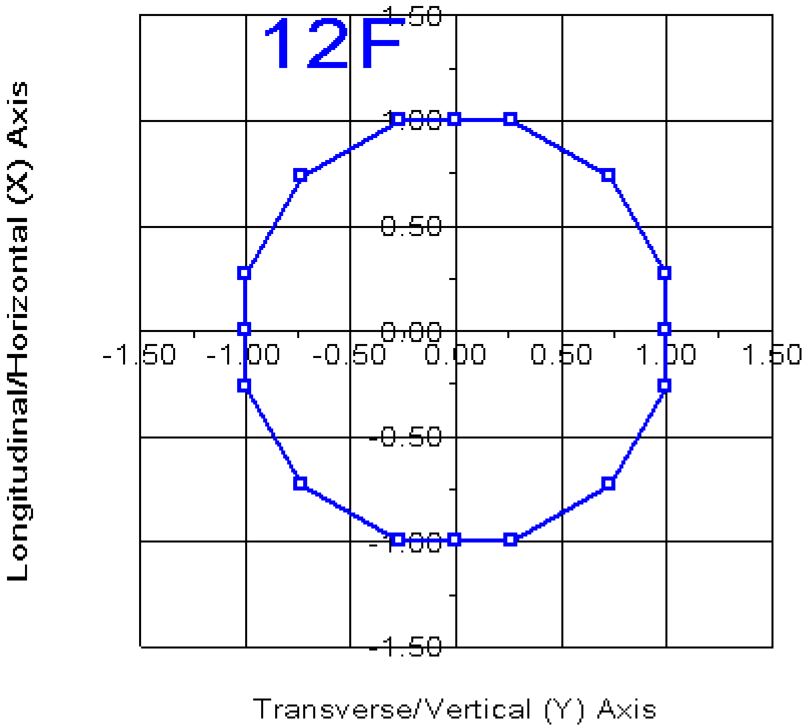
Steel Pole Connectivity:

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)
3848			0	0	0	0	0	CL&P3848	17 labels		0.00	0

Relative Attachment Labels for Steel Pole "3848":

Joint Label	Distance From Origin/Top Joint (ft)	Global Z of Attach (ft)
3848:Arm1	0.00	95.54
3848:Arm2	0.00	88.90
3848:Arm3	0.00	75.65
3848:Arm4	0.00	62.40
3848:WVGD1	0.00	85.00

3848:WVGD2	0.00	75.00
3848:WVGD3	0.00	65.00
3848:WVGD4	0.00	55.00
3848:WVGD5	0.00	45.00
3848:WVGD6	0.00	35.00
3848:WVGD7	0.00	25.00
3848:WVGD8	0.00	15.00
3848:WVGD9	0.00	5.00
3848:TopConn	0.00	93.00
3848:BotConn	0.00	83.00
3848:BotConT	0.00	83.50
3848:BotConB	0.00	82.50



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)
3848	3848:t	3848:t Ori	0.00	20.00	19.78	981.62	981.62	0.00	14.5	65.00	65.00	531.71	531.71
3848	3848:Arm1	3848:Arm1 End	0.46	20.16	19.94	1005.47	1005.47	0.00	14.6	65.00	65.00	540.35	540.35
3848	3848:Arm1	3848:Arm1 Ori	0.46	20.16	19.94	1005.47	1005.47	0.00	14.6	65.00	65.00	540.35	540.35
3848	3848:TopConn	3848:TopConn End	3.00	21.04	20.82	1144.88	1144.88	0.00	15.4	65.00	65.00	589.60	589.60
3848	3848:TopConn	3848:TopConn Ori	3.00	21.04	20.82	1144.88	1144.88	0.00	15.4	65.00	65.00	589.60	589.60

3848	3848:Arm2	3848:Arm2	End	7.10	22.45	22.25	1396.19	1396.19	0.00	16.6	65.00	65.00	673.63	673.63
3848	3848:Arm2	3848:Arm2	Ori	7.10	22.45	22.25	1396.19	1396.19	0.00	16.6	65.00	65.00	673.63	673.63
3848	3848:WVGD1	3848:WVGD1	End	11.00	23.80	23.60	1666.49	1666.49	0.00	17.7	65.00	65.00	758.58	758.58
3848	3848:WVGD1	3848:WVGD1	Ori	11.00	23.80	23.60	1666.49	1666.49	0.00	17.7	65.00	65.00	758.58	758.58
3848	3848:BotConT	3848:BotConT	End	12.50	24.32	24.12	1779.21	1779.21	0.00	18.2	65.00	65.00	792.64	792.64
3848	3848:BotConT	3848:BotConT	Ori	12.50	24.32	24.12	1779.21	1779.21	0.00	18.2	65.00	65.00	792.64	792.64
3848	3848:BotConn	3848:BotConn	End	13.00	24.49	24.29	1817.88	1817.88	0.00	18.3	65.00	65.00	804.15	804.15
3848	3848:BotConn	3848:BotConn	Ori	13.00	24.49	24.29	1817.88	1817.88	0.00	18.3	65.00	65.00	804.15	804.15
3848	3848:BotConB	3848:BotConB	End	13.50	24.66	24.47	1857.11	1857.11	0.00	18.5	65.00	65.00	815.75	815.75
3848	3848:BotConB	3848:BotConB	Ori	13.50	24.66	24.47	1857.11	1857.11	0.00	18.5	65.00	65.00	815.75	815.75
3848	#3848:0	Tube 1	End	16.93	25.85	25.66	2141.26	2141.26	0.00	19.5	65.00	65.00	897.50	897.50
3848	#3848:0	Tube 1	Ori	16.93	25.85	25.66	2141.27	2141.27	0.00	19.5	65.00	65.00	897.50	897.50
3848	3848:Arm3	3848:Arm3	End	20.35	27.03	26.85	2453.02	2453.02	0.00	20.5	65.00	65.00	983.15	983.15
3848	3848:Arm3	3848:Arm3	Ori	20.35	27.03	26.85	2453.03	2453.03	0.00	20.5	65.00	65.00	983.15	983.15
3848	3848:WVGD2	3848:WVGD2	End	21.00	27.25	27.07	2514.99	2514.99	0.00	20.7	65.00	65.00	999.73	999.73
3848	3848:WVGD2	3848:WVGD2	Ori	21.00	27.25	27.07	2514.99	2514.99	0.00	20.7	65.00	65.00	999.73	999.73
3848	#3848:1	Tube 1	End	26.00	28.98	28.81	3030.24	3030.24	0.00	22.2	65.00	65.00	1132.77	1132.77
3848	#3848:1	Tube 1	Ori	26.00	28.98	28.81	3030.24	3030.24	0.00	22.2	65.00	65.00	1132.77	1132.77
3848	3848:WVGD3	3848:WVGD3	End	31.00	30.71	30.54	3611.46	3611.46	0.00	23.6	65.00	65.00	1274.12	1274.12
3848	3848:WVGD3	3848:WVGD3	Ori	31.00	30.71	30.54	3611.46	3611.46	0.00	23.6	65.00	65.00	1274.12	1274.12
3848	3848:Arm4	3848:Arm4	End	33.60	31.61	31.44	3941.61	3941.61	0.00	24.4	65.00	65.00	1351.03	1351.03
3848	3848:Arm4	3848:Arm4	Ori	33.60	31.61	31.44	3941.61	3941.61	0.00	24.4	65.00	65.00	1351.03	1351.03
3848	#3848:2	Tube 1	End	37.30	32.88	32.73	4444.15	4444.15	0.00	25.5	65.00	65.00	1464.11	1464.11
3848	#3848:2	Tube 1	Ori	37.30	32.88	32.73	4444.15	4444.15	0.00	25.5	65.00	65.00	1464.12	1464.12
3848	3848:WVGD4	3848:WVGD4	End	41.00	34.16	34.01	4987.70	4987.70	0.00	26.6	65.00	65.00	1581.75	1581.75
3848	3848:WVGD4	3848:WVGD4	Ori	41.00	34.16	34.01	4987.70	4987.70	0.00	26.6	65.00	65.00	1581.75	1581.75
3848	#3848:3	SpliceT	End	42.92	34.82	34.68	5286.13	5286.13	0.00	27.2	65.00	65.00	1644.52	1644.52
3848	#3848:3	SpliceT	Ori	42.92	34.82	34.68	5286.13	5286.13	0.00	27.2	65.00	65.00	1644.52	1644.52
3848	#3848:4	SpliceB	End	47.50	35.78	42.69	6850.22	6850.22	0.00	22.9	65.00	65.00	2074.05	2074.05
3848	#3848:4	SpliceB	Ori	47.50	35.78	42.69	6850.22	6850.22	0.00	22.9	65.00	65.00	2074.05	2074.05
3848	3848:WVGD5	3848:WVGD5	End	51.00	36.99	44.15	7576.04	7576.04	0.00	23.8	65.00	65.00	2218.85	2218.85
3848	3848:WVGD5	3848:WVGD5	Ori	51.00	36.99	44.15	7576.04	7576.04	0.00	23.8	65.00	65.00	2218.85	2218.85
3848	#3848:5	Tube 2	End	56.00	38.72	46.23	8699.27	8699.27	0.00	25.0	65.00	65.00	2434.18	2434.18
3848	#3848:5	Tube 2	Ori	56.00	38.72	46.23	8699.28	8699.28	0.00	25.0	65.00	65.00	2434.18	2434.18
3848	3848:WVGD6	3848:WVGD6	End	61.00	40.44	48.31	9928.38	9928.38	0.00	26.2	65.00	65.00	2659.47	2659.47
3848	3848:WVGD6	3848:WVGD6	Ori	61.00	40.44	48.31	9928.38	9928.38	0.00	26.2	65.00	65.00	2659.47	2659.47
3848	#3848:6	Tube 2	End	63.71	41.38	49.44	10640.09	10640.09	0.00	26.9	65.00	65.00	2785.68	2785.68
3848	#3848:6	Tube 2	Ori	63.71	41.38	49.44	10640.09	10640.09	0.00	26.9	65.00	65.00	2785.68	2785.68
3848	#3848:7	SpliceT	End	66.42	42.31	50.57	11385.02	11385.02	0.00	27.6	65.00	65.00	2914.82	2914.82
3848	#3848:7	SpliceT	Ori	66.42	42.31	50.57	11385.02	11385.02	0.00	27.6	65.00	65.00	2914.82	2914.82
3848	3848:WVGD7	3848:WVGD7	End	71.00	43.90	52.48	12723.30	12723.30	0.00	28.7	65.00	65.00	3139.99	3139.99
3848	3848:WVGD7	3848:WVGD7	Ori	71.00	43.90	52.48	12723.30	12723.30	0.00	28.7	65.00	65.00	3139.99	3139.99
3848	#3848:8	Tube 3	End	76.00	45.62	54.56	14298.64	14298.64	0.00	29.9	65.00	64.92	3391.09	3391.09
3848	#3848:8	Tube 3	Ori	76.00	45.62	54.56	14298.64	14298.64	0.00	29.9	65.00	64.92	3391.09	3391.09
3848	3848:WVGD8	3848:WVGD8	End	81.00	47.35	56.64	15998.93	15998.93	0.00	31.2	65.00	63.71	3587.84	3587.84
3848	3848:WVGD8	3848:WVGD8	Ori	81.00	47.35	56.64	15998.93	15998.93	0.00	31.2	65.00	63.71	3587.84	3587.84
3848	#3848:9	Tube 3	End	86.00	49.08	58.72	17828.94	17828.94	0.00	32.4	65.00	62.50	3784.31	3784.31
3848	#3848:9	Tube 3	Ori	86.00	49.08	58.72	17828.94	17828.94	0.00	32.4	65.00	62.50	3784.31	3784.31
3848	3848:WVGD9	3848:WVGD9	End	91.00	50.80	60.81	19793.44	19793.44	0.00	33.6	65.00	61.29	3979.95	3979.95
3848	3848:WVGD9	3848:WVGD9	Ori	91.00	50.80	60.81	19793.44	19793.44	0.00	33.6	65.00	61.29	3979.95	3979.95
3848	3848:g	3848:g	End	96.00	52.53	62.89	21897.19	21897.19	0.00	34.9	65.00	60.08	4174.19	4174.19

Tubular Davit Properties:

Davit Property	Stock Number	Steel Shape	Thickness	Base Diameter	Tip Diameter	Taper	Drag Coef.	Modulus of	Geometry	Strength Check	Vertical Capacity	Tension Capacity	Compres. Capacity	Long. Capacity	Yield Stress	Weight Density	Steel Shape

Label				or Depth	or Depth			Elasticity		Type						Override
At End																
			(in)	(in)	(in)	(in/ft)		(ksi)			(lbs)	(lbs)	(lbs)	(lbs)	(ksi)	(lbs/ft^3)
20702-M	20702-M	8T	0.1875	7	5	0	1.3	29000	1 point	Calculated	0	0	0	0	65	0
20702-N	20702-N	8T	0.25	15	7.5	0	1.3	29000	1 point	Calculated	0	0	0	0	65	0

Intermediate Joints for Davit Property "20702-M":

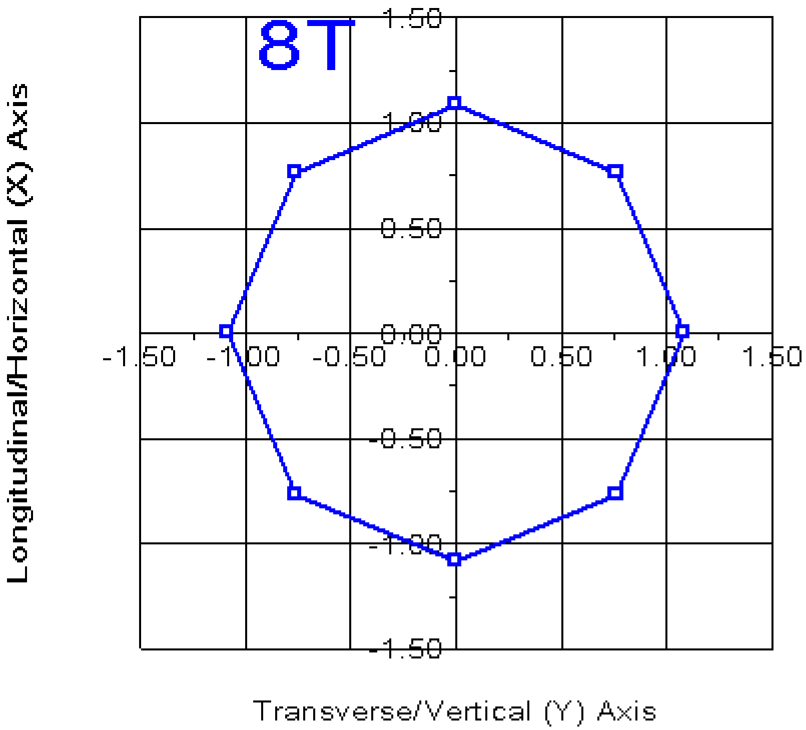
Joint Label	Horz. Offset (ft)	Vert. Offset (ft)
t	4	-0.5

Intermediate Joints for Davit Property "20702-N":

Joint Label	Horz. Offset (ft)	Vert. Offset (ft)
t	9	-0.75

Tubular Davit Arm Connectivity:

Davit Label	Attach Label	Davit Property Set	Azimuth (deg)
Davit1	3848:Arm1	20702-M	0
Davit2	3848:Arm1	20702-M	180
Davit3	3848:Arm2	20702-N	0
Davit4	3848:Arm2	20702-N	180
Davit5	3848:Arm3	20702-N	0
Davit6	3848:Arm3	20702-N	180
Davit7	3848:Arm4	20702-N	0
Davit8	3848:Arm4	20702-N	180



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)
Davit1	Davit1:O	Origin	0.00	7.00	4.23	25.98	25.98	0.00	11.3	65.00	65.00	37.15	37.15
Davit1	Davit1:t	End	4.03	5.00	2.99	9.16	9.16	0.00	6.9	65.00	65.00	18.35	18.35
Davit2	Davit2:O	Origin	0.00	7.00	4.23	25.98	25.98	0.00	11.3	65.00	65.00	37.15	37.15
Davit2	Davit2:t	End	4.03	5.00	2.99	9.16	9.16	0.00	6.9	65.00	65.00	18.35	18.35
Davit3	Davit3:O	Origin	0.00	15.00	12.22	351.41	351.41	0.00	20.7	65.00	65.00	234.48	234.48
Davit3	#Davit3:0	End	4.52	11.25	9.11	145.79	145.79	0.00	14.5	65.00	65.00	129.70	129.70
Davit3	#Davit3:0	Origin	4.52	11.25	9.11	145.79	145.79	0.00	14.5	65.00	65.00	129.70	129.70
Davit3	Davit3:t	End	9.03	7.50	6.01	41.77	41.77	0.00	8.3	65.00	65.00	55.74	55.74
Davit4	Davit4:O	Origin	0.00	15.00	12.22	351.41	351.41	0.00	20.7	65.00	65.00	234.48	234.48
Davit4	#Davit4:0	End	4.52	11.25	9.11	145.79	145.79	0.00	14.5	65.00	65.00	129.70	129.70
Davit4	#Davit4:0	Origin	4.52	11.25	9.11	145.79	145.79	0.00	14.5	65.00	65.00	129.70	129.70
Davit4	Davit4:t	End	9.03	7.50	6.01	41.77	41.77	0.00	8.3	65.00	65.00	55.74	55.74
Davit5	Davit5:O	Origin	0.00	15.00	12.22	351.41	351.41	0.00	20.7	65.00	65.00	234.48	234.48

Davit5	#Davit5:0	End	4.52	11.25	9.11	145.79	145.79	0.00	14.5	65.00	65.00	129.70	129.70
Davit5	#Davit5:0	Origin	4.52	11.25	9.11	145.79	145.79	0.00	14.5	65.00	65.00	129.70	129.70
Davit5	Davit5:t	End	9.03	7.50	6.01	41.77	41.77	0.00	8.3	65.00	65.00	55.74	55.74
Davit6	Davit6:O	Origin	0.00	15.00	12.22	351.41	351.41	0.00	20.7	65.00	65.00	234.48	234.48
Davit6	#Davit6:0	End	4.52	11.25	9.11	145.79	145.79	0.00	14.5	65.00	65.00	129.70	129.70
Davit6	#Davit6:0	Origin	4.52	11.25	9.11	145.79	145.79	0.00	14.5	65.00	65.00	129.70	129.70
Davit6	Davit6:t	End	9.03	7.50	6.01	41.77	41.77	0.00	8.3	65.00	65.00	55.74	55.74
Davit7	Davit7:O	Origin	0.00	15.00	12.22	351.41	351.41	0.00	20.7	65.00	65.00	234.48	234.48
Davit7	#Davit7:0	End	4.52	11.25	9.11	145.79	145.79	0.00	14.5	65.00	65.00	129.70	129.70
Davit7	#Davit7:0	Origin	4.52	11.25	9.11	145.79	145.79	0.00	14.5	65.00	65.00	129.70	129.70
Davit7	Davit7:t	End	9.03	7.50	6.01	41.77	41.77	0.00	8.3	65.00	65.00	55.74	55.74
Davit8	Davit8:O	Origin	0.00	15.00	12.22	351.41	351.41	0.00	20.7	65.00	65.00	234.48	234.48
Davit8	#Davit8:0	End	4.52	11.25	9.11	145.79	145.79	0.00	14.5	65.00	65.00	129.70	129.70
Davit8	#Davit8:0	Origin	4.52	11.25	9.11	145.79	145.79	0.00	14.5	65.00	65.00	129.70	129.70
Davit8	Davit8:t	End	9.03	7.50	6.01	41.77	41.77	0.00	8.3	65.00	65.00	55.74	55.74

*** Insulator Data

Clamp Properties:

Label	Stock Number	Holding Capacity (lbs)
clamp2	clamp2	1e+005

Clamp Insulator Connectivity:

Clamp Label	Structure And Tip Attach	Property Set	Min. Required Vertical Load (uplift) (lbs)
Clamp1	Davit1:t	clamp2	No Limit
Clamp2	Davit2:t	clamp2	No Limit
Clamp3	Davit3:t	clamp2	No Limit
Clamp4	Davit4:t	clamp2	No Limit
Clamp5	Davit5:t	clamp2	No Limit
Clamp6	Davit6:t	clamp2	No Limit
Clamp7	Davit7:t	clamp2	No Limit
Clamp8	Davit8:t	clamp2	No Limit
Clamp9	3848:WVGD1	clamp2	No Limit
Clamp10	3848:WVGD2	clamp2	No Limit
Clamp11	3848:WVGD3	clamp2	No Limit
Clamp12	3848:WVGD4	clamp2	No Limit
Clamp13	3848:WVGD5	clamp2	No Limit
Clamp14	3848:WVGD6	clamp2	No Limit
Clamp15	3848:WVGD7	clamp2	No Limit
Clamp16	3848:WVGD8	clamp2	No Limit
Clamp17	3848:WVGD9	clamp2	No Limit
Clamp18	3848:TopConn	clamp2	No Limit
Clamp19	3848:BotConn	clamp2	No Limit
Clamp20	3848:BotConT	clamp2	No Limit
Clamp21	3848:BotConB	clamp2	No Limit

*** Loads Data

Loads from file: j:\jobs\1506600.wi\04_structural\calcs\pls-pole\cl&p #3848.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)	96.04 (ft)	
Structure height	96.04 (ft)	
Structure height above ground	96.04 (ft)	

Vector Load Cases:

Load Case Description	Dead Load Factor	Wind Area Factor	SF for Steel Poles Tubular Arms and Towers	SF for Wood Poles	SF for Conc. Ult.	SF for Conc. First Crack	SF for Conc. Zero Tens.	SF for Guys and Cables	SF for Non Tubular Arms	SF for Braces	SF for Insuls.	SF For Found.	Point Loads	Wind/Ice Model	Trans. Wind Pressure (psf)	Longit. Wind Pressure (psf)	Ice Thick. (in)	Ice Density (lbs/ft^3)	Temperature (deg F)	Pole Deflection Check	Pole Deflection Limit % or (ft)
NESC Heavy Wind	1.5000	2.5000	1.00000	0.6500	0.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	21 loads	Wind on All	4	0	0.000	56.000	60.0	No Limit	0
NESC Extreme Wind	1.0000	1.0000	1.00000	0.6500	0.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	21 loads	NESC 2007	31	0	0.000	0.000	60.0	No Limit	0
NESC Extreme Ice w/ Wind	1.0000	1.0000	1.00000	0.6500	0.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	21 loads	Wind on All	6.4	0	0.000	56.000	60.0	No Limit	0

Point Loads for Load Case "NESC Heavy Wind":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
Davit1:t	795	603	-1	Shield Wire
Davit2:t	872	659	-1	Shield Wire
Davit3:t	2377	1055	-1	Conductor
Davit4:t	2369	1055	-1	Conductor
Davit5:t	2377	1054	-1	Conductor
Davit6:t	2369	1056	-1	Conductor
Davit7:t	2377	1053	-1	Conductor
Davit8:t	2369	1057	-1	Conductor
3848:TopConn	0	10225	0	Top Connection
3848:BotConT	0	0	22500	
3848:BotConn	11015	-7033	0	Bottom Connection
3848:BotConB	0	0	-22500	
3848:WVGD1	1380	258	0	Coax Cables
3848:WVGD2	920	172	0	Coax Cables

3848:WVGD3	920	172	0	Coax Cables
3848:WVGD4	920	172	0	Coax Cables
3848:WVGD5	920	172	0	Coax Cables
3848:WVGD6	920	172	0	Coax Cables
3848:WVGD7	920	172	0	Coax Cables
3848:WVGD8	920	172	0	Coax Cables
3848:WVGD9	920	172	0	Coax Cables

Point Loads for Load Case "NESC Extreme Wind":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
Davit1:t	296	678	-3	Shield Wire
Davit2:t	321	858	-3	Shield Wire
Davit3:t	1179	2030	-7	Conductor
Davit4:t	1175	2027	-6	Conductor
Davit5:t	1179	2029	-7	Conductor
Davit6:t	1175	2028	-6	Conductor
Davit7:t	1179	2029	-7	Conductor
Davit8:t	1175	2028	-6	Conductor
3848:TopConn	0	38275	0	Top Connection
3848:BotConT	0	0	84910	
3848:BotConn	5250	-26571	0	Bottom Connection
3848:BotConB	0	0	-84910	
3848:WVGD1	374	820	0	Coax Cables
3848:WVGD2	250	546	0	Coax Cables
3848:WVGD3	250	546	0	Coax Cables
3848:WVGD4	250	546	0	Coax Cables
3848:WVGD5	250	546	0	Coax Cables
3848:WVGD6	250	546	0	Coax Cables
3848:WVGD7	250	546	0	Coax Cables
3848:WVGD8	250	546	0	Coax Cables
3848:WVGD9	250	546	0	Coax Cables

Detailed Pole Loading Data for Load Case "NESC Extreme Wind":

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)
3848	3848:t	3848:Arm1	96.00	95.54	95.77	20.079	1.68e+006	1.000	31.22	0.00	30.95	23.93	0.00	0.00	23.93	0.00
3848	3848:Arm1	3848:TopConn	95.54	93.00	94.27	20.597	1.72e+006	1.000	31.22	0.00	176.30	136.23	0.00	0.00	136.23	0.00
3848	3848:TopConn	3848:Arm2	93.00	88.90	90.95	21.745	1.82e+006	1.000	31.22	0.00	300.74	232.19	0.00	0.00	232.19	0.00
3848	3848:Arm2	3848:WVGD1	88.90	85.00	86.95	23.126	1.93e+006	1.000	31.22	0.00	303.90	234.43	0.00	0.00	234.43	0.00
3848	3848:WVGD1	3848:BotConT	85.00	83.50	84.25	24.058	2.01e+006	1.000	31.22	0.00	121.78	93.89	0.00	0.00	93.89	0.00
3848	3848:BotConT	3848:BotConn	83.50	83.00	83.25	24.404	2.04e+006	1.000	31.22	0.00	41.19	31.75	0.00	0.00	31.75	0.00
3848	3848:BotConn	3848:BotConB	83.00	82.50	82.75	24.576	2.06e+006	1.000	31.22	0.00	41.48	31.97	0.00	0.00	31.97	0.00
3848	3848:BotConB		82.50	79.07	80.79	25.254	2.11e+006	1.000	31.22	0.00	292.25	225.18	0.00	0.00	225.18	0.00
3848		3848:Arm3	79.07	75.65	77.36	26.438	2.21e+006	1.000	31.22	0.00	306.12	235.74	0.00	0.00	235.74	0.00
3848	3848:Arm3	3848:WVGD2	75.65	75.00	75.32	27.141	2.27e+006	1.000	31.22	0.00	59.26	45.62	0.00	0.00	45.62	0.00
3848	3848:WVGD2		75.00	70.00	72.50	28.116	2.35e+006	1.000	31.22	0.00	475.33	365.77	0.00	0.00	365.77	0.00
3848		3848:WVGD3	70.00	65.00	67.50	29.843	2.5e+006	1.000	31.22	0.00	504.85	388.24	0.00	0.00	388.24	0.00
3848	3848:WVGD3	3848:Arm4	65.00	62.40	63.70	31.156	2.61e+006	1.000	31.22	0.00	274.62	211.09	0.00	0.00	211.09	0.00

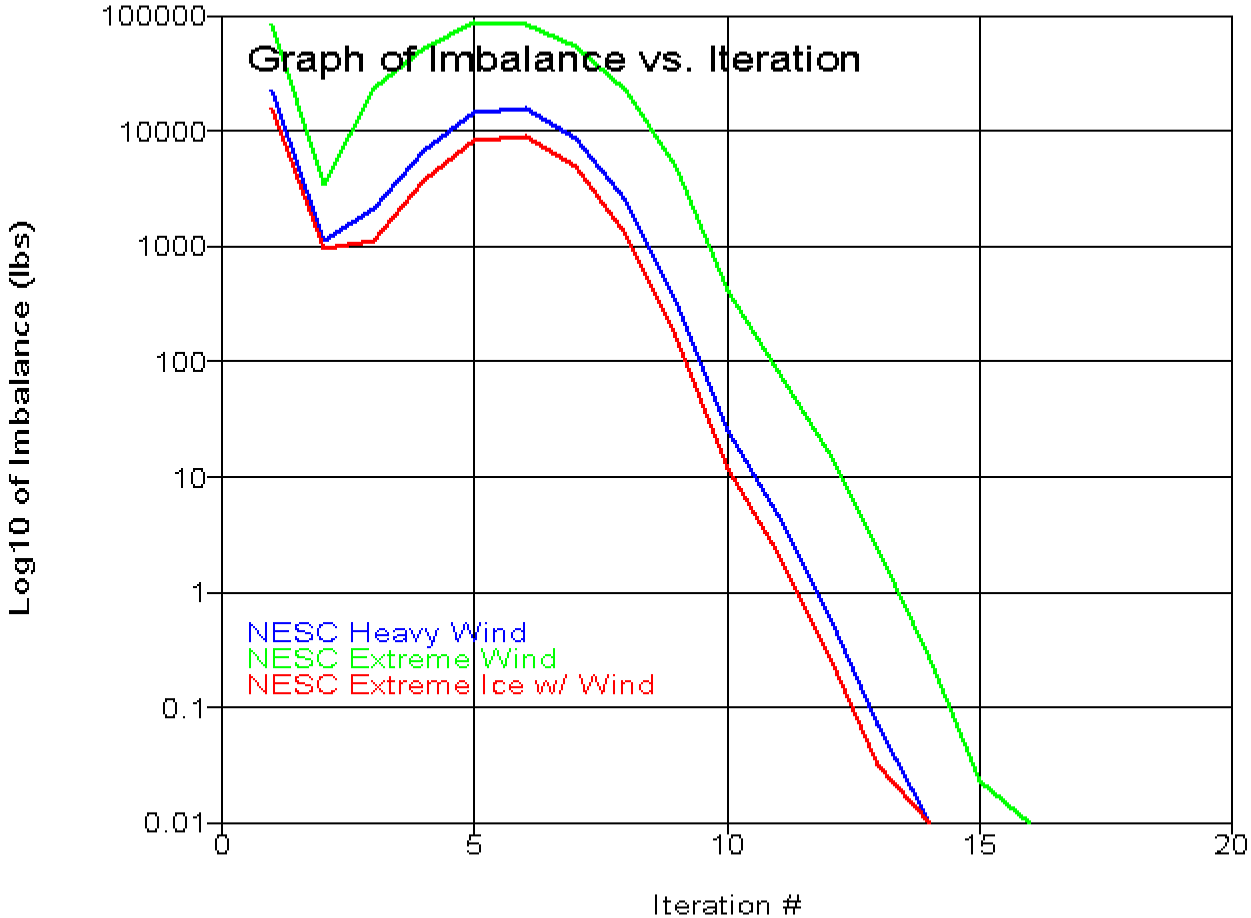
3848	3848:Arm4		62.40	58.70	60.55	32.245	2.7e+006	1.000	31.22	0.00	403.75	310.25	0.00	0.00	310.25	0.00
3848		3848:WVGD4	58.70	55.00	56.85	33.522	2.8e+006	1.000	31.22	0.00	419.90	322.54	0.00	0.00	322.54	0.00
3848	3848:WVGD4		55.00	53.08	54.04	34.492	2.89e+006	1.000	31.22	0.00	224.03	172.04	0.00	0.00	172.04	0.00
3848			53.08	48.50	50.79	35.302	2.95e+006	1.000	31.22	0.00	1204.05	420.95	0.00	0.00	420.95	0.00
3848		3848:WVGD5	48.50	45.00	46.75	36.385	3.04e+006	1.000	31.22	0.00	517.20	331.34	0.00	0.00	331.34	0.00
3848	3848:WVGD5		45.00	40.00	42.50	37.853	3.17e+006	1.000	31.22	0.00	768.85	492.44	0.00	0.00	492.44	0.00
3848		3848:WVGD6	40.00	35.00	37.50	39.580	3.31e+006	1.000	31.22	0.00	804.28	514.90	0.00	0.00	514.90	0.00
3848	3848:WVGD6		35.00	32.29	33.65	40.911	3.42e+006	1.000	31.22	0.00	450.47	288.30	0.00	0.00	288.30	0.00
3848			32.29	29.58	30.94	41.846	3.5e+006	1.000	31.22	0.00	460.87	294.90	0.00	0.00	294.90	0.00
3848		3848:WVGD7	29.58	25.00	27.29	43.105	3.61e+006	1.000	31.22	0.00	803.50	514.00	0.00	0.00	514.00	0.00
3848	3848:WVGD7		25.00	20.00	22.50	44.760	3.74e+006	1.000	31.22	0.00	910.56	582.30	0.00	0.00	582.30	0.00
3848		3848:WVGD8	20.00	15.00	17.50	46.487	3.89e+006	1.000	31.22	0.00	945.98	604.76	0.00	0.00	604.76	0.00
3848	3848:WVGD8		15.00	10.00	12.50	48.214	4.03e+006	1.000	31.22	0.00	981.41	627.23	0.00	0.00	627.23	0.00
3848		3848:WVGD9	10.00	5.00	7.50	49.941	4.18e+006	1.000	31.22	0.00	1016.84	649.69	0.00	0.00	649.69	0.00
3848	3848:WVGD9	3848:g	5.00	0.00	2.50	51.668	4.32e+006	1.000	31.22	0.00	1052.27	672.16	0.00	0.00	672.16	0.00

Point Loads for Load Case "NESC Extreme Ice w/ Wind":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
Davit1:t	871	552	-1	Shield Wire
Davit2:t	948	592	-1	Shield Wire
Davit3:t	2176	867	-1	Conductor
Davit4:t	2169	867	-1	Conductor
Davit5:t	2176	866	-1	Conductor
Davit6:t	2168	868	-1	Conductor
Davit7:t	2176	866	-1	Conductor
Davit8:t	2168	868	-1	Conductor
3848:TopConn	0	6984	0	Top Connection
3848:BotConT	0	0	15394	
3848:BotConn	8809	-4814	0	Bottom Connection
3848:BotConB	0	0	-15394	
3848:WVGD1	1275	171	0	Coax Cables
3848:WVGD2	850	114	0	Coax Cables
3848:WVGD3	850	114	0	Coax Cables
3848:WVGD4	850	114	0	Coax Cables
3848:WVGD5	850	114	0	Coax Cables
3848:WVGD6	850	114	0	Coax Cables
3848:WVGD7	850	114	0	Coax Cables
3848:WVGD8	850	114	0	Coax Cables
3848:WVGD9	850	114	0	Coax Cables

*** Analysis Results:

Maximum element usage is 77.82% for Base Plate "3848" in load case "NESC Extreme Wind"
Maximum insulator usage is 84.91% for Clamp "Clamp20" in load case "NESC Extreme Wind"



*** Analysis Results for Load Case No. 1 "NESC Heavy Wind" - Number of iterations in SAPS 14

Equilibrium Joint Positions and Rotations for Load Case "NESC Heavy Wind":

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)
3848:g	0	0	0	0.0000	0.0000	0.0000	0	0	0
3848:t	0.06736	1.599	-0.02134	-1.8680	0.0989	-0.0007	0.06736	1.599	95.98
3848:Arm1	0.06657	1.584	-0.0211	-1.8680	0.0989	-0.0007	0.06657	1.584	95.52

3848:TopConn	0.06218	1.501	-0.01974	-1.8666	0.0989	-0.0008	0.06218	1.501	92.98
3848:Arm2	0.05509	1.368	-0.01756	-1.8412	0.0989	-0.0008	0.05509	1.368	88.88
3848:WVGD1	0.04837	1.244	-0.01554	-1.7827	0.0989	-0.0009	0.04837	1.244	84.98
3848:BotConT	0.04578	1.198	-0.0148	-1.7532	0.0988	-0.0009	0.04578	1.198	83.49
3848:BotConn	0.04487	1.183	-0.01456	-1.7426	0.0984	-0.0010	0.04487	1.183	82.99
3848:BotConB	0.04398	1.168	-0.01431	-1.7318	0.0971	-0.0009	0.04398	1.168	82.49
3848:Arm3	0.03365	0.9691	-0.01123	-1.5795	0.0763	-0.0006	0.03365	0.9691	75.63
3848:WVGD2	0.0328	0.9514	-0.01097	-1.5647	0.0746	-0.0005	0.0328	0.9514	74.99
3848:WVGD3	0.02176	0.6983	-0.007402	-1.3261	0.0528	-0.0002	0.02176	0.6983	64.99
3848:Arm4	0.01947	0.6394	-0.006644	-1.2627	0.0481	-0.0002	0.01947	0.6394	62.39
3848:WVGD4	0.014	0.4878	-0.004793	-1.0797	0.0369	-0.0001	0.014	0.4878	55
3848:WVGD5	0.008586	0.3195	-0.003012	-0.8501	0.0258	-0.0000	0.008586	0.3195	45
3848:WVGD6	0.004807	0.1892	-0.001828	-0.6402	0.0177	-0.0000	0.004807	0.1892	35
3848:WVGD7	0.002289	0.09458	-0.00105	-0.4418	0.0113	-0.0000	0.002289	0.09458	25
3848:WVGD8	0.0007749	0.03347	-0.0005353	-0.2559	0.0061	0.0000	0.0007749	0.03347	15
3848:WVGD9	8.245e-005	0.003751	-0.0001643	-0.0824	0.0019	0.0000	8.245e-005	0.003751	5
Davit1:O	0.06653	1.584	-0.04848	-1.8680	0.0989	-0.0007	0.06653	2.424	95.49
Davit1:t	0.06721	1.598	-0.1846	-1.9842	0.0989	-0.0006	0.06721	6.438	95.86
Davit2:O	0.06661	1.585	0.006279	-1.8680	0.0989	-0.0007	0.06661	0.7446	95.55
Davit2:t	0.06763	1.602	0.1315	-1.7633	0.0989	-0.0008	0.06763	-3.238	96.17
Davit3:O	0.05505	1.367	-0.04761	-1.8412	0.0989	-0.0008	0.05505	2.303	88.85
Davit3:t	0.05594	1.388	-0.3526	-2.0093	0.0989	-0.0007	0.05594	11.32	89.29
Davit4:O	0.05513	1.368	0.0125	-1.8412	0.0989	-0.0008	0.05513	0.4329	88.91
Davit4:t	0.05677	1.396	0.2871	-1.6857	0.0989	-0.0008	0.05677	-8.54	89.93
Davit5:O	0.03362	0.9687	-0.04228	-1.5795	0.0763	-0.0006	0.03362	2.095	75.6
Davit5:t	0.03435	0.9868	-0.3061	-1.7479	0.0763	-0.0005	0.03435	11.11	76.09
Davit6:O	0.03368	0.9696	0.01981	-1.5795	0.0763	-0.0006	0.03368	-0.1567	75.67
Davit6:t	0.0349	0.9921	0.2534	-1.4237	0.0763	-0.0006	0.0349	-9.134	76.65
Davit7:O	0.01945	0.6391	-0.03566	-1.2627	0.0481	-0.0002	0.01945	1.956	62.36
Davit7:t	0.01993	0.6544	-0.2496	-1.4315	0.0482	-0.0001	0.01993	10.97	62.9
Davit8:O	0.01949	0.6397	0.02238	-1.2627	0.0481	-0.0002	0.01949	-0.6772	62.42
Davit8:t	0.02024	0.657	0.2063	-1.1064	0.0482	-0.0002	0.02024	-9.66	63.35

Joint Support Reactions for Load Case "NESC Heavy Wind":

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 %
3848:g	-0.09	0.0	-16.19	0.0	0.0	-61.52	0.0	0.0	63.61	0.0	1247.49	0.0	-27.6	0.0	0.0	-0.00	0.0	0.0

Detailed Steel Pole Usages for Load Case "NESC Heavy Wind":

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.
3848	3848:t	Origin	0.00	19.19	0.81	-0.26	-0.00	-0.00	0.0	-0.02	0.01	-0.00	-0.00	0.00	0.00	0.00	0.00	0.0	5
3848	3848:Arm1	End	0.46	19.01	0.80	-0.25	0.00	-0.00	0.0	-0.02	0.01	-0.00	-0.00	0.00	0.00	0.00	0.00	0.0	4
3848	3848:Arm1	Origin	0.46	19.01	0.80	-0.25	0.29	-0.00	0.0	-1.95	1.36	-0.00	-0.10	0.00	0.14	0.00	0.26	0.4	5
3848	3848:TopConn	End	3.00	18.01	0.75	-0.24	3.76	-0.01	0.0	-1.95	1.36	-0.00	-0.09	0.42	0.03	0.00	0.51	0.8	2
3848	3848:TopConn	Origin	3.00	18.01	0.75	-0.24	3.76	-0.01	0.0	-1.98	11.67	-0.01	-0.09	0.00	1.14	0.00	1.98	3.0	5
3848	3848:Arm2	End	7.10	16.42	0.66	-0.21	51.67	-0.03	0.0	-1.98	11.67	-0.01	-0.09	4.99	0.28	0.00	5.10	7.8	2
3848	3848:Arm2	Origin	7.10	16.42	0.66	-0.21	53.43	-0.03	0.0	-7.95	14.07	-0.02	-0.36	5.16	0.34	0.00	5.54	8.5	2
3848	3848:WVGD1	End	11.00	14.93	0.58	-0.19	108.24	-0.10	0.0	-7.95	14.07	-0.02	-0.34	9.28	0.32	0.00	9.63	14.8	2
3848	3848:WVGD1	Origin	11.00	14.93	0.58	-0.19	108.24	-0.10	0.0	-9.66	14.44	-0.02	-0.41	9.28	0.32	0.00	9.70	14.9	2
3848	3848:BotConT	End	12.50	14.38	0.55	-0.18	129.90	-0.13	0.0	-9.66	14.44	-0.02	-0.40	10.66	0.32	0.00	11.07	17.0	2
3848	3848:BotConT	Origin	12.50	14.38	0.55	-0.18	129.90	-0.13	-0.0	-9.74	14.47	-22.52	-0.40	10.65	1.90	0.00	11.54	17.7	1

3848	3848:BotConn	End	13.00	14.19	0.54	-0.17	137.13	-11.39	-0.0	-9.74	14.47	-22.52	-0.40	11.33	1.85	0.00	12.16	18.7	2
3848	3848:BotConn	Origin	13.00	14.19	0.54	-0.17	137.13	-11.39	-0.0	-21.03	7.78	-22.54	-0.87	11.33	1.84	0.00	12.60	19.4	2
3848	3848:BotConB	End	13.50	14.01	0.53	-0.17	141.02	-22.66	-0.0	-21.03	7.78	-22.54	-0.86	11.72	1.82	0.00	12.97	20.0	2
3848	3848:BotConB	Origin	13.50	14.01	0.53	-0.17	141.02	-22.66	0.0	-21.33	7.83	-0.04	-0.87	11.72	0.17	0.00	12.60	19.4	2
3848	Tube 1	End	16.93	12.79	0.46	-0.15	167.86	-22.80	0.0	-21.33	7.83	-0.04	-0.83	12.60	0.16	0.00	13.43	20.7	2
3848	Tube 1	Origin	16.93	12.79	0.46	-0.15	167.86	-22.80	0.0	-21.79	7.91	-0.04	-0.85	12.60	0.16	0.00	13.45	20.7	2
3848	3848:Arm3	End	20.35	11.63	0.40	-0.13	194.96	-22.94	0.0	-21.79	7.91	-0.04	-0.81	13.30	0.16	0.00	14.11	21.7	2
3848	3848:Arm3	Origin	20.35	11.63	0.40	-0.13	196.71	-22.94	0.0	-27.59	10.22	-0.05	-1.03	13.41	0.20	0.00	14.44	22.2	2
3848	3848:WVGD2	End	21.00	11.42	0.39	-0.13	203.31	-22.97	0.0	-27.59	10.22	-0.05	-1.02	13.62	0.20	0.00	14.64	22.5	2
3848	3848:WVGD2	Origin	21.00	11.42	0.39	-0.13	203.31	-22.97	0.0	-28.92	10.48	-0.05	-1.07	13.62	0.21	0.00	14.69	22.6	2
3848	Tube 1	End	26.00	9.84	0.32	-0.11	255.73	-23.20	0.0	-28.92	10.48	-0.05	-1.00	15.03	0.19	0.00	16.04	24.7	2
3848	Tube 1	Origin	26.00	9.84	0.32	-0.11	255.73	-23.20	0.0	-29.68	10.60	-0.05	-1.03	15.03	0.19	0.00	16.06	24.7	2
3848	3848:WVGD3	End	31.00	8.38	0.26	-0.09	308.71	-23.43	0.0	-29.68	10.60	-0.05	-0.97	16.07	0.18	0.00	17.04	26.2	2
3848	3848:WVGD3	Origin	31.00	8.38	0.26	-0.09	308.71	-23.43	0.0	-31.19	10.88	-0.05	-1.02	16.07	0.19	0.00	17.09	26.3	2
3848	3848:Arm4	End	33.60	7.67	0.23	-0.08	337.04	-23.55	0.0	-31.19	10.88	-0.05	-0.99	16.52	0.18	0.00	17.51	26.9	2
3848	3848:Arm4	Origin	33.60	7.67	0.23	-0.08	338.77	-23.55	0.0	-37.26	13.19	-0.05	-1.18	16.60	0.22	0.00	17.79	27.4	2
3848	Tube 1	End	37.30	6.73	0.20	-0.07	387.53	-23.73	0.0	-37.26	13.19	-0.05	-1.14	17.49	0.21	0.00	18.63	28.7	2
3848	Tube 1	Origin	37.30	6.73	0.20	-0.07	387.53	-23.73	0.0	-37.90	13.27	-0.05	-1.16	17.49	0.21	0.00	18.65	28.7	2
3848	3848:WVGD4	End	41.00	5.85	0.17	-0.06	436.60	-23.91	0.0	-37.90	13.27	-0.05	-1.11	18.20	0.21	0.00	19.32	29.7	2
3848	3848:WVGD4	Origin	41.00	5.85	0.17	-0.06	436.60	-23.91	0.0	-39.31	13.52	-0.05	-1.16	18.20	0.21	0.00	19.36	29.8	2
3848	SpliceT	End	42.92	5.43	0.15	-0.05	462.52	-24.01	0.0	-39.31	13.52	-0.05	-1.13	18.54	0.21	0.00	19.67	30.3	2
3848	SpliceT	Origin	42.92	5.43	0.15	-0.05	462.52	-24.01	0.0	-40.40	13.61	-0.05	-1.17	18.54	0.21	0.00	19.70	30.3	2
3848	SpliceB	End	47.50	4.49	0.12	-0.04	524.91	-24.25	0.0	-40.40	13.61	-0.05	-0.95	16.65	0.17	0.00	17.60	27.1	2
3848	SpliceB	Origin	47.50	4.49	0.12	-0.04	524.91	-24.25	0.0	-41.71	13.73	-0.05	-0.98	16.65	0.17	0.00	17.63	27.1	2
3848	3848:WVGD5	End	51.00	3.83	0.10	-0.04	572.95	-24.43	0.0	-41.71	13.73	-0.05	-0.94	16.98	0.16	0.00	17.92	27.6	2
3848	3848:WVGD5	Origin	51.00	3.83	0.10	-0.04	572.95	-24.43	0.0	-43.62	14.03	-0.06	-0.99	16.98	0.17	0.00	17.97	27.6	2
3848	Tube 2	End	56.00	3.00	0.08	-0.03	643.09	-24.71	0.0	-43.62	14.03	-0.06	-0.94	17.35	0.16	0.00	18.29	28.1	2
3848	Tube 2	Origin	56.00	3.00	0.08	-0.03	643.09	-24.71	0.0	-44.82	14.17	-0.06	-0.97	17.35	0.16	0.00	18.32	28.2	2
3848	3848:WVGD6	End	61.00	2.27	0.06	-0.02	713.96	-25.00	0.0	-44.82	14.17	-0.06	-0.93	17.61	0.15	0.00	18.54	28.5	2
3848	3848:WVGD6	Origin	61.00	2.27	0.06	-0.02	713.96	-25.00	0.0	-46.70	14.47	-0.06	-0.97	17.61	0.16	0.00	18.58	28.6	2
3848	Tube 2	End	63.71	1.92	0.05	-0.02	753.15	-25.17	0.0	-46.70	14.47	-0.06	-0.94	17.73	0.15	0.00	18.68	28.7	2
3848	Tube 2	Origin	63.71	1.92	0.05	-0.02	753.15	-25.17	0.0	-47.40	14.55	-0.06	-0.96	17.73	0.16	0.00	18.69	28.8	2
3848	SpliceT	End	66.42	1.60	0.04	-0.02	792.56	-25.34	0.0	-47.40	14.55	-0.06	-0.94	17.83	0.15	0.00	18.76	28.9	2
3848	SpliceT	Origin	66.42	1.60	0.04	-0.02	792.56	-25.34	0.0	-48.37	14.67	-0.07	-0.96	17.83	0.15	0.00	18.78	28.9	2
3848	3848:WVGD7	End	71.00	1.13	0.03	-0.01	859.80	-25.64	0.0	-48.37	14.67	-0.07	-0.92	17.94	0.15	0.00	18.86	29.0	2
3848	3848:WVGD7	Origin	71.00	1.13	0.03	-0.01	859.80	-25.64	0.0	-50.59	15.01	-0.07	-0.96	17.94	0.15	0.00	18.91	29.1	2
3848	Tube 3	End	76.00	0.72	0.02	-0.01	934.84	-25.99	0.0	-50.59	15.01	-0.07	-0.93	18.03	0.15	0.00	18.96	29.2	2
3848	Tube 3	Origin	76.00	0.72	0.02	-0.01	934.84	-25.99	0.0	-52.01	15.18	-0.07	-0.95	18.03	0.15	0.00	18.99	29.2	2
3848	3848:WVGD8	End	81.00	0.40	0.01	-0.01	1010.74	-26.36	0.0	-52.01	15.18	-0.07	-0.92	18.07	0.14	0.00	18.99	29.8	2
3848	3848:WVGD8	Origin	81.00	0.40	0.01	-0.01	1010.74	-26.36	0.0	-54.40	15.54	-0.08	-0.96	18.07	0.14	0.00	19.04	29.9	2
3848	Tube 3	End	86.00	0.18	0.00	-0.00	1088.42	-26.76	0.0	-54.40	15.54	-0.08	-0.93	18.09	0.14	0.00	19.02	30.4	2
3848	Tube 3	Origin	86.00	0.18	0.00	-0.00	1088.42	-26.76	0.0	-55.92	15.72	-0.08	-0.95	18.09	0.14	0.00	19.05	30.5	2
3848	3848:WVGD9	End	91.00	0.05	0.00	-0.00	1167.04	-27.18	0.0	-55.92	15.72	-0.08	-0.92	18.08	0.14	0.00	19.01	31.0	2
3848	3848:WVGD9	Origin	91.00	0.05	0.00	-0.00	1167.04	-27.18	0.0	-58.42	16.09	-0.09	-0.96	18.08	0.14	0.00	19.05	31.1	2
3848	3848:g	End	96.00	0.00	0.00	0.00	1247.49	-27.62	0.0	-58.42	16.09	-0.09	-0.93	18.06	0.13	0.00	18.99	31.6	2

Detailed Tubular Davit Arm Usages for Load Case "NESC Heavy Wind":

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.
Davit1	Davit1:O	Origin	0.00	19.00	0.80	-0.58	-3.56	-0.00	0.0	0.53	0.88	0.00	0.12	6.23	0.00	0.00	6.35	9.8	1
Davit1	Davit1:t	End	4.03	19.18	0.81	-2.22	0.00	0.00	0.0	0.53	0.88	0.00	0.18	0.00	0.61	0.00	1.08	1.7	3
Davit2	Davit2:O	Origin	0.00	19.01	0.80	0.08	-3.21	0.00	0.0	-0.79	0.80	-0.00	-0.19	5.61	0.00	0.00	5.80	8.9	1
Davit2	Davit2:t	End	4.03	19.23	0.81	1.58	-0.00	0.00	0.0	-0.79	0.80	-0.00	-0.26	0.00	0.55	0.00	0.99	1.5	3

Davit3	Davit3:O	Origin	0.00	16.41	0.66	-0.57	-23.64	-0.03	-0.0	0.92	2.72	0.00	0.08	6.55	0.00	0.00	6.63	10.2	1
Davit3	#Davit3:0	End	4.52	16.53	0.67	-2.36	-11.35	-0.01	-0.0	0.92	2.72	0.00	0.10	5.69	0.00	0.00	5.79	8.9	1
Davit3	#Davit3:0	Origin	4.52	16.53	0.67	-2.36	-11.35	-0.01	0.0	0.93	2.51	0.00	0.10	5.69	0.00	0.00	5.79	8.9	1
Davit3	Davit3:t	End	9.03	16.65	0.67	-4.23	0.00	0.00	0.0	0.93	2.51	0.00	0.16	0.00	0.87	0.00	1.51	2.3	3
Davit4	Davit4:O	Origin	0.00	16.42	0.66	0.15	-21.89	0.03	0.0	-1.35	2.53	-0.00	-0.11	6.07	0.00	0.00	6.18	9.5	1
Davit4	#Davit4:0	End	4.52	16.59	0.67	1.84	-10.48	0.01	0.0	-1.35	2.53	-0.00	-0.15	5.25	0.00	0.00	5.40	8.3	1
Davit4	#Davit4:0	Origin	4.52	16.59	0.67	1.84	-10.48	0.01	0.0	-1.33	2.32	-0.00	-0.15	5.25	0.00	0.00	5.40	8.3	1
Davit4	Davit4:t	End	9.03	16.75	0.68	3.45	-0.00	0.00	0.0	-1.33	2.32	-0.00	-0.22	0.00	0.80	0.00	1.41	2.2	3
Davit5	Davit5:O	Origin	0.00	11.62	0.40	-0.51	-23.68	-0.02	-0.0	0.91	2.73	0.00	0.07	6.57	0.00	0.00	6.64	10.2	1
Davit5	#Davit5:0	End	4.52	11.73	0.41	-2.05	-11.36	-0.01	-0.0	0.91	2.73	0.00	0.10	5.70	0.00	0.00	5.79	8.9	1
Davit5	#Davit5:0	Origin	4.52	11.73	0.41	-2.05	-11.36	-0.01	0.0	0.92	2.52	0.00	0.10	5.70	0.00	0.00	5.80	8.9	1
Davit5	Davit5:t	End	9.03	11.84	0.41	-3.67	0.00	0.00	0.0	0.92	2.52	0.00	0.15	0.00	0.87	0.00	1.52	2.3	3
Davit6	Davit6:O	Origin	0.00	11.63	0.40	0.24	-21.95	0.02	0.0	-1.34	2.53	-0.00	-0.11	6.08	0.00	0.00	6.19	9.5	1
Davit6	#Davit6:0	End	4.52	11.77	0.41	1.68	-10.51	0.01	0.0	-1.34	2.53	-0.00	-0.15	5.27	0.00	0.00	5.41	8.3	1
Davit6	#Davit6:0	Origin	4.52	11.77	0.41	1.68	-10.51	0.01	0.0	-1.32	2.33	-0.00	-0.14	5.27	0.00	0.00	5.41	8.3	1
Davit6	Davit6:t	End	9.03	11.91	0.42	3.04	-0.00	0.00	0.0	-1.32	2.33	-0.00	-0.22	0.00	0.80	0.00	1.41	2.2	3
Davit7	Davit7:O	Origin	0.00	7.67	0.23	-0.43	-23.73	-0.01	-0.0	0.89	2.73	0.00	0.07	6.58	0.00	0.00	6.65	10.2	1
Davit7	#Davit7:0	End	4.52	7.76	0.24	-1.67	-11.39	-0.00	-0.0	0.89	2.73	0.00	0.10	5.71	0.00	0.00	5.80	8.9	1
Davit7	#Davit7:0	Origin	4.52	7.76	0.24	-1.67	-11.39	-0.00	0.0	0.91	2.52	0.00	0.10	5.71	0.00	0.00	5.81	8.9	1
Davit7	Davit7:t	End	9.03	7.85	0.24	-3.00	0.00	0.00	0.0	0.91	2.52	0.00	0.15	0.00	0.87	0.00	1.52	2.3	3
Davit8	Davit8:O	Origin	0.00	7.68	0.23	0.27	-22.01	0.01	0.0	-1.33	2.54	-0.00	-0.11	6.10	0.00	0.00	6.21	9.6	1
Davit8	#Davit8:0	End	4.52	7.78	0.24	1.41	-10.54	0.00	0.0	-1.33	2.54	-0.00	-0.15	5.28	0.00	0.00	5.43	8.4	1
Davit8	#Davit8:0	Origin	4.52	7.78	0.24	1.41	-10.54	0.00	0.0	-1.30	2.33	-0.00	-0.14	5.28	0.00	0.00	5.43	8.3	1
Davit8	Davit8:t	End	9.03	7.88	0.24	2.48	-0.00	0.00	0.0	-1.30	2.33	-0.00	-0.22	0.00	0.81	0.00	1.42	2.2	3

Summary of Clamp Capacities and Usages for Load Case "NESC Heavy Wind":

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
Clamp1	0.998	100.00	100.00	1.00
Clamp2	1.093	100.00	100.00	1.09
Clamp3	2.601	100.00	100.00	2.60
Clamp4	2.593	100.00	100.00	2.59
Clamp5	2.600	100.00	100.00	2.60
Clamp6	2.594	100.00	100.00	2.59
Clamp7	2.600	100.00	100.00	2.60
Clamp8	2.594	100.00	100.00	2.59
Clamp9	1.404	100.00	100.00	1.40
Clamp10	0.936	100.00	100.00	0.94
Clamp11	0.936	100.00	100.00	0.94
Clamp12	0.936	100.00	100.00	0.94
Clamp13	0.936	100.00	100.00	0.94
Clamp14	0.936	100.00	100.00	0.94
Clamp15	0.936	100.00	100.00	0.94
Clamp16	0.936	100.00	100.00	0.94
Clamp17	0.936	100.00	100.00	0.94
Clamp18	10.225	100.00	100.00	10.23
Clamp19	13.069	100.00	100.00	13.07
Clamp20	22.500	100.00	100.00	22.50
Clamp21	22.500	100.00	100.00	22.50

*** Analysis Results for Load Case No. 2 "NESC Extreme Wind" - Number of iterations in SAPS 16

Equilibrium Joint Positions and Rotations for Load Case "NESC Extreme Wind":

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)
3848:g	0	0	0	0.0000	0.0000	0.0000	0	0	0
3848:t	0.2347	4.139	-0.1278	-5.0278	0.3531	-0.0063	0.2347	4.139	95.87
3848:Arm1	0.2319	4.099	-0.126	-5.0278	0.3531	-0.0063	0.2319	4.099	95.42
3848:TopConn	0.2162	3.876	-0.1162	-5.0258	0.3531	-0.0063	0.2162	3.876	92.88
3848:Arm2	0.1909	3.518	-0.1004	-4.9457	0.3531	-0.0068	0.1909	3.518	88.8
3848:WVGD1	0.1668	3.187	-0.08628	-4.7579	0.3531	-0.0080	0.1668	3.187	84.91
3848:BotConT	0.1576	3.064	-0.08115	-4.6637	0.3531	-0.0086	0.1576	3.064	83.42
3848:BotConn	0.1543	3.023	-0.07949	-4.6300	0.3514	-0.0086	0.1543	3.023	82.92
3848:BotConB	0.1511	2.983	-0.07785	-4.5957	0.3465	-0.0084	0.1511	2.983	82.42
3848:Arm3	0.1144	2.461	-0.05775	-4.1278	0.2690	-0.0051	0.1144	2.461	75.59
3848:WVGD2	0.1114	2.415	-0.05607	-4.0838	0.2628	-0.0048	0.1114	2.415	74.94
3848:WVGD3	0.0728	1.76	-0.03436	-3.4033	0.1826	-0.0022	0.0728	1.76	64.97
3848:Arm4	0.06488	1.609	-0.02993	-3.2289	0.1658	-0.0018	0.06488	1.609	62.37
3848:WVGD4	0.04616	1.224	-0.01969	-2.7371	0.1253	-0.0009	0.04616	1.224	54.98
3848:WVGD5	0.02793	0.7989	-0.01043	-2.1384	0.0861	-0.0003	0.02793	0.7989	44.99
3848:WVGD6	0.01543	0.4718	-0.004888	-1.6025	0.0581	-0.0001	0.01543	0.4718	35
3848:WVGD7	0.007256	0.2355	-0.001901	-1.1021	0.0364	-0.0000	0.007256	0.2355	25
3848:WVGD8	0.002424	0.08324	-0.0005539	-0.6371	0.0194	0.0000	0.002424	0.08324	15
3848:WVGD9	0.0002534	0.009317	-9.42e-005	-0.2048	0.0058	0.0000	0.0002534	0.009317	5
Davit1:O	0.2315	4.096	-0.1996	-5.0278	0.3531	-0.0063	0.2315	4.936	95.34
Davit1:t	0.2329	4.125	-0.5543	-5.0732	0.3531	-0.0059	0.2329	8.964	95.49
Davit2:O	0.2323	4.102	-0.05238	-5.0278	0.3531	-0.0063	0.2323	3.263	95.49
Davit2:t	0.237	4.162	0.2953	-5.0073	0.3531	-0.0065	0.237	-0.6784	96.34
Davit3:O	0.1905	3.515	-0.1811	-4.9457	0.3531	-0.0068	0.1905	4.45	88.71
Davit3:t	0.1913	3.546	-0.9674	-5.0283	0.3531	-0.0063	0.1913	13.48	88.68
Davit4:O	0.1913	3.522	-0.01978	-4.9457	0.3531	-0.0068	0.1913	2.586	88.88
Davit4:t	0.1996	3.619	0.7479	-4.8866	0.3531	-0.0071	0.1996	-6.317	90.39
Davit5:O	0.1141	2.458	-0.1388	-4.1278	0.2690	-0.0051	0.1141	3.584	75.51
Davit5:t	0.1153	2.489	-0.7964	-4.2124	0.2691	-0.0046	0.1153	12.62	75.6
Davit6:O	0.1147	2.464	0.02332	-4.1278	0.2690	-0.0051	0.1147	1.338	75.67
Davit6:t	0.1204	2.54	0.6636	-4.0666	0.2690	-0.0054	0.1204	-7.586	77.06
Davit7:O	0.0647	1.607	-0.1041	-3.2289	0.1658	-0.0018	0.0647	2.924	62.29
Davit7:t	0.06562	1.636	-0.6202	-3.3155	0.1658	-0.0013	0.06562	11.95	62.53
Davit8:O	0.06505	1.611	0.04424	-3.2289	0.1658	-0.0018	0.06505	0.2945	62.44
Davit8:t	0.06837	1.667	0.5442	-3.1653	0.1658	-0.0021	0.06837	-8.65	63.69

Joint Support Reactions for Load Case "NESC Extreme Wind":

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 %
3848:g	0.01	0.0	-39.63	0.0	0.0	-33.58	0.0	0.0	51.94	0.0	3098.95	0.0	-85.1	0.0	0.0	-0.04	0.0	0.0

Detailed Steel Pole Usages for Load Case "NESC Extreme Wind":

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.

3848	3848:t	Origin	0.00	49.67	2.82	-1.53	0.00	-0.00	-0.0	-0.02	0.01	-0.00	-0.00	0.00	0.00	0.00	0.00	0.0	5
3848	3848:Arm1	End	0.46	49.19	2.78	-1.51	0.01	-0.00	-0.0	-0.02	0.01	-0.00	-0.00	0.00	0.00	0.00	0.00	0.0	4
3848	3848:Arm1	Origin	0.46	49.19	2.78	-1.51	0.76	0.00	0.0	-0.69	1.70	0.00	-0.03	0.00	0.17	0.00	0.30	0.5	5
3848	3848:TopConn	End	3.00	46.52	2.59	-1.39	5.07	0.00	0.0	-0.69	1.70	0.00	-0.03	0.56	0.04	0.00	0.60	0.9	2
3848	3848:TopConn	Origin	3.00	46.52	2.59	-1.39	5.07	0.00	0.0	2.41	40.03	0.00	0.12	0.00	3.91	0.00	6.78	10.4	5
3848	3848:Arm2	End	7.10	42.22	2.29	-1.21	169.35	0.01	0.0	2.41	40.03	0.00	0.11	16.34	0.95	0.00	16.53	25.4	2
3848	3848:Arm2	Origin	7.10	42.22	2.29	-1.21	172.61	0.01	0.0	-0.54	44.58	-0.00	-0.02	16.66	1.06	0.00	16.78	25.8	2
3848	3848:WVGD1	End	11.00	38.25	2.00	-1.04	346.29	0.00	0.0	-0.54	44.58	-0.00	-0.02	29.67	1.00	0.00	29.75	45.8	2
3848	3848:WVGD1	Origin	11.00	38.25	2.00	-1.04	346.29	0.01	0.0	-1.17	45.61	-0.01	-0.05	29.67	1.02	0.00	29.78	45.8	2
3848	3848:BotConT	End	12.50	36.77	1.89	-0.97	414.70	-0.01	0.0	-1.17	45.61	-0.01	-0.05	34.01	1.00	0.00	34.10	52.5	2
3848	3848:BotConT	Origin	12.50	36.77	1.89	-0.97	414.70	-0.00	-0.1	-0.75	45.65	-84.92	-0.03	34.01	7.16	0.00	36.23	55.7	1
3848	3848:BotConn	End	13.00	36.28	1.85	-0.95	437.53	-42.46	-0.1	-0.75	45.65	-84.92	-0.03	36.28	6.96	0.00	38.26	58.9	2
3848	3848:BotConn	Origin	13.00	36.28	1.85	-0.95	437.53	-42.46	-0.1	-8.20	19.62	-84.95	-0.34	36.28	6.90	0.00	38.53	59.3	2
3848	3848:BotConB	End	13.50	35.80	1.81	-0.93	447.34	-84.94	-0.1	-8.20	19.62	-84.95	-0.34	37.46	6.85	0.00	39.61	60.9	2
3848	3848:BotConB	Origin	13.50	35.80	1.81	-0.93	447.34	-84.93	0.0	-8.96	19.77	-0.04	-0.37	37.46	0.43	0.00	37.83	58.2	2
3848	Tube 1	End	16.93	32.58	1.58	-0.81	515.08	-85.07	0.0	-8.96	19.77	-0.04	-0.35	38.95	0.41	0.00	39.31	60.5	2
3848	Tube 1	Origin	16.93	32.58	1.58	-0.81	515.08	-85.06	0.0	-9.34	19.98	-0.04	-0.36	38.95	0.41	0.00	39.33	60.5	2
3848	3848:Arm3	End	20.35	29.53	1.37	-0.69	583.56	-85.19	0.0	-9.34	19.98	-0.04	-0.35	40.09	0.39	0.00	40.44	62.2	2
3848	3848:Arm3	Origin	20.35	29.53	1.37	-0.69	586.79	-85.18	0.0	-12.18	24.37	-0.03	-0.45	40.30	0.48	0.00	40.77	62.7	2
3848	3848:WVGD2	End	21.00	28.98	1.34	-0.67	602.54	-85.20	0.0	-12.18	24.37	-0.03	-0.45	40.66	0.48	0.00	41.12	63.3	2
3848	3848:WVGD2	Origin	21.00	28.98	1.34	-0.67	602.54	-85.19	0.0	-12.74	25.11	-0.03	-0.47	40.66	0.49	0.00	41.14	63.3	2
3848	Tube 1	End	26.00	24.87	1.08	-0.53	728.10	-85.35	0.0	-12.74	25.11	-0.03	-0.44	43.09	0.46	0.00	43.54	67.0	2
3848	Tube 1	Origin	26.00	24.87	1.08	-0.53	728.10	-85.33	0.0	-13.38	25.44	-0.03	-0.46	43.09	0.47	0.00	43.56	67.0	2
3848	3848:WVGD3	End	31.00	21.12	0.87	-0.41	855.32	-85.46	0.0	-13.38	25.44	-0.03	-0.44	44.80	0.44	0.00	45.25	69.6	2
3848	3848:WVGD3	Origin	31.00	21.12	0.87	-0.41	855.32	-85.45	0.0	-14.10	26.26	-0.02	-0.46	44.80	0.45	0.00	45.27	69.6	2
3848	3848:Arm4	End	33.60	19.31	0.78	-0.36	923.71	-85.50	0.0	-14.10	26.26	-0.02	-0.45	45.54	0.44	0.00	46.00	70.8	2
3848	3848:Arm4	Origin	33.60	19.31	0.78	-0.36	926.91	-85.49	0.0	-17.22	30.70	-0.01	-0.55	45.70	0.52	0.00	46.25	71.2	2
3848	Tube 1	End	37.30	16.90	0.66	-0.29	1040.43	-85.54	0.0	-17.22	30.70	-0.01	-0.53	47.21	0.50	0.00	47.74	73.4	2
3848	Tube 1	Origin	37.30	16.90	0.66	-0.29	1040.43	-85.53	0.0	-17.76	30.96	-0.01	-0.54	47.21	0.50	0.00	47.76	73.5	2
3848	3848:WVGD4	End	41.00	14.68	0.55	-0.24	1154.92	-85.56	0.0	-17.76	30.96	-0.01	-0.52	48.40	0.48	0.00	48.93	75.3	2
3848	3848:WVGD4	Origin	41.00	14.68	0.55	-0.24	1154.92	-85.55	0.0	-18.41	31.72	-0.01	-0.54	48.40	0.49	0.00	48.95	75.3	2
3848	SpliceT	End	42.92	13.61	0.51	-0.21	1215.73	-85.56	0.0	-18.41	31.72	-0.01	-0.53	48.96	0.48	0.00	49.50	76.1	2
3848	SpliceT	Origin	42.92	13.61	0.51	-0.21	1215.73	-85.56	0.0	-19.23	31.98	-0.00	-0.55	48.96	0.49	0.00	49.52	76.2	2
3848	SpliceB	End	47.50	11.23	0.40	-0.16	1362.32	-85.57	0.0	-19.23	31.98	-0.00	-0.45	43.41	0.40	0.00	43.87	67.5	2
3848	SpliceB	Origin	47.50	11.23	0.40	-0.16	1362.32	-85.56	0.0	-20.23	32.31	-0.00	-0.47	43.41	0.40	0.00	43.89	67.5	2
3848	3848:WVGD5	End	51.00	9.59	0.34	-0.13	1475.41	-85.57	0.0	-20.23	32.31	-0.00	-0.46	43.89	0.39	0.00	44.36	68.2	2
3848	3848:WVGD5	Origin	51.00	9.59	0.34	-0.13	1475.41	-85.56	0.0	-21.23	33.22	0.00	-0.48	43.89	0.40	0.00	44.38	68.3	2
3848	Tube 2	End	56.00	7.48	0.25	-0.09	1641.51	-85.56	0.0	-21.23	33.22	0.00	-0.46	44.45	0.38	0.00	44.91	69.1	2
3848	Tube 2	Origin	56.00	7.48	0.25	-0.09	1641.51	-85.55	0.0	-22.18	33.65	0.00	-0.48	44.45	0.38	0.00	44.93	69.1	2
3848	3848:WVGD6	End	61.00	5.66	0.19	-0.06	1809.73	-85.53	0.0	-22.18	33.65	0.00	-0.46	44.79	0.37	0.00	45.26	69.6	2
3848	3848:WVGD6	Origin	61.00	5.66	0.19	-0.06	1809.73	-85.52	0.0	-23.16	34.54	0.01	-0.48	44.79	0.38	0.00	45.28	69.7	2
3848	Tube 2	End	63.71	4.79	0.15	-0.05	1903.28	-85.50	0.0	-23.16	34.54	0.01	-0.47	44.94	0.37	0.00	45.42	69.9	2
3848	Tube 2	Origin	63.71	4.79	0.15	-0.05	1903.28	-85.50	0.0	-23.70	34.78	0.01	-0.48	44.94	0.37	0.00	45.43	69.9	2
3848	SpliceT	End	66.42	4.00	0.13	-0.04	1997.49	-85.48	0.0	-23.70	34.78	0.01	-0.47	45.05	0.36	0.00	45.53	70.0	2
3848	SpliceT	Origin	66.42	4.00	0.13	-0.04	1997.49	-85.48	0.0	-24.44	35.13	0.01	-0.48	45.05	0.37	0.00	45.54	70.1	2
3848	3848:WVGD7	End	71.00	2.83	0.09	-0.02	2158.48	-85.44	0.0	-24.44	35.13	0.01	-0.47	45.16	0.35	0.00	45.63	70.2	2
3848	3848:WVGD7	Origin	71.00	2.83	0.09	-0.02	2158.48	-85.43	0.0	-25.68	36.14	0.01	-0.49	45.16	0.36	0.00	45.65	70.2	2
3848	Tube 3	End	76.00	1.79	0.05	-0.01	2339.19	-85.38	0.0	-25.68	36.14	0.01	-0.47	45.22	0.35	0.00	45.70	70.4	2
3848	Tube 3	Origin	76.00	1.79	0.05	-0.01	2339.19	-85.38	0.0	-26.75	36.64	0.01	-0.49	45.22	0.35	0.00	45.72	70.4	2
3848	3848:WVGD8	End	81.00	1.00	0.03	-0.01	2522.40	-85.32	0.0	-26.75	36.64	0.01	-0.47	45.20	0.34	0.00	45.67	71.7	2
3848	3848:WVGD8	Origin	81.00	1.00	0.03	-0.01	2522.40	-85.32	0.0	-28.11	37.71	0.01	-0.50	45.20	0.35	0.00	45.70	71.7	2
3848	Tube 3	End	86.00	0.44	0.01	-0.00	2710.96	-85.26	0.0	-28.11	37.71	0.01	-0.48	45.15	0.34	0.00	45.63	73.0	2
3848	Tube 3	Origin	86.00	0.44	0.01	-0.00	2710.96	-85.26	0.0	-29.25	38.25	0.01	-0.50	45.15	0.34	0.00	45.65	73.0	2
3848	3848:WVGD9	End	91.00	0.11	0.00	-0.00	2902.20	-85.19	0.0	-29.25	38.25	0.01	-0.48	45.05	0.33	0.00	45.53	74.3	2
3848	3848:WVGD9	Origin	91.00	0.11	0.00	-0.00	2902.20	-85.19	0.0	-30.67	39.35	0.01	-0.50	45.05	0.34	0.00	45.55	74.3	2
3848	3848:g	End	96.00	0.00	0.00	0.00	3098.95	-85.11	0.0	-30.67	39.35	0.01	-0.49	44.93	0.33	0.00	45.43	75.6	2

Detailed Tubular Davit Arm Usages for Load Case "NESC Extreme Wind":

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.
Davit1	Davit1:O	Origin	0.00	49.15	2.78	-2.40	-1.39	0.00	0.0	0.67	0.35	-0.00	0.16	2.43	0.00	0.00	2.59	4.0	1
Davit1	Davit1:t	End	4.03	49.49	2.79	-6.65	0.00	0.00	0.0	0.67	0.35	-0.00	0.22	0.00	0.24	0.00	0.47	0.7	3
Davit2	Davit2:O	Origin	0.00	49.23	2.79	-0.63	-0.63	-0.00	0.0	-0.91	0.16	0.00	-0.22	1.10	0.00	0.00	1.31	2.0	1
Davit2	Davit2:t	End	4.03	49.94	2.84	3.54	-0.00	0.00	0.0	-0.91	0.16	0.00	-0.30	0.00	0.11	0.00	0.36	0.6	3
Davit3	Davit3:O	Origin	0.00	42.18	2.29	-2.17	-11.73	-0.01	-0.0	2.03	1.37	0.00	0.17	3.25	0.00	0.00	3.42	5.3	1
Davit3	#Davit3:0	End	4.52	42.36	2.29	-6.87	-5.55	-0.00	-0.0	2.03	1.37	0.00	0.22	2.78	0.00	0.00	3.00	4.6	1
Davit3	#Davit3:0	Origin	4.52	42.36	2.29	-6.87	-5.55	-0.00	0.0	2.04	1.23	0.00	0.22	2.78	0.00	0.00	3.00	4.6	1
Davit3	Davit3:t	End	9.03	42.55	2.30	-11.61	0.00	0.00	0.0	2.04	1.23	0.00	0.34	0.00	0.42	0.00	0.81	1.2	3
Davit4	Davit4:O	Origin	0.00	42.26	2.30	-0.24	-8.48	0.02	0.0	-2.23	1.01	-0.00	-0.18	2.35	0.00	0.00	2.53	3.9	1
Davit4	#Davit4:0	End	4.52	42.85	2.35	4.38	-3.94	0.01	0.0	-2.23	1.01	-0.00	-0.24	1.98	0.00	0.00	2.22	3.4	1
Davit4	#Davit4:0	Origin	4.52	42.85	2.35	4.38	-3.94	0.01	0.0	-2.21	0.87	-0.00	-0.24	1.98	0.00	0.00	2.22	3.4	1
Davit4	Davit4:t	End	9.03	43.43	2.39	8.97	-0.00	0.00	0.0	-2.21	0.87	-0.00	-0.37	0.00	0.30	0.00	0.64	1.0	3
Davit5	Davit5:O	Origin	0.00	29.50	1.37	-1.67	-11.99	0.01	-0.0	2.01	1.40	-0.00	0.16	3.32	0.00	0.00	3.49	5.4	1
Davit5	#Davit5:0	End	4.52	29.68	1.38	-5.59	-5.68	0.01	-0.0	2.01	1.40	-0.00	0.22	2.84	0.00	0.00	3.07	4.7	1
Davit5	#Davit5:0	Origin	4.52	29.68	1.38	-5.59	-5.68	0.01	0.0	2.02	1.26	-0.00	0.22	2.84	0.00	0.00	3.07	4.7	1
Davit5	Davit5:t	End	9.03	29.87	1.38	-9.56	0.00	0.00	0.0	2.02	1.26	-0.00	0.34	0.00	0.43	0.00	0.82	1.3	3
Davit6	Davit6:O	Origin	0.00	29.57	1.38	0.28	-8.77	-0.00	0.0	-2.22	1.04	-0.00	-0.18	2.43	0.00	0.00	2.61	4.0	1
Davit6	#Davit6:0	End	4.52	30.03	1.41	4.14	-4.09	-0.00	0.0	-2.22	1.04	-0.00	-0.24	2.05	0.00	0.00	2.29	3.5	1
Davit6	#Davit6:0	Origin	4.52	30.03	1.41	4.14	-4.09	-0.00	0.0	-2.19	0.91	0.00	-0.24	2.05	0.00	0.00	2.29	3.5	1
Davit6	Davit6:t	End	9.03	30.49	1.44	7.96	-0.00	0.00	0.0	-2.19	0.91	0.00	-0.37	0.00	0.31	0.00	0.65	1.0	3
Davit7	Davit7:O	Origin	0.00	19.29	0.78	-1.25	-12.28	0.03	-0.0	1.99	1.43	-0.00	0.16	3.40	0.00	0.00	3.57	5.5	1
Davit7	#Davit7:0	End	4.52	19.46	0.78	-4.32	-5.82	0.02	-0.0	1.99	1.43	-0.00	0.22	2.92	0.00	0.00	3.13	4.8	1
Davit7	#Davit7:0	Origin	4.52	19.46	0.78	-4.32	-5.82	0.02	0.0	2.00	1.29	-0.00	0.22	2.92	0.00	0.00	3.13	4.8	1
Davit7	Davit7:t	End	9.03	19.63	0.79	-7.44	0.00	0.00	0.0	2.00	1.29	-0.00	0.33	0.00	0.45	0.00	0.84	1.3	3
Davit8	Davit8:O	Origin	0.00	19.34	0.78	0.53	-9.09	-0.02	0.0	-2.20	1.07	0.00	-0.18	2.52	0.00	0.00	2.70	4.2	1
Davit8	#Davit8:0	End	4.52	19.67	0.80	3.55	-4.24	-0.01	0.0	-2.20	1.07	0.00	-0.24	2.13	0.00	0.00	2.37	3.6	1
Davit8	#Davit8:0	Origin	4.52	19.67	0.80	3.55	-4.24	-0.01	0.0	-2.18	0.94	0.00	-0.24	2.13	0.00	0.00	2.37	3.6	1
Davit8	Davit8:t	End	9.03	20.01	0.82	6.53	-0.00	0.00	0.0	-2.18	0.94	0.00	-0.36	0.00	0.33	0.00	0.67	1.0	3

Summary of Clamp Capacities and Usages for Load Case "NESC Extreme Wind":

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
Clamp1	0.740	100.00	100.00	0.74
Clamp2	0.916	100.00	100.00	0.92
Clamp3	2.348	100.00	100.00	2.35
Clamp4	2.343	100.00	100.00	2.34
Clamp5	2.347	100.00	100.00	2.35
Clamp6	2.344	100.00	100.00	2.34
Clamp7	2.347	100.00	100.00	2.35
Clamp8	2.344	100.00	100.00	2.34
Clamp9	0.901	100.00	100.00	0.90

Clamp10	0.601	100.00	100.00	0.60
Clamp11	0.601	100.00	100.00	0.60
Clamp12	0.601	100.00	100.00	0.60
Clamp13	0.601	100.00	100.00	0.60
Clamp14	0.601	100.00	100.00	0.60
Clamp15	0.601	100.00	100.00	0.60
Clamp16	0.601	100.00	100.00	0.60
Clamp17	0.601	100.00	100.00	0.60
Clamp18	38.275	100.00	100.00	38.28
Clamp19	27.085	100.00	100.00	27.08
Clamp20	84.910	100.00	100.00	84.91
Clamp21	84.910	100.00	100.00	84.91

*** Analysis Results for Load Case No. 3 "NESC Extreme Ice w/ Wind" - Number of iterations in SAPS 14

Equilibrium Joint Positions and Rotations for Load Case "NESC Extreme Ice w/ Wind":

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)
3848:g	0	0	0	0.0000	0.0000	0.0000	0	0	0
3848:t	0.0445	1.195	-0.01268	-1.3890	0.0661	-0.0004	0.0445	1.195	95.99
3848:Arm1	0.04397	1.184	-0.01254	-1.3890	0.0661	-0.0004	0.04397	1.184	95.53
3848:TopConn	0.04104	1.122	-0.01179	-1.3878	0.0661	-0.0004	0.04104	1.122	92.99
3848:Arm2	0.03631	1.023	-0.01058	-1.3692	0.0661	-0.0004	0.03631	1.023	88.89
3848:WVGD1	0.03181	0.9314	-0.009445	-1.3269	0.0661	-0.0005	0.03181	0.9314	84.99
3848:BotConT	0.03008	0.8968	-0.009028	-1.3056	0.0661	-0.0005	0.03008	0.8968	83.49
3848:BotConn	0.02948	0.8855	-0.008891	-1.2980	0.0658	-0.0005	0.02948	0.8855	82.99
3848:BotConB	0.02888	0.8742	-0.008751	-1.2902	0.0649	-0.0005	0.02888	0.8742	82.49
3848:Arm3	0.02199	0.7262	-0.006982	-1.1794	0.0507	-0.0003	0.02199	0.7262	75.64
3848:WVGD2	0.02143	0.7129	-0.006827	-1.1686	0.0495	-0.0003	0.02143	0.7129	74.99
3848:WVGD3	0.01412	0.5237	-0.004735	-0.9928	0.0348	-0.0001	0.01412	0.5237	65
3848:Arm4	0.01261	0.4796	-0.004284	-0.9458	0.0317	-0.0001	0.01261	0.4796	62.39
3848:WVGD4	0.009027	0.366	-0.003163	-0.8096	0.0241	-0.0001	0.009027	0.366	55
3848:WVGD5	0.005504	0.2397	-0.002065	-0.6378	0.0167	-0.0000	0.005504	0.2397	45
3848:WVGD6	0.003064	0.1419	-0.001311	-0.4803	0.0114	-0.0000	0.003064	0.1419	35
3848:WVGD7	0.001451	0.07092	-0.0007898	-0.3314	0.0072	-0.0000	0.001451	0.07092	25
3848:WVGD8	0.0004883	0.02509	-0.0004193	-0.1919	0.0039	-0.0000	0.0004883	0.02509	15
3848:WVGD9	5.157e-005	0.00281	-0.0001315	-0.0617	0.0012	0.0000	5.157e-005	0.00281	5
Davit1:O	0.04396	1.184	-0.03291	-1.3890	0.0661	-0.0004	0.04396	2.024	95.51
Davit1:t	0.04444	1.195	-0.1359	-1.5134	0.0661	-0.0003	0.04444	6.035	95.91
Davit2:O	0.04399	1.184	0.007815	-1.3890	0.0661	-0.0004	0.04399	0.3443	95.55
Davit2:t	0.04464	1.197	0.0992	-1.2739	0.0661	-0.0005	0.04464	-3.643	96.14
Davit3:O	0.03629	1.023	-0.03293	-1.3692	0.0661	-0.0004	0.03629	1.959	88.86
Davit3:t	0.03695	1.039	-0.2621	-1.5212	0.0661	-0.0004	0.03695	10.97	89.38
Davit4:O	0.03632	1.024	0.01178	-1.3692	0.0661	-0.0004	0.03632	0.08804	88.91
Davit4:t	0.03735	1.043	0.2137	-1.2276	0.0661	-0.0005	0.03735	-8.893	89.86
Davit5:O	0.02198	0.726	-0.03016	-1.1794	0.0507	-0.0003	0.02198	1.852	75.62
Davit5:t	0.02251	0.7404	-0.2295	-1.3315	0.0507	-0.0002	0.02251	10.87	76.17
Davit6:O	0.02201	0.7264	0.0162	-1.1794	0.0507	-0.0003	0.02201	-0.3998	75.66
Davit6:t	0.02277	0.7425	0.1884	-1.0376	0.0507	-0.0004	0.02277	-9.384	76.58
Davit7:O	0.0126	0.4794	-0.02602	-0.9458	0.0317	-0.0001	0.0126	1.796	62.37
Davit7:t	0.01294	0.4915	-0.1886	-1.0982	0.0317	-0.0000	0.01294	10.81	62.96
Davit8:O	0.01262	0.4797	0.01745	-0.9458	0.0317	-0.0001	0.01262	-0.8372	62.41
Davit8:t	0.01309	0.4921	0.153	-0.8037	0.0317	-0.0002	0.01309	-9.825	63.3

Joint Support Reactions for Load Case "NESC Extreme Ice w/ Wind":

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 %
3848:g	-0.03	0.0	-12.01	0.0	0.0	-49.73	0.0	0.0	51.16	0.0	934.65	0.0	-17.3	0.0	0.0	-0.00	0.0	0.0

Detailed Steel Pole Usages for Load Case "NESC Extreme Ice w/ Wind":

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.

3848	3848:t	Origin	0.00	14.34	0.53	-0.15	-0.00	-0.00	0.0	-0.02	0.00	-0.00	-0.00	0.00	0.00	0.00	0.00	0.0	5
3848	3848:Arm1	End	0.46	14.21	0.53	-0.15	0.00	-0.00	0.0	-0.02	0.00	-0.00	-0.00	0.00	0.00	0.00	0.00	0.0	4
3848	3848:Arm1	Origin	0.46	14.21	0.53	-0.15	0.22	-0.00	0.0	-2.01	1.22	-0.00	-0.10	0.00	0.12	0.00	0.24	0.4	5
3848	3848:TopConn	End	3.00	13.47	0.49	-0.14	3.32	-0.00	0.0	-2.01	1.22	-0.00	-0.10	0.37	0.03	0.00	0.47	0.7	2
3848	3848:TopConn	Origin	3.00	13.47	0.49	-0.14	3.32	-0.00	0.0	-2.08	8.25	-0.00	-0.10	0.00	0.81	0.00	1.40	2.2	5
3848	3848:Arm2	End	7.10	12.28	0.44	-0.13	37.19	-0.01	0.0	-2.08	8.25	-0.00	-0.09	3.59	0.20	0.00	3.70	5.7	2
3848	3848:Arm2	Origin	7.10	12.28	0.44	-0.13	38.63	-0.01	0.0	-7.25	10.17	-0.01	-0.33	3.73	0.24	0.00	4.07	6.3	2
3848	3848:WVGD1	End	11.00	11.18	0.38	-0.11	78.26	-0.04	0.0	-7.25	10.17	-0.01	-0.31	6.71	0.23	0.00	7.02	10.8	2
3848	3848:WVGD1	Origin	11.00	11.18	0.38	-0.11	78.26	-0.04	0.0	-8.74	10.42	-0.01	-0.37	6.71	0.23	0.00	7.09	10.9	2
3848	3848:BotConT	End	12.50	10.76	0.36	-0.11	93.88	-0.05	0.0	-8.74	10.42	-0.01	-0.36	7.70	0.23	0.00	8.07	12.4	2
3848	3848:BotConT	Origin	12.50	10.76	0.36	-0.11	93.88	-0.05	-0.0	-8.80	10.43	-15.40	-0.36	7.70	1.30	0.00	8.37	12.9	1
3848	3848:BotConn	End	13.00	10.63	0.35	-0.11	99.10	-7.76	-0.0	-8.80	10.43	-15.40	-0.36	8.18	1.27	0.00	8.82	13.6	2
3848	3848:BotConn	Origin	13.00	10.63	0.35	-0.11	99.10	-7.76	-0.0	-17.76	5.83	-15.41	-0.73	8.18	1.26	0.00	9.17	14.1	2
3848	3848:BotConB	End	13.50	10.49	0.35	-0.11	102.01	-15.46	-0.0	-17.76	5.83	-15.41	-0.73	8.46	1.25	0.00	9.43	14.5	2
3848	3848:BotConB	Origin	13.50	10.49	0.35	-0.11	102.01	-15.46	0.0	-17.95	5.86	-0.02	-0.73	8.46	0.13	0.00	9.19	14.1	2
3848	Tube 1	End	16.93	9.58	0.30	-0.09	122.08	-15.53	0.0	-17.95	5.86	-0.02	-0.70	9.14	0.12	0.00	9.84	15.1	2
3848	Tube 1	Origin	16.93	9.58	0.30	-0.09	122.08	-15.53	0.0	-18.25	5.91	-0.02	-0.71	9.14	0.12	0.00	9.86	15.2	2
3848	3848:Arm3	End	20.35	8.71	0.26	-0.08	142.32	-15.59	0.0	-18.25	5.91	-0.02	-0.68	9.69	0.12	0.00	10.37	15.9	2
3848	3848:Arm3	Origin	20.35	8.71	0.26	-0.08	143.75	-15.59	0.0	-23.31	7.77	-0.02	-0.87	9.78	0.15	0.00	10.65	16.4	2
3848	3848:WVGD2	End	21.00	8.56	0.26	-0.08	148.77	-15.61	0.0	-23.31	7.77	-0.02	-0.86	9.94	0.15	0.00	10.81	16.6	2
3848	3848:WVGD2	Origin	21.00	8.56	0.26	-0.08	148.77	-15.61	0.0	-24.43	7.94	-0.02	-0.90	9.94	0.16	0.00	10.85	16.7	2
3848	Tube 1	End	26.00	7.37	0.21	-0.07	188.48	-15.71	0.0	-24.43	7.94	-0.02	-0.85	11.06	0.15	0.00	11.91	18.3	2
3848	Tube 1	Origin	26.00	7.37	0.21	-0.07	188.48	-15.71	0.0	-24.93	8.01	-0.02	-0.87	11.06	0.15	0.00	11.92	18.3	2
3848	3848:WVGD3	End	31.00	6.28	0.17	-0.06	228.55	-15.80	0.0	-24.93	8.01	-0.02	-0.82	11.88	0.14	0.00	12.69	19.5	2
3848	3848:WVGD3	Origin	31.00	6.28	0.17	-0.06	228.55	-15.80	0.0	-26.18	8.20	-0.02	-0.86	11.88	0.14	0.00	12.74	19.6	2
3848	3848:Arm4	End	33.60	5.75	0.15	-0.05	249.90	-15.85	0.0	-26.18	8.20	-0.02	-0.83	12.23	0.14	0.00	13.06	20.1	2
3848	3848:Arm4	Origin	33.60	5.75	0.15	-0.05	251.32	-15.85	0.0	-31.40	10.06	-0.02	-1.00	12.30	0.17	0.00	13.30	20.5	2
3848	Tube 1	End	37.30	5.05	0.13	-0.04	288.52	-15.93	0.0	-31.40	10.06	-0.02	-0.96	13.00	0.16	0.00	13.96	21.5	2
3848	Tube 1	Origin	37.30	5.05	0.13	-0.04	288.52	-15.93	0.0	-31.82	10.11	-0.02	-0.97	13.00	0.16	0.00	13.97	21.5	2
3848	3848:WVGD4	End	41.00	4.39	0.11	-0.04	325.91	-16.00	0.0	-31.82	10.11	-0.02	-0.94	13.57	0.16	0.00	14.51	22.3	2
3848	3848:WVGD4	Origin	41.00	4.39	0.11	-0.04	325.91	-16.00	0.0	-33.00	10.28	-0.02	-0.97	13.57	0.16	0.00	14.54	22.4	2
3848	SpliceT	End	42.92	4.07	0.10	-0.03	345.62	-16.03	0.0	-33.00	10.28	-0.02	-0.95	13.83	0.16	0.00	14.78	22.7	2
3848	SpliceT	Origin	42.92	4.07	0.10	-0.03	345.62	-16.03	0.0	-33.73	10.33	-0.02	-0.97	13.83	0.16	0.00	14.81	22.8	2
3848	SpliceB	End	47.50	3.37	0.08	-0.03	392.98	-16.12	0.0	-33.73	10.33	-0.02	-0.79	12.45	0.13	0.00	13.24	20.4	2
3848	SpliceB	Origin	47.50	3.37	0.08	-0.03	392.98	-16.12	0.0	-34.60	10.40	-0.02	-0.81	12.45	0.13	0.00	13.26	20.4	2
3848	3848:WVGD5	End	51.00	2.88	0.07	-0.02	429.40	-16.19	0.0	-34.60	10.40	-0.02	-0.78	12.71	0.12	0.00	13.49	20.8	2
3848	3848:WVGD5	Origin	51.00	2.88	0.07	-0.02	429.40	-16.19	0.0	-36.11	10.60	-0.02	-0.82	12.71	0.13	0.00	13.53	20.8	2
3848	Tube 2	End	56.00	2.25	0.05	-0.02	482.41	-16.29	0.0	-36.11	10.60	-0.02	-0.78	13.00	0.12	0.00	13.78	21.2	2
3848	Tube 2	Origin	56.00	2.25	0.05	-0.02	482.41	-16.29	0.0	-36.91	10.69	-0.02	-0.80	13.00	0.12	0.00	13.80	21.2	2
3848	3848:WVGD6	End	61.00	1.70	0.04	-0.02	535.89	-16.39	0.0	-36.91	10.69	-0.02	-0.76	13.20	0.12	0.00	13.97	21.5	2
3848	3848:WVGD6	Origin	61.00	1.70	0.04	-0.02	535.89	-16.39	0.0	-38.39	10.89	-0.02	-0.79	13.20	0.12	0.00	14.00	21.5	2
3848	Tube 2	End	63.71	1.44	0.03	-0.01	565.38	-16.45	0.0	-38.39	10.89	-0.02	-0.78	13.30	0.12	0.00	14.07	21.7	2
3848	Tube 2	Origin	63.71	1.44	0.03	-0.01	565.38	-16.45	0.0	-38.86	10.94	-0.02	-0.79	13.30	0.12	0.00	14.08	21.7	2
3848	SpliceT	End	66.42	1.20	0.03	-0.01	595.02	-16.51	0.0	-38.86	10.94	-0.02	-0.77	13.37	0.11	0.00	14.14	21.7	2
3848	SpliceT	Origin	66.42	1.20	0.03	-0.01	595.02	-16.51	0.0	-39.50	11.02	-0.02	-0.78	13.37	0.12	0.00	14.15	21.8	2
3848	3848:WVGD7	End	71.00	0.85	0.02	-0.01	645.51	-16.61	0.0	-39.50	11.02	-0.02	-0.75	13.45	0.11	0.00	14.21	21.9	2
3848	3848:WVGD7	Origin	71.00	0.85	0.02	-0.01	645.51	-16.61	0.0	-41.22	11.24	-0.02	-0.79	13.45	0.11	0.00	14.24	21.9	2
3848	Tube 3	End	76.00	0.54	0.01	-0.01	701.71	-16.73	0.0	-41.22	11.24	-0.02	-0.76	13.52	0.11	0.00	14.28	22.0	2
3848	Tube 3	Origin	76.00	0.54	0.01	-0.01	701.71	-16.73	0.0	-42.16	11.35	-0.03	-0.77	13.52	0.11	0.00	14.29	22.0	2
3848	3848:WVGD8	End	81.00	0.30	0.01	-0.01	758.46	-16.86	0.0	-42.16	11.35	-0.03	-0.74	13.55	0.11	0.00	14.29	22.4	2
3848	3848:WVGD8	Origin	81.00	0.30	0.01	-0.01	758.46	-16.86	0.0	-43.99	11.58	-0.03	-0.78	13.55	0.11	0.00	14.33	22.5	2
3848	Tube 3	End	86.00	0.13	0.00	-0.00	816.38	-17.00	0.0	-43.99	11.58	-0.03	-0.75	13.56	0.10	0.00	14.31	22.9	2
3848	Tube 3	Origin	86.00	0.13	0.00	-0.00	816.38	-17.00	0.0	-45.00	11.71	-0.03	-0.77	13.56	0.11	0.00	14.33	22.9	2
3848	3848:WVGD9	End	91.00	0.03	0.00	-0.00	874.91	-17.14	0.0	-45.00	11.71	-0.03	-0.74	13.54	0.10	0.00	14.29	23.3	2
3848	3848:WVGD9	Origin	91.00	0.03	0.00	-0.00	874.91	-17.14	0.0	-46.90	11.95	-0.03	-0.77	13.54	0.10	0.00	14.32	23.4	2
3848	3848:g	End	96.00	0.00	0.00	0.00	934.65	-17.30	0.0	-46.90	11.95	-0.03	-0.75	13.52	0.10	0.00	14.27	23.7	2

Detailed Tubular Davit Arm Usages for Load Case "NESC Extreme Ice w/ Wind":

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.
Davit1	Davit1:O	Origin	0.00	14.21	0.53	-0.39	-3.81	-0.00	-0.0	0.46	0.95	0.00	0.11	6.67	0.00	0.00	6.78	10.4	1
Davit1	Davit1:t	End	4.03	14.34	0.53	-1.63	0.00	0.00	-0.0	0.46	0.95	0.00	0.15	0.00	0.66	0.00	1.15	1.8	3
Davit2	Davit2:O	Origin	0.00	14.21	0.53	0.09	-3.53	0.00	0.0	-0.73	0.88	-0.00	-0.17	6.17	0.00	0.00	6.35	9.8	1
Davit2	Davit2:t	End	4.03	14.36	0.54	1.19	-0.00	0.00	0.0	-0.73	0.88	-0.00	-0.24	0.00	0.61	0.00	1.08	1.7	3
Davit3	Davit3:O	Origin	0.00	12.28	0.44	-0.40	-21.23	-0.01	-0.0	0.73	2.42	0.00	0.06	5.88	0.00	0.00	5.94	9.1	1
Davit3	#Davit3:0	End	4.52	12.37	0.44	-1.73	-10.30	-0.01	-0.0	0.73	2.42	0.00	0.08	5.16	0.00	0.00	5.24	8.1	1
Davit3	#Davit3:0	Origin	4.52	12.37	0.44	-1.73	-10.30	-0.01	0.0	0.74	2.28	0.00	0.08	5.16	0.00	0.00	5.24	8.1	1
Davit3	Davit3:t	End	9.03	12.47	0.44	-3.15	0.00	0.00	0.0	0.74	2.28	0.00	0.12	0.00	0.79	0.00	1.37	2.1	3
Davit4	Davit4:O	Origin	0.00	12.28	0.44	0.14	-19.80	0.01	0.0	-1.11	2.26	-0.00	-0.09	5.49	0.00	0.00	5.58	8.6	1
Davit4	#Davit4:0	End	4.52	12.40	0.44	1.39	-9.59	0.01	0.0	-1.11	2.26	-0.00	-0.12	4.81	0.00	0.00	4.93	7.6	1
Davit4	#Davit4:0	Origin	4.52	12.40	0.44	1.39	-9.59	0.01	0.0	-1.10	2.12	-0.00	-0.12	4.81	0.00	0.00	4.93	7.6	1
Davit4	Davit4:t	End	9.03	12.51	0.45	2.56	-0.00	0.00	0.0	-1.10	2.12	-0.00	-0.18	0.00	0.73	0.00	1.29	2.0	3
Davit5	Davit5:O	Origin	0.00	8.71	0.26	-0.36	-21.25	-0.01	-0.0	0.72	2.42	0.00	0.06	5.89	0.00	0.00	5.95	9.2	1
Davit5	#Davit5:0	End	4.52	8.80	0.27	-1.52	-10.31	-0.00	-0.0	0.72	2.42	0.00	0.08	5.16	0.00	0.00	5.24	8.1	1
Davit5	#Davit5:0	Origin	4.52	8.80	0.27	-1.52	-10.31	-0.00	0.0	0.73	2.28	0.00	0.08	5.16	0.00	0.00	5.24	8.1	1
Davit5	Davit5:t	End	9.03	8.88	0.27	-2.75	0.00	0.00	0.0	0.73	2.28	0.00	0.12	0.00	0.79	0.00	1.37	2.1	3
Davit6	Davit6:O	Origin	0.00	8.72	0.26	0.19	-19.82	0.01	0.0	-1.11	2.26	-0.00	-0.09	5.50	0.00	0.00	5.59	8.6	1
Davit6	#Davit6:0	End	4.52	8.82	0.27	1.26	-9.60	0.00	0.0	-1.11	2.26	-0.00	-0.12	4.81	0.00	0.00	4.93	7.6	1
Davit6	#Davit6:0	Origin	4.52	8.82	0.27	1.26	-9.60	0.00	0.0	-1.09	2.13	-0.00	-0.12	4.81	0.00	0.00	4.93	7.6	1
Davit6	Davit6:t	End	9.03	8.91	0.27	2.26	-0.00	0.00	0.0	-1.09	2.13	-0.00	-0.18	0.00	0.74	0.00	1.29	2.0	3
Davit7	Davit7:O	Origin	0.00	5.75	0.15	-0.31	-21.27	-0.00	-0.0	0.71	2.43	0.00	0.06	5.90	0.00	0.00	5.96	9.2	1
Davit7	#Davit7:0	End	4.52	5.82	0.15	-1.25	-10.32	-0.00	-0.0	0.71	2.43	0.00	0.08	5.17	0.00	0.00	5.25	8.1	1
Davit7	#Davit7:0	Origin	4.52	5.82	0.15	-1.25	-10.32	-0.00	-0.0	0.72	2.29	0.00	0.08	5.17	0.00	0.00	5.25	8.1	1
Davit7	Davit7:t	End	9.03	5.90	0.16	-2.26	0.00	0.00	-0.0	0.72	2.29	0.00	0.12	0.00	0.79	0.00	1.37	2.1	3
Davit8	Davit8:O	Origin	0.00	5.76	0.15	0.21	-19.86	0.00	0.0	-1.10	2.27	-0.00	-0.09	5.51	0.00	0.00	5.60	8.6	1
Davit8	#Davit8:0	End	4.52	5.83	0.15	1.06	-9.62	0.00	0.0	-1.10	2.27	-0.00	-0.12	4.82	0.00	0.00	4.94	7.6	1
Davit8	#Davit8:0	Origin	4.52	5.83	0.15	1.06	-9.62	0.00	0.0	-1.08	2.13	-0.00	-0.12	4.82	0.00	0.00	4.94	7.6	1
Davit8	Davit8:t	End	9.03	5.91	0.16	1.84	-0.00	0.00	0.0	-1.08	2.13	-0.00	-0.18	0.00	0.74	0.00	1.29	2.0	3

Summary of Clamp Capacities and Usages for Load Case "NESC Extreme Ice w/ Wind":

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
Clamp1	1.031	100.00	100.00	1.03
Clamp2	1.118	100.00	100.00	1.12
Clamp3	2.342	100.00	100.00	2.34
Clamp4	2.336	100.00	100.00	2.34
Clamp5	2.342	100.00	100.00	2.34
Clamp6	2.335	100.00	100.00	2.34
Clamp7	2.342	100.00	100.00	2.34
Clamp8	2.335	100.00	100.00	2.34
Clamp9	1.286	100.00	100.00	1.29

Clamp10	0.858	100.00	100.00	0.86
Clamp11	0.858	100.00	100.00	0.86
Clamp12	0.858	100.00	100.00	0.86
Clamp13	0.858	100.00	100.00	0.86
Clamp14	0.858	100.00	100.00	0.86
Clamp15	0.858	100.00	100.00	0.86
Clamp16	0.858	100.00	100.00	0.86
Clamp17	0.858	100.00	100.00	0.86
Clamp18	6.984	100.00	100.00	6.98
Clamp19	10.039	100.00	100.00	10.04
Clamp20	15.394	100.00	100.00	15.39
Clamp21	15.394	100.00	100.00	15.39

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

Summary of Steel Pole Usages:

Steel Pole Label	Maximum Usage %	Load Case	Segment Number	Weight (lbs)
3848	76.18	NESC Extreme Wind	17	16194.8

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 %
3848	NESC Heavy Wind	1	1.946	1.404	0.774	2.080	16.234	19.182	32.707	3	59.295	1.555	2.750	31.97
3848	NESC Heavy Wind	2	2.080	0.774	1.404	1.946	16.234	14.207	24.224	3	52.058	1.338	2.750	23.68
3848	NESC Heavy Wind	3	1.404	-1.946	2.080	-0.774	16.234	12.358	21.072	3	-46.432	1.248	2.750	20.60
3848	NESC Heavy Wind	4	0.774	-2.080	1.946	-1.404	16.234	17.118	29.187	3	-53.192	1.469	2.750	28.53
3848	NESC Heavy Wind	5	-1.946	-1.404	-0.774	-2.080	16.234	16.529	28.184	3	-51.893	1.443	2.750	27.55
3848	NESC Heavy Wind	6	-2.080	-0.774	-1.404	-1.946	16.234	11.554	19.701	3	-44.656	1.207	2.750	19.26
3848	NESC Heavy Wind	7	-1.404	1.946	-2.080	0.774	16.234	15.011	25.595	3	53.834	1.375	2.750	25.02
3848	NESC Heavy Wind	8	-0.774	2.080	-1.946	1.404	16.234	19.770	33.710	3	60.595	1.579	2.750	32.95
3848	NESC Heavy Wind	9	2.177	1.028	1.028	2.177	19.509	11.692	23.959	4	59.295	1.214	2.750	19.49
3848	NESC Heavy Wind	10	1.028	-2.177	2.177	-1.028	19.509	10.332	21.172	4	-53.192	1.141	2.750	17.22
3848	NESC Heavy Wind	11	-2.177	-1.028	-1.028	-2.177	19.509	9.844	20.172	4	-51.893	1.114	2.750	16.41
3848	NESC Heavy Wind	12	-1.028	2.177	-2.177	1.028	19.509	12.180	24.958	4	60.595	1.239	2.750	20.30
3848	NESC Extreme Wind	1	1.946	1.404	0.774	2.080	16.234	44.881	76.526	3	139.672	2.378	2.750	74.80
3848	NESC Extreme Wind	2	2.080	0.774	1.404	1.946	16.234	32.458	55.344	3	121.551	2.023	2.750	54.10
3848	NESC Extreme Wind	3	1.404	-1.946	2.080	-0.774	16.234	33.534	57.178	3	-123.114	2.056	2.750	55.89
3848	NESC Extreme Wind	4	0.774	-2.080	1.946	-1.404	16.234	45.293	77.228	3	-139.765	2.389	2.750	75.49
3848	NESC Extreme Wind	5	-1.946	-1.404	-0.774	-2.080	16.234	43.480	74.137	3	-135.762	2.341	2.750	72.47
3848	NESC Extreme Wind	6	-2.080	-0.774	-1.404	-1.946	16.234	31.057	52.955	3	-117.642	1.979	2.750	51.76
3848	NESC Extreme Wind	7	-1.404	1.946	-2.080	0.774	16.234	34.935	59.567	3	127.023	2.098	2.750	58.22
3848	NESC Extreme Wind	8	-0.774	2.080	-1.946	1.404	16.234	46.694	79.616	3	143.675	2.426	2.750	77.82
3848	NESC Extreme Wind	9	2.177	1.028	1.028	2.177	19.509	27.093	55.516	4	139.672	1.848	2.750	45.15
3848	NESC Extreme Wind	10	1.028	-2.177	2.177	-1.028	19.509	27.620	56.596	4	-139.765	1.866	2.750	46.03
3848	NESC Extreme Wind	11	-2.177	-1.028	-1.028	-2.177	19.509	26.117	53.516	4	-135.762	1.814	2.750	43.53
3848	NESC Extreme Wind	12	-1.028	2.177	-2.177	1.028	19.509	28.596	58.595	4	143.675	1.898	2.750	47.66
3848	NESC Extreme Ice w/ Wind	1	1.946	1.404	0.774	2.080	16.234	14.476	24.684	3	44.697	1.351	2.750	24.13
3848	NESC Extreme Ice w/ Wind	2	2.080	0.774	1.404	1.946	16.234	10.762	18.351	3	39.304	1.165	2.750	17.94
3848	NESC Extreme Ice w/ Wind	3	1.404	-1.946	2.080	-0.774	16.234	9.141	15.586	3	-34.487	1.073	2.750	15.24
3848	NESC Extreme Ice w/ Wind	4	0.774	-2.080	1.946	-1.404	16.234	12.720	21.689	3	-39.582	1.266	2.750	21.20
3848	NESC Extreme Ice w/ Wind	5	-1.946	-1.404	-0.774	-2.080	16.234	12.352	21.061	3	-38.768	1.248	2.750	20.59
3848	NESC Extreme Ice w/ Wind	6	-2.080	-0.774	-1.404	-1.946	16.234	8.638	14.728	3	-33.375	1.043	2.750	14.40
3848	NESC Extreme Ice w/ Wind	7	-1.404	1.946	-2.080	0.774	16.234	11.266	19.209	3	40.416	1.192	2.750	18.78
3848	NESC Extreme Ice w/ Wind	8	-0.774	2.080	-1.946	1.404	16.234	14.845	25.312	3	45.511	1.368	2.750	24.74
3848	NESC Extreme Ice w/ Wind	9	2.177	1.028	1.028	2.177	19.509	8.838	18.110	4	44.697	1.055	2.750	14.73
3848	NESC Extreme Ice w/ Wind	10	1.028	-2.177	2.177	-1.028	19.509	7.663	15.703	4	-39.582	0.983	2.750	12.77
3848	NESC Extreme Ice w/ Wind	11	-2.177	-1.028	-1.028	-2.177	19.509	7.358	15.077	4	-38.768	0.963	2.750	12.26
3848	NESC Extreme Ice w/ Wind	12	-1.028	2.177	-2.177	1.028	19.509	9.143	18.736	4	45.511	1.074	2.750	15.24

Summary of Tubular Davit Usages:

Tubular Davit Maximum Load Case Segment Weight

Label	Usage %		Number	(lbs)
Davit1	10.43	NESC Extreme Ice w/ Wind	1	49.5
Davit2	9.76	NESC Extreme Ice w/ Wind	1	49.5
Davit3	10.20	NESC Heavy Wind	1	280.0
Davit4	9.51	NESC Heavy Wind	1	280.0
Davit5	10.21	NESC Heavy Wind	1	280.0
Davit6	9.53	NESC Heavy Wind	1	280.0
Davit7	10.23	NESC Heavy Wind	1	280.0
Davit8	9.56	NESC Heavy Wind	1	280.0

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy Wind	32.95	3848	Base Plate
NESC Extreme Wind	77.82	3848	Base Plate
NESC Extreme Ice w/ Wind	24.74	3848	Base Plate

Summary of Steel Pole Usages by Load Case:

Load Case	Maximum Usage %	Steel Pole Label	Segment Number
NESC Heavy Wind	31.61	3848	28
NESC Extreme Wind	76.18	3848	17
NESC Extreme Ice w/ Wind	23.75	3848	28

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 Heavy Wind	3848	8	16.234	59.218	1247.487	-27.624	19.770	33.710	3	60.595	1.579	32.95
NESC Extreme Wind	3848	8	16.234	31.273	3098.952	-85.115	46.694	79.616	3	143.675	2.426	77.82
NESC Extreme Ice w/ Wind	3848	8	16.234	47.432	934.652	-17.298	14.845	25.312	3	45.511	1.368	24.74

Summary of Tubular Davit Usages by Load Case:

Load Case	Maximum Usage %	Tubular Davit Label	Segment Number
NESC Heavy Wind	10.23	Davit7	1
NESC Extreme Wind	5.49	Davit7	1
NESC Extreme Ice w/ Wind	10.43	Davit1	1

Summary of Insulator Usages:

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

Clamp1	Clamp	1.03	NESC Extreme Ice w/ Wind	0.0
Clamp2	Clamp	1.12	NESC Extreme Ice w/ Wind	0.0
Clamp3	Clamp	2.60	NESC Heavy Wind	0.0
Clamp4	Clamp	2.59	NESC Heavy Wind	0.0
Clamp5	Clamp	2.60	NESC Heavy Wind	0.0
Clamp6	Clamp	2.59	NESC Heavy Wind	0.0
Clamp7	Clamp	2.60	NESC Heavy Wind	0.0
Clamp8	Clamp	2.59	NESC Heavy Wind	0.0
Clamp9	Clamp	1.40	NESC Heavy Wind	0.0
Clamp10	Clamp	0.94	NESC Heavy Wind	0.0
Clamp11	Clamp	0.94	NESC Heavy Wind	0.0
Clamp12	Clamp	0.94	NESC Heavy Wind	0.0
Clamp13	Clamp	0.94	NESC Heavy Wind	0.0
Clamp14	Clamp	0.94	NESC Heavy Wind	0.0
Clamp15	Clamp	0.94	NESC Heavy Wind	0.0
Clamp16	Clamp	0.94	NESC Heavy Wind	0.0
Clamp17	Clamp	0.94	NESC Heavy Wind	0.0
Clamp18	Clamp	38.28	NESC Extreme Wind	0.0
Clamp19	Clamp	27.08	NESC Extreme Wind	0.0
Clamp20	Clamp	84.91	NESC Extreme Wind	0.0
Clamp21	Clamp	84.91	NESC Extreme Wind	0.0

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 Heavy Wind	Clamp1	Clamp	Davit1:t	-0.001	0.603	0.795	0.998
NESC Heavy Wind	Clamp2	Clamp	Davit2:t	-0.001	0.659	0.872	1.093
NESC Heavy Wind	Clamp3	Clamp	Davit3:t	-0.001	1.055	2.377	2.601
NESC Heavy Wind	Clamp4	Clamp	Davit4:t	-0.001	1.055	2.369	2.593
NESC Heavy Wind	Clamp5	Clamp	Davit5:t	-0.001	1.054	2.377	2.600
NESC Heavy Wind	Clamp6	Clamp	Davit6:t	-0.001	1.056	2.369	2.594
NESC Heavy Wind	Clamp7	Clamp	Davit7:t	-0.001	1.053	2.377	2.600
NESC Heavy Wind	Clamp8	Clamp	Davit8:t	-0.001	1.057	2.369	2.594
NESC Heavy Wind	Clamp9	Clamp	3848:WVGD1	0.000	0.258	1.380	1.404
NESC Heavy Wind	Clamp10	Clamp	3848:WVGD2	0.000	0.172	0.920	0.936
NESC Heavy Wind	Clamp11	Clamp	3848:WVGD3	0.000	0.172	0.920	0.936
NESC Heavy Wind	Clamp12	Clamp	3848:WVGD4	0.000	0.172	0.920	0.936
NESC Heavy Wind	Clamp13	Clamp	3848:WVGD5	0.000	0.172	0.920	0.936
NESC Heavy Wind	Clamp14	Clamp	3848:WVGD6	0.000	0.172	0.920	0.936
NESC Heavy Wind	Clamp15	Clamp	3848:WVGD7	0.000	0.172	0.920	0.936
NESC Heavy Wind	Clamp16	Clamp	3848:WVGD8	0.000	0.172	0.920	0.936
NESC Heavy Wind	Clamp17	Clamp	3848:WVGD9	0.000	0.172	0.920	0.936
NESC Heavy Wind	Clamp18	Clamp	3848:TopConn	0.000	10.225	0.000	10.225
NESC Heavy Wind	Clamp19	Clamp	3848:BotConn	0.000	-7.033	11.015	13.069
NESC Heavy Wind	Clamp20	Clamp	3848:BotConT	22.500	0.000	0.000	22.500
NESC Heavy Wind	Clamp21	Clamp	3848:BotConB	-22.500	0.000	0.000	22.500
NESC Extreme Wind	Clamp1	Clamp	Davit1:t	-0.003	0.678	0.296	0.740
NESC Extreme Wind	Clamp2	Clamp	Davit2:t	-0.003	0.858	0.321	0.916
NESC Extreme Wind	Clamp3	Clamp	Davit3:t	-0.007	2.030	1.179	2.348
NESC Extreme Wind	Clamp4	Clamp	Davit4:t	-0.006	2.027	1.175	2.343
NESC Extreme Wind	Clamp5	Clamp	Davit5:t	-0.007	2.029	1.179	2.347
NESC Extreme Wind	Clamp6	Clamp	Davit6:t	-0.006	2.028	1.175	2.344
NESC Extreme Wind	Clamp7	Clamp	Davit7:t	-0.007	2.029	1.179	2.347
NESC Extreme Wind	Clamp8	Clamp	Davit8:t	-0.006	2.028	1.175	2.344
NESC Extreme Wind	Clamp9	Clamp	3848:WVGD1	0.000	0.820	0.374	0.901

NESC Extreme Wind	Clamp10	Clamp	3848:WVGD2	0.000	0.546	0.250	0.601
NESC Extreme Wind	Clamp11	Clamp	3848:WVGD3	0.000	0.546	0.250	0.601
NESC Extreme Wind	Clamp12	Clamp	3848:WVGD4	0.000	0.546	0.250	0.601
NESC Extreme Wind	Clamp13	Clamp	3848:WVGD5	0.000	0.546	0.250	0.601
NESC Extreme Wind	Clamp14	Clamp	3848:WVGD6	0.000	0.546	0.250	0.601
NESC Extreme Wind	Clamp15	Clamp	3848:WVGD7	0.000	0.546	0.250	0.601
NESC Extreme Wind	Clamp16	Clamp	3848:WVGD8	0.000	0.546	0.250	0.601
NESC Extreme Wind	Clamp17	Clamp	3848:WVGD9	0.000	0.546	0.250	0.601
NESC Extreme Wind	Clamp18	Clamp	3848:TopConn	0.000	38.275	0.000	38.275
NESC Extreme Wind	Clamp19	Clamp	3848:BotConn	0.000	-26.571	5.250	27.085
NESC Extreme Wind	Clamp20	Clamp	3848:BotConT	84.910	0.000	0.000	84.910
NESC Extreme Wind	Clamp21	Clamp	3848:BotConB	-84.910	0.000	0.000	84.910
NESC Extreme Ice w/ Wind	Clamp1	Clamp	Davit1:t	-0.001	0.552	0.871	1.031
NESC Extreme Ice w/ Wind	Clamp2	Clamp	Davit2:t	-0.001	0.592	0.948	1.118
NESC Extreme Ice w/ Wind	Clamp3	Clamp	Davit3:t	-0.001	0.867	2.176	2.342
NESC Extreme Ice w/ Wind	Clamp4	Clamp	Davit4:t	-0.001	0.867	2.169	2.336
NESC Extreme Ice w/ Wind	Clamp5	Clamp	Davit5:t	-0.001	0.866	2.176	2.342
NESC Extreme Ice w/ Wind	Clamp6	Clamp	Davit6:t	-0.001	0.868	2.168	2.335
NESC Extreme Ice w/ Wind	Clamp7	Clamp	Davit7:t	-0.001	0.866	2.176	2.342
NESC Extreme Ice w/ Wind	Clamp8	Clamp	Davit8:t	-0.001	0.868	2.168	2.335
NESC Extreme Ice w/ Wind	Clamp9	Clamp	3848:WVGD1	0.000	0.171	1.275	1.286
NESC Extreme Ice w/ Wind	Clamp10	Clamp	3848:WVGD2	0.000	0.114	0.850	0.858
NESC Extreme Ice w/ Wind	Clamp11	Clamp	3848:WVGD3	0.000	0.114	0.850	0.858
NESC Extreme Ice w/ Wind	Clamp12	Clamp	3848:WVGD4	0.000	0.114	0.850	0.858
NESC Extreme Ice w/ Wind	Clamp13	Clamp	3848:WVGD5	0.000	0.114	0.850	0.858
NESC Extreme Ice w/ Wind	Clamp14	Clamp	3848:WVGD6	0.000	0.114	0.850	0.858
NESC Extreme Ice w/ Wind	Clamp15	Clamp	3848:WVGD7	0.000	0.114	0.850	0.858
NESC Extreme Ice w/ Wind	Clamp16	Clamp	3848:WVGD8	0.000	0.114	0.850	0.858
NESC Extreme Ice w/ Wind	Clamp17	Clamp	3848:WVGD9	0.000	0.114	0.850	0.858
NESC Extreme Ice w/ Wind	Clamp18	Clamp	3848:TopConn	0.000	6.984	0.000	6.984
NESC Extreme Ice w/ Wind	Clamp19	Clamp	3848:BotConn	0.000	-4.814	8.809	10.039
NESC Extreme Ice w/ Wind	Clamp20	Clamp	3848:BotConT	15.394	0.000	0.000	15.394
NESC Extreme Ice w/ Wind	Clamp21	Clamp	3848:BotConB	-15.394	0.000	0.000	15.394

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 Heavy Wind	12.418	-0.008	35.660	1048.818	21.850	-0.000
NESC Extreme Wind	30.599	-0.045	15.303	2675.939	81.354	0.030
NESC Extreme Ice w/ Wind	9.599	-0.008	31.736	808.109	14.744	-0.000

*** Weight of structure (lbs):

Weight of Tubular Davit Arms:	1779.3
Weight of Steel Poles:	16194.8
Total:	17974.1

*** End of Report

Anchor Bolt Analysis:

Input Data:

Bolt Force:

Maximum Tensile Force = $T_{Max} := 144 \cdot kips$ (User Input from PLS-Pole)

Anchor Bolt Data:

Use ASTM A615 Grade 75

Number of Anchor Bolts = $N := 16$ (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:

Calculated Anchor Bolt Properties:

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

Bolt Tension Check:

Allowable Tensile Force (Net Area) = $T_{ALL.Net} := 1.0 \cdot (A_n \cdot F_y) = 243.576 \cdot kips$

Bolt Tension % of Capacity = $\frac{T_{Max}}{T_{ALL.Net}} = 59.1 \cdot \%$

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

Condition1 = "OK"

Caisson Foundation:

Input Data:

Shear Force =	$S := 39.6k \cdot 1.1 = 43.6 \cdot kips$	*USER INPUT-FROM PLS-Pole*
Overturning Moment =	$M := 3100ft \cdot k \cdot 1.1 = 3410 \cdot ft \cdot k$	*USER INPUT-FROM PLS-Pole*
Applied Axial Load =	$A1 := 33.6k \cdot 1.1 = 37 \cdot kips$	*USER INPUT-FROM PLS-Pole*
Bending Moment =	$Mu := 3585ft \cdot k$	*USER INPUT--FROM LPILE*
Moment Capacity =	$Mn := 7563ft \cdot k$	*USER INPUT--FROM LPILE*
Foundation Diameter =	$d := 7.0ft$	*USER INPUT*
Overall Length of Caisson =	$L_c := 18ft$	*USER INPUT*
Depth From Top of Caisson to Grade =	$L_{pag} := 1.0ft$	*USER INPUT*
Number of Rebar =	$n := 27$	*USER INPUT*
Area of Rebar =	$Ar := 1.56in^2$	*USER INPUT*
Rebar Yield Strength =	$fy := 60ksi$	*USER INPUT*
Concrete Comp Strength =	$f'c := 3.5ksi$	*USER INPUT*

Check Moment Capacity:

Factor of Safety = $FS := \frac{Mn}{Mu} = 2.11$

Factor of Safety Required = $FS_{reqd} := 1.0$

$FOSCheck := if(FS \geq FS_{reqd}, \text{"OK"}, \text{"NO GOOD"})$

$FOSCheck = \text{"OK"}$

```
================================================================================
                 LPILE Plus for Windows, Version 5.0 (5.0.47)

                Analysis of Individual Piles and Drilled Shafts
               Subjected to Lateral Loading Using the p-y Method

                         (c) 1985-2010 by Ensoft, Inc.
                              All Rights Reserved

================================================================================

This program is licensed to:

TJL
Centek Engineering

--------------------------------------------------------------------------------
                            Files Used for Analysis
--------------------------------------------------------------------------------

Path to file locations:      J:\Jobs\1506600.WI\04_Structural\Calcs\L-Pile\
Name of input data file:     Caisson Analysis.lpd
Name of output file:         Caisson Analysis.lpo
Name of plot output file:    Caisson Analysis.lpp
Name of runtime file:        Caisson Analysis.lpr


------------------------------------------------------------------------------
                          Time and Date of Analysis
------------------------------------------------------------------------------

               Date:  June  8, 2015     Time:  10:48:21


------------------------------------------------------------------------------
                                Problem Title
------------------------------------------------------------------------------

15066.000/ CT2267 - Orange/ Pole # 3848


------------------------------------------------------------------------------
                               Program Options
------------------------------------------------------------------------------

Units Used in Computations - US Customary Units: Inches, Pounds

Basic Program Options:

Analysis Type 3:
- Computation of Nonlinear Bending Stiffness and Ultimate Bending Moment
  Capacity with Pile Response Computed Using Nonlinear EI

Computation Options:
- Only internally-generated p-y curves used in analysis
- Analysis does not use p-y multipliers (individual pile or shaft action only)
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- Analysis includes computation of foundation stiffness matrix elements
- Output summary table of values for pile-head deflection, maximum
bending moment, and shear force only
- Analysis assumes no soil movements acting on pile
- No additional p-y curves to be computed at user-specified depths

Solution Control Parameters:
- Number of pile increments            =          100
- Maximum number of iterations allowed =          250
- Deflection tolerance for convergence =   1.0000E-04 in
- Maximum allowable deflection         =   1.0000E+02 in

Printing Options:
- Only summary tables of pile-head deflection, maximum bending moment,
  and maximum shear force are to be printed in output file.


------------------------------------------------------------------------------
                    Pile Structural Properties and Geometry
------------------------------------------------------------------------------

Pile Length                               =     216.00 in

Depth of ground surface below top of pile =      12.00 in

Slope angle of ground surface             =       0.00 deg.

Structural properties of pile defined using  2 points
```

Point No.	Point Depth in	Pile Diameter in	Moment of Inertia in**4	Pile Area Sq.in	Modulus of Elasticity lbs/Sq.in
1	0.0000	84.00000000	2443920.	5541.8000	3300000.
2	216.0000	84.00000000	2443920.	5541.8000	3300000.

Please note that because this analysis makes computations of ultimate moment capacity and pile response using nonlinear bending stiffness that the above values of moment of inertia and modulus of are not used for any computations other than total stress due to combined axial loading and bending.

Soil and Rock Layering Information

The soil profile is modelled using 2 layers

Layer 1 is sand, p-y criteria by Reese et al., 1974
Distance from top of pile to top of layer = 12.000 in
Distance from top of pile to bottom of layer = 132.000 in
p-y subgrade modulus k for top of soil layer = 90.000 lbs/in**3
p-y subgrade modulus k for bottom of layer = 90.000 lbs/in**3

Layer 2 is weak rock, p-y criteria by Reese, 1997
Distance from top of pile to top of layer = 132.000 in
Distance from top of pile to bottom of layer = 216.000 in
Initial modulus of rock at top of layer = 5.0000E+05 lbs/in**2
Initial modulus of rock at bottom of layer = 5.0000E+05 lbs/in**2

(Depth of lowest layer extends 0.00 in below pile tip)

Effective Unit Weight of Soil vs. Depth

Effective unit weight of soil with depth defined using 4 points

Point No.	Depth X in	Eff. Unit Weight lbs/in**3
1	12.00	0.05800
2	132.00	0.05800
3	132.00	0.07800
4	216.00	0.07800

Shear Strength of Soils

Shear strength parameters with depth defined using 4 points

Point No.	Depth X in	Cohesion c lbs/in**2	Angle of Friction Deg.	E50 or k_rm	RQD %
1	12.000	0.00000	30.00	------	------
2	132.000	0.00000	30.00	------	------
3	132.000	250.00000	0.00	0.00050	50.0
4	216.000	250.00000	0.00	0.00050	50.0

Notes:

(1) Cohesion = uniaxial compressive strength for rock materials.
(2) Values of E50 are reported for clay strata.
(3) Default values will be generated for E50 when input values are 0.
(4) RQD and k_rm are reported only for weak rock strata.

Loading Type

Static loading criteria was used for computation of p-y curves.

Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 1

Load Case Number 1

Pile-head boundary conditions are Shear and Moment (BC Type 1)
Shear force at pile head = 43600.000 lbs
Bending moment at pile head = 40920000.000 in-lbs
Axial load at pile head = 37000.000 lbs

Non-zero moment at pile head for this load case indicates the pile-head may rotate under the applied pile-head loading, but is not a free-head (zero moment) condition.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

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Number of sections = 1

Pile Section No. 1

The sectional shape is a circular drilled shaft (bored pile).

Outside Diameter = 84.0000 in

Material Properties:

Compressive Strength of Concrete = 3.500 kip/in**2
Yield Stress of Reinforcement = 60. kip/in**2
Modulus of Elasticity of Reinforcement = 29000. kip/in**2
Number of Reinforcing Bars = 27
Area of Single Bar = 1.56000 in**2
Number of Rows of Reinforcing Bars = 27
Area of Steel = 42.120 in**2
Area of Shaft = 5541.769 in**2
Percentage of Steel Reinforcement = 0.760 percent
Cover Thickness (edge to bar center) = 3.000 in

Unfactored Axial Squash Load Capacity = 18888.66 kip

Distribution and Area of Steel Reinforcement

Row Number	Area of Reinforcement in**2	Distance to Centroidal Axis in
1	1.560	38.934
2	1.560	38.408
3	1.560	37.362
4	1.560	35.810
5	1.560	33.775
6	1.560	31.283
7	1.560	28.368
8	1.560	25.069
9	1.560	21.431
10	1.560	17.503
11	1.560	13.339
12	1.560	8.994
13	1.560	4.528
14	1.560	0.000
15	1.560	-4.528
16	1.560	-8.994
17	1.560	-13.339
18	1.560	-17.503
19	1.560	-21.431
20	1.560	-25.069
21	1.560	-28.368
22	1.560	-31.283
23	1.560	-33.775
24	1.560	-35.810
25	1.560	-37.362
26	1.560	-38.408
27	1.560	-38.934

Axial Thrust Force = 37000.00 lbs

Bending Moment in-lbs	Bending Stiffness lb-in2	Bending Curvature rad/in	Maximum Strain in/in	Neutral Axis Position inches	Max. Concrete Stress psi	Max. Steel Stress psi
5762890.	9.220625E+12	6.250000E-07	0.00002820	45.11807495	93.68743809	762.19419
11473134.	9.178507E+12	0.00000125	0.00005455	43.63719410	179.77558	1470.70644
17131085.	9.136579E+12	0.00000188	0.00008093	43.16282827	264.67533	2180.26603

22735071.	9.094029E+12	0.00000250	0.00010728	42.91111189	348.14964	2888.77193
28285901.	9.051488E+12	0.00000313	0.00013363	42.76000696	430.31758	3597.27103
28285901.	7.542907E+12	0.00000375	0.00008307	22.15155298	267.35505	6392.59309
28285901.	6.465349E+12	0.00000438	0.00009569	21.87141055	306.74363	7493.56834
28285901.	5.657180E+12	0.00000500	0.00010832	21.66423708	345.89052	8594.11826
28285901.	5.028605E+12	0.00000563	0.00012097	21.50572711	384.79498	9694.23998
28285901.	4.525744E+12	0.00000625	0.00013363	21.38129586	423.45624	10793.93092
28285901.	4.114313E+12	0.00000688	0.00014631	21.28166074	461.87349	11893.18876
28285901.	3.771453E+12	0.00000750	0.00015900	21.20063835	500.04603	12992.01011
28285901.	3.481342E+12	0.00000813	0.00017171	21.13394541	537.97309	14090.39215
28285901.	3.232674E+12	0.00000875	0.00018444	21.07851774	575.65374	15188.33324
28285901.	3.017163E+12	0.00000938	0.00019718	21.03211731	613.08733	16285.82930
28285901.	2.828590E+12	0.00001000	0.00021000	20.99999875	650.48165	17380.86563
28285901.	2.662202E+12	0.00001063	0.00022312	20.99999875	688.47568	18467.16974
28285901.	2.514302E+12	0.00001125	0.00023605	20.98231226	725.56812	19559.24405
28285901.	2.381971E+12	0.00001188	0.00024886	20.95686775	762.02209	20654.63118
28285901.	2.262872E+12	0.00001250	0.00026169	20.93534106	798.22821	21749.52045
28285901.	2.155116E+12	0.00001313	0.00027454	20.91717893	834.18548	22843.90944
28285901.	2.057156E+12	0.00001375	0.00028740	20.90193576	869.89318	23937.79286
28285901.	1.967715E+12	0.00001438	0.00030028	20.88923603	905.35026	25031.16855
28681059.	1.912071E+12	0.00001500	0.00031318	20.87877184	940.55585	26124.03215
29826389.	1.908889E+12	0.00001563	0.00032610	20.87028533	975.50915	27216.37894
30970472.	1.905875E+12	0.00001625	0.00033903	20.86355120	1010.20897	28308.20756
32113308.	1.903011E+12	0.00001688	0.00035199	20.85838670	1044.65456	29399.51215
33254888.	1.900279E+12	0.00001750	0.00036496	20.85463160	1078.84499	30490.28868
34395199.	1.897666E+12	0.00001813	0.00037795	20.85214323	1112.77908	31580.53552
35534244.	1.895160E+12	0.00001875	0.00039095	20.85080892	1146.45619	32670.24503
36672005.	1.892749E+12	0.00001938	0.00040398	20.85051852	1179.87504	33759.41636
37808479.	1.890424E+12	0.00002000	0.00041702	20.85118443	1213.03480	34848.04357
38943655.	1.888177E+12	0.00002063	0.00043009	20.85272402	1245.93432	35936.12407
40077528.	1.886001E+12	0.00002125	0.00044317	20.85506970	1278.57274	37023.65200
41210091.	1.883890E+12	0.00002188	0.00045627	20.85815889	1310.94900	38110.62323
42341335.	1.881837E+12	0.00002250	0.00046939	20.86193651	1343.06209	39197.03329
43471246.	1.879838E+12	0.00002313	0.00048253	20.86635000	1374.91075	40282.87997
44599821.	1.877887E+12	0.00002375	0.00049569	20.87135929	1406.49415	41368.15631
45727052.	1.875982E+12	0.00002438	0.00050888	20.87692434	1437.81116	42452.85821
47977440.	1.872290E+12	0.00002563	0.00053530	20.88958150	1499.64152	44620.52200
50222336.	1.868738E+12	0.00002688	0.00056180	20.90407866	1560.39295	46785.83411
52461669.	1.865304E+12	0.00002813	0.00058838	20.92021805	1620.05640	48948.75572
54695370.	1.861970E+12	0.00002938	0.00061505	20.93783945	1678.62276	51109.24475
56923355.	1.858722E+12	0.00003063	0.00064180	20.95680517	1736.08236	53267.26230
59145545.	1.855546E+12	0.00003188	0.00066864	20.97700256	1792.42542	55422.76631
61361855.	1.852433E+12	0.00003313	0.00069557	20.99833649	1847.64191	57575.71421
63514299.	1.847689E+12	0.00003438	0.00072187	20.99999875	1900.26515	59746.72561
65433860.	1.836740E+12	0.00003563	0.00074812	20.99999875	1951.52082	60000.00000
66964501.	1.815986E+12	0.00003688	0.00077245	20.94785303	1997.77890	60000.00000
68296208.	1.791376E+12	0.00003813	0.00079586	20.87489408	2041.20740	60000.00000
69500966.	1.765104E+12	0.00003938	0.00081873	20.79302806	2082.65590	60000.00000
70533962.	1.736221E+12	0.00004063	0.00084080	20.69666988	2121.71868	60000.00000
71522796.	1.708007E+12	0.00004188	0.00086271	20.60198897	2159.60332	60000.00000
72384902.	1.678490E+12	0.00004313	0.00088400	20.49850863	2195.55521	60000.00000
73240360.	1.650487E+12	0.00004438	0.00090531	20.40128928	2230.72910	60000.00000
73953606.	1.620901E+12	0.00004563	0.00092586	20.29274458	2263.82783	60000.00000
74664836.	1.592850E+12	0.00004688	0.00094645	20.19083637	2296.23830	60000.00000
75338089.	1.565467E+12	0.00004813	0.00096685	20.09039766	2327.60089	60000.00000
75918191.	1.537584E+12	0.00004938	0.00098672	19.98427624	2357.39788	60000.00000
76496522.	1.511042E+12	0.00005063	0.00100663	19.88411540	2386.54805	60000.00000
77073087.	1.485746E+12	0.00005188	0.00102658	19.78949457	2415.04816	60000.00000
77556104.	1.459880E+12	0.00005313	0.00104593	19.68811458	2441.98356	60000.00000
78068539.	1.435743E+12	0.00005438	0.00106575	19.60000008	2468.91170	60000.00000
78528573.	1.411750E+12	0.00005563	0.00108826	19.56425661	2498.81382	60000.00000
78982798.	1.388709E+12	0.00005688	0.00110712	19.46583062	2522.97270	60000.00000
79395280.	1.365940E+12	0.00005813	0.00112567	19.36632568	2546.10396	60000.00000
79752937.	1.343207E+12	0.00005938	0.00114379	19.26386923	2568.09447	60000.00000
80109349.	1.321391E+12	0.00006063	0.00116195	19.16614920	2589.54426	60000.00000
80464509.	1.300437E+12	0.00006188	0.00118013	19.07288271	2610.45051	60000.00000
80818395.	1.280291E+12	0.00006313	0.00119835	18.98380691	2630.81019	60000.00000
81171012.	1.260909E+12	0.00006438	0.00121660	18.89868397	2650.62058	60000.00000
81450409.	1.241149E+12	0.00006563	0.00123419	18.80663162	2669.11612	60000.00000
81723917.	1.222040E+12	0.00006688	0.00125175	18.71775860	2687.05024	60000.00000
81996321.	1.203616E+12	0.00006813	0.00126934	18.63257557	2704.47258	60000.00000
82267606.	1.185839E+12	0.00006938	0.00128697	18.55088478	2721.38039	60000.00000
82537777.	1.168676E+12	0.00007063	0.00130462	18.47250599	2737.77116	60000.00000
82806808.	1.152095E+12	0.00007188	0.00132230	18.39726645	2753.64200	60000.00000
83074708.	1.136064E+12	0.00007313	0.00134002	18.32501096	2768.99037	60000.00000
83290791.	1.119876E+12	0.00007438	0.00135719	18.24788386	2783.31879	60000.00000
83768084.	1.089666E+12	0.00007688	0.00139771	18.18163902	2815.33956	60000.00000
84158724.	1.060267E+12	0.00007938	0.00143077	18.02542967	2839.05666	60000.00000
84545769.	1.032620E+12	0.00008188	0.00146393	17.88009757	2860.94077	60000.00000
84929146.	1.006568E+12	0.00008438	0.00149721	17.74469143	2880.97260	60000.00000
85243377.	9.812187E+11	0.00008688	0.00152960	17.60693711	2898.59200	60000.00000
85524510.	9.569176E+11	0.00008938	0.00156165	17.47299045	2914.21571	60000.00000
85802412.	9.339038E+11	0.00009188	0.00159380	17.34746522	2928.09879	60000.00000
86077045.	9.120746E+11	0.00009438	0.00162605	17.22970802	2940.22333	60000.00000
86348364.	8.913380E+11	0.00009688	0.00165842	17.11913306	2950.57104	60000.00000
86616314.	8.716107E+11	0.00009938	0.00169089	17.01521212	2959.12314	60000.00000
86852500.	8.525399E+11	0.00010188	0.00172294	16.91225499	2965.76005	60000.00000
87044819.	8.339623E+11	0.00010438	0.00175433	16.80791599	2970.52496	60000.00000

87834047.	8.218390E+11	0.00010688	0.00179550	16.80000025	2974.21497	60000.00000
87834047.	8.030541E+11	0.00010938	0.00182717	16.70553964	2974.67292	60000.00000
87834047.	7.851088E+11	0.00011188	0.00185746	16.60303313	2968.46168	60000.00000
87834047.	7.679480E+11	0.00011438	0.00188786	16.50591141	2964.99655	60000.00000
87987052.	7.528304E+11	0.00011688	0.00191837	16.41384655	2969.35803	60000.00000
88149898.	7.384285E+11	0.00011938	0.00194898	16.32652813	2972.48960	60000.00000
88311356.	7.246060E+11	0.00012188	0.00197970	16.24368328	2974.37565	60000.00000
88446943.	7.111312E+11	0.00012438	0.00200984	16.15953165	2974.99989	60000.00000
88554777.	6.979687E+11	0.00012688	0.00203949	16.07480925	2969.78851	60000.00000
88661824.	6.853088E+11	0.00012938	0.00206922	15.99397963	2964.46203	60000.00000
88768093.	6.731230E+11	0.00013188	0.00209903	15.91680998	2962.88132	60000.00000
88873567.	6.613847E+11	0.00013438	0.00212892	15.84310251	2967.03611	60000.00000
88978232.	6.500693E+11	0.00013688	0.00215888	15.77267450	2970.33277	60000.00000
89082103.	6.391541E+11	0.00013938	0.00218893	15.70536071	2972.76150	60000.00000
89185144.	6.286178E+11	0.00014188	0.00221907	15.64100093	2974.31217	60000.00000
89287331.	6.184404E+11	0.00014438	0.00224928	15.57944745	2974.97448	60000.00000
89387302.	6.085944E+11	0.00014688	0.00227968	15.52122599	2971.40657	60000.00000
89486280.	5.990713E+11	0.00014938	0.00231017	15.46558052	2966.67599	60000.00000
89584758.	5.898585E+11	0.00015188	0.00234072	15.41217309	2961.93199	60000.00000
89584758.	5.803061E+11	0.00015438	0.00237737	15.39999908	2959.02686	60000.00000
89584758.	5.710582E+11	0.00015688	0.00241587	15.39999908	2964.89990	60000.00000
89914870.	5.641717E+11	0.00015938	0.00245186	15.38423771	2969.05703	60000.00000
89972921.	5.558173E+11	0.00016188	0.00247986	15.31959504	2971.21005	60000.00000
90030647.	5.477150E+11	0.00016438	0.00250791	15.25723547	2972.88556	60000.00000
90088088.	5.398537E+11	0.00016688	0.00253601	15.19706637	2974.07886	60000.00000
90145213.	5.322227E+11	0.00016938	0.00256417	15.13899010	2974.78498	60000.00000
90201931.	5.248112E+11	0.00017188	0.00259239	15.08298165	2974.76125	60000.00000
90250400.	5.175650E+11	0.00017438	0.00262148	15.03357464	2971.09661	60000.00000
90343927.	5.036595E+11	0.00017938	0.00268006	14.94110674	2963.68091	60000.00000
90433745.	4.904881E+11	0.00018438	0.00273911	14.85621661	2956.16241	60000.00000
90509503.	4.779380E+11	0.00018938	0.00279974	14.78411633	2955.27526	60000.00000
90584234.	4.660282E+11	0.00019438	0.00286057	14.71676499	2962.56268	60000.00000
90657882.	4.547104E+11	0.00019938	0.00292161	14.65382713	2968.21072	60000.00000
90730428.	4.439409E+11	0.00020438	0.00298285	14.59500736	2972.18443	60000.00000
90791723.	4.336321E+11	0.00020938	0.00304377	14.53741175	2974.42143	60000.00000
90814800.	4.236259E+11	0.00021438	0.00310445	14.48139828	2973.95894	60000.00000
90835196.	4.140636E+11	0.00021938	0.00316565	14.43030399	2967.49698	60000.00000
90855123.	4.049253E+11	0.00022438	0.00322698	14.38206857	2961.00663	60000.00000
90874575.	3.961834E+11	0.00022938	0.00328844	14.33651680	2954.48729	60000.00000
90893541.	3.878124E+11	0.00023438	0.00335004	14.29348844	2947.93838	60000.00000
90912017.	3.797891E+11	0.00023938	0.00341177	14.25283831	2943.31249	60000.00000
90929982.	3.720920E+11	0.00024438	0.00347365	14.21443123	2950.98866	60000.00000
90947441.	3.647015E+11	0.00024938	0.00353568	14.17814702	2957.63965	60000.00000
90964363.	3.575995E+11	0.00025438	0.00359785	14.14387053	2963.24606	60000.00000
90980738.	3.507691E+11	0.00025938	0.00366017	14.11149913	2967.78805	60000.00000
90991153.	3.441746E+11	0.00026438	0.00372361	14.08456260	2971.35992	60000.00000
90996412.	3.378057E+11	0.00026938	0.00378802	14.06226236	2973.79058	60000.00000
91000918.	3.316662E+11	0.00027438	0.00385264	14.04152924	2974.91876	60000.00000

Unfactored (Nominal) Moment Capacity at Concrete Strain of 0.003 = 90747.68022 in-kip

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Computed Values of Load Distribution and Deflection
for Lateral Loading for Load Case Number 1

Pile-head boundary conditions are Shear and Moment (Pile-head Condition Type 1)
Specified shear force at pile head = 43600.000 lbs
Specified moment at pile head = 40920000.000 in-lbs
Specified axial load at pile head = 37000.000 lbs

Output Verification:

Computed forces and moments are within specified convergence limits.

Summary of Pile Response(s)

Definition of Symbols for Pile-Head Loading Conditions:

Type 1 = Shear and Moment, y = pile-head displacment in
Type 2 = Shear and Slope, M = Pile-head Moment lbs-in
Type 3 = Shear and Rot. Stiffness, V = Pile-head Shear Force lbs
Type 4 = Deflection and Moment, S = Pile-head Slope, radians
Type 5 = Deflection and Slope, R = Rot. Stiffness of Pile-head in-lbs/rad

Load Type	Pile-Head Condition 1	Pile-Head Condition 2	Axial Load lbs	Pile-Head Deflection in	Maximum Moment in-lbs	Maximum Shear lbs

1 V= 43600. M= 4.09E+07 37000.0000 1.8618 4.3018E+07 -755192.

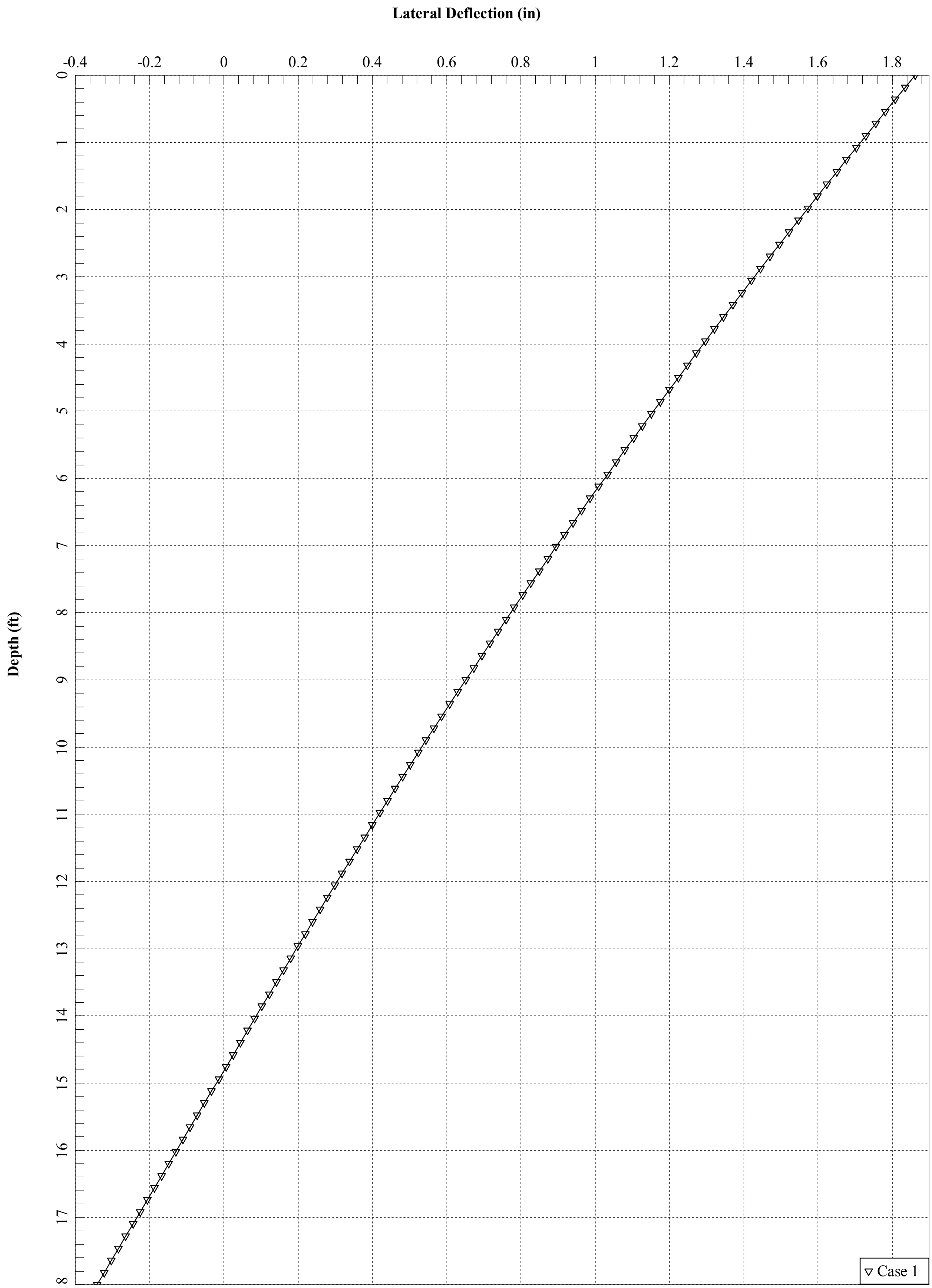
Computed Pile-head Stiffness Matrix Members
K22, K23, K32, K33 for Superstructure

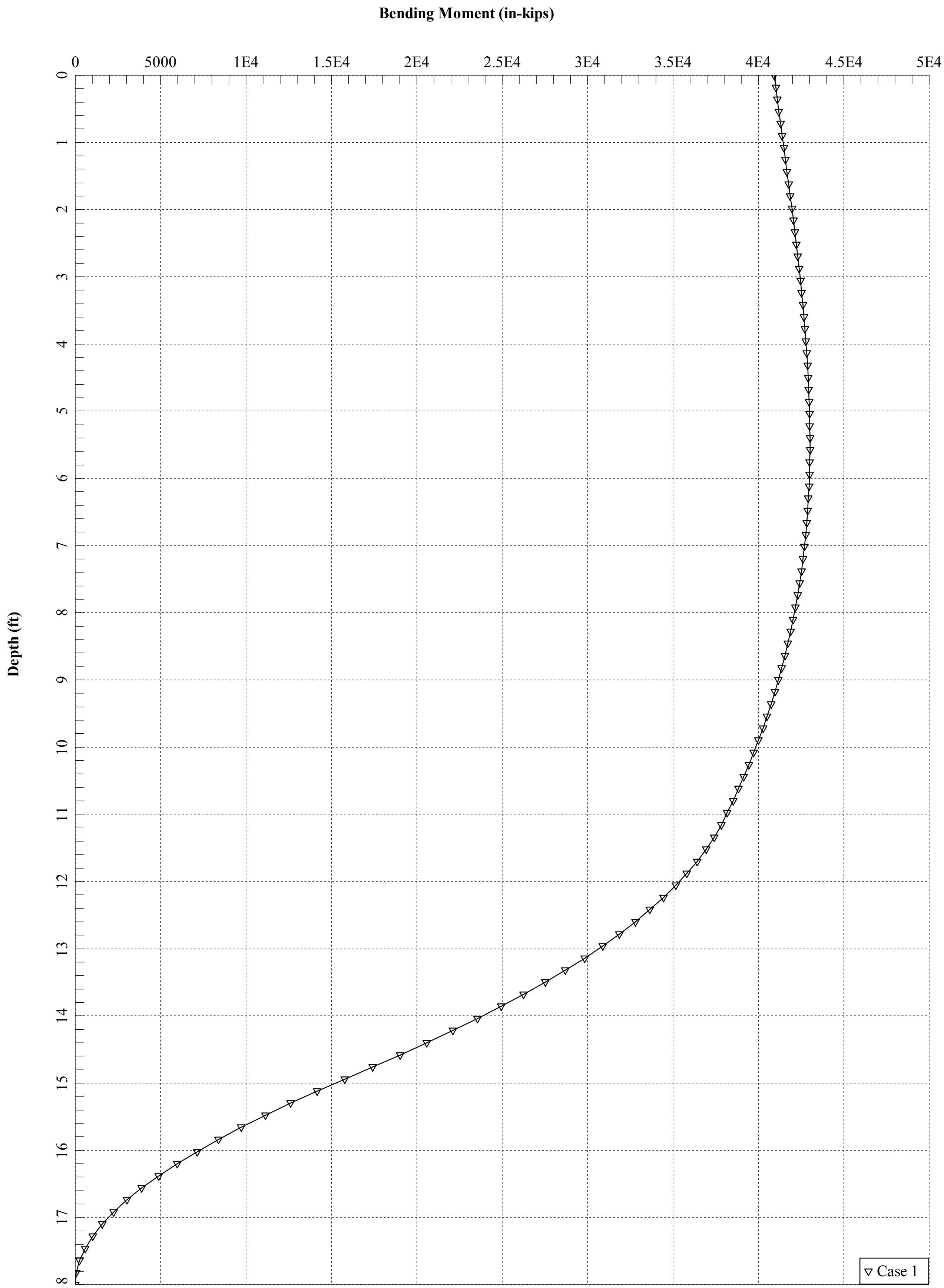
Top y in	Shear React. lbs	Mom. React. in-lbs	K22 lbs/in	K32 in-lbs/in
0.00016594	4360.00006	350171.74192	26274131.	2.110197E+09
0.00054465	13124.90781	1083637.	24098005.	1.989613E+09
0.00094539	20802.48671	1766320.	22004031.	1.868342E+09
0.00121744	26249.81562	2243174.	21561564.	1.842540E+09
0.00146952	30475.09219	2635236.	20738117.	1.793262E+09
0.00169104	33927.39452	2963538.	20063079.	1.752498E+09
0.00188930	36846.27454	3246692.	19502656.	1.718467E+09
0.00200965	39374.72343	3465016.	19592851.	1.724191E+09
0.00216830	41604.97341	3685053.	19187800.	1.699510E+09
0.00231545	43600.00000	3884538.	18829993.	1.677657E+09

Top Rota. rad	Shear React. lbs	Mom. React. in-lbs	K23 lbs/rad	K33 in-lbs/rad
0.00001937	35532.63333	4092000.	1.834408E+09	2.112536E+11
0.00006526	96467.80601	12318147.	1.478286E+09	1.887650E+11
0.00011082	142818.40131	19523802.	1.288716E+09	1.761722E+11
0.00014477	174035.17527	24636295.	1.202135E+09	1.701734E+11
0.00017131	198083.26450	28601853.	1.156294E+09	1.669608E+11
0.00021889	217289.53077	31841949.	9.926668E+08	1.454670E+11
0.00046156	235919.28014	34581412.	5.111358E+08	7.492308E+10
0.00059207	251897.40738	36954442.	4.254522E+08	6.241568E+10
0.00070536	266266.57093	39047603.	3.774886E+08	5.535816E+10
0.00078838	278689.99945	40920000.	3.534961E+08	5.190377E+10

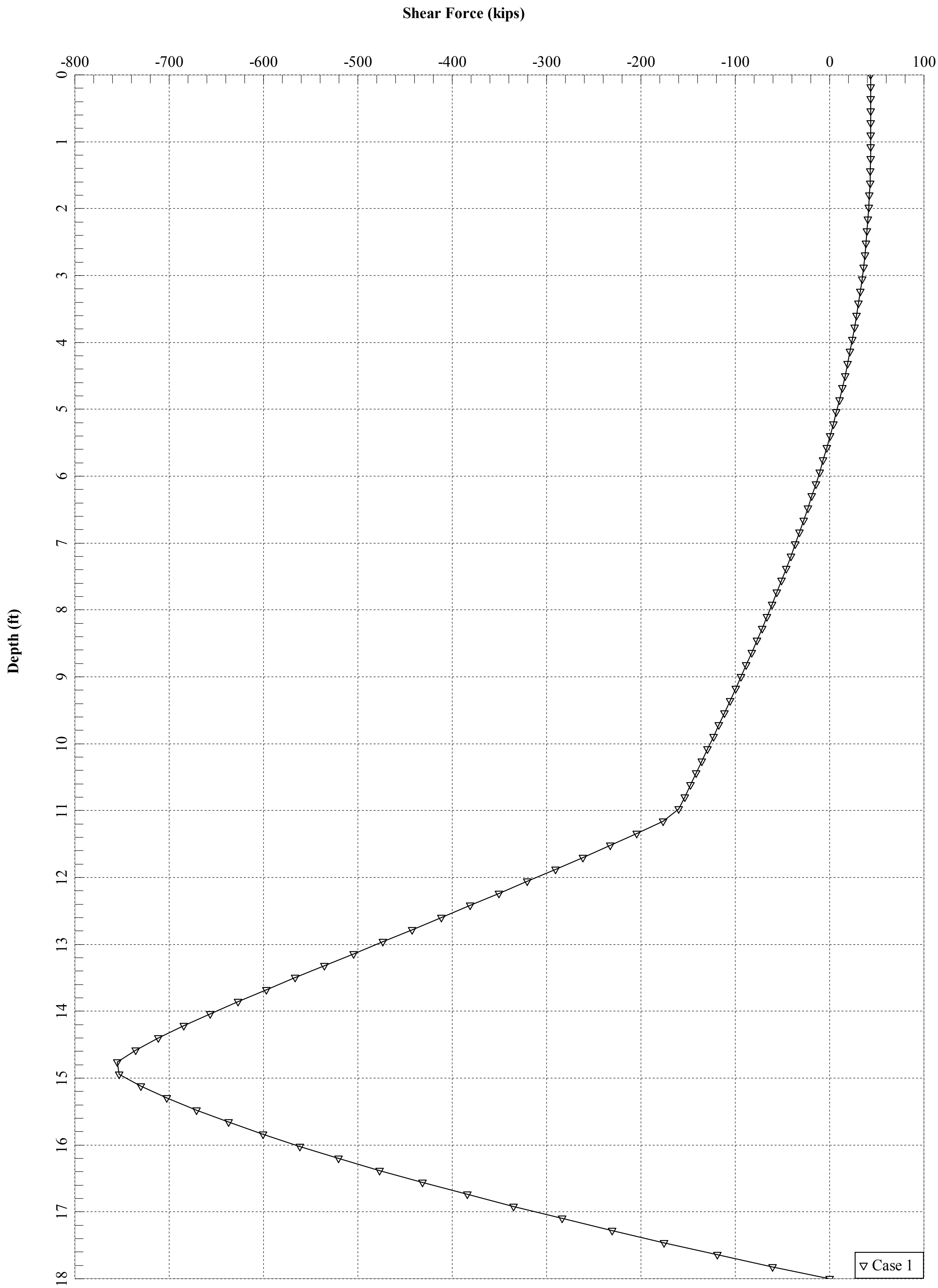
K22 = abs(Shear Reaction/Top y)
K23 = abs(Shear Reaction/Top Rotation)
K32 = abs(Moment Reaction/Top y)
K33 = abs(Moment Reaction/Top Rotation)

The analysis ended normally.


Lateral Deflection (in)
-0.4
-0.2
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
Depth (ft)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
Case 1



Bending Moment (in-kips)
0
5000
1E4
1.5E4
2E4
2.5E4
3E4
3.5E4
4E4
4.5E4
5E4
Depth (ft)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
Case 1



Shear Force (kips)
-800
-700
-600
-500
-400
-300
-200
-100
0
100
Depth (ft)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
Case 1

Section 1 - RFDS GENERAL INFORMATION

RFDS NAME:	CTU2267	DATE:	9/30/2014	RF DESIGN ENG:	Md Mateen	RF PERF ENG:		RFDS PROGRAM TYPE:	2015 LTE Next Carrier
ISSUE:	Bronze Standard	Approved? (Y/N):	Yes	RF DESIGN PHONE:		RF PERF PHONE:		RFDS TECHNOLOGY:	LTE 2C
REVISION:	V.1	RF MANAGER:	Cameron Syme	RF DESIGN EMAIL:	MM093Q@ATT.COM	RF PERF EMAIL:		State:	As Built

INITIATIVE / PROJECT:	LTE 2C - 1900 W/Bronze Configuration.	TRIDENT:		Status:	In Progress
		GSM FREQUENCY:		RFDS ID:	457511
		UMTS FREQUENCY:	850,1900	Version	1.00
		LTE FREQUENCY:	700,1900	Created By:	mm093q
				Date Created:	9/30/2014
				Date Updated:	11/3/2014
				Updated By:	fm4830
		I-PLAN JOB # 1:	NER-RCTB-14-03472	Product Group || Sub Group #1	LTE Next Carrier || LTE 2C
		I-PLAN JOB # 2:		Product Group || Sub Group #2	
		I-PLAN JOB # 3:		Product Group || Sub Group #3	
		I-PLAN JOB # 4:		Product Group || Sub Group #4	

Section 2 - LOCATION INFORMATION

USID:	**135348**	FA LOCATION CODE:	**10141359**	LOCATION NAME:	ORANGE CT RIDGE ROAD	ORACLE PRJT # 1:		PACE JOB #1:	MRCTB013119
REGION:	NORTHEAST	MARKET CLUSTER:	NEW ENGLAND	MARKET:	CONNECTICUT	ORACLE PRJT # 2:		PACE JOB #2:	
ADDRESS:.	298 RIDGE ROAD	CITY:	ORANGE	STATE:	CT	ORACLE PRJT # 3:		PACE JOB #3:	
ZIP CODE:	06477	COUNTY:	NEW HAVEN	MSA / RSA:		ORACLE PRJT # 4:		PACE JOB #4:	
LATITUDE (D-M-S):	41d 15m 30.456s	LONGITUDE (D-M-S):	-73d -2m -39.336s	LAT (DEC. DEG.):	41.2584600	SEARCH RING NAME:			

DIRECTIONS, ACCESS AND EQUIPMENT LOCATION:	FROM HARTFORD, TAKE RT 91 SOUTH TO EXIT 17 ROUTE 15 SOUTH. TAKE EXIT 56 AND TURN RIGHT ONTO GRASSY HILL ROAD. TURN LEFT ONTO CLARK LANE. TAKE SECOND RIGHT ONTO RIDGE ROAD. RRU'S ARE IN THE SHELTER, ALL COAX UP THE POLE. THE COMBO IS 0043 ON THE GATE, 12345678 DOOR COMBO. 5509 NU GATE.	SEARCH RING ID:		CASPR INITIATIVE #1:	
		BTA:		CASPR INITIATIVE #2:	
		LONG (DEC. DEG.):	-73.0442600	CASPR INITIATIVE #3:	
		BORDER CELL WITH CONTOUR COORD:		CASPR INITIATIVE #4:	
		AM STUDY REQ'D (Y/N):	No		
		FREQ COORD:			

Section 3 - LICENSE COVERAGE/FILING INFORMATION

CGSA - NO FILING TRIGGERED (Yes/No):	No	CGSA LOSS:		PCS REDUCED - UPS ZIP:		CGSA CALL SIGNS:	
CGSA - MINOR FILING NEEDED (Yes/No):	No	CGSA EXT AGMT NEEDED:		PCS POPS REDUCED:			
CGSA - MAJOR FILING NEEDED (Yes/No):	Yes	CGSA SCORECARD UPDATED:					

Section 4 - TOWER/REGULATORY INFORMATION

STRUCTURE AT&T OWNED?:	Yes	GROUND ELEVATION (ft):	0	STRUCTURE TYPE:	SELF SUPPORT	MARKET LOCATION 700 MHz Band:	
ADDITIONAL REGULATORY?:	Yes	HEIGHT OVERALL (ft):	97.50	FCC ASR NUMBER:	0	MARKET LOCATION 850 MHz Band:	
SUB-LEASE RIGHTS?:	Yes	STRUCTURE HEIGHT (ft):	97.50			MARKET LOCATION 1900 MHz Band:	
LIGHTING TYPE:	NOT REQUIRED					MARKET LOCATION AWS Band:	
						MARKET LOCATION WCS Band:	
						MARKET LOCATION Future Band:	

Section 5 - E-911 INFORMATION - existing

	PSAP NAME:	PSAP ID:	E911 PHASE:	MPC SVC PROVIDER:	LMU REQUIRED:	ESRN:	DATE LIVE PH1:	DATE LIVE PH2:
SECTOR A E-911	MILFORD FIRE DEPARTMENT	1358		INTRADO_MIAMI		0		
SECTOR B	MILFORD FIRE DEPARTMENT	1358		INTRADO_MIAMI		0		
SECTOR C	MILFORD FIRE DEPARTMENT	1358		INTRADO_MIAMI		0		
SECTOR D								
SECTOR E								
SECTOR F								
OMNI								

Section 5 - E-911 INFORMATION - final

	PSAP NAME:	PSAP ID:	E911 PHASE:	MPC SVC PROVIDER:	LMU REQUIRED:	ESRN:	DATE LIVE PH1:	DATE LIVE PH2:
SECTOR_A E-911	MILFORD FIRE DEPARTMENT	1358		INTRADO_MIAMI		0		
SECTOR B	MILFORD FIRE DEPARTMENT	1358		INTRADO_MIAMI		0		
SECTOR C	MILFORD FIRE DEPARTMENT	1358		INTRADO_MIAMI		0		
SECTOR D								
SECTOR E								
SECTOR F								
OMNI								

Section 6 - RBS GENERAL INFORMATION - existing

	GSM 1ST RBS	GSM 2ND RBS	UMTS 1ST RBS	UMTS 2ND RBS	UMTS 3RD RBS	UMTS 4TH RBS	UMTS 5TH RBS	UMTS 6TH RBS	LTE 1ST RBS	LTE 2ND RBS	LTE 3RD RBS	LTE 4TH RBS
RBS ID			333304						458566			
CTS COMMON ID			CTU2267						CTL02267			
BTA/TID			318W						318L			
4-DIGIT SITE ID:			2267						2267			
COW OR TOY?:			No						No			
CELL SITE TYPE:			SECTORIZED						SECTORIZED			
SITE TYPE:			MACRO-CONVENTIONAL						MACRO-CONVENTIONAL			
BTS LOCATION ID:			INTERNAL						INTERNAL			
ORIGINATING CO:			CINGULAR						CINGULAR			
CELLULAR NETWORK:			GOLD						GOLD			
OPS DISTRICT:			CT-SOUTH						CT-South			
RF DISTRICT:			NPO TRIAGE						NPO Triage			
OPS ZONE:			NE_CT_S_FRFD_SE_CS						NE_CT_S_FRFD_SE_CS			
RF ZONE:			HOTSEAT						Hotseat			
BASE STATION TYPE:			BASE						OVERLAY			
EQUIPMENT NAME:			NORTH STREET, MILFORD CT UMTS						NORTH STREET, MILFORD CT LTE			
DISASTER PRIORITY:			0						0			

Section 6 - RBS GENERAL INFORMATION - final

	GSM 1ST RBS	GSM 2ND RBS	UMTS 1ST RBS	UMTS 2ND RBS	UMTS 3RD RBS	UMTS 4TH RBS	UMTS 5TH RBS	UMTS 6TH RBS	LTE 1ST RBS	LTE 2ND RBS	LTE 3RD RBS	LTE 4TH RBS
RBS ID			333304						458566			
CTS COMMON ID			CTU2267						CTL02267			
BTA/TID			318W						318L			
4-DIGIT SITE ID:			2267						2267			
COW OR TOY?:			No						No			
CELL SITE TYPE:			SECTORIZED						SECTORIZED			
SITE TYPE:			MACRO-CONVENTIONAL						MACRO-CONVENTIONAL			
BTS LOCATION ID:			INTERNAL						INTERNAL			
ORIGINATING CO:			CINGULAR						CINGULAR			
CELLULAR NETWORK:			GOLD						GOLD			
OPS DISTRICT:			CT-South						CT-South			
RF DISTRICT:			NPO Triage						NPO Triage			
OPS ZONE:			NE_CT_S_FRFD_SE_CS						NE_CT_S_FRFD_SE_CS			
RF ZONE:			Hotseat						Hotseat			
BASE STATION TYPE:			BASE						OVERLAY			
EQUIPMENT NAME:			NORTH STREET, MILFORD CT UMTS						NORTH STREET, MILFORD CT LTE			
DISASTER PRIORITY:			0						0			

Section 7 - RBS SPECIFIC INFORMATION - existing

	GSM 1ST RBS	GSM 2ND RBS	UMTS 1ST RBS	UMTS 2ND RBS	UMTS 3RD RBS	UMTS 4TH RBS	UMTS 5TH RBS	UMTS 6TH RBS	LTE 1ST RBS	LTE 2ND RBS	LTE 3RD RBS	LTE 4TH RBS
MSC												
BSC/RNC/MME POOL ID			BRPTCT04CR0R05						FF01			
LAC			05991									
RAC												
EQUIPMENT VENDOR			ERICSSON						ERICSSON			
EQUIPMENT TYPE			6601 MAIN UNIT UMTS						6601 INDOOR MU			
LOCATION												
CABINET LOCATION												
MARKET STATE CODE									CT			
AGPS			Yes						Yes			
NODE B NUMBER			0						2267			
PARENT NAME			BRIDGEPORT CT RNC5						FF01			

Section 7 - RBS SPECIFIC INFORMATION - final

	GSM 1ST RBS	GSM 2ND RBS	UMTS 1ST RBS	UMTS 2ND RBS	UMTS 3RD RBS	UMTS 4TH RBS	UMTS 5TH RBS	UMTS 6TH RBS	LTE 1ST RBS	LTE 2ND RBS	LTE 3RD RBS	LTE 4TH RBS
MSC												
BSC/RNC/MME POOL ID			BRPTCT04CR0R05						FF01			
LAC			05991									
RAC												
EQUIPMENT VENDOR			ERICSSON						ERICSSON			
EQUIPMENT TYPE			6601 MAIN UNIT UMTS						6601 INDOOR MU			
LOCATION												
CABINET LOCATION												
MARKET STATE CODE									CT			
AGPS			Yes						Yes			
NODE B NUMBER			0						2267			
PARENT NAME			BRIDGEPORT CT RNC5									

Section 8- INDIVIDUAL CARRIER INFORMATION - existing

	GSM 1ST 850	GSM 1ST 1900	GSM 2ND 850	GSM 2ND 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	UMTS 3RD 850	UMTS 3RD 1900	UMTS 4TH 850	UMTS 4TH 1900	UMTS 5TH 850	UMTS 5TH 1900	UMTS 6TH 850	UMTS 6TH 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 1ST FUTURE		
RBS ID					333304	333304	333304										458566							
CELL ID/BCF					CTU2267	CTU2267	CTU2267										CTL02267							
CTS COMMON ID					CTU2267	CTU2267	CTU2267										CTL02267							
																	LTE 2ND 700	LTE 2ND 850	LTE 2ND 1900	LTE 2ND AWS	LTE 2ND WCS	LTE 2ND FUTURE		
RBS ID																								
CELL ID/BCF																								
CTS COMMON ID																								

Section 8 - INDIVIDUAL CARRIER INFORMATION - final

	GSM 1ST 850	GSM 1ST 1900	GSM 2ND 850	GSM 2ND 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	UMTS 3RD 850	UMTS 3RD 1900	UMTS 4TH 850	UMTS 4TH 1900	UMTS 5TH 850	UMTS 5TH 1900	UMTS 6TH 850	UMTS 6TH 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 1ST FUTURE		
RBS ID					333304	333304	333304										458566		458566					
CELL ID/BCF					CTU2267	CTU2267	CTU2267										CTL02267		CTL02267					
CTS COMMON ID					CTU2267	CTU2267	CTU2267										CTL02267		CTL02267					
																	LTE 2ND 700	LTE 2ND 850	LTE 2ND 1900	LTE 2ND AWS	LTE 2ND WCS	LTE 2ND FUTURE		
RBS ID																								
CELL ID/BCF																								
CTS COMMON ID																								

Section 9 - SOFT SECTOR ID - existing

	GSM 1ST 850	GSM 1ST 1900	GSM 2ND 850	GSM 2ND 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	UMTS 3RD 850	UMTS 3RD 1900	UMTS 4TH 850	UMTS 4TH 1900	UMTS 5TH 850	UMTS 5TH 1900	UMTS 6TH 850	UMTS 6TH 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 1ST FUTURE		
USEID (excluding Hard Sector)					135348.850.3G.1	135348.1900.3G.1	135348.850.3G.2										135348.700.4G.1							
SECTOR A SOFT_SECTOR_ID					CTV22671	CTU22677	CTV2267A										CTL02267_7A_1							
SECTOR B					CTV22672	CTU22678	CTV2267B										CTL02267_7B_1							
SECTOR C					CTV22673	CTU22679	CTV2267C										CTL02267_7C_1							
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								
																	LTE 2ND 700	LTE 2ND 850	LTE 2ND 1900	LTE 2ND AWS	LTE 2ND WCS	LTE 2ND FUTURE		
USEID (excluding Hard Sector)																								
SECTOR_A SOFT_SECTOR_ID																								
SECTOR B																								
SECTOR C																								
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								

Section 9 - SOFT SECTOR ID - final

	GSM 1ST 850	GSM 1ST 1900	GSM 2ND 850	GSM 2ND 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	UMTS 3RD 850	UMTS 3RD 1900	UMTS 4TH 850	UMTS 4TH 1900	UMTS 5TH 850	UMTS 5TH 1900	UMTS 6TH 850	UMTS 6TH 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 1ST FUTURE		
USEID (excluding Hard Sector)					135348.850.3G.1	135348.1900.3G.1	135348.850.3G.2										135348.700.4G.1		135348.1900.4G.1					
SECTOR A SOFT_SECTOR_ID					CTV22671	CTU22677	CTV2267A										CTL02267_7A_1		CTL02267_9A_1					
SECTOR B					CTV22672	CTU22678	CTV2267B										CTL02267_7B_1		CTL02267_9B_1					
SECTOR C					CTV22673	CTU22679	CTV2267C										CTL02267_7C_1		CTL02267_9C_1					
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								
																	LTE 2ND 700	LTE 2ND 850	LTE 2ND 1900	LTE 2ND AWS	LTE 2ND WCS	LTE 2ND FUTURE		
USEID (excluding Hard Sector)																								
SECTOR_A SOFT_SECTOR_ID																								
SECTOR B																								
SECTOR C																								
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								

Section 9 - SOFT SECTOR CELL NUMBER - existing

	GSM 1ST 850	GSM 1ST 1900	GSM 2ND 850	GSM 2ND 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	UMTS 3RD 850	UMTS 3RD 1900	UMTS 4TH 850	UMTS 4TH 1900	UMTS 5TH 850	UMTS 5TH 1900	UMTS 6TH 850	UMTS 6TH 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 1ST FUTURE		
USEID (excluding Hard Sector)					135348.850.3G.1	135348.1900.3G.1	135348.850.3G.2										135348.700.4G.1							
SECTOR A CELL NUMBER					0	0	0										15							
SECTOR B					0	0	0										16							
SECTOR C					0	0	0										17							
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								
																	LTE 2ND 700	LTE 2ND 850	LTE 2ND 1900	LTE 2ND AWS	LTE 2ND WCS	LTE 2ND FUTURE		
USEID (excluding Hard Sector)																								
SECTOR A CELL NUMBER																								
SECTOR B																								
SECTOR C																								
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								

Section 9 - SOFT SECTOR CELL NUMBER - final

	GSM 1ST 850	GSM 1ST 1900	GSM 2ND 850	GSM 2ND 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	UMTS 3RD 850	UMTS 3RD 1900	UMTS 4TH 850	UMTS 4TH 1900	UMTS 5TH 850	UMTS 5TH 1900	UMTS 6TH 850	UMTS 6TH 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 1ST FUTURE		
USEID (excluding Hard Sector)					135348.850.3G.1	135348.1900.3G.1	135348.850.3G.2										135348.700.4G.1		135348.1900.4G.1					
SECTOR A CELL NUMBER					0	0	0										15		8					
SECTOR B					0	0	0										16		9					
SECTOR C					0	0	0										17		10					
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								
																	LTE 2ND 700	LTE 2ND 850	LTE 2ND 1900	LTE 2ND AWS	LTE 2ND WCS	LTE 2ND FUTURE		
USEID (excluding Hard Sector)																								
SECTOR A CELL NUMBER																								
SECTOR B																								
SECTOR C																								
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								

Section 10 - CID/SAC - existing

	GSM 1ST 850	GSM 1ST 1900	GSM 2ND 850	GSM 2ND 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	UMTS 3RD 850	UMTS 3RD 1900	UMTS 4TH 850	UMTS 4TH 1900	UMTS 5TH 850	UMTS 5TH 1900	UMTS 6TH 850	UMTS 6TH 1900								
SECTOR A CID/SAC					22671	22677	22674																	
SECTOR B					22672	22678	22675																	
SECTOR C					22673	22679	22676																	
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								

Section 10 - CID/SAC - final

	GSM 1ST 850	GSM 1ST 1900	GSM 2ND 850	GSM 2ND 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	UMTS 3RD 850	UMTS 3RD 1900	UMTS 4TH 850	UMTS 4TH 1900	UMTS 5TH 850	UMTS 5TH 1900	UMTS 6TH 850	UMTS 6TH 1900								
SECTOR A CID/SAC					22671	22677	22674																	
SECTOR B					22672	22678	22675																	
SECTOR C					22673	22679	22676																	
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								

Section 11 - CURRENT RADIO COUNTS existing

	GSM 1ST 850	GSM 1ST 1900	GSM 2ND 850	GSM 2ND 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	UMTS 3RD 850	UMTS 3RD 1900	UMTS 4TH 850	UMTS 4TH 1900	UMTS 5TH 850	UMTS 5TH 1900	UMTS 6TH 850	UMTS 6TH 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 1ST FUTURE		
SECTOR A RADIO_COUNTS																								
SECTOR B																								
SECTOR C																								
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								
																	LTE 2ND 700	LTE 2ND 850	LTE 2ND 1900	LTE 2ND AWS	LTE 2ND WCS	LTE 2ND FUTURE		
SECTOR A RADIO_COUNTS																								
SECTOR B																								
SECTOR C																								
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								

Section 12 - CURRENT T1 COUNTS existing

	GSM 1ST Cabinet	GSM 2ND Cabinet	UMTS 1ST Cabinet	UMTS 2ND Cabinet	UMTS 3RD Cabinet	UMTS 4TH Cabinet	UMTS 5TH Cabinet	UMTS 6TH Cabinet	LTE 1ST Cabinet	LTE 2ND Cabinet	LTE 3RD Cabinet	LTE 4TH Cabinet
# T1s												
LINK PROFILE												
RF COMBINING												
FIBER or ETHERNET?												
Tx Board Model												
Tx Board QTY												
RAX/ECU Board Model												
RAX/ECU Board QTY												
BBU Board Model												
BBU Board QTY												
RRU - location												
FIBER JUMPER												
DC CABLE												
DC/Fiber Dem. Box												
Bundled Fiber Cable												
Bundled DC Cable												

Section 13 - NEW/PROPOSED RADIO COUNTS

	GSM 1ST 850	GSM 1ST 1900	GSM 2ND 850	GSM 2ND 1900	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	UMTS 3RD 850	UMTS 3RD 1900	UMTS 4TH 850	UMTS 4TH 1900	UMTS 5TH 850	UMTS 5TH 1900	UMTS 6TH 850	UMTS 6TH 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 1ST FUTURE		
SECTOR A RADIO_COUNTS																								
SECTOR B																								
SECTOR C																								
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								
																	LTE 2ND 700	LTE 2ND 850	LTE 2ND 1900	LTE 2ND AWS	LTE 2ND WCS	LTE 2ND FUTURE		
SECTOR A RADIO_COUNTS																								
SECTOR B																								
SECTOR C																								
SECTOR D																								
SECTOR E																								
SECTOR F																								
OMNI																								

Section 14 - NEW/PROPOSED T1 COUNTS

	GSM 1st Cabinet	GSM 2nd Cabinet	UMTS 1st Cabinet	UMTS 2nd Cabinet	UMTS 3rd Cabinet	UMTS 4th Cabinet	UMTS 5TH Cabinet	UMTS 6TH Cabinet	LTE 1ST Cabinet	LTE 2ND Cabinet	LTE 3RD Cabinet	LTE 4TH Cabinet
# T1s												
LINK PROFILE												
RF COMBINING												
FIBER or ETHERNET?												
Tx Board Model												
Tx Board QTY												
RAX/ECU Board Model												
RAX/ECU Board QTY												
BBU Board Model												
BBU Board QTY												
RRU - location												
FIBER JUMPER												
DC CABLE												
DC/Fiber Dem. Box												
Bundled Fiber Cable												
Bundled DC Cable												

Section 15A - CURRENT SECTOR/CELL INFORMATION - SECTOR A (OR OMNI)

ANTENNA COMMON FIELDS	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
ANTENNA MAKE - MODEL	SBNH-1D6565C		SBNH-1D6565C		SBNH-1D6565C		SBNH-1D6565C							
ANTENNA VENDOR	Andrew		Andrew		Andrew		Andrew							
ANTENNA SIZE (H x W x D)	96.4X11.9X7.1		96.4X11.9X7.1		96.4X11.9X7.1		96.4X11.9X7.1							
ANTENNA WEIGHT	60.8		60.8		60.8		60.8							
AZIMUTH	70		70		70		70							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	111		111		111		111							
ANTENNA TIP HEIGHT														
MECHANICAL DOWNTILT	0		0		0		0							
FEEDER AMOUNT	2		2		2		2							
Antenna RET Motor (QTY/MODEL)		Built-in RET Equipment		Built-in RET Equipment		Built-in RET Equipment		Built-in RET Equipment						
SURGE ARRESTOR (QTY/MODEL)							2	APTDC-BDFDM-DBW						
DIPLEXER (QTY/MODEL)	2	CM1007-DBPXBC-003		CM1007-DBPXBC-003		CM1007-DBPXBC-003	2	CM1007-DBPXBC-003						
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)	1	Powerwave 7070												
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	1	G12A (Twin 700/850 Bypass)	1	G12A (Twin 700/850 Bypass)	1	G12A (Twin 700/850 Bypass)	1	G12A (Twin 700/850 Bypass)						
CURRENT INJECTORS FOR TMA (QTY/MODEL)		AiSG Diplexer						AiSG Diplexer						
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)							1	RRUS-11						
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)														
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1														
Local Market Note 2														
Local Market Note 3	Position 2 and 3 have Spare antenna // GSM technology shown to avoid errors in AutoForms// No technology installed at position 2 and 3													

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	CABLE NUMBER	CABLE ID(cssng)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)
ANTENNA POSITION 1	PORT 1		135348.A.850.3G.1	CTV22671			UMTS 850	1D6565C_850MHz_04DT	13.41		4	Bottom	Commscope 1-5/8 (850)	140								
	PORT 2		135348.A.850.3G.2	CTV2267A			UMTS 850	1D6565C_850MHz_04DT	13.41		4	Bottom	Commscope 1-5/8 (850)	140								
	PORT 3		135348.A.1900.3G.1	CTU22677			UMTS 1900	1D6565C_1950MHz_04DT	17		4	Bottom	Commscope 1-5/8 (1900)	140								
ANTENNA POSITION 2	PORT 1					Spare	GSM															
ANTENNA POSITION 3	PORT 1					Spare	GSM															
ANTENNA POSITION 4	PORT 1		135348.A.700.4G.1	CTL02267_7A_1			LTE 700	1D6565C_716MHz_04DT	15.3		4	Bottom	Commscope 1-5/8 (700)	140								

Section 15B - CURRENT SECTOR/CELL INFORMATION - SECTOR B

ANTENNA COMMON FIELDS	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
ANTENNA MAKE - MODEL	SBNH-1D6565C		SBNH-1D6565C		SBNH-1D6565C		SBNH-1D6565C							
ANTENNA VENDOR	Andrew		Andrew		Andrew		Andrew							
ANTENNA SIZE (H x W x D)	96.4X11.9X7.1		96.4X11.9X7.1		96.4X11.9X7.1		96.4X11.9X7.1							
ANTENNA WEIGHT	60.8		60.8		60.8		60.8							
AZIMUTH	190		190		190		190							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	111		111		111		111							
ANTENNA TIP HEIGHT														
MECHANICAL DOWNTILT	0		0		0		0							
FEEDER AMOUNT	2		2		2		2							
Antenna RET Motor (QTY/MODEL)		Built-in RET Equipment		Built-in RET Equipment		Built-in RET Equipment		Built-in RET Equipment						
SURGE ARRESTOR (QTY/MODEL)							2	APTDC-BDFDM-DBW						
DIPLEXER (QTY/MODEL)	2	CM1007-DBPXBC-003		CM1007-DBPXBC-003		CM1007-DBPXBC-003	2	CM1007-DBPXBC-003						
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)	1	Powerwave 7070												
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	1	G12A (Twin 700/850 Bypass)	1	G12A (Twin 700/850 Bypass)	1	G12A (Twin 700/850 Bypass)	1	G12A (Twin 700/850 Bypass)						
CURRENT INJECTORS FOR TMA (QTY/MODEL)		AiSG Diplexer						AiSG Diplexer						
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)							1	RRUS-11						
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)														
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1														
Local Market Note 2														
Local Market Note 3	Position 2 and 3 have Spare antenna // GSM technology shown to avoid errors in AutoForms// No technology installed at position 2 and 3													

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	CABLE NUMBER	CABLE ID(cssng)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)
ANTENNA POSITION 1	PORT 1		135348.B.850.3G.1	CTV22672			UMTS 850	1D6565C_850MHz_04DT	13.41		4	Bottom	Commscope 1-5/8 (850)	140								
	PORT 2		135348.B.850.3G.2	CTV2267B			UMTS 850	1D6565C_850MHz_04DT	13.41		4	Bottom	Commscope 1-5/8 (850)	140								
	PORT 3		135348.B.1900.3G.1	CTU22678			UMTS 1900	1D6565C_1950MHz_04DT	17		4	Bottom	Commscope 1-5/8 (1900)	140								
ANTENNA POSITION 2	PORT 1					Spare	GSM															
ANTENNA POSITION 3	PORT 1					Spare	GSM															
ANTENNA POSITION 4	PORT 1		135348.B.700.4G.1	CTL02267_7B_1			LTE 700	1D6565C_716MHz_04DT	15.3		4	Bottom	Commscope 1-5/8 (700)	140								

Section 15C - CURRENT SECTOR/CELL INFORMATION - SECTOR C

ANTENNA COMMON FIELDS	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
ANTENNA MAKE - MODEL	SBNH-1D6565C		SBNH-1D6565C		SBNH-1D6565C		SBNH-1D6565C							
ANTENNA VENDOR	Andrew		Andrew		Andrew		Andrew							
ANTENNA SIZE (H x W x D)	96.4X11.9X7.1		96.4X11.9X7.1		96.4X11.9X7.1		96.4X11.9X7.1							
ANTENNA WEIGHT	60.8		60.8		60.8		60.8							
AZIMUTH	310		310		310		310							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	111		111		111		111							
ANTENNA TIP HEIGHT														
MECHANICAL DOWNTILT	0		0		0		0							
FEEDER AMOUNT	2		2		2		2							
Antenna RET Motor (QTY/MODEL)		Built-in RET Equipment		Built-in RET Equipment		Built-in RET Equipment		Built-in RET Equipment						
SURGE ARRESTOR (QTY/MODEL)							2	APTDC-BDFDM-DBW						
DIPLEXER (QTY/MODEL)	2	CM1007-DBPXBC-003		CM1007-DBPXBC-003		CM1007-DBPXBC-003	2	CM1007-DBPXBC-003						
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)	1	Powerwave 7070												
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	1	G12A (Twin 700/850 Bypass)	1	G12A (Twin 700/850 Bypass)	1	G12A (Twin 700/850 Bypass)	1	G12A (Twin 700/850 Bypass)						
CURRENT INJECTORS FOR TMA (QTY/MODEL)		AiSG Diplexer						AiSG Diplexer						
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)							1	RRUS-11						
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)														
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1														
Local Market Note 2														
Local Market Note 3	Position 2 and 3 have Spare antenna // GSM technology shown to avoid errors in AutoForms// No technology installed at position 2 and 3													

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	CABLE NUMBER	CABLE ID(cssng)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)
ANTENNA POSITION 1	PORT 1		135348.C.850.3G.1	CTV22673			UMTS 850	1D6565C_850MHz_04DT	13.41		4	Bottom	Commscope 1-5/8 (850)	140								
	PORT 2		135348.C.850.3G.2	CTV2267C			UMTS 850	1D6565C_850MHz_04DT	13.41		4	Bottom	Commscope 1-5/8 (850)	140								
	PORT 3		135348.C.1900.3G.1	CTU22679			UMTS 1900	1D6565C_1950MHz_04DT	17		4	Bottom	Commscope 1-5/8 (1900)	140								
ANTENNA POSITION 2	PORT 1					Spare	GSM															
ANTENNA POSITION 3	PORT 1					Spare	GSM															
ANTENNA POSITION 4	PORT 1		135348.C.700.4G.1	CTL02267_7C_1			LTE 700	1D6565C_716MHz_04DT	15.3		4	Bottom	Commscope 1-5/8 (700)	140								

Section 16A - NEW/PROPOSED SECTOR/CELL INFORMATION - SECTOR A (OR OMNI)

ANTENNA COMMON FIELDS	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
Existing Antenna?														
ANTENNA MAKE - MODEL							OPA-65R-LCUU-H8							
ANTENNA VENDOR							CCI Products							
ANTENNA SIZE (H x W x D)							92.7X14.4X7							
ANTENNA WEIGHT							88							
AZIMUTH							70							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)							111							
ANTENNA TIP HEIGHT														
MECHANICAL DOWNTILT							0							
FEEDER AMOUNT														
Antenna RET Motor (QTY/MODEL)								Internal						
SURGE ARRESTOR (QTY/MODEL)							2	APTDC-BDFDM-DBW						
DIPLEXER (QTY/MODEL)							2	CM1007-DBPXBC-003						
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)														
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)							1	G12A (Twin 700/850 Bypass)						
CURRENT INJECTORS FOR TMA (QTY/MODEL)								AiSG Diplexer						
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)														
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)							1	RRUS-12+RRUS-A2						
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1	LTE: Replace existing quad port antenna on postion 4 with Octo port antenna// Install and integrate LTE RRUS-12+A2 // Connect existing LTE 700 RRUS-11 to Octoport													
Local Market Note 2														
Local Market Note 3														

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	CABLE NUMBER	CABLE ID(cssng)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)
ANTENNA POSITION 2	PORT 1																					
	PORT 3																					
ANTENNA POSITION 3	PORT 3																					
ANTENNA POSITION 4	PORT 3		135348.A.1900.4G.1	CTL02267_9A_1			LTE 1900	H8_1948MHz_04DT	15.3		4	Bottom	Commscope 1-5/8 (1900)	140								

Section 16B - NEW/PROPOSED SECTOR/CELL INFORMATION - SECTOR B

ANTENNA COMMON FIELDS	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
Existing Antenna?														
ANTENNA MAKE - MODEL							OPA-65R-LCUU-H8							
ANTENNA VENDOR							CCI Products							
ANTENNA SIZE (H x W x D)							92.7X14.4X7							
ANTENNA WEIGHT							88							
AZIMUTH							190							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)							111							
ANTENNA TIP HEIGHT														
MECHANICAL DOWNTILT							0							
FEEDER AMOUNT														
Antenna RET Motor (QTY/MODEL)								Internal						
SURGE ARRESTOR (QTY/MODEL)							2	APTDC-BDFDM-DBW						
DIPLEXER (QTY/MODEL)							2	CM1007-DBPXBC-003						
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)														
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)							1	G12A (Twin 700/850 Bypass)						
CURRENT INJECTORS FOR TMA (QTY/MODEL)								AiSG Diplexer						
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)														
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)							1	RRUS-12+RRUS-A2						
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1	LTE: Replace existing quad port antenna on postion 4 with Octo port antenna// Install and integrate LTE RRUS-12+A2 // Connect existing LTE 700 RRUS-11 to Octoport													
Local Market Note 2														
Local Market Note 3														

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	CABLE NUMBER	CABLE ID(cssng)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)
ANTENNA POSITION 2	PORT 1																					
	PORT 3																					
ANTENNA POSITION 3	PORT 3																					
ANTENNA POSITION 4	PORT 3		135348.B.1900.4G.1	CTL02267_9B_1			LTE 1900	H8_1948MHz_03DT	15.3		3	Bottom	Commscope 1-5/8 (1900)	140								

Section 16C - NEW/PROPOSED SECTOR/CELL INFORMATION - SECTOR C

ANTENNA COMMON FIELDS	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
Existing Antenna?														
ANTENNA MAKE - MODEL							OPA-65R-LCUU-H8							
ANTENNA VENDOR							CCI Products							
ANTENNA SIZE (H x W x D)							92.7X14.4X7							
ANTENNA WEIGHT							88							
AZIMUTH							310							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)							111							
ANTENNA TIP HEIGHT														
MECHANICAL DOWNTILT							0							
FEEDER AMOUNT														
Antenna RET Motor (QTY/MODEL)								Internal						
SURGE ARRESTOR (QTY/MODEL)							2	APTDC-BDFDM-DBW						
DIPLEXER (QTY/MODEL)							2	CM1007-DBPXBC-003						
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)														
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)							1	G12A (Twin 700/850 Bypass)						
CURRENT INJECTORS FOR TMA (QTY/MODEL)								AiSG Diplexer						
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)														
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)							1	RRUS-12+RRUS-A2						
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1	LTE: Replace existing quad port antenna on postion 4 with Octo port antenna// Install and integrate LTE RRUS-12+A2 // Connect existing LTE 700 RRUS-11 to Octoport													
Local Market Note 2														
Local Market Note 3														

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	CABLE NUMBER	CABLE ID(cssng)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)
ANTENNA POSITION 2	PORT 1																					
	PORT 3																					
ANTENNA POSITION 3	PORT 3																					
ANTENNA POSITION 4	PORT 3		135348.C.1900.4G.1	CTL02267_9C_1			LTE 1900	H8_1948MHz_03DT	15.3		3	Bottom	Commscope 1-5/8 (1900)	140								

Section 17A - FINAL SECTOR/CELL INFORMATION - SECTOR A (OR OMNI)

ANTENNA COMMON FIELDS	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
ANTENNA MAKE - MODEL	SBNH-1D6565C		SBNH-1D6565C		SBNH-1D6565C		OPA-65R-LCUU-H8							
ANTENNA VENDOR	Andrew		Andrew		Andrew		CCI Products							
ANTENNA SIZE (H x W x D)	96.4X11.9X7.1		96.4X11.9X7.1		96.4X11.9X7.1		92.7X14.4X7							
ANTENNA WEIGHT	60.8		60.8		60.8		88							
AZIMUTH	70		70		70		70							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	111		111		111		111							
ANTENNA TIP HEIGHT														
MECHANICAL DOWNTILT	0		0		0		0							
FEEDER AMOUNT	2		2		2									
Antenna RET Motor (QTY/MODEL)		Built-in RET Equipment		Built-in RET Equipment		Built-in RET Equipment		Internal						
SURGE ARRESTOR (QTY/MODEL)							2	APTDC-BDFDM-DBW						
DIPLEXER (QTY/MODEL)	2	CM1007-DBPXBC-003		CM1007-DBPXBC-003		CM1007-DBPXBC-003	2	CM1007-DBPXBC-003						
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)	1	Powerwave 7070												
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	1	G12A (Twin 700/850 Bypass)	1	G12A (Twin 700/850 Bypass)	1	G12A (Twin 700/850 Bypass)	1	G12A (Twin 700/850 Bypass)						
CURRENT INJECTORS FOR TMA (QTY/MODEL)		AiSG Diplexer						AiSG Diplexer						
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)							1	RRUS-11						
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)							1	RRUS-12+RRUS-A2						
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1	LTE: Replace existing quad port antenna on postion 4 with Octo port antenna// Install and integrate LTE RRUS-12+A2 // Move existing LTE 700 RRUS-11 to Octoport													
Local Market Note 2														
Local Market Note 3	Position 2 and 3 have Spare antenna // GSM technology shown to avoid errors in AutoForms// No technology installed at position 2 and 3													

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	CABLE NUMBER	CABLE ID(cssng)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)
ANTENNA POSITION 1	PORT 1		135348.A.850.3G.1	CTV22671			UMTS 850	1D6565C_850MHz_04DT	13.41		4	Bottom	Commscope 1-5/8 (850)	140								
	PORT 2		135348.A.850.3G.2	CTV2267A			UMTS 850	1D6565C_850MHz_04DT	13.41		4	Bottom	Commscope 1-5/8 (850)	140								
	PORT 3		135348.A.1900.3G.1	CTU22677			UMTS 1900	1D6565C_1950MHz_04DT	17		4	Bottom	Commscope 1-5/8 (1900)	140								
ANTENNA POSITION 2	PORT 1					Spare	GSM															
	PORT 3																					
ANTENNA POSITION 3	PORT 1					Spare	GSM															
	PORT 3																					
ANTENNA POSITION 4	PORT 1		135348.A.700.4G.1	CTL02267_7A_1			LTE 700	H8_719MHz_04DT	15.3		4	Bottom	Commscope 1-5/8 (700)	140								
	PORT 3		135348.A.1900.4G.1	CTL02267_9A_1			LTE 1900	H8_1948MHz_04DT	15.3		4	Bottom	Commscope 1-5/8 (1900)	140								

Section 17B - FINAL SECTOR/CELL INFORMATION - SECTOR B

ANTENNA COMMON FIELDS	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
ANTENNA MAKE - MODEL	SBNH-1D6565C		SBNH-1D6565C		SBNH-1D6565C		OPA-65R-LCUU-H8							
ANTENNA VENDOR	Andrew		Andrew		Andrew		CCI Products							
ANTENNA SIZE (H x W x D)	96.4X11.9X7.1		96.4X11.9X7.1		96.4X11.9X7.1		92.7X14.4X7							
ANTENNA WEIGHT	60.8		60.8		60.8		88							
AZIMUTH	190		190		190		190							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	111		111		111		111							
ANTENNA TIP HEIGHT														
MECHANICAL DOWNTILT	0		0		0		0							
FEEDER AMOUNT	2		2		2									
Antenna RET Motor (QTY/MODEL)		Built-in RET Equipment		Built-in RET Equipment		Built-in RET Equipment		Internal						
SURGE ARRESTOR (QTY/MODEL)							2	APTDC-BDFDM-DBW						
DIPLEXER (QTY/MODEL)	2	CM1007-DBPXBC-003		CM1007-DBPXBC-003		CM1007-DBPXBC-003	2	CM1007-DBPXBC-003						
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)	1	Powerwave 7070												
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	1	G12A (Twin 700/850 Bypass)	1	G12A (Twin 700/850 Bypass)	1	G12A (Twin 700/850 Bypass)	1	G12A (Twin 700/850 Bypass)						
CURRENT INJECTORS FOR TMA (QTY/MODEL)		AiSG Diplexer						AiSG Diplexer						
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)							1	RRUS-11						
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)							1	RRUS-12+RRUS-A2						
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1	LTE: Replace existing quad port antenna on postion 4 with Octo port antenna// Install and integrate LTE RRUS-12+A2 // Move existing LTE 700 RRUS-11 to Octoport													
Local Market Note 2														
Local Market Note 3	Position 2 and 3 have Spare antenna // GSM technology shown to avoid errors in AutoForms// No technology installed at position 2 and 3													

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	CABLE NUMBER	CABLE ID(cssng)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)
ANTENNA POSITION 1	PORT 1		135348.B.850.3G.1	CTV22672			UMTS 850	1D6565C_850MHz_04DT	13.41		4	Bottom	Commscope 1-5/8 (850)	140								
	PORT 2		135348.B.850.3G.2	CTV2267B			UMTS 850	1D6565C_850MHz_04DT	13.41		4	Bottom	Commscope 1-5/8 (850)	140								
	PORT 3		135348.B.1900.3G.1	CTU22678			UMTS 1900	1D6565C_1950MHz_04DT	17		4	Bottom	Commscope 1-5/8 (1900)	140								
ANTENNA POSITION 2	PORT 1					Spare	GSM															
	PORT 3																					
ANTENNA POSITION 3	PORT 1					Spare	GSM															
	PORT 3																					
ANTENNA POSITION 4	PORT 1		135348.B.700.4G.1	CTL02267_7B_1			LTE 700	H8_719MHz_04DT	15.3		4	Bottom	Commscope 1-5/8 (700)	140								
	PORT 3		135348.B.1900.4G.1	CTL02267_9B_1			LTE 1900	H8_1948MHz_03DT	15.3		3	Bottom	Commscope 1-5/8 (1900)	140								

Section 17C - FINAL SECTOR/CELL INFORMATION - SECTOR C

ANTENNA COMMON FIELDS	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
ANTENNA MAKE - MODEL	SBNH-1D6565C		SBNH-1D6565C		SBNH-1D6565C		OPA-65R-LCUU-H8							
ANTENNA VENDOR	Andrew		Andrew		Andrew		CCI Products							
ANTENNA SIZE (H x W x D)	96.4X11.9X7.1		96.4X11.9X7.1		96.4X11.9X7.1		92.7X14.4X7							
ANTENNA WEIGHT	60.8		60.8		60.8		88							
AZIMUTH	310		310		310		310							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	111		111		111		111							
ANTENNA TIP HEIGHT														
MECHANICAL DOWNTILT	0		0		0		0							
FEEDER AMOUNT	2		2		2									
Antenna RET Motor (QTY/MODEL)		Built-in RET Equipment		Built-in RET Equipment		Built-in RET Equipment		Internal						
SURGE ARRESTOR (QTY/MODEL)							2	APTDC-BDFDM-DBW						
DIPLEXER (QTY/MODEL)	2	CM1007-DBPXBC-003		CM1007-DBPXBC-003		CM1007-DBPXBC-003	2	CM1007-DBPXBC-003						
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)	1	Powerwave 7070												
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	1	G12A (Twin 700/850 Bypass)	1	G12A (Twin 700/850 Bypass)	1	G12A (Twin 700/850 Bypass)	1	G12A (Twin 700/850 Bypass)						
CURRENT INJECTORS FOR TMA (QTY/MODEL)		AiSG Diplexer						AiSG Diplexer						
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)							1	RRUS-11						
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)							1	RRUS-12+RRUS-A2						
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1	LTE: Replace existing quad port antenna on postion 4 with Octo port antenna// Install and integrate LTE RRUS-12+A2 // Move existing LTE 700 RRUS-11 to Octoport													
Local Market Note 2														
Local Market Note 3	Position 2 and 3 have Spare antenna // GSM technology shown to avoid errors in AutoForms// No technology installed at position 2 and 3													

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	CABLE NUMBER	CABLE ID(cssng)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)
ANTENNA POSITION 1	PORT 1		135348.C.850.3G.1	CTV22673			UMTS 850	1D6565C_850MHz_04DT	13.41		4	Bottom	Commscope 1-5/8 (850)	140								
	PORT 2		135348.C.850.3G.2	CTV2267C			UMTS 850	1D6565C_850MHz_04DT	13.41		4	Bottom	Commscope 1-5/8 (850)	140								
	PORT 3		135348.C.1900.3G.1	CTU22679			UMTS 1900	1D6565C_1950MHz_04DT	17		4	Bottom	Commscope 1-5/8 (1900)	140								
ANTENNA POSITION 2	PORT 1					Spare	GSM															
	PORT 3																					
ANTENNA POSITION 3	PORT 1					Spare	GSM															
	PORT 3																					
ANTENNA POSITION 4	PORT 1		135348.C.700.4G.1	CTL02267_7C_1			LTE 700	H8_719MHz_04DT	15.3		4	Bottom	Commscope 1-5/8 (700)	140								
	PORT 3		135348.C.1900.4G.1	CTL02267_9C_1			LTE 1900	H8_1948MHz_03DT	15.3		3	Bottom	Commscope 1-5/8 (1900)	140								

Product Specifications

Andrew Solutions

SBNH-1D6565C

DualPol® Dual Band Teletilt® Antenna, 698–896 and 1710–2180 MHz, 65° horizontal beamwidth, RET compatible

- Interleaved dipole technology providing for attractive, low wind load mechanical package
- Internal next generation actuator eliminates field installation and defines new standards for reliability

Electrical Specifications

Frequency Band, MHz	**698–806**	**806–896**	**1710–1880**	**1850–1990**	**1920–2180**
Gain, dBi	15.7	16.4	18.0	18.0	18.0
Beamwidth, Horizontal, degrees	71	67	58	57	59
Beamwidth, Vertical, degrees	8.6	7.8	5.5	5.1	4.8
Beam Tilt, degrees	0–11	0–11	0–7	0–7	0–7
USLS, typical, dB	15	15	16	16	16
Front-to-Back Ratio at 180°, dB	25	28	34	31	31
Front-to-Back Total Power at 180° ± 20°, dB	21	22	30	27	26
CPR at Boresight, dB	24	21	17	17	17
CPR at Sector, dB	11	8	9	8	9
Isolation, dB	30	30	30	30	30
Isolation, Intersystem, dB	35	35	35	35	35
VSWR | Return Loss, dB	1.5:1 | 14.0	1.5:1 | 14.0	1.5:1 | 14.0	1.5:1 | 14.0	1.5:1 | 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-150	-150	-150	-150	-150
Input Power per Port, maximum, watts	400	400	300	300	300
Polarization	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm
Lightning Protection	dc Ground	dc Ground	dc Ground	dc Ground	dc Ground

Mechanical Specifications

Color | Radome Material	Light gray | Fiberglass, UV resistant
Connector Interface | Location | Quantity	7-16 DIN Female | Bottom | 4
Wind Loading, maximum	879.0 N @ 150 km/h 197.6 lbf @ 150 km/h
Wind Speed, maximum	241.0 km/h | 149.8 mph

Dimensions

Depth	181.0 mm | 7.1 in
Length	2449.00 mm | 96.42 in
Width	301.00 mm | 11.85 in
Net Weight	27.60 kg | 60.85 lb

Remote Electrical Tilt (RET) Information

Adjustment Time, full range, maximum	30 s
Annual Failure Rate, maximum	0.01%
Power Consumption, during motor movements, maximum	11.0 W
Power Consumption, idle state, maximum	2.0 W

65° OctoPort Multi-Band Antenna

Model OPA-65R-LCUU-H8

Octoport Multi-Band Antenna Array

The CCI Octoport Multi-Band Antenna Array is an industry first 8-port antenna with full WCS Band Coverage. With four high band ports covering PCS, AWS and WCS bands, two 700 MHZ ports, and two 850 MHz ports our octoport antenna is ready for 4X4 high band MIMO.

Modern networks demand high performance, consequently CCI has incorporated several new and innovative design techniques to provide an antenna with excellent side-lobe performance, sharp elevation beams, and high front to back ratio.

Multiple networks can now be connected to a single antenna, reducing tower loading and leasing expense, while decreasing deployment time and installation cost.

Full band capability for 700 MHz , Cellular 850 MHz, PCS 1900 MHz, AWS 1710/2155 MHz and WCS 2300 MHz coverage in a single enclosure.

All CCI antennas are manufactured under ISO 9001.

Benefits

- **RET System allows Independent Tilt of each band specific paired port**
- **Reduces tower loading**
- **Frees up space for tower mounted Remote Radio Heads**
- **Single radome with eight ports**
- **All Band design simplifies radio assignments**
- **Sharp elevation beam eases network planning**

Features

- High Band Ports include WCS Band
- Four High Band ports with four Low Band ports in one antenna
- Sharp elevation beam
- Excellent elevation side-lobe performance
- Excellent MIMO performance due to array spacing
- Excellent PIM Performance
- A multi-network solution in one radome

Applications

- 4x4 MIMO on High Band and Dual 2x2 MIMO on 700 & 850 Low Bands
- Adding additional capacity without adding additional antennas
- Adding WCS Band without increasing antenna count

65° OctoPort Multi-Band Antenna

Model OPA-65R-LCUU-H8

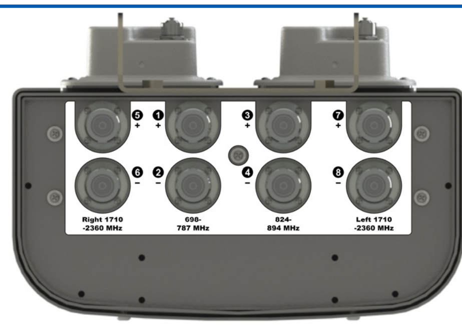
OPA-65R Multi-Band Antenna

Electrical Specifications

Frequency Range	2 X Low Band Ports (L) which cover the range from 698-787 MHz	2 X Low Band Ports (C) which cover the range from 824-894 MHz	4 X High Band Ports (H1 & H2) which cover the full range from 1710-2360 MHz			
			1850-1990 MHz	1710-1755/2110-2170 MHz		2305-2360 MHz
Gain	14.7 dBi	15.5 dBi	17.0 dBi	16.5 dBi	17.2 dBi	17.1 dBi
Azimuth Beamwidth (-3dB)	65°	61°	62°	67°	64°	61°
Elevation Beamwidth (-3dB)	10.1°	8.5°	5.6°	6.2°	5.0°	4.5°
Electrical Downtilt	2° to 10°	2° to 10°	0° to 8°	0° to 8°	0° to 8°	0° to 8°
Elevation Sidelobes (1st Upper)	< -17 dB	< -17 dB	< -19 dB	< -18 dB	< -18 dB	< -17 dB
Front-to-Back Ratio @180°	> 28 dB	> 28 dB	> 35 dB	> 35 dB	> 35 dB	> 35 dB
Front-to-Back Ratio over ± 20°	> 28 dB	> 27 dB	> 28 dB	> 27 dB	> 27 dB	> 28 dB
Cross-Polar Discrimination (at Peak)	> 24 dB	> 20 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB
Cross-Polar Discrimination (at ± 60°)	> 16 dB	> 14 dB	> 18 dB	> 18 dB	> 18 dB	> 18 dB
Cross-Polar Port-to-Port Isolation	> 25 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB
VSWR	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1
Passive Intermodulation (2x20W)	≤ -150 dBc	≤ -150 dBc	≤ -150 dBc	≤ -150 dBc	≤ -150 dBc	≤ -150 dBc
Input Power	500 Watts CW	500 Watts CW	300 Watts CW	300 Watts CW	300 Watts CW	300 Watts CW
Polarization	Dual Pol 45°	Dual Pol 45°	Dual Pol 45°	Dual Pol 45°	Dual Pol 45°	Dual Pol 45°
Input Impedance	50 Ohms	50 Ohms	50 Ohms	50 Ohms	50 Ohms	50 Ohms
Lightning Protection	DC Ground	DC Ground	DC Ground	DC Ground	DC Ground	DC Ground

Mechanical Specifications

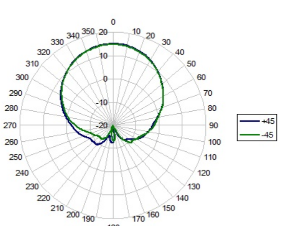
Dimensions (LxWxD)	92.7 x 14.4 x 7.0 inches (2355 x 366 x 179 mm)
Survival Wind Speed	> 150 mph
Front Wind Load	327 lbs (1453 N) @ 100 mph (161 kph)
Side Wind Load	186 lbs (829 N) @ 100 mph (161 kph)
Equivalent Flat Plate Area	12.9 ft^2 (1.2 m^2)
Weight (w/o RET/Mounting)	88 lbs (40 kg)
RET System Weight	7.0 lbs (3.0 kg)
Connector	8; 7-16 DIN female long neck
Mounting Pole	2-5 inches (5-12 cm)



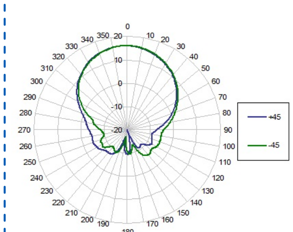
Bottom View

Rear View

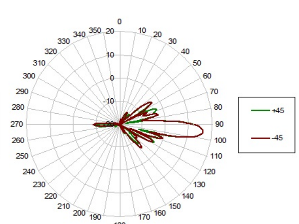
Antenna Patterns*



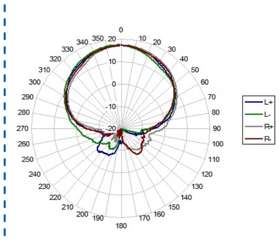
737 MHz Azimuth



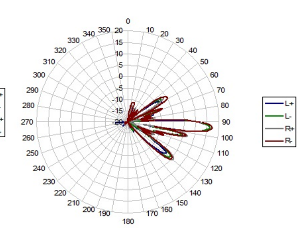
887 MHz Azimuth



Elevation 5°



1920 MHz Azimuth



Elevation 4°

*Typical antenna patterns. For detail information on antenna pattern, please contact us at info@cciproducts.com. All specifications are subject to change without notice.

PCS Twin TMA with 700/850 Bypass

EXTENDING WIRELESS PERFORMANCE

Tel: 201-342-3338 Fax: 201-342-3339 www.cciproducts.com

General Information

CCI's PCS Twin TMA with 700/850 Bypass contains two PCS TMA's and 700/850 Bypass in a single housing. The PCS TMA is full band and fully duplexed, while the 700 Band and Cellular (850) RF is bypassed and combined (Diplexed) with the PCS RF signal. High linearity improves the uplink sensitivity and the receive performance of base stations. The TMA is fully compliant with the latest AISG 2.0 specification. The TMA supports EDGE/GSM, UMTS and LTE BTS equipment. It provides a convenient package for sites upgraded to triple or quad antenna configurations. The twin TMA package reduces tower loading, leasing, and installation costs. Unit count on the tower is cut in half. An excellent match for two branch receive diversity applications using triple polarization antennas. The input and output connectors are located inline for ease of installation in space constrained areas such as uni-pole structures and stealth antennas.

Model DTMABP7819VG12A

Contents:

Features:

- Small, lightweight, twin unit
- Twin PCS Band Dual Duplexed TMA with 700/850 Band Bypass
- Optional AISG 2.0 compatible unit
- AISG TMA detects BTS port that DC voltage and AISG sampling is applied to, and automatically switches to utilize that port
- AISG TMA operates at constant power
- AISG TMA may be powered by a standard PDU
- High linearity
- Lightning protected
- Fail-safe bypass mode
- High reliability

Technical Description

The TMA system consists of a twin PCS band with 700/850 Bypass tower mount unit which combine separate PCS and the 700/850 Band antennas onto a single BTS port. The PCS path of the tower mount unit is dual duplexed to separate the low-power uplink signals from the high-power downlink signals at the antenna port, amplifies the low-level uplink signals using an ultra-low noise amplifier (LNA), and recombines the two paths at the BTS port. The 700/850 Band path is ultra low loss and passive. Both paths are diplexed at the BTS port. The tower mount units consist of eight band-pass filters, two redundant low-noise amplifiers, bypass failure circuitry, and bias tee's which are all housed in an IP65 moisture proof enclosure, with IP68 Immersion proof connectors suited to long-life masthead mounting. The unit provides protection against lightning strikes via a multi-stage surge protection circuit. DC power and control is provided via the feeder cable from the BTS or a Power Distribution Unit (PDU). Optional AISG 2.0 DC power and control is provided via the feeder cable from the BTS using the AISG 2.0 and 3GPP standard. The optional AISG TMA detects which BTS port has DC Voltage/AISG Sampling applied and automatically switches to utilize that port. Additionally the AISG TMA operates at constant power when powered by an AISG 2.0 Compatible Site Control Unit, but may be powered by a “Standard Power distribution Unit. A separate AISG connector is also provided to allow direct AISG connection or “Daisy Chaining” to multiple AISG products at the top of the tower.

An optional indoor site control unit (SCU) is available to power up to up to 32 AISG modules per sector and to provide the all the monitoring and alarm functions for the system. The SCU is housed in a single (1U) 1.75” x 19” rack and contains triple redundant power supplies capable of being “hot swapped” that provide a regulated DC supply voltage on the RF coax for the tower mount amplifiers.

PCS Twin TMA with 700/850 Bypass Typical Specifications

Description	Typical Specifications
Electrical Specifications	
700 Band & Cellular Frequency Range	698 to 894 MHz
PCS Receive Frequency Range	1850 – 1910 MHz
PCS Transmit Frequency Range	1930 - 1990 MHz
PCS Amplifier Gain	6 to 12 dB Adjustable in 0.25 dB steps via AISG
PCS Gain Variation	±1.0 dB
PCS System Noise Figure	1.4 dB (@ +25°C),1.6 dB (@ +65°C), At 1910 MHz: 1.7 dB (@ +25°C), 1.9 dB (@ +65°C)
PCS Input Third Order Intercept Point	+12 dBm Min @ Max. Gain
Input/Output Return Loss	18 dB Min. all ports, 15 dB Min. Bypass Mode
Insertion Loss	
700 Band & Cellular Passband	< 0.2 dB, 0.1 dB typical
PCS Transmit Passband	0.4 dB Typical
PCS Transmit Passband Ripple	±0.2 dB
PCS Bypass Mode, Rx Passband	1.6 dB (@ +25°C),1.8 dB (@ +65°C), At 1910 MHz: 2.3 dB (@ +25°C), 2.5 dB (@ +65°C)
PCS Bypass Mode, Rx Passband Ripple	±1 dB
Filter Characteristics	
700 Band & Cellular Path Rejection	70 dB @ 1850 - 1990 MHz
PCS Path Rejection	80 dB @ 698 - 894 MHz
Continuous Average Power	200 Watts max
Peak Envelope Power	2 kW max
Intermodulation Performance	
IMD at ANT port in Rx Band	-112 dBm Min. (2 x +43 dBm tones)
Operating Voltage	+10V to +30V DC provided via coax or AISG
Power Consumption	≤ 2.1 Watts
Mechanical Specifications	
Connectors	DIN 7-16 Female (Long Neck) x 6, AISG x 1
Dimensions (Body Only)	10.63” (H) x 11.02” (W) x 3.78” (D); (270 (H) x 280 (W) x 96 (D) mm)
Dimensions (with Bracket)	14.25” (H) x 11.46” (W) x 4.17” (D); (362 (H) x 291 (W) x 106 (D) mm)
Weight (w/o Bracket)	19.18 Lbs. (8.7 Kg)
Mounting	Pole/Wall Mounting Bracket
Environmental Specifications	
Operating Temperature	-40° C to +65°C
Lightning Protection	8/20us, ±2KA max, 10 strikes each, IEC61000-4-5
Enclosure	IP65 (Unit Body), IP68 (Connector)
MTBF	>500,000 hours

All specifications are subject to change. The latest specifications are available at www.cciproducts.com