NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Northeast Site Solutions
Denise Sabo
199 Brickyard Rd Farmington, CT 06032
860-209-4690
denise@northeastsitesolutions.com

November 9, 2016

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

RE: Notice of Exempt Modification
15 Old Danbury Road, Wilton CT 06897
Latitude: 41.196250
Longitude: -73.431941
T-Mobile Site#: CT11101B_L700

Dear Ms. Bachman:

T-Mobile currently maintains three (3) antennas at the 119-foot level of the existing 124-foot transmission pole at 15 Old Danbury Road, Wilton CT 06897. The electric transmission pole is owned by CL&P d/b/a Eversource. The property is owned by CD Station LLC. T-Mobile now intends to install three (3) new 700/1900/2100 MHz. The new antennas would be installed at the 119-foot level of the tower. T-Mobile also intends to make the following modifications.

Planned Modifications:

Remove: NONE

Remove and Replace:
(3) APX16DWV-16DWV-SE-A20 **(Remove)** - (3) SBNHH-1D65SA Flush Mounted **(Replace)**

Install New:
(3) Smart Bias-T
(6) 1-1/4" Coax
(3) RRUS 11 B12 **Ground level Mounted on Ice Bridge**

Existing to Remain: (12) 1-1/4" Coax

This facility was approved by the CT Siting Council. Petition No.395A –on September 16, 2016 T-Mobile Northeast LLC and Eversource received permission to relocate and replace the electric transmission line structure (pole #2997). The petition was approved to expand the height of the existing tower to 124-feet. T-Mobile's new RAD center is approved to be 119' AGL. Please see attached.

NORTHEAST SITE SOLUTIONS

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Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies§ 16- SOj-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.SA. § 16-SOj-73, a copy of this letter is being sent to First Selectman Lynn Vanderslice, Elected Official for the Town of Wilton, as well as the property owner and the tower owner.

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

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

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

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

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

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

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

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

Sincerely,

Denise Sabo
Mobile: 860-209-4690
Fax: 413-521-0558
Office: 199 Brickyard Rd, Farmington, CT 06032
Email: denise@northeastsitesolutions.com

Attachments
cc: Lynn Vanderslice- First Selectman - as elected official
CL&P d/b/a Eversource - as tower owner
CD Station LLC - property owner

Exhibit A

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

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

September 16, 2016

Eric Dahl
Vertical Development
20 Commercial Street
Branford, CT 06405

RE: **PETITION NO. 395A** – T-Mobile Northeast LLC (T-Mobile) request to amend its declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required to relocate an existing T-Mobile facility attached to an Eversource electric transmission line structure (#2997) onto an approved replacement electric transmission line structure (#2997) within the existing Eversource right-of-way located in the parking lot of the Wilton Railroad Station near the intersection of Route 7 and Route 33 (Old Station Road a/k/a 15 Old Danbury Road) in Wilton, Connecticut.

Dear Mr. Dahl:

At a public meeting held on September 15, 2016, the Connecticut Siting Council (Council) considered and ruled that the above-referenced proposal to amend its declaratory ruling would not have a substantial adverse environmental effect, and pursuant to Connecticut General Statutes § 16-50k, would not require a Certificate of Environmental Compatibility and Public Need with the following conditions:

1. Use of off-road construction equipment that meets the latest EPA or California Air Resources Board standards, or in the alternative, equipment with the best available controls on diesel emissions, including, but not limited to, retrofitting with diesel oxidation catalysts, particulate filters and use of ultra-low sulfur fuel;

2. Compliance with the provisions of Section 22a-174-18(b)(3)(C) of the Regulations of Connecticut State Agencies that limit the idling of mobile sources to 3 minutes;

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

4. Deployment and operation of a temporary facility subject to the submission of final design details to the Executive Director for review and final authorization;

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

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

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

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

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

10. This Declaratory Ruling may be transferred, provided the facility owner/operator/transferor is current with payments to the Council for annual assessments and invoices under Conn. Gen. Stat. §16-50v and the transferee provides written confirmation that the transferee agrees to comply with the terms, limitations and conditions contained in the Declaratory Ruling, including timely payments to the Council for annual assessments and invoices under Conn. Gen. Stat. §16-50v; and

11. If the facility owner/operator is a wholly owned subsidiary of a corporation or other entity and is sold/transferred to another corporation or other entity, the Council shall be notified of such sale and/or transfer and of any change in contact information for the individual or representative responsible for management and operations of the facility within 30 days of the sale and/or transfer.

This decision is under the exclusive jurisdiction of the Council and is not applicable to any other modification or construction. All work is to be implemented as specified in the petition dated August 13, 2016.

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

Very truly yours,

Robert Stein MAB

Robert Stein
Chairman

RS/RDM/lm

Enclosure: Staff Report dated September 15, 2016

c: The Honorable Lynne Vanderslice, First Selectman, Town of Wilton
Robert Nerney, Director of Planning and Land Use Management, Town of Wilton

Exhibit B

15 **OLD DA**NBURY **R**D

Location	15 OLD DANBURY RD	Mblu	74/ / 22/ /
Acct#	003140	Owner	CD STATION LLC
Assessment	$11,804,870	Appraisal	$16,864,100
PID	3983	**Building Count**	1

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2015	$9,951,200	$6,912,900	$16,864,100
Assessment			
Valuation Year	Improvements	Land	Total
2015	$6,965,840	$4,839,030	$11,804,870

Owner of Record

Owner	CD STATION LLC	Sale Price	$7,050,000
Co-Owner	MARCUS PARTNERS ACCT DEPT	Certificate	
Address	301 MERRITT 7 NORWALK, CT 06851	Book & Page	1158/0193
		Sale Date	03/15/1999
		Instrument	00

Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
CD STATION LLC	$7,050,000		1158/0193	00	03/15/1999
STATION PARK LLC	$3,500,000		1127/0274	00	10/05/1998
LAVIN, MARCELINO E & JUDITH P	$0		0696/0200	00	09/14/1989

Building Information

Building 1 : Section 1

Year Built: 1968
Living Area: 81,697
Replacement Cost: $12,244,425
Building Percent Good: 78
Replacement Cost Less Depreciation: $9,550,700

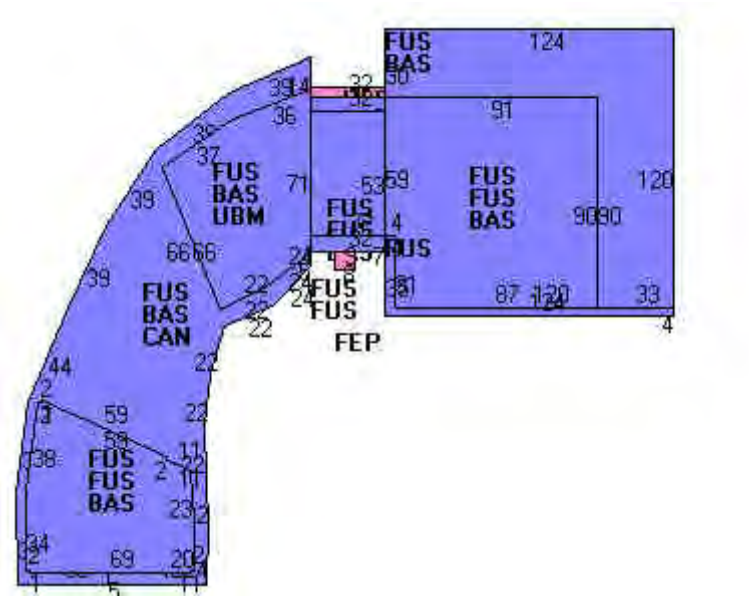
Building Attributes	
Field	Description
STYLE	Class A Office
MODEL	Commercial
Grade	Excellent +20
Occupancy	2
Exterior Wall 1	Reinforced Cnc
Exterior Wall 2	Glass/Thermo.
Roof Structure	Flat

Building Photo

(http://images.vgsi.com/photos/WiltonCTPhotos//\00\00\56/32.

Roof Cover	Tar/Gravl/Rubr
Interior Wall 1	Drywall
Interior Wall 2	
Interior Floor 1	Carpet
Interior Floor 2	
Heating Fuel	Electric
Heating Type	Forced Air
AC Type	Central
Bldg Use	Commercial
Fireplace	
Elevator	2
Cath Ceil	
Sauna	
1st Floor Use:	2-1
Heat/AC	Heat A/C Pkg
Frame Type	Steel
Baths/Plumbing	Average
Ceiling/Wall	Sus Ceil and W
Rooms/Prtns	Average
Wall Height	11
% Comn Wall	0

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
FUS	Upper Story, Finished	48,598	48,598
BAS	First Floor	33,099	33,099
CAN	Canopy	8,394	0
FEP	Enclosed Porch	72	0
UBM	Basement, Unfinished	3,968	0
ULP	Loading Platform, Unfinished	352	0
		94,483	81,697

Extra Features

Extra Features				Legend
Code	Description	Size	Value	Bldg #
SPR1	Sprinklers Wet	85388 S.F.	$99,900	1
ELEV	Elevator	3 STOP	$58,500	1
ELEV	Elevator	3 STOP	$58,500	1

Land

Land Use

Use Code	2-1
Description	Commercial
Zone	DE-5
Neighborhood	9000
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	4.28
Frontage	
Depth	
Assessed Value	$4,839,030
Appraised Value	$6,912,900

Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
CFL2	Computer Floor			1640 S.F.	$25,300	1
PAV1	Paving Asphaul			115000 S.F.	$138,000	1
LT1	Lights 1			16 UNITS	$11,800	1
LT2	Lights (2)			5 UNITS	$3,700	1
SHD1	Shed			96 S.F.	$1,200	1
FN1	Fence 4'			430 L.F.	$3,600	1

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2014	$9,951,200	$6,912,900	$16,864,100
2013	$9,951,200	$6,912,900	$16,864,100
2012	$9,951,200	$6,912,900	$16,864,100

Assessment			
Valuation Year	Improvements	Land	Total
2014	$6,965,840	$4,839,030	$11,804,870
2013	$6,965,840	$4,839,030	$11,804,870
2012	$6,965,840	$4,839,030	$11,804,870

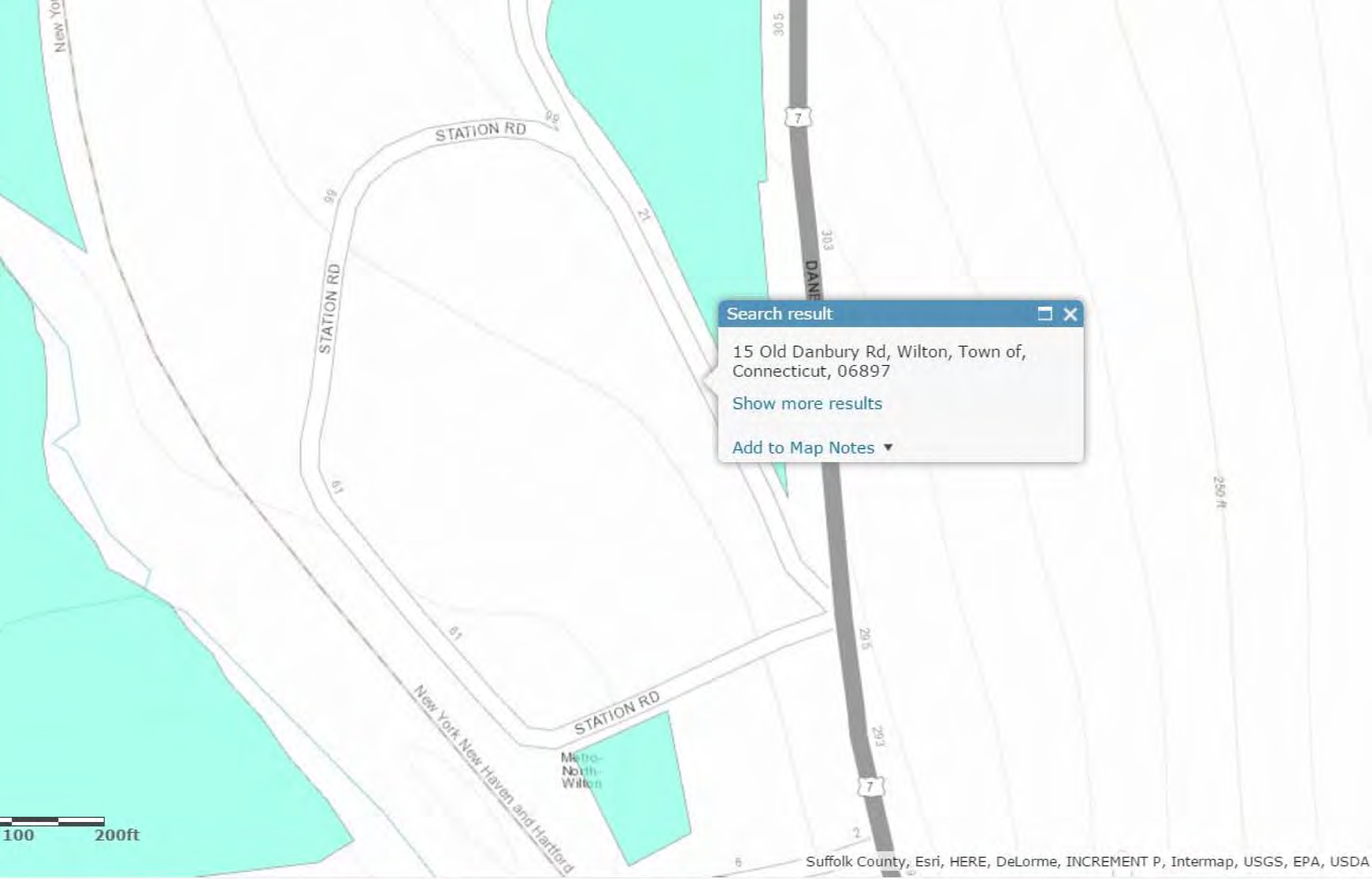
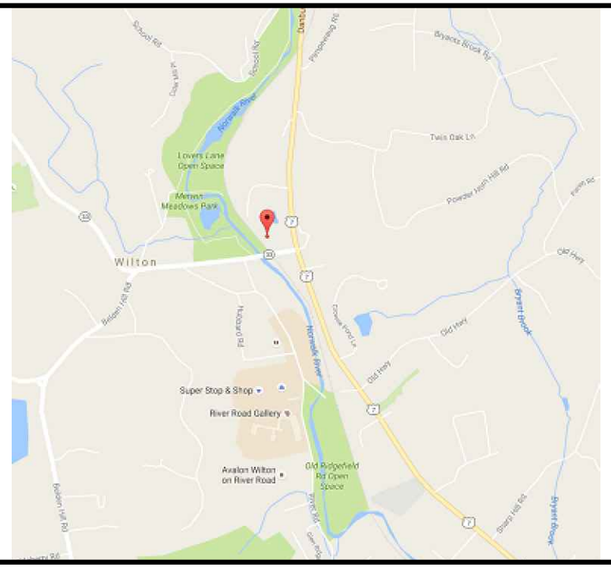

STATION RD
STATION RD
STATION RD
New York New Haven and Hartford
Metro-North-Wilton
7
7
Search result
15 Old Danbury Rd, Wilton, Town of, Connecticut, 06897
Show more results
Add to Map Notes
100
200ft
Suffolk County, Esri, HERE, DeLorme, INCREMENT P, Intermap, USGS, EPA, USDA

Exhibit C

GENERAL NOTES

1. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTORS SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK.
2. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
3. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
4. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
5. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
6. THE SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
7. THE SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
8. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWING MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
9. ALL SAFETY PRECAUTIONS MUCH BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

LOCATION MAP



DIRECTIONS

DIRECTIONS FROM BLOOMFIELD, CT:
ET ON I-84 IN WEST HARTFORD FROM CT-218 W, KING PHILIP DR AND TROUT BROOK DR, TAKE CT-9 S TO CT-15 S/US-5 S/BERLIN TURNPIKE IN BERLIN. TAKE EXIT 21 FROM CT-9 S, USE ANY LANE TO TURN LEFT ONTO CT-15 S/US-5 S/BERLIN TURNPIKE, FOLLOW CT-15 S TO CT-33 N/WILTON RD IN WESTPORT. TAKE EXIT 41 FROM CT-15 S, FOLLOW CT-33 N TO YOUR DESTINATION IN WILTON, TURN LEFT ONTO CT-33 N/WILTON RD, CONTINUE TO FOLLOW CT-33 N, CONTINUE ONTO US-7 N, TURN LEFT ONTO STATION RD, TURN LEFT, TURN LEFT, DESTINATION WILL BE ON THE LEFT

T··Mobile·

2016 L700

T-MOBILE SITE NUMBER

CT11101B

EXISTING 124' TOWER

SITE ADDRESS
15 OLD DANBURY RD. POLE #2997 WILTON TRAIN STATION
WILTON, CT 06897

RF CONFIG TYPE
704Bu Outdoor

SITE SUMMARY

SITE TYPE:	EXISTING SITE OVERLAY
SITE ADDRESS:	15 OLD DANBURY RD. POLE #2997 WILTON TRAIN STATION WILTON, CT 06897
SITE LATITUDE: SITE LONGITUDE:	41° 11' 46.5" -73° 25' 55.2"
JURISDICTION:	TOWN OF WILTON
POWER COMPANY: TELEPHONE COMPANY:	EVERSOURCE NOT PROVIDED
TOWER OWNER/MANAGER:	CONNECTICUT LIGHT AND POWER 107 SELDEN ST BERLIN, CT 06037 1-860-947-2121
WIRELESS CARRIER:	T-MOBILE 35 GRIFFIN RD S BLOOMFIELD, CT 06002 OFFICE: 860-692-7100 FAX: 860-692-7159
ENGINEER:	SMW ENGINEERING GROUP N.C., PLLC 158 BUSINESS CENTER DRIVE BIRMINGHAM, AL 35244 CONTACT: V.G. DUVALL, JR., PE PHONE: 205-252-6985

APPROVALS

DEPARTMENT	NAME/SIGNATURE	DATE
DEVELOPMENT MANAGER		
PROPERTY/TOWER OWNER		
SITE ACQUISITION MANAGER		
CONSTRUCTION MANAGER		
RF ENGINEER		
OPERATIONS MANAGER		

SHEET INDEX

BUILDING CODES

ALL CONSTRUCTION SHALL COMPLY WITH THE LATEST EDITION OF THE (AS ADOPTED BY LOCAL JURISDICTION):

- 2016 CONNECTICUT BUILDING CODE
- 2012 INTERNATIONAL BUILDING CODE W/AMENDMENTS
- 2009 ICC/ANSI A117.1 W/AMENDMENTS
- 2012 INTERNATIONAL EXISTING BUILDING CODE W/AMENDMENTS
- 2012 INTERNATIONAL PLUMBING CODE WITH AMENDMENTS
- 2012 INTERNATIONAL MECHANICAL CODE W/AMENDMENTS
- 2012 INTERNATIONAL ENERGY CONSERVATION CODE W/AMENDMENTS
- 2014 NFPA 70, NATIONAL ELECTRICAL CODE W/AMENDMENTS
- 2012 INTERNATIONAL RESIDENTIAL CODE W/AMENDMENTS

HANDICAP REQUIREMENTS

FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. HANDICAP ACCESS IS NOT REQUIRED.

PLUMBING REQUIREMENTS

FACILITY HAS NO SANITARY OR POTABLE WATER

CALL BEFORE YOU DIG

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

CONNECTICUT CALL BEFORE YOU DIG
STATE WIDE
1-800-922-4455 OR 811
HTTP://WWW.CBYD.COM/#

T··Mobile·
35 GRIFFIN RD S
BLOOMFIELD, CT 06002
OFFICE: 860-692-7100
FAX: 860-692-7159

PLANS PREPARED BY:
NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development
199 BRICKYARD RD
FARMINGTON, CT 06032

SMW ENGINEERING GROUP, INC.
TOGETHER PLANNING A BETTER TOMORROW

REVIEW DRAWING
(ISSUED ONLY FOR APPROVAL)

SITE INFORMATION:
CT11101B
15 OLD DANBURY RD.
POLE #2997 WILTON TRAIN STATION
WILTON, CT 06897

#	DATE	DESCRIPTION:
0	10/18/16	ISSUED FOR CLIENT REV.
1	11/02/16	REISSUED FOR CLIENT REV.
2	11/10/16	ISSUED FOR APPROVAL

T-MOBILE SITE ID: CT11101B

SHEET NAME: TITLE SHEET

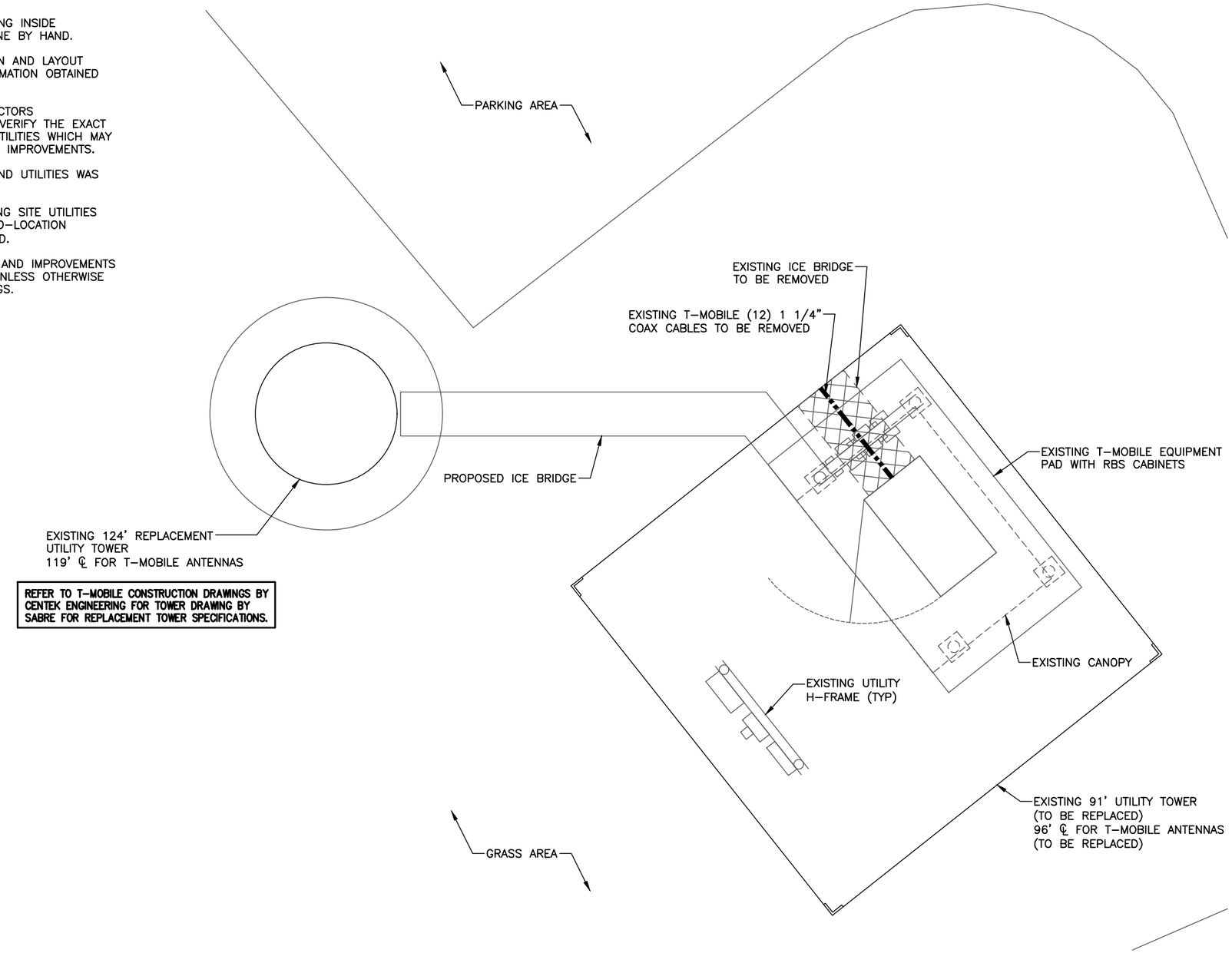
SMW #: 16-2083

DESIGNER:	ACR
CHECKED BY:	RTB
ENGINEER:	VGD

SHEET NUMBER: T-1

SITE NOTES:

1. DIGGING AND/OR TRENCHING INSIDE COMPOUND, MUST BE DONE BY HAND.
2. EXISTING SITE INFORMATION AND LAYOUT SHOWN REPRESENT INFORMATION OBTAINED FROM NSS & T–MOBILE.
3. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY THE EXACT LOCATIONS OF EXISTING UTILITIES WHICH MAY CONFLICT WITH PROPOSED IMPROVEMENTS.
4. LOCATION OF UNDERGROUND UTILITIES WAS NOT PERFORMED.
5. THE ADEQUACY OF EXISTING SITE UTILITIES TO ACCOMMODATE NEW CO–LOCATION LOAD(S) WAS NOT VERIFIED.
6. ALL EXISTING VEGETATION AND IMPROVEMENTS SHOWN ARE TO REMAIN UNLESS OTHERWISE SHOWN IN THESE DRAWINGS.



REFER TO T–MOBILE CONSTRUCTION DRAWINGS BY CENTEK ENGINEERING FOR TOWER DRAWING BY SABRE FOR REPLACEMENT TOWER SPECIFICATIONS.

N

0' 4' 8' 12'
1" = 4' (11"x17")

0' 2' 4' 8'
1" = 2' (24"x36")

1/C-1 EXISTING OVERALL SITE PLAN

T-Mobile
35 GRIFFIN RD S
BLOOMFIELD, CT 06002
OFFICE: 860–692–7100
FAX: 860–692–7159

PLANS PREPARED BY:
NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development
199 BRICKYARD RD
FARMINGTON, CT 06032

SMW ENGINEERING GROUP, INC.
TOGETHER PLANNING A BETTER TOMORROW

REVIEW DRAWING
(ISSUED ONLY FOR APPROVAL)

SITE INFORMATION:
CT11101B
15 OLD DANBURY RD.
POLE #2997 WILTON TRAIN STATION
WILTON, CT 06897

#	DATE	DESCRIPTION:
0	10/18/16	ISSUED FOR CLIENT REV.
1	11/02/16	REISSUED FOR CLIENT REV.
2	11/10/16	ISSUED FOR APPROVAL

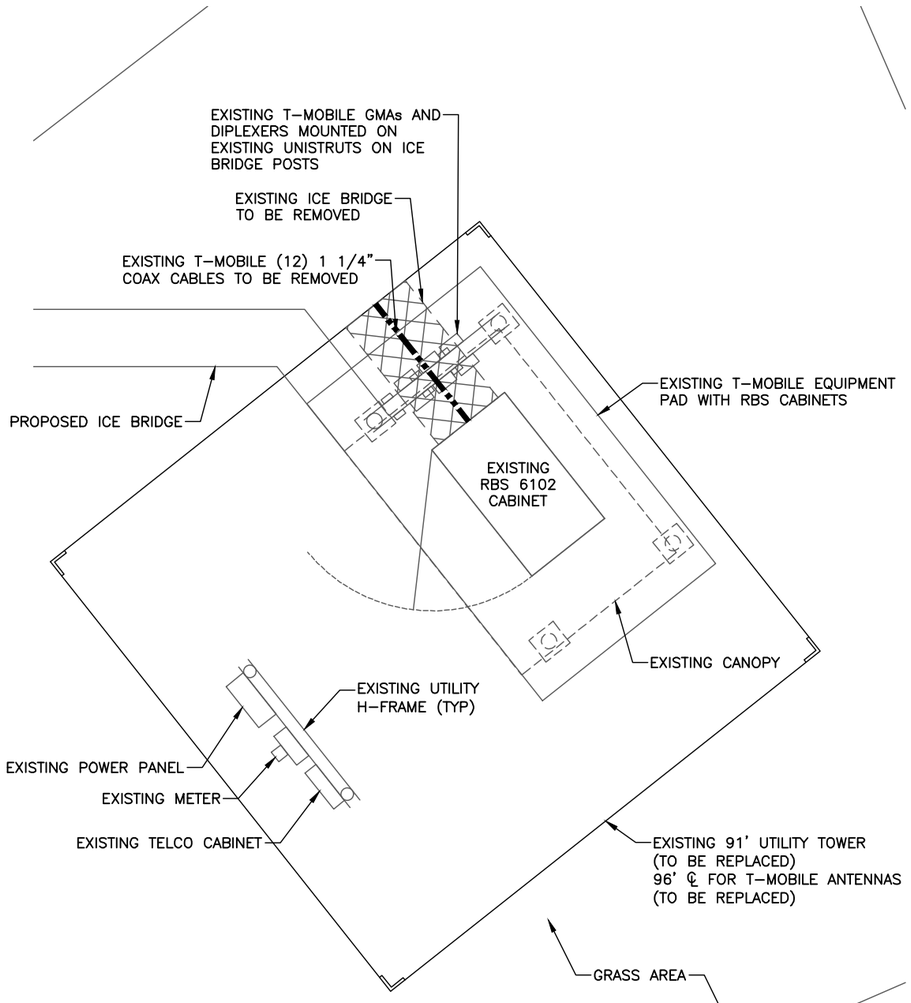
T-MOBILE SITE ID: CT11101B

SHEET NAME: OVERALL SITE PLAN

SMW #: 16–2083

DESIGNER:	ACR
CHECKED BY:	RTB
ENGINEER:	VGD

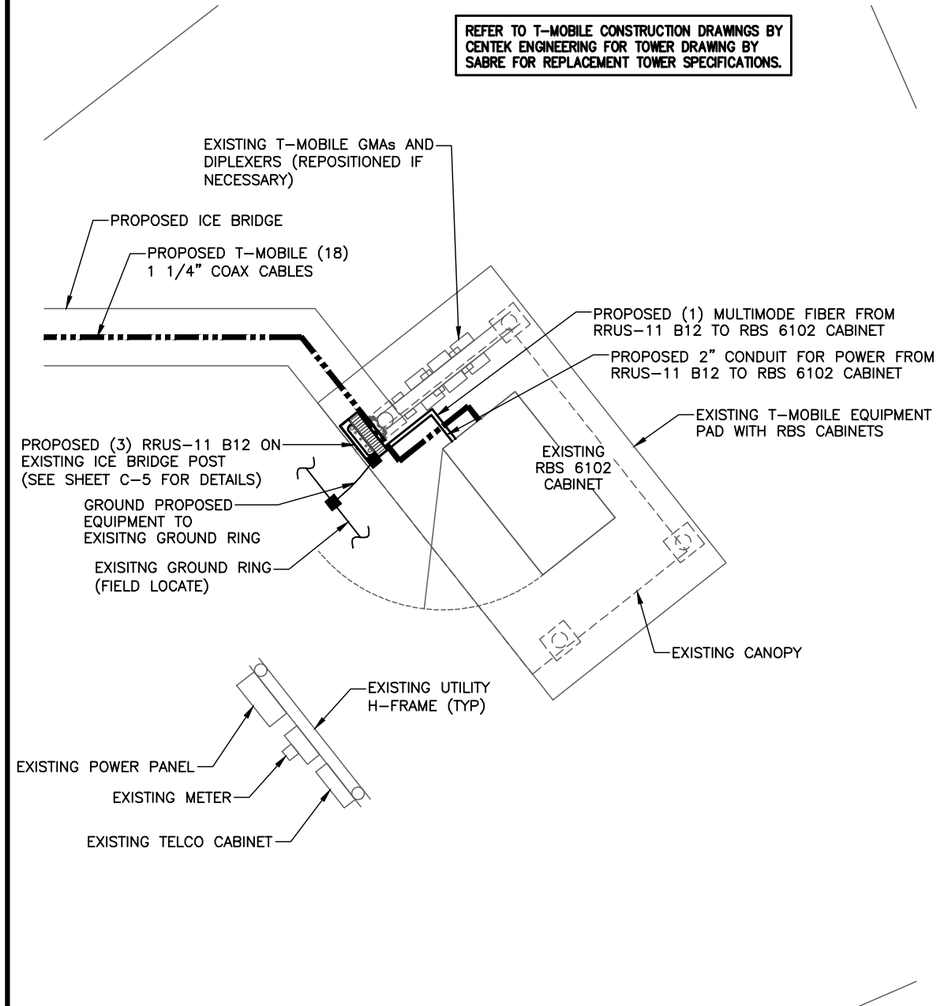
SHEET NUMBER: C-1



0' 4' 8' 12'
1" = 4' (11"x17")

0' 2' 4' 8'
1" = 2' (24"x36")

1 C-2 EXISTING EQUIPMENT PLAN



0' 4' 8' 12'
1" = 4' (11"x17")

0' 2' 4' 8'
1" = 2' (24"x36")

2 C-2 PROPOSED EQUIPMENT PLAN

T-Mobile
35 GRIFFIN RD S
BLOOMFIELD, CT 06002
OFFICE: 860-692-7100
FAX: 860-692-7159

PLANS PREPARED BY:
NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development
199 BRICKYARD RD
FARMINGTON, CT 06032

SMW ENGINEERING GROUP, INC.
TOGETHER PLANNING A BETTER TOMORROW

REVIEW DRAWING
(ISSUED ONLY FOR APPROVAL)

SITE INFORMATION:
CT11101B
15 OLD DANBURY RD.
POLE #2997 WILTON TRAIN STATION
WILTON, CT 06897

#	DATE	DESCRIPTION:
0	10/18/16	ISSUED FOR CLIENT REV.
1	11/02/16	REISSUED FOR CLIENT REV.
2	11/10/16	ISSUED FOR APPROVAL

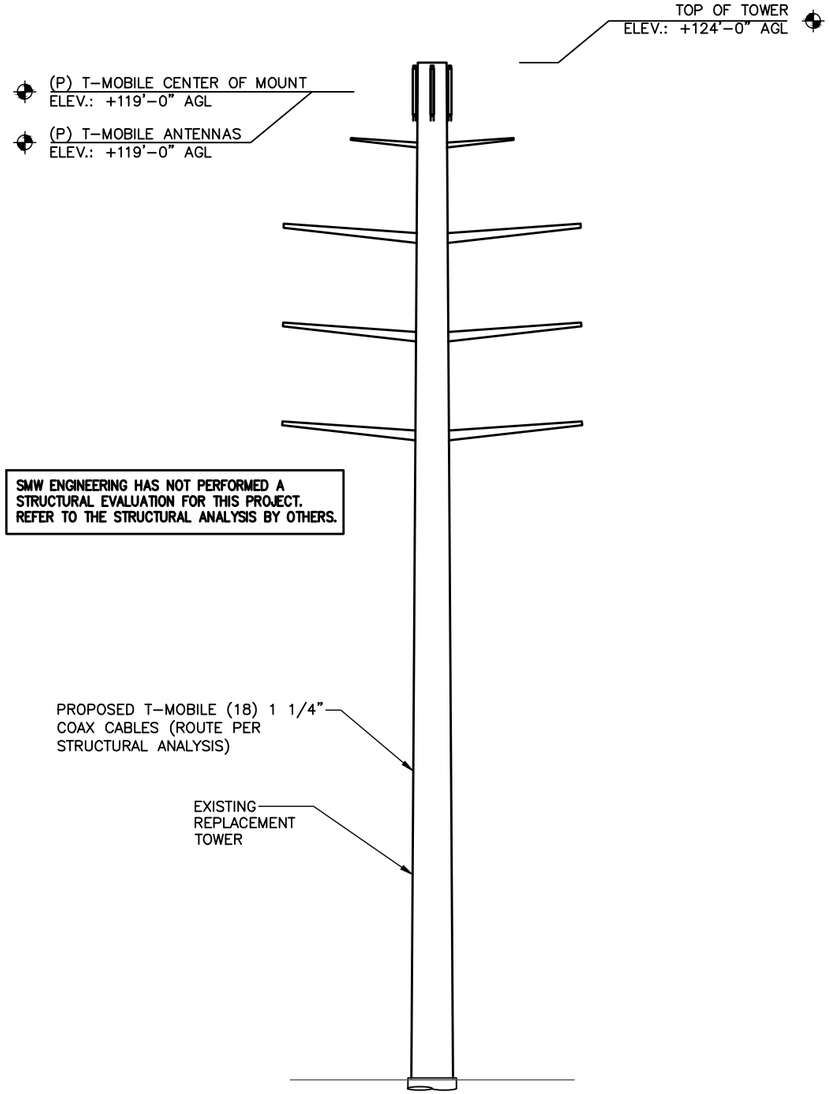
T-MOBILE SITE ID: CT11101B

SHEET NAME:
EQUIPMENT PLAN

SMW #: 16-2083

DESIGNER:	ACR
CHECKED BY:	RTB
ENGINEER:	VGD

SHEET NUMBER: C-2



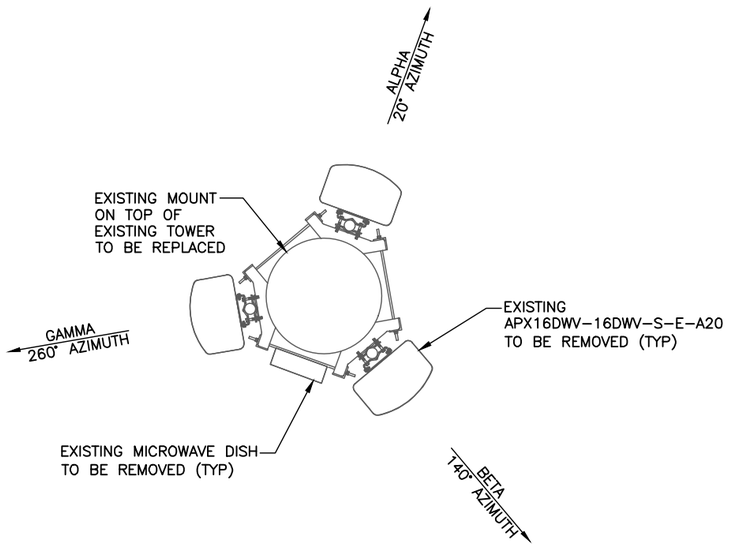
STRUCTURAL NOTES:

1. SMW HAS NOT PERFORMED A STRUCTURAL ANALYSIS OF THE EXISTING TOWER OR PROPOSED ANTENNA MOUNT. REFER TO STRUCTURAL ANALYSIS OR STRUCTURAL LETTER BY OTHERS FOR ADDITIONAL INFORMATION.
2. IF THE TOWER STRUCTURAL ANALYSIS SHOWS THE NEED FOR TOWER REINFORCEMENT REFER TO TOWER REINFORCEMENT DESIGN PRIOR TO THE INSTALLATION OF ANY PROPOSED EQUIPMENT.
3. REFER TO TOWER STRUCTURAL ANALYSIS FOR PROPOSED CABLE ROUTING AND ATTACHMENT DETAILS.
4. TOWER ELEVATION SHOWN IS NOT DRAWN TO SCALE AND IS INTENDED ONLY FOR REFERENCE PURPOSES. REFER TO ORIGINAL TOWER DESIGN FOR ADDITIONAL INFORMATION.

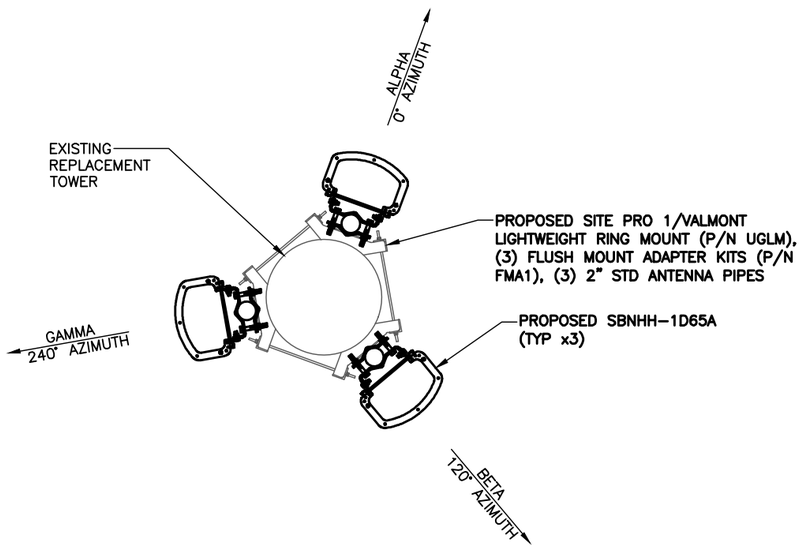
ANTENNA NOTES:

1. THE PRE-APPLICATION & LEASE DIRECTION OF THE ANTENNA SHALL BE ADJUSTED TO MEET SYSTEM REQUIREMENTS.
2. CONTRACTOR SHALL VERIFY HEIGHT OF ANTENNA WITH T-MOBILE PCS PM.
3. CONTRACTOR SHALL VERIFY HEIGHT AND DIRECTION OF MICROWAVE DISHES WITH T-MOBILE PROJECT MANAGER (WHEN APPLICABLE).
4. ALL ANTENNA AZIMUTHS TO BE FROM MAGNETIC NORTH.
5. CONTRACTOR TO USE EXISTING ANTENNA TOP HAT.

1 / C-3 TOWER ELEVATION
NOT TO SCALE



2 / C-3 EXISTING ANTENNA ORIENTATION PLAN
NOT TO SCALE



3 / C-3 PROPOSED ANTENNA ORIENTATION PLAN
NOT TO SCALE

T-Mobile
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BLOOMFIELD, CT 06002
OFFICE: 860-692-7100
FAX: 860-692-7159

PLANS PREPARED BY:
NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development
199 BRICKYARD RD
FARMINGTON, CT 06032

SMW ENGINEERING GROUP, INC.
TOGETHER PLANNING A BETTER TOMORROW

REVIEW DRAWING
(ISSUED ONLY FOR APPROVAL)

SITE INFORMATION:
CT11101B
15 OLD DANBURY RD.
POLE #2997 WILTON TRAIN STATION
WILTON, CT 06897

#	DATE	DESCRIPTION:
0	10/18/16	ISSUED FOR CLIENT REV.
1	11/02/16	REISSUED FOR CLIENT REV.
2	11/10/16	ISSUED FOR APPROVAL

T-MOBILE SITE ID: CT11101B

SHEET NAME:
TOWER ELEVATION & ANTENNA PLAN

SMW #: 16-2083

DESIGNER:	ACR
CHECKED BY:	RTB
ENGINEER:	VGD

SHEET NUMBER: C-3

TOWER EQUIPMENT SCHEDULE										
ANTENNA MARK	SECTOR	ANTENNA MODEL	ANTENNA ORIENTATION	PROPOSED RAD CENTER	RADIO	TMA MODEL	EQUIPMENT	SURGE PROTECTION	COAX/CABLE	TECHNOLOGY
A1	ALPHA	(1) COMMSCOPE – SBNHH–1D65A (P)	20°	119'			(1) ANDREW SMART BIAS T (P)		(6) 1–1/4" COAX (P)	U1900/G1900/U1200/ L2100/L700
B1	BETA	(1) COMMSCOPE – SBNHH–1D65A (P)	140°	119'			(1) ANDREW SMART BIAS T (P)		(6) 1–1/4" COAX (P)	U1900/G1900/U1200/ L2100/L700
C1	GAMMA	(1) COMMSCOPE – SBNHH–1D65A (P)	260°	119'			(1) ANDREW SMART BIAS T (P)		(6) 1–1/4" COAX (P)	U1900/G1900/U1200/ L2100/L700

TABLE NOTE:
(P) DENOTES PROPOSED EQUIPMENT
(E) DENOTES EXISTING EQUIPMENT

EQUIPMENT NOTES:
1. THE HYBRID CABLE LENGTH SHOWN IS ONLY AN ESTIMATE & SHOULD NOT BE USED FOR ORDERING MATERIALS. CONFIRM THE REQUIRED HYBRID CABLE LENGTH W/T–MOBILE PRIOR TO ORDERING OR INSTALLATION.
2. THE CONTRACTOR SHALL TEST THE OPTICAL FIBER AFTER INSTALLATION IN ACCORDANCE W/T–MOBILE STANDARDS & SUPPLY THE RESULTS TO T–MOBILE.
3. THE CONTRACTOR SHALL CONFIRM THE TOWER TOP EQUIPMENT LIST ABOVE W/THE FINAL T–MOBILE RFDS PRIOR TO INSTALLATION.
4. ALL EXISTING & PROPOSED ANTENNA CABLES SHALL BE COLOR CODED PER T–MOBILE STANDARDS.
5. REFER TO NOKIA SIEMENS NETWORKS EQUIPMENT INSTALLATION STANDARDS FOR ADDITIONAL INFORMATION.
6. REFER TO EQUIPMENT MANUFACTURER'S SPECIFICATION SHEETS FOR ADDITIONAL INFORMATION NOT LISTED ABOVE.

TOWER LOADING SUMMARY				
EXISTING QUANTITY	REMOVE QUANTITY	EQUIPMENT TYPE	ADD QUANTITY	TOTAL QUANTITY
3	3	PANEL ANTENNA	3	3
12	12	COAX CABLE	18	18
0	0	TMA	0	0
0	0	DIPLEXER	0	0
0	0	RRUS	0	0
0	0	SMART BIAS T	3	3

RFDS REFERENCE:
CT11101B–L700–rfds.eng.t–mobile 9–26–2016

T-Mobile
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PLANS PREPARED BY:
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2	11/10/16	ISSUED FOR APPROVAL

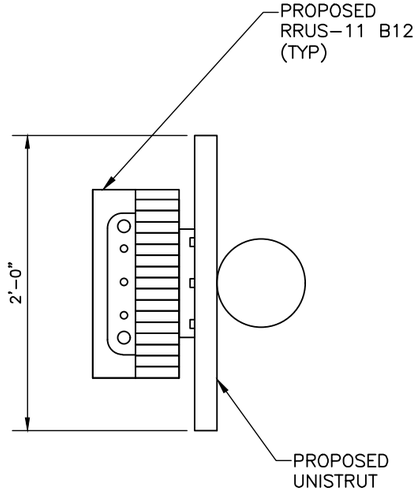
T-MOBILE SITE ID:
CT11101B

SHEET NAME:
TOWER EQUIPMENT SCHEDULE

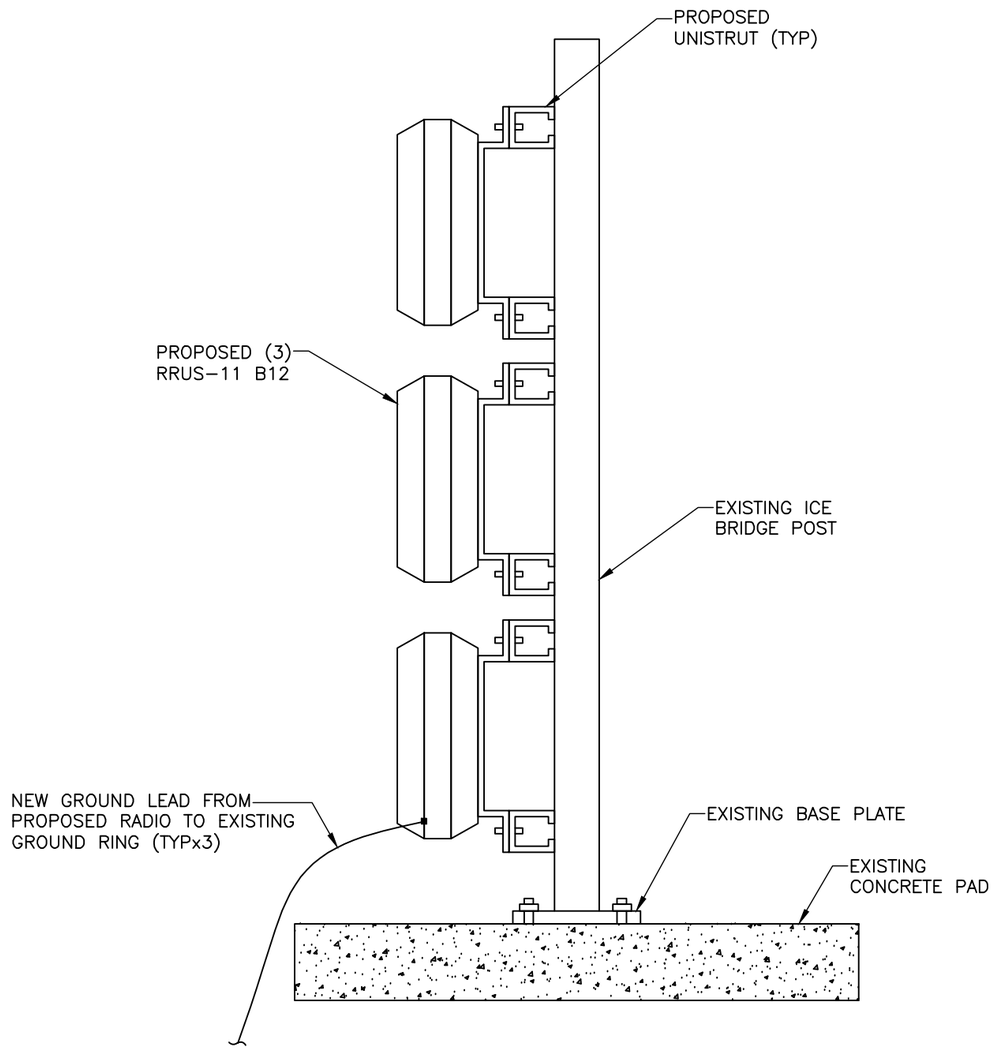
SMW #:
16–2083

DESIGNER:	ACR
CHECKED BY:	RTB
ENGINEER:	VGD

SHEET NUMBER:
C-4



TOP VIEW



SIDE VIEW

T-Mobile
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PLANS PREPARED BY:
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POLE #2997 WILTON TRAIN STATION
WILTON, CT 06897

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1	11/02/16	REISSUED FOR CLIENT REV.
2	11/10/16	ISSUED FOR APPROVAL

T-MOBILE SITE ID: CT11101B

SHEET NAME: EQUIPMENT DETAIL

SMW #: 16–2083

DESIGNER:	ACR
CHECKED BY:	RTB
ENGINEER:	VGD

SHEET NUMBER: C-5

GENERAL ELECTRICAL NOTES:

1. ALL WORK IS TO COMPLY WITH THE LATEST EDITION OF THE NATIONAL ELECTRIC CODE (NEC) AND ANY LOCAL ORDINANCES, CODES, AND ALL OTHER ADMINISTRATIVE AUTHORITIES HAVING JURISDICTION. THE CONTRACTOR SHALL FURNISH AND PAY FOR ALL PERMITS AND RELATED FEES.

2. ALL EQUIPMENT AND MATERIAL FURNISHED AND INSTALLED UNDER THIS CONTRACT SHALL BE UNDERWRITERS LABORATORIES (U.L.) LISTED, NEW, FREE FROM DEFECTS, AND SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE BY OWNER OR HIS REPRESENTATIVE. SHOULD ANY TROUBLE DEVELOP DURING THIS PERIOD DUE TO FAULTY WORKMANSHIP, MATERIAL, OR EQUIPMENT, THE CONTRACTOR SHALL FURNISH ALL NECESSARY MATERIALS AND LABOR TO CORRECT THE TROUBLE WITHOUT COST TO THE OWNER.

3. ALL WORK SHALL BE EXECUTED IN A WORKMAN LIKE MANNER AND SHALL PRESENT A NEAT MECHANICAL APPEARANCE WHEN COMPLETED. CONTRACTOR SHOULD AVOID DAMAGE TO EXISTING UTILITIES WHEREVER POSSIBLE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING RELATED TO ELECTRICAL WORK, AND SHALL RESTORE ALL EXISTING LANDSCAPING, SPRINKLER SYSTEMS, CONDUITS, WIRING, PIPING, ETC. DAMAGED BY THE ELECTRICAL WORK TO MATCH EXISTING CONDITIONS.

4. ELECTRICAL WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, ALL LABOR, MATERIALS AND EQUIPMENT REQUIRED TO COMPLETE ELECTRICAL POWER AND LIGHTING SYSTEMS, TELEPHONE AND COMMUNICATION SYSTEMS, PANELBOARDS, CONDUIT, CONTROL WIRING, GROUNDING, ETC. AS INDICATED ON ELECTRICAL DRAWINGS AND/OR AS REQUIRED BY GOVERNING CODES.

5. PRIOR TO INSTALLING ANY ELECTRICAL WORK, THE CONTRACTOR SHALL VISIT THE JOB SITE AND VERIFY EXISTING SITE LOCATIONS AND CONDITIONS AND UTILITY SERVICE REQUIREMENTS OF THE JOB, AND BY REFERENCE TO ENGINEERING AND EQUIPMENT SUPPLIERS' DRAWINGS. SHOULD THERE BE ANY QUESTION OR PROBLEM CONCERNING THE NECESSARY PROVISIONS TO BE MADE. PROPER DIRECTIONS SHALL BE OBTAINED BEFORE PROCEEDING WITH ANY WORK.

6. PROVIDE POWER AND TELEPHONE TO SERVICE POINTS PER UTILITY COMPANY REQUIREMENTS. CONTRACTOR SHALL CONTACT UTILITY SERVICE PLANNERS AND OBTAIN ALL SERVICE REQUIREMENTS AND INCLUDE COSTS FOR SUCH IN THEIR BID.

7. SERVICE EQUIPMENT SHALL HAVE A SHORT CIRCUIT WITHSTAND RATING EXCEEDING THE MAXIMUM AVAILABLE FAULT CURRENT AT THE SUPPLY TERMINAL ON THE UTILITY TRANSFORMER SECONDARY, THE INSULATION SHALL BE FREE FROM ANY SHORT CIRCUITS AND GROUNDS. CONTRACTOR TO OBTAIN THE AVAILABLE SHORT CIRCUIT CURRENT FROM THE ELECTRICAL SERVICE PROVIDER.

8. ALL WIRES SHALL BE STRANDED COPPER WITH THHN/THWN AND 600 VOLTS INSULATION. ALL GROUND CONDUCTORS TO BE PROPERLY SIZED COPPER. (STRANDED OR SOLID)

9. IN THE EVENT OF ANY CONFLICT OR INCONSISTENCY BETWEEN ITEMS SHOWN ON THE PLANS AND/OR SPECIFICATIONS, THE NOTE, SPECIFICATION OR CODE WHICH PRESCRIBES AND ESTABLISHES THE HIGHEST STANDARD OF PERFORMANCE SHALL PREVAIL.

10. SERVICE CONDUITS SHALL HAVE NO MORE THAN (4) –50° BENDS IN ANY SINGLE RUN. THE CONTRACTOR SHALL PROVIDE PULL BOXES AS NEEDED WHERE CONDUIT REQUIREMENTS EXCEED THESE CONDITIONS. PULL WIRES AND CAPS SHALL BE PROVIDED AT ALL SPARE CONDUITS FOR FUTURE USE.

11. ALL ELECTRICAL EQUIPMENT SHALL BE ANCHORED TO WITHSTAND LOCAL WIND SPEED REQUIREMENTS AND DESIGNED FOR OUTDOOR EXPOSURE.

12. ALL COAX, POWER AND TELEPHONE SYSTEM CONDUITS SHALL HAVE A MINIMUM 24" SCH. 80 PVC RADIUS SWEEPS TO EQUIPMENT, PULLBOXES, GUY, ETC., UNLESS OTHERWISE NOTED, OR AS REQUIRED BY UTILITY COMPANIES.

13. FUSE TYPE SHALL BE BUSSMAN RKI LOW PEAK FUSE (LPN–RK–140).

14. UPON COMPLETION OF THE JOB, THE CONTRACTOR SHALL FURNISH AS–BUILT DRAWINGS TO THE OWNER.

15. GENERAL GROUNDING CRITERIA
    1ST STEP: GROUND TO EXISTING BUILDING STRUCTURAL STEEL AND TO THE EXISTING COLD WATER METAL PIPE LINE. (WHERE APPLICABLE) THEN TEST GROUNDING RESISTANCE FOR 5 OHMS OR LESS OVERALL GROUND RESISTANCE. WHERE THE EFFECTIVE RESISTANCE DOES NOT MEET THIS CRITERIA, PROVIDE SUPPLEMENTAL GROUNDING AND RE–TEST UNTIL GROUND RESISTANCE FALLS BELOW THIS LEVEL.

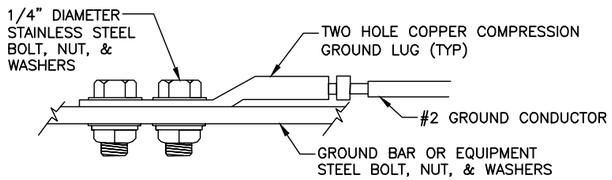
16. SUPPLEMENTAL GROUND MAY CONSIST OF ONE OR MORE OF THE FOLLOWING:
    COUNTERPOISE, USER GROUND, GROUND ROD AND/OR GROUND WELL IN EXTREMELY ADVERSE SOIL CONDITIONS. WHERE THE EXISTING BUILDING STEEL DOES NOT PROVIDE AN EFFECTIVE GROUND RESISTANCE, THEN THE CONTRACTOR SHALL PROVIDE A SEPARATE GROUND CONDUCTOR FROM ROOF MOUNTED BTS EQUIPMENT LOCATIONS EITHER DOWN THROUGH THE INSIDE OF THE BUILDING OR DOWN THE OUTSIDE OF THE BUILDING, DEPENDING UPON OWNER PREFERENCE. WHERE THE GROUND CONDUCTOR FROM THE ROOF MOUNTED EQUIPMENT IS ROUTED IN CONDUIT, THE CONDUIT SHALL BE EFFECTIVELY GROUNDED TO THE GROUND CONDUCTOR AT BOTH ENDS OF THE CONDUIT. (GUY INSTALLATIONS):

    FOR INSTALLATIONS WHERE WOODEN STRUCTURES, TOWERS, CONCRETE SILOS ETC. ARE ENCOUNTERED A PARATE DOWNLEAD SHALL BE PROVIDED FROM THE 3 ANTENNAS SEPARATED BY A MINIMUM OF 12 INCHES FROM THE COAXIAL CABLES. THE GROUND CONDUCTOR SHALL BE SECURELY FASTENED TO THE EXTERIOR OF OUTSIDE STRUCTURES WITH NONMETALLIC GROUND STRAPS EVERY 10 FEET. AGAIN, AS FOR TENANT IMPROVEMENT PROJECTS, TEST THE GROUND RESISTANCE FOR GUY INSTALLATIONS AND PROCEED PER THE ABOVE STEPS.

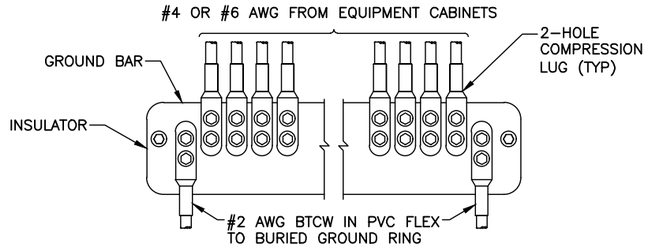
17. CONTRACTOR TO COLOR PHASE CONDUCTORS BLACK (B PHASE), RED (A PHASE), WHITE (NEUTRAL), AND GREEN (GROUND).

18. CONTRACTOR TO PROVIDE GUTTER TAP.

19. THERE SHALL BE A MINIMUM CLEARANCE OF 48" BETWEEN FRONT OF ELECTRICAL EQUIPMENT AND ANY WALL OR OBSTRUCTION.



1 / E-1 TWO HOLE LUG CONNECTION DETAIL
NOT TO SCALE



2 / E-1 GROUND BAR DETAIL
NOT TO SCALE

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PLANS PREPARED BY:
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Turnkey Wireless Development
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FARMINGTON, CT 06032

SMW ENGINEERING GROUP, INC.
TOGETHER PLANNING A BETTER TOMORROW

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SITE INFORMATION:
CT11101B
15 OLD DANBURY RD.
POLE #2997 WILTON TRAIN STATION
WILTON, CT 06897

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0	10/18/16	ISSUED FOR CLIENT REV.
1	11/02/16	REISSUED FOR CLIENT REV.
2	11/10/16	ISSUED FOR APPROVAL

T-MOBILE SITE ID: CT11101B

SHEET NAME:
ELECTRICAL & GROUNDING DETAILS

SMW #: 16–2083

DESIGNER:	ACR
CHECKED BY:	RTB
ENGINEER:	VGD

SHEET NUMBER: E-1

Exhibit D

CENTEK engineering

Centered on Solutions℠

Structural Analysis of Pole

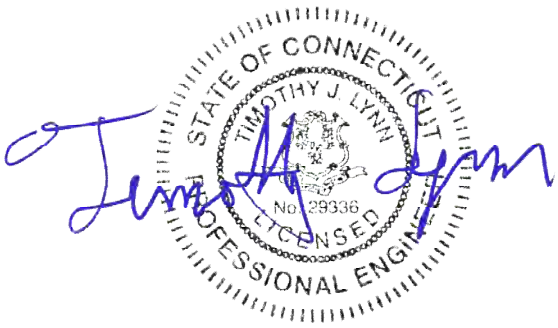
T-Mobile Site Ref: CT11101B

Eversource Structure No. 2997
124' Electric Transmission Pole

15 Old Danbury Road
Wilton, CT

CENTEK Project No. 16162.01

~~Date: October 27, 2016~~
Rev 1: November 1, 2016



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

Table of Contents

Introduction

The purpose of this report is to analyze the existing 124' pole located at 15 Old Danbury Road in Wilton, CT for the proposed antenna and equipment installation by T-Mobile.

The pole was analyzed for the following antenna configuration:

- **T-MOBILE (Proposed):**
  Antennas: Three (3) Andrew SBNHH-1D65A panel antennas and three (3) Andrew ATSBT-TOP-FM-4G Smart Bias Tees flush mounted with a RAD center elevation of 119-ft above tower base.
  Coax Cables: Eighteen (18) 1-1/4" ∅ coax cables running on the outside of the tower as indicated in section 4 of this report

Primary assumptions used in the analysis

- 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.
- 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.
- All utility pole 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.

A n a l y s i s

Structural analysis of the utility pole was completed using the current version of PLS-Pole computer program licensed to CENTEK Engineering. Loading was developed per the requirements of the NESC standard and Northeast Utilities Design Criteria. These loads are developed in Section 5 of this report.

D e s i g n B a s i s

Our analysis was performed in accordance with 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 proposed T-Mobile equipment was analyzed as follows:

- 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

Wind Pressure……..	4.0 psf
Radial Ice Thickness……	0.5"
Vertical Overload Capacity Factor……	1.50
Wind Overload Capacity Factor……	2.50
Wire Tension Overload Capacity Factor……	1.65

  Load Case 2: NESC Extreme Wind

Wind Speed……	110 mph (1)
Radial Ice Thickness……	0"

  Load Case 3: NESC Extreme Ice w/ Wind

Wind Pressure……..	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)

R e s u l t s

- UTILITY POLE

This analysis finds that the subject utility pole is adequate to support the proposed antenna mast and related appurtenances. The pole stresses meet the requirements set forth by the ASCE Manual No. 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 **70.05%** occurs in the utility pole base plate under the **NESC Heavy Wind** loading condition with the Antenna configuration #1 loading.

POLE SECTION:

The utility pole was found to be within allowable limits.

Tower Section	Elevation	Stress Ratio (% of capacity)	Result
Tube Number 4	0.00' -42.00' (AGL)	70.02%	**PASS**

BASE PLATE:

The base plate was found to be within allowable limits from the PLS output based on 24 bend lines.

Tower Component	Design Limit	Stress Ratio (percentage of capacity)	Result
Base Plate	Bending	70.05%	**PASS**

- FOUNDATION AND ANCHORS

The existing foundation information was unavailable. The proposed based reactions were compared to the original design reactions. The base of the tower is connected to the foundation by means of (20) 2.25"∅, ASTM A615-75 anchor bolts embedded into the concrete foundation structure.

BASE REACTIONS:

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

Load Case	Shear	Axial	Moment
NESC Heavy Wind	49.04 kips	71.53 kips	4371.28 ft-kips
NESC Extreme Wind	52.18 kips	39.91 kips	4260.53 ft-kips
NESC Extreme Ice w/ Wind	32.13 kips	59.33 kips	2867.57 ft-kips

Note 1 – 10% increase will be applied to above tower base reactions per OTRM 051 for foundation analysis.

ANCHOR BOLTS:

The anchor bolts were found to be within allowable limits.

Tower Component	Design Limit	Stress Ratio (% of capacity)	Result
Anchor Bolts	Tension	61.99%	**PASS**

FOUNDATION:

The foundation was found to be within allowable limits.

Design Limit	Original Design Reaction	Proposed Reaction (1)	Result
Moment	5113 ft-kips	4808.4 ft-kips	**PASS**

Note 1: 10% increase to PLS base reactions used in foundation analysis per OTRM 051.

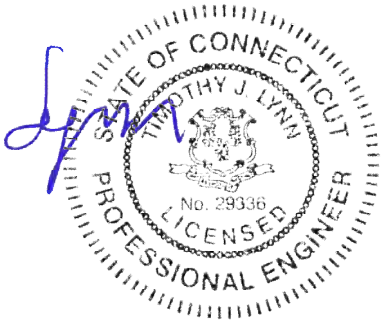
C o n c l u s i o n

This analysis shows that the subject utility tower **is adequate** to support the proposed T-Mobile equipment upgrade.

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

Please feel free to call with any questions or comments.

Respectfully Submitted by:



Timothy J. Lynn, PE
Structural Engineer

STANDARD CONDITIONS FOR FURNISHING OF PROFESSIONAL ENGINEERING SERVICES ON EXISTING STRUCTURES

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

- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.

- Information from the field and/or drawings in the possession of CENTEK engineering, Inc. or generated by field inspections or measurements of the structure.

- It is the responsibility of the client to ensure that the information provided to CENTEK engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the "as new" condition.

- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222.

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

GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM ~ PLS-POLE

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

Modeling Features:

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

Analysis Features:

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

Results Features:

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

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

Introduction

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

ANSI Standard TIA/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

			Basic Wind Speed	Pressure	Height Factor	Gust Factor	Load or Stress Factor	Force Coef - Shape Factor
			V (MPH)	Q (PSF)	Kz	Gh		
Ice Condition	TIA/EIA	Antenna Mount	TIA	TIA (.75Wi)	TIA	TIA	TIA, Section 3.1.1.1 disallowed for connection design	TIA
	NESC Heavy	Tower/Pole Analysis with antennas extending above top of Tower/Pole (Yield Stress)	------	4	1.00	1.00	2.50	1.6 Flat Surfaces 1.3 Round Surfaces
		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
		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
	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
		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
		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
		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
		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.

EVERSOURCE

Wire Loads

Project Name	Redding-To-Norwalk Reliability Project
Work Order	
Structure #	Type B2 (2997)
Line #	1682 115kV Line
Prepared By	POWER Engineers
Date	3/6/2015
Checked By	
Date	

Structure Data

Structure Height (AGL)		Load Zone	Central CT
# of Circuits	2	Insulation Type	Strain (On Arm-Pole)
Insulator Weight	250	Broken Wire Side	Back
Broken Wire Side	Left	Structure Type	Double Circuit Steel Pole

Wire Data

Circuit #	Left	Right
Shield Wire	0.646 OPGW 48	0.646 OPGW 48
Conductor	FALCON/ACSS	FALCON/ACSS
# of Conductors	1	1

Line Geometry

	Circuit 1			Circuit 2		
	Ahead	Back	Total	Ahead	Back	Total
Wind Span	300	300	600	300	300	600
Weight Span	250	400	650	250	400	650
Minimum Line Angle	6	6	12	6	6	12
Maximum Line Angle	6	6	12	6	6	12

Wire Tensions

	Left Circuit		Right Circuit		
	Ahead	Back	Ahead	Back	
NESC Rule 250B	14000	14000	14000	14000	Conductor
NESC Rule 250C	13000	12900	13000	12900	
NESC Rule 250D	15600	15600	15600	15600	
60°F, No wind or ice	9900	9900	9900	9900	
NESC Rule 250B	5500	5500	5500	5500	Shield Wire
NESC Rule 250C	4900	4800	4900	4800	
NESC Rule 250D	6700	6800	6700	6800	
60°F, No wind or ice	2900	2900	2900	2900	

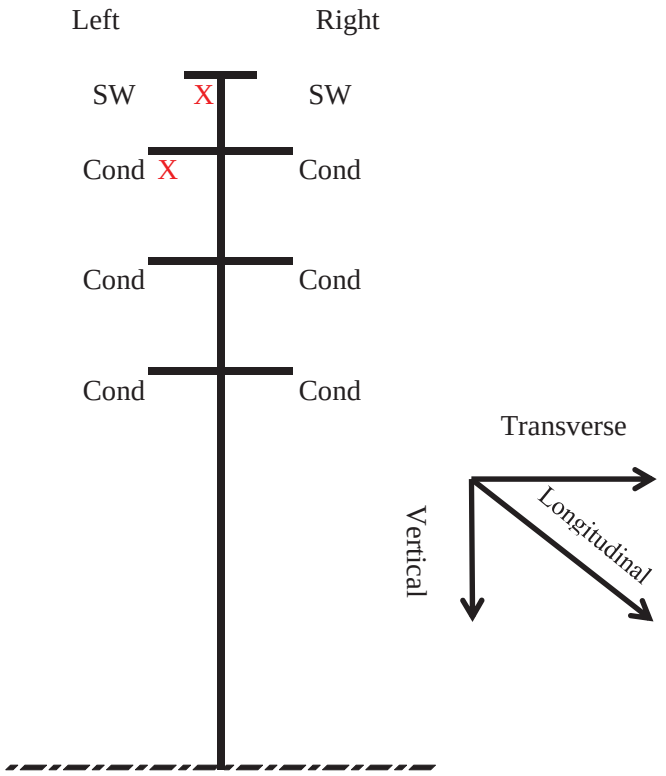
All Loads include Overload Factors but not Pole Shape Factors

Load Case	Description
1	NESC Rule 250B; 0°F, ½" of ice, 4 psf wind
2	NESC Rule 250C; (Extreme Wind Loading)
3	NESC Rule 250C; Extreme Wind Longtitudinal On The Pole Only
4	NESC Rule 250D; 15°F 1" of ice, 4 psf or NU Ice Case; 32°F 1" Ice
5	NESC Rule 250B with no OLFs (Service Load)
6	60°F, No wind or Ice (Deflection)
7a	NESC Rule 250B/261C Broken Wire Case (Broken SW and Borken Conductor)
7b	NESC Rule 250B/261C Broken Wire Case (Broken SW or Broken Phase)

EVERSOURCE

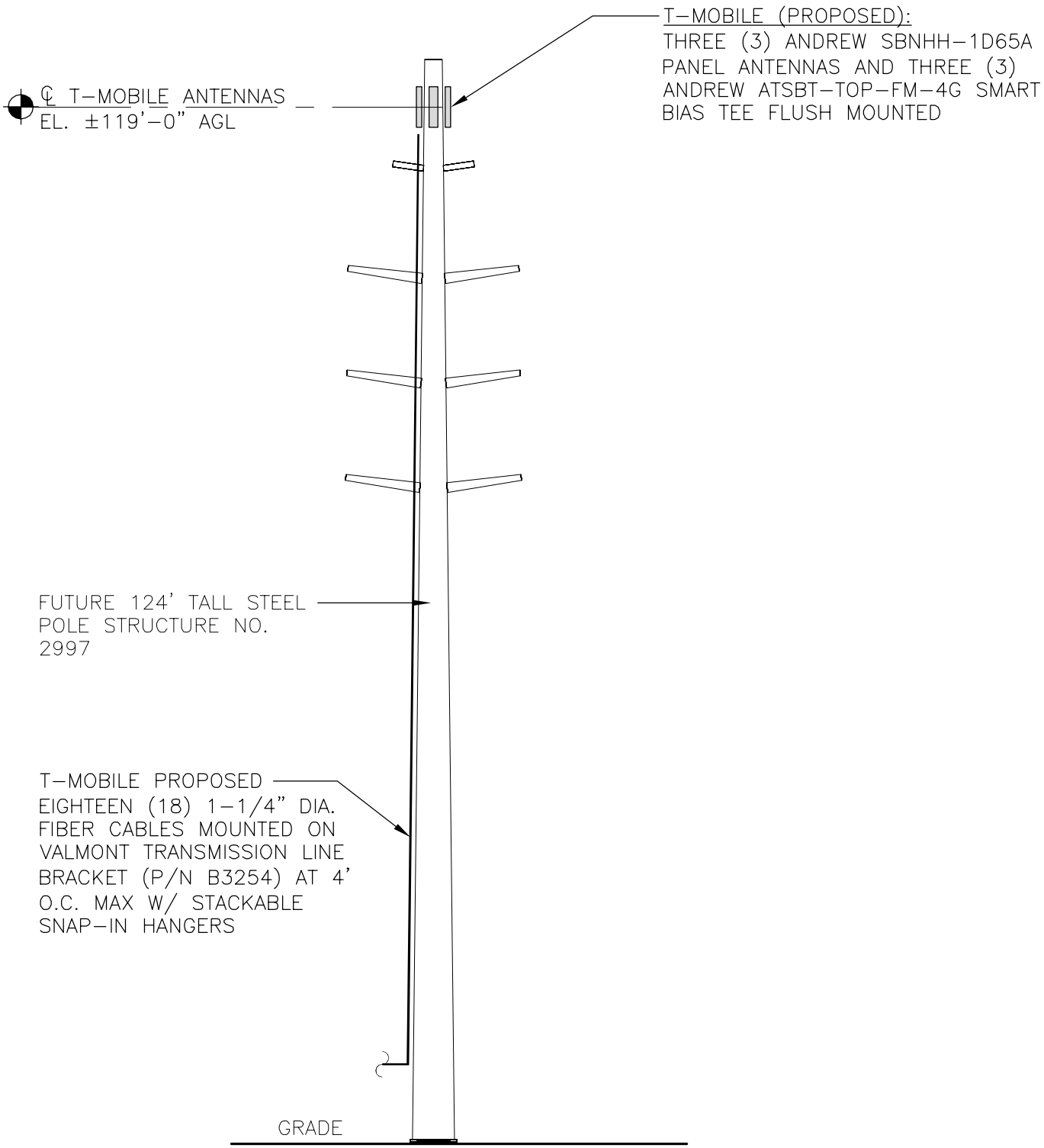
Wire Loads
Load Tree

Project Number
Redding-To-Norwalk Re
Structure Number
Type B2 (2997)
Line Number
1682 115kV Line



Double Circuit Steel Pole Configuration
X Denotes Broken Wire Location. This attachment receives case 7 loads. All others receive Case 1 Loads for Case 7

	Left Circuit				Right Circuit			
Conductor	Case	Vertical	Transverse	Longitudina	Case	Vertical	Transverse	Longitudina
	1	3980.5553	6201.715	0	1	3980.5553	6201.715	0
	2	1826.91	5324.7872	99.45219	2	1826.91	5324.7872	99.45219
	3	1826.91	2069.6636	0	3	1826.91	2069.6636	0
	4	3884.797	4010.2881	0	4	3884.797	4010.2881	0
	5	2653.7035	3475.797	0	5	2653.7035	3475.797	0
	6	1826.91	2069.6636	0	6	1826.91	2069.6636	0
	7a	1617.5213	3100.8575	22973.456	7a	1617.5213	3100.8575	22973.456
	7b	1617.5213	3100.8575	22973.456	7b	1617.5213	3100.8575	22973.456
Shield Wire	Case	Vertical	Transverse	Longitudina	Case	Vertical	Transverse	Longitudina
	1	1139.5917	2720.1916	0	1	1139.5917	2720.1916	0
	2	296.4	1982.9261	99.45219	2	296.4	1982.9261	99.45219
	3	296.4	606.26509	0	3	296.4	606.26509	0
	4	1627.3556	1940.3343	-99.45219	4	1627.3556	1940.3343	-99.45219
	5	759.7278	1479.0131	0	5	759.7278	1479.0131	0
	6	296.4	606.26509	0	6	296.4	606.26509	0
	7a	438.3045	1360.0958	9025.2862	7a	438.3045	1360.0958	9025.2862
	7b	438.3045	1360.0958	9025.2862	7b	438.3045	1360.0958	9025.2862



1 / EL-1

TOWER & MAST ELEVATION

SCALE: NOT TO SCALE

REVISIONS		
00	10/27/16	ISSUED FOR REVIEW
01	11/1/16	CONSTRUCTION

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CT11101B
EVERSOURCE 2997

15 OLD DANBURY ROAD
WILTON, CT 06897

PROJECT NO:	16162.01
DRAWN BY:	TJL
CHECKED BY:	CFC
SCALE:	AS NOTED
DATE:	10/27/16

TOWER ELEVATION

EL-1

DWG. 1 OF 1

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Subject:	Load Analysis of T-Mobile Equipment on Structure #2997
Location:	Wilton, CT
Rev. 0: 10/27/16	Prepared by: T.J.L Checked by: C.F.C. Job No. 16162.01

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 Tower Above Grade =	TME := 124	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 =	$Kz := 2.01 \cdot \left(\frac{TME}{900}\right)^{\frac{2}{9.5}} = 1.324$		(NESC 2007 Table 250-2)
Exposure Factor =	$Es := 0.346 \left[\frac{33}{(0.67 \cdot TME)}\right]^{\frac{1}{7}} = 0.303$		(NESC 2007 Table 250-3)
Response Term =	$Bs := \frac{1}{\left(1 + 0.375 \cdot \frac{TME}{220}\right)} = 0.826$		(NESC 2007 Table 250-3)
Gust Response Factor =	$Grf := \frac{\left[1 + \left(2.7 \cdot Es \cdot Bs^{\frac{1}{2}}\right)\right]}{kv^2} = 0.853$		(NESC 2007 Table 250-3)
Wind Pressure =	$qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf \cdot I = 35$	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 =	$Cd_{coax} := 1.45$	(User Input)

Overload Factors NU Design Criteria Table

Overload Factors for Wind Loads:

NESC Heavy Wind Loading =	**2.5**	(User Input)
NESC Extreme Wind Loading =	**1.0**	(User Input)
NESC Extreme Ice w/ Wind Loading =	**1.0**	(User Input)

Overload Factors for Vertical Loads:

NESC Heavy Wind Loading =	**1.5**	(User Input)
NESC Extreme Wind Loading =	**1.0**	(User Input)
NESC Extreme Ice w/ Wind Loading =	**1.0**	(User Input)

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Subject: Load Analysis of T-Mobile Equipment on Structure #2997

Location: Wilton, CT

Rev. 0: 10/27/16

Prepared by: T.J.L Checked by: C.F.C.
Job No. 16162.01

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Andrew SBNHH-1D65A		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 55.5$	in	(User Input)
Antenna Width =	$W_{ant} := 11.9$	in	(User Input)
Antenna Thickness =	$T_{ant} := 7.1$	in	(User Input)
Antenna Weight =	$WT_{ant} := 33.5$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant1} := WT_{ant} \cdot N_{ant} = 101$ lbs

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 4689$ cu in

Volume of Ice on Each Antenna = $V_{ice} := \left(L_{ant} + 2 \cdot Ir\right)\left(W_{ant} + 2 \cdot Ir\right)\left(T_{ant} + 2 \cdot Ir\right) - V_{ant} = 1214$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 39$ lbs

Weight of Ice on All Antennas = $Wt_{ice.ant1} := W_{ICEant} \cdot N_{ant} = 118$ lbs

Gravity Load (Extreme ice only)

Volume of Extreme Ice on Each Antenna = $V_{ice.ex} := \left(L_{ant} + 2 \cdot Ir_{ex}\right)\left(W_{ant} + 2 \cdot Ir_{ex}\right)\left(T_{ant} + 2 \cdot Ir_{ex}\right) - V_{ant} = 1879$ cu in

Weight of Extreme Ice on Each Antenna = $W_{ICE.exant} := \frac{V_{ice.ex}}{1728} \cdot Id = 61$ lbs

Weight of Extreme Ice on All Antennas = $Wt_{ice.ex.ant1} := W_{ICE.exant} \cdot N_{ant} = 183$ lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

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

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

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

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

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

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

Total Antenna Wind Force = $F_{ant1} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 963$ lbs

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 = $SA_{ICE.exant} := \frac{\left(L_{ant} + 2 \cdot Ir_{ex}\right) \cdot \left(W_{ant} + 2 \cdot Ir_{ex}\right)}{144} = 5.3$ sf

Antenna Projected Surface Area w/ Extreme Ice = $A_{ICE.exant} := SA_{ICE.exant} \cdot N_{ant} = 15.9$ sf

Total Antenna Wind Force w/ Extreme Ice = $Fi_{ex.ant1} := p_{ex} \cdot Cd_F \cdot A_{ICE.exant} \cdot m = 204$ lbs

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Andrew ATSBT-TOP-FM-4G		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 5.63$	in	(User Input)
Antenna Width =	$W_{ant} := 3.7$	in	(User Input)
Antenna Thickness =	$T_{ant} := 2.0$	in	(User Input)
Antenna Weight =	$WT_{ant} := 2$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant2} := WT_{ant} \cdot N_{ant} = 6$ lbs

Gravity Load (ice only)

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

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

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

Weight of Ice on All Antennas = $Wt_{ice.ant2} := W_{ICEant} \cdot N_{ant} = 5$ lbs

Gravity Load (Extreme ice only)

Volume of Extreme Ice on Each Antenna = $V_{ice.ex} := \left(L_{ant} + 2 \cdot Ir_{ex}\right)\left(W_{ant} + 2 \cdot Ir_{ex}\right)\left(T_{ant} + 2 \cdot Ir_{ex}\right) - V_{ant} = 88$ cu in

Weight of Extreme Ice on Each Antenna = $W_{ICE.exant} := \frac{V_{ice.ex}}{1728} \cdot Id = 3$ lbs

Weight of Extreme Ice on All Antennas = $Wt_{ice.ex.ant2} := W_{ICE.exant} \cdot N_{ant} = 9$ lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

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

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

Total Antenna Wind Force w/ Ice = $Fi_{ant2} := p \cdot Cd_F \cdot A_{ICEant} = 4$ lbs

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

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

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

Total Antenna Wind Force = $F_{ant2} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 30$ lbs

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 = $SA_{ICE.exant} := \frac{\left(L_{ant} + 2 \cdot Ir_{ex}\right) \cdot \left(W_{ant} + 2 \cdot Ir_{ex}\right)}{144} = 0.3$ sf

Antenna Projected Surface Area w/ Extreme Ice = $A_{ICE.exant} := SA_{ICE.exant} \cdot N_{ant} = 0.8$ sf

Total Antenna Wind Force w/ Extreme Ice = $Fi_{ex.ant2} := p_{ex} \cdot Cd_F \cdot A_{ICE.exant} \cdot m = 10$ lbs

Total Equipment Loads:

T-Mobile @ 119-ft AGL

NESC Heavy Wind Vertical =	$\left(Wt_{ant1} + Wt_{ice.ant1} + Wt_{ant2} + Wt_{ice.ant2}\right)\cdot 1.5 = 344$	lbs
NESC Heavy Wind Trasnsverse =	$\left(Fi_{ant1} + Fi_{ant2}\right)\cdot 2.5 = 253$	lbs
NESC Extreme Wind Vertical =	$\left(Wt_{ant1} + Wt_{ant2}\right) = 107$	lbs
NESC Extreme Wind Trasnsverse =	$\left(F_{ant1} + F_{ant2}\right) = 993$	lbs
NESC Extreme Ice w/ Wind Vertical =	$NESC_{ice.ex} := Wt_{ant1} + Wt_{ice.ex.ant1} + Wt_{ant2} + Wt_{ice.ex.ant2} = 298$	lbs
NESC Extreme Ice w/ Wind Trasnsverse =	$\left(Fi_{ex.ant1} + Fi_{ex.ant2}\right) = 214$	lbs

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Subject:	Coax Cable on Pole #2997
Location:	Wilton, CT
Rev. 0: 10/27/16	Prepared by: T.J.L Checked by: C.F.C. Job No. 16162.01

Coax Cable on Pole

Distance Between Coax Cable Attach Points =

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

Diameter of Coax Cable = $D_{coax} := 1.55 \cdot in$ *(User Input)*

Weight of Coax Cable = $W_{coax} := 0.66 \cdot plf$ *(User Input)*

Number of Coax Cables = $N_{coax} := 18$ *(User Input)*

Number of Projected Coax Cables = $NP_{coax} := 2$ *(User Input)*

Extreme Wind Pressure = $qz := 35 \cdot psf$ *(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 = $Cd_{coax} := 1.45$ *(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 = $A := \left(NP_{coax} \cdot D_{coax}\right) = 3.1 \cdot in$

Wind Area with Ice = $A_{ice} := \left(NP_{coax} \cdot D_{coax} + 2 \cdot Ir\right) = 4.1 \cdot in$

Wind Area with Extreme Ice = $A_{ice.ex} := \left(NP_{coax} \cdot D_{coax} + 2 \cdot Ir_{ex}\right) = 4.6 \cdot in$

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Subject:	Coax Cable on Pole #2997
Location:	Wilton, CT
Rev. 0: 10/27/16	Prepared by: T.J.L Checked by: C.F.C. Job No. 16162.01

Ice Area per Liner Ft =

$$Ai_{coax} := \frac{\pi}{4}\cdot\left[\left(D_{coax} + 2\cdot Ir\right)^2 - D_{coax}^2\right] = 0.022\,ft^2$$

Weight of Ice on All Coax Cables =

$$W_{ice} := Ai_{coax}\cdot Id\cdot N_{coax} = 22.541\cdot plf$$

Extreme Ice Area per Liner Ft =

$$Ai_{coax.ex} := \frac{\pi}{4}\cdot\left[\left(D_{coax} + 2\cdot Ir_{ex}\right)^2 - D_{coax}^2\right] = 0.038\,ft^2$$

Weight of Extreme Ice on All Coax Cables =

$$W_{ice.ex} := Ai_{coax.ex}\cdot Id\cdot N_{coax} = 37.935\cdot plf$$

Heavy Vertical Load =

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

Heavy Transverse Load =

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

$$Heavy_{Vert} = \begin{pmatrix}516\\516\\516\\516\\516\\516\\516\\516\\516\\516\\516\\516\end{pmatrix} lb \qquad Heavy_{Trans} = \begin{pmatrix}50\\50\\50\\50\\50\\50\\50\\50\\50\\50\\50\\50\end{pmatrix} lb$$

Extreme Wind Vertical Load =

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

Extreme Wind Transverse Load =

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

$$Extreme\_Wind_{Vert} = \begin{pmatrix}119\\119\\119\\119\\119\\119\\119\\119\\119\\119\\119\\119\end{pmatrix} lb \qquad Extreme\_Wind_{Trans} = \begin{pmatrix}131\\131\\131\\131\\131\\131\\131\\131\\131\\131\\131\\131\end{pmatrix} lb$$

Extreme Ice w/ Wind Vertical Load =

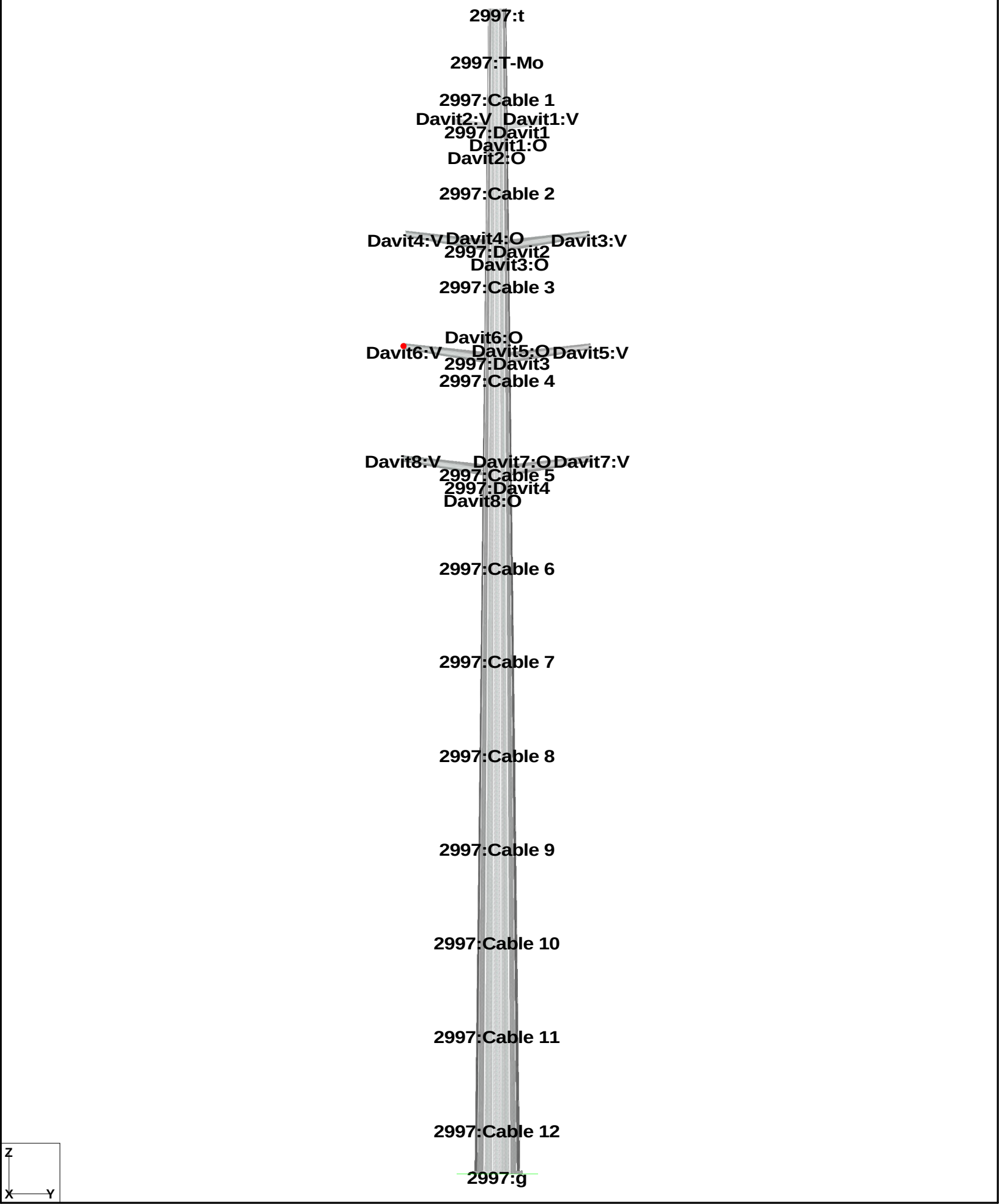
$$\overrightarrow{Extreme\_Ice_{Vert} := \left[\left(N_{coax}\cdot W_{coax} + W_{ice.ex}\right)\cdot Coax_{Span}\cdot OF_{EIV}\right]}$$

Extreme Ice w/ Wind Transverse Load =

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

$$Extreme\_Ice_{Vert} = \begin{pmatrix}498\\498\\498\\498\\498\\498\\498\\498\\498\\498\\498\\498\end{pmatrix} lb \qquad Extreme\_Ice_{Trans} = \begin{pmatrix}36\\36\\36\\36\\36\\36\\36\\36\\36\\36\\36\\36\end{pmatrix} lb$$

Centek Engineering Inc, Project: "Pole # 2997"
PLS-POLE Version 12.50, 4:12:23 PM Thursday, October 27, 2016
Undeformed geometry displayed



Project Name : 16162.01 - Wilton, CT
Project Notes: Structure # 2997/ T-Mobile CT11101B
Project File : J:\Jobs\1616200.WI\01_CT11101B\04_Structural\Backup Documentation\Calcs\Rev (1)\PLS Pole\Pole # 2997.pol
Date run : 1:17:47 PM Monday, November 07, 2016
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\1616200.wi\01_ct11101b\04_structural\backup documentation\calcs\rev (1)\pls pole\pole #2997.lca

*** Analysis Results:

Maximum element usage is 70.05% for Base Plate "2997" in load case "NESC Heavy Wind"
Maximum insulator usage is 9.21% for Clamp "3" in load case "NESC Heavy 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	2997:g	-0.16	-49.04	-71.53	49.04	4371.27	-9.04	4371.28	-0.01	0.00
NESC Extreme Wind	2997:g	-0.06	-52.18	-39.91	52.18	4260.53	-3.45	4260.53	-0.00	0.00
NESC Extreme Ice w/ Wind	2997:g	-0.07	-32.13	-59.33	32.13	2867.57	-4.13	2867.57	-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	2997:t	0.10	56.95	-1.42	56.96	0.01	-3.48	0.00
NESC Extreme Wind	2997:t	0.04	54.16	-1.27	54.18	0.00	-3.32	-0.00
NESC Extreme Ice w/ Wind	2997:t	0.05	37.55	-0.63	37.56	0.00	-2.30	0.00

Tubes Summary:

Pole Label	Tube Num.	Weight (lbs)	Load Case	Maximum Usage %	Resultant Moment (ft-k)
2997	1	522	NESC Extreme Wind	0.55	2.62
2997	2	3419	NESC Heavy Wind	37.78	499.81
2997	3	8069	NESC Heavy Wind	67.29	2334.68
2997	4	10331	NESC Heavy Wind	70.02	4371.28

*** 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)
2997	70.02	NESC Heavy Wind	35	24292.1

Summary of Tubular Davit Usages:

Tubular Davit Label	Maximum Usage %	Load Case	Segment Number	Weight (lbs)
Davit1	6.69	NESC Extreme Ice w/ Wind	1	93.2
Davit2	4.85	NESC Extreme Ice w/ Wind	1	93.2
Davit3	15.36	NESC Heavy Wind	1	323.1
Davit4	10.88	NESC Extreme Ice w/ Wind	1	323.1
Davit5	15.43	NESC Heavy Wind	1	323.1
Davit6	10.91	NESC Extreme Ice w/ Wind	1	323.1
Davit7	15.53	NESC Heavy Wind	1	323.1
Davit8	10.97	NESC Extreme Ice w/ Wind	1	323.1

*** 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	70.05	2997	Base Plate
NESC Extreme Wind	67.66	2997	Steel Pole
NESC Extreme Ice w/ Wind	46.23	2997	Base Plate

Summary of Steel Pole Usages by Load Case:

Load Case	Maximum Usage %	Steel Pole Label	Segment Number
NESC Heavy Wind	70.02	2997	35
NESC Extreme Wind	67.66	2997	35
NESC Extreme Ice w/ Wind	46.15	2997	35

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	2997	15	16.286	69.576	4371.266	-9.038	35.023	83.676	3	150.924	2.720	70.05
NESC Extreme Wind	2997	15	16.286	37.963	4260.530	-3.453	33.739	80.609	3	145.529	2.670	67.48
NESC Extreme Ice w/ Wind	2997	15	16.286	57.378	2867.569	-4.131	23.113	55.221	3	99.567	2.210	46.23

Summary of Tubular Davit Usages by Load Case:

Load Case	Maximum Usage %	Tubular Davit Label	Segment Number
NESC Heavy Wind	15.53	Davit7	1
NESC Extreme Wind	8.26	Davit7	1
NESC Extreme Ice w/ Wind	14.36	Davit7	1

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
1	Clamp	3.69	NESC Heavy Wind	0.0
2	Clamp	3.69	NESC Heavy Wind	0.0
3	Clamp	9.21	NESC Heavy Wind	0.0
4	Clamp	9.21	NESC Heavy Wind	0.0
5	Clamp	9.21	NESC Heavy Wind	0.0
6	Clamp	9.21	NESC Heavy Wind	0.0
7	Clamp	9.21	NESC Heavy Wind	0.0
8	Clamp	9.21	NESC Heavy Wind	0.0
9	Clamp	0.65	NESC Heavy Wind	0.0
10	Clamp	0.65	NESC Heavy Wind	0.0
11	Clamp	0.65	NESC Heavy Wind	0.0
12	Clamp	0.65	NESC Heavy Wind	0.0
13	Clamp	0.65	NESC Heavy Wind	0.0
14	Clamp	0.65	NESC Heavy Wind	0.0
15	Clamp	0.65	NESC Heavy Wind	0.0
16	Clamp	0.65	NESC Heavy Wind	0.0
17	Clamp	0.65	NESC Heavy Wind	0.0
18	Clamp	0.65	NESC Heavy Wind	0.0
19	Clamp	0.65	NESC Heavy Wind	0.0
20	Clamp	0.65	NESC Heavy Wind	0.0
21	Clamp	1.25	NESC Extreme Wind	0.0

*** Weight of structure (lbs):
Weight of Tubular Davit Arms: 2125.1
Weight of Steel Poles: 24292.1
Total: 26417.2

*** End of Report

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

Project Name : 16162.01 - Wilton, CT
Project Notes: Structure # 2997/ T-Mobile CT11101B
Project File : J:\Jobs\1616200.WI\01_CT11101B\04_Structural\Backup Documentation\Calcs\Rev (1)\PLS Pole\Pole # 2997.pol
Date run     : 1:17:47 PM Monday, November 07, 2016
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 Length	Number	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)	Length (ft)		(in)	(in)	Coef. (in/ft)		Override (ksi)	Override (lbs/ft^3)	Base	Type	Tip (ft)	Trans. Load (kips)	Long. Load (kips)
2997	2997	124.00	0	Yes	16F	24.44	58.38	0	1.3	4 tubes	0	0	Calculated	0.000	0.0000	0.0000

Steel Tubes Properties:

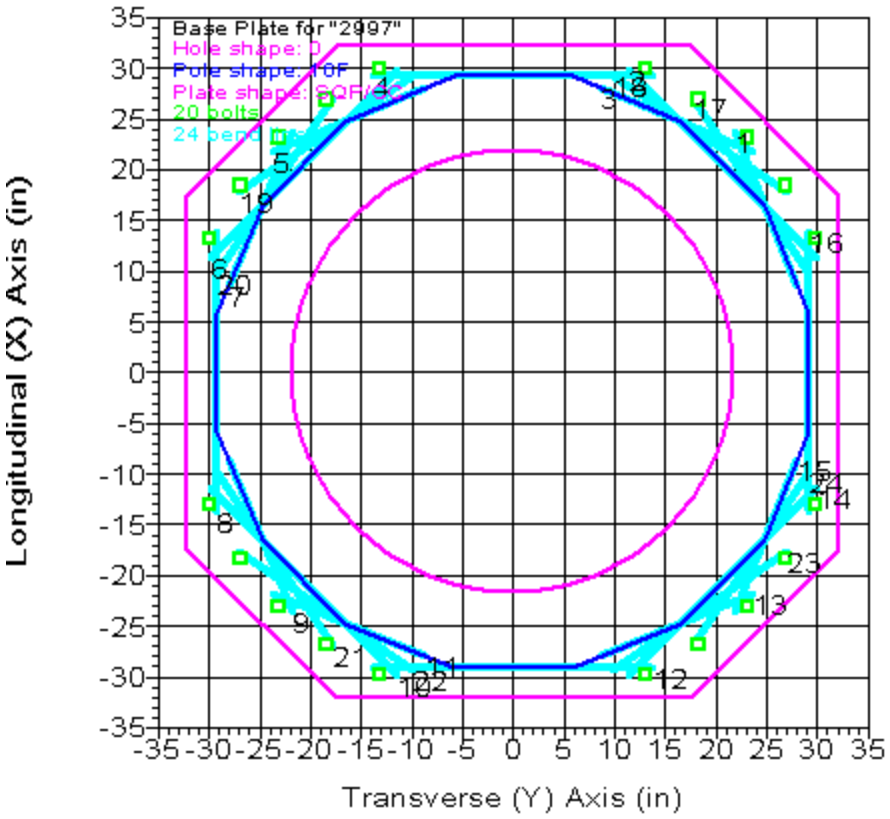
Pole Property	Tube No.	Length (ft)	Thickness (in)	Lap Length (ft)	Lap Factor	Lap Gap (in)	Yield Stress (ksi)	Moment Cap. Override (ft-k)	Tube Weight (lbs)	Center of Gravity (ft)	Calculated Taper (in/ft)	Tube Top Diameter (in)	Tube Bot. Diameter (in)	1.5x Lap Length (ft)	Actual Diam. Overlap (ft)
2997	1	10	0.1875	3.750	0.000	0.000	65.000	0.000	522	5.09	0.28679	24.44	27.31	3.366	3.750
2997	2	40.25	0.25	5.250	0.000	0.000	65.000	0.000	3419	21.36	0.28679	25.85	37.40	4.612	5.250
2997	3	47.5	0.375	6.750	0.000	0.000	65.000	0.000	8069	25.04	0.28679	35.39	49.02	6.033	6.750
2997	4	42	0.4375	0.000	0.000	0.000	65.000	0.000	10331	21.81	0.28679	46.33	58.37	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)
2997	64.250	SQP/CC	3.250	1952	0.000	43.750	0	490.00	50.000	2.250	65.250	20	42297.13	42297.13

Base Plate Bolt Coordinates for Property "2997":

Bolt X Coord.	Bolt Y Coord.	Bolt Angle (deg)
0.4023	0.9157	0
0.5632	0.8238	0
0.7088	0.7088	0
0.8238	0.5632	0
0.9157	0.4023	0



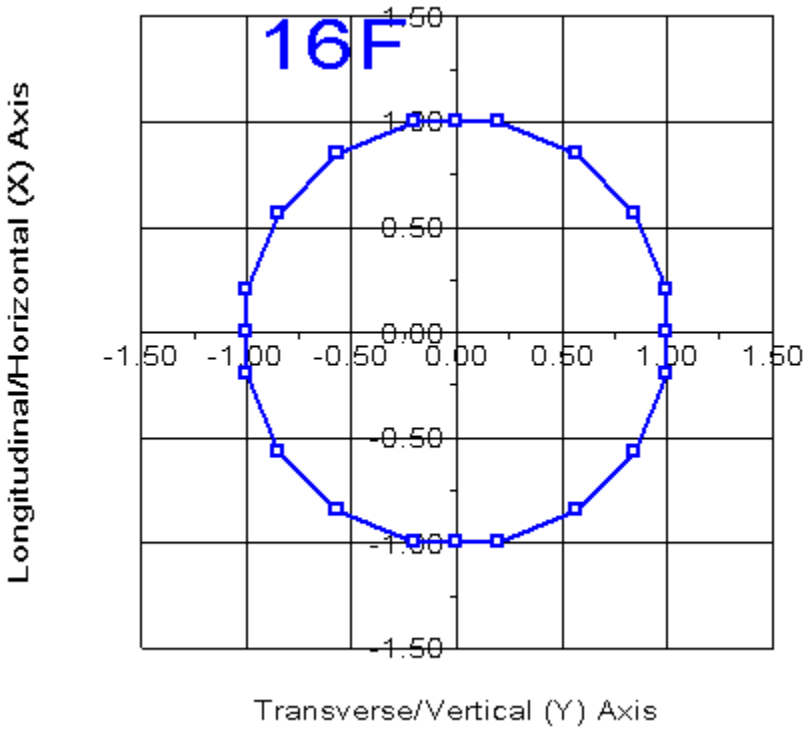
Steel Pole Connectivity:

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)
2997			0	0	0	0	0	2997	17 labels		0.00	0

Relative Attachment Labels for Steel Pole "2997":

Joint Label	Distance From Origin/Top Joint (ft)	Global Z of Attach (ft)
2997:Davit1	0.00	111.50
2997:Davit2	0.00	98.83
2997:Davit3	0.00	86.83
2997:Davit4	0.00	74.83
2997:Cable 1	0.00	115.00

2997:Cable 2	0.00	105.00
2997:Cable 3	0.00	95.00
2997:Cable 4	0.00	85.00
2997:Cable 5	0.00	75.00
2997:Cable 6	0.00	65.00
2997:Cable 7	0.00	55.00
2997:Cable 8	0.00	45.00
2997:Cable 9	0.00	35.00
2997:Cable 10	0.00	25.00
2997:Cable 11	0.00	15.00
2997:Cable 12	0.00	5.00
2997:T-Mo	0.00	119.00



Pole Steel Properties:

Warning: Capacities and usages printed in splices are listed for the inner tube except at the splice top which uses the outer tube. ??

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)
2997	2997:t	2997:t Ori	0.00	24.44	14.47	1077.77	1077.77	0.00	23.9	65.00	65.00	477.78	477.78
2997	2997:T-Mo	2997:T-Mo End	5.00	25.87	15.33	1280.49	1280.49	0.00	25.5	65.00	65.00	536.19	536.19
2997	2997:T-Mo	2997:T-Mo Ori	5.00	25.87	15.33	1280.49	1280.49	0.00	25.5	65.00	65.00	536.19	536.19

2997	#2997:0	SpliceT	End	6.25	26.23	15.54	1334.86	1334.86	0.00	25.8	65.00	65.00	551.31	551.31
2997	#2997:0	SpliceT	Ori	6.25	26.23	15.54	1334.86	1334.86	0.00	25.8	65.00	65.00	551.31	551.31
2997	2997:Cable 1	2997:Cable 1	End	9.00	26.64	21.00	1852.85	1852.85	0.00	19.2	65.00	65.00	753.37	753.37
2997	2997:Cable 1	2997:Cable 1	Ori	9.00	26.64	21.00	1852.85	1852.85	0.00	19.2	65.00	65.00	753.37	753.37
2997	#2997:1	SpliceB	End	10.00	26.93	21.23	1913.91	1913.91	0.00	19.4	65.00	65.00	769.91	769.91
2997	#2997:1	SpliceB	Ori	10.00	26.93	21.23	1913.91	1913.91	0.00	19.4	65.00	65.00	769.91	769.91
2997	2997:Davit1	2997:Davit1	End	12.50	27.65	21.80	2072.38	2072.38	0.00	20.0	65.00	65.00	812.04	812.04
2997	2997:Davit1	2997:Davit1	Ori	12.50	27.65	21.80	2072.38	2072.38	0.00	20.0	65.00	65.00	812.04	812.04
2997	#2997:2	Tube 2	End	15.75	28.58	22.54	2291.16	2291.16	0.00	20.8	65.00	65.00	868.48	868.48
2997	#2997:2	Tube 2	Ori	15.75	28.58	22.54	2291.16	2291.16	0.00	20.8	65.00	65.00	868.48	868.48
2997	2997:Cable 2	2997:Cable 2	End	19.00	29.51	23.28	2524.81	2524.81	0.00	21.5	65.00	65.00	926.83	926.83
2997	2997:Cable 2	2997:Cable 2	Ori	19.00	29.51	23.28	2524.81	2524.81	0.00	21.5	65.00	65.00	926.83	926.83
2997	#2997:3	Tube 2	End	22.09	30.40	23.99	2760.82	2760.82	0.00	22.2	65.00	65.00	983.96	983.96
2997	#2997:3	Tube 2	Ori	22.09	30.40	23.99	2760.82	2760.82	0.00	22.2	65.00	65.00	983.96	983.96
2997	2997:Davit2	2997:Davit2	End	25.17	31.28	24.69	3011.09	3011.09	0.00	22.9	65.00	65.00	1042.81	1042.81
2997	2997:Davit2	2997:Davit2	Ori	25.17	31.28	24.69	3011.10	3011.10	0.00	22.9	65.00	65.00	1042.81	1042.81
2997	2997:Cable 3	2997:Cable 3	End	29.00	32.38	25.56	3342.29	3342.29	0.00	23.8	65.00	65.00	1118.24	1118.24
2997	2997:Cable 3	2997:Cable 3	Ori	29.00	32.38	25.56	3342.29	3342.29	0.00	23.8	65.00	65.00	1118.24	1118.24
2997	#2997:4	Tube 2	End	33.09	33.55	26.50	3721.38	3721.38	0.00	24.7	65.00	65.00	1201.60	1201.60
2997	#2997:4	Tube 2	Ori	33.09	33.55	26.50	3721.38	3721.38	0.00	24.7	65.00	65.00	1201.60	1201.60
2997	2997:Davit3	2997:Davit3	End	37.17	34.72	27.43	4128.11	4128.11	0.00	25.6	65.00	65.00	1287.95	1287.95
2997	2997:Davit3	2997:Davit3	Ori	37.17	34.72	27.43	4128.11	4128.11	0.00	25.6	65.00	65.00	1287.95	1287.95
2997	2997:Cable 4	2997:Cable 4	End	39.00	35.25	27.85	4319.53	4319.53	0.00	26.1	65.00	65.00	1327.61	1327.61
2997	2997:Cable 4	2997:Cable 4	Ori	39.00	35.25	27.85	4319.54	4319.54	0.00	26.1	65.00	65.00	1327.61	1327.61
2997	#2997:5	SpliceT	End	41.25	35.89	28.36	4562.89	4562.89	0.00	26.6	65.00	65.00	1377.19	1377.19
2997	#2997:5	SpliceT	Ori	41.25	35.89	28.36	4562.89	4562.89	0.00	26.6	65.00	65.00	1377.19	1377.19
2997	#2997:6	Tube 2	End	43.88	36.15	42.69	6918.64	6918.64	0.00	17.2	65.00	65.00	2073.61	2073.61
2997	#2997:6	Tube 2	Ori	43.88	36.15	42.69	6918.64	6918.64	0.00	17.2	65.00	65.00	2073.61	2073.61
2997	#2997:7	SpliceB	End	46.50	36.90	43.59	7364.70	7364.70	0.00	17.6	65.00	65.00	2162.26	2162.26
2997	#2997:7	SpliceB	Ori	46.50	36.90	43.59	7364.70	7364.70	0.00	17.6	65.00	65.00	2162.26	2162.26
2997	2997:Cable 5	2997:Cable 5	End	49.00	37.62	44.44	7806.96	7806.96	0.00	18.0	65.00	65.00	2248.42	2248.42
2997	2997:Cable 5	2997:Cable 5	Ori	49.00	37.62	44.44	7806.97	7806.97	0.00	18.0	65.00	65.00	2248.42	2248.42
2997	2997:Davit4	2997:Davit4	End	49.17	37.66	44.50	7837.66	7837.66	0.00	18.0	65.00	65.00	2254.34	2254.34
2997	2997:Davit4	2997:Davit4	Ori	49.17	37.66	44.50	7837.67	7837.67	0.00	18.0	65.00	65.00	2254.34	2254.34
2997	#2997:8	Tube 3	End	54.09	39.07	46.19	8760.46	8760.46	0.00	18.7	65.00	65.00	2428.86	2428.86
2997	#2997:8	Tube 3	Ori	54.09	39.07	46.19	8760.46	8760.46	0.00	18.7	65.00	65.00	2428.86	2428.86
2997	2997:Cable 6	2997:Cable 6	End	59.00	40.48	47.87	9752.99	9752.99	0.00	19.5	65.00	65.00	2609.89	2609.89
2997	2997:Cable 6	2997:Cable 6	Ori	59.00	40.48	47.87	9752.99	9752.99	0.00	19.5	65.00	65.00	2609.89	2609.89
2997	#2997:9	Tube 3	End	64.00	41.92	49.58	10836.85	10836.85	0.00	20.2	65.00	65.00	2800.73	2800.73
2997	#2997:9	Tube 3	Ori	64.00	41.92	49.58	10836.85	10836.85	0.00	20.2	65.00	65.00	2800.73	2800.73
2997	2997:Cable 7	2997:Cable 7	End	69.00	43.35	51.29	11998.18	11998.18	0.00	21.0	65.00	65.00	2998.30	2998.30
2997	2997:Cable 7	2997:Cable 7	Ori	69.00	43.35	51.29	11998.19	11998.19	0.00	21.0	65.00	65.00	2998.30	2998.30
2997	#2997:10	Tube 3	End	74.00	44.79	53.00	13239.66	13239.66	0.00	21.8	65.00	65.00	3202.60	3202.60
2997	#2997:10	Tube 3	Ori	74.00	44.79	53.00	13239.66	13239.66	0.00	21.8	65.00	65.00	3202.60	3202.60
2997	2997:Cable 8	2997:Cable 8	End	79.00	46.22	54.71	14563.95	14563.95	0.00	22.5	65.00	65.00	3413.64	3413.64
2997	2997:Cable 8	2997:Cable 8	Ori	79.00	46.22	54.71	14563.95	14563.95	0.00	22.5	65.00	65.00	3413.64	3413.64
2997	#2997:11	SpliceT	End	82.00	47.08	55.74	15399.39	15399.39	0.00	23.0	65.00	65.00	3543.49	3543.49
2997	#2997:11	SpliceT	Ori	82.00	47.08	55.74	15399.39	15399.39	0.00	23.0	65.00	65.00	3543.49	3543.49
2997	#2997:12	Tube 3	End	85.38	47.30	65.25	18146.30	18146.30	0.00	19.5	65.00	65.00	4156.34	4156.34
2997	#2997:12	Tube 3	Ori	85.38	47.30	65.25	18146.30	18146.30	0.00	19.5	65.00	65.00	4156.34	4156.34
2997	#2997:13	SpliceB	End	88.75	48.27	66.59	19294.10	19294.10	0.00	20.0	65.00	65.00	4330.61	4330.61
2997	#2997:13	SpliceB	Ori	88.75	48.27	66.59	19294.11	19294.11	0.00	20.0	65.00	65.00	4330.61	4330.61
2997	2997:Cable 9	2997:Cable 9	End	89.00	48.34	66.69	19381.00	19381.00	0.00	20.0	65.00	65.00	4343.66	4343.66
2997	2997:Cable 9	2997:Cable 9	Ori	89.00	48.34	66.69	19381.00	19381.00	0.00	20.0	65.00	65.00	4343.66	4343.66
2997	#2997:14	Tube 4	End	94.00	49.77	68.69	21174.16	21174.16	0.00	20.6	65.00	65.00	4608.82	4608.82
2997	#2997:14	Tube 4	Ori	94.00	49.77	68.69	21174.16	21174.16	0.00	20.6	65.00	65.00	4608.82	4608.82
2997	2997:Cable 10	2997:Cable 10	End	99.00	51.21	70.69	23074.65	23074.65	0.00	21.3	65.00	65.00	4881.83	4881.83
2997	2997:Cable 10	2997:Cable 10	Ori	99.00	51.21	70.69	23074.65	23074.65	0.00	21.3	65.00	65.00	4881.83	4881.83
2997	#2997:15	Tube 4	End	104.00	52.64	72.68	25085.59	25085.59	0.00	21.9	65.00	65.00	5162.70	5162.70

2997	#2997:15	Tube 4	Ori	104.00	52.64	72.68	25085.59	25085.59	0.00	21.9	65.00	65.00	5162.70	5162.70
2997	2997:Cable 11	2997:Cable 11	End	109.00	54.07	74.68	27210.10	27210.10	0.00	22.6	65.00	65.00	5451.43	5451.43
2997	2997:Cable 11	2997:Cable 11	Ori	109.00	54.07	74.68	27210.10	27210.10	0.00	22.6	65.00	65.00	5451.43	5451.43
2997	#2997:16	Tube 4	End	114.00	55.51	76.68	29451.29	29451.29	0.00	23.3	65.00	65.00	5748.01	5748.01
2997	#2997:16	Tube 4	Ori	114.00	55.51	76.68	29451.30	29451.30	0.00	23.3	65.00	65.00	5748.01	5748.01
2997	2997:Cable 12	2997:Cable 12	End	119.00	56.94	78.67	31812.30	31812.30	0.00	23.9	65.00	65.00	6052.45	6052.45
2997	2997:Cable 12	2997:Cable 12	Ori	119.00	56.94	78.67	31812.30	31812.30	0.00	23.9	65.00	65.00	6052.45	6052.45
2997	2997:g	2997:g	End	124.00	58.37	80.67	34296.23	34296.23	0.00	24.6	65.00	65.00	6364.74	6364.74

Tubular Davit Properties:

Davit Property Label	Stock Number	Steel Shape	Thickness (in)	Base Diameter or Depth (in)	Tip Diameter or Depth (in)	Taper (in/ft)	Drag Coef.	Modulus of Elasticity (ksi)	Geometry	Strength Check Type	Vertical Capacity (lbs)	Tension Capacity (lbs)	Compres. Capacity (lbs)	Long. Capacity (lbs)	Yield Stress (ksi)	Weight Steel Density Override (lbs/ft^3)	Shape At End
ARM D		4F	0.25	8	8	0	1.3	29000	1 point	Calculated	0	0	0	0	65	0	
ARM E		8F	0.3125	14	8	0	1.3	29000	1 point	Calculated	0	0	0	0	65	0	

Intermediate Joints for Davit Property "ARM D":

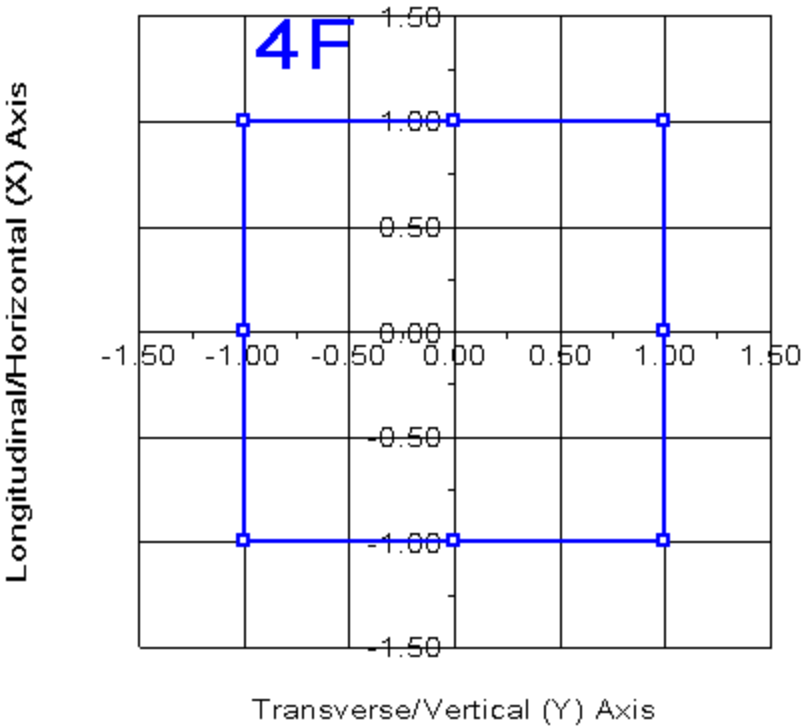
Joint Label	Horz. Offset (ft)	Vert. Offset (ft)
V	3.5	-0.5

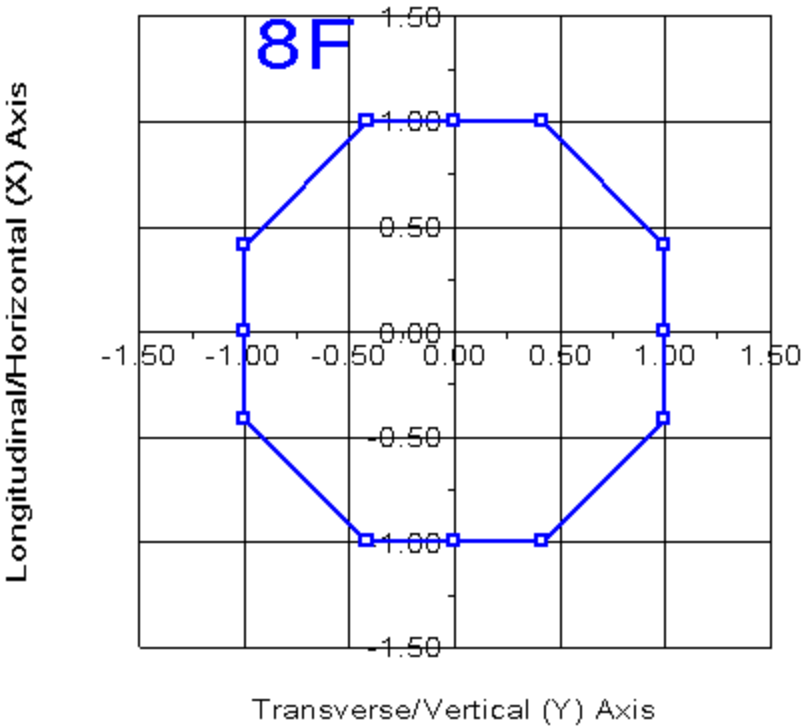
Intermediate Joints for Davit Property "ARM E":

Joint Label	Horz. Offset (ft)	Vert. Offset (ft)
V	8.5	-1.167

Tubular Davit Arm Connectivity:

Davit Label	Attach Label	Davit Property Set	Azimuth (deg)
Davit1	2997:Davit1	ARM D	0
Davit2	2997:Davit1	ARM D	180
Davit3	2997:Davit2	ARM E	0
Davit4	2997:Davit2	ARM E	180
Davit5	2997:Davit3	ARM E	0
Davit6	2997:Davit3	ARM E	180
Davit7	2997:Davit4	ARM E	0
Davit8	2997:Davit4	ARM E	180


4F
1.50
1.00
0.50
0.00
-0.50
-1.00
-1.50
-1.50
-1.00
-0.50
0.00
0.50
1.00
1.50
Longitudinal/Horizontal (X) Axis
Transverse/Vertical (Y) Axis



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	8.00	7.75	77.66	77.66	0.00	22.0	65.00	65.00	105.17	105.17
Davit1	Davit1:V	End	3.54	8.00	7.75	77.66	77.66	0.00	22.0	65.00	65.00	105.17	105.17
Davit2	Davit2:O	Origin	0.00	8.00	7.75	77.66	77.66	0.00	22.0	65.00	65.00	105.17	105.17
Davit2	Davit2:V	End	3.54	8.00	7.75	77.66	77.66	0.00	22.0	65.00	65.00	105.17	105.17
Davit3	Davit3:O	Origin	0.00	14.00	14.17	351.09	351.09	0.00	14.4	65.00	65.00	271.68	271.68
Davit3	#Davit3:0	End	4.29	11.00	11.07	167.19	167.19	0.00	10.4	65.00	65.00	164.66	164.66
Davit3	#Davit3:0	Origin	4.29	11.00	11.07	167.19	167.19	0.00	10.4	65.00	65.00	164.66	164.66
Davit3	Davit3:V	End	8.58	8.00	7.96	62.27	62.27	0.00	6.5	65.00	65.00	84.33	84.33
Davit4	Davit4:O	Origin	0.00	14.00	14.17	351.09	351.09	0.00	14.4	65.00	65.00	271.68	271.68
Davit4	#Davit4:0	End	4.29	11.00	11.07	167.19	167.19	0.00	10.4	65.00	65.00	164.66	164.66
Davit4	#Davit4:0	Origin	4.29	11.00	11.07	167.19	167.19	0.00	10.4	65.00	65.00	164.66	164.66
Davit4	Davit4:V	End	8.58	8.00	7.96	62.27	62.27	0.00	6.5	65.00	65.00	84.33	84.33
Davit5	Davit5:O	Origin	0.00	14.00	14.17	351.09	351.09	0.00	14.4	65.00	65.00	271.68	271.68

Davit5	#Davit5:0	End	4.29	11.00	11.07	167.19	167.19	0.00	10.4	65.00	65.00	164.66	164.66
Davit5	#Davit5:0	Origin	4.29	11.00	11.07	167.19	167.19	0.00	10.4	65.00	65.00	164.66	164.66
Davit5	Davit5:V	End	8.58	8.00	7.96	62.27	62.27	0.00	6.5	65.00	65.00	84.33	84.33
Davit6	Davit6:O	Origin	0.00	14.00	14.17	351.09	351.09	0.00	14.4	65.00	65.00	271.68	271.68
Davit6	#Davit6:0	End	4.29	11.00	11.07	167.19	167.19	0.00	10.4	65.00	65.00	164.66	164.66
Davit6	#Davit6:0	Origin	4.29	11.00	11.07	167.19	167.19	0.00	10.4	65.00	65.00	164.66	164.66
Davit6	Davit6:V	End	8.58	8.00	7.96	62.27	62.27	0.00	6.5	65.00	65.00	84.33	84.33
Davit7	Davit7:O	Origin	0.00	14.00	14.17	351.09	351.09	0.00	14.4	65.00	65.00	271.68	271.68
Davit7	#Davit7:0	End	4.29	11.00	11.07	167.19	167.19	0.00	10.4	65.00	65.00	164.66	164.66
Davit7	#Davit7:0	Origin	4.29	11.00	11.07	167.19	167.19	0.00	10.4	65.00	65.00	164.66	164.66
Davit7	Davit7:V	End	8.58	8.00	7.96	62.27	62.27	0.00	6.5	65.00	65.00	84.33	84.33
Davit8	Davit8:O	Origin	0.00	14.00	14.17	351.09	351.09	0.00	14.4	65.00	65.00	271.68	271.68
Davit8	#Davit8:0	End	4.29	11.00	11.07	167.19	167.19	0.00	10.4	65.00	65.00	164.66	164.66
Davit8	#Davit8:0	Origin	4.29	11.00	11.07	167.19	167.19	0.00	10.4	65.00	65.00	164.66	164.66
Davit8	Davit8:V	End	8.58	8.00	7.96	62.27	62.27	0.00	6.5	65.00	65.00	84.33	84.33

*** Insulator Data

Clamp Properties:

Label	Stock Number	Holding Capacity (lbs)
clamp	clamp1	8e+004

Clamp Insulator Connectivity:

Clamp Label	Structure And Tip Attach	Property Set	Min. Required Vertical Load (uplift) (lbs)
1	Davit1:V	clamp	No Limit
2	Davit2:V	clamp	No Limit
3	Davit3:V	clamp	No Limit
4	Davit4:V	clamp	No Limit
5	Davit5:V	clamp	No Limit
6	Davit6:V	clamp	No Limit
7	Davit7:V	clamp	No Limit
8	Davit8:V	clamp	No Limit
9	2997:Cable 1	clamp	No Limit
10	2997:Cable 2	clamp	No Limit
11	2997:Cable 3	clamp	No Limit
12	2997:Cable 4	clamp	No Limit
13	2997:Cable 5	clamp	No Limit
14	2997:Cable 6	clamp	No Limit
15	2997:Cable 7	clamp	No Limit
16	2997:Cable 8	clamp	No Limit
17	2997:Cable 9	clamp	No Limit
18	2997:Cable 10	clamp	No Limit
19	2997:Cable 11	clamp	No Limit
20	2997:Cable 12	clamp	No Limit
21	2997:T-Mo	clamp	No Limit

*** Loads Data

Loads from file: j:\jobs\1616200.wi\01_ct11101b\04_structural\backup documentation\calcs\rev (1)\pls pole\pole #2997.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) 124.00 (ft)
  Structure height 124.00 (ft)
  Structure height above ground 124.00 (ft)

Vector Load Cases:

Load Case Description	Dead Load Factor	Wind Area Factor	SF for Steel Poles Deflection	SF for Wood Poles Deflection	SF for Conc. Poles Ult. Check	SF for Conc. First Crack	SF for Guys Zero Tens.	SF for and Tubular Cables	SF for Non Tubular Arms	SF for Braces	SF For Insuls.	SF for Found.	Point Loads	Wind/Ice Model	Trans. Wind Pressure
Longit. Ice Density (in)	Ice (lbs/ft^3)	Temperature (deg F)	Tubular Arms and Towers	Poles	Limit % or (ft)										Pressure (psf)
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	0.000	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 2012	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	0.000	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:V	1140	2720	2	Shield Wire
Davit2:V	1140	2720	2	Conductor
Davit3:V	3981	6202	2	Conductor
Davit4:V	3981	6202	2	Conductor
Davit5:V	3981	6202	0	Cables
Davit6:V	3981	6202	0	Cables
Davit7:V	3981	6202	0	Cables
Davit8:V	3981	6202	0	Cables
2997:Cable 1	516	50	0	Cables
2997:Cable 2	516	50	0	Cables
2997:Cable 3	516	50	0	Cables
2997:Cable 4	516	50	0	Cables
2997:Cable 5	516	50	0	Cables
2997:Cable 6	516	50	0	Cables

2997:Cable 7	516	50	0	Cables
2997:Cable 8	516	50	0	Cables
2997:Cable 9	516	50	0	Cables
2997:Cable 10	516	50	0	Cables
2997:Cable 11	516	50	0	Cables
2997:Cable 12	516	50	0	Cables
2997:T-Mo	344	253	0	T-Mobile Equipment

Point Loads for Load Case "NESC Extreme Wind":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
Davit1:V	296	1983	2	Shield Wire
Davit2:V	296	1983	2	Conductor
Davit3:V	1827	5325	2	Conductor
Davit4:V	1827	5325	2	Conductor
Davit5:V	1827	5325	0	Cables
Davit6:V	1827	5325	0	Cables
Davit7:V	1827	5325	0	Cables
Davit8:V	1827	5325	0	Cables
2997:Cable 1	119	131	0	Cables
2997:Cable 2	119	131	0	Cables
2997:Cable 3	119	131	0	Cables
2997:Cable 4	119	131	0	Cables
2997:Cable 5	119	131	0	Cables
2997:Cable 6	119	131	0	Cables
2997:Cable 7	119	131	0	Cables
2997:Cable 8	119	131	0	Cables
2997:Cable 9	119	131	0	Cables
2997:Cable 10	119	131	0	Cables
2997:Cable 11	119	131	0	Cables
2997:Cable 12	119	131	0	Cables
2997:T-Mo	107	993	0	T-Mobile Equipment

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)
2997	2997:t	2997:T-Mo	124.00	119.00	121.50	25.154	2.14e+006	1.000	32.15	0.00	253.48	336.96	0.00	0.00	336.96	0.00
2997	2997:T-Mo		119.00	117.75	118.38	26.051	2.21e+006	1.000	32.15	0.00	65.65	87.24	0.00	0.00	87.24	0.00
2997		2997:Cable 1	117.75	115.00	116.38	26.437	2.24e+006	1.000	32.15	0.00	341.20	194.78	0.00	0.00	194.78	0.00
2997	2997:Cable 1		115.00	114.00	114.50	26.787	2.27e+006	1.000	32.15	0.00	126.56	71.77	0.00	0.00	71.77	0.00
2997		2997:Davit1	114.00	111.50	112.75	27.289	2.32e+006	1.000	32.15	0.00	183.01	182.78	0.00	0.00	182.78	0.00
2997	2997:Davit1		111.50	108.25	109.88	28.113	2.39e+006	1.000	32.15	0.00	245.17	244.79	0.00	0.00	244.79	0.00
2997		2997:Cable 2	108.25	105.00	106.63	29.046	2.47e+006	1.000	32.15	0.00	253.37	252.91	0.00	0.00	252.91	0.00
2997	2997:Cable 2		105.00	101.92	103.46	29.954	2.54e+006	1.000	32.15	0.00	248.10	247.57	0.00	0.00	247.57	0.00
2997		2997:Davit2	101.92	98.83	100.37	30.839	2.62e+006	1.000	32.15	0.00	255.49	254.89	0.00	0.00	254.89	0.00
2997	2997:Davit2	2997:Cable 3	98.83	95.00	96.92	31.830	2.7e+006	1.000	32.15	0.00	327.47	326.61	0.00	0.00	326.61	0.00
2997	2997:Cable 3		95.00	90.92	92.96	32.965	2.8e+006	1.000	32.15	0.00	361.82	360.78	0.00	0.00	360.78	0.00
2997		2997:Davit3	90.92	86.83	88.87	34.137	2.9e+006	1.000	32.15	0.00	374.78	373.60	0.00	0.00	373.60	0.00
2997	2997:Davit3	2997:Cable 4	86.83	85.00	85.92	34.985	2.97e+006	1.000	32.15	0.00	172.10	171.53	0.00	0.00	171.53	0.00

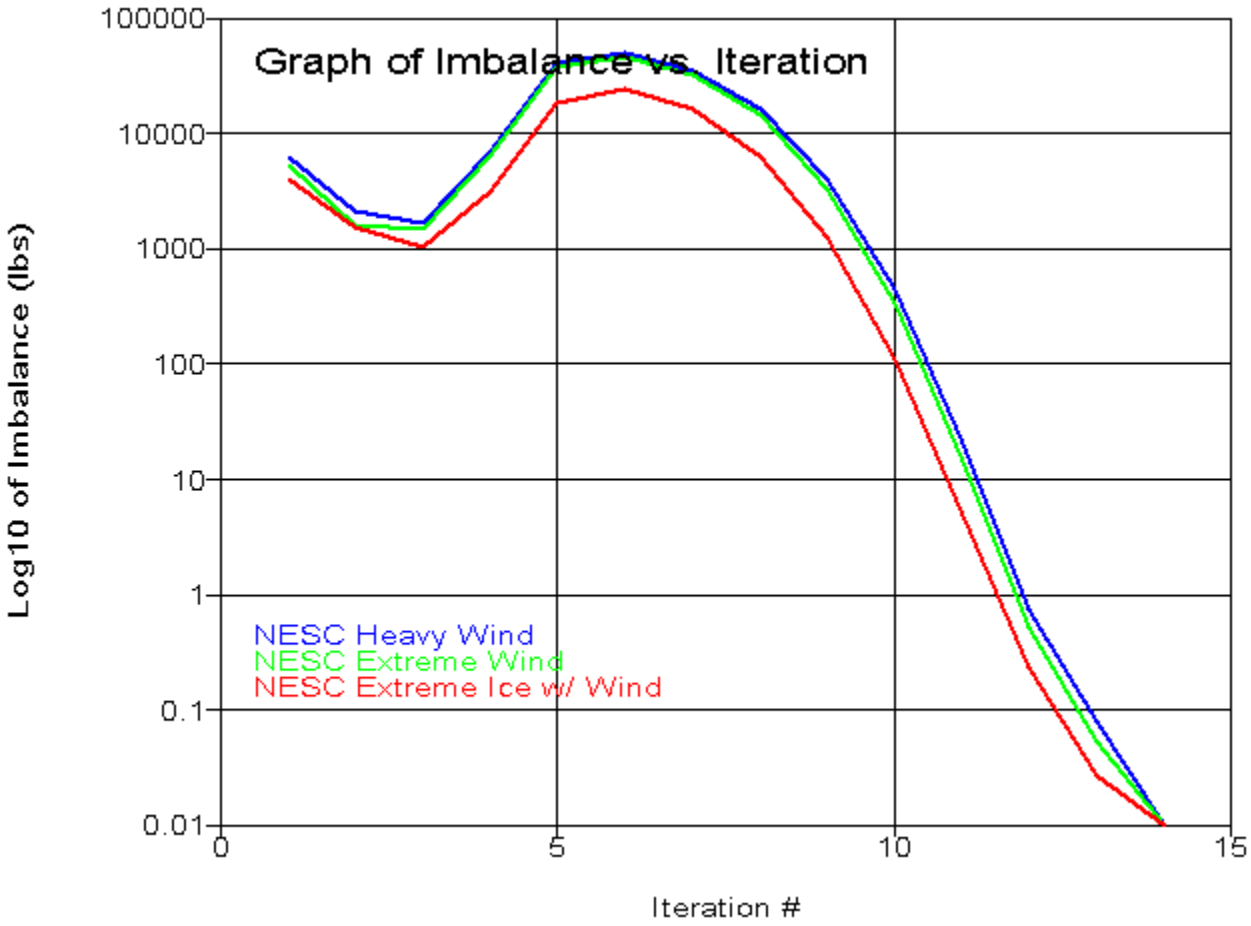
2997	2997:Cable 4		85.00	82.75	83.88	35.570	3.02e+006	1.000	32.15	0.00	215.16	214.42	0.00	0.00	214.42	0.00
2997			82.75	80.13	81.44	36.019	3.06e+006	1.000	32.15	0.00	633.30	253.31	0.00	0.00	253.31	0.00
2997			80.13	77.50	78.81	36.522	3.1e+006	1.000	32.15	0.00	646.56	256.85	0.00	0.00	256.85	0.00
2997		2997:Cable 5	77.50	75.00	76.25	37.257	3.16e+006	1.000	32.15	0.00	374.52	249.54	0.00	0.00	249.54	0.00
2997	2997:Cable 5	2997:Davit4	75.00	74.83	74.91	37.640	3.2e+006	1.000	32.15	0.00	25.73	17.14	0.00	0.00	17.14	0.00
2997	2997:Davit4		74.83	69.92	72.37	38.369	3.26e+006	1.000	32.15	0.00	758.37	505.24	0.00	0.00	505.24	0.00
2997		2997:Cable 6	69.92	65.00	67.46	39.779	3.38e+006	1.000	32.15	0.00	786.50	523.80	0.00	0.00	523.80	0.00
2997	2997:Cable 6		65.00	60.00	62.50	41.200	3.5e+006	1.000	32.15	0.00	828.97	551.91	0.00	0.00	551.91	0.00
2997		2997:Cable 7	60.00	55.00	57.50	42.634	3.62e+006	1.000	32.15	0.00	858.09	571.12	0.00	0.00	571.12	0.00
2997	2997:Cable 7		55.00	50.00	52.50	44.068	3.74e+006	1.000	32.15	0.00	887.21	590.33	0.00	0.00	590.33	0.00
2997		2997:Cable 8	50.00	45.00	47.50	45.502	3.86e+006	1.000	32.15	0.00	916.33	609.53	0.00	0.00	609.53	0.00
2997	2997:Cable 8		45.00	42.00	43.50	46.649	3.96e+006	1.000	32.15	0.00	563.77	374.94	0.00	0.00	374.94	0.00
2997			42.00	38.63	40.31	47.189	4.01e+006	1.000	32.15	0.00	1388.35	426.68	0.00	0.00	426.68	0.00
2997			38.63	35.25	36.94	47.782	4.06e+006	1.000	32.15	0.00	1416.88	432.05	0.00	0.00	432.05	0.00
2997		2997:Cable 9	35.25	35.00	35.13	48.301	4.1e+006	1.000	32.15	0.00	56.80	32.35	0.00	0.00	32.35	0.00
2997	2997:Cable 9		35.00	30.00	32.50	49.054	4.16e+006	1.000	32.15	0.00	1151.71	657.12	0.00	0.00	657.12	0.00
2997		2997:Cable 10	30.00	25.00	27.50	50.488	4.29e+006	1.000	32.15	0.00	1185.68	676.32	0.00	0.00	676.32	0.00
2997	2997:Cable 10		25.00	20.00	22.50	51.922	4.41e+006	1.000	32.15	0.00	1219.65	695.53	0.00	0.00	695.53	0.00
2997		2997:Cable 11	20.00	15.00	17.50	53.356	4.53e+006	1.000	32.15	0.00	1253.62	714.74	0.00	0.00	714.74	0.00
2997	2997:Cable 11		15.00	10.00	12.50	54.790	4.65e+006	1.000	32.15	0.00	1287.59	733.95	0.00	0.00	733.95	0.00
2997		2997:Cable 12	10.00	5.00	7.50	56.224	4.77e+006	1.000	32.15	0.00	1321.56	753.16	0.00	0.00	753.16	0.00
2997	2997:Cable 12	2997:g	5.00	0.00	2.50	57.658	4.89e+006	1.000	32.15	0.00	1355.53	772.37	0.00	0.00	772.37	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:V	1627	1940	2	Shield Wire
Davit2:V	1627	1940	2	Conductor
Davit3:V	3885	4010	2	Conductor
Davit4:V	3885	4010	2	Conductor
Davit5:V	3885	4010	0	Cables
Davit6:V	3885	4010	0	Cables
Davit7:V	3885	4010	0	Cables
Davit8:V	3885	4010	0	Cables
2997:Cable 1	498	36	0	Cables
2997:Cable 2	498	36	0	Cables
2997:Cable 3	498	36	0	Cables
2997:Cable 4	498	36	0	Cables
2997:Cable 5	498	36	0	Cables
2997:Cable 6	498	36	0	Cables
2997:Cable 7	498	36	0	Cables
2997:Cable 8	498	36	0	Cables
2997:Cable 9	498	36	0	Cables
2997:Cable 10	498	36	0	Cables
2997:Cable 11	498	36	0	Cables
2997:Cable 12	498	36	0	Cables
2997:T-Mo	298	214	0	T-Mobile Equipment

*** Analysis Results:

Maximum element usage is 70.05% for Base Plate "2997" in load case "NESC Heavy Wind"
Maximum insulator usage is 9.21% for Clamp "3" in load case "NESC Heavy 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)
2997:g	0	0	0	0.0000	0.0000	0.0000	0	0	0
2997:t	0.008478	4.746	-0.1181	-3.4789	0.0063	0.0000	0.008478	4.746	123.9
2997:T-Mo	0.007928	4.442	-0.1089	-3.4786	0.0063	0.0000	0.007928	4.442	118.9

2997:Cable 1	0.007488	4.199	-0.1015	-3.4776	0.0063	0.0000	0.007488	4.199	114.9
2997:Davit1	0.007104	3.987	-0.09504	-3.4758	0.0063	0.0000	0.007104	3.987	111.4
2997:Cable 2	0.006397	3.594	-0.08308	-3.4529	0.0062	0.0000	0.006397	3.594	104.9
2997:Davit2	0.005738	3.224	-0.07195	-3.4081	0.0060	0.0000	0.005738	3.224	98.76
2997:Cable 3	0.005338	2.998	-0.06517	-3.3583	0.0059	0.0000	0.005338	2.998	94.93
2997:Davit3	0.004519	2.53	-0.05156	-3.1934	0.0055	0.0000	0.004519	2.53	86.78
2997:Cable 4	0.004344	2.428	-0.04869	-3.1449	0.0054	0.0000	0.004344	2.428	84.95
2997:Cable 5	0.003436	1.903	-0.03462	-2.8740	0.0050	0.0000	0.003436	1.903	74.97
2997:Davit4	0.003421	1.894	-0.0344	-2.8693	0.0050	0.0000	0.003421	1.894	74.8
2997:Cable 6	0.002614	1.428	-0.02301	-2.5480	0.0044	0.0000	0.002614	1.428	64.98
2997:Cable 7	0.00189	1.015	-0.01419	-2.1611	0.0038	0.0000	0.00189	1.015	54.99
2997:Cable 8	0.001277	0.673	-0.008027	-1.7423	0.0032	0.0000	0.001277	0.673	44.99
2997:Cable 9	0.0007827	0.4045	-0.004119	-1.3331	0.0025	0.0000	0.0007827	0.4045	35
2997:Cable 10	0.0004051	0.2052	-0.001838	-0.9423	0.0018	0.0000	0.0004051	0.2052	25
2997:Cable 11	0.0001485	0.07356	-0.0006724	-0.5576	0.0011	0.0000	0.0001485	0.07356	15
2997:Cable 12	1.735e-005	0.00833	-0.0001551	-0.1828	0.0004	0.0000	1.735e-005	0.00833	5
Davit1:O	0.007096	3.985	-0.1649	-3.4758	0.0063	0.0000	0.007096	5.137	111.3
Davit1:V	0.007129	4.009	-0.3794	-3.5084	0.0063	-0.0000	0.007129	8.661	111.6
Davit2:O	0.007112	3.989	-0.0252	-3.4758	0.0063	0.0000	0.007112	2.837	111.5
Davit2:V	0.007192	4.026	0.1855	-3.4612	0.0063	0.0001	0.007192	-0.626	112.2
Davit3:O	0.005729	3.222	-0.1494	-3.4081	0.0060	0.0000	0.005729	4.526	98.68
Davit3:V	0.005804	3.278	-0.6785	-3.6512	0.0060	-0.0001	0.005804	13.08	99.32
Davit4:O	0.005746	3.227	0.005532	-3.4081	0.0060	0.0000	0.005746	1.923	98.84
Davit4:V	0.005935	3.309	0.4954	-3.2563	0.0061	0.0001	0.005935	-6.495	100.5
Davit5:O	0.004511	2.527	-0.1322	-3.1934	0.0055	0.0000	0.004511	3.974	86.7
Davit5:V	0.004573	2.581	-0.6293	-3.4377	0.0055	0.0000	0.004573	12.53	87.37
Davit6:O	0.004528	2.532	0.02903	-3.1934	0.0055	0.0000	0.004528	1.085	86.86
Davit6:V	0.00469	2.608	0.4872	-3.0402	0.0056	0.0000	0.00469	-7.339	88.48
Davit7:O	0.003414	1.892	-0.113	-2.8693	0.0050	0.0000	0.003414	3.462	74.72
Davit7:V	0.003473	1.942	-0.5619	-3.1154	0.0050	0.0000	0.003473	12.01	75.44
Davit8:O	0.003428	1.896	0.04416	-2.8693	0.0050	0.0000	0.003428	0.3269	74.87
Davit8:V	0.003569	1.963	0.4545	-2.7140	0.0050	0.0000	0.003569	-8.106	76.45

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 %
2997:g	-0.16	0.0	-49.04	0.0	0.0	-71.53	0.0	0.0	86.73	0.0	4371.27	0.0	-9.0	0.0	0.0	-0.01	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.
2997	2997:t	Origin	0.00	56.95	0.10	-1.42	-0.00	-0.00	0.0	-0.19	0.08	-0.00	-0.01	0.00	0.01	0.00	0.02	0.0	6
2997	2997:T-Mo	End	5.00	53.31	0.10	-1.31	0.40	-0.01	0.0	-0.19	0.08	-0.00	-0.01	0.05	0.00	0.00	0.06	0.1	2
2997	2997:T-Mo	Origin	5.00	53.31	0.10	-1.31	0.40	-0.01	0.0	-0.76	0.45	-0.00	-0.05	0.01	0.06	0.00	0.12	0.2	5
2997	SpliceT	End	6.25	52.40	0.09	-1.28	0.96	-0.01	0.0	-0.76	0.45	-0.00	-0.05	0.11	0.01	0.00	0.16	0.3	2
2997	SpliceT	Origin	6.25	52.40	0.09	-1.28	0.96	-0.01	0.0	-1.06	0.53	-0.01	-0.07	0.11	0.01	0.00	0.18	0.3	2
2997	2997:Cable 1	End	9.00	50.39	0.09	-1.22	2.42	-0.03	0.0	-1.06	0.53	-0.01	-0.05	0.21	0.01	0.00	0.26	0.4	2
2997	2997:Cable 1	Origin	9.00	50.39	0.09	-1.22	2.42	-0.03	0.0	-1.92	0.68	-0.01	-0.09	0.21	0.01	0.00	0.30	0.5	2
2997	SpliceB	End	10.00	49.67	0.09	-1.20	3.10	-0.04	0.0	-1.92	0.68	-0.01	-0.09	0.26	0.01	0.00	0.35	0.5	2
2997	SpliceB	Origin	10.00	49.67	0.09	-1.20	3.10	-0.04	0.0	-2.16	0.75	-0.01	-0.10	0.26	0.01	0.00	0.36	0.6	2
2997	2997:Davit1	End	12.50	47.85	0.09	-1.14	4.97	-0.06	0.0	-2.16	0.75	-0.01	-0.10	0.40	0.01	0.00	0.50	0.8	2
2997	2997:Davit1	Origin	12.50	47.85	0.09	-1.14	7.76	-0.06	0.0	-4.70	6.44	-0.02	-0.22	0.13	0.59	0.00	1.07	1.6	5

2997	Tube 2	End	15.75	45.48	0.08	-1.07	28.69	-0.11	0.0	-4.70	6.44	-0.02	-0.21	2.15	0.11	0.00	2.37	3.6	2
2997	Tube 2	Origin	15.75	45.48	0.08	-1.07	28.69	-0.11	0.0	-5.07	6.56	-0.02	-0.23	2.15	0.12	0.00	2.38	3.7	2
2997	2997:Cable 2	End	19.00	43.13	0.08	-1.00	50.02	-0.17	0.0	-5.07	6.56	-0.02	-0.22	3.51	0.11	0.00	3.73	5.7	2
2997	2997:Cable 2	Origin	19.00	43.13	0.08	-1.00	50.02	-0.17	0.0	-5.96	6.77	-0.02	-0.26	3.51	0.12	0.00	3.77	5.8	2
2997	Tube 2	End	22.09	40.90	0.07	-0.93	70.89	-0.23	0.0	-5.96	6.77	-0.02	-0.25	4.69	0.11	0.00	4.94	7.6	2
2997	Tube 2	Origin	22.09	40.90	0.07	-0.93	70.89	-0.23	0.0	-6.34	6.89	-0.02	-0.26	4.69	0.11	0.00	4.95	7.6	2
2997	2997:Davit2	End	25.17	38.69	0.07	-0.86	92.13	-0.30	0.0	-6.34	6.89	-0.02	-0.26	5.75	0.11	0.00	6.01	9.2	2
2997	2997:Davit2	Origin	25.17	38.69	0.07	-0.86	106.97	-0.31	0.0	-14.96	19.94	-0.03	-0.61	6.67	0.32	0.00	7.30	11.2	2
2997	2997:Cable 3	End	29.00	35.98	0.06	-0.78	183.33	-0.43	0.0	-14.96	19.94	-0.03	-0.59	10.66	0.31	0.00	11.26	17.3	2
2997	2997:Cable 3	Origin	29.00	35.98	0.06	-0.78	183.33	-0.43	0.0	-16.01	20.17	-0.04	-0.63	10.66	0.31	0.00	11.30	17.4	2
2997	Tube 2	End	33.09	33.13	0.06	-0.70	265.71	-0.58	0.0	-16.01	20.17	-0.04	-0.60	14.38	0.30	0.00	14.99	23.1	2
2997	Tube 2	Origin	33.09	33.13	0.06	-0.70	265.71	-0.58	0.0	-16.59	20.33	-0.04	-0.63	14.38	0.30	0.00	15.02	23.1	2
2997	2997:Davit3	End	37.17	30.36	0.05	-0.62	348.74	-0.74	0.0	-16.59	20.33	-0.04	-0.61	17.61	0.29	0.00	18.22	28.0	2
2997	2997:Davit3	Origin	37.17	30.36	0.05	-0.62	363.54	-0.74	0.0	-25.26	33.32	-0.04	-0.92	18.35	0.48	0.00	19.29	29.7	2
2997	2997:Cable 4	End	39.00	29.14	0.05	-0.58	424.51	-0.82	0.0	-25.26	33.32	-0.04	-0.91	20.79	0.47	0.00	21.71	33.4	2
2997	2997:Cable 4	Origin	39.00	29.14	0.05	-0.58	424.51	-0.82	0.0	-26.09	33.46	-0.05	-0.94	20.79	0.48	0.00	21.74	33.5	2
2997	SpliceT	End	41.25	27.67	0.05	-0.54	499.81	-0.93	0.0	-26.09	33.46	-0.05	-0.92	23.60	0.47	0.00	24.53	37.7	2
2997	SpliceT	Origin	41.25	27.67	0.05	-0.54	499.81	-0.93	0.0	-26.77	33.56	-0.05	-0.94	23.60	0.47	0.00	24.56	37.8	2
2997	Tube 2	End	43.88	26.00	0.05	-0.50	587.90	-1.05	0.0	-26.77	33.56	-0.05	-0.63	18.44	0.31	0.00	19.07	29.3	2
2997	Tube 2	Origin	43.88	26.00	0.05	-0.50	587.90	-1.05	0.0	-27.77	33.68	-0.05	-0.65	18.44	0.31	0.00	19.09	29.4	2
2997	SpliceB	End	46.50	24.36	0.04	-0.45	676.31	-1.19	0.0	-27.77	33.68	-0.05	-0.64	20.34	0.31	0.00	20.98	32.3	2
2997	SpliceB	Origin	46.50	24.36	0.04	-0.45	676.31	-1.19	0.0	-28.57	33.79	-0.05	-0.66	20.34	0.31	0.00	21.00	32.3	2
2997	2997:Cable 5	End	49.00	22.83	0.04	-0.42	760.78	-1.32	0.0	-28.57	33.79	-0.05	-0.64	22.00	0.30	0.00	22.65	34.8	2
2997	2997:Cable 5	Origin	49.00	22.83	0.04	-0.42	760.78	-1.32	0.0	-29.41	33.92	-0.06	-0.66	22.00	0.30	0.00	22.67	34.9	2
2997	2997:Davit4	End	49.17	22.73	0.04	-0.41	766.55	-1.33	0.0	-29.41	33.92	-0.06	-0.66	22.11	0.30	0.00	22.78	35.0	2
2997	2997:Davit4	Origin	49.17	22.73	0.04	-0.41	781.30	-1.33	0.0	-38.35	46.84	-0.06	-0.86	22.53	0.42	0.00	23.41	36.0	2
2997	Tube 3	End	54.09	19.85	0.04	-0.34	1011.50	-1.63	0.0	-38.35	46.84	-0.06	-0.83	27.08	0.40	0.00	27.92	42.9	2
2997	Tube 3	Origin	54.09	19.85	0.04	-0.34	1011.50	-1.63	0.0	-39.64	46.99	-0.07	-0.86	27.08	0.40	0.00	27.94	43.0	2
2997	2997:Cable 6	End	59.00	17.13	0.03	-0.28	1242.46	-1.95	0.0	-39.64	46.99	-0.07	-0.83	30.95	0.39	0.00	31.79	48.9	2
2997	2997:Cable 6	Origin	59.00	17.13	0.03	-0.28	1242.46	-1.95	0.0	-41.51	47.21	-0.07	-0.87	30.95	0.39	0.00	31.83	49.0	2
2997	Tube 3	End	64.00	14.55	0.03	-0.22	1478.50	-2.30	0.0	-41.51	47.21	-0.07	-0.84	34.32	0.38	0.00	35.17	54.1	2
2997	Tube 3	Origin	64.00	14.55	0.03	-0.22	1478.50	-2.30	0.0	-42.93	47.34	-0.08	-0.87	34.32	0.38	0.00	35.20	54.1	2
2997	2997:Cable 7	End	69.00	12.18	0.02	-0.17	1715.21	-2.68	0.0	-42.93	47.34	-0.08	-0.84	37.20	0.37	0.00	38.04	58.5	2
2997	2997:Cable 7	Origin	69.00	12.18	0.02	-0.17	1715.21	-2.68	0.0	-44.92	47.54	-0.08	-0.88	37.20	0.37	0.00	38.08	58.6	2
2997	Tube 3	End	74.00	10.02	0.02	-0.13	1952.91	-3.09	0.0	-44.92	47.54	-0.08	-0.85	39.65	0.36	0.00	40.50	62.3	2
2997	Tube 3	Origin	74.00	10.02	0.02	-0.13	1952.91	-3.09	0.0	-46.45	47.66	-0.09	-0.88	39.65	0.36	0.00	40.53	62.4	2
2997	2997:Cable 8	End	79.00	8.08	0.02	-0.10	2191.22	-3.54	0.0	-46.45	47.66	-0.09	-0.85	41.74	0.34	0.00	42.59	65.5	2
2997	2997:Cable 8	Origin	79.00	8.08	0.02	-0.10	2191.22	-3.54	0.0	-48.22	47.82	-0.09	-0.88	41.74	0.35	0.00	42.62	65.6	2
2997	SpliceT	End	82.00	7.02	0.01	-0.08	2334.68	-3.82	0.0	-48.22	47.82	-0.09	-0.87	42.84	0.34	0.00	43.71	67.2	2
2997	SpliceT	Origin	82.00	7.02	0.01	-0.08	2334.68	-3.82	0.0	-49.79	47.91	-0.10	-0.89	42.84	0.34	0.00	43.74	67.3	2
2997	Tube 3	End	85.38	5.92	0.01	-0.06	2496.37	-4.15	0.0	-49.79	47.91	-0.10	-0.76	39.05	0.29	0.00	39.82	61.3	2
2997	Tube 3	Origin	85.38	5.92	0.01	-0.06	2496.37	-4.15	0.0	-52.01	48.02	-0.10	-0.80	39.05	0.29	0.00	39.85	61.3	2
2997	SpliceB	End	88.75	4.92	0.01	-0.05	2658.42	-4.49	0.0	-52.01	48.02	-0.10	-0.78	39.91	0.29	0.00	40.70	62.6	2
2997	SpliceB	Origin	88.75	4.92	0.01	-0.05	2658.42	-4.49	0.0	-53.17	48.07	-0.10	-0.80	39.91	0.29	0.00	40.72	62.6	2
2997	2997:Cable 9	End	89.00	4.85	0.01	-0.05	2670.44	-4.52	0.0	-53.17	48.07	-0.10	-0.80	39.97	0.29	0.00	40.78	62.7	2
2997	2997:Cable 9	Origin	89.00	4.85	0.01	-0.05	2670.44	-4.52	0.0	-54.68	48.20	-0.11	-0.82	39.97	0.29	0.00	40.80	62.8	2
2997	Tube 4	End	94.00	3.56	0.01	-0.03	2911.42	-5.06	0.0	-54.68	48.20	-0.11	-0.80	41.08	0.28	0.00	41.87	64.4	2
2997	Tube 4	Origin	94.00	3.56	0.01	-0.03	2911.42	-5.06	0.0	-56.60	48.31	-0.11	-0.82	41.08	0.28	0.00	41.90	64.5	2
2997	2997:Cable 10	End	99.00	2.46	0.00	-0.02	3152.97	-5.63	0.0	-56.60	48.31	-0.11	-0.80	42.00	0.27	0.00	42.80	65.8	2
2997	2997:Cable 10	Origin	99.00	2.46	0.00	-0.02	3152.97	-5.63	0.0	-59.08	48.48	-0.12	-0.84	42.00	0.27	0.00	42.83	65.9	2
2997	Tube 4	End	104.00	1.57	0.00	-0.01	3395.36	-6.24	0.0	-59.08	48.48	-0.12	-0.81	42.76	0.26	0.00	43.58	67.0	2
2997	Tube 4	Origin	104.00	1.57	0.00	-0.01	3395.36	-6.24	0.0	-61.10	48.59	-0.13	-0.84	42.76	0.26	0.00	43.61	67.1	2
2997	2997:Cable 11	End	109.00	0.88	0.00	-0.01	3638.30	-6.88	0.0	-61.10	48.59	-0.13	-0.82	43.40	0.26	0.00	44.22	68.0	2
2997	2997:Cable 11	Origin	109.00	0.88	0.00	-0.01	3638.30	-6.88	0.0	-63.68	48.75	-0.14	-0.85	43.40	0.26	0.00	44.25	68.1	2
2997	Tube 4	End	114.00	0.39	0.00	-0.00	3882.03	-7.56	0.0	-63.68	48.75	-0.14	-0.83	43.92	0.25	0.00	44.75	68.8	2
2997	Tube 4	Origin	114.00	0.39	0.00	-0.00	3882.03	-7.56	0.0	-65.80	48.85	-0.14	-0.86	43.92	0.25	0.00	44.78	68.9	2
2997	2997:Cable 12	End	119.00	0.10	0.00	-0.00	4126.27	-8.28	0.0	-65.80	48.85	-0.14	-0.84	44.33	0.25	0.00	45.17	69.5	2
2997	2997:Cable 12	Origin	119.00	0.10	0.00	-0.00	4126.27	-8.28	0.0	-68.48	49.00	-0.15	-0.87	44.33	0.25	0.00	45.20	69.5	2
2997	2997:g	End	124.00	0.00	0.00	0.00	4371.27	-9.04	0.0	-68.48	49.00	-0.15	-0.85	44.66	0.24	0.00	45.51	70.0	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	47.82	0.09	-1.98	-5.04	-0.01	0.0	2.61	1.43	0.00	0.34	3.12	0.28	0.00	3.49	5.4	2
Davit1	Davit1:V	End	3.54	48.11	0.09	-4.55	0.00	0.00	0.0	2.61	1.43	0.00	0.34	0.00	0.42	0.00	0.81	1.2	3
Davit2	Davit2:O	Origin	0.00	47.87	0.09	-0.30	-2.26	0.01	0.0	-2.91	0.64	-0.00	-0.38	1.40	0.13	0.00	1.79	2.8	2
Davit2	Davit2:V	End	3.54	48.31	0.09	2.23	-0.00	0.00	0.0	-2.91	0.64	-0.00	-0.38	0.00	0.19	0.00	0.50	0.8	3
Davit3	Davit3:O	Origin	0.00	38.67	0.07	-1.79	-39.95	-0.02	-0.0	5.86	4.78	0.00	0.41	9.56	0.27	0.00	9.98	15.4	2
Davit3	#Davit3:0	End	4.29	39.00	0.07	-4.91	-19.43	-0.01	-0.0	5.86	4.78	0.00	0.53	7.67	0.35	0.00	8.22	12.6	2
Davit3	#Davit3:0	Origin	4.29	39.00	0.07	-4.91	-19.43	-0.01	0.0	5.89	4.53	0.00	0.53	7.67	0.33	0.00	8.22	12.6	2
Davit3	Davit3:V	End	8.58	39.34	0.07	-8.14	-0.00	0.00	0.0	5.89	4.53	0.00	0.74	0.00	1.19	0.00	2.19	3.4	4
Davit4	Davit4:O	Origin	0.00	38.72	0.07	0.07	-25.12	0.02	0.0	-6.92	3.04	-0.00	-0.49	6.01	0.17	0.00	6.51	10.0	2
Davit4	#Davit4:0	End	4.29	39.22	0.07	3.04	-12.07	0.01	0.0	-6.92	3.04	-0.00	-0.63	4.77	0.22	0.00	5.41	8.3	2
Davit4	#Davit4:0	Origin	4.29	39.22	0.07	3.04	-12.07	0.01	0.0	-6.87	2.81	-0.00	-0.62	4.77	0.20	0.00	5.40	8.3	2
Davit4	Davit4:V	End	8.58	39.70	0.07	5.94	-0.00	0.00	0.0	-6.87	2.81	-0.00	-0.86	0.00	0.74	0.00	1.54	2.4	4
Davit5	Davit5:O	Origin	0.00	30.33	0.05	-1.59	-40.14	-0.00	-0.0	5.84	4.81	0.00	0.41	9.60	0.27	0.00	10.03	15.4	2
Davit5	#Davit5:0	End	4.29	30.65	0.05	-4.51	-19.52	-0.00	-0.0	5.84	4.81	0.00	0.53	7.71	0.35	0.00	8.26	12.7	2
Davit5	#Davit5:0	Origin	4.29	30.65	0.05	-4.51	-19.52	-0.00	0.0	5.87	4.55	0.00	0.53	7.71	0.33	0.00	8.26	12.7	2
Davit5	Davit5:V	End	8.58	30.97	0.05	-7.55	-0.00	0.00	0.0	5.87	4.55	0.00	0.74	0.00	1.19	0.00	2.20	3.4	4
Davit6	Davit6:O	Origin	0.00	30.38	0.05	0.35	-25.34	0.01	0.0	-6.91	3.07	-0.00	-0.49	6.06	0.17	0.00	6.56	10.1	2
Davit6	#Davit6:0	End	4.29	30.84	0.06	3.13	-12.19	0.00	0.0	-6.91	3.07	-0.00	-0.62	4.81	0.22	0.00	5.45	8.4	2
Davit6	#Davit6:0	Origin	4.29	30.84	0.06	3.13	-12.19	0.00	0.0	-6.86	2.84	-0.00	-0.62	4.81	0.21	0.00	5.44	8.4	2
Davit6	Davit6:V	End	8.58	31.29	0.06	5.85	-0.00	0.00	0.0	-6.86	2.84	-0.00	-0.86	0.00	0.75	0.00	1.55	2.4	4
Davit7	Davit7:O	Origin	0.00	22.71	0.04	-1.36	-40.42	-0.00	-0.0	5.81	4.84	0.00	0.41	9.67	0.27	0.00	10.09	15.5	2
Davit7	#Davit7:0	End	4.29	23.00	0.04	-3.99	-19.66	-0.00	-0.0	5.81	4.84	0.00	0.53	7.76	0.35	0.00	8.31	12.8	2
Davit7	#Davit7:0	Origin	4.29	23.00	0.04	-3.99	-19.66	-0.00	0.0	5.84	4.58	0.00	0.53	7.76	0.33	0.00	8.31	12.8	2
Davit7	Davit7:V	End	8.58	23.31	0.04	-6.74	-0.00	0.00	0.0	5.84	4.58	0.00	0.73	0.00	1.20	0.00	2.21	3.4	4
Davit8	Davit8:O	Origin	0.00	22.76	0.04	0.53	-25.68	0.01	0.0	-6.89	3.11	-0.00	-0.49	6.14	0.18	0.00	6.64	10.2	2
Davit8	#Davit8:0	End	4.29	23.16	0.04	3.03	-12.35	0.00	0.0	-6.89	3.11	-0.00	-0.62	4.88	0.23	0.00	5.51	8.5	2
Davit8	#Davit8:0	Origin	4.29	23.16	0.04	3.03	-12.35	0.00	0.0	-6.85	2.88	-0.00	-0.62	4.88	0.21	0.00	5.51	8.5	2
Davit8	Davit8:V	End	8.58	23.56	0.04	5.45	-0.00	0.00	0.0	-6.85	2.88	-0.00	-0.86	0.00	0.76	0.00	1.57	2.4	4

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 %
1	2.949	80.00	80.00	3.69
2	2.949	80.00	80.00	3.69
3	7.370	80.00	80.00	9.21
4	7.370	80.00	80.00	9.21
5	7.370	80.00	80.00	9.21
6	7.370	80.00	80.00	9.21
7	7.370	80.00	80.00	9.21

8	7.370	80.00	80.00	9.21
9	0.518	80.00	80.00	0.65
10	0.518	80.00	80.00	0.65
11	0.518	80.00	80.00	0.65
12	0.518	80.00	80.00	0.65
13	0.518	80.00	80.00	0.65
14	0.518	80.00	80.00	0.65
15	0.518	80.00	80.00	0.65
16	0.518	80.00	80.00	0.65
17	0.518	80.00	80.00	0.65
18	0.518	80.00	80.00	0.65
19	0.518	80.00	80.00	0.65
20	0.518	80.00	80.00	0.65
21	0.427	80.00	80.00	0.53

*** Analysis Results for Load Case No. 2 "NESC Extreme Wind" - Number of iterations in SAPS 14

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)
2997:g	0	0	0	0.0000	0.0000	0.0000	0	0	0
2997:t	0.003439	4.514	-0.1054	-3.3200	0.0026	-0.0000	0.003439	4.514	123.9
2997:T-Mo	0.003212	4.224	-0.09704	-3.3195	0.0026	-0.0000	0.003212	4.224	118.9
2997:Cable 1	0.00303	3.992	-0.09033	-3.3167	0.0026	0.0000	0.00303	3.992	114.9
2997:Davit1	0.002871	3.79	-0.08447	-3.3115	0.0026	0.0000	0.002871	3.79	111.4
2997:Cable 2	0.002578	3.416	-0.07366	-3.2829	0.0026	0.0000	0.002578	3.416	104.9
2997:Davit2	0.002306	3.065	-0.06365	-3.2335	0.0025	0.0000	0.002306	3.065	98.77
2997:Cable 3	0.00214	2.85	-0.05759	-3.1829	0.0024	0.0000	0.00214	2.85	94.94
2997:Davit3	0.001803	2.406	-0.04546	-3.0217	0.0023	0.0000	0.001803	2.406	86.78
2997:Cable 4	0.001731	2.311	-0.04292	-2.9751	0.0022	0.0000	0.001731	2.311	84.96
2997:Cable 5	0.001362	1.814	-0.03043	-2.7188	0.0020	0.0000	0.001362	1.814	74.97
2997:Davit4	0.001356	1.805	-0.03024	-2.7143	0.0020	0.0000	0.001356	1.805	74.8
2997:Cable 6	0.00103	1.364	-0.02016	-2.4142	0.0018	0.0000	0.00103	1.364	64.98
2997:Cable 7	0.0007405	0.9722	-0.01234	-2.0537	0.0015	0.0000	0.0007405	0.9722	54.99
2997:Cable 8	0.0004976	0.6466	-0.006876	-1.6623	0.0012	0.0000	0.0004976	0.6466	44.99
2997:Cable 9	0.0003035	0.3899	-0.00342	-1.2775	0.0010	0.0000	0.0003035	0.3899	35
2997:Cable 10	0.0001563	0.1984	-0.001427	-0.9072	0.0007	0.0000	0.0001563	0.1984	25
2997:Cable 11	5.702e-005	0.07141	-0.0004565	-0.5394	0.0004	0.0000	5.702e-005	0.07141	15
2997:Cable 12	6.619e-006	0.00813	-8.711e-005	-0.1778	0.0001	0.0000	6.619e-006	0.00813	5
Davit1:O	0.002868	3.788	-0.151	-3.3115	0.0026	0.0000	0.002868	4.94	111.3
Davit1:V	0.002883	3.811	-0.3545	-3.3232	0.0026	-0.0000	0.002883	8.463	111.6
Davit2:O	0.002874	3.792	-0.01792	-3.3115	0.0026	0.0000	0.002874	2.64	111.5
Davit2:V	0.002908	3.827	0.1835	-3.3129	0.0026	0.0000	0.002908	-0.8253	112.2
Davit3:O	0.002302	3.063	-0.1372	-3.2335	0.0025	0.0000	0.002302	4.366	98.69
Davit3:V	0.002341	3.116	-0.6296	-3.3577	0.0025	-0.0001	0.002341	12.92	99.37
Davit4:O	0.002309	3.067	0.009871	-3.2335	0.0025	0.0000	0.002309	1.763	98.84
Davit4:V	0.002391	3.145	0.4833	-3.1873	0.0025	0.0001	0.002391	-6.658	100.5
Davit5:O	0.0018	2.404	-0.1217	-3.0217	0.0023	0.0000	0.0018	3.851	86.71
Davit5:V	0.001828	2.455	-0.5826	-3.1470	0.0023	0.0000	0.001828	12.4	87.41
Davit6:O	0.001806	2.408	0.03081	-3.0217	0.0023	0.0000	0.001806	0.9617	86.86
Davit6:V	0.001872	2.481	0.473	-2.9744	0.0023	0.0000	0.001872	-7.466	88.47
Davit7:O	0.001353	1.804	-0.1046	-2.7143	0.0020	0.0000	0.001353	3.373	74.73
Davit7:V	0.001378	1.851	-0.5197	-2.8410	0.0020	0.0000	0.001378	11.92	75.48
Davit8:O	0.001358	1.807	0.04408	-2.7143	0.0020	0.0000	0.001358	0.2379	74.87
Davit8:V	0.001414	1.871	0.4409	-2.6654	0.0020	0.0000	0.001414	-8.198	76.44

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. Uplift Usage %	Result. 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 %
2997:g	-0.06	0.0	-52.18	0.0	0.0	-39.91	0.0	0.0	65.69	0.0	4260.53	0.0	-3.5	0.0	0.0	-0.00	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.

2997	2997:t	Origin	0.00	54.16	0.04	-1.27	-0.00	-0.00	0.0	-0.13	0.18	-0.00	-0.01	0.00	0.02	0.00	0.04	0.1	6
2997	2997:T-Mo	End	5.00	50.69	0.04	-1.16	0.88	-0.00	0.0	-0.13	0.18	-0.00	-0.01	0.11	0.00	0.00	0.11	0.2	2
2997	2997:T-Mo	Origin	5.00	50.69	0.04	-1.16	0.88	-0.00	0.0	-0.34	1.39	-0.00	-0.02	0.00	0.18	0.00	0.32	0.5	6
2997	SpliceT	End	6.25	49.82	0.04	-1.14	2.62	-0.00	0.0	-0.34	1.39	-0.00	-0.02	0.31	0.04	0.00	0.34	0.5	2
2997	SpliceT	Origin	6.25	49.82	0.04	-1.14	2.62	-0.00	0.0	-0.54	1.55	-0.00	-0.03	0.18	0.17	0.00	0.36	0.6	4
2997	2997:Cable 1	End	9.00	47.91	0.04	-1.08	6.87	-0.01	0.0	-0.54	1.55	-0.00	-0.03	0.59	0.03	0.00	0.62	1.0	2
2997	2997:Cable 1	Origin	9.00	47.91	0.04	-1.08	6.87	-0.01	0.0	-0.88	1.83	-0.00	-0.04	0.59	0.03	0.00	0.64	1.0	2
2997	SpliceB	End	10.00	47.21	0.04	-1.06	8.70	-0.01	0.0	-0.88	1.83	-0.00	-0.04	0.73	0.03	0.00	0.78	1.2	2
2997	SpliceB	Origin	10.00	47.21	0.04	-1.06	8.70	-0.01	0.0	-1.04	1.97	-0.00	-0.05	0.73	0.04	0.00	0.79	1.2	2
2997	2997:Davit1	End	12.50	45.48	0.03	-1.01	13.61	-0.02	0.0	-1.04	1.97	-0.00	-0.05	1.09	0.04	0.00	1.14	1.8	2
2997	2997:Davit1	Origin	12.50	45.48	0.03	-1.01	15.62	-0.02	0.0	-1.80	6.20	-0.01	-0.08	1.25	0.11	0.00	1.35	2.1	2
2997	Tube 2	End	15.75	43.23	0.03	-0.95	35.76	-0.04	0.0	-1.80	6.20	-0.01	-0.08	2.68	0.11	0.00	2.76	4.3	2
2997	Tube 2	Origin	15.75	43.23	0.03	-0.95	35.76	-0.04	0.0	-2.05	6.46	-0.01	-0.09	2.68	0.11	0.00	2.77	4.3	2
2997	2997:Cable 2	End	19.00	40.99	0.03	-0.88	56.75	-0.07	0.0	-2.05	6.46	-0.01	-0.09	3.98	0.11	0.00	4.07	6.3	2
2997	2997:Cable 2	Origin	19.00	40.99	0.03	-0.88	56.75	-0.07	0.0	-2.41	6.86	-0.01	-0.10	3.98	0.12	0.00	4.09	6.3	2
2997	Tube 2	End	22.09	38.87	0.03	-0.82	77.90	-0.10	0.0	-2.41	6.86	-0.01	-0.10	5.15	0.11	0.00	5.25	8.1	2
2997	Tube 2	Origin	22.09	38.87	0.03	-0.82	77.90	-0.10	0.0	-2.67	7.12	-0.01	-0.11	5.15	0.12	0.00	5.26	8.1	2
2997	2997:Davit2	End	25.17	36.78	0.03	-0.76	99.88	-0.13	0.0	-2.67	7.12	-0.01	-0.11	6.23	0.11	0.00	6.34	9.8	2
2997	2997:Davit2	Origin	25.17	36.78	0.03	-0.76	112.54	-0.14	0.0	-6.65	18.30	-0.02	-0.27	7.02	0.29	0.00	7.30	11.2	2
2997	2997:Cable 3	End	29.00	34.20	0.03	-0.69	182.64	-0.20	0.0	-6.65	18.30	-0.02	-0.26	10.62	0.28	0.00	10.89	16.8	2
2997	2997:Cable 3	Origin	29.00	34.20	0.03	-0.69	182.64	-0.20	0.0	-7.12	18.79	-0.02	-0.28	10.62	0.29	0.00	10.91	16.8	2
2997	Tube 2	End	33.09	31.50	0.02	-0.62	259.41	-0.26	0.0	-7.12	18.79	-0.02	-0.27	14.04	0.28	0.00	14.31	22.0	2
2997	Tube 2	Origin	33.09	31.50	0.02	-0.62	259.41	-0.26	0.0	-7.52	19.17	-0.02	-0.28	14.04	0.29	0.00	14.33	22.0	2
2997	2997:Davit3	End	37.17	28.88	0.02	-0.55	337.72	-0.34	0.0	-7.52	19.17	-0.02	-0.27	17.05	0.28	0.00	17.33	26.7	2
2997	2997:Davit3	Origin	37.17	28.88	0.02	-0.55	350.37	-0.34	0.0	-11.54	30.31	-0.02	-0.42	17.69	0.44	0.00	18.12	27.9	2
2997	2997:Cable 4	End	39.00	27.73	0.02	-0.52	405.84	-0.37	0.0	-11.54	30.31	-0.02	-0.41	19.87	0.43	0.00	20.30	31.2	2
2997	2997:Cable 4	Origin	39.00	27.73	0.02	-0.52	405.84	-0.37	0.0	-11.87	30.64	-0.02	-0.43	19.87	0.44	0.00	20.31	31.3	2
2997	SpliceT	End	41.25	26.34	0.02	-0.48	474.77	-0.42	0.0	-11.87	30.64	-0.02	-0.42	22.41	0.43	0.00	22.84	35.1	2
2997	SpliceT	Origin	41.25	26.34	0.02	-0.48	474.77	-0.42	0.0	-12.33	30.88	-0.02	-0.43	22.41	0.43	0.00	22.86	35.2	2
2997	Tube 2	End	43.88	24.75	0.02	-0.44	555.83	-0.47	0.0	-12.33	30.88	-0.02	-0.29	17.43	0.29	0.00	17.72	27.3	2
2997	Tube 2	Origin	43.88	24.75	0.02	-0.44	555.83	-0.47	0.0	-13.01	31.15	-0.02	-0.30	17.43	0.29	0.00	17.74	27.3	2
2997	SpliceB	End	46.50	23.20	0.02	-0.40	637.60	-0.53	0.0	-13.01	31.15	-0.02	-0.30	19.17	0.28	0.00	19.47	30.0	2
2997	SpliceB	Origin	46.50	23.20	0.02	-0.40	637.60	-0.53	0.0	-13.55	31.41	-0.02	-0.31	19.17	0.29	0.00	19.49	30.0	2
2997	2997:Cable 5	End	49.00	21.76	0.02	-0.37	716.13	-0.59	0.0	-13.55	31.41	-0.02	-0.30	20.71	0.28	0.00	21.02	32.3	2
2997	2997:Cable 5	Origin	49.00	21.76	0.02	-0.37	716.13	-0.59	0.0	-13.88	31.68	-0.02	-0.31	20.71	0.28	0.00	21.02	32.3	2
2997	2997:Davit4	End	49.17	21.67	0.02	-0.36	721.52	-0.59	0.0	-13.88	31.68	-0.02	-0.31	20.81	0.28	0.00	21.12	32.5	2
2997	2997:Davit4	Origin	49.17	21.67	0.02	-0.36	734.15	-0.59	0.0	-18.11	42.79	-0.02	-0.41	21.17	0.38	0.00	21.59	33.2	2
2997	Tube 3	End	54.09	18.94	0.01	-0.30	944.44	-0.71	0.0	-18.11	42.79	-0.02	-0.39	25.28	0.37	0.00	25.68	39.5	2
2997	Tube 3	Origin	54.09	18.94	0.01	-0.30	944.44	-0.71	0.0	-18.99	43.29	-0.03	-0.41	25.28	0.37	0.00	25.70	39.5	2
2997	2997:Cable 6	End	59.00	16.36	0.01	-0.24	1157.18	-0.84	0.0	-18.99	43.29	-0.03	-0.40	28.82	0.36	0.00	29.23	45.0	2
2997	2997:Cable 6	Origin	59.00	16.36	0.01	-0.24	1157.18	-0.84	0.0	-20.04	43.94	-0.03	-0.42	28.82	0.36	0.00	29.25	45.0	2
2997	Tube 3	End	64.00	13.92	0.01	-0.19	1376.86	-0.98	0.0	-20.04	43.94	-0.03	-0.40	31.96	0.35	0.00	32.37	49.8	2
2997	Tube 3	Origin	64.00	13.92	0.01	-0.19	1376.86	-0.98	0.0	-21.02	44.46	-0.03	-0.42	31.96	0.36	0.00	32.39	49.8	2
2997	2997:Cable 7	End	69.00	11.67	0.01	-0.15	1599.18	-1.13	0.0	-21.02	44.46	-0.03	-0.41	34.67	0.34	0.00	35.09	54.0	2
2997	2997:Cable 7	Origin	69.00	11.67	0.01	-0.15	1599.18	-1.13	0.0	-22.16	45.14	-0.03	-0.43	34.67	0.35	0.00	35.11	54.0	2
2997	Tube 3	End	74.00	9.61	0.01	-0.11	1824.87	-1.28	0.0	-22.16	45.14	-0.03	-0.42	37.04	0.34	0.00	37.47	57.6	2
2997	Tube 3	Origin	74.00	9.61	0.01	-0.11	1824.87	-1.28	0.0	-23.21	45.69	-0.03	-0.44	37.04	0.34	0.00	37.49	57.7	2
2997	2997:Cable 8	End	79.00	7.76	0.01	-0.08	2053.32	-1.45	0.0	-23.21	45.69	-0.03	-0.42	39.10	0.33	0.00	39.53	60.8	2
2997	2997:Cable 8	Origin	79.00	7.76	0.01	-0.08	2053.32	-1.45	0.0	-24.20	46.27	-0.04	-0.44	39.10	0.33	0.00	39.55	60.8	2
2997	SpliceT	End	82.00	6.75	0.01	-0.07	2192.13	-1.56	0.0	-24.20	46.27	-0.04	-0.43	40.22	0.33	0.00	40.66	62.5	2
2997	SpliceT	Origin	82.00	6.75	0.01	-0.07	2192.13	-1.56	0.0	-25.28	46.64	-0.04	-0.45	40.22	0.33	0.00	40.67	62.6	2
2997	Tube 3	End	85.38	5.70	0.00	-0.05	2349.56	-1.68	0.0	-25.28	46.64	-0.04	-0.39	36.75	0.28	0.00	37.14	57.1	2
2997	Tube 3	Origin	85.38	5.70	0.00	-0.05	2349.56	-1.68	0.0	-26.78	47.05	-0.04	-0.41	36.75	0.29	0.00	37.16	57.2	2
2997	SpliceB	End	88.75	4.75	0.00	-0.04	2508.35	-1.81	0.0	-26.78	47.05	-0.04	-0.40	37.65	0.28	0.00	38.06	58.6	2
2997	SpliceB	Origin	88.75	4.75	0.00	-0.04	2508.35	-1.81	0.0	-27.58	47.27	-0.04	-0.41	37.65	0.28	0.00	38.07	58.6	2
2997	2997:Cable 9	End	89.00	4.68	0.00	-0.04	2520.17	-1.82	0.0	-27.58	47.27	-0.04	-0.41	37.72	0.28	0.00	38.13	58.7	2
2997	2997:Cable 9	Origin	89.00	4.68	0.00	-0.04	2520.17	-1.82	0.0	-28.37	47.71	-0.04	-0.43	37.72	0.28	0.00	38.15	58.7	2
2997	Tube 4	End	94.00	3.43	0.00	-0.03	2758.72	-2.02	0.0	-28.37	47.71	-0.04	-0.41	38.91	0.28	0.00	39.33	60.5	2

2997	Tube 4	Origin	94.00	3.43	0.00	-0.03	2758.72	-2.02	0.0	-29.70	48.31	-0.04	-0.43	38.91	0.28	0.00	39.35	60.5	2
2997	2997:Cable 10	End	99.00	2.38	0.00	-0.02	3000.25	-2.23	0.0	-29.70	48.31	-0.04	-0.42	39.95	0.27	0.00	40.38	62.1	2
2997	2997:Cable 10	Origin	99.00	2.38	0.00	-0.02	3000.25	-2.23	0.0	-31.17	49.05	-0.04	-0.44	39.95	0.27	0.00	40.40	62.1	2
2997	Tube 4	End	104.00	1.52	0.00	-0.01	3245.48	-2.45	0.0	-31.17	49.05	-0.04	-0.43	40.87	0.27	0.00	41.30	63.5	2
2997	Tube 4	Origin	104.00	1.52	0.00	-0.01	3245.48	-2.45	0.0	-32.57	49.66	-0.05	-0.45	40.87	0.27	0.00	41.32	63.6	2
2997	2997:Cable 11	End	109.00	0.86	0.00	-0.01	3493.80	-2.68	0.0	-32.57	49.66	-0.05	-0.44	41.66	0.26	0.00	42.10	64.8	2
2997	2997:Cable 11	Origin	109.00	0.86	0.00	-0.01	3493.80	-2.68	0.0	-34.12	50.43	-0.05	-0.46	41.66	0.27	0.00	42.12	64.8	2
2997	Tube 4	End	114.00	0.38	0.00	-0.00	3745.93	-2.93	0.0	-34.12	50.43	-0.05	-0.44	42.37	0.26	0.00	42.81	65.9	2
2997	Tube 4	Origin	114.00	0.38	0.00	-0.00	3745.93	-2.93	0.0	-35.58	51.07	-0.05	-0.46	42.37	0.26	0.00	42.83	65.9	2
2997	2997:Cable 12	End	119.00	0.10	0.00	-0.00	4001.27	-3.18	0.0	-35.58	51.07	-0.05	-0.45	42.98	0.26	0.00	43.43	66.8	2
2997	2997:Cable 12	Origin	119.00	0.10	0.00	-0.00	4001.27	-3.18	0.0	-37.20	51.85	-0.05	-0.47	42.98	0.26	0.00	43.45	66.9	2
2997	2997:g	End	124.00	0.00	0.00	0.00	4260.53	-3.45	0.0	-37.20	51.85	-0.05	-0.46	43.52	0.25	0.00	43.98	67.7	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	45.46	0.03	-1.81	-1.80	-0.01	0.0	1.95	0.51	0.00	0.25	1.11	0.10	0.00	1.38	2.1	2
Davit1	Davit1:V	End	3.54	45.73	0.03	-4.25	0.00	0.00	0.0	1.95	0.51	0.00	0.25	0.00	0.15	0.00	0.36	0.6	3
Davit2	Davit2:O	Origin	0.00	45.50	0.03	-0.22	0.21	0.01	0.0	-2.01	-0.06	-0.00	-0.26	0.13	0.01	0.00	0.39	0.6	2
Davit2	Davit2:V	End	3.54	45.92	0.03	2.20	-0.00	0.00	0.0	-2.01	-0.06	-0.00	-0.26	0.00	0.02	0.00	0.26	0.4	3
Davit3	Davit3:O	Origin	0.00	36.75	0.03	-1.65	-20.51	-0.02	-0.0	5.15	2.47	0.00	0.36	4.91	0.14	0.00	5.28	8.1	2
Davit3	#Davit3:0	End	4.29	37.07	0.03	-4.57	-9.90	-0.01	-0.0	5.15	2.47	0.00	0.46	3.91	0.18	0.00	4.38	6.7	2
Davit3	#Davit3:0	Origin	4.29	37.07	0.03	-4.57	-9.90	-0.01	0.0	5.16	2.31	0.00	0.47	3.91	0.17	0.00	4.38	6.7	2
Davit3	Davit3:V	End	8.58	37.39	0.03	-7.55	-0.00	0.00	0.0	5.16	2.31	0.00	0.65	0.00	0.61	0.00	1.23	1.9	4
Davit4	Davit4:O	Origin	0.00	36.80	0.03	0.12	-7.87	0.02	0.0	-5.62	0.99	-0.00	-0.40	1.88	0.06	0.00	2.28	3.5	2
Davit4	#Davit4:0	End	4.29	37.28	0.03	2.97	-3.61	0.01	0.0	-5.62	0.99	-0.00	-0.51	1.43	0.07	0.00	1.94	3.0	2
Davit4	#Davit4:0	Origin	4.29	37.28	0.03	2.97	-3.61	0.01	0.0	-5.59	0.84	-0.00	-0.51	1.43	0.06	0.00	1.94	3.0	2
Davit4	Davit4:V	End	8.58	37.75	0.03	5.80	-0.00	0.00	0.0	-5.59	0.84	-0.00	-0.70	0.00	0.22	0.00	0.80	1.2	4
Davit5	Davit5:O	Origin	0.00	28.85	0.02	-1.46	-20.68	-0.00	-0.0	5.14	2.49	0.00	0.36	4.95	0.14	0.00	5.31	8.2	2
Davit5	#Davit5:0	End	4.29	29.16	0.02	-4.20	-9.98	-0.00	-0.0	5.14	2.49	0.00	0.46	3.94	0.18	0.00	4.41	6.8	2
Davit5	#Davit5:0	Origin	4.29	29.16	0.02	-4.20	-9.98	-0.00	0.0	5.15	2.33	0.00	0.47	3.94	0.17	0.00	4.41	6.8	2
Davit5	Davit5:V	End	8.58	29.46	0.02	-6.99	-0.00	0.00	0.0	5.15	2.33	0.00	0.65	0.00	0.61	0.00	1.24	1.9	4
Davit6	Davit6:O	Origin	0.00	28.90	0.02	0.37	-8.05	0.00	0.0	-5.62	1.01	-0.00	-0.40	1.93	0.06	0.00	2.32	3.6	2
Davit6	#Davit6:0	End	4.29	29.34	0.02	3.03	-3.70	0.00	0.0	-5.62	1.01	-0.00	-0.51	1.46	0.07	0.00	1.97	3.0	2
Davit6	#Davit6:0	Origin	4.29	29.34	0.02	3.03	-3.70	0.00	0.0	-5.59	0.86	-0.00	-0.50	1.46	0.06	0.00	1.97	3.0	2
Davit6	Davit6:V	End	8.58	29.77	0.02	5.68	-0.00	0.00	0.0	-5.59	0.86	-0.00	-0.70	0.00	0.23	0.00	0.80	1.2	4
Davit7	Davit7:O	Origin	0.00	21.64	0.02	-1.25	-20.91	-0.00	-0.0	5.12	2.52	0.00	0.36	5.00	0.14	0.00	5.37	8.3	2
Davit7	#Davit7:0	End	4.29	21.92	0.02	-3.72	-10.10	-0.00	-0.0	5.12	2.52	0.00	0.46	3.99	0.18	0.00	4.46	6.9	2
Davit7	#Davit7:0	Origin	4.29	21.92	0.02	-3.72	-10.10	-0.00	0.0	5.14	2.35	0.00	0.46	3.99	0.17	0.00	4.46	6.9	2
Davit7	Davit7:V	End	8.58	22.21	0.02	-6.24	-0.00	0.00	0.0	5.14	2.35	0.00	0.65	0.00	0.62	0.00	1.25	1.9	4
Davit8	Davit8:O	Origin	0.00	21.69	0.02	0.53	-8.31	0.00	0.0	-5.61	1.04	-0.00	-0.40	1.99	0.06	0.00	2.39	3.7	2
Davit8	#Davit8:0	End	4.29	22.07	0.02	2.92	-3.83	0.00	0.0	-5.61	1.04	-0.00	-0.51	1.51	0.08	0.00	2.02	3.1	2
Davit8	#Davit8:0	Origin	4.29	22.07	0.02	2.92	-3.83	0.00	0.0	-5.58	0.89	-0.00	-0.50	1.51	0.07	0.00	2.02	3.1	2
Davit8	Davit8:V	End	8.58	22.46	0.02	5.29	-0.00	0.00	0.0	-5.58	0.89	-0.00	-0.70	0.00	0.23	0.00	0.81	1.2	4

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 %
1	2.005	80.00	80.00	2.51
2	2.005	80.00	80.00	2.51
3	5.630	80.00	80.00	7.04
4	5.630	80.00	80.00	7.04
5	5.630	80.00	80.00	7.04
6	5.630	80.00	80.00	7.04
7	5.630	80.00	80.00	7.04
8	5.630	80.00	80.00	7.04
9	0.177	80.00	80.00	0.22
10	0.177	80.00	80.00	0.22
11	0.177	80.00	80.00	0.22
12	0.177	80.00	80.00	0.22
13	0.177	80.00	80.00	0.22
14	0.177	80.00	80.00	0.22
15	0.177	80.00	80.00	0.22
16	0.177	80.00	80.00	0.22
17	0.177	80.00	80.00	0.22
18	0.177	80.00	80.00	0.22
19	0.177	80.00	80.00	0.22
20	0.177	80.00	80.00	0.22
21	0.999	80.00	80.00	1.25

*** 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)
2997:g	0	0	0	0.0000	0.0000	0.0000	0	0	0
2997:t	0.00407	3.129	-0.05275	-2.3030	0.0031	0.0000	0.00407	3.129	123.9
2997:T-Mo	0.003802	2.929	-0.04871	-2.3029	0.0031	0.0000	0.003802	2.929	119
2997:Cable 1	0.003587	2.768	-0.04547	-2.3022	0.0031	0.0000	0.003587	2.768	115
2997:Davit1	0.0034	2.627	-0.04264	-2.3008	0.0031	0.0000	0.0034	2.627	111.5
2997:Cable 2	0.003055	2.367	-0.03737	-2.2846	0.0030	0.0000	0.003055	2.367	105
2997:Davit2	0.002733	2.122	-0.03247	-2.2527	0.0029	0.0000	0.002733	2.122	98.8
2997:Cable 3	0.002539	1.973	-0.02947	-2.2182	0.0029	0.0000	0.002539	1.973	94.97
2997:Davit3	0.002141	1.664	-0.02344	-2.1059	0.0027	0.0000	0.002141	1.664	86.81
2997:Cable 4	0.002056	1.597	-0.02217	-2.0732	0.0026	0.0000	0.002056	1.597	84.98
2997:Cable 5	0.001618	1.25	-0.01592	-1.8918	0.0024	0.0000	0.001618	1.25	74.98
2997:Davit4	0.001611	1.245	-0.01583	-1.8887	0.0024	0.0000	0.001611	1.245	74.81
2997:Cable 6	0.001225	0.9377	-0.01076	-1.6756	0.0021	0.0000	0.001225	0.9377	64.99
2997:Cable 7	0.000882	0.6664	-0.006801	-1.4201	0.0018	0.0000	0.000882	0.6664	54.99
2997:Cable 8	0.0005933	0.4417	-0.004002	-1.1442	0.0015	0.0000	0.0005933	0.4417	45
2997:Cable 9	0.0003622	0.2655	-0.002189	-0.8751	0.0012	0.0000	0.0003622	0.2655	35
2997:Cable 10	0.0001867	0.1346	-0.001087	-0.6184	0.0008	0.0000	0.0001867	0.1346	25
2997:Cable 11	6.816e-005	0.04826	-0.0004661	-0.3659	0.0005	0.0000	6.816e-005	0.04826	15
2997:Cable 12	7.921e-006	0.005465	-0.0001256	-0.1200	0.0002	0.0000	7.921e-006	0.005465	5
Davit1:O	0.003398	2.626	-0.08889	-2.3008	0.0031	0.0000	0.003398	3.778	111.4
Davit1:V	0.003419	2.644	-0.2316	-2.3435	0.0031	-0.0000	0.003419	7.296	111.8
Davit2:O	0.003403	2.628	0.003609	-2.3008	0.0031	0.0000	0.003403	1.476	111.5
Davit2:V	0.003439	2.651	0.1425	-2.2712	0.0031	0.0000	0.003439	-2.001	112.1
Davit3:O	0.002731	2.121	-0.0837	-2.2527	0.0029	0.0000	0.002731	3.425	98.75
Davit3:V	0.002782	2.163	-0.4393	-2.4835	0.0030	-0.0001	0.002782	11.97	99.56
Davit4:O	0.002736	2.123	0.01876	-2.2527	0.0029	0.0000	0.002736	0.82	98.85
Davit4:V	0.002823	2.173	0.3368	-2.0810	0.0030	0.0001	0.002823	-7.63	100.3
Davit5:O	0.002138	1.663	-0.07661	-2.1059	0.0027	0.0000	0.002138	3.109	86.75
Davit5:V	0.002177	1.702	-0.4103	-2.3372	0.0027	0.0000	0.002177	11.65	87.59
Davit6:O	0.002143	1.665	0.02972	-2.1059	0.0027	0.0000	0.002143	0.2177	86.86
Davit6:V	0.002213	1.711	0.3261	-1.9336	0.0027	0.0000	0.002213	-8.236	88.32
Davit7:O	0.001609	1.244	-0.06755	-1.8887	0.0024	0.0000	0.001609	2.813	74.76
Davit7:V	0.001644	1.28	-0.369	-2.1207	0.0024	0.0000	0.001644	11.35	75.63
Davit8:O	0.001614	1.246	0.03589	-1.8887	0.0024	0.0000	0.001614	-0.3237	74.87
Davit8:V	0.001674	1.286	0.3001	-1.7154	0.0024	0.0000	0.001674	-8.783	76.3

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. Uplift Usage %	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 %
2997:g	-0.07	0.0	-32.13	0.0	0.0	-59.33	0.0	0.0	67.47	0.0	2867.57	0.0	-4.1	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.

2997	2997:t	Origin	0.00	37.55	0.05	-0.63	-0.00	-0.00	0.0	-0.13	0.05	-0.00	-0.01	0.00	0.01	0.00	0.01	0.0	6
2997	2997:T-Mo	End	5.00	35.14	0.05	-0.58	0.24	-0.00	0.0	-0.13	0.05	-0.00	-0.01	0.03	0.00	0.00	0.04	0.1	2
2997	2997:T-Mo	Origin	5.00	35.14	0.05	-0.58	0.24	-0.00	0.0	-0.58	0.34	-0.00	-0.04	0.01	0.04	0.00	0.09	0.1	5
2997	SpliceT	End	6.25	34.54	0.04	-0.57	0.66	-0.01	0.0	-0.58	0.34	-0.00	-0.04	0.08	0.01	0.00	0.12	0.2	2
2997	SpliceT	Origin	6.25	34.54	0.04	-0.57	0.66	-0.01	0.0	-0.78	0.38	-0.00	-0.05	0.08	0.01	0.00	0.13	0.2	2
2997	2997:Cable 1	End	9.00	33.21	0.04	-0.55	1.71	-0.01	0.0	-0.78	0.38	-0.00	-0.04	0.15	0.01	0.00	0.19	0.3	2
2997	2997:Cable 1	Origin	9.00	33.21	0.04	-0.55	1.71	-0.01	0.0	-1.51	0.48	-0.00	-0.07	0.15	0.01	0.00	0.22	0.3	2
2997	SpliceB	End	10.00	32.73	0.04	-0.54	2.19	-0.01	0.0	-1.51	0.48	-0.00	-0.07	0.18	0.01	0.00	0.26	0.4	2
2997	SpliceB	Origin	10.00	32.73	0.04	-0.54	2.19	-0.01	0.0	-1.66	0.52	-0.00	-0.08	0.18	0.01	0.00	0.26	0.4	2
2997	2997:Davit1	End	12.50	31.53	0.04	-0.51	3.49	-0.02	0.0	-1.66	0.52	-0.00	-0.08	0.28	0.01	0.00	0.36	0.5	2
2997	2997:Davit1	Origin	12.50	31.53	0.04	-0.51	5.49	-0.03	0.0	-5.16	4.60	-0.01	-0.24	0.09	0.42	0.00	0.80	1.2	5
2997	Tube 2	End	15.75	29.96	0.04	-0.48	20.43	-0.05	0.0	-5.16	4.60	-0.01	-0.23	1.53	0.08	0.00	1.76	2.7	2
2997	Tube 2	Origin	15.75	29.96	0.04	-0.48	20.43	-0.05	0.0	-5.41	4.67	-0.01	-0.24	1.53	0.08	0.00	1.78	2.7	2
2997	2997:Cable 2	End	19.00	28.40	0.04	-0.45	35.61	-0.08	0.0	-5.41	4.67	-0.01	-0.23	2.50	0.08	0.00	2.73	4.2	2
2997	2997:Cable 2	Origin	19.00	28.40	0.04	-0.45	35.61	-0.08	0.0	-6.16	4.80	-0.01	-0.26	2.50	0.08	0.00	2.77	4.3	2
2997	Tube 2	End	22.09	26.93	0.03	-0.42	50.42	-0.12	0.0	-6.16	4.80	-0.01	-0.26	3.33	0.08	0.00	3.59	5.5	2
2997	Tube 2	Origin	22.09	26.93	0.03	-0.42	50.42	-0.12	0.0	-6.41	4.87	-0.01	-0.27	3.33	0.08	0.00	3.60	5.5	2
2997	2997:Davit2	End	25.17	25.47	0.03	-0.39	65.46	-0.15	0.0	-6.41	4.87	-0.01	-0.26	4.08	0.08	0.00	4.34	6.7	2
2997	2997:Davit2	Origin	25.17	25.47	0.03	-0.39	75.05	-0.16	0.0	-14.80	13.30	-0.02	-0.60	4.68	0.21	0.00	5.29	8.1	2
2997	2997:Cable 3	End	29.00	23.67	0.03	-0.35	125.99	-0.23	0.0	-14.80	13.30	-0.02	-0.58	7.33	0.21	0.00	7.91	12.2	2
2997	2997:Cable 3	Origin	29.00	23.67	0.03	-0.35	125.99	-0.23	0.0	-15.65	13.45	-0.02	-0.61	7.33	0.21	0.00	7.95	12.2	2
2997	Tube 2	End	33.09	21.79	0.03	-0.32	180.92	-0.31	0.0	-15.65	13.45	-0.02	-0.59	9.79	0.20	0.00	10.39	16.0	2
2997	Tube 2	Origin	33.09	21.79	0.03	-0.32	180.92	-0.31	0.0	-16.03	13.54	-0.02	-0.60	9.79	0.20	0.00	10.40	16.0	2
2997	2997:Davit3	End	37.17	19.96	0.03	-0.28	236.23	-0.39	0.0	-16.03	13.54	-0.02	-0.58	11.93	0.20	0.00	12.51	19.3	2
2997	2997:Davit3	Origin	37.17	19.96	0.03	-0.28	245.80	-0.39	0.0	-24.43	21.93	-0.02	-0.89	12.41	0.32	0.00	13.31	20.5	2
2997	2997:Cable 4	End	39.00	19.16	0.02	-0.27	285.93	-0.43	0.0	-24.43	21.93	-0.02	-0.88	14.00	0.31	0.00	14.89	22.9	2
2997	2997:Cable 4	Origin	39.00	19.16	0.02	-0.27	285.93	-0.43	0.0	-25.13	22.02	-0.02	-0.90	14.00	0.31	0.00	14.92	22.9	2
2997	SpliceT	End	41.25	18.19	0.02	-0.25	335.48	-0.49	0.0	-25.13	22.02	-0.02	-0.89	15.84	0.31	0.00	16.73	25.7	2
2997	SpliceT	Origin	41.25	18.19	0.02	-0.25	335.48	-0.49	0.0	-25.58	22.08	-0.02	-0.90	15.84	0.31	0.00	16.75	25.8	2
2997	Tube 2	End	43.88	17.09	0.02	-0.23	393.44	-0.55	0.0	-25.58	22.08	-0.02	-0.60	12.34	0.21	0.00	12.94	19.9	2
2997	Tube 2	Origin	43.88	17.09	0.02	-0.23	393.44	-0.55	0.0	-26.23	22.15	-0.03	-0.61	12.34	0.21	0.00	12.96	19.9	2
2997	SpliceB	End	46.50	16.01	0.02	-0.21	451.57	-0.62	0.0	-26.23	22.15	-0.03	-0.60	13.58	0.20	0.00	14.18	21.8	2
2997	SpliceB	Origin	46.50	16.01	0.02	-0.21	451.57	-0.62	0.0	-26.76	22.21	-0.03	-0.61	13.58	0.20	0.00	14.20	21.8	2
2997	2997:Cable 5	End	49.00	15.01	0.02	-0.19	507.09	-0.68	0.0	-26.76	22.21	-0.03	-0.60	14.66	0.20	0.00	15.27	23.5	2
2997	2997:Cable 5	Origin	49.00	15.01	0.02	-0.19	507.09	-0.68	0.0	-27.47	22.29	-0.03	-0.62	14.66	0.20	0.00	15.29	23.5	2
2997	2997:Davit4	End	49.17	14.94	0.02	-0.19	510.88	-0.69	0.0	-27.47	22.29	-0.03	-0.62	14.73	0.20	0.00	15.36	23.6	2
2997	2997:Davit4	Origin	49.17	14.94	0.02	-0.19	520.41	-0.69	0.0	-36.03	30.63	-0.03	-0.81	15.01	0.27	0.00	15.83	24.3	2
2997	Tube 3	End	54.09	13.04	0.02	-0.16	670.97	-0.83	0.0	-36.03	30.63	-0.03	-0.78	17.96	0.26	0.00	18.75	28.8	2
2997	Tube 3	Origin	54.09	13.04	0.02	-0.16	670.97	-0.83	0.0	-36.86	30.72	-0.03	-0.80	17.96	0.26	0.00	18.76	28.9	2
2997	2997:Cable 6	End	59.00	11.25	0.01	-0.13	821.97	-0.98	0.0	-36.86	30.72	-0.03	-0.77	20.48	0.25	0.00	21.25	32.7	2
2997	2997:Cable 6	Origin	59.00	11.25	0.01	-0.13	821.97	-0.98	0.0	-38.23	30.86	-0.03	-0.80	20.48	0.26	0.00	21.28	32.7	2
2997	Tube 3	End	64.00	9.56	0.01	-0.10	976.26	-1.15	0.0	-38.23	30.86	-0.03	-0.77	22.66	0.25	0.00	23.44	36.1	2
2997	Tube 3	Origin	64.00	9.56	0.01	-0.10	976.26	-1.15	0.0	-39.14	30.94	-0.04	-0.79	22.66	0.25	0.00	23.46	36.1	2
2997	2997:Cable 7	End	69.00	8.00	0.01	-0.08	1130.96	-1.32	0.0	-39.14	30.94	-0.04	-0.76	24.52	0.24	0.00	25.29	38.9	2
2997	2997:Cable 7	Origin	69.00	8.00	0.01	-0.08	1130.96	-1.32	0.0	-40.58	31.07	-0.04	-0.79	24.52	0.24	0.00	25.32	39.0	2
2997	Tube 3	End	74.00	6.58	0.01	-0.06	1286.29	-1.51	0.0	-40.58	31.07	-0.04	-0.77	26.11	0.23	0.00	26.88	41.4	2
2997	Tube 3	Origin	74.00	6.58	0.01	-0.06	1286.29	-1.51	0.0	-41.56	31.14	-0.04	-0.78	26.11	0.23	0.00	26.90	41.4	2
2997	2997:Cable 8	End	79.00	5.30	0.01	-0.05	1442.01	-1.71	0.0	-41.56	31.14	-0.04	-0.76	27.46	0.23	0.00	28.23	43.4	2
2997	2997:Cable 8	Origin	79.00	5.30	0.01	-0.05	1442.01	-1.71	0.0	-42.86	31.25	-0.04	-0.78	27.46	0.23	0.00	28.25	43.5	2
2997	SpliceT	End	82.00	4.61	0.01	-0.04	1535.75	-1.84	0.0	-42.86	31.25	-0.04	-0.77	28.18	0.22	0.00	28.95	44.5	2
2997	SpliceT	Origin	82.00	4.61	0.01	-0.04	1535.75	-1.84	0.0	-43.88	31.30	-0.04	-0.79	28.18	0.22	0.00	28.97	44.6	2
2997	Tube 3	End	85.38	3.89	0.01	-0.03	1641.40	-1.99	0.0	-43.88	31.30	-0.04	-0.67	25.68	0.19	0.00	26.35	40.5	2
2997	Tube 3	Origin	85.38	3.89	0.01	-0.03	1641.40	-1.99	0.0	-45.33	31.37	-0.05	-0.69	25.68	0.19	0.00	26.37	40.6	2
2997	SpliceB	End	88.75	3.23	0.00	-0.03	1747.27	-2.14	0.0	-45.33	31.37	-0.05	-0.68	26.23	0.19	0.00	26.91	41.4	2
2997	SpliceB	Origin	88.75	3.23	0.00	-0.03	1747.27	-2.14	0.0	-46.10	31.40	-0.05	-0.69	26.23	0.19	0.00	26.93	41.4	2
2997	2997:Cable 9	End	89.00	3.19	0.00	-0.03	1755.12	-2.15	0.0	-46.10	31.40	-0.05	-0.69	26.27	0.19	0.00	26.96	41.5	2
2997	2997:Cable 9	Origin	89.00	3.19	0.00	-0.03	1755.12	-2.15	0.0	-47.23	31.49	-0.05	-0.71	26.27	0.19	0.00	26.98	41.5	2
2997	Tube 4	End	94.00	2.33	0.00	-0.02	1912.57	-2.39	0.0	-47.23	31.49	-0.05	-0.69	26.98	0.18	0.00	27.67	42.6	2

2997	Tube 4	Origin	94.00	2.33	0.00	-0.02	1912.57	-2.39	0.0	-48.47	31.57	-0.05	-0.71	26.98	0.18	0.00	27.69	42.6	2
2997	2997:Cable 10	End	99.00	1.62	0.00	-0.01	2070.42	-2.65	0.0	-48.47	31.57	-0.05	-0.69	27.57	0.18	0.00	28.26	43.5	2
2997	2997:Cable 10	Origin	99.00	1.62	0.00	-0.01	2070.42	-2.65	0.0	-50.24	31.69	-0.05	-0.71	27.57	0.18	0.00	28.29	43.5	2
2997	Tube 4	End	104.00	1.03	0.00	-0.01	2228.88	-2.92	0.0	-50.24	31.69	-0.05	-0.69	28.07	0.17	0.00	28.76	44.2	2
2997	Tube 4	Origin	104.00	1.03	0.00	-0.01	2228.88	-2.92	0.0	-51.55	31.77	-0.06	-0.71	28.07	0.17	0.00	28.78	44.3	2
2997	2997:Cable 11	End	109.00	0.58	0.00	-0.01	2387.75	-3.20	0.0	-51.55	31.77	-0.06	-0.69	28.48	0.17	0.00	29.17	44.9	2
2997	2997:Cable 11	Origin	109.00	0.58	0.00	-0.01	2387.75	-3.20	0.0	-53.39	31.89	-0.06	-0.71	28.48	0.17	0.00	29.19	44.9	2
2997	Tube 4	End	114.00	0.26	0.00	-0.00	2547.22	-3.49	0.0	-53.39	31.89	-0.06	-0.70	28.81	0.16	0.00	29.51	45.4	2
2997	Tube 4	Origin	114.00	0.26	0.00	-0.00	2547.22	-3.49	0.0	-54.76	31.98	-0.06	-0.71	28.81	0.17	0.00	29.53	45.4	2
2997	2997:Cable 12	End	119.00	0.07	0.00	-0.00	2707.09	-3.80	0.0	-54.76	31.98	-0.06	-0.70	29.08	0.16	0.00	29.78	45.8	2
2997	2997:Cable 12	Origin	119.00	0.07	0.00	-0.00	2707.09	-3.80	0.0	-56.66	32.10	-0.07	-0.72	29.08	0.16	0.00	29.80	45.8	2
2997	2997:g	End	124.00	0.00	0.00	0.00	2867.57	-4.13	0.0	-56.66	32.10	-0.07	-0.70	29.29	0.16	0.00	30.00	46.1	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	31.52	0.04	-1.07	-6.58	-0.01	0.0	1.76	1.86	0.00	0.23	4.07	0.37	0.00	4.35	6.7	2
Davit1	Davit1:V	End	3.54	31.73	0.04	-2.78	0.00	0.00	0.0	1.76	1.86	0.00	0.23	0.00	0.55	0.00	0.98	1.5	3
Davit2	Davit2:O	Origin	0.00	31.54	0.04	0.04	-4.58	0.01	0.0	-2.21	1.30	-0.00	-0.29	2.83	0.26	0.00	3.15	4.8	2
Davit2	Davit2:V	End	3.54	31.81	0.04	1.71	-0.00	0.00	0.0	-2.21	1.30	-0.00	-0.29	0.00	0.38	0.00	0.72	1.1	3
Davit3	Davit3:O	Origin	0.00	25.46	0.03	-1.00	-37.72	-0.02	-0.0	3.60	4.48	0.00	0.25	9.03	0.25	0.00	9.29	14.3	2
Davit3	#Davit3:0	End	4.29	25.70	0.03	-3.08	-18.50	-0.01	-0.0	3.60	4.48	0.00	0.33	7.30	0.33	0.00	7.65	11.8	2
Davit3	#Davit3:0	Origin	4.29	25.70	0.03	-3.08	-18.50	-0.01	0.0	3.62	4.31	0.00	0.33	7.30	0.31	0.00	7.65	11.8	2
Davit3	Davit3:V	End	8.58	25.95	0.03	-5.27	-0.00	0.00	0.0	3.62	4.31	0.00	0.46	0.00	1.13	0.00	2.01	3.1	4
Davit4	Davit4:O	Origin	0.00	25.48	0.03	0.23	-28.14	0.02	0.0	-4.66	3.35	-0.00	-0.33	6.73	0.19	0.00	7.07	10.9	2
Davit4	#Davit4:0	End	4.29	25.79	0.03	2.17	-13.74	0.01	0.0	-4.66	3.35	-0.00	-0.42	5.43	0.24	0.00	5.86	9.0	2
Davit4	#Davit4:0	Origin	4.29	25.79	0.03	2.17	-13.74	0.01	0.0	-4.63	3.20	-0.00	-0.42	5.43	0.23	0.00	5.86	9.0	2
Davit4	Davit4:V	End	8.58	26.08	0.03	4.04	-0.00	0.00	0.0	-4.63	3.20	-0.00	-0.58	0.00	0.84	0.00	1.57	2.4	4
Davit5	Davit5:O	Origin	0.00	19.95	0.03	-0.92	-37.80	-0.00	-0.0	3.59	4.49	0.00	0.25	9.04	0.25	0.00	9.31	14.3	2
Davit5	#Davit5:0	End	4.29	20.18	0.03	-2.87	-18.54	-0.00	-0.0	3.59	4.49	0.00	0.32	7.32	0.33	0.00	7.66	11.8	2
Davit5	#Davit5:0	Origin	4.29	20.18	0.03	-2.87	-18.54	-0.00	0.0	3.61	4.32	0.00	0.33	7.32	0.31	0.00	7.66	11.8	2
Davit5	Davit5:V	End	8.58	20.42	0.03	-4.92	-0.00	0.00	0.0	3.61	4.32	0.00	0.45	0.00	1.13	0.00	2.02	3.1	4
Davit6	Davit6:O	Origin	0.00	19.97	0.03	0.36	-28.24	0.00	0.0	-4.66	3.37	-0.00	-0.33	6.76	0.19	0.00	7.09	10.9	2
Davit6	#Davit6:0	End	4.29	20.26	0.03	2.18	-13.80	0.00	0.0	-4.66	3.37	-0.00	-0.42	5.45	0.25	0.00	5.88	9.0	2
Davit6	#Davit6:0	Origin	4.29	20.26	0.03	2.18	-13.80	0.00	0.0	-4.62	3.22	-0.00	-0.42	5.45	0.23	0.00	5.88	9.0	2
Davit6	Davit6:V	End	8.58	20.53	0.03	3.91	-0.00	0.00	0.0	-4.62	3.22	-0.00	-0.58	0.00	0.84	0.00	1.57	2.4	4
Davit7	Davit7:O	Origin	0.00	14.93	0.02	-0.81	-37.92	-0.00	-0.0	3.57	4.50	0.00	0.25	9.07	0.25	0.00	9.33	14.4	2
Davit7	#Davit7:0	End	4.29	15.14	0.02	-2.56	-18.60	-0.00	-0.0	3.57	4.50	0.00	0.32	7.34	0.33	0.00	7.68	11.8	2
Davit7	#Davit7:0	Origin	4.29	15.14	0.02	-2.56	-18.60	-0.00	0.0	3.60	4.34	0.00	0.32	7.34	0.32	0.00	7.69	11.8	2
Davit7	Davit7:V	End	8.58	15.36	0.02	-4.43	-0.00	0.00	0.0	3.60	4.34	0.00	0.45	0.00	1.14	0.00	2.02	3.1	4
Davit8	Davit8:O	Origin	0.00	14.95	0.02	0.43	-28.39	0.00	0.0	-4.64	3.38	-0.00	-0.33	6.79	0.19	0.00	7.13	11.0	2
Davit8	#Davit8:0	End	4.29	15.20	0.02	2.06	-13.87	0.00	0.0	-4.64	3.38	-0.00	-0.42	5.48	0.25	0.00	5.91	9.1	2
Davit8	#Davit8:0	Origin	4.29	15.20	0.02	2.06	-13.87	0.00	0.0	-4.61	3.23	-0.00	-0.42	5.48	0.24	0.00	5.91	9.1	2
Davit8	Davit8:V	End	8.58	15.44	0.02	3.60	-0.00	0.00	0.0	-4.61	3.23	-0.00	-0.58	0.00	0.85	0.00	1.58	2.4	4

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 %
1	2.532	80.00	80.00	3.16
2	2.532	80.00	80.00	3.16
3	5.583	80.00	80.00	6.98
4	5.583	80.00	80.00	6.98
5	5.583	80.00	80.00	6.98
6	5.583	80.00	80.00	6.98
7	5.583	80.00	80.00	6.98
8	5.583	80.00	80.00	6.98
9	0.499	80.00	80.00	0.62
10	0.499	80.00	80.00	0.62
11	0.499	80.00	80.00	0.62
12	0.499	80.00	80.00	0.62
13	0.499	80.00	80.00	0.62
14	0.499	80.00	80.00	0.62
15	0.499	80.00	80.00	0.62
16	0.499	80.00	80.00	0.62
17	0.499	80.00	80.00	0.62
18	0.499	80.00	80.00	0.62
19	0.499	80.00	80.00	0.62
20	0.499	80.00	80.00	0.62
21	0.367	80.00	80.00	0.46

*** 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)
2997	70.02	NESC Heavy Wind	35	24292.1

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 %
2997	NESC Heavy Wind	1	1.973	1.815	0.720	2.335	16.286	34.939	83.476	3	150.656	2.717	3.250	69.88
2997	NESC Heavy Wind	2	2.490	0.950	0.950	2.490	26.124	28.785	110.316	5	150.656	2.466	3.250	57.57
2997	NESC Heavy Wind	3	2.335	0.720	1.815	1.973	16.286	21.098	50.406	3	117.270	2.111	3.250	42.20
2997	NESC Heavy Wind	4	2.432	-1.151	2.432	1.151	27.624	1.829	7.413	2	67.893	0.622	3.250	3.66
2997	NESC Heavy Wind	5	1.815	-1.973	2.335	-0.720	16.286	19.506	46.603	3	-110.784	2.030	3.250	39.01
2997	NESC Heavy Wind	6	0.950	-2.490	2.490	-0.950	26.124	27.150	104.050	5	-143.966	2.395	3.250	54.30
2997	NESC Heavy Wind	7	0.720	-2.335	1.973	-1.815	16.286	33.290	79.536	3	-143.966	2.652	3.250	66.58
2997	NESC Heavy Wind	8	-1.151	-2.432	1.151	-2.432	27.624	4.065	16.474	2	-143.966	0.927	3.250	8.13
2997	NESC Heavy Wind	9	-1.973	-1.815	-0.720	-2.335	16.286	33.206	79.336	3	-143.699	2.649	3.250	66.41
2997	NESC Heavy Wind	10	-2.490	-0.950	-0.950	-2.490	26.124	27.034	103.606	5	-143.699	2.390	3.250	54.07
2997	NESC Heavy Wind	11	-2.335	-0.720	-1.815	-1.973	16.286	19.365	46.266	3	-110.312	2.023	3.250	38.73
2997	NESC Heavy Wind	12	-2.432	1.151	-2.432	-1.151	27.624	1.829	7.413	2	68.503	0.622	3.250	3.66
2997	NESC Heavy Wind	13	-1.815	1.973	-2.335	0.720	16.286	21.239	50.743	3	117.741	2.118	3.250	42.48
2997	NESC Heavy Wind	14	-0.950	2.490	-2.490	0.950	26.124	28.901	110.759	5	150.924	2.471	3.250	57.80
2997	NESC Heavy Wind	15	-0.720	2.335	-1.973	1.815	16.286	35.023	83.676	3	150.924	2.720	3.250	70.05
2997	NESC Heavy Wind	16	1.151	2.432	-1.151	2.432	27.624	4.262	17.271	2	150.924	0.949	3.250	8.52
2997	NESC Heavy Wind	17	2.250	1.479	0.819	2.435	20.648	28.924	87.610	4	150.656	2.472	3.250	57.85
2997	NESC Heavy Wind	18	2.435	0.819	1.479	2.250	20.648	20.810	63.034	4	135.819	2.097	3.250	41.62
2997	NESC Heavy Wind	19	1.479	-2.250	2.435	-0.819	20.648	19.407	58.785	4	-129.236	2.025	3.250	38.81
2997	NESC Heavy Wind	20	0.819	-2.435	2.250	-1.479	20.648	27.487	83.260	4	-143.966	2.410	3.250	54.97
2997	NESC Heavy Wind	21	-2.250	-1.479	-0.819	-2.435	20.648	27.404	83.008	4	-143.699	2.406	3.250	54.81
2997	NESC Heavy Wind	22	-2.435	-0.819	-1.479	-2.250	20.648	19.291	58.432	4	-128.861	2.019	3.250	38.58
2997	NESC Heavy Wind	23	-1.479	2.250	-2.435	0.819	20.648	20.927	63.387	4	136.193	2.103	3.250	41.85
2997	NESC Heavy Wind	24	-0.819	2.435	-2.250	1.479	20.648	29.007	87.862	4	150.924	2.475	3.250	58.01
2997	NESC Extreme Wind	1	1.973	1.815	0.720	2.335	16.286	33.707	80.532	3	145.427	2.668	3.250	67.41
2997	NESC Extreme Wind	2	2.490	0.950	0.950	2.490	26.124	27.714	106.213	5	145.427	2.420	3.250	55.43
2997	NESC Extreme Wind	3	2.335	0.720	1.815	1.973	16.286	20.233	48.341	3	112.946	2.067	3.250	40.47
2997	NESC Extreme Wind	4	2.432	-1.151	2.432	1.151	27.624	1.783	7.225	2	64.861	0.614	3.250	3.57
2997	NESC Extreme Wind	5	1.815	-1.973	2.335	-0.720	16.286	19.342	46.211	3	-109.330	2.021	3.250	38.68
2997	NESC Extreme Wind	6	0.950	-2.490	2.490	-0.950	26.124	26.803	102.722	5	-141.733	2.380	3.250	53.61
2997	NESC Extreme Wind	7	0.720	-2.335	1.973	-1.815	16.286	32.793	78.350	3	-141.733	2.632	3.250	65.59
2997	NESC Extreme Wind	8	-1.151	-2.432	1.151	-2.432	27.624	4.004	16.228	2	-141.733	0.920	3.250	8.01
2997	NESC Extreme Wind	9	-1.973	-1.815	-0.720	-2.335	16.286	32.761	78.273	3	-141.630	2.631	3.250	65.52
2997	NESC Extreme Wind	10	-2.490	-0.950	-0.950	-2.490	26.124	26.759	102.552	5	-141.630	2.378	3.250	53.52
2997	NESC Extreme Wind	11	-2.335	-0.720	-1.815	-1.973	16.286	19.288	46.082	3	-109.150	2.019	3.250	38.58
2997	NESC Extreme Wind	12	-2.432	1.151	-2.432	-1.151	27.624	1.783	7.225	2	65.094	0.614	3.250	3.57
2997	NESC Extreme Wind	13	-1.815	1.973	-2.335	0.720	16.286	20.287	48.470	3	113.126	2.070	3.250	40.57
2997	NESC Extreme Wind	14	-0.950	2.490	-2.490	0.950	26.124	27.759	106.383	5	145.529	2.422	3.250	55.52
2997	NESC Extreme Wind	15	-0.720	2.335	-1.973	1.815	16.286	33.739	80.609	3	145.529	2.670	3.250	67.48
2997	NESC Extreme Wind	16	1.151	2.432	-1.151	2.432	27.624	4.112	16.662	2	145.529	0.932	3.250	8.22
2997	NESC Extreme Wind	17	2.250	1.479	0.819	2.435	20.648	27.890	84.478	4	145.427	2.427	3.250	55.78

2997	NESC Extreme Wind	18	2.435	0.819	1.479	2.250	20.648	19.991	60.554	4	130.996	2.055	3.250	39.98
2997	NESC Extreme Wind	19	1.479	-2.250	2.435	-0.819	20.648	19.207	58.178	4	-127.343	2.014	3.250	38.41
2997	NESC Extreme Wind	20	0.819	-2.435	2.250	-1.479	20.648	27.092	82.063	4	-141.733	2.392	3.250	54.18
2997	NESC Extreme Wind	21	-2.250	-1.479	-0.819	-2.435	20.648	27.061	81.967	4	-141.630	2.391	3.250	54.12
2997	NESC Extreme Wind	22	-2.435	-0.819	-1.479	-2.250	20.648	19.162	58.043	4	-127.200	2.012	3.250	38.32
2997	NESC Extreme Wind	23	-1.479	2.250	-2.435	0.819	20.648	20.036	60.689	4	131.140	2.057	3.250	40.07
2997	NESC Extreme Wind	24	-0.819	2.435	-2.250	1.479	20.648	27.921	84.574	4	145.529	2.429	3.250	55.84
2997	NESC Extreme Ice w/ Wind	1	1.973	1.815	0.720	2.335	16.286	23.074	55.129	3	99.445	2.208	3.250	46.15
2997	NESC Extreme Ice w/ Wind	2	2.490	0.950	0.950	2.490	26.124	19.042	72.978	5	99.445	2.006	3.250	38.08
2997	NESC Extreme Ice w/ Wind	3	2.335	0.720	1.815	1.973	16.286	14.000	33.449	3	77.563	1.720	3.250	28.00
2997	NESC Extreme Ice w/ Wind	4	2.432	-1.151	2.432	1.151	27.624	1.200	4.863	2	45.186	0.503	3.250	2.40
2997	NESC Extreme Ice w/ Wind	5	1.815	-1.973	2.335	-0.720	16.286	12.636	30.189	3	-72.041	1.634	3.250	25.27
2997	NESC Extreme Ice w/ Wind	6	0.950	-2.490	2.490	-0.950	26.124	17.651	67.647	5	-93.829	1.931	3.250	35.30
2997	NESC Extreme Ice w/ Wind	7	0.720	-2.335	1.973	-1.815	16.286	21.684	51.807	3	-93.829	2.140	3.250	43.37
2997	NESC Extreme Ice w/ Wind	8	-1.151	-2.432	1.151	-2.432	27.624	2.650	10.740	2	-93.829	0.748	3.250	5.30
2997	NESC Extreme Ice w/ Wind	9	-1.973	-1.815	-0.720	-2.335	16.286	21.645	51.715	3	-93.707	2.138	3.250	43.29
2997	NESC Extreme Ice w/ Wind	10	-2.490	-0.950	-0.950	-2.490	26.124	17.598	67.444	5	-93.707	1.928	3.250	35.20
2997	NESC Extreme Ice w/ Wind	11	-2.335	-0.720	-1.815	-1.973	16.286	12.571	30.035	3	-71.825	1.630	3.250	25.14
2997	NESC Extreme Ice w/ Wind	12	-2.432	1.151	-2.432	-1.151	27.624	1.200	4.863	2	45.464	0.503	3.250	2.40
2997	NESC Extreme Ice w/ Wind	13	-1.815	1.973	-2.335	0.720	16.286	14.065	33.603	3	77.779	1.724	3.250	28.13
2997	NESC Extreme Ice w/ Wind	14	-0.950	2.490	-2.490	0.950	26.124	19.095	73.180	5	99.567	2.008	3.250	38.19
2997	NESC Extreme Ice w/ Wind	15	-0.720	2.335	-1.973	1.815	16.286	23.113	55.221	3	99.567	2.210	3.250	46.23
2997	NESC Extreme Ice w/ Wind	16	1.151	2.432	-1.151	2.432	27.624	2.812	11.397	2	99.567	0.771	3.250	5.62
2997	NESC Extreme Ice w/ Wind	17	2.250	1.479	0.819	2.435	20.648	19.110	57.886	4	99.445	2.009	3.250	38.22
2997	NESC Extreme Ice w/ Wind	18	2.435	0.819	1.479	2.250	20.648	13.791	41.774	4	89.722	1.707	3.250	27.58
2997	NESC Extreme Ice w/ Wind	19	1.479	-2.250	2.435	-0.819	20.648	12.592	38.140	4	-84.155	1.631	3.250	25.18
2997	NESC Extreme Ice w/ Wind	20	0.819	-2.435	2.250	-1.479	20.648	17.895	54.206	4	-93.829	1.944	3.250	35.79
2997	NESC Extreme Ice w/ Wind	21	-2.250	-1.479	-0.819	-2.435	20.648	17.857	54.090	4	-93.707	1.942	3.250	35.71
2997	NESC Extreme Ice w/ Wind	22	-2.435	-0.819	-1.479	-2.250	20.648	12.538	37.978	4	-83.984	1.627	3.250	25.08
2997	NESC Extreme Ice w/ Wind	23	-1.479	2.250	-2.435	0.819	20.648	13.844	41.935	4	89.893	1.710	3.250	27.69
2997	NESC Extreme Ice w/ Wind	24	-0.819	2.435	-2.250	1.479	20.648	19.148	58.001	4	99.567	2.011	3.250	38.30

Summary of Tubular Davit Usages:

Tubular Davit Label	Maximum Usage %	Load Case	Segment Number	Weight (lbs)
Davit1	6.69	NESC Extreme Ice w/ Wind	1	93.2
Davit2	4.85	NESC Extreme Ice w/ Wind	1	93.2
Davit3	15.36	NESC Heavy Wind	1	323.1
Davit4	10.88	NESC Extreme Ice w/ Wind	1	323.1
Davit5	15.43	NESC Heavy Wind	1	323.1
Davit6	10.91	NESC Extreme Ice w/ Wind	1	323.1
Davit7	15.53	NESC Heavy Wind	1	323.1
Davit8	10.97	NESC Extreme Ice w/ Wind	1	323.1

*** 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	70.05	2997	Base Plate
NESC Extreme Wind	67.66	2997	Steel Pole
NESC Extreme Ice w/ Wind	46.23	2997	Base Plate

Summary of Steel Pole Usages by Load Case:

Load Case	Maximum Steel Pole Usage %	Pole Segment Label	Segment Number
NESC Heavy Wind	70.02	2997	35
NESC Extreme Wind	67.66	2997	35
NESC Extreme Ice w/ Wind	46.15	2997	35

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	2997	15	16.286	69.576	4371.266	-9.038	35.023	83.676	3	150.924	2.720	70.05
NESC Extreme Wind	2997	15	16.286	37.963	4260.530	-3.453	33.739	80.609	3	145.529	2.670	67.48
NESC Extreme Ice w/ Wind	2997	15	16.286	57.378	2867.569	-4.131	23.113	55.221	3	99.567	2.210	46.23

Summary of Tubular Davit Usages by Load Case:

Load Case	Maximum Tubular Davit Usage %	Davit Label	Segment Number
NESC Heavy Wind	15.53	Davit7	1
NESC Extreme Wind	8.26	Davit7	1
NESC Extreme Ice w/ Wind	14.36	Davit7	1

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
1	Clamp	3.69	NESC Heavy Wind	0.0
2	Clamp	3.69	NESC Heavy Wind	0.0
3	Clamp	9.21	NESC Heavy Wind	0.0
4	Clamp	9.21	NESC Heavy Wind	0.0
5	Clamp	9.21	NESC Heavy Wind	0.0
6	Clamp	9.21	NESC Heavy Wind	0.0
7	Clamp	9.21	NESC Heavy Wind	0.0
8	Clamp	9.21	NESC Heavy Wind	0.0
9	Clamp	0.65	NESC Heavy Wind	0.0
10	Clamp	0.65	NESC Heavy Wind	0.0
11	Clamp	0.65	NESC Heavy Wind	0.0
12	Clamp	0.65	NESC Heavy Wind	0.0
13	Clamp	0.65	NESC Heavy Wind	0.0
14	Clamp	0.65	NESC Heavy Wind	0.0
15	Clamp	0.65	NESC Heavy Wind	0.0
16	Clamp	0.65	NESC Heavy Wind	0.0
17	Clamp	0.65	NESC Heavy Wind	0.0
18	Clamp	0.65	NESC Heavy Wind	0.0
19	Clamp	0.65	NESC Heavy Wind	0.0
20	Clamp	0.65	NESC Heavy Wind	0.0
21	Clamp	1.25	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	1	Clamp	Davit1:V	0.002	2.720	1.140	2.949
NESC Heavy Wind	2	Clamp	Davit2:V	0.002	2.720	1.140	2.949
NESC Heavy Wind	3	Clamp	Davit3:V	0.002	6.202	3.981	7.370
NESC Heavy Wind	4	Clamp	Davit4:V	0.002	6.202	3.981	7.370
NESC Heavy Wind	5	Clamp	Davit5:V	0.000	6.202	3.981	7.370
NESC Heavy Wind	6	Clamp	Davit6:V	0.000	6.202	3.981	7.370
NESC Heavy Wind	7	Clamp	Davit7:V	0.000	6.202	3.981	7.370
NESC Heavy Wind	8	Clamp	Davit8:V	0.000	6.202	3.981	7.370
NESC Heavy Wind	9	Clamp	2997:Cable 1	0.000	0.050	0.516	0.518
NESC Heavy Wind	10	Clamp	2997:Cable 2	0.000	0.050	0.516	0.518
NESC Heavy Wind	11	Clamp	2997:Cable 3	0.000	0.050	0.516	0.518
NESC Heavy Wind	12	Clamp	2997:Cable 4	0.000	0.050	0.516	0.518
NESC Heavy Wind	13	Clamp	2997:Cable 5	0.000	0.050	0.516	0.518
NESC Heavy Wind	14	Clamp	2997:Cable 6	0.000	0.050	0.516	0.518
NESC Heavy Wind	15	Clamp	2997:Cable 7	0.000	0.050	0.516	0.518
NESC Heavy Wind	16	Clamp	2997:Cable 8	0.000	0.050	0.516	0.518
NESC Heavy Wind	17	Clamp	2997:Cable 9	0.000	0.050	0.516	0.518
NESC Heavy Wind	18	Clamp	2997:Cable 10	0.000	0.050	0.516	0.518
NESC Heavy Wind	19	Clamp	2997:Cable 11	0.000	0.050	0.516	0.518
NESC Heavy Wind	20	Clamp	2997:Cable 12	0.000	0.050	0.516	0.518
NESC Heavy Wind	21	Clamp	2997:T-Mo	0.000	0.253	0.344	0.427
NESC Extreme Wind	1	Clamp	Davit1:V	0.002	1.983	0.296	2.005
NESC Extreme Wind	2	Clamp	Davit2:V	0.002	1.983	0.296	2.005
NESC Extreme Wind	3	Clamp	Davit3:V	0.002	5.325	1.827	5.630
NESC Extreme Wind	4	Clamp	Davit4:V	0.002	5.325	1.827	5.630
NESC Extreme Wind	5	Clamp	Davit5:V	0.000	5.325	1.827	5.630
NESC Extreme Wind	6	Clamp	Davit6:V	0.000	5.325	1.827	5.630
NESC Extreme Wind	7	Clamp	Davit7:V	0.000	5.325	1.827	5.630
NESC Extreme Wind	8	Clamp	Davit8:V	0.000	5.325	1.827	5.630
NESC Extreme Wind	9	Clamp	2997:Cable 1	0.000	0.131	0.119	0.177
NESC Extreme Wind	10	Clamp	2997:Cable 2	0.000	0.131	0.119	0.177
NESC Extreme Wind	11	Clamp	2997:Cable 3	0.000	0.131	0.119	0.177
NESC Extreme Wind	12	Clamp	2997:Cable 4	0.000	0.131	0.119	0.177
NESC Extreme Wind	13	Clamp	2997:Cable 5	0.000	0.131	0.119	0.177
NESC Extreme Wind	14	Clamp	2997:Cable 6	0.000	0.131	0.119	0.177
NESC Extreme Wind	15	Clamp	2997:Cable 7	0.000	0.131	0.119	0.177
NESC Extreme Wind	16	Clamp	2997:Cable 8	0.000	0.131	0.119	0.177
NESC Extreme Wind	17	Clamp	2997:Cable 9	0.000	0.131	0.119	0.177
NESC Extreme Wind	18	Clamp	2997:Cable 10	0.000	0.131	0.119	0.177
NESC Extreme Wind	19	Clamp	2997:Cable 11	0.000	0.131	0.119	0.177
NESC Extreme Wind	20	Clamp	2997:Cable 12	0.000	0.131	0.119	0.177
NESC Extreme Wind	21	Clamp	2997:T-Mo	0.000	0.993	0.107	0.999
NESC Extreme Ice w/ Wind	1	Clamp	Davit1:V	0.002	1.940	1.627	2.532
NESC Extreme Ice w/ Wind	2	Clamp	Davit2:V	0.002	1.940	1.627	2.532
NESC Extreme Ice w/ Wind	3	Clamp	Davit3:V	0.002	4.010	3.885	5.583
NESC Extreme Ice w/ Wind	4	Clamp	Davit4:V	0.002	4.010	3.885	5.583
NESC Extreme Ice w/ Wind	5	Clamp	Davit5:V	0.000	4.010	3.885	5.583
NESC Extreme Ice w/ Wind	6	Clamp	Davit6:V	0.000	4.010	3.885	5.583
NESC Extreme Ice w/ Wind	7	Clamp	Davit7:V	0.000	4.010	3.885	5.583
NESC Extreme Ice w/ Wind	8	Clamp	Davit8:V	0.000	4.010	3.885	5.583
NESC Extreme Ice w/ Wind	9	Clamp	2997:Cable 1	0.000	0.036	0.498	0.499
NESC Extreme Ice w/ Wind	10	Clamp	2997:Cable 2	0.000	0.036	0.498	0.499
NESC Extreme Ice w/ Wind	11	Clamp	2997:Cable 3	0.000	0.036	0.498	0.499

NESC Extreme Ice w/ Wind	12	Clamp	2997:Cable 4	0.000	0.036	0.498	0.499
NESC Extreme Ice w/ Wind	13	Clamp	2997:Cable 5	0.000	0.036	0.498	0.499
NESC Extreme Ice w/ Wind	14	Clamp	2997:Cable 6	0.000	0.036	0.498	0.499
NESC Extreme Ice w/ Wind	15	Clamp	2997:Cable 7	0.000	0.036	0.498	0.499
NESC Extreme Ice w/ Wind	16	Clamp	2997:Cable 8	0.000	0.036	0.498	0.499
NESC Extreme Ice w/ Wind	17	Clamp	2997:Cable 9	0.000	0.036	0.498	0.499
NESC Extreme Ice w/ Wind	18	Clamp	2997:Cable 10	0.000	0.036	0.498	0.499
NESC Extreme Ice w/ Wind	19	Clamp	2997:Cable 11	0.000	0.036	0.498	0.499
NESC Extreme Ice w/ Wind	20	Clamp	2997:Cable 12	0.000	0.036	0.498	0.499
NESC Extreme Ice w/ Wind	21	Clamp	2997:T-Mo	0.000	0.214	0.298	0.367

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	43.505	0.008	32.702	3949.931	0.848	-0.000
NESC Extreme Wind	38.481	0.008	13.089	3468.183	0.848	-0.000
NESC Extreme Ice w/ Wind	28.586	0.008	32.838	2603.154	0.848	-0.000

*** Weight of structure (lbs):
    Weight of Tubular Davit Arms: 2125.1
    Weight of Steel Poles: 24292.1
    Total: 26417.2

*** End of Report

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

Subject:	Anchor Bolt Analysis Pole #2997
Location:	Wilton, CT
Rev. 0: 10/27/16	Prepared by: T.J.L. Checked by: C.F.C. Job No. 16162.01

Anchor Bolt Analysis:

Input Data:

Bolt Force:

Maximum Tensile Force = $T_{Max} := 151 \cdot kips$ (User Input from PLS-Pole)

Anchor Bolt Data:

Use ASTM A615 Grade 75

Number of Anchor Bolts = $N := 20$ (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) = $T_{ALL.Net} := 1.0 \cdot \left(A_n \cdot F_y \right) = 243.576 \cdot kips$

Bolt Tension % of Capacity = $\frac{T_{Max}}{T_{ALL.Net}} = 61.99 \cdot \%$

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

Condition1 = "OK"

RAN Template: 704Bu Outdoor	A&L Template: Custom

CT11101B_0.1_L700

Section 1 - Site Information

Site ID: CT11101B
Status: Draft
Version: 0.1
Project Type: L700
Approved: Not Approved
Approved By: Not Approved
Last Modified: 9/26/2016 5:51:36 AM
Last Modified By: GSM1900\AMurill9

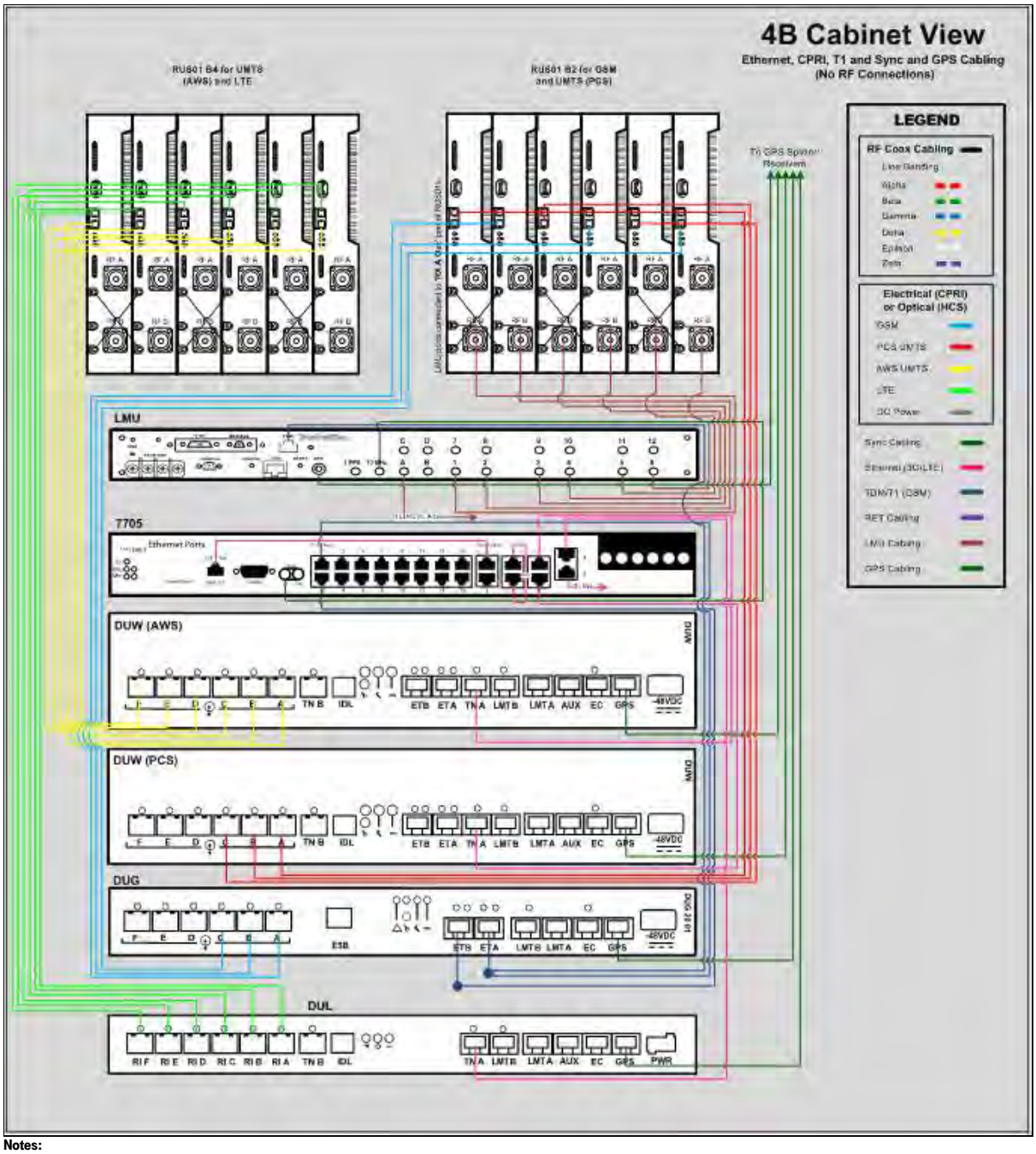
Site Name: CL & P in Wilton DTWN
Site Class: Utility Lattice Tower
Site Type: Structure Non Building
Solution Type: 704Bu
Plan Year: 2015
Market: CONNECTICUT
Vendor: Ericsson
Landlord: North East Utility/ CL&P

Latitude: 41.19624590
Longitude: -73.43200040
Address: 15 Old Danbury Rd. Pole #997 Wilton Train Station
City, State: Wilton, CT
Region: NORTHEAST

RAN Template: 704Bu Outdoor			AL Template: Custom	
Sector Count: 3	Antenna Count: 3	Coax Line Count: 18	TMA Count: 6	RRU Count: 3

Section 2 - Existing Template Images

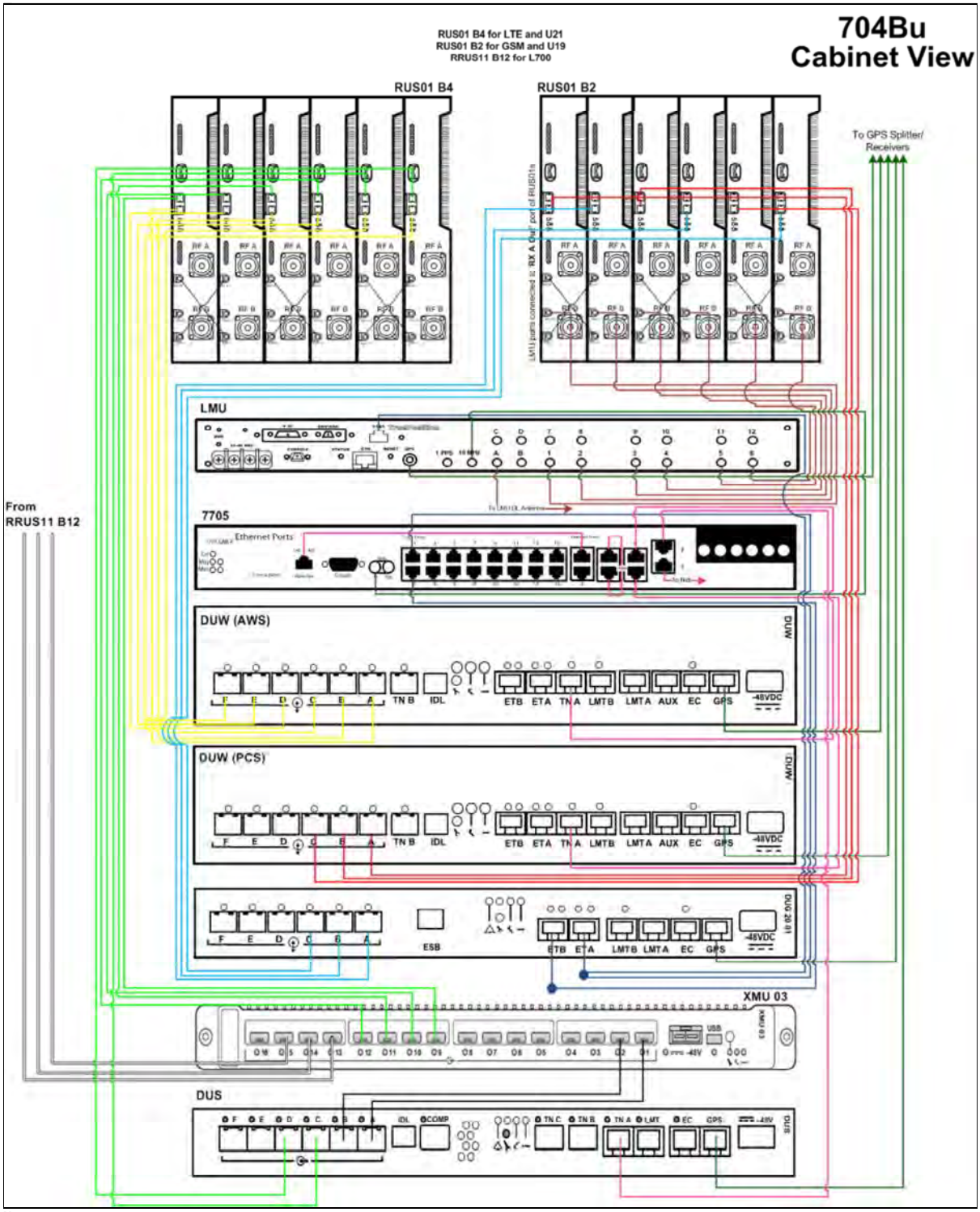
RAN_4B.jpg


4B Cabinet View
Ethernet, CPRI, T1 and Sync and GPS Cabling
(No RF Connections)
RUS01 B4 for UMTS
(AWS) and LTE
RUS01 B2 for GSM
and UMTS (PCS)
LEGEND
RF Coax Cabling
Line Sending
Alpha
Beta
Gamma
Delta
Epsilon
Zeta
Electrical (CPRI)
or Optical (HCS)
GSM
PCS UMTS
AWS UMTS
LTE
DC Power
Sync Cabling
Ethernet (3G/LTE)
TDM/T1 (GSM)
RET Cabling
LMU Cabling
GPS Cabling
LMU
7705
Ethernet Ports
DUW (AWS)
DUW (PCS)
DUG
DUL
ETB ETA TNA LMTB LMTA AUX EC GPS
48VDC
TNB IDL
ESB
RIF RIE RID RIC RIB RIA
PWR

Notes:

Section 3 - Proposed Template Images

704Bu.png



Notes:

Section 4 - Siteplan Images

— This section is intentionally blank. —

RAN Template: 704Bu Outdoor	A&L Template: Custom

CT11101B_0.1_L700

Section 5 - RAN Equipment

Existing RAN Equipment
---- This section is intentionally blank. ----

Proposed RAN Equipment

Template: 704Bu Outdoor

Enclosure	1	2
Enclosure Type	RBS 6102	Ground Mount
Baseband	DUG20 (G1900); DUW30 (U1900); DUW30 (U2100); DUS41 (L2100, L700)	
Multiplexer	XMU	
Radio	RUS01 B2 (x3) (G1900); RUS01 B2 (x3) (U1900); RUS01 B4 (x6) (U2100, L2100)	RRUS11 B12 (x3) (L700)

RAN Scope of Work:

Swap DUL with DUS41.Add XMU's

RAN Template: 704Bu Outdoor	A&L Template: Custom

CT11101B_0.1_L700

Section 6 - A&L Equipment

Existing Template: Custom
Proposed Template: Custom

Sector 1 (Existing) view from behind		
Coverage Type	A - Outdoor Macro	
Antenna	1	
Antenna Model	APX16DWV-16DWV-S-E-A20 (Quad)	
Azimuth	20	
M. Tilt	0	
Height	119	
Ports	P1	P2
Active Tech.	U1900 G1900	U2100 L2100
Dark Tech.		
Restricted Tech.		
Decomm. Tech.		
E. Tilt	2	2
Cables	1-1/4" Coax - 100 ft. 1-1/4" Coax - 100 ft.	1-1/4" Coax - 100 ft. 1-1/4" Coax - 100 ft.
TMAs	Generic Style 1A - Twin PCS	Generic Style 1B - Twin AWS
Diplexers / Combiners		
Radio		
Sector Equipment		

Unconnected Equipment:

Scope of Work:

RAN Template: 704Bu Outdoor	A&L Template: Custom

CT11101B_0.1_L700

Sector 1 (Proposed) view from behind			
Coverage Type	A - Outdoor Macro		
Antenna	1		
Antenna Model	SBNHH-1D65A (Hex)		
Azimuth	20		
M. Tilt	0		
Height	119		
Ports	P1	P2	P3
Active Tech.	U1900 G1900	U2100 L2100	L700
Dark Tech.			
Restricted Tech.			
Decomm. Tech.			
E. Tilt	2	2	2
Cables	1-1/4" Coax - 130 ft. 1-1/4" Coax - 130 ft.	1-1/4" Coax - 130 ft. 1-1/4" Coax - 130 ft.	1-1/4" Coax - 130 ft. 1-1/4" Coax - 130 ft.
TMAs	Generic Style 1A - Twin PCS	Generic Style 1B - Twin AWS	
Diplexers / Combiners			
Radio			
Sector Equipment			Andrew Smart Bias T

Unconnected Equipment:

Scope of Work:

Swap Existing Quad pole antenna with a 4.5ft Hexpole.Add coax. Add RRU's at ground.Add smart Bias-T. GMA's on ground

RAN Template: 704Bu Outdoor	A&L Template: Custom

CT11101B_0.1_L700

Sector 2 (Existing) view from behind		
Coverage Type	A - Outdoor Macro	
Antenna	1	
Antenna Model	APX16DWV-16DWV-S-E-A20 (Quad)	
Azimuth	140	
M. Tilt	0	
Height	119	
Ports	P1	P2
Active Tech.	U1900 G1900	U2100 L2100
Dark Tech.		
Restricted Tech.		
Decomm. Tech.		
E. Tilt	2	2
Cables	1-1/4" Coax - 100 ft. 1-1/4" Coax - 100 ft.	1-1/4" Coax - 100 ft. 1-1/4" Coax - 100 ft.
TMAs	Generic Style 1A - Twin PCS	Generic Style 1B - Twin AWS
Diplexers / Combiners		
Radio		
Sector Equipment		

Unconnected Equipment:

Scope of Work:

RAN Template: 704Bu Outdoor	A&L Template: Custom

CT11101B_0.1_L700

Sector 2 (Proposed) view from behind			
Coverage Type	A - Outdoor Macro		
Antenna	1		
Antenna Model	SBNHH-1D65A (Hex)		
Azimuth	140		
M. Tilt	0		
Height	119		
Ports	P1	P2	P3
Active Tech.	U1900 G1900	U2100 L2100	L700
Dark Tech.			
Restricted Tech.			
Decomm. Tech.			
E. Tilt	2	2	2
Cables	1-1/4" Coax - 130 ft. 1-1/4" Coax - 130 ft.	1-1/4" Coax - 130 ft. 1-1/4" Coax - 130 ft.	1-1/4" Coax - 130 ft. 1-1/4" Coax - 130 ft.
TMAs	Generic Style 1A - Twin PCS	Generic Style 1B - Twin AWS	
Diplexers / Combiners			
Radio			
Sector Equipment			Andrew Smart Bias T

Unconnected Equipment:

Scope of Work:

Swap Existing Quad pole antenna with a 4.5ft Hexpole.Add coax. Add RRU's at ground.Add smart Bias-T. GMA's on ground.

RAN Template: 704Bu Outdoor	A&L Template: Custom

CT11101B_0.1_L700

Sector 3 (Existing) view from behind		
Coverage Type	A - Outdoor Macro	
Antenna	1	
Antenna Model	APX16DWV-16DWV-S-E-A20 (Quad)	
Azimuth	260	
M. Tilt	0	
Height	119	
Ports	P1	P2
Active Tech.	U1900 G1900	U2100 L2100
Dark Tech.		
Restricted Tech.		
Decomm. Tech.		
E. Tilt	2	2
Cables	1-1/4" Coax - 100 ft. 1-1/4" Coax - 100 ft.	1-1/4" Coax - 100 ft. 1-1/4" Coax - 100 ft.
TMAs	Generic Style 1A - Twin PCS	Generic Style 1B - Twin AWS
Diplexers / Combiners		
Radio		
Sector Equipment		

Unconnected Equipment:

Scope of Work:

RAN Template: 704Bu Outdoor	A&L Template: Custom

CT11101B_0.1_L700

Sector 3 (Proposed) view from behind			
Coverage Type	A - Outdoor Macro		
Antenna	1		
Antenna Model	SBNHH-1D65A (Hex)		
Azimuth	260		
M. Tilt	0		
Height	119		
Ports	P1	P2	P3
Active Tech.	U1900 G1900	U2100 L2100	L700
Dark Tech.			
Restricted Tech.			
Decomm. Tech.			
E. Tilt	2	2	2
Cables	1-1/4" Coax - 130 ft. 1-1/4" Coax - 130 ft.	1-1/4" Coax - 130 ft. 1-1/4" Coax - 130 ft.	1-1/4" Coax - 130 ft. 1-1/4" Coax - 130 ft.
TMAs	Generic Style 1A - Twin PCS	Generic Style 1B - Twin AWS	
Diplexers / Combiners			
Radio			
Sector Equipment			Andrew Smart Bias T

Unconnected Equipment:

Scope of Work:

Swap Existing Quad pole antenna with a 4.5ft Hexpole.Add coax. Add RRU's at ground.Add smart Bias-T. GMA's on ground.

Product Specifications

SBNHH-1D65A

Andrew® Tri-band Antenna, 698–896 and 2x 1695–2360 MHz, 65° horizontal beamwidth, internal RET. Both high bands share the same electrical tilt.

- Interleaved dipole technology providing for attractive, low wind load mechanical package

Electrical Specifications

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2180	2300–2360
Gain, dBi	13.6	13.7	16.5	16.9	17.1	17.6
Beamwidth, Horizontal, degrees	66	61	70	65	62	61
Beamwidth, Vertical, degrees	17.6	15.9	7.1	6.6	6.2	5.5
Beam Tilt, degrees	0–18	0–18	0–10	0–10	0–10	0–10
USLS, dB	16	13	13	13	12	12
Front-to-Back Ratio at 180°, dB	25	27	28	28	27	29
CPR at Boresight, dB	20	16	20	23	17	20
CPR at Sector, dB	10	5	11	6	1	4
Isolation, dB	25	25	25	25	25	25
Isolation, Intersystem, dB	30	30	30	30	30	30
VSWR | Return Loss, dB	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-153
Input Power per Port, maximum, watts	350	350	350	350	350	300
Polarization	±45°	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm

Electrical Specifications, BASTA*

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2180	2300–2360
Gain by all Beam Tilts, average, dBi	13.1	13.1	16.1	16.5	16.7	17.2
Gain by all Beam Tilts Tolerance, dB	±0.5	±0.5	±0.5	±0.3	±0.5	±0.4
Gain by Beam Tilt, average, dBi	0 ° | 13.4	0 ° | 13.4	0 ° | 16.0	0 ° | 16.3	0 ° | 16.5	0 ° | 17.0
	9 ° | 13.1	9 ° | 13.1	5 ° | 16.2	5 ° | 16.5	5 ° | 16.8	5 ° | 17.3
	18 ° | 12.7	18 ° | 12.7	10 ° | 16.1	10 ° | 16.5	10 ° | 16.6	10 ° | 16.9
Beamwidth, Horizontal Tolerance, degrees	±3.1	±5.4	±2.8	±4	±6.6	±4.6
Beamwidth, Vertical Tolerance, degrees	±1.8	±1.4	±0.3	±0.4	±0.5	±0.3
USLS, dB	15	14	15	15	15	14
Front-to-Back Total Power at 180° ± 30°, dB	22	21	26	26	24	25
CPR at Boresight, dB	22	16	22	25	21	22
CPR at Sector, dB	10	6	12	8	5	4

* CommScope® supports NGMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, download the whitepaper Time to Raise the Bar on BSAs.

General Specifications

Antenna Brand	Andrew®
Antenna Type	DualPol® multiband with internal RET
Band	Multiband
Brand	DualPol® | Teletilt®
Operating Frequency Band	1695 – 2360 MHz | 698 – 896 MHz

Product Specifications

SBNHH-1D65A

Mechanical Specifications

Color	Light gray
Lightning Protection	dc Ground
Radiator Material	Aluminum | Low loss circuit board
Radome Material	Fiberglass, UV resistant
RF Connector Interface	7-16 DIN Female
RF Connector Location	Bottom
RF Connector Quantity, total	6
Wind Loading, maximum	445.0 N @ 150 km/h 100.0 lbf @ 150 km/h
Wind Speed, maximum	241.4 km/h | 150.0 mph

Dimensions

Depth	180.0 mm | 7.1 in
Length	1409.0 mm | 55.5 in
Width	301.0 mm | 11.9 in
Net Weight	15.2 kg | 33.5 lb

Remote Electrical Tilt (RET) Information

Input Voltage	10–30 Vdc
Power Consumption, idle state, maximum	2.0 W
Power Consumption, normal conditions, maximum	13.0 W
Protocol	3GPP/AISG 2.0 (Multi-RET)
RET Interface	8-pin DIN Female | 8-pin DIN Male
RET Interface, quantity	1 female | 1 male
RET System	Teletilt®

Regulatory Compliance/Certifications

Agency	Classification
RoHS 2011/65/EU	Compliant by Exemption
China RoHS SJ/T 11364-2006	Above Maximum Concentration Value (MCV)
ISO 9001:2008	Designed, manufactured and/or distributed under this quality management system

Included Products

BSAMNT-1 — Wide Profile Antenna Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.

Product Specifications

ATSBT-TOP-FM-4G

Teletilt® Top Smart Bias Tee

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

General Specifications

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

Electrical Specifications

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

Mechanical Specifications

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

Product Specifications

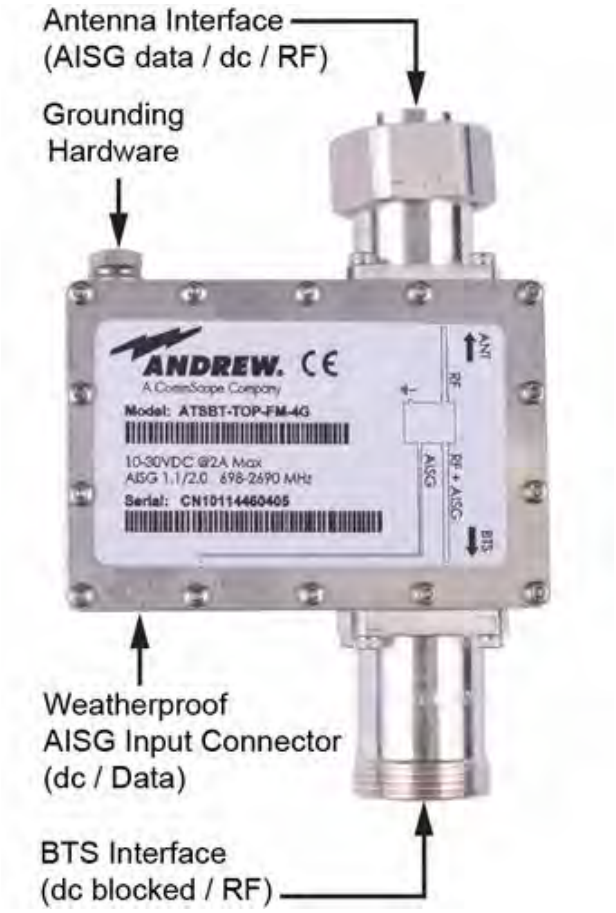
ATSBT-TOP-FM-4G

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

Environmental Specifications

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

Interface Port Drawing



Dimensions

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

Regulatory Compliance/Certifications

Agency	Classification
RoHS 2011/65/EU	Compliant by Exemption

Exhibit E

EBI Consulting
environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CT11101B

CL & P in Wilton DTWN
15 Old Danbury Rd. Pole #997 W
Wilton, CT 06897

November 8, 2016

EBI Project Number: 6216004966

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	1.89 %

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

EBI Consulting
environmental | engineering | due diligence

November 8, 2016

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

Emissions Analysis for Site: **CT11101B – CL & P in Wilton DTWN**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **15 Old Danbury Rd. Pole #997 W, Wilton, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **15 Old Danbury Rd. Pole #997 W, Wilton, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

1) 2 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 2 UMTS channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

3) 2 UMTS channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

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

5) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

6) Since all radios are ground mounted there are additional cabling losses accounted for. For each ground mounted RF path the following losses were calculated. 0.91 dB of additional cable loss for all ground mounted 700 MHz Channels, 1.59 dB of additional cable loss for all ground mounted 1900 MHz channels and 1.68 dB of additional cable loss for all ground mounted 2100 MHz channels. This is based on manufacturers Specifications for 130 feet of 1-1/4" coax cable on each path.

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

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

9) The antennas used in this modeling are the **Commscope SBNHH-1D65A** for 700 MHz, 1900 MHz (PCS) and 2100 MHz (AWS) channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Commscope SBNHH-1D65A** has a maximum gain of **14.7 dBd** at its main lobe at 1900 MHz and 2100 MHz and a maximum gain of **10.9 dBd** at its main lobe at 700 MHz. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

10) The antenna mounting height centerline of the proposed antennas is **119 feet** above ground level (AGL).

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

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

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Commscope SBNHH-1D65A	Make / Model:	Commscope SBNHH-1D65A	Make / Model:	Commscope SBNHH-1D65A
Gain:	14.7 dBd / 10.9 dBd	Gain:	14.7 dBd / 10.9 dBd	Gain:	14.7 dBd / 10.9 dBd
Height (AGL):	119	Height (AGL):	119	Height (AGL):	119
Frequency Bands	700 MHz / 1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	700 MHz / 1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	700 MHz / 1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	9	Channel Count	9	Channel Count	9
Total TX Power(W):	330	Total TX Power(W):	330	Total TX Power(W):	330
ERP (W):	6,363.09	ERP (W):	6,363.09	ERP (W):	6,363.09
Antenna A1 MPE%	1.89	Antenna B1 MPE%	1.89	Antenna C1 MPE%	1.89

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**1.89 %**
No Additional Carriers per CSC active MPE database	NA
Site Total MPE %:	**1.89 %**

T-Mobile Sector A Total:	1.89 %
T-Mobile Sector B Total:	1.89 %
T-Mobile Sector C Total:	1.89 %
Site Total:	1.89 %

T-Mobile _per sector	**# Channels**	**Watts ERP (Per Channel)**	**Height (feet)**	**Total Power Density ($\mu W/cm^2$)**	**Frequency (MHz)**	**Allowable MPE ($\mu W/cm^2$)**	**Calculated % MPE**
T-Mobile AWS - 2100 MHz LTE	2	1,202.68	119	6.77	AWS - 2100 MHz	1000	0.68%
T-Mobile AWS - 2100 MHz UMTS	2	601.34	119	3.39	AWS - 2100 MHz	1000	0.34%
T-Mobile PCS - 1950 MHz UMTS	2	613.93	119	3.46	PCS - 1950 MHz	1000	0.35%
T-Mobile PCS - 1950 MHz GSM	2	613.93	119	3.46	PCS - 1950 MHz	1000	0.35%
T-Mobile 700 MHz LTE	1	299.31	119	0.84	700 MHz	467	0.18%
						Total:	**1.89%**

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	1.89 %
Sector B:	1.89 %
Sector C:	1.89 %
T-Mobile Per Sector Maximum:	1.89 %
Site Total:	1.89 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **1.89%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Exhibit F

EVERSOURCE ENERGY

56 Prospect Street,
Hartford, CT 06103

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

November 7, 2016

Mr. Mark Richard
T-Mobile
35 Griffin Rd.
Bloomfield, CT 06002

RE: T-Mobile Antenna Site, CT-11101B 15 Old Danbury Rd, Wilton CT, structure 2997.

Dear Mr. Richard:

Based on our reviews of the site drawings, the structural analysis provided by Centek Engineering and, and the foundation analyses performed by Centek Engineering, we have reviewed for acceptance this modification

Since there are no outstanding structural or site related issues to resolve at this time, please contact Hank O'Brien (860-665-6987) to complete the lease amendment issues

Sincerely,

Robert Gray
Transmission Line Engineering

ref: 16162.01 - CT11101B Structural Analysis Rev1 16.11.01.pdf
CT11101B-L700-CD-V1 S&S.pd