QC Development
PO Box 916
Storrs, CT 06268
860-670-9068
QCDevelopment9068@gmail.com

March 4, 2015

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

Notice of Exempt Modification – New Cingular Wireless PCS, LLC (AT&T)
45 Maple Ridge Road, Farmington, CT 06032
N 41-43-04.7
W 72-46-09.5

Dear Ms. Bachman:

AT&T currently maintains six (6) antennas at the 88-foot level of the existing 102-foot Laminated Wood Utility Structure at 45 Maple Ridge Road, Farmington, CT. The tower is owned by Eversource. The property is also owned by Eversource (CONN LIGHT & POWER CO). AT&T now intends to replace all six (6) of its existing antennas with three (3) new CCI and three (3) new Quintel antennas. These antennas would be installed at the 88-foot level of the structure on the existing 3-sector mount. AT&T also intends to replace the existing six (6) Powerwave TMAs with six (6) new CCI TMAs and twelve (12) new Kaelus TMAs.

This facility was approved by the Connecticut Siting Council, Petition No. 644 on October 29, 2003. This approval included no condition(s) that could feasibly be violated by this modification. This modification therefore complies with the aforementioned approval.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2).

In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Nancy Nickerson, Town Council Chair for the Town of Farmington, as well as the property and structure 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.

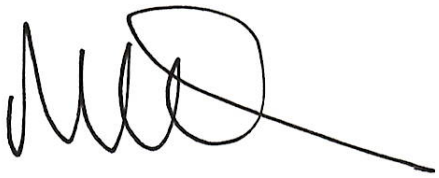
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

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

For the foregoing reasons, AT&T 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).

Please feel free to call me at (860) 670-9068 with any questions regarding this matter. Thank you for your consideration.

Sincerely,



Mark Roberts
QC Development
Consultant for AT&T

Attachments

cc: Nancy Nickerson - as elected official (via e-mail)
Eversource - as structure and property owner (via e-mail)

Power Density

Existing Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm^2)	Freq. Band (MHz**)	Limit S (mW /cm^2)	%MPE
Other Carriers*							2.75%
AT&T LTE	2	427	86	0.0480	1900	1.0000	0.48%
AT&T GSM	4	296	86	0.0665	880	0.5867	1.13%
AT&T UMTS	2	500	86	0.0562	1900	1.0000	0.56%
AT&T UMTS	1	500	86	0.0281	880	0.5867	0.48%
Site Total							5.40%

*Per CSC Records (available upon request, includes calculation formulas)

** If a range of frequencies are used, such as 880-894, enter the lowest value, i.e. 880

Proposed Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm^2)	Freq. Band (MHz**)	Limit S (mW /cm^2)	%MPE
Other Carriers*							2.75%
AT&T LTE	2	1791	88	0.1916	2300	1.0000	1.92%
AT&T LTE	2	1104	88	0.1181	734	0.4893	2.41%
AT&T LTE	2	2203	88	0.2356	1900	1.0000	2.36%
AT&T GSM	2	492	88	0.0526	880	0.5867	0.90%
AT&T UMTS	2	419	88	0.0448	880	0.5867	0.76%
AT&T UMTS	2	817	88	0.0874	1900	1.0000	0.87%
Site Total							11.97%

*Per CSC Records (available upon request, includes calculation formulas)

** If a range of frequencies are used, such as 880-894, enter the lowest value, i.e. 880

Note: Proposed Loading may also include corrections to certain Existing Loading values

Matthew J. Young – Professional Engineer
P.O. Box 277 – Story, WY 82842
Telephone: 402-643-4708 Fax: 402-643-4374
e-mail: myoung@lwsinc.com

SAI Communcations - ATTN: Tim Burks
Centek Engineering – ATTN: Camilo Gaviria
February 18, 2016

RE: Northeast Utilities–Site # CT58XC965/CT1104 – Str. # 8012 –
45 Maple Ridge Dr. – Farmington, CT

I have reviewed the proposed modification to the laminated wood pole that is shown on drawing # NESC-0028.04A1. I understand that the AT&T antenna array is to be updated to include the following hardware:

- Replace 6 existing antennas with (3) model CCI HPA-65R-BUU-H6 and (3) model Quintel QS66512-2
- Add 24 coaxial cables to the 12 existing cables for a total of 36.
- Replace the 6 existing TMAs with 18 new TMAS –
  (6) CCI DTMABP7819VG12A and (12) Kaelus TMA2117F00V1-1
- Replace the existing 36 jumper cables with 90 short 1/2" (.5) diameter jumper cables

All equipment referenced above to be mounted at a centerline height of approximately 88' AGL

In addition, this analysis also includes the existing Sprint antennas and brackets that are to remain at the 98' AGL location. The Sprint hardware was specified in the April 2013 analysis.
Most Recent LWS Drawing Revision Date = 10/8/2010
Most Recent Point Load Update = 4/2/2013
Most Recent LWS Analysis Date = 4/2/2013

The laminated wood poles have adequate capacity to support the additional load caused by the proposed equipment.

This analysis was based on the updated conductor loading that was developed by Northeast Utilities, dated 9/16/2010 in conjunction with the proposed antenna loading as described above.

This analysis was based on the following parameters:
Pole groundline dimensions of 22 ¼" x 23 3/8" and 12 ¼" x 16 ½"
Analyzed per: NESC Heavy and NESC Extreme Wind (110 mph)
Maximum Pole Usage = 95.9%
Maximum Element Usage = 95.9% (102' AGL pole)
Foundation Usage = acceptable (based on reported Class 3 soil conditions)
Structure Pass or Fail: **PASS**

If you have any questions, please call or e-mail.

Sincerely,

Matthew J. Young, P.E.

STATE OF CONNECTICUT
MATTHEW J. YOUNG
No. 20406
LICENSED
PROFESSIONAL ENGINEER

Feb. 18, 2016

Matthew J. Young – Professional Engineer
P.O. Box 277 – Story, WY 82842
Telephone: 402-643-4708
e-mail: myoung@lwsinc.com

Pole Analysis

E-LAM® Laminated Wood Poles

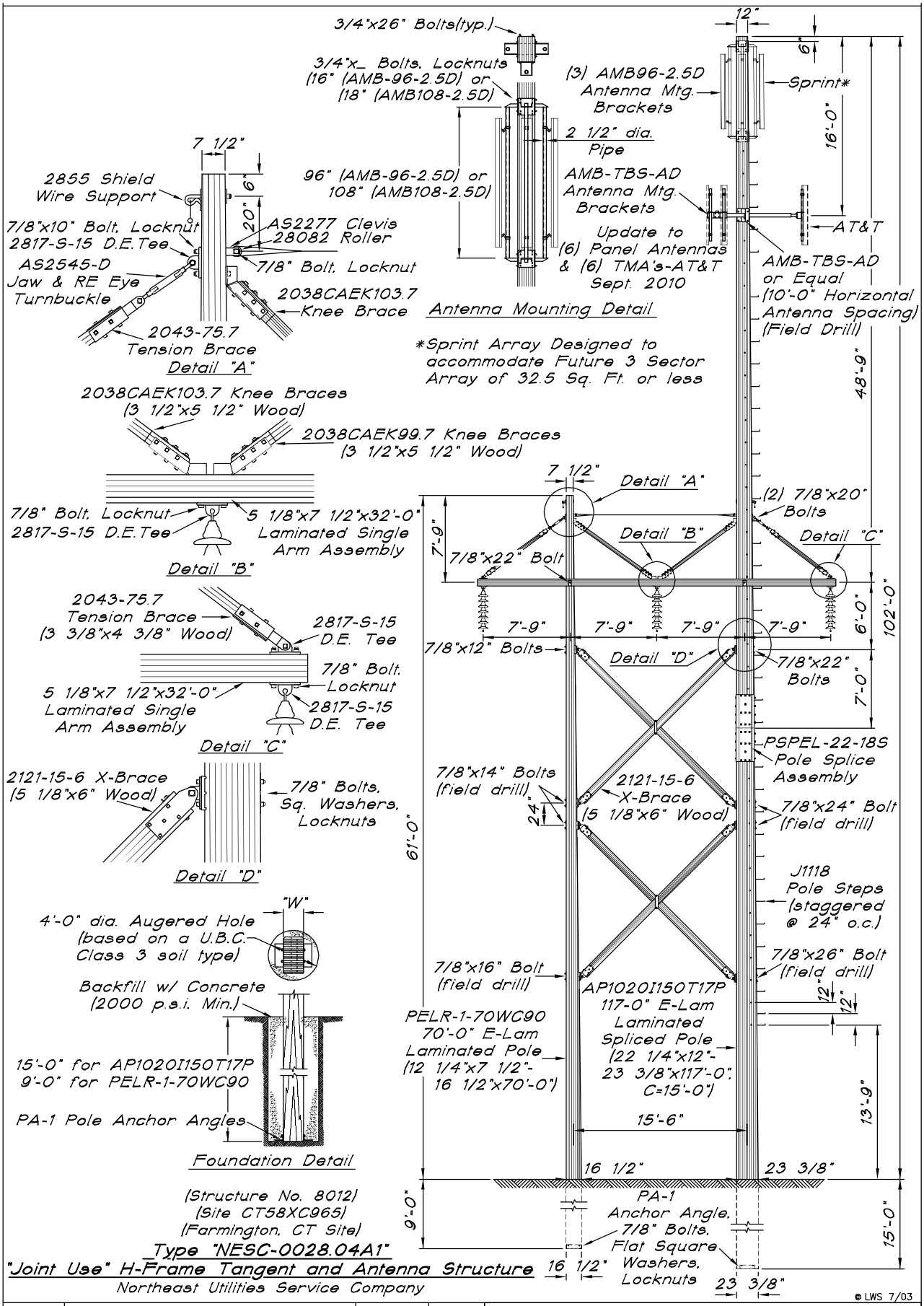
Eversource
(formerly Northeast Utilities)
Site # CT58XC965/CT1104
Str. # 8012

(LWS Reference NESC-0028.04A1)

45 Maple Ridge Dr.
Farmington, CT

Drawings and Calculations
(29 Pages + Cover Sheet)

FEB. 18, 2016



(Structure No. 8012)
(Site CT58XC965)
(Farmington, CT Site)

Type "NESC-0028.04A1"

"Joint Use" H-Frame Tangent and Antenna Structure

Northeast Utilities Service Company

NO.	REVISION	DATE	CK.
5.	Changed AT&T bracket from AMB108-2.5D to AMB-TBS-AD	10-8-10	
4.		9-28-10	
3.	Revised right knee brace length	11-4-03	
2.	added foundation detail	10-1-03	
1.	replaced amb-er44 with amb96-2.5D	9-23-03	

ACAD DWG. FILE: NESC2804A1

Laminated Wood Systems, Inc.
E-LAM
P.O. BOX 386, SEWARD, NE 68434 1-800-949-ELAM

DRAWN	DATE	DWG. NO.
J. Baack	7-15-03	NESC-0028.04A1

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*************************************************************************
*                                                                       *
*                              PLS-POLE                                 *
*                   POLE AND FRAME ANALYSIS AND DESIGN                  *
*              Copyright Power Line Systems, Inc. 1999-2013             *
*                                                                       *
*************************************************************************
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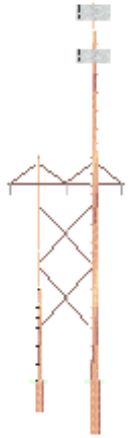
Project Name : NESC/Sprint/AT&T - Joint Use - Farmington, CT Site - # 8012
Date run : 2:07:08 PM Thursday, February 18, 2016
by : PLS-POLE Version 14.00

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: No
  Use Alternate Convergence Process: No

Laminated Wood Pole Properties:

Laminated Pole Property Label	Stock Number	Pole Type	Length (ft)	Default Embedded Length (ft)	Stop Dist. From Butt (ft)	Taper Tip Dim. (in)	Long. Tip Dim. (in)	Trans. Base Dim. (in)	Long. Base Dim. (in)	Default Drag Coef.	Modulus of Elasticity (ksi)	Density (lbs/ft^3)	Trans. MOR (ksi)	Long. MOR (ksi)
PELR-1-70WC90		SYP (LWS)	70.00	9	9.00	7.5	12.25	16.5	12.25	1.60	2400	46	7.6	8
AP1020I150T17P		SYP (LWS)	117.00	15	15.00	12	22.25	23.38	22.25	1.60	2400	46	7.6	8

Laminated Wood 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)
Left			0	-7.75	0	0	0	PELR-1-70WC90	7 labels	Fixed	0.00	0
Right			0	7.75	0	0	0	AP1020I150T17P	10 labels	Fixed	0.00	0

Relative Attachment Labels for Laminated Wood Pole "Left":

Joint Label	Distance From Origin/Top Joint (ft)	Global Z of Attach (ft)
Left:SW	0.50	0.00
Left:BRACE	2.00	0.00
Left:ARM	7.75	0.00
Left:X1T	13.75	0.00
Left:X1B	29.25	0.00
Left:X2T	31.25	0.00
Left:X2B	46.75	0.00

Relative Attachment Labels for Laminated Wood Pole "Right":

Joint Label	Distance From Origin/Top Joint (ft)	Global Z of Attach (ft)
Right:ANT1	2.00	0.00
Right:ANT2	14.00	0.00
Right:SW	41.50	0.00
Right:BRACE	43.00	0.00
Right:ARM	48.75	0.00
Right:X1T	54.75	0.00
Right:X1B	70.25	0.00
Right:X2T	72.25	0.00
Right:X2B	87.75	0.00
Right:cables	51.00	0.00

Detailed Laminated Wood Properties:

Element Label	Pole Feature	Dist. Above Ground (ft)	Dist. From Tip (ft)	Trans. Dim. (in)	Long. Dim. (in)	Area (in^2)	Trans. Section Modulus (in^3)	Long. Section Modulus (in^3)	Trans. Inertia (in^4)	Long. Inertia (in^4)	Trans. MOR (ksi)	Long. MOR (ksi)	Trans. Moment Capacity (ft-k)	Long. Moment Capacity (ft-k)
Left	Left:t	61.00	0.00	7.50	12.25	91.88	114.84	187.58	430.66	1148.92	7.600	8.000	72.734	125.052
Left	Left:SW	60.50	0.50	7.57	12.25	92.78	117.11	189.42	443.50	1160.22	7.600	8.000	74.172	126.282
Left	Left:BRACE	59.00	2.00	7.80	12.25	95.49	124.06	194.96	483.52	1194.12	7.600	8.000	78.570	129.972
Left		56.12	4.88	8.22	12.25	100.69	137.93	205.57	566.83	1259.10	7.600	8.000	87.354	137.045
Left	Left:ARM	53.25	7.75	8.64	12.25	105.88	152.53	216.18	659.20	1324.08	7.600	8.000	96.603	144.117
Left		50.25	10.75	9.09	12.25	111.30	168.55	227.25	765.74	1391.88	7.600	8.000	106.750	151.497
Left	Left:X1T	47.25	13.75	9.53	12.25	116.73	185.37	238.32	883.19	1459.69	7.600	8.000	117.404	158.877
Left		42.25	18.75	10.27	12.25	125.76	215.19	256.77	1104.61	1572.70	7.600	8.000	136.286	171.178
Left		37.25	23.75	11.00	12.25	134.80	247.23	275.22	1360.25	1685.70	7.600	8.000	156.576	183.478
Left		34.50	26.50	11.41	12.25	139.77	265.79	285.36	1516.33	1747.86	7.600	8.000	168.335	190.243
Left	Left:X1B	31.75	29.25	11.82	12.25	144.74	285.03	295.51	1683.91	1810.01	7.600	8.000	180.520	197.008
Left	Left:X2T	29.75	31.25	12.11	12.25	148.36	299.45	302.89	1813.25	1855.22	7.600	8.000	189.650	201.928
Left		24.75	36.25	12.85	12.25	157.39	337.04	321.34	2165.20	1968.22	7.600	8.000	213.458	214.228
Left		19.75	41.25	13.59	12.25	166.43	376.85	339.79	2559.98	2081.23	7.600	8.000	238.673	226.528
Left		17.00	44.00	13.99	12.25	171.40	399.70	349.94	2796.25	2143.39	7.600	8.000	253.142	233.294
Left	Left:X2B	14.25	46.75	14.40	12.25	176.37	423.22	360.09	3046.63	2205.54	7.600	8.000	268.036	240.059
Left		9.25	51.75	15.14	12.25	185.41	467.70	378.54	3539.35	2318.55	7.600	8.000	296.207	252.359
Left		4.62	56.37	15.82	12.25	193.77	510.82	395.61	4039.97	2423.08	7.600	8.000	323.518	263.736
Left	Left:g	0.00	61.00	16.50	12.25	202.13	555.84	412.67	4585.71	2527.62	7.577	8.000	350.952	275.114
Right	Right:t	102.00	0.00	12.00	22.25	267.00	534.00	990.13	3204.00	11015.14	7.600	8.000	338.199	660.082
Right	Right:ANT1	100.00	2.00	12.22	22.25	271.96	554.03	1008.53	3386.00	11219.87	7.600	8.000	350.888	672.351
Right		95.00	7.00	12.78	22.25	284.37	605.74	1054.54	3870.85	11731.71	7.600	8.000	383.633	703.023
Right		91.50	10.50	13.17	22.25	293.05	643.30	1086.74	4236.44	12089.99	7.600	8.000	407.423	724.493
Right	Right:ANT2	88.00	14.00	13.56	22.25	301.74	681.99	1118.95	4624.35	12448.28	7.600	8.000	431.928	745.963
Right		83.00	19.00	14.12	22.25	314.14	739.23	1164.95	5218.54	12960.11	7.600	8.000	468.177	776.635
Right		78.00	24.00	14.68	22.25	326.55	798.77	1210.96	5861.57	13471.95	7.600	8.000	505.887	807.307
Right		73.00	29.00	15.23	22.25	338.96	860.62	1256.97	6555.36	13983.78	7.600	8.000	545.057	837.978
Right		68.00	34.00	15.79	22.25	351.36	924.77	1302.98	7301.85	14495.62	7.600	8.000	585.688	868.650
Right		64.25	37.75	16.21	22.25	360.67	974.40	1337.48	7897.45	14879.50	7.590	8.000	616.316	891.654
Right	Right:SW	60.50	41.50	16.63	22.25	369.97	1025.33	1371.99	8524.60	15263.37	7.571	8.000	646.877	914.658
Right	Right:BRACE	59.00	43.00	16.80	22.25	373.70	1046.06	1385.79	8784.47	15416.92	7.563	8.000	659.297	923.859
Right		56.13	45.88	17.12	22.25	380.83	1086.38	1412.25	9297.21	15711.23	7.549	8.000	683.416	941.495
Right	Right:ARM	53.25	48.75	17.44	22.25	387.96	1127.46	1438.70	9829.53	16005.53	7.535	8.000	707.944	959.132
Right	Right:cables	51.00	51.00	17.69	22.25	393.55	1160.14	1459.40	10260.02	16235.86	7.524	8.000	727.426	972.934
Right	Right:X1T	47.25	54.75	18.11	22.25	402.85	1215.65	1493.91	11005.12	16619.73	7.507	8.000	760.451	995.938
Right		42.25	59.75	18.66	22.25	415.26	1291.68	1539.92	12053.52	17131.57	7.484	8.000	805.564	1026.609
Right		37.25	64.75	19.22	22.25	427.66	1370.02	1585.92	13166.48	17643.40	7.462	8.000	851.907	1057.281
Right		34.50	67.50	19.53	22.25	434.49	1414.08	1611.23	13806.82	17924.91	7.450	8.000	877.918	1074.150
Right	Right:X1B	31.75	70.25	19.83	22.25	441.31	1458.85	1636.53	14467.59	18206.42	7.438	8.000	904.300	1091.020
Right	Right:X2T	29.75	72.25	20.06	22.25	446.27	1491.84	1654.94	14961.17	18411.16	7.430	8.000	923.719	1103.289
Right		24.75	77.25	20.61	22.25	458.68	1575.94	1700.94	16243.96	18922.99	7.410	8.000	973.120	1133.960
Right		19.75	82.25	21.17	22.25	471.09	1662.35	1746.95	17598.05	19434.83	7.390	8.000	1023.738	1164.632
Right		17.00	85.00	21.48	22.25	477.91	1710.86	1772.25	18373.89	19716.34	7.379	8.000	1052.096	1181.501
Right	Right:X2B	14.25	87.75	21.79	22.25	484.74	1760.06	1797.56	19172.20	19997.85	7.369	8.000	1080.821	1198.371
Right		9.25	92.75	22.34	22.25	497.14	1851.31	1843.57	20682.31	20509.68	7.350	8.000	1133.986	1229.043
Right		4.62	97.38	22.86	22.25	508.62	1937.77	1886.12	22147.93	20983.13	7.334	8.000	1184.238	1257.414
Right	Right:g	0.00	102.00	23.38	22.25	520.09	2026.20	1928.68	23681.20	21456.58	7.317	8.000	1235.522	1285.785

Equipment Library:

Equipment Property Label	Stock Number	Weight (lbs)	Wind Area (ft^2)	Ice Area (ft^2)	EIA	Shape or Antenna Type	Drag Coef.	Diameter (ft)	Height (ft)	Vertical Offset (ft)
AMB-ER44	AMBER44	0.0	0.00	0.00		Square	1.00	9.15	4.00	0.00
Cable_25	Cable_25	2000.0	25.00	0.00		Circle	1.00	0.00	0.00	0.00

Equipment Connectivity:

Equipment Label	Attach Label	Equipment Property Set	Azimuth (deg)	Offset (ft)	Measured Relative To	EIA Antenna Orientation Angle (deg)
Carrier 1	Right:ANT1	AMB-ER44	0	0	Center	0.00
Carrier 2	Right:ANT2	AMB-ER44	0	0	Center	0.00

Cables	Right:X2T	Cable_25	0	0	Center	0.00

Brace Properties:

Brace Property Label	Stock Number	Cross Section Area (in^2)	Length (ft)	Depth (in)	Width (in)	Weight (lbs)	Unit Wt. (If Length Unknown) (lbs/ft)	Modulus of Elasticity (ksi)	Drag Coef.	Strength Check Type	Use Steel S.F.	Tension Capacity (lbs)	Compres. Capacity (lbs)	Net Area (in^2)	Design Normal Stress (ksi)	X-Moment Of Inertia (in^4)	Z-Moment Of Inertia (in^4)	Unbraced Length Ratio-X	Unbraced Length Ratio-Z
ten2043	2043-75.7	14.76	9.1	4.375	3.375	47	0	1600	1.6	Nominal	No	30000	16505	0	0	0	0	0	0
ten2043L	2043-75.7	14.76	9.4	4.375	3.375	47	0	1600	1.6	Nominal	No	30000	16505	0	0	0	0	0	0
x2121	2121-15-6	30.75	21.1	6	5.125	200	0	1600	1.6	Nominal	No	35000	66950	0	0	0	0	0	0
vee2038	2038CAEV115.8	19.25	9.1	5.5	3.5	59	0	1600	1.6	Nominal	No	30000	23141	0	0	0	0	0	0
vee2038L	2038CAEV115.8	19.25	9.4	5.5	3.5	59	0	1600	1.6	Nominal	No	30000	23141	0	0	0	0	0	0

Brace Connectivity:

Brace Label	Origin Label	End Label	Brace Property Set	Element Type
TENL	NESC32:L1	Left:BRACE	ten2043L	Standard
TENR	NESC32:L3	Right:BRACE	ten2043	Standard
VEEL	Left:BRACE	NESC32:L2V	vee2038L	Standard
VEER	Right:BRACE	NESC32:L2V	vee2038	Standard
X1T1	Left:X1T	Right:X1B	x2121	Standard
X1T2	Right:X1T	Left:X1B	x2121	Standard
X2T1	Left:X2T	Right:X2B	x2121	Standard
X2T2	Right:X2T	Left:X2B	x2121	Standard

X-Arm Properties:

Cross Arm Property Label	Stock Number	Cross Section Area (in^2)	X Inertia (in^4)	Z Inertia (in^4)	Weight (lbs)	Depth (in)	Width (in)	Length (ft)	Modulus of Elasticity (ksi)	Drag Coef.	Geometry	Strength Check Type	Use Steel S.F.	Vertical Capacity (lbs)	Trans. Capacity (lbs)	Long. Capacity (lbs)	Design Normal Stress (psi)	X Section Modulus (in^3)	Z Section Modulus (in^3)
NESC32		38.4	84.1	180.2	393	7.5	5.125	32	2100	1.6	7 points Calculated		No	0	0	0	8000	32.83	48.04

Intermediate Joints and Bolt Holes for Cross Arm Property "NESC32":

Joint Label	Offset (ft)	Horz. Hole Diameter (in)	Vert. Hole Diameter (in)
L1	0.5	0	0
PL	8.25	0	0
BRL	15	0	0
L2V	16	0	0
BRR	17	0	0
PR	23.75	0	0
L3	31.5	0	0

X-Arm Connectivity:

X-Arm Label	X-Arm Property Set	Azimuth (deg)	Slope (deg)	Attach. Labels	Connects
NESC32	NESC32	0	0	9 connections	

X-Arm Connections for "NESC32":

Attach Label	Offset (ft)	Connect At	Connection Code Type
NESC32:O	0.000		Pinned X
NESC32:L1	0.500		Pinned X
NESC32:PL	8.250	Left:ARM	Pinned X
NESC32:BRL	15.000		Pinned X
NESC32:L2V	16.000		Pinned X
NESC32:BRR	17.000		Pinned X
NESC32:PR	23.750	Right:ARM	Pinned X
NESC32:L3	31.500		Pinned X
NESC32:E	32.000		Pinned X

*** Insulator Data

Suspension Properties:

Label	Stock Number	Length (ft)	Weight (lbs)	Wind Area (ft^2)	Tension Capacity (lbs)	Top Rect Width (ft)	Top Rect Height (ft)	Bot. Rect Width (ft)	Bot. Rect Height (ft)	Vert. Rect Width (ft)	Vert. Rect Height (ft)
SUSSW		0.25	3	0.1	6e+004	0	0	0	0	0	0
SUS		3.5	50	2	6e+004	0	0	0	0	0	0

Suspension Insulator Connectivity:

Suspension Label	Structure Attach	Tip Label	Property Set	Cond. 1 Minimum Swing (deg)	Cond. 1 Maximum Swing (deg)	Cond. 2 Minimum Swing (deg)	Cond. 2 Maximum Swing (deg)	Cond. 3 Minimum Swing (deg)	Cond. 3 Maximum Swing (deg)	Cond. 4 Minimum Swing (deg)	Cond. 4 Maximum Swing (deg)	Min. Required Vertical Load (uplift) (lbs)
SUSSWL	Left:SW	SWL	SUSSW	-90.00	90.00	-90.00	90.00	-90.00	90.00	-180.00	180.00	No Limit
SUSSWR	Right:SW	SWR	SUSSW	-90.00	90.00	-90.00	90.00	-90.00	90.00	-180.00	180.00	No Limit
L1	NESC32:L1	L1	SUS	-90.00	90.00	-90.00	90.00	-90.00	90.00	-180.00	180.00	No Limit
L2	NESC32:L2V	L2	SUS	-90.00	90.00	-90.00	90.00	-90.00	90.00	-180.00	180.00	No Limit
L3	NESC32:L3	L3	SUS	-90.00	90.00	-90.00	90.00	-90.00	90.00	-180.00	180.00	No Limit
ANT1	Right:ANT1	ANT1	SUSSW	-90.00	90.00	-90.00	90.00	-90.00	90.00	-180.00	180.00	No Limit
ANT2	Right:ANT2	ANT2	SUSSW	-90.00	90.00	-90.00	90.00	-90.00	90.00	-180.00	180.00	No Limit
cables	Right:cables	cables	SUSSW	-90.00	90.00	-90.00	90.00	-90.00	90.00	-180.00	180.00	No Limit

Material List

Stock Number	Item Description	Quantity	Unit of Measure
2043-75.7	Brace property: ten2043	2.00	Each
2038CAEV115.8	Brace property: vee2038L	2.00	Each
2121-15-6	Brace property: x2121	4.00	Each
AMBER44	Equipment property: AMB-ER44	2.00	Each
Cable_25	Equipment property: Cable_25	1.00	Each

*** Loads Data

Loads from file: h:\pls\examples\old_files\pls\pls_pole\projects\nesc\nesc_8012_feb2016.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) 102.00 (ft)
  Structure height 102.00 (ft)
  Structure height above ground 102.00 (ft)

Vector Load Cases:

Load Case Description	Dead Load Factor	Wind Area Factor	SF for Steel Tubular Arms and Towers	SF for Poles	SF for Wood Poles	SF for Conc. Ult.	SF for Conc. First Crack	SF for Conc. Zero Tens.	SF for Guys and Cables	SF for Non Tubular Arms	SF for Braces	SF for Insuls.	SF For Found.	Point Loads	Wind/Ice Model	Trans. Wind Pressure (psf)	Longit. Wind Pressure (psf)	Ice Thick. (in)	Ice Density (lbs/ft^3)	Temperature (deg F)	Pole Deflection Check	Pole Deflection Limit % or (ft)
NESC HVY	1.0000	1.0000	1.00000	0.6500	0.0000	0.0000	0.0000	1.0000	0.6500	0.6500	1.0000	1.0000	8 loads	Wind on All	10	0	0.000	56.000	60.0	No Limit	0
NESC HVY BW	1.0000	1.0000	1.00000	0.6500	0.0000	0.0000	0.0000	1.0000	0.6500	0.6500	1.0000	1.0000	8 loads	Wind on All	10	0	0.000	56.000	60.0	No Limit	0
Ext. Wind t	1.0000	1.0000	1.00000	0.7500	0.0000	0.0000	0.0000	1.0000	0.7500	0.7500	1.0000	1.0000	8 loads	Wind on All	31.3	0	0.000	56.000	60.0	No Limit	0
Ext. Wind l	1.0000	1.0000	1.00000	0.7500	0.0000	0.0000	0.0000	1.0000	0.7500	0.7500	1.0000	1.0000	8 loads	Wind on All	0	31.3	0.000	56.000	60.0	No Limit	0

Point Loads for Load Case "NESC HVY":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
SWL	628	586	0	
SWR	628	586	0	
L1	913	692	0	
L2	913	692	0	
L3	913	692	0	
ANT1	1050	181	0	
ANT2	2715	710	0	
cables	4920	816	0	

Detailed Pole Loading Data for Load Case "NESC HVY":

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 Vertical Load (lbs)	Pole Ice Wind Load (lbs)	Tran. Wind Load (lbs)	Long. Wind Load (lbs)
Left	Left:t	Left:SW	61.00	60.50	60.75	7.537	3.57e+005	1.600	10.00	0.00	14.75	8.17	0.00	0.00	8.17	0.05
Left	Left:SW	Left:BRACE	60.50	59.00	59.75	7.684	3.64e+005	1.600	10.00	0.00	45.11	24.50	0.00	0.00	24.50	0.16
Left	Left:BRACE		59.00	56.12	57.56	8.007	3.79e+005	1.600	10.00	0.00	90.08	46.96	0.00	0.00	46.96	0.32
Left		Left:ARM	56.12	53.25	54.69	8.431	3.99e+005	1.600	10.00	0.00	94.86	46.96	0.00	0.00	46.96	0.34
Left	Left:ARM		53.25	50.25	51.75	8.865	4.2e+005	1.600	10.00	0.00	104.07	49.00	0.00	0.00	49.00	0.37
Left		Left:X1T	50.25	47.25	48.75	9.307	4.41e+005	1.600	10.00	0.00	109.26	49.00	0.00	0.00	49.00	0.39
Left	Left:X1T		47.25	42.25	44.75	9.898	4.69e+005	1.600	10.00	0.00	193.66	81.67	0.00	0.00	81.67	0.69
Left			42.25	37.25	39.75	10.635	5.04e+005	1.600	10.00	0.00	208.09	81.67	0.00	0.00	81.67	0.74
Left			37.25	34.50	35.87	11.207	5.31e+005	1.600	10.00	0.00	120.60	44.92	0.00	0.00	44.92	0.43
Left		Left:X1B	34.50	31.75	33.12	11.613	5.5e+005	1.600	10.00	0.00	124.97	44.92	0.00	0.00	44.92	0.44
Left	Left:X1B	Left:X2T	31.75	29.75	30.75	11.963	5.66e+005	1.600	10.00	0.00	93.63	32.67	0.00	0.00	32.67	0.33
Left	Left:X2T		29.75	24.75	27.25	12.250	5.8e+005	1.600	10.00	0.00	244.17	81.67	0.00	0.00	81.67	0.87
Left			24.75	19.75	22.25	12.250	5.8e+005	1.600	10.00	0.00	258.61	81.67	0.00	0.00	81.67	0.92
Left			19.75	17.00	18.37	12.250	5.8e+005	1.600	10.00	0.00	148.39	44.92	0.00	0.00	44.92	0.53
Left		Left:X2B	17.00	14.25	15.62	12.250	5.8e+005	1.600	10.00	0.00	152.75	44.92	0.00	0.00	44.92	0.54
Left	Left:X2B		14.25	9.25	11.75	12.250	5.8e+005	1.600	10.00	0.00	288.92	81.67	0.00	0.00	81.67	1.03
Left			9.25	4.62	6.94	12.250	5.8e+005	1.600	10.00	0.00	280.10	75.55	0.00	0.00	75.54	1.00
Left		Left:g	4.62	0.00	2.31	12.250	5.8e+005	1.600	10.00	0.00	292.45	75.55	0.00	0.00	75.54	1.04
Right	Right:t	Right:ANT1	102.00	100.00	101.00	12.112	5.73e+005	1.600	10.00	0.00	172.17	59.33	0.00	0.00	59.33	0.34
Right	Right:ANT1		100.00	95.00	97.50	12.502	5.92e+005	1.600	10.00	0.00	444.29	148.34	0.00	0.00	148.33	0.87
Right			95.00	91.50	93.25	12.976	6.14e+005	1.600	10.00	0.00	322.80	103.84	0.00	0.00	103.83	0.63
Right		Right:ANT2	91.50	88.00	89.75	13.366	6.33e+005	1.600	10.00	0.00	332.51	103.84	0.00	0.00	103.83	0.65
Right	Right:ANT2		88.00	83.00	85.50	13.840	6.55e+005	1.600	10.00	0.00	491.85	148.34	0.00	0.00	148.33	0.96
Right			83.00	78.00	80.50	14.398	6.82e+005	1.600	10.00	0.00	511.67	148.34	0.00	0.00	148.33	1.00
Right			78.00	73.00	75.50	14.955	7.08e+005	1.600	10.00	0.00	531.48	148.34	0.00	0.00	148.33	1.04
Right			73.00	68.00	70.50	15.513	7.34e+005	1.600	10.00	0.00	551.30	148.34	0.00	0.00	148.33	1.08
Right			68.00	64.25	66.13	16.001	7.58e+005	1.600	10.00	0.00	426.48	111.25	0.00	0.00	111.25	0.84
Right		Right:SW	64.25	60.50	62.38	16.419	7.77e+005	1.600	10.00	0.00	437.63	111.25	0.00	0.00	111.25	0.86
Right	Right:SW	Right:BRACE	60.50	59.00	59.75	16.712	7.91e+005	1.600	10.00	0.00	178.17	44.50	0.00	0.00	44.50	0.35
Right	Right:BRACE		59.00	56.13	57.56	16.956	8.03e+005	1.600	10.00	0.00	346.48	85.29	0.00	0.00	85.29	0.68
Right		Right:ARM	56.13	53.25	54.69	17.276	8.18e+005	1.600	10.00	0.00	353.03	85.29	0.00	0.00	85.29	0.69
Right	Right:ARM	Right:cables	53.25	51.00	52.13	17.562	8.31e+005	1.600	10.00	0.00	280.86	66.75	0.00	0.00	66.75	0.55
Right	Right:cables	Right:X1T	51.00	47.25	49.13	17.897	8.47e+005	1.600	10.00	0.00	477.01	111.25	0.00	0.00	111.25	0.93
Right	Right:X1T		47.25	42.25	44.75	18.384	8.7e+005	1.600	10.00	0.00	653.35	148.34	0.00	0.00	148.33	1.28
Right			42.25	37.25	39.75	18.942	8.97e+005	1.600	10.00	0.00	673.17	148.34	0.00	0.00	148.33	1.32
Right			37.25	34.50	35.88	19.374	9.17e+005	1.600	10.00	0.00	378.69	81.59	0.00	0.00	81.58	0.74

Right		Right:X1B	34.50	31.75	33.13	19.681	9.32e+005	1.600	10.00	0.00	384.68	81.59	0.00	0.00	81.58	0.75
Right	Right:X1B	Right:X2T	31.75	29.75	30.75	19.946	9.44e+005	1.600	10.00	0.00	283.53	59.34	0.00	0.00	59.33	0.56
Right	Right:X2T		29.75	24.75	27.25	20.336	9.63e+005	1.600	10.00	0.00	722.71	148.34	0.00	0.00	148.33	1.42
Right			24.75	19.75	22.25	20.894	9.89e+005	1.600	10.00	0.00	742.52	148.34	0.00	0.00	148.33	1.45
Right			19.75	17.00	18.38	21.326	1.01e+006	1.600	10.00	0.00	416.83	81.59	0.00	0.00	81.58	0.82
Right		Right:X2B	17.00	14.25	15.62	21.633	1.02e+006	1.600	10.00	0.00	422.83	81.59	0.00	0.00	81.58	0.83
Right	Right:X2B		14.25	9.25	11.75	22.065	1.04e+006	1.600	10.00	0.00	784.14	148.34	0.00	0.00	148.33	1.54
Right			9.25	4.62	6.94	22.250	1.05e+006	1.600	10.00	0.00	742.97	137.22	0.00	0.00	137.21	1.46
Right		Right:g	4.62	0.00	2.31	22.250	1.05e+006	1.600	10.00	0.00	759.92	137.22	0.00	0.00	137.21	1.49

Point Loads for Load Case "NESC HVY BW":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
SWL	628	586	0	
SWR	210	242	6930	
L1	913	692	0	
L2	913	692	0	
L3	913	692	0	
ANT1	1050	181	0	
ANT2	2715	710	0	
cables	4920	816	0	

Detailed Pole Loading Data for Load Case "NESC HVY BW":

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)
Left	Left:t	Left:SW	61.00	60.50	60.75	7.537	3.57e+005	1.600	10.00	0.00	14.75	8.17	0.00	0.00	8.17	0.05
Left	Left:SW	Left:BRACE	60.50	59.00	59.75	7.684	3.64e+005	1.600	10.00	0.00	45.11	24.50	0.00	0.00	24.50	0.16
Left	Left:BRACE		59.00	56.12	57.56	8.007	3.79e+005	1.600	10.00	0.00	90.08	46.96	0.00	0.00	46.96	0.32
Left		Left:ARM	56.12	53.25	54.69	8.431	3.99e+005	1.600	10.00	0.00	94.86	46.96	0.00	0.00	46.96	0.34
Left	Left:ARM		53.25	50.25	51.75	8.865	4.2e+005	1.600	10.00	0.00	104.07	49.00	0.00	0.00	49.00	0.37
Left		Left:X1T	50.25	47.25	48.75	9.307	4.41e+005	1.600	10.00	0.00	109.26	49.00	0.00	0.00	49.00	0.39
Left	Left:X1T		47.25	42.25	44.75	9.898	4.69e+005	1.600	10.00	0.00	193.66	81.67	0.00	0.00	81.67	0.69
Left			42.25	37.25	39.75	10.635	5.04e+005	1.600	10.00	0.00	208.09	81.67	0.00	0.00	81.67	0.74
Left			37.25	34.50	35.87	11.207	5.31e+005	1.600	10.00	0.00	120.60	44.92	0.00	0.00	44.92	0.43
Left		Left:X1B	34.50	31.75	33.12	11.613	5.5e+005	1.600	10.00	0.00	124.97	44.92	0.00	0.00	44.92	0.44
Left	Left:X1B	Left:X2T	31.75	29.75	30.75	11.963	5.66e+005	1.600	10.00	0.00	93.63	32.67	0.00	0.00	32.67	0.33
Left	Left:X2T		29.75	24.75	27.25	12.250	5.8e+005	1.600	10.00	0.00	244.17	81.67	0.00	0.00	81.67	0.87
Left			24.75	19.75	22.25	12.250	5.8e+005	1.600	10.00	0.00	258.61	81.67	0.00	0.00	81.67	0.92
Left			19.75	17.00	18.37	12.250	5.8e+005	1.600	10.00	0.00	148.39	44.92	0.00	0.00	44.92	0.53
Left		Left:X2B	17.00	14.25	15.62	12.250	5.8e+005	1.600	10.00	0.00	152.75	44.92	0.00	0.00	44.92	0.54
Left	Left:X2B		14.25	9.25	11.75	12.250	5.8e+005	1.600	10.00	0.00	288.92	81.67	0.00	0.00	81.67	1.03
Left			9.25	4.62	6.94	12.250	5.8e+005	1.600	10.00	0.00	280.10	75.55	0.00	0.00	75.54	1.00
Left		Left:g	4.62	0.00	2.31	12.250	5.8e+005	1.600	10.00	0.00	292.45	75.55	0.00	0.00	75.54	1.04
Right	Right:t	Right:ANT1	102.00	100.00	101.00	12.112	5.73e+005	1.600	10.00	0.00	172.17	59.33	0.00	0.00	59.33	0.34
Right	Right:ANT1		100.00	95.00	97.50	12.502	5.92e+005	1.600	10.00	0.00	444.29	148.34	0.00	0.00	148.33	0.87
Right			95.00	91.50	93.25	12.976	6.14e+005	1.600	10.00	0.00	322.80	103.84	0.00	0.00	103.83	0.63
Right		Right:ANT2	91.50	88.00	89.75	13.366	6.33e+005	1.600	10.00	0.00	332.51	103.84	0.00	0.00	103.83	0.65
Right	Right:ANT2		88.00	83.00	85.50	13.840	6.55e+005	1.600	10.00	0.00	491.85	148.34	0.00	0.00	148.33	0.96
Right			83.00	78.00	80.50	14.398	6.82e+005	1.600	10.00	0.00	511.67	148.34	0.00	0.00	148.33	1.00
Right			78.00	73.00	75.50	14.955	7.08e+005	1.600	10.00	0.00	531.48	148.34	0.00	0.00	148.33	1.04
Right			73.00	68.00	70.50	15.513	7.34e+005	1.600	10.00	0.00	551.30	148.34	0.00	0.00	148.33	1.08
Right			68.00	64.25	66.13	16.001	7.58e+005	1.600	10.00	0.00	426.48	111.25	0.00	0.00	111.25	0.84
Right		Right:SW	64.25	60.50	62.38	16.419	7.77e+005	1.600	10.00	0.00	437.63	111.25	0.00	0.00	111.25	0.86
Right	Right:SW	Right:BRACE	60.50	59.00	59.75	16.712	7.91e+005	1.600	10.00	0.00	178.17	44.50	0.00	0.00	44.50	0.35
Right	Right:BRACE		59.00	56.13	57.56	16.956	8.03e+005	1.600	10.00	0.00	346.48	85.29	0.00	0.00	85.29	0.68
Right		Right:ARM	56.13	53.25	54.69	17.276	8.18e+005	1.600	10.00	0.00	353.03	85.29	0.00	0.00	85.29	0.69
Right	Right:ARM	Right:cables	53.25	51.00	52.13	17.562	8.31e+005	1.600	10.00	0.00	280.86	66.75	0.00	0.00	66.75	0.55
Right	Right:cables	Right:X1T	51.00	47.25	49.13	17.897	8.47e+005	1.600	10.00	0.00	477.01	111.25	0.00	0.00	111.25	0.93
Right	Right:X1T		47.25	42.25	44.75	18.384	8.7e+005	1.600	10.00	0.00	653.35	148.34	0.00	0.00	148.33	1.28
Right			42.25	37.25	39.75	18.942	8.97e+005	1.600	10.00	0.00	673.17	148.34	0.00	0.00	148.33	1.32
Right			37.25	34.50	35.88	19.374	9.17e+005	1.600	10.00	0.00	378.69	81.59	0.00	0.00	81.58	0.74
Right		Right:X1B	34.50	31.75	33.13	19.681	9.32e+005	1.600	10.00	0.00	384.68	81.59	0.00	0.00	81.58	0.75
Right	Right:X1B	Right:X2T	31.75	29.75	30.75	19.946	9.44e+005	1.600	10.00	0.00	283.53	59.34	0.00	0.00	59.33	0.56
Right	Right:X2T		29.75	24.75	27.25	20.336	9.63e+005	1.600	10.00	0.00	722.71	148.34	0.00	0.00	148.33	1.42
Right			24.75	19.75	22.25	20.894	9.89e+005	1.600	10.00	0.00	742.52	148.34	0.00	0.00	148.33	1.45
Right			19.75	17.00	18.38	21.326	1.01e+006	1.600	10.00	0.00	416.83	81.59	0.00	0.00	81.58	0.82
Right		Right:X2B	17.00	14.25	15.62	21.633	1.02e+006	1.600	10.00	0.00	422.83	81.59	0.00	0.00	81.58	0.83
Right	Right:X2B		14.25	9.25	11.75	22.065	1.04e+006	1.600	10.00	0.00	784.14	148.34	0.00	0.00	148.33	1.54
Right			9.25	4.62	6.94	22.250	1.05e+006	1.600	10.00	0.00	742.97	137.22	0.00	0.00	137.21	1.46
Right		Right:g	4.62	0.00	2.31	22.250	1.05e+006	1.600	10.00	0.00	759.92	137.22	0.00	0.00	137.21	1.49

Point Loads for Load Case "Ext. Wind t":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
SWL	140	409	0	
SWR	140	409	0	
L1	265	644	0	
L2	265	644	0	
L3	265	644	0	
ANT1	700	566	0	

ANT2	1810	2196	0
cables	3280	2566	0

Detailed Pole Loading Data for Load Case "Ext. Wind t":

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)
Left	Left:t	Left:SW	61.00	60.50	60.75	7.537	6.31e+005	1.600	31.30	0.00	14.75	25.56	0.00	0.00	25.56	0.05
Left	Left:SW	Left:BRACE	60.50	59.00	59.75	7.684	6.44e+005	1.600	31.30	0.00	45.11	76.69	0.00	0.00	76.68	0.16
Left	Left:BRACE		59.00	56.12	57.56	8.007	6.71e+005	1.600	31.30	0.00	90.08	146.98	0.00	0.00	146.98	0.32
Left		Left:ARM	56.12	53.25	54.69	8.431	7.06e+005	1.600	31.30	0.00	94.86	146.98	0.00	0.00	146.98	0.34
Left	Left:ARM		53.25	50.25	51.75	8.865	7.43e+005	1.600	31.30	0.00	104.07	153.37	0.00	0.00	153.37	0.37
Left		Left:X1T	50.25	47.25	48.75	9.307	7.8e+005	1.600	31.30	0.00	109.26	153.37	0.00	0.00	153.37	0.39
Left	Left:X1T		47.25	42.25	44.75	9.898	8.29e+005	1.600	31.30	0.00	193.66	255.62	0.00	0.00	255.62	0.69
Left			42.25	37.25	39.75	10.635	8.91e+005	1.600	31.30	0.00	208.09	255.62	0.00	0.00	255.62	0.74
Left			37.25	34.50	35.87	11.207	9.39e+005	1.600	31.30	0.00	120.60	140.59	0.00	0.00	140.59	0.43
Left		Left:X1B	34.50	31.75	33.12	11.613	9.73e+005	1.600	31.30	0.00	124.97	140.59	0.00	0.00	140.59	0.44
Left	Left:X1B	Left:X2T	31.75	29.75	30.75	11.963	1e+006	1.600	31.30	0.00	93.63	102.25	0.00	0.00	102.25	0.33
Left	Left:X2T		29.75	24.75	27.25	12.250	1.03e+006	1.600	31.30	0.00	244.17	255.62	0.00	0.00	255.62	0.87
Left			24.75	19.75	22.25	12.250	1.03e+006	1.600	31.30	0.00	258.61	255.62	0.00	0.00	255.62	0.92
Left			19.75	17.00	18.37	12.250	1.03e+006	1.600	31.30	0.00	148.39	140.59	0.00	0.00	140.59	0.53
Left		Left:X2B	17.00	14.25	15.62	12.250	1.03e+006	1.600	31.30	0.00	152.75	140.59	0.00	0.00	140.59	0.54
Left	Left:X2B		14.25	9.25	11.75	12.250	1.03e+006	1.600	31.30	0.00	288.92	255.62	0.00	0.00	255.62	1.03
Left			9.25	4.62	6.94	12.250	1.03e+006	1.600	31.30	0.00	280.10	236.45	0.00	0.00	236.45	1.00
Left		Left:g	4.62	0.00	2.31	12.250	1.03e+006	1.600	31.30	0.00	292.45	236.45	0.00	0.00	236.45	1.04
Right	Right:t	Right:ANT1	102.00	100.00	101.00	12.112	1.01e+006	1.600	31.30	0.00	172.17	185.71	0.00	0.00	185.71	0.34
Right	Right:ANT1		100.00	95.00	97.50	12.502	1.05e+006	1.600	31.30	0.00	444.29	464.28	0.00	0.00	464.28	0.87
Right			95.00	91.50	93.25	12.976	1.09e+006	1.600	31.30	0.00	322.80	325.00	0.00	0.00	325.00	0.63
Right		Right:ANT2	91.50	88.00	89.75	13.366	1.12e+006	1.600	31.30	0.00	332.51	325.00	0.00	0.00	325.00	0.65
Right	Right:ANT2		88.00	83.00	85.50	13.840	1.16e+006	1.600	31.30	0.00	491.85	464.28	0.00	0.00	464.28	0.96
Right			83.00	78.00	80.50	14.398	1.21e+006	1.600	31.30	0.00	511.67	464.28	0.00	0.00	464.28	1.00
Right			78.00	73.00	75.50	14.955	1.25e+006	1.600	31.30	0.00	531.48	464.28	0.00	0.00	464.28	1.04
Right			73.00	68.00	70.50	15.513	1.3e+006	1.600	31.30	0.00	551.30	464.28	0.00	0.00	464.28	1.08
Right			68.00	64.25	66.13	16.001	1.34e+006	1.600	31.30	0.00	426.48	348.21	0.00	0.00	348.21	0.84
Right		Right:SW	64.25	60.50	62.38	16.419	1.38e+006	1.600	31.30	0.00	437.63	348.21	0.00	0.00	348.21	0.86
Right	Right:SW	Right:BRACE	60.50	59.00	59.75	16.712	1.4e+006	1.600	31.30	0.00	178.17	139.29	0.00	0.00	139.28	0.35
Right	Right:BRACE		59.00	56.13	57.56	16.956	1.42e+006	1.600	31.30	0.00	346.48	266.96	0.00	0.00	266.96	0.68
Right		Right:ARM	56.13	53.25	54.69	17.276	1.45e+006	1.600	31.30	0.00	353.03	266.96	0.00	0.00	266.96	0.69
Right	Right:ARM	Right:cables	53.25	51.00	52.13	17.562	1.47e+006	1.600	31.30	0.00	280.86	208.93	0.00	0.00	208.93	0.55
Right	Right:cables	Right:X1T	51.00	47.25	49.13	17.897	1.5e+006	1.600	31.30	0.00	477.01	348.21	0.00	0.00	348.21	0.93
Right	Right:X1T		47.25	42.25	44.75	18.384	1.54e+006	1.600	31.30	0.00	653.35	464.28	0.00	0.00	464.28	1.28
Right			42.25	37.25	39.75	18.942	1.59e+006	1.600	31.30	0.00	673.17	464.28	0.00	0.00	464.28	1.32
Right			37.25	34.50	35.88	19.374	1.62e+006	1.600	31.30	0.00	378.69	255.36	0.00	0.00	255.36	0.74
Right		Right:X1B	34.50	31.75	33.13	19.681	1.65e+006	1.600	31.30	0.00	384.68	255.36	0.00	0.00	255.36	0.75
Right	Right:X1B	Right:X2T	31.75	29.75	30.75	19.946	1.67e+006	1.600	31.30	0.00	283.53	185.71	0.00	0.00	185.71	0.56
Right	Right:X2T		29.75	24.75	27.25	20.336	1.7e+006	1.600	31.30	0.00	722.71	464.28	0.00	0.00	464.28	1.42
Right			24.75	19.75	22.25	20.894	1.75e+006	1.600	31.30	0.00	742.52	464.28	0.00	0.00	464.28	1.45
Right			19.75	17.00	18.38	21.326	1.79e+006	1.600	31.30	0.00	416.83	255.36	0.00	0.00	255.36	0.82
Right		Right:X2B	17.00	14.25	15.62	21.633	1.81e+006	1.600	31.30	0.00	422.83	255.36	0.00	0.00	255.36	0.83
Right	Right:X2B		14.25	9.25	11.75	22.065	1.85e+006	1.600	31.30	0.00	784.14	464.29	0.00	0.00	464.28	1.54
Right			9.25	4.62	6.94	22.250	1.86e+006	1.600	31.30	0.00	742.97	429.46	0.00	0.00	429.46	1.46
Right		Right:g	4.62	0.00	2.31	22.250	1.86e+006	1.600	31.30	0.00	759.92	429.46	0.00	0.00	429.46	1.49

Point Loads for Load Case "Ext. Wind l":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
SWL	140	0	0	
SWR	140	0	0	
L1	265	0	0	
L2	265	0	0	
L3	265	0	0	
ANT1	700	0	566	
ANT2	1810	0	2196	
cables	3280	0	2566	

Detailed Pole Loading Data for Load Case "Ext. Wind l":

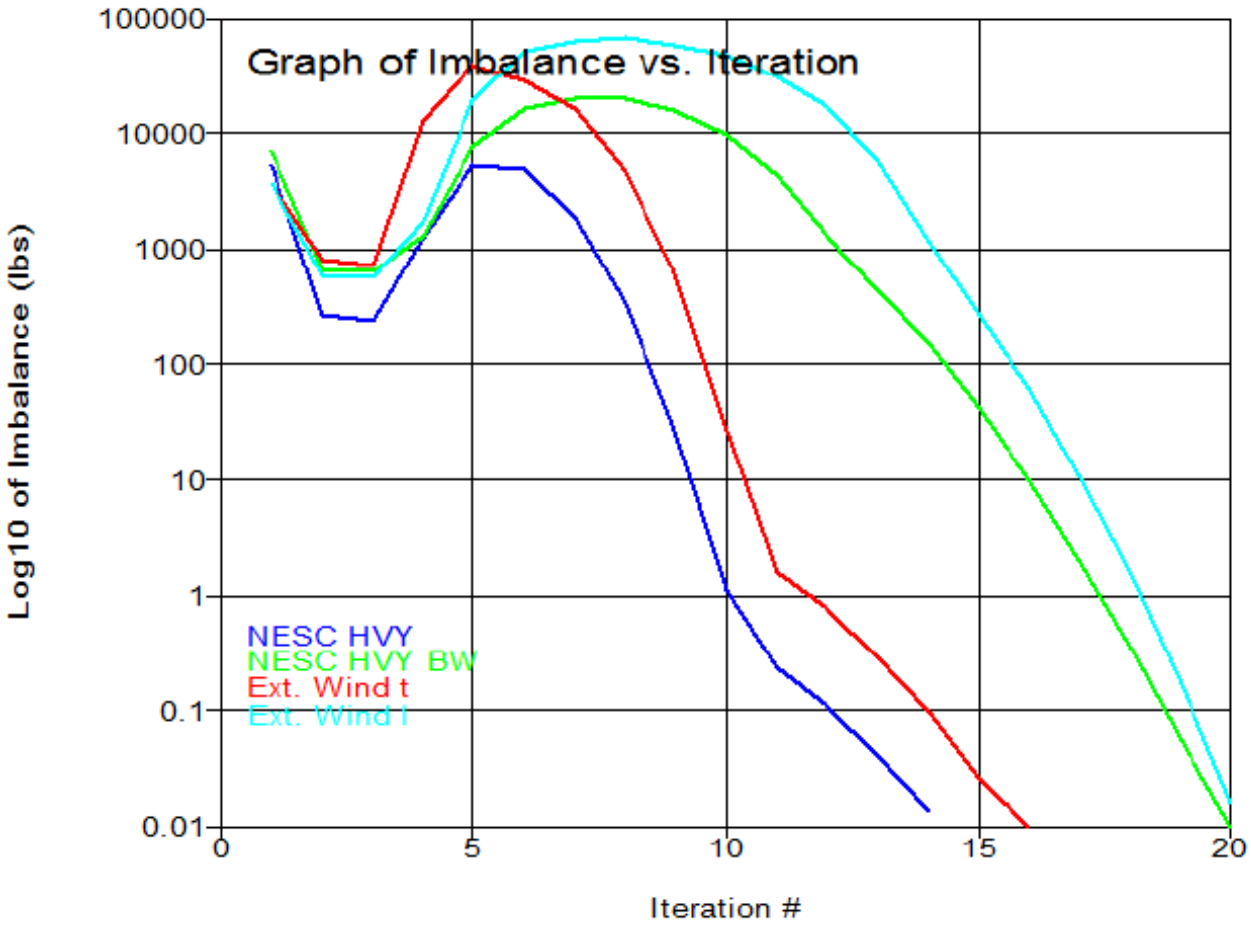
Notes: Does not include loads from equipment, arms, guys, braces, etc. or user input loads.
Wind load is calculated for the undeformed shape of a pole.

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)
Left	Left:t	Left:SW	61.00	60.50	60.75	7.537	6.31e+005	1.600	31.30	0.00	14.75	15.73	0.00	0.00	0.09	15.73
Left	Left:SW	Left:BRACE	60.50	59.00	59.75	7.684	6.44e+005	1.600	31.30	0.00	45.11	48.11	0.00	0.00	0.26	48.10
Left	Left:BRACE		59.00	56.12	57.56	8.007	6.71e+005	1.600	31.30	0.00	90.08	96.07	0.00	0.00	0.49	96.07
Left		Left:ARM	56.12	53.25	54.69	8.431	7.06e+005	1.600	31.30	0.00	94.86	101.16	0.00	0.00	0.49	101.16
Left	Left:ARM		53.25	50.25	51.75	8.865	7.43e+005	1.600	31.30	0.00	104.07	110.99	0.00	0.00	0.51	110.99
Left		Left:X1T	50.25	47.25	48.75	9.307	7.8e+005	1.600	31.30	0.00	109.26	116.53	0.00	0.00	0.51	116.53
Left	Left:X1T		47.25	42.25	44.75	9.898	8.29e+005	1.600	31.30	0.00	193.66	206.53	0.00	0.00	0.85	206.53
Left			42.25	37.25	39.75	10.635	8.91e+005	1.600	31.30	0.00	208.09	221.92	0.00	0.00	0.85	221.92
Left			37.25	34.50	35.87	11.207	9.39e+005	1.600	31.30	0.00	120.60	128.62	0.00	0.00	0.47	128.62

Left		Left:X1B	34.50	31.75	33.12	11.613	9.73e+005	1.600	31.30	0.00	124.97	133.28	0.00	0.00	0.47	133.27
Left	Left:X1B	Left:X2T	31.75	29.75	30.75	11.963	1e+006	1.600	31.30	0.00	93.63	99.85	0.00	0.00	0.34	99.85
Left	Left:X2T		29.75	24.75	27.25	12.250	1.03e+006	1.600	31.30	0.00	244.17	260.41	0.00	0.00	0.85	260.41
Left			24.75	19.75	22.25	12.250	1.03e+006	1.600	31.30	0.00	258.61	275.80	0.00	0.00	0.85	275.80
Left			19.75	17.00	18.37	12.250	1.03e+006	1.600	31.30	0.00	148.39	158.25	0.00	0.00	0.47	158.25
Left		Left:X2B	17.00	14.25	15.62	12.250	1.03e+006	1.600	31.30	0.00	152.75	162.91	0.00	0.00	0.47	162.91
Left	Left:X2B		14.25	9.25	11.75	12.250	1.03e+006	1.600	31.30	0.00	288.92	308.13	0.00	0.00	0.85	308.12
Left			9.25	4.62	6.94	12.250	1.03e+006	1.600	31.30	0.00	280.10	298.72	0.00	0.00	0.79	298.72
Left		Left:g	4.62	0.00	2.31	12.250	1.03e+006	1.600	31.30	0.00	292.45	311.89	0.00	0.00	0.79	311.89
Right	Right:t	Right:ANT1	102.00	100.00	101.00	12.112	1.01e+006	1.600	31.30	0.00	172.17	101.09	0.00	0.00	0.62	101.09
Right	Right:ANT1		100.00	95.00	97.50	12.502	1.05e+006	1.600	31.30	0.00	444.29	260.88	0.00	0.00	1.55	260.87
Right			95.00	91.50	93.25	12.976	1.09e+006	1.600	31.30	0.00	322.80	189.54	0.00	0.00	1.08	189.53
Right		Right:ANT2	91.50	88.00	89.75	13.366	1.12e+006	1.600	31.30	0.00	332.51	195.24	0.00	0.00	1.08	195.23
Right	Right:ANT2		88.00	83.00	85.50	13.840	1.16e+006	1.600	31.30	0.00	491.85	288.80	0.00	0.00	1.55	288.80
Right			83.00	78.00	80.50	14.398	1.21e+006	1.600	31.30	0.00	511.67	300.43	0.00	0.00	1.55	300.43
Right			78.00	73.00	75.50	14.955	1.25e+006	1.600	31.30	0.00	531.48	312.07	0.00	0.00	1.55	312.07
Right			73.00	68.00	70.50	15.513	1.3e+006	1.600	31.30	0.00	551.30	323.71	0.00	0.00	1.55	323.70
Right			68.00	64.25	66.13	16.001	1.34e+006	1.600	31.30	0.00	426.48	250.41	0.00	0.00	1.16	250.41
Right		Right:SW	64.25	60.50	62.38	16.419	1.38e+006	1.600	31.30	0.00	437.63	256.96	0.00	0.00	1.16	256.96
Right	Right:SW	Right:BRACE	60.50	59.00	59.75	16.712	1.4e+006	1.600	31.30	0.00	178.17	104.62	0.00	0.00	0.46	104.62
Right	Right:BRACE		59.00	56.13	57.56	16.956	1.42e+006	1.600	31.30	0.00	346.48	203.44	0.00	0.00	0.89	203.44
Right		Right:ARM	56.13	53.25	54.69	17.276	1.45e+006	1.600	31.30	0.00	353.03	207.29	0.00	0.00	0.89	207.29
Right	Right:ARM	Right:cables	53.25	51.00	52.13	17.562	1.47e+006	1.600	31.30	0.00	280.86	164.91	0.00	0.00	0.70	164.91
Right	Right:cables	Right:X1T	51.00	47.25	49.13	17.897	1.5e+006	1.600	31.30	0.00	477.01	280.08	0.00	0.00	1.16	280.08
Right	Right:X1T		47.25	42.25	44.75	18.384	1.54e+006	1.600	31.30	0.00	653.35	383.63	0.00	0.00	1.55	383.62
Right			42.25	37.25	39.75	18.942	1.59e+006	1.600	31.30	0.00	673.17	395.26	0.00	0.00	1.55	395.26
Right			37.25	34.50	35.88	19.374	1.62e+006	1.600	31.30	0.00	378.69	222.35	0.00	0.00	0.85	222.35
Right		Right:X1B	34.50	31.75	33.13	19.681	1.65e+006	1.600	31.30	0.00	384.68	225.87	0.00	0.00	0.85	225.87
Right	Right:X1B	Right:X2T	31.75	29.75	30.75	19.946	1.67e+006	1.600	31.30	0.00	283.53	166.48	0.00	0.00	0.62	166.48
Right	Right:X2T		29.75	24.75	27.25	20.336	1.7e+006	1.600	31.30	0.00	722.71	424.35	0.00	0.00	1.55	424.35
Right			24.75	19.75	22.25	20.894	1.75e+006	1.600	31.30	0.00	742.52	435.98	0.00	0.00	1.55	435.98
Right			19.75	17.00	18.38	21.326	1.79e+006	1.600	31.30	0.00	416.83	244.75	0.00	0.00	0.85	244.75
Right		Right:X2B	17.00	14.25	15.62	21.633	1.81e+006	1.600	31.30	0.00	422.83	248.27	0.00	0.00	0.85	248.27
Right	Right:X2B		14.25	9.25	11.75	22.065	1.85e+006	1.600	31.30	0.00	784.14	460.42	0.00	0.00	1.55	460.41
Right			9.25	4.62	6.94	22.250	1.86e+006	1.600	31.30	0.00	742.97	436.25	0.00	0.00	1.43	436.24
Right		Right:g	4.62	0.00	2.31	22.250	1.86e+006	1.600	31.30	0.00	759.92	446.20	0.00	0.00	1.43	446.20

*** Analysis Results:

Maximum element usage is 95.85% for Laminated Wood Pole "Right" in load case "Ext. Wind l"
Maximum insulator usage is 11.56% for Suspension "SUSSWR" in load case "NESC HVY BW"



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

Equilibrium Joint Positions and Rotations for Load Case "NESC HVY":

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)
Left:g	0	0	0	0.0000	0.0000	0.0000	0	-7.75	0
Left:t	0.006295	0.01233	0.001726	0.3137	0.0078	0.0021	0.006295	-7.738	61
Left:SW	0.006227	0.01507	0.001734	0.3137	0.0078	0.0021	0.006227	-7.735	60.5
Left:BRACE	0.006024	0.02331	0.001761	0.3187	0.0078	0.0021	0.006024	-7.727	59
Left:ARM	0.005248	0.04388	0.0018	-0.0128	0.0077	0.0021	0.005248	-7.706	53.25
Left:X1T	0.004449	0.02783	0.001815	-0.1475	0.0076	0.0017	0.004449	-7.722	47.25
Left:X1B	0.002455	0.01945	0.00151	-0.0016	0.0070	0.0009	0.002455	-7.731	31.75
Left:X2T	0.002213	0.01921	0.001439	0.0008	0.0069	0.0008	0.002213	-7.731	29.75
Left:X2B	0.0006216	0.01612	0.0006655	-0.0616	0.0045	0.0003	0.0006216	-7.734	14.25
Right:g	0	0	0	0.0000	0.0000	0.0000	0	7.75	0
Right:t	0.0121	0.5578	-0.005117	-0.7778	0.0091	0.0005	0.0121	8.308	102
Right:ANT1	0.01178	0.5307	-0.004932	-0.7778	0.0091	0.0005	0.01178	8.281	100
Right:ANT2	0.009877	0.3694	-0.003818	-0.7541	0.0091	0.0004	0.009877	8.119	88
Right:SW	0.005632	0.08069	-0.002029	-0.3662	0.0085	0.0004	0.005632	7.831	60.5

Right:BRACE	0.005412	0.07153	-0.001986	-0.3326	0.0084	0.0004	0.005412	7.822	59
Right:ARM	0.004585	0.04414	-0.001832	-0.2162	0.0081	0.0004	0.004585	7.794	53.25
Right:cables	0.00427	0.03646	-0.001784	-0.1746	0.0079	0.0004	0.00427	7.786	51
Right:X1T	0.003758	0.02728	-0.001696	-0.1039	0.0077	0.0003	0.003758	7.777	47.25
Right:X1B	0.001876	0.02009	-0.001267	-0.0006	0.0061	0.0002	0.001876	7.77	31.75
Right:X2T	0.001668	0.01996	-0.0012	-0.0065	0.0058	0.0002	0.001668	7.77	29.75
Right:X2B	0.0004195	0.0116	-0.0006159	-0.0554	0.0032	0.0001	0.0004195	7.762	14.25
NESC32:O	0.005575	0.04414	-0.02953	0.1803	0.0077	0.0024	0.005575	-15.96	53.22
NESC32:L1	0.005555	0.04414	-0.02796	0.1803	0.0077	0.0024	0.005555	-15.46	53.22
NESC32:PL	0.005248	0.04388	0.0018	0.2915	0.0077	0.0021	0.005248	-7.706	53.25
NESC32:BRL	0.004921	0.04433	0.03184	0.0911	0.0079	0.0031	0.004921	-0.9557	53.28
NESC32:L2V	0.004868	0.04441	0.03262	-0.0067	0.0079	0.0030	0.004868	0.04441	53.28
NESC32:BRR	0.004816	0.04439	0.0316	-0.1055	0.0079	0.0029	0.004816	1.044	53.28
NESC32:PR	0.004585	0.04414	-0.001832	-0.3401	0.0081	0.0004	0.004585	7.794	53.25
NESC32:L3	0.004549	0.04399	-0.04062	-0.2561	0.0081	0.0002	0.004549	15.54	53.21
NESC32:E	0.004547	0.04399	-0.04285	-0.2561	0.0081	0.0002	0.004547	16.04	53.21
TENL:E	0.006036	0.02332	-4.588e-005	0.3187	0.0078	0.0021	0.006036	-8.051	59
TENR:E	0.005407	0.07152	-0.006049	-0.3326	0.0084	0.0004	0.005407	8.521	58.99
VEEL:O	0.006013	0.02331	0.003568	0.3187	0.0078	0.0021	0.006013	-7.402	59
VEER:O	0.005417	0.07154	0.002076	-0.3326	0.0084	0.0004	0.005417	7.122	59
X1T1:O	0.004437	0.02783	0.0007923	-0.1475	0.0076	0.0017	0.004437	-7.325	47.25
X1T1:E	0.001879	0.02009	-0.001258	-0.0006	0.0061	0.0002	0.001879	6.944	31.75
X1T2:O	0.003763	0.02728	-0.0003277	-0.1039	0.0077	0.0003	0.003763	7.023	47.25
X1T2:E	0.002447	0.01945	0.001496	-0.0016	0.0070	0.0009	0.002447	-7.238	31.75
X2T1:O	0.002205	0.01921	0.001446	0.0008	0.0069	0.0008	0.002205	-7.226	29.75
X2T1:E	0.0004207	0.0116	0.000262	-0.0554	0.0032	0.0001	0.0004207	6.854	14.25
X2T2:O	0.00167	0.01996	-0.001106	-0.0065	0.0058	0.0002	0.00167	6.934	29.75
X2T2:E	0.0006182	0.01612	2.091e-005	-0.0616	0.0045	0.0003	0.0006182	-7.134	14.25

Joint Support Reactions for Load Case "NESC HVY":

Joint Label	X Force (kips)	X Usage %(kips)	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 %
Left:g	-0.01	0.0	-2.42	0.0	0.0	21.05	0.0	0.0	21.19	0.0	22.21	0.0	-0.3	0.0	0.0	-0.02	0.0	0.0
Right:g	-0.03	0.0	-7.13	0.0	0.0	-52.82	0.0	0.0	53.30	0.0	75.66	0.0	-1.6	0.0	0.0	-0.03	0.0	0.0

Detailed Laminated Wood Pole Usages for Load Case "NESC HVY":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Trans. Mom. (ft-k)	Long. Mom. (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Tran. Shear (kips)	Long. Shear (kips)	Usage %
Left	Left:t	Origin	0.00	0.15	0.08	0.02	0.00	0.00	-0.0	-0.01	0.00	-0.00	0.0
Left	Left:SW	End	0.50	0.18	0.07	0.02	0.00	-0.00	-0.0	-0.01	0.00	-0.00	0.0
Left	Left:SW	Origin	0.50	0.18	0.07	0.02	0.00	-0.00	-0.0	-0.67	0.60	-0.00	0.1
Left	Left:BRACE	End	2.00	0.28	0.07	0.02	0.91	-0.00	-0.0	-0.67	0.60	-0.00	1.9
Left	Left:BRACE	Origin	2.00	0.28	0.07	0.02	-0.12	-0.00	-0.0	0.22	-3.40	-0.00	0.3
Left	#Left:0	End	4.88	0.45	0.07	0.02	-9.90	-0.00	-0.0	0.22	-3.40	-0.00	17.5
Left	#Left:0	Origin	4.88	0.45	0.07	0.02	-9.90	-0.00	-0.0	0.12	-3.35	-0.00	17.5
Left	Left:ARM	End	7.75	0.53	0.06	0.02	-19.54	-0.01	-0.0	0.12	-3.35	-0.00	31.1
Left	Left:ARM	Origin	7.75	0.53	0.06	0.02	-19.54	-0.01	0.0	0.39	5.02	0.00	31.2
Left	#Left:1	End	10.75	0.45	0.06	0.02	-4.48	-0.01	0.0	0.39	5.02	0.00	6.5
Left	#Left:1	Origin	10.75	0.45	0.06	0.02	-4.48	-0.01	0.0	0.29	5.07	0.00	6.5
Left	Left:X1T	End	13.75	0.33	0.05	0.02	10.73	-0.01	0.0	0.29	5.07	0.00	14.1
Left	Left:X1T	Origin	13.75	0.33	0.05	0.02	8.22	-0.01	0.0	6.47	-0.74	-0.00	11.9
Left	#Left:2	End	18.75	0.24	0.05	0.02	4.50	-0.01	0.0	6.47	-0.74	-0.00	6.1
Left	#Left:2	Origin	18.75	0.24	0.05	0.02	4.50	-0.01	0.0	6.27	-0.65	-0.00	6.1
Left	#Left:3	End	23.75	0.23	0.04	0.02	1.23	-0.02	0.0	6.27	-0.65	-0.00	2.1
Left	#Left:3	Origin	23.75	0.23	0.04	0.02	1.23	-0.02	0.0	6.10	-0.59	-0.00	2.1
Left	#Left:4	End	26.50	0.23	0.03	0.02	-0.39	-0.03	0.0	6.10	-0.59	-0.00	1.2
Left	#Left:4	Origin	26.50	0.23	0.03	0.02	-0.39	-0.03	0.0	5.98	-0.54	-0.00	1.2
Left	Left:X1B	End	29.25	0.23	0.03	0.02	-1.89	-0.04	0.0	5.98	-0.54	-0.00	2.5
Left	Left:X1B	Origin	29.25	0.23	0.03	0.02	-5.18	-0.04	0.0	12.55	5.80	-0.00	6.2
Left	Left:X2T	End	31.25	0.23	0.03	0.02	6.42	-0.04	0.0	12.55	5.80	-0.00	6.9
Left	Left:X2T	Origin	31.25	0.23	0.03	0.02	2.73	-0.04	0.0	19.69	-0.81	-0.01	4.9
Left	#Left:5	End	36.25	0.24	0.02	0.01	-1.31	-0.07	0.0	19.69	-0.81	-0.01	3.5
Left	#Left:5	Origin	36.25	0.24	0.02	0.01	-1.31	-0.07	0.0	19.44	-0.73	-0.01	3.4
Left	#Left:6	End	41.25	0.24	0.01	0.01	-4.96	-0.10	0.0	19.44	-0.73	-0.01	5.6
Left	#Left:6	Origin	41.25	0.24	0.01	0.01	-4.96	-0.10	0.0	19.24	-0.67	-0.01	5.5
Left	#Left:7	End	44.00	0.22	0.01	0.01	-6.82	-0.12	0.0	19.24	-0.67	-0.01	6.4
Left	#Left:7	Origin	44.00	0.22	0.01	0.01	-6.82	-0.12	0.0	19.08	-0.64	-0.01	6.4
Left	Left:X2B	End	46.75	0.19	0.01	0.01	-8.57	-0.14	0.0	19.08	-0.64	-0.01	7.1
Left	Left:X2B	Origin	46.75	0.19	0.01	0.01	-10.31	-0.14	0.0	21.77	2.20	-0.01	8.4
Left	#Left:8	End	51.75	0.11	0.00	0.01	0.69	-0.19	0.0	21.77	2.20	-0.01	2.8
Left	#Left:8	Origin	51.75	0.11	0.00	0.01	0.69	-0.19	0.0	21.49	2.28	-0.01	2.8
Left	#Left:9	End	56.38	0.03	0.00	0.00	11.24	-0.25	0.0	21.49	2.28	-0.01	7.7
Left	#Left:9	Origin	56.38	0.03	0.00	0.00	11.24	-0.25	0.0	21.20	2.37	-0.01	7.6
Left	Left:g	End	61.00	0.00	0.00	0.00	22.21	-0.31	0.0	21.20	2.37	-0.01	12.0
Right	Right:t	Origin	0.00	6.69	0.15	-0.06	0.00	-0.00	-0.0	-0.09	0.03	-0.00	0.0
Right	Right:ANT1	End	2.00	6.37	0.14	-0.06	0.06	-0.00	-0.0	-0.09	0.03	-0.00	0.0
Right	Right:ANT1	Origin	2.00	6.37	0.14	-0.06	0.06	-0.00	-0.0	-1.44	0.33	-0.00	0.1
Right	#Right:10	End	7.00	5.56	0.13	-0.05	1.73	-0.01	-0.0	-1.44	0.33	-0.00	0.8
Right	#Right:10	Origin	7.00	5.56	0.13	-0.05	1.73	-0.01	-0.0	-1.82	0.47	-0.00	0.8
Right	#Right:11	End	10.50	4.99	0.13	-0.05	3.36	-0.01	-0.0	-1.82	0.47	-0.00	1.4
Right	#Right:11	Origin	10.50	4.99	0.13	-0.05	3.36	-0.01	-0.0	-2.15	0.57	-0.00	1.4
Right	Right:ANT2	End	14.00	4.43	0.12	-0.05	5.37	-0.02	-0.0	-2.15	0.57	-0.00	2.1
Right	Right:ANT2	Origin	14.00	4.43	0.12	-0.05	5.37	-0.02	-0.0	-5.26	1.45	-0.00	2.3
Right	#Right:12	End	19.00	3.66	0.11	-0.04	12.61	-0.04	-0.0	-5.26	1.45	-0.00	4.5
Right	#Right:12	Origin	19.00	3.66	0.11	-0.04	12.61	-0.04	-0.0	-5.77	1.60	-0.00	4.5

Right	#Right:13	End	24.00	2.93	0.10	-0.04	20.61	-0.06	-0.0	-5.77	1.60	-0.00	6.6
Right	#Right:13	Origin	24.00	2.93	0.10	-0.04	20.61	-0.06	-0.0	-6.29	1.75	-0.01	6.7
Right	#Right:14	End	29.00	2.26	0.09	-0.03	29.34	-0.09	-0.0	-6.29	1.75	-0.01	8.7
Right	#Right:14	Origin	29.00	2.26	0.09	-0.03	29.34	-0.09	-0.0	-6.83	1.89	-0.01	8.7
Right	#Right:15	End	34.00	1.67	0.08	-0.03	38.80	-0.13	-0.0	-6.83	1.89	-0.01	10.6
Right	#Right:15	Origin	34.00	1.67	0.08	-0.03	38.80	-0.13	-0.0	-7.32	2.02	-0.01	10.6
Right	#Right:16	End	37.75	1.29	0.07	-0.03	46.37	-0.16	-0.0	-7.32	2.02	-0.01	12.0
Right	#Right:16	Origin	37.75	1.29	0.07	-0.03	46.37	-0.16	-0.0	-7.75	2.12	-0.01	12.0
Right	Right:SW	End	41.50	0.97	0.07	-0.02	54.32	-0.19	-0.0	-7.75	2.12	-0.01	13.4
Right	Right:SW	Origin	41.50	0.97	0.07	-0.02	54.32	-0.19	-0.0	-8.69	2.78	-0.01	13.4
Right	Right:BRACE	End	43.00	0.86	0.06	-0.02	58.50	-0.21	-0.0	-8.69	2.78	-0.01	14.1
Right	Right:BRACE	Origin	43.00	0.86	0.06	-0.02	56.48	-0.21	-0.0	-13.91	-0.63	-0.01	14.0
Right	#Right:17	End	45.88	0.68	0.06	-0.02	54.67	-0.24	-0.0	-13.91	-0.63	-0.01	13.1
Right	#Right:17	Origin	45.88	0.68	0.06	-0.02	54.67	-0.24	-0.0	-14.26	-0.56	-0.01	13.1
Right	Right:ARM	End	48.75	0.53	0.06	-0.02	53.06	-0.27	-0.0	-14.26	-0.56	-0.01	12.3
Right	Right:ARM	Origin	48.75	0.53	0.06	-0.02	53.06	-0.27	0.0	-14.28	0.86	-0.02	12.3
Right	Right:cables	End	51.00	0.44	0.05	-0.02	54.99	-0.31	0.0	-14.28	0.86	-0.02	12.4
Right	Right:cables	Origin	51.00	0.44	0.05	-0.02	54.99	-0.31	0.0	-19.58	1.76	-0.02	12.7
Right	Right:X1T	End	54.75	0.33	0.05	-0.02	61.59	-0.37	0.0	-19.58	1.76	-0.02	13.5
Right	Right:X1T	Origin	54.75	0.33	0.05	-0.02	56.34	-0.37	0.0	-27.10	-4.36	-0.02	12.8
Right	#Right:18	End	59.75	0.26	0.04	-0.02	34.53	-0.46	0.0	-27.10	-4.36	-0.02	8.0
Right	#Right:18	Origin	59.75	0.26	0.04	-0.02	34.53	-0.46	0.0	-27.76	-4.24	-0.02	8.0
Right	#Right:19	End	64.75	0.24	0.03	-0.02	13.34	-0.56	0.0	-27.76	-4.24	-0.02	3.8
Right	#Right:19	Origin	64.75	0.24	0.03	-0.02	13.34	-0.56	0.0	-28.28	-4.13	-0.02	3.8
Right	#Right:20	End	67.50	0.24	0.03	-0.02	1.98	-0.62	0.0	-28.28	-4.13	-0.02	1.7
Right	#Right:20	Origin	67.50	0.24	0.03	-0.02	1.98	-0.62	0.0	-28.66	-4.05	-0.02	1.7
Right	Right:X1B	End	70.25	0.24	0.02	-0.02	-9.16	-0.68	0.0	-28.66	-4.05	-0.02	2.9
Right	Right:X1B	Origin	70.25	0.24	0.02	-0.02	-14.52	-0.68	0.0	-35.48	1.96	-0.02	4.2
Right	Right:X2T	End	72.25	0.24	0.02	-0.01	-10.59	-0.73	0.0	-35.48	1.96	-0.02	3.5
Right	Right:X2T	Origin	72.25	0.24	0.02	-0.01	-13.24	-0.73	0.0	-41.15	-0.40	-0.03	4.1
Right	#Right:21	End	77.25	0.22	0.01	-0.01	-15.24	-0.86	0.0	-41.15	-0.40	-0.03	4.3
Right	#Right:21	Origin	77.25	0.22	0.01	-0.01	-15.24	-0.86	0.0	-41.88	-0.24	-0.03	4.3
Right	#Right:22	End	82.25	0.19	0.01	-0.01	-16.43	-1.00	0.0	-41.88	-0.24	-0.03	4.4
Right	#Right:22	Origin	82.25	0.19	0.01	-0.01	-16.43	-1.00	0.0	-42.46	-0.11	-0.03	4.4
Right	#Right:23	End	85.00	0.17	0.01	-0.01	-16.74	-1.08	0.0	-42.46	-0.11	-0.03	4.4
Right	#Right:23	Origin	85.00	0.17	0.01	-0.01	-16.74	-1.08	0.0	-42.88	-0.03	-0.03	4.4
Right	Right:X2B	End	87.75	0.14	0.01	-0.01	-16.82	-1.16	0.0	-42.88	-0.03	-0.03	4.3
Right	Right:X2B	Origin	87.75	0.14	0.01	-0.01	-23.57	-1.16	0.0	-50.92	6.84	-0.03	5.6
Right	#Right:24	End	92.75	0.07	0.00	-0.00	10.63	-1.30	0.0	-50.92	6.84	-0.03	3.7
Right	#Right:24	Origin	92.75	0.07	0.00	-0.00	10.63	-1.30	0.0	-51.68	6.98	-0.03	3.7
Right	#Right:25	End	97.38	0.02	0.00	-0.00	42.89	-1.44	0.0	-51.68	6.98	-0.03	7.8
Right	#Right:25	Origin	97.38	0.02	0.00	-0.00	42.89	-1.44	0.0	-52.44	7.09	-0.03	7.8
Right	Right:g	End	102.00	0.00	0.00	0.00	75.66	-1.58	0.0	-52.44	7.09	-0.03	11.6

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

Brace Label	Forces (kips)	Allowable Compression (kips)	Allowable Tension (kips)	Usage %
TENL	1.75	16.50	30.00	8.95
TENR	1.62	16.50	30.00	8.33
VEEL	-3.38	23.14	30.00	22.49
VEER	6.13	23.14	30.00	31.45
X1T1	-8.72	66.95	35.00	20.03
X1T2	9.26	66.95	35.00	40.70
X2T1	-9.96	66.95	35.00	22.90
X2T2	4.10	66.95	35.00	18.02

Detailed X-Arm Usages for Load Case "NESC HVY":

X-Arm Label	Joint Label	Joint Position	Rel. Dist.(ft)	Area (in^2)	X Sect. Modulus (in^3)	Z Sect. Modulus (in^3)	Tran. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	X Mom. (ft-k)	Z Mom. (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	X Shear (kips)	Z Shear (kips)	P/A (psi)	Mx/Sx (psi)	Mz/Sz (psi)	Max. Usage %
NESC32	NESC32:O	Origin	0.00	38.40	32.83	48.04	0.53	0.07	-0.35	0.00	0.00	0.0	0.00	-0.00	-0.00	0.00025	0.000104	5.12e-005	0.0
NESC32	NESC32:L1	End	0.50	38.40	32.83	48.04	0.53	0.07	-0.34	-0.00	-0.00	0.0	0.00	-0.00	-0.00	0.00025	0.561	3.52e-005	0.0
NESC32	NESC32:L1	Origin	0.50	38.40	32.83	48.04	0.53	0.07	-0.34	0.00	0.00	0.0	-2.07	0.09	-0.00	54	0.561	0.000114	1.0
NESC32	#gNESC32:0	End	4.38	38.40	32.83	48.04	0.53	0.06	-0.18	0.36	0.00	0.0	-2.07	0.09	-0.00	54	130	0.327	3.5
NESC32	#gNESC32:0	Origin	4.38	38.40	32.83	48.04	0.53	0.06	-0.18	-0.36	-0.00	-0.0	-2.07	0.04	-0.00	54	130	0.327	3.5
NESC32	NESC32:PL	End	8.25	38.40	32.83	48.04	0.53	0.06	0.02	0.52	0.00	-0.0	-2.07	0.04	-0.00	54	190	0.659	4.7
NESC32	NESC32:PL	Origin	8.25	38.40	32.83	48.04	0.53	0.06	0.02	-0.52	0.01	0.0	6.26	-0.33	-0.00	1.6e+002	190	3.58	6.9
NESC32	#gNESC32:1	End	11.63	38.40	32.83	48.04	0.53	0.06	0.24	-0.59	-0.01	0.0	6.26	-0.33	-0.00	1.6e+002	216	1.55	7.3
NESC32	#gNESC32:1	Origin	11.63	38.40	32.83	48.04	0.53	0.06	0.24	0.59	0.01	0.0	6.26	-0.38	-0.00	1.6e+002	216	1.55	7.3
NESC32	NESC32:BRL	End	15.00	38.40	32.83	48.04	0.53	0.06	0.38	-1.88	0.00	0.0	6.26	-0.38	-0.00	1.6e+002	687	0.438	16.3
NESC32	NESC32:BRL	Origin	15.00	38.40	32.83	48.04	0.53	0.06	0.38	1.88	-0.00	0.0	6.25	-0.43	-0.00	1.6e+002	687	0.438	16.3
NESC32	NESC32:L2V	End	16.00	38.40	32.83	48.04	0.53	0.06	0.39	-2.30	0.00	0.0	6.25	-0.43	-0.00	1.6e+002	842	1.03	19.4
NESC32	NESC32:L2V	Origin	16.00	38.40	32.83	48.04	0.53	0.06	0.39	2.30	-0.00	0.0	-1.91	0.38	-0.00	50	842	1.03	17.2
NESC32	NESC32:BRR	End	17.00	38.40	32.83	48.04	0.53	0.06	0.38	-1.92	0.01	0.0	-1.91	0.38	-0.00	50	703	1.8	14.5
NESC32	NESC32:BRR	Origin	17.00	38.40	32.83	48.04	0.53	0.06	0.38	1.92	-0.01	0.0	-1.90	0.36	-0.00	50	703	1.8	14.5
NESC32	#gNESC32:2	End	20.38	38.40	32.83	48.04	0.53	0.06	0.22	-0.71	0.02	0.0	-1.90	0.36	-0.00	50	260	4.39	6.0
NESC32	#gNESC32:2	Origin	20.38	38.40	32.83	48.04	0.53	0.06	0.22	0.71	-0.02	0.0	-1.90	0.32	-0.00	50	260	4.39	6.0
NESC32	NESC32:PR	End	23.75	38.40	32.83	48.04	0.53	0.06	-0.02	0.37	0.03	0.0	-1.90	0.32	-0.00	50	136	6.95	3.7
NESC32	NESC32:PR	Origin	23.75	38.40	32.83	48.04	0.53	0.06	-0.02	-0.37	-0.00	-0.0	-0.56	-0.02	0.00	14	136	0.629	2.9
NESC32	#gNESC32:3	End	27.63	38.40	32.83	48.04	0.53	0.05	-0.27	0.28	0.00	-0.0	-0.56	-0.02	0.00	14	102	0.31	2.2
NESC32	#gNESC32:3	Origin	27.63	38.40	32.83	48.04	0.53	0.05	-0.27	-0.28	-0.00	-0.0	-0.56	-0.07	0.00	14	102	0.31	2.2
NESC32	NESC32:L3	End	31.50	38.40	32.83	48.04	0.53	0.05	-0.49	-0.00	-0.00	-0.0	-0.56	-0.07	0.00	14	0.561	1.04e-005	0.3
NESC32	NESC32:L3	Origin	31.50	38.40	32.83	48.04	0.53	0.05	-0.49	0.00	-0.00	-0.0	0.00	0.00	0.00	0.00036	0.561	4.32e-005	0.0
NESC32	NESC32:E	End	32.00	38.40	32.83	48.04	0.53	0.05	-0.51	-0.00	-0.00	-0.0	0.00	0.00	0.00	0.00036	4.5e-006	2.64e-005	0.0

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

Suspension Label	Tension (kips)	Input Tension Capacity (kips)	Factored Tension Capacity (kips)	Usage %
SUSSWL	0.859	60.00	60.00	1.43
SUSSWR	0.859	60.00	60.00	1.43
L1	1.146	60.00	60.00	1.91
L2	1.146	60.00	60.00	1.91
L3	1.146	60.00	60.00	1.91
ANT1	1.065	60.00	60.00	1.78
ANT2	2.806	60.00	60.00	4.68
cables	4.987	60.00	60.00	8.31

*** Analysis Results for Load Case No. 2 "NESC HVY BW" - Number of iterations in SAPS 20

Equilibrium Joint Positions and Rotations for Load Case "NESC HVY BW":

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)
Left:g	0	0	0	0.0000	0.0000	0.0000	0	-7.75	0
Left:t	1.399	0.01087	-0.01747	0.2875	1.9053	-0.4584	1.399	-7.739	60.98
Left:SW	1.382	0.01352	-0.01719	0.2875	1.9053	-0.4584	1.382	-7.736	60.48
Left:BRACE	1.333	0.02148	-0.01633	0.2926	1.9052	-0.4586	1.333	-7.729	58.98
Left:ARM	1.142	0.04127	-0.01312	-0.0297	1.9067	-0.4480	1.142	-7.709	53.24
Left:X1T	0.9433	0.02665	-0.009831	-0.1629	1.8666	-0.3589	0.9433	-7.723	47.24
Left:X1B	0.4769	0.01853	-0.003084	-0.0106	1.5307	-0.1986	0.4769	-7.731	31.75
Left:X2T	0.4246	0.01833	-0.002466	-0.0062	1.4672	-0.1816	0.4246	-7.732	29.75
Left:X2B	0.1082	0.01565	0.0001088	-0.0609	0.8268	-0.0725	0.1082	-7.734	14.25
Right:g	0	0	0	0.0000	0.0000	0.0000	0	7.75	0
Right:t	3.289	0.5402	-0.06537	-0.7631	2.3729	-0.0555	3.289	8.29	101.9
Right:ANT1	3.206	0.5136	-0.06348	-0.7630	2.3729	-0.0555	3.206	8.264	99.94
Right:ANT2	2.709	0.3559	-0.05212	-0.7394	2.3715	-0.0565	2.709	8.106	87.95
Right:SW	1.576	0.07535	-0.02706	-0.3523	2.3423	-0.0721	1.576	7.825	60.47
Right:BRACE	1.515	0.06663	-0.02577	-0.3189	2.3376	-0.0734	1.515	7.817	58.97
Right:ARM	1.282	0.04083	-0.02092	-0.2049	2.2872	-0.0777	1.282	7.791	53.23
Right:cables	1.193	0.03378	-0.01911	-0.1650	2.2546	-0.0747	1.193	7.784	50.98
Right:X1T	1.048	0.02544	-0.0162	-0.0979	2.1850	-0.0698	1.048	7.775	47.23
Right:X1B	0.5138	0.01954	-0.006557	-0.0016	1.7118	-0.0459	0.5138	7.77	31.74
Right:X2T	0.4554	0.01944	-0.00564	-0.0075	1.6310	-0.0425	0.4554	7.769	29.74
Right:X2B	0.1116	0.01128	-0.001155	-0.0546	0.8711	-0.0184	0.1116	7.761	14.25
NESC32:O	1.078	0.04176	-0.04121	0.1688	1.9076	-0.4259	1.078	-15.96	53.21
NESC32:L1	1.082	0.04174	-0.03987	0.1688	1.9076	-0.4259	1.082	-15.46	53.21
NESC32:PL	1.142	0.04127	-0.01312	0.2915	1.9067	-0.4480	1.142	-7.709	53.24
NESC32:BRL	1.215	0.04132	0.01321	0.1277	2.0716	-0.6698	1.215	-0.9587	53.26
NESC32:L2V	1.226	0.04133	0.01374	0.0355	2.0966	-0.6489	1.226	0.04133	53.26
NESC32:BRR	1.237	0.04124	0.01259	-0.0587	2.1216	-0.6151	1.237	1.041	53.26
NESC32:PR	1.282	0.04083	-0.02092	-0.3140	2.2872	-0.0777	1.282	7.791	53.23
NESC32:L3	1.294	0.04068	-0.05803	-0.2455	2.2870	-0.1057	1.294	15.54	53.19
NESC32:E	1.295	0.04068	-0.06021	-0.2455	2.2870	-0.1057	1.295	16.04	53.19
TENL:E	1.33	0.02149	-0.01799	0.2926	1.9052	-0.4586	1.33	-8.053	58.98
TENR:E	1.516	0.06662	-0.02966	-0.3189	2.3376	-0.0734	1.516	8.516	58.97
VEEL:O	1.335	0.02146	-0.01468	0.2926	1.9052	-0.4586	1.335	-7.404	58.99
VEER:O	1.514	0.06664	-0.02188	-0.3189	2.3376	-0.0734	1.514	7.117	58.98
X1T1:O	0.9458	0.02664	-0.01096	-0.1629	1.8666	-0.3589	0.9458	-7.326	47.24
X1T1:E	0.5131	0.01954	-0.006533	-0.0016	1.7118	-0.0459	0.5131	6.943	31.74
X1T2:O	1.047	0.02545	-0.01491	-0.0979	2.1850	-0.0698	1.047	7.021	47.24
X1T2:E	0.4786	0.01852	-0.003175	-0.0106	1.5307	-0.1986	0.4786	-7.239	31.75
X2T1:O	0.4262	0.01833	-0.00252	-0.0062	1.4672	-0.1816	0.4262	-7.227	29.75
X2T1:E	0.1113	0.01128	-0.0002904	-0.0546	0.8711	-0.0184	0.1113	6.854	14.25
X2T2:O	0.4548	0.01944	-0.005531	-0.0075	1.6310	-0.0425	0.4548	6.934	29.74
X2T2:E	0.1089	0.01565	-0.0005291	-0.0609	0.8268	-0.0725	0.1089	-7.134	14.25

Joint Support Reactions for Load Case "NESC HVY BW":

Joint Label	X Force (kips)	X Usage %(kips)	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Force (kips)	Comp. Uplift 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 %
Left:g	-1.35	0.0	-2.35	0.0	0.0	19.87	0.0	0.0	20.06	0.0	21.67	0.0	-48.9	0.0	0.0	3.40	0.0	0.0
Right:g	-5.62	0.0	-6.86	0.0	0.0	-51.22	0.0	0.0	51.98	0.0	73.34	0.0	-410.9	0.0	0.0	5.88	0.0	0.0

Detailed Laminated Wood Pole Usages for Load Case "NESC HVY BW":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Trans. Defl. (in)	Trans. Mom. (ft-k)	Long. Mom. (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Tran. Shear (kips)	Long. Shear (kips)	Usage %
Left	Left:t	Origin	0.00	0.13	16.79	-0.21	-0.00	-0.00	-0.0	-0.01	0.00	-0.00	0.0
Left	Left:SW	End	0.50	0.16	16.59	-0.21	0.00	-0.00	-0.0	-0.01	0.00	-0.00	0.0
Left	Left:SW	Origin	0.50	0.16	16.59	-0.21	0.00	-0.00	-0.0	-0.67	0.60	-0.02	0.1
Left	Left:BRACE	End	2.00	0.26	15.99	-0.20	0.91	-0.03	-0.0	-0.67	0.60	-0.02	1.9
Left	Left:BRACE	Origin	2.00	0.26	15.99	-0.20	-0.10	-0.03	0.0	0.14	-3.31	-0.01	0.2
Left	#Left:0	End	4.88	0.43	14.85	-0.18	-9.63	-0.07	0.0	0.14	-3.31	-0.01	17.1
Left	#Left:0	Origin	4.88	0.43	14.85	-0.18	-9.63	-0.07	0.0	0.04	-3.27	-0.02	17.0
Left	Left:ARM	End	7.75	0.50	13.70	-0.16	-19.02	-0.12	0.0	0.04	-3.27	-0.02	30.4
Left	Left:ARM	Origin	7.75	0.50	13.70	-0.16	-19.13	-0.76	-3.4	0.32	4.90	-0.68	31.3
Left	#Left:1	End	10.75	0.43	12.50	-0.14	-4.43	-2.79	-3.4	0.32	4.90	-0.68	9.3
Left	#Left:1	Origin	10.75	0.43	12.50	-0.14	-4.43	-2.79	-3.4	0.22	4.95	-0.69	9.3
Left	Left:X1T	End	13.75	0.32	11.32	-0.12	10.42	-4.86	-3.4	0.22	4.95	-0.69	18.4
Left	Left:X1T	Origin	13.75	0.32	11.32	-0.12	7.99	-4.86	-3.4	6.20	-0.68	-0.71	16.2
Left	#Left:2	End	18.75	0.23	9.40	-0.09	4.56	-8.41	-3.4	6.20	-0.68	-0.71	13.7
Left	#Left:2	Origin	18.75	0.23	9.40	-0.09	4.57	-8.40	-3.4	6.00	-0.59	-0.73	13.7
Left	#Left:3	End	23.75	0.22	7.58	-0.06	1.58	-12.03	-3.4	6.00	-0.59	-0.73	12.5
Left	#Left:3	Origin	23.75	0.22	7.58	-0.06	1.59	-12.03	-3.4	5.84	-0.53	-0.74	12.5
Left	#Left:4	End	26.50	0.22	6.63	-0.05	0.12	-14.06	-3.4	5.84	-0.53	-0.74	12.3
Left	#Left:4	Origin	26.50	0.22	6.63	-0.05	0.13	-14.06	-3.4	5.71	-0.49	-0.75	12.3
Left	Left:X1B	End	29.25	0.22	5.72	-0.04	-1.21	-16.12	-3.4	5.71	-0.49	-0.75	14.4
Left	Left:X1B	Origin	29.25	0.22	5.72	-0.04	-4.29	-16.12	-3.4	11.85	5.46	-0.81	17.9
Left	Left:X2T	End	31.25	0.22	5.09	-0.03	6.62	-17.75	-3.4	11.85	5.46	-0.81	20.5
Left	Left:X2T	Origin	31.25	0.22	5.09	-0.03	3.13	-17.75	-3.4	18.61	-0.81	-0.84	18.5
Left	#Left:5	End	36.25	0.23	3.65	-0.02	-0.92	-21.93	-3.4	18.61	-0.81	-0.84	18.7
Left	#Left:5	Origin	36.25	0.23	3.65	-0.02	-0.91	-21.93	-3.4	18.36	-0.73	-0.90	18.7

Left	#Left:6	End	41.25	0.23	2.40	-0.01	-4.57	-26.45	-3.4	18.36	-0.73	-0.90	23.1
Left	#Left:6	Origin	41.25	0.23	2.40	-0.01	-4.56	-26.45	-3.4	18.15	-0.67	-0.96	23.1
Left	#Left:7	End	44.00	0.21	1.81	-0.00	-6.42	-29.09	-3.4	18.15	-0.67	-0.96	25.2
Left	#Left:7	Origin	44.00	0.21	1.81	-0.00	-6.41	-29.09	-3.4	18.00	-0.64	-1.00	25.2
Left	Left:X2B	End	46.75	0.19	1.30	0.00	-8.17	-31.86	-3.4	18.00	-0.64	-1.00	27.1
Left	Left:X2B	Origin	46.75	0.19	1.30	0.00	-9.86	-31.86	-3.4	20.61	2.13	-1.10	28.4
Left	#Left:8	End	51.75	0.11	0.57	0.00	0.79	-37.35	-3.4	20.61	2.13	-1.10	25.4
Left	#Left:8	Origin	51.75	0.11	0.57	0.00	0.80	-37.35	-3.4	20.32	2.21	-1.20	25.3
Left	#Left:9	End	56.38	0.03	0.15	0.00	11.02	-42.89	-3.4	20.32	2.21	-1.20	32.3
Left	#Left:9	Origin	56.38	0.03	0.15	0.00	11.03	-42.89	-3.4	20.02	2.30	-1.30	32.3
Left	Left:g	End	61.00	0.00	0.00	0.00	21.66	-48.91	-3.4	20.02	2.30	-1.30	38.8
Right	Right:t	Origin	0.00	6.48	39.47	-0.78	-0.00	-0.00	-0.0	-0.09	0.03	-0.00	0.0
Right	Right:ANT1	End	2.00	6.16	38.47	-0.76	0.06	-0.01	-0.0	-0.09	0.03	-0.00	0.0
Right	Right:ANT1	Origin	2.00	6.16	38.47	-0.76	0.06	-0.01	-0.0	-1.44	0.33	-0.06	0.1
Right	#Right:10	End	7.00	5.37	35.99	-0.70	1.73	-0.31	-0.0	-1.44	0.33	-0.06	0.9
Right	#Right:10	Origin	7.00	5.37	35.99	-0.70	1.73	-0.31	-0.0	-1.82	0.46	-0.08	0.9
Right	#Right:11	End	10.50	4.82	34.25	-0.67	3.36	-0.58	-0.0	-1.82	0.46	-0.08	1.5
Right	#Right:11	Origin	10.50	4.82	34.25	-0.67	3.36	-0.58	-0.0	-2.15	0.57	-0.09	1.5
Right	Right:ANT2	End	14.00	4.27	32.51	-0.63	5.36	-0.90	-0.0	-2.15	0.57	-0.09	2.2
Right	Right:ANT2	Origin	14.00	4.27	32.51	-0.63	5.36	-0.90	-0.0	-5.26	1.45	-0.22	2.4
Right	#Right:12	End	19.00	3.51	30.03	-0.57	12.60	-2.00	-0.0	-5.26	1.45	-0.22	4.9
Right	#Right:12	Origin	19.00	3.51	30.03	-0.57	12.60	-2.00	-0.0	-5.76	1.60	-0.24	4.9
Right	#Right:13	End	24.00	2.80	27.55	-0.51	20.58	-3.20	-0.0	-5.76	1.60	-0.24	7.2
Right	#Right:13	Origin	24.00	2.80	27.55	-0.51	20.59	-3.20	-0.0	-6.28	1.75	-0.26	7.2
Right	#Right:14	End	29.00	2.15	25.07	-0.46	29.31	-4.52	-0.0	-6.28	1.75	-0.26	9.5
Right	#Right:14	Origin	29.00	2.15	25.07	-0.46	29.31	-4.52	-0.0	-6.82	1.89	-0.29	9.5
Right	#Right:15	End	34.00	1.58	22.60	-0.40	38.77	-5.95	-0.0	-6.82	1.89	-0.29	11.6
Right	#Right:15	Origin	34.00	1.58	22.60	-0.40	38.77	-5.94	-0.0	-7.31	2.02	-0.31	11.6
Right	#Right:16	End	37.75	1.21	20.75	-0.36	46.33	-7.09	-0.0	-7.31	2.02	-0.31	13.2
Right	#Right:16	Origin	37.75	1.21	20.75	-0.36	46.33	-7.09	-0.0	-7.75	2.12	-0.32	13.2
Right	Right:SW	End	41.50	0.90	18.91	-0.32	54.27	-8.30	-0.0	-7.75	2.12	-0.32	14.7
Right	Right:SW	Origin	41.50	0.90	18.91	-0.32	54.27	-8.30	-0.0	-7.98	2.44	-7.27	14.7
Right	Right:BRACE	End	43.00	0.80	18.18	-0.31	57.94	-19.20	-0.0	-7.98	2.44	-7.27	17.1
Right	Right:BRACE	Origin	43.00	0.80	18.18	-0.31	56.00	-19.20	-0.0	-13.08	-0.84	-7.25	17.0
Right	#Right:17	End	45.88	0.63	16.77	-0.28	53.58	-40.04	-0.0	-13.08	-0.84	-7.25	19.3
Right	#Right:17	Origin	45.88	0.63	16.77	-0.28	53.58	-40.04	-0.1	-13.43	-0.77	-7.26	19.3
Right	Right:ARM	End	48.75	0.49	15.39	-0.25	51.37	-60.91	-0.1	-13.43	-0.77	-7.26	21.6
Right	Right:ARM	Origin	48.75	0.49	15.39	-0.25	51.15	-60.28	-5.9	-13.52	0.64	-6.76	21.5
Right	Right:cables	End	51.00	0.41	14.32	-0.23	52.58	-75.49	-5.9	-13.52	0.64	-6.76	23.7
Right	Right:cables	Origin	51.00	0.41	14.32	-0.23	52.58	-75.48	-5.9	-18.82	1.54	-6.95	24.0
Right	Right:X1T	End	54.75	0.31	12.57	-0.19	58.36	-101.54	-5.9	-18.82	1.54	-6.95	28.4
Right	Right:X1T	Origin	54.75	0.31	12.57	-0.19	53.45	-101.53	-5.9	-25.91	-4.18	-6.95	27.8
Right	#Right:18	End	59.75	0.24	10.34	-0.15	32.53	-136.31	-5.9	-25.91	-4.18	-6.95	27.9
Right	#Right:18	Origin	59.75	0.24	10.34	-0.15	32.55	-136.31	-5.9	-26.59	-4.05	-6.92	27.9
Right	#Right:19	End	64.75	0.23	8.26	-0.11	12.26	-170.89	-5.9	-26.59	-4.05	-6.92	28.3
Right	#Right:19	Origin	64.75	0.23	8.26	-0.11	12.28	-170.89	-5.9	-27.13	-3.95	-6.88	28.3
Right	#Right:20	End	67.50	0.23	7.18	-0.10	1.41	-189.79	-5.9	-27.13	-3.95	-6.88	28.7
Right	#Right:20	Origin	67.50	0.23	7.18	-0.10	1.42	-189.79	-5.9	-27.52	-3.87	-6.84	28.7
Right	Right:X1B	End	70.25	0.23	6.17	-0.08	-9.23	-208.60	-5.9	-27.52	-3.87	-6.84	32.2
Right	Right:X1B	Origin	70.25	0.23	6.17	-0.08	-14.41	-208.60	-5.9	-34.15	1.97	-6.81	33.4
Right	Right:X2T	End	72.25	0.23	5.46	-0.07	-10.50	-222.23	-5.9	-34.15	1.97	-6.81	34.3
Right	Right:X2T	Origin	72.25	0.23	5.46	-0.07	-13.06	-222.23	-5.9	-39.76	-0.32	-6.81	34.9
Right	#Right:21	End	77.25	0.22	3.87	-0.04	-14.72	-256.29	-5.9	-39.76	-0.32	-6.81	38.8
Right	#Right:21	Origin	77.25	0.22	3.87	-0.04	-14.70	-256.29	-5.9	-40.52	-0.17	-6.67	38.9
Right	#Right:22	End	82.25	0.19	2.52	-0.03	-15.56	-289.63	-5.9	-40.52	-0.17	-6.67	42.3
Right	#Right:22	Origin	82.25	0.19	2.52	-0.03	-15.54	-289.63	-5.9	-41.12	-0.04	-6.54	42.3
Right	#Right:23	End	85.00	0.16	1.88	-0.02	-15.68	-307.62	-5.9	-41.12	-0.04	-6.54	44.1
Right	#Right:23	Origin	85.00	0.16	1.88	-0.02	-15.67	-307.62	-5.9	-41.56	0.05	-6.44	44.1
Right	Right:X2B	End	87.75	0.14	1.34	-0.01	-15.56	-325.34	-5.9	-41.56	0.05	-6.44	45.7
Right	Right:X2B	Origin	87.75	0.14	1.34	-0.01	-21.95	-325.34	-5.9	-49.24	6.57	-6.24	46.9
Right	#Right:24	End	92.75	0.07	0.58	-0.01	10.84	-356.54	-5.9	-49.24	6.57	-6.24	48.1
Right	#Right:24	Origin	92.75	0.07	0.58	-0.01	10.87	-356.54	-5.9	-50.04	6.70	-6.00	48.1
Right	#Right:25	End	97.38	0.02	0.15	-0.00	41.83	-384.30	-5.9	-50.04	6.70	-6.00	54.4
Right	#Right:25	Origin	97.38	0.02	0.15	-0.00	41.86	-384.30	-5.9	-50.82	6.81	-5.75	54.5
Right	Right:g	End	102.00	0.00	0.00	0.00	73.33	-410.91	-5.9	-50.82	6.81	-5.75	60.3

Summary of Brace Forces and Usages for Load Case "NESC HVY BW":

Brace Label	Forces (kips)	Allowable Compression (kips)	Allowable Tension (kips)	Usage %
TENL	1.76	16.50	30.00	9.02
TENR	1.61	16.50	30.00	8.24
VEEL	-3.26	23.14	30.00	21.68
VEER	5.95	23.14	30.00	30.49
X1T1	-8.45	66.95	35.00	19.42
X1T2	8.67	66.95	35.00	38.11
X2T1	-9.46	66.95	35.00	21.73
X2T2	3.99	66.95	35.00	17.56

Detailed X-Arm Usages for Load Case "NESC HVY BW":

X-Arm Label	Joint Label	Joint Position	Rel. Dist. (ft)	Area (in^2)	X Sect. Modulus (in^3)	Z Sect. Modulus (in^3)	Tran. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	X Mom. (ft-k)	Z Mom. (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	X Shear (kips)	Z Shear (kips)	P/A (psi)	Mx/Sx (psi)	Mz/Sz (psi)	Max. Usage %
NESC32	NESC32:O	Origin	0.00	38.40	32.83	48.04	0.50	12.94	-0.49	0.00	0.00	0.0	0.00	-0.00	-0.00	0.00022	0.000519	3.44e-005	0.0
NESC32	NESC32:L1	End	0.50	38.40	32.83	48.04	0.50	12.99	-0.48	-0.00	0.00	0.0	0.00	-0.00	-0.00	0.00022	0.56	0.0128	0.0
NESC32	NESC32:L1	Origin	0.50	38.40	32.83	48.04	0.50	12.99	-0.48	0.00	-0.00	-0.0	-2.09	0.10	-0.03	54	0.561	0.0127	1.1
NESC32	#gNESC32:0	End	4.38	38.40	32.83	48.04	0.50	13.34	-0.34	0.39	0.11	-0.0	-2.09	0.10	-0.03	54	142	26.3	4.3

NESC32	#gNESC32:0	Origin	4.38	38.40	32.83	48.04	0.50	13.34	-0.34	-0.39	-0.11	-0.0	-2.09	0.05	-0.03	54	142	26.3	4.3
NESC32	NESC32:PL	End	8.25	38.40	32.83	48.04	0.50	13.70	-0.16	0.59	0.21	-0.0	-2.09	0.05	-0.03	54	214	53.7	6.2
NESC32	NESC32:PL	Origin	8.25	38.40	32.83	48.04	0.50	13.70	-0.16	-0.69	-3.62	0.6	6.04	-0.34	0.62	1.6e+002	253	904	25.3
NESC32	#gNESC32:1	End	11.63	38.40	32.83	48.04	0.50	14.10	0.03	-0.45	1.53	0.6	6.04	-0.34	0.62	1.6e+002	165	383	13.6
NESC32	#gNESC32:1	Origin	11.63	38.40	32.83	48.04	0.50	14.10	0.03	0.45	-1.53	0.6	6.04	-0.39	0.60	1.6e+002	165	383	13.6
NESC32	NESC32:BRL	End	15.00	38.40	32.83	48.04	0.50	14.58	0.16	-1.77	-0.50	0.6	6.04	-0.39	0.60	1.6e+002	647	126	17.9
NESC32	NESC32:BRL	Origin	15.00	38.40	32.83	48.04	0.50	14.58	0.16	1.77	0.50	0.6	6.04	-0.43	0.60	1.6e+002	647	126	17.9
NESC32	NESC32:L2V	End	16.00	38.40	32.83	48.04	0.50	14.72	0.16	-2.21	-1.11	0.6	6.04	-0.43	0.60	1.6e+002	806	276	23.8
NESC32	NESC32:L2V	Origin	16.00	38.40	32.83	48.04	0.50	14.72	0.16	2.21	1.11	0.6	-1.88	0.33	0.57	49	806	277	21.8
NESC32	NESC32:BRR	End	17.00	38.40	32.83	48.04	0.49	14.85	0.15	-1.88	-1.68	0.6	-1.88	0.33	0.57	49	686	419	22.2
NESC32	NESC32:BRR	Origin	17.00	38.40	32.83	48.04	0.49	14.85	0.15	1.88	1.68	0.6	-1.88	0.31	0.57	49	686	419	22.2
NESC32	#gNESC32:2	End	20.38	38.40	32.83	48.04	0.49	15.21	-0.01	-0.84	-3.59	0.6	-1.88	0.31	0.57	49	308	897	24.1
NESC32	#gNESC32:2	Origin	20.38	38.40	32.83	48.04	0.49	15.21	-0.01	0.84	3.59	0.6	-1.88	0.27	0.56	49	307	897	24.1
NESC32	NESC32:PR	End	23.75	38.40	32.83	48.04	0.49	15.39	-0.25	0.06	-5.47	0.6	-1.88	0.27	0.56	49	21.9	1.37e+003	27.6
NESC32	NESC32:PR	Origin	23.75	38.40	32.83	48.04	0.49	15.39	-0.25	-0.29	-0.30	0.0	-0.54	-0.01	0.04	14	107	75.5	3.8
NESC32	#gNESC32:3	End	27.63	38.40	32.83	48.04	0.49	15.45	-0.49	0.24	0.15	0.0	-0.54	-0.01	0.04	14	87.2	36.9	2.7
NESC32	#gNESC32:3	Origin	27.63	38.40	32.83	48.04	0.49	15.45	-0.49	-0.24	-0.15	0.0	-0.54	-0.06	0.04	14	87.2	36.9	2.7
NESC32	NESC32:L3	End	31.50	38.40	32.83	48.04	0.49	15.52	-0.70	-0.00	0.00	0.0	-0.54	-0.06	0.04	14	0.561	0.0153	0.3
NESC32	NESC32:L3	Origin	31.50	38.40	32.83	48.04	0.49	15.52	-0.70	0.00	-0.00	-0.0	0.00	0.00	0.00	0.00035	0.561	0.0153	0.0
NESC32	NESC32:E	End	32.00	38.40	32.83	48.04	0.49	15.53	-0.72	0.00	0.00	-0.0	0.00	0.00	0.00	0.00035	2.12e-005	1.66e-005	0.0

Summary of Suspension Capacities and Usages for Load Case "NESC HVY BW":

Suspension Label	Tension (kips)	Input Tension Capacity (kips)	Factored Tension Capacity (kips)	Usage %
SUSSWL	0.859	60.00	60.00	1.43
SUSSWR	6.937	60.00	60.00	11.56
L1	1.146	60.00	60.00	1.91
L2	1.146	60.00	60.00	1.91
L3	1.146	60.00	60.00	1.91
ANT1	1.065	60.00	60.00	1.78
ANT2	2.806	60.00	60.00	4.68
cables	4.987	60.00	60.00	8.31

*** Analysis Results for Load Case No. 3 "Ext. Wind t" - Number of iterations in SAPS 16

Equilibrium Joint Positions and Rotations for Load Case "Ext. Wind t":

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)
Left:g	0	0	0	0.0000	0.0000	0.0000	0	-7.75	0
Left:t	0.006198	0.01536	0.004677	0.8599	0.0075	0.0020	0.006198	-7.735	61
Left:SW	0.006133	0.02286	0.004734	0.8599	0.0075	0.0020	0.006133	-7.727	60.5
Left:BRACE	0.005935	0.0454	0.004904	0.8639	0.0075	0.0020	0.005935	-7.705	59
Left:ARM	0.005183	0.1018	0.005092	0.0059	0.0074	0.0022	0.005183	-7.648	53.26
Left:X1T	0.004414	0.06471	0.005065	-0.3509	0.0073	0.0018	0.004414	-7.685	47.26
Left:X1B	0.002474	0.04427	0.004008	0.0004	0.0069	0.0009	0.002474	-7.706	31.75
Left:X2T	0.002236	0.04395	0.003804	0.0082	0.0068	0.0008	0.002236	-7.706	29.75
Left:X2B	0.0006449	0.03765	0.001754	-0.1426	0.0046	0.0003	0.0006449	-7.712	14.25
Right:g	0	0	0	0.0000	0.0000	0.0000	0	7.75	0
Right:t	0.01186	1.582	-0.02773	-2.2747	0.0089	0.0006	0.01186	9.332	102
Right:ANT1	0.01155	1.503	-0.02615	-2.2745	0.0089	0.0006	0.01155	9.253	99.97
Right:ANT2	0.009686	1.031	-0.01687	-2.2016	0.0089	0.0006	0.009686	8.781	87.98
Right:SW	0.005525	0.2001	-0.003624	-1.0077	0.0083	0.0005	0.005525	7.95	60.5
Right:BRACE	0.005309	0.1751	-0.003403	-0.9047	0.0082	0.0005	0.005309	7.925	59
Right:ARM	0.004496	0.1023	-0.00283	-0.5565	0.0080	0.0004	0.004496	7.852	53.25
Right:cables	0.004187	0.08283	-0.002706	-0.4382	0.0078	0.0004	0.004187	7.833	51
Right:X1T	0.003683	0.06023	-0.00256	-0.2510	0.0076	0.0003	0.003683	7.81	47.25
Right:X1B	0.001833	0.04586	-0.001991	0.0102	0.0060	0.0002	0.001833	7.796	31.75
Right:X2T	0.001629	0.04589	-0.001892	-0.0061	0.0057	0.0002	0.001629	7.796	29.75
Right:X2B	0.0004073	0.02704	-0.0009967	-0.1300	0.0031	0.0001	0.0004073	7.777	14.25
NESC32:O	0.005503	0.1023	-0.07743	0.4735	0.0074	0.0024	0.005503	-15.9	53.17
NESC32:L1	0.005483	0.1023	-0.0733	0.4734	0.0074	0.0024	0.005483	-15.4	53.18
NESC32:PL	0.005183	0.1018	0.005092	0.7841	0.0074	0.0022	0.005183	-7.648	53.26
NESC32:BRL	0.004858	0.1028	0.08797	0.2642	0.0077	0.0032	0.004858	-0.8972	53.34
NESC32:L2V	0.004803	0.1031	0.09036	-0.0042	0.0077	0.0031	0.004803	0.1031	53.34
NESC32:BRR	0.004748	0.1031	0.0878	-0.2778	0.0077	0.0031	0.004748	1.103	53.34
NESC32:PR	0.004496	0.1023	-0.00283	-0.9087	0.0080	0.0004	0.004496	7.852	53.25
NESC32:L3	0.004443	0.1017	-0.1036	-0.6597	0.0079	0.0002	0.004443	15.6	53.15
NESC32:E	0.00444	0.1017	-0.1094	-0.6597	0.0079	0.0002	0.00444	16.1	53.14
TENL:E	0.005946	0.04544	7.036e-006	0.8639	0.0075	0.0020	0.005946	-8.029	59
TENR:E	0.005302	0.175	-0.01445	-0.9047	0.0082	0.0005	0.005302	8.625	58.99
VEEL:O	0.005924	0.04536	0.009801	0.8639	0.0075	0.0020	0.005924	-7.38	59.01
VEER:O	0.005316	0.1751	0.007646	-0.9047	0.0082	0.0005	0.005316	7.225	59.01
X1T1:O	0.004402	0.06471	0.002634	-0.3509	0.0073	0.0018	0.004402	-7.288	47.25
X1T1:E	0.001836	0.04586	-0.002138	0.0102	0.0060	0.0002	0.001836	6.969	31.75
X1T2:O	0.003688	0.06024	0.0007452	-0.2510	0.0076	0.0003	0.003688	7.056	47.25
X1T2:E	0.002466	0.04427	0.004011	0.0004	0.0069	0.0009	0.002466	-7.213	31.75
X2T1:O	0.002229	0.04395	0.003876	0.0082	0.0068	0.0008	0.002229	-7.201	29.75
X2T1:E	0.0004086	0.02704	0.001063	-0.1300	0.0031	0.0001	0.0004086	6.869	14.25
X2T2:O	0.001631	0.04589	-0.001803	-0.0061	0.0057	0.0002	0.001631	6.96	29.75
X2T2:E	0.0006414	0.03765	0.0002607	-0.1426	0.0046	0.0003	0.0006414	-7.112	14.25

Joint Support Reactions for Load Case "Ext. Wind t":

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)	X Usage %	X-M. 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 %
Left:g	-0.02	0.0	-5.89	0.0	0.0	57.10	0.0	0.0	57.41	0.0	52.41	0.0	-0.3	0.0	0.0	-0.02	0.0	0.0
Right:g	-0.03	0.0	-16.59	0.0	0.0	-83.06	0.0	0.0	84.70	0.0	175.89	0.0	-1.5	0.0	0.0	-0.03	0.0	0.0

Detailed Laminated Wood Pole Usages for Load Case "Ext. Wind t":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Trans. Mom. (ft-k)	Long. Mom. (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Tran. Shear (kips)	Long. Shear (kips)	Usage %
Left	Left:t	Origin	0.00	0.18	0.07	0.06	0.00	-0.00	-0.0	-0.01	0.01	-0.00	0.0
Left	Left:SW	End	0.50	0.27	0.07	0.06	0.01	-0.00	-0.0	-0.01	0.01	-0.00	0.0
Left	Left:SW	Origin	0.50	0.27	0.07	0.06	0.01	-0.00	-0.0	-0.18	0.47	-0.00	0.0
Left	Left:BRACE	End	2.00	0.54	0.07	0.06	0.71	-0.00	-0.0	-0.18	0.47	-0.00	1.2
Left	Left:BRACE	Origin	2.00	0.54	0.07	0.06	-1.57	-0.00	-0.0	5.51	-8.34	-0.00	3.7
Left	#Left:0	End	4.88	1.01	0.07	0.06	-25.55	-0.00	-0.0	5.51	-8.34	-0.00	39.9
Left	#Left:0	Origin	4.88	1.01	0.07	0.06	-25.55	-0.00	-0.0	5.36	-8.23	-0.00	39.9
Left	Left:ARM	End	7.75	1.22	0.06	0.06	-49.22	-0.01	-0.0	5.36	-8.23	-0.00	68.8
Left	Left:ARM	Origin	7.75	1.22	0.06	0.06	-49.22	-0.01	0.0	6.63	12.42	0.00	69.0
Left	#Left:1	End	10.75	1.05	0.06	0.06	-11.96	-0.01	0.0	6.63	12.42	0.00	16.0
Left	#Left:1	Origin	10.75	1.05	0.06	0.06	-11.96	-0.01	0.0	6.57	12.55	0.00	16.0
Left	Left:X1T	End	13.75	0.78	0.05	0.06	25.70	-0.00	0.0	6.57	12.55	0.00	30.2
Left	Left:X1T	Origin	13.75	0.78	0.05	0.06	19.43	-0.00	0.0	22.21	-1.79	-0.00	25.3
Left	#Left:2	End	18.75	0.56	0.05	0.06	10.46	-0.01	0.0	22.21	-1.79	-0.00	13.3
Left	#Left:2	Origin	18.75	0.56	0.05	0.06	10.46	-0.01	0.0	22.02	-1.47	-0.00	13.2
Left	#Left:3	End	23.75	0.52	0.04	0.05	3.12	-0.02	0.0	22.02	-1.47	-0.00	5.5
Left	#Left:3	Origin	23.75	0.52	0.04	0.05	3.12	-0.02	0.0	21.86	-1.25	-0.00	5.4
Left	#Left:4	End	26.50	0.53	0.03	0.05	-0.33	-0.02	0.0	21.86	-1.25	-0.00	3.0
Left	#Left:4	Origin	26.50	0.53	0.03	0.05	-0.33	-0.02	0.0	21.73	-1.11	-0.00	2.9
Left	Left:X1B	End	29.25	0.53	0.03	0.05	-3.40	-0.03	0.0	21.73	-1.11	-0.00	5.1
Left	Left:X1B	Origin	29.25	0.53	0.03	0.05	-10.42	-0.03	0.0	35.89	12.42	-0.00	12.0
Left	Left:X2T	End	31.25	0.53	0.03	0.05	14.42	-0.04	0.0	35.89	12.42	-0.00	14.3
Left	Left:X2T	Origin	31.25	0.53	0.03	0.05	6.27	-0.04	0.0	51.86	-1.93	-0.00	10.4
Left	#Left:5	End	36.25	0.55	0.02	0.04	-3.38	-0.06	0.0	51.86	-1.93	-0.00	7.8
Left	#Left:5	Origin	36.25	0.55	0.02	0.04	-3.38	-0.06	0.0	51.61	-1.69	-0.01	7.8

Left	#Left:6	End	41.25	0.55	0.01	0.03	-11.85	-0.09	0.0	51.61	-1.69	-0.01	12.0
Left	#Left:6	Origin	41.25	0.55	0.01	0.03	-11.85	-0.09	0.0	51.40	-1.55	-0.01	12.0
Left	#Left:7	End	44.00	0.52	0.01	0.03	-16.10	-0.11	0.0	51.40	-1.55	-0.01	13.7
Left	#Left:7	Origin	44.00	0.52	0.01	0.03	-16.10	-0.11	0.0	51.25	-1.45	-0.01	13.7
Left	Left:X2B	End	46.75	0.45	0.01	0.02	-20.10	-0.14	0.0	51.25	-1.45	-0.01	15.0
Left	Left:X2B	Origin	46.75	0.45	0.01	0.02	-24.18	-0.14	0.0	57.84	5.10	-0.01	17.7
Left	#Left:8	End	51.75	0.26	0.00	0.01	1.34	-0.19	0.0	57.84	5.10	-0.01	6.0
Left	#Left:8	Origin	51.75	0.26	0.00	0.01	1.34	-0.19	0.0	57.55	5.35	-0.01	6.0
Left	#Left:9	End	56.38	0.08	0.00	0.01	26.09	-0.25	0.0	57.55	5.35	-0.01	16.0
Left	#Left:9	Origin	56.38	0.08	0.00	0.01	26.09	-0.25	0.0	57.26	5.69	-0.02	15.9
Left	Left:g	End	61.00	0.00	0.00	0.00	52.41	-0.33	0.0	57.26	5.69	-0.02	24.9
Right	Right:t	Origin	0.00	18.98	0.14	-0.33	0.00	-0.00	-0.0	-0.08	0.10	-0.00	0.0
Right	Right:ANT1	End	2.00	18.03	0.14	-0.31	0.19	-0.00	-0.0	-0.08	0.10	-0.00	0.1
Right	Right:ANT1	Origin	2.00	18.03	0.14	-0.31	0.19	-0.00	-0.0	-1.05	1.03	-0.00	0.1
Right	#Right:10	End	7.00	15.66	0.13	-0.27	5.32	-0.01	-0.0	-1.05	1.03	-0.00	1.9
Right	#Right:10	Origin	7.00	15.66	0.13	-0.27	5.32	-0.01	-0.0	-1.42	1.44	-0.00	1.9
Right	#Right:11	End	10.50	14.01	0.12	-0.23	10.35	-0.01	-0.0	-1.42	1.44	-0.00	3.5
Right	#Right:11	Origin	10.50	14.01	0.12	-0.23	10.35	-0.01	-0.0	-1.74	1.77	-0.00	3.5
Right	Right:ANT2	End	14.00	12.38	0.12	-0.20	16.55	-0.02	-0.0	-1.74	1.77	-0.00	5.2
Right	Right:ANT2	Origin	14.00	12.38	0.12	-0.20	16.55	-0.02	-0.0	-3.86	4.44	-0.00	5.3
Right	#Right:12	End	19.00	10.12	0.11	-0.16	38.77	-0.04	-0.0	-3.86	4.44	-0.00	11.3
Right	#Right:12	Origin	19.00	10.12	0.11	-0.16	38.77	-0.04	-0.0	-4.36	4.92	-0.00	11.3
Right	#Right:13	End	24.00	7.99	0.10	-0.12	63.35	-0.06	-0.0	-4.36	4.92	-0.00	16.9
Right	#Right:13	Origin	24.00	7.99	0.10	-0.12	63.35	-0.06	-0.0	-4.88	5.38	-0.01	17.0
Right	#Right:14	End	29.00	6.05	0.09	-0.09	90.26	-0.09	-0.0	-4.88	5.38	-0.01	22.3
Right	#Right:14	Origin	29.00	6.05	0.09	-0.09	90.26	-0.09	-0.0	-5.43	5.84	-0.01	22.4
Right	#Right:15	End	34.00	4.37	0.08	-0.07	119.47	-0.13	-0.0	-5.43	5.84	-0.01	27.5
Right	#Right:15	Origin	34.00	4.37	0.08	-0.07	119.47	-0.13	-0.0	-5.93	6.24	-0.01	27.5
Right	#Right:16	End	37.75	3.29	0.07	-0.05	142.86	-0.16	-0.0	-5.93	6.24	-0.01	31.2
Right	#Right:16	Origin	37.75	3.29	0.07	-0.05	142.86	-0.15	-0.0	-6.38	6.57	-0.01	31.2
Right	Right:SW	End	41.50	2.40	0.07	-0.04	167.49	-0.19	-0.0	-6.38	6.57	-0.01	34.8
Right	Right:SW	Origin	41.50	2.40	0.07	-0.04	167.49	-0.19	-0.0	-6.84	7.21	-0.01	34.9
Right	Right:BRACE	End	43.00	2.10	0.06	-0.04	178.30	-0.20	-0.0	-6.84	7.21	-0.01	36.4
Right	Right:BRACE	Origin	43.00	2.10	0.06	-0.04	172.23	-0.20	-0.0	-16.73	-3.05	-0.01	35.6
Right	#Right:17	End	45.88	1.61	0.06	-0.04	163.45	-0.23	-0.0	-16.73	-3.05	-0.01	32.7
Right	#Right:17	Origin	45.88	1.61	0.06	-0.04	163.45	-0.23	-0.0	-17.06	-2.83	-0.01	32.7
Right	Right:ARM	End	48.75	1.23	0.05	-0.03	155.31	-0.27	-0.0	-17.06	-2.83	-0.01	30.0
Right	Right:ARM	Origin	48.75	1.23	0.05	-0.03	155.31	-0.27	0.0	-16.32	-1.51	-0.02	30.0
Right	Right:cables	End	51.00	0.99	0.05	-0.03	151.91	-0.30	0.0	-16.32	-1.51	-0.02	28.6
Right	Right:cables	Origin	51.00	0.99	0.05	-0.03	151.91	-0.30	0.0	-19.95	1.31	-0.02	28.8
Right	Right:X1T	End	54.75	0.72	0.04	-0.03	156.83	-0.36	0.0	-19.95	1.31	-0.02	28.4
Right	Right:X1T	Origin	54.75	0.72	0.04	-0.03	145.73	-0.36	0.0	-35.21	-11.51	-0.02	27.1
Right	#Right:18	End	59.75	0.56	0.04	-0.03	88.16	-0.46	0.0	-35.21	-11.51	-0.02	16.1
Right	#Right:18	Origin	59.75	0.56	0.04	-0.03	88.16	-0.46	0.0	-35.85	-11.13	-0.02	16.1
Right	#Right:19	End	64.75	0.53	0.03	-0.03	32.53	-0.56	0.0	-35.85	-11.13	-0.02	6.6
Right	#Right:19	Origin	64.75	0.53	0.03	-0.03	32.53	-0.56	0.0	-36.37	-10.79	-0.02	6.6
Right	#Right:20	End	67.50	0.54	0.03	-0.03	2.84	-0.62	0.0	-36.37	-10.79	-0.02	2.0
Right	#Right:20	Origin	67.50	0.54	0.03	-0.03	2.84	-0.62	0.0	-36.75	-10.54	-0.02	2.0
Right	Right:X1B	End	70.25	0.55	0.02	-0.02	-26.15	-0.68	0.0	-36.75	-10.54	-0.02	5.4
Right	Right:X1B	Origin	70.25	0.55	0.02	-0.02	-39.29	-0.68	0.0	-53.00	4.42	-0.02	8.0
Right	Right:X2T	End	72.25	0.55	0.02	-0.02	-30.45	-0.72	0.0	-53.00	4.42	-0.02	6.5
Right	Right:X2T	Origin	72.25	0.55	0.02	-0.02	-36.45	-0.72	0.0	-62.68	-0.68	-0.03	7.8
Right	#Right:21	End	77.25	0.52	0.01	-0.02	-39.83	-0.85	0.0	-62.68	-0.68	-0.03	7.9
Right	#Right:21	Origin	77.25	0.52	0.01	-0.02	-39.83	-0.85	0.0	-63.41	-0.16	-0.03	8.0
Right	#Right:22	End	82.25	0.45	0.01	-0.02	-40.66	-0.99	0.0	-63.41	-0.16	-0.03	7.7
Right	#Right:22	Origin	82.25	0.45	0.01	-0.02	-40.66	-0.99	0.0	-63.99	0.23	-0.03	7.8
Right	#Right:23	End	85.00	0.39	0.01	-0.01	-40.02	-1.06	0.0	-63.99	0.23	-0.03	7.5
Right	#Right:23	Origin	85.00	0.39	0.01	-0.01	-40.02	-1.06	0.0	-64.41	0.51	-0.03	7.5
Right	Right:X2B	End	87.75	0.32	0.00	-0.01	-38.62	-1.14	0.0	-64.41	0.51	-0.03	7.2
Right	Right:X2B	Origin	87.75	0.32	0.00	-0.01	-53.25	-1.14	0.0	-81.12	15.70	-0.03	9.6
Right	#Right:24	End	92.75	0.17	0.00	-0.01	25.24	-1.28	0.0	-81.12	15.70	-0.03	5.9
Right	#Right:24	Origin	92.75	0.17	0.00	-0.01	25.24	-1.28	0.0	-81.89	16.12	-0.03	6.0
Right	#Right:25	End	97.38	0.05	0.00	-0.00	99.81	-1.40	0.0	-81.89	16.12	-0.03	14.2
Right	#Right:25	Origin	97.38	0.05	0.00	-0.00	99.81	-1.40	0.0	-82.66	16.45	-0.03	14.2
Right	Right:g	End	102.00	0.00	0.00	0.00	175.89	-1.53	0.0	-82.66	16.45	-0.03	21.9

Summary of Brace Forces and Usages for Load Case "Ext. Wind t":

Brace Label	Forces (kips)	Allowable Compression (kips)	Allowable Tension (kips)	Usage %
TENL	0.95	16.50	30.00	4.24
TENR	0.75	16.50	30.00	3.33
VEEL	-10.41	23.14	30.00	59.95
VEER	14.32	23.14	30.00	63.66
X1T1	-21.61	66.95	35.00	43.03
X1T2	19.65	66.95	35.00	74.87
X2T1	-21.81	66.95	35.00	43.43
X2T2	9.43	66.95	35.00	35.93

Detailed X-Arm Usages for Load Case "Ext. Wind t":

X-Arm Label	Joint Label	Joint Position	Rel. Dist. (ft)	Area (in^2)	X Sect. Modulus (in^3)	Z Sect. Modulus (in^3)	Tran. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	X Mom. (ft-k)	Z Mom. (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	X Shear (kips)	Z Shear (kips)	P/A (psi)	Mx/Sx (psi)	Mz/Sz (psi)	Max. Usage %
NESC32	NESC32:O	Origin	0.00	38.40	32.83	48.04	1.23	0.07	-0.93	0.00	0.00	0.0	0.00	-0.00	-0.00	0.00066	5.77e-006	3.18e-006	0.0
NESC32	NESC32:L1	End	0.50	38.40	32.83	48.04	1.23	0.07	-0.88	-0.00	0.00	0.0	0.00	-0.00	-0.00	0.00066	0.561	7.59e-005	0.0
NESC32	NESC32:L1	Origin	0.50	38.40	32.83	48.04	1.23	0.07	-0.88	0.00	-0.00	0.0	-1.41	0.23	-0.00	37	0.561	7.12e-005	0.6
NESC32	#gNESC32:0	End	4.38	38.40	32.83	48.04	1.23	0.06	-0.47	0.91	0.00	0.0	-1.41	0.23	-0.00	37	332	0.243	6.1

NESC32	#gNESC32:0	Origin	4.38	38.40	32.83	48.04	1.23	0.06	-0.47	-0.91	-0.00	-0.0	-1.41	0.18	-0.00	37	332	0.242	6.1
NESC32	NESC32:PL	End	8.25	38.40	32.83	48.04	1.22	0.06	0.06	1.62	0.00	-0.0	-1.41	0.18	-0.00	37	591	0.493	10.5
NESC32	NESC32:PL	Origin	8.25	38.40	32.83	48.04	1.22	0.06	0.06	-1.62	0.02	0.0	19.17	-0.94	-0.00	5e+002	591	3.8	18.2
NESC32	#gNESC32:1	End	11.63	38.40	32.83	48.04	1.23	0.06	0.65	-1.54	-0.01	0.0	19.17	-0.94	-0.00	5e+002	564	1.6	17.7
NESC32	#gNESC32:1	Origin	11.63	38.40	32.83	48.04	1.23	0.06	0.65	1.54	0.01	0.0	19.17	-1.06	-0.00	5e+002	564	1.6	17.7
NESC32	NESC32:BRL	End	15.00	38.40	32.83	48.04	1.23	0.06	1.06	-5.13	0.00	0.0	19.17	-1.06	-0.00	5e+002	1.87e+003	0.472	39.6
NESC32	NESC32:BRL	Origin	15.00	38.40	32.83	48.04	1.23	0.06	1.06	5.13	-0.00	0.0	19.16	-1.24	-0.00	5e+002	1.87e+003	0.47	39.6
NESC32	NESC32:L2V	End	16.00	38.40	32.83	48.04	1.24	0.06	1.08	-6.37	0.00	0.0	19.16	-1.24	-0.00	5e+002	2.33e+003	1.08	47.1
NESC32	NESC32:L2V	Origin	16.00	38.40	32.83	48.04	1.24	0.06	1.08	6.37	-0.00	0.0	-1.04	1.02	-0.00	27	2.33e+003	1.08	39.2
NESC32	NESC32:BRR	End	17.00	38.40	32.83	48.04	1.24	0.06	1.05	-5.35	0.01	0.0	-1.04	1.02	-0.00	27	1.95e+003	1.89	33.1
NESC32	NESC32:BRR	Origin	17.00	38.40	32.83	48.04	1.24	0.06	1.05	5.35	-0.01	0.0	-1.03	1.00	-0.00	27	1.95e+003	1.89	33.1
NESC32	#gNESC32:2	End	20.38	38.40	32.83	48.04	1.23	0.06	0.62	-1.97	0.02	0.0	-1.03	1.00	-0.00	27	720	4.63	12.5
NESC32	#gNESC32:2	Origin	20.38	38.40	32.83	48.04	1.23	0.06	0.62	1.97	-0.02	0.0	-1.03	0.96	-0.00	27	720	4.63	12.5
NESC32	NESC32:PR	End	23.75	38.40	32.83	48.04	1.23	0.05	-0.03	1.29	0.03	0.0	-1.03	0.96	-0.00	27	470	7.35	8.4
NESC32	NESC32:PR	Origin	23.75	38.40	32.83	48.04	1.23	0.05	-0.03	-1.29	-0.00	0.0	0.09	-0.14	0.00	2.3	470	0.457	7.9
NESC32	#gNESC32:3	End	27.63	38.40	32.83	48.04	1.22	0.05	-0.69	0.73	0.00	0.0	0.09	-0.14	0.00	2.3	268	0.222	4.5
NESC32	#gNESC32:3	Origin	27.63	38.40	32.83	48.04	1.22	0.05	-0.69	-0.73	-0.00	-0.0	0.09	-0.19	0.00	2.3	268	0.222	4.5
NESC32	NESC32:L3	End	31.50	38.40	32.83	48.04	1.22	0.05	-1.24	-0.00	0.00	-0.0	0.09	-0.19	0.00	2.3	0.561	8.59e-005	0.0
NESC32	NESC32:L3	Origin	31.50	38.40	32.83	48.04	1.22	0.05	-1.24	0.00	-0.00	-0.0	0.00	0.00	0.00	0.00092	0.561	9.4e-005	0.0
NESC32	NESC32:E	End	32.00	38.40	32.83	48.04	1.22	0.05	-1.31	0.00	-0.00	-0.0	0.00	0.00	0.00	0.00092	2.31e-007	3.92e-006	0.0

Summary of Suspension Capacities and Usages for Load Case "Ext. Wind t":

Suspension Label	Tension (kips)	Input Tension Capacity (kips)	Factored Tension Capacity (kips)	Usage %
SUSSWL	0.432	60.00	60.00	0.72
SUSSWR	0.432	60.00	60.00	0.72
L1	0.696	60.00	60.00	1.16
L2	0.696	60.00	60.00	1.16
L3	0.696	60.00	60.00	1.16
ANT1	0.900	60.00	60.00	1.50
ANT2	2.846	60.00	60.00	4.74
cables	4.164	60.00	60.00	6.94

*** Analysis Results for Load Case No. 4 "Ext. Wind l" - Number of iterations in SAPS 20

Equilibrium Joint Positions and Rotations for Load Case "Ext. Wind l":

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)
Left:g	0	0	0	0.0000	0.0000	0.0000	0	-7.75	0
Left:t	3.518	0.01442	-0.1184	0.0239	4.5954	0.4805	3.518	-7.736	60.88
Left:SW	3.478	0.01429	-0.1168	0.0239	4.5954	0.4805	3.478	-7.736	60.38
Left:BRACE	3.358	0.01391	-0.112	0.0239	4.5952	0.4805	3.358	-7.736	58.89
Left:ARM	2.898	0.01277	-0.09355	0.0330	4.5781	0.4799	2.898	-7.737	53.16
Left:X1T	2.422	0.008636	-0.07465	0.0361	4.5008	0.3820	2.422	-7.741	47.18
Left:X1B	1.272	0.002711	-0.03177	0.0081	3.8982	0.1992	1.272	-7.747	31.72
Left:X2T	1.138	0.002112	-0.02727	0.0058	3.7713	0.1810	1.138	-7.748	29.72
Left:X2B	0.3008	-0.0002799	-0.004109	0.0028	2.2633	0.0699	0.3008	-7.75	14.25
Right:g	0	0	0	0.0000	0.0000	0.0000	0	7.75	0
Right:t	7.479	0.04894	-0.319	-0.0374	5.7720	0.0721	7.479	7.799	101.7
Right:ANT1	7.278	0.04738	-0.3089	-0.0374	5.7719	0.0721	7.278	7.797	99.69
Right:ANT2	6.072	0.03804	-0.2482	-0.0373	5.7507	0.0721	6.072	7.788	87.75
Right:SW	3.404	0.01714	-0.1182	-0.0353	5.2480	0.0723	3.404	7.767	60.38
Right:BRACE	3.268	0.01605	-0.112	-0.0351	5.1973	0.0723	3.268	7.766	58.89
Right:ARM	2.757	0.012	-0.08922	-0.0318	4.9792	0.0722	2.757	7.762	53.16
Right:cables	2.564	0.01039	-0.08087	-0.0293	4.8832	0.0684	2.564	7.76	50.92
Right:X1T	2.25	0.00803	-0.06769	-0.0242	4.7028	0.0624	2.25	7.758	47.18
Right:X1B	1.109	0.002187	-0.02522	-0.0081	3.6579	0.0393	1.109	7.752	31.72
Right:X2T	0.9845	0.0018	-0.0213	-0.0066	3.4889	0.0365	0.9845	7.752	29.73
Right:X2B	0.2446	0.000348	-0.002922	-0.0016	1.8945	0.0164	0.2446	7.75	14.25
NESC32:O	2.982	0.01325	-0.09893	-0.0345	4.5773	0.6299	2.982	-15.99	53.15
NESC32:L1	2.976	0.01322	-0.09879	-0.0345	4.5773	0.6299	2.976	-15.49	53.15
NESC32:PL	2.898	0.01277	-0.09355	0.0392	4.5781	0.4799	2.898	-7.737	53.16
NESC32:BRL	2.829	0.01235	-0.08989	0.0634	4.7530	0.6394	2.829	-0.9876	53.16
NESC32:L2V	2.818	0.01228	-0.08917	0.0581	4.7789	0.6356	2.818	0.01228	53.16
NESC32:BRR	2.807	0.01222	-0.08857	0.0517	4.8047	0.6198	2.807	1.012	53.16
NESC32:PR	2.757	0.012	-0.08922	0.0041	4.9792	0.0722	2.757	7.762	53.16
NESC32:L3	2.76	0.01196	-0.09531	-0.0633	4.9791	-0.0660	2.76	15.51	53.15
NESC32:E	2.761	0.01196	-0.0959	-0.0633	4.9791	-0.0660	2.761	16.01	53.15
TENL:E	3.36	0.01392	-0.1121	0.0239	4.5952	0.4805	3.36	-8.061	58.89
TENR:E	3.267	0.01605	-0.1124	-0.0351	5.1973	0.0723	3.267	8.466	58.89
VEEL:O	3.355	0.01389	-0.1119	0.0239	4.5952	0.4805	3.355	-7.411	58.89
VEER:O	3.269	0.01605	-0.1115	-0.0351	5.1973	0.0723	3.269	7.066	58.89
X1T1:O	2.419	0.008628	-0.0744	0.0361	4.5008	0.3820	2.419	-7.344	47.18
X1T1:E	1.11	0.002187	-0.0251	-0.0081	3.6579	0.0393	1.11	6.926	31.72
X1T2:O	2.251	0.008031	-0.06737	-0.0242	4.7028	0.0624	2.251	7.004	47.18
X1T2:E	1.271	0.002708	-0.0317	0.0081	3.8982	0.1992	1.271	-7.255	31.72
X2T1:O	1.137	0.00211	-0.02722	0.0058	3.7713	0.1810	1.137	-7.243	29.72
X2T1:E	0.2449	0.0003481	-0.002896	-0.0016	1.8945	0.0164	0.2449	6.843	14.25
X2T2:O	0.985	0.0018	-0.0212	-0.0066	3.4889	0.0365	0.985	6.916	29.73
X2T2:E	0.3	-0.0002803	-0.004079	0.0028	2.2633	0.0699	0.3	-7.15	14.25

Joint Support Reactions for Load Case "Ext. Wind l":

Joint Label	X Force (kips)	X Usage %(kips)	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Force (kips)	Comp. Uplift Usage %	Z 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 %
Left:g	-4.44	0.0	0.07	0.0	0.0	-3.99	0.0	0.0	5.97	0.0	-0.83	0.0	-139.4	0.0	0.0	-3.34	0.0	0.0
Right:g	-16.11	0.0	-0.13	0.0	0.0	-22.06	0.0	0.0	27.32	0.0	1.58	0.0	-915.7	0.0	0.0	-5.42	0.0	0.0

Detailed Laminated Wood Pole Usages for Load Case "Ext. Wind l":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Trans. Defl. (in)	Mom. (ft-k)	Long. Mom. (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Tran. Shear (kips)	Long. Shear (kips)	Usage %
Left	Left:t	Origin	0.00	0.17	42.21	-1.42	0.00	0.00	0.0	-0.01	-0.00	-0.01	0.0
Left	Left:SW	End	0.50	0.17	41.73	-1.40	-0.00	-0.00	0.0	-0.01	-0.00	-0.01	0.0
Left	Left:SW	Origin	0.50	0.17	41.73	-1.40	-0.00	-0.00	0.0	-0.17	-0.00	-0.05	0.0
Left	Left:BRACE	End	2.00	0.17	40.29	-1.34	-0.00	-0.08	0.0	-0.17	-0.00	-0.05	0.1
Left	Left:BRACE	Origin	2.00	0.17	40.29	-1.34	0.02	-0.08	-0.0	-1.10	0.08	-0.33	0.3
Left	#Left:0	End	4.88	0.16	37.53	-1.23	0.26	-1.03	-0.0	-1.10	0.08	-0.33	1.6
Left	#Left:0	Origin	4.88	0.16	37.53	-1.23	0.26	-1.03	-0.0	-1.18	0.08	-0.43	1.6
Left	Left:ARM	End	7.75	0.15	34.77	-1.12	0.51	-2.27	-0.0	-1.18	0.08	-0.43	3.0
Left	Left:ARM	Origin	7.75	0.15	34.77	-1.12	0.81	-2.94	3.9	-1.27	-0.25	-0.74	4.0
Left	#Left:1	End	10.75	0.12	31.91	-1.01	0.07	-5.15	3.9	-1.27	-0.25	-0.74	4.8
Left	#Left:1	Origin	10.75	0.12	31.91	-1.01	0.07	-5.15	3.9	-1.37	-0.25	-0.86	4.8
Left	Left:X1T	End	13.75	0.10	29.07	-0.90	-0.68	-7.73	3.9	-1.37	-0.25	-0.86	7.5
Left	Left:X1T	Origin	13.75	0.10	29.07	-0.90	-0.55	-7.73	3.8	-1.83	-0.03	-1.30	7.4
Left	#Left:2	End	18.75	0.08	24.42	-0.71	-0.66	-14.23	3.8	-1.83	-0.03	-1.30	12.0
Left	#Left:2	Origin	18.75	0.08	24.42	-0.71	-0.67	-14.23	3.8	-2.02	-0.02	-1.52	12.0
Left	#Left:3	End	23.75	0.05	19.93	-0.55	-0.77	-21.85	3.8	-2.02	-0.02	-1.52	16.8
Left	#Left:3	Origin	23.75	0.05	19.93	-0.55	-0.78	-21.85	3.8	-2.17	-0.02	-1.70	16.8
Left	#Left:4	End	26.50	0.04	17.56	-0.46	-0.83	-26.53	3.8	-2.17	-0.02	-1.70	19.5
Left	#Left:4	Origin	26.50	0.04	17.56	-0.46	-0.84	-26.53	3.8	-2.29	-0.02	-1.84	19.5
Left	Left:X1B	End	29.25	0.03	15.27	-0.38	-0.88	-31.59	3.8	-2.29	-0.02	-1.84	22.3
Left	Left:X1B	Origin	29.25	0.03	15.27	-0.38	-1.03	-31.59	3.7	-2.12	0.31	-2.23	22.4
Left	Left:X2T	End	31.25	0.03	13.66	-0.33	-0.40	-36.04	3.7	-2.12	0.31	-2.23	24.3
Left	Left:X2T	Origin	31.25	0.03	13.66	-0.33	-0.53	-36.04	3.5	-2.06	0.03	-2.67	24.4
Left	#Left:5	End	36.25	0.01	9.90	-0.21	-0.33	-49.40	3.5	-2.06	0.03	-2.67	31.2
Left	#Left:5	Origin	36.25	0.01	9.90	-0.21	-0.36	-49.40	3.5	-2.32	0.03	-2.94	31.2

Left	#Left:6	End	41.25	0.00	6.60	-0.12	-0.15	-64.08	3.5	-2.32	0.03	-2.94	38.0
Left	#Left:6	Origin	41.25	0.00	6.60	-0.12	-0.18	-64.08	3.5	-2.53	0.04	-3.15	38.1
Left	#Left:7	End	44.00	-0.00	5.01	-0.08	-0.06	-72.74	3.5	-2.53	0.04	-3.15	41.9
Left	#Left:7	Origin	44.00	-0.00	5.01	-0.08	-0.08	-72.74	3.5	-2.69	0.04	-3.30	41.9
Left	Left:X2B	End	46.75	-0.00	3.61	-0.05	0.05	-81.81	3.5	-2.69	0.04	-3.30	45.7
Left	Left:X2B	Origin	46.75	-0.00	3.61	-0.05	0.14	-81.81	3.4	-3.15	-0.07	-3.78	45.8
Left	#Left:8	End	51.75	-0.00	1.59	-0.01	-0.17	-100.73	3.4	-3.15	-0.07	-3.78	53.6
Left	#Left:8	Origin	51.75	-0.00	1.59	-0.01	-0.21	-100.73	3.4	-3.47	-0.07	-4.05	53.6
Left	#Left:9	End	56.38	-0.00	0.41	-0.00	-0.49	-119.47	3.4	-3.47	-0.07	-4.05	60.9
Left	#Left:9	Origin	56.38	-0.00	0.41	-0.00	-0.54	-119.47	3.3	-3.81	-0.07	-4.31	61.0
Left	Left:g	End	61.00	0.00	0.00	0.00	-0.80	-139.41	3.3	-3.81	-0.07	-4.31	68.2
Right	Right:t	Origin	0.00	0.59	89.75	-3.83	0.00	-0.00	0.0	-0.08	0.00	-0.06	0.0
Right	Right:ANT1	End	2.00	0.57	87.33	-3.71	0.00	-0.12	0.0	-0.08	0.00	-0.06	0.0
Right	Right:ANT1	Origin	2.00	0.57	87.33	-3.71	0.00	-0.12	-0.0	-1.01	0.00	-0.90	0.1
Right	#Right:10	End	7.00	0.52	81.30	-3.40	0.01	-4.64	-0.0	-1.01	0.00	-0.90	0.9
Right	#Right:10	Origin	7.00	0.52	81.30	-3.40	0.01	-4.64	-0.0	-1.37	0.00	-1.17	1.0
Right	#Right:11	End	10.50	0.49	77.08	-3.19	0.01	-8.72	-0.0	-1.37	0.00	-1.17	1.7
Right	#Right:11	Origin	10.50	0.49	77.08	-3.19	0.01	-8.72	-0.0	-1.67	0.00	-1.39	1.7
Right	Right:ANT2	End	14.00	0.46	72.87	-2.98	0.03	-13.58	-0.0	-1.67	0.00	-1.39	2.5
Right	Right:ANT2	Origin	14.00	0.46	72.87	-2.98	0.03	-13.58	-0.0	-3.64	0.00	-4.04	2.6
Right	#Right:12	End	19.00	0.41	66.87	-2.68	0.04	-33.77	-0.0	-3.64	0.00	-4.04	6.0
Right	#Right:12	Origin	19.00	0.41	66.87	-2.68	0.04	-33.77	-0.0	-4.12	0.00	-4.38	6.0
Right	#Right:13	End	24.00	0.36	60.92	-2.38	0.06	-55.66	-0.0	-4.12	0.00	-4.38	9.4
Right	#Right:13	Origin	24.00	0.36	60.92	-2.38	0.06	-55.66	-0.0	-4.61	0.01	-4.73	9.4
Right	#Right:14	End	29.00	0.32	55.04	-2.09	0.09	-79.30	-0.0	-4.61	0.01	-4.73	12.9
Right	#Right:14	Origin	29.00	0.32	55.04	-2.09	0.09	-79.30	-0.0	-5.13	0.01	-5.09	12.9
Right	#Right:15	End	34.00	0.27	49.26	-1.81	0.13	-104.74	-0.0	-5.13	0.01	-5.09	16.4
Right	#Right:15	Origin	34.00	0.27	49.26	-1.81	0.13	-104.74	-0.0	-5.60	0.01	-5.41	16.4
Right	#Right:16	End	37.75	0.24	45.02	-1.61	0.16	-125.04	-0.0	-5.60	0.01	-5.41	19.0
Right	#Right:16	Origin	37.75	0.24	45.02	-1.61	0.16	-125.04	-0.0	-6.01	0.01	-5.69	19.0
Right	Right:SW	End	41.50	0.21	40.85	-1.42	0.19	-146.39	-0.0	-6.01	0.01	-5.69	21.7
Right	Right:SW	Origin	41.50	0.21	40.85	-1.42	0.19	-146.39	-0.0	-6.45	0.01	-5.91	21.7
Right	Right:BRACE	End	43.00	0.19	39.21	-1.34	0.21	-155.24	-0.0	-6.45	0.01	-5.91	22.7
Right	Right:BRACE	Origin	43.00	0.19	39.21	-1.34	0.40	-155.24	0.0	-7.02	0.36	-6.27	22.8
Right	#Right:17	End	45.88	0.17	36.12	-1.20	1.44	-173.26	0.0	-7.02	0.36	-6.27	25.1
Right	#Right:17	Origin	45.88	0.17	36.12	-1.20	1.44	-173.26	0.0	-7.36	0.36	-6.49	25.1
Right	Right:ARM	End	48.75	0.14	33.09	-1.07	2.47	-191.91	0.0	-7.36	0.36	-6.49	27.5
Right	Right:ARM	Origin	48.75	0.14	33.09	-1.07	2.87	-191.24	4.6	-7.77	0.27	-7.98	27.5
Right	Right:cables	End	51.00	0.12	30.77	-0.97	3.49	-209.19	4.6	-7.77	0.27	-7.98	29.6
Right	Right:cables	Origin	51.00	0.12	30.77	-0.97	3.48	-209.19	4.6	-11.20	0.27	-11.04	29.8
Right	Right:X1T	End	54.75	0.10	27.00	-0.81	4.51	-250.60	4.6	-11.20	0.27	-11.04	34.8
Right	Right:X1T	Origin	54.75	0.10	27.00	-0.81	4.15	-250.60	4.8	-12.24	-0.08	-11.65	34.8
Right	#Right:18	End	59.75	0.07	22.23	-0.62	3.79	-308.86	4.8	-12.24	-0.08	-11.65	41.2
Right	#Right:18	Origin	59.75	0.07	22.23	-0.62	3.77	-308.86	4.8	-12.94	-0.08	-12.02	41.3
Right	#Right:19	End	64.75	0.04	17.77	-0.45	3.43	-368.97	4.8	-12.94	-0.08	-12.02	47.6
Right	#Right:19	Origin	64.75	0.04	17.77	-0.45	3.41	-368.97	4.8	-13.50	-0.08	-12.31	47.6
Right	#Right:20	End	67.50	0.03	15.48	-0.37	3.23	-402.81	4.8	-13.50	-0.08	-12.31	51.0
Right	#Right:20	Origin	67.50	0.03	15.48	-0.37	3.22	-402.81	4.8	-13.91	-0.07	-12.50	51.0
Right	Right:X1B	End	70.25	0.03	13.31	-0.30	3.04	-437.19	4.8	-13.91	-0.07	-12.50	54.4
Right	Right:X1B	Origin	70.25	0.03	13.31	-0.30	3.14	-437.19	5.0	-14.13	-0.28	-12.95	54.4
Right	Right:X2T	End	72.25	0.02	11.81	-0.26	2.61	-463.09	5.0	-14.13	-0.28	-12.95	56.9
Right	Right:X2T	Origin	72.25	0.02	11.81	-0.26	2.60	-463.09	5.2	-16.62	-0.17	-14.35	57.0
Right	#Right:21	End	77.25	0.01	8.39	-0.16	1.80	-534.86	5.2	-16.62	-0.17	-14.35	63.8
Right	#Right:21	Origin	77.25	0.01	8.39	-0.16	1.76	-534.86	5.2	-17.45	-0.17	-14.68	63.8
Right	#Right:22	End	82.25	0.01	5.48	-0.09	0.97	-608.25	5.2	-17.45	-0.17	-14.68	70.4
Right	#Right:22	Origin	82.25	0.01	5.48	-0.09	0.93	-608.25	5.2	-18.12	-0.17	-14.92	70.4
Right	#Right:23	End	85.00	0.01	4.12	-0.06	0.50	-649.27	5.2	-18.12	-0.17	-14.92	74.0
Right	#Right:23	Origin	85.00	0.01	4.12	-0.06	0.48	-649.27	5.2	-18.61	-0.17	-15.08	74.0
Right	Right:X2B	End	87.75	0.00	2.94	-0.04	0.05	-690.74	5.2	-18.61	-0.17	-15.08	77.5
Right	Right:X2B	Origin	87.75	0.00	2.94	-0.04	-0.36	-690.74	5.4	-19.74	0.13	-15.55	77.6
Right	#Right:24	End	92.75	0.00	1.27	-0.01	0.35	-768.51	5.4	-19.74	0.13	-15.55	84.1
Right	#Right:24	Origin	92.75	0.00	1.27	-0.01	0.30	-768.51	5.4	-20.66	0.13	-15.80	84.1
Right	#Right:25	End	97.38	0.00	0.33	-0.00	0.98	-841.59	5.4	-20.66	0.13	-15.80	90.1
Right	#Right:25	Origin	97.38	0.00	0.33	-0.00	0.92	-841.59	5.4	-21.59	0.13	-16.02	90.1
Right	Right:g	End	102.00	0.00	0.00	0.00	1.61	-915.66	5.4	-21.59	0.13	-16.02	95.8

Summary of Brace Forces and Usages for Load Case "Ext. Wind l":

Brace Label	Forces (kips)	Allowable Compression (kips)	Allowable Tension (kips)	Usage %
TENL	0.62	16.50	30.00	2.74
TENR	0.44	16.50	30.00	1.94
VEEL	0.72	23.14	30.00	3.21
VEER	-0.01	23.14	30.00	0.07
X1T1	0.32	66.95	35.00	1.21
X1T2	0.50	66.95	35.00	1.91
X2T1	-0.42	66.95	35.00	0.85
X2T2	-0.16	66.95	35.00	0.31

Detailed X-Arm Usages for Load Case "Ext. Wind l":

X-Arm Label	Joint Label	Joint Position	Rel. Dist. (ft)	Area (in^2)	X Sect. Modulus (in^3)	Z Sect. Modulus (in^3)	Tran. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	X Mom. (ft-k)	Z Mom. (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	X Shear (kips)	Z Shear (kips)	P/A (psi)	Mx/Sx (psi)	Mz/Sz (psi)	Max. Usage %
NESC32	NESC32:O	Origin	0.00	38.40	32.83	48.04	0.16	35.78	-1.19	0.00	-0.00	0.0	0.00	-0.00	-0.01	2.2e-005	9.16e-005	0.000342	0.0
NESC32	NESC32:L1	End	0.50	38.40	32.83	48.04	0.16	35.71	-1.19	-0.00	0.00	0.0	0.00	-0.00	-0.01	2.2e-005	0.445	1	0.0
NESC32	NESC32:L1	Origin	0.50	38.40	32.83	48.04	0.16	35.71	-1.19	0.00	-0.00	-0.0	-0.48	0.07	-0.19	13	0.445	1	0.2
NESC32	#gNESC32:0	End	4.38	38.40	32.83	48.04	0.16	35.21	-1.17	0.27	0.73	-0.0	-0.48	0.07	-0.19	13	99.7	182	4.9

NESC32	#gNESC32:0	Origin	4.38	38.40	32.83	48.04	0.16	35.21	-1.17	-0.27	-0.73	-0.0	-0.48	0.03	-0.31	13	99.7	182	4.9
NESC32	NESC32:PL	End	8.25	38.40	32.83	48.04	0.15	34.77	-1.12	0.40	1.94	-0.0	-0.48	0.03	-0.31	13	146	483	10.7
NESC32	NESC32:PL	Origin	8.25	38.40	32.83	48.04	0.15	34.77	-1.12	-0.09	1.99	0.7	-0.82	-0.01	-0.24	21	33.4	497	9.2
NESC32	#gNESC32:1	End	11.63	38.40	32.83	48.04	0.15	34.39	-1.11	0.06	-1.19	0.7	-0.82	-0.01	-0.24	21	22.7	297	5.7
NESC32	#gNESC32:1	Origin	11.63	38.40	32.83	48.04	0.15	34.39	-1.11	-0.06	1.19	0.7	-0.82	-0.04	-0.35	21	23	297	5.7
NESC32	NESC32:BRL	End	15.00	38.40	32.83	48.04	0.15	33.95	-1.08	-0.07	-0.02	0.7	-0.82	-0.04	-0.35	21	27.3	3.77	0.9
NESC32	NESC32:BRL	Origin	15.00	38.40	32.83	48.04	0.15	33.95	-1.08	0.07	0.02	0.7	-0.82	-0.06	-0.42	21	27.2	3.78	0.9
NESC32	NESC32:L2V	End	16.00	38.40	32.83	48.04	0.15	33.81	-1.07	-0.14	0.40	0.7	-0.82	-0.06	-0.42	21	49.5	101	2.9
NESC32	NESC32:L2V	Origin	16.00	38.40	32.83	48.04	0.15	33.81	-1.07	0.14	-0.40	0.7	-0.23	0.05	-0.69	6.1	49.6	101	2.6
NESC32	NESC32:BRR	End	17.00	38.40	32.83	48.04	0.15	33.68	-1.06	-0.08	1.09	0.7	-0.23	0.05	-0.69	6.1	30.6	272	5.1
NESC32	NESC32:BRR	Origin	17.00	38.40	32.83	48.04	0.15	33.68	-1.06	0.08	-1.09	0.7	-0.24	0.03	-0.76	6.1	30.9	272	5.2
NESC32	#gNESC32:2	End	20.38	38.40	32.83	48.04	0.14	33.29	-1.05	0.03	3.64	0.7	-0.24	0.03	-0.76	6.1	9.21	910	15.4
NESC32	#gNESC32:2	Origin	20.38	38.40	32.83	48.04	0.14	33.29	-1.05	-0.02	-3.64	0.7	-0.24	-0.00	-0.86	6.2	8.05	910	15.4
NESC32	NESC32:PR	End	23.75	38.40	32.83	48.04	0.14	33.09	-1.07	0.03	6.56	0.7	-0.24	-0.00	-0.86	6.2	11.5	1.64e+003	27.6
NESC32	NESC32:PR	Origin	23.75	38.40	32.83	48.04	0.14	33.09	-1.07	0.37	-1.94	-0.0	-0.34	0.07	0.31	8.7	137	483	10.5
NESC32	#gNESC32:3	End	27.63	38.40	32.83	48.04	0.14	33.08	-1.09	-0.12	0.73	-0.0	-0.34	0.07	0.31	8.7	42.7	182	3.9
NESC32	#gNESC32:3	Origin	27.63	38.40	32.83	48.04	0.14	33.08	-1.09	0.12	-0.73	-0.0	-0.33	0.03	0.19	8.7	42.7	182	3.9
NESC32	NESC32:L3	End	31.50	38.40	32.83	48.04	0.14	33.12	-1.14	-0.00	0.00	-0.0	-0.33	0.03	0.19	8.7	0.435	1.01	0.2
NESC32	NESC32:L3	Origin	31.50	38.40	32.83	48.04	0.14	33.12	-1.14	0.00	-0.00	-0.0	0.00	0.00	0.01	9.6e-005	0.434	1.01	0.0
NESC32	NESC32:E	End	32.00	38.40	32.83	48.04	0.14	33.13	-1.15	-0.00	0.00	-0.0	0.00	0.00	0.01	9.6e-005	0.000766	0.000109	0.0

Summary of Suspension Capacities and Usages for Load Case "Ext. Wind l":

Suspension Label	Tension (kips)	Input Tension Capacity (kips)	Factored Tension Capacity (kips)	Usage %
SUSSWL	0.140	60.00	60.00	0.23
SUSSWR	0.140	60.00	60.00	0.23
L1	0.265	60.00	60.00	0.44
L2	0.265	60.00	60.00	0.44
L3	0.265	60.00	60.00	0.44
ANT1	0.900	60.00	60.00	1.50
ANT2	2.846	60.00	60.00	4.74
cables	4.164	60.00	60.00	6.94

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

Summary of Laminated Wood Pole Usages:

Laminated Wood Pole Label	Maximum Usage %	Load Case	Segment Number	Weight (lbs)
Left	69.01	Ext. Wind t	5	3445.6
Right	95.85	Ext. Wind l	27	15315.2

Summary of X-Arm Usages:

X-Arm Label	Maximum Usage %	Load Case	Segment Number	Weight (lbs)
NESC32	47.11	Ext. Wind t	6	393.0

Summary of Brace Usages:

Brace Label	Maximum Usage %	Load Case	Weight (lbs)
TENL	9.02	NESC HVY BW	47.0
TENR	8.33	NESC HVY	47.0
VEEL	59.95	Ext. Wind t	59.0
VEER	63.66	Ext. Wind t	59.0
X1T1	43.03	Ext. Wind t	200.0
X1T2	74.87	Ext. Wind t	200.0
X2T1	43.43	Ext. Wind t	200.0
X2T2	35.93	Ext. Wind t	200.0

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC HVY	40.70	X1T2	Brace
NESC HVY BW	60.26	Right Laminated	Wood
Ext. Wind t	74.87	X1T2	Brace
Ext. Wind l	95.85	Right Laminated	Wood

Summary of Laminated Wood Pole Usages by Load Case:

Load Case	Maximum Usage %	Laminated Wood Pole Segment Label	Number
NESC HVY	31.20	Left	5
NESC HVY BW	60.26	Right	27
Ext. Wind t	69.01	Left	5
Ext. Wind l	95.85	Right	27

Summary of X-Arm Usages by Load Case:

Load Case	Maximum Usage %	X-Arm Label	Segment Number
NESC HVY	19.35	NESC32	6
NESC HVY BW	27.65	NESC32	9
Ext. Wind t	47.11	NESC32	6
Ext. Wind l	27.60	NESC32	9

Summary of Brace Usages by Load Case:

Load Case	Maximum Usage %	Brace Label
NESC HVY	40.70	X1T2
NESC HVY BW	38.11	X1T2
Ext. Wind t	74.87	X1T2
Ext. Wind l	3.21	VEEL

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
SUSSWL	Suspension	1.43	NESC HVY	3.0
SUSSWR	Suspension	11.56	NESC HVY BW	3.0
L1	Suspension	1.91	NESC HVY	50.0
L2	Suspension	1.91	NESC HVY	50.0
L3	Suspension	1.91	NESC HVY	50.0
ANT1	Suspension	1.78	NESC HVY	3.0
ANT2	Suspension	4.74	Ext. Wind t	3.0
cables	Suspension	8.31	NESC HVY	3.0

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 HVY	SUSSWL	Suspension	Left:SW	0.000	0.586	0.628	0.859
NESC HVY	SUSSWR	Suspension	Right:SW	0.000	0.586	0.628	0.859
NESC HVY	L1	Suspension	NESC32:L1	0.000	0.692	0.913	1.146
NESC HVY	L2	Suspension	NESC32:L2V	0.000	0.692	0.913	1.146
NESC HVY	L3	Suspension	NESC32:L3	0.000	0.692	0.913	1.146
NESC HVY	ANT1	Suspension	Right:ANT1	0.000	0.181	1.050	1.065
NESC HVY	ANT2	Suspension	Right:ANT2	0.000	0.710	2.715	2.806
NESC HVY	cables	Suspension	Right:cables	0.000	0.816	4.920	4.987
NESC HVY BW	SUSSWL	Suspension	Left:SW	0.000	0.586	0.628	0.859
NESC HVY BW	SUSSWR	Suspension	Right:SW	6.930	0.242	0.210	6.937
NESC HVY BW	L1	Suspension	NESC32:L1	0.000	0.692	0.913	1.146
NESC HVY BW	L2	Suspension	NESC32:L2V	0.000	0.692	0.913	1.146
NESC HVY BW	L3	Suspension	NESC32:L3	0.000	0.692	0.913	1.146
NESC HVY BW	ANT1	Suspension	Right:ANT1	0.000	0.181	1.050	1.065
NESC HVY BW	ANT2	Suspension	Right:ANT2	0.000	0.710	2.715	2.806
NESC HVY BW	cables	Suspension	Right:cables	0.000	0.816	4.920	4.987
Ext. Wind t	SUSSWL	Suspension	Left:SW	0.000	0.409	0.140	0.432
Ext. Wind t	SUSSWR	Suspension	Right:SW	0.000	0.409	0.140	0.432
Ext. Wind t	L1	Suspension	NESC32:L1	0.000	0.644	0.265	0.696
Ext. Wind t	L2	Suspension	NESC32:L2V	0.000	0.644	0.265	0.696
Ext. Wind t	L3	Suspension	NESC32:L3	0.000	0.644	0.265	0.696
Ext. Wind t	ANT1	Suspension	Right:ANT1	0.000	0.566	0.700	0.900
Ext. Wind t	ANT2	Suspension	Right:ANT2	0.000	2.196	1.810	2.846
Ext. Wind t	cables	Suspension	Right:cables	0.000	2.566	3.280	4.164
Ext. Wind l	SUSSWL	Suspension	Left:SW	0.000	0.000	0.140	0.140
Ext. Wind l	SUSSWR	Suspension	Right:SW	0.000	0.000	0.140	0.140
Ext. Wind l	L1	Suspension	NESC32:L1	0.000	0.000	0.265	0.265
Ext. Wind l	L2	Suspension	NESC32:L2V	0.000	0.000	0.265	0.265
Ext. Wind l	L3	Suspension	NESC32:L3	0.000	0.000	0.265	0.265
Ext. Wind l	ANT1	Suspension	Right:ANT1	0.566	0.000	0.700	0.900
Ext. Wind l	ANT2	Suspension	Right:ANT2	2.196	0.000	1.810	2.846
Ext. Wind l	cables	Suspension	Right:cables	2.566	0.000	3.280	4.164

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 HVY	4.955	0.000	12.680	370.958	0.000	0.000
NESC HVY BW	4.611	6.930	12.262	346.906	419.265	-53.707
Ext. Wind t	8.078	0.000	6.865	577.954	0.000	0.000
Ext. Wind l	0.000	5.328	6.865	44.872	380.714	-41.292

*** Weight of structure (lbs):

Weight of Braces:	1012.0
Weight of X-Arms:	393.0
Weight of Laminated Wood Poles:	18760.8
Weight of Equipment:	2000.0
Weight of Suspensions:	165.0
Total:	22330.8

*** End of Report

Point Load Information

Northeast Utilities System

Job :		Page	of
Description:	Spec. Number	Sheet	of
	Computed by	Date	9/16/10
	Checked by	Date	

WIRE LOADING AT ATTACHMENTS

TOWER ID: 8012

Wind Span =	483 ft	Broken Wire Span =	AHEAD SPAN
Weight Span =	499 ft	Type of Insulator Attachment =	SUSPENSION
Total Angle =	0 degrees		

1. NESC RULE 250B Heavy Loading:

	INTACT CONDITION			BROKEN WIRE CONDITION		
	Horizontal	Longitudinal	Vertical	Horizontal	Longitudinal	Vertical
Shield Wire =	586 lb	0 lb	628 lb	242 lb	6,930 lb	210 lb
Conductor =	692 lb	0 lb	913 lb	285 lb	4,950 lb	306 lb

2. NESC RULE 250C Transverse Extreme Wind Loading:

	Horizontal	Longitudinal	Vertical
Shield Wire =	409 lb	0 lb	140 lb
Conductor =	644 lb	0 lb	265 lb

3. NESC RULE 250C Longitudinal Extreme Wind Loading:

	Horizontal	Longitudinal	Vertical
Shield Wire =	#VALUE!	#VALUE!	140 lb
Conductor =	#VALUE!	#VALUE!	265 lb

4. NESC RULE 250D Extreme Ice & Wind Loading:

	Horizontal	Longitudinal	Vertical
Shield Wire =	#VALUE!	#VALUE!	1,026 lb
Conductor =	#VALUE!	#VALUE!	1,297 lb

5. NESC RULE 250B w/o OLF's

	Horizontal	Longitudinal	Vertical
Shield Wire =	#VALUE!	#VALUE!	419 lb
Conductor =	#VALUE!	#VALUE!	609 lb

6. 60 Deg. F. No Wind

	Horizontal	Longitudinal	Vertical
Shield Wire =	0 lb	0 lb	122 lb
Conductor =	0 lb	0 lb	230 lb

7. Construction

	Horizontal	Longitudinal	Vertical
Shield Wire =	0 lb	0 lb	183 lb
Conductor =	0 lb	0 lb	346 lb

AT&T Antennas - proposed

Site # CT58XC965 - Str. # 8012 - Farmington, CT Site

Wind Load Calculation

Ext. Wind Speed =	110	MPH			
Ext. Wind	Height Above Ground (ft.)				
O.L.F.		Kz	Grf-Str	Shape Factor	Wind Pressure (p.s.f.)
1.00	88.00	1.13	0.88	1.6	49.45
				Projected Area (sq. ft.)	Equiv. Point Load (lbs.)
existing antennas & bracket				44.4	**2,196**
NESC Zone		Basic Pressure (p.s.f.)			
			O.L.F.	Shape Factor	
		4.00	2.50	1.60	16.0
				Projected Area (sq. ft.)	Equiv. Point Load (lbs.)
existing antennas & bracket 0.00				44.4	**710**

Weights: (incl. brkts.)

NESC Heavy = 2,715 lbs.

Ext. Wind = 1,810 lbs.

Sprint Antennas - existing

Site # CT58XC965 - Str. # 8012 - Farmington, CT Site

Wind Load Calculation

Ext. Wind Speed =	110	MPH			
Ext. Wind	Height Above Ground (ft.)				
O.L.F.		Kz	Grf-Str	Shape Factor	Wind Pressure (p.s.f.)
1.00	98.00	1.16	0.87	1.6	50.08
				Projected Area (sq. ft.)	Equiv. Point Load (lbs.)
existing equipment - unchanged from 2013 spec				11.3	**566**
NESC Zone		Basic Pressure (p.s.f.)			
			O.L.F.	Shape Factor	
		4.00	2.50	1.60	16.0
				Projected Area (sq. ft.)	Equiv. Point Load (lbs.)
existing equipment - unchanged from 2013 spec 0.00				11.3	**181**

Weights: (incl. brkts.)

NESC Heavy = 1,050 lbs

Ext. Wind = 700 lbs

Coax Cables -

Site # CT58XC965 - Str. # 8012 - Farmington, CT Site

Wind Load Calculation

Ext. Wind Speed =	110	MPH			
Ext. Wind	Height Above Ground (ft.)				
O.L.F.		Kz	Grf-Str	Shape Factor	Wind Pressure (p.s.f.)
1.00	102.00	1.17	0.87	1.6	50.31
				Projected Area (sq. ft.)	Equiv. Point Load (lbs.)
6" maximum projection from one pole face				51.0	**2,566**
NESC Zone		Basic Pressure (p.s.f.)			
			O.L.F.	Shape Factor	
		4.00	2.50	1.60	16.0
				Projected Area (sq. ft.)	Equiv. Point Load (lbs.)
6" maximum projection from one pole face 0.00				51.0	**816**

Weights:

NESC Heavy = 4,920 lbs

Ext. Wind = 3,280 lbs

EVERSOURCE ENERGY

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

February 19, 2016

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

Re: Site Permitting Authorization
45 Maple Ridge Drive, Farmington, CT
Telecommunications Site

Dear Mr. Burks:

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

CL&P Structure #8012, FA #10035295
45 Maple Ridge Drive
Farmington, Connecticut

The foregoing authorization is given subject to the following conditions:

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

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

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

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

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

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

Very truly yours,

Michael J. Green

Michael J. Green, Senior Real Estate Analyst
Transmission & Distribution ROW & Survey Engineering

AGREED TO ON BEHALF OF New Cingular Wireless PCS, LLC

By: Timothy M. Berk
Duly Authorized

Date: 2-23-2016

EVERSOURCE
ENERGY

56 Prospect Street,
Hartford, CT 06103

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

February 5, 2016

Mr. Tim Burks
AT&T Wireless.
500 Enterprise Drive
Rocky Hill, CT 06067

RE: AT&T Antenna Site, CT-1104, 45 Maple Ridge Dr., Farmington CT, structure 8012

Dear Mr. Burks:

Based on Laminated Wood Systems' (LWS) evaluation of AT&T's proposed equipment modification dated February 4, 2016; we have reviewed for acceptance this modification.

Since there are no outstanding structural or site related issues to resolve at this time, please contact Mr. Green (860-665-6933) to complete the lease amendment issues.

Sincerely,

Robert Gray
Transmission Line Engineering

WIRELESS COMMUNICATIONS FACILITY
CT1104 - LTE 3C
EVERSOURCE STRUCT. NO. 8012
FARMINGTON NU MAPLE RIDGE DR.
45 MAPLE RIDGE RD.
FARMINGTON, CT 06032

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2003 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2005 CONNECTICUT SUPPLEMENT AND 2009 AMENDMENTS, INCLUDING THE TIA/EIA-222 REVISION "F" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2005 CONNECTICUT FIRE SAFETY CODE AND 2009 AMENDMENTS, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. THE COMPOUND, TOWER, PRIMARY GROUND RING, ELECTRICAL SERVICE TO THE METER BANK AND TELEPHONE SERVICE TO THE DEMARCATION POINT ARE PROVIDED BY SITE OWNER. AS BUILT FIELD CONDITIONS REGARDING THESE ITEMS SHALL BE CONFIRMED BY THE CONTRACTOR. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
3. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
4. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
5. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
6. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
7. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN "AS-BUILT" SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
8. LOCATION OF EQUIPMENT, AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING BUILDING'S/PROPERTY'S OPERATIONS, COORDINATE WORK WITH BUILDING/PROPERTY OWNER.
10. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
11. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
12. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MFR.'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
13. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED" ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE AT&T CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
15. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
16. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
17. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUIT AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
18. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
19. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
20. THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED PRIOR TO ANY EXCAVATION WORK. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
21. CONTRACTOR SHALL COMPLY WITH OWNERS ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.

SITE DIRECTIONS

FROM: 500 ENTERPRISE DRIVE
ROCKY HILL, CONNECTICUT

TO: 45 MAPLE RIDGE DRIVE
FARMINGTON, CT 06032

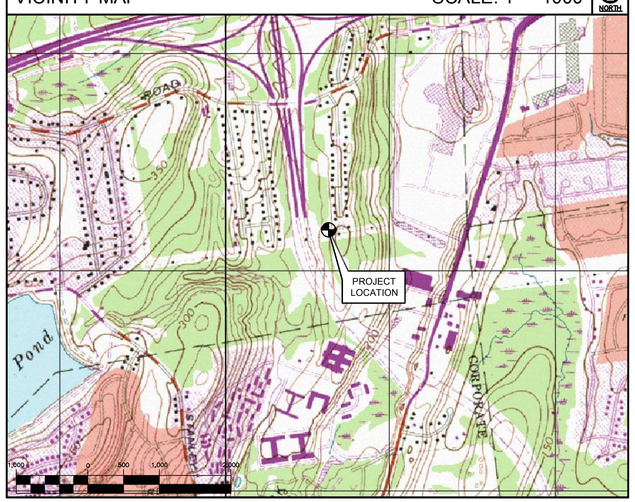
1.	TAKE RAMP LEFT FOR I-91	1.7 mi
2.	AT EXIT 22N, TAKE RAMP RIGHT FOR CT-9 NORTH TOWARD NEW BRITAIN	10.0 mi
3.	AT EXIT 30, TAKE RAMP RIGHT FOR CT-71 TOWARD CORBINS CORNER	0.3 mi
4.	TURN RIGHT ONTO CT-71/ HARTFORD	0.9 mi
5.	TURN LEFT ONTO SOUTH RD.	0.6 mi
6.	TURN LEFT ONTO MAPLE RIDGE RD.	0.2 mi

ARRIVE AT 45 MAPLE RIDGE DR, FARMINGTON, CT 06032

VICINITY MAP

SCALE: 1" = 1000'

NORTH



PROJECT SUMMARY

1. THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:
   A. REMOVE AND REPLACE EXISTING POSITION 1&3 ANTENNAS WITH NEW HEXPORT AND (12) PORT ANTENNAS, RESPECTIVELY.
   B. REMOVE AND REPLACE(6) EXISTING TMA'S WITH (6) NEW TMA'S & ADD (12) NEW TMA'S MOUNTED BEHIND ANTENNAS.
   C. REMOVE & REPLACE EXISTING GALAXY POWER PLANT WITH NEW INFINITY-M -48VDC POWER PLANT.
   D. REMOVE & REPLACE (3) EXISTING RRUS-11 (1900 MHz) WITH (3) RRUS-32 B2 (1900 MHz). INSTALL (3) NEW ERICSSON RRUS-32 MOUNTED ON NEW EXTERIOR EQUIPMENT FRAME.

PROJECT INFORMATION

AT&T SITE NUMBER:	CT1104
AT&T SITE NAME:	FARMINGTON NU MAPLE RIDGE DR.
SITE ADDRESS:	EVERSOURCE STRUCT. NO. 8012 45 MAPLE RIDGE DR. FARMINGTON, CT 06032
LESSEE/APPLICANT:	AT&T MOBILITY 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067
CONTACT PERSON:	TIM BURKS SAI COMMUNICATIONS (860) 989-0001
ENGINEER:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT. 06405
PROJECT COORDINATES:	LATITUDE: 41°-43'-04.7"N LONGITUDE: 72°-46'-09.5"W GROUND ELEVATION: ±240' AMSL

SHEET INDEX

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
2	02/19/16	DRA	CAG	CONSTRUCTION DRAWINGS - ISSUED FINAL
1	2/5/16	CAG	HMR	CONSTRUCTION DRAWINGS-REVISED PER CLIENT'S COMMENTS
0	01/26/16	KAW		

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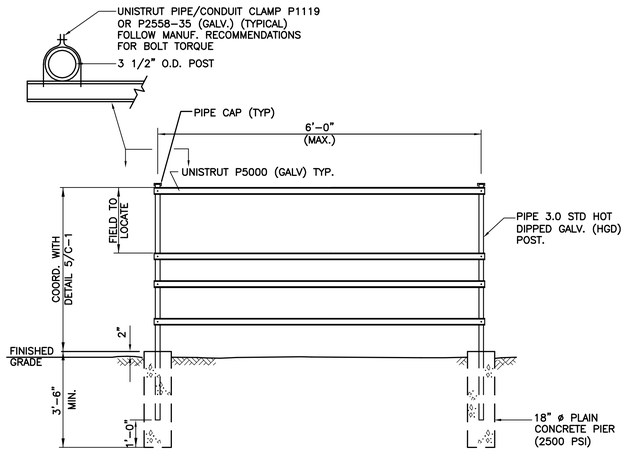
WIRELESS COMMUNICATIONS FACILITY
FARMINGTON NU MAPLE RIDGE DR.
CT1104 - LTE3C
45 MAPLE RIDGE DR.
FARMINGTON, CT 06032

DATE: 01/19/16
SCALE: AS NOTED
JOB NO. 15267.004

TITLE SHEET

T-1

Sheet No. 1 of 8



1 / N-1 **UTILITY SUPPORT FRAME (TYP)**

NOT TO SCALE

NOTES AND SPECIFICATIONS

DESIGN BASIS

GOVERNING CODE: 2003 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2005 CONNECTICUT STATE BUILDING CODE AND 2009 AMENDMENTS.

1. DESIGN CRITERIA:
   - WIND LOAD: PER EIA/TIA 222 F-96 & NU CRITERIA (ANTENNA MOUNTS): 85 MPH (FASTEST MILE), EQUIVALENT TO 105 MPH (3 SECOND GUST).
   - WIND LOAD: PER NESC C2-2012 SECTION 25 RULE 250c (TOWER AND FOUNDATION) 110 MPH (3 SECOND GUST).
   - SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7-02 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES.

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE GOVERNING BUILDING CODE.
2. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
3. BEFORE BEGINNING THE WORK, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SUCH INVESTIGATIONS CONCERNING PHYSICAL CONDITIONS (SURFACE AND SUBSURFACE) AT OR CONTIGUOUS TO THE SITE WHICH MAY AFFECT PERFORMANCE AND COST OF THE WORK.
4. DIMENSIONS AND DETAILS SHALL BE CHECKED AGAINST EXISTING FIELD CONDITIONS.
5. THE CONTRACTOR SHALL VERIFY AND COORDINATE THE SIZE AND LOCATION OF ALL OPENINGS, SLEEVES AND ANCHOR BOLTS AS REQUIRED BY ALL TRADES.
6. ALL DIMENSIONS, ELEVATIONS, AND OTHER REFERENCES TO EXISTING STRUCTURES, SURFACE, AND SUBSURFACE CONDITIONS ARE APPROXIMATE. NO GUARANTEE IS MADE FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS, ELEVATIONS, ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.
7. AS THE WORK PROGRESSES, THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY CONDITIONS WHICH ARE IN CONFLICT OR OTHERWISE NOT CONSISTENT WITH THE CONSTRUCTION DOCUMENTS AND SHALL NOT PROCEED WITH SUCH WORK UNTIL THE CONFLICT IS SATISFACTORILY RESOLVED.
8. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROVIDING AND MAINTAINING ADEQUATE SHORING, BRACING, AND BARRICADES AS MAY BE REQUIRED FOR THE PROTECTION OF EXISTING PROPERTY, CONSTRUCTION WORKERS, AND FOR PUBLIC SAFETY.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING SITE OPERATIONS, COORDINATE WORK WITH NORTHEAST UTILITIES
10. THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER FOUNDATION REMEDIATION WORK IS COMPLETE. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, TEMPORARY BRACING, GUYS OR TIEDOWNS, WHICH MIGHT BE NECESSARY.
11. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
12. SHOP DRAWINGS, CONCRETE MIX DESIGNS, TEST REPORTS, AND OTHER SUBMITTALS PERTAINING TO STRUCTURAL WORK SHALL BE FORWARDED TO THE OWNER FOR REVIEW BEFORE FABRICATION AND/OR INSTALLATION IS MADE. SHOP DRAWINGS SHALL INCLUDE ERECTION DRAWINGS AND COMPLETE DETAILS OF CONNECTIONS AS WELL AS MANUFACTURER'S SPECIFICATION DATA WHERE APPROPRIATE. SHOP DRAWINGS SHALL BE CHECKED BY THE CONTRACTOR AND BEAR THE CHECKER'S INITIALS BEFORE BEING SUBMITTED FOR REVIEW.
13. NO DRILLING WELDING OR TAPING ON CL&P OWNED EQUIPMENT.
14. REFER TO DRAWING T1 FOR ADDITIONAL NOTES AND REQUIREMENTS.

STRUCTURAL STEEL

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

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

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

PAINT NOTES

PAINTING SCHEDULE:

1. ANTENNA PANELS:
   A. SHERWIN WILLIAMS POLANE-B
   B. COLOR TO BE MATCHED WITH EXISTING TOWER STRUCTURE.
2. COAXIAL CABLES:
   A. ONE COAT OF DTM BONDING PRIMER (2-5 MILS. DRY FINISH)
   B. TWO COATS OF DTM ACRYLIC PRIMER/FINISH (2.5-5 MILS. DRY FINISH)
   C. COLOR TO BE FIELD MATCHED WITH EXISTING STRUCTURE.

EXAMINATION AND PREPARATION:

1. DO NOT APPLY PAINT IN SNOW, RAIN, FOG OR MIST OR WHEN RELATIVE HUMIDITY EXCEEDS 85%. DO NOT APPLY PAINT TO DAMP OR WET SURFACES.
2. VERIFY THAT SUBSTRATE CONDITIONS ARE READY TO RECEIVE WORK. EXAMINE SURFACE SCHEDULED TO BE FINISHED PRIOR TO COMMENCEMENT OF WORK. REPORT ANY CONDITION THAT MAY POTENTIALLY AFFECT PROPER APPLICATION.
3. TEST SHOP APPLIED PRIMER FOR COMPATIBILITY WITH SUBSEQUENT COVER MATERIALS.
4. PERFORM PREPARATION AND CLEANING PROCEDURE IN STRICT ACCORDANCE WITH COATING MANUFACTURER'S INSTRUCTIONS FOR EACH SUBSTRATE CONDITION.
5. CORRECT DEFECTS AND CLEAN SURFACES WHICH AFFECT WORK OF THIS SECTION. REMOVE EXISTING COATINGS THAT EXHIBIT LOOSE SURFACE DEFECTS.
6. IMPERVIOUS SURFACE: REMOVE MILDEW BY SCRUBBING WITH SOLUTION OF TRI-SODIUM PHOSPHATE AND BLEACH. RINSE WITH CLEAN WATER AND ALLOW SURFACE TO DRY.
7. ALUMINUM SURFACE SCHEDULED FOR PAINT FINISH: REMOVE SURFACE CONTAMINATION BY STEAM OR HIGH-PRESSURE WATER. REMOVE OXIDATION WITH ACID ETCH AND SOLVENT WASHING. APPLY ETCHING PRIMER IMMEDIATELY FOLLOWING CLEANING.
8. FERROUS METALS: CLEAN UNGALVANIZED FERROUS METAL SURFACES THAT HAVE NOT BEEN SHOP COATED; REMOVE OIL, GREASE, DIRT, LOOSE MILL SCALE, AND OTHER FOREIGN SUBSTANCES. USE SOLVENT OR MECHANICAL CLEANING METHODS THAT COMPLY WITH THE STEEL STRUCTURES PAINTING COUNCIL'S (SSPC) RECOMMENDATIONS. TOUCH UP BARE AREAS AND SHOP APPLIED PRIME COATS THAT HAVE BEEN DAMAGED. WIRE BRUSH, CLEAN WITH SOLVENTS RECOMMENDED BY PAINT MANUFACTURER, AND TOUCH UP WITH THE SAME PRIMER AS THE SHOP COAT.
9. GALVANIZED SURFACES: CLEAN GALVANIZED SURFACES WITH NON-PETROLEUM-BASED SOLVENTS SO SURFACE IS FREE OF OIL AND SURFACE CONTAMINANTS. REMOVE PRETREATMENT FROM GALVANIZED SHEET METAL FABRICATED FROM COIL STOCK BY MECHANICAL METHODS.
10. ANTENNA PANELS: REMOVE ALL OIL, DUST, GREASE, DIRT, AND OTHER FOREIGN MATERIAL TO ENSURE ADEQUATE ADHESION. PANELS MUST BE WIPED WITH METHYL ETHYL KETONE (MEK).
11. COAXIAL CABLES: REMOVE ALL OIL, DUST, GREASE. DIRT, AND OTHER FOREIGN MATERIAL TO ENSURE ADEQUATE ADHESION.

CLEANING:

1. COLLECT WASTE MATERIAL, WHICH MAY CONSTITUTE A FIRE HAZARD, PLACE IN CLOSED METAL CONTAINERS AND REMOVE DAILY FROM SITE.

APPLICATION:

1. APPLY PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. DO NOT APPLY FINISHES TO SURFACES THAT ARE NOT DRY.
3. APPLY EACH COAT TO UNIFORM FINISH.
4. APPLY EACH COAT OF PAINT SLIGHTLY DARKER THAN PRECEDING COAT UNLESS OTHERWISE APPROVED.
5. SAND METAL LIGHTLY BETWEEN COATS TO ACHIEVE REQUIRED FINISH.
6. VACUUM CLEAN SURFACES FREE OF LOOSE PARTICLES. USE TACK CLOTH JUST PRIOR TO APPLYING NEXT COAT.
7. ALLOW APPLIED COAT TO DRY BEFORE NEXT COAT IS APPLIED.

COMPLETED WORK:

1. SAMPLES: PREPARE 24" X 24" SAMPLE AREA FOR REVIEW.
2. MATCH APPROVED SAMPLES FOR COLOR, TEXTURE AND COVERAGE. REMOVE REFINISH OR REPAINT WORK NOT IN COMPLIANCE WITH SPECIFIED REQUIREMENTS.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	01/26/16	KAW	CAG	CONSTRUCTION DRAWINGS - ISSUED FINAL

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WIRELESS COMMUNICATIONS FACILITY

FARMINGTON NU MAPLE RIDGE DR.

CT1104 - LTE3C

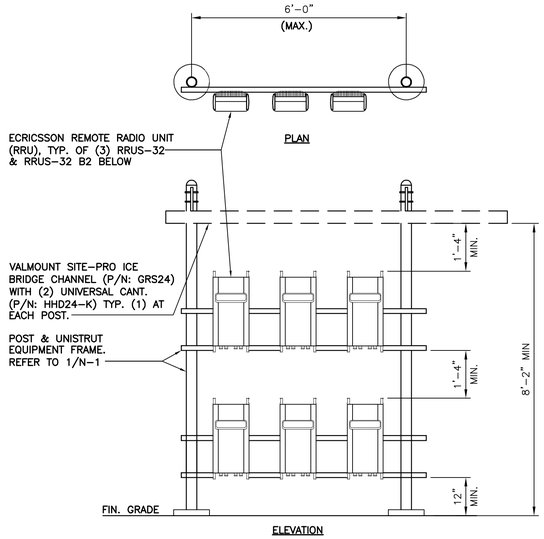
45 MAPLE RIDGE DR.
FARMINGTON, CT 06032

DATE: 01/19/16
SCALE: AS NOTED
JOB NO. 15267.004

NOTES AND SPECIFICATIONS

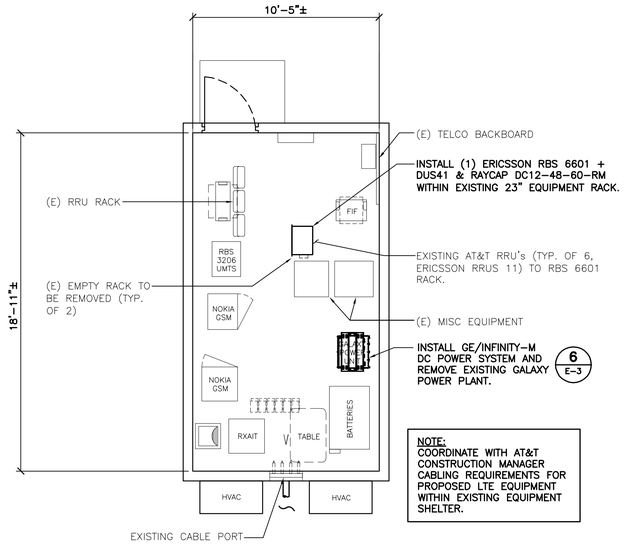
N-1

Sheet No. 2 of 8



5 C-1 RRU MOUNTING CONFIG.

SCALE: 1/2" = 1'-0"



NOTE:
COORDINATE WITH AT&T CONSTRUCTION MANAGER CABLING REQUIREMENTS FOR PROPOSED LTE EQUIPMENT WITHIN EXISTING EQUIPMENT SHELTER.

3 C-1 EQUIPMENT SHELTER PLAN

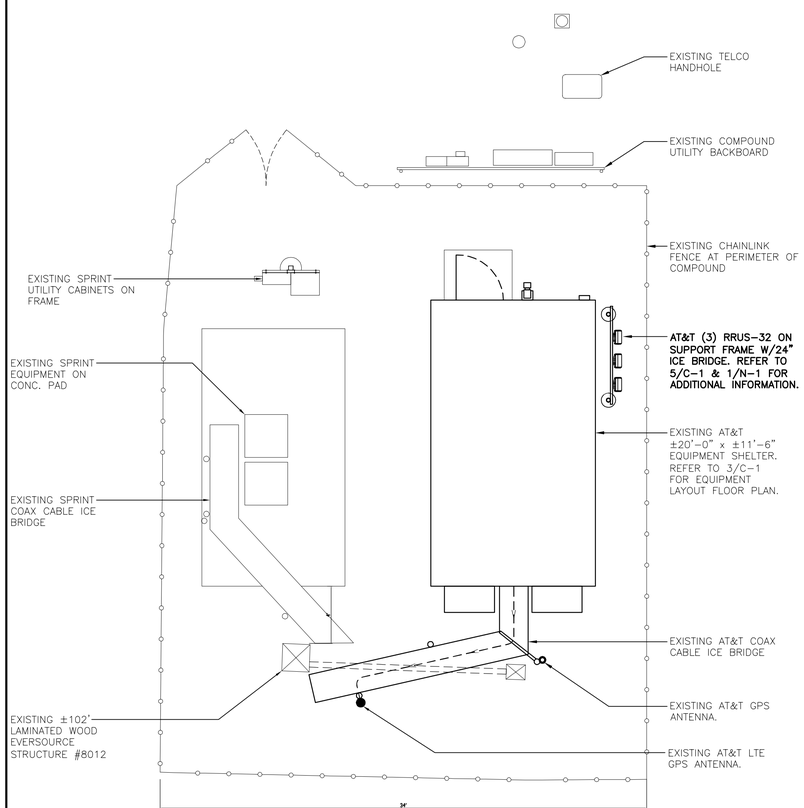
SCALE: 1/4" = 1'-0"

APPROX. NORTH

GRAPHIC SCALE

4 0 2 4 8 16

(IN FEET)
1 inch = 4 ft.



2 C-1 COMPOUND PLAN

SCALE: 1" = 5'-0"

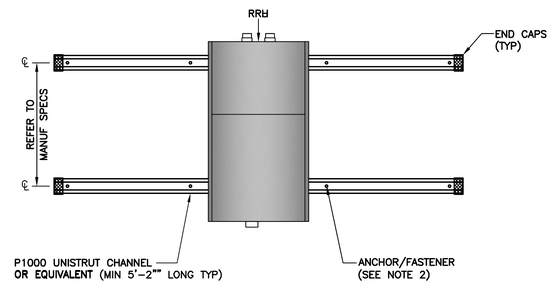
APPROX. NORTH

1 C-1

GRAPHIC SCALE

5 0 2.5 5 10 20

(IN FEET)
1 inch = 5 ft.



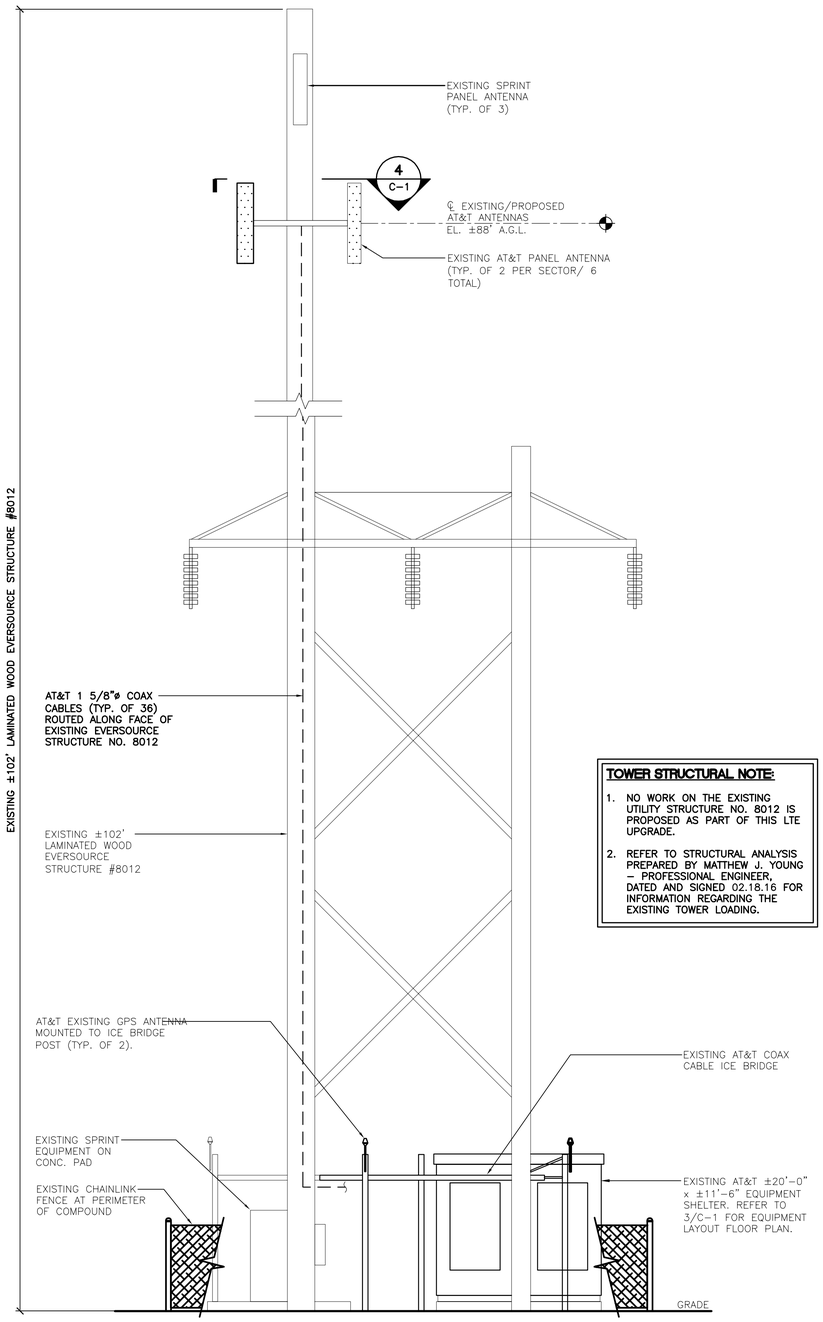
ELEVATION

NOTES:

1. INSTALL ANCHORS/FASTENERS TO EXISTING POSTS USING ½"ø U-BOLTS.
2. MOUNT RRU TO UNISTRUT WITH 3/8"ø UNISTRUT BOLTING HARDWARE AND SPRING NUTS. TYPICAL FOUR PER BRACKET.

4 C-1 TYPICAL RRUS MOUNTING DETAILS

SCALE: 1 1/2" = 1'-0"



TOWER STRUCTURAL NOTE:

1. NO WORK ON THE EXISTING UTILITY STRUCTURE NO. 8012 IS PROPOSED AS PART OF THIS LTE UPGRADE.
2. REFER TO STRUCTURAL ANALYSIS PREPARED BY MATTHEW J. YOUNG – PROFESSIONAL ENGINEER, DATED AND SIGNED 02.18.16 FOR INFORMATION REGARDING THE EXISTING TOWER LOADING.

1 C-1 WEST ELEVATION

SCALE: 1" = 5'-0"

GRAPHIC SCALE

5 0 2.5 5 10 20

(IN FEET)
1 inch = 5 ft.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
1	02/19/16	DRA	CAG	CONSTRUCTION DRAWINGS – ISSUED FINAL
0	01/26/16	KAW	CAG	CONSTRUCTION DRAWINGS – ISSUED FINAL

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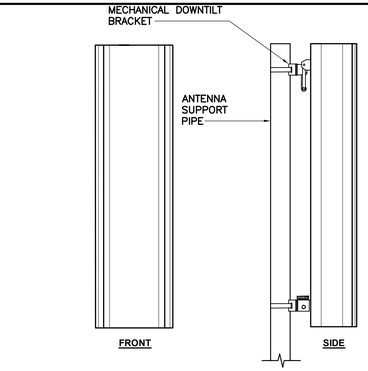
PLANS, ELEVATION AND DETAILS

C-1

Sheet No. 3 of 8



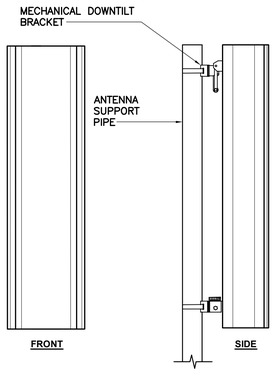
ALPHA/BETA/GAMMA ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: QUINTEL MODEL: QS66512-2	72"H x 12"W x 9.6"D	111-LBS

BOTTOM

5 C-2 PROPOSED ANTENNA DETAIL

SCALE: NTS

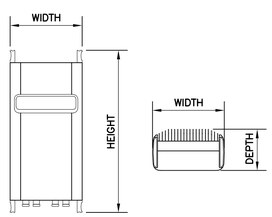
NOTES:
1. INSTALL ANTENNA TO EXISTING PIPE MAST USING MANUFACTURERS SUPPLIED BRACKETS AND MOUNTING HARDWARE
2. SET MECHANICAL DOWNTILT TO VALUE SPECIFIED IN LATEST RFDS



ALPHA/BETA/GAMMA ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: CCI MODEL: HPA-65R-BUU-H6	72"L x 14.8"W x 9"D	50.7 LBS.

6 C-2 PROPOSED ANTENNA DETAIL

SCALE: 1/2" = 1'-0"

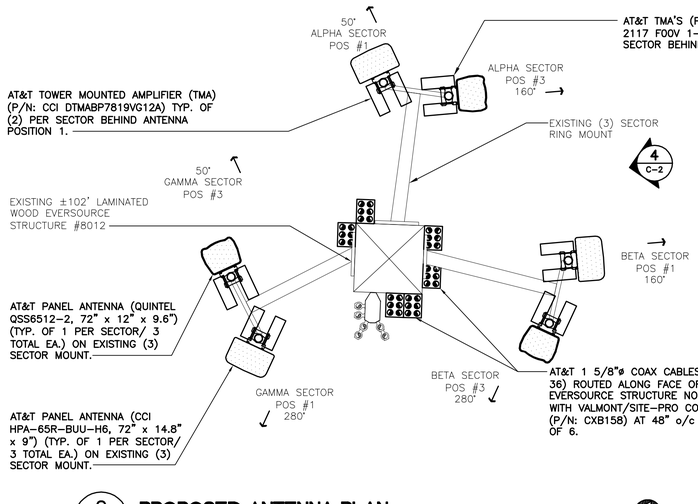


RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS 32	27.17"H x 12.05"W x 7.01"D	52.91 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.

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

7 C-2 ERICSSON RRUS 32 DETAIL

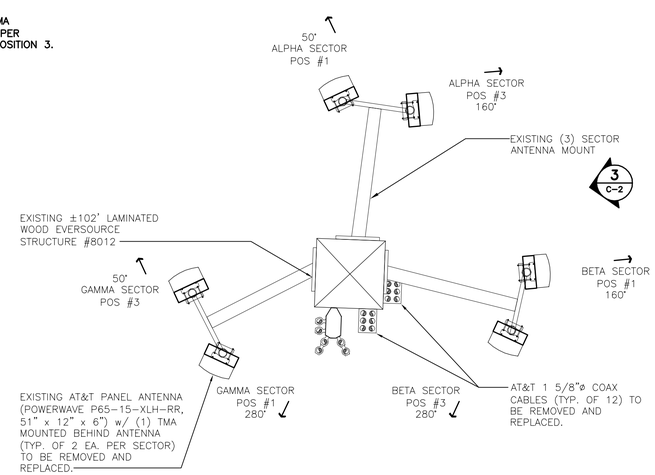
SCALE: 1" = 1'-0"



2 C-2 PROPOSED ANTENNA PLAN

SCALE: 1/2" = 1'-0"

NORTH



1 C-2 EXISTING ANTENNA PLAN

SCALE: 1/2" = 1'-0"

NORTH

4 C-2 PROPOSED ANTENNA PLAN

SCALE: 1/2" = 1'-0"

3 C-2 EXISTING ANTENNA PLAN

SCALE: 1/2" = 1'-0"

5 C-2 PROPOSED TMA MOUNTING DETAIL

SCALE: 1/2" = 1'-0"

NOTES:
1. PROVIDE MOUNTING PIPES, CROSSOVERS & ASSOCIATED HARDWARE TO COMPLETE THE PROPOSED UPGRADE.
2. REFER TO STRUCTURAL ANALYSIS AND FINAL AT&T RF DATA SHEET PRIOR TO INSTALLATION OF TOWER MOUNTED LTE RELATED ANTENNAS, CABLES AND RELATED EQUIPMENT

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2	02/19/16	DRA	CAG	CONSTRUCTION DRAWINGS - ISSUED FINAL
1	2/5/16	CAG	HMR	CONSTRUCTION DRAWINGS-REVISED PER CLIENT'S COMMENTS
0	01/26/16	KAW	CAG	CONSTRUCTION DRAWINGS - ISSUED FINAL

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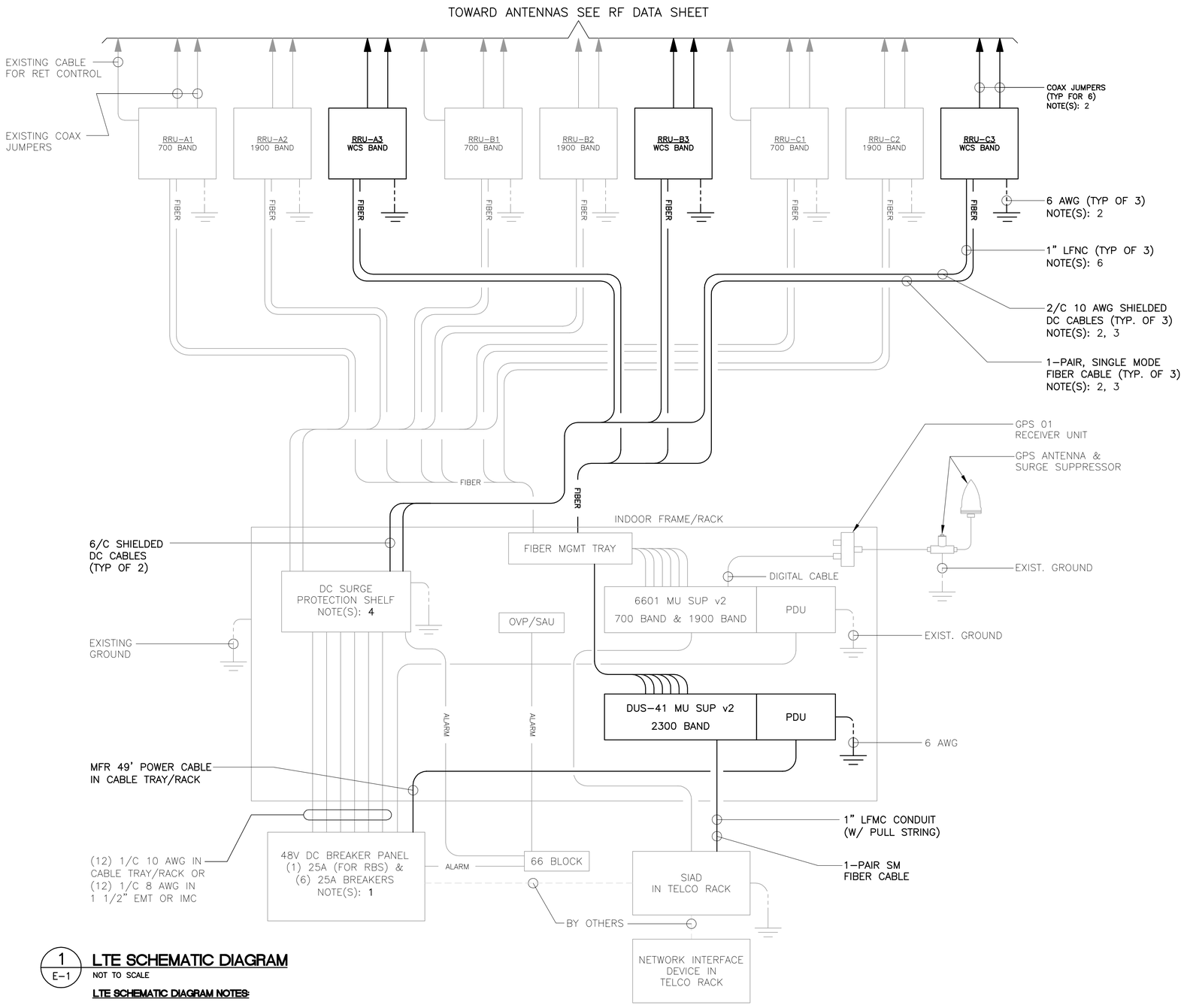
LTE 3C EQUIPMENT DETAILS

C-2

Sheet No. 4 of 8



1 / E-1

LTE SCHEMATIC DIAGRAM

NOT TO SCALE

LTE SCHEMATIC DIAGRAM NOTES:

1. BREAKERS TO BE TAGGED AND LOCKED OUT. A 20A (MIN.) OR 30A (MAX.) BREAKER FOR RRUs MAY BE SUBSTITUTED FOR THE RECOMMENDED 25A BREAKER. SIZE 12 CONDUCTORS MAY BE USED ONLY WITH 20A BREAKERS.
2. LEAVE COILED AND PROTECTED UNTIL TERMINATED.
3. DC AND FIBER CABLE SHALL BE ROUTED WITH THE EXISTING COAX CABLE.
4. DC SURGE PROTECTION SHELF SHALL BE RAYCAP DCx-48-60-RM.
5. FIBER & DC DISTRIBUTION BOX W/DC SURGE PROTECTION SHALL BE RAYCAP DC6-48-60-18-8F. SEE DETAIL 1410 OR 1410B FOR INTERNAL WIRING DIAGRAM.
6. CONDUIT TO BE USED ON A TOWER IF THE RRU IS MORE THAN 10' FROM THE DISTRIBUTION UNITS. MAX CABLE LENGTH IS 16 FEET.
7. SINGLE-CONDUCTOR DC POWER CABLES SHALL BE TELCOFLEX® OR KS24194™, COPPER, UL LISTED RHH NON-HALOGEN, LOW SMOKE WITH BRAIDED COVER, TYPE TC (1/0 AND LARGER). UNLESS OTHERWISE NOTED, STRANDING SHALL BE CLASS B (TYPE II) FOR CABLES SIZES 14, 12 & 10 AWG AND CLASS I (TYPE IV) FOR SIZES 8 AWG AND LARGER. CABLES SHALL BE COLOR CODED RED FOR +24V, BLUE FOR -48V AND GRAY FOR 24V AND 48V RETURN CONDUCTORS. MULTI-CONDUCTOR DC POWER CABLES SHALL BE COPPER, CLASS B STRANDING WITH FLAME RETARDANT PVC JACKET, TYPE TC, UL LISTED FOR 90°C DRY/ 75°C WET INSTALLATION.
8. GROUNDING WIRES SHALL BE COPPER, GREEN THHN/THWN UL LISTED FOR 90°C DRY/75°C WET INSTALLATION. MINIMUM SIZE IS 6AWG UNLESS NOTED OTHERWISE.

ELECTRICAL NOTES

1. PRIOR TO START OF CONSTRUCTION CONTRACTOR SHALL COORDINATE WITH OWNER FOR ALL CONSTRUCTION STANDARDS AND SPECIFICATIONS, AND ALL MANUFACTURER DOCUMENTATION FOR ALL EQUIPMENT TO BE INSTALLED.
2. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH LOCAL BUILDING CODE, NATIONAL ELECTRIC CODE, OWNER AND MANUFACTURER'S SPECIFICATIONS.
3. CONNECT ALL NEW EQUIPMENT TO EXISTING TELCO AS REQUIRED BY MANUFACTURER.
4. MAINTAIN ALL CLEARANCES REQUIRED BY NEC AND EQUIPMENT MANUFACTURER.
5. PRIOR TO INSTALLATION CONTRACTOR SHALL MEASURE EXISTING ELECTRICAL LOAD AND VERIFY EXISTING AVAILABLE CAPACITY FOR PROPOSED INSTALLATION. IF INADEQUATE CAPACITY IS AVAILABLE, CONTRACTOR SHALL COORDINATE WITH LOCAL ELECTRIC UTILITY COMPANY TO UPGRADE EXISTING ELECTRIC SERVICE.
6. CONTRACTOR SHALL INSPECT EXISTING GROUNDING AND LIGHTNING PROTECTION SYSTEM AND ENSURE THAT IT IS IN COMPLIANCE WITH NEC, AND SITE OWNER'S SPECIFICATIONS. THE RESULTS OF THIS INSPECTION SHALL BE PRESENTED TO OWNERS REPRESENTATIVE, AND ANY DEFICIENCIES SHALL BE CORRECTED.
7. ALL TRANSMISSION TOWER SITES CONTAIN AN EXTENSIVE BURIED GROUNDING SYSTEM. ALL GROUNDING WORK MUST BE COORDINATED WITH, AND APPROVED BY, THE TOWER OWNER'S SITE REPRESENTATIVE. ALL OF THE TOWER OWNER'S SPECIFICATIONS MUST BE STRICTLY FOLLOWED.
8. PROVIDE AND INSTALL GROUND KITS FOR ALL NEW COAXIAL CABLES AND BOND TO EXISTING OWNERS GROUNDING SYSTEM PER OWNERS SPECIFICATIONS AND NEC.
9. ALL CONDUCTORS SHALL BE TYPE THWN (INT. APPLICATION) AND XHHW (EXT. APPLICATION), 75 DEGREE C, 600 VOLT INSULATION, SOFT ANNEALED STRANDED COPPER. #10 AWG AND SMALLER SHALL BE SPLICED USING ACCEPTABLE SOLDERLESS PRESSURE CONNECTORS. #8 AWG AND LARGER SHALL BE SPLICED USING COMPRESSION SPLIT-BOLT TYPE CONNECTORS. #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR FOR LINE VOLTAGE BRANCH CIRCUITS. REFER TO PANEL SCHEDULE FOR BRANCH CIRCUIT CONDUCTOR SIZE(S). CONDUCTORS SHALL BE COLOR CODED FOR CONSISTENT PHASE IDENTIFICATION:
10. MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.
11. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE MADE IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES AND REGULATIONS WHICH MAY APPLY AND NOTHING IN THE DRAWINGS OR SPECIFICATIONS SHALL BE INTERPRETED AS AN INFRINGEMENT OF SUCH CODES OR REGULATIONS.
12. THE ELECTRICAL CONTRACTOR IS TO BE RESPONSIBLE FOR THE COMPLETE INSTALLATION AND COORDINATION OF THE ENTIRE ELECTRICAL SERVICE. ALL ACTIVITIES TO BE COORDINATED THROUGH OWNER'S REPRESENTATIVE, DESIGN ENGINEER AND OTHER AUTHORITIES HAVING JURISDICTION OF TRADES.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES AS MAY BE REQUIRED FOR THE ELECTRICAL WORK AND FOR SCHEDULING OF ALL INSPECTIONS AS MAY BE REQUIRED BY THE LOCAL AUTHORITY.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE SITE AND/OR BUILDING OWNER FOR NEW AND/OR DEMOLITION WORK INVOLVED.
15. THE CONTRACTOR SHALL GUARANTEE ALL NEW WORK FOR A PERIOD OF ONE YEAR FROM THE ACCEPTANCE DATE BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING WARRANTIES FROM ALL EQUIPMENT MANUFACTURERS FOR SUBMISSION TO THE OWNER.
16. DRAWINGS INDICATE GENERAL ARRANGEMENT OF WORK INCLUDED IN CONTRACT. CONTRACTOR SHALL WITHOUT EXTRA CHARGE, MAKE MODIFICATIONS TO THE LAYOUT OF THE WORK TO PREVENT CONFLICT WITH WORK OF OTHER TRADES AND FOR THE PROPER INSTALLATION OF WORK. CHECK ALL DRAWINGS AND VISIT JOB SITE TO VERIFY SPACE AND TYPE OF EXISTING CONDITIONS IN WHICH WORK WILL BE DONE, PRIOR TO SUBMITTAL OF BID.
17. ALL NON-CURRENT CARRYING PARTS OF THE ELECTRICAL AND TELEPHONE CONDUIT SYSTEMS SHALL BE MECHANICALLY AND ELECTRICALLY CONNECTED TO PROVIDE AN INDEPENDENT RETURN PATH TO THE EQUIPMENT GROUNDING SOURCES.
18. GROUNDING SYSTEM WILL BE IN ACCORDANCE WITH THE LATEST ACCEPTABLE EDITION OF THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS PER LOCAL INSPECTOR HAVING JURISDICTION.
19. EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250-122. (MIN. #12 AWG).
20. CONTRACTOR SHALL PROVIDE A CELLULAR GROUNDING SYSTEM WITH THE MAXIMUM AC RESISTANCE TO GROUND OF 5 OHM BETWEEN ANY POINT ON THE GROUNDING SYSTEM AS MEASURED BY 3-POINT GROUNDING TEST. (REFER TO SECTION 16960).

TESTS BY INDEPENDENT ELECTRICAL TESTING FIRM

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

   TEST 1: RESISTANCE TO GROUND TEST ON THE CELLULAR GROUNDING SYSTEM.

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

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

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

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

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

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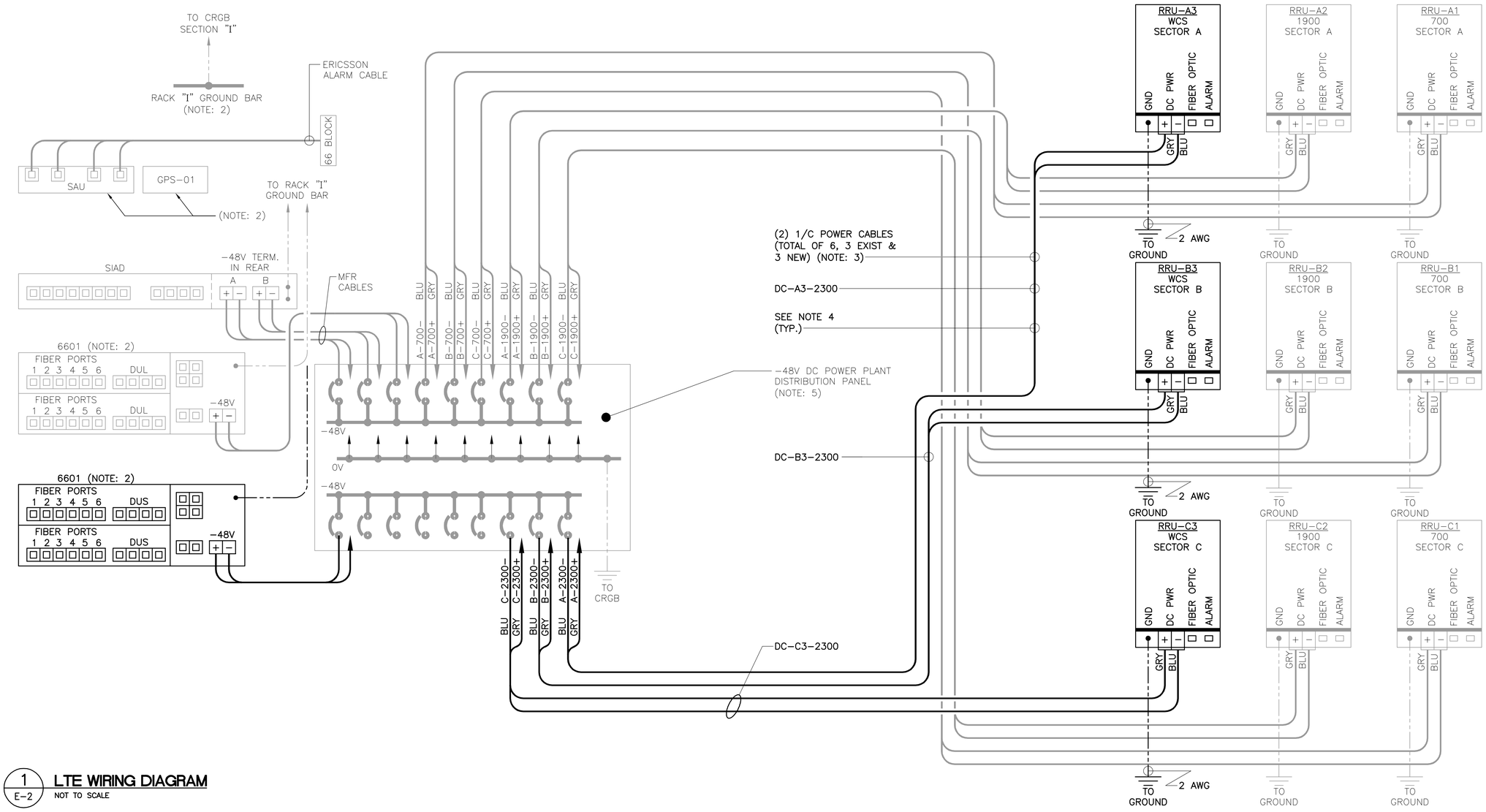
LTE SCHEMATIC DIAGRAM AND NOTES

E-1

Sheet No. 5 of 8



1 E-2 LTE WIRING DIAGRAM

NOT TO SCALE

LTE WIRING DIAGRAM NOTES:

1. LABEL THE DC POWER CABLES AT BOTH ENDS OF EVERY WIRE AND IN ANY PULL BOX IF USED. LABEL SHALL BE DURABLE, SELF ADHESIVE, WRAPPED LONGITUDINALLY ALONG THE CABLE AND STATE THE SECTOR, FREQUENCY BAND AND POLARITY; I.E. "A-2300+". CABLE AND WIRE LABELS SHOWN ARE REPRESENTATIVE AND MAY BE MODIFIED AS DIRECTED BY AT&T.
2. INSTALL ON BASEBAND EQUIPMENT RACK.
3. MAXIMUM CABLE LENGTH IS 49 FEET WITHOUT SURGE PROTECTION AT RRU. INCREASE CONDUCTOR SIZE TO 10 OR 8 AWG WHERE BREAKER RATING IS GREATER THAN 20A.
4. CABLE GROUND WIRE AND SHIELD DRAIN WIRE TO BE LEFT UN-TERMINATED AT RRU AND DC POWER PLANT.
5. SEE LTE SCHEMATIC DIAGRAM DETAIL 1/E-1 FOR BREAKER RATING.

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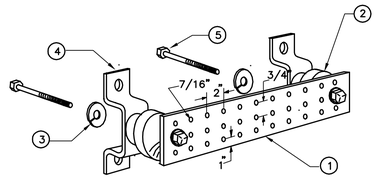
LTE WIRING DIAGRAM

E-2

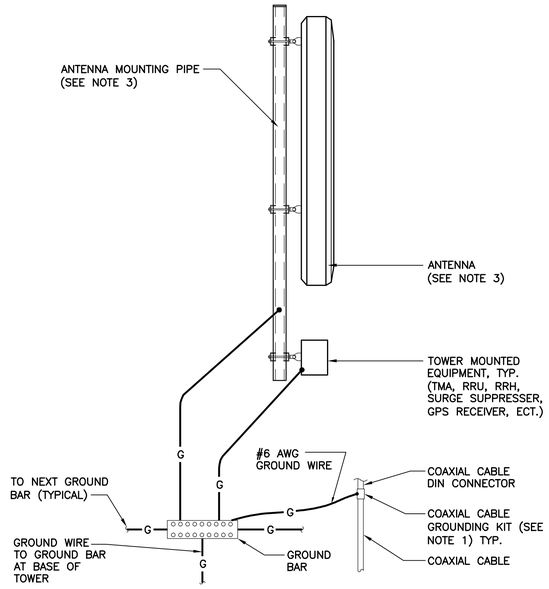
Sheet No. 6 of 8



LEGEND

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

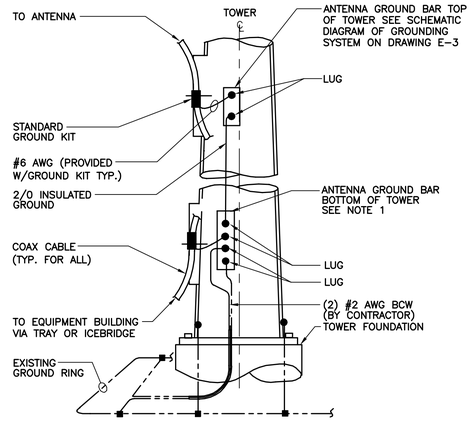
3 E–3 **GROUND BAR DETAIL**
NOT TO SCALE



NOTES:

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

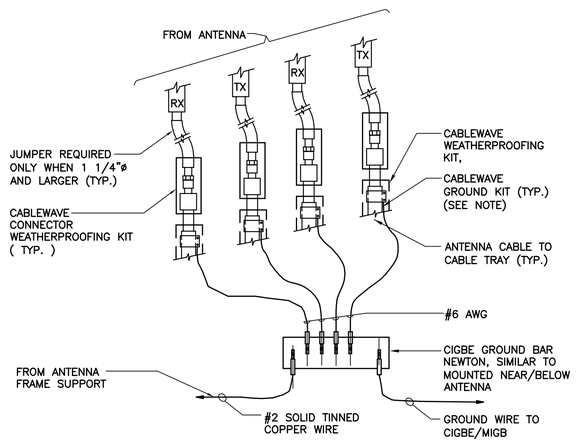
2 E–3 **TYPICAL ANTENNA GROUNDING DETAIL**
NOT TO SCALE



NOTES:

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

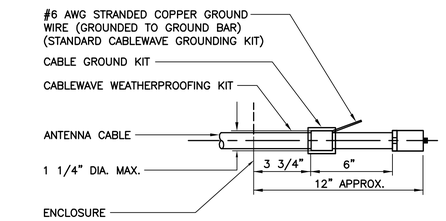
1 E–3 **ANTENNA CABLE GROUNDING - TOWER**
NOT TO SCALE



NOTE:

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

5 E–3 **CONNECTION OF GROUND WIRES TO GROUND BAR**
NOT TO SCALE



NOTE:

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

4 E–3 **ANTENNA CABLE GROUNDING DETAIL**
NOT TO SCALE

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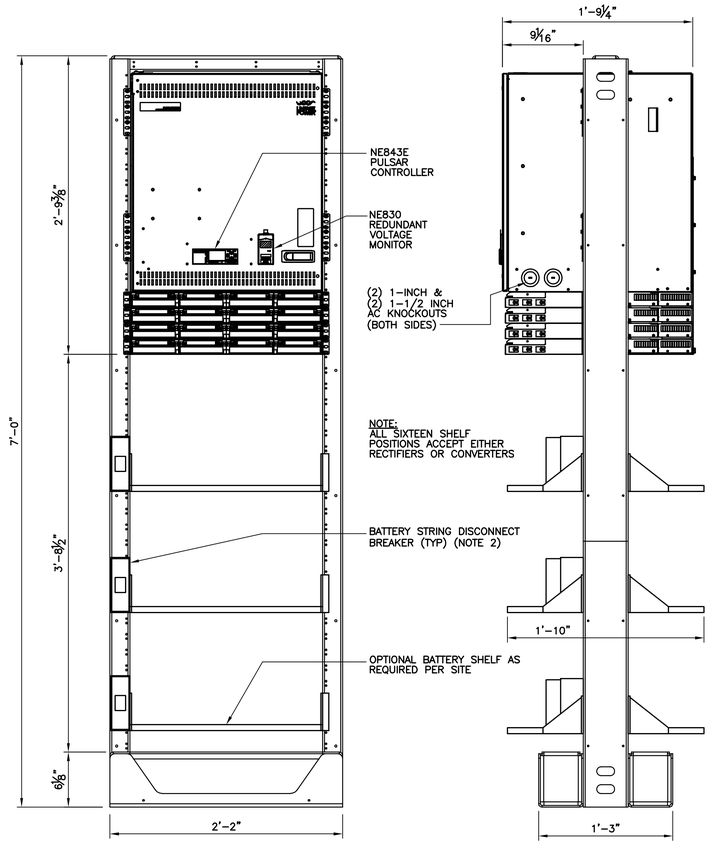
TYPICAL ELECTRICAL DETAILS

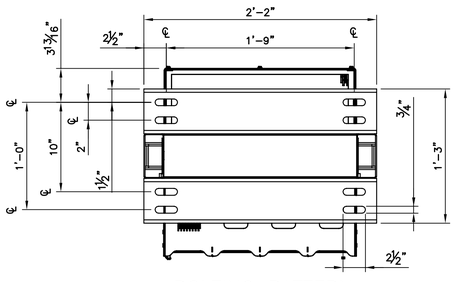
E–3

Sheet No. 7 of 8



FRONT VIEW

SIDE VIEW



BOLTING PATTERN

WEIGHT:
FRAME W/DC POWER SYSTEM AND WITHOUT BATTERIES = 435lbs

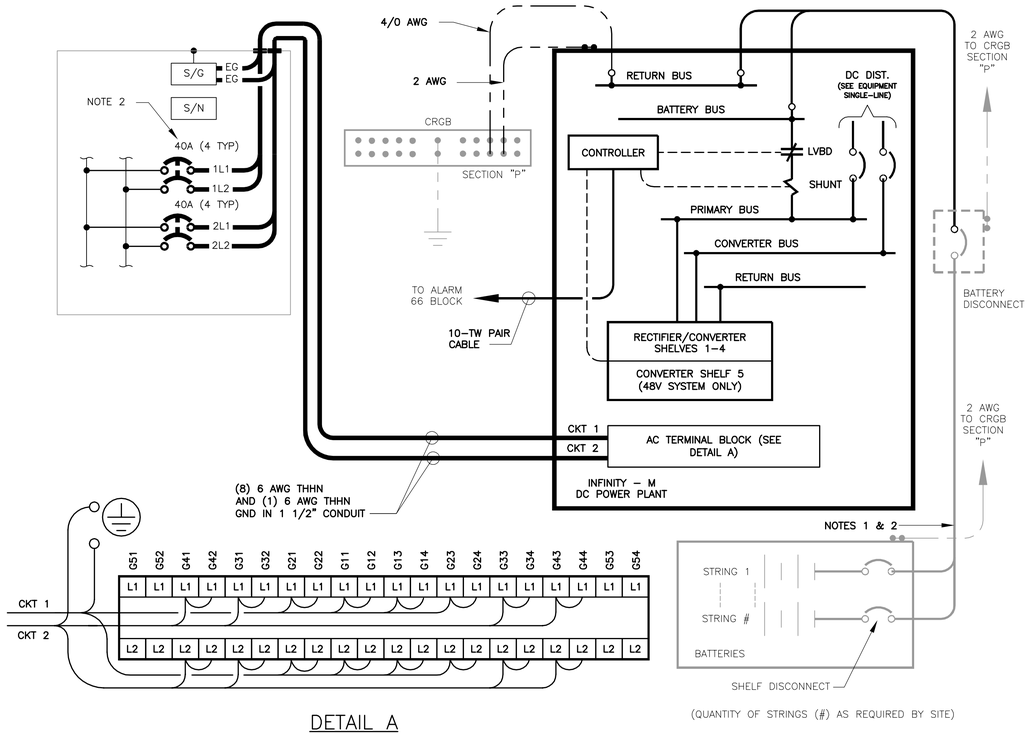
BATTERY SHELF (W/(4) 155AH BATTERIES = APPROXIMATELY 500lbs PER SHELF

CLEARANCE:
FRONT = 36"
REAR = 6"
SIDES = 2"

2 GE/INFINITY-M DC POWER SYSTEM DETAIL
2 / E-4
NOT TO SCALE

NOTES:

1. GE/LINEAGE FLOOR ANCHOR KIT (**P/N: 847135688**) MAY BE USED UNLESS LOCAL REQUIREMENTS GOVERN.
2. DISCONNECT MAY BE MOUNTED TO EITHER SIDE OF TRAY OR DIRECTLY TO FRAMEWORK.



(QUANTITY OF STRINGS (#) AS REQUIRED BY SITE)

DETAIL A
AC TERMINAL BLOCK WIRING

NOTES:

1. EACH POWER MODULE (SHELF) HAS (4) POSITIONS FOR RECTIFIERS. INSTALL CONDUIT AND CONNECT WIRING TO ALL FOUR RECTIFIER POSITIONS. THE QUANTITY OF ACTIVE RECTIFIERS SHALL BE DETERMINED BY OTHERS.
2. INSTALL ONE 40A CIRCUIT BREAKER FOR EVERY TWO RECTIFIERS TO BE INSTALLED. REFER TO PANEL SCHEDULE. UNTERMINATED WIRES IN THE PANELBOARD SHALL BE CAPPED AND COILED. BREAKER INTERRUPTING RATING SHALL MATCH PANELBOARD.
3. SIZE 2/0 AWG BATTERY CABLES ARE FACTORY INSTALLED AND TERMINATED TO DISTRIBUTION PANEL WHEN TRAY-MOUNTED SHELVES ARE ORDERED.
4. ALL DC AND GROUND CABLE TERMINALS SHALL BE TINNED, 2-HOLE COMPRESSION TYPE. DC PP HARDWARE IS PROVIDED BY MANUFACTURER.
5. PROVIDE REFERENCE GROUND (C.O. GROUND) CABLE TERMINAL FOR 3/8" HOLES ON 1" CENTERS. TORQUE TO 240 IN-LB.
6. PROVIDE FRAME GROUND CABLE TERMINAL FOR 1/4" HOLES ON 5/8" CENTERS. CONNECTION MAY BE MADE TO EITHER TOP LEFT OR TOP RIGHT SIDE OF FRAME. CLEAN FRAME AND APPLY THIN COAT OF CONDUCTIVE ANTI-CORROSION COMPOUND. TORQUE TO 65 IN-LB.
7. STUDS FOR BATTERY BUS CABLE TERMINALS ARE 3/8" ON 1" CENTERS SPACED 1-1/4" APART. TORQUE TO 240 IN-LB.
8. AC TERMINAL BLOCKS FOR SHELF 5 SLOTS G51, G52, G53 & G54 ARE PROVIDED FOR 48V SYSTEMS ONLY. BY INSTALLING ONLY CONVERTERS IN SHELF 5, CONNECTION OF AC POWER CABLES TO THESE TERMINAL POINTS IS UNNECESSARY.
9. GROUND WIRES SHALL BE STRANDED COPPER, THHN GREEN INSULATED.

1 SINGLE-LINE DIAGRAM FOR GE INFINITY-M DC POWER PLANT
1 / E-4
NOT TO SCALE

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POWER SYSTEM DETAILS

E-4

Sheet No. 8 of 8