

PAC_289.52

EB 011 Poles—Class Selection

Scope

This standard specifies the pole class required to support overhead distribution conductors, guys, equipment and related hardware for existing and new construction. In addition, it provides the information and procedures necessary for making these determinations.

General

The transverse and vertical loads, as shown in Figure 1, must be calculated and compared for each installation to determine which case is the limiting factor in the pole class selection. The longitudinal load is negligible and is therefore assumed to not be the limiting case.

Primary line poles shall be Class 4 or stronger.

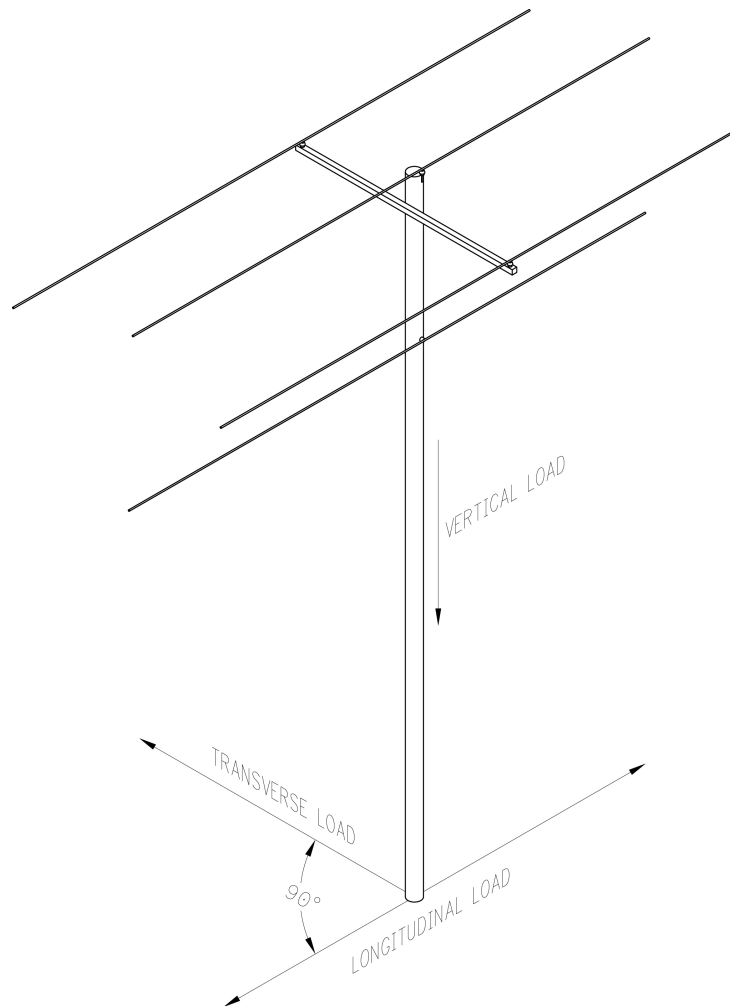


Figure 1—Diagram of Transverse and Vertical Loads

1. Transverse Load:

The transverse load on the pole is the force perpendicular to the conductors due to wind and line angles.

Determination of pole class due to transverse load requires the following information:

- Pole height
- Primary, neutral, secondary, and joint use conductors
- Guying (where applicable)
- Span lengths
- Grade of construction and related overload capacity and strength factors (NESC) and/or safety factors (GO 95) and wind load factors
- Number, size, and direction of unguyed services, taps, slack spans, etc.

The strength of the pole by class must be adequate to support the transverse load of all applicable items listed above.

2. Vertical Load:

The vertical load on the pole is the force pushing downward on the pole due to the weight of the pole, conductors, and equipment.

Determination of pole class due to vertical load requires the following information:

- Vertical load component of all guy strand tensions
- Conductor weight—primary, neutral, secondary, and joint use
- Equipment weight—capacitors, reclosers, transformers, etc.
- Grade of construction and related overload capacity and strength factors (NESC) and/or safety factor (GO 95)
- Span lengths
- Soil class
- Pole height and weight (determined by class of pole)

The strength of the pole by class must be adequate to support the vertical load of all the applicable items listed above.

Table 7 through Table 11 list the soil-bearing and pole-buckling loading limits by soil and pole class for each grade of construction. If the pole has adequate buckling strength to support applicable vertical loads, but the soil bearing capacity is deficient, the bearing capacity may be increased by one of the following methods:

- Gravel bed beneath pole (see below)
- Swamp footings (bog shoes and pilings, see EB 501, Pole Footing—Swamp)

3. Longitudinal Load:

The longitudinal load is the load in the direction of the wires due to conductor tension. This load is negligible on non-deadend structures and is therefore omitted from this standard.

Determination of Pole Class Due to Transverse Loading on Tangent Poles

1. Guidelines for Calculating Transverse Loads

The following guidelines shall be followed when calculating transverse loads on the pole:

- a. Overhead distribution poles are required to support the transverse forces placed upon them by the wind acting on the pole, conductors, and all hardware mounted on the pole, plus any transverse forces resulting from line angles and wire tensions.
- b. Table 1 lists the moment at the pole ground line due to wind acting in a transverse direction on the pole, as shown in Figure 2. The values listed in Table 1 do not include overload capacity factors (NESC) or safety factors (GO 95). Note that the values in Table 1 are based on class 1 Douglas Fir poles. See Example 1 for equations and method of calculating loads for other classes or wood species.

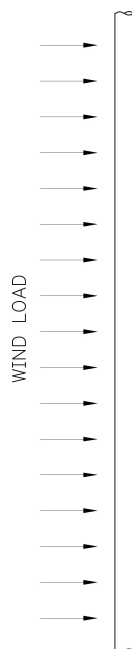


Figure 2—Transverse Wind Loading on the Pole

- c. Table 2 lists the moment at the pole ground line due to wind acting in a transverse direction on the equipment mounted on the pole, as shown in Figure 3. The values listed in Table 2 do not include overload capacity factors (NESC) or safety factors (GO 95). See example 2 for equations and method of calculating loads for equipment other than those given in Table 2. Values for single-phase transformers and three-phase transformers are based on one 167 kVA and three 100 kVA sizes respectively.

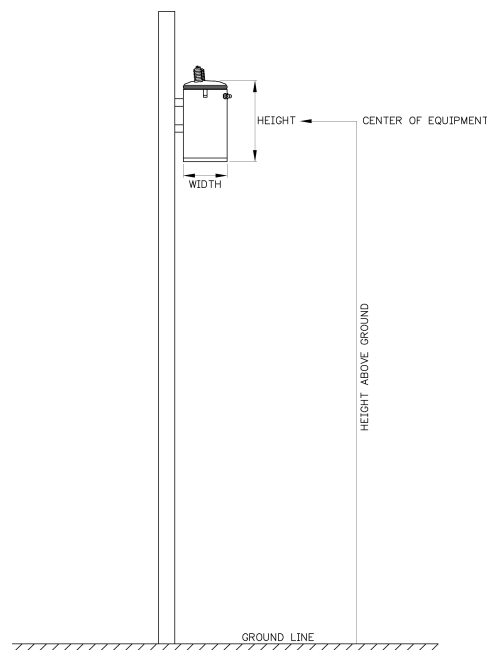


Figure 3—Graphical Representation of Physical Quantities

- d. Table 3 and Table 4 list the maximum allowable moment at the pole ground line due to the total transverse forces acting on the pole. The values listed in Table 3 and Table 4 are adjusted to include overload capacity and strength factors (NESC) and safety factors (GO 95) as applicable. See TA 191 for more information on calculating the maximum ground line bending moment of wood poles.
- e. Standard EC 031 lists the transverse wind loading (lb./ft.) for primary conductors. The total moment at the pole ground line due to wind load on the conductor is determined by multiplying values listed in EC 031 by the wind span (sum of $\frac{1}{2}$ span length on each side of pole), the number of conductors, and installation heights on the pole.
- f. Standard ES 011 lists the transverse wind loading (lb./ft.) for secondary and service conductors. The total moment at the pole ground line due to wind load on the conductor is determined by multiplying values listed in ES 011 by the wind span (sum of $\frac{1}{2}$ span length on each side of pole), the number of conductors, and installation height on the pole.
- g. Standard EA 061 defines and explains the proper use and values for overload capacity and strength factors (NESC) and safety factors (GO 95).
- h. Although the overload capacity factors are normally applied to the loads before comparing them to the bending moment capacity of the structure, in order to simplify the tables and examples in this section, the overload capacity factors have been applied instead to reduce the bending moment capacity of the structure. Because the tables in this section deal strictly with transverse loading at the ground line due to wind, these two methods are mathematically equivalent.

2. Determining Pole Class Due to Transverse Loads:

Determination of pole class due to transverse loading on tangent poles requires totaling the following:

- Applicable moments from wind on the pole (Table 1) and wind on equipment (Table 2).
- Moments resulting from wind load on the conductors calculated from Standards EC 031 and ES 011.
- Moments resulting from transverse forces due to line angles and wire tensions calculated from Standards EC 131, EC 201, and EC 211 through EC 481.

The pole class is then determined by comparing the sum of moments calculated above to the maximum allowable bending moment for the pole classes and conditions listed in Table 3 and Table 4.

3. Example 1: Calculating Moment at Ground Line Due to Transverse Wind Loading on Pole

Find the moment at the ground line due to wind acting in a transverse direction on the pole.

Pole Information:	Douglas Fir 45 ft. Class 1 Top diameter 8.6 in (ANSI O5.1) 6 ft.-from-butt diameter 13.7 in. (ANSI O5.1)
Design Loading:	NESC Heavy Wind Load 4 (lb/ft ²)
Equations:	M_{GL} = Moment at the ground line due to wind on the pole (ft. lb.) $\frac{(F_W)(2D_T + D_{GL})(H_{AG})^2}{72} \text{ (ft. lb.)}$

F_W = Wind pressure (psf)

H_{AG} = Height of the pole above ground (ft.)

D_T = Diameter of the pole at the top (in.)

D_{GL} = >Diameter of the pole at the ground line (in.)

$$D_{GL} = D_{6ft.} - \frac{(L \times 0.1 - 4)(D_{6ft.} - D_T)}{(L - 6)} \text{ (in.)}$$

D_{6ft} = Diameter of the pole 6 ft. from the butt of the pole (in.)

L = Overall length of the pole (ft.)

The top and 6 ft.-from-butt diameters of the pole can be found by dividing by 3.14 the circumference values given in ANSI O5.1. Then the ground line diameter can be found by:

$$D_{GL} = 13.7 - \frac{(45 \times 0.1 - 4)(13.7 - 8.6)}{(45 - 6)} = 13.6 \text{ (in.)}$$

The moment at the ground line due to wind on the pole then be calculated by:

$$M_{GL} = \frac{(4)(2 \times 8.6 + 13.7)(38.5)^2}{72} = 2537 \text{ (ft. lb.)}$$

Table 1—Moment at the Ground Line Due to Transverse Wind (ft. lb.)

(overload capacity factor, strength factor, and safety factor not included)

Pole Height (ft)	NESC	California	
	Medium/Heavy	Light	Heavy
30	1005	2009	1507
35	1434	2869	2152
40	1942	3884	2913
45	2537	5074	3806
50	3224	6447	4836
55	3986	7972	5979
60	4840	9680	7260

Note: Values given are for Douglas Fir and Southern Pine Poles

4. Example 2: Calculating Moment at Ground Line Due to Wind on Equipment

Find the moment at the ground line due to the wind acting in a transverse direction on the transformer.

Pole Size: 45 ft.

Design Loading: NESC Heavy 4 (lb/ft²)

Equipment Type: 167 kVA transformer

Equipment Width 26 in.

Dimensions: Height 49 in.

Height of center of equipment above ground 32 ft.

Equations: M_{GL} = Moment at the ground line due to wind on the equipment

$$M_{GL} = \frac{F_W \times W \times H \times H_{AG}}{144} \text{ (ft. lb.)}$$

 F_W = Wind pressure (psf) W = Width of the equipment (in.) H = Height of the equipment (in.) H_{AG} = Height of center of equipment above ground (ft.)

$$M_{GL} = \frac{(4)(26)(49)(32)}{144} = 1134 \text{ (ft. lb.)}$$

When determining the moment at the ground line due to wind on capacitor bank, GO 95 makes a distinction between cylindrical and rectangular objects when determining the design wind load. Poles, conductors, and transformers are cylindrical, but capacitor banks are rectangular.

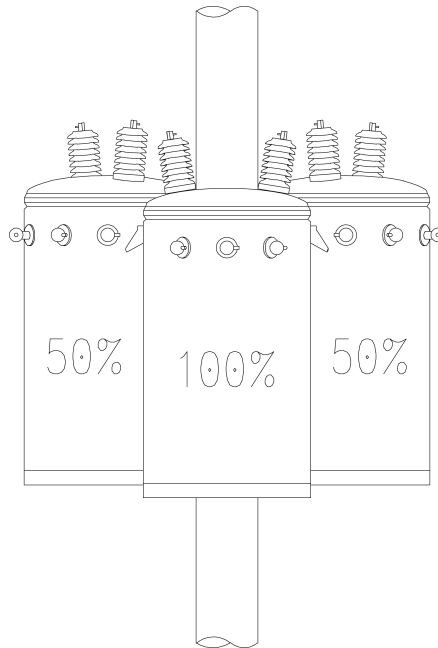


Figure 4—Transverse Wind Loading on Equipment

Table 2—Moment at the Ground Line Due to Transverse Wind on Equipment (ft. lb.)

(overload capacity factor not included)

Pole (ft.)	Transformer	Transformer Bank	Capacitor Bank
NESC Medium/Heavy (4 lb/ft²)			
30	656	1064	121
35	815	1357	152
40	975	1649	183
45	1134	1942	214
50	1293	2234	246
55	1452	2527	277
60	1612	2819	308
California Light (8 lb/ft² cylindrical, 13 lb/ft² rectangular)			
30	1312	2129	392
35	1631	2714	494
40	1949	3299	595
45	2268	3884	697
50	2586	4469	798
55	2905	5054	900
60	3223	5639	1001
California Heavy (6 lb/ft² cylindrical, 10 lb/ft² rectangular)			
30	984	1597	302
35	1223	2035	380
40	1462	2474	458
45	1701	2913	536
50	1940	3352	614
55	2179	3790	692
60	2418	4229	770

**Table 3—Maximum Allowable Bending Moment (ft. lb.)
in Pole by NESC Construction Class**

Pole Height (ft.)	Class 1	Class 2	Class 3	Class 4	Class 5
NESC B (overload capacity factor = 2.50)					
30	27656	22293	18624	14603	11860
35	33077	27125	21934	17451	13625
40	37825	31319	25606	20633	16350
45	43014	35924	28514	23171	18541
50	48660	39549	31653	25922	20929
55	53083	43434	35031	28895	N/A
60	57793	47582	38651	30914	N/A
NESC C At Crossing (overload capacity factor = 2.20)					
30	40963	33127	27675	21701	17625
35	49152	40308	32594	25933	20248
40	56209	46541	38051	30661	24296
45	63919	53384	42372	34432	27552
50	72309	58771	47037	38521	31100
55	78882	64543	52056	42938	N/A
60	85880	70708	57437	45939	N/A
NESC C Elsewhere (overload capacity factor = 1.75)					
30	51496	41645	34791	27281	22157
35	61791	50673	40975	32602	25454
40	70663	58509	47835	38546	30544
45	80355	67111	53267	43286	34636
50	90903	73883	59133	48426	39097
55	99166	81140	65442	53979	N/A
60	107964	88890	72206	57752	N/A

Table 4—California Maximum Allowable Bending Moment (ft. lb.) in Pole by Class

Pole Height (ft.)	Class 1	Class 2	Class 3	Class 4	Class 5
California A (safety factor = 4.00)					
30	26505	21435	17907	14042	11404
35	31804	26082	21090	16780	13101
40	36371	30115	24621	19840	15721
45	41359	34543	27417	22279	17828
50	46788	38028	30436	24925	20124
55	51042	41763	33683	27783	N/A
60	55570	45752	37165	29725	N/A
California B (safety factor = 3.00)					
30	35340	28580	23876	18722	15206
35	42406	34776	28120	22374	17468
40	48494	40153	32828	26453	20962
45	55146	46057	36556	29706	23770
50	62385	50704	40581	33234	26831
55	68055	55684	44911	37044	N/A
60	74093	61003	49553	39634	N/A
California C (safety factor = 2.00)					
30	53010	42870	35814	28083	22809
35	63609	52163	42181	33560	26203
40	72741	60230	49242	39679	31442
45	82719	69085	54834	44559	35655
50	93577	76056	60872	49851	40247
55	102083	83526	67367	55567	N/A
60	111139	91504	74330	59451	N/A

Determination of Pole Class Due to Vertical Loading

1. Guidelines for Calculating Vertical Loads

The following guidelines shall be followed when calculating transverse loads on the pole:

- a. Overhead distribution poles are required to support the vertical forces placed upon them by the weight of the pole, conductors, and all hardware mounted on the pole plus any vertical forces resulting from guy tensions.
- b. Table 5 lists the soil class, description of soil type, and allowable loading limits of soil (psf).
- c. Figure 5 illustrates the pole hole and gravel bed dimensions.
- d. Table 6 lists the increased load-bearing capacity of adding a gravel bed. When the vertical forces on the pole exceed the allowable loading limits of the soil, but not the pole-buckling strength, a 30 diameter hole with an 18 thick gravel bed (SI #0652248) will increase the soil bearing capacity.
- e. Table 7 through Table 11 list the maximum allowable vertical forces limited by soil class and pole-buckling strength. The pole-buckling strength values listed in the tables are adjusted to include overload capacity and strength factors (NESC) and safety factors (GO 95).
- f. Standard EC 031, lists the weight (lb./ft.) for primary conductors. The vertical force on the pole due to conductor weight and ice loading is determined by multiplying the values listed in EC 031 by the weight span (approximately the sum of $\frac{1}{2}$ span length on each side of the pole for level terrain) and the number of conductors.
- g. Standards EG 071, EG 081, and EG 091 list maximum working tension (MWT) and guying requirements. The vertical force on the pole due to guy tension is determined by multiplying the conductor MWT by the number of conductors, and guy lead/height ratio.
- h. Standard EL001, lists the weight (lb.) for overhead transformers. The vertical force on the pole due to transformer weight is determined by multiplying the value listed in the Standard EC 031, by the number of units.
- i. Standard ES 011, lists the weight (lb./ft.) for secondary conductors. The vertical force on the pole due to conductor weight is determined by multiplying the values listed in ES 011 by the weight span (approximately the sum of $\frac{1}{2}$ span length on each side of pole for level terrain), and the number of conductors.
- j. Standard EA 061, defines and explains the proper use and values for overload capacity and strength factors (NESC) and safety factor (GO 95).

2. Determining Pole Class Due to Vertical Loads

Determination of pole class due to vertical loading on poles requires totaling the following:

- Vertical force due to the weight of the pole, conductors, and equipment mounted on the pole.
- Vertical force due to guy tensions.

The pole class is then determined by comparing the sum of vertical forces calculated above to the maximum allowable vertical load for the pole classes and conditions listed in Table 7 through Table 11.

Table 5—Soil Classification

Soil Class	Description of Soil Type	Names (Geological)	Allowable Loading Limits (lb/ft ²)
0	Sound hard rock, un-weathered	Granite, Basalt, Massive Limestone	140,000
1	Very dense and/or cemented sands; coarse gravel and cobbles*	Caliche, weathered sandstone	60,000
2	Dense fine sands*; very hard silts & clays (may be preloaded)	Basil till; boulder clay; caliche; weathered laminated rock	30,000
3	Dense clays, sands and gravel*; hard silts and clays	Glacial till; weathered shales, schist, gneiss and siltstone	18,000
4	Medium dense sandy gravel*; very stiff to hard silts and clays	Glacial till; hardpan; marls	12,000
5	Medium dense coarse sand and sandy gravels*; stiff silts and clays	Saprolites, residual soils	7,000
6	Loose to medium dense fine to coarse sand; firm to stiff clays and silts	Hydraulic fill; compacted fill and residual soils	6,000
7	Loose fine sand; Alluvium; Loess; soft firm clays; varied clays and fill	Flood plain soils; lake clays; adobe; gumbo, fill	3,000
8	Peat, organic silts, inundated silts, fly ash	Miscellaneous fill; swamp marsh	1,000

*These soils are difficult to probe consistently.

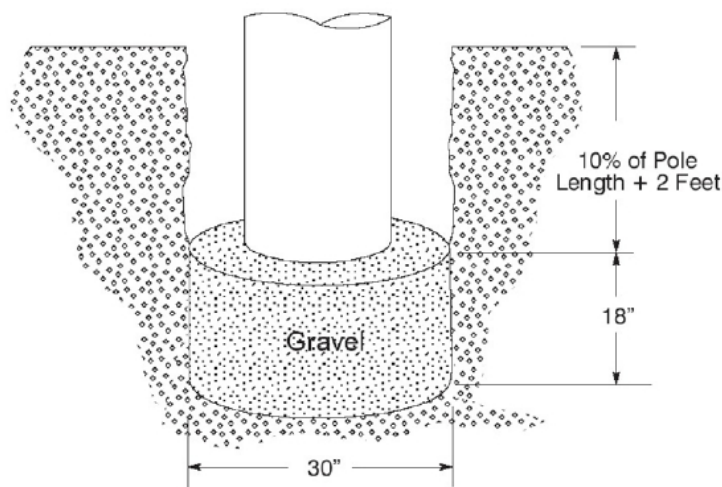
**Figure 5—Gravel Bed**

Table 6—Increased Soil Load Capacity

Soil Class	Maximum Soil Load with 30" Dia. Hole w/ 18" Gravel Bed	Maximum Soil Load with 22"* Dia. Hole w/ 18" Gravel Bed
4	58,900 lb.	31,700 lb.
5	34,400 lb.	18,500 lb.
6	29,500 lb.	15,800 lb.
7	14,700 lb.	7,900 lb.
8	4900 lb.	2,600 lb.

* 22-inch diameter hole is not recommended for poor soil classes.

Table 7—Maximum Allowable Vertical Load (NESC Class B) in 1000s of Pounds

Soil Class	Pole Class					Pole Class				
	1	2	3	4	5	1	2	3	4	5
	30 ft. Pole					35 ft. Pole				
0	66.5*	49.3*	36.5*	25.7*	17.9*	51.6*	38.5*	28.1*	19.9*	13.7*
1	50.1	43.6	36.5*	25.7*	17.9*	51.6*	38.5*	28.1*	19.9*	13.7*
2	25.1	21.8	19.4	16.6	14.6	28.5	25.1	21.8	18.8	13.7*
3	15.0	13.1	11.7	9.9	8.7	17.1	15.0	13.1	11.3	9.6
4	10.0	8.7	7.8	6.6	5.8	11.4	10.0	8.7	7.5	6.4
5	5.8	5.1	4.5	3.9	3.4	6.7	5.8	5.1	4.4	3.7
6	5.0	4.4	3.9	3.3	2.9	5.7	5.0	4.4	3.8	3.2
7	2.5	2.2	1.9	1.7	1.5	2.9	2.5	2.2	1.9	1.6
8	0.8	0.7	0.6	0.6	0.5	1.0	0.8	0.7	0.6	0.5
	40 ft. Pole					45 ft. Pole				
	1	2	3	4	5	1	2	3	4	5
	1	2	3	4	5	1	2	3	4	5
0	41.2*	30.9*	22.6*	16.2*	11.2*	34.0*	25.6*	18.5*	13.3*	9.3*
1	41.2*	30.9*	22.6*	16.2*	11.2*	34.0*	25.6*	18.5*	13.3*	9.3*
2	31.3	27.7	22.6*	16.2*	11.2*	34.0*	25.6*	18.5*	13.3*	9.3*
3	18.8	16.6	14.6	12.7	10.9	20.6	18.3	15.7	13.3*	9.3*
4	12.5	11.1	9.7	8.5	7.3	13.7	12.2	10.5	9.2	7.9
5	7.3	6.5	5.7	4.9	4.2	8.0	7.1	6.1	5.3	4.6
6	6.3	5.5	4.9	4.2	3.6	6.9	6.1	5.2	4.6	4.0
7	3.1	2.8	2.4	2.1	1.8	3.4	3.0	2.6	2.3	2.0
8	1.0	0.9	0.8	0.7	0.6	1.1	1.0	0.9	0.8	0.7
	50 ft. Pole					55 ft. Pole				
	1	2	3	4	5	1	2	3	4	5
	1	2	3	4	5	1	2	3	4	5
0	28.9*	21.5*	15.6*	11.2*	7.9*	24.6*	18.4*	13.4*	9.7*	N/A
1	28.9*	21.5*	15.6*	11.2*	7.9*	24.6*	18.4*	13.4*	9.7*	N/A
2	28.9*	21.5*	15.6*	11.2*	7.9*	24.6*	18.4*	13.4*	9.7*	N/A
3	22.4	19.5	15.6*	11.2*	7.9*	24.6*	18.4*	13.4*	9.7*	N/A
4	14.9	13.0	11.2	9.9	7.9*	15.8	13.9	12.1	9.7*	N/A
5	8.7	7.6	6.6	5.8	5.0	9.2	8.1	7.0	6.2	N/A
6	7.5	6.5	5.6	4.9	4.3	7.9	6.9	6.0	5.3	N/A
7	3.7	3.3	2.8	2.5	2.2	4.0	3.5	3.0	2.7	N/A
8	1.2	1.1	0.9	0.8	0.7	1.3	1.2	1.0	0.9	N/A
	60 ft. Pole									
	1	2	3	4	5	1	2	3	4	5
	1	2	3	4	5	1	2	3	4	5
0	21.4*	16.0*	11.7*	8.4*	N/A					
1	21.4*	16.0*	11.7*	8.4*	N/A					
2	21.4*	16.0*	11.7*	8.4*	N/A					
3	21.4*	16.0*	11.7*	8.4*	N/A					
4	16.8	14.8	11.7*	8.4*	N/A					
5	9.8	8.6	7.5	6.5	N/A					
6	8.4	7.4	6.5	5.6	N/A					
7	4.2	3.7	3.2	2.8	N/A					
8	1.4	1.2	1.1	0.9	N/A					

* Limited by buckling strength of poles, not soil class. N/A indicates 55' and 60' poles are not available in Class 5.

Table 8—Maximum Allowable Vertical Load (NESC Class C) in 1000s of Pounds

Soil Class	Pole Class					Pole Class				
	1	2	3	4	5	1	2	3	4	5
	30 ft. Pole					35 ft. Pole				
0	68.7*	50.9*	37.6*	26.5*	18.5*	53.3*	39.8*	29.0*	20.6*	14.1*
1	50.1	43.6	37.6*	26.5*	18.5*	53.3*	39.8*	29.0*	20.6*	14.1*
2	25.1	21.8	19.4	16.6	14.6	28.5	25.1	21.8	18.8	14.1*
3	15.0	13.1	11.7	9.9	8.7	17.1	15.0	13.1	11.3	9.6
4	10.0	8.7	7.8	6.6	5.8	11.4	10.0	8.7	7.5	6.4
5	5.8	5.1	4.5	3.9	3.4	6.7	5.8	5.1	4.4	3.7
6	5.0	4.4	3.9	3.3	2.9	5.7	5.0	4.4	3.8	3.2
7	2.5	2.2	1.9	1.7	1.5	2.9	2.5	2.2	1.9	1.6
8	0.8	0.7	0.6	0.6	0.5	1.0	0.8	0.7	0.6	0.5
	40 ft. Pole					45 ft. Pole				
	1	2	3	4	5	1	2	3	4	5
	1	2	3	4	5	1	2	3	4	5
0	42.5*	31.9*	23.4*	16.7*	11.6*	35.1*	26.4*	19.1*	13.7*	9.6*
1	42.5*	31.9*	23.4*	16.7*	11.6*	35.1*	26.4*	19.1*	13.7*	9.6*
2	31.3	27.7	23.4*	16.7*	11.6*	34.3	26.4*	19.1*	13.7*	9.6*
3	18.8	16.6	14.6	12.7	10.9	20.6	18.3	15.7	13.7*	9.6*
4	12.5	11.1	9.7	8.5	7.3	13.7	12.2	10.5	9.2	7.9
5	7.3	6.5	5.7	4.9	4.2	8.0	7.1	6.1	5.3	4.6
6	6.3	5.5	4.9	4.2	3.6	6.9	6.1	5.2	4.6	4.0
7	3.1	2.8	2.4	2.1	1.8	3.4	3.0	2.6	2.3	2.0
8	1.0	0.9	0.8	0.7	0.6	1.1	1.0	0.9	0.8	0.7
	50 ft. Pole					55 ft. Pole				
	1	2	3	4	5	1	2	3	4	5
	1	2	3	4	5	1	2	3	4	5
0	29.8*	22.2*	16.1*	11.6*	8.1*	25.4*	19.0*	13.8*	10.0*	N/A
1	29.8*	22.2*	16.1*	11.6*	8.1*	25.4*	19.0*	13.8*	10.0*	N/A
2	29.8*	22.2*	16.1*	11.6*	8.1*	25.4*	19.0*	13.8*	10.0*	N/A
3	22.4	19.5	16.1*	11.6*	8.1*	23.8	19.0*	13.8*	10.0*	N/A
4	14.9	13.0	11.2	9.9	8.1*	15.8	13.9	12.1	10.0*	N/A
5	8.7	7.6	6.6	5.8	5.0	9.2	8.1	7.0	6.2	N/A
6	7.5	6.5	5.6	4.9	4.3	7.9	6.9	6.0	5.3	N/A
7	3.7	3.3	2.8	2.5	2.2	4.0	3.5	3.0	2.7	N/A
8	1.2	1.1	0.9	0.8	0.7	1.3	1.2	1.0	0.9	N/A
	60 ft. Pole									
	1	2	3	4	5	1	2	3	4	5
	1	2	3	4	5	1	2	3	4	5
0	22.1*	16.5*	12.1*	8.6*	N/A					
1	22.1*	16.5*	12.1*	8.6*	N/A					
2	22.1*	16.5*	12.1*	8.6*	N/A					
3	22.1*	16.5*	12.1*	8.6*	N/A					
4	16.8	14.8	12.1*	8.6*	N/A					
5	9.8	8.6	7.5	6.5	N/A					
6	8.4	7.4	6.5	5.6	N/A					
7	4.2	3.7	3.2	2.8	N/A					
8	1.4	1.2	1.1	0.9	N/A					

* Limited by buckling strength of poles, not soil class. N/A indicates 55' and 60' poles are not available in Class 5.

Table 9—Maximum Allowable Vertical Load, (California Class A) in 1000s of Pounds

Soil Class	Pole Class					Pole Class				
	1	2	3	4	5	1	2	3	4	5
	30 ft. Pole					35 ft. Pole				
0	38.4*	28.4*	21.0*	14.8*	10.4*	29.8*	22.2*	16.2*	11.5*	7.9*
1	38.4*	28.4*	21.0*	14.8*	10.4*	29.8*	22.2*	16.2*	11.5*	7.9*
2	25.1	21.8	19.4	14.8*	10.4*	28.5	22.2*	16.2*	11.5*	7.9*
3	15.0	13.1	11.7	9.9	8.7	17.1	15.0	13.1	11.3	7.9*
4	10.0	8.7	7.8	6.6	5.8	11.4	10.0	8.7	7.5	6.4
5	5.8	5.1	4.5	3.9	3.4	6.7	5.8	5.1	4.4	3.7
6	5.0	4.4	3.9	3.3	2.9	5.7	5.0	4.4	3.8	3.2
7	2.5	2.2	1.9	1.7	1.5	2.9	2.5	2.2	1.9	1.6
8	0.8	0.7	0.6	0.6	0.5	1.0	0.8	0.7	0.6	0.5
	40 ft. Pole					45 ft. Pole				
	1	2	3	4	5	1	2	3	4	5
	1	2	3	4	5	1	2	3	4	5
0	23.8*	17.8*	13.1*	9.3*	6.5*	19.6*	14.8*	10.7*	7.7*	5.3*
1	23.8*	17.8*	13.1*	9.3*	6.5*	19.6*	14.8*	10.7*	7.7*	5.3*
2	23.8*	17.8*	13.1*	9.3*	6.5*	19.6*	14.8*	10.7*	7.7*	5.3*
3	18.8	16.6	13.1*	9.3*	6.5*	19.6*	14.8*	10.7*	7.7*	5.3*
4	12.5	11.1	9.7	8.5	6.5*	13.7	12.2	10.5	7.7*	5.3*
5	7.3	6.5	5.7	4.9	4.2	8.0	7.1	6.1	5.3	4.6
6	6.3	5.5	4.9	4.2	3.6	6.9	6.1	5.2	4.6	4.0
7	3.1	2.8	2.4	2.1	1.8	3.4	3.0	2.6	2.3	2.0
8	1.0	0.9	0.8	0.7	0.6	1.1	1.0	0.9	0.8	0.7
	50 ft. Pole					55 ft. Pole				
	1	2	3	4	5	1	2	3	4	5
	1	2	3	4	5	1	2	3	4	5
0	16.6*	12.4*	9.0*	6.5*	4.5*	14.2*	10.6*	7.7*	5.6*	N/A
1	16.6*	12.4*	9.0*	6.5*	4.5*	14.2*	10.6*	7.7*	5.6*	N/A
2	16.6*	12.4*	9.0*	6.5*	4.5*	14.2*	10.6*	7.7*	5.6*	N/A
3	16.6*	12.4*	9.0*	6.5*	4.5*	14.2*	10.6*	7.7*	5.6*	N/A
4	14.9	12.4*	9.0*	6.5*	4.5*	14.2*	10.6*	7.7*	5.6*	N/A
5	8.7	7.6	6.6	5.8	4.5*	9.2	8.1	7.0	5.6*	N/A
6	7.5	6.5	5.6	4.9	4.3	7.9	6.9	6.0	5.3	N/A
7	3.7	3.3	2.8	2.5	2.2	4.0	3.5	3.0	2.7	N/A
8	1.2	1.1	0.9	0.8	0.7	1.3	1.2	1.0	0.9	N/A
	60 ft. Pole									
	1	2	3	4	5	1	2	3	4	5
	1	2	3	4	5	1	2	3	4	5
0	12.3*	9.2*	6.8*	4.8*	N/A					
1	12.3*	9.2*	6.8*	4.8*	N/A					
2	12.3*	9.2*	6.8*	4.8*	N/A					
3	12.3*	9.2*	6.8*	4.8*	N/A					
4	12.3*	9.2*	6.8*	4.8*	N/A					
5	9.8	8.6	6.8*	4.8*	N/A					
6	8.4	7.4	6.5	4.8*	N/A					
7	4.2	3.7	3.2	2.8	N/A					
8	1.4	1.2	1.1	0.9	N/A					

* Limited by buckling strength of poles, not soil class. N/A indicates 55' and 60' poles are not available in Class 5.

Table 10—Maximum Allowable Vertical Load, (California Class B) in 1000s of Pounds

Soil Class	Pole Class					Pole Class				
	1	2	3	4	5	1	2	3	4	5
	30 ft. Pole					35 ft. Pole				
0	51.2*	37.9*	28.0*	19.8*	13.8*	39.7*	29.6*	21.6*	15.3*	10.5*
1	50.1	37.9*	28.0*	19.8*	13.8*	39.7*	29.6*	21.6*	15.3*	10.5*
2	25.1	21.8	19.4	16.6	13.8*	28.5	25.1	21.6*	15.3*	10.5*
3	15.0	13.1	11.7	9.9	8.7	17.1	15.0	13.1	11.3	9.6
4	10.0	8.7	7.8	6.6	5.8	11.4	10.0	8.7	7.5	6.4
5	5.8	5.1	4.5	3.9	3.4	6.7	5.8	5.1	4.4	3.7
6	5.0	4.4	3.9	3.3	2.9	5.7	5.0	4.4	3.8	3.2
7	2.5	2.2	1.9	1.7	1.5	2.9	2.5	2.2	1.9	1.6
8	0.8	0.7	0.6	0.6	0.5	1.0	0.8	0.7	0.6	0.5
	40 ft. Pole					45 ft. Pole				
	1	2	3	4	5	1	2	3	4	5
	1	2	3	4	5	1	2	3	4	5
0	31.7*	23.8*	17.4*	12.4*	8.6*	26.2*	19.7*	14.2*	10.2*	7.1*
1	31.7*	23.8*	17.4*	12.4*	8.6*	26.2*	19.7*	14.2*	10.2*	7.1*
2	31.3	23.8*	17.4*	12.4*	8.6*	26.2*	19.7*	14.2*	10.2*	7.1*
3	18.8	16.6	14.6	12.4*	8.6*	20.6	18.3	14.2*	10.2*	7.1*
4	12.5	11.1	9.7	8.5	7.3	13.7	12.2	10.5	9.2	7.1*
5	7.3	6.5	5.7	4.9	4.2	8.0	7.1	6.1	5.3	4.6
6	6.3	5.5	4.9	4.2	3.6	6.9	6.1	5.2	4.6	4.0
7	3.1	2.8	2.4	2.1	1.8	3.4	3.0	2.6	2.3	2.0
8	1.0	0.9	0.8	0.7	0.6	1.1	1.0	0.9	0.8	0.7
	50 ft. Pole					55 ft. Pole				
	1	2	3	4	5	1	2	3	4	5
	1	2	3	4	5	1	2	3	4	5
0	22.2*	16.5*	12.0*	8.6*	6.0*	18.9*	14.1*	10.3*	7.5*	N/A
1	22.2*	16.5*	12.0*	8.6*	6.0*	18.9*	14.1*	10.3*	7.5*	N/A
2	22.2*	16.5*	12.0*	8.6*	6.0*	18.9*	14.1*	10.3*	7.5*	N/A
3	22.2*	16.5*	12.0*	8.6*	6.0*	18.9*	14.1*	10.3*	7.5*	N/A
4	14.9	13.0	11.2	8.6*	6.0*	15.8	13.9	10.3*	7.5*	N/A
5	8.7	7.6	6.6	5.8	5.0	9.2	8.1	7.0	6.2	N/A
6	7.5	6.5	5.6	4.9	4.3	7.9	6.9	6.0	5.3	N/A
7	3.7	3.3	2.8	2.5	2.2	4.0	3.5	3.0	2.7	N/A
8	1.2	1.1	0.9	0.8	0.7	1.3	1.2	1.0	0.9	N/A
	60 ft. Pole									
	1	2	3	4	5	1	2	3	4	5
	1	2	3	4	5	1	2	3	4	5
0	16.4*	12.3*	9.0*	6.4*	N/A					
1	16.4*	12.3*	9.0*	6.4*	N/A					
2	16.4*	12.3*	9.0*	6.4*	N/A					
3	16.4*	12.3*	9.0*	6.4*	N/A					
4	16.4*	12.3*	9.0*	6.4*	N/A					
5	9.8	8.6	7.5	6.4*	N/A					
6	8.4	7.4	6.5	5.6	N/A					
7	4.2	3.7	3.2	2.8	N/A					
8	1.4	1.2	1.1	0.9	N/A					

* Limited by buckling strength of poles, not soil class. N/A indicates 55' and 60' poles are not available in Class 5.

Table 11—Maximum Allowable Vertical Load, (California Class C) in 1000s of Pounds

Soil Class	Pole Class					Pole Class				
	1	2	3	4	5	1	2	3	4	5
	30 ft. Pole					35 ft. Pole				
0	76.8*	56.9*	42.1*	29.6*	20.7*	59.6*	44.4*	32.4*	23.0*	15.8*
1	50.1	43.6	38.9	29.6*	20.7*	57.1	44.4*	32.4*	23.0*	15.8*
2	25.1	21.8	19.4	16.6	14.6	28.5	25.1	21.8	18.8	15.8*
3	15.0	13.1	11.7	9.9	8.7	17.1	15.0	13.1	11.3	9.6
4	10.0	8.7	7.8	6.6	5.8	11.4	10.0	8.7	7.5	6.4
5	5.8	5.1	4.5	3.9	3.4	6.7	5.8	5.1	4.4	3.7
6	5.0	4.4	3.9	3.3	2.9	5.7	5.0	4.4	3.8	3.2
7	2.5	2.2	1.9	1.7	1.5	2.9	2.5	2.2	1.9	1.6
8	0.8	0.7	0.6	0.6	0.5	1.0	0.8	0.7	0.6	0.5
	40 ft. Pole					45 ft. Pole				
	1	2	3	4	5	1	2	3	4	5
	40 ft. Pole					45 ft. Pole				
0	47.5*	35.6*	26.1*	18.7*	12.9*	39.3*	29.6*	21.4*	15.3*	10.7*
1	47.5*	35.6*	26.1*	18.7*	12.9*	39.3*	29.6*	21.4*	15.3*	10.7*
2	31.3	27.7	24.3	18.7*	12.9*	34.3	29.6*	21.4*	15.3*	10.7*
3	18.8	16.6	14.6	12.7	10.9	20.6	18.3	15.7	13.7	10.7*
4	12.5	11.1	9.7	8.5	7.3	13.7	12.2	10.5	9.2	7.9
5	7.3	6.5	5.7	4.9	4.2	8.0	7.1	6.1	5.3	4.6
6	6.3	5.5	4.9	4.2	3.6	6.9	6.1	5.2	4.6	4.0
7	3.1	2.8	2.4	2.1	1.8	3.4	3.0	2.6	2.3	2.0
8	1.0	0.9	0.8	0.7	0.6	1.1	1.0	0.9	0.8	0.7
	50 ft. Pole					55 ft. Pole				
	1	2	3	4	5	1	2	3	4	5
	50 ft. Pole					55 ft. Pole				
0	33.3*	24.8*	18.0*	13.0*	9.1*	28.4*	21.2*	15.5*	11.2*	N/A
1	33.3*	24.8*	18.0*	13.0*	9.1*	28.4*	21.2*	15.5*	11.2*	N/A
2	33.3*	24.8*	18.0*	13.0*	9.1*	28.4*	21.2*	15.5*	11.2*	N/A
3	22.4	19.5	16.9	13.0*	9.1*	23.8	20.8	15.5*	11.2*	N/A
4	14.9	13.0	11.2	9.9	8.6	15.8	13.9	12.1	10.7	N/A
5	8.7	7.6	6.6	5.8	5.0	9.2	8.1	7.0	6.2	N/A
6	7.5	6.5	5.6	4.9	4.3	7.9	6.9	6.0	5.3	N/A
7	3.7	3.3	2.8	2.5	2.2	4.0	3.5	3.0	2.7	N/A
8	1.2	1.1	0.9	0.8	0.7	1.3	1.2	1.0	0.9	N/A
	60 ft. Pole									
	1	2	3	4	5	1	2	3	4	5
	60 ft. Pole									
0	24.7*	18.5*	13.5*	9.6*	N/A					
1	24.7*	18.5*	13.5*	9.6*	N/A					
2	24.7*	18.5*	13.5*	9.6*	N/A					
3	24.7*	18.5*	13.5*	9.6*	N/A					
4	16.8	14.8	12.9	9.6*	N/A					
5	9.8	8.6	7.5	6.5	N/A					
6	8.4	7.4	6.5	5.6	N/A					
7	4.2	3.7	3.2	2.8	N/A					
8	1.4	1.2	1.1	0.9	N/A					

* Limited by buckling strength of poles, not soil class. N/A indicates 55' and 60' poles are not available in Class 5.

Example: Determining Pole Class

Given:

40-foot deadend pole
 Three 4/0 AAC primary
 One 1/0 ACSR neutral
 Three 25 kVA transformers
 NESC medium loading
 Grade C construction
 4/0 Par-Lay secondary
 90 degree secondary tap
 primary guy L/H = 3/4
 secondary guy L/H = 1/1
 neutral guy L/H = 24/26
 350-foot span (primary circuit)
 200-foot span (secondary circuit)
 Class 4 soil

1. Calculate Total Transverse Loading

- a. From standard EC 031, for NESC Medium loading, the conductor wind load factor for 4/0 AAC is 0.341 lb./ft. and for 1/0 ACSR is 0.299 lb./ft.:

Conductor Transverse Wind Load = (conductor wind load factor)
 (wind span)(number of phases)(installation height)

Primary conductor transverse wind load is:

$$(0.341 \text{ lb./ft.})(175 \text{ ft.})(3)(33 \text{ ft.}) = 5908 \text{ ft. lb.}$$

Neutral conductor transverse wind load is:

$$(0.299 \text{ lb./ft.})(175 \text{ ft.})(1)(27 \text{ ft.}) = \frac{1413 \text{ ft. lb.}}{7321 \text{ ft. lb.}}$$

- b. From Table 1 of this standard, for NESC Medium loading:

Pole transverse wind load = 1942 ft. lb.

- c. From Table 2 of this standard, for NESC Medium loading:

Transformer bank transverse wind load = 1649 ft. lb.

- d. From standard ES 011, for NESC Medium loading, the conductor wind load factor for 4/0 Par-Lay is 0.8067 lb./ft.:

Conductor Transverse Wind Load = (conductor wind load factor)
 (wind span)(number of phases)(installation height)

Secondary conductor transverse wind load is:

$$(0.8067 \text{ lb./ft.})(100 \text{ ft.})(1)(26 \text{ ft.}) = 2097 \text{ ft. lb.}$$

- e. Total transverse wind load for this particular pole is the sum of individual loads calculated above:

$$7321 \text{ ft. lb.} + 1942 \text{ ft. lb.} + 1649 \text{ ft. lb.} + 2097 \text{ ft. lb.} = 13009 \text{ ft. lb.}$$

- f. Compare the total from step (e) above with the maximum allowable bending moments in Table 3 above for a 40 ft. pole. A Class 5 pole has a limit of 30544 ft. lb.; therefore, that would be the minimum pole specified.

2. Calculate Total Vertical Loading

- a. From the tables in standard EG 071, determine the initial maximum wire tension (MWT) for the appropriate ruling span and calculate vertical loading of primary guy tension.

$$\text{Vertical loading of guy tension} = (\# \text{ of wire}) (\text{MWT}) / (L/H)$$

Vertical loading of guy tension for primary conductors:

$$= (3)(1737 \text{ lb.}) / (3/4) = 6948 \text{ lb.}$$

Vertical loading of guy tension for neutral conductor:

$$= (1)(1643 \text{ lb.}) / (24/26) = 1780 \text{ lb.}$$

- b. From standard EC 031, determine weight of loaded conductor and calculate primary conductor weight. For unequal span lengths, use $\frac{1}{2}$ the total span length of the adjacent spans.

$$\text{Conductor weight} = (\text{Weight Span})(\# \text{ of conductors})(\text{Weight per lineal foot})$$

Primary conductor weight:

$$= (175 \text{ ft.})(3)(0.4386 \text{ lb./ft.}) = 230 \text{ lb.}$$

Neutral conductor weight:

$$= (175 \text{ ft.})(1)(0.3467 \text{ lb./ft.}) = 60 \text{ lb.}$$

- c. From standard ES 031, find the initial maximum wire tension (MWT) and use step (2a) to calculate vertical loading of secondary guy tension.

$$\text{Par-lay tension} = (1)(4163 \text{ lb.}) / (1/1) = 4163 \text{ lb.}$$

- d. From standard ES 011, calculate secondary conductor weight.

$$\text{Same as primary (step (b))} = (100 \text{ ft.})(1)(0.750 \text{ lb./ft.}) = 75 \text{ lb.}$$

- e. From standard EL 001, calculate transformer weight.

$$(\# \text{ of transformers})(\text{weight}) = (3)(425 \text{ lb.}) = 1275 \text{ lb.}$$

f. From Table 1 of EB 111, determine the weight of 40-foot Douglas Fir,

Class 4 pole = 1065 lb.

Total Weight = 15,596 lb.

g. Use the total weight from step (f) above to determine the maximum vertical load on poles from Table 8. Find the soil class for 40-foot pole and read across from left to right. According to the table, a 40-foot Class 4 pole in soil Class 4 has a maximum allowable vertical load of 8500 pounds. However, the 8500-pound limit is due to the soil-bearing capacity, whereas the pole-buckling strength equals 16,700 pounds.

3. Solution

A Class 4 pole with added gravel (Table 6) will be specified for this example since it will handle both transverse wind load and vertical load.

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PAC_289.53

ER 191 Line Protective Device—Three-Phase/Triple-Single Recloser Assembly

Scope

This standard provides materials necessary to install solid dielectric reclosers in a traditional line overcurrent protection application. If it is required to apply custom features such as voltage sensing, bi-directionality, dead-line check, transfer trip, etc. for an installation, contact standards engineering. DO NOT use this assembly for custom applications.

Standard References

ER 011 Reclosers and Sectionalizers—General Information

DA 071 Fire High Consequence Area (FHCA) Applications

Notes

1. A PT will be provided for grounded wye systems. For delta, ungrounded, ungrounded wye-delta systems, or for a grounded wye system: choose available codes under delta and locate the smallest standard transformer (10 kVA) on the next source side pole and string #4 duplex (SI# 1050050). Then, deadend the service cable to the pole and splice it to the existing power cable from the recloser. This eliminates the use of a junction box and related accessories.

For coastal triple-single reclosers choose the appropriate PT in standard EL 906.
2. When bypassing a recloser with disconnect switches, be certain that measures have been taken to ensure the proper isolation of load-side faults; change the relay settings on the substation breaker or adjust the next source side fault clearing device.
3. For smaller phase conductors, a smaller jumper and connector may be used.

RCMS Code: CU

ER 191						
System Voltage	PT	Code	•	—	—	—
4.16/2.4 kV	2.4 kV	A				
12.47/7.2 kV	7.2 kV	B				
20.8/12.0 kV	12 kV	C				
24.9/14.4 kV	14.4 kV	D				
34.5/19.9 kV	19.9 kV	E				
Delta (27 kV)	None	F				
Delta (38 kV)	None	G				
Phase Connectors	Jumper	Code	•			
795 AAC*	4/0 Cu	A				
556*, 500*, 477*, 397	4/0 Cu	B				
336 AAC	4/0 Cu	C				
250	4/0 Cu	D				
4/0	4/0 Cu	E				
3/0	4/0 Cu	F				
1/0 or smaller†	4/0 Cu	G				
Grounding		Code		•		
NESC, includes ground rod		A				
NESC, grounding existing		B				
California, includes ground rod		C				
California, grounding exists		D				
Application (Cutout)		Code			•	
General		A				
Coastal/Contaminated (see Note 1 for triple-single)		B				
FHCA – General		C				
FHCA – Coastal/Contaminated (see Note 1 for triple-single)		D				
Recloser Type		Code				•
Three-phase (group-operated), 200 A maximum		A				
Three-phase (group-operated), above 200 A		B				
Triple-single (single-pole), 200 A maximum		C				
Triple-single (single-pole), above 200 A		D				

* For this phase conductor, a bigger jumper (500 Cu) and connector may be used for loads greater than the ampacity limit of a 4/0 Cu jumper.

† For smaller phase conductors, a smaller jumper and connector may be used.

Table I—Component Assemblies

No.	Standard	Description
1	ER 755	Line Protective Device—Recloser, Electronic
2	EE 741	Crossarm, Fiberglass
3*	EM 921	Bracket, Hanger, Crossarm, Cutout
4	DE 341	Connector, Shell-Fired, Yellow Cartridge
	DE 351	Connector, Shell-Fired, Blue Cartridge
5	DG 201	Grounding Assembly—Pole
	DG 301	Grounding Assembly—Pole-Mounted Equipment
6	EF 181	Deadend Insulator Assembly—Primary
7†	DE 491	Clamp, Hot-Line
8	EM 701	Cutout, With Cover
9	DQ 901	Surge Arrester, Overhead
	DQ 902	Surge Arrester, Overhead, Non-Expulsion
10	EF 117	Pin Insulator Assembly—Standoff, Clamp-Top
11†	DE 366	Connector, Stirrup, Bolted
12	EC 951	Conductor, Overhead Primary, Leads and Jumpers
13	DP 501	Fuse Links, Universal, 7.2/12.4 kV to 14.4/24.9 kV and 19.9/34.5 kV (Newer Short Tubes)
14†	DE 471	Lug, Two-Hole, Terminal, Aluminum and Copper, Compression
15*	EM 901	Bracket, Cutout and Arrester Mounting, Three-Phase
16	ER 835	Strap, Steel, for PVC Conduit
17*	DY 181	Bolt Assembly, Machine, ¾", Single Curved Washer
18†	EM 501	Switch, Disconnect, In-Line, Crossarm-Mounted
19†	EM 511	Switch, Disconnect, Line-Tap, Hanging
20	EV 901	Guard, Bird, Jumper Cover
21	EF 341	Insulator, Suspension, Polymer

* Only applicable for installations with 200 A maximum load.

† Only applicable for installations above 200 A load. Hot-line clamps may only be used to connect to potential transformers.

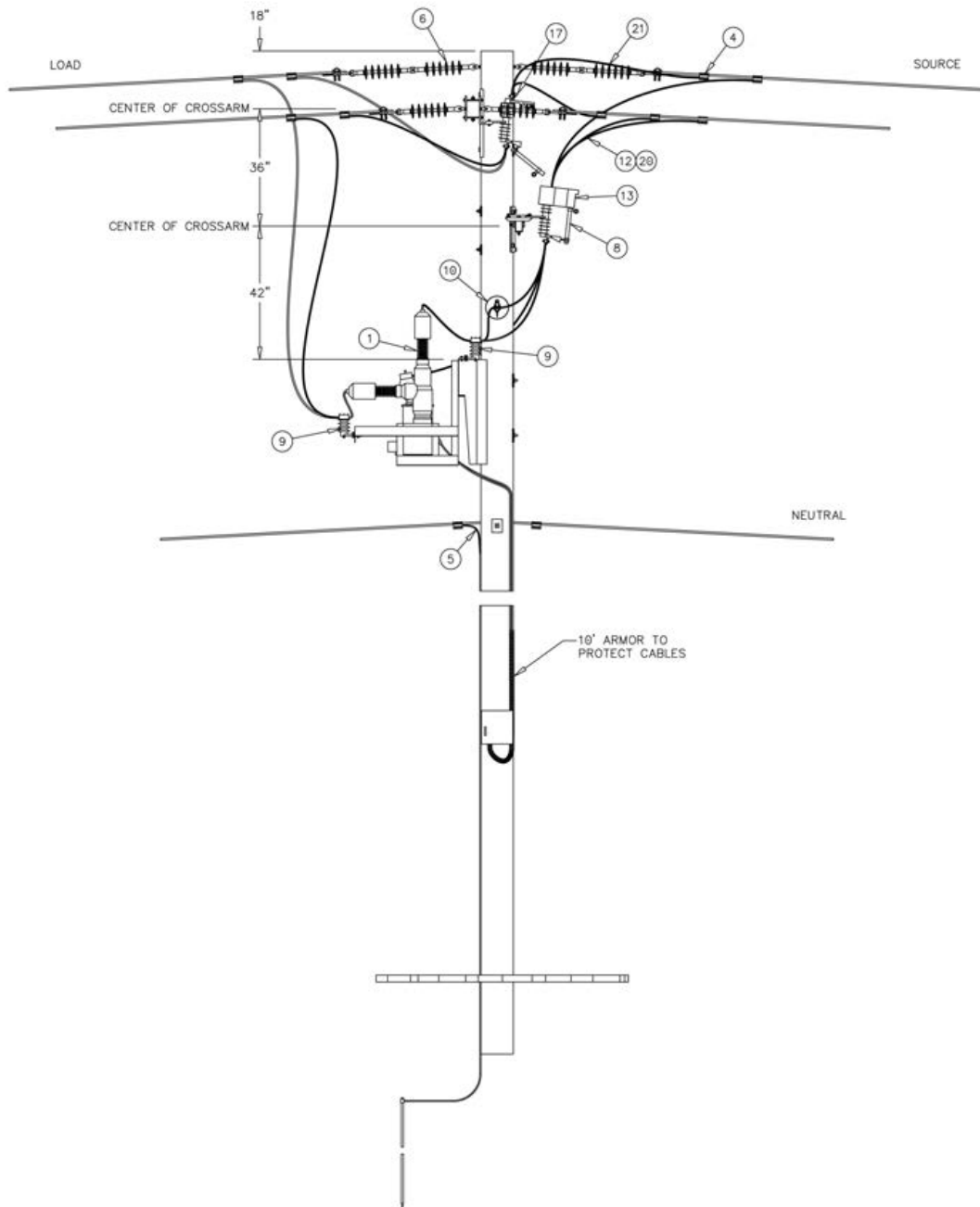


Figure 1—Typical Recloser Assembly, 200 A Maximum Load, Front View

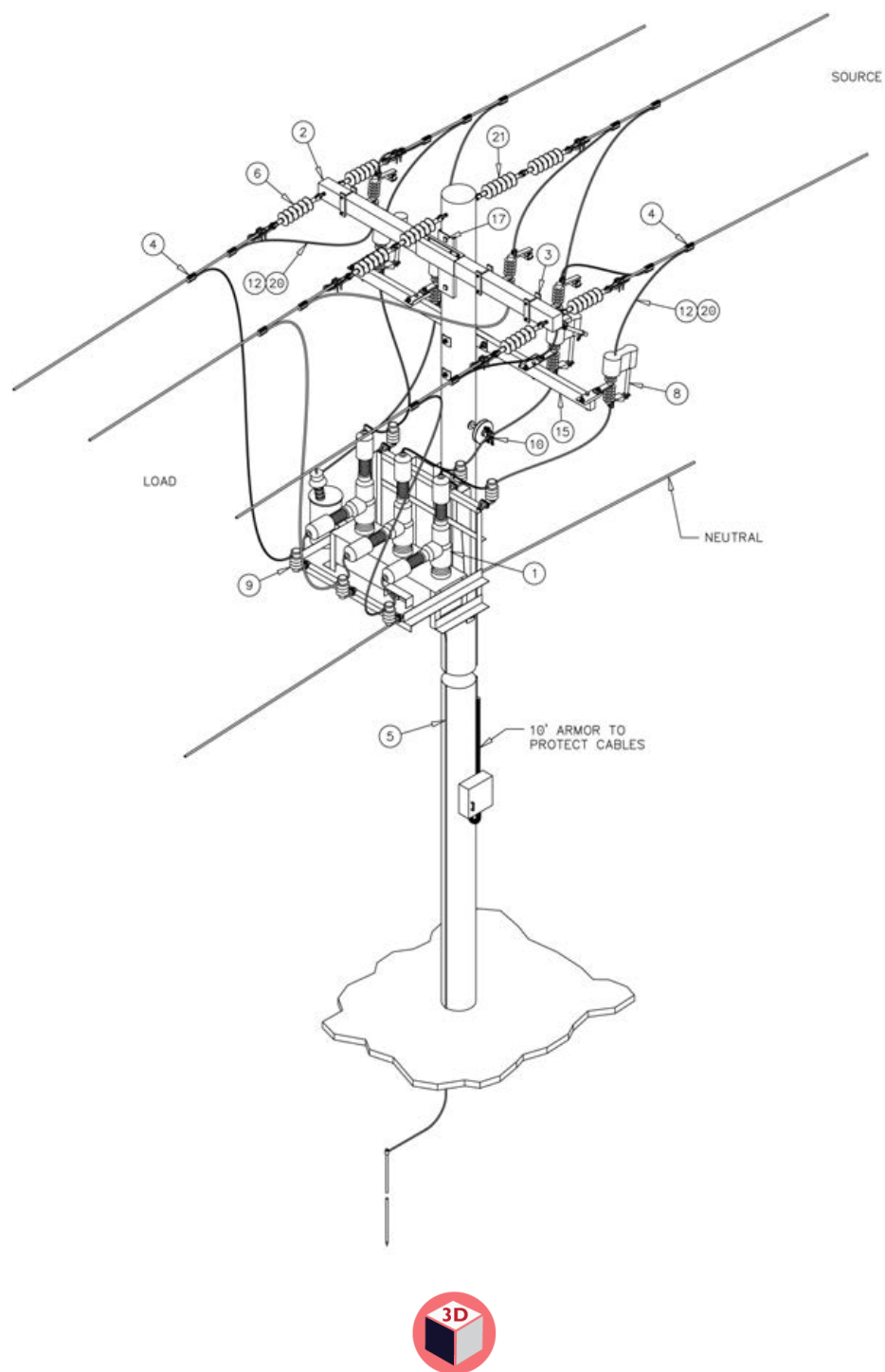


Figure 2—Typical Recloser Assembly, 200 A Maximum Load, Isometric View

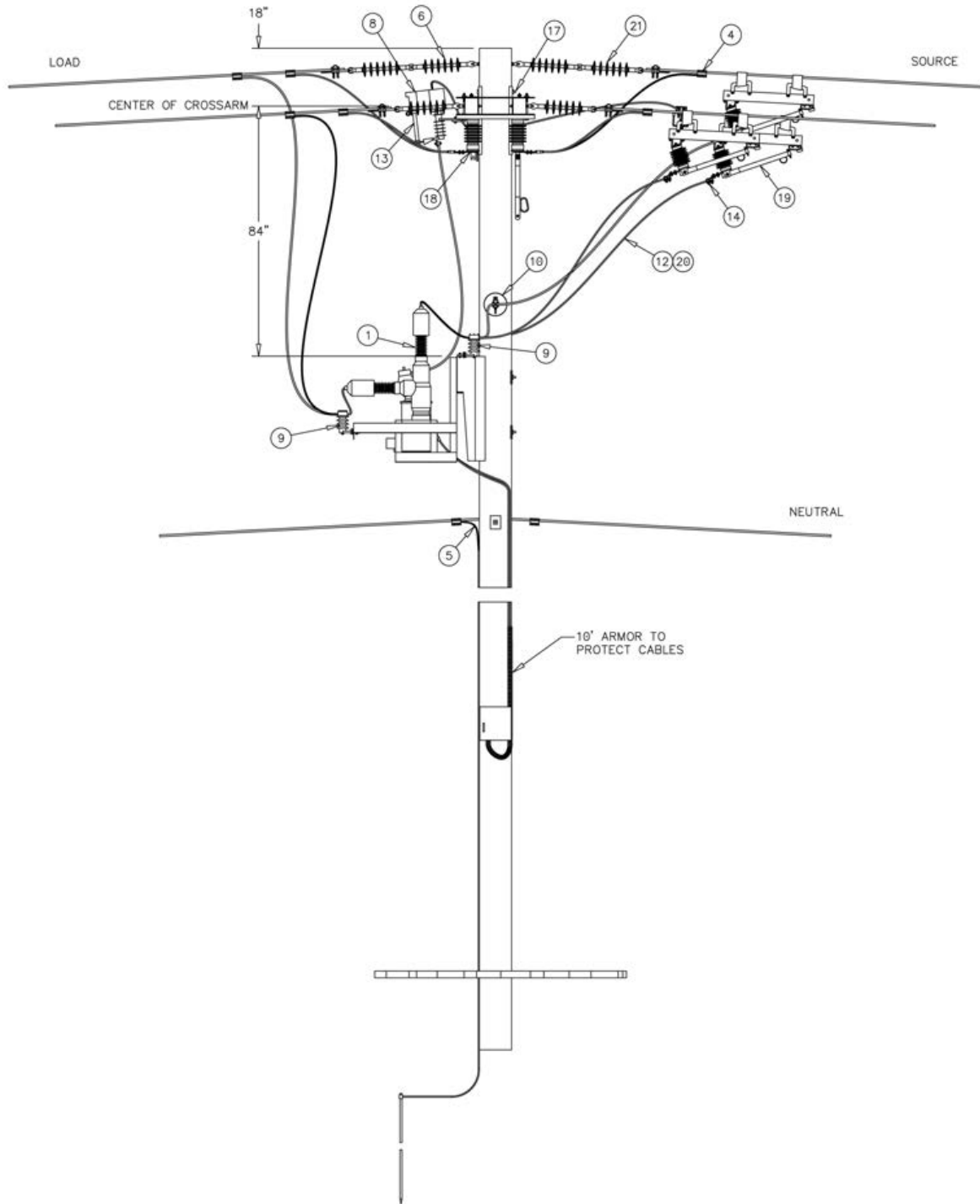


Figure 3—Typical Recloser Assembly, Above 200 A Load, Front View

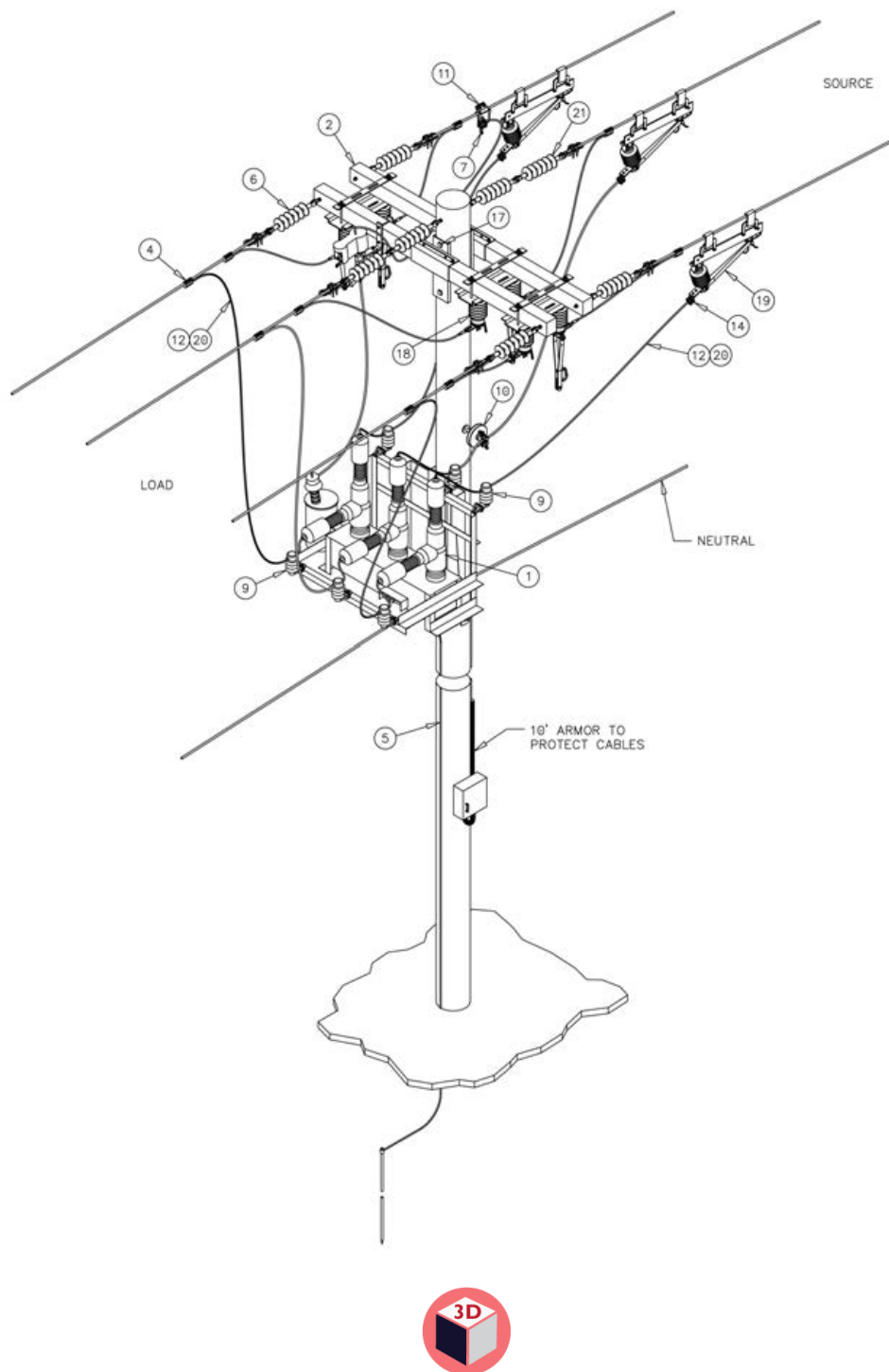


Figure 4—Typical Recloser Assembly, Above 200 A Load, Isometric View

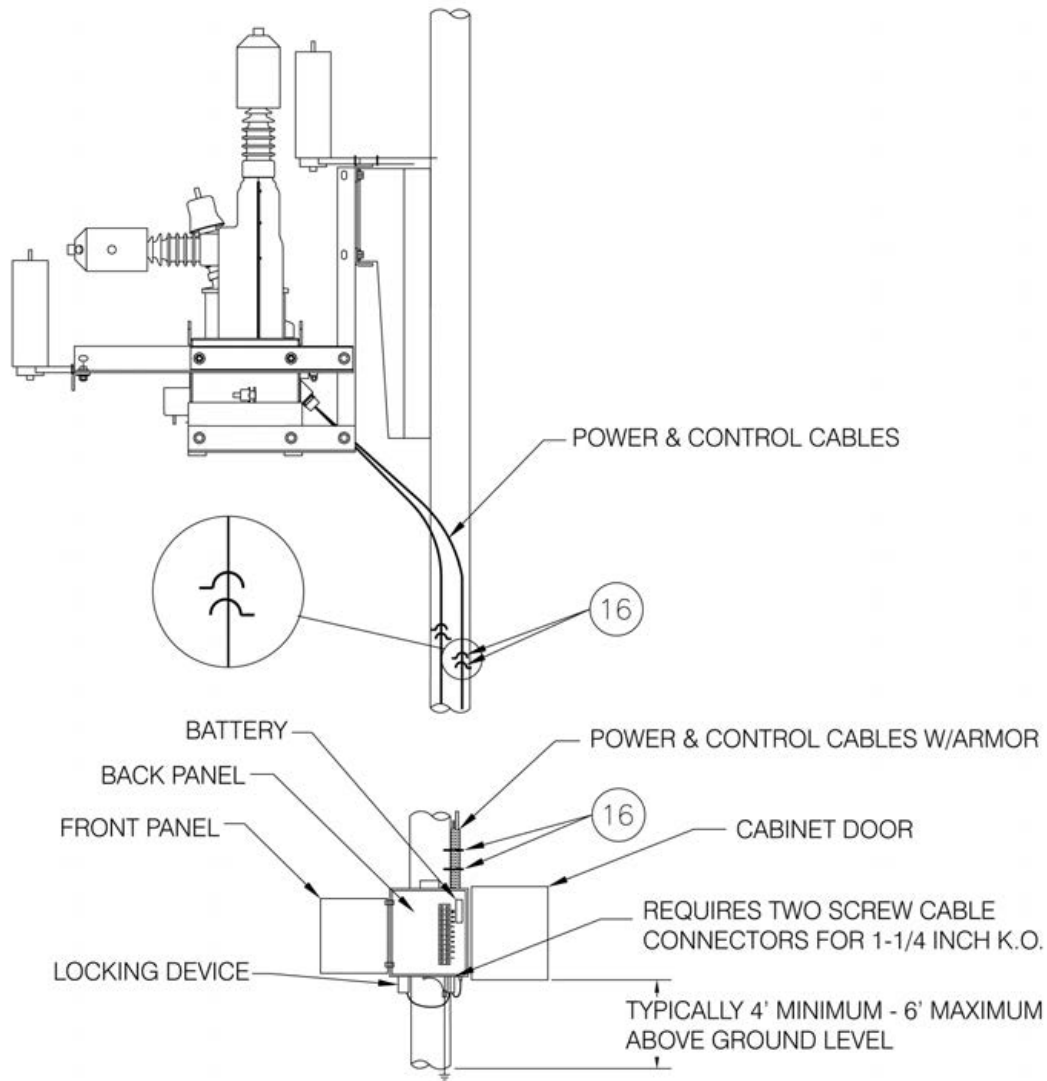


Figure 5—Recloser, Electronic Control Detail

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PAC_289.54

EB 331 Poles—Fire Protection

RCMS Code: BA

Genics Fire Mesh (SI# 8004438)			EB 331
Wrap Levels	Height (in feet)	Use	Code
Two levels of wrap	6	For vegetation ≤ 5 feet	A
Additional levels *	3	For vegetation > 5 feet	B

* The minimum wrap height required by company policy is 6 feet (or two levels of wrap); in many instances the minimum wrap level, code "A" will be sufficient. "B" code is for use in instances where vegetation exceeds 5 feet. Each level of wrap is 4-feet long by 3-feet tall.

Scope

This standard provides information and material identification for pole fire protection.

General

There may be poles installed in areas where annual field or brush burning could damage distribution pole to a degree which it may not be strong enough for the structure. To prevent pole fire damage, engineering recommends the following methods.

Genics Fire Mesh

Genics Fire Mesh (SI# 8004438) can be used as an alternate to the Fire-Guard Wrap and is installed in a similar manner. Detailed installation instructions distilled from the Genics website can be found in Rocky Mountain Power Policy [357](#), *Genics Fire Mesh for New and Existing Poles*.



Figure 1—Example of Genics Fire Mesh Application

Fire-Guard

Osmose wood pole fire guard is a heavy-duty coating (SI# 8004292) applied by an airless spraying equipment helps protect distribution wood poles from fire damage. It is recommended to hire osmose crew to apply a heavy duty coating of this material on designated poles. This method should prevent pole damage due to fire for up to five years.

Aluminum Butt Wrap

Four sheets of aluminum, 0.019" × 36" × 72", purchased at a local hardware store can be installed as it is shown in Figure 2. Aluminum roofing nails, screw shank of 1¾", or monel staple of ½" size can be used to fasten these aluminum sheets.

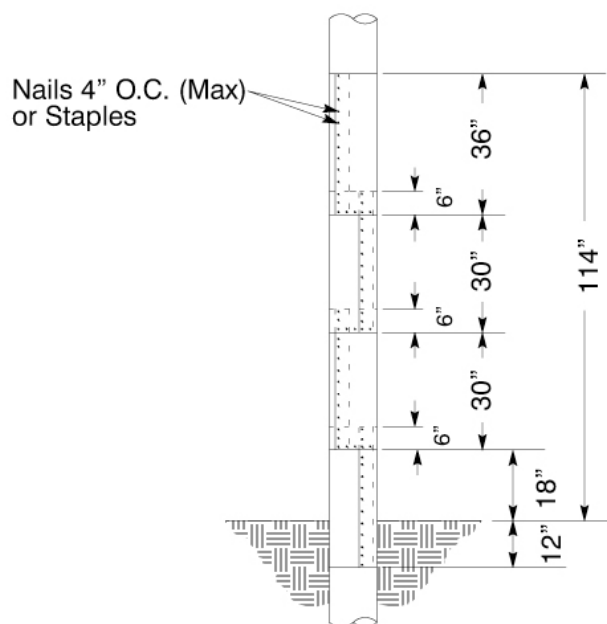


Figure 2—Aluminum Butt Wrap

Fire-Guard Wrap

Fire-Guard Wrap should be applied to a clean surface. Remove loose surface debris and excess preservative material. Excess vegetation should also be removed at pole base. Excavate 2" of dirt from around the pole prior to applying Fire-Guard Wrap. Fire-Guard Wrap should be applied from 1"–2" below ground line to at least two feet (2') above surrounding vegetation. Typical application height is 36" – 54" or higher. Horizontal and vertical seams should overlap by approximately 2". Off-set vertical seams.

Fire-Guard Wrap should be applied as snugly to the pole as possible. Each wrap is 20" wide and 36" (SI# 8004375), 48" (SI# 8004275) or 60" (SI# 8004276) long. Exposed vertical and horizontal seams should be secured with 1 ½" or longer galvanized, aluminum, or stainless steel roofing nails every 6". The product should be installed from the top down, allowing approximately 2" overlap on the vertical seam.

Successively lower pieces should overlap the higher piece by approximately 2", resulting in a reverse roofing effect. The lower most piece should overlap the upper piece by approximately 2" and extend approximately 2" below grade, see Figure 3.



Figure 3—Example of Finished Application

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PAC_289.55

EB 401 Pole, Wood

RCMS Code: BA

Scope

This standard provides details for selecting the proper pole according to length and class to be used in distribution line construction.

Standard References

- EB 001 Poles—General Information
- EB 011 Poles—Class Selection
- EB 021 Poles—Setting Information
- EB 171 Poles—Predrilled Holes

Notes

1. For further information refer to the Engineering Handbook.
2. Wood poles are classed by length and diameter. A class-1 diameter pole is the strongest. A class-5 pole is the weakest.
3. Pole marker should be installed approximately 8' above ground line.
4. This standard assumes digging will be in reasonably soft ground. If hard digging is required, then use appropriate labor factor to provide for variance.
5. When ordering poles over 45' in length, specify drawing MK-89 for distribution spacing for framing holes.
6. Refer to Figure 1 and Table 1 for detailed component information.
7. The aluminum pole markers should accompany the job packet and are obtained and filled out by the estimator. A pole marker is required for each pole.

RCMS Code: BA

EB 401		
Pole Class	Code	
5	A	
4	B	
3	C	
2	D	
1	E	
Length (feet)	Code	
Pole without Pole Hole		
25	A	
30	B	
35	C	
40	D	
45	E	
50	F	
55	G	
60	H	
65	I	
70	J	
Pole with Pole Hole		
25	M	
30	N	
35	O	
40	P	
45	Q	
50	R	
55	S	
60	T	
65	U	
70	V	

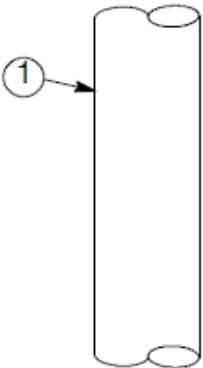


Figure 1—Typical Wood Pole

Table I—List of Materials

No.	S.I. No.	Description
1	1614255	25-foot Pole, Class 5
	1614305	30-foot Pole, Class 5
	1614354	35-foot Pole, Class 4
	1614403	40-foot Pole, Class 3
	1614402	40-foot Pole, Class 2
	1614401	40-foot Pole, Class 1
	1614453	45-foot Pole, Class 3
	1614452	45-foot Pole, Class 2
	1614451	45-foot Pole, Class 1
	1616503	50-foot Pole, Class 3
	1616502	50-foot Pole, Class 2
	1616501	50-foot Pole, Class 1
	1616553	55-foot Pole, Class 3
	1616552	55-foot Pole, Class 2
	1616551	55-foot Pole, Class 1
	1616603	60-foot Pole, Class 3
	1616602	60-foot Pole, Class 2
	1616601	60-foot Pole, Class 1
	1616653	65-foot Pole, Class 3
	1616652	65-foot Pole, Class 2
	1616651	65-foot Pole, Class 1
	1616702	70-foot Pole, Class 2
	1616701	70 foot Pole, Class 1

PAC_289.56



EB 403 Pole, Fiberglass

Scope

This standard provides details for selecting the proper pole according to type, length and class to be used in distribution line construction, typically in areas experiencing excessive woodpecker damage or fire high consequence areas (FHCA).

Standard References

- EB 001 Poles—General Information
- EB 011 Poles—Class Selection
- EB 021 Poles—Setting Information
- EB 041 Poles—Alternate to Wood
- EB 171 Poles—Predrilled Holes
- DB 711 Plates, Facility Point

RCMS Code: BA

EB 403		—	—	—
Pole Type	Code	•		
Round	A			
Octagonal (eight sides)	B			
Pole Class	Code		•	
5	A			
4	B			
3	C			
2	D			
1	E			
Length (feet)	Code			•
Without Pole Hole				
30	A			
35	B			
40	C			
45	D			
50	I			
55	K			
60	M			
With Pole Hole				
30	E			
35	F			
40	G			
45	H			
50	J			
55	L			
60	N			

Notes

1. Use round type fiberglass poles for spacer cable systems. Octagonal type is used for other installations, such as in wood pecker areas if desired.
2. Fiberglass poles are manufactured to be equivalent in height and class to wood poles.
3. This standard assumes digging will be done in reasonably soft ground. If hard digging is required, then use appropriate labor factor to provide for variance.
4. These poles will be pre-drilled as shown in standard EB 171.
5. This standard includes two pole types: round poles and octagonal poles. Refer to the figures and list of materials.
6. A pole marker is required for each pole. Adhesive-backed plates can be used to mark fiberglass poles. Refer to DB 711.
7. Pole class 1, at 55- and 60-foot lengths is only available round. The manufacturer is unable to make these in an octagonal shape.



Figure 1—Round Fiberglass Pole



Figure 2—Octagonal Fiberglass Pole

Table I—List of Materials

Pole Length (in feet)	Class	Shape	S.I. No.
30	5	Round	1008200
35	4	Round	1008201
40	4	Round	1008203
40	3	Round	1008202
45	4	Round	1008206
45	3	Round	1008205
45	2	Round	1008204
45	1	Round	8006086
50	4	Round	7999925
50	3	Round	8005874
50	2	Round	8005888
50	1	Round	8005890
55	3	Round	8005875
55	1	Round	8005891
60	2	Round	8005889
60	1	Round	8005892
35	4	Octagonal	8002287
40	4	Octagonal	8000392
40	3	Octagonal	8000391
45	4	Octagonal	8000396
45	3	Octagonal	8000394
45	2	Octagonal	8000393
45	1	Octagonal	8005887
50	3	Octagonal	8002291
50	2	Octagonal	8005881
55	2	Octagonal	8005876

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PAC_289.57

EB 331 Poles—Fire Protection

RCMS Code: BA

Genics Fire Mesh (SI# 8004438)			EB 331
Wrap Levels	Height (in feet)	Use	Code
Two levels of wrap	6	For vegetation ≤ 5 feet	A
Additional levels *	3	For vegetation > 5 feet	B

* The minimum wrap height required by company policy is 6 feet (or two levels of wrap); in many instances the minimum wrap level, code "A" will be sufficient. "B" code is for use in instances where vegetation exceeds 5 feet. Each level of wrap is 4-feet long by 3-feet tall.

Scope

This standard provides information and material identification for pole fire protection.

General

There may be poles installed in areas where annual field or brush burning could damage distribution pole to a degree which it may not be strong enough for the structure. To prevent pole fire damage, engineering recommends the following methods.

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Figure 1—Example of Genics Fire Mesh Application

Fire-Guard

Osmose wood pole fire guard is a heavy-duty coating (SI# 8004292) applied by an airless spraying equipment helps protect distribution wood poles from fire damage. It is recommended to hire osmose crew to apply a heavy duty coating of this material on designated poles. This method should prevent pole damage due to fire for up to five years.

Aluminum Butt Wrap

Four sheets of aluminum, 0.019" × 36" × 72", purchased at a local hardware store can be installed as it is shown in Figure 2. Aluminum roofing nails, screw shank of 1¾", or monel staple of ½" size can be used to fasten these aluminum sheets.

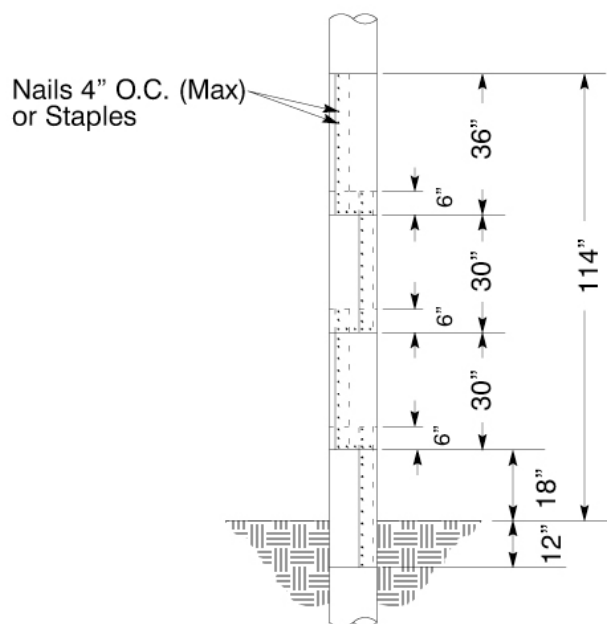


Figure 2—Aluminum Butt Wrap

Fire-Guard Wrap

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Successively lower pieces should overlap the higher piece by approximately 2", resulting in a reverse roofing effect. The lower most piece should overlap the upper piece by approximately 2" and extend approximately 2" below grade, see Figure 3.



Figure 3—Example of Finished Application

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PAC_289.58

LINE	1	POLE NUMBER	1	TYPE	
NOTES					
LOCATION	06239004.0139000				
COMMENTS					
LATITUDE (DMS)	41°13'52.733"N	LONGITUDE (DMS)	122°16'1.784"W	GROUND ELEVATION (FT)	2838.3



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	56.68	WOOD POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+
ELEMENT	78.56	GUY "GUY"	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-

WOOD POLE PROPERTIES AND EMBEDMENT								
POLE LABEL	PROPERTY LABEL	STOCK NUMBER	SPECIES	CLASS	LENGTH (FT)	EMBED. (FT)	MODELED GL DIAM. (IN)	GL CIRC. (IN)
POLE	DF-4-40	DF-4-40	DF - DOUGAS FIR	4	40.0	6.0	10.7	33.5

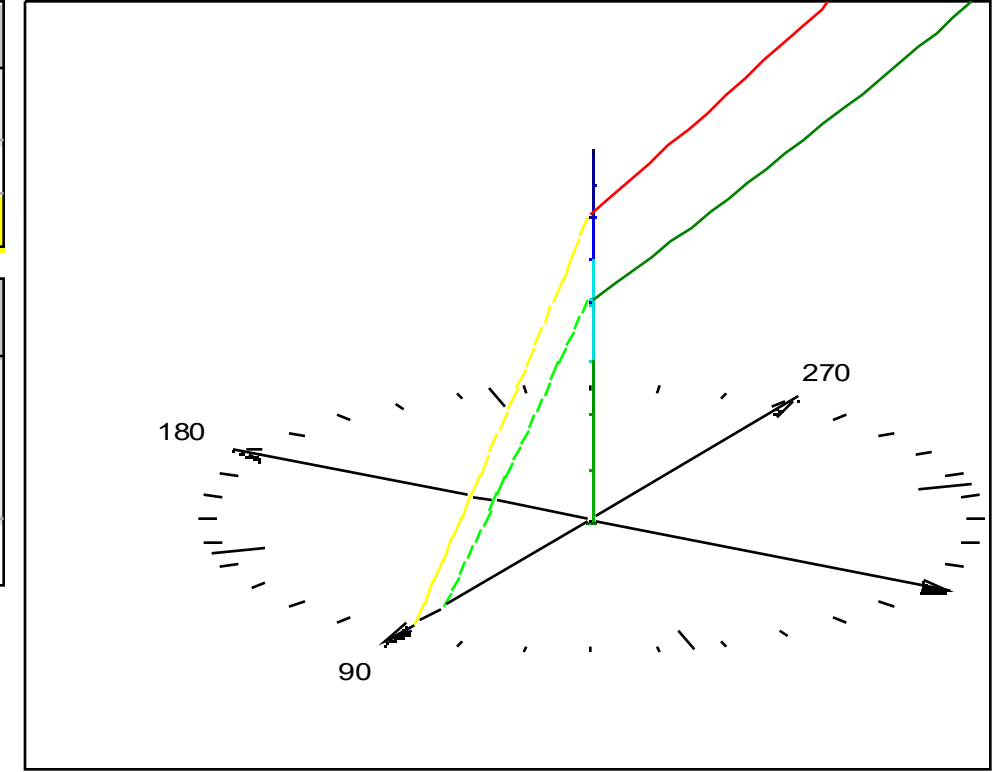
FRAMING LIBRARY				
	FRAMING PROPERTY LABEL	STOCK NUMBER	KEYWORDS	INSERTION DISTANCE FROM TIP (FT)
	VANGDE-COMM_SEC_NEUT		VANGDE-COMM_SEC_NEUT	0.50

SUMMARY OF WOOD POLE USAGES				
WOOD POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	56.68	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	2.5	1090.1

SUMMARY OF GUY USAGES				
GUY LABEL	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)	UNSTRESSED LENGTH (FT)
GUY	78.56	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	16.4	41.04
GUY1	50.85	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	12.9	32.33

SUMMARY OF MAXIMUM USAGES BY LOAD CASE				
	LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE
	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	78.48	GUY	GUY
	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	78.56	GUY	GUY

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES						
	LOAD CASE	FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %
	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	5.74	0.41	10.62	0.00
	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND1	-3.73	4.02	0.00	0.00
	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND2	-2.24	2.75	0.00	0.00
	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	5.74	0.30	7.18	0.00
	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND1	-3.73	4.02	0.00	0.00
	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND2	-2.25	2.75	0.00	0.00



SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
DE	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	TRANSVERSE (LBS)	LOADS LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)
SET #1	0.0	0.0	28.0	1	1	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	182	4591	-868	214	-4589	1.65	2.21
SET #2	-0.4	0.0	20.0	1	1	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	182	2197	-253	109	-2197	1.13	1.34

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	TRANSVERSE (LBS)	LOADS LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)
SET #1	0.0	0.0	28.0	1	1	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	182	4591	-868	-93	-4593	1.65	2.21
SET #2	-0.4	0.0	20.0	1	1	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	182	2197	-253	-99	-2198	1.13	1.34

WOOD MATERIAL PROPERTIES									
MATERIAL LABEL	MODULUS OF ELASTICITY (KSI)	DESIGN STRESS MOR (KSI)	WEIGHT DENSITY (LBS/FT^3)	ANSI O5.1 STATUS	ALLOWABLE SHEAR STRESS (KSI)	ALLOWABLE COMPRESS. STRESS (KSI)	THROUGH-BORING STRENGTH REDUCTION %	THROUGH-BORING DIST. ABOVE GROUND (FT)	THROUGH-BORING DIST. BELOW GROUND (FT)
DF-DOUGLAS FIR	2380	8	60	INCLUDED	0	0	0	0	0

CABLE PROPERTIES									
LABEL	STOCK NUMBER	AREA (IN^2)	MODULUS OF ELASTICITY (PSI)	DIAMETER (IN)	UNIT WEIGHT (LBS/FT)	DRAW COEF.	THERMAL EXPANSION COEFF. (/DEG F)	ULTIMATE TENSION (KIPS)	ALLOWABLE % OF ULTIMATE
7/16" 7 STRAND HS		0.1156	2.57E+07	0.435	0.399	1	6.4E-06	14	100

CLAMP PROPERTIES			
LABEL	STOCK NUMBER	HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)
MG-4128		2.2E+04	2.2E+04
MG-41280	MG-4128	2.3E+04	0

WEATHER CASES													
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1

STRUCTURE LOADS CRITERIA															
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON-TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSULATORS	STRENGTH FACTOR HARDWARE	STRENGTH FACTOR FOUNDATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	` GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	` GRADE A HEAVY`		

LINE	1	POLE NUMBER	2	TYPE	
NOTES					
LOCATION	06239004.0249900				
COMMENTS					
LATITUDE (DMS)	41°13'52.171"N	LONGITUDE (DMS)	122°15'59.52"W	GROUND ELEVATION (FT)	2870.9



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	85.58	WOOD POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-
ELEMENT	46.16	GUY "G1"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+

WOOD POLE PROPERTIES AND EMBEDMENT									
POLE LABEL	PROPERTY LABEL	STOCK NUMBER	SPECIES	CLASS	LENGTH (FT)	EMBED. (FT)	MODELED GL DIAM. (IN)	GL CIRC. (IN)	
POLE	DF-3-45	DF-3-45	DF - DOUGAS FIR	3	45.0	6.5	11.9	37.3	

FRAMING LIBRARY				
FRAMING PROPERTY LABEL	STOCK NUMBER	KEYWORDS	INSERTION DISTANCE FROM TIP (FT)	
VANG-COMM_SEC_NEUT		VANG-COMM_SEC_NEUT	0.50	

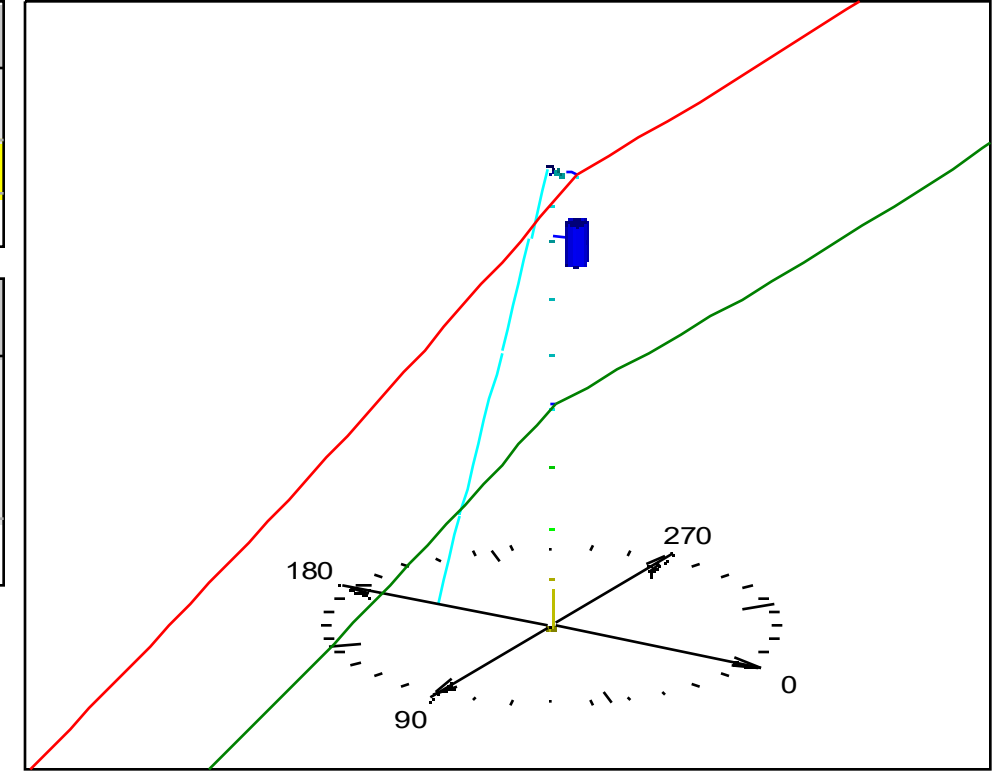
SUMMARY OF WOOD POLE USAGES				
WOOD POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	85.58	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	2.1	1502.7

SUMMARY OF TUBULAR DAVIT USAGES				
TUBULAR DAVIT LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
TAN1	29.51	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	38.0	28.3

SUMMARY OF GUY USAGES				
GUY LABEL	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)	UNSTRESSED LENGTH (FT)
G1	46.16	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	8.1	39.29

SUMMARY OF MAXIMUM USAGES BY LOAD CASE			
LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	46.16	G1	GUY
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	85.58	POLE	WOOD POLE

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+																
CIRCUIT LABEL	---AVERAGE---			WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----					
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)			LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	FACTORED SPAN TRANSVERSE (LBS)	FACTORED SPAN LONGITUDINAL (LBS)	FACTORED UNIT LOADS- HORIZONTAL (LBS/FT)	FACTORED UNIT LOADS- VERTICAL (LBS/FT)				
SET #1	0.0	2.4	38.0	1	2	052AWA 40 15KV RTL-20VDM.WIR		1.29	15	220	4610	1140	307	-36	1.65	2.21
SET #2	0.0	0.4	18.5	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER		1.26	1	220	2202	453	246	-9	1.13	1.34



SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
MC2	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES						
LOAD CASE	FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %	
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	5.41	0.24	4.92	0.00	
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND1	-2.00	0.54	0.00	0.00	
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	3.42	0.91	23.05	0.00	
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND1	-0.01	0.00	0.00	0.00	

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-																
CIRCUIT LABEL	---AVERAGE---			WIRE ATTACHMENT PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----		
	STRUCTURE X (FT)	STRUCTURE Y (FT)	ATTACHMENT HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED VERTICAL (LBS)	FACTORED TRANSVERSE (LBS)	FACTORED LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	-FACTORED VERTICAL (LBS/FT)	
SET #1	0.0	2.4	38.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	220	4610	1140	-429	-40	1.65	2.21	
SET #2	0.0	0.4	18.5	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	220	2202	453	-256	-9	1.13	1.34	

WOOD MATERIAL PROPERTIES										
MATERIAL LABEL	MODULUS OF ELASTICITY (KSI)	DESIGN STRESS MOR (KSI)	WEIGHT DENSITY (LBS/FT^3)	ANSI O5.1 STATUS	ALLOWABLE SHEAR STRESS (KSI)	ALLOWABLE COMPRESS. STRESS (KSI)	THROUGH-BORING STRENGTH REDUCTION %	THROUGH-BORING DIST. ABOVE GROUND (FT)	THROUGH-BORING DIST. BELOW GROUND (FT)	
DF-DOUGLAS FIR	2380	8	60	INCLUDED	0	0	0	0	0	

TUBULAR DAVIT PROPERTIES																	
DAVIT PROPERTY LABEL	STOCK NUMBER	STEEL SHAPE	THICKNESS (IN)	BASE DIAMETER OR DEPTH (IN)	TIP DIAMETER OR DEPTH (IN)	TAPER (IN/FT)	DRAG COEF.	MODULUS OF ELASTICITY (KSI)	STRENGTH CHECK TYPE	VERTICAL CAPACITY (LBS)	TENSION CAPACITY (LBS)	COMPRES. CAPACITY (LBS)	LONG. CAPACITY (LBS)	YIELD STRESS (KSI)	WEIGHT DENSITY OVERRIDE (LBS/FT^3)	STEEL SHAPE AT END	
BM-24		4F	0.377	4.5	1.5	0	0	25000	NOMINAL	6000	2500	2500	2300	0	0		

CABLE PROPERTIES									
LABEL	STOCK NUMBER	AREA (IN^2)	MODULUS OF ELASTICITY (PSI)	DIAMETER (IN)	UNIT WEIGHT (LBS/FT)	DRAG COEF.	THERMAL EXPANSION COEFF. (/DEG F)	ULTIMATE TENSION (KIPS)	ALLOWABLE % OF ULTIMATE
5/16" 7 STRAND EHS		0.05946	2.5E+07	0.312	0.205	1	6.4E-06	9	100

CLAMP PROPERTIES				
LABEL	STOCK NUMBER	HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)	
MC-2	MC-2	1.1E+04	0	
CMA-10	CMA-1	1.2E+04	0	

WEATHER CASES														
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR	
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1	

STRUCTURE LOADS CRITERIA																
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)	
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00	
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00	

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON- TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSUL- ATORS	STRENGTH FACTOR HARD- WARE	STRENGTH FACTOR FOUND- ATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	`GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	`GRADE A HEAVY`		

LINE	1	POLE NUMBER	3	TYPE	
NOTES					
LOCATION	06239003.0180900				
COMMENTS					
LATITUDE (DMS)	41°13'51.373"N	LONGITUDE (DMS)	122°15'56.301"W	GROUND ELEVATION (FT)	2894.8



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	57.76	WOOD POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+
ELEMENT	54.55	GUY "GUY"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+

WOOD POLE PROPERTIES AND EMBEDMENT								
POLE LABEL	PROPERTY LABEL	STOCK NUMBER	SPECIES	CLASS	LENGTH (FT)	EMBED. (FT)	MODELED GL DIAM. (IN)	GL CIRC. (IN)
POLE	DF-3-45	DF-3-45	DF - DOUGAS FIR	3	45.0	6.5	11.9	37.3

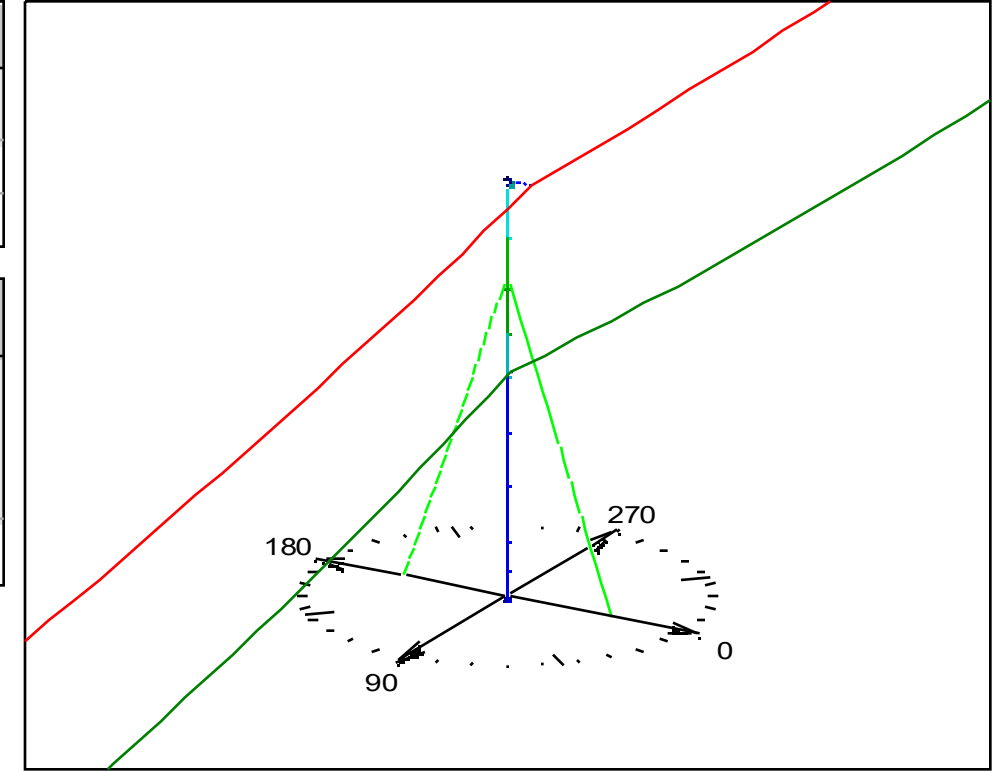
FRAMING LIBRARY			
FRAMING PROPERTY LABEL	STOCK NUMBER	KEYWORDS	INSERTION DISTANCE FROM TIP (FT)
VANG-COMM_SEC_NEUT		VANG-COMM_SEC_NEUT	0.50

SUMMARY OF WOOD POLE USAGES				
WOOD POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	57.76	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	30.9	1502.7

SUMMARY OF TUBULAR DAVIT USAGES				
TUBULAR DAVIT LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
TAN1	30.23	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	38.0	28.3

SUMMARY OF GUY USAGES				
GUY LABEL	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)	UNSTRESSED LENGTH (FT)
GUY	54.55	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	6.2	30.20
GUY2	50.80	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	6.2	30.20

SUMMARY OF MAXIMUM USAGES BY LOAD CASE			
LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	57.76	POLE	WOOD POLE
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	50.80	GUY2	GUY



SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
MC2	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES					
LOAD CASE	FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	4.50	0.11	4.06	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND1	-2.31	0.82	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND2	-0.01	0.00	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	4.35	0.24	5.37	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND1	-0.01	0.00	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND2	-2.15	0.77	0.00	0.00

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED VERTICAL (LBS)	SPAN TRANSVERSE (LBS)	LOADS LONGITUDINAL (LBS)	- FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)
SET #1	0.0	2.4	38.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	279	4628	579	424	-0	1.65	2.21
SET #2	0.0	0.4	20.5	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	279	2206	385	318	-0	1.13	1.34

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED VERTICAL (LBS)	SPAN TRANSVERSE (LBS)	LOADS LONGITUDINAL (LBS)	- FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)
SET #1	0.0	2.4	38.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	279	4628	579	-499	4	1.65	2.21
SET #2	0.0	0.4	20.5	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	279	2206	385	-317	-0	1.13	1.34

WOOD MATERIAL PROPERTIES									
MATERIAL LABEL	MODULUS OF ELASTICITY (KSI)	DESIGN STRESS MOR (KSI)	WEIGHT DENSITY (LBS/FT^3)	ANSI O5.1 STATUS	ALLOWABLE SHEAR STRESS (KSI)	ALLOWABLE COMPRESS. STRESS (KSI)	THROUGH-BORING STRENGTH REDUCTION %	THROUGH-BORING DIST. ABOVE GROUND (FT)	THROUGH-BORING DIST. BELOW GROUND (FT)
DF-DOUGLAS FIR	2380	8	60	INCLUDED	0	0	0	0	0

TUBULAR DAVIT PROPERTIES																
DAVIT PROPERTY LABEL	STOCK NUMBER	STEEL SHAPE	THICKNESS (IN)	BASE DIAMETER OR DEPTH (IN)	TIP DIAMETER OR DEPTH (IN)	TAPER (IN/FT)	DRAG COEF.	MODULUS OF ELASTICITY (KSI)	STRENGTH CHECK TYPE	VERTICAL CAPACITY (LBS)	TENSION CAPACITY (LBS)	COMPRES. CAPACITY (LBS)	LONG. CAPACITY (LBS)	YIELD STRESS (KSI)	WEIGHT DENSITY OVERRIDE (LBS/FT^3)	STEEL SHAPE AT END
BM-24		4F	0.377	4.5	1.5	0	0	25000	NOMINAL	6000	2500	2500	2300	0	0	

CABLE PROPERTIES										
LABEL	STOCK NUMBER	AREA (IN^2)	MODULUS OF ELASTICITY (PSI)	DIAMETER (IN)	UNIT WEIGHT (LBS/FT)	DRAG COEF.	THERMAL EXPANSION COEFF. (/DEG F)	ULTIMATE TENSION (KIPS)	ALLOWABLE % OF ULTIMATE	
5/16" 7 STRAND EHS		0.05946	2.5E+07	0.312	0.205	1	6.4E-06	9	100	

CLAMP PROPERTIES				
LABEL		STOCK NUMBER	HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)
MC-2		MC-2	1.1E+04	0
CMA-10		CMA-1	1.2E+04	0

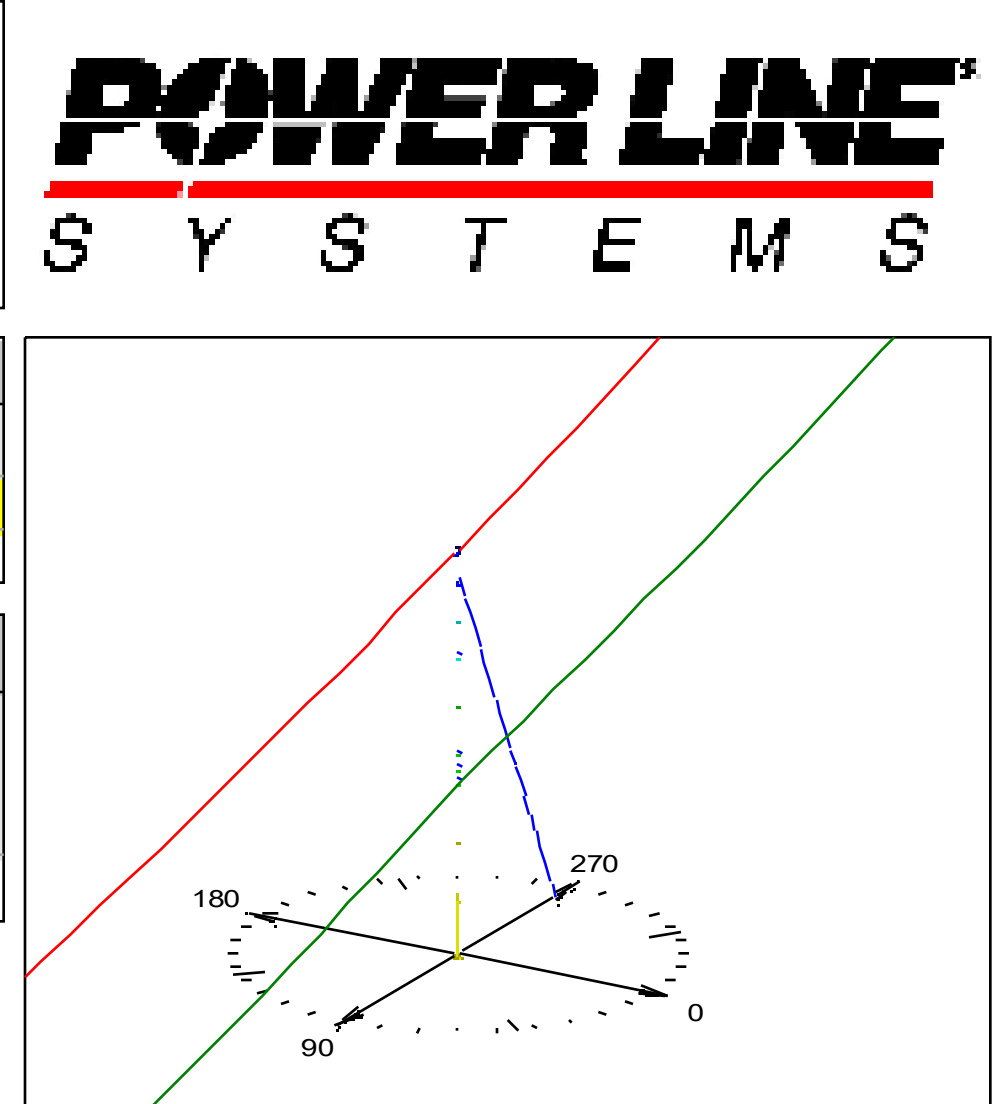
WEATHER CASES														
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR	
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1	

STRUCTURE LOADS CRITERIA															
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON-TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSUL-ATORS	STRENGTH FACTOR HARD-WARE	STRENGTH FACTOR FOUND-ATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	` GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	` GRADE A HEAVY`		

LINE	1	POLE NUMBER	4	TYPE	
NOTES					
LOCATION	06239003.0180901				
COMMENTS					
LATITUDE (DMS)	41°13'50.448"N	LONGITUDE (DMS)	122°15'52.576"W	GROUND ELEVATION (FT)	2929.5



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	93.82	WOOD POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-
ELEMENT	10.96	GUY "F9-G"	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-

WOOD POLE PROPERTIES AND EMBEDMENT								
POLE LABEL	PROPERTY LABEL	STOCK NUMBER	SPECIES	CLASS	LENGTH (FT)	EMBED. (FT)	MODELED GL DIAM. (IN)	GL CIRC. (IN)
POLE	DF-3-40	DF-3-40	DF - DOUGAS FIR	3	40.0	6.0	11.5	36.0

SUMMARY OF WOOD POLE USAGES				
WOOD POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	93.82	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	2.4	1271.6

SUMMARY OF GUY USAGES				
GUY LABEL	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)	UNSTRESSED LENGTH (FT)
F9-G	10.96	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	7.1	34.62

SUMMARY OF MAXIMUM USAGES BY LOAD CASE			
LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	91.93	POLE	WOOD POLE
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	93.82	POLE	WOOD POLE

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES					
LOAD CASE	FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	0.81	0.94	22.55	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND1	-0.42	0.20	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	0.83	0.95	23.01	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND1	-0.44	0.21	0.00	0.00

SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F2-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F2-VANG0	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F3-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F4-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F5-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+														
CIRCUIT LABEL	---AVERAGE--- X Y (FT) (FT)		STRUCTURE ATTACHMENT HEIGHT (FT)	ENTRANCE/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE----- LENGTH (FT)	HORIZONTAL TENSION (LBS)	-----TOTAL----- FACTORED SPAN LOADS----- VERTICAL (LBS) TRANSVERSE (LBS) LONGITUDINAL (LBS)			-----AVERAGE----- -FACTORED UNIT LOADS- HORIZONTAL (LBS/FT) VERTICAL (LBS/FT)
SET #4	0.0	0.4	14.6	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	276	2182	-161	321	50	1.13 1.34
SET #21	0.4	0.0	33.5	1	1	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	299	4628	800	285	4625	1.65 2.21
SET #31	-0.4	-0.0	33.5	1	1	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	253	4472	-1254	177	-4474	1.65 2.21

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-																
CIRCUIT LABEL	---AVERAGE---			ENTRANCE/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----		
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	VERTICAL (LBS)	FACTORED SPAN LOADS- TRANSVERSE (LBS)	LONGITUDINAL (LBS)	-FACTORED UNIT LOADS- HORIZONTAL (LBS/FT)	VERTICAL (LBS/FT)	
SET #4	0.0	0.4	14.6	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	276	2182	-161	-322	50	1.13	1.34	
SET #21	0.4	0.0	33.5	1	1	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	299	4628	800	-211	4629	1.65	2.21	
SET #31	-0.4	-0.0	33.5	1	1	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	253	4472	-1254	-261	-4470	1.65	2.21	

WOOD MATERIAL PROPERTIES									
MATERIAL LABEL	MODULUS OF ELASTICITY (KSI)	DESIGN STRESS MOR (KSI)	WEIGHT DENSITY (LBS/FT^3)	ANSI O5.1 STATUS	ALLOWABLE SHEAR STRESS (KSI)	ALLOWABLE COMPRESS. STRESS (KSI)	THROUGH-BORING STRENGTH REDUCTION %	THROUGH-BORING DIST. ABOVE GROUND (FT)	THROUGH-BORING DIST. BELOW GROUND (FT)
DF-DOUGLAS FIR	2380	8	60	INCLUDED	0	0	0	0	0

CABLE PROPERTIES										
LABEL	STOCK NUMBER	AREA (IN^2)	MODULUS OF ELASTICITY (PSI)	DIAMETER (IN)	UNIT WEIGHT (LBS/FT)	DRAW COEF.	THERMAL EXPANSION COEFF. (/DEG F)	ULTIMATE TENSION (KIPS)	ALLOWABLE % OF ULTIMATE	
5/16" 7 STRAND EHS		0.05946	2.5E+07	0.312	0.205	1	6.4E-06	9	100	

CLAMP PROPERTIES			
LABEL	STOCK NUMBER	HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)
CMA-10	CMA-1	1.2E+04	0
MG-41280	MG-4128	2.3E+04	0

WEATHER CASES													
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1

STRUCTURE LOADS CRITERIA																
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)	
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00	
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00	

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON- TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSUL- ATORS	STRENGTH FACTOR HARD- WARE	STRENGTH FACTOR FOUND- ATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	`GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	`GRADE A HEAVY`		

LINE	1	POLE NUMBER	5	TYPE	
NOTES					
LOCATION	06239003.0180800				
COMMENTS					
LATITUDE (DMS)	41°13'49.666"N	LONGITUDE (DMS)	122°15'49.424"W	GROUND ELEVATION (FT)	3017.0



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	70.08	WOOD POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+
ELEMENT	54.54	GUY "GUY2"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+

WOOD POLE PROPERTIES AND EMBEDMENT								
POLE LABEL	PROPERTY LABEL	STOCK NUMBER	SPECIES	CLASS	LENGTH (FT)	EMBED. (FT)	MODELED GL DIAM. (IN)	GL CIRC. (IN)
POLE	DF-4-40	DF-4-40	DF - DOUGAS FIR	4	40.0	6.0	10.7	33.5

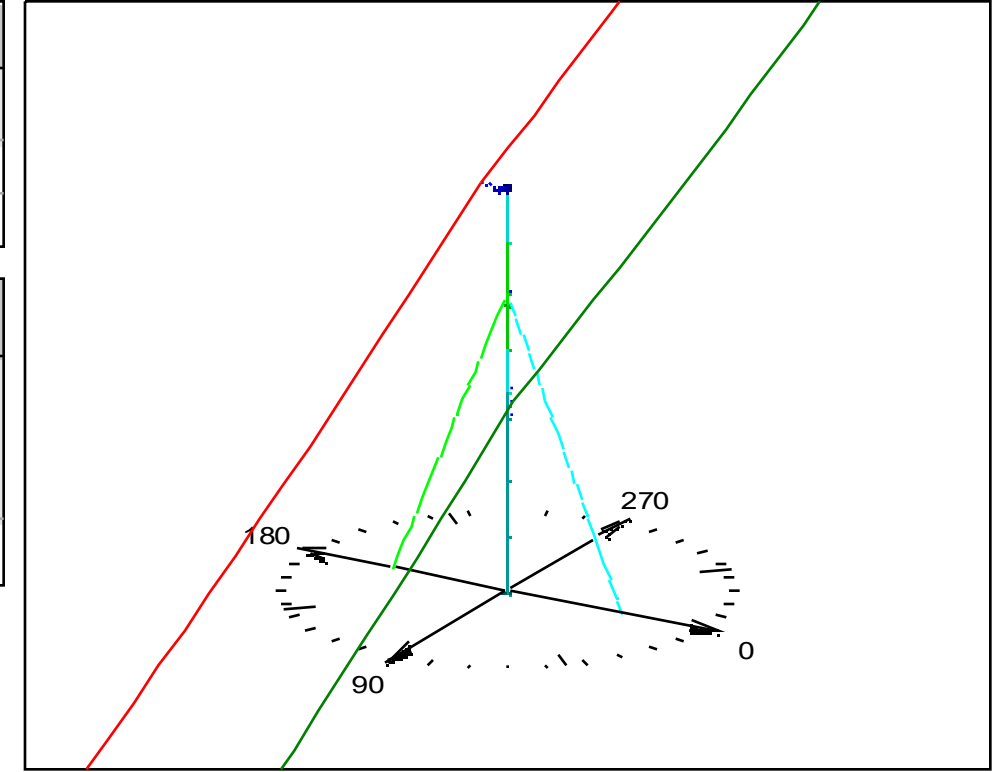
FRAMING LIBRARY				
FRAMING PROPERTY LABEL	STOCK NUMBER	KEYWORDS	INSERTION DISTANCE FROM TIP (FT)	
AC1244-02		AC1244-02, 03,04 TANGENT 25,35,46KV	0.50	
VANG-COMM_SEC_NEUT		VANG-COMM_SEC_NEUT	0.50	

SUMMARY OF WOOD POLE USAGES				
WOOD POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	70.08	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	24.5	1090.1

SUMMARY OF TUBULAR DAVIT USAGES				
TUBULAR DAVIT LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
SC	13.56	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	33.5	28.3

SUMMARY OF GUY USAGES				
GUY LABEL	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)	UNSTRESSED LENGTH (FT)
GUY1	34.19	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	5.3	26.00
GUY2	54.54	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	5.3	26.00

SUMMARY OF MAXIMUM USAGES BY LOAD CASE			
LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	70.08	POLE	WOOD POLE
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	39.39	POLE	WOOD POLE



SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
SC	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F3-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F4-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F5-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES					
LOAD CASE	FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	3.08	0.16	4.91	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND1	-0.01	0.00	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND2	-2.26	0.95	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	2.24	0.20	4.92	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND1	-1.41	0.60	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND2	-0.01	0.00	0.00	0.00

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+																
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----		
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED VERTICAL (LBS)	SPAN TRANSVERSE (LBS)	LOADS LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)	
SET #1	0.0	-2.4	33.5	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	237	4423	-81	537	96	1.65	2.21	
SET #4	0.0	0.4	15.7	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	237	2126	8	326	61	1.13	1.34	

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-																
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----		
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED VERTICAL (LBS)	SPAN TRANSVERSE (LBS)	LOADS LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)	
SET #1	0.0	-2.4	33.5	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	237	4423	-81	-311	100	1.65	2.21	
SET #4	0.0	0.4	15.7	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	237	2126	8	-259	61	1.13	1.34	

WOOD MATERIAL PROPERTIES									
MATERIAL LABEL	MODULUS OF ELASTICITY (KSI)	DESIGN STRESS MOR (KSI)	WEIGHT DENSITY (LBS/FT^3)	ANSI O5.1 STATUS	ALLOWABLE SHEAR STRESS (KSI)	ALLOWABLE COMPRESS. STRESS (KSI)	THROUGH-BORING STRENGTH REDUCTION %	THROUGH-BORING DIST. ABOVE GROUND (FT)	THROUGH-BORING DIST. BELOW GROUND (FT)
DF-DOUGLAS FIR	2380	8	60	INCLUDED	0	0	0	0	0

TUBULAR DAVIT PROPERTIES																
DAVIT PROPERTY LABEL	STOCK NUMBER	STEEL SHAPE	THICKNESS (IN)	BASE DIAMETER OR DEPTH (IN)	TIP DIAMETER OR DEPTH (IN)	TAPER (IN/FT)	DRAG COEF.	MODULUS OF ELASTICITY (KSI)	STRENGTH CHECK TYPE	VERTICAL CAPACITY (LBS)	TENSION CAPACITY (LBS)	COMPRES. CAPACITY (LBS)	LONG. CAPACITY (LBS)	YIELD STRESS (KSI)	WEIGHT DENSITY OVERRIDE (LBS/FT^3)	STEEL SHAPE AT END
BM-24A	BM-24	4F	0.377	4.5	1.5	0	0	25000	NOMINAL	6000	6000	6000	2300	0	0	

CABLE PROPERTIES									
LABEL	STOCK NUMBER	AREA (IN^2)	MODULUS OF ELASTICITY (PSI)	DIAMETER (IN)	UNIT WEIGHT (LBS/FT)	DRAG COEF.	THERMAL EXPANSION COEFF. (/DEG F)	ULTIMATE TENSION (KIPS)	ALLOWABLE % OF ULTIMATE
5/16" 7 STRAND EHS		0.05946	2.5E+07	0.312	0.205	1	6.4E-06	9	100

CLAMP PROPERTIES				
LABEL	STOCK NUMBER	HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)	
MC-22	MC-2	1.1E+04	0	
CMA-10	CMA-1	1.2E+04	0	

WEATHER CASES													
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1

STRUCTURE LOADS CRITERIA															
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON-TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSULATORS	STRENGTH FACTOR HARDWARE	STRENGTH FACTOR FOUNDATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	` GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	` GRADE A HEAVY`		

LINE	1	POLE NUMBER	6	TYPE	
NOTES					
LOCATION	06239003.0181803				
COMMENTS					
LATITUDE (DMS)	41°13'48.951"N	LONGITUDE (DMS)	122°15'46.689"W	GROUND ELEVATION (FT)	3128.1



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	76.20	WOOD POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+
ELEMENT	37.30	GUY "GUY"	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-

WOOD POLE PROPERTIES AND EMBEDMENT								
POLE LABEL	PROPERTY LABEL	STOCK NUMBER	SPECIES	CLASS	LENGTH (FT)	EMBED. (FT)	MODELED GL DIAM. (IN)	GL CIRC. (IN)
POLE	DF-5-40	DF-5-40	DF - DOUGAS FIR	5	40.0	6.0	9.9	31.0

FRAMING LIBRARY			
FRAMING PROPERTY LABEL	STOCK NUMBER	KEYWORDS	INSERTION DISTANCE FROM TIP (FT)
VANG-COMM_SEC_NEUT		VANG-COMM_SEC_NEUT	0.50

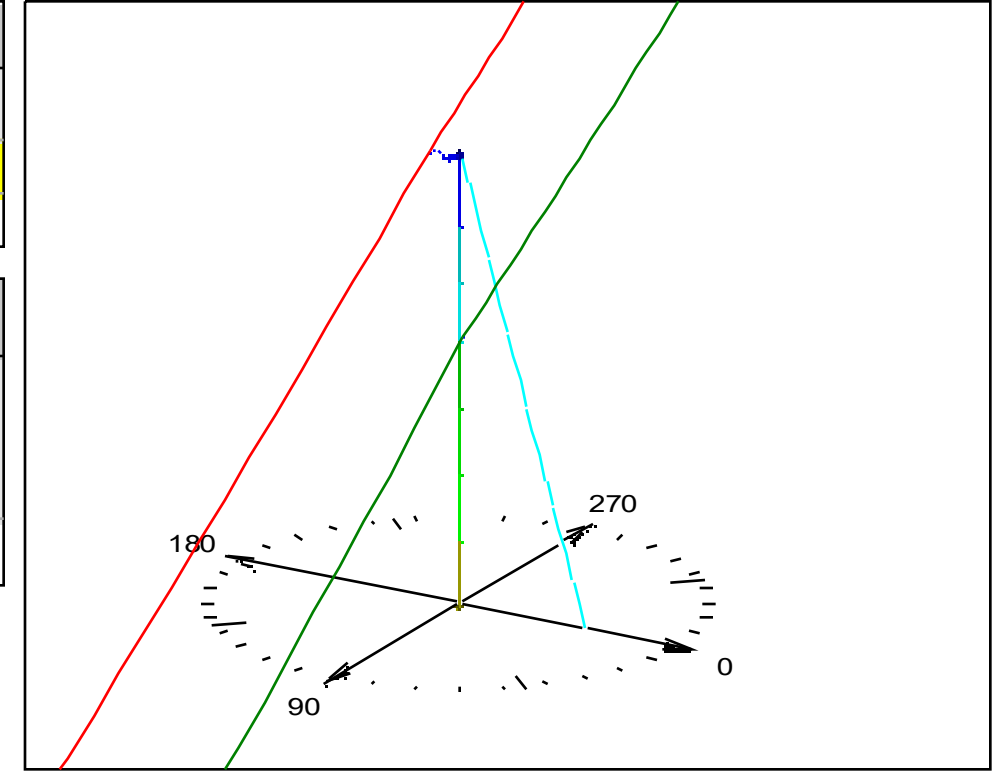
SUMMARY OF WOOD POLE USAGES				
WOOD POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	76.20	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	2.5	922.7

SUMMARY OF TUBULAR DAVIT USAGES				
TUBULAR DAVIT LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
TAN1	23.56	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	33.5	28.3

SUMMARY OF GUY USAGES				
GUY LABEL	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)	UNSTRESSED LENGTH (FT)
GUY	37.30	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	7.2	34.96

SUMMARY OF MAXIMUM USAGES BY LOAD CASE			
LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	76.20	POLE	WOOD POLE
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	37.30	GUY	GUY

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+														
CIRCUIT LABEL	---AVERAGE--- STRUCTURE X Y (FT) (FT)		ATTACHMENT HEIGHT (FT)	WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE----- LENGTH (FT)	HORIZONTAL TENSION (LBS)	-----TOTAL----- -FACTORED SPAN LOADS- VERTICAL (LBS) TRANSVERSE (LBS) LONGITUDINAL (LBS)			-----AVERAGE----- -FACTORED UNIT LOADS- HORIZONTAL (LBS/FT) VERTICAL (LBS/FT)
SET #1	-0.0	-2.4	33.5	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	158	4344	85	203	64	1.65 2.21
SET #2	0.0	0.3	20.0	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	158	2092	215	119	8	1.13 1.34



SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
MC2	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES						
LOAD CASE	FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %	
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	1.06	0.47	11.88	0.00	
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND1	-0.01	0.00	0.00	0.00	
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	2.65	0.33	5.19	0.00	
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND1	-1.60	0.49	0.00	0.00	

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-																
CIRCUIT LABEL	---AVERAGE---			WIRE ATTACHMENT PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----		
	STRUCTURE X (FT)	STRUCTURE Y (FT)	ATTACHMENT HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED VERTICAL (LBS)	FACTORED TRANSVERSE (LBS)	FACTORED LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	-FACTORED VERTICAL (LBS/FT)	
SET #1	-0.0	-2.4	33.5	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	158	4344	85	-389	55	1.65	2.21	
SET #2	0.0	0.3	20.0	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	158	2092	215	-288	4	1.13	1.34	

WOOD MATERIAL PROPERTIES									
MATERIAL LABEL	MODULUS OF ELASTICITY (KSI)	DESIGN STRESS MOR (KSI)	WEIGHT DENSITY (LBS/FT^3)	ANSI O5.1 STATUS	ALLOWABLE SHEAR STRESS (KSI)	ALLOWABLE COMPRESS. STRESS (KSI)	THROUGH-BORING STRENGTH REDUCTION %	THROUGH-BORING DIST. ABOVE GROUND (FT)	THROUGH-BORING DIST. BELOW GROUND (FT)
DF-DOUGLAS FIR	2380	8	60	INCLUDED	0	0	0	0	0

TUBULAR DAVIT PROPERTIES																
DAVIT PROPERTY LABEL	STOCK NUMBER	STEEL SHAPE	THICKNESS (IN)	BASE DIAMETER OR DEPTH (IN)	TIP DIAMETER OR DEPTH (IN)	TAPER (IN/FT)	DRAG COEF.	MODULUS OF ELASTICITY (KSI)	STRENGTH CHECK TYPE	VERTICAL CAPACITY (LBS)	TENSION CAPACITY (LBS)	COMPRES. CAPACITY (LBS)	LONG. CAPACITY (LBS)	YIELD STRESS (KSI)	WEIGHT DENSITY OVERRIDE (LBS/FT^3)	STEEL SHAPE AT END
BM-24		4F	0.377	4.5	1.5	0	0	25000	NOMINAL	6000	2500	2500	2300	0	0	

CABLE PROPERTIES									
LABEL	STOCK NUMBER	AREA (IN^2)	MODULUS OF ELASTICITY (PSI)	DIAMETER (IN)	UNIT WEIGHT (LBS/FT)	DRAG COEF.	THERMAL EXPANSION COEFF. (/DEG F)	ULTIMATE TENSION (KIPS)	ALLOWABLE % OF ULTIMATE
5/16" 7 STRAND EHS		0.05946	2.5E+07	0.312	0.205	1	6.4E-06	9	100

CLAMP PROPERTIES				
LABEL	STOCK NUMBER	HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)	
MC-2	MC-2	1.1E+04	0	
CMA-10	CMA-1	1.2E+04	0	

WEATHER CASES														
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR	
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1	

STRUCTURE LOADS CRITERIA																
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)	
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00	
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00	

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON- TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSUL- ATORS	STRENGTH FACTOR HARD- WARE	STRENGTH FACTOR FOUND- ATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

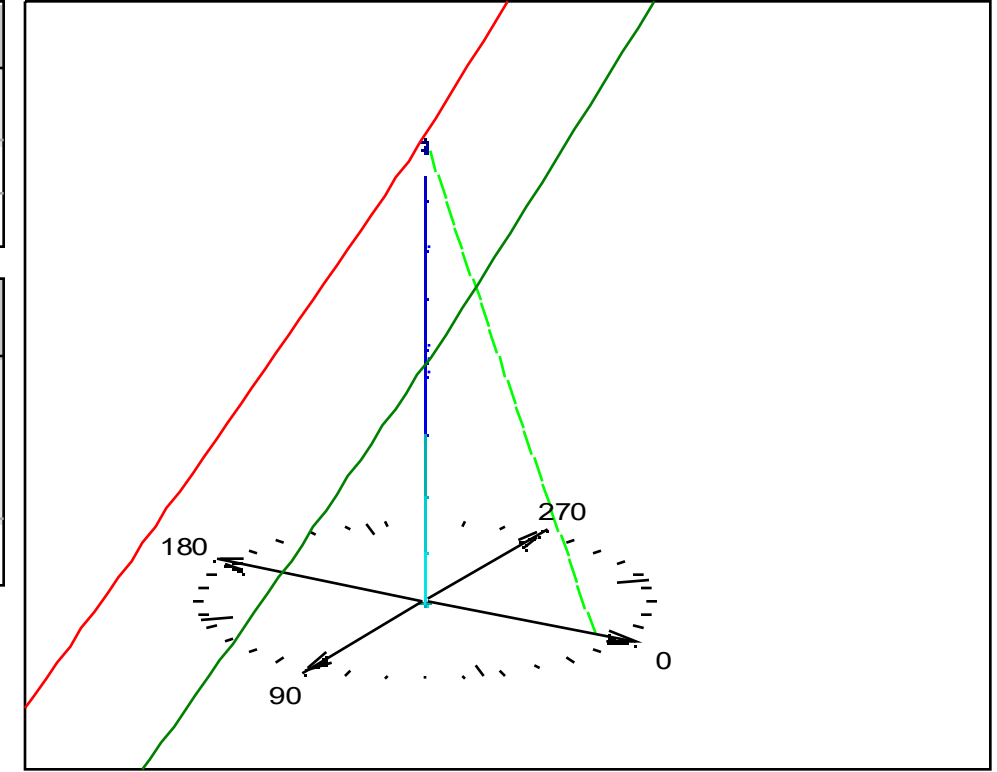
CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	`GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	`GRADE A HEAVY`		

LINE	1	POLE NUMBER	7	TYPE	
NOTES					
LOCATION	06239003.0181802				
COMMENTS					
LATITUDE (DMS)	41°13'48.679"N	LONGITUDE (DMS)	122°15'45.492"W	GROUND ELEVATION (FT)	3179.2



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	45.51	WOOD POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-
ELEMENT	72.74	GUY "GUY"	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-

WOOD POLE PROPERTIES AND EMBEDMENT								
POLE LABEL	PROPERTY LABEL	STOCK NUMBER	SPECIES	CLASS	LENGTH (FT)	EMBED. (FT)	MODELED GL DIAM. (IN)	GL CIRC. (IN)
POLE	DF-3-45	DF-3-45	DF - DOUGAS FIR	3	45.0	6.5	11.9	37.3



FRAMING LIBRARY			
FRAMING PROPERTY LABEL	STOCK NUMBER	KEYWORDS	INSERTION DISTANCE FROM TIP (FT)
AC1341-01-02-03		AC1341-01-02-03,SA,SMALL ANGLE	0.50
VANG-COMM_SEC_NEUT		VANG-COMM_SEC_NEUT	0.50

SUMMARY OF WOOD POLE USAGES				
WOOD POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	45.51	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	2.3	1502.7

SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
SC	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F3-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F4-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F5-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

SUMMARY OF GUY USAGES				
GUY LABEL	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)	UNSTRESSED LENGTH (FT)
GUY	72.74	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	8.3	40.62

SUMMARY OF MAXIMUM USAGES BY LOAD CASE			
LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	35.83	GUY	GUY
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	72.74	GUY	GUY

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES					
LOAD CASE	FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	3.69	0.13	5.08	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND1	-1.49	0.60	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	5.23	0.64	11.84	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND1	-3.03	1.23	0.00	0.00

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+																
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----		
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	TRANSVERSE (LBS)	LOADS- LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)	
SET #1	0.0	-0.4	38.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	130	4351	716	-647	-87	1.65	2.21	
SET #4	0.0	0.4	20.2	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	130	2100	293	-224	-25	1.13	1.34	

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-																
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----		
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	TRANSVERSE (LBS)	LOADS- LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)	
SET #1	0.0	-0.4	38.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	130	4351	716	-1125	-80	1.65	2.21	
SET #4	0.0	0.4	20.2	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	130	2100	293	-550	-17	1.13	1.34	

WOOD MATERIAL PROPERTIES									
MATERIAL LABEL	MODULUS OF ELASTICITY (KSI)	DESIGN STRESS MOR (KSI)	WEIGHT DENSITY (LBS/FT^3)	ANSI O5.1 STATUS	ALLOWABLE SHEAR STRESS (KSI)	ALLOWABLE COMPRESS. STRESS (KSI)	THROUGH-BORING STRENGTH REDUCTION %	THROUGH-BORING DIST. ABOVE GROUND (FT)	THROUGH-BORING DIST. BELOW GROUND (FT)
DF-DOUGLAS FIR	2380	8	60	INCLUDED	0	0	0	0	0

CABLE PROPERTIES									
LABEL	STOCK NUMBER	AREA (IN^2)	MODULUS OF ELASTICITY (PSI)	DIAMETER (IN)	UNIT WEIGHT (LBS/FT)	DRAG COEF.	THERMAL EXPANSION COEFF. (/DEG F)	ULTIMATE TENSION (KIPS)	ALLOWABLE % OF ULTIMATE
5/16" 7 STRAND EHS		0.05946	2.5E+07	0.312	0.205	1	6.4E-06	9	100

CLAMP PROPERTIES				
LABEL	STOCK NUMBER	HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)	
CMA-10	CMA-1	1.2E+04	0	

WEATHER CASES													
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1

STRUCTURE LOADS CRITERIA															
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON- TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSUL- ATORS	STRENGTH FACTOR HARD- WARE	STRENGTH FACTOR FOUND- ATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	`GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	`GRADE A HEAVY`		

LINE	1	POLE NUMBER	8	TYPE	
NOTES					
LOCATION	06239003.0181801				
COMMENTS					
LATITUDE (DMS)	41°13'48.504"N	LONGITUDE (DMS)	122°15'43.357"W	GROUND ELEVATION (FT)	3258.3



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	39.26	WOOD POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-
ELEMENT	50.54	GUY "G"	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-

WOOD POLE PROPERTIES AND EMBEDMENT								
POLE LABEL	PROPERTY LABEL	STOCK NUMBER	SPECIES	CLASS	LENGTH (FT)	EMBED. (FT)	MODELED GL DIAM. (IN)	GL CIRC. (IN)
POLE	DF-3-45	DF-3-45	DF - DOUGAS FIR	3	45.0	6.5	11.9	37.3

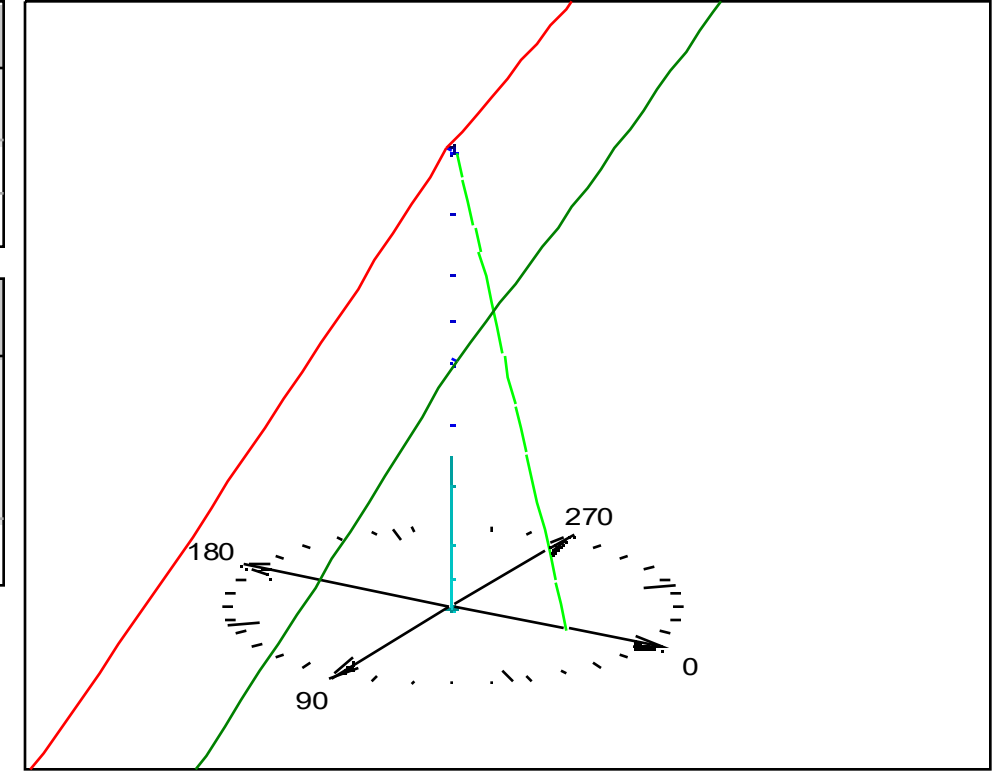
SUMMARY OF WOOD POLE USAGES				
WOOD POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	39.26	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	1.4	1502.7

SUMMARY OF GUY USAGES				
GUY LABEL	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)	UNSTRESSED LENGTH (FT)
G	50.54	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	8.1	39.29

SUMMARY OF MAXIMUM USAGES BY LOAD CASE			
LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	19.42	POLE	WOOD POLE
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	50.54	G	GUY

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES					
LOAD CASE	FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	2.48	0.22	5.03	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND1	-0.03	0.01	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	4.64	0.52	10.20	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND1	-2.19	0.59	0.00	0.00

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+														
CIRCUIT LABEL	---AVERAGE--- STRUCTURE ATTACHMENT X Y (FT) (FT)		HEIGHT (FT)	ENTRANCE PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE----- LENGTH (FT)	HORIZONTAL TENSION (LBS)	-----TOTAL----- -FACTORED SPAN LOADS- VERTICAL (LBS) TRANSVERSE (LBS) LONGITUDINAL (LBS)			-----AVERAGE----- -FACTORED UNIT LOADS- HORIZONTAL (LBS/FT) VERTICAL (LBS/FT)
SET #1	0.0	0.4	20.5	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	150	2123	351	7	-23	1.13 1.34
SET #21	-0.0	-0.4	38.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	150	4429	909	-10	-80	1.65 2.21



SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
SC	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-																
CIRCUIT LABEL	---AVERAGE---			WIRE ATTACHMENT PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----		
	STRUCTURE X (FT)	STRUCTURE Y (FT)	ATTACHMENT HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED VERTICAL (LBS)	FACTORED TRANSVERSE (LBS)	FACTORED LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	-FACTORED VERTICAL (LBS/FT)	
SET #1	0.0	0.4	20.5	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	150	2123	351	-365	-25	1.13	1.34	
SET #21	-0.0	-0.4	38.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	150	4429	909	-546	-88	1.65	2.21	

WOOD MATERIAL PROPERTIES									
MATERIAL LABEL	MODULUS OF ELASTICITY (KSI)	DESIGN STRESS MOR (KSI)	WEIGHT DENSITY (LBS/FT^3)	ANSI O5.1 STATUS	ALLOWABLE SHEAR STRESS (KSI)	ALLOWABLE COMPRESS. STRESS (KSI)	THROUGH-BORING STRENGTH REDUCTION %	THROUGH-BORING DIST. ABOVE GROUND (FT)	THROUGH-BORING DIST. BELOW GROUND (FT)
DF-DOUGLAS FIR	2380	8	60	INCLUDED	0	0	0	0	0

CABLE PROPERTIES									
LABEL	STOCK NUMBER	AREA (IN^2)	MODULUS OF ELASTICITY (PSI)	DIAMETER (IN)	UNIT WEIGHT (LBS/FT)	DRAG COEF.	THERMAL EXPANSION COEFF. (/DEG F)	ULTIMATE TENSION (KIPS)	ALLOWABLE % OF ULTIMATE
5/16" 7 STRAND EHS		0.05946	2.5E+07	0.312	0.205	1	6.4E-06	9	100

CLAMP PROPERTIES				
LABEL	STOCK NUMBER	HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)	
CMA-10	CMA-1	1.2E+04	0	
PSAC	PSAC	2E+04	0	

WEATHER CASES													
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1

STRUCTURE LOADS CRITERIA															
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON- TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSUL- ATORS	STRENGTH FACTOR HARD- WARE	STRENGTH FACTOR FOUND- ATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

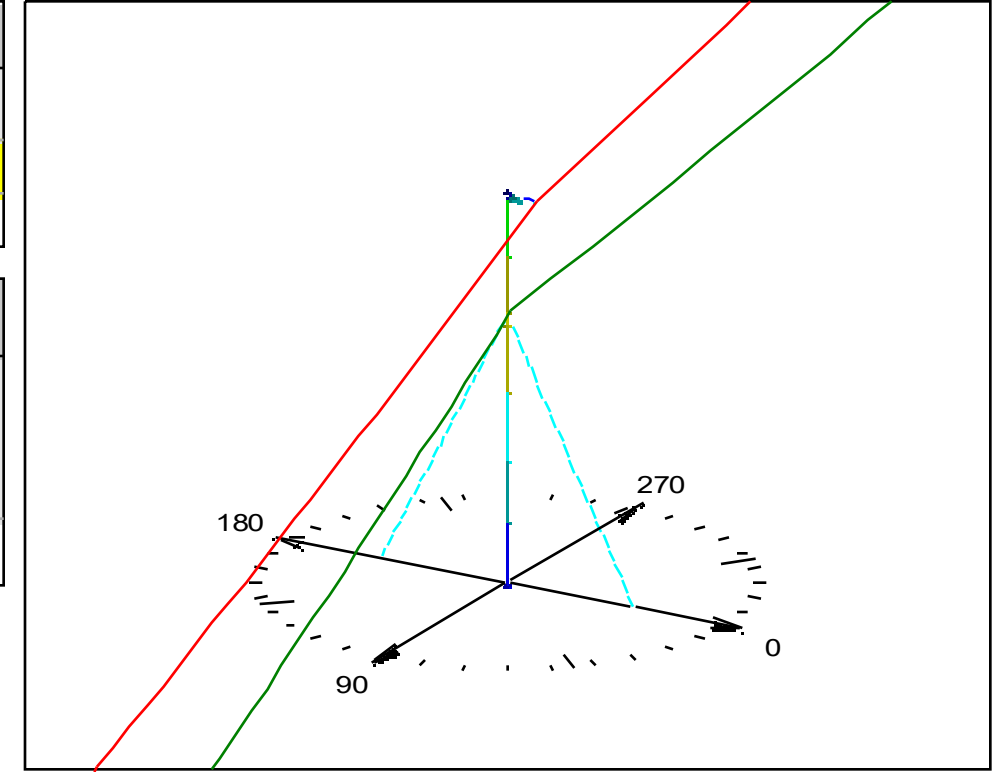
CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	`GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	`GRADE A HEAVY`		

LINE	1	POLE NUMBER	9	TYPE	
NOTES					
LOCATION	06239003.0181800				
COMMENTS					
LATITUDE (DMS)	41°13'48.471"N	LONGITUDE (DMS)	122°15'41.585"W	GROUND ELEVATION (FT)	3314.7



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	86.94	WOOD POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+
ELEMENT	43.91	GUY "GUY1"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+

WOOD POLE PROPERTIES AND EMBEDMENT								
POLE LABEL	PROPERTY LABEL	STOCK NUMBER	SPECIES	CLASS	LENGTH (FT)	EMBED. (FT)	MODELED GL DIAM. (IN)	GL CIRC. (IN)
POLE	DF-5-35	DF-5-35	DF - DOUGAS FIR	5	35.0	5.5	9.3	29.2



FRAMING LIBRARY			
FRAMING PROPERTY LABEL	STOCK NUMBER	KEYWORDS	INSERTION DISTANCE FROM TIP (FT)
VANG-COMM_SEC_NEUT		VANG-COMM_SEC_NEUT	0.50

SUMMARY OF WOOD POLE USAGES				
WOOD POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	86.94	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	20.0	741.4

SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
MC2	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

SUMMARY OF TUBULAR DAVIT USAGES				
TUBULAR DAVIT LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
TAN1	28.91	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	29.0	28.3

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES						
LOAD CASE		FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %
GO95	HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	3.74	0.25	2.13	0.00
GO95	HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND1	-1.75	0.91	0.00	0.00
GO95	HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND2	-0.00	0.00	0.00	0.00
GO95	HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	3.72	0.10	1.97	0.00
GO95	HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND1	-0.00	0.00	0.00	0.00
GO95	HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND2	-1.73	0.89	0.00	0.00

SUMMARY OF GUY USAGES				
GUY LABEL	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)	UNSTRESSED LENGTH (FT)
GUY1	43.91	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	4.5	21.91
GUY2	43.32	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	4.5	21.91

SUMMARY OF MAXIMUM USAGES BY LOAD CASE			
LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	86.94	POLE	WOOD POLE
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	53.29	POLE	WOOD POLE

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED VERTICAL (LBS)	SPAN TRANSVERSE (LBS)	LOADS LONGITUDINAL (LBS)	- FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)
SET #1	0.0	2.4	29.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	214	4484	751	259	-31	1.65	2.21
SET #2	0.0	0.3	20.5	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	214	2158	623	282	-45	1.13	1.34

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED VERTICAL (LBS)	SPAN TRANSVERSE (LBS)	LOADS LONGITUDINAL (LBS)	- FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)
SET #1	0.0	2.4	29.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	214	4484	751	-477	-29	1.65	2.21
SET #2	0.0	0.3	20.5	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	214	2158	623	-224	-46	1.13	1.34

WOOD MATERIAL PROPERTIES									
MATERIAL LABEL	MODULUS OF ELASTICITY (KSI)	DESIGN STRESS MOR (KSI)	WEIGHT DENSITY (LBS/FT^3)	ANSI O5.1 STATUS	ALLOWABLE SHEAR STRESS (KSI)	ALLOWABLE COMPRESS. STRESS (KSI)	THROUGH-BORING STRENGTH REDUCTION %	THROUGH-BORING DIST. ABOVE GROUND (FT)	THROUGH-BORING DIST. BELOW GROUND (FT)
DF-DOUGLAS FIR	2380	8	60	INCLUDED	0	0	0	0	0

TUBULAR DAVIT PROPERTIES																
DAVIT PROPERTY LABEL	STOCK NUMBER	STEEL SHAPE	THICKNESS (IN)	BASE DIAMETER OR DEPTH (IN)	TIP DIAMETER OR DEPTH (IN)	TAPER (IN/FT)	DRAG COEF.	MODULUS OF ELASTICITY (KSI)	STRENGTH CHECK TYPE	VERTICAL CAPACITY (LBS)	TENSION CAPACITY (LBS)	COMPRES. CAPACITY (LBS)	LONG. CAPACITY (LBS)	YIELD STRESS (KSI)	WEIGHT DENSITY OVERRIDE (LBS/FT^3)	STEEL SHAPE AT END
BM-24		4F	0.377	4.5	1.5	0	0	25000	NOMINAL	6000	2500	2500	2300	0	0	

CABLE PROPERTIES									
LABEL	STOCK NUMBER	AREA (IN^2)	MODULUS OF ELASTICITY (PSI)	DIAMETER (IN)	UNIT WEIGHT (LBS/FT)	DRAG COEF.	THERMAL EXPANSION COEFF. (/DEG F)	ULTIMATE TENSION (KIPS)	ALLOWABLE % OF ULTIMATE
5/16" 7 STRAND EHS		0.05946	2.5E+07	0.312	0.205	1	6.4E-06	9	100

CLAMP PROPERTIES				
LABEL		STOCK NUMBER	HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)
MC-2		MC-2	1.1E+04	0
CMA-10		CMA-1	1.2E+04	0

WEATHER CASES													
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1

STRUCTURE LOADS CRITERIA															
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON-TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSULATORS	STRENGTH FACTOR HARDWARE	STRENGTH FACTOR FOUNDATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	` GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	` GRADE A HEAVY`		

LINE	1	POLE NUMBER	10	TYPE	
NOTES					
LOCATION	06239003.0182802				
COMMENTS					
LATITUDE (DMS)	41°13'48.364"N	LONGITUDE (DMS)	122°15'37.753"W	GROUND ELEVATION (FT)	3391.1



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	45.42	WOOD POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-
ELEMENT	51.66	GUY "GUY2"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+

WOOD POLE PROPERTIES AND EMBEDMENT								
POLE LABEL	PROPERTY LABEL	STOCK NUMBER	SPECIES	CLASS	LENGTH (FT)	EMBED. (FT)	MODELED GL DIAM. (IN)	GL CIRC. (IN)
POLE	DF-3-45	DF-3-45	DF - DOUGAS FIR	3	45.0	6.5	11.9	37.3

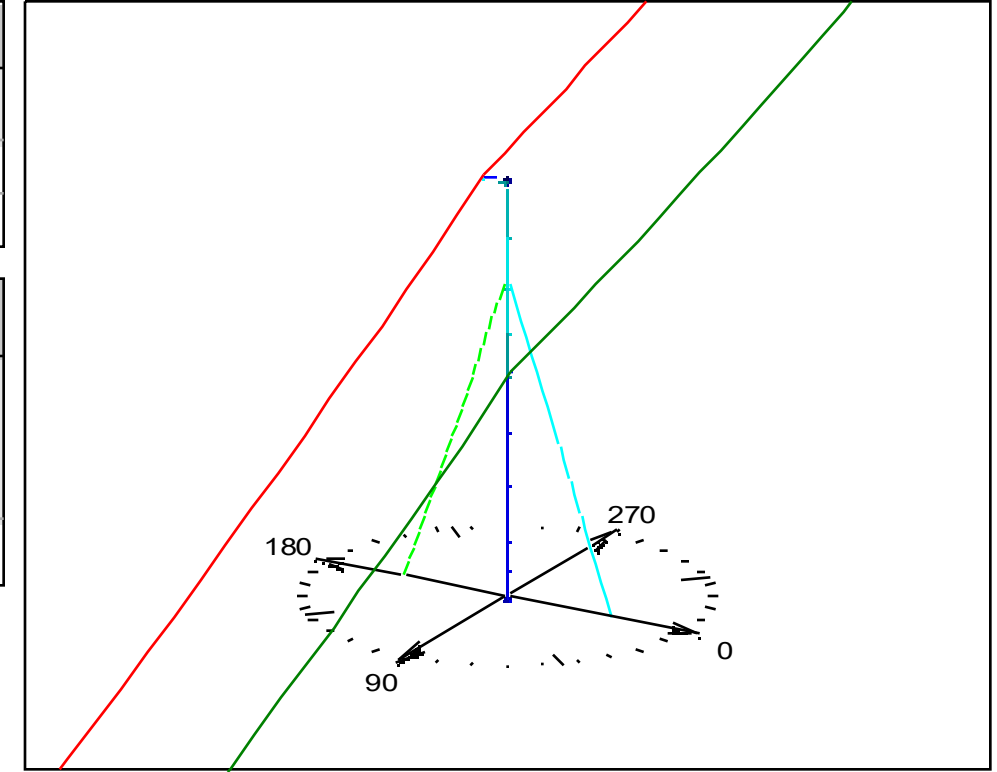
FRAMING LIBRARY			
FRAMING PROPERTY LABEL	STOCK NUMBER	KEYWORDS	INSERTION DISTANCE FROM TIP (FT)
VANG-COMM_SEC_NEUT		VANG-COMM_SEC_NEUT	0.50

SUMMARY OF WOOD POLE USAGES				
WOOD POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	45.42	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	30.9	1502.7

SUMMARY OF TUBULAR DAVIT USAGES				
TUBULAR DAVIT LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
TAN1	29.93	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	38.0	28.3

SUMMARY OF GUY USAGES				
GUY LABEL	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)	UNSTRESSED LENGTH (FT)
GUY	45.66	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	6.2	30.20
GUY2	51.66	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	6.2	30.20

SUMMARY OF MAXIMUM USAGES BY LOAD CASE			
LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	51.66	GUY2	GUY
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	45.66	GUY	GUY



SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
MC2	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES					
LOAD CASE	FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	3.93	0.20	5.07	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND1	-0.01	0.00	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND2	-2.18	0.78	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	3.67	0.16	4.21	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND1	-1.93	0.69	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND2	-0.01	0.00	0.00	0.00

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED VERTICAL (LBS)	SPAN TRANSVERSE (LBS)	LOADS LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)
SET #1	-0.0	-2.4	38.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	245	4488	368	494	18	1.65	2.21
SET #2	0.0	0.4	20.5	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	245	2167	142	290	26	1.13	1.34

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED VERTICAL (LBS)	SPAN TRANSVERSE (LBS)	LOADS LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)
SET #1	-0.0	-2.4	38.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	245	4488	368	-353	26	1.65	2.21
SET #2	0.0	0.4	20.5	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	245	2167	142	-291	26	1.13	1.34

WOOD MATERIAL PROPERTIES									
MATERIAL LABEL	MODULUS OF ELASTICITY (KSI)	DESIGN STRESS MOR (KSI)	WEIGHT DENSITY (LBS/FT^3)	ANSI O5.1 STATUS	ALLOWABLE SHEAR STRESS (KSI)	ALLOWABLE COMPRESS. STRESS (KSI)	THROUGH-BORING STRENGTH REDUCTION %	THROUGH-BORING DIST. ABOVE GROUND (FT)	THROUGH-BORING DIST. BELOW GROUND (FT)
DF-DOUGLAS FIR	2380	8	60	INCLUDED	0	0	0	0	0

TUBULAR DAVIT PROPERTIES																
DAVIT PROPERTY LABEL	STOCK NUMBER	STEEL SHAPE	THICKNESS (IN)	BASE DIAMETER OR DEPTH (IN)	TIP DIAMETER OR DEPTH (IN)	TAPER (IN/FT)	DRAG COEF.	MODULUS OF ELASTICITY (KSI)	STRENGTH CHECK TYPE	VERTICAL CAPACITY (LBS)	TENSION CAPACITY (LBS)	COMPRES. CAPACITY (LBS)	LONG. CAPACITY (LBS)	YIELD STRESS (KSI)	WEIGHT DENSITY OVERRIDE (LBS/FT^3)	STEEL SHAPE AT END
BM-24		4F	0.377	4.5	1.5	0	0	25000	NOMINAL	6000	2500	2500	2300	0	0	

CABLE PROPERTIES										
LABEL	STOCK NUMBER	AREA (IN^2)	MODULUS OF ELASTICITY (PSI)	DIAMETER (IN)	UNIT WEIGHT (LBS/FT)	DRAG COEF.	THERMAL EXPANSION COEFF. (/DEG F)	ULTIMATE TENSION (KIPS)	ALLOWABLE % OF ULTIMATE	
5/16" 7 STRAND EHS		0.05946	2.5E+07	0.312	0.205	1	6.4E-06	9	100	

CLAMP PROPERTIES				
LABEL		STOCK NUMBER	HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)
MC-2		MC-2	1.1E+04	0
CMA-10		CMA-1	1.2E+04	0

WEATHER CASES														
WC #	DESCRIPTION			AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL
1	GO95 HEAVY LOADING 43.1			0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE

STRUCTURE LOADS CRITERIA															
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00

STRENGTH FACTORS FOR EACH LOAD CASE														
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON-TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSULATORS	STRENGTH FACTOR HARDWARE	STRENGTH FACTOR FOUNDATION	
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00	
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00	

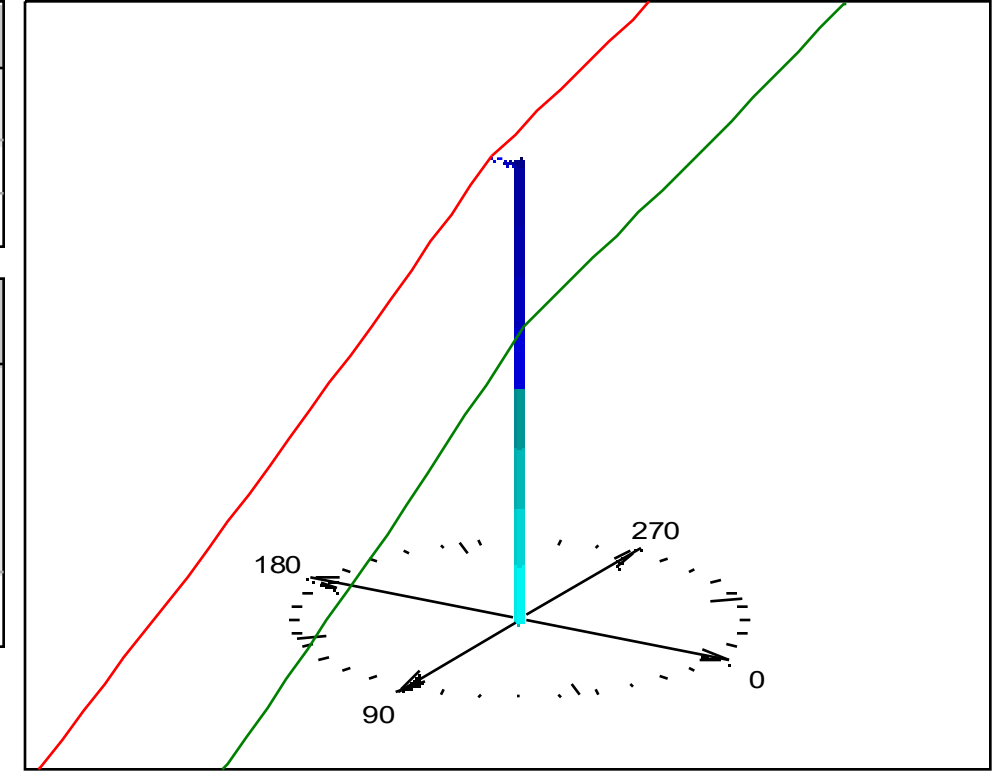
CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	` GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	` GRADE A HEAVY`		

LINE	1	POLE NUMBER	11	TYPE	
NOTES					
LOCATION	NEW POLE 1				
COMMENTS					
LATITUDE (DMS)	41°13'48.291"N	LONGITUDE (DMS)	122°15'35.175"W	GROUND ELEVATION (FT)	3457.6



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	49.51	FRP POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+
ELEMENT	14.77	TUBULAR DAVIT "SC"	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-

FRP POLE PROPERTIES									
FRP POLE PROPERTY LABEL		STOCK NUMBER	LENGTH (FT)	DEFAULT EMBEDDED LENGTH (FT)	SHAPE	DEFAULT DRAG COEF.	TUBES	TOP TUBE CUT (FT)	
10.2" X 0.25" OCTAGONAL CP074 45FT		PT4503CP0743B2 (PAC SI# 8000393)	45.00	6.5	8F	1.4	1 TUBE	15	



FRAMING LIBRARY			
FRAMING PROPERTY LABEL	STOCK NUMBER	KEYWORDS	INSERTION DISTANCE FROM TIP (FT)
AC1244-02		AC1244-02, 03,04 TANGENT 25,35,46KV	0.50
VANG-COMM_SEC_NEUT		VANG-COMM_SEC_NEUT	0.50

SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
SC	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

SUMMARY OF FRP POLE USAGES				
FRP POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	49.51	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	2.4	397.1

SUMMARY OF TUBULAR DAVIT USAGES				
TUBULAR DAVIT LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
SC	14.77	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	38.0	28.3

SUMMARY OF MAXIMUM USAGES BY LOAD CASE				
LOAD CASE		MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+		49.51	POLE	FRP POLE
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-		38.53	POLE	FRP POLE

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES					
LOAD CASE	FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	1.32	0.96	30.14	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	1.31	0.73	23.21	0.00

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	FACTORED SPAN TRANSVERSE (LBS)	FACTORED SPAN LONGITUDINAL (LBS)	FACTORED UNIT LOADS-HORIZONTAL (LBS/FT)	FACTORED UNIT LOADS-VERTICAL (LBS/FT)
SET #1	-0.0	-2.5	38.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	197	4483	557	456	-6	1.65	2.21
SET #2	0.0	0.4	24.5	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	197	2160	368	234	-12	1.13	1.34

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	FACTORED SPAN TRANSVERSE (LBS)	FACTORED SPAN LONGITUDINAL (LBS)	FACTORED UNIT LOADS-HORIZONTAL (LBS/FT)	FACTORED UNIT LOADS-VERTICAL (LBS/FT)
SET #1	-0.0	-2.5	38.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	197	4483	557	-226	-14	1.65	2.21
SET #2	0.0	0.4	24.5	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	197	2160	368	-236	-12	1.13	1.34

TUBULAR DAVIT PROPERTIES																
DAVIT PROPERTY LABEL	STOCK NUMBER	STEEL SHAPE	THICKNESS (IN)	BASE DIAMETER OR DEPTH (IN)	TIP DIAMETER OR DEPTH (IN)	TAPER (IN/FT)	DRAG COEF.	MODULUS OF ELASTICITY (KSI)	STRENGTH CHECK TYPE	VERTICAL CAPACITY (LBS)	TENSION CAPACITY (LBS)	COMPRES. CAPACITY (LBS)	LONG. CAPACITY (LBS)	YIELD STRESS (KSI)	WEIGHT DENSITY OVERRIDE (LBS/FT^3)	STEEL SHAPE AT END
BM-24A	BM-24	4F	0.377	4.5	1.5	0	0	25000	NOMINAL	6000	6000	6000	2300	0	0	

CLAMP PROPERTIES					
LABEL		STOCK NUMBER		HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)
MC-22		MC-2		1.1E+04	0
CMA-10		CMA-1		1.2E+04	0

WEATHER CASES														
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR	
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1	

STRUCTURE LOADS CRITERIA																
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)	
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00	
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00	

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON- TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSUL- ATORS	STRENGTH FACTOR HARD- WARE	STRENGTH FACTOR FOUND- ATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	`GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	`GRADE A HEAVY`		

LINE	1	POLE NUMBER	12	TYPE	
NOTES					
LOCATION	06239003.0182800				
COMMENTS					
LATITUDE (DMS)	41°13'48.219"N	LONGITUDE (DMS)	122°15'32.602"W	GROUND ELEVATION (FT)	3523.9



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	33.27	WOOD POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-
ELEMENT	38.31	GUY "GUY1"	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-

WOOD POLE PROPERTIES AND EMBEDMENT								
POLE LABEL	PROPERTY LABEL	STOCK NUMBER	SPECIES	CLASS	LENGTH (FT)	EMBED. (FT)	MODELED GL DIAM. (IN)	GL CIRC. (IN)
POLE	DF-3-40	DF-3-40	DF - DOUGAS FIR	3	40.0	6.0	11.5	36.0

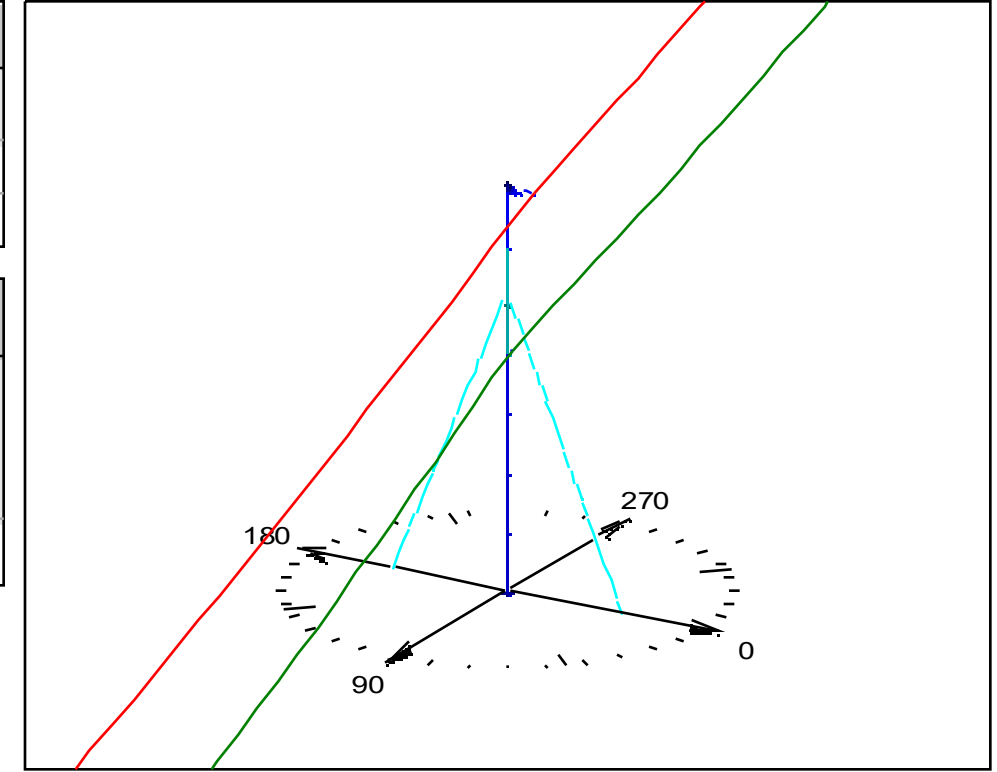
FRAMING LIBRARY			
FRAMING PROPERTY LABEL	STOCK NUMBER	KEYWORDS	INSERTION DISTANCE FROM TIP (FT)
VANG-COMM_SEC_NEUT		VANG-COMM_SEC_NEUT	0.50

SUMMARY OF WOOD POLE USAGES				
WOOD POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	33.27	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	26.4	1271.6

SUMMARY OF TUBULAR DAVIT USAGES				
TUBULAR DAVIT LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
TAN1	23.34	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	33.5	28.3

SUMMARY OF GUY USAGES				
GUY LABEL	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)	UNSTRESSED LENGTH (FT)
GUY1	38.31	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	5.3	26.00
GUY2	35.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	5.3	26.00

SUMMARY OF MAXIMUM USAGES BY LOAD CASE			
LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	35.00	GUY2	GUY
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	38.31	GUY1	GUY



SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
MC2	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES					
LOAD CASE	FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	2.86	0.09	2.72	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND1	-0.01	0.00	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND2	-1.45	0.61	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	3.00	0.09	2.84	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND1	-1.58	0.67	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND2	-0.01	0.00	0.00	0.00

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	TRANSVERSE (LBS)	LOADS-LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS-VERTICAL (LBS/FT)
SET #1	0.0	2.4	33.5	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	188	4475	213	268	31	1.65	2.21
SET #2	0.0	0.4	20.0	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	188	2159	158	250	15	1.13	1.34

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	TRANSVERSE (LBS)	LOADS-LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS-VERTICAL (LBS/FT)
SET #1	0.0	2.4	33.5	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	188	4475	213	-385	22	1.65	2.21
SET #2	0.0	0.4	20.0	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	188	2159	158	-199	15	1.13	1.34

WOOD MATERIAL PROPERTIES									
MATERIAL LABEL	MODULUS OF ELASTICITY (KSI)	DESIGN STRESS MOR (KSI)	WEIGHT DENSITY (LBS/FT^3)	ANSI O5.1 STATUS	ALLOWABLE SHEAR STRESS (KSI)	ALLOWABLE COMPRESS. STRESS (KSI)	THROUGH-BORING STRENGTH REDUCTION %	THROUGH-BORING DIST. ABOVE GROUND (FT)	THROUGH-BORING DIST. BELOW GROUND (FT)
DF-DOUGLAS FIR	2380	8	60	INCLUDED	0	0	0	0	0

TUBULAR DAVIT PROPERTIES																
DAVIT PROPERTY LABEL	STOCK NUMBER	STEEL SHAPE	THICKNESS (IN)	BASE DIAMETER OR DEPTH (IN)	TIP DIAMETER OR DEPTH (IN)	TAPER (IN/FT)	DRAG COEF.	MODULUS OF ELASTICITY (KSI)	STRENGTH CHECK TYPE	VERTICAL CAPACITY (LBS)	TENSION CAPACITY (LBS)	COMPRES. CAPACITY (LBS)	LONG. CAPACITY (LBS)	YIELD STRESS (KSI)	WEIGHT DENSITY OVERRIDE (LBS/FT^3)	STEEL SHAPE AT END
BM-24		4F	0.377	4.5	1.5	0	0	25000	NOMINAL	6000	2500	2500	2300	0	0	

CABLE PROPERTIES									
LABEL	STOCK NUMBER	AREA (IN^2)	MODULUS OF ELASTICITY (PSI)	DIAMETER (IN)	UNIT WEIGHT (LBS/FT)	DRAG COEF.	THERMAL EXPANSION COEFF. (/DEG F)	ULTIMATE TENSION (KIPS)	ALLOWABLE % OF ULTIMATE
5/16" 7 STRAND EHS		0.05946	2.5E+07	0.312	0.205	1	6.4E-06	9	100

CLAMP PROPERTIES				
LABEL		STOCK NUMBER	HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)
MC-2		MC-2	1.1E+04	0
CMA-10		CMA-1	1.2E+04	0

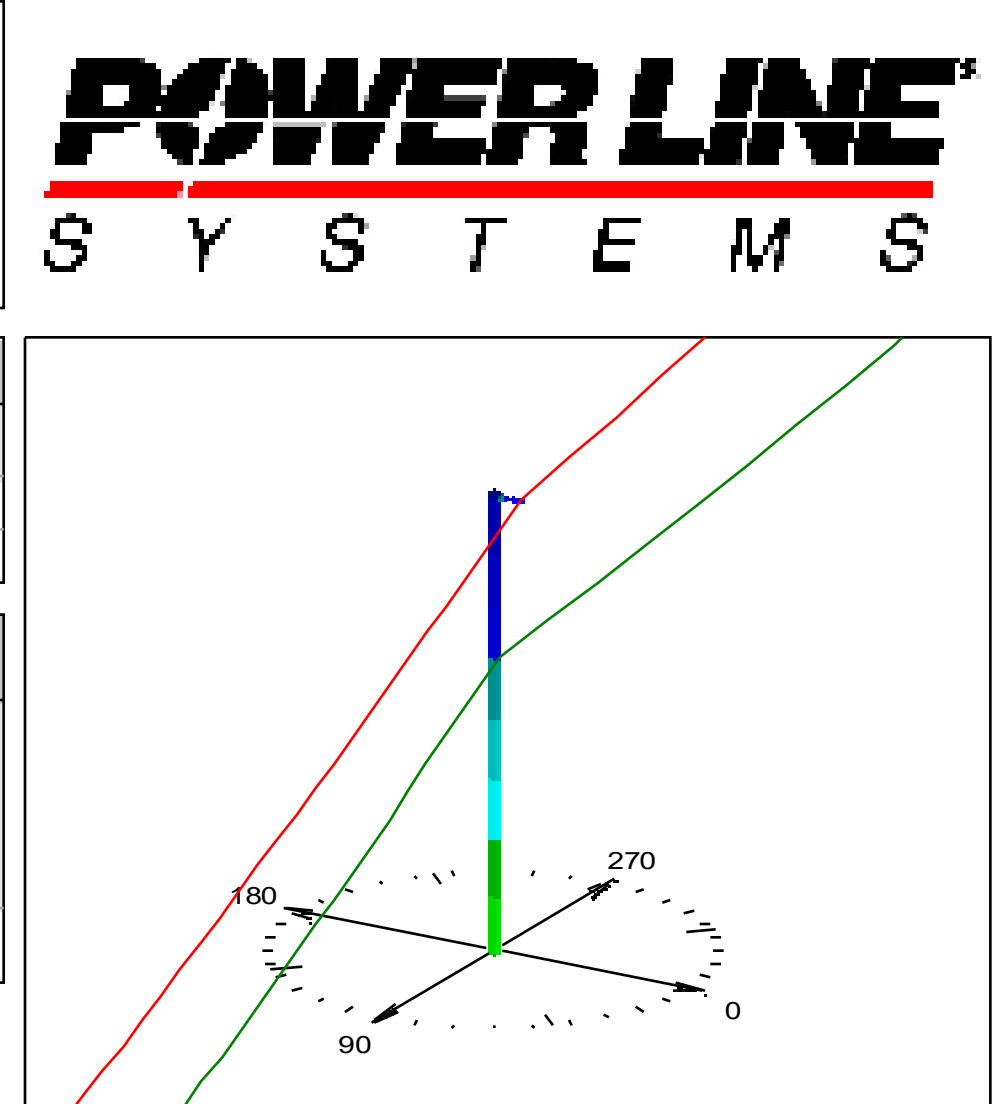
WEATHER CASES														
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR	
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1	

STRUCTURE LOADS CRITERIA															
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON-TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSUL-ATORS	STRENGTH FACTOR HARD-WARE	STRENGTH FACTOR FOUND-ATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	` GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	` GRADE A HEAVY`		

LINE	1	POLE NUMBER	13	TYPE	
NOTES					
LOCATION	06239003.0183802				
COMMENTS					
LATITUDE (DMS)	41°13'48.134"N	LONGITUDE (DMS)	122°15'30.265"W	GROUND ELEVATION (FT)	3585.0



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	70.30	FRP POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-
ELEMENT	25.12	TUBULAR DAVIT "TAN1"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+

FRP POLE PROPERTIES									
FRP POLE PROPERTY LABEL		STOCK NUMBER	LENGTH (FT)	DEFAULT EMBEDDED LENGTH (FT)	SHAPE	DEFAULT DRAG COEF.	TUBES	TOP TUBE CUT (FT)	
10.2" X 0.25" OCTAGONAL CP074 45FT		PT4503CP0743B2 (PAC SI# 8000393)	45.00	6.5	8F	1.4	1 TUBE	15	

FRAMING LIBRARY			
FRAMING PROPERTY LABEL	STOCK NUMBER	KEYWORDS	INSERTION DISTANCE FROM TIP (FT)
VANG-COMM_SEC_NEUT		VANG-COMM_SEC_NEUT	0.50

SUMMARY OF FRP POLE USAGES				
FRP POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	70.30	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	2.4	397.1

SUMMARY OF TUBULAR DAVIT USAGES				
TUBULAR DAVIT LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
TAN1	25.12	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	38.0	44.4

SUMMARY OF MAXIMUM USAGES BY LOAD CASE				
LOAD CASE		MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+		58.68	POLE	FRP POLE
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-		70.30	POLE	FRP POLE

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES					
LOAD CASE	FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	1.93	0.94	35.03	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	1.94	1.28	42.36	0.00

SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
MC2	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	FACTORED SPAN TRANSVERSE (LBS)	FACTORED SPAN LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	-FACTORED VERTICAL (LBS/FT)
SET #1	0.0	2.5	38.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	289	4478	950	374	-37	1.65	2.21
SET #2	0.0	0.4	24.5	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	289	2163	569	296	-24	1.13	1.34

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	FACTORED SPAN TRANSVERSE (LBS)	FACTORED SPAN LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	-FACTORED VERTICAL (LBS/FT)
SET #1	0.0	2.5	38.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	289	4478	950	-621	-29	1.65	2.21
SET #2	0.0	0.4	24.5	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	289	2163	569	-386	-21	1.13	1.34

TUBULAR DAVIT PROPERTIES																
DAVIT PROPERTY LABEL	STOCK NUMBER	STEEL SHAPE	THICKNESS (IN)	BASE DIAMETER OR DEPTH (IN)	TIP DIAMETER OR DEPTH (IN)	TAPER (IN/FT)	DRAG COEF.	MODULUS OF ELASTICITY (KSI)	STRENGTH CHECK TYPE	VERTICAL CAPACITY (LBS)	TENSION CAPACITY (LBS)	COMPRES. CAPACITY (LBS)	LONG. CAPACITY (LBS)	YIELD STRESS (KSI)	WEIGHT DENSITY OVERRIDE (LBS/FT^3)	STEEL SHAPE AT END
BM-24	BM-24	4F	0.377	4.5	4.5	0	0	25000	NOMINAL	6000	6000	6000	2300	0	0	

CLAMP PROPERTIES				
LABEL		STOCK NUMBER	HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)
MC-2		MC-2	1.1E+04	0
CMA-10		CMA-1	1.2E+04	0

WEATHER CASES													
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1

STRUCTURE LOADS CRITERIA																
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)	
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00	
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00	

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON- TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSUL- ATORS	STRENGTH FACTOR HARD- WARE	STRENGTH FACTOR FOUND- ATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

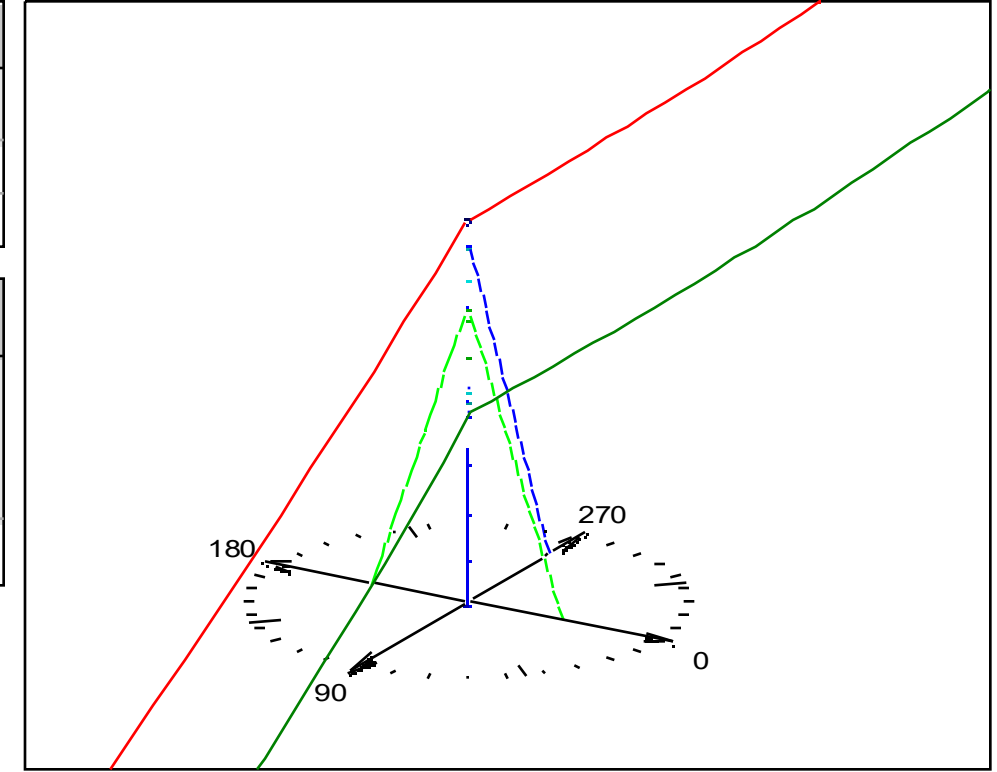
CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	`GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	`GRADE A HEAVY`		

LINE	1	POLE NUMBER	14	TYPE	
NOTES					
LOCATION	06239003.0183801				
COMMENTS					
LATITUDE (DMS)	41°13'48.024"N	LONGITUDE (DMS)	122°15'25.046"W	GROUND ELEVATION (FT)	3705.0



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	60.40	WOOD POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+
ELEMENT	62.23	GUY "G1"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+

WOOD POLE PROPERTIES AND EMBEDMENT								
POLE LABEL	PROPERTY LABEL	STOCK NUMBER	SPECIES	CLASS	LENGTH (FT)	EMBED. (FT)	MODELED GL DIAM. (IN)	GL CIRC. (IN)
POLE	DF-3-45	DF-3-45	DF - DOUGAS FIR	3	45.0	6.5	11.9	37.3



SUMMARY OF WOOD POLE USAGES				
WOOD POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	60.40	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	29.0	1502.7

SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F3-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F4-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F5-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
HD-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F2-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

SUMMARY OF GUY USAGES				
GUY LABEL	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)	UNSTRESSED LENGTH (FT)
F9-G	16.38	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	7.9	38.73
G1	62.23	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	6.2	30.20
G2	54.33	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	6.2	30.20

SUMMARY OF MAXIMUM USAGES BY LOAD CASE			
LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	62.23	G1	GUY
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	54.64	POLE	WOOD POLE

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES					
LOAD CASE	FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	7.11	0.19	5.40	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND1	-0.65	0.27	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND2	-2.63	0.94	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND3	-0.01	0.00	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	6.80	0.20	4.90	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND1	-0.67	0.28	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND2	-0.01	0.00	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND3	-2.30	0.82	0.00	0.00

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+																
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----		
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	TRANSVERSE (LBS)	LOADS LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)	
SET #4	0.0	0.4	19.1	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	303	2191	875	380	-35	1.13	1.34	
SET #21	0.4	0.0	38.0	1	1	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	398	4495	1819	400	4490	1.65	2.21	
SET #31	-0.4	-0.0	38.0	1	1	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	207	4243	-71	146	-4243	1.65	2.21	

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-																
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----		
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	TRANSVERSE (LBS)	LOADS LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)	
SET #4	0.0	0.4	19.1	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	303	2191	875	-331	-34	1.13	1.34	
SET #21	0.4	0.0	38.0	1	1	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	398	4495	1819	-292	4498	1.65	2.21	
SET #31	-0.4	-0.0	38.0	1	1	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	207	4243	-71	-195	-4241	1.65	2.21	

WOOD MATERIAL PROPERTIES									
MATERIAL LABEL	MODULUS OF ELASTICITY (KSI)	DESIGN STRESS MOR (KSI)	WEIGHT DENSITY (LBS/FT^3)	ANSI O5.1 STATUS	ALLOWABLE SHEAR STRESS (KSI)	ALLOWABLE COMPRESS. STRESS (KSI)	THROUGH-BORING STRENGTH REDUCTION %	THROUGH-BORING DIST. ABOVE GROUND (FT)	THROUGH-BORING DIST. BELOW GROUND (FT)
DF-DOUGLAS FIR	2380	8	60	INCLUDED	0	0	0	0	0

CABLE PROPERTIES										
LABEL	STOCK NUMBER	AREA (IN^2)	MODULUS OF ELASTICITY (PSI)	DIAMETER (IN)	UNIT WEIGHT (LBS/FT)	DRAW COEF.	THermal EXPANSION COEFF. (/DEG F)	ULTIMATE TENSION (KIPS)	ALLOWABLE % OF ULTIMATE	
5/16" 7 STRAND EHS		0.05946	2.5E+07	0.312	0.205	1	6.4E-06	9	100	

CLAMP PROPERTIES			
LABEL	STOCK NUMBER	HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)
CMA-10	CMA-1	1.2E+04	0
MG-41280	MG-4128	2.3E+04	0

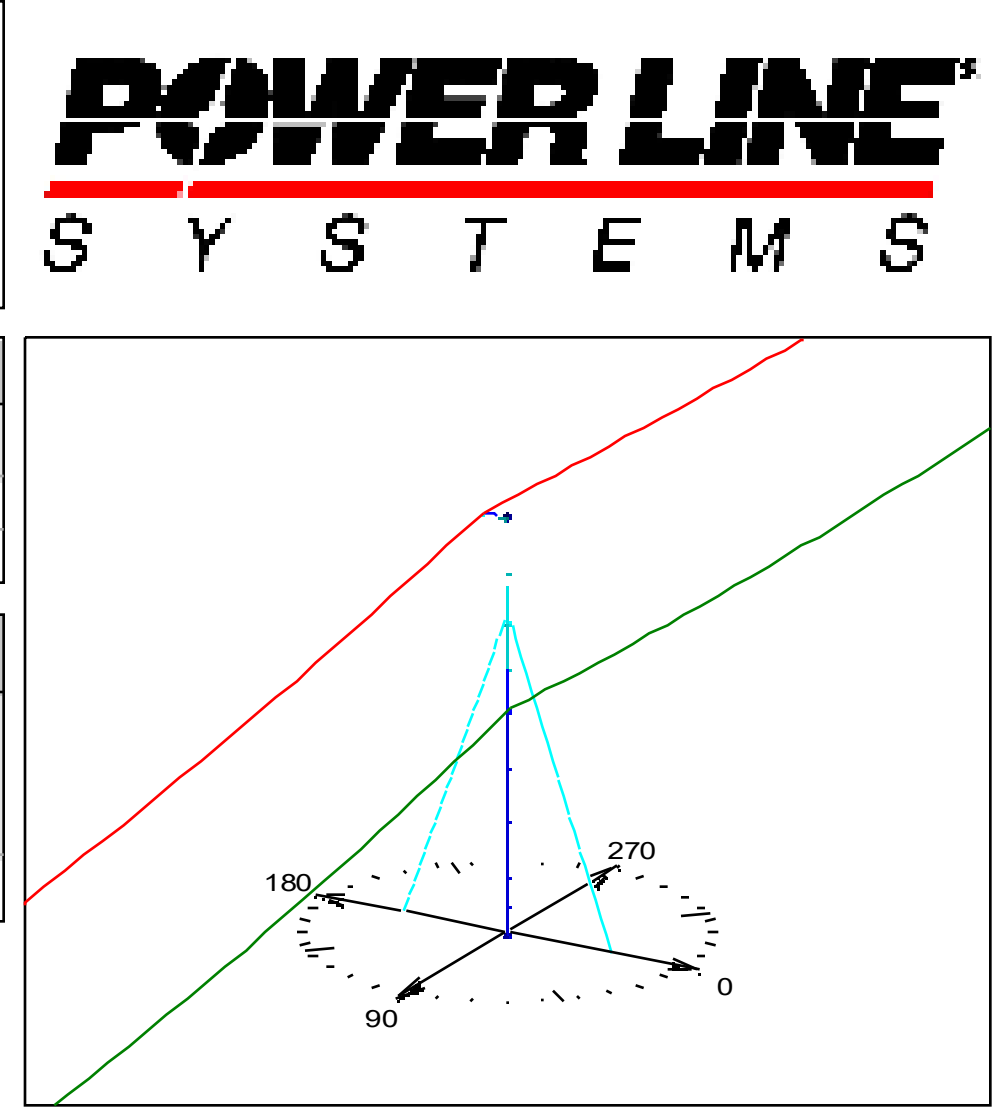
WEATHER CASES													
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1

STRUCTURE LOADS CRITERIA															
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON-TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSULATORS	STRENGTH FACTOR HARDWARE	STRENGTH FACTOR FOUNDATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	`GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	`GRADE A HEAVY`		

LINE	1	POLE NUMBER	15	TYPE	
NOTES					
LOCATION	NO POLE NUMBER				
COMMENTS					
LATITUDE (DMS)	41°13'47.943"N	LONGITUDE (DMS)	122°15'22.336"W	GROUND ELEVATION (FT)	3719.6



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	45.09	WOOD POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+
ELEMENT	49.27	GUY "GUY2"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+

WOOD POLE PROPERTIES AND EMBEDMENT								
POLE LABEL	PROPERTY LABEL	STOCK NUMBER	SPECIES	CLASS	LENGTH (FT)	EMBED. (FT)	MODELED GL DIAM. (IN)	GL CIRC. (IN)
POLE	DF-4-45	DF-4-45	DF - DOUGAS FIR	4	45.0	6.5	11.1	34.8

FRAMING LIBRARY			
FRAMING PROPERTY LABEL	STOCK NUMBER	KEYWORDS	INSERTION DISTANCE FROM TIP (FT)
VANG-COMM_SEC_NEUT		VANG-COMM_SEC_NEUT	0.50

SUMMARY OF WOOD POLE USAGES				
WOOD POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	45.09	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	30.9	1293.9

SUMMARY OF TUBULAR DAVIT USAGES				
TUBULAR DAVIT LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
TAN1	28.97	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	38.0	28.3

SUMMARY OF GUY USAGES				
GUY LABEL	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)	UNSTRESSED LENGTH (FT)
GUY1	28.01	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	6.2	30.20
GUY2	49.27	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	6.2	30.20

SUMMARY OF MAXIMUM USAGES BY LOAD CASE			
LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	49.27	GUY2	GUY
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	37.20	POLE	WOOD POLE

SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
MC2	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES						
LOAD CASE		FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+		POLE:G	4.03	0.13	3.23	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+		\$GND1	-0.01	0.00	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+		\$GND2	-2.08	0.74	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-		POLE:G	3.14	0.11	1.87	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-		\$GND1	-1.18	0.42	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-		\$GND2	-0.01	0.00	0.00	0.00

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED VERTICAL (LBS)	SPAN TRANSVERSE (LBS)	LOADS LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)
SET #1	-0.0	-2.4	38.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	186	4244	548	478	1	1.65	2.21
SET #2	0.0	0.4	20.5	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	186	2209	336	211	-2	1.13	1.34

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED VERTICAL (LBS)	SPAN TRANSVERSE (LBS)	LOADS LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)
SET #1	-0.0	-2.4	38.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	186	4244	548	-135	-3	1.65	2.21
SET #2	0.0	0.4	20.5	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	186	2209	336	-211	-2	1.13	1.34

WOOD MATERIAL PROPERTIES									
MATERIAL LABEL	MODULUS OF ELASTICITY (KSI)	DESIGN STRESS MOR (KSI)	WEIGHT DENSITY (LBS/FT^3)	ANSI O5.1 STATUS	ALLOWABLE SHEAR STRESS (KSI)	ALLOWABLE COMPRESS. STRESS (KSI)	THROUGH-BORING STRENGTH REDUCTION %	THROUGH-BORING DIST. ABOVE GROUND (FT)	THROUGH-BORING DIST. BELOW GROUND (FT)
DF-DOUGLAS FIR	2380	8	60	INCLUDED	0	0	0	0	0

TUBULAR DAVIT PROPERTIES																
DAVIT PROPERTY LABEL	STOCK NUMBER	STEEL SHAPE	THICKNESS (IN)	BASE DIAMETER OR DEPTH (IN)	TIP DIAMETER OR DEPTH (IN)	TAPER (IN/FT)	DRAG COEF.	MODULUS OF ELASTICITY (KSI)	STRENGTH CHECK TYPE	VERTICAL CAPACITY (LBS)	TENSION CAPACITY (LBS)	COMPRES. CAPACITY (LBS)	LONG. CAPACITY (LBS)	YIELD STRESS (KSI)	WEIGHT DENSITY OVERRIDE (LBS/FT^3)	STEEL SHAPE AT END
BM-24		4F	0.377	4.5	1.5	0	0	25000	NOMINAL	6000	2500	2500	2300	0	0	

CABLE PROPERTIES									
LABEL	STOCK NUMBER	AREA (IN^2)	MODULUS OF ELASTICITY (PSI)	DIAMETER (IN)	UNIT WEIGHT (LBS/FT)	DRAG COEF.	THERMAL EXPANSION COEFF. (/DEG F)	ULTIMATE TENSION (KIPS)	ALLOWABLE % OF ULTIMATE
5/16" 7 STRAND EHS		0.05946	2.5E+07	0.312	0.205	1	6.4E-06	9	100

CLAMP PROPERTIES				
LABEL	STOCK NUMBER	HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)	
MC-2	MC-2	1.1E+04	0	
CMA-10	CMA-1	1.2E+04	0	

WEATHER CASES													
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1

STRUCTURE LOADS CRITERIA															
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON-TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSULATORS	STRENGTH FACTOR HARDWARE	STRENGTH FACTOR FOUNDATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

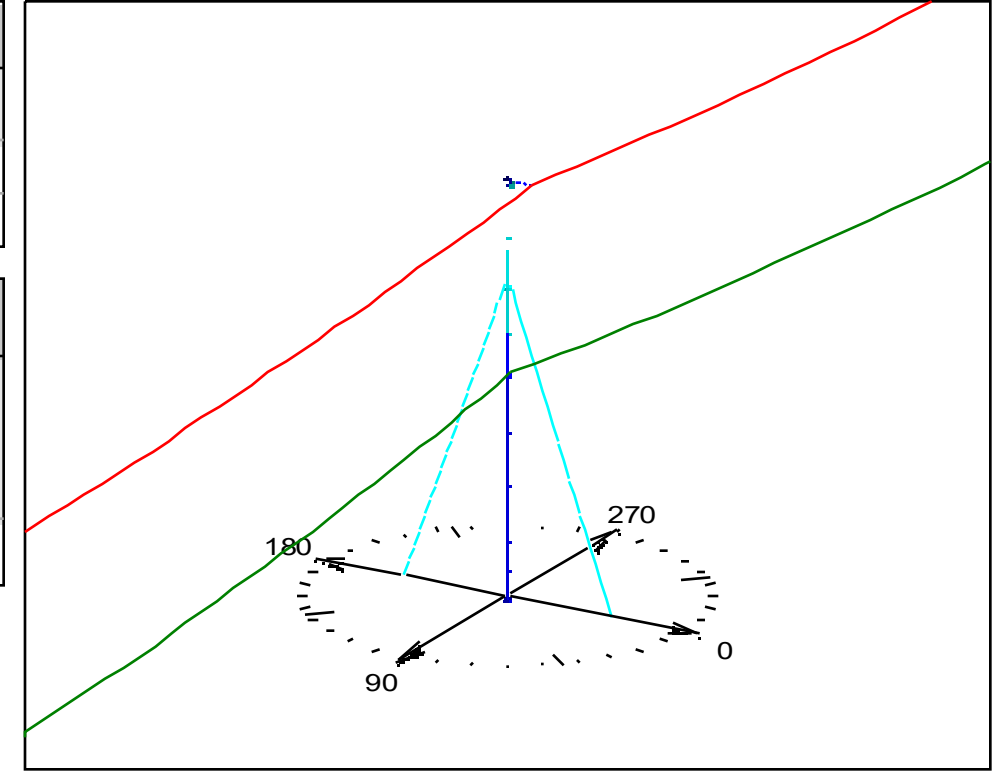
CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	` GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	` GRADE A HEAVY`		

LINE	1	POLE NUMBER	16	TYPE	
NOTES					
LOCATION	06239003.0183800				
COMMENTS					
LATITUDE (DMS)	41°13'47.879"N	LONGITUDE (DMS)	122°15'20.179"W	GROUND ELEVATION (FT)	3725.9



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	43.63	WOOD POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+
ELEMENT	48.80	GUY "GUY1"	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-

WOOD POLE PROPERTIES AND EMBEDMENT								
POLE LABEL	PROPERTY LABEL	STOCK NUMBER	SPECIES	CLASS	LENGTH (FT)	EMBED. (FT)	MODELED GL DIAM. (IN)	GL CIRC. (IN)
POLE	DF-4-45	DF-4-45	DF - DOUGAS FIR	4	45.0	6.5	11.1	34.8



FRAMING LIBRARY			
FRAMING PROPERTY LABEL	STOCK NUMBER	KEYWORDS	INSERTION DISTANCE FROM TIP (FT)
VANG-COMM_SEC_NEUT		VANG-COMM_SEC_NEUT	0.50

SUMMARY OF WOOD POLE USAGES				
WOOD POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	43.63	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	30.9	1293.9

SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
MC2	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

SUMMARY OF TUBULAR DAVIT USAGES				
TUBULAR DAVIT LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
TAN1	29.62	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	38.0	28.3

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES						
LOAD CASE		FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %
GO95	HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	3.46	0.08	1.76	0.00
GO95	HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND1	-0.01	0.00	0.00	0.00
GO95	HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND2	-1.34	0.48	0.00	0.00
GO95	HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	4.18	0.15	3.50	0.00
GO95	HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND1	-2.06	0.74	0.00	0.00
GO95	HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND2	-0.01	0.00	0.00	0.00

SUMMARY OF GUY USAGES				
GUY LABEL	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)	UNSTRESSED LENGTH (FT)
GUY1	48.80	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	6.2	30.20
GUY2	31.68	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	6.2	30.20

SUMMARY OF MAXIMUM USAGES BY LOAD CASE			
LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	43.63	POLE	WOOD POLE
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	48.80	GUY1	GUY

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	TRANSVERSE (LBS)	LOADS-LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS-VERTICAL (LBS/FT)
SET #1	0.0	2.4	38.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	195	4246	672	154	-0	1.65	2.21
SET #2	0.0	0.4	20.5	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	195	2210	377	221	-1	1.13	1.34

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	TRANSVERSE (LBS)	LOADS-LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS-VERTICAL (LBS/FT)
SET #1	0.0	2.4	38.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	195	4246	672	-489	-4	1.65	2.21
SET #2	0.0	0.4	20.5	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	195	2210	377	-221	-1	1.13	1.34

WOOD MATERIAL PROPERTIES									
MATERIAL LABEL	MODULUS OF ELASTICITY (KSI)	DESIGN STRESS MOR (KSI)	WEIGHT DENSITY (LBS/FT^3)	ANSI O5.1 STATUS	ALLOWABLE SHEAR STRESS (KSI)	ALLOWABLE COMPRESS. STRESS (KSI)	THROUGH-BORING STRENGTH REDUCTION %	THROUGH-BORING DIST. ABOVE GROUND (FT)	THROUGH-BORING DIST. BELOW GROUND (FT)
DF-DOUGLAS FIR	2380	8	60	INCLUDED	0	0	0	0	0

TUBULAR DAVIT PROPERTIES																
DAVIT PROPERTY LABEL	STOCK NUMBER	STEEL SHAPE	THICKNESS (IN)	BASE DIAMETER OR DEPTH (IN)	TIP DIAMETER OR DEPTH (IN)	TAPER (IN/FT)	DRAG COEF.	MODULUS OF ELASTICITY (KSI)	STRENGTH CHECK TYPE	VERTICAL CAPACITY (LBS)	TENSION CAPACITY (LBS)	COMPRES. CAPACITY (LBS)	LONG. CAPACITY (LBS)	YIELD STRESS (KSI)	WEIGHT DENSITY OVERRIDE (LBS/FT^3)	STEEL SHAPE AT END
BM-24		4F	0.377	4.5	1.5	0	0	25000	NOMINAL	6000	2500	2500	2300	0	0	

CABLE PROPERTIES										
LABEL	STOCK NUMBER	AREA (IN^2)	MODULUS OF ELASTICITY (PSI)	DIAMETER (IN)	UNIT WEIGHT (LBS/FT)	DRAG COEF.	THERMAL EXPANSION COEFF. (/DEG F)	ULTIMATE TENSION (KIPS)	ALLOWABLE % OF ULTIMATE	
5/16" 7 STRAND EHS		0.05946	2.5E+07	0.312	0.205	1	6.4E-06	9	100	

CLAMP PROPERTIES				
LABEL		STOCK NUMBER	HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)
MC-2		MC-2	1.1E+04	0
CMA-10		CMA-1	1.2E+04	0

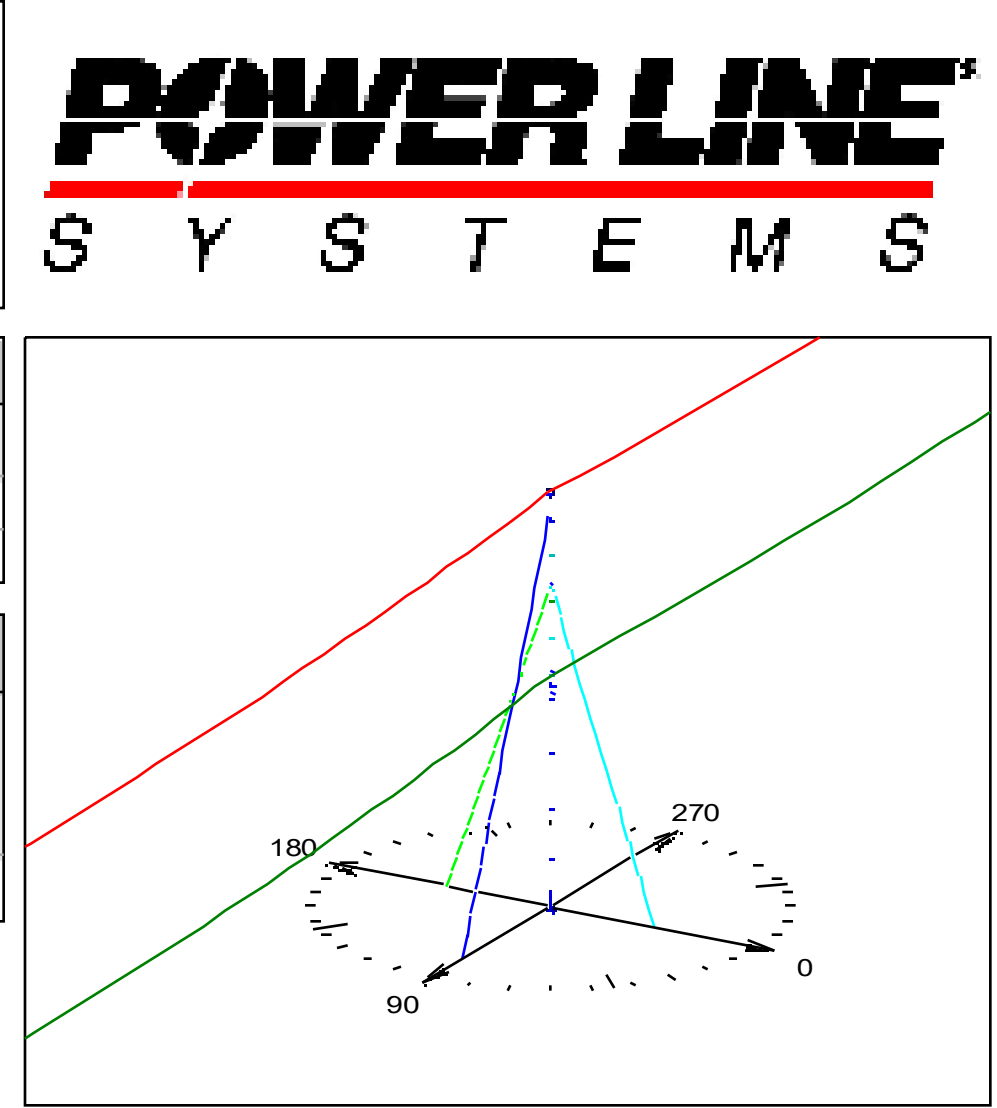
WEATHER CASES													
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1

STRUCTURE LOADS CRITERIA															
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON-TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSUL-ATORS	STRENGTH FACTOR HARD-WARE	STRENGTH FACTOR FOUND-ATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	` GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	` GRADE A HEAVY`		

LINE	1	POLE NUMBER	17	TYPE	
NOTES					
LOCATION	06239003.0184802				
COMMENTS					
LATITUDE (DMS)	41°13'47.792"N	LONGITUDE (DMS)	122°15'17.232"W	GROUND ELEVATION (FT)	3721.8



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	51.90	WOOD POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+
ELEMENT	56.86	GUY "SG2"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+

WOOD POLE PROPERTIES AND EMBEDMENT								
POLE LABEL	PROPERTY LABEL	STOCK NUMBER	SPECIES	CLASS	LENGTH (FT)	EMBED. (FT)	MODELED GL DIAM. (IN)	GL CIRC. (IN)
POLE	DF-3-45	DF-3-45	DF - DOUGAS FIR	3	45.0	6.5	11.9	37.3

SUMMARY OF WOOD POLE USAGES				
WOOD POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	51.90	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	29.0	1502.7

SUMMARY OF GUY USAGES				
GUY LABEL	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)	UNSTRESSED LENGTH (FT)
F8-G	13.39	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	7.9	38.73
SG1	43.74	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	6.2	30.20
SG2	56.86	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	6.2	30.20

SUMMARY OF MAXIMUM USAGES BY LOAD CASE			
LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	56.86	SG2	GUY
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	43.74	SG1	GUY

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES					
LOAD CASE	FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	4.33	0.14	4.61	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND1	-0.55	0.23	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND2	-0.01	0.00	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND3	-2.40	0.86	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	3.77	0.18	4.23	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND1	-0.55	0.23	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND2	-1.85	0.66	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND3	-0.01	0.00	0.00	0.00

SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F2-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F2-VANG0	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F3-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F4-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F5-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+																
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----		
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	LOADS TRANSVERSE (LBS)	LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)	
SET #2	0.0	0.4	21.5	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	261	2208	63	295	6	1.13	1.34	
SET #21	0.4	0.0	38.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	261	4365	98	511	-238	1.65	2.21	

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-																
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----		
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	LOADS TRANSVERSE (LBS)	LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)	
SET #2	0.0	0.4	21.5	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	261	2208	63	-297	6	1.13	1.34	
SET #21	0.4	0.0	38.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	261	4365	98	-350	-238	1.65	2.21	

WOOD MATERIAL PROPERTIES									
MATERIAL LABEL	MODULUS OF ELASTICITY (KSI)	DESIGN STRESS MOR (KSI)	WEIGHT DENSITY (LBS/FT^3)	ANSI O5.1 STATUS	ALLOWABLE SHEAR STRESS (KSI)	ALLOWABLE COMPRESS. STRESS (KSI)	THROUGH-BORING STRENGTH REDUCTION %	THROUGH-BORING DIST. ABOVE GROUND (FT)	THROUGH-BORING DIST. BELOW GROUND (FT)
DF-DOUGLAS FIR	2380	8	60	INCLUDED	0	0	0	0	0

CABLE PROPERTIES										
LABEL		STOCK NUMBER	AREA (IN^2)	MODULUS OF ELASTICITY (PSI)	DIAMETER (IN)	UNIT WEIGHT (LBS/FT)	DRAG COEF.	THERMAL EXPANSION COEFF. (/DEG F)	ULTIMATE TENSION (KIPS)	ALLOWABLE % OF ULTIMATE
5/16" 7 STRAND EHS			0.05946	2.5E+07	0.312	0.205	1	6.4E-06	9	100

CLAMP PROPERTIES			
LABEL		STOCK NUMBER	HOLDING CAPACITY (LBS)
CMA-10		CMA-1	1.2E+04
MG-41280		MG-4128	2.3E+04

WEATHER CASES													
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1

STRUCTURE LOADS CRITERIA															
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON-TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSUL-ATORS	STRENGTH FACTOR HARD-WARE	STRENGTH FACTOR FOUND-ATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	`GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	`GRADE A HEAVY`		

LINE	1	POLE NUMBER	18	TYPE	
NOTES					
LOCATION	06239003.0184801				
COMMENTS					
LATITUDE (DMS)	41°13'47.676"N	LONGITUDE (DMS)	122°15'13.344"W	GROUND ELEVATION (FT)	3757.6



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	79.94	WOOD POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+
ELEMENT	52.46	GUY "GUY2"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+

WOOD POLE PROPERTIES AND EMBEDMENT								
POLE LABEL	PROPERTY LABEL	STOCK NUMBER	SPECIES	CLASS	LENGTH (FT)	EMBED. (FT)	MODELED GL DIAM. (IN)	GL CIRC. (IN)
POLE	DF-5-35	DF-5-35	DF - DOUGAS FIR	5	35.0	5.5	9.3	29.2

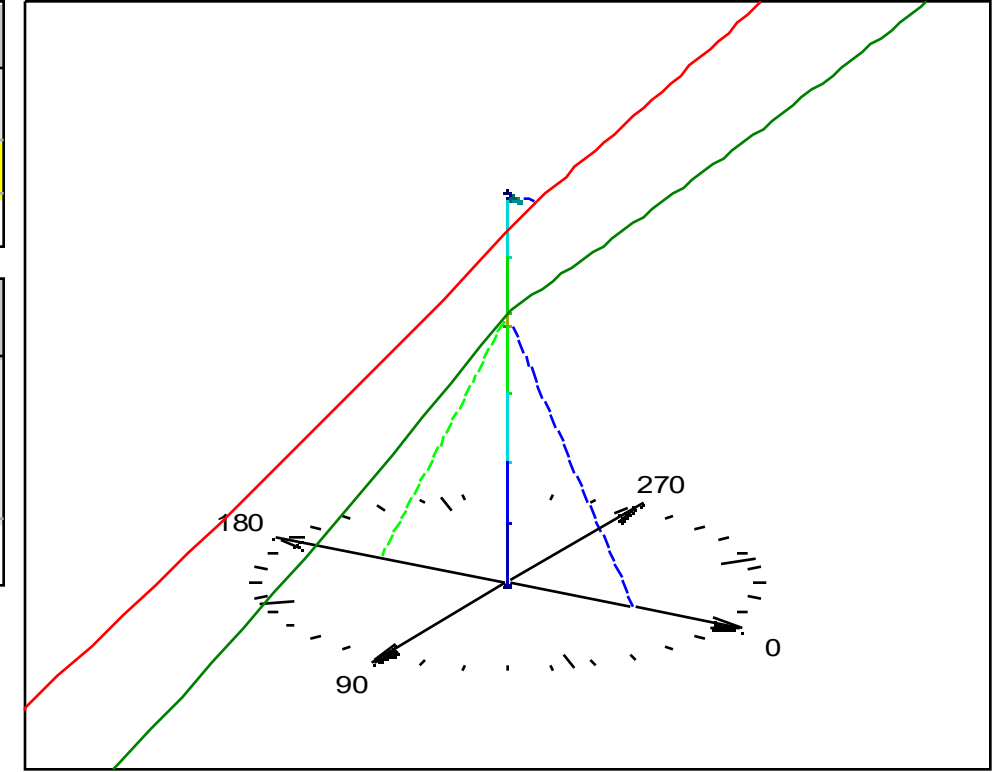
FRAMING LIBRARY			
FRAMING PROPERTY LABEL	STOCK NUMBER	KEYWORDS	INSERTION DISTANCE FROM TIP (FT)
VANG-COMM_SEC_NEUT		VANG-COMM_SEC_NEUT	0.50

SUMMARY OF WOOD POLE USAGES				
WOOD POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	79.94	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	20.0	741.4

SUMMARY OF TUBULAR DAVIT USAGES				
TUBULAR DAVIT LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
TAN1	26.08	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	29.0	28.3

SUMMARY OF GUY USAGES				
GUY LABEL	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)	UNSTRESSED LENGTH (FT)
GUY1	21.45	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	4.5	21.91
GUY2	52.46	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	4.5	21.91

SUMMARY OF MAXIMUM USAGES BY LOAD CASE			
LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	79.94	POLE	WOOD POLE
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	33.34	POLE	WOOD POLE



SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
MC2	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES					
LOAD CASE	FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	2.97	0.19	0.39	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND1	-0.00	0.00	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND2	-2.09	1.08	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	1.74	0.06	0.81	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND1	-0.85	0.44	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND2	-0.00	0.00	0.00	0.00

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED VERTICAL (LBS)	SPAN TRANSVERSE (LBS)	LOADS LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)
SET #1	0.0	2.4	29.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	188	4474	15	430	13	1.65	2.21
SET #2	0.0	0.3	20.5	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	188	2204	250	348	-3	1.13	1.34

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED VERTICAL (LBS)	SPAN TRANSVERSE (LBS)	LOADS LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)
SET #1	0.0	2.4	29.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	188	4474	15	-193	23	1.65	2.21
SET #2	0.0	0.3	20.5	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	188	2204	250	-80	4	1.13	1.34

WOOD MATERIAL PROPERTIES									
MATERIAL LABEL	MODULUS OF ELASTICITY (KSI)	DESIGN STRESS MOR (KSI)	WEIGHT DENSITY (LBS/FT^3)	ANSI O5.1 STATUS	ALLOWABLE SHEAR STRESS (KSI)	ALLOWABLE COMPRESS. STRESS (KSI)	THROUGH-BORING STRENGTH REDUCTION %	THROUGH-BORING DIST. ABOVE GROUND (FT)	THROUGH-BORING DIST. BELOW GROUND (FT)
DF-DOUGLAS FIR	2380	8	60	INCLUDED	0	0	0	0	0

TUBULAR DAVIT PROPERTIES																
DAVIT PROPERTY LABEL	STOCK NUMBER	STEEL SHAPE	THICKNESS (IN)	BASE DIAMETER OR DEPTH (IN)	TIP DIAMETER OR DEPTH (IN)	TAPER (IN/FT)	DRAG COEF.	MODULUS OF ELASTICITY (KSI)	STRENGTH CHECK TYPE	VERTICAL CAPACITY (LBS)	TENSION CAPACITY (LBS)	COMPRES. CAPACITY (LBS)	LONG. CAPACITY (LBS)	YIELD STRESS (KSI)	WEIGHT DENSITY OVERRIDE (LBS/FT^3)	STEEL SHAPE AT END
BM-24		4F	0.377	4.5	1.5	0	0	25000	NOMINAL	6000	2500	2500	2300	0	0	

CABLE PROPERTIES									
LABEL	STOCK NUMBER	AREA (IN^2)	MODULUS OF ELASTICITY (PSI)	DIAMETER (IN)	UNIT WEIGHT (LBS/FT)	DRAG COEF.	THERMAL EXPANSION COEFF. (/DEG F)	ULTIMATE TENSION (KIPS)	ALLOWABLE % OF ULTIMATE
5/16" 7 STRAND EHS		0.05946	2.5E+07	0.312	0.205	1	6.4E-06	9	100

CLAMP PROPERTIES				
LABEL	STOCK NUMBER	HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)	
MC-2	MC-2	1.1E+04	0	
CMA-10	CMA-1	1.2E+04	0	

WEATHER CASES													
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1

STRUCTURE LOADS CRITERIA															
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON-TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSULATORS	STRENGTH FACTOR HARDWARE	STRENGTH FACTOR FOUNDATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	` GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	` GRADE A HEAVY`		

LINE	1	POLE NUMBER	19	TYPE	
NOTES					
LOCATION	06239003.0184800				
COMMENTS					
LATITUDE (DMS)	41°13'47.601"N	LONGITUDE (DMS)	122°15'12.329"W	GROUND ELEVATION (FT)	3767.1



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	60.95	WOOD POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+
ELEMENT	89.67	GUY "GUY"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+

WOOD POLE PROPERTIES AND EMBEDMENT								
POLE LABEL	PROPERTY LABEL	STOCK NUMBER	SPECIES	CLASS	LENGTH (FT)	EMBED. (FT)	MODELED GL DIAM. (IN)	GL CIRC. (IN)
POLE	DF-3-45	DF-3-45	DF - DOUGAS FIR	3	45.0	6.5	11.9	37.3

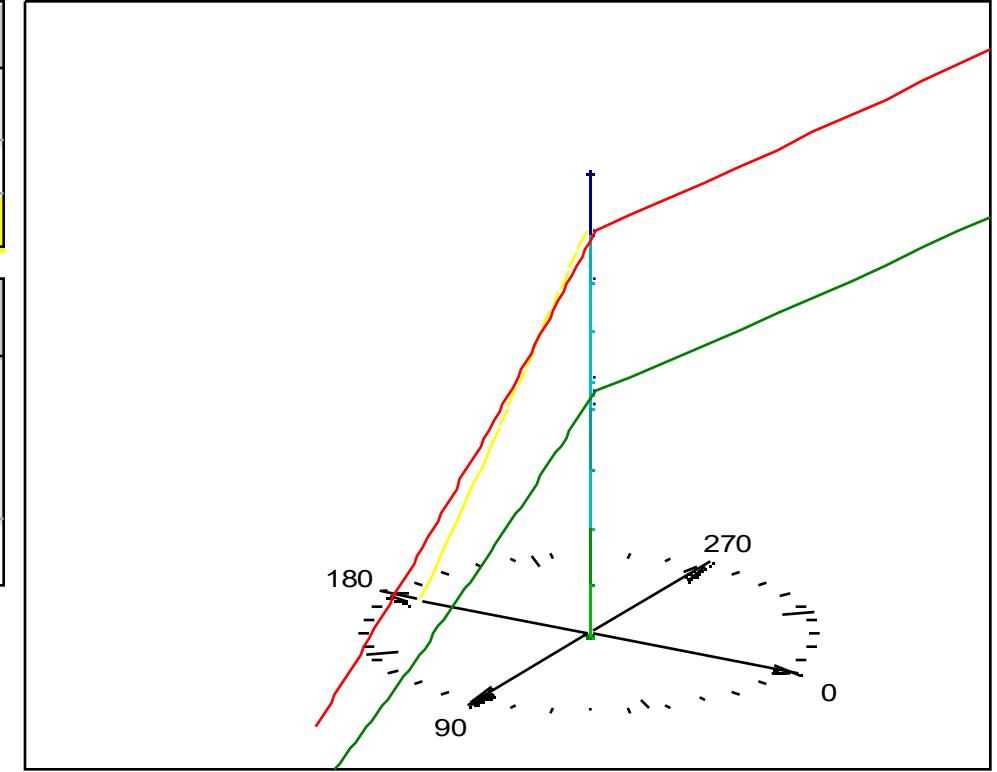
FRAMING LIBRARY				
FRAMING PROPERTY LABEL	STOCK NUMBER	KEYWORDS	INSERTION DISTANCE FROM TIP (FT)	
AC1341-01-02-03		AC1341-01-02-03,SA,SMALL ANGLE	0.50	
VANG-COMM_SEC_NEUT		VANG-COMM_SEC_NEUT	0.50	

SUMMARY OF WOOD POLE USAGES				
WOOD POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	60.95	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	2.3	1502.7

SUMMARY OF GUY USAGES				
GUY LABEL	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)	UNSTRESSED LENGTH (FT)
GUY	89.67	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	14.6	36.70

SUMMARY OF MAXIMUM USAGES BY LOAD CASE				
LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE	
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	89.67	GUY	GUY	
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	64.40	GUY	GUY	

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES					
LOAD CASE	FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	7.62	1.01	15.78	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND1	-5.70	2.59	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	6.01	0.51	9.71	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND1	-4.10	1.85	0.00	0.00



SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
SC	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F3-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F4-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F5-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+																
CIRCUIT LABEL	---AVERAGE---			WIRING PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----		
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	LOADS-TRANSVERSE (LBS)	LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS-VERTICAL (LBS/FT)	
SET #1	0.0	0.4	33.5	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	157	4470	546	2299	0	1.65	2.21	
SET #4	0.0	0.4	20.2	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	157	2203	175	1109	22	1.13	1.34	

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-																
CIRCUIT LABEL	---AVERAGE---			WIRING PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----		
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	LOADS-TRANSVERSE (LBS)	LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS-VERTICAL (LBS/FT)	
SET #1	0.0	0.4	33.5	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	157	4470	546	1789	-56	1.65	2.21	
SET #4	0.0	0.4	20.2	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	157	2203	175	758	-17	1.13	1.34	

WOOD MATERIAL PROPERTIES									
MATERIAL LABEL	MODULUS OF ELASTICITY (KSI)	DESIGN STRESS MOR (KSI)	WEIGHT DENSITY (LBS/FT^3)	ANSI O5.1 STATUS	ALLOWABLE SHEAR STRESS (KSI)	ALLOWABLE COMPRESS. STRESS (KSI)	THROUGH-BORING STRENGTH REDUCTION %	THROUGH-BORING DIST. ABOVE GROUND (FT)	THROUGH-BORING DIST. BELOW GROUND (FT)
DF-DOUGLAS FIR	2380	8	60	INCLUDED	0	0	0	0	0

CABLE PROPERTIES									
LABEL	STOCK NUMBER	AREA (IN^2)	MODULUS OF ELASTICITY (PSI)	DIAMETER (IN)	UNIT WEIGHT (LBS/FT)	DRAW COEF.	THERMAL EXPANSION COEFF. (/DEG F)	ULTIMATE TENSION (KIPS)	ALLOWABLE % OF ULTIMATE
7/16" 7 STRAND HS		0.1156	2.57E+07	0.435	0.399	1	6.4E-06	14	100

CLAMP PROPERTIES				
LABEL	STOCK NUMBER	HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)	
CMA-10	CMA-1	1.2E+04	0	

WEATHER CASES													
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1

STRUCTURE LOADS CRITERIA															
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON- TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSUL- ATORS	STRENGTH FACTOR HARD- WARE	STRENGTH FACTOR FOUND- ATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

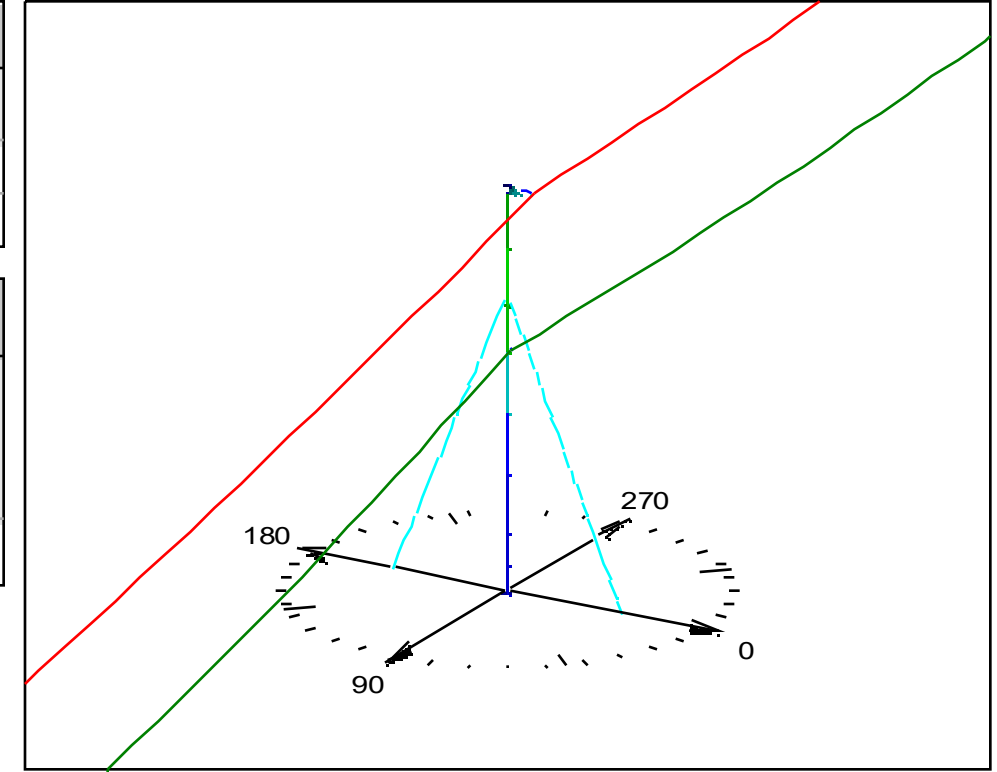
CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	`GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	`GRADE A HEAVY`		

LINE	1	POLE NUMBER	20	TYPE	
NOTES					
LOCATION	06239003.0185800				
COMMENTS					
LATITUDE (DMS)	41°13'46.423"N	LONGITUDE (DMS)	122°15'9.647"W	GROUND ELEVATION (FT)	3799.4



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	65.08	WOOD POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+
ELEMENT	47.06	GUY "GUY1"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+

WOOD POLE PROPERTIES AND EMBEDMENT								
POLE LABEL	PROPERTY LABEL	STOCK NUMBER	SPECIES	CLASS	LENGTH (FT)	EMBED. (FT)	MODELED GL DIAM. (IN)	GL CIRC. (IN)
POLE	DF-4-40	DF-4-40	DF - DOUGAS FIR	4	40.0	6.0	10.7	33.5



FRAMING LIBRARY			
FRAMING PROPERTY LABEL	STOCK NUMBER	KEYWORDS	INSERTION DISTANCE FROM TIP (FT)
VANG-COMM_SEC_NEUT		VANG-COMM_SEC_NEUT	0.50

SUMMARY OF WOOD POLE USAGES				
WOOD POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	65.08	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	26.4	1090.1

SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
MC2	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

SUMMARY OF TUBULAR DAVIT USAGES				
TUBULAR DAVIT LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
TAN1	25.52	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	33.5	28.3

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES						
LOAD CASE	FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %	
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	3.83	0.05	1.15	0.00	
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND1	-1.95	0.82	0.00	0.00	
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND2	-0.01	0.00	0.00	0.00	
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	3.61	0.11	2.55	0.00	
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND1	-0.01	0.00	0.00	0.00	
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND2	-1.73	0.73	0.00	0.00	

SUMMARY OF GUY USAGES				
GUY LABEL	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)	UNSTRESSED LENGTH (FT)
GUY1	47.06	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	5.3	26.00
GUY2	41.73	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	5.3	26.00

SUMMARY OF MAXIMUM USAGES BY LOAD CASE			
LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	65.08	POLE	WOOD POLE
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	41.73	GUY2	GUY

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED VERTICAL (LBS)	SPAN TRANSVERSE (LBS)	LOADS LONGITUDINAL (LBS)	- FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)
SET #1	0.0	2.4	33.5	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	232	4478	621	348	-3	1.65	2.21
SET #2	0.0	0.4	20.1	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	232	2204	364	265	-3	1.13	1.34

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED VERTICAL (LBS)	SPAN TRANSVERSE (LBS)	LOADS LONGITUDINAL (LBS)	- FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)
SET #1	0.0	2.4	33.5	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	232	4478	621	-421	-6	1.65	2.21
SET #2	0.0	0.4	20.1	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	232	2204	364	-264	-3	1.13	1.34

WOOD MATERIAL PROPERTIES									
MATERIAL LABEL	MODULUS OF ELASTICITY (KSI)	DESIGN STRESS MOR (KSI)	WEIGHT DENSITY (LBS/FT^3)	ANSI O5.1 STATUS	ALLOWABLE SHEAR STRESS (KSI)	ALLOWABLE COMPRESS. STRESS (KSI)	THROUGH-BORING STRENGTH REDUCTION %	THROUGH-BORING DIST. ABOVE GROUND (FT)	THROUGH-BORING DIST. BELOW GROUND (FT)
DF-DOUGLAS FIR	2380	8	60	INCLUDED	0	0	0	0	0

TUBULAR DAVIT PROPERTIES																
DAVIT PROPERTY LABEL	STOCK NUMBER	STEEL SHAPE	THICKNESS (IN)	BASE DIAMETER OR DEPTH (IN)	TIP DIAMETER OR DEPTH (IN)	TAPER (IN/FT)	DRAG COEF.	MODULUS OF ELASTICITY (KSI)	STRENGTH CHECK TYPE	VERTICAL CAPACITY (LBS)	TENSION CAPACITY (LBS)	COMPRES. CAPACITY (LBS)	LONG. CAPACITY (LBS)	YIELD STRESS (KSI)	WEIGHT DENSITY OVERRIDE (LBS/FT^3)	STEEL SHAPE AT END
BM-24		4F	0.377	4.5	1.5	0	0	25000	NOMINAL	6000	2500	2500	2300	0	0	

CABLE PROPERTIES										
LABEL	STOCK NUMBER	AREA (IN^2)	MODULUS OF ELASTICITY (PSI)	DIAMETER (IN)	UNIT WEIGHT (LBS/FT)	DRAG COEF.	THERMAL EXPANSION COEFF. (/DEG F)	ULTIMATE TENSION (KIPS)	ALLOWABLE % OF ULTIMATE	
5/16" 7 STRAND EHS		0.05946	2.5E+07	0.312	0.205	1	6.4E-06	9	100	

CLAMP PROPERTIES				
LABEL		STOCK NUMBER	HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)
MC-2		MC-2	1.1E+04	0
CMA-10		CMA-1	1.2E+04	0

WEATHER CASES														
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR	
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1	

STRUCTURE LOADS CRITERIA															
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON-TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSUL-ATORS	STRENGTH FACTOR HARD-WARE	STRENGTH FACTOR FOUND-ATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	` GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	` GRADE A HEAVY`		

LINE	1	POLE NUMBER	21	TYPE	
NOTES					
LOCATION	06239003.0185701				
COMMENTS					
LATITUDE (DMS)	41°13'45.299"N	LONGITUDE (DMS)	122°15'7.087"W	GROUND ELEVATION (FT)	3825.0



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	95.08	WOOD POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+
ELEMENT	33.88	TUBULAR DAVIT "TAN1"	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-

WOOD POLE PROPERTIES AND EMBEDMENT								
POLE LABEL	PROPERTY LABEL	STOCK NUMBER	SPECIES	CLASS	LENGTH (FT)	EMBED. (FT)	MODELED GL DIAM. (IN)	GL CIRC. (IN)
POLE	DF-3-40	DF-3-40	DF - DOUGAS FIR	3	40.0	6.0	11.5	36.0

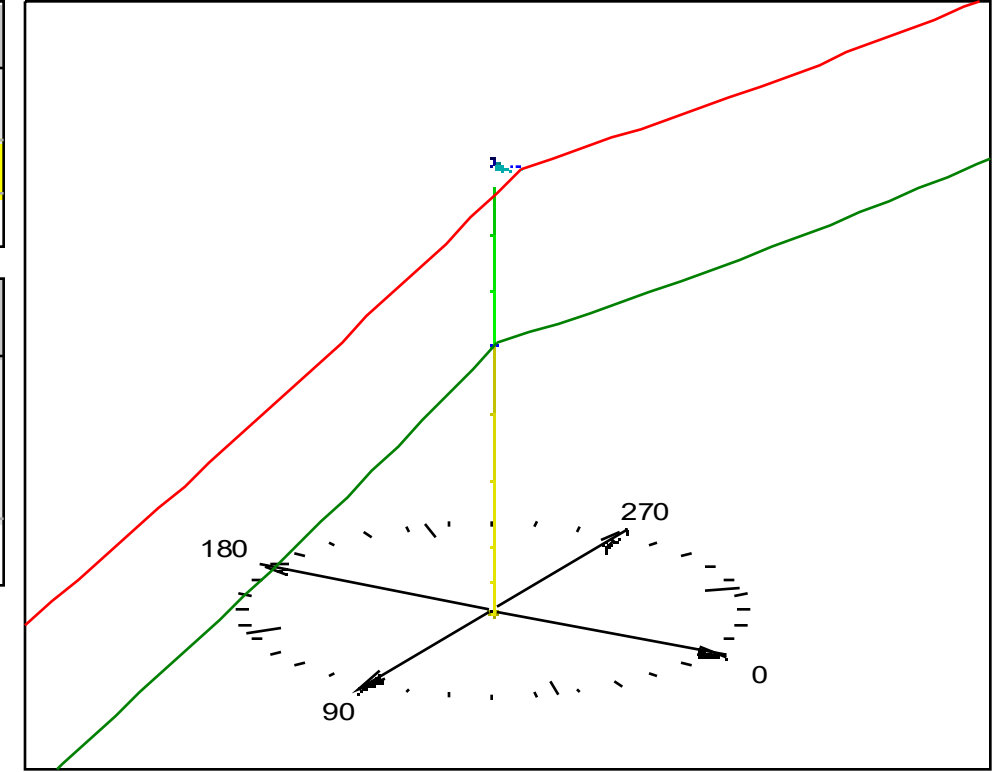
FRAMING LIBRARY			
FRAMING PROPERTY LABEL	STOCK NUMBER	KEYWORDS	INSERTION DISTANCE FROM TIP (FT)
VANG-COMM_SEC_NEUT		VANG-COMM_SEC_NEUT	0.50

SUMMARY OF WOOD POLE USAGES				
WOOD POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	95.08	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	1.3	1271.6

SUMMARY OF TUBULAR DAVIT USAGES				
TUBULAR DAVIT LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
TAN1	33.88	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	33.5	28.3

SUMMARY OF MAXIMUM USAGES BY LOAD CASE			
LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	95.08	POLE	WOOD POLE
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	87.01	POLE	WOOD POLE

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES					
LOAD CASE	FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	3.00	0.71	23.02	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	3.00	0.90	21.07	0.00



SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
MC2	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	TRANSVERSE (LBS)	LOADS-LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS-VERTICAL (LBS/FT)
SET #1	0.0	2.4	33.5	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	230	4484	1313	319	-7	1.65	2.21
SET #2	0.0	0.4	20.0	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	230	2207	662	231	-5	1.13	1.34

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	TRANSVERSE (LBS)	LOADS-LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS-VERTICAL (LBS/FT)
SET #1	0.0	2.4	33.5	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	230	4484	1313	-443	-7	1.65	2.21
SET #2	0.0	0.4	20.0	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	230	2207	662	-293	-5	1.13	1.34

WOOD MATERIAL PROPERTIES									
MATERIAL LABEL	MODULUS OF ELASTICITY (KSI)	DESIGN STRESS MOR (KSI)	WEIGHT DENSITY (LBS/FT^3)	ANSI O5.1 STATUS	ALLOWABLE SHEAR STRESS (KSI)	ALLOWABLE COMPRESS. STRESS (KSI)	THROUGH-BORING STRENGTH REDUCTION %	THROUGH-BORING DIST. ABOVE GROUND (FT)	THROUGH-BORING DIST. BELOW GROUND (FT)
DF-DOUGLAS FIR	2380	8	60	INCLUDED	0	0	0	0	0

TUBULAR DAVIT PROPERTIES																
DAVIT PROPERTY LABEL	STOCK NUMBER	STEEL SHAPE	THICKNESS (IN)	BASE DIAMETER OR DEPTH (IN)	TIP DIAMETER OR DEPTH (IN)	TAPER (IN/FT)	DRAG COEF.	MODULUS OF ELASTICITY (KSI)	STRENGTH CHECK TYPE	VERTICAL CAPACITY (LBS)	TENSION CAPACITY (LBS)	COMPRES. CAPACITY (LBS)	LONG. CAPACITY (LBS)	YIELD STRESS (KSI)	WEIGHT DENSITY OVERRIDE (LBS/FT^3)	STEEL SHAPE AT END
BM-24		4F	0.377	4.5	1.5	0	0	25000	NOMINAL	6000	2500	2500	2300	0	0	

CLAMP PROPERTIES				
LABEL		STOCK NUMBER		HOLDING CAPACITY (LBS)
MC-2		MC-2		1.1E+04
CMA-10		CMA-1		1.2E+04

WEATHER CASES													
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1

STRUCTURE LOADS CRITERIA															
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON-TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSULATORS	STRENGTH FACTOR HARDWARE	STRENGTH FACTOR FOUNDATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	`GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	`GRADE A HEAVY`		

LINE	1	POLE NUMBER	22	TYPE	
NOTES					
LOCATION	06239003.0185700				
COMMENTS					
LATITUDE (DMS)	41°13'44.162"N	LONGITUDE (DMS)	122°15'4.416"W	GROUND ELEVATION (FT)	3814.1



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	92.74	WOOD POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-
ELEMENT	44.04	GUY "GUY1"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+

WOOD POLE PROPERTIES AND EMBEDMENT								
POLE LABEL	PROPERTY LABEL	STOCK NUMBER	SPECIES	CLASS	LENGTH (FT)	EMBED. (FT)	MODELED GL DIAM. (IN)	GL CIRC. (IN)
POLE	DF-5-35	DF-5-35	DF - DOUGAS FIR	5	35.0	5.5	9.3	29.2

FRAMING LIBRARY			
FRAMING PROPERTY LABEL	STOCK NUMBER	KEYWORDS	INSERTION DISTANCE FROM TIP (FT)
VANG-COMM_SEC_NEUT		VANG-COMM_SEC_NEUT	0.50

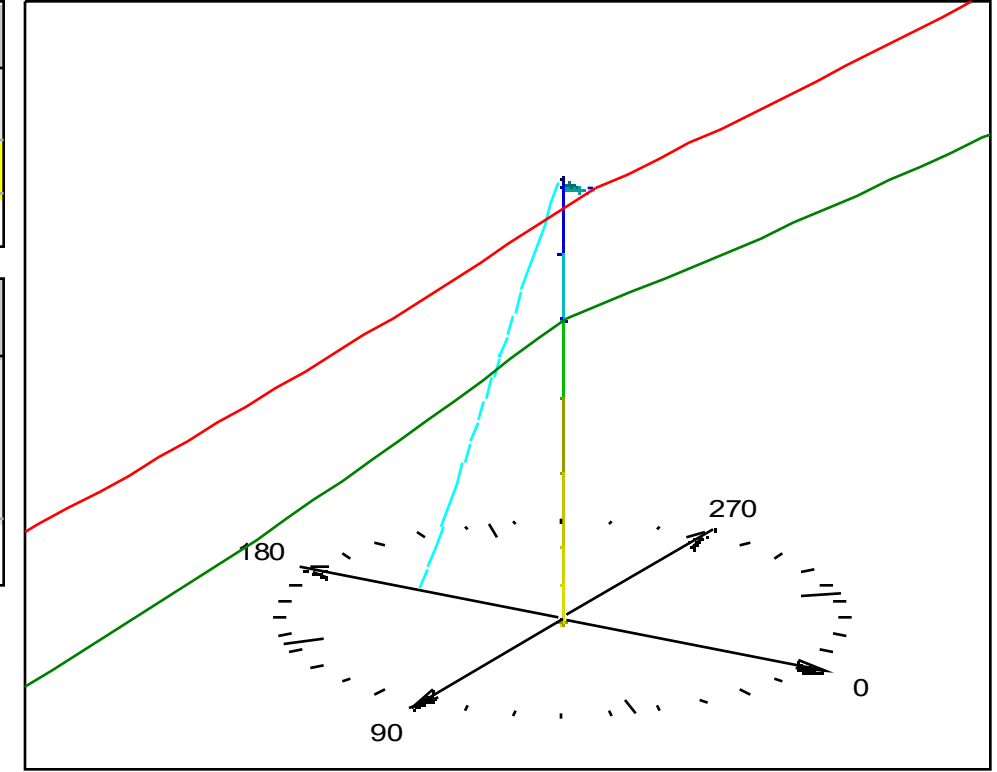
SUMMARY OF WOOD POLE USAGES				
WOOD POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	92.74	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	1.3	741.4

SUMMARY OF TUBULAR DAVIT USAGES				
TUBULAR DAVIT LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
TAN1	30.84	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	29.0	28.3

SUMMARY OF GUY USAGES				
GUY LABEL	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)	UNSTRESSED LENGTH (FT)
GUY1	44.04	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	6.3	30.67

SUMMARY OF MAXIMUM USAGES BY LOAD CASE			
LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	44.04	GUY1	GUY
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	92.74	POLE	WOOD POLE

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+														
CIRCUIT LABEL	---AVERAGE--- STRUCTURE X Y (FT) (FT)		ATTACHMENT HEIGHT (FT)	WITNESSES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE----- LENGTH HORIZONTAL (FT) TENSION (LBS)		-----TOTAL----- -FACTORED SPAN LOADS- VERTICAL TRANSVERSE LONGITUDINAL (LBS) (LBS) (LBS)			-----AVERAGE----- -FACTORED UNIT LOADS- HORIZONTAL VERTICAL (LBS/FT) (LBS/FT)
SET #1	0.0	2.4	29.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	224	4489	107	509	-3	1.65 2.21
SET #2	0.0	0.3	20.1	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	224	2210	199	322	-1	1.13 1.34



SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
MC2	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES						
LOAD CASE	FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %	
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	2.78	0.29	4.08	0.00	
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND1	-1.86	0.65	0.00	0.00	
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	0.92	0.53	12.06	0.00	
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND1	-0.00	0.00	0.00	0.00	

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-																
CIRCUIT LABEL	---AVERAGE---			WIRE PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----		
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	LOADS TRANSVERSE (LBS)	LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)	
SET #1	0.0	2.4	29.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	224	4489	107	-231	-3	1.65	2.21	
SET #2	0.0	0.3	20.1	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	224	2210	199	-186	-1	1.13	1.34	

WOOD MATERIAL PROPERTIES										
MATERIAL LABEL	MODULUS OF ELASTICITY (KSI)	DESIGN STRESS MOR (KSI)	WEIGHT DENSITY (LBS/FT^3)	ANSI O5.1 STATUS	ALLOWABLE SHEAR STRESS (KSI)	ALLOWABLE COMPRESS. STRESS (KSI)	THROUGH-BORING STRENGTH REDUCTION %	THROUGH-BORING DIST. ABOVE GROUND (FT)	THROUGH-BORING DIST. BELOW GROUND (FT)	
DF-DOUGLAS FIR	2380	8	60	INCLUDED	0	0	0	0	0	

TUBULAR DAVIT PROPERTIES																	
DAVIT PROPERTY LABEL	STOCK NUMBER	STEEL SHAPE	THICKNESS (IN)	BASE DIAMETER OR DEPTH (IN)	TIP DIAMETER OR DEPTH (IN)	TAPER (IN/FT)	DRAG COEF.	MODULUS OF ELASTICITY (KSI)	STRENGTH CHECK TYPE	VERTICAL CAPACITY (LBS)	TENSION CAPACITY (LBS)	COMPRES. CAPACITY (LBS)	LONG. CAPACITY (LBS)	YIELD STRESS (KSI)	WEIGHT DENSITY OVERRIDE (LBS/FT^3)	STEEL SHAPE AT END	
BM-24		4F	0.377	4.5	1.5	0	0	25000	NOMINAL	6000	2500	2500	2300	0	0		

CABLE PROPERTIES									
LABEL	STOCK NUMBER	AREA (IN^2)	MODULUS OF ELASTICITY (PSI)	DIAMETER (IN)	UNIT WEIGHT (LBS/FT)	DRAG COEF.	THERMAL EXPANSION COEFF. (/DEG F)	ULTIMATE TENSION (KIPS)	ALLOWABLE % OF ULTIMATE
5/16" 7 STRAND EHS		0.05946	2.5E+07	0.312	0.205	1	6.4E-06	9	100

CLAMP PROPERTIES				
LABEL	STOCK NUMBER	HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)	
MC-2	MC-2	1.1E+04	0	
CMA-10	CMA-1	1.2E+04	0	

WEATHER CASES														
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR	
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1	

STRUCTURE LOADS CRITERIA																
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)	
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00	
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00	

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON- TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSUL- ATORS	STRENGTH FACTOR HARD- WARE	STRENGTH FACTOR FOUND- ATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

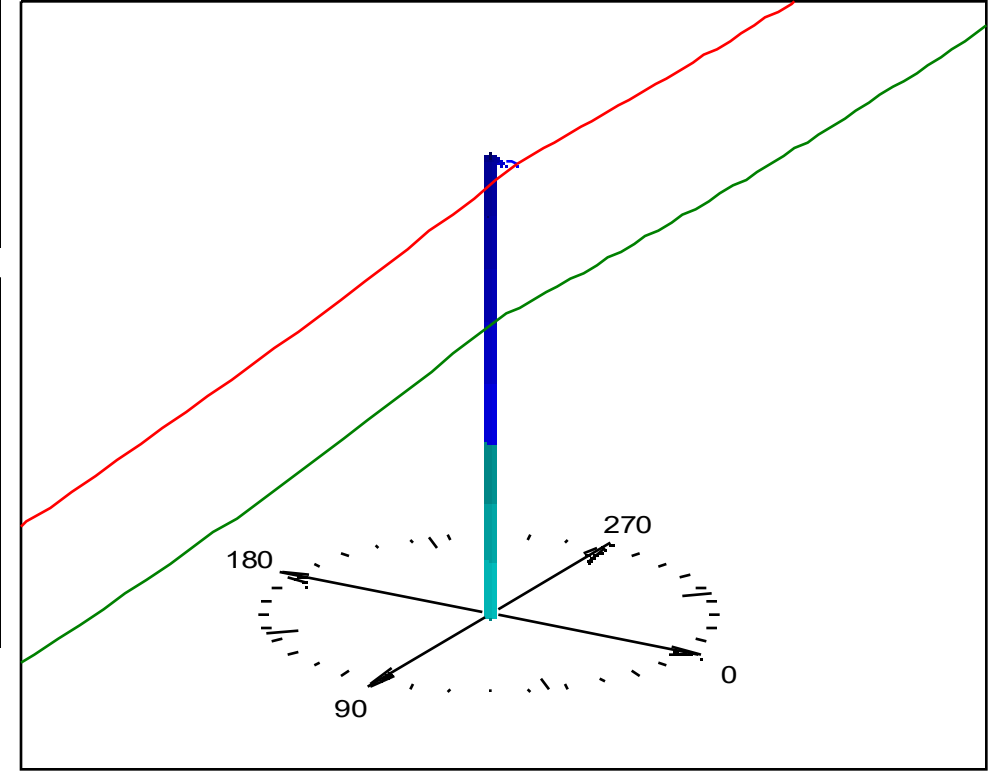
CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	`GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	`GRADE A HEAVY`		

LINE	1	POLE NUMBER	23	TYPE	
NOTES					
LOCATION	06239003.0186702				
COMMENTS					
LATITUDE (DMS)	41°13'43.065"N	LONGITUDE (DMS)	122°15'2.009"W	GROUND ELEVATION (FT)	3809.6



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	36.09	FRP POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+
ELEMENT	16.83	TUBULAR DAVIT "TAN1"	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-

FRP POLE PROPERTIES									
FRP POLE PROPERTY LABEL		STOCK NUMBER	LENGTH (FT)	DEFAULT EMBEDDED LENGTH (FT)	SHAPE	DEFAULT DRAG COEF.	TUBES	TOP TUBE CUT (FT)	
10.2" X 0.25" OCTAGONAL CP074 45FT		PT4503CP0743B2 (PAC SI# 8000393)	45.00	6.5	8F	1.4	1 TUBE	15	



FRAMING LIBRARY			
FRAMING PROPERTY LABEL	STOCK NUMBER	KEYWORDS	INSERTION DISTANCE FROM TIP (FT)
VANG-COMM_SEC_NEUT		VANG-COMM_SEC_NEUT	0.50

SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
MC2	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

SUMMARY OF FRP POLE USAGES				
FRP POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	36.09	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	2.4	397.1

SUMMARY OF TUBULAR DAVIT USAGES				
TUBULAR DAVIT LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
TAN1	16.83	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	38.0	28.3

SUMMARY OF MAXIMUM USAGES BY LOAD CASE			
LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	36.09	POLE	FRP POLE
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	33.96	POLE	FRP POLE

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES					
LOAD CASE	FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	0.92	0.72	22.11	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	0.92	0.74	20.80	0.00

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	TRANSVERSE (LBS)	LOADS- LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)
SET #1	0.0	2.5	38.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	164	4490	360	261	0	1.65	2.21
SET #2	0.0	0.4	24.5	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	164	2211	172	183	0	1.13	1.34

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	TRANSVERSE (LBS)	LOADS- LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)
SET #1	0.0	2.5	38.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	164	4490	360	-278	-0	1.65	2.21
SET #2	0.0	0.4	24.5	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	164	2211	172	-187	0	1.13	1.34

TUBULAR DAVIT PROPERTIES																
DAVIT PROPERTY LABEL	STOCK NUMBER	STEEL SHAPE	THICKNESS (IN)	BASE DIAMETER OR DEPTH (IN)	TIP DIAMETER OR DEPTH (IN)	TAPER (IN/FT)	DRAG COEF.	MODULUS OF ELASTICITY (KSI)	STRENGTH CHECK TYPE	VERTICAL CAPACITY (LBS)	TENSION CAPACITY (LBS)	COMPRES. CAPACITY (LBS)	LONG. CAPACITY (LBS)	YIELD STRESS (KSI)	WEIGHT DENSITY OVERRIDE (LBS/FT^3)	STEEL SHAPE AT END
BM-24		4F	0.377	4.5	1.5	0	0	25000	NOMINAL	6000	2500	2500	2300	0	0	

CLAMP PROPERTIES				
LABEL		STOCK NUMBER	HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)
MC-2		MC-2	1.1E+04	0
CMA-10		CMA-1	1.2E+04	0

WEATHER CASES														
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR	
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1	

STRUCTURE LOADS CRITERIA																
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)	
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00	
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00	

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON- TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSUL- ATORS	STRENGTH FACTOR HARD- WARE	STRENGTH FACTOR FOUND- ATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

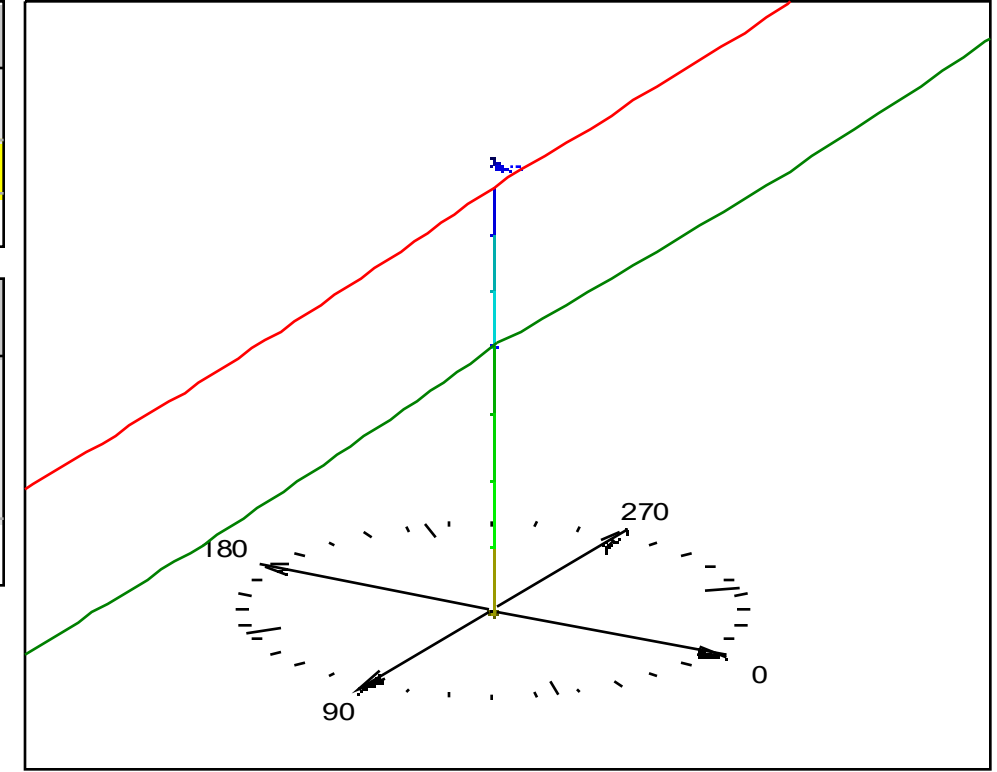
CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	`GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	`GRADE A HEAVY`		

LINE	1	POLE NUMBER	24	TYPE	
NOTES					
LOCATION	06239003.0186701				
COMMENTS					
LATITUDE (DMS)	41°13'42.491"N	LONGITUDE (DMS)	122°15'0.751"W	GROUND ELEVATION (FT)	3816.5



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	76.78	WOOD POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-
ELEMENT	21.49	TUBULAR DAVIT "TAN1"	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-

WOOD POLE PROPERTIES AND EMBEDMENT								
POLE LABEL	PROPERTY LABEL	STOCK NUMBER	SPECIES	CLASS	LENGTH (FT)	EMBED. (FT)	MODELED GL DIAM. (IN)	GL CIRC. (IN)
POLE	DF-3-40	DF-3-40	DF - DOUGAS FIR	3	40.0	6.0	11.5	36.0



FRAMING LIBRARY			
FRAMING PROPERTY LABEL	STOCK NUMBER	KEYWORDS	INSERTION DISTANCE FROM TIP (FT)
VANG-COMM_SEC_NEUT		VANG-COMM_SEC_NEUT	0.50

SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
MC2	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

SUMMARY OF WOOD POLE USAGES				
WOOD POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	76.78	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	2.5	1271.6

SUMMARY OF TUBULAR DAVIT USAGES				
TUBULAR DAVIT LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
TAN1	21.49	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	33.5	28.3

SUMMARY OF MAXIMUM USAGES BY LOAD CASE			
LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	39.21	POLE	WOOD POLE
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	76.78	POLE	WOOD POLE

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES					
LOAD CASE	FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	1.29	0.39	9.51	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	1.29	0.74	18.76	0.00

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	TRANSVERSE (LBS)	LOADS- LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)
SET #1	0.0	2.4	33.5	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	146	4489	155	126	2	1.65	2.21
SET #2	0.0	0.4	20.0	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	146	2210	111	107	1	1.13	1.34

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	TRANSVERSE (LBS)	LOADS- LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)
SET #1	0.0	2.4	33.5	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	146	4489	155	-355	3	1.65	2.21
SET #2	0.0	0.4	20.0	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	146	2210	111	-223	2	1.13	1.34

WOOD MATERIAL PROPERTIES									
MATERIAL LABEL	MODULUS OF ELASTICITY (KSI)	DESIGN STRESS MOR (KSI)	WEIGHT DENSITY (LBS/FT^3)	ANSI O5.1 STATUS	ALLOWABLE SHEAR STRESS (KSI)	ALLOWABLE COMPRESS. STRESS (KSI)	THROUGH-BORING STRENGTH REDUCTION %	THROUGH-BORING DIST. ABOVE GROUND (FT)	THROUGH-BORING DIST. BELOW GROUND (FT)
DF-DOUGLAS FIR	2380	8	60	INCLUDED	0	0	0	0	0

TUBULAR DAVIT PROPERTIES																
DAVIT PROPERTY LABEL	STOCK NUMBER	STEEL SHAPE	THICKNESS (IN)	BASE DIAMETER OR DEPTH (IN)	TIP DIAMETER OR DEPTH (IN)	TAPER (IN/FT)	DRAG COEF.	MODULUS OF ELASTICITY (KSI)	STRENGTH CHECK TYPE	VERTICAL CAPACITY (LBS)	TENSION CAPACITY (LBS)	COMPRES. CAPACITY (LBS)	LONG. CAPACITY (LBS)	YIELD STRESS (KSI)	WEIGHT DENSITY OVERRIDE (LBS/FT^3)	STEEL SHAPE AT END
BM-24		4F	0.377	4.5	1.5	0	0	25000	NOMINAL	6000	2500	2500	2300	0	0	

CLAMP PROPERTIES				
LABEL	STOCK NUMBER	HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)	
MC-2	MC-2	1.1E+04	0	
CMA-10	CMA-1	1.2E+04	0	

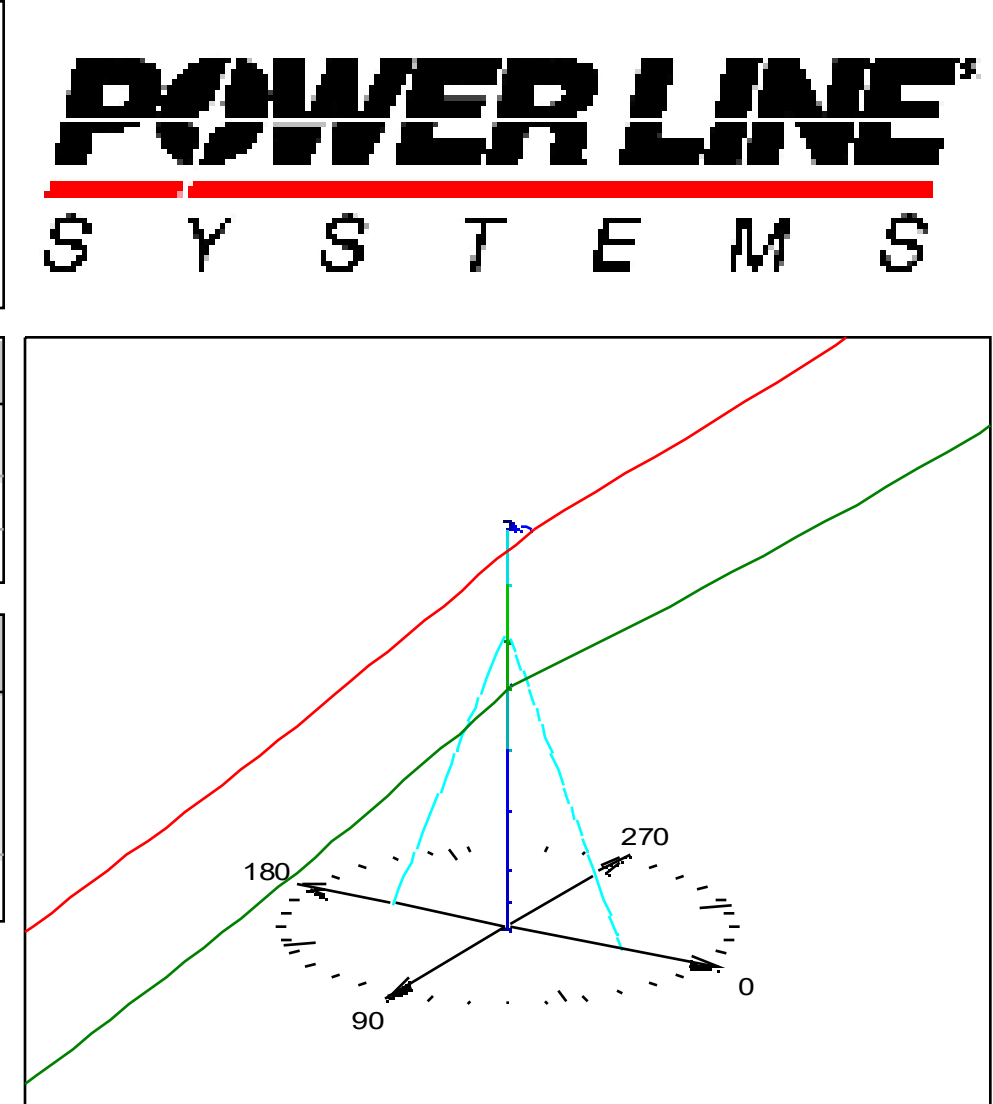
WEATHER CASES														
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR	
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1	

STRUCTURE LOADS CRITERIA															
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON-TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSULATORS	STRENGTH FACTOR HARDWARE	STRENGTH FACTOR FOUNDATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	` GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	` GRADE A HEAVY`		

LINE	1	POLE NUMBER	25	TYPE	
NOTES					
LOCATION	06239003.0186700				
COMMENTS					
LATITUDE (DMS)	41°13'41.614"N	LONGITUDE (DMS)	122°14'58.707"W	GROUND ELEVATION (FT)	3827.0



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	61.56	WOOD POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+
ELEMENT	49.14	GUY "GUY2"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+

WOOD POLE PROPERTIES AND EMBEDMENT								
POLE LABEL	PROPERTY LABEL	STOCK NUMBER	SPECIES	CLASS	LENGTH (FT)	EMBED. (FT)	MODELED GL DIAM. (IN)	GL CIRC. (IN)
POLE	DF-4-40	DF-4-40	DF - DOUGAS FIR	4	40.0	6.0	10.7	33.5

FRAMING LIBRARY			
FRAMING PROPERTY LABEL	STOCK NUMBER	KEYWORDS	INSERTION DISTANCE FROM TIP (FT)
VANG-COMM_SEC_NEUT		VANG-COMM_SEC_NEUT	0.50

SUMMARY OF WOOD POLE USAGES				
WOOD POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	61.56	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	26.4	1090.1

SUMMARY OF TUBULAR DAVIT USAGES				
TUBULAR DAVIT LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
TAN1	24.12	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	33.5	28.3

SUMMARY OF GUY USAGES				
GUY LABEL	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)	UNSTRESSED LENGTH (FT)
GUY1	34.94	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	5.3	26.00
GUY2	49.14	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	5.3	26.00

SUMMARY OF MAXIMUM USAGES BY LOAD CASE			
LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	61.56	POLE	WOOD POLE
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	34.94	GUY1	GUY

SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
MC2	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES					
LOAD CASE	FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	3.54	0.02	1.60	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND1	-0.01	0.00	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND2	-2.03	0.86	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	2.95	0.09	1.98	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND1	-1.44	0.61	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND2	-0.01	0.00	0.00	0.00

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED VERTICAL (LBS)	SPAN TRANSVERSE (LBS)	LOADS LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)
SET #1	0.0	2.4	33.5	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	220	4486	336	398	3	1.65	2.21
SET #2	0.0	0.4	20.1	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	220	2209	269	287	1	1.13	1.34

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED VERTICAL (LBS)	SPAN TRANSVERSE (LBS)	LOADS LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)
SET #1	0.0	2.4	33.5	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	220	4486	336	-329	5	1.65	2.21
SET #2	0.0	0.4	20.1	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	220	2209	269	-212	0	1.13	1.34

WOOD MATERIAL PROPERTIES									
MATERIAL LABEL	MODULUS OF ELASTICITY (KSI)	DESIGN STRESS MOR (KSI)	WEIGHT DENSITY (LBS/FT^3)	ANSI O5.1 STATUS	ALLOWABLE SHEAR STRESS (KSI)	ALLOWABLE COMPRESS. STRESS (KSI)	THROUGH-BORING STRENGTH REDUCTION %	THROUGH-BORING DIST. ABOVE GROUND (FT)	THROUGH-BORING DIST. BELOW GROUND (FT)
DF-DOUGLAS FIR	2380	8	60	INCLUDED	0	0	0	0	0

TUBULAR DAVIT PROPERTIES																
DAVIT PROPERTY LABEL	STOCK NUMBER	STEEL SHAPE	THICKNESS (IN)	BASE DIAMETER OR DEPTH (IN)	TIP DIAMETER OR DEPTH (IN)	TAPER (IN/FT)	DRAG COEF.	MODULUS OF ELASTICITY (KSI)	STRENGTH CHECK TYPE	VERTICAL CAPACITY (LBS)	TENSION CAPACITY (LBS)	COMPRES. CAPACITY (LBS)	LONG. CAPACITY (LBS)	YIELD STRESS (KSI)	WEIGHT DENSITY OVERRIDE (LBS/FT^3)	STEEL SHAPE AT END
BM-24		4F	0.377	4.5	1.5	0	0	25000	NOMINAL	6000	2500	2500	2300	0	0	

CABLE PROPERTIES									
LABEL	STOCK NUMBER	AREA (IN^2)	MODULUS OF ELASTICITY (PSI)	DIAMETER (IN)	UNIT WEIGHT (LBS/FT)	DRAG COEF.	THERMAL EXPANSION COEFF. (/DEG F)	ULTIMATE TENSION (KIPS)	ALLOWABLE % OF ULTIMATE
5/16" 7 STRAND EHS		0.05946	2.5E+07	0.312	0.205	1	6.4E-06	9	100

CLAMP PROPERTIES				
LABEL	STOCK NUMBER	HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)	
MC-2	MC-2	1.1E+04	0	
CMA-10	CMA-1	1.2E+04	0	

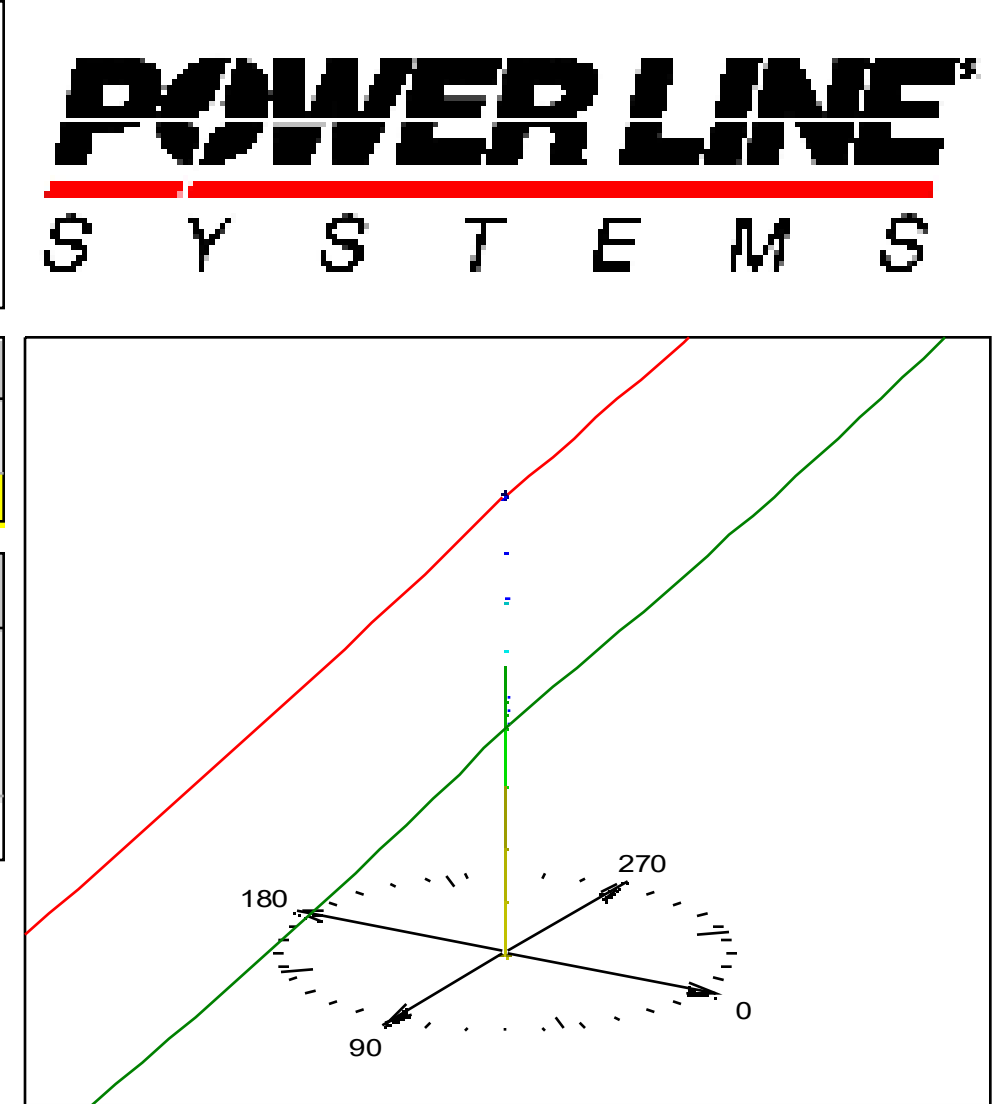
WEATHER CASES													
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1

STRUCTURE LOADS CRITERIA															
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON-TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSUL-ATORS	STRENGTH FACTOR HARD-WARE	STRENGTH FACTOR FOUND-ATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	` GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	` GRADE A HEAVY`		

LINE	1	POLE NUMBER	26	TYPE	
NOTES					
LOCATION	06239003.0186600				
COMMENTS					
LATITUDE (DMS)	41°13'40.302"N	LONGITUDE (DMS)	122°14'55.766"W	GROUND ELEVATION (FT)	3846.6



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	86.53	WOOD POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-

WOOD POLE PROPERTIES AND EMBEDMENT								
POLE LABEL	PROPERTY LABEL	STOCK NUMBER	SPECIES	CLASS	LENGTH (FT)	EMBED. (FT)	MODELED GL DIAM. (IN)	GL CIRC. (IN)
POLE	DF-3-45	DF-3-45	DF - DOUGAS FIR	3	45.0	6.5	11.9	37.3

SUMMARY OF WOOD POLE USAGES				
WOOD POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	86.53	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	2.3	1502.7

SUMMARY OF MAXIMUM USAGES BY LOAD CASE			
LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	81.45	POLE	WOOD POLE
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	86.53	POLE	WOOD POLE

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES					
LOAD CASE	FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	1.10	0.78	22.21	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	1.10	0.86	23.60	0.00

SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F3-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F4-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F5-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
HD-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F2-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+															
CIRCUIT LABEL	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)	PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	LENGTH (FT)	AVERAGE HORIZONTAL TENSION (LBS)	TOTAL FACTORED SPAN LOADS			AVERAGE FACTORED UNIT LOADS	
											VERTICAL (LBS)	TRANSVERSE (LBS)	LONGITUDINAL (LBS)	HORIZONTAL (LBS/FT)	VERTICAL (LBS/FT)
SET #4	0.0	0.4	19.1	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	227	2199	-19	214	20	1.13	1.34
SET #21	0.4	0.0	38.0	1	1	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	261	4484	704	210	4484	1.65	2.21
SET #31	-0.4	-0.0	38.0	1	1	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	192	4453	-771	172	-4453	1.65	2.21

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-															
CIRCUIT LABEL	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)	PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	LENGTH (FT)	AVERAGE HORIZONTAL TENSION (LBS)	TOTAL FACTORED SPAN LOADS			AVERAGE FACTORED UNIT LOADS	
											VERTICAL (LBS)	TRANSVERSE (LBS)	LONGITUDINAL (LBS)	HORIZONTAL (LBS/FT)	VERTICAL (LBS/FT)
SET #4	0.0	0.4	19.1	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	227	2199	-19	-305	19	1.13	1.34
SET #21	0.4	0.0	38.0	1	1	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	261	4484	704	-221	4483	1.65	2.21
SET #31	-0.4	-0.0	38.0	1	1	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	192	4453	-771	-151	-4454	1.65	2.21

WOOD MATERIAL PROPERTIES									
MATERIAL LABEL	MODULUS OF ELASTICITY (KSI)	DESIGN STRESS MOR (KSI)	WEIGHT DENSITY (LBS/FT^3)	ANSI O5.1 STATUS	ALLOWABLE SHEAR STRESS (KSI)	ALLOWABLE COMPRESS. STRESS (KSI)	THROUGH-BORING STRENGTH REDUCTION %	THROUGH-BORING DIST. ABOVE GROUND (FT)	THROUGH-BORING DIST. BELOW GROUND (FT)
DF-DOUGLAS FIR	2380	8	60	INCLUDED	0	0	0	0	0

CLAMP PROPERTIES			
LABEL	STOCK NUMBER	HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)
CMA-10	CMA-1	1.2E+04	0
MG-41280	MG-4128	2.3E+04	0

WEATHER CASES													
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1

STRUCTURE LOADS CRITERIA															
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON-TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSULATORS	STRENGTH FACTOR HARDWARE	STRENGTH FACTOR FOUNDATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	GRADE A HEAVY		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	GRADE A HEAVY		

LINE	1	POLE NUMBER	27	TYPE	
NOTES					
LOCATION	06239003.0187601				
COMMENTS					
LATITUDE (DMS)	41°13'39.368"N	LONGITUDE (DMS)	122°14'53.571"W	GROUND ELEVATION (FT)	3889.2



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	75.49	WOOD POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+
ELEMENT	10.56	TUBULAR DAVIT "SC"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+

WOOD POLE PROPERTIES AND EMBEDMENT								
POLE LABEL	PROPERTY LABEL	STOCK NUMBER	SPECIES	CLASS	LENGTH (FT)	EMBED. (FT)	MODELED GL DIAM. (IN)	GL CIRC. (IN)
POLE	DF-2-45	DF-2-45	DF - DOUGAS FIR	2	45.0	6.5	12.8	40.3

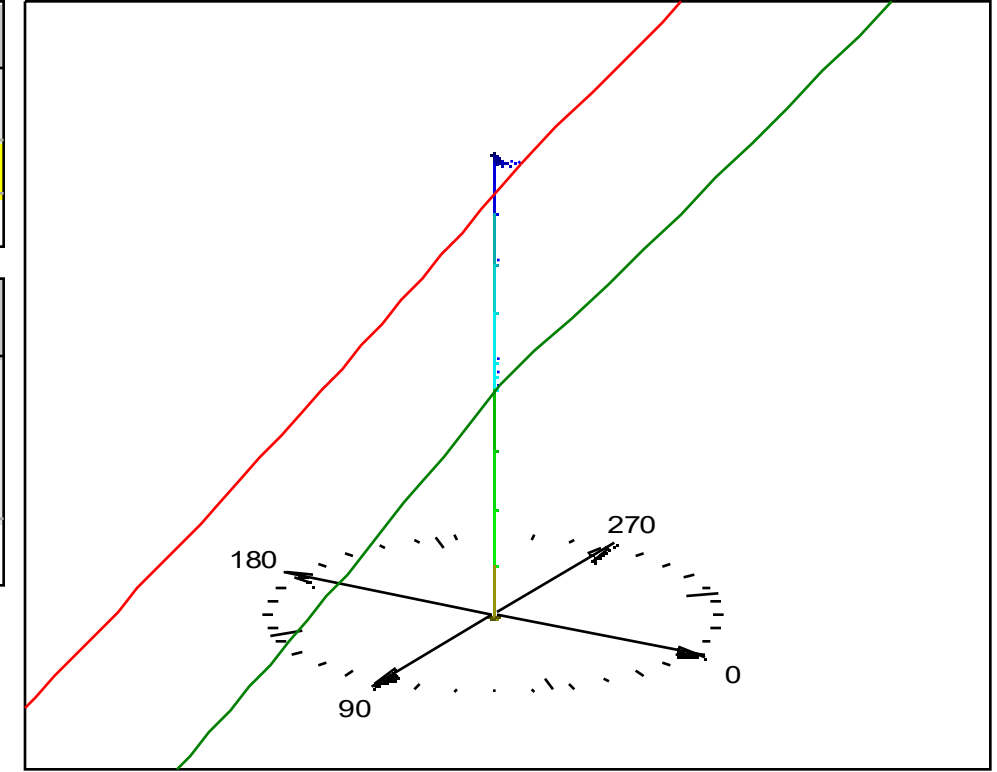
FRAMING LIBRARY				
FRAMING PROPERTY LABEL	STOCK NUMBER	KEYWORDS	INSERTION DISTANCE FROM TIP (FT)	
AC1244-02		AC1244-02, 03,04 TANGENT 25,35,46KV	0.50	
VANG-COMM_SEC_NEUT		VANG-COMM_SEC_NEUT	0.50	

SUMMARY OF WOOD POLE USAGES				
WOOD POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	75.49	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	2.3	1758.8

SUMMARY OF TUBULAR DAVIT USAGES				
TUBULAR DAVIT LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
SC	10.56	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	38.0	28.3

SUMMARY OF MAXIMUM USAGES BY LOAD CASE			
LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	75.49	POLE	WOOD POLE
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	72.60	POLE	WOOD POLE

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES					
LOAD CASE	FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	1.43	0.94	25.90	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	1.43	0.88	24.90	0.00



SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F3-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F4-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F5-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
SC	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+																
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----		
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	TRANSVERSE (LBS)	LOADS LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)	
SET #4	0.0	0.4	19.1	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	243	2171	43	315	36	1.13	1.34	
SET #5	0.0	2.4	38.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	243	4423	-26	418	63	1.65	2.21	

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-																
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----		
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	TRANSVERSE (LBS)	LOADS LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)	
SET #4	0.0	0.4	19.1	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	243	2171	43	-260	36	1.13	1.34	
SET #5	0.0	2.4	38.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	243	4423	-26	-418	58	1.65	2.21	

WOOD MATERIAL PROPERTIES									
MATERIAL LABEL	MODULUS OF ELASTICITY (KSI)	DESIGN STRESS MOR (KSI)	WEIGHT DENSITY (LBS/FT^3)	ANSI O5.1 STATUS	ALLOWABLE SHEAR STRESS (KSI)	ALLOWABLE COMPRESS. STRESS (KSI)	THROUGH-BORING STRENGTH REDUCTION %	THROUGH-BORING DIST. ABOVE GROUND (FT)	THROUGH-BORING DIST. BELOW GROUND (FT)
DF-DOUGLAS FIR	2380	8	60	INCLUDED	0	0	0	0	0

TUBULAR DAVIT PROPERTIES																
DAVIT PROPERTY LABEL	STOCK NUMBER	STEEL SHAPE	THICKNESS (IN)	BASE DIAMETER OR DEPTH (IN)	TIP DIAMETER OR DEPTH (IN)	TAPER (IN/FT)	DRAG COEF.	MODULUS OF ELASTICITY (KSI)	STRENGTH CHECK TYPE	VERTICAL CAPACITY (LBS)	TENSION CAPACITY (LBS)	COMPRES. CAPACITY (LBS)	LONG. CAPACITY (LBS)	YIELD STRESS (KSI)	WEIGHT DENSITY OVERRIDE (LBS/FT^3)	STEEL SHAPE AT END
BM-24A	BM-24	4F	0.377	4.5	1.5	0	0	25000	NOMINAL	6000	6000	6000	2300	0	0	

CLAMP PROPERTIES				
LABEL	STOCK NUMBER	HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)	
MC-22	MC-2	1.1E+04	0	
CMA-10	CMA-1	1.2E+04	0	

WEATHER CASES														
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR	
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1	

STRUCTURE LOADS CRITERIA															
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00

STRENGTH FACTORS FOR EACH LOAD CASE														
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON-TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSULATORS	STRENGTH FACTOR HARDWARE	STRENGTH FACTOR FOUNDATION	
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00	
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00	

CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	` GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	` GRADE A HEAVY`		

LINE	1	POLE NUMBER	28	TYPE	
NOTES					
LOCATION	06239003.0187600				
COMMENTS					
LATITUDE (DMS)	41°13'37.908"N	LONGITUDE (DMS)	122°14'50.238"W	GROUND ELEVATION (FT)	3994.7



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	71.97	WOOD POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+
ELEMENT	68.95	GUY "GUY1"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+

WOOD POLE PROPERTIES AND EMBEDMENT								
POLE LABEL	PROPERTY LABEL	STOCK NUMBER	SPECIES	CLASS	LENGTH (FT)	EMBED. (FT)	MODELED GL DIAM. (IN)	GL CIRC. (IN)
POLE	DF-3-45	DF-3-45	DF - DOUGAS FIR	3	45.0	6.5	11.9	37.3

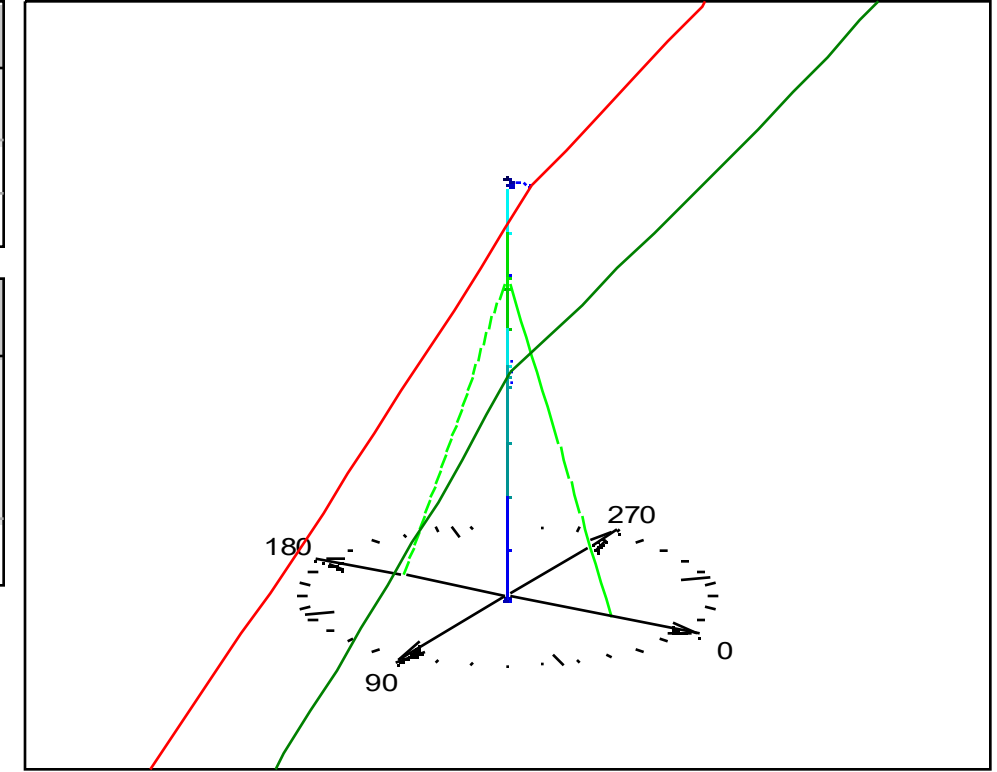
FRAMING LIBRARY				
FRAMING PROPERTY LABEL	STOCK NUMBER	KEYWORDS	INSERTION DISTANCE FROM TIP (FT)	
AC1244-02		AC1244-02, 03,04 TANGENT 25,35,46KV	0.50	
VANG-COMM_SEC_NEUT		VANG-COMM_SEC_NEUT	0.50	

SUMMARY OF WOOD POLE USAGES				
WOOD POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	71.97	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	29.0	1502.7

SUMMARY OF TUBULAR DAVIT USAGES				
TUBULAR DAVIT LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
SC	14.79	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	38.0	28.3

SUMMARY OF GUY USAGES				
GUY LABEL	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)	UNSTRESSED LENGTH (FT)
GUY1	68.95	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	6.2	30.20
GUY2	50.89	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	6.2	30.20

SUMMARY OF MAXIMUM USAGES BY LOAD CASE			
LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	71.97	POLE	WOOD POLE
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	50.89	GUY2	GUY



SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
SC	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F3-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F4-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F5-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES					
LOAD CASE	FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	5.07	0.12	5.20	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND1	-2.92	1.04	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND2	-0.01	0.00	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	4.31	0.26	5.66	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND1	-0.01	0.00	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND2	-2.15	0.77	0.00	0.00

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	FACTORED SPAN TRANSVERSE (LBS)	FACTORED SPAN LONGITUDINAL (LBS)	FACTORED UNIT HORIZONTAL (LBS/FT)	FACTORED UNIT VERTICAL (LBS/FT)
SET #1	0.0	2.4	38.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	303	4382	558	579	21	1.65	2.21
SET #4	0.0	0.4	20.5	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	303	2147	368	389	11	1.13	1.34

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	FACTORED SPAN TRANSVERSE (LBS)	FACTORED SPAN LONGITUDINAL (LBS)	FACTORED UNIT HORIZONTAL (LBS/FT)	FACTORED UNIT VERTICAL (LBS/FT)
SET #1	0.0	2.4	38.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	303	4382	558	-488	21	1.65	2.21
SET #4	0.0	0.4	20.5	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	303	2147	368	-345	11	1.13	1.34

WOOD MATERIAL PROPERTIES									
MATERIAL LABEL	MODULUS OF ELASTICITY (KSI)	DESIGN STRESS MOR (KSI)	WEIGHT DENSITY (LBS/FT^3)	ANSI O5.1 STATUS	ALLOWABLE SHEAR STRESS (KSI)	ALLOWABLE COMPRESS. STRESS (KSI)	THROUGH-BORING STRENGTH REDUCTION %	THROUGH-BORING DIST. ABOVE GROUND (FT)	THROUGH-BORING DIST. BELOW GROUND (FT)
DF-DOUGLAS FIR	2380	8	60	INCLUDED	0	0	0	0	0

TUBULAR DAVIT PROPERTIES																
DAVIT PROPERTY LABEL	STOCK NUMBER	STEEL SHAPE	THICKNESS (IN)	BASE DIAMETER OR DEPTH (IN)	TIP DIAMETER OR DEPTH (IN)	TAPER (IN/FT)	DRAG COEF.	MODULUS OF ELASTICITY (KSI)	STRENGTH CHECK TYPE	VERTICAL CAPACITY (LBS)	TENSION CAPACITY (LBS)	COMPRES. CAPACITY (LBS)	LONG. CAPACITY (LBS)	YIELD STRESS (KSI)	WEIGHT DENSITY OVERRIDE (LBS/FT^3)	STEEL SHAPE AT END
BM-24A	BM-24	4F	0.377	4.5	1.5	0	0	25000	NOMINAL	6000	6000	6000	2300	0	0	

CABLE PROPERTIES									
LABEL	STOCK NUMBER	AREA (IN^2)	MODULUS OF ELASTICITY (PSI)	DIAMETER (IN)	UNIT WEIGHT (LBS/FT)	DRAG COEF.	THERMAL EXPANSION COEFF. (/DEG F)	ULTIMATE TENSION (KIPS)	ALLOWABLE % OF ULTIMATE
5/16" 7 STRAND EHS		0.05946	2.5E+07	0.312	0.205	1	6.4E-06	9	100

CLAMP PROPERTIES				
LABEL	STOCK NUMBER	HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)	
MC-22	MC-2	1.1E+04	0	
CMA-10	CMA-1	1.2E+04	0	

WEATHER CASES													
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1

STRUCTURE LOADS CRITERIA															
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON-TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSUL-ATORS	STRENGTH FACTOR HARD-WARE	STRENGTH FACTOR FOUND-ATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	`GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	`GRADE A HEAVY`		

LINE	1	POLE NUMBER	29	TYPE	
NOTES					
LOCATION	06239003.0188601				
COMMENTS					
LATITUDE (DMS)	41°13'36.332"N	LONGITUDE (DMS)	122°14'46.726"W	GROUND ELEVATION (FT)	4118.5



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	79.48	WOOD POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+
ELEMENT	32.47	GUY "GUY2"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+

WOOD POLE PROPERTIES AND EMBEDMENT								
POLE LABEL	PROPERTY LABEL	STOCK NUMBER	SPECIES	CLASS	LENGTH (FT)	EMBED. (FT)	MODELED GL DIAM. (IN)	GL CIRC. (IN)
POLE	DF-3-45	DF-3-45	DF - DOUGAS FIR	3	45.0	6.5	11.9	37.3

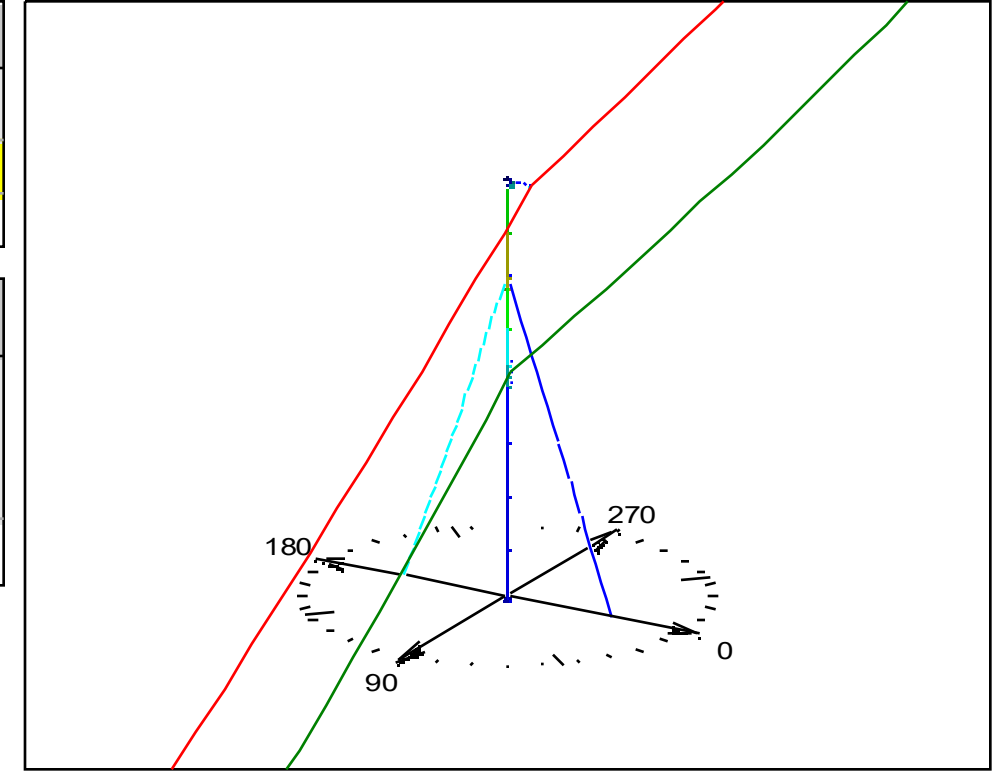
FRAMING LIBRARY				
FRAMING PROPERTY LABEL	STOCK NUMBER	KEYWORDS	INSERTION DISTANCE FROM TIP (FT)	
AC1244-02		AC1244-02, 03,04 TANGENT 25,35,46KV	0.50	
VANG-COMM_SEC_NEUT		VANG-COMM_SEC_NEUT	0.50	

SUMMARY OF WOOD POLE USAGES				
WOOD POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	79.48	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	29.0	1502.7

SUMMARY OF TUBULAR DAVIT USAGES				
TUBULAR DAVIT LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
SC	26.93	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	38.0	28.3

SUMMARY OF GUY USAGES				
GUY LABEL	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)	UNSTRESSED LENGTH (FT)
GUY1	24.19	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	12.0	30.20
GUY2	32.47	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	12.0	30.20

SUMMARY OF MAXIMUM USAGES BY LOAD CASE				
LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE	
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	79.48	POLE	WOOD POLE	
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	39.72	POLE	WOOD POLE	



SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
SC	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F3-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F4-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F5-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES					
LOAD CASE	FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	6.04	0.07	2.44	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND1	-0.01	0.00	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND2	-3.17	1.13	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	5.23	0.25	4.44	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND1	-2.36	0.84	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND2	-0.01	0.00	0.00	0.00

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	TRANSVERSE (LBS)	LOADS- LONGITUDINAL (LBS)	- FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)
SET #1	0.0	2.4	38.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	299	4393	1038	523	-43	1.65	2.21
SET #4	0.0	0.4	20.5	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	299	2154	590	360	-24	1.13	1.34

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	TRANSVERSE (LBS)	LOADS- LONGITUDINAL (LBS)	- FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)
SET #1	0.0	2.4	38.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	299	4393	1038	-525	-43	1.65	2.21
SET #4	0.0	0.4	20.5	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	299	2154	590	-361	-24	1.13	1.34

WOOD MATERIAL PROPERTIES									
MATERIAL LABEL	MODULUS OF ELASTICITY (KSI)	DESIGN STRESS MOR (KSI)	WEIGHT DENSITY (LBS/FT^3)	ANSI O5.1 STATUS	ALLOWABLE SHEAR STRESS (KSI)	ALLOWABLE COMPRESS. STRESS (KSI)	THROUGH-BORING STRENGTH REDUCTION %	THROUGH-BORING DIST. ABOVE GROUND (FT)	THROUGH-BORING DIST. BELOW GROUND (FT)
DF-DOUGLAS FIR	2380	8	60	INCLUDED	0	0	0	0	0

TUBULAR DAVIT PROPERTIES																
DAVIT PROPERTY LABEL	STOCK NUMBER	STEEL SHAPE	THICKNESS (IN)	BASE DIAMETER OR DEPTH (IN)	TIP DIAMETER OR DEPTH (IN)	TAPER (IN/FT)	DRAG COEF.	MODULUS OF ELASTICITY (KSI)	STRENGTH CHECK TYPE	VERTICAL CAPACITY (LBS)	TENSION CAPACITY (LBS)	COMPRES. CAPACITY (LBS)	LONG. CAPACITY (LBS)	YIELD STRESS (KSI)	WEIGHT DENSITY OVERRIDE (LBS/FT^3)	STEEL SHAPE AT END
BM-24A	BM-24	4F	0.377	4.5	1.5	0	0	25000	NOMINAL	6000	6000	6000	2300	0	0	

CABLE PROPERTIES									
LABEL	STOCK NUMBER	AREA (IN^2)	MODULUS OF ELASTICITY (PSI)	DIAMETER (IN)	UNIT WEIGHT (LBS/FT)	DRAG COEF.	THERMAL EXPANSION COEFF. (/DEG F)	ULTIMATE TENSION (KIPS)	ALLOWABLE % OF ULTIMATE
7/16" 7 STRAND EHS		0.1156	2.5E+07	0.435	0.399	1	6.4E-06	20.8	100

CLAMP PROPERTIES				
LABEL	STOCK NUMBER	HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)	
MC-22	MC-2	1.1E+04	0	
CMA-10	CMA-1	1.2E+04	0	

WEATHER CASES													
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1

STRUCTURE LOADS CRITERIA															
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON-TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSUL-ATORS	STRENGTH FACTOR HARD-WARE	STRENGTH FACTOR FOUND-ATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

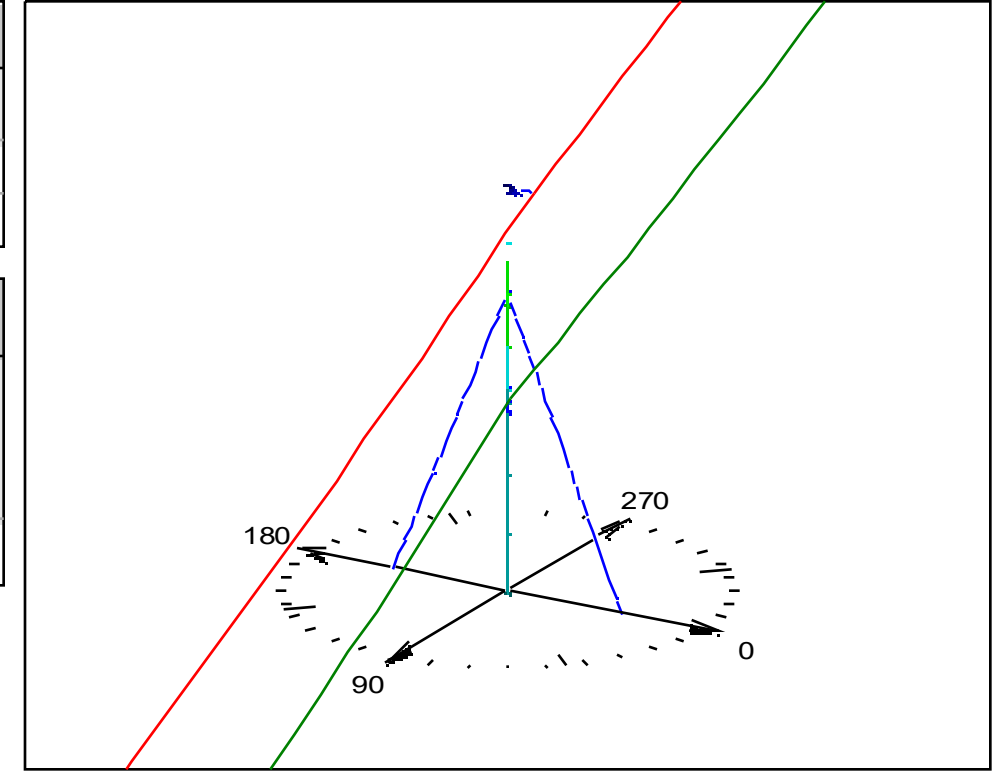
CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	`GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	`GRADE A HEAVY`		

LINE	1	POLE NUMBER	30	TYPE	
NOTES					
LOCATION	06239003.0188502				
COMMENTS					
LATITUDE (DMS)	41°13'34.891"N	LONGITUDE (DMS)	122°14'43.514"W	GROUND ELEVATION (FT)	4213.4



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	73.35	WOOD POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-
ELEMENT	21.37	GUY "GUY1"	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-

WOOD POLE PROPERTIES AND EMBEDMENT								
POLE LABEL	PROPERTY LABEL	STOCK NUMBER	SPECIES	CLASS	LENGTH (FT)	EMBED. (FT)	MODELED GL DIAM. (IN)	GL CIRC. (IN)
POLE	DF-5-40	DF-5-40	DF - DOUGAS FIR	5	40.0	6.0	9.9	31.0



FRAMING LIBRARY				
FRAMING PROPERTY LABEL	STOCK NUMBER	KEYWORDS	INSERTION DISTANCE FROM TIP (FT)	
AC1244-02		AC1244-02, 03,04 TANGENT 25,35,46KV	0.50	
VANG-COMM_SEC_NEUT		VANG-COMM_SEC_NEUT	0.50	

SUMMARY OF WOOD POLE USAGES				
WOOD POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	73.35	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	24.5	922.7

SUMMARY OF TUBULAR DAVIT USAGES				
TUBULAR DAVIT LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
SC	10.77	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	33.5	28.3

SUMMARY OF GUY USAGES				
GUY LABEL	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)	UNSTRESSED LENGTH (FT)
GUY1	21.37	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	10.4	26.00
GUY2	21.06	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	10.4	26.00

SUMMARY OF MAXIMUM USAGES BY LOAD CASE				
LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE	
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	68.87	POLE	WOOD POLE	
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	73.35	POLE	WOOD POLE	

SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
SC	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F3-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F4-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F5-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES					
LOAD CASE	FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	2.75	0.13	3.93	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND1	-0.00	0.00	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND2	-2.01	0.85	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	2.78	0.13	3.92	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND1	-2.04	0.86	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND2	-0.00	0.00	0.00	0.00

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	TRANSVERSE (LBS)	LOADS-LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS-VERTICAL (LBS/FT)
SET #1	0.0	2.4	33.5	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	240	4369	-71	426	90	1.65	2.21
SET #4	0.0	0.3	16.0	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	240	2141	35	293	51	1.13	1.34

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	TRANSVERSE (LBS)	LOADS-LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS-VERTICAL (LBS/FT)
SET #1	0.0	2.4	33.5	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	240	4369	-71	-422	90	1.65	2.21
SET #4	0.0	0.3	16.0	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	240	2141	35	-291	51	1.13	1.34

WOOD MATERIAL PROPERTIES									
MATERIAL LABEL	MODULUS OF ELASTICITY (KSI)	DESIGN STRESS MOR (KSI)	WEIGHT DENSITY (LBS/FT^3)	ANSI O5.1 STATUS	ALLOWABLE SHEAR STRESS (KSI)	ALLOWABLE COMPRESS. STRESS (KSI)	THROUGH-BORING STRENGTH REDUCTION %	THROUGH-BORING DIST. ABOVE GROUND (FT)	THROUGH-BORING DIST. BELOW GROUND (FT)
DF-DOUGLAS FIR	2380	8	60	INCLUDED	0	0	0	0	0

TUBULAR DAVIT PROPERTIES																
DAVIT PROPERTY LABEL	STOCK NUMBER	STEEL SHAPE	THICKNESS (IN)	BASE DIAMETER OR DEPTH (IN)	TIP DIAMETER OR DEPTH (IN)	TAPER (IN/FT)	DRAG COEF.	MODULUS OF ELASTICITY (KSI)	STRENGTH CHECK TYPE	VERTICAL CAPACITY (LBS)	TENSION CAPACITY (LBS)	COMPRES. CAPACITY (LBS)	LONG. CAPACITY (LBS)	YIELD STRESS (KSI)	WEIGHT DENSITY OVERRIDE (LBS/FT^3)	STEEL SHAPE AT END
BM-24A	BM-24	4F	0.377	4.5	1.5	0	0	25000	NOMINAL	6000	6000	6000	2300	0	0	

CABLE PROPERTIES									
LABEL	STOCK NUMBER	AREA (IN^2)	MODULUS OF ELASTICITY (PSI)	DIAMETER (IN)	UNIT WEIGHT (LBS/FT)	DRAG COEF.	THERMAL EXPANSION COEFF. (/DEG F)	ULTIMATE TENSION (KIPS)	ALLOWABLE % OF ULTIMATE
7/16" 7 STRAND EHS		0.1156	2.5E+07	0.435	0.399	1	6.4E-06	20.8	100

CLAMP PROPERTIES				
LABEL	STOCK NUMBER	HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)	
MC-22	MC-2	1.1E+04	0	
CMA-10	CMA-1	1.2E+04	0	

WEATHER CASES													
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1

STRUCTURE LOADS CRITERIA															
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON-TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSULATORS	STRENGTH FACTOR HARDWARE	STRENGTH FACTOR FOUNDATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

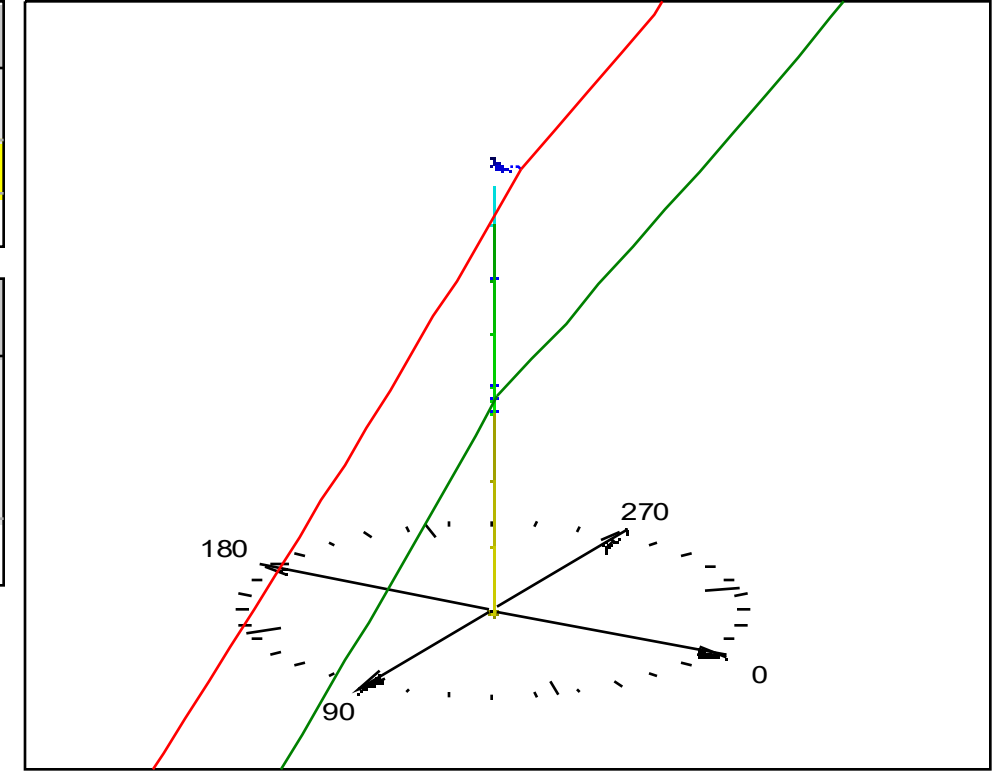
CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	`GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	`GRADE A HEAVY`		

LINE	1	POLE NUMBER	31	TYPE	
NOTES					
LOCATION	06239003.0188501				
COMMENTS					
LATITUDE (DMS)	41°13'33.907"N	LONGITUDE (DMS)	122°14'41.322"W	GROUND ELEVATION (FT)	4305.3



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	89.07	WOOD POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-
ELEMENT	18.64	TUBULAR DAVIT "SC"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+

WOOD POLE PROPERTIES AND EMBEDMENT								
POLE LABEL	PROPERTY LABEL	STOCK NUMBER	SPECIES	CLASS	LENGTH (FT)	EMBED. (FT)	MODELED GL DIAM. (IN)	GL CIRC. (IN)
POLE	DF-3-40	DF-3-40	DF - DOUGAS FIR	3	40.0	6.0	11.5	36.0



FRAMING LIBRARY				
FRAMING PROPERTY LABEL	STOCK NUMBER	KEYWORDS	INSERTION DISTANCE FROM TIP (FT)	
AC1244-02		AC1244-02, 03,04 TANGENT 25,35,46KV	0.50	
VANG-COMM_SEC_NEUT		VANG-COMM_SEC_NEUT	0.50	

SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
SC	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F3-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F4-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F5-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

SUMMARY OF WOOD POLE USAGES				
WOOD POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	89.07	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	2.5	1271.6

SUMMARY OF TUBULAR DAVIT USAGES				
TUBULAR DAVIT LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
SC	18.64	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	33.5	28.3

SUMMARY OF MAXIMUM USAGES BY LOAD CASE			
LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	86.75	POLE	WOOD POLE
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	89.07	POLE	WOOD POLE

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES					
LOAD CASE	FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	2.16	0.76	21.11	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	2.16	0.93	21.68	0.00

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	TRANSVERSE (LBS)	LOADS- LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)
SET #1	0.0	2.4	33.5	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	224	4337	710	354	-27	1.65	2.21
SET #4	0.0	0.4	16.0	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	224	2124	421	246	-18	1.13	1.34

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	TRANSVERSE (LBS)	LOADS- LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)
SET #1	0.0	2.4	33.5	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	224	4337	710	-455	-27	1.65	2.21
SET #4	0.0	0.4	16.0	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	224	2124	421	-309	-16	1.13	1.34

WOOD MATERIAL PROPERTIES									
MATERIAL LABEL	MODULUS OF ELASTICITY (KSI)	DESIGN STRESS MOR (KSI)	WEIGHT DENSITY (LBS/FT^3)	ANSI O5.1 STATUS	ALLOWABLE SHEAR STRESS (KSI)	ALLOWABLE COMPRESS. STRESS (KSI)	THROUGH-BORING STRENGTH REDUCTION %	THROUGH-BORING DIST. ABOVE GROUND (FT)	THROUGH-BORING DIST. BELOW GROUND (FT)
DF-DOUGLAS FIR	2380	8	60	INCLUDED	0	0	0	0	0

TUBULAR DAVIT PROPERTIES																
DAVIT PROPERTY LABEL	STOCK NUMBER	STEEL SHAPE	THICKNESS (IN)	BASE DIAMETER OR DEPTH (IN)	TIP DIAMETER OR DEPTH (IN)	TAPER (IN/FT)	DRAG COEF.	MODULUS OF ELASTICITY (KSI)	STRENGTH CHECK TYPE	VERTICAL CAPACITY (LBS)	TENSION CAPACITY (LBS)	COMPRES. CAPACITY (LBS)	LONG. CAPACITY (LBS)	YIELD STRESS (KSI)	WEIGHT DENSITY OVERRIDE (LBS/FT^3)	STEEL SHAPE AT END
BM-24A	BM-24	4F	0.377	4.5	1.5	0	0	25000	NOMINAL	6000	6000	6000	2300	0	0	

CLAMP PROPERTIES				
LABEL	STOCK NUMBER	HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)	
MC-22	MC-2	1.1E+04	0	
CMA-10	CMA-1	1.2E+04	0	

WEATHER CASES														
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR	
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1	

STRUCTURE LOADS CRITERIA															
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON-TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSULATORS	STRENGTH FACTOR HARDWARE	STRENGTH FACTOR FOUNDATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

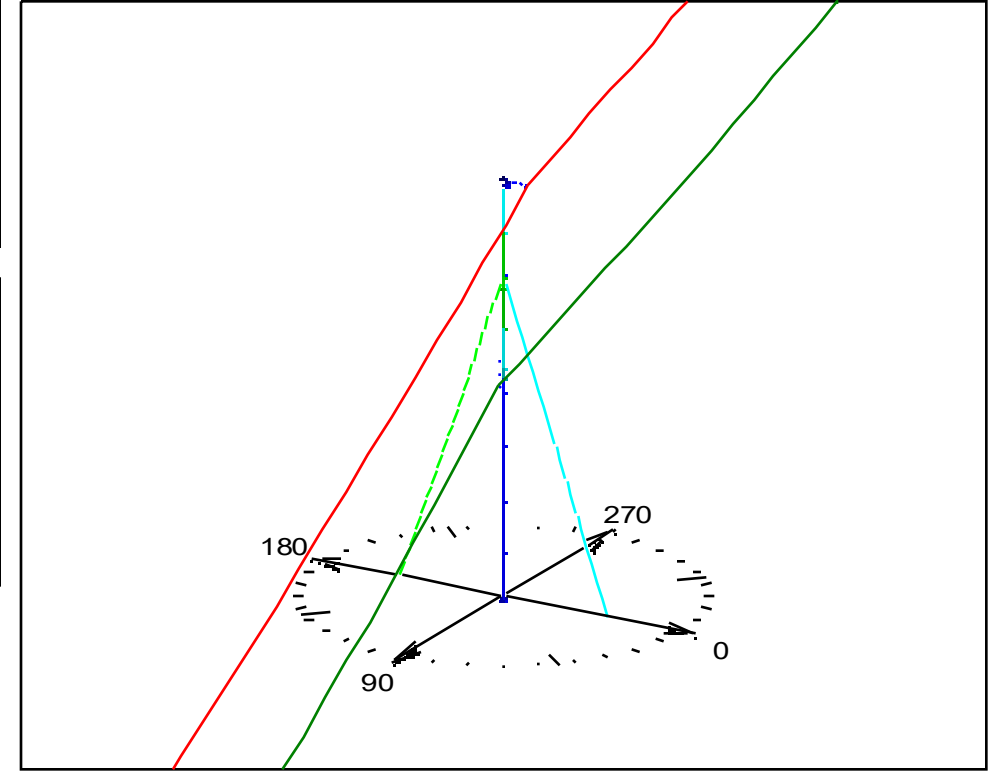
CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE				
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE: COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	` GRADE A HEAVY`	
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	` GRADE A HEAVY`	

LINE	1	POLE NUMBER	32	TYPE	
NOTES					
LOCATION	06239003.0188500				
COMMENTS					
LATITUDE (DMS)	41°13'32.649"N	LONGITUDE (DMS)	122°14'38.442"W	GROUND ELEVATION (FT)	4410.2



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	63.86	WOOD POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+
ELEMENT	56.35	GUY "SG2"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+

WOOD POLE PROPERTIES AND EMBEDMENT								
POLE LABEL	PROPERTY LABEL	STOCK NUMBER	SPECIES	CLASS	LENGTH (FT)	EMBED. (FT)	MODELED GL DIAM. (IN)	GL CIRC. (IN)
POLE	DF-3-45	DF-3-45	DF - DOUGAS FIR	3	45.0	6.5	11.9	37.3



FRAMING LIBRARY				
FRAMING PROPERTY LABEL	STOCK NUMBER	KEYWORDS	INSERTION DISTANCE FROM TIP (FT)	
AC1244-02		AC1244-02, 03,04 TANGENT 25,35,46KV	0.50	
VANG-COMM_SEC_NEUT		VANG-COMM_SEC_NEUT	0.50	

SUMMARY OF WOOD POLE USAGES				
WOOD POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	63.86	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	29.0	1502.7

SUMMARY OF TUBULAR DAVIT USAGES				
TUBULAR DAVIT LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
SC	17.93	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	38.0	28.3

SUMMARY OF GUY USAGES				
GUY LABEL	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)	UNSTRESSED LENGTH (FT)
SG1	35.18	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	6.2	30.20
SG2	56.35	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	6.2	30.20

SUMMARY OF MAXIMUM USAGES BY LOAD CASE			
LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	63.86	POLE	WOOD POLE
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	35.18	SG1	GUY

SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F3-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F4-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F5-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
SC	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES					
LOAD CASE	FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	4.67	0.12	4.26	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND1	-0.01	0.00	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND2	-2.38	0.85	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	3.77	0.25	4.46	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND1	-1.49	0.53	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND2	-0.01	0.00	0.00	0.00

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+																
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----		
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	LOADS-TRANSVERSE (LBS)	LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS-VERTICAL (LBS/FT)	
SET #4	0.0	-0.4	19.1	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	225	2136	371	320	-8	1.13	1.34	
SET #5	0.0	2.4	38.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	225	4361	682	459	-21	1.65	2.21	

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-																
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----		
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	LOADS-TRANSVERSE (LBS)	LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS-VERTICAL (LBS/FT)	
SET #4	0.0	-0.4	19.1	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	225	2136	371	-233	-7	1.13	1.34	
SET #5	0.0	2.4	38.0	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	225	4361	682	-346	-21	1.65	2.21	

WOOD MATERIAL PROPERTIES									
MATERIAL LABEL	MODULUS OF ELASTICITY (KSI)	DESIGN STRESS MOR (KSI)	WEIGHT DENSITY (LBS/FT^3)	ANSI O5.1 STATUS	ALLOWABLE SHEAR STRESS (KSI)	ALLOWABLE COMPRESS. STRESS (KSI)	THROUGH-BORING STRENGTH REDUCTION %	THROUGH-BORING DIST. ABOVE GROUND (FT)	THROUGH-BORING DIST. BELOW GROUND (FT)
DF-DOUGLAS FIR	2380	8	60	INCLUDED	0	0	0	0	0

TUBULAR DAVIT PROPERTIES																
DAVIT PROPERTY LABEL	STOCK NUMBER	STEEL SHAPE	THICKNESS (IN)	BASE DIAMETER OR DEPTH (IN)	TIP DIAMETER OR DEPTH (IN)	TAPER (IN/FT)	DRAG COEF.	MODULUS OF ELASTICITY (KSI)	STRENGTH CHECK TYPE	VERTICAL CAPACITY (LBS)	TENSION CAPACITY (LBS)	COMPRES. CAPACITY (LBS)	LONG. CAPACITY (LBS)	YIELD STRESS (KSI)	WEIGHT DENSITY OVERRIDE (LBS/FT^3)	STEEL SHAPE AT END
BM-24A	BM-24	4F	0.377	4.5	1.5	0	0	25000	NOMINAL	6000	6000	6000	2300	0	0	

CABLE PROPERTIES									
LABEL	STOCK NUMBER	AREA (IN^2)	MODULUS OF ELASTICITY (PSI)	DIAMETER (IN)	UNIT WEIGHT (LBS/FT)	DRAG COEF.	THERMAL EXPANSION COEFF. (/DEG F)	ULTIMATE TENSION (KIPS)	ALLOWABLE % OF ULTIMATE
5/16" 7 STRAND EHS		0.05946	2.5E+07	0.312	0.205	1	6.4E-06	9	100

CLAMP PROPERTIES				
LABEL	STOCK NUMBER	HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)	
MC-22	MC-2	1.1E+04	0	
CMA-10	CMA-1	1.2E+04	0	

WEATHER CASES													
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1

STRUCTURE LOADS CRITERIA															
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON-TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSUL-ATORS	STRENGTH FACTOR HARD-WARE	STRENGTH FACTOR FOUND-ATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	` GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	` GRADE A HEAVY`		

LINE	1	POLE NUMBER	33	TYPE	
NOTES					
LOCATION	06239003.0189500				
COMMENTS					
LATITUDE (DMS)	41°13'31.656"N	LONGITUDE (DMS)	122°14'36.237"W	GROUND ELEVATION (FT)	4492.3



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	47.56	WOOD POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-
ELEMENT	42.29	GUY "SG2"	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-

WOOD POLE PROPERTIES AND EMBEDMENT								
POLE LABEL	PROPERTY LABEL	STOCK NUMBER	SPECIES	CLASS	LENGTH (FT)	EMBED. (FT)	MODELED GL DIAM. (IN)	GL CIRC. (IN)
POLE	DF-4-40	DF-4-40	DF - DOUGAS FIR	4	40.0	6.0	10.7	33.5

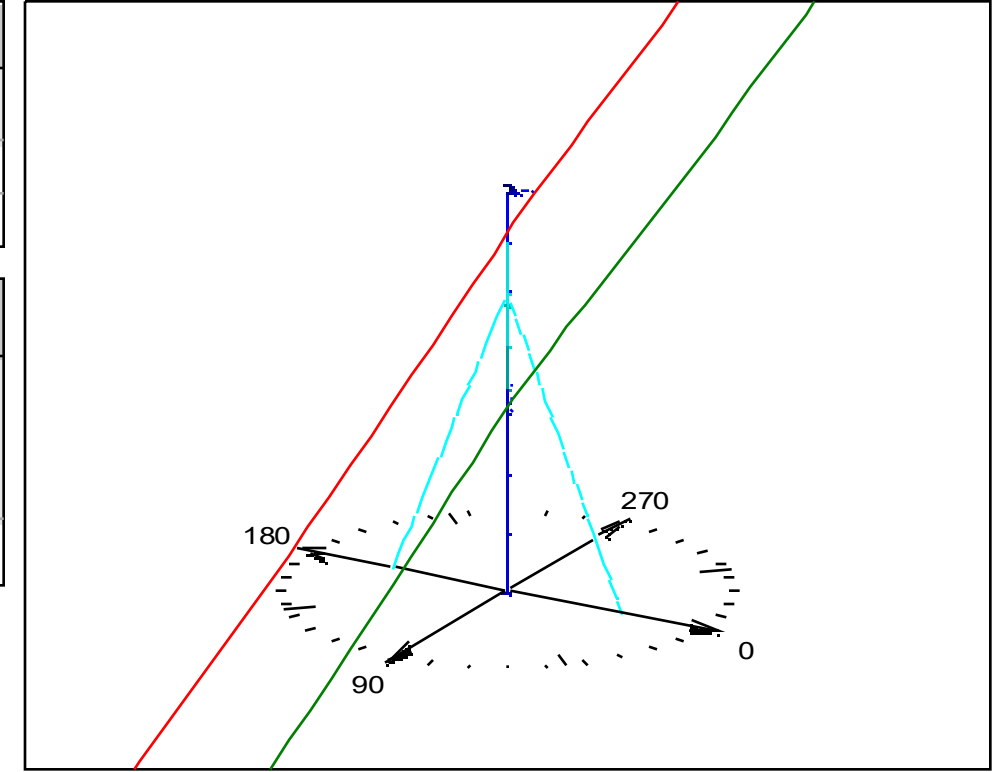
FRAMING LIBRARY				
FRAMING PROPERTY LABEL	STOCK NUMBER	KEYWORDS	INSERTION DISTANCE FROM TIP (FT)	
AC1244-02		AC1244-02, 03,04 TANGENT 25,35,46KV	0.50	
VANG-COMM_SEC_NEUT		VANG-COMM_SEC_NEUT	0.50	

SUMMARY OF WOOD POLE USAGES				
WOOD POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	47.56	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	24.5	1090.1

SUMMARY OF TUBULAR DAVIT USAGES				
TUBULAR DAVIT LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
SC	10.59	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	33.5	28.3

SUMMARY OF GUY USAGES				
GUY LABEL	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)	UNSTRESSED LENGTH (FT)
SG1	27.84	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	5.3	26.00
SG2	42.29	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	5.3	26.00

SUMMARY OF MAXIMUM USAGES BY LOAD CASE			
LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	35.97	POLE	WOOD POLE
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	47.56	POLE	WOOD POLE



SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
SC	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F3-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F4-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F5-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES					
LOAD CASE	FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	2.40	0.08	2.05	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND1	-1.15	0.48	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND2	-0.01	0.00	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	3.00	0.13	2.89	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND1	-0.01	0.00	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND2	-1.75	0.74	0.00	0.00

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	LOADS- TRANSVERSE (LBS)	LONGITUDINAL (LBS)	- FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)
SET #1	0.0	2.4	33.5	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	179	4353	191	223	37	1.65	2.21
SET #4	0.0	0.4	16.0	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	179	2131	160	164	19	1.13	1.34

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	LOADS- TRANSVERSE (LBS)	LONGITUDINAL (LBS)	- FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)
SET #1	0.0	2.4	33.5	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	179	4353	191	-419	36	1.65	2.21
SET #4	0.0	0.4	16.0	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	179	2131	160	-278	17	1.13	1.34

WOOD MATERIAL PROPERTIES									
MATERIAL LABEL	MODULUS OF ELASTICITY (KSI)	DESIGN STRESS MOR (KSI)	WEIGHT DENSITY (LBS/FT^3)	ANSI O5.1 STATUS	ALLOWABLE SHEAR STRESS (KSI)	ALLOWABLE COMPRESS. STRESS (KSI)	THROUGH-BORING STRENGTH REDUCTION %	THROUGH-BORING DIST. ABOVE GROUND (FT)	THROUGH-BORING DIST. BELOW GROUND (FT)
DF-DOUGLAS FIR	2380	8	60	INCLUDED	0	0	0	0	0

TUBULAR DAVIT PROPERTIES																
DAVIT PROPERTY LABEL	STOCK NUMBER	STEEL SHAPE	THICKNESS (IN)	BASE DIAMETER OR DEPTH (IN)	TIP DIAMETER OR DEPTH (IN)	TAPER (IN/FT)	DRAG COEF.	MODULUS OF ELASTICITY (KSI)	STRENGTH CHECK TYPE	VERTICAL CAPACITY (LBS)	TENSION CAPACITY (LBS)	COMPRES. CAPACITY (LBS)	LONG. CAPACITY (LBS)	YIELD STRESS (KSI)	WEIGHT DENSITY OVERRIDE (LBS/FT^3)	STEEL SHAPE AT END
BM-24A	BM-24	4F	0.377	4.5	1.5	0	0	25000	NOMINAL	6000	6000	6000	2300	0	0	

CABLE PROPERTIES									
LABEL	STOCK NUMBER	AREA (IN^2)	MODULUS OF ELASTICITY (PSI)	DIAMETER (IN)	UNIT WEIGHT (LBS/FT)	DRAG COEF.	THERMAL EXPANSION COEFF. (/DEG F)	ULTIMATE TENSION (KIPS)	ALLOWABLE % OF ULTIMATE
5/16" 7 STRAND EHS		0.05946	2.5E+07	0.312	0.205	1	6.4E-06	9	100

CLAMP PROPERTIES				
LABEL	STOCK NUMBER	HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)	
MC-22	MC-2	1.1E+04	0	
CMA-10	CMA-1	1.2E+04	0	

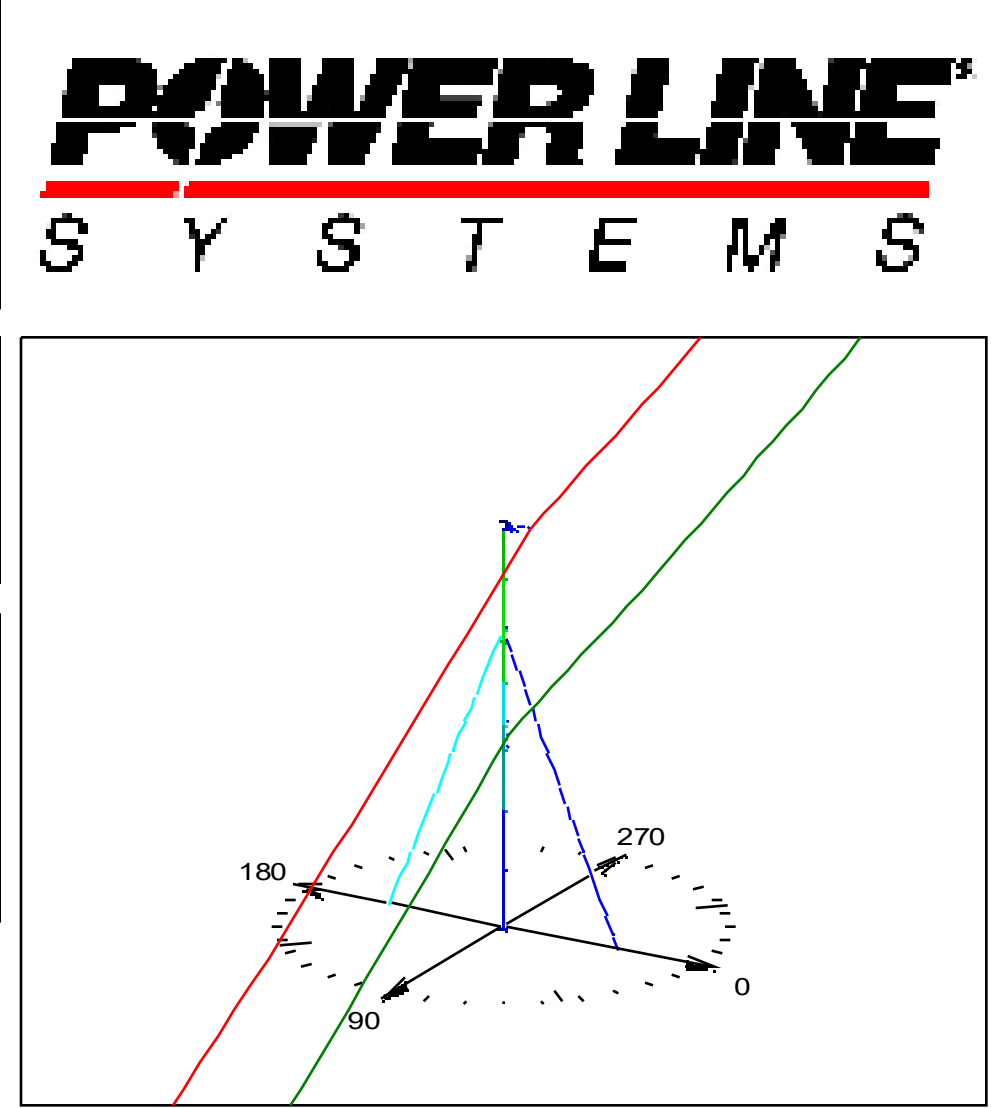
WEATHER CASES													
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1

STRUCTURE LOADS CRITERIA															
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON-TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSULATORS	STRENGTH FACTOR HARDWARE	STRENGTH FACTOR FOUNDATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	`GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	`GRADE A HEAVY`		

LINE	1	POLE NUMBER	34	TYPE	
NOTES					
LOCATION	NO POLE NUMBER				
COMMENTS					
LATITUDE (DMS)	41°13'30.864"N	LONGITUDE (DMS)	122°14'34.384"W	GROUND ELEVATION (FT)	4566.2



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	70.98	WOOD POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+
ELEMENT	43.03	GUY "GUY2"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+

WOOD POLE PROPERTIES AND EMBEDMENT								
POLE LABEL	PROPERTY LABEL	STOCK NUMBER	SPECIES	CLASS	LENGTH (FT)	EMBED. (FT)	MODELED GL DIAM. (IN)	GL CIRC. (IN)
POLE	DF-4-40	DF-4-40	DF - DOUGAS FIR	4	40.0	6.0	10.7	33.5

FRAMING LIBRARY				
FRAMING PROPERTY LABEL	STOCK NUMBER	KEYWORDS	INSERTION DISTANCE FROM TIP (FT)	
AC1244-02		AC1244-02, 03,04 TANGENT 25,35,46KV	0.50	
VANG-COMM_SEC_NEUT		VANG-COMM_SEC_NEUT	0.50	

SUMMARY OF WOOD POLE USAGES				
WOOD POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	70.98	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	24.5	1090.1

SUMMARY OF TUBULAR DAVIT USAGES				
TUBULAR DAVIT LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
SC	23.56	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	33.5	28.3

SUMMARY OF GUY USAGES				
GUY LABEL	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)	UNSTRESSED LENGTH (FT)
GUY1	15.70	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	5.3	26.00
GUY2	43.03	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	5.3	26.00

SUMMARY OF MAXIMUM USAGES BY LOAD CASE			
LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL	ELEMENT TYPE
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	70.98	POLE	WOOD POLE
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	44.95	POLE	WOOD POLE

SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
SC	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F3-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F4-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
F5-VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES					
LOAD CASE	FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	4.00	0.11	3.59	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND1	-0.01	0.00	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND2	-1.78	0.75	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	2.87	0.22	3.87	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND1	-0.65	0.27	0.00	0.00
GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND2	-0.01	0.01	0.00	0.00

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	LOADS- TRANSVERSE (LBS)	LONGITUDINAL (LBS)	- FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)
SET #1	0.0	2.4	33.5	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	145	4374	905	311	-80	1.65	2.21
SET #4	0.0	0.4	16.0	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	145	2139	418	245	-35	1.13	1.34

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED SPAN VERTICAL (LBS)	LOADS- TRANSVERSE (LBS)	LONGITUDINAL (LBS)	- FACTORED HORIZONTAL (LBS/FT)	UNIT LOADS- VERTICAL (LBS/FT)
SET #1	0.0	2.4	33.5	1	2	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	145	4374	905	-204	-75	1.65	2.21
SET #4	0.0	0.4	16.0	1	2	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	145	2139	418	-109	-34	1.13	1.34

WOOD MATERIAL PROPERTIES									
MATERIAL LABEL	MODULUS OF ELASTICITY (KSI)	DESIGN STRESS MOR (KSI)	WEIGHT DENSITY (LBS/FT^3)	ANSI O5.1 STATUS	ALLOWABLE SHEAR STRESS (KSI)	ALLOWABLE COMPRESS. STRESS (KSI)	THROUGH-BORING STRENGTH REDUCTION %	THROUGH-BORING DIST. ABOVE GROUND (FT)	THROUGH-BORING DIST. BELOW GROUND (FT)
DF-DOUGLAS FIR	2380	8	60	INCLUDED	0	0	0	0	0

TUBULAR DAVIT PROPERTIES																
DAVIT PROPERTY LABEL	STOCK NUMBER	STEEL SHAPE	THICKNESS (IN)	BASE DIAMETER OR DEPTH (IN)	TIP DIAMETER OR DEPTH (IN)	TAPER (IN/FT)	DRAG COEF.	MODULUS OF ELASTICITY (KSI)	STRENGTH CHECK TYPE	VERTICAL CAPACITY (LBS)	TENSION CAPACITY (LBS)	COMPRES. CAPACITY (LBS)	LONG. CAPACITY (LBS)	YIELD STRESS (KSI)	WEIGHT DENSITY OVERRIDE (LBS/FT^3)	STEEL SHAPE AT END
BM-24A	BM-24	4F	0.377	4.5	1.5	0	0	25000	NOMINAL	6000	6000	6000	2300	0	0	

CABLE PROPERTIES									
LABEL	STOCK NUMBER	AREA (IN^2)	MODULUS OF ELASTICITY (PSI)	DIAMETER (IN)	UNIT WEIGHT (LBS/FT)	DRAG COEF.	THERMAL EXPANSION COEFF. (/DEG F)	ULTIMATE TENSION (KIPS)	ALLOWABLE % OF ULTIMATE
5/16" 7 STRAND EHS		0.05946	2.5E+07	0.312	0.205	1	6.4E-06	9	100

CLAMP PROPERTIES				
LABEL	STOCK NUMBER	HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)	
MC-22	MC-2	1.1E+04	0	
CMA-10	CMA-1	1.2E+04	0	

WEATHER CASES													
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1

STRUCTURE LOADS CRITERIA															
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON-TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSULATORS	STRENGTH FACTOR HARDWARE	STRENGTH FACTOR FOUNDATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	` GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	` GRADE A HEAVY`		

LINE	1	POLE NUMBER	35	TYPE	
NOTES					
LOCATION	06239003.0189401				
COMMENTS					
LATITUDE (DMS)	41°13'30.213"N	LONGITUDE (DMS)	122°14'32.965"W	GROUND ELEVATION (FT)	4606.8



ANALYSIS RESULTS MAXIMUM USAGE			
TYPE	USAGE	LABEL	LOAD CASE
POLE	47.28	WOOD POLE "POLE"	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+
ELEMENT	91.26	GUY "G1"	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-

WOOD POLE PROPERTIES AND EMBEDMENT								
POLE LABEL	PROPERTY LABEL	STOCK NUMBER	SPECIES	CLASS	LENGTH (FT)	EMBED. (FT)	MODELED GL DIAM. (IN)	GL CIRC. (IN)
POLE	DF-4-40	DF-4-40	DF - DOUGAS FIR	4	40.0	6.0	10.7	33.5

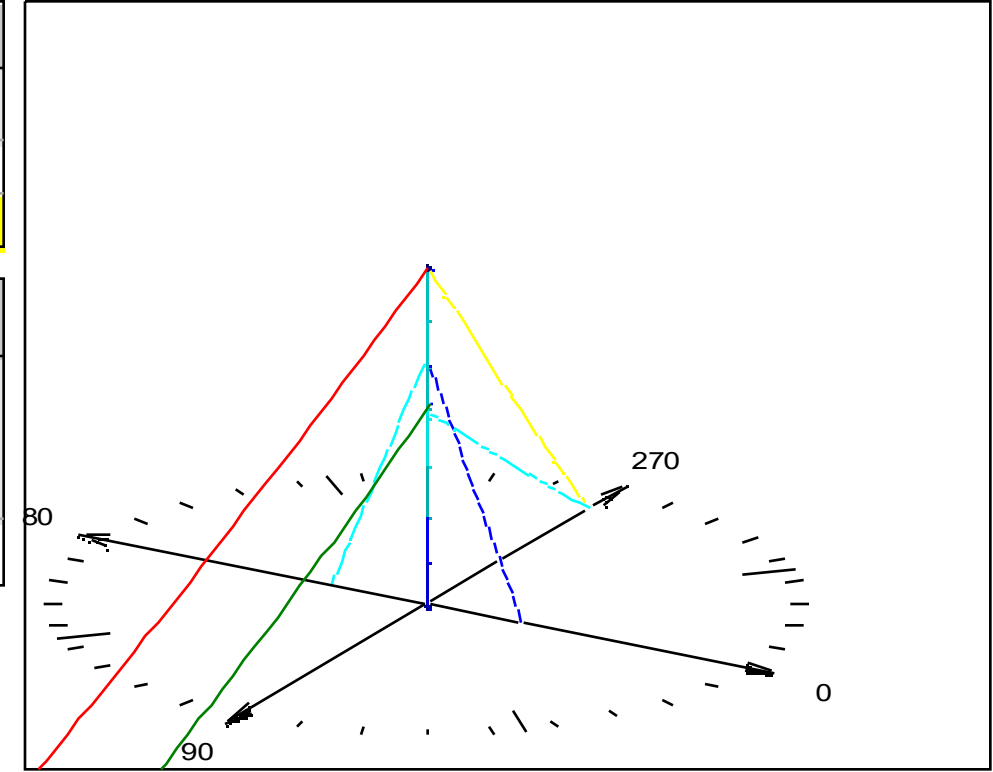
FRAMING LIBRARY				
	FRAMING PROPERTY LABEL	STOCK NUMBER	KEYWORDS	INSERTION DISTANCE FROM TIP (FT)
	VANGDE-COMM_SEC_NEUT		VANGDE-COMM_SEC_NEUT	0.50

SUMMARY OF WOOD POLE USAGES				
WOOD POLE LABEL	MAXIMUM USAGE %	LOAD CASE	HEIGHT AGL (FT)	WEIGHT (LBS)
POLE	47.28	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	19.5	1090.1

SUMMARY OF GUY USAGES				
GUY LABEL	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)	UNSTRESSED LENGTH (FT)
G1	91.26	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	17.9	44.97
GUY2	41.34	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	14.1	35.45
GUY3	9.24	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	5.3	26.00
GUY4	25.14	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	5.3	26.00

SUMMARY OF MAXIMUM USAGES BY LOAD CASE			
	LOAD CASE	MAXIMUM USAGE %	ELEMENT LABEL
	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	91.20	G1
	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	91.26	G1

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+															
CIRCUIT LABEL	---AVERAGE--- STRUCTURE ATTACHMENT X Y HEIGHT (FT) (FT)		WIRE DIAMETER (IN)	VOLTAGE (KV)	LENGTH (FT)	HORIZONTAL TENSION (LBS)	TOTAL FACTORED SPAN LOADS			AVERAGE FACTORED UNIT LOADS					
							VERTICAL (LBS)	TRANSVERSE (LBS)	LONGITUDINAL (LBS)	HORIZONTAL (LBS/FT)	VERTICAL (LBS/FT)				
SET #1	0.0	0.0	33.5	1	1	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	127	4412	1558	193	4410	1.65	2.21
SET #2	0.0	0.4	20.0	1	1	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	127	2156	847	75	2156	1.13	1.34



SUMMARY OF INSULATOR USAGES				
INSULATOR LABEL	INSULATOR TYPE	MAXIMUM USAGE %	LOAD CASE	WEIGHT (LBS)
DE	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0
VANG	CLAMP	0.00	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	0.0

FOUNDATION DESIGN FORCES FOR ALL LOAD CASES						
	LOAD CASE	FOUNDATION DESCRIPTION	AXIAL FORCE (KIPS)	SHEAR FORCE (KIPS)	BENDING MOMENT (FT-K)	FOUNDATION USAGE %
	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	POLE:G	10.62	0.14	0.90	0.00
	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND1	-6.27	6.71	0.00	0.00
	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND3	-0.01	0.00	0.00	0.00
	GO95 HEAVY LOADING 43.1 - GRADE A NA+,I NA+	\$GND4	-1.04	0.44	0.00	0.00
	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	POLE:G	9.97	0.18	1.27	0.00
	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND1	-6.28	6.71	0.00	0.00
	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND3	-0.38	0.16	0.00	0.00
	GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-	\$GND4	-0.02	0.01	0.00	0.00

SUMMARIZED CABLE LOADING FOR GO95 HEAVY LOADING 43.1 - GRADE A NA-,I NA-															
CIRCUIT LABEL	---AVERAGE---			WIRES/ PHASE	NUMBER SPANS	CABLE NAME	WIRE DIAMETER (IN)	VOLTAGE (KV)	-----AVERAGE-----		-----TOTAL-----			-----AVERAGE-----	
	STRUCTURE X (FT)	ATTACHMENT Y (FT)	HEIGHT (FT)						LENGTH (FT)	HORIZONTAL TENSION (LBS)	FACTORED VERTICAL (LBS)	FACTORED TRANSVERSE (LBS)	FACTORED LONGITUDINAL (LBS)	-FACTORED HORIZONTAL (LBS/FT)	-FACTORED VERTICAL (LBS/FT)
SET #1	0.0	0.0	33.5	1	1	052AWA 40 15KV RTL-20VDM.WIR	1.29	15	127	4412	1558	-27	4414	1.65	2.21
SET #2	0.0	0.4	20.0	1	1	FIBER OPTIC 96X 1_4 7X EHS MESSENGER	1.26	1	127	2156	847	-78	2156	1.13	1.34

WOOD MATERIAL PROPERTIES									
MATERIAL LABEL	MODULUS OF ELASTICITY (KSI)	DESIGN STRESS MOR (KSI)	WEIGHT DENSITY (LBS/FT^3)	ANSI O5.1 STATUS	ALLOWABLE SHEAR STRESS (KSI)	ALLOWABLE COMPRESS. STRESS (KSI)	THROUGH-BORING STRENGTH REDUCTION %	THROUGH-BORING DIST. ABOVE GROUND (FT)	THROUGH-BORING DIST. BELOW GROUND (FT)
DF-DOUGLAS FIR	2380	8	60	INCLUDED	0	0	0	0	0

CABLE PROPERTIES									
LABEL	STOCK NUMBER	AREA (IN^2)	MODULUS OF ELASTICITY (PSI)	DIAMETER (IN)	UNIT WEIGHT (LBS/FT)	DRAW COEF.	THERMAL EXPANSION COEFF. (/DEG F)	ULTIMATE TENSION (KIPS)	ALLOWABLE % OF ULTIMATE
5/16" 7 STRAND EHS		0.05946	2.5E+07	0.312	0.205	1	6.4E-06	9	100
7/16" 7 STRAND HS		0.1156	2.57E+07	0.435	0.399	1	6.4E-06	14	100

CLAMP PROPERTIES			
LABEL	STOCK NUMBER	HOLDING CAPACITY (LBS)	HARDWARE CAPACITY (LBS)
MG-4128		2.2E+04	2.2E+04
MG-41280	MG-4128	2.3E+04	0

WEATHER CASES													
WC #	DESCRIPTION	AIR DENSITY FACTOR (PSF/MPH^2)	WIND VEL. (MPH)	WIND PRES. (PSF)	WIRE ICE THICK (IN)	WIRE ICE DENSITY (LBS/FT^3)	WIRE ICE LOAD (LBS/FT)	WIRE TEMP (DEG F)	AMBIENT TEMP (DEG F)	WEATHER LOAD FACTOR	NESC CONSTANT (LBS/FT)	WIRE WIND HEIGHT ADJUST MODEL	WIRE GUST RESPONSE FACTOR
1	GO95 HEAVY LOADING 43.1	0.00256	48	6.0	0.50	57.000	0.00	0	0	1.00	0.00	NONE	1

STRUCTURE LOADS CRITERIA															
LC #	WC #	LOAD CASE DESCRIPTION	CABLE CONDITION	WIND DIR.	BISECT WIND ANGLE	WIRE VERT. LOAD FACTOR	WIRE + STRUCT. WIND LOAD FACTOR	WIRE TENSION LOAD FACTOR	STRUCT WEIGHT LOAD FACTOR	STRUCT WIND AREA FACTOR	STRUCT. WIND LOAD MODEL	STRUCT. ICE THICK (IN)	STRUCT. ICE DENSITY (LBS/FT^3)	POLE TIP DEFLECTION CHECK	POLE TIP DEFLECT LIMIT % OR (FT)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	INITIAL RS	NA+		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	INITIAL RS	NA-		1.00	1.00	1.00	1.00	1.00	WIND ON FACE	0.00	0.000	NO LIMIT	0.00

STRENGTH FACTORS FOR EACH LOAD CASE													
LC #	WC #	LOAD CASE DESCRIPTION	STRENGTH FACTOR STEEL POLES TUBULAR ARMS TOWERS	STRENGTH FACTOR WOOD POLES	STRENGTH FACTOR CONCRETE POLES ULTIMATE	STRENGTH FACTOR CONCRETE POLES FIRST CRACK	STRENGTH FACTOR CONCRETE POLES ZERO TENSION	STRENGTH FACTOR GUYS	STRENGTH FACTOR NON- TUBULAR ARMS	STRENGTH FACTOR BRACES	STRENGTH FACTOR INSUL- ATORS	STRENGTH FACTOR HARD- WARE	STRENGTH FACTOR FOUND- ATION
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	0.66	0.25	0.55	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00

CABLE LOAD ADJUSTMENTS FOR EACH LOAD CASE					
LC #	WC #	LOAD CASE DESCRIPTION	STRUCT GROUPS ON WHICH TO APPLY	COMMAND WIRE(S) SET: PHASE: SIDE:	COMMAND VALUE (LBS) (DEG) (%)
1	1	GO95 HEAVY LOADING 43.1 - GRADE A NA+	`GRADE A HEAVY`		
2	1	GO95 HEAVY LOADING 43.1 - GRADE A NA-	`GRADE A HEAVY`		

PAC_289.59

MASTER IT SERVICES CONTRACT
BETWEEN
PACIFICORP
AND
WESTERN WEATHER GROUP
FOR
PROFESSIONAL SERVICES

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MASTER PROFESSIONAL SERVICES CONTRACT
BETWEEN
PACIFICORP
AND
WESTERN WEATHER GROUP
FOR
PROFESSIONAL SERVICES

PARTIES

The Parties to this Master Professional Services Contract ("Contract") are **PACIFICORP** (hereinafter "Company"), whose address is 825 NE Multnomah Street, Portland, Oregon 97232, and **WESTERN WEATHER GROUP** (hereinafter "Consultant"), whose address is 686 Rio Linda Avenue, Chico, California 95926. Company and Consultant are hereinafter sometimes collectively referred to as "Parties" and individually as a "Party," as the context may require.

ARTICLE 1. DEFINITIONS

BES Cyber System Information (BCSI) shall mean information concerning CIPS Covered Assets that: (i) relates to the production, generation or transmission of energy; (ii) could be useful to a person planning an attack on critical infrastructure; and (iii) provides strategic information beyond the geographic location of the critical asset, and which is identified as BCSI by Company.

CIPS Covered Assets shall mean any assets identified by Company as "BES assets," "BES cyber assets," "BES cyber systems," "protected cyber assets," "electronic access control or monitoring systems," "electronic access points," or, "physical access control systems," as those terms are defined in the North American Electric Reliability Corporation (NERC) Glossary of Terms. "BES" refers to the "Bulk Electric System" as defined by NERC.

Company's Facilities shall mean any facilities owned, operated or otherwise controlled by Company which require Company authorization to obtain access.

Confidential Information shall mean: (i) proprietary information of Company; (ii) information marked or designated by Company as confidential; (iii) BES Cyber System Information of Company; (iv) information, whether or not in written form and whether or not designated as confidential, which is known to Contractor as being treated by Company as confidential; (v) information provided to Company that Company is obligated to keep confidential (including but not limited to information that identifies an individual or customer of Company, such as customer account numbers, customer addresses, customer energy usage information, credit or bank account numbers, social security numbers, passport or driver's license numbers, whether or not such information is publicly available); and (vi) information developed by Contractor in connection with the performance of this Contract.

Cyber Assets shall mean programmable electronic devices, including the hardware, software, and data in those devices.

Data shall mean any and all data, information, formulae, algorithms, or other content that Company or its Personnel create, generate or modify (i) using the Software, (ii) that is hosted by Consultant or (iii) that is stored on Company's systems and that is accessible by Consultant. Data also includes user identification information and metadata which may contain the foregoing data or from which the foregoing data may be ascertainable.

Deliverables shall mean those items to be developed and delivered by Consultant as set forth in the Scope of Work.

Documentation shall mean collectively: (a) all of the written, printed, electronic, or other format materials published or otherwise made available by Consultant that relate to the functional, operational or performance capabilities of the Software; (b) all user, operator, system administration, technical, support, and other manuals and all other written, printed, electronic, or other format materials published or otherwise made available by Consultant that describe the functional, operational or performance capabilities of the Software; (c) any applicable functional specifications for the Software and (d) any Deliverable that describes the Software that is not Software. Documentation does not include source code for the Software.

Force Majeure Event shall mean a delay caused by any national or general strikes (but excluding strikes relating solely to the work force of Company, Consultant or a Subcontractor), fires, riots, acts of God, acts of the public enemy, floods, acts of

terrorism, unavoidable transportation accidents or embargoes, or other events which are: (i) not reasonably foreseeable as of the date the applicable Release is executed; and (ii) attributable to a cause beyond the control and without the fault or negligence of the Party incurring such delay.

Hardware means any hardware, equipment or appliance purchased by Company from Consultant pursuant to this Contract.

Maintenance and Support Services shall mean the maintenance and support services set out in an Contract Document, provided in accordance with the terms set out in Schedule D (Maintenance and Support Services Terms).

Material Adverse Change or **MAC** shall mean, with respect to Consultant, if Consultant, in the reasonable opinion of Company, has experienced a material adverse change in Consultant's financial condition or Consultant's ability to fulfill its obligations under this Contract, including, but not limited to, any such change that results in its inability to satisfy ARTICLE 9. CREDIT REQUIREMENTS or ARTICLE 10. SECURITY, including any event or circumstance that would give Company the right to terminate for cause pursuant to ARTICLE 32. TERMINATION FOR CAUSE.

Net Replacement Costs shall mean the "cost to cover" remedy available to Company in the event of a default by Consultant under this Contract and each Release. The Net Replacement Costs shall be: (i) the incremental costs incurred by Company to complete the Work itself or through use of a replacement consultant; plus (ii) a sum for additional managerial, administrative, and other reasonable costs Company incurs as a result of Consultant's default.

Notice shall mean a formal written communication which, pursuant to the Contract, one Party must deliver to the other in order to invoke a Contract right set forth herein.

Personal Information means personally identifiable information, including, in the case of Company, information that identifies an individual or customer of Company such as customer account numbers, customer addresses, customer energy usage information, customer credit or bank account numbers, customer social insurance numbers or customer passport or driver's license numbers.

Personnel shall mean the employees of Consultant or any of its agents, Subcontractors, or independent contractors who are employed to perform Work under this Contract.

Professional Services means those services involving providing Company with implementation services, project management services, consulting services, Hardware delivery and installation services and training (when training is at a Work Site) and any other professional services. Professional Services may include software Maintenance and Support Services

Purchase Order shall mean a Company form of purchase order that includes the information as set out in ARTICLE 3, RELEASE/PURCHASE ORDER.

Release shall mean any project-specific Work release issued by Company from time to time pursuant to the master terms and conditions set forth in this Contract.

Scope of Work shall be detailed in this Contract and in the Release for specific Work assignments, including all exhibits attached to either such document and all standards, specifications, criteria and other requirements which are incorporated into either by reference.

Security Breach shall mean any act or omission that compromises either the security, confidentiality, or integrity of Company's Confidential Information, Data, systems and facilities or Company's physical, technical, administrative or organizational safeguards and controls relating to the protection of Company's Confidential Information, Data, systems, and facilities.

Sensitive Personnel shall mean all Personnel with authorized unescorted physical access or cyber access to Company's CIPS Covered Assets.

Service(s) shall mean any labor, skill, or advice provided to Company pursuant to this Contract.

Software shall mean any software, whether in object code or source code form, including all accompanying documentation, delivered by Consultant to Company under this Contract, including software set out in Exhibit I (Software License Terms) and including software provided to Company by Consultant as part of the Maintenance and Support Services. Additionally, a change in the naming convention of the foregoing software is included within the definition of Software (that is, the definition of "Software" includes all future software with the same functionality which may have a different name).

Statement of Work shall mean the requirements regarding the Services, as described in each schedule added to Schedule A forming a part of this Contract and any other Contract Document, including any additional requirements that, while not

specifically described in a schedule added to Schedule A or other Contract Document, are implied or reasonably required to complete the Services as so described.

Subcontractor shall mean any entity or person (including subcontractors at any tier) having an agreement with Consultant or any other Subcontractor to perform a portion of Consultant's obligations under this Contract.

Term shall mean the period commencing upon the execution of this Contract by Company and continuing thereafter until April 26, 2022, unless earlier terminated as provided herein.

Unescorted Personnel shall mean all Personnel with authorized unescorted physical access to Company's Facilities.

Work shall mean all obligations, duties, requirements, and responsibilities for the successful completion of the Contract by Consultant, including furnishing of all Services, Deliverables and incidental materials and equipment in accordance with the terms and conditions set forth herein and inclusive of those detailed within a project-specific Release.

Workers' Compensation Laws shall mean the statutory requirements of the state and/or federal regulations (e.g., FELA, USL&H, Jones Act) where the Work is to be performed.

Work Site shall mean the location or locations on Company's premises where the Work is to be performed, as specified in each applicable Release.

ARTICLE 2. DESCRIPTION OF WORK

Consultant shall perform the Services in accordance with this Contract. Consultant agrees to provide any Maintenance Hardware and Support Services set out in a Contract Document in accordance with the terms set out in Exhibit A. Scope of Work.

Consultant agrees that the license terms set out in Exhibit I (Software License Terms) apply to any Software provided to Company pursuant to this Contract.

Consultant shall be solely responsible for the means, methods, and procedures of performing the Services, except as otherwise specifically provided in this Contract. Except as otherwise specifically provided in the Contract Documents, Consultant shall provide and obtain all necessary licenses, permits, permissions and utilities.

ARTICLE 3. RELEASE/PURCHASE ORDER

Each Purchase Order will identify or describe, at a high level: (i) the type or nature of the Services, including any key Deliverables that Consultant will provide to Company; (ii) each Work Site (if applicable); (iii) the agreed pricing for a Contract Document based on the rates and calculations set out in Schedule B (Standing Pricing Terms); (iv) the completion date or estimated completion date for the Services and any other schedule or milestones; (v) whether a notice to proceed is to be issued for the commencement of the Services; (vi) the designated representatives for each Party with respect to the Purchase Order; (vii) whether the performance of such Services will require physical or electronic access to a CIP Covered Asset or BES Cyber System Information; (viii) project-specific invoicing instructions (if contrary to the Invoice Procedure); and (ix) any other project-specific terms and conditions. These project-specific details and further particulars may be stated in the Statement of Work or Change Order that is being authorized by the Purchase Order, or otherwise incorporated by reference. The Parties agree that Consultant is not authorized to provide any Services in a Statement of Work or in a Change Order until a Purchase Order has been authorized and placed by Company.

Within three (3) Business Days of Consultant receiving a Purchase Order from Company, Consultant shall acknowledge the Purchase Order (according to the method set out in the Purchase Order) and either accept or reject the Purchase Order as placed by Company. Any Purchase Order that is not rejected within three (3) Business Days of receipt by Consultant will be deemed to have been accepted and deemed confirmed by Consultant. Company may also require that a mutually executed document, on terms and conditions acceptable to each of the Parties, acting reasonably, be used in lieu of, or in addition to, a Purchase Order. As used throughout this, the term "Purchase Order" includes any such mutually executed document.

Each Contract Document that includes a project for implementation of Software will include, as applicable, a project overview, project assumptions, project plan, project schedule, a service responsibility matrix (specifying Consultant's roles and responsibilities and cross-referenced to the activities listed in the project plan), development activities for deliverables (such as interfaces and documentation), any applicable milestones ("Milestones"), any training provided by Consultant and other applicable implementation details.

Consultant agrees to identify in each Contract Document that includes any procurement of Software licenses or Hardware any third party software or third party hardware required by Company to use the Software, Hardware or Services set out in the Contract Documents.

A Contract Document may specify a completion date for the Services and may also specify critical project milestones that must be met by Consultant. Consultant shall proceed in accordance with such schedule requirements, and shall comply (as applicable) with the detailed schedule of Services included in (or developed in accordance with) the Contract Documents. Any critical time and schedule requirements and milestones included within the Contract Documents are of the essence. By entering this Contract, Consultant confirms that any critical time and schedule requirements and milestones stipulated in the Contract Documents are reasonable for performance of the Services. Unless Consultant's late performance is excused by the terms of the Contract Documents or by a Force Majeure Event or a delay caused solely by Company, Company shall have all of the rights and remedies available at law and in equity with respect to late performance. Consultant shall provide Notice to Company immediately once Consultant becomes aware or reasonably anticipates that it will not be able to complete the Services pursuant to the schedule stipulated by the Contract Documents.

ARTICLE 4. PERIOD OF PERFORMANCE

The Contract shall be effective for Work performed pursuant to a Release that is authorized during the Term of the Contract, whether or not such Work is completed prior to the expiration of such Term. The expiration of the Term shall not impact the Parties' respective rights or obligations with respect to any Work authorized prior to expiration of such Term. Moreover, neither the expiration of the Term nor any earlier termination of this Contract shall impact any warranties, indemnities, insurance requirements, confidentiality obligations, termination obligations, or other obligations with by their own terms are intended to survive the completion of Work, all of which shall continue in full force and effect after the expiration or termination of this Contract.

Each Release will specify a project schedule for Consultant's performance of the Work. Consultant shall commence performance in accordance with the terms of each Release and shall complete Work according to the schedule milestones and any project guaranteed dates set forth in such Release. Time is of the essence with respect to the performance of Consultant's obligations set forth in the Contract.

ARTICLE 5. CONSIDERATION AND PAYMENT

Except as otherwise set forth in the applicable Release, and as full consideration for the satisfactory performance of Consultant's obligations under this Contract, Company will pay Consultant in accordance with Exhibit B.

Consultant shall invoice Company on a monthly basis, and shall submit each invoice to the Company designated representative. Consultant shall submit a separate invoice for the Work performed for each Release issued hereunder, and Consultant shall itemize each invoice by applicable Release number along with the applicable project name. All invoices shall reference the applicable Contract number. All invoices shall include each employee's name and skill classification responsible for Work under said invoice, hours worked on the project (billable hours), hourly rate, and a subtotal cost by skill classification. Consultant shall not bill Company for a higher skill classification than is required for the Work. Consultant shall furnish reasonable backup detail supporting each invoice including, without limitation, receipts supporting expenses that are reimbursed pursuant to ARTICLE 7. TRAVEL. Consultant shall identify and clearly set forth on the invoice any discount for early payment.

Company will pay all undisputed invoice amounts within thirty (30) calendar days of receipt of a proper invoice and Company's acceptance of the Work. Payment shall be contingent upon Consultant's satisfactory compliance with the invoicing requirements.

Company may offset any such payment to reflect amounts owing from Consultant to Company or its subsidiaries pursuant to this Contract. In addition, Company may withhold all payments otherwise due Consultant until such time as Consultant has provided any Default Security required by this Contract.

Upon request by Company, Consultant shall also provide lien and claim releases executed by Consultant, its Subcontractors and their suppliers through the date of each invoice submitted. Every fee, expense, payment type or charge and any adjustment, formula or calculation method for any of the foregoing must be explicitly referenced in Schedule B (Standing Pricing Terms) or in an Contract Document (as the foregoing may be updated from time to time). Any fee, expense, payment type or charge and any adjustment, formula or calculation method for any of the foregoing that is not explicitly set out in Exhibit B, Pricing Schedule, or set out in a Contract Document is not enforceable.

ARTICLE 6. TAXES

The consideration to be paid under the Contract includes all taxes arising out of Consultant's performance hereunder, including without limitation state and local sales and use taxes, value-added taxes, import duties, payroll taxes, income taxes and other taxes relating to the performance of the Work.

ARTICLE 7. TRAVEL

If required for the Work, pre-approved expenses for travel and related expenses will be reimbursed at Consultant's cost to the extent that such expenses are supported by original receipts or invoices and are in accordance with Company's travel policy attached hereto as Exhibit G. Such expenses will be invoiced as separate line items on any applicable invoice.

ARTICLE 8. ACCOUNTING AND AUDITING

Consultant shall keep accurate and complete accounting records in support of any cost-based billings and claims to Company in accordance with generally accepted accounting principles. Company, or its audit representatives, shall have the right at any reasonable time or times to examine, audit, and copy the records, vouchers, and other source documents which relate to any claim for compensation other than pricing elements which are fixed in amount by this Contract. Such documents shall be available for examination, audit and reproduction for three (3) years after completion or termination of this Contract.

Consultant shall assist Company with preparing necessary audit material and will allow Company to review any work papers prepared by independent auditors as allowed by professional standards.

Audit findings by Company's representative will be considered to be final and conclusive for the period audited. Any over collections shall be returned to Company within thirty (30) calendar days from date of Notice of overcharge.

ARTICLE 9. CREDIT REQUIREMENTS

Consultant shall meet the requirements of either clause (i) or clause (ii) below: (i) Consultant maintains a senior unsecured debt rating from Standard & Poor's of BBB- or better; or (ii) if Consultant does not maintain a satisfactory debt rating, Consultant meets ALL of the following credit standards: a) tangible net worth ten (10) times the projected maximum liability of Consultant under this Contract; b) no change in the condition of its earnings, net worth, or working capital over the last twenty-four (24) months, which would reasonably be anticipated to impair Consultant's ability to meet its obligations under this Contract; and c) Consultant is not in default under any of its other agreements and is current on all of its financial obligations.

If requested by Company, Consultant shall within thirty (30) calendar days provide Company with copies of its most recent annual and quarterly financial statements prepared in accordance with generally accepted accounting principles.

ARTICLE 10. SECURITY

In the event Consultant is unable to satisfy the credit requirements set forth in ARTICLE 9. CREDIT REQUIREMENTS at any time during the performance of the Work, or if Consultant experiences a Material Adverse Change at any time during such performance, then Consultant shall provide Company with security against defaults by Consultant under this Contract in such form and amount as may be reasonably required by Company ("Default Security"), and pursuant to such additional agreements or instruments as may be reasonably required by Company, including but not limited to letters of credit, third party guaranties, escrow accounts, labor and material payment bonds and/or performance bonds. Company may at any time, at its own discretion or pursuant to a request by Consultant, recalculate the amount of Default Security required pursuant to this Article, in which case Company shall increase or decrease the existing amount of Default Security, as appropriate. At no time shall the amount of Default Security to which Company is entitled pursuant to this Article be less than Company's Net Replacement Costs.

The terms of any letter of credit required by Company shall conform to the attached Exhibit C, as well as the requirements of this Contract and be issued by a bank acceptable to Company. The letter of credit shall provide for payment to Company of the letter of credit stated amount if Consultant defaults under the terms of this Contract. Company shall have the right to call the entire amount of the letter of credit if Consultant has not renewed the letter of credit thirty (30) calendar days prior to its expiration.

Consultant's expenses of complying with additional Default Security obligations as set forth in this Article shall be borne by Consultant.

ARTICLE 11. WITHHOLDING PAYMENT

Company may, without limiting any other rights or remedies Company may have, withhold from payments amounts which reflect the reasonable cost to replace non-conforming or defective Work or the value of any claim which Company has

against Consultant under the Contract. Company may also retain from any payment sufficient funds to discharge any delinquent accounts of Consultant for which liens on Company's property have been or can be filed, and Company may at any time pay therefrom for Consultant's account such amounts as are, in the reasonable opinion of Company, due thereon, including any sums due under any federal or state law.

ARTICLE 12. DESIGNATED REPRESENTATIVES AND NOTICES

In conjunction with each Release, each Party shall designate a representative authorized to act on its respective behalf and shall advise the other Party in writing of the name, address and telephone number of such designated representative, and shall inform the other Party of any subsequent change in such designation. All communications relating to the day-to-day activities under this Contract shall be exchanged between such designated representatives through any agreed form of communication.

Any formal Notice required to be delivered in writing under the terms of this Contract shall be delivered to the representative of the other Party as designated below. All formal written Notices shall be: (i) hand delivered; (ii) deposited in the mail, properly stamped with the required postage; (iii) sent via registered or certified mail; or (iv) sent via recognized overnight courier service. The Parties' addresses for purposes of Notice shall be as set forth below:

If to Company:	If to Consultant:
PacifiCorp	Western Weather Group
825 NE Multnomah Street	686 Rio Linda Avenue
Portland, Oregon 97232	Chico, California 95926
Attn: Robert Mizera	Attn: Nathan Lohse
Telephone: 503-813-5923	Telephone: 530-342-1700

Either Party may change the name or address of the designated recipient of Notices by delivery of a Notice of such change as provided for in this Article.

ARTICLE 13. EXAMINATION OF WORK AND PROGRESS REPORTS

Consultant shall submit periodic progress reports as requested by Company. Company, its agents or representatives may visit Consultant's office at any reasonable time to determine the status of ongoing Work required by this Contract.

All Work will be subject to examination at any reasonable time or times by Company, which shall have the right to reject unsatisfactory Work. Neither examination of Work nor the lack of same nor acceptance of the Work by Company nor payment therefore shall relieve Consultant from any of its obligations under this Contract.

ARTICLE 14. PROFESSIONAL RESPONSIBILITY

Consultant shall perform the Work in accordance with the Scope of Work and using the standards of care, skill, and diligence normally provided by a professional in the performance of similar Services, and shall comply with all laws, codes and standards applicable to the Work.

In the event of Consultant's failure to do so, Consultant shall, upon Notice by Company, promptly reperform the Work and correct the defect at Consultant's sole cost. Consultant's obligation to correct and reperform its Work shall be in addition to, and not in lieu of, any other right that Company may have.

ARTICLE 15. CHANGES

Company may at any time in writing direct changes and/or additions within the general scope of this Contract and any Release issued hereunder or direct the omission of or variation in Work. If any such direction results in a material change in the amount or character of the Work, an equitable adjustment in the Contract price and/or other such provisions as may be affected shall be made and this Contract or the applicable Release shall be modified in writing accordingly. Any claim by Consultant for an adjustment under this Article shall be processed in accordance with the provisions of ARTICLE 29. CLAIM NOTICE AND RESOLUTION PROCEDURE.

No change shall be binding upon Company until a change order is executed by an authorized representative of Company which EXPRESSLY STATES THAT IT CONSTITUTES A CHANGE ORDER TO THIS CONTRACT. THE ISSUANCE OF INFORMATION, ADVICE,

APPROVALS, OR INSTRUCTIONS BY ANYONE OTHER THAN THE AUTHORIZED COMPANY REPRESENTATIVE SHALL NOT CONSTITUTE AN AUTHORIZED CHANGE ORDER PURSUANT TO THIS ARTICLE.

ARTICLE 16. INSURANCE

Without limiting any liabilities or any other obligations of Consultant, Consultant shall, prior to commencing Work, secure and continuously carry with insurers having an A.M. Best Insurance Reports rating of A-:VII or better such insurance as will protect Consultant from liability and claims for injuries and damages which may arise out of or result from Consultant's operations under the Contract and for which Consultant may be legally liable, whether such operations are by Consultant or a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable. Consultant shall insure the risks associated with the Work and this Contract with minimum coverages and limits as set forth below:

Workers' Compensation. Consultant shall comply with all applicable workers' compensation laws and shall furnish proof thereof satisfactory to Company prior to commencing Work. If Work is to be performed in Washington or Wyoming, Consultant will participate in the appropriate state fund(s) to cover all eligible employees and provide a stop gap (employer's liability) endorsement. Coverage should also provide applicable federal regulations (including, without limitation, FELA, USL&H and the Jones Act).

Employers' Liability. Consultant shall maintain employers' liability insurance with limits not less than \$1,000,000 each accident, \$1,000,000 disease each employee, and \$1,000,000 disease policy limit.

Commercial General Liability. Consultant shall maintain commercial general liability insurance on the most recently approved ISO policy form, or its equivalent, written on an occurrence basis, with limits not less than \$1,000,000 per occurrence/\$2,000,000 general aggregate (on a per location and/or per job basis) and shall include the following coverages:

- a. Premises and operations coverage
- b. Independent contractor's coverage
- c. Contractual liability
- d. Products and completed operations coverage, maintained for at least **2 years** for post-completion losses
- e. Broad form property damage liability
- f. Personal and advertising injury liability, with the contractual exclusion removed
- g. Sudden and accidental pollution liability, as applicable

Business Automobile Liability. Consultant shall maintain business automobile liability insurance on the most recently approved ISO policy form, or its equivalent, with a minimum single limit of \$1,000,000 each accident for bodily injury and property damage including sudden and accidental pollution liability, with respect to Consultant's vehicles whether owned, hired or non-owned, assigned to or used in the performance of the Work.

Network Security & Privacy Liability. If the Work or Services under the Contract involves the rendering of IT services including, but not limited to: software, software or hardware or systems development or consulting services; internet/application services (e.g., web hosting); providing content; connections to systems, technology or network(s); or if Contractor in any way collects, obtains, maintains or in any way accesses or uses Confidential Information, then Contractor, and its Subcontractors shall maintain Network Security & Privacy Liability coverage, including Professional Errors & Omissions, throughout the term of this Contract and for a period of two (2) years thereafter, with a minimum required limit of \$5,000,000 Each Claim.

Professional Liability. Consultant shall maintain professional liability insurance covering damages arising out of negligent acts, errors, or omissions committed by Consultant in the performance of this Contract, with a liability limit of not less than \$1,000,000 each claim. Consultant shall maintain this policy for a minimum of two (2) years after completion of the Work or shall arrange for a two (2) year extended discovery (tail) provision if the policy is not renewed. The intent of this policy is to provide coverage for claims arising out of the performance of Work or Services under this Contract and caused by any error, omission- for which the Consultant is held liable.

Umbrella or Excess Liability. Consultant shall maintain umbrella or excess liability insurance with a minimum limit of \$5,000,000 each occurrence/aggregate where applicable on a following form basis to be excess of the insurance coverage and limits required in employers' liability insurance, commercial general liability insurance and business automobile liability insurance above. Consultant shall provide Notice to Company, if at any time the full umbrella limit required under this Contract is not available, and will purchase additional limits, if requested by Company.

Company does not represent that the insurance coverages specified herein (whether in scope of coverage or amounts of coverage) are adequate to protect the obligations of Consultant, and Consultant shall be solely responsible for any deficiencies thereof.

Except for workers' compensation and professional liability insurance, the policies required herein shall include provisions or endorsements naming Company, its parent, divisions, affiliates, subsidiary companies, co-lessees, co-venturers, officers, directors, agents, employees, servants and insurers as additional insureds or loss payees, as applicable to specific insurance coverage. The commercial general liability additional insured endorsement shall be ISO Form CG 20 10 or its equivalent.

To the extent of Consultant's negligent acts or omissions, all policies required by this Contract shall include: (i) provisions that such insurance is primary insurance with respect to the interests of Company and that any other insurance maintained by Company (including self-insurance) is excess and not contributory insurance with the insurance required hereunder; and (ii) provisions that the policy contain a cross liability or severability of interest clause or endorsement in the commercial general liability and automobile liability coverage. Unless prohibited by applicable law, all required insurance policies (except professional liability) shall contain provisions that the insurer will have no right of recovery or subrogation against Company, its parent, divisions, affiliates, subsidiary companies, co-lessees or co-venturers, agents, directors, officers, employees, servants, and insurers, it being the intention of the Parties that the insurance as effected shall protect all of the above-referenced entities evidenced by waiver of subrogation wording.

A certificate of insurance shall be furnished to Company confirming the issuance of such insurance prior to commencement of Work by Consultant. Should a loss arise during the Term of the Contract that may give rise to a claim against Consultant and/or Company as an additional insured, Consultant shall deliver to Company (or cause to be delivered to Company) certified copies of such insurance policies. Consultant shall not cancel or reduce limits of liability without (i) ten (10) calendar days prior written Notice to Company if canceled for nonpayment of premium; or (ii) thirty (30) calendar days prior written Notice to Company if canceled for any other reason. Lack of notification shall be considered a material breach of this Contract.

Consultant shall require Subcontractors who perform Work at the Work Site to carry liability insurance (auto, commercial general liability and excess) and workers' compensation/employer's liability insurance commensurate with their respective scopes of work. Consultant shall remain responsible for any claims, lawsuits, losses and expenses included defense costs that exceed any of its Subcontractors' insurance limits or for uninsured claims or losses.

ARTICLE 17. INDEMNIFICATION

Consultant specifically and expressly agrees to indemnify, defend, and hold harmless Company and its officers, directors, employees and agents (hereinafter collectively "Indemnitees") against and from any and all claims, demands, suits, losses, costs and damages of every kind and description, including attorneys' fees and/or litigation expenses, brought or made against or incurred by any of the Indemnitees resulting from or arising out of the acts, errors or omissions of Consultant, its employees, agents, representatives or Subcontractors of any tier, their employees, agents or representatives in the performance or nonperformance of Consultant's obligations under this Contract or in any way related to this Contract. The indemnity obligations under this Article shall include without limitation:

- a. Loss of or damage to any property of Company, Consultant or any third party;
- b. Bodily injury to, or death of any person(s), including without limitation employees of Company, or of Consultant or its Subcontractors of any tier; and
- c. Claims arising out of workers' compensation, unemployment compensation, or similar such laws or obligations applicable to employees of Consultant or its Subcontractors of any tier.

Consultant's indemnity obligations owing to Indemnitees under this Article are not limited by any applicable insurance coverage identified in ARTICLE 16. INSURANCE. Consultant's indemnity obligation under this Article shall not extend to any liability caused by the sole negligence of any of the Indemnitees.

For Work performed in the States of Oregon and Washington, Consultant's indemnity obligations under this Article shall extend only to liability for damage arising out of death or bodily injury to persons or damage to property to the extent that the death or bodily injury to persons or damage to property arises out of the fault of Consultant, or the fault of Consultant's agents, representatives or Subcontractors.

To the extent applicable, Consultant specifically and expressly waives any immunity under either Industrial Insurance, Title 51, RCW, or Workers' Compensation Law, Chapter 656, ORS, and acknowledges that this waiver was mutually negotiated by the Parties herein.

The invalidity, in whole or in part, of any of the foregoing paragraphs will not affect the remainder of such paragraph or any other paragraphs in this Article.

ARTICLE 18. CHANGES IN PERSONNEL

Prior to: (i) changing or replacing any "key" Personnel, as identified in a Release or in Consultant's proposal for any Work; or (ii) changing any classification, grade or rate of any Personnel working under a Release, Consultant shall notify Company of the proposed replacement/change before executing such replacement/change, and obtain Company's prior written approval to such replacement/change. Any replacement Personnel shall have the capabilities equivalent to or better than the person replaced. If Consultant replaces or changes the classification, grade or rate of any person for performance of the Work described in the applicable Release, without the express approval of Company, then Consultant shall bear all costs associated with any and all such replacements and changes, and said costs shall not be reimbursable from Company.

ARTICLE 19. CONSULTANT'S PERSONNEL; DRUGS, ALCOHOL AND FIREARMS

Consultant shall employ in the performance of the Work only persons qualified for the same. Consultant shall at all times enforce strict discipline and good order among its employees and the employees of any Subcontractor of any tier. Consultant shall not permit or allow the introduction or use of any firearms, illegal drugs or intoxicating liquor upon the Work Site under this Contract, or upon any of the grounds occupied, controlled, or used by Consultant in the performance of the Work. Consultant shall immediately remove from the Work, whenever requested by Company, any person considered by Company to be incompetent, insubordinate, careless, disorderly, in violation of the above restriction on firearms, illegal drugs or intoxicating liquor, or under the influence of illegal drugs or intoxicating liquor, and such person shall not again be employed in the performance of the Work herein without the consent of Company.

ARTICLE 20. ACCESS TO COMPANY'S FACILITIES

20.1 Requirements for Access

Access to Company controlled areas is granted on an as-needed basis only in accordance with Company's internal badge and access policies. Company shall specify in the Release or Scope of Work whether or not the Work under this Contract requires either: (i) unescorted physical access to Company's Facilities; or (ii) local or remote access to Company's Cyber Assets. For all Personnel who require either such access, Contractor shall:

- a. Conduct, at Contractor's cost and expense, a Personnel risk assessment to include at a minimum an identity verification and seven-year criminal background check for the current residence and past locations of residence of all Personnel requiring access. All background checks will be conducted in accordance with federal, state, provincial and local laws, and subject to existing collective bargaining unit agreements or other agreements, if any. A background check completed within two (2) years prior to the date the Contractor signed a Contractor/Vendor Information Form for each such person will be considered valid. Following the initial background check, updates shall be performed no less frequently than every seven (7) years or upon request by Company. In the event Company notifies Contractor of impending expiration of a background check, Contractor shall provide an updated Contractor/Vendor Information Form reflecting a refreshed background check within twenty (20) days of receipt of the Notice in order to avoid revocation of such person's access. An appropriate authorization form must be signed by each of the Personnel prior to a background check being conducted, acknowledging that the background check is being conducted and authorizing the information obtained to be provided to Company;
- b. Ensure that Personnel have passed the background checks outlined in subsection 20.1(a) prior to requesting access to Company's Facilities and/or Cyber Assets. In the event any such person: (i) is currently under indictment for a crime punishable by imprisonment for a term exceeding one year; (ii) has been convicted (within the past seven years) in any court of a crime punishable by imprisonment for a term exceeding one year; (iii) is currently a fugitive of justice; or (iv) is an alien illegally or unlawfully in the United States, such person shall be considered a "restricted person" and may not be granted access without prior written consent from Company. In the event any such person's background check reveals any residency gap of six (6) consecutive months or more, Contractor shall review, evaluate, and document any such residency gap to ensure that it does not pose a risk to Company's Facilities or Cyber Assets, prior to making a determination that Personnel have passed the background check;

- c. Ensure that Personnel complete Company provided or approved training prior to requesting access;
- d. Ensure that Personnel have passed Contractor's drug and alcohol exam and are in compliance with Contractor's substance abuse/drug and alcohol policy as outlined in ARTICLE 21. SUBSTANCE ABUSE; DRUG AND ALCOHOL POLICY;
- e. Keep accurate and detailed documentation to confirm completion dates for background checks and all required training (initial and annual training, to the extent applicable), and certify to Company such documentation by completing a Contractor/Vendor Information Form, attached as Exhibit A, Appendix 1, hereto, for each person who will have access. Company has the right to audit Contractor's records supporting each Contractor/Vendor Information Form submitted to Company and to verify that the requisite background checks and training were performed. Contractor shall provide Company with all requested records supporting Contractor/Vendor Information forms within a reasonable time after receiving such a request, and in the form requested by Company, but not longer than three (3) business days following the date of such request; and
- f. Notify the company in a timely manner of termination or change in status removing the need for access. In the case of Sensitive Personnel and/or involuntary termination, notification must be immediate. In all other cases, notification must be within one business day. The Enterprise Service Desk is available 24 hours a day by calling either (503) 813-5555 or (801) 220-5555.

Contractor shall not allow any person who has not met the foregoing requirements of this subsection 20.1 to perform Work, unless Contractor has received prior written consent from Company.

20.2 Additional Access Requirements Specific to Sensitive Personnel

In addition to the access requirements outlined in subsection 20.1, with respect to all Sensitive Personnel, Contractor also shall:

- a. Ensure that Sensitive Personnel (and any Personnel with access to BCSI) are informed of and comply with Company's BCSI requirements contained in any confidentiality agreement previously executed by Contractor as well as the BCSI requirements set forth herein in ARTICLE 38. CONFIDENTIAL INFORMATION; NONDISCLOSURE; and
- b. In addition to the initial training requirement outlined in subsection 20.1(c), ensure that Sensitive Personnel complete annual Company provided or approved CIPS compliance training within Company's prescribed training window.

Contractor shall not allow any person who has not met the foregoing requirements of this subsection 20.2 to perform Work, unless Contractor has received prior written consent from Company.

ARTICLE 21. SUBSTANCE ABUSE; DRUG AND ALCOHOL POLICY

- a. Consultant shall have and ensure compliance with a substance abuse/drug and alcohol policy that complies with all applicable federal, state and/or local statutes or regulations. Consultant shall subject each of the Personnel to a drug test at Consultant's sole cost and expense. Such drug test shall, at a minimum, be a five (5) Panel Drug Test, which should be recognizable at testing labs as a "SamHSA5 panel at 50NG – THC cut-off".
- b. For any Personnel who have had a recent drug test, such recent drug test shall be documented pursuant to the previous Article. Consultant warrants that Consultant and the Personnel are in compliance with Consultant's substance abuse/drug and alcohol policy.
- c. During the course of Work performed under this Contract, Consultant shall keep accurate and detailed documentation of its drug policy and Personnel drug tests, which it shall submit to Company upon request.
- d. Consultant shall designate one person to be responsible for compliance with the requirements of this Article and all reporting and inquiries shall be made to a duly authorized representative of Company in a timely manner.

ARTICLE 22. BUSINESS ETHICS

Consultant, its employees, officers, agents, representatives and Subcontractors shall at all times maintain the highest ethical standards and avoid conflicts of interest in the performance of Consultant's obligations under this Contract. In conjunction with its performance of the Work, Consultant and its employees, officers, agents and representatives shall comply with, and cause its Subcontractors and their respective employees, officers, agents and representatives to comply with, all applicable laws, statutes, regulations and other requirements prohibiting bribery, corruption, kick-backs or similar unethical practices including, without limitation, the United States Foreign Corrupt Practices Act, the United Kingdom Bribery Act 2010, and the Company Code of Business Conduct. Without limiting the generality of the foregoing, Consultant specifically represents and warrants that neither Consultant nor any Subcontractor employees, officers, representatives or other agents of Consultant have made or will

make any payment, or have given or will give anything of value, in either case to any government official (including any officer or employee of any governmental authority) to influence his, her, or its decision or to gain any other advantage for Company or Consultant in connection with the Work to be performed hereunder. Consultant shall maintain and cause to be maintained effective accounting procedures and internal controls necessary to record all expenditures in connection with this Contract and to verify Consultant's compliance with this Article. Company shall be permitted to audit such records as reasonably necessary to confirm Consultant's compliance with this Article. Consultant shall immediately provide notice to Company of any facts, circumstances or allegations that constitute or might constitute a breach of this Article and shall cooperate with Company's subsequent investigation of such matters. Consultant shall indemnify and hold Company harmless from all fines, penalties, expenses or other losses sustained by Company as a result of Consultant's breach of this provision. The Parties specifically acknowledge that Consultant's failure to comply with the requirements of this Article shall constitute a condition of default under this Contract.

ARTICLE 23. REVIEW OF DELIVERABLES

Review by Company of any Deliverables submitted by Consultant shall be solely for the benefit of Company and shall not relieve Consultant of its responsibility to comply with all requirements of the Contract and for the accuracy of the Deliverables.

ARTICLE 24. SAFETY AND SITE REGULATIONS

Consultant shall be solely responsible for being aware of and initiating, maintaining, and supervising compliance with all safety laws, regulations, precautions, and programs in connection with the performance of this Contract. Consultant shall also make itself aware of and adhere to all applicable Company Work Site regulations including, without limitation, environmental protection, loss control, dust control, safety, and security. As a continuing condition to performing Work at any Work Site, Consultant may be required to maintain a subscription with Company's third-party safety and loss information reporting service (the "Administrator"). The Administrator manages safety ratings and insurance certificates of Company's contractors. Consultant will provide safety related information as requested by the Administrator including Consultant's safety programs, OSHA documents, experience modification rates (EMR) and an insurance and safety questionnaire. A variance or exclusion to the subscription and information requirements under this paragraph may be granted by the Company's Designated Representative.

ARTICLE 25. PROGRESS MEETINGS

Company will conduct weekly, or at other regular intervals as agreed by both Parties, meetings with Consultant to discuss the performance of the Work.

ARTICLE 26. COOPERATION WITH OTHERS

Consultant shall fully cooperate and coordinate with Company employees and other contractors who may be awarded other work. Consultant shall not commit or permit any act which will interfere with the performance of work by Company employees or other contractors.

ARTICLE 27. LIENS

Consultant shall: (i) indemnify, defend, and hold harmless Company from all laborers', materialmen's, and mechanics' liens, or claims made or filed upon the Work Site or other Company property on account of any Work or Service performed or furnished by Consultant's Subcontractors of any tier in connection with the Work (including any liens or claims based on the failure or alleged failure to maintain a payment bond); and (ii) keep Company property free and clear of all liens or claims arising from the performance of any Work covered by this Contract by Consultant or its Subcontractors of any tier.

If any lien arising out of this Contract is filed before or after Work is completed, Consultant, within ten (10) calendar days after receiving from Company written Notice of such lien, shall obtain release of or otherwise satisfy such lien. If Consultant fails to do so, Company may take such steps and make such expenditures as in its discretion it deems advisable to obtain release of or otherwise satisfy any such lien or liens, and Consultant shall upon demand reimburse Company for all costs incurred and expenditures made by Company in obtaining such release or satisfaction. If any non-payment claim is made directly against Company arising out of non-payment to any Subcontractor (including any liens or claims based on the failure or alleged failure to maintain a payment bond), Consultant shall assume the defense of such claim within ten (10) calendar days after receiving from Company written Notice of such claim. If Consultant fails to do so, Consultant shall upon demand reimburse Company for all costs incurred and expenditures made by Company to satisfy such claim.

Consultant's obligation to indemnify, defend, and hold harmless Company from liens shall not in any way be rendered unenforceable, or altered, amended, eliminated or otherwise conditioned by any laws and regulations related to processing such liens. Company shall have no obligation to deliver a copy of any notice of claim or right to a lien to Consultant or any other person or entity.

ARTICLE 28. CONFLICTS, ERRORS, OMISSIONS, OR DISCREPANCIES IN CONTRACT DOCUMENTS

Consultant shall advise Company in writing of all conflicts, errors, omissions, or discrepancies among the various documents comprising this Contract immediately upon discovery and prior to Consultant's performing the affected Work. Company shall resolve such conflicts and such resolution shall be final. Anything mentioned in the specifications and not shown on the drawings, or shown on the drawings and not mentioned in the specifications, shall be considered as if shown or mentioned in both.

ARTICLE 29. CLAIM NOTICE AND RESOLUTION PROCEDURE

In the event Consultant has a claim or request for a time extension, additional compensation, any other adjustment of the Contract terms, or any dispute arising under the Contract (hereinafter "Claim"), Consultant shall provide Company with Notice of such Claim within five (5) business days following the occurrence of the event giving rise to the Claim. Consultant's failure to give Notice as required will constitute a waiver of all of Consultant's rights with respect to the Claim.

As soon as practicable after Claim notification, Consultant shall submit the Claim to Company with all supporting information and documentation. Consultant shall also respond promptly to all Company inquiries about the Claim and its basis.

Any Claim that is not disposed of by mutual agreement between the Parties shall be decided by Company, which shall provide a written decision to Consultant. Such decision shall be final unless Consultant, within thirty (30) days after such receipt of Company's decision, provides to Company a written protest, stating clearly and in detail the basis thereof. Consultant's failure to protest Company's decision within that time period shall constitute a waiver by Consultant of its right to dispute the decision. Even if a Claim arises, Consultant shall continue its performance of this Contract.

ARTICLE 30. SUSPENSION OF PROFESSIONAL SERVICES

Company may, by written Notice, direct Consultant to suspend performance of any or all of the Professional Services or any specific Release for a specified period of time. Upon receipt of such Notice to suspend, Consultant shall: (i) discontinue the applicable Professional Services; (ii) place no further orders or subcontracts with respect to the suspended Professional Services; (iii) suspend all orders and subcontracts with respect to the suspended Professional Services; (iv) protect and maintain the suspended Professional Services; and (v) otherwise mitigate Company's costs and liabilities for those areas of Professional Services suspended. Company shall pay Consultant an equitable amount for incremental costs incurred by Consultant as a result of the suspension and equitably extend any guaranteed completion dates to the extent such suspension adversely impacts Consultant's critical path to completion; provided, however, that if the suspension is due to Consultant's failure to comply with the Contract, no such payment shall be made or extension granted.

ARTICLE 31. TERMINATION FOR CONVENIENCE

Company may terminate this Contract, in whole or in part, or any Release issued hereunder at any time without cause prior to its completion by sending to Consultant written Notice of such termination. Upon such termination, Company shall pay to Consultant, in full satisfaction and discharge of all liabilities and obligations owed Consultant, an equitable amount for all Work satisfactorily performed by Consultant as of the date of termination, plus an equitable termination fee to address Subcontractor termination charges and other reasonable out-of-pocket costs demonstrably incurred by Consultant as the result of the termination provided that such costs cannot be reasonably mitigated. Company shall not be liable for anticipated profits, costs or overhead based upon Work not yet performed as of the date of termination.

ARTICLE 32. TERMINATION FOR CAUSE

32.1 For purposes of this Contract, a default by Consultant shall be the occurrence of any of the following:

- a. A breach by Consultant of any of its material obligations under the Contract, if such breach continues uncured for a period of seven (7) days after receipt of Notice from Company, unless Company agrees, in writing, to grant Consultant an extension of such seven (7) day period for a period of time to be determined at Company's sole discretion. In such circumstance, Company shall prescribe the new cure period in writing. For purposes of the Contract, a default by Consultant shall be deemed to include, without limitation, Consultant's refusal or neglect to supply sufficient and properly skilled Personnel, materials or Deliverables of the proper quality or quantity, or equipment necessary to perform the Work or Services described in the Contract properly, or Consultant's failure in any respect to prosecute the Work or Services

described in the Contract or any part thereof with promptness, diligence and in accordance with all of the material provisions hereof;

b. Consultant fails in any material respect to comply with any laws, ordinances or regulations pertaining to safety or environmental compliance;

c. A determination that any representation, statement or warranty made by Consultant in this Contract, a Release or any other statement, report or document which Consultant is required to furnish to Company, was false or misleading in any material respect;

d. The occurrence of any of the following: (i) the filing by or against Consultant of a proceeding under any bankruptcy or similar law, unless such proceeding is dismissed within thirty (30) calendar days from the date of filing; (ii) the making by Consultant of any assignment for the benefit of creditors; (iii) the filing by or against Consultant for a proceeding for dissolution or liquidation, unless such proceeding is dismissed within thirty (30) calendar days from the date of filing; (iv) the appointment of or the application for the appointment of a receiver, trustee, or custodian for any material part of Consultant's assets unless such appointment is revoked or dismissed within thirty (30) calendar days from the date thereof; (v) the attempt by Consultant to make any adjustment, settlement, or extension of its debts with its creditors generally; (vi) the insolvency of Consultant or; (vii) the filing or recording of a notice of lien or the issuance or the obtaining of a levy of execution upon or against a material portion of Consultant's assets, unless such lien or levy of execution is dissolved within thirty (30) calendar days from the date thereof; or

e. A Material Adverse Change has occurred with respect to Consultant and Consultant fails to provide such performance assurances as are reasonably requested by Company, including without limitation the posting of Default Security pursuant to ARTICLE 10. SECURITY.

32.2 Upon the occurrence of any such default, following the applicable process described in this Article, Company shall be entitled upon written Notice to Consultant and without notice to Consultant's sureties and without limiting any of Company's other rights or remedies, to terminate this Contract for cause, terminate any Release for cause, or to terminate for cause Consultant's right to proceed with that portion of the Work affected by any such default and collect the Net Replacement Costs incurred to complete the Work.

32.3 Upon the occurrence of any such default, Company shall be entitled to make one or more draws against any Default Security as may be provided for in this Contract or the applicable Release.

32.4 Upon the occurrence of any such default, Company shall be entitled to pursue any and all other rights and remedies that it may have against Consultant under this Contract or at law or in equity.

32.5 In the event of a full or partial termination under this Article, Company may, for the purpose of completing the Work or enforcing these provisions, take possession of all completed and in-process Deliverables use them or may finish the Work by whatever method it may deem expedient including: (i) Company may hire a replacement contractor or contractors to complete the remaining Work that Consultant was otherwise obligated to complete under the Contract using such form of agreement as Company may deem advisable; or (ii) Company may itself provide any labor or materials to complete the Work.

32.6 All rights and remedies provided in this Article are cumulative, and are not exclusive of any other rights or remedies that may be available, whether provided by law, equity, statute, in any other agreement between the Parties or otherwise. Upon the occurrence of any such default, following the applicable process described in this Article, Company shall be entitled to pursue any and all other rights and remedies, including without limitation damages, that Company may have against Consultant under this Contract or at law or in equity.

ARTICLE 33. OBLIGATIONS ON TERMINATION AND TERMINATION ASSISTANCE

33.1 In addition to any other obligations that arise on termination or expiration of this Contract, the Parties agree that, on any expiration or termination of this Contract, regardless of the circumstance:

(a) Consultant shall immediately surrender to Company all access cards, security passes, passwords and other such devices granting access to any Work Site or to Company networks or computer systems; and

(b) Consultant shall return any Data that is in its care, custody or control to Company in the format requested by Company and Consultant shall, after receiving Company's written confirmation that it can read the Data provided by Consultant, permanently delete any copies of the Data in Consultant's care, custody or control.

33.2 Prior to the expected expiration or termination of a Contract Document by either Party for any reason, or prior to the expected expiration or termination of this Contract for any reason, including the default of the terms of a Contract Document or a default under this Contract, Consultant agrees to provide Company with the reasonable assistance services requested by Company. These services will include, at a minimum, converting data, providing parallel services until Company has transitioned to a new system, providing on-site technical support, cooperating with Company or its designated vendor in developing required interfaces, and such other assistance services as shall be necessary or appropriate to facilitate, without material or extended interruption to the Services, the orderly transition of the Services to Company or its new provider of services. The Parties agree that assistance services may extend beyond the Term as reasonably required by Company.

ARTICLE 34. DELAYS

Force Majeure. Neither Party shall be liable for delays caused by a Force Majeure Event; provided, however, that both Parties agree to seek to mitigate the potential impact of any such delay. Any delay attributable to a Force Majeure Event shall not be the basis for a request for additional compensation. In the event of any such delay, the required completion date(s) may be extended for a reasonable period not exceeding the time actually lost by reason of the Force Majeure Event.

Company-Caused Delay. If Consultant is actually delayed in its performance of the Work by the actions or omissions of Company (excluding the Company's good faith exercise of rights and remedies provided under the Contract), or by changes ordered with respect to the Work, and if Consultant is able to prove that it has used all reasonable means to avoid or minimize the effects of the delay, then, as Consultant's sole remedy, Consultant's guaranteed completion dates shall be equitably adjusted to reflect the impacts of such Company-caused delays. No adjustment under this Article shall be made for any delay to the extent that it is caused or contributed to by Consultant or performance would have otherwise been delayed by any other cause, including the fault or negligence of Consultant. Company may determine whether Consultant has met its burden described in this Article either before or after the completion deadline. If before the completion deadline, Company determines Consultant has met its burden as described in this Article, then Company may issue a written change order to extend the schedule. If after the completion deadline, Company determines Consultant has met its burden described in this Article, then Company may extend the completion deadline and thereby relieve Consultant of the obligation to pay liquidated damages. .

Consultant-Caused Delays. Any Work that is not delivered in accordance with the Scope of Work may constitute a default to the extent set forth in the terms and conditions of this Contract, provided that the delay is not related to either a Force Majeure Event or Company-caused delay.

Request For Time Extension. Any request for time extension shall be made in accordance with ARTICLE 29. CLAIM NOTICE AND RESOLUTION PROCEDURE.

ARTICLE 35. COMPLIANCE WITH LAWS

Consultant shall at all times comply with all laws, statutes, regulations, rules, executive orders, ordinances, codes, and standards applicable to Consultant's performance of the Work including, without limitation, those governing health and safety, wages, hours, employment of minors, desegregation and employment discrimination, as each may be applicable to the Work performed hereunder, and based on total anticipated dollar value of this Contract. Consultant further confirms that its employees and the employees of all Subcontractors employed under the Contract may legally work in the United States.

Without limiting the generality of the foregoing, Consultant and any Subcontractors shall abide by the requirements of 41 CFR §§60-1.4(a), 60-300.5(a) and 60-741.5(a). These regulations prohibit discrimination against qualified individuals based on their status as protected veterans or individuals with disabilities, and prohibit discrimination against all individuals based on their race, color, religion, sex, sexual orientation, gender identity, national origin or discussion of compensation. Moreover, these regulations require that covered prime contractors and Subcontractors take affirmative action to employ and advance in employment individuals without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, protected veteran status or disability. Consultant and any Subcontractors shall also abide by the requirements of Executive Order 11246, as amended, to develop and maintain a written affirmative action program (AAP) and Executive Orders 11625 and 13170 (utilization of disadvantaged business enterprises) and the Small Business Act. To the extent applicable, the employee notice requirements set forth in 29 CFR Part 471, Appendix A to Subpart A, are hereby incorporated by reference into this Contract.

Consultant shall indemnify, defend and hold harmless Company, its directors, officers, employees and agents from all losses, costs and damages by reason of any violation thereof and from any liability, including without limitation fines, penalties and other costs arising out of Consultant's failure to so comply.

ARTICLE 36. INDEPENDENT CONTRACTOR

Consultant is an independent contractor and all persons employed by Consultant in connection herewith shall be employees of Consultant and not employees of Company in any respect. Consultant shall maintain complete control over Consultant's employees and Subcontractors.

ARTICLE 37. RELEASE OF INFORMATION; ADVERTISING AND PROMOTION

Consultant shall not publish, release, disclose, or announce to any member of the public, press, official body, or any other third party any information concerning this Contract and/or the Work, or any part thereof, without the express prior written consent of Company, except as required by law. Neither the names of Company, nor the Work Site shall be used in any advertising or other promotional context by Consultant without the express prior written consent of Company.

ARTICLE 38. CONFIDENTIAL INFORMATION; NONDISCLOSURE

BES Cyber System Information. Confidential Information of Company labeled as BCSI shall be protected consistent with the following requirements: (a) BCSI shall be protected at all times, either by appropriate storage or having it under the personal observation and control of a person authorized to receive it; (b) each person who works with protected BCSI is personally responsible for taking proper precautions to ensure that unauthorized persons do not gain access to it; (c) reasonable steps shall be taken to minimize the risks of access to BCSI by unauthorized personnel (when not in use, BCSI shall be secured in a secure container, such as a locked desk, file cabinet or facility where security is provided); (d) documents or material containing BCSI may be reproduced to the minimum extent necessary, consistent with the need to carry out the Work, provided that the reproduced material is marked and protected in the same manner as the original material; (e) material containing BCSI should be disposed of through secured shredding receptacles or other secured document destruction methods; (f) BCSI shall be transmitted only by the following means: (i) hand delivery; (ii) United States first class, express, certified or registered mail, bonded courier; (iii) secure electronic means with NIST- or ISO-compliant encryption; and (g) documents or material containing BCSI shall be returned to Company or certified destroyed upon completion of the Work.

Nondisclosure. Consultant agrees that it will not disclose Confidential Information, directly or indirectly, under any circumstances or by any means, to any third person without the express written consent of Company.

Nonuse. Consultant further agrees that it will not use Confidential Information except as may be necessary to perform the Work called for by this Contract.

Protection. Confidential Information will be made available by Consultant to its employees only on a "need to know" basis and only after notifying such employees of the confidential nature of the information and after having obligated them to the nonuse and nondisclosure obligations of this Contract. Consultant agrees to take all reasonable precautions to protect the confidentiality of Confidential Information and, upon request by Company, to return to Company any documents which contain or reflect such Confidential Information.

Federal Defend Trade Secrets Act. The Federal Defend Trade Secrets Act of 2016 provides immunity from civil or criminal liability for any employee or contractor who discloses a trade secret "in confidence to a Federal, State, or local government official, either directly or indirectly, or to an attorney" where the disclosure by the employee or contractor is "solely for the purpose of reporting or investigating a suspected violation of law" or "is made in a complaint or other document filed in a lawsuit or other proceeding, if such filing is made under seal." 18 U.S.C. § 1833(b). Nothing in this Contract is intended to conflict with 18 U.S.C. § 1833(b) or create liability for disclosures of trade secrets that are expressly allowed by 18 U.S.C. § 1833(b).

Unless waived by Company, Consultant shall require its employees and Subcontractors of any tier to adhere to these confidential information and nondisclosure terms.

ARTICLE 39. OWNERSHIP OF DELIVERABLES

To the extent a Deliverable includes or incorporates pre-existing Intellectual Property of Supplier or of a third party ("Pre-Existing Property"), Consultant hereby grants Company a non-exclusive, perpetual, fully paid, transferable right to use, copy and modify such Pre-Existing Property for the purpose of Company's use of the Deliverable. Such license includes the right for Company to share Pre-Existing Property with Company's contractors, agent, officers, directors, employees, joint owners, affiliates and consultants for the foregoing purpose, without regard to any markings that may denote a confidential or proprietary

interest in the said items. Consultant represents warrants and covenants that it holds all requisite rights and third party consents necessary to grant the foregoing license without infringing the rights of any third party.

Except to the extent consisting of Consultant's Pre-Existing Property, the Deliverables prepared or developed hereunder, or other documents or information provided to Company, by Consultant or its Personnel shall become the property of Company when prepared (including any and all Intellectual Property rights in such Deliverables). Consultant hereby assigns, conveys and transfers to Company any and all right, title and interest in and to such Deliverables including any Intellectual Property rights therein, without regard to any markings that may denote a confidential or proprietary interest of Consultant in such Deliverables. Deliverables shall not mean and include any rights and title to the Consultant's software.

Consultant shall deliver all Deliverables, together with any documents or information furnished to Consultant and its employees or agents by Company hereunder, upon Company's request and, in any event, upon termination or final acceptance of the Services. Promptly upon Company's request, Consultant shall provide all tools and information (including without limitation applicable passwords and authorization codes) necessary to ensure Company receives the full benefit of the Services.

ARTICLE 40. INTELLECTUAL PROPERTY INFRINGEMENT INDEMNITY

Consultant shall indemnify, defend, and hold harmless Company, its directors, officers, employees, and agents against and from all claims, losses, costs, suits, judgments, damages, and expenses, including attorneys' fees, of any kind or nature whatsoever on account of infringement of any patent, copyrighted or uncopyrighted work, including claims thereof pertaining to or arising from Consultant's performance under this Contract. If notified promptly in writing and given authority, information, and assistance, and contingent upon Company not taking any position adverse to Consultant in connection with such claim, Consultant shall defend, or may settle at its expense, any suit or proceeding against Company so far as based on a claimed infringement which would result in a breach of this warranty and Consultant shall pay all damages and costs awarded therein against Company due to such breach.

In case any Service or Deliverable is in such suit held to constitute such an infringement and the use of said Service or Deliverable is enjoined, Consultant shall, at its expense and through mutual agreement between Company and Consultant, either procure for Company the right to continue using said Service or Deliverable, or replace same with a non-infringing Service or Deliverable, or modify same so it becomes non-infringing.

ARTICLE 41. CYBER SECURITY

41.1 SCOPE OF THIS ARTICLE

This Article applies to Contractor and its Personnel and Subcontractors that provide hardware, software, or services to the Company that may impact the confidentiality, integrity, or availability of the Company's networks, systems, software, Data, or Confidential Information for the term of the Contract.

41.2 CYBER SECURITY CONTROLS

- a. Without limiting Contractor's obligations elsewhere in this Article or the Contract, Contractor shall implement baseline security safeguards and controls to protect the Company's networks, systems, software, Confidential Information, and Data that are no less rigorous than accepted industry practices, specifically those set forth in the latest published version of ISO/IEC 27001 – *Information Security Management Systems–Requirements* and ISO/IEC 27002 – *Code of Practice for International Security Management*.
- b. Contractor agrees to notify the Company of known security vulnerabilities in hardware, software, and services provided under the Contract in a timely manner.
- c. Contractor warrants that the hardware, software, and patches provided under the Contract will not contain malicious code. Contractor agrees to provide a method to verify the integrity and authenticity of all software and patches provided by the Contractor.
- d. Contractor shall follow all applicable Company requirements for all remote access to Company resources and systems. To the extent Contractor's Personnel will have interactive remote access to Company's networks, systems or applications, such access must be performed on a secure connection. Contractor shall utilize multi-factor authentication provided by the Company. Authentication tokens and passwords may not be shared. Upon either (i) Personnel termination actions or (ii) changes in the status of Personnel which removes their need for remote access, Contractor shall report such termination or change in status to the Company's Service Desk at 503-813-5555. In the case of Sensitive Personnel and/or involuntary termination, notification must be immediate. In all other cases, notification must be within one business day.

41.3 OVERSIGHT OF COMPLIANCE

Contractor shall either:

- a. Undergo an annual Statement on Standards for Attestation Engagements (SSAE) No. 16 Service Organization Control (SOC) 2 Type II audit, ISO 27001 certification or equivalent third-party audit covering the security controls relevant to hardware, software, or services provided under this contract. Audit results and Contractor's plan to correct any negative findings shall be made available to the Company; or
- b. Allow Company to conduct an assessment, audit, examination, or review of Contractor's security controls to confirm Contractor's adherence to the terms of this Article, as well as any applicable laws, regulations, and industry standards, not more than once per year or upon notification of any Security Breach or complaint regarding Contractor's privacy and security practices. Company may elect to obtain the services of a mutually-agreeable third party to conduct this assessment, audit, examination, or review on behalf of Company. Company shall give Contractor no less than thirty (30) calendar days' notice of its intent to conduct such assessment, audit, examination, or review. As part of this assessment, audit, examination, or review, Company may review all controls in Contractor's physical and/or technical environment in relation to all Confidential Information being handled and/or hardware, software, or services being provided pursuant to this Contract. Contractor shall fully cooperate with such assessment by providing access to knowledgeable personnel, physical premises, documentation, infrastructure, application software, and systems relevant to the provision of hardware, software, or services under the Contract.

41.4 SECURITY BREACH PROCEDURES; EQUITABLE RELIEF

- a. In the event of Security Breach of the contractor or subcontractor affecting the Company, the Company's networks, systems, software, Data, or the Company's Confidential Information, Contractor shall:
 - (i) notify the Company of a Security Breach as soon as practicable, but no later than 48 hours after Contractor becomes aware of it by telephone at the following number: 503-813-5555 and
 - (ii) provide the Company with the name and contact information for any Personnel who shall serve as Contractor's primary security contact and shall be available to assist the Company with security incident management, response, and recovery associated with the Security Breach;
- b. Immediately following Contractor's notification to the Company of a Security Breach, the Parties shall coordinate with each other to investigate such Security Breach. Contractor agrees to coordinate with Company in Company's handling of the matter, including: (i) assisting with any investigation and (ii) making available all relevant records and other materials required to comply with applicable law, regulation, industry standards, or otherwise reasonably required by Company.
- c. Contractor shall use best efforts to immediately remedy any Security Breach and prevent any further or recurrent Security Breach at Contractor's expense in accordance with applicable privacy laws, regulations, and standards. Contractor shall reimburse Company for actual reasonable costs incurred by Company in responding to, and mitigating damages caused by, any Security Breach, including all costs of notice and/or remediation pursuant to this section.
- d. Contractor shall fully cooperate at its own expense with Company in any litigation or other formal action deemed reasonably necessary by Company to protect its rights relating to the use, disclosure, protection, and maintenance of its Confidential Information and Data.
- e. Contractor acknowledges that any breach of Contractor's obligations set forth in this Article may cause Company substantial irreparable harm for which monetary damages would not be adequate compensation and agrees that, in the event of such a breach or threatened breach, Company is entitled to seek equitable relief, including a restraining order, injunctive relief, specific performance and any other relief that may be available from any court, in addition to any other remedy to which Company may be entitled at law or in equity. Such remedies shall not be deemed to be exclusive but shall be in addition to all other available remedies at law or in equity, subject to any express exclusions or limitations in the Contract to the contrary.

ARTICLE 42. ASSIGNMENT

Company may at any time assign its rights and delegate its obligations under this Contract, in whole or in part, including, without limitation, transferring its rights and obligations under this Contract to any: (i) affiliate; (ii) successor in interest with respect to the Work Site; or (iii) corporation or any other business entity in conjunction with a merger, consolidation, or other business reorganization to which Company is a party. Consultant shall not assign any of its rights or responsibilities, nor delegate

its obligations, under this Contract or any part hereof without the prior written consent of Company, and any attempted transfer in violation of this restriction shall be void.

ARTICLE 43. SUBCONTRACTS

Consultant shall not subcontract any or all of the Work without prior written consent of Company which shall not be unreasonably withheld. Consultant shall be fully responsible for the acts or omissions of any Subcontractors of any tier and of all persons employed by them, shall maintain complete control over all such Subcontractors, and neither the consent by Company, nor anything contained herein, shall be deemed to create any contractual relation between the Subcontractors of any tier and Company.

Company is committed to and understands the importance of promoting diversity among its consultants and their Subcontractors by increasing the amount of business conducted with qualified diverse business enterprises, including women-owned, minority-owned, disabled veteran-owned, and lesbian, gay, bisexual, and transgender ("LGBT")-owned businesses. Company expects the same level of commitment from Consultant when it subcontracts any of the Work to Subcontractors of any tier. In the event of any spend activity with qualified diverse Subcontractors in a given monthly period, Consultant shall submit, by the 10th day of the following month, the Diversity Subcontractor Spend Report included as Exhibit H. Consultant shall submit the Diversity Subcontractor Spend Report to supplierdiversity@pacificorp.com.

In the event that a state agency or regulatory commission audits any Company report or filing concerning diverse consultant spend activity that had been prepared utilizing information provided at least in part by Consultant, Consultant shall provide Company with all substantiating documentation to sufficiently support Company's report or filing within five (5) business days of any request. Examples of documentation that Company may request include, but are not limited to, contracts or purchase orders between Consultant and any of its Subcontractors identifying Company as the ultimate recipient, invoices between Consultant and any of its Subcontractors identifying Company as the ultimate recipient, and proof of payment by Consultant to any of its Subcontractors.

ARTICLE 44. NON-EXCLUSIVE RIGHTS

Nothing in this Contract is to be construed as granting to Consultant an exclusive right to provide any or all of the Work anticipated herein. The use of Consultant's services is completely discretionary with Company. This Contract shall not be construed in any way to impose a duty upon Company to use Consultant.

ARTICLE 45. NONWAIVER

The failure of Company to insist upon or enforce strict performance by Consultant of any of the terms of this Contract or to exercise any rights herein shall not be construed as a waiver or relinquishment to any extent of Company's right to enforce such terms or rights on any future occasion.

ARTICLE 46. SEVERABILITY

Any provision of this Contract prohibited or rendered unenforceable by operation of law shall be ineffective only to the extent of such prohibition or unenforceability without invalidating the remaining provisions of this Contract.

ARTICLE 47. APPLICABLE LAW AND VENUE

This Contract shall be interpreted in accordance with the substantive and procedural laws of the State of Oregon. Any litigation between the Parties arising out of or relating to this Contract will be conducted exclusively in federal or state courts in the State of Oregon and Consultant consents to jurisdiction by such courts. TO THE FULLEST EXTENT PERMITTED BY LAW, EACH OF THE PARTIES HERETO WAIVES ANY RIGHT IT MAY HAVE TO A TRIAL BY JURY IN RESPECT OF LITIGATION DIRECTLY OR INDIRECTLY ARISING OUT OF, UNDER OR IN CONNECTION WITH THIS CONTRACT. EACH PARTY FURTHER WAIVES ANY RIGHT TO CONSOLIDATE ANY ACTION IN WHICH A JURY TRIAL HAS BEEN WAIVED WITH ANY OTHER ACTION IN WHICH A JURY TRIAL CANNOT BE OR HAS NOT BEEN WAIVED. THIS PARAGRAPH WILL SURVIVE THE EXPIRATION OR TERMINATION OF THIS CONTRACT.

ARTICLE 48. ENTIRE AGREEMENT; DOCUMENTS INCORPORATED BY REFERENCE

This Contract and any referenced exhibits and attachments, and the Release constitute the complete agreement between the Parties. All understandings, representations, warranties, agreements and any referenced attachments, if any, existing between the Parties regarding the subject matter hereof are merged into and superseded by this Contract, which fully and completely expresses the agreement of the Parties with respect to the subject matter hereof. Any Scope of Work, drawings, schedules or other documents listed in this Contract are incorporated by reference into this Contract. In the event of a conflict between (i) any

Scope of Work, drawings, schedules or other attachment or exhibit to this Contract and (ii) the above terms and conditions of this Contract, the above terms and conditions of this Contract shall take precedence and control. In the event of a conflict between the terms and conditions of this Contract and the terms and conditions of any Release, the terms of the Release shall take precedence and control.

Company assumes no responsibility for any understanding or representation made by any of its employees, officers or agents during or prior to the negotiations and execution of this Contract, unless such understanding or representation is expressly stated in the Contract.

ARTICLE 49. EXCLUDED DAMAGES

Notwithstanding anything else contained in this Contract (except for damages resulting from a breach of ARTICLE 23, BUSINESS ETHICS; ARTICLE 25, SAFETY AND SITE REGULATIONS, ARTICLE 35, COMPLIANCE WITH LAWS, ARTICLE 38, CONFIDENTIAL INFORMATION; NONDISCLOSURE, and ARTICLE 41, CYBER SECURITY, neither Party shall be liable under this Contract for any loss of profits or income, loss of use, loss of production or loss of contracts or any consequential, special, indirect, incidental or extraordinary damages; provided that a Party will not be precluded from entitlement to indemnification or recovery for any claim, loss or liability under this Contract for final, determined and non-appealable liability to a third party for consequential, indirect or punitive damages, including fines or penalties levied or assessed under applicable Law.

[Signature Page Follows]

ARTICLE 50. EXECUTION AND EFFECTIVE DATE

This Contract or any amendment to it, may be executed in as many counterparts as may be necessary. Signatures provided by internet-based or other electronic means, including in a tagged image format file (TIFF) or portable document format (PDF), are an acceptable and valid execution of any such counterpart and equally effective as delivery of a manually executed counterpart of this Contract. All counterparts so signed are to be construed together, are deemed to be an original and together constitute one and the same instrument and are deemed an original Contract.

This Contract has been executed by duly authorized representatives of the Parties and shall only be effective as of date of execution by both Parties.

CONSULTANT:
WESTERN WEATHER GROUP

By:



(Signature)

Name: **Nathan Lohse**

(Type or Print)

Title: **Chief Operating Officer**

4/22/2019

(Date Executed)

COMPANY:

PACIFICORP

By:



(Signature)

Name: **Nancy Lahti**

(Type or Print)

Title: **Vice President Information Technology & Security**

April 23, 2019

(Date Executed)

PAC_289.60

SharePoint

Atkins, Ann ▾

**NonCompete**

(for internal use)

Noncompet Form for Values Between: \$100k to \$499k

This contract is: ☒ Budgeted

Please explain reason for being unbudgeted:

SAP Requisition: TBD

SAP Purchase Order/Contract Number: TBD

SAP Vendor Number: 151667

SAP Vendor/Contractor Name (as it appears in SAP): Western Weather Group Inc

Description of Good or Service: Weather data management and forecasting services

Estimated Value of Procurement: Original value \$98.0k + \$308k = \$406.0k

Requestor must provide additional details justifying policy exception:

Vendor: Western Weather Group Master Agreement 4600004522
 Application: Furnish weather stations / weather data management and forecasting services Cost: Previously Approved: One Time – 2019: \$70,842 Total ongoing monthly: 2019 – 2020: \$26,750 / 12 months Total: (for two year contract) = \$97,592 This Request – estimated value: One Time – 2019: Add rain gages to previous order: \$6,760 One Time – 2019: Add 10 additional weather stations in OR & WA: \$86,000 One Time – 2019: Add 9 additional weather stations in UT: \$75,000 Total ongoing monthly – OR/WA: 2019 -2020 \$77,723 Total ongoing monthly – UT: 2019 – 2020 \$62,473 Total This Request: (2019 – 2020): \$307,956 Total Estimated Contract Value: \$405,548 Justification: On February 6, 2019, PacifiCorp filed a Wildfire Mitigation Plan with the California Public Utilities Commission per the requirements of California Rulemaking 18-10-007 and Senate Bill 901. This plan outlines the preventative strategies and programs PacifiCorp will implement to minimize the risk that its electric distribution and transmission infrastructure will cause wildfires. Included in the plan is a program to integrate real-time and forecasted weather data into operations of the transmission and distribution system. Weather and forecasting data will be utilized in managing relay and control settings including the implementation of proactive de-energization of portions of the system. As such the quality and reliability of the data is essential The recommended vendor - Western Weather Group is currently under contract to provide 10 weather stations along with data management and forecasting services for PacifiCorp's northern California service territory. They are also providing weather stations for other California utilities including San Diego Gas & Electric, Southern California Edison and Pacific Gas & Electric. They provide a proven package that is specifically designed for utility applications. All three off these utilities are also utilizing Western Weather Group as their weather station data management provider with approximately 400 stations currently being managed and potentially over a thousand more being added in the near future. They are also providing forecasting services focused on fire mitigation for other utilities in California. A turnkey, fully-integrated solution which Western Weather Group provides is optimal for PacifiCorp and its customers. A search for companies who can provide the total turnkey approach sought by PacifiCorp has not yielded any other providers. It is uncertain if pursuing an ala carte solution as discussed in the option section below is even viable. Doing so would place the successful delivery of an integrated weather service monitoring and forecasting service at risk. To date, the vendor has performed well and met all expectations. Integrating the additional work with the existing vendor will enable one vendor supported platform to be utilized by PacifiCorp for this critical service. Unit pricing obtained in the initial contract award will be utilized for establishing the value of the additional work. Business Purpose: On February 6, 2019, PacifiCorp filed a Wildfire Mitigation Plan with the California Public Utilities Commission per the requirements of California Rulemaking 18-10-007 and Senate Bill 901. This plan outlines the preventative strategies and programs PacifiCorp will implement to minimize the risk that its electric distribution and transmission infrastructure will cause

wildfires. Included in the plan is a program to integrate real-time and forecasted weather data into operations of the transmission and distribution system. Weather and forecasting data will be utilized in managing relay and control settings including the implementation of proactive de-energization of portions of the system. As such the quality and reliability of the data is essential. PacifiCorp is in the process of implementing the weather monitoring and forecasting services utilizing Western Weather Group per the requirements of the California plan. Western Weather Group is responsible for the following: - Furnishing of industrial grade weather stations, suitable for PacifiCorp's application and location - Train company personnel on installation / maintenance issues - Furnish and manage communication infrastructure to weather stations (cellular / satellite as required) - Manage and store data produced by weather station installations - Configure data gathering equipment to calculate specific fire risk indexes required by PacifiCorp - Produce daily weather forecasts tailored specific to targeted locations and fire related topics – during fire season only - Implement alert system to notify staff of weather alerts or operational issues with stations - Develop and implement web based viewer to provide weather data and forecasts to PacifiCorp staff. - Forward data from PacifiCorp weather stations available to other entities (Mesowest) as directed by PacifiCorp As the stations will be placed on PacifiCorp's transmission and distribution poles, PacifiCorp will assume responsibility for installation of the weather stations. PacifiCorp senior management has directed that similar wildfire mitigation plans and processes be implemented in high fire threat areas in the balance of the Company. An additional 23 proactive de-energization zones in Oregon, Utah and Washington have been identified where detailed weather data and forecasting services will be required to implement wildfire mitigation plans in these areas. Next Opportunity to competitively bid replacement? At the completion of the two year recommended contract length (November 2020), the opportunity would exist to either bring the communication, forecasting and data management and website services in-house or pursue an external vendor who can perform this service. As PacifiCorp will own the weather station installations including cellular modems, the output from these stations could be rerouted to either internal resources or an external service provider to enable the transition. The weather station hardware could also be competitively bid at that time. This solution is designed and quoted as stand-alone without integration with existing PacifiCorp IT systems. As such, the approval of this non-compete will have no influence on future non-complete requests, other than the aforementioned potential expansion of this same solution. End of Useful Life: With periodic maintenance, the weather stations would be anticipated to have a useful life of 10 years or more. The cellular / satellite modems utilized in the stations may require a more periodic replacement based upon the cellular service providers technology upgrades. The services component including data management and forecasting has no definitive "end of life" and could be replaced as needed. Option for services: No vendor has been identified who can provide the total packages of services being delivered by Western Weather Group. An alternative to the turnkey approach proposed would be to break the deliverables into separate work items utilizing a combination of internal and external resources: This may include: - Bid weather station hardware - Utilize company cellular services contract to establish communications services to stations - Obtain cloud based or internal company servers for data storage - Integrate weather station data / protocol into data base. - Build website utilizing internal or contract resources. Include functionality for alerts, etc.. - Contract with a weather forecasting service. - Integrate and manage all of the above into one "product" for operations to meet operations' needs.

I approve this exception to the Procurement Policy::

8 - Exempt

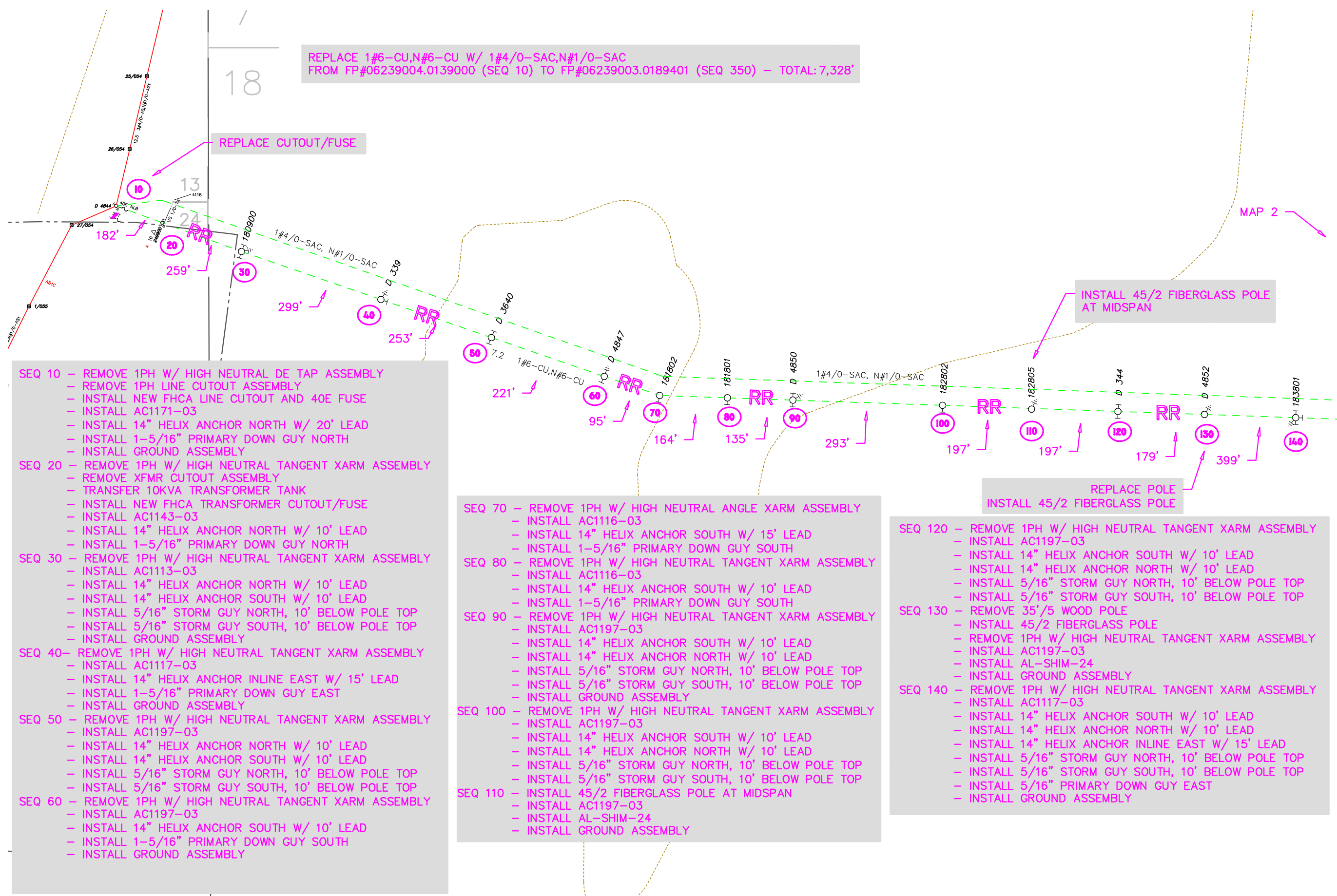
Prepared By:

Witte, Jon

Requestor Name	Caswell, Heide	Approved	06-17-2019
Manager of Requestor Name	Berreth, Allen	Approved	06-13-2019
Procurement Representative Name	Witte, Jon	Approved	06-13-2019
Manager Procurement Name	Keister, Jan	Approved	06-13-2019
Procurement Director (\$100,000 and above)	LaPorte, Glenn	Approved	06-18-2019
Center of Excellence	Blanco, Jose R	Auction Exception Gran...	06-24-2019
Business Unit Director/Managing Director	Lucas, David	Approved	06-19-2019

Procurement Managing Director Name	Hickey, Joe	Approved	06-14-2019
Comments:	Attached is the original sole source justification and the original sole source approval JRB - Sole Source		

PAC_289.61



REPLACE 1#6-CU,N#6-CU W/ 1#4/0-SAC,N#1/0-SAC
FROM FP#06239004.0139000 (SEQ 10) TO FP#06239003.0189401 (SEQ 350) - TOTAL:7,328'

REPLACE CUTOUT/FUSE

INSTALL 45/2 FIBERGLASS POLE
AT MIDSPAN

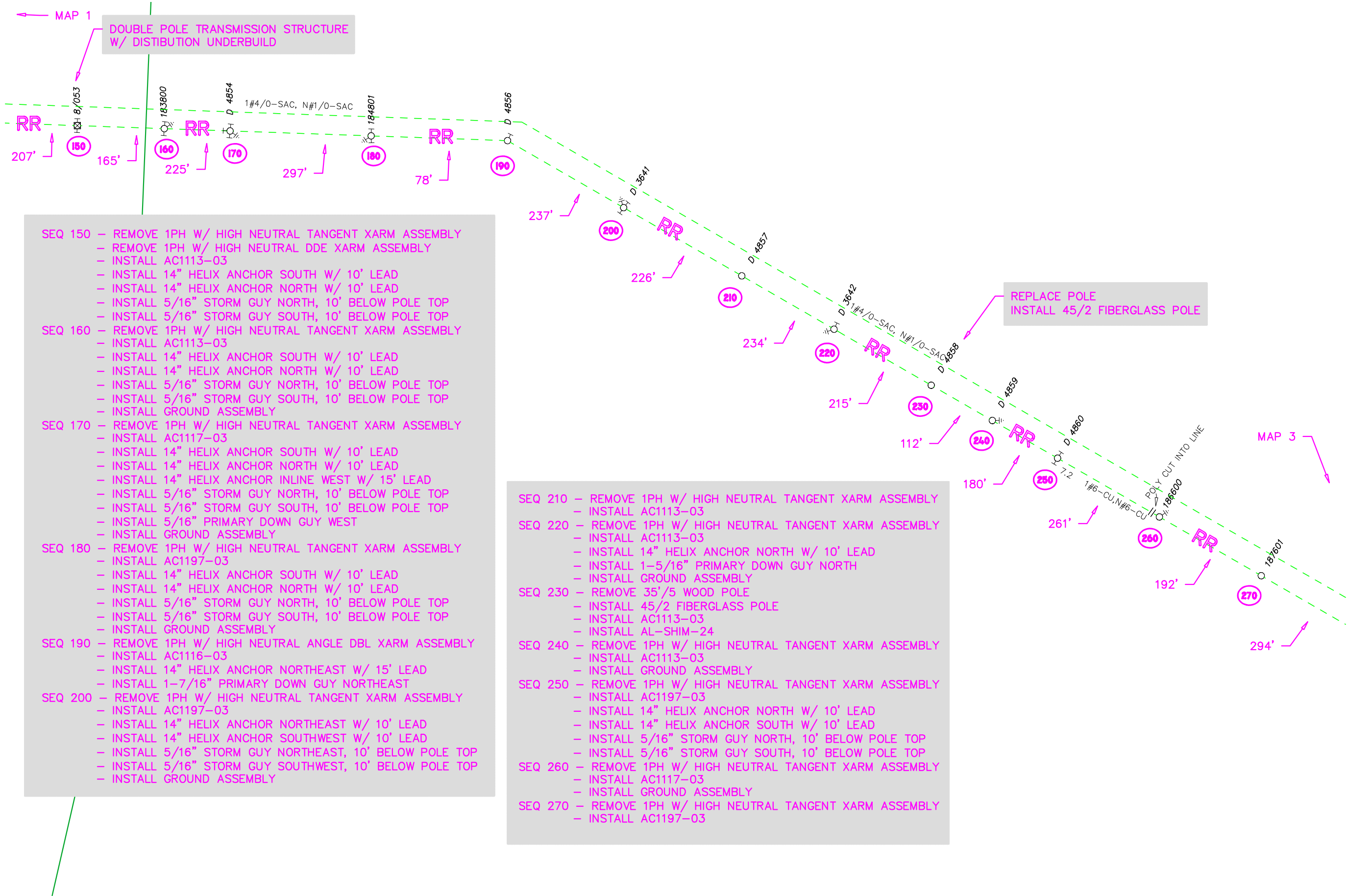
REPLACE POLE
INSTALL 45/2 FIBERGLASS POLE

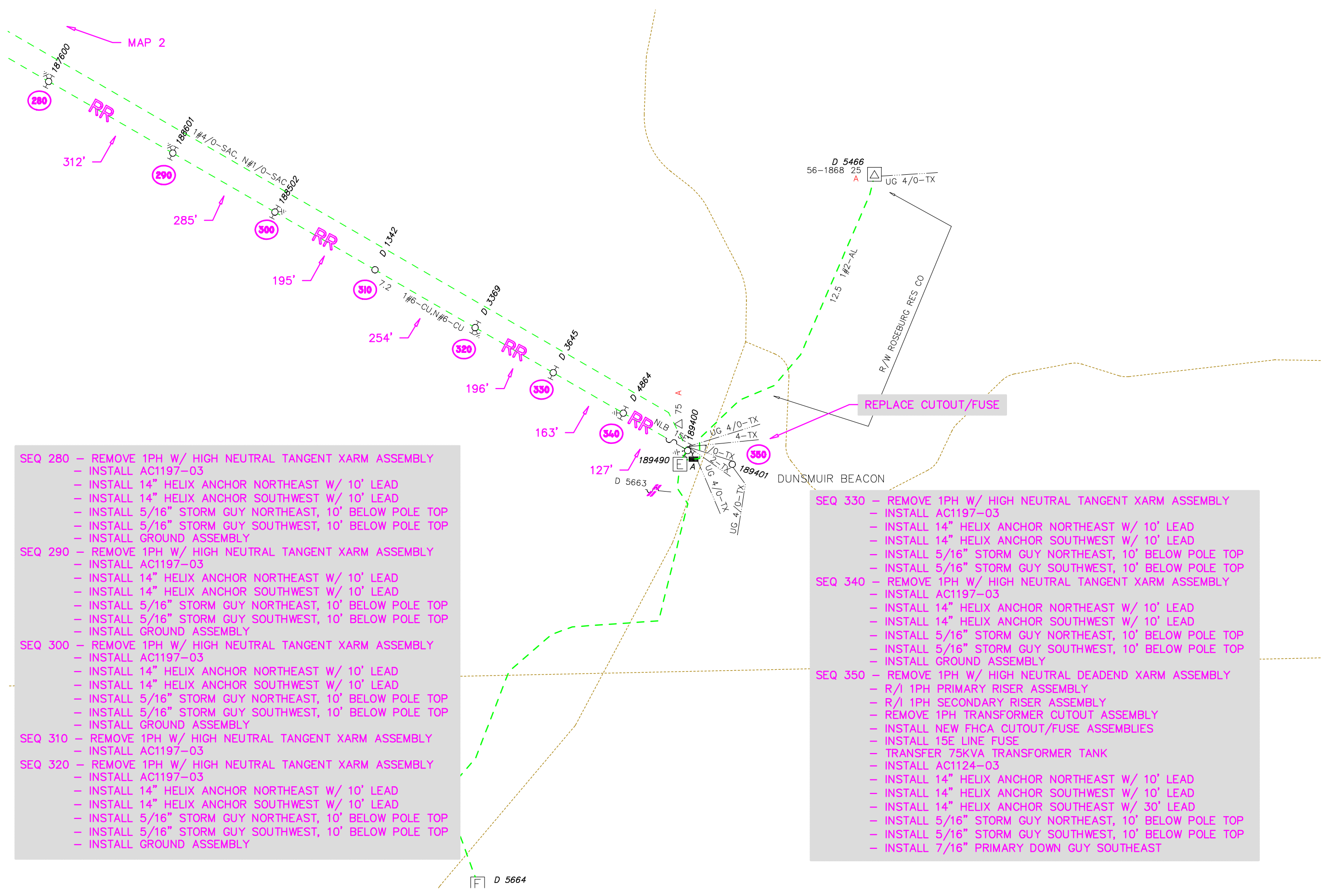
- SEQ 10 - REMOVE 1PH W/ HIGH NEUTRAL DE TAP ASSEMBLY
- REMOVE 1PH LINE CUTOUT ASSEMBLY
- INSTALL NEW FHCA LINE CUTOUT AND 40E FUSE
- INSTALL AC1171-03
- INSTALL 14" HELIX ANCHOR NORTH W/ 20' LEAD
- INSTALL 1-5/16" PRIMARY DOWN GUY NORTH
- INSTALL GROUND ASSEMBLY
- SEQ 20 - REMOVE 1PH W/ HIGH NEUTRAL TANGENT XARM ASSEMBLY
- REMOVE XFMR CUTOUT ASSEMBLY
- TRANSFER 10KVA TRANSFORMER TANK
- INSTALL NEW FHCA TRANSFORMER CUTOUT/FUSE
- INSTALL AC1143-03
- INSTALL 14" HELIX ANCHOR NORTH W/ 10' LEAD
- INSTALL 1-5/16" PRIMARY DOWN GUY NORTH
- SEQ 30 - REMOVE 1PH W/ HIGH NEUTRAL TANGENT XARM ASSEMBLY
- INSTALL AC1113-03
- INSTALL 14" HELIX ANCHOR NORTH W/ 10' LEAD
- INSTALL 14" HELIX ANCHOR SOUTH W/ 10' LEAD
- INSTALL 5/16" STORM GUY NORTH, 10' BELOW POLE TOP
- INSTALL 5/16" STORM GUY SOUTH, 10' BELOW POLE TOP
- INSTALL GROUND ASSEMBLY
- SEQ 40- REMOVE 1PH W/ HIGH NEUTRAL TANGENT XARM ASSEMBLY
- INSTALL AC1117-03
- INSTALL 14" HELIX ANCHOR INLINE EAST W/ 15' LEAD
- INSTALL 1-5/16" PRIMARY DOWN GUY EAST
- INSTALL GROUND ASSEMBLY
- SEQ 50 - REMOVE 1PH W/ HIGH NEUTRAL TANGENT XARM ASSEMBLY
- INSTALL AC1197-03
- INSTALL 14" HELIX ANCHOR NORTH W/ 10' LEAD
- INSTALL 14" HELIX ANCHOR SOUTH W/ 10' LEAD
- INSTALL 5/16" STORM GUY NORTH, 10' BELOW POLE TOP
- INSTALL 5/16" STORM GUY SOUTH, 10' BELOW POLE TOP
- SEQ 60 - REMOVE 1PH W/ HIGH NEUTRAL TANGENT XARM ASSEMBLY
- INSTALL AC1197-03
- INSTALL 14" HELIX ANCHOR SOUTH W/ 10' LEAD
- INSTALL 1-5/16" PRIMARY DOWN GUY SOUTH
- INSTALL GROUND ASSEMBLY

- SEQ 70 - REMOVE 1PH W/ HIGH NEUTRAL ANGLE XARM ASSEMBLY
- INSTALL AC1116-03
- INSTALL 14" HELIX ANCHOR SOUTH W/ 15' LEAD
- INSTALL 1-5/16" PRIMARY DOWN GUY SOUTH
- SEQ 80 - REMOVE 1PH W/ HIGH NEUTRAL TANGENT XARM ASSEMBLY
- INSTALL AC1116-03
- INSTALL 14" HELIX ANCHOR SOUTH W/ 10' LEAD
- INSTALL 1-5/16" PRIMARY DOWN GUY SOUTH
- SEQ 90 - REMOVE 1PH W/ HIGH NEUTRAL TANGENT XARM ASSEMBLY
- INSTALL AC1197-03
- INSTALL 14" HELIX ANCHOR SOUTH W/ 10' LEAD
- INSTALL 14" HELIX ANCHOR NORTH W/ 10' LEAD
- INSTALL 5/16" STORM GUY NORTH, 10' BELOW POLE TOP
- INSTALL 5/16" STORM GUY SOUTH, 10' BELOW POLE TOP
- INSTALL GROUND ASSEMBLY
- SEQ 100 - REMOVE 1PH W/ HIGH NEUTRAL TANGENT XARM ASSEMBLY
- INSTALL AC1197-03
- INSTALL 14" HELIX ANCHOR SOUTH W/ 10' LEAD
- INSTALL 14" HELIX ANCHOR NORTH W/ 10' LEAD
- INSTALL 5/16" STORM GUY NORTH, 10' BELOW POLE TOP
- INSTALL 5/16" STORM GUY SOUTH, 10' BELOW POLE TOP
- SEQ 110 - INSTALL 45/2 FIBERGLASS POLE AT MIDSPAN
- INSTALL AC1197-03
- INSTALL AL-SHIM-24
- INSTALL GROUND ASSEMBLY

- SEQ 120 - REMOVE 1PH W/ HIGH NEUTRAL TANGENT XARM ASSEMBLY
- INSTALL AC1197-03
- INSTALL 14" HELIX ANCHOR SOUTH W/ 10' LEAD
- INSTALL 14" HELIX ANCHOR NORTH W/ 10' LEAD
- INSTALL 5/16" STORM GUY NORTH, 10' BELOW POLE TOP
- INSTALL 5/16" STORM GUY SOUTH, 10' BELOW POLE TOP
- SEQ 130 - REMOVE 35'/5 WOOD POLE
- INSTALL 45/2 FIBERGLASS POLE
- REMOVE 1PH W/ HIGH NEUTRAL TANGENT XARM ASSEMBLY
- INSTALL AC1197-03
- INSTALL AL-SHIM-24
- INSTALL GROUND ASSEMBLY
- SEQ 140 - REMOVE 1PH W/ HIGH NEUTRAL TANGENT XARM ASSEMBLY
- INSTALL AC1117-03
- INSTALL 14" HELIX ANCHOR SOUTH W/ 10' LEAD
- INSTALL 14" HELIX ANCHOR NORTH W/ 10' LEAD
- INSTALL 14" HELIX ANCHOR INLINE EAST W/ 15' LEAD
- INSTALL 5/16" STORM GUY NORTH, 10' BELOW POLE TOP
- INSTALL 5/16" STORM GUY SOUTH, 10' BELOW POLE TOP
- INSTALL 5/16" PRIMARY DOWN GUY EAST
- INSTALL GROUND ASSEMBLY

Foreman		Emp #		Job Start Date		 PACIFIC CORP A BERKSHIRE HATHAWAY ENERGY COMPANY		1 of 3		Scale 1"=200'	
CC# 11581		WO# / REQ# 006771706		Job Complete Date							
CUSTOMER : PACIFIC POWER ADDRESS : DUNSMUIR, CA B.SCOTT (503)892-6796		Map String 06239003.0		Circuit 5G69		EST ID# 43950		Print Date 07/30/20			
				Post Jobs ROI Posted							





- SEQ 280 – REMOVE 1PH W/ HIGH NEUTRAL TANGENT XARM ASSEMBLY
– INSTALL AC1197-03
– INSTALL 14" HELIX ANCHOR NORTHEAST W/ 10' LEAD
– INSTALL 14" HELIX ANCHOR SOUTHWEST W/ 10' LEAD
– INSTALL 5/16" STORM GUY NORTHEAST, 10' BELOW POLE TOP
– INSTALL 5/16" STORM GUY SOUTHWEST, 10' BELOW POLE TOP
– INSTALL GROUND ASSEMBLY
- SEQ 290 – REMOVE 1PH W/ HIGH NEUTRAL TANGENT XARM ASSEMBLY
– INSTALL AC1197-03
– INSTALL 14" HELIX ANCHOR NORTHEAST W/ 10' LEAD
– INSTALL 14" HELIX ANCHOR SOUTHWEST W/ 10' LEAD
– INSTALL 5/16" STORM GUY NORTHEAST, 10' BELOW POLE TOP
– INSTALL 5/16" STORM GUY SOUTHWEST, 10' BELOW POLE TOP
– INSTALL GROUND ASSEMBLY
- SEQ 300 – REMOVE 1PH W/ HIGH NEUTRAL TANGENT XARM ASSEMBLY
– INSTALL AC1197-03
– INSTALL 14" HELIX ANCHOR NORTHEAST W/ 10' LEAD
– INSTALL 14" HELIX ANCHOR SOUTHWEST W/ 10' LEAD
– INSTALL 5/16" STORM GUY NORTHEAST, 10' BELOW POLE TOP
– INSTALL 5/16" STORM GUY SOUTHWEST, 10' BELOW POLE TOP
– INSTALL GROUND ASSEMBLY
- SEQ 310 – REMOVE 1PH W/ HIGH NEUTRAL TANGENT XARM ASSEMBLY
– INSTALL AC1197-03
- SEQ 320 – REMOVE 1PH W/ HIGH NEUTRAL TANGENT XARM ASSEMBLY
– INSTALL AC1197-03
– INSTALL 14" HELIX ANCHOR NORTHEAST W/ 10' LEAD
– INSTALL 14" HELIX ANCHOR SOUTHWEST W/ 10' LEAD
– INSTALL 5/16" STORM GUY NORTHEAST, 10' BELOW POLE TOP
– INSTALL 5/16" STORM GUY SOUTHWEST, 10' BELOW POLE TOP
– INSTALL GROUND ASSEMBLY

- SEQ 330 – REMOVE 1PH W/ HIGH NEUTRAL TANGENT XARM ASSEMBLY
– INSTALL AC1197-03
– INSTALL 14" HELIX ANCHOR NORTHEAST W/ 10' LEAD
– INSTALL 14" HELIX ANCHOR SOUTHWEST W/ 10' LEAD
– INSTALL 5/16" STORM GUY NORTHEAST, 10' BELOW POLE TOP
– INSTALL 5/16" STORM GUY SOUTHWEST, 10' BELOW POLE TOP
– INSTALL GROUND ASSEMBLY
- SEQ 340 – REMOVE 1PH W/ HIGH NEUTRAL TANGENT XARM ASSEMBLY
– INSTALL AC1197-03
– INSTALL 14" HELIX ANCHOR NORTHEAST W/ 10' LEAD
– INSTALL 14" HELIX ANCHOR SOUTHWEST W/ 10' LEAD
– INSTALL 5/16" STORM GUY NORTHEAST, 10' BELOW POLE TOP
– INSTALL 5/16" STORM GUY SOUTHWEST, 10' BELOW POLE TOP
– INSTALL GROUND ASSEMBLY
- SEQ 350 – REMOVE 1PH W/ HIGH NEUTRAL DEADEND XARM ASSEMBLY
– R/I 1PH PRIMARY RISER ASSEMBLY
– R/I 1PH SECONDARY RISER ASSEMBLY
– REMOVE 1PH TRANSFORMER CUTOUT ASSEMBLY
– INSTALL NEW FHCA CUTOUT/FUSE ASSEMBLIES
– INSTALL 15E LINE FUSE
– TRANSFER 75KVA TRANSFORMER TANK
– INSTALL AC1124-03
– INSTALL 14" HELIX ANCHOR NORTHEAST W/ 10' LEAD
– INSTALL 14" HELIX ANCHOR SOUTHWEST W/ 10' LEAD
– INSTALL 14" HELIX ANCHOR SOUTHEAST W/ 30' LEAD
– INSTALL 5/16" STORM GUY NORTHEAST, 10' BELOW POLE TOP
– INSTALL 5/16" STORM GUY SOUTHWEST, 10' BELOW POLE TOP
– INSTALL 7/16" PRIMARY DOWN GUY SOUTHEAST

PACIFICCORP A BERKSHIRE HATHAWAY ENERGY COMPANY N W E S		3 of 3		Print Date	07/30/20	Scale	1"=200'
EST ID#		43950		Post Jobs		☐ ROLL ☐ Posted	
Job Start Date		Job Complete Date		Circuit		5G69	
Emp #		Map String		WO# / REQ#		006771706	
Foreman		CC#		11581		CUSTOMER : PACIFIC POWER ADDRESS : DUNSMUIR, CA BSCOTT (503)892-6796	

PAC_289.62

PROJECT SCOPE:

THIS PROJECT WILL REPLACE A BARE SINGLE PHASE CIRCUIT WITH A SINGLE CIRCUIT 12.47 KV 4/0 AWG HENDRIX SPACER CABLE SYSTEM WITH 052AWA MESSENGER. PROJECT WILL UTILIZE EXISTING POLE LOCATIONS.

PROJECT ALIGNMENT:

THIS PROJECT IS LOCATED IN DUNSMUIR, CA. THE ALIGNMENT IS BASED OFF OF PACIFICORP PROVIDED KML FILE. POLE FRAMING AND GUYING SHOULD BE ADJUSTED FOR ACTUAL POLE LOCATIONS.

SURVEY:

GROUND SURVEY IS FROM USGS BEST AVAILABLE SOURCES

CLEARANCES:

CALIFORNIA GO95 TABLE 1
25 FT GROUND CLEARANCE FOR PRIMARY
15 FT GROUND CLEARANCE FOR COMM CABLES

REFERENCES

CALIFORNIA GO95
RUS BULLETIN 1724E-200
HENDRIX APPLICATION AND DESIGN GUIDE
HENDRIX INSTALLATION GUIDE
HENDRIX DESIGN SPECIFICATIONS

DESIGN CRITERIA:

- POLE LINE:
- 1) THE CIRCUIT IS DESIGNED FOR IEC 60815 ZONE 2 CONTAMINATION ENVIRONMENT.
 - 2) POLE LOCATIONS ARE DETERMINED BY PACIFICORP PROVIDED SURVEY DATA AND DRAWINGS
 - 3) ELEVATION IS PROVIDED
 - 4) X,Y COORDINATES ARE IN UTM WSG84 ZONE 10

STRUCTURE TYPES:

- 1) NEW STRUCTURES WILL BE FIBER REINFORCED POLYMER
- 2) EXISTING DISTRIBUTION POLES ARE DOUGLAS FIR

STRUCTURE LOADING:

- 1) ASSUMED GO95 HEAVY
- 2) ASSUMED MAXIMUM OPERATING TEMPERATURE OF 167 F.
- 3) ASSUMED GO95 GRADE A CONSTRUCTION
- 4) EMBEDMENT DEPTH REQUIREMENTS ARE ASSUMED 10% + 2 FT.
- 5) GUYING CALCULATIONS WILL ASSUME A STANDARD GUY STRAND SIZE – 5/16" EXTRA HIGH STRENGTH GRADE PER PAC STANDARD EG031, U.N.O.

THIS PROJECT DOES NOT INCLUDE:

- 1) GUY ANCHOR SIZING
- 2) SOIL ANALYSIS
- 3) FOUNDATION DESIGN & ANALYSIS
- 4) CLEARANCE CHECKS TO BUILDINGS OR OTHER STRUCTURES
- 5) PE STAMPING

GENERAL NOTES:

- 1) MESSENGER DESIGN TENSION IS 1600 LB INITIAL @ 60° F WITHOUT CABLES ATTACHED.
- 2) POLE GROUNDS TO BE BONDED TO EARTH WITH #4 AWG COPPER, MIN. MESSENGER GROUNDS SHOULD HAVE NO MORE THAN 25 OHMS RESISTANCE. POLES GROUNDS SHALL BE CONNECTED TO A GROUND ROD EVERY 500 FT.
- 3) LINEDUC SHALL BE INSTALLED AT TAP LOCATIONS AND DEADEND POLES.
- 4) POLES TO BE BUILT TO SPEC DESIGNATED AT EACH LOCATION, UNLESS NOTED OTHERWISE.
 - A) MESSENGER ATTACHMENT HEIGHTS ARE PROVIDED FOR TOP MESSENGER ATTACHMENT POINT ON POLE IN HENDRIX CONSTRUCTION DRAWINGS. POLES TO BE BUILT TO SPEC DESIGNATED AT EACH LOCATION, U.N.O.
 - B) MINIMUM GUY LEAD LENGTHS REQUIREMENTS ARE INDICATED AT POLES. GUYS TO BE LOCATED VERTICALLY ON POLE AS INDICATED ON HENDRIX SPEC DRAWING, U.N.O.
- 5) CONDUCTOR TYPES TYPICAL TO PLAN AND PROFILE DRAWINGS.
- 6) TIE THE SPACER CABLE SYSTEM TO LIGHTNING ARRESTERS AT POINTS WHERE THE CONDUCTOR COVERING HAS BEEN REMOVED. COVERING TAPS CAN PROVIDE PARTIAL PROTECTION BUT DOES NOT NEGATE THE NEED FOR ARRESTERS IN HIGH LIGHTING AREAS. REFER TO HENDRIX INSTALLATION GUIDE FOR ADDITIONAL INFORMATION.

PACIFICORP-PACIFIC POWER
5G69 RADIO TOWER FEED

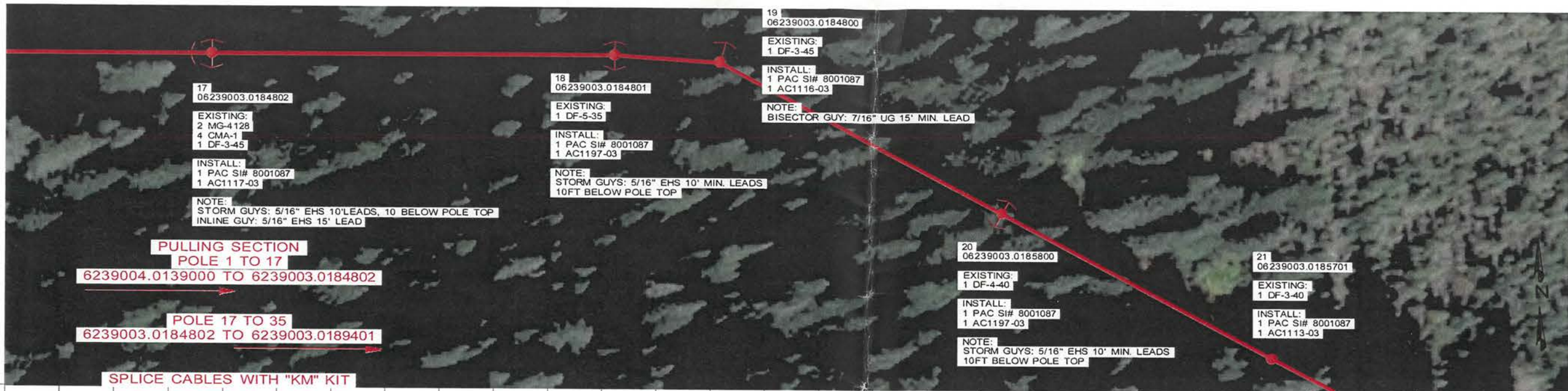


PROJECT NO.	16619	DRAWING NO.
DESIGN NO.	4764	
UTILITY NO.	6771706	

53 OLD WILTON RD. ■ MILFORD, NH 03055 ■ (603) 673-2040
ISSUE DATE: DESIGNED BY:

REVISIONS

REV	DATE	DESCRIPTION
0	2/14/20	INITIAL RELEASE



PULLING SECTION
POLE 1 TO 17

6239004.0139000 TO 6239003.0184802

POLE 17 TO 35
6239003.0184802 TO 6239003.0189401

SPLICE CABLES WITH "KM" KIT

17
06239003.0184802
STA=34+71.18
HT=38.50' ELE=3721.83'
MSG ATTACH HT: 0.5'

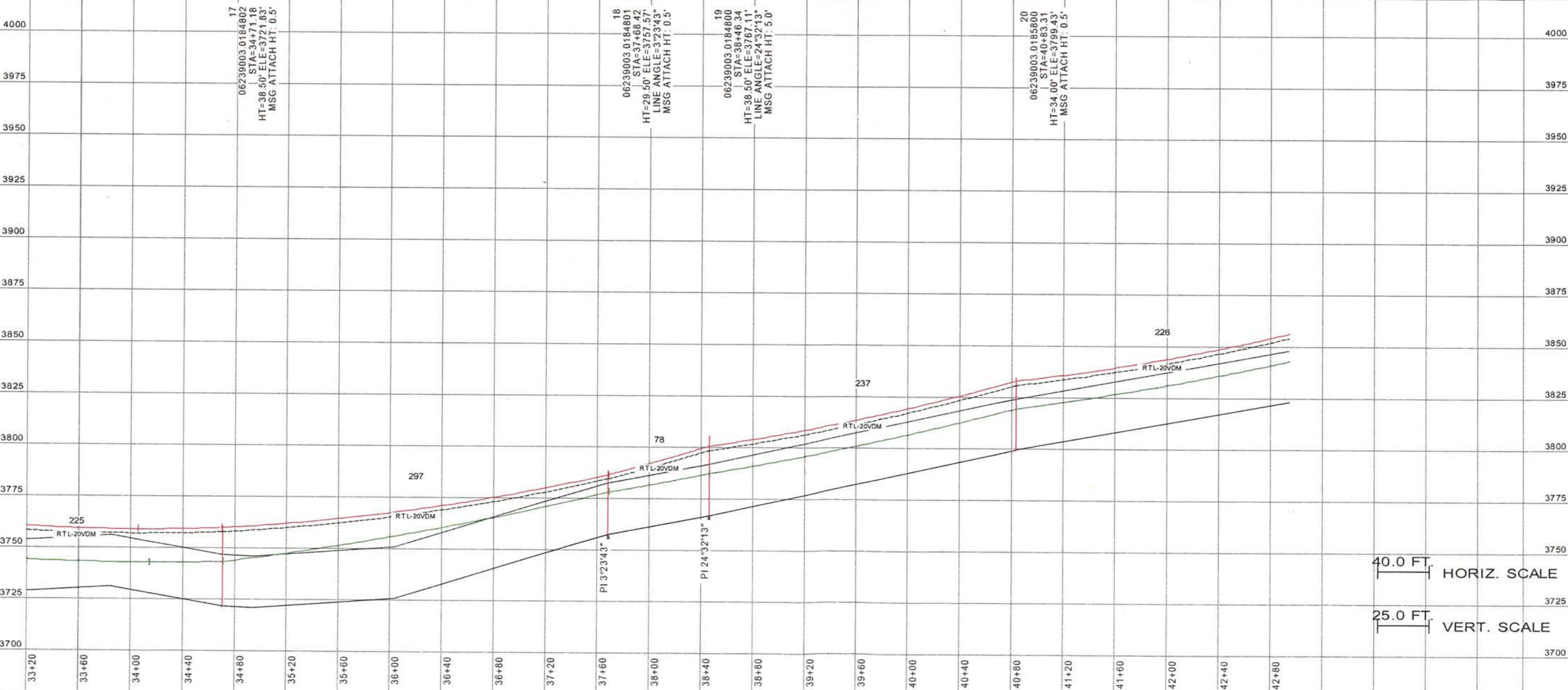
18
06239003.0184801
STA=37+68.42
HT=29.50' ELE=3757.57'
LINE ANGLE=3°23'43"
MSG ATTACH HT: 0.5'

19
06239003.0184800
STA=38+46.34
HT=38.50' ELE=3767.11'
LINE ANGLE=24°32'13"
MSG ATTACH HT: 0.5'

20
06239003.0185800
STA=40+83.31
HT=34.00' ELE=3799.43'
MSG ATTACH HT: 0.5'

21
06239003.0185701
EXISTING:
1 DF-3-40
INSTALL:
1 PAC SI# 8001087
1 AC1113-03

20
06239003.0185800
EXISTING:
1 DF-4-40
INSTALL:
1 PAC SI# 8001087
1 AC1197-03
NOTE:
STORM GUYS: 5/16" EHS 10' MIN. LEADS
10FT BELOW POLE TOP



AERIAL CABLE SYSTEMS

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ISSUE DATE: DESIGNED BY:

PACIFICORP-PACIFIC POWER
5G69 RADIO TOWER FEED

PROJECT NO. 16619
DESIGN NO. 4764
UTILITY NO. 6771706

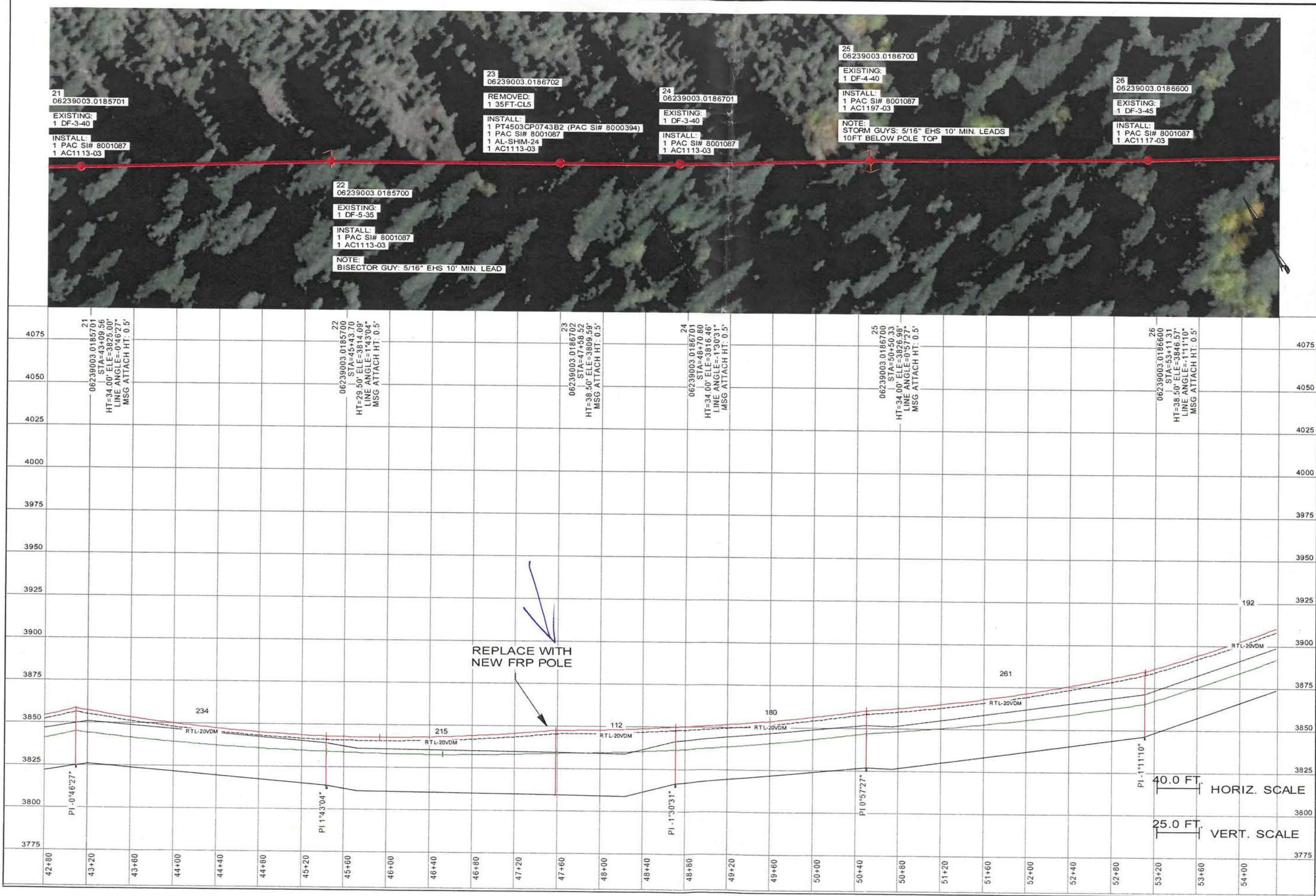
DRAWING NO.
DL-4

REVISIONS

REV	DATE	DESCRIPTION
0	2/14/20	INITIAL RELEASE

SHEET

6 OF 9

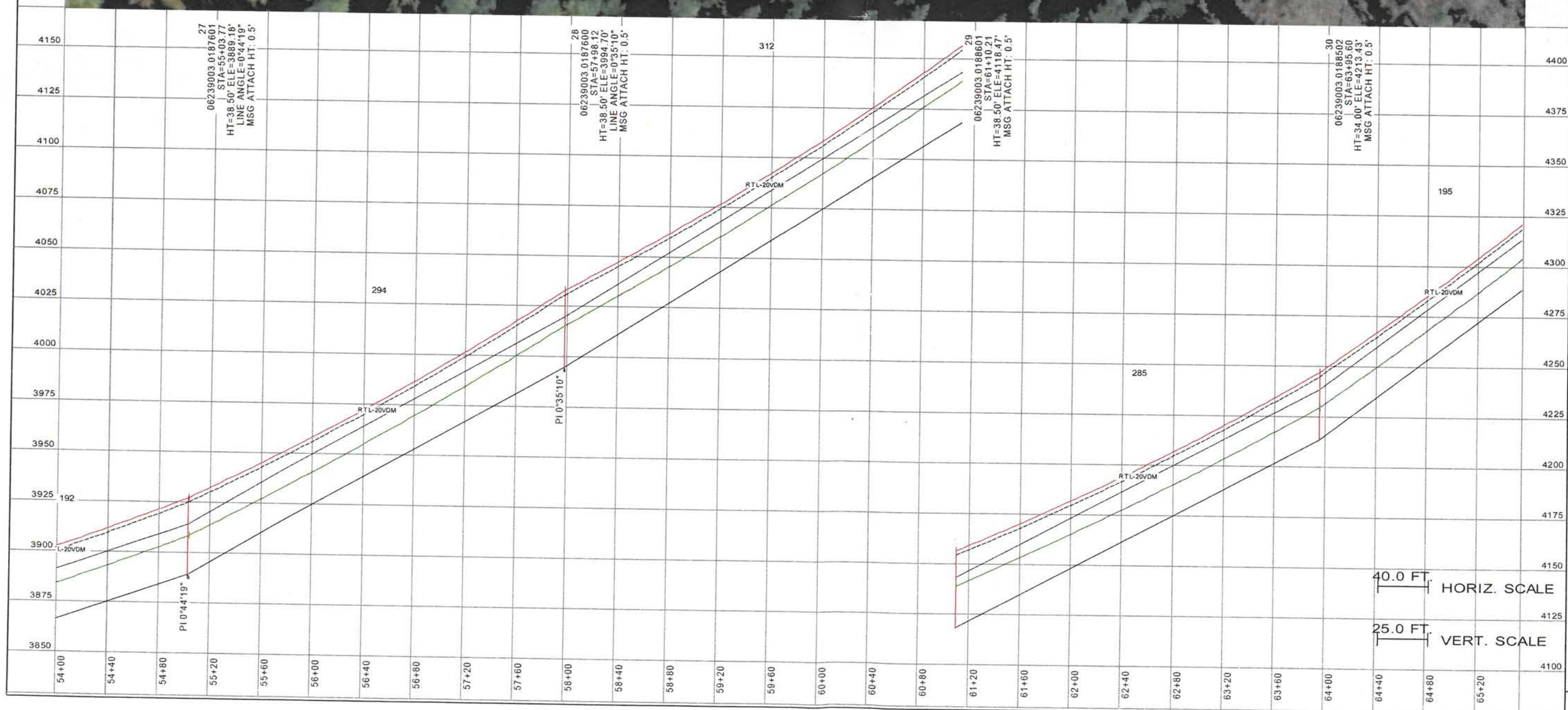


PACIFICORP-PACIFIC POWER
5G69 RADIO TOWER FEED

PROJECT NO.	15619	DRAWING NO.	DL-5
DESIGN NO.	4764	UTILITY NO.	6771706
ISSUE DATE	53 OLD WILTON RD. ■ MILFORD, NH 03055 ■ (603) 673-2040	DESIGNED BY:	

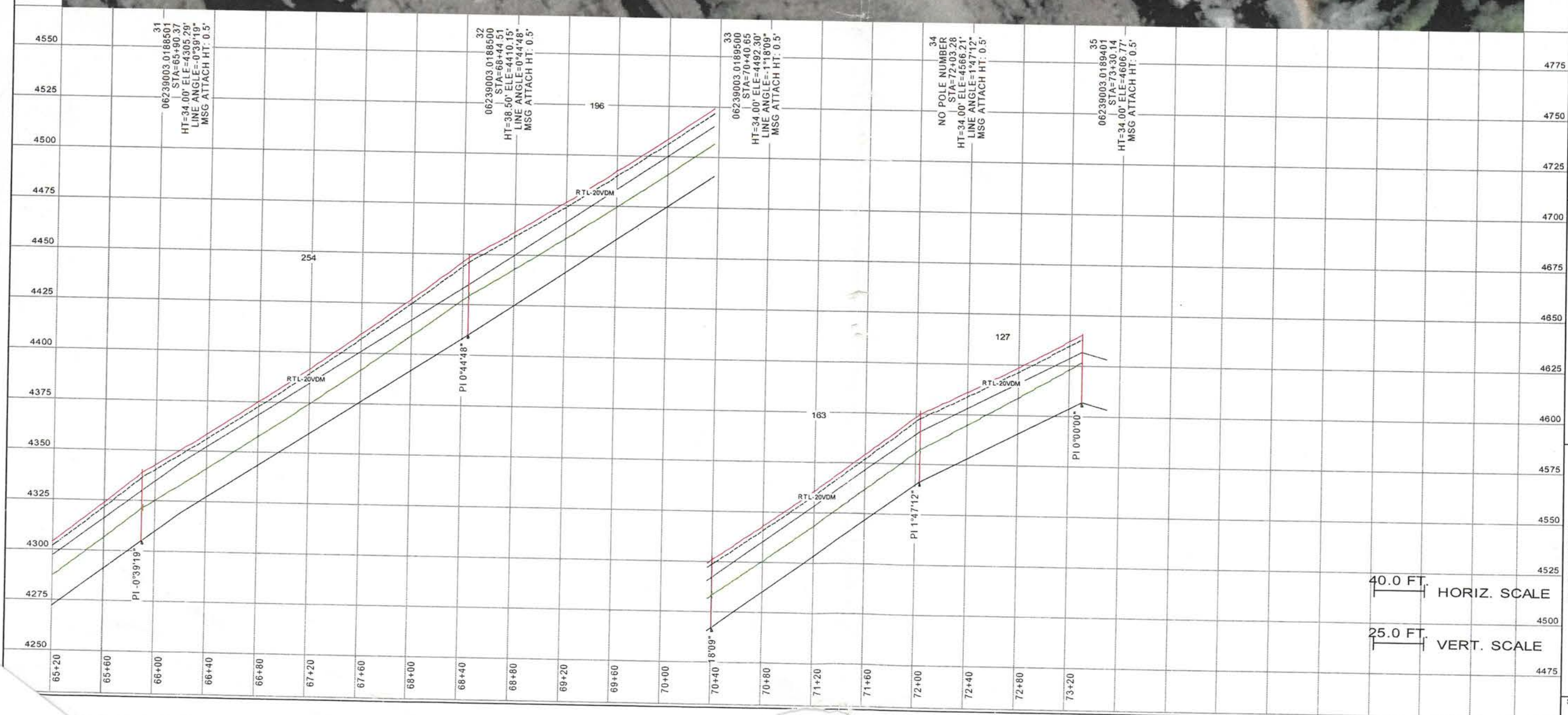
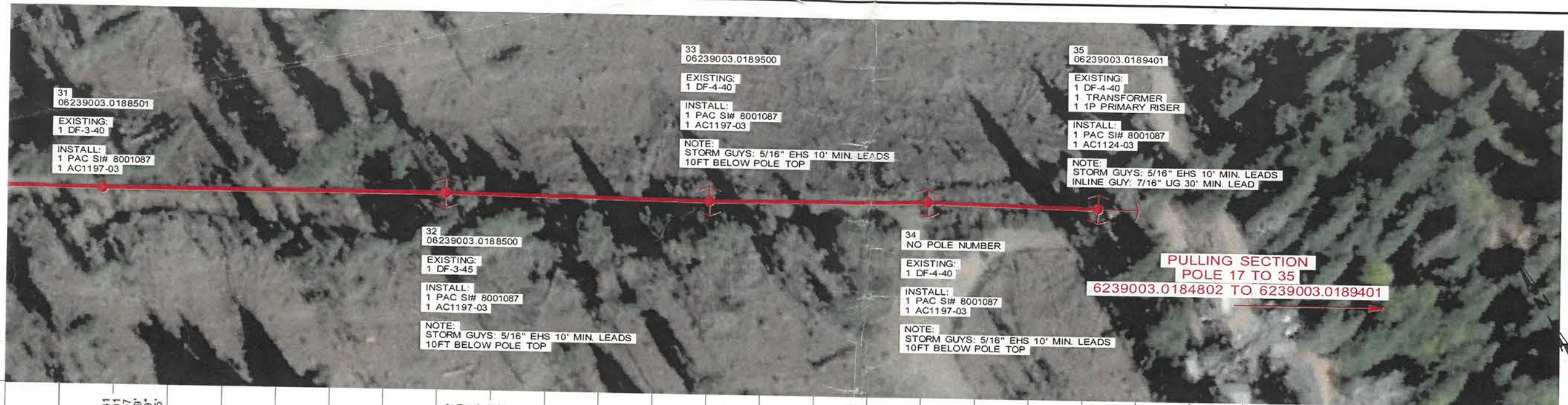
REVISIONS

REV	DATE	DESCRIPTION
0	2/14/20	INITIAL RELEASE



Hendrix®

AERIAL CABLE SYSTEMS



PACIFICORP-PACIFIC POWER
5G69 RADIO TOWER FEED

PROJECT NO. 16619
DESIGN NO. 4764
UTILITY NO. 6771706

DRAWING NO. DL-7



53 OLD WILTON RD. ■ MILFORD, NH 03055 ■ (603) 673-2040

ISSUE DATE: _____
DESIGNED BY: _____

REVISIONS

REV	DATE	DESCRIPTION
0	2/14/20	INITIAL RELEASE