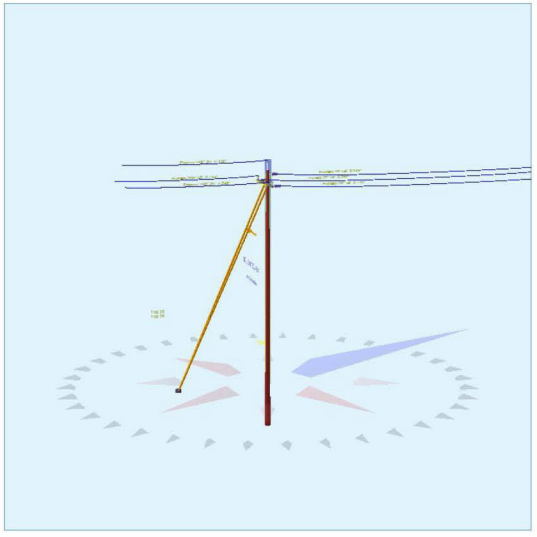
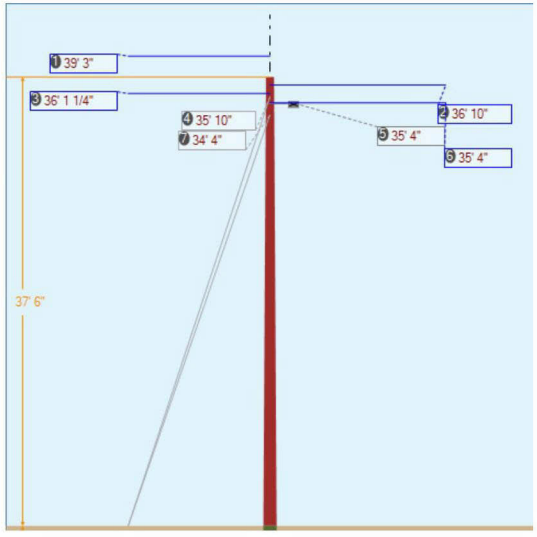
Pacific Gas and Electric Company®

PASSED [redacted] 05/22/2021

Pole Num:	**0**	Pole Length / Class:	**45 / 4**	Code:	**HFTD 2-3 Peak Wind**	Structure Type:	**Guyed Tangent**
PM Order Number	[redacted]	Species:	**DOUGLAS FIR**	GO 95 Rule:	**At Installation (New)**	Pole Strength Factor:	**0.50**
Estimator LAN ID		Setting Depth (ft):	**7.50**	Construction Grade:	**B**	Transverse Wind LF:	**1.00**
Sketch Location	**LOC_106**	G/L Circumference (in):	**34.46**	Loading District:	**Heavy**	Wire Tension LF:	**1.00**
Joint Pole Number	**Unset**	G/L Fiber Stress (psi):	**7,600**	Ice Thickness (in):	**0.00**	Vertical LF:	**1.00**
Notification	[redacted]	Allowable Stress (psi):	**3,800**	Wind Speed (mph):	**90.00**	Pole Factor of Safety:	**3.64**
Aux Data 6	**Unset**	Fiber Stress Ht. Reduc:	**No**	Wind Pressure (psf):	**20.74**	Vertical Factor of Safety:	**9.39**
Latitude:	**39.910787 Deg**	Longitude:	**-121.327455 Deg**	Elevation:	**1795.999942528 Feet**	Bending Factor of Safety:	**3.88**





Pole Capacity Utilization (%)		Height (ft)	Wind Angle (deg)
Maximum	**55.0**	0.0	300.7
Groundline	**55.0**	0.0	300.7
Vertical	**21.3**	34.0	28.0

Pole Moments (ft-lb)		Load Angle (deg)	Wind Angle (deg)
Max Cap Util	**21,144**	312.7	300.7
Groundline	**21,144**	312.7	300.7
GL Allowable	**41,035**		
Overturn	**67,000**		

[redacted]

Digitally signed by [redacted]
Date: 2021.05.24 09:15:35 -07'00'

Guy System Component Summary				Load From Worst Wind Angle on Pole		Individual Maximum Load With Overload Applied	
Description	**Lead Length (ft)**	**Lead Angle (deg)**	**Height (ft)**	**Nominal Capacity (%)**	**Wind Angle (deg)**	**Max* Load Capacity (%)**	**Wind Angle (deg)**
Anchor - 20M	16.0	208.0		**62.3**	300.7	**66.4**	30.0
EHS 3/8 (Down)			35.8	**81.4**	300.7	**86.2**	30.0
EHS 3/8 (Down)			34.3	**80.4**	300.7	**86.2**	30.0
			System Capacity Summary:	**Adequate**		**Adequate**	

Groundline Load Summary - Reporting Angle Mode: Load - Reporting Angle: 312.7°

	Shear Load* (lbs)	Applied Load (%)	Bending Moment (ft-lb)	Applied Moment (%)	Pole Capacity (%)	Bending Stress (+/- psi)	Vertical Load (lbs)	Vertical Stress (psi)	Total Stress (psi)	Pole Capacity (%)
Powers	1,521	174.0	**50,635**	239.5	**123.4**	**5,047**	36	0	**5,048**	**132.8**
GuyBraces	-1,261	-144.2	**-41,077**	-194.3	**-100.1**	**-4,095**	11,387	120	**-3,974**	**-104.6**
Pole	560	64.0	**9,777**	46.2	**23.8**	**975**	975	10	**985**	**25.9**
Crossarms	5	0.5	**151**	0.7	**0.4**	**15**	63	1	**16**	**0.4**
Insulators	49	5.6	**1,659**	7.8	**4.0**	**165**	34	0	**166**	**4.4**
Pole Load	875	100.0	**21,144**	100.0	**51.5**	**2,108**	12,494	132	**2,240**	**58.9**
Pole Reserve Capacity			**19,891**		**48.5**	**1,692**			**1,560**	**41.1**

Load Summary by Owner - Reporting Angle Mode: Load - Reporting Angle: 312.7°

	Shear Load* (lbs)	Applied Load (%)	Bending Moment (ft-lb)	Applied Moment (%)	Pole Capacity (%)	Bending Stress (+/- psi)	Vertical Load (lbs)	Vertical Stress (psi)	Total Stress (psi)	Pole Capacity (%)
PG&E	315	36.0	**11,367**	53.8	**27.7**	**1,133**	11,519	122	**1,255**	**33.0**
Pole	560	64.0	**9,777**	46.2	**23.8**	**975**	975	10	**985**	**25.9**
Totals:	875	100.0	**21,144**	100.0	**51.5**	**2,108**	12,494	132	**2,240**	**58.9**

Detailed Load Components:

Power		Owner	Height (ft)	Horiz. Offset (in)	Cable Diameter (in)	Sag at Max Temp (ft)	Cable Weight (lbs/ft)	Lead/Span Length (ft)	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment* (ft-lb)	Offset Moment* (ft-lb)	Wind Moment* (ft-lb)	Moment at GL* (ft-lb)
Primary	1/0 (6/1) ACSR XLPE TW	PG&E	39.25	0.00	0.7480	0.11	0.284	25.0	208.0	25.0	75	-745	0	613	-132
Primary	1/0 (6/1) ACSR XLPE TW	PG&E	36.83	22.13	0.7480	0.53	0.284	59.0	28.0	59.0	1,872	17,446	1	1,357	18,804

Primary	1/0 (6/1) ACSR XLPE TW	PG&E	36.11	50.33	0.7480	0.11	0.284	25.0	208.0	25.0	75	-686	14	564	-108
Primary	1/0 (6/1) ACSR XLPE TW	PG&E	36.11	50.33	0.7480	0.11	0.284	25.0	208.0	25.0	75	-686	-15	564	-136
Primary	1/0 (6/1) ACSR XLPE TW	PG&E	35.33	49.72	0.7480	0.53	0.284	59.0	28.0	59.0	1,872	16,735	2	1,302	18,040
Primary	1/0 (6/1) ACSR XLPE TW	PG&E	35.33	49.72	0.7480	0.53	0.284	59.0	28.0	59.0	1,872	16,735	-2	1,302	18,035
										Totals:	**48,800**	**0**	**5,703**	**54,503**	

Crossarm		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Length (in)	Offset Moment* (ft-lb)	Wind Moment* (ft-lb)	Moment at GL* (ft-lb)
Normal	9L Composite Dead-End Arm	PG&E	35.33	5.78	208.0	208.0	63.00	3.63	4.63	108.00	-8	170	162
										Totals:	**-8**	**170**	**162**

Insulator		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Diameter (in)	Unit Length (in)	Offset Moment* (ft-lb)	Wind Moment* (ft-lb)	Moment at GL* (ft-lb)
Pin	Kingpin w/ Insulator	PG&E	37.50	0.00	0.0	208.0	10.00	2.30	21.00	0	261	261
Deadend	Dead-End Insulator	PG&E	36.83	0.00	28.0	28.0	4.00	3.90	18.75	2	379	381
Pin	Insulator	PG&E	35.48	50.00	291.4	0.0	6.00	5.50	7.50	23	207	231
Pin	Insulator	PG&E	35.48	-50.00	124.6	0.0	6.00	5.50	7.50	-25	207	182
Deadend	Dead-End Insulator	PG&E	35.33	48.00	291.1	180.0	4.00	3.90	18.75	17	364	381
Deadend	Dead-End Insulator	PG&E	35.33	-48.00	124.9	180.0	4.00	3.90	18.75	-14	364	350
									Totals:	**3**	**1,783**	**1,785**

Guy Wire and Brace		Owner	Attach Height (ft)	End Height (ft)	Lead/Span Length (ft)	Wire Diameter (in)	Percent Solid (%)	Lead Angle (deg)	Incline Angle (deg)	Wire Weight (lbs/ft)	Rest Length (ft)	Stretch Length (in)
EHS 3/8	Down	PG&E	35.83	0.00	16.00	0.375	75.00	208.0	65.7	0.273	45.59	1.80
EHS 3/8	Down	PG&E	34.33	0.00	16.00	0.375	75.00	208.0	64.8	0.273	44.19	1.72

Guy Wire and Brace (Loads and Reactions)		Elastic Modulus (psi)	Rated Tensile Strength (lbs)	Guy Strength Factor	Allowable Tension (lbs)	Initial Tension (lbs)	Loaded Tension*[2] (lbs)	Maximum Tension[2] (lbs)	Applied Tension[3] (lbs)	Vertical Load (lbs)	Shear Load In Guy Dir (lbs)	Shear Load At Report Angle (lbs)	Moment at GL[3] (ft-lb)
EHS 3/8	Down	2.30e+7	15,400	0.50	7,700	700	6,634	6,634	6,267	5,712	2,578	-652	-22,310
EHS 3/8	Down	2.30e+7	15,400	0.50	7,700	700	6,640	6,640	6,192	5,602	2,638	-667	-21,905
									Totals:	**11,314**	**5,215**	**-1,320**	**-44,215**

Anchor/Rod Load Summary	Owner	Rod Length AGL (in)	Lead Length (ft)	Lead Angle (deg)	Strength of Assembly (lbs)	Anchor/Rod Strength Factor	Allowable Load (lbs)	Max Load[2] (lbs)	Load at Pole MCU[3] (lbs)	Max Required Capacity[2] (%)
Anchor - 20M	PG&E	6.00	16.00	208.0	40,000	0.50	20,000	13,274	12,459	66.4

Pole Buckling

Buckling Constant	Buckling Column Height* (ft)	Buckling Section Height (% Buckling Col. Hgt.)	Buckling Section Diameter (in)	Minimum Buckling Diameter at GL (in)	Diameter at Tip (in)	Diameter at GL (in)	Modulus of Elasticity (psi)	Pole Density (pcf)	Ice Density (pcf)	Pole Tip Height (ft)	Buckling Load Capacity at Height (lbs)	Buckling Load Applied at Height (lbs)	Buckling Load Factor of Safety
0.71	34.00	35.31	9.60	7.45	6.69	10.98	2.38e+6	60.00	57.00	37.50	58,786	**586.59**	**4.69**

Notes

Date	Author	Description
8/26/2015	[redacted]	Outside Dead-Ends are at 48", inside phase at 23". Outside top insulators are at 50", inside are at 18"