

Exhibit No.\_\_\_\_(WGR-6)

Docket No. UT-023003



**Parameters**

40' Class 4 Pole with 6' set  
Medium Storm Loading (NESC)  
Maximum Sharing on pole  
10M Strand  
15.5' mid span clearance (NESC)  
26 Gauge Cable (BKTA)  
Design for max 100-degree temperatures

Maximum attachment height allowable from table on page 2  
18' - 6"

Find Maximum size (pairs) cable for a:  
200' Span  
250' Span

**15'-6" is 186 inches. (Road Clearance Required)**  
**18'-6" is 222 inches. (Height of Cable Attachment)**

**222"-186" = 36" (Maximum allowable sag)**

**Factor in Storm Loading "M", 4lbs per foot via chart on page 3**

**From Table J on Page 4, values determine by Storm Loading "M" under two spans**  
**200 ft. span allows 1.0 lb./ft. cable**  
**250 ft. span allows 0.4 lb./ft. cable**

**From the cable spec chart on page 5, under BKTA Cable**  
**1.0 lb./ft. cable equates to a BKTA-4 (400 pairs)**  
**0.4 lb./ft. cable equates to a BKTA-1 (100 pairs)**



**NESC Clearances**

T-232-1(f)

PART 2. SAFETY RULES FOR OVERHEAD LINES

T-232-1(f)

ft

**Table 232-1 (Continued)**  
**Vertical Clearance of Wires, Conductors, and Cables Above Ground,  
 Roadway, Rail, or Water Surfaces<sup>25</sup>**

(Voltages are phase to ground for effectively grounded circuits and those other circuits where all ground faults are cleared by promptly de-energizing the faulted section, both initially and following subsequent breaker operations. See the definitions section for voltages of other systems. See Rules 232B1, 232C1a, and 232D4.)

Nature of surface underneath wires, conductors, or cables	Insulated communication conductors and cable; messengers; surge-protection wires; grounded guys; ungrounded guys exposed to 0 to 300 V <sup>11,18</sup> ; neutral conductors meeting Rule 230E1; supply cables meeting Rule 230C1 (ft)	Noninsulated communication conductors; supply cables of 0 to 750 V meeting Rules 230C2 or 230C3 (ft)	Supply cables over 750 V meeting Rules 230C2 or 230C3; open supply conductors, 0 to 750 V; ungrounded guys exposed to over 300 V to 750 V <sup>14</sup> (ft)	Open supply conductors, over 750 V to 22 kV; ungrounded guys exposed to 750 V to 22 kV <sup>14</sup> (ft)	Trolley and electrified railroad contact conductors and associated span or messenger wires	
					0 to 750 V to ground (ft)	Over 750 V to 22 kV to ground (ft)
3. Driveways, parking lots, and alleys <sup>23</sup>	15.5 <sup>7,13</sup>	16.0 <sup>7,13</sup>	16.5 <sup>7</sup>	18.5	18.0 <sup>5</sup>	20.0 <sup>5</sup>
4. Other land traversed by vehicles, such as cultivated, grazing, forest, orchards, etc. <sup>26</sup>	15.5	16.0	16.5	18.5	—	—
5. Spaces and ways subject to pedestrians or restricted traffic only <sup>8</sup>	9.5	12.0 <sup>8</sup>	12.5 <sup>8</sup>	14.5	16.0	18.0
6. Water areas not suitable for sailboating or where sailboating is prohibited <sup>21</sup>	14.0	14.5	15.0	17.0	—	—
7. Water areas suitable for sailboating including lakes, ponds, reservoirs, tidal waters, rivers, streams, and canals with an unobstructed surface area of <sup>17, 18, 19, 20, 21</sup>						
a. Less than 20 acres	17.5	18.0	18.5	20.5	—	—
b. Over 20 to 200 acres	25.5	26.0	26.5	28.5	—	—
c. Over 200 to 2000 acres	31.5	32.0	32.5	34.5	—	—
d. Over 2000 acres	37.5	38.0	38.5	40.5	—	—
8. Established boat ramps and associated rigging areas; areas posted with sign(s) for rigging or launching sail boats	Clearance above ground shall be 5 ft greater than in 7 above, for the type of water areas served by the launching site.					
<b>Where wires, conductors, or cables run along and within the limits of highways or other road rights-of-way but do not overhang the roadway</b>						
9. Roads, streets, or alleys	15.5 <sup>24</sup>	16.0	16.5	18.5	18.0 <sup>5</sup>	20.0 <sup>5</sup>
10. Roads in rural districts where it is unlikely that vehicles will be crossing under the line	13.5 <sup>10,12</sup>	14.0 <sup>10</sup>	14.5 <sup>10</sup>	16.5	18.0 <sup>5</sup>	20.0 <sup>5</sup>



**Storm Loading Information from NESC**

F-250-1

PART 2. SAFETY RULES FOR OVERHEAD LINES

T-250-1

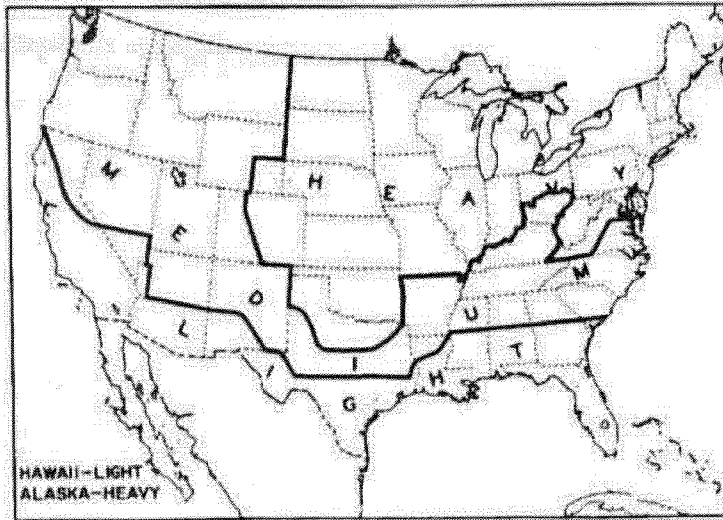


Fig 250-1  
 General Loading Map of United States  
 with Respect to Loading of Overhead Lines

Table 250-1  
 Ice, Wind, and Temperature

	Loading districts (For use with Rule 250B)			Extreme wind loading (For use with Rule 250C)
	Heavy	Medium	Light	
Radial thickness of ice (mm)	12.5	6.5	0	0
(in)	0.50	0.25	0	0
Horizontal wind pressure (Pa)	190	190	430	See Fig 250-2
(lb/ft <sup>2</sup> )	4	4	9	See Fig 250-2
Temperature (°C)	-20	-10	-1	+15
(°F)	0	+15	+30	+60



**Table J. Copper Conductor Cable, 10M Strand Span Length (Feet)**  
**BR 627-210-018**  
**Issue 3, December 1989**

CABLE WEIGHT (LBS/FT)	TEMP (°F)	180		185		190		195		200		205		210	
		SAG (IN.)	TENS (LBS)	SAG (IN.)	TENS (LBS)	SAG (IN.)	TENS (LBS)	SAG (IN.)	TENS (LBS)	SAG (IN.)	TENS (LBS)	SAG (IN.)	TENS (LBS)	SAG (IN.)	TENS (LBS)
0.2	0	3	2725	4	2735	5	2745	6	2755	7	2765	8	2775	9	2785
	20	3	2525	4	2535	5	2545	6	2555	7	2565	8	2575	9	2585
	40	3	2325	4	2335	5	2345	6	2355	7	2365	8	2375	9	2385
	60	3	2125	4	2135	5	2145	6	2155	7	2165	8	2175	9	2185
	80	4	1925	5	1935	6	1945	7	1955	8	1965	9	1975	10	1985
	100	4	1725	5	1735	6	1745	7	1755	8	1765	9	1775	10	1785
0.4	M	5	2481	6	2491	7	2501	8	2511	9	2521	10	2531	11	2541
	H	6	2512	7	2522	8	2532	9	2542	10	2552	11	2562	12	2572
	0	4	2725	5	2735	6	2745	7	2755	8	2765	9	2775	10	2785
	20	4	2525	5	2535	6	2545	7	2555	8	2565	9	2575	10	2585
	40	4	2325	5	2335	6	2345	7	2355	8	2365	9	2375	10	2385
	60	5	2125	6	2135	7	2145	8	2155	9	2165	10	2175	11	2185
0.6	80	5	1925	6	1935	7	1945	8	1955	9	1965	10	1975	11	1985
	100	6	1775	7	1785	8	1795	9	1805	10	1815	11	1825	12	1835
	M	7	2431	8	2441	9	2451	10	2461	11	2471	12	2481	13	2491
	H	8	2462	9	2472	10	2482	11	2492	12	2502	13	2512	14	2522
	0	5	2725	6	2735	7	2745	8	2755	9	2765	10	2775	11	2785
	20	5	2525	6	2535	7	2545	8	2555	9	2565	10	2575	11	2585
0.8	40	5	2325	6	2335	7	2345	8	2355	9	2365	10	2375	11	2385
	60	6	2125	7	2135	8	2145	9	2155	10	2165	11	2175	12	2185
	80	6	1925	7	1935	8	1945	9	1955	10	1965	11	1975	12	1985
	100	7	1825	8	1835	9	1845	10	1855	11	1865	12	1875	13	1885
	M	8	2540	9	2550	10	2560	11	2570	12	2580	13	2590	14	2600
	H	9	2571	10	2581	11	2591	12	2601	13	2611	14	2621	15	2631
1.0	0	6	2900	7	2910	8	2920	9	2930	10	2940	11	2950	12	2960
	20	6	2700	7	2710	8	2720	9	2730	10	2740	11	2750	12	2760
	40	7	2425	8	2435	9	2445	10	2455	11	2465	12	2475	13	2485
	60	7	2225	8	2235	9	2245	10	2255	11	2265	12	2275	13	2285
	80	8	2025	9	2035	10	2045	11	2055	12	2065	13	2075	14	2085
	100	8	1825	9	1835	10	1845	11	1855	12	1865	13	1875	14	1885
1.2	M	9	2570	10	2580	11	2590	12	2600	13	2610	14	2620	15	2630
	H	10	2601	11	2611	12	2621	13	2631	14	2641	15	2651	16	2661
	0	7	2825	8	2835	9	2845	10	2855	11	2865	12	2875	13	2885
	20	7	2625	8	2635	9	2645	10	2655	11	2665	12	2675	13	2685
	40	8	2425	9	2435	10	2445	11	2455	12	2465	13	2475	14	2485
	60	8	2225	9	2235	10	2245	11	2255	12	2265	13	2275	14	2285
1.4	80	9	2025	10	2035	11	2045	12	2055	13	2065	14	2075	15	2085
	100	10	1825	11	1835	12	1845	13	1855	14	1865	15	1875	16	1885
	M	11	2680	12	2690	13	2700	14	2710	15	2720	16	2730	17	2740
	H	12	2711	13	2721	14	2731	15	2741	16	2751	17	2761	18	2771
	0	8	2875	9	2885	10	2895	11	2905	12	2915	13	2925	14	2935
	20	8	2675	9	2685	10	2695	11	2705	12	2715	13	2725	14	2735
1.6	40	9	2475	10	2485	11	2495	12	2505	13	2515	14	2525	15	2535
	60	9	2275	10	2285	11	2295	12	2305	13	2315	14	2325	15	2335
	80	10	2075	11	2085	12	2095	13	2105	14	2115	15	2125	16	2135
	100	10	1875	11	1885	12	1895	13	1905	14	1915	15	1925	16	1935
	M	11	2690	12	2700	13	2710	14	2720	15	2730	16	2740	17	2750
	H	12	2721	13	2731	14	2741	15	2751	16	2761	17	2771	18	2781
1.8	0	9	2900	10	2910	11	2920	12	2930	13	2940	14	2950	15	2960
	20	9	2700	10	2710	11	2720	12	2730	13	2740	14	2750	15	2760
	40	10	2475	11	2485	12	2495	13	2505	14	2515	15	2525	16	2535
	60	10	2275	11	2285	12	2295	13	2305	14	2315	15	2325	16	2335
	80	11	2075	12	2085	13	2095	14	2105	15	2115	16	2125	17	2135
	100	11	1875	12	1885	13	1895	14	1905	15	1915	16	1925	17	1935
2.0	M	12	2625	13	2635	14	2645	15	2655	16	2665	17	2675	18	2685
	H	13	2656	14	2666	15	2676	16	2686	17	2696	18	2706	19	2716
	0	10	2900	11	2910	12	2920	13	2930	14	2940	15	2950	16	2960
	20	10	2700	11	2710	12	2720	13	2730	14	2740	15	2750	16	2760
	40	11	2475	12	2485	13	2495	14	2505	15	2515	16	2525	17	2535
	60	11	2275	12	2285	13	2295	14	2305	15	2315	16	2325	17	2335
2.2	80	12	2075	13	2085	14	2095	15	2105	16	2115	17	2125	18	2135
	100	12	1875	13	1885	14	1895	15	1905	16	1915	17	1925	18	1935
	M	13	2680	14	2690	15	2700	16	2710	17	2720	18	2730	19	2740
	H	14	2711	15	2721	16	2731	17	2741	18	2751	19	2761	20	2771
	0	11	2900	12	2910	13	2920	14	2930	15	2940	16	2950	17	2960
	20	11	2700	12	2710	13	2720	14	2730	15	2740	16	2750	17	2760
2.4	40	12	2475	13	2485	14	2495	15	2505	16	2515	17	2525	18	2535
	60	12	2275	13	2285	14	2295	15	2305	16	2315	17	2325	18	2335
	80	13	2075	14	2085	15	2095	16	2105	17	2115	18	2125	19	2135
	100	13	1875	14	1885	15	1895	16	1905	17	1915	18	1925	19	1935
	M	14	2640	15	2650	16	2660	17	2670	18	2680	19	2690	20	2700
	H	15	2671	16	2681	17	2691	18	2701	19	2711	20	2721	21	2731



**Cable Specs**

**CABLE AND WIRE**  
**PIC Cable - Alpeth, Sheath (Air Core)**  
**Cable Diameters, Weights, and Reel Lengths**

**Alpeth Sheath (Air Core)**

These cables are primarily designed for aerial use. *They should not be used for buried installation.*

PIC AIR-CORE SHEATH CABLE (NOTE)						
CABLE CODE	NO. OF PRS	AWG	PULLING EYES	STANDARD LENGTH ON 420 REEL (FT)	NOMINAL OD (IN.)	NOMINAL WT (LBS/FT)
BHBA	25	19	*	7750	0.81	0.33
	50	19	*	3875	1.06	0.59
	100	19	*	3350	1.46	1.12
	200	19	*	1900	2.01	2.18
	300	19	*	1525	2.41	3.21
BHAA	25	22	*	7650	0.63	0.19
	50	22	*	7650	0.81	0.33
	100	22	*	5100	1.06	0.60
	200	22	*	3780	1.45	1.13
	300	22	*	2525	1.76	1.67
	400	22	*	1900	2.00	2.18
	900	22	*	1275	2.40	3.21
BKMA	25	24	*	5775	0.54	0.13
	50	24	*	5775	0.68	0.22
	100	24	*	5775	0.86	0.39
	200	24	*	5675	1.17	0.73
	300	24	*	3780	1.39	1.06
	400	24	*	3250	1.61	1.41
	600	24	*	2275	1.92	2.06
	900	24	*	1525	2.29	3.03
	1200	24	*	1125	2.61	4.00
	1500	24	*	1025	2.89	4.95
1800	24	*	800	3.15	5.92	
BKTA	25	26	*	8750	0.47	0.10
	50	26	*	8750	0.57	0.16
	100	26	*	8650	0.72	0.27
	200	26	*	8650	0.95	0.48
	300	26	*	5775	1.13	0.69
	400	26	*	4325	1.27	0.90
	600	26	*	3460	1.51	1.30
	900	26	*	2300	1.84	1.94
	1200	26	*	1910	2.06	2.54
	1500	26	*	1560	2.30	3.15
	1800	26	*	1450	2.50	3.75
	2100	26	*	1225	2.68	4.35
2700	26	*	910	3.00	5.56	

*Note:* Cables are not shipped under air pressure. Bond wires are furnished on factory shipments when specified on the order or on agreement with the service center.

\* Pulling eyes are furnished on factory shipments when specified on the order or on agreement with the service center.