The Los Angeles Department of Water and Power (LADWP) requires pole loading reports on all Make-Ready Applications for Third Party Attachments. When LADWP receives the application, it will review all pole loading reports for accuracy. If there are errors in the reports, the application will be returned to the applicant for corrections.

LADWPs Pole Records Group offers access to pole records and LADWPs overhead distribution maps, applicants are required to fill out the attached “Request for Pole Information Form PD-384-A.” The following fees apply, and are subject to change annually based on the LADWP operating costs:

- Pole records are $2.75 per pole
- Access to overhead maps is $53.60 per hour or $13.40 per quarter hour

Contact Information:

LADWP Pole Records Group
111 North Hope Street, Room 863
Los Angeles, California 90012
Attention: Alex Zaval
(213) 367-2520

In order to eliminate errors, the following pages provide information on typical constructions, and wires sizes that are used on LADWPs distribution system.

Pole Loading Guidelines

Grade A – 4:1 Safety Factor for new poles. The Safety Factors may be reduced to 2/3 of 4:1 or 2.67:1 when poles are reconstructed, provided the reconstruction does not involve a change in construction.

- 34.5kV – Class H Circuit
  - Lines crossing over railroad tracks
  - Communication lines attached to the same pole
  - Poles jointly used
- 4.8kV – Class L Circuit
  - Grade A – 4:1 Safety Factor
    - Lines crossing over railroad tracks

Grade B – 3:1 Safety Factor for new poles. May The Safety Factors may be reduced to 2/3 of 3:1 or 2:1 when poles are reconstructed, provided the reconstruction does not involve a change in construction.

- 34.5kV alone or with 4.8kV

Grade C – 2:1 Safety Factor for new poles and when poles are reconstructed.

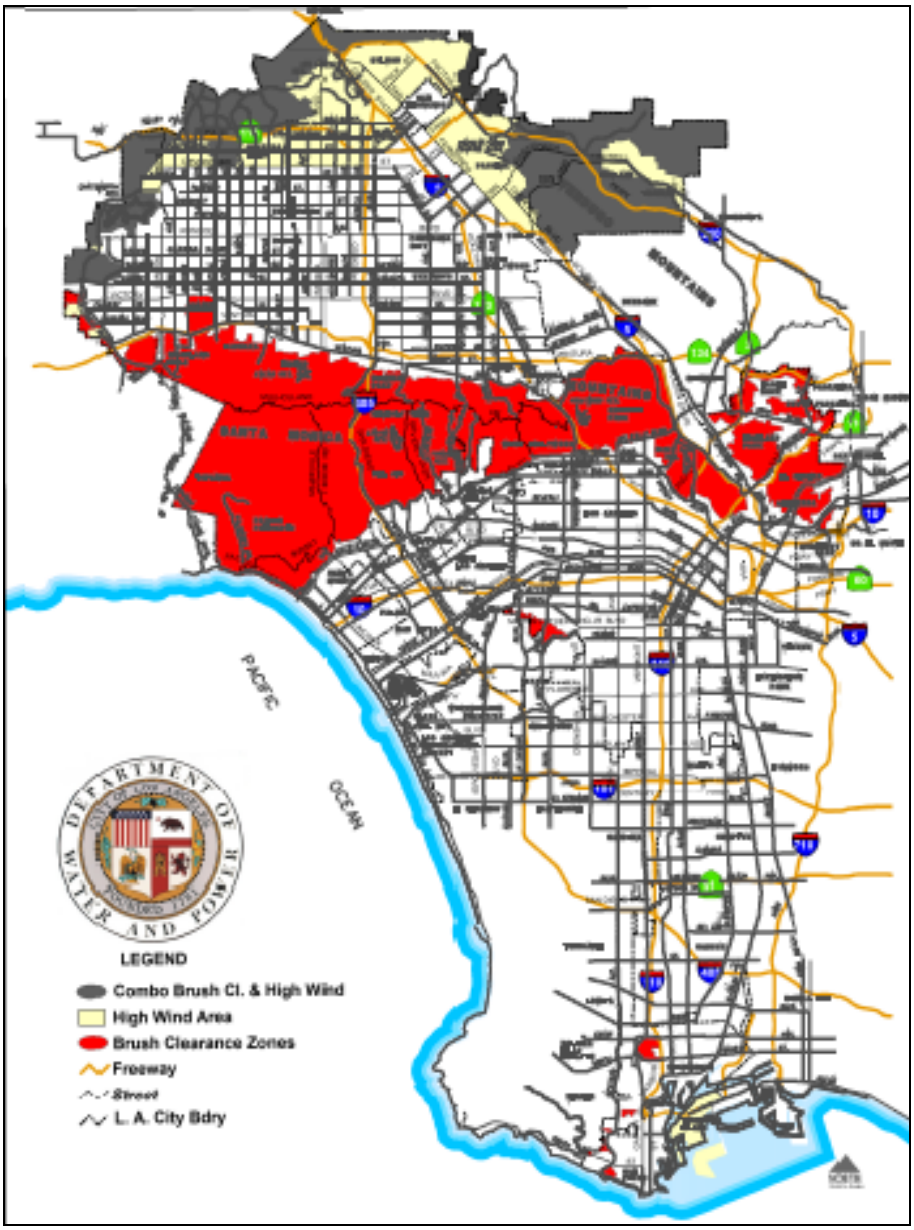
- Any other situation – poles jointly used, 4.8kV alone

Loading District is another consideration of determining the load on a pole. GO95 specifies two loading factors:

- Heavy Loading factors
  - Poles in locations above 3000 feet of elevation – poles located in the Owens Valley
  - Temperature shall be considered at 0° at the time of maximum loading
  - A horizontal wind pressure of 6 pounds per square foot of projected area on cylindrical surfaces, and 10 pounds per square foot on flat surfaces, which equates to a 48 mile per hour wind applied to the structure
  - A radial thickness of one-half inch of ice

- Light Loading factors
  - Pole in locations where the elevation is 3000 feet or less
  - Temperature shall be considered to be 25° at the time of maximum loading
  - A horizontal wind pressure of 8 pounds per square foot of projected area on cylindrical surfaces, and 13 pounds per square foot on flat surfaces, which equates to a 56 mile per hour wind applied to the structure

- LADWP Hazard Threat Zones
  - Poles in the LADWP designated hazard threat zone (see map below)
    - Temperature shall be considered to be 25° at the time of maximum loading
    - A horizontal wind pressure of 16 pounds per square foot of projected area on cylindrical surfaces, which equates to a 80 mile per hour wind applied to the structure



The following pages show examples of LADWP typical constructions, wires sizes, tensions, and pole information. Conductor tensions given are not actual tensions; they are worst case scenario with loadings applied per General Order 95 Rule 43.

Typical 34.5kV Construction

Typical 34.5kV Construction

Typical 34.5kV Wires Sizes and Tensions

34.5kV Copper

AWG OR KCMIL	Insulation O.D. (in.)	LBS. Per 1000 Foot	Light Loading Maximum Tension 100' Span 11" SAG Per Conductor	Heavy Loading Maximum Tension 100' Span 11" SAG Per Conductor
1/0 CU	.3684	.326	730	1190
2/0 CU	.4137	.411	920	1440
3/0 CU	.4644	.518	1140	1740
4/0 CU	.5217	.654	1430	2110
300 CU	.628	.926	2020	2900
350 CU	.679	1.081	2350	3330

34.5kV Aluminum Bare (ACSR)

AWG OR KCMIL	Insulation O.D. (in.)	LBS. Per 1000 Foot	Light Loading Maximum Tension 100' Span 11" SAG Per Conductor	Heavy Loading Maximum Tension 100' Span 11" SAG Per Conductor
3/0 ACSR	.502	.231	740	1560
336.4 ACSR	.684	.365	1180	2380
477 ACSR	.814	.518	1610	3140
795 AAC	1.026	.746	2530	4210

Note: Tensions shown above represent worst case scenario with loadings applied per General Order 95, Rule 43.

Typical 34.5kV Wires Sizes and Angle Tensions

Light Loading Maximum Tension Applied Per Single Conductor										
CONDUCTOR		ANGLE								
TYPE	SIZE	5°	10°	15°	20°	25°	30°	35°	40°	45°
BARE COPPER MHD	1/0	58	113	171	231	283	342	395	453	504
	2/0	73	149	221	294	359	434	499	574	639
	3/0	96	184	274	363	456	549	632	718	807
	4/0	118	234	347	462	577	686	800	908	1020
	300	160	325	486	648	812	976	1129	1291	1442
	350	194	378	573	762	953	1134	1323	1502	1688
BARE ACSR	3/0	53	102	156	211	258	317	366	426	576
	336	81	161	249	336	428	514	606	693	785
	477	117	229	351	473	600	729	848	978	1097
BARE AAC	795	197	400	599	800	1003	1199	1399	1593	1790

Heavy Loading Maximum Tension Applied Per Single Conductor										
CONDUCTOR		ANGLE								
TYPE	SIZE	5°	10°	15°	20°	25°	30°	35°	40°	45°
BARE COPPER MHD	1/0	89	177	275	361	452	547	633	727	813
	2/0	116	221	331	443	556	664	776	883	994
	3/0	137	276	410	547	678	815	953	1082	1212
	4/0	165	332	500	668	835	1005	1167	1334	1491
	300	235	466	706	940	1167	1398	1632	1854	2075
	350	268	538	805	1074	1344	1614	1873	2140	2394
BARE ACSR	3/0	118	228	344	464	587	711	827	951	1066
	336	176	353	543	730	913	1102	1294	1475	1643
	477	235	480	733	983	1235	1479	1733	1977	2224
BARE AAC	795	340	690	1029	1371	1713	2047	2383	2719	3041

Note: Tensions shown above represent worst case scenario with loadings applied per General Order 95, Rule 43.

Typical 4.8kV Construction

Typical 4.8kV Construction

Typical 4.8kV Construction

Typical 4.8kV Wires Sizes and Tensions

4.8kV Copper Covered

AWG OR KCMIL	Insulation O.D. (in.)	LBS. Per 1000 Foot	Light Loading Maximum Tension 100' Span 11" SAG Per Conductor	Heavy Loading Maximum Tension 100' Span 23" SAG Per Conductor
#6 CU	.287	.110	330	500
#4 CU	.329	.160	450	580
AWG OR KCMIL	Insulation O.D. (in.)	LBS. Per 1000 Foot	Maximum Tension 100' Span 11" SAG Per Conductor	Maximum Tension 100' Span 11" SAG Per Conductor
#2 CU	.383	.240	630	1130
1/0 CU	.524	.410	1070	1790
2/0 CU	.570	.510	1290	2090
4/0 CU	.684	.765	1880	2900

4.8kV Copper Bare

AWG OR KCMIL	Insulation O.D. (in.)	LBS. Per 1000 Foot	Light Loading Maximum Tension 100' Span 11" SAG Per Conductor	Heavy Loading Maximum Tension 100' Span 11" SAG Per Conductor
#6 CU	.162	.079	180	420
#4 CU	.2043	.126	280	560
#2 CU	.2922	.205	470	850
1/0 CU	.3684	.326	730	1190
2/0 CU	.4137	.411	920	1440
3/0 CU	.4644	.518	1140	1740
4/0 CU	.5217	.654	1430	2110
300 CU	.628	.926	2020	2900
350 CU	.679	1.081	2350	3330

Note: Tensions shown above represent worst case scenario with loadings applied per General Order 95, Rule 43

Typical 4.8kV Wires Sizes and Tensions

4.8kV Aluminum Bare (ACSR)

AWG OR KCMIL	Insulation O.D. (in.)	LBS. Per 1000 Foot	Light Loading Maximum Tension 100' Span 11" SAG Per Conductor	Heavy Loading Maximum Tension 100' Span 11" SAG Per Conductor
#2 ACSR	.316	.0912	330	860
3/0 ACSR	.502	.2304	740	1560
336.4 ACSR	.684	.3648	1180	2380
477 ACSR	.814	.5173	1610	3140

Note: Tensions shown above represent worst case scenario with loadings applied per General Order 95, Rule 43.

Typical 4.8kV Wires Sizes and Angle Tensions

Light Loading Maximum Tension Applied Per Conductor										
CONDUCTOR		ANGLE								
TYPE	SIZE	5°	10°	15°	20°	25°	30°	35°	40°	45°
WRXLPE COPPER MHD	6	25	51	69	96	116	137	164	183	205
	4	32	63	99	128	163	193	228	256	287
	2	50	97	145	188	237	280	330	374	423
	1/0	89	168	250	335	420	496	592	659	745
	2/0	97	203	303	405	501	603	700	802	898
	4/0	149	300	448	598	749	893	1042	1186	1333
BARE COPPER MHD	6	11	19	36	55	65	75	87	104	114
	4	16	40	63	82	105	122	141	165	182
	2	37	71	110	149	179	219	250	284	322
	1/0	58	113	171	231	283	342	395	453	504
	2/0	73	149	221	294	359	434	499	574	639
	3/0	96	184	274	363	456	549	632	718	807
	4/0	118	234	347	462	577	686	800	908	1020
	300	160	325	486	648	812	976	1129	1291	1442
	350	194	378	573	762	953	1134	1323	1502	1688
BARE ACSR	2	23	39	62	81	106	126	152	171	192
	3/0	53	102	156	211	258	317	366	426	576
	336	81	161	249	336	428	514	606	693	785
	477	117	229	351	473	600	729	848	978	1097

Note: Tensions shown above represent worst case scenario with loadings applied per General Order 95, Rule 43.

Typical 4.8kV Wires Sizes and Angle Tensions

Heavy Loading Maximum Tension Applied Per Conductor										
CONDUCTOR		ANGLE								
TYPE	SIZE	5°	10°	15°	20°	25°	30°	35°	40°	45°
WRXLPE COPPER MHD	6	31	58	91	128	157	196	227	260	298
	4	36	74	108	149	193	229	267	312	349
	2	42	89	138	189	232	286	331	387	432
	1/0	66	130	199	271	335	410	476	553	620
	2/0	74	147	225	306	390	465	551	627	713
	4/0	97	193	295	401	510	610	720	822	932
BARE COPPER MHD	6	37	57	89	115	146	170	204	229	254
	4	37	77	111	151	195	229	266	309	344
	2	58	125	180	243	309	369	434	494	558
	1/0	89	177	275	361	452	547	633	727	813
	2/0	116	221	331	443	556	664	776	883	994
	3/0	137	276	410	547	678	815	953	1082	1212
	4/0	165	332	500	668	835	1005	1167	1334	1491
	300	235	466	706	940	1167	1398	1632	1854	2075
	350	268	538	805	1074	1344	1614	1873	2140	2394
BARE ACSR	2	54	119	173	235	301	360	426	485	553
	3/0	118	228	344	464	587	711	827	951	1066
	336	176	353	543	730	913	1102	1294	1475	1643
	477	235	480	733	983	1235	1479	1733	1977	2224

Note: Tensions shown above represent worst case scenario with loadings applied per General Order 95, Rule 43.

Typical 120/240V Secondary Construction

Typical Secondary Wires Sizes and Tensions

Secondary Aluminum Covered Conductor

AWG OR KCMIL	Insulation O.D. (in.).	LBS. Per Foot	Light Loading Maximum Tension 100' Span 11" SAG Per Conductor	Heavy Loading Maximum Tension 100' Span 23" SAG Per Conductor
#2	.412	.100	430	610
1/0	.528	.185	700	800
3/0	.624	.240	930	950
336.4	.856	.455	1680	1390
AWG OR KCMIL	Insulation O.D. (in.)	LBS. Per Foot	Light Loading Maximum Tension 100' Span 11" SAG Per Conductor	Heavy Loading Maximum Tension 100' Span 11" SAG Per Conductor
795	1.248	.985	3500	5880

Secondary Copper Covered Conductor

AWG OR KCMIL	Insulation O.D. (in.)	LBS. Per Foot	Light Loading Maximum Tension 100' Span 11" SAG Per Conductor	Heavy Loading Maximum Tension 100' Span 23" SAG Per Conductor
#6 CU	.287	.110	330	500
#4 CU	.329	.160	450	580
AWG OR KCMIL	Insulation O.D. (in.)	LBS. Per Foot	Light Loading Maximum Tension 100' Span 11" SAG Per Conductor	Heavy Loading Maximum Tension 100' Span 11" SAG Per Conductor
#2 CU	.383	.240	630	850
1/0 CU	.524	.410	1070	1240
2/0 CU	.570	.510	1290	1420
4/0 CU	.684	.765	1880	1870

Note: Tensions shown above represent worst case scenario with loadings applied per General Order 95, Rule 43.

Typical Secondary Wires Sizes and Tensions

Secondary Aluminum Duplex

AWG OR KCMIL	Insulation O.D. (in.)	LBS. Per Foot	Light Loading Maximum Tension 100' Span 11" SAG Per Duplex	Heavy Loading Maximum Tension 100' Span 21" SAG Per Duplex
#4	.630	.107	670	890

Secondary Aluminum Triplex

AWG OR KCMIL	Insulation O.D. (in.)	LBS. Per Foot	Light Loading Maximum Tension 100' Span 11" SAG Per Triplex	Heavy Loading Installed as Reduced Tension Spans Only Per triplex
#4	.680	.164	790	920
AWG OR KCMIL	Insulation O.D. (in.)	LBS. Per Foot	Light Loading Maximum Tension 100' Span 11" SAG Per Triplex	Heavy Loading Maximum Tension 100' Span 19"SAG Per triplex
#2	.808	.248	1120	1330
1/0	1.03	.399	1640	1710
3/0	1.20	.638	2400	2130

Secondary Aluminum Quadruplex

AWG OR KCMIL	Insulation O.D. (in.)	LBS. Per Foot	Light Loading Maximum Tension 100' Span 13" SAG Per Quad	Heavy Loading Installed as Reduced Tension Spans Only Per Quad
#4	.761	.227	800	920
AWG OR KCMIL	Insulation O.D. (in.)	LBS. Per Foot	Light Loading Maximum Tension 100' Span 13" SAG Per Quad.	Heavy Loading Maximum Tension 100' Span 21" SAG Per Quad.
#2	.901	.341	1080	1310
1/0	1.151	.541	1570	1690
3/0	1.350	.841	2250	2110
336.4	2.000	1.568	4050	3280

Note: Tensions shown above represent worst case scenario with loadings applied per General Order 95, Rule 43.

Typical Secondary Wires Sizes and Tensions

Secondary Copper Triplex

AWG OR KCMIL	Insulation O.D.	LBS. Per Foot	Light Loading Maximum Tension 100' Span 17" SAG Per Triplex	Heavy Loading Not to be Installed
#4	.646	.445	760	N/A
#2	.806	.664	1100	N/A
1/0	.990	1.140	1740	N/A

Secondary Copper Quadruplex

AWG OR KCMIL	Insulation O.D.	LBS. Per Foot	Light Loading Maximum Tension 100' Span 17" SAG Per Quad.	Heavy Loading Not To be Installed
#4	.848	.480	790	N/A
#2	.901	.893	1410	N/A
1/0	1.12	1.225	1920	N/A

Note: Tensions shown above represent worst case scenario with loadings applied per General Order 95, Rule 43.

Typical Secondary Wires Sizes and Angle Tensions

Light Loading Maximum Tension Applied Per Single Conductor										
CONDUCTOR		ANGLE								
TYPE	SIZE	5°	10°	15°	20°	25°	30°	35°	40°	45°
WRXLPE COPPER MHD	6	25	51	69	96	116	137	164	183	205
	4	32	63	99	128	163	193	228	256	287
	2	50	97	145	188	237	280	330	374	423
	1/0	89	168	250	335	420	496	592	659	745
	2/0	97	203	303	405	501	603	700	802	898
	4/0	149	300	448	598	749	893	1042	1186	1333
WRXLPE ALUMINUM	2	30	60	93	120	153	178	214	240	269
	1/0	55	106	160	214	263	317	363	420	467
	3/0	72	139	210	282	345	419	484	558	622
	336	132	267	397	530	657	789	916	1048	1174
	795	281	562	840	1121	1403	1685	1959	2236	2502

Heavy Loading Maximum Tension Applied Per Single Conductor										
CONDUCTOR		ANGLE								
TYPE	SIZE	5°	10°	15°	20°	25°	30°	35°	40°	45°
WRXLPE COPPER MHD	6	31	58	91	128	157	196	227	260	298
	4	36	74	108	149	193	229	267	312	349
	2	42	89	138	189	232	286	331	387	432
	1/0	66	130	199	271	335	410	476	553	620
	2/0	74	147	225	306	390	465	551	627	713
	4/0	97	193	295	401	510	610	720	822	932
WRXLPE ALUMINUM	2	37	77	120	155	201	238	286	325	366
	1/0	55	101	157	213	274	326	389	443	499
	3/0	64	127	194	265	327	401	466	541	607
	336	94	189	289	394	494	600	710	811	921
	795	492	975	1455	1937	2419	2898	3366	3834	4291

Note: Tensions shown above represent worst case scenario with loadings applied per General Order 95, Rule 43.

Typical Secondary Wires Sizes and Angle Tension

Light Loading Maximum Tension Applied Per Multiplex Conductor										
CONDUCTOR		ANGLE								
TYPE	SIZE	5°	10°	15°	20°	25°	30°	35°	40°	45°
ALUMINUM DUPLEX	4	34	74	111	157	207	252	303	347	402
ALUMINUM TRIPLEX	4	44	95	151	211	267	329	395	452	511
	2	69	141	220	304	391	470	560	641	731
	1/0	107	223	347	477	608	744	873	1008	1134
	3/0	166	337	524	712	896	1087	1281	1464	1656
ALUMINUM QUADRUPLEX	4	41	89	142	200	253	313	369	431	489
	2	65	132	207	286	362	445	531	609	688
	1/0	98	202	317	438	563	691	810	938	1057
	3/0	152	306	475	650	826	1007	1181	1360	1419
	336	277	579	899	1222	1549	1869	2197	2516	2836
COPPER TRIPLEX	4	46	97	152	208	260	317	370	429	481
	2	74	148	227	310	394	471	558	636	723
	1/0	121	254	383	517	647	782	914	1050	1180
COPPER QUADRUPLEX	4	60	119	182	242	310	381	444	509	580
	2	105	203	306	413	523	625	736	839	951
	1/0	134	277	420	568	719	864	1015	1161	1311

Heavy Loading Maximum Tension Applied Per Multiplex Conductor										
CONDUCTOR		ANGLE								
TYPE	SIZE	5°	10°	15°	20°	25°	30°	35°	40°	45°
ALUMINUM DUPLEX	4	56	111	164	226	293	355	422	486	554
ALUMINUM TRIPLEX	2	78	171	265	365	457	562	661	765	864
	1/0	109	225	356	479	610	746	876	1010	1139
	3/0	148	294	453	615	783	953	1114	1285	1444
ALUMINUM QUADRUPLEX	2	77	170	262	360	451	554	651	753	848
	1/0	109	224	353	473	602	735	863	995	1119
	3/0	146	291	449	608	774	943	1102	1271	1429
	336	230	475	724	981	1243	1499	1760	2015	2273

Note: Tensions shown above represent worst case scenario with loadings applied per General Order 95, Rule 43.

Typical 4.8kV and 120/240V Secondary on Same Arm

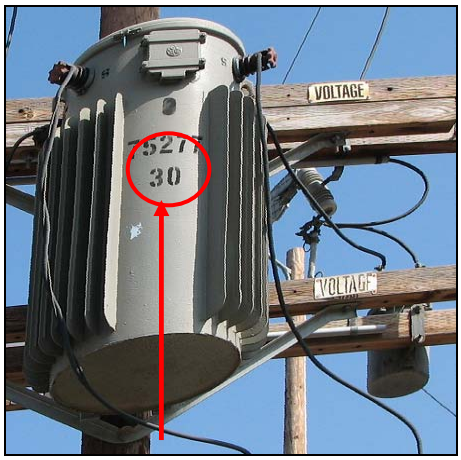
Typical 4.8kV at Top, Transformer, and 120/240V Construction

Typical Transformer Sizes and Weights

Typical location of KVA size

KVA Size	Weight lbs	Dimensions
25	515	30.5"High 19.20" Dia.
37.5	644	32" High 20.5" Dia.
50	786	32" High 22" Dia.
75	1024	37" High 23.2" Dia.
100	1234	39.5" High 24.5" Dia.
167	1539	44" High 27" Dia.

Typical Street Light Transformer Sizes and Weights



Typical location of KVA size

KW Size	Weights lbs	Dimensions
10	1160	39" High 28" Dia.
15	1160	42" High 28" Dia.
18	1245	42" High 28" Dia.
20	1245	45" High 27" Dia.
25	1290	52" High 25" Dia.
30	1365	49" High 27" Dia.

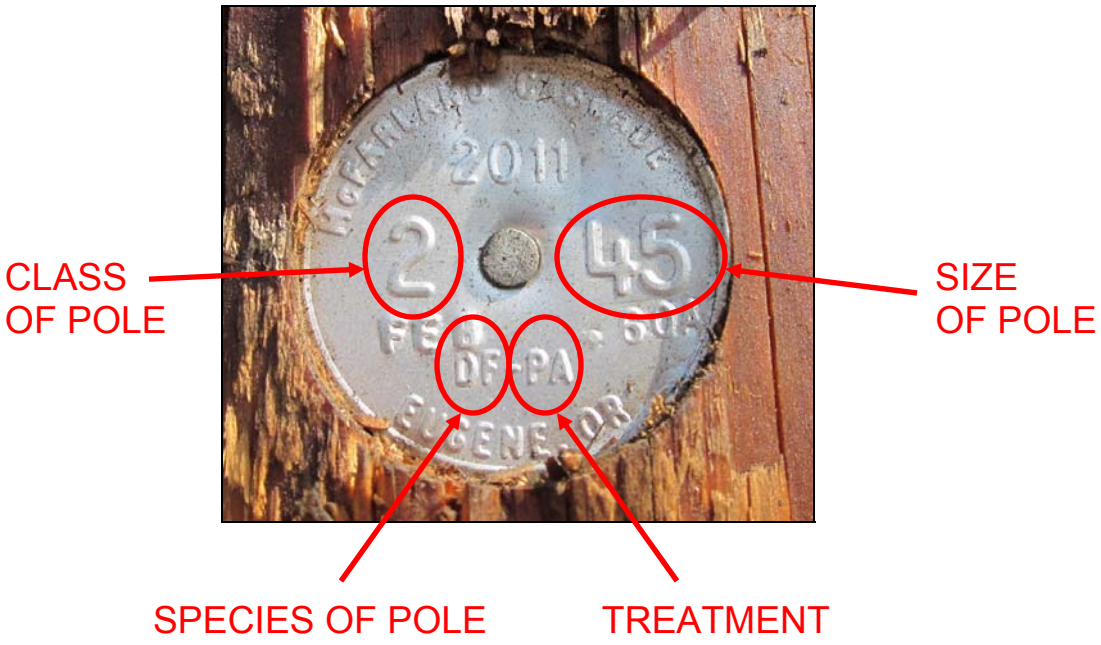
Typical Capacitor

APPX. Assembled Weight	APPX. Assembled Height	APPX. Assembled Depth	APPX. Assembled Width
450Lbs	24"	16"	52"

Typical Poles

Listed below are the most common types of poles that LADWP currently purchases. LADWP has a variety of poles types in its system; the applicant must verify the pole size, class, and species. This information can be found on the pole brand or contact the LADWP Pole Records Group and request the information. The pole brand is located 10' from the butt of the pole on poles 50' and below, and 14' from the butt of the pole on poles 55' and above. The typical setting depths for poles are shown in the tables below. In 2011, LADWP made a transition from using the standard GO95 setting depth to setting poles 10% of the pole height +2' as its standard for setting depth. The actual setting depth can be verified by checking how high the pole brand is from the ground. Use the standard given for the pole brand height from the butt of the pole, minus how high the brand is from the ground.

Typical Wood Pole Brand



Typical Poles

Wood Poles (Most Common Species: Douglas Fir)			
Size	Class	Setting Depth 2011 & Before	Setting Depth 2011 & After
30’	3	5’	5’
35’	3	5’	5.5’
40’	3	5.5’	6’
45’	3	6’	6.5’
45’	2	6’	6.5’
50’	3	6.5’	7’
50’	2	6.5’	7’
55’	3	7’	7.5’
55’	2	7’	7.5’
60’	2	7’	8’
65’	2	7.5’	8.5’
70’	2	7.5’	9’
75’	2	8’	9.5’
80’	2	8’	10’
85’	2	8.5’	10.5’
90’	2	9’	11’
95’	2	9’	11.5’
100’	2	9.5’	12’
105’	2	10’	12.5
110’	2	10.5	13’

Round Fiberglass Poles							
Size	G/L Circ.	Tip Circ.	Modulus Of Rupture (psi)	Modulus Of Elasticity (psi)	Density (lb/ft^3)	Setting Depth 2011 & Before	Setting Depth 2011 & After
40’	41.21”	29.20”	5,220	7.24958E+5	14.93	5.5’	6’
45’	41.60”	27.63”	5,125	7.18674E+5	15.10	6’	6.5
50’	42.98”	27.31”	4,830	7.57581E+5	14.47	6..5’	7

Typical Poles

Octagonal Fiberglass Poles							
Size	G/L Circ.	Tip Circ.	Modulus Of Rupture (psi)	Modulus Of Elasticity (psi)	Density (lb/ft^3)	Setting Depth 2011 & Before	Setting Depth 2011 & After
40’	33.78	33.78	9,510	1.35705E+6	15.57	5.5’	6’
45’	33.78	33.78	11,776	1.30529E+6	18.13	6’	6.5
50’	33.78	33.78	11,776	1.30529E+6	18.12	6.5’	7

Concrete Poles (Pre-stressed Spun concrete)							
Size	G/L Circ.	Tip Circ.	Modulus Of Rupture (psi)	Modulus Of Elasticity (psi)	Density (lb/ft^3)	Setting Depth 2011 & Before	Setting Depth 2011 & After
35’	68.33	48.32	5,930	4.67424E+6	94.52	5’	5.5’
50’	54.29	29.99	6,574	4.94573E+6	94.52	6.5’	7’
60’	53.73	24.34	4,660.8	4.97457E+6	85.48	7’	8’
70’	64.46	29.99	4,689.8	4.46656E+6	70.60	7.5’	9’

Steel Poles (Light Duty Assembled)							
Size	G/L Circ.	Tip Circ.	Modulus Of Rupture (psi)	Modulus Of Elasticity (psi)	Density (lb/ft^3)	Setting Depth 2011 & Before	Setting Depth 2011 & After
55’	51.46	30.85	5,109	2.56456E+6	26.29	7’	7.5’
60’	53.41	30.85	5,066	2.47393E+6	25.55	7’	8’
65’	55.43	30.85	4,931	2.38657E+6	24.83	7.5’	8.5’
70’	57.45	30.85	4,788	2.30515E+6	24.14	7.5’	9’
75’	59.19	30.85	4,742	2.23935E+6	23.56	8’	9.5’

Steel Poles (Light Duty Un-Assembled)							
Size	G/L Circ.	Tip Circ.	Modulus Of Rupture (psi)	Modulus Of Elasticity (psi)	Density (lb/ft^3)	Setting Depth 2011 & Before	Setting Depth 2011 & After
80’	60.16	30.85	5,215	2.20438E+6	24.27	8’	10’
85’	62.18	30.85	4,689	2.13479E+6	23.58	8.5’	10.5’
90’	64.20	30.85	4,517	2.06944E+6	23.65	9’	11’
100’	68.18	30.85	4,226	1.95202E+6	22.43	9.5’	12’
110’	72.01	30.85	3,951	1.85067E+6	21.21	10.5’	13’

Typical Poles

Ductile Iron (Class 2)						
Size	G/L Circ.	Tip Circ.	Modulus Of Rupture (psi)	Modulus Of Elasticity (psi)	Density (lb/ft^3)	Setting Depth
50’	37.79	18.84	6,910	4.30195E+6	33.42	7’
55’	38.69	18.84	8,150	4.20965E+6	34.53	7.5’
60’	40.93	18.84	6,633	3.99417E+6	31.83	8’

Ductile Iron (Class 1)						
Size	G/L Circ.	Tip Circ.	Modulus Of Rupture (psi)	Modulus Of Elasticity (psi)	Density (lb/ft^3)	Setting Depth
50’	48.29	25.77	4,934	2.92743E+6	22.19	7’
55’	45.10	24.93	5,487	3.29083E+6	26.08	7.5’
60’	44.86	22.57	6,129	3.78446E+6	28.61	8’

Ductile Iron (Class H1)						
Size	G/L Circ.	Tip Circ.	Modulus Of Rupture (psi)	Modulus Of Elasticity (psi)	Density (lb/ft^3)	Setting Depth
50’	45.18	26.09	5,903	3.5234E+6	27.81	7’
55’	45.11	24.96	6,583	3.99915E+6	30.66	7.5’
60’	44.86	22.54	7,356	4.71362E+6	35.37	8’

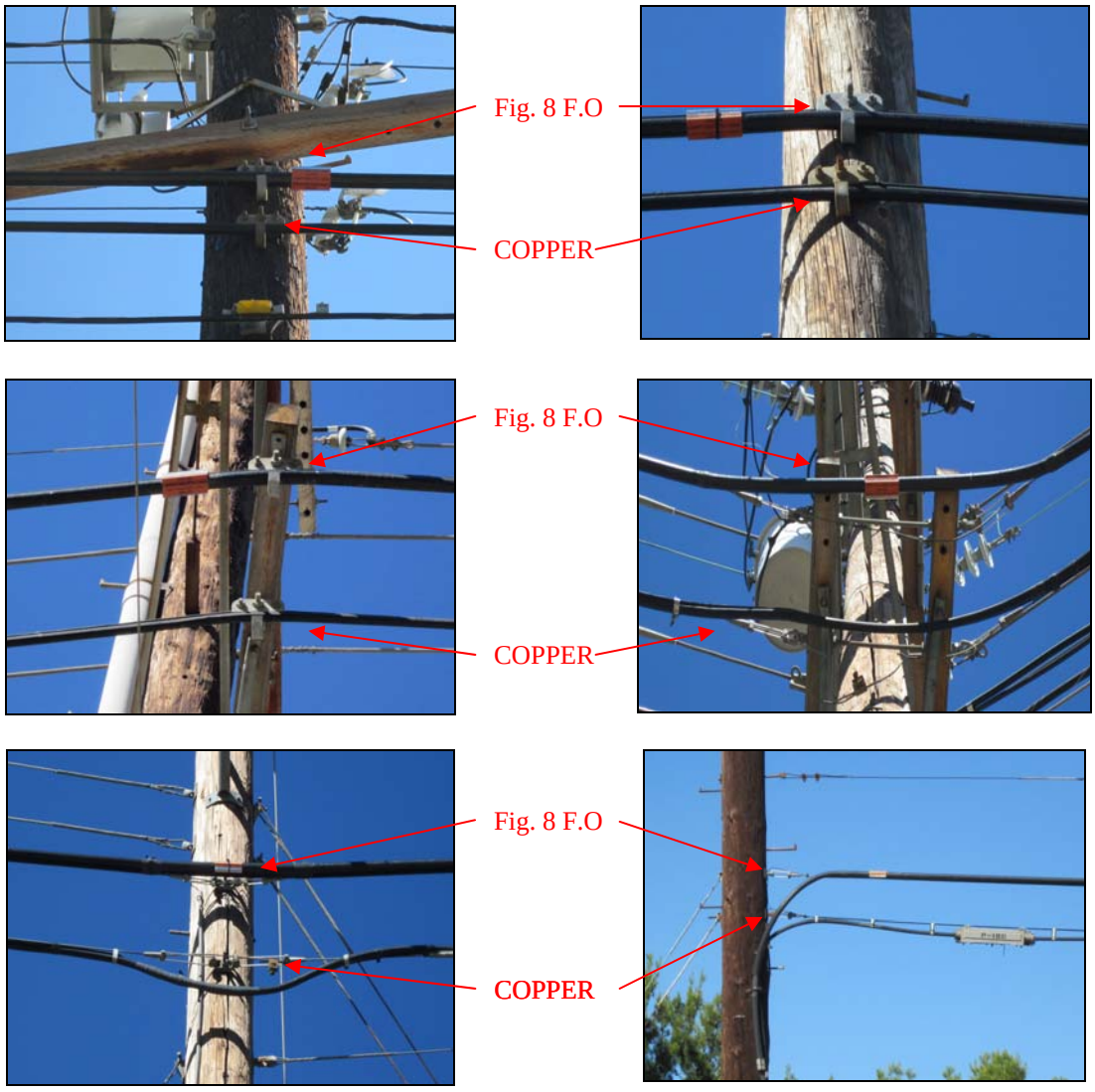
Ductile Iron (Class H2)						
Size	G/L Circ.	Tip Circ.	Modulus Of Rupture (psi)	Modulus Of Elasticity (psi)	Density (lb/ft^3)	Setting Depth
50’	45.20	26.21	6,988	4.33846E+6	33.00	7’
55’	45.13	25.12	7,791	4.91336E+6	37.22	7.5’
60’	45.22	25.30	8,507	4.90387E+6	43.45	8’

Ductile Iron (Class H3)						
Size	G/L Circ.	Tip Circ.	Modulus Of Rupture (psi)	Modulus Of Elasticity (psi)	Density (lb/ft^3)	Setting Depth
50’	45.20	26.25	8,187	5.01809E+6	38.56	7’
55’	45.22	25.77	9,076	4.90441E+6	38.30	7.5’

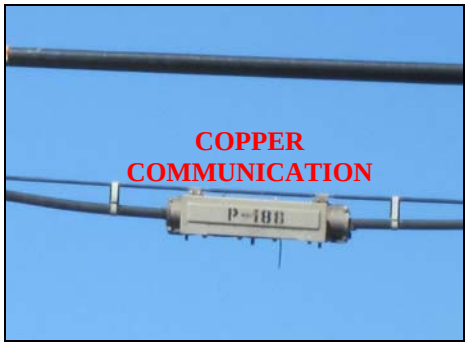
Typical Guy Wires Size and Strength

Size	Max Tension with Wind Loading Applied	LBS Per Foot
1/4" HS	2,375 lbs	.121
3/8" HS	5,400 lbs	.273
7/16" EHS	10,400 lbs	.399

Typical LADWP Communication Hardware



Typical LADWP Communication Splices



Typical LADWP Communication Sizes and Tensions

Light Loading Maximum Tension Applied		
CONDUCTOR		
Type	Size	Tension
Messenger Only	1/4"	1670
	3/8"	1880
Copper Lashed To Messenger	12 PAIR - 1/4"	1680
	50 PAIR - 3/8"	1830
	100 PAIR - 3/8"	1870
	300 PAIR - 3/8"	1870
Innerduct Only	1 1/4"	1510
Fiber Optic Inside Innerduct	48 COUNT	1510
	96 COUNT	1510
	216 COUNT	1510

Heavy Loading Maximum Tension Applied		
CONDUCTOR		
Type	Size	Tension
Messenger Only	1/4"	1880
	3/8"	2240
Copper Lashed To Messenger	12 PAIR - 1/4"	1910
	50 PAIR - 3/8"	2240
	100 PAIR - 3/8"	2350
	300 PAIR - 3/8"	2350
Innerduct Only	1 1/4"	2110
Fiber Optic Inside Innerduct	48 COUNT	2110
	96 COUNT	2110
	216 COUNT	2110

Note: Tensions shown above represent worst case scenario with loadings applied per General Order 95, Rule 43.

Typical LADWP Communication Sizes and Tensions

Light Loading Maximum Tension Applied										
CONDUCTOR		ANGLE								
Type	Size	5°	10°	15°	20°	25°	30°	35°	40°	45°
Messenger Only	1/4"	241	379	511	646	781	907	1041	1165	1297
	3/8"	265	417	568	717	868	1020	1160	1309	1446
Copper Lashed To Messenger	12 Pair - 1/4"	284	415	550	686	822	950	1083	1206	1338
	50 Pair - 3/8"	338	498	654	811	961	1115	1262	1413	1554
	100 Pair - 3/8"	377	533	691	851	1009	1158	1314	1459	1604
	300 Pair - 3/8"	386	541	697	854	1011	1157	1312	1454	1597
Innerduct Only	1 1/4"	384	504	626	740	860	972	1089	1197	1312
Fiber Optic Inside Innerduct	48 Count									
	96 Count									
	216 Count									

Heavy Loading Maximum Tension Applied										
CONDUCTOR		ANGLE								
Type	Size	5°	10°	15°	20°	25°	30°	35°	40°	45°
Messenger Only	1/4"	280	421	570	715	862	1010	1146	1283	1424
	3/8"	315	498	676	856	1036	1205	1382	1548	1722
Copper Lashed To Messenger	12 Pair - 1/4"	363	513	666	819	965	1115	1258	1405	1542
	50 Pair - 3/8"	433	636	834	1033	1224	1418	1606	1796	1975
	100 Pair - 3/8"	480	687	896	1105	1313	1510	1714	1906	2096
	300 Pair - 3/8"	478	679	882	1086	1281	1480	1679	1866	2051
Innerduct Only	1 1/4"	468	636	805	967	1133	1299	1454	1609	1766
Fiber Optic Inside Innerduct	48 Count									
	96 Count									
	216 Count									

Note: Tensions shown above represent worst case scenario with loadings applied per General Order 95, Rule 43.

DISTRIBUTION CONSTRUCTION MAINTENANCE OVERHEAD DISTRIBUTION DESIGN	LOS ANGELES DEPARTMENT OF WATER AND POWER POLE LOADING INFORMATION

Request for Pole or Facility Information

Customer Name: _____

Company Name: _____

Address: _____

City, State, Zip: _____

Contact Name: _____

Date: _____ Time: _____

Job Name: _____

Pole Information

Number of Poles Requested: _____ (Price: $2.75 per pole)

Work Performed By: _____Date: _____

Sub Total: $ _____

Review of Overhead Maps

Date of Review:_____ Start Time:_____ Time Ended:_____
(Price: $53.60 per hour or $13.40 per quarter hour)

Time Recorded By: _____Date: _____

Sub Total: $ _____

Total Charges: $ _____

Prepared By: _____ Phone: _____

Approved By: _____ Phone: _____