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Table 2

Basic Minimum Allowable Clearance of Wires from Other Wires at Crossings and at Supports (Letter references Denote Modifications of Minimum Clearances Referred to in Notes Following this Table)
All Clearances Are in Inches

					Other Wire	, cable or co	onductor conc	erned				
		Α	В	C		•	Supply condu-		ing supply	cables)		
Case No.	Nature of Clearance and Class of Voltage of wire, cable or conductor concerned	Span wires, guys and messeng ers	B Trolley contact conductors 0-750 volts	C Communication conductors (including open wire, cables and service drops)	D 0-750 volts (including service drops and trolley feeders (a))	E 750- 7,500 Volts	F 7,500- 20,000 volts	G 20,000- 35,000 volts	H 35,000- 75,000 volts	I 75,000- 150,000 volts	J 150,000 - 300,000 volts	K 300,000 - 550,000 volts
	Clearance between wires, cables, and conductors not supported on the same poles, vertically at crossings in spans, and radially where collinear or approaching crossing.											
1	approaching crossing Span wires, guys and	18 (c)	48 (d, e)	24 (e)	24 (e)	36 (f)	36	72	72	78	78(gg)	138(hh)
2	messengers (b) Trolley contact conductors 0- 750 volts	48 (d, e)		48 (d)	48 (d, h)	48	72	96	96	96	96 (gg)	156(hh)
3	Communication conductors	24 (e)	48 (d)	24	48 (i)	48 (dd)	72	96	96	96	96 (gg)	156(hh)
4	Supply conductors, service	24 (6)	48 (d, h)	48 (i)	24	48	48	96	96	96	96 (gg)	156(hh)
•	drops and trolley feeders 0-	24 (e)	10 (d, 11)	10 (1)	21	10		30	30	30	30 (gg)	150(1111)
5	Supply conductors, 750-7500 volts	36 (f)	48	48 (dd)	48	48 (h)	72	96	96	96	96 (gg)	156(hh)
6	Supply conductors 7500- 20.000 volts	36	72	72	48	72	72	96	96	96	96 (gg)	156(hh)
7	Supply conductors, more than 20,000 volts	72	96	96	96	96	96	96	96	96	96 (gg)	156(hh)
	Vertical separation											
	between conductors and /											
	or cables on separate crossarms or other											

	supports at different levels		ĺ		ĺ		1			İ	İ	
	(excepting on related line											
	and buck arms on the											
	same pole)											
8	Communication conductors			12 (j)	48 (k, l, m,	48 (k)	72 (m, n)	72(m)	72	78	87 (gg)	147(hh)
	and service drops		-	40 (1 1)	n)	40.71	40.4	70()	70	70	07 ()	4.771.13
9	Supply Conductors, service			48 (k, l, m, n)	24 (h, k, m,	48 (k,	48 (k, m,	72(m)	72	78	87 (gg)	147(hh)
	drops and trolley feeders 0- 750 volts		_		o)	m, p)	q)					
10	Supply conductors, 750-7500			48 (k)	48 (k, m, p)	48 (m,	48 (m, q)	48(q)	48(q)	60(ff)	90 (gg)	150(hh)
10	volts		_	40 (K)	το (κ, III, β)	o, r, ee)	70 (III, q)	70(q)	70(q)	00(11)	30 (gg)	130(1111)
11	Supply conductors 7500-			72 (m, n)	48 (k, m, q)	48 (m,	48 (m, o,	48(q)	48(q)	60(ff)	90 (gg)	150(hh)
	20,000 volts		_	7 = (,,	10 (14, 11, 4)	q)	q, r, ee)	.0(4)	.0(4)	00()	30 (33)	200()
12	Supply conductors 20,000-			72 (m)	72 (m)	48 (m,	48 (m, q)	48(o,	48(o,	60(ff)	90 (gg)	150(hh)
	68,000 volts		-	, ,		q)		q)	q)	, ,		, ,
13	Supply conductors, more than			72	72	60 (q)	60 (q)	60(q)	60(q)	60(ff)	90 (gg)	150(hh)
	68,000 volts		-									
	Vertical arms above or											
	below conductors on related line arms and buck											
	arms.											
14	Line arms above or below			6	12 (u)	18 (u)	18 (u)	24	48	60(ff)	90 (gg)	150(hh)
14	related buck arms (s, t)		_		12 (u)	10 (u)	10 (u)	27	10	00(11)	30 (gg)	130(1111)
	Horizontal separation of											
	conductors on same											
	crossarm											
15	Pin spacings of longitudinal			3(x)	11 ½ (h, x)	11 ½	17 ½ (x)	24 (x)	48	60(ff)	90 (gg)	150(hh)
	conductors, vertical		-			(x)						
	conductors and service drops											
	(v, w)											
	Radial separation of conductors on same											
	crossarm, pole or structure											
	Incidental pole wiring											
16	Conductors, tap or lead wires			3 (x)	11 ½ (h, x)	11 ½	17 ½ (x)	24 (x)	48	60(ff)	90 (gg)	150(hh)
	of different circuits (v, y, z)		-			(x)		()			(33)	,
17	Conductors, tap or lead wires			3	3	6	6	12	24	60(ff)	90 (gg)	150(hh)
	of same circuits (v, z, aa)		-									
	Radial separation between guys											
40	and conductors		-	2 (11)	12	40	10	20	26	26 (60)	70 ()	120(11)
18	Guys passing conductors			3 (bb)	12	18	18	30	36	36 (ff)	78 (gg)	138(hh)
	supported on other poles (excluding poles of same		-									
	circuit), and guys											
	Circuity, and guys	I	I	I	I		I	1	I	I	I	1

	approximately parallel to conductors supported on the											
	same poles											1
19	Guys and spans wires passing	(ee)		3	3	6	9	12	18	24	48 (II)	86 (jj)
	conductors supported on the											1
	same poles											ĺ
20	Vertical Clearance between	-	-	-	-	24	24	30	36 or	48 (mm)	48(mm	48(mm)
	conductors of the same circuit								48 (ii)	. ,)	1
	on Horizontal post insulators								(mm)		-	1

(a)	The clearances in Column D are also applicable to supply cables of any voltage under certain conditions	57.4
(b)	Clearances for guys and span wires apply vertically at crossings; see Case 18 for radial clearances from conductors. 1. Supply guys and span wires from conductors	56.4-C 56.4-D1
	2. Supply guys and span wires from guys and span wires3. Communication guys and span wires from	86.4-C 86.4-D1
	conductors 4. Communication guys and span wires from guys and span wires	
(c)	Not applicable between messengers or span wires of the same system. 1. Supply messengers 2. Trolley span wires 3. Communication messengers	57.4-E 77.4-D 87.4-G
(d)	Protection required on guys, span wires, messengers, and cables where within trolley throw 1. Supply Guys and Span wires 2. Supply Messengers and Cables 3. Communication guys and span wires 4. Communication messengers	56.4-B2 57.4-B2 86.4-B2 87.4-B2
(e)	Not applicable to certain conductors supported on trolley span wires. 1. Trolley contact and feeder conductors 2. Trolley feeder conductors 3. Trolley system communication conductors 4. Foreign conductors	74.4-G 78.1 78.2 78.3
(f)	Increased clearance required over trolley contact conductors of 750-7500 volts	74.4-G2
(g)	Shall be increased for conductors of more than 75,000 volts. As required by Table 2 Columns I, J, and K	
(h)	May be reduced for certain conductors of Class T circuits of the same system	74.4-C

(i)	 May be reduced for service drops under special conditions. 1. Supply service drops and communication line conductors 2. Supply service drops and communication service drops 3. Communication service drops and supply line conductors 4. Communication service drops and supply service drops 	54.8- C1a 54.8-C4 84.8- D1a 84.8-D4
(j)	May be reduced or shall be increased for certain communication conductors or cables. 1. Open wire conductors, attached to poles, within 3 feet of topmost conductor 2. Line conductors of police or fire-alarm circuits and service drops from other communication circuits. 3. Cables and messengers attached to poles	84.4- C1a 84.8- D1b 87.4-C3
(k)	Special clearances for 0-750 volt conductors in rack configuration and messengers and cables attached to poles. 1. Supply conductors of 0-750 volts in rack configuration 2. Supply cables and messengers attached to poles 3. Communication cables and messengers attached to poles 4. On Jointly used poles	54.9 57.4-F 87.4-C3 92.1
(1)	 May be reduced for service drops, and police or fire-alarm conductors, under special conditions. 1. Supply service drops and communication line conductors 2. Supply service drops on clearance arms 3. Supply service drops on pole-top extensions 4. Supply service drops and communication service drops 5. Communication service drops and police, fire-alarm or supply line conductors 6. Communication service drops on clearance arms 7. Communication service drops on pole-top extensions 8. Communication service drops and supply service drops 9. Police or fire-alarm conductors 	54.8- C1b 54.8-C2 54.8-C3 54.8-C4 84.8- D1b 84.8-D2 84.8-D3 84.8-D4 92.2

 (m) May be reduced for lead wires Supply lead wires above supply conductors Supply drip loops above communication conductors (n) May be reduced for supply conductors and private communication conductors of the same ownership (o) May be reduced or increased for triangular or vertical configuration or for pole-top construction. 	54.4-C6 92.1-F3 89.2-B 54.4- C1c 54.4-C4
Supply drip loops above communication conductors May be reduced for supply conductors and private communication conductors of the same ownership May be reduced or increased for triangular or vertical	92.1-F3 89.2-B 54.4- C1c
 (n) May be reduced for supply conductors and private communication conductors of the same ownership (o) May be reduced or increased for triangular or vertical 	89.2-B 54.4- C1c
communication conductors of the same ownership (o) May be reduced or increased for triangular or vertical	54.4- C1c
(o) May be reduced or increased for triangular or vertical	54.4- C1c
	C1c
configuration or for pole-top construction.	C1c
	C1c
Triangular or vertical configuration on crossarms	
2. Dead-ended on pole in vertical configuration	
3. Conductors of 0-7500 volts in triangular	J4.4-C4
configuration at top of pole	
4. Conductors of more than 7500 volts at top of pole	54.4-
	D8a
	54.4-
	D8b
(p) May be reduced for supply service drops of 0-750 volts	54.8-C6
(q) Shall be increased between circuits where conductors of more	
than 7500 volts are at pole top.	54.4-
	D8b
(r) May be reduced under special conditions	
1. Supply conductors of 750-7500 volts	54.4-
2. Supply conductors of 7500-20,000 volts	C1a
	54.4-
	C1b
(s) Does not apply where conductors do not cross.	
 Supply conductors of different phase polarity 	54.4-
2. Communication conductors	C2a
	84.4-
	C1a
(t) Shall not be applied consecutively both above and below the	54.4-2a
same supply conductors	
(u) Shall be increased where conductors of different	
classifications are supported on the same crossarms.	
1. Supply conductors of 0-750 volts and conductors of	32.4-A2
7500-20,000 volts	
2. Supply conductors of 0-750 volts and conductors of	32.4-A3
750-7500 volts	
(v) Not applicable to certain kinds of conductors.	
 Supply conductors of same phase or polarity 	54.4-
2. Insulated supply conductors in multiple-conductor	C3c
cables	57.4-C
3. Communication insulated conductors or multiple-	
conductor cables	87.4-C1

(w)	Shall apply radially to conductors on brackets attached to	
	crossarms.	54.4-
	1. Supply conductors	C3b
	2. Communication conductors	84.8-
		C1b
(x)	Shall be increased between conductors of different	
	classifications supported on the same crossarm.	
	Supply conductors of different voltage classification	32.4-A
	2. Supply circuits of 0-750 volts and communication	32.4-B
	circuits	89.2-A
	3. Supply circuits and private communication circuits.	
(y)	Special clearances for unprotected supply conductors from	
	one level to another level	54.6-A
		58.2-B3
		92.1-F5
(z)	Not applicable to the following:	
	 Clearances between conductors at different levels 	
	specified in Cases 8 to 13 inclusive.	
	2. Supply lateral conductors, suitably protected	54.6-C
	3. Supply vertical runs, suitably protected	54.6-D
	4. Supply risers, suitably protected	54.6-E
	5. Communication Conductors	87.4-C1
(aa)	Not applicable between cables and their supporting	
	messengers.	57.4-D
	1. Supply	87.4-F
	2. Communication	
(bb)	May be reduced for communication guys and communication	
	conductors supported on the same poles	
	1. Supply	56.4-C
	2. Communication	86.4-C
(cc)	Clearance required between guys.	E6 4 D0
	1. Supply guys, crossing	56.4-D2
	2. Supply guys, approximately parallel	56.4-D3
	3. Communication guys, crossing	86.4-D2
(44)	4. Communication guys, approximately parallel	86.4-D3
(dd)	Shall be increased where within 6 feet of a pole	103.5
(ee)	May be decreased in partial underground distribution	54.4-
(££)	shall be increased by 0.40 inches you let in success of 75 let	C4c
(ff)	shall be increased by 0.40 inches per kV in excess of 75 kV	+
(gg)	shall be increased by 0.40 inches per kV in excess of 150 kV	+
(hh)	shall be increased by 0.40 inches per kV in excess of 300 kV	
(ii)	shall be increased by 0.25 inches per kV in excess of 150 kV	

(jj)	shall be increased by 0.25 inches per kV in excess of 300 kV	
(kk)	proposed clearances to submitted to the CPUC prior to	
	construction for circuits in excess of 550 kV	
(II)	36-inch clearance applies 35 kV to 68kV	
	48-inch clearance applies over 68 kV	
(mm)	vertical clearance shall be increased by ½ inch for each	
	kilovolt over 68 kV	

Strikeout and Underline Version Table 2

Basic Minimum Allowable Clearance of Wires from Other Wires at Crossings and at Supports (Letter references Denote Modifications of Minimum Clearances Referred to in Notes Following this Table) All Clearances Are in Inches

	Other Wire, cable or conductor concerned											
		Α	_	_	Other Wire	, cable of c	Supply condu		ing supply	cables)		
Case No.	Nature of Clearance and Class of Voltage of wire, cable or conductor concerned	Span wires, guys and messeng ers	B Trolley contact conductors 0-750 volts	C Communication conductors (including open wire, cables and service drops)	D 0-750 volts (including service drops and trolley feeders (a))	E 750- 7,500 Volts	F 7,500- 20,000 volts	G 20,000- 35,000 volts	H 35,000- 75,000 volts	I 75,000- 150,000 volts	J 150,000 - 300,000 volts	K 300,000 - 550,000 volts
	Clearance between wires, cables, and conductors not supported on the same poles, vertically at crossings in spans, and radially where collinear or approaching crossing											
1	Span wires, guys and messengers (b)	18 (c)	48 (d, e)	24 (e)	24 (e)	36 (f)	36	72	72	78	78(gg)	138(hh)
2	Trolley contact conductors 0-750 volts	48 (d, e)		48 (d)	48 (d, h)	48	72	96	96	96	96 (gg)	156(hh)
3 4	Communication conductors Supply conductors, service drops and trolley feeders 0- 750 volts	24 (e) 24 (e)	48 (d) 48 (d, h)	24 48 (i)	48 (i) 24	48 (dd) 48	72 48	96 96	96 96	96 96	96 (gg) 96 (gg)	156(hh) 156(hh)
5	Supply conductors, 750-7500 volts	36 (f)	48	48 (dd)	48	48 (h)	72	96	96	96	96 (gg)	156(hh)
6	Supply conductors 7500- 20,000 volts	36	72	72	48	72	72	96	96	96	96 (gg)	156(hh)
7	Supply conductors, more than 20,000 volts Vertical separation between conductors and / or cables on separate crossarms or other supports at different levels (excepting on related line	72 <u>(q)</u>	96 <u>(a)</u>	96 <u>(a)</u>	96 <u>(a)</u>	96 <u>(a)</u>	96 <u>(a)</u>	96 <u>(a)</u>	96 <u>(q)</u>	96	96 (gg)	156(hh)

	same pole)		ĺ				ĺ				1	
8	Communication conductors			12 (j)	48 (k, l, m,	48 (k)	72 (m, n)	72(m)	72	78	87 (gg)	147(hh)
_	and service drops		-		n)							
9	Supply Conductors, service			48 (k, l, m, n)	24 (h, k, m,	48 (k,	48 (k, m,	72(m)	72	78	87 (gg)	147(hh)
	drops and trolley feeders 0-		-		o)	m, p)	q)					
10	750 volts			40 (14)	40 (1,)	40 (40 (== =)	40(~)	40(~)	COVE	00 (~~)	150/66)
10	Supply conductors, 750-7500 volts			48 (k)	48 (k, m, p)	48 (m, o, r, ee)	48 (m, q)	48(q)	48(q)	60(ff)	90 (gg)	150(hh)
11	Supply conductors 7500-			72 (m, n)	48 (k, m, q)	48 (m,	48 (m, o,	48(q)	48(q)	60(ff)	90 (gg)	150(hh)
	20,000 volts		_	72 (m, n)	10 (10, 111, 4)	q)	q, r, ee)	10(4)	10(4)	00(11)	50 (99)	150(1111)
12	Supply conductors 20,000-			72 (m)	72 (m)	48 (m,	48 (m, q)	48(o,	48(o,	60(ff)	90 (gg)	150(hh)
	68,000 <u>75,000</u> volts		-		, ,	q) ` '		q) `	q) ,	,	(33)	,
13	Supply conductors, more than			72	72	60 (q)	60 (q)	60(q)	60(q)	60(ff)	90 (gg)	150(hh)
	68,000 <u>75,000</u> volts		-									
	Vertical arms above or											
	below conductors on											
	related line arms and buck											
14	arms. Line arms above or below			6	12 (u)	10 (11)	18 (u)	24	48	60(ff)	00 (aa)	150(hh)
14	related buck arms (s, t)			0	12 (u)	18 (u)	10 (u)	24	40	00(11)	90 (gg)	150(1111)
	Horizontal separation of											
	conductors on same											
	crossarm											
15	Pin spacings of longitudinal			3(x)	11 ½ (h, x)	11 ½	17 ½ (x)	24 (x)	48	60(ff)	90 (gg)	150(hh)
	conductors, vertical		-			(x)		, ,		, ,	,,,,,	, ,
	conductors and service drops											
	(v, w)											
	Radial separation of											
	conductors on same											
	crossarm, pole or structure											
16	Incidental pole wiring Conductors, tap or lead wires			3 (x)	11 ½ (h, x)	11 ½	17 ½ (x)	24 (x)	48	60(ff)	90 (gg)	150(hh)
10	of different circuits (v, y, z)		_	3 (X)	11 72 (11, X)	(X)	17 72 (X)	24 (X)	40	00(11)	90 (99)	130(1111)
17	Conductors, tap or lead wires			3	3	6	6	12	24	60(ff)	90 (gg)	150(hh)
	of same circuits (v, z, aa)		_							00()	30 (99)	200()
	Radial separation between guys											
	and conductors		-									
18	Guys passing conductors			3 (bb)	12	18	18	30	36	36 (ff)	78 (gg)	138(hh)
	supported on other poles		-									
	(excluding poles of same											
	circuit), and guys											
	approximately parallel to											
	conductors supported on the											
	same poles	l	Į.	l	1	l	1	l	l	l	I	

19	Guys and spans wires passing	(ee)		3	3	6	9	12	18	24	48 (II)	86 (jj)
	conductors supported on the											
	same poles											
20	Vertical Clearance between	-	-	-	-	24	24	30	36 or	48 (mm)	48(mm	48(mm)
	conductors of the same circuit								48 (ii))	
	on Horizontal post insulators								(mm)			

(a)	The clearances in Column D are also applicable to supply cables of any voltage under certain conditions	57.4
(b)	Clearances for guys and span wires apply vertically at crossings; see Case 18 for radial clearances from conductors. 1. Supply guys and span wires from conductors	56.4-C 56.4-D1
	2. Supply guys and span wires from guys and span wires3. Communication guys and span wires from	86.4-C 86.4-D1
	conductors 4. Communication guys and span wires from guys and span wires	
(c)	Not applicable between messengers or span wires of the same system. 1. Supply messengers 2. Trolley span wires 3. Communication messengers	57.4-E 77.4-D 87.4-G
(d)	Protection required on guys, span wires, messengers, and cables where within trolley throw 1. Supply Guys and Span wires 2. Supply Messengers and Cables 3. Communication guys and span wires 4. Communication messengers	56.4-B2 57.4-B2 86.4-B2 87.4-B2
(e)	Not applicable to certain conductors supported on trolley span wires. 1. Trolley contact and feeder conductors 2. Trolley feeder conductors 3. Trolley system communication conductors 4. Foreign conductors	74.4-G 78.1 78.2 78.3
(f)	Increased clearance required over trolley contact conductors of 750-7500 volts	74.4-G2
(g)	Shall be increased for conductors of more than 75,000 volts. As required by Table 2 Columns I, J, and K	
(h)	May be reduced for certain conductors of Class T circuits of the same system	74.4-C

(i)	 May be reduced for service drops under special conditions. 1. Supply service drops and communication line conductors 2. Supply service drops and communication service drops 3. Communication service drops and supply line conductors 4. Communication service drops and supply service drops 	54.8- C1a 54.8-C4 84.8- D1a 84.8-D4
(j)	May be reduced or shall be increased for certain communication conductors or cables. 1. Open wire conductors, attached to poles, within 3 feet of topmost conductor 2. Line conductors of police or fire-alarm circuits and service drops from other communication circuits. 3. Cables and messengers attached to poles	84.4- C1a 84.8- D1b 87.4-C3
(k)	Special clearances for 0-750 volt conductors in rack configuration and messengers and cables attached to poles. 1. Supply conductors of 0-750 volts in rack configuration 2. Supply cables and messengers attached to poles 3. Communication cables and messengers attached to poles 4. On Jointly used poles	54.9 57.4-F 87.4-C3 92.1
(1)	 May be reduced for service drops, and police or fire-alarm conductors, under special conditions. 1. Supply service drops and communication line conductors 2. Supply service drops on clearance arms 3. Supply service drops on pole-top extensions 4. Supply service drops and communication service drops 5. Communication service drops and police, fire-alarm or supply line conductors 6. Communication service drops on clearance arms 7. Communication service drops on pole-top extensions 8. Communication service drops and supply service drops 9. Police or fire-alarm conductors 	54.8- C1b 54.8-C2 54.8-C3 54.8-C4 84.8- D1b 84.8-D2 84.8-D3 84.8-D4 92.2

 (m) May be reduced for lead wires Supply lead wires above supply conductors Supply drip loops above communication conductors (n) May be reduced for supply conductors and private communication conductors of the same ownership (o) May be reduced or increased for triangular or vertical configuration or for pole-top construction. 	54.4-C6 92.1-F3 89.2-B 54.4- C1c 54.4-C4
Supply drip loops above communication conductors May be reduced for supply conductors and private communication conductors of the same ownership May be reduced or increased for triangular or vertical	92.1-F3 89.2-B 54.4- C1c
 (n) May be reduced for supply conductors and private communication conductors of the same ownership (o) May be reduced or increased for triangular or vertical 	89.2-B 54.4- C1c
communication conductors of the same ownership (o) May be reduced or increased for triangular or vertical	54.4- C1c
(o) May be reduced or increased for triangular or vertical	54.4- C1c
	C1c
configuration or for pole-top construction.	C1c
	C1c
Triangular or vertical configuration on crossarms	
2. Dead-ended on pole in vertical configuration	
3. Conductors of 0-7500 volts in triangular	J4.4-C4
configuration at top of pole	
4. Conductors of more than 7500 volts at top of pole	54.4-
	D8a
	54.4-
	D8b
(p) May be reduced for supply service drops of 0-750 volts	54.8-C6
(q) Shall be increased between circuits where conductors of more	
than 7500 volts are at pole top.	54.4-
	D8b
(r) May be reduced under special conditions	
1. Supply conductors of 750-7500 volts	54.4-
2. Supply conductors of 7500-20,000 volts	C1a
	54.4-
	C1b
(s) Does not apply where conductors do not cross.	
 Supply conductors of different phase polarity 	54.4-
2. Communication conductors	C2a
	84.4-
	C1a
(t) Shall not be applied consecutively both above and below the	54.4-2a
same supply conductors	
(u) Shall be increased where conductors of different	
classifications are supported on the same crossarms.	
1. Supply conductors of 0-750 volts and conductors of	32.4-A2
7500-20,000 volts	
2. Supply conductors of 0-750 volts and conductors of	32.4-A3
750-7500 volts	
(v) Not applicable to certain kinds of conductors.	
 Supply conductors of same phase or polarity 	54.4-
2. Insulated supply conductors in multiple-conductor	C3c
cables	57.4-C
3. Communication insulated conductors or multiple-	
conductor cables	87.4-C1

(w)	Shall apply radially to conductors on brackets attached to	
	crossarms.	54.4-
	1. Supply conductors	C3b
	2. Communication conductors	84.8-
		C1b
(x)	Shall be increased between conductors of different	
	classifications supported on the same crossarm.	
	Supply conductors of different voltage classification	32.4-A
	2. Supply circuits of 0-750 volts and communication	32.4-B
	circuits	89.2-A
	3. Supply circuits and private communication circuits.	
(y)	Special clearances for unprotected supply conductors from	
	one level to another level	54.6-A
		58.2-B3
		92.1-F5
(z)	Not applicable to the following:	
	 Clearances between conductors at different levels 	
	specified in Cases 8 to 13 inclusive.	
	2. Supply lateral conductors, suitably protected	54.6-C
	3. Supply vertical runs, suitably protected	54.6-D
	4. Supply risers, suitably protected	54.6-E
	5. Communication Conductors	87.4-C1
(aa)	Not applicable between cables and their supporting	
	messengers.	57.4-D
	1. Supply	87.4-F
	2. Communication	
(bb)	May be reduced for communication guys and communication	
	conductors supported on the same poles	
	1. Supply	56.4-C
	2. Communication	86.4-C
(cc)	Clearance required between guys.	E6 4 D0
	1. Supply guys, crossing	56.4-D2
	2. Supply guys, approximately parallel	56.4-D3
	3. Communication guys, crossing	86.4-D2
(44)	4. Communication guys, approximately parallel	86.4-D3
(dd)	Shall be increased where within 6 feet of a pole	103.5
(ee)	May be decreased in partial underground distribution	54.4-
(££)	shall be increased by 0.40 inches you let in success of 75 let	C4c
(ff)	shall be increased by 0.40 inches per kV in excess of 75 kV	+
(gg)	shall be increased by 0.40 inches per kV in excess of 150 kV	+
(hh)	shall be increased by 0.40 inches per kV in excess of 300 kV	
(ii)	shall be increased by 0.25 inches per kV in excess of 150 kV	

(jj)	shall be increased by 0.25 inches per kV in excess of 300 kV	
(kk)	proposed clearances to submitted to the CPUC prior to	
	construction for circuits in excess of 550 kV	
(II)	36-inch clearance applies 35 kV to 68kV	
	48-inch clearance applies over 68 kV	
(mm)	vertical clearance shall be increased by ½ inch for each	
	kilovolt over 68 kV	

Final Version Table 2

Basic Minimum Allowable Clearance of Wires from Other Wires at Crossings and at Supports (Letter references Denote Modifications of Minimum Clearances Referred to in Notes Following this Table) All Clearances Are in Inches

	Other Wire, cable or conductor concerned B Supply conductor (including supply cables)											
			В				Supply condu	ctor (includ	ing supply	cables)		
			Troll									
			e									
			У									
			c									
			0									
			n t									
		Α	a	C								
Cana	Nature of Clearance and Class	Span	c	Communication	D	_	_	-			J	K
Case No.	of Voltage of wire, cable or	wires, guys	t	conductors	0-750 volts (including	E 750-	F 7,500-	G 20,000-	H 35,000-	75,000-	150,000	300,000
1101	conductor concerned	and	С	(including open	service drops	7,500	20,000	35,000	75,000	150,000	-	-
		messeng	О	wire, cables and service drops)	and trolley	Volts	volts	volts	volts	volts	300,000 volts	550,000 volts
		ers	n d	service arops)	feeders (a))						VOILS	VOILS
			u u									
			c									
			t									
			0 r									
			s									
			0-750									
			volts									
	Clearance between wires, cables, and conductors not											
	supported on the same											
	poles, vertically at											
	crossings in spans, and											
	radially where collinear or approaching crossing											
1	Span wires, guys and	18 (c)	48 (d, e)	24 (e)	24 (e)	36 (f)	36	72	72	78	78(gg)	138(hh)
_	messengers (b)		- (-, -)			, ,					-(33)	
2	Trolley contact conductors 0-	48 (d, e)		48 (d)	48 (d, h)	48	72	96	96	96	96 (gg)	156(hh)
3	750 volts Communication conductors	24 (a)	- -	24	49 (i)	V0 (44)	72	96	96	96	06 (00)	1E6/bb)
3	Communication conductors	24 (e)	48 (d)	24	48 (i)	48 (dd)	/2	90	90	90	96 (gg)	156(hh)

drops and trolley feeders 0	4	l o a taranta da cara tar	ı	1 40 (1 1)	L 40 (°)	24	l 40	l 40	Loc	Loc	Loc	l oc ()	456(11)
Supply conductors, 750-7500 36 (f) 48 48 (dd) 48 48 (h) 72 96 96 96 96 (gg) 156(hh)	4		24 (e)	48 (d, h)	48 (i)	24	48	48	96	96	96	96 (gg)	156(hh)
20,000 volts 20,000 volts 20,000 volts 20,000 volts Vertical separation between conductors and / or cables on separate crossarms or other supports at different levels (excepting on related line and buck arms on the same pole) 8 Communication conductors and and service drops and trolley feders 0	5	Supply conductors, 750-7500	36 (f)	48	48 (dd)	48	48 (h)	72	96	96	96	96 (gg)	156(hh)
Supply conductors, more than 2,000 volts Vertical separation between conductors and / or cables on separate crossarms or other same pole)	6	Supply conductors 7500-	36	72	72	48	72	72	96	96	96	96 (gg)	156(hh)
between conductors and / or cables on separate crossarms or other supports at different levels (excepting on related line and buck arms on the same pole) 8 Communication conductors and service drops	7	Supply conductors, more than 20,000 volts	72 <u>(g)</u>	96 <u>(g)</u>	96 <u>(g)</u>	96 <u>(g)</u>	96 <u>(g)</u>	96 <u>(g)</u>	96 <u>(g)</u>	96 <u>(g)</u>	96	96 (gg)	156(hh)
Supports at different levels (excepting on related line and buck arms on the same pole) 12 (j)		between conductors and /											
## Same pole													
8		and buck arms on the											
9	8	Communication conductors			12 (j)		48 (k)	72 (m, n)	72(m)	72	78	87 (gg)	147(hh)
10 Supply conductors, 750-7500 volts 11 Supply conductors 7500- 20,000 volts 12 Supply conductors 20,000- 68,000 75,000 volts 13 Supply conductors, more than 68,000 75,000 volts Vertical arms above or below related buck arms (s, t) Horizontal separation of conductors, vertical conductors, vertical conductors, vertical conductors, vertical conductors, vertical conductors, vertical conductors, vertical conductors and service drops 15 Supply conductors, 750-7500-72 (m, n) 16 Supply conductors 20,000-68,000 75,000 volts 17 Supply conductors 20,000-68,000 75,000 volts 18 (m, q) 48 (m	9	Supply Conductors, service			48 (k, l, m, n)	24 (h, k, m,			72(m)	72	78	87 (gg)	147(hh)
11 Supply conductors 7500- 20,000 volts 12 Supply conductors 20,000- 50,000 volts 13 Supply conductors, more than 68,000 75,000 volts Vertical arms above or below conductors on related line arms and buck arms. 14 Line arms above or below related buck arms (s, t) Horizontal separation of conductors on same crossarm 15 Pin spacings of longitudinal conductors, vertical conductors, vertical conductors and service drops (v, w) 72 (m, n) 48 (k, m, q) 48 (m, q)	10	Supply conductors, 750-7500			48 (k)	48 (k, m, p)		48 (m, q)	48(q)	48(q)	60(ff)	90 (gg)	150(hh)
12 Supply conductors 20,000-68,000 75,000 volts	11	Supply conductors 7500-		- 	72 (m, n)	48 (k, m, q)	48 (m,		48(q)	48(q)	60(ff)	90 (gg)	150(hh)
14 Line arms above or below related line arms (s, t) Horizontal separation of conductors on same crossarm 15 Pin spacings of longitudinal conductors, vertical conductors, vertical conductors and service drops (v, w)	12	Supply conductors 20,000-			72 (m)	72 (m)	48 (m,				60(ff)	90 (gg)	150(hh)
14 Line arms above or below related line arms (s, t) Horizontal separation of conductors on same crossarm Pin spacings of longitudinal conductors, vertical conductors and service drops (v, w) Note that the service drops (v, w) Note that the service drops Note th	13	68,000 <u>75,000</u> volts		-	72	72	60 (q)	60 (q)	60(q)	60(q)	60(ff)	90 (gg)	150(hh)
14 Line arms above or below related buck arms (s, t) Horizontal separation of conductors on same crossarm 15 Pin spacings of longitudinal conductors, vertical conductors and service drops (v, w) 15 Variable		below conductors on											
related buck arms (s, t) Horizontal separation of conductors on same crossarm Pin spacings of longitudinal conductors, vertical conductors and service drops (v, w) 15 related buck arms (s, t) Horizontal separation of conductors on same crossarm 16 Pin spacings of longitudinal conductors, vertical conductors and service drops (v, w) 17 ½ (h, x) 11 ½ (h, x) 11 ½ (x) 17 ½ (x) 17 ½ (x) 18 60(ff) 90 (gg) 150(hh)		arms.											
conductors on same crossarm Pin spacings of longitudinal conductors, vertical conductors and service drops (v, w) 15 Conductors on same crossarm	14	related buck arms (s, t)		-	6	12 (u)	18 (u)	18 (u)	24	48	60(ff)	90 (gg)	150(hh)
15 Pin spacings of longitudinal conductors, vertical conductors and service drops (v, w)		conductors on same											
(v, w)	15	Pin spacings of longitudinal conductors, vertical			3(x)	11 ½ (h, x)		17 ½ (x)	24 (x)	48	60(ff)	90 (gg)	150(hh)
Kaulai Separation													

	conductors on same crossarm, pole or structure											
	Incidental pole wiring											
16	Conductors, tap or lead wires			3 (x)	11 ½ (h, x)	11 ½	17 ½ (x)	24 (x)	48	60(ff)	90 (gg)	150(hh)
	of different circuits (v, y, z)		-			(x)						
17	Conductors, tap or lead wires			3	3	6	6	12	24	60(ff)	90 (gg)	150(hh)
	of same circuits (v, z, aa)		-									
	Radial separation between guys											
	and conductors		-									
18	Guys passing conductors			3 (bb)	12	18	18	30	36	36 (ff)	78 (gg)	138(hh)
	supported on other poles		-									
	(excluding poles of same											
	circuit), and guys											
	approximately parallel to											
	conductors supported on the											
	same poles				_	_						
19	Guys and spans wires passing	(ee)		3	3	6	9	12	18	24	48 (II)	86 (jj)
	conductors supported on the											
	same poles											
20	Vertical Clearance between	-	-	-	-	24	24	30	36 or	48 (mm)	48(mm	48(mm)
	conductors of the same circuit								48 (ii))	
	on Horizontal post insulators								(mm)			

(a)	The clearances in Column D are also applicable to supply cables of any voltage under certain conditions	57.4
(b)	Clearances for guys and span wires apply vertically at crossings; see Case 18 for radial clearances from conductors. 1. Supply guys and span wires from conductors	56.4-C 56.4-D1
	2. Supply guys and span wires from guys and span wires3. Communication guys and span wires from	86.4-C 86.4-D1
	conductors 4. Communication guys and span wires from guys and span wires	
(c)	Not applicable between messengers or span wires of the same system. 1. Supply messengers 2. Trolley span wires 3. Communication messengers	57.4-E 77.4-D 87.4-G
(d)	Protection required on guys, span wires, messengers, and cables where within trolley throw 1. Supply Guys and Span wires 2. Supply Messengers and Cables 3. Communication guys and span wires 4. Communication messengers	56.4-B2 57.4-B2 86.4-B2 87.4-B2
(e)	Not applicable to certain conductors supported on trolley span wires. 1. Trolley contact and feeder conductors 2. Trolley feeder conductors 3. Trolley system communication conductors 4. Foreign conductors	74.4-G 78.1 78.2 78.3
(f)	Increased clearance required over trolley contact conductors of 750-7500 volts	74.4-G2
(g)	Shall be increased for conductors of more than 75,000 volts. As required by Table 2 Columns I, J, and K	
(h)	May be reduced for certain conductors of Class T circuits of the same system	74.4-C

(i)	 May be reduced for service drops under special conditions. 1. Supply service drops and communication line conductors 2. Supply service drops and communication service drops 3. Communication service drops and supply line conductors 4. Communication service drops and supply service drops 	54.8- C1a 54.8-C4 84.8- D1a 84.8-D4
(j)	May be reduced or shall be increased for certain communication conductors or cables. 1. Open wire conductors, attached to poles, within 3 feet of topmost conductor 2. Line conductors of police or fire-alarm circuits and service drops from other communication circuits. 3. Cables and messengers attached to poles	84.4- C1a 84.8- D1b 87.4-C3
(k)	Special clearances for 0-750 volt conductors in rack configuration and messengers and cables attached to poles. 1. Supply conductors of 0-750 volts in rack configuration 2. Supply cables and messengers attached to poles 3. Communication cables and messengers attached to poles 4. On Jointly used poles	54.9 57.4-F 87.4-C3 92.1
(1)	 May be reduced for service drops, and police or fire-alarm conductors, under special conditions. 1. Supply service drops and communication line conductors 2. Supply service drops on clearance arms 3. Supply service drops on pole-top extensions 4. Supply service drops and communication service drops 5. Communication service drops and police, fire-alarm or supply line conductors 6. Communication service drops on clearance arms 7. Communication service drops on pole-top extensions 8. Communication service drops and supply service drops 9. Police or fire-alarm conductors 	54.8- C1b 54.8-C2 54.8-C3 54.8-C4 84.8- D1b 84.8-D2 84.8-D3 84.8-D4 92.2

 (m) May be reduced for lead wires Supply lead wires above supply conductors Supply drip loops above communication conductors (n) May be reduced for supply conductors and private communication conductors of the same ownership (o) May be reduced or increased for triangular or vertical configuration or for pole-top construction. 	54.4-C6 92.1-F3 89.2-B 54.4- C1c 54.4-C4
Supply drip loops above communication conductors May be reduced for supply conductors and private communication conductors of the same ownership May be reduced or increased for triangular or vertical	92.1-F3 89.2-B 54.4- C1c
 (n) May be reduced for supply conductors and private communication conductors of the same ownership (o) May be reduced or increased for triangular or vertical 	89.2-B 54.4- C1c
communication conductors of the same ownership (o) May be reduced or increased for triangular or vertical	54.4- C1c
(o) May be reduced or increased for triangular or vertical	54.4- C1c
	C1c
configuration or for pole-top construction.	C1c
	C1c
Triangular or vertical configuration on crossarms	
2. Dead-ended on pole in vertical configuration	
3. Conductors of 0-7500 volts in triangular	J4.4-C4
configuration at top of pole	
4. Conductors of more than 7500 volts at top of pole	54.4-
	D8a
	54.4-
	D8b
(p) May be reduced for supply service drops of 0-750 volts	54.8-C6
(q) Shall be increased between circuits where conductors of more	
than 7500 volts are at pole top.	54.4-
	D8b
(r) May be reduced under special conditions	
1. Supply conductors of 750-7500 volts	54.4-
2. Supply conductors of 7500-20,000 volts	C1a
	54.4-
	C1b
(s) Does not apply where conductors do not cross.	
 Supply conductors of different phase polarity 	54.4-
2. Communication conductors	C2a
	84.4-
	C1a
(t) Shall not be applied consecutively both above and below the	54.4-2a
same supply conductors	
(u) Shall be increased where conductors of different	
classifications are supported on the same crossarms.	
1. Supply conductors of 0-750 volts and conductors of	32.4-A2
7500-20,000 volts	
2. Supply conductors of 0-750 volts and conductors of	32.4-A3
750-7500 volts	
(v) Not applicable to certain kinds of conductors.	
 Supply conductors of same phase or polarity 	54.4-
2. Insulated supply conductors in multiple-conductor	C3c
cables	57.4-C
3. Communication insulated conductors or multiple-	
conductor cables	87.4-C1

crossarms. 1. Supply conductors 2. Communication conductors 2. Communication conductors 3. Shall be increased between conductors of different classifications supported on the same crossarm. 1. Supply conductors of different voltage classification 2. Supply circuits of 0-750 volts and communication circuits 3. Supply circuits and private communication circuits. (y) Special clearances for unprotected supply conductors from one level to another level Specified in Cases 8 to 13 inclusive. 2. Supply lateral conductors, suitably protected 3. Supply vertical runs, suitably protected 4. Supply risers, suitably protected 54.6-C 3. Supply risers, suitably protected 54.6-E 5. Communication Conductors 1. Supply 2. Communication the same poles 1. Supply 2. Communication (bb) May be reduced for communication guys and communication conductors supported on the same poles 1. Supply 2. Communication (cc) Clearance required between guys. 1. Supply guys, crossing 2. Supply guys, crossing 3. Communication guys, approximately parallel 3. Communication guys, approximately parallel 4. Communication guys, approximately parallel 56.4-D3 64.4-D3 64.6-D3 64.6-D3 64.6-D3 64.6-D3 65.4-D3 65.4-D3 65.4-D3 65.4-D3 65.4-D3 66.4-D3 6	(w)	Shall apply radially to conductors on brackets attached to	
2. Communication conductors (x) Shall be increased between conductors of different classifications supported on the same crossarm. 1. Supply conductors of different voltage classification 2. Supply circuits of 0-750 volts and communication circuits 3. Supply circuits and private communication circuits. (y) Special clearances for unprotected supply conductors from one level to another level 54.6-A 58.2-B3 92.1-F5 (z) Not applicable to the following: 1. Clearances between conductors at different levels specified in Cases 8 to 13 inclusive. 2. Supply lateral conductors, suitably protected 3. Supply vertical runs, suitably protected 4. Supply risers, suitably protected 54.6-D 4. Supply risers, suitably protected 54.6-E 55. Communication Conductors (aa) Not applicable between cables and their supporting messengers. 1. Supply 2. Communication (bb) May be reduced for communication guys and communication conductors supported on the same poles 1. Supply 2. Communication (cc) Clearance required between guys. 1. Supply guys, crossing 2. Supply guys, approximately parallel 3. Communication guys, approximately parallel 3. Communication guys, approximately parallel 4. Communication guys, approximately parallel 56.4-D3 66.4-D3 66	` ′		54.4-
2. Communication conductors (x) Shall be increased between conductors of different classifications supported on the same crossarm. 1. Supply conductors of different voltage classification 2. Supply circuits of 0-750 volts and communication circuits 3. Supply circuits and private communication circuits. (y) Special clearances for unprotected supply conductors from one level to another level 54.6-A 58.2-B3 92.1-F5 (z) Not applicable to the following: 1. Clearances between conductors at different levels specified in Cases 8 to 13 inclusive. 2. Supply lateral conductors, suitably protected 3. Supply vertical runs, suitably protected 4. Supply risers, suitably protected 54.6-D 54.6-E 55. Communication Conductors (aa) Not applicable between cables and their supporting messengers. 1. Supply 2. Communication (bb) May be reduced for communication guys and communication conductors supported on the same poles 1. Supply 2. Communication (cc) Clearance required between guys. 1. Supply guys, crossing 2. Supply guys, approximately parallel 3. Communication guys, crossing 4. Communication guys, approximately parallel 56.4-D3 66.4-D3 66.4-		1. Supply conductors	C3b
(x) Shall be increased between conductors of different classifications supported on the same crossarm. 1. Supply conductors of different voltage classification 2. Supply circuits of 0-750 volts and communication circuits 3. Supply circuits and private communication circuits. (y) Special clearances for unprotected supply conductors from one level to another level 54.6-A 58.2-B3 92.1-F5 (z) Not applicable to the following: 1. Clearances between conductors at different levels specified in Cases 8 to 13 inclusive. 2. Supply lateral conductors, suitably protected 3. Supply vertical runs, suitably protected 4. Supply risers, suitably protected 54.6-D 4. Supply risers, suitably protected 55. Communication Conductors (aa) Not applicable between cables and their supporting messengers. 1. Supply 2. Communication (bb) May be reduced for communication guys and communication conductors supported on the same poles 1. Supply 2. Communication (cc) Clearance required between guys. 1. Supply guys, crossing 2. Supply guys, crossing 3. Communication guys, crossing 4. Communication guys, crossing 56.4-D2 3. Communication guys, crossing 4. Communication guys, approximately parallel 56.4-D3 56.4		1 ' ' '	84.8-
classifications supported on the same crossarm. 1. Supply conductors of different voltage classification 2. Supply circuits of 0-750 volts and communication circuits 3. Supply circuits and private communication circuits. (y) Special clearances for unprotected supply conductors from one level to another level 54.6-A 58.2-B3 92.1-F5 (z) Not applicable to the following: 1. Clearances between conductors at different levels specified in Cases 8 to 13 inclusive. 2. Supply lateral conductors, suitably protected 3. Supply vertical runs, suitably protected 4. Supply risers, suitably protected 54.6-D 4. Supply risers, suitably protected 54.6-E 5. Communication Conductors (aa) Not applicable between cables and their supporting messengers. 1. Supply 2. Communication (bb) May be reduced for communication guys and communication conductors supported on the same poles 1. Supply 2. Communication (bb) May be reduced for communication guys and communication conductors supported on the same poles 1. Supply 2. Communication (cc) Clearance required between guys. 1. Supply guys, crossing 2. Supply guys, approximately parallel 3. Communication guys, crossing 4. Communication guys, crossing 56.4-D2 3. Communication guys, crossing 4. Communication guys, approximately parallel 56.4-D3 56.4			C1b
1. Supply conductors of different voltage classification 2. Supply circuits of 0-750 volts and communication circuits 3. Supply circuits and private communication circuits. (y) Special clearances for unprotected supply conductors from one level to another level (z) Not applicable to the following: 1. Clearances between conductors at different levels specified in Cases 8 to 13 inclusive. 2. Supply lateral conductors, suitably protected 3. Supply vertical runs, suitably protected 4. Supply risers, suitably protected 5. Communication Conductors 57.4-D Not applicable between cables and their supporting messengers. 1. Supply 2. Communication (bb) May be reduced for communication guys and communication conductors supported on the same poles 1. Supply 2. Communication (cc) Clearance required between guys. 1. Supply guys, crossing 2. Supply guys, approximately parallel 3. Communication guys, crossing 4. Communication guys, crossing 56.4-D2 3. Communication guys, crossing 4. Communication guys, crossing 56.4-D3 56.4-	(x)	Shall be increased between conductors of different	
2. Supply circuits of 0-750 volts and communication circuits 3. Supply circuits and private communication circuits. (y) Special clearances for unprotected supply conductors from one level to another level 54.6-A 58.2-B3 92.1-F5 (z) Not applicable to the following: 1. Clearances between conductors at different levels specified in Cases 8 to 13 inclusive. 2. Supply lateral conductors, suitably protected 3. Supply vertical runs, suitably protected 4. Supply risers, suitably protected 54.6-D 5. Communication Conductors 87.4-C1 (aa) Not applicable between cables and their supporting messengers. 1. Supply 2. Communication (bb) May be reduced for communication guys and communication conductors supported on the same poles 1. Supply 2. Communication (cc) Clearance required between guys. 1. Supply guys, crossing 2. Supply guys, approximately parallel 3. Communication guys, approximately parallel 3. Communication guys, approximately parallel (dd) Shall be increased where within 6 feet of a pole (ff) shall be increased by 0.40 inches per kV in excess of 75 kV		classifications supported on the same crossarm.	
circuits 3. Supply circuits and private communication circuits. (y) Special clearances for unprotected supply conductors from one level to another level (z) Not applicable to the following: 1. Clearances between conductors at different levels specified in Cases 8 to 13 inclusive. 2. Supply lateral conductors, suitably protected 3. Supply vertical runs, suitably protected 4. Supply risers, suitably protected 5. Communication Conductors (aa) Not applicable between cables and their supporting messengers. 1. Supply 2. Communication (bb) May be reduced for communication guys and communication conductors supported on the same poles 1. Supply 2. Communication (cc) Clearance required between guys. 1. Supply guys, crossing 2. Supply guys, crossing 3. Communication guys, approximately parallel 3. Communication guys, approximately parallel 4. Communication guys, approximately parallel 56.4-D2 56.4-D2 64D3 65D3 66D3 6		 Supply conductors of different voltage classification 	32.4-A
3. Supply circuits and private communication circuits. (y) Special clearances for unprotected supply conductors from one level to another level 54.6-A 58.2-B3 92.1-F5 (z) Not applicable to the following: 1. Clearances between conductors at different levels specified in Cases 8 to 13 inclusive. 2. Supply lateral conductors, suitably protected 54.6-C 3. Supply vertical runs, suitably protected 54.6-B 5. Communication Conductors 87.4-C1 (aa) Not applicable between cables and their supporting messengers. 1. Supply 2. Communication (bb) May be reduced for communication guys and communication conductors supported on the same poles 1. Supply 2. Communication (cc) Clearance required between guys. 1. Supply guys, crossing 2. Supply guys, crossing 3. Communication guys, approximately parallel 3. Communication guys, approximately parallel 3. Communication guys, approximately parallel 4. Communication guys, approximately parallel (dd) Shall be increased where within 6 feet of a pole (ee) May be decreased in partial underground distribution 54.4-C4c (ff) shall be increased by 0.40 inches per kV in excess of 75 kV			
(y) Special clearances for unprotected supply conductors from one level to another level Separation one level to another level 1. Clearances between conductors at different levels specified in Cases 8 to 13 inclusive. 2. Supply lateral conductors, suitably protected 3. Supply vertical runs, suitably protected 4. Supply risers, suitably protected 54.6-D 5. Communication Conductors 87.4-C1 (aa) Not applicable between cables and their supporting messengers. 1. Supply 2. Communication (bb) May be reduced for communication guys and communication conductors supported on the same poles 1. Supply 2. Communication (cc) Clearance required between guys. 1. Supply guys, crossing 2. Supply guys, approximately parallel 3. Communication guys, crossing 4. Communication guys, approximately parallel (dd) Shall be increased where within 6 feet of a pole (ee) May be decreased in partial underground distribution 54.4-C4c (ff) shall be increased by 0.40 inches per kV in excess of 75 kV			89.2-A
one level to another level 54.6-A 58.2-B3 92.1-F5			
(z) Not applicable to the following: 1. Clearances between conductors at different levels specified in Cases 8 to 13 inclusive. 2. Supply lateral conductors, suitably protected 3. Supply vertical runs, suitably protected 4. Supply risers, suitably protected 54.6-D 4. Supply risers, suitably protected 54.6-E 5. Communication Conductors 87.4-C1 (aa) Not applicable between cables and their supporting messengers. 1. Supply 2. Communication (bb) May be reduced for communication guys and communication conductors supported on the same poles 1. Supply 2. Communication (cc) Clearance required between guys. 1. Supply guys, crossing 2. Supply guys, approximately parallel 3. Communication guys, crossing 4. Communication guys, approximately parallel (dd) Shall be increased where within 6 feet of a pole (ee) May be decreased in partial underground distribution 54.4-C4c (ff) shall be increased by 0.40 inches per kV in excess of 75 kV	(y)	1	5464
(z) Not applicable to the following: 1. Clearances between conductors at different levels specified in Cases 8 to 13 inclusive. 2. Supply lateral conductors, suitably protected 3. Supply vertical runs, suitably protected 4. Supply risers, suitably protected 54.6-D 4. Supply risers, suitably protected 54.6-E 5. Communication Conductors 87.4-C1 (aa) Not applicable between cables and their supporting messengers. 1. Supply 2. Communication (bb) May be reduced for communication guys and communication conductors supported on the same poles 1. Supply 2. Communication (cc) Clearance required between guys. 1. Supply guys, crossing 2. Supply guys, approximately parallel 3. Communication guys, crossing 4. Communication guys, approximately parallel (dd) Shall be increased where within 6 feet of a pole (dd) Shall be increased where within 6 feet of a pole (ee) May be decreased in partial underground distribution 54.4-C4c (ff) shall be increased by 0.40 inches per kV in excess of 75 kV		one level to another level	
(z) Not applicable to the following: 1. Clearances between conductors at different levels specified in Cases 8 to 13 inclusive. 2. Supply lateral conductors, suitably protected 54.6-D 4. Supply risers, suitably protected 54.6-E 5. Communication Conductors 87.4-C1 (aa) Not applicable between cables and their supporting messengers. 57.4-D 1. Supply 87.4-F 2. Communication (bb) May be reduced for communication guys and communication conductors supported on the same poles 1. Supply 56.4-C 2. Communication 86.4-C (cc) Clearance required between guys. 1. Supply guys, crossing 56.4-D3 3. Communication guys, crossing 86.4-D3 3. Communication guys, crossing 86.4-D3 4. Communication guys, approximately parallel 86.4-D3 (dd) Shall be increased where within 6 feet of a pole 103.5 (ee) May be decreased in partial underground distribution 54.4-C4c (ff) shall be increased by 0.40 inches per kV in excess of 75 kV			
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(ff) shall be increased by 0.40 inches per kV in excess of 75 kV			
(ff) shall be increased by 0.40 inches per kV in excess of 75 kV	(66)	Priay be decreased in partial underground distribution	
	(ff)	shall be increased by 0.40 inches per kV in excess of 75 kV	
(qq) snail be increased by 0.40 inches per kV in excess of 150 kV	(gg)	shall be increased by 0.40 inches per kV in excess of 75 kV	
(hh) shall be increased by 0.40 inches per kV in excess of 300 kV		·	
(ii) shall be increased by 0.25 inches per kV in excess of 150 kV		, , , , , , , , , , , , , , , , , , , ,	

(jj)	shall be increased by 0.25 inches per kV in excess of 300 kV	
(kk)	proposed clearances to submitted to the CPUC prior to	
	construction for circuits in excess of 550 kV	
(II)	36-inch clearance applies 35 kV to 68kV	
	48-inch clearance applies over 68 kV	
(mm)	vertical clearance shall be increased by ½ inch for each	
	kilovolt over 68 kV	

Rule 49.3-B

49.3-B Size

- 1 Wood Pins: The minimum diameter of the shank shall not be less than 1 ¼ inches.
- Metal Pins: The minimum diameter of the shank shall not be less than ½ inches.
 - Fastenings and Tie Wires: Fastenings and tie wires shall have no sharp edges at points of contact with conductors, and shall be applied in such a manner as not to damage the conductor. The materials and minimum sizes of tie wires for the various sizes and types of conductors shall be as shown in Table 7. Flat tie wire having a cross-sectional area not less than that of round wire of the gage specified for tie wires may be used.

Table 7
Size and Material of Tie Wires

Line conductor		Tie Wire	
Material	Size	Size	Material
Copper, bronze, copper-	6 AWG and smaller	Same as line conductor	Soft copper or
covered steel, or composition	4 AWG	6 AWG	annealed copper-
of any of them	2 AWG and larger	4 AWG	covered steel
Galvanized iron or galvanized	10 BWG and smaller	Same as line conductor	Soft or galvanized
steel	9 BWG	10 BWG	iron or galvanized
	8 BWG	9 BWG	steel
	4 and 6 BWG	8 BWG	
Aluminum or ACSR	4 AWG and smaller	Same as line conductor	Soft aluminum
	2 AWG and	4 AWG	
	larger		

Strikeout and Underline Version

Rule 49.3-B

49.3-B Size

- 1 Wood Pins: The minimum diameter of the shank shall not be less than 1 ¼ inches.
- Metal Pins: The minimum diameter of the shank shall not be less than ½ inches.
 - Fastenings and Tie Wires: Fastenings and tie wires shall have no sharp edges at points of contact with conductors, and shall be applied in such a manner as not to damage the conductor. The materials and minimum sizes of tie wires for the various sizes and types of conductors shall be as shown in Table 7. Flat tie wire having a cross-sectional area not less than that of round wire of the gage specified for tie wires may be used.

Table 7
Size and Material of Tie Wires

Line condu	Line conductor		Tie Wire	
Material	Size	Size	Material	
Copper, bronze, copper- covered steel, or composition of any of them	6 AWG and smaller 4 AWG 2 AWG and larger	Same as line conductor 6 AWG 4 AWG	Soft copper or annealed copper- covered steel	
Galvanized iron or galvanized steel	10 BWG and smaller 9 BWG 8 BWG	Same as line conductor 10 BWG 9 BWG	Soft or galvanized iron or galvanized steel	
	4 and 6 BWG	8 BWG	30001	
Aluminum or ACSR	4 AWG and smaller	Same as line conductor	Soft aluminum <u>or</u> aluminum alloy	
		Or 6 AWG	Strong aluminum alloy*	
	2 AWG and larger	4 AWG	Soft aluminum or aluminum alloy	
		Or 6 AWG	Strong aluminum alloy*	

^{*}Minimum tensile strength of 350 pounds.

Rule 49.3-B

49.3-B Size

- 1 Wood Pins: The minimum diameter of the shank shall not be less than 1 ¼ inches.
- Metal Pins: The minimum diameter of the shank shall not be less than ½ inches.
 - Fastenings and Tie Wires: Fastenings and tie wires shall have no sharp edges at points of contact with conductors, and shall be applied in such a manner as not to damage the conductor. The materials and minimum sizes of tie wires for the various sizes and types of conductors shall be as shown in Table 7. Flat tie wire having a cross-sectional area not less than that of round wire of the gage specified for tie wires may be used.

Table 7
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Line conductor		Tie Wire	
Material	Size	Size	Material
Copper, bronze, copper-	6 AWG and smaller	Same as line conductor	Soft copper or
covered steel, or composition	4 AWG	6 AWG	annealed copper-
of any of them	2 AWG and larger	4 AWG	covered steel
Galvanized iron or galvanized	10 BWG and smaller	Same as line conductor	Soft or galvanized
steel	9 BWG	10 BWG	iron or galvanized
	8 BWG	9 BWG	steel
	4 and 6 BWG	8 BWG	
Aluminum or ACSR	4 AWG and smaller	Same as line conductor	Soft aluminum or aluminum alloy
		Or 6 AWG	Strong aluminum alloy*
	2 AWG and larger	4 AWG	Soft aluminum or aluminum alloy
		Or 6 AWG	Strong aluminum alloy*

^{*}Minimum tensile strength of 350 pounds.

Rule 54.4-D6b

Rule 54.4-D6 Dead Ended on Poles

b) More Than 750 Volts supported on climbable poles:

Where conductors are supported on a climbable pole in vertical configuration, the energized portions of such conductors shall have clearances of not less than 15 inches from the surface of pole for voltages between 750 and 7500 volts and 18 inches from the surface of pole for voltages in excess of 7500 volts.

Not more than two conductors of a circuit of 750-5000 volts shall be attached directly to a pole in vertical configuration without the use of crossarms. The number of conductors of a circuit of more than 5000 volts so supported on a pole is not limited. Branch circuits may be taken from such construction without the use of crossarms provided a climbing and working space as specified in Rules 54.7 and 54.11 is maintained.

Strikeout and Underline Version

Rule 54.4-D6b

Rule 54.4-D6 Dead Ended on Poles

b) More Than 750 Volts supported on climbable poles:

Where conductors are supported on a climbable pole in vertical configuration, the energized portions of such conductors shall have clearances of not less than 15 inches from the surface of pole for voltages between 750 and 7500 volts and 18 inches from the surface of pole for voltages in excess of 7500 volts.

Not more than two conductors of a circuit of 750-5000 volts shall be attached directly to a pole in vertical configuration without the use of crossarms. The number of conductors of a circuit of more than 5000 volts so supported on a pole shall is not be limited to four. Branch circuits may be taken from such construction without the use of crossarms provided a climbing and working space as specified in Rules 54.7 and 54.11 is maintained.

Rule 54.4-D6b

Rule 54.4-D6 Dead Ended on Poles

b) More Than 750 Volts supported on climbable poles:

Where conductors are supported on a climbable pole in vertical configuration, the energized portions of such conductors shall have clearances of not less than 15 inches from the surface of pole for voltages between 750 and 7500 volts and 18 inches from the surface of pole for voltages in excess of 7500 volts.

Not more than two conductors of a circuit of 750-5000 volts shall be attached directly to a pole in vertical configuration without the use of crossarms. The number of conductors of a circuit of more than 5000 volts so supported on a pole shall be limited to four. Branch circuits may be taken from such construction without the use of crossarms provided a climbing and working space as specified in Rules 54.7 and 54.11 is maintained.

Rule 54.6-D

54.6 Vertical and Lateral Conductors

- D Vertical Runs
 - (1) VERTICAL RUNS: Vertical conductors installed as specified in this Rule 54.6-D are known as Vertical Runs.
 - (2) RUNS LESS THAN 18 INCHES FROM POLE CENTERLINE: Vertical conductors may be installed with less than the radial clearances between conductors, specified in Table, Cases 16 and 17, and on the surface of poles or less than 18 inches from center line of pole provided such conductors are suitably insulated and covered throughout by a suitable protective covering. (See Rule 22.2 for the definition of suitable protective covering.) the plastic pipe or U-shaped moulding specified in Rule 22.2 shall have a minimum wall thickness of 0.15 inches. This protective covering is not required over suitably insulated vertical conductors in metal conduit attached to metal poles, towers, or other structures provided conduit and structures are metallically connected and effectively grounded.
 - (3) RUNS 18 INCHES FROM POLE CENTERLINE: Vertical conductors may be installed with less than the radial clearances between conductors, specified in Table 2, Cases 16 and 17, and at a distance of more than 18 inches from the center line of any pole provided that such conductors are suitably insulated and covered by suitable protective covering or by securely supported impregnated fiber conduit without metal conduit. Such conductors shall be located outside of the climbing and working spaces and shall not pass between conductors of different ownership except between the pole pair and at a clearance therefrom of no less than 6 inches.
 - (4) OPTION: In lieu of the foregoing vertical conductors may be installed as unprotected conductors, as specified in Rules 54.6-A and 54.4-D9.

- (5) RUNS WITHIN 8 FEET OF GROUND: Vertical conductors installed as specified in Rule 54.6-D(1) and 54.6-D(2) and which extend within 8 feet of the ground shall be treated as risers. Runs which terminate in the top of the runs may extend within 8 feet of the ground but not less than 6 feet of the ground without being treated as risers.
- (6) RUNS ENCASED IN GROUNDED METAL COVERING: Vertical conductors where encased shall be treated as risers.

Strikeout and Underline Version

Rule 54.6-D

54.6 Vertical and Lateral Conductors

- D Vertical Runs
 - (1) VERTICAL RUNS: Vertical conductors installed as specified in this Rule 54.6-D are known as Vertical Runs.
 - (2) RUNS LESS THAN 18 INCHES FROM POLE CENTERLINE: Vertical conductors may be installed with less than the radial clearances between conductors, specified in Table, Cases 16 and 17, and on the surface of poles or less than 18 inches from center line of pole provided such conductors are suitably insulated and covered throughout by a suitable protective covering. (See Rule 22.2 for the definition of suitable protective covering.) the plastic pipe or U-shaped moulding specified in Rule 22.2 shall have a minimum wall thickness of 0.15 inches. This protective covering is not required over suitably insulated vertical conductors in metal conduit attached to metal poles, towers, or other structures provided conduit and structures are metallically connected and effectively grounded.
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 - (4) OPTION: In lieu of the foregoing vertical conductors may be installed as unprotected conductors, as specified in Rules 54.6-A and 54.4-D9.

- (5) RUNS WITHIN 8 FEET OF GROUND: Vertical conductors installed as specified in Rule 54.6-D(½) and 54.6-D(½) and which extend within 8 feet of the ground shall be treated as risers. Runs which terminate in the top of the runs may extend within 8 feet of the ground but not less than 6 feet of the ground without being treated as risers.
- (6) RUNS ENCASED IN GROUNDED METAL COVERING: Vertical conductors where encased in grounded metal conduit, sheath, or shield, shall be treated as risers.

Rule 54.6-D

54.6 Vertical and Lateral Conductors

- D Vertical Runs
 - (1) VERTICAL RUNS: Vertical conductors installed as specified in this Rule 54.6-D are known as Vertical Runs.
 - (2) RUNS LESS THAN 18 INCHES FROM POLE CENTERLINE: Vertical conductors may be installed with less than the radial clearances between conductors, specified in Table, Cases 16 and 17, and on the surface of poles or less than 18 inches from center line of pole provided such conductors are suitably insulated and covered throughout by a suitable protective covering. (See Rule 22.2 for the definition of suitable protective covering.) the plastic pipe or U-shaped moulding specified in Rule 22.2 shall have a minimum wall thickness of 0.15 inches. This protective covering is not required over suitably insulated vertical conductors in metal conduit attached to metal poles, towers, or other structures provided conduit and structures are metallically connected and effectively grounded.
 - (3) RUNS 18 INCHES FROM POLE CENTERLINE: Vertical conductors may be installed with less than the radial clearances between conductors, specified in Table 2, Cases 16 and 17, and at a distance of more than 18 inches from the center line of any pole provided that such conductors are suitably insulated and covered by suitable protective covering or by securely supported impregnated fiber conduit without metal conduit. Such conductors shall be located outside of the climbing and working spaces and shall not pass between conductors of different ownership except between the pole pair and at a clearance therefrom of no less than 6 inches.
 - (4) OPTION: In lieu of the foregoing vertical conductors may be installed as unprotected conductors, as specified in Rules 54.6-A and 54.4-D9.

- (5) RUNS WITHIN 8 FEET OF GROUND: Vertical conductors installed as specified in Rule 54.6-D(2) and 54.6-D(3) and which extend within 8 feet of the ground shall be treated as risers. Runs which terminate in the top of the runs may extend within 8 feet of the ground but not less than 6 feet of the ground without being treated as risers.
- (6) RUNS ENCASED IN GROUNDED METAL COVERING: Vertical conductors where encased in grounded metal conduit, sheath, or shield, shall be treated as risers.

Rule 54.8-B4b

54.8-B4b) Residential Premises: On premises used for residential purpose only, service drops of 300-750 volts shall be maintained at a vertical clearance of not less than 8 feet over all buildings and structures.

The clearance above buildings of service drops of 0-300 volts shall be not less than the distance specified in Table 10.

Table 10
Minimum Allowable Clearances of Service Drops of 0-300 Volts Above Buildings.

	Minimum clearance above		
	Building	Other	Buildings
Type of Roof	Served	Buildings	on other
. , , , , , , , , , , , , , , , , , , ,		on	premises
		Premises	
		served	
Metal roof 3/8 pitch or less (a)	8 ft.(c)	8 ft.	8 ft.
Metal roof, more than 3/8 pitch	2 ft.(c)	2 ft.	8 ft.
Nonmetallic roof, 3/8 pitch or less	(b)	2 ft.	8 ft.
Nonmetallic roof, more than 3/8 pitch	(b)	2 ft.	2 ft.

- a. 3/8 pitch is a approximately 37 degrees from the horizontal.
- b. No limit specified but the greatest clearance should be obtained.
- c. Where insulated abrasion-resistant conductors are may be reduced to 12 inches.

On premises used for residential purposes only the clearance above building of service drops of 0-300 volts may be less than the distance specified in Table 10 but not less than 12 inches over the building served nor less than 24 inches above other buildings on the premises served, provided:

The current-carrying conductors consist of abrasion-resistant cable having a grounded metallic voltage being supplied and the roof is metallic or nonmetallic, nonwalkable over hang or patio cover.

Service Drops are not required to clear buildings on residential premises any specified horizontal distance, but shall be so installed that they clear fire escapes, exits, windows, doors, and other points at which human contact might be expected, a horizontal distance of not less than 3 feet. Service drops above a horizontal plane through the top extremity of an opening should maintain the maximum practical radial clearance, which in no event shall be less than 1 foot.

Strike out and Underline Version

Rule 54.8-B4b

54.8-B4b) Residential Premises: On premises used for residential purpose only, service drops of 300-750 volts shall be maintained at a vertical clearance of not less than 8 feet over all buildings and structures.

The clearance above buildings of service drops of 0-300 volts shall be not less than the distance specified in Table 10.

Table 10 Minimum Allowable Clearances of Service Drops of 0-300 Volts Above Buildings.

	Minimum clearance above		
	Building	Other	Buildings
Type of Roof	Served	Buildings	on other
Type of Roof		on	premises
		Premises	
		served	
Metal roof 3/8 pitch or less (a)	8 ft.(c)	8 ft.	8 ft.
Metal roof, more than 3/8 pitch	2 ft.(c)	2 ft.	8 ft.
Nonmetallic roof, 3/8 pitch or less	(b)	2 ft.	8 ft.
Nonmetallic roof, more than 3/8 pitch	(b)	2 ft.	2 ft.

- a. 3/8 pitch is a approximately 37 degrees from the horizontal.
- b. No limit specified but the greatest clearance should be obtained.
- c. Where insulated abrasion-resistant conductors are may be reduced to 12 inches.

On premises used for residential purposes only the clearance above building of service drops of 0-300 volts may be less than the distance specified in Table 10 but not less than 12 inches over the building served nor less than 24 inches above other buildings on the premises served, provided:

The current-carrying conductors consist of abrasion-resistant cable having a grounded metallic <u>sheath or neutral supported service</u> drop cable manufactured in accordance with Standard No. WC-%-1961 or Standard No. WC-3-1959 of the National Electric Manufactures Association and are insulated for the voltage being

supplied and the roof is metallic or nonmetallic, nonwalkable over hang or patio cover.

Service Drops are not required to clear buildings on residential premises any specified horizontal distance, but shall be so installed that they clear fire escapes, exits, windows, doors, and other points at which human contact might be expected, a horizontal distance of not less than 3 feet. Service drops above a horizontal plane through the top extremity of an opening should maintain the maximum practical radial clearance, which in no event shall be less than 1 foot.

Rule 54.8-B4b

54.8-B4b) Residential Premises: On premises used for residential purpose only, service drops of 300-750 volts shall be maintained at a vertical clearance of not less than 8 feet over all buildings and structures.

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	Minimum clearance above		
	Building	Other	Buildings
Type of Roof	Served	Buildings	on other
Type of Roof		on	premises
		Premises	
		served	
Metal roof 3/8 pitch or less (a)	8 ft.(c)	8 ft.	8 ft.
Metal roof, more than 3/8 pitch	2 ft.(c)	2 ft.	8 ft.
Nonmetallic roof, 3/8 pitch or less	(b)	2 ft.	8 ft.
Nonmetallic roof, more than 3/8 pitch	(b)	2 ft.	2 ft.

- a. 3/8 pitch is a approximately 37 degrees from the horizontal.
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supplied and the roof is metallic or nonmetallic, nonwalkable over hang or patio cover.

Service Drops are not required to clear buildings on residential premises any specified horizontal distance, but shall be so installed that they clear fire escapes, exits, windows, doors, and other points at which human contact might be expected, a horizontal distance of not less than 3 feet. Service drops above a horizontal plane through the top extremity of an opening should maintain the maximum practical radial clearance, which in no event shall be less than 1 foot.

Rule 54.11-G

54.11-G ALLOWABLE CLIMBING SPACE OBSTRUCTIONS

Post-type insulators and their attaching brackets which support line conductors of over 750 volts may extend not more than one-half of their dimension D into the climbing space.

Suitable protected vertical conductors attached to the surface of poles and guys (except those guys contacting metal pins or deadend hardware (as specified in Rule 52.7D)) are allowed in the climbing spaces provided that not more than one guy and one vertical riser, run, or ground wire are installed in any 4-foot vertical section of climbing space. The terminals or terminal fittings of risers or runs shall not be installed within climbing spaces.

Strikeout and underline Version

Rule 54.11-G

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Rule 54.11-G

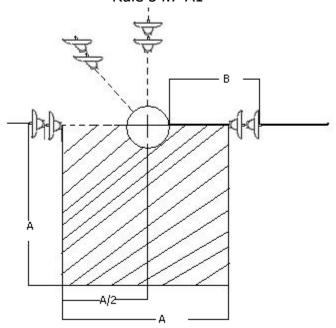
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Original Version Figure 15

Climbing Space for Dead Ending in Vertical Configuration Rule 54.7-A1



		B** (Min)	
Voltage of Circuit	A (min)	Top Circuit	Below Top
			Circuit
750-7500 Volts	30"*	18"	36"
7500-46000 Volts	36"*	18"	36"
More Than 46000	36" plus 1/2 per KV	18"	36"
Volts	over 46 KV*		

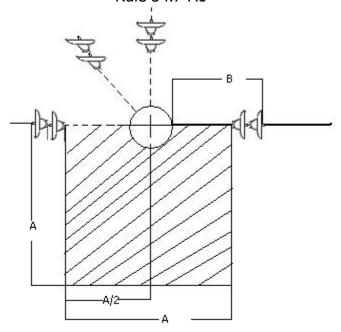
Unobstructed by deadend insulators Etc. (Rule 54.7-A4) *

^{**} See Rule 54.4-D6b

Strikeout and Underline Version

Figure 15

Climbing Space for Dead Ending in Vertical Configuration Rule 54.7-A1



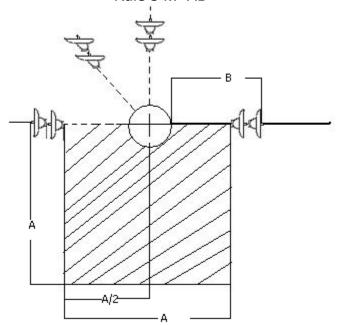
		B** (Min)	
Voltage of Circuit	A (min)	Top Circuit	Below Top
			Circuit
750-7500 Volts	30"*	15"	24"
7500-46000 Volts	36"*	18"	36"
More Than 46000	36" plus 1/2 per KV	18"	36"
Volts	over 46 KV*		

^{*} Unobstructed by deadend insulators Etc. (Rule 54.7-A4)

^{**} See Rule 54.4-D6b

Figure 15

Climbing Space for Dead Ending in Vertical Configuration Rule 54.7-A1



Voltage of Circuit	A (min)	B** (Min)
750-7500 Volts	30"*	15"
7500-46000 Volts	36"*	18"
More Than 46000	36" plus 1/2 per KV	18"
Volts	over 46 KV*	

^{*} Unobstructed by deadend insulators Etc. (Rule 54.7-A4)

^{**} See Rule 54.4-D6b