

Substation Design Data

BUS DESIGN									
Bus Size (IPS)	1	1-1/2	2	2-1/2	3	3-1/2	4	5	6
Outside Diameter	1.315	1.9	2.375	2.875	3.5	4	4.5	5.563	6.625
Copper, Sch 40, 48" Spacing, 24kA									
1 Span, 1 Fixed	9	15	19	25	32	39	43	52	52
2 Spans, Middle Fixed	7	12	15	20	26	32	35	43	42
3+ Spans, 1 Fixed	8	13	17	22	28	34	38	46	46
Aluminum, 6063-T6 Alloy, Sch 40, 48" Spacing, 24kA									
1 Span, 1 Fixed	9	14	19	26	33	38	44	57	70
2 Spans, Middle Fixed	8	12	16	21	27	32	36	47	57
3+ Spans, 1 Fixed	8	13	17	23	29	34	39	50	61
Ampacity @ 40°C rise over 30°C, 2fps wind									
Cu	850	1270	1570	1990	2540	3020	3365		
Al, 6063-T6 Alloy	681	984	1234	1663	2040	2347	2664	3348	4064

Note: Spans should be applied only to specified conditions.

Ampacities	1	2	3
1/4"x4" Al Bar	980	1760	2462
1/4"x5" Al Bar	1184	2092	2905
3-1/4"x3-1/4"x1/4" Al Angle	1902		
4"x4"x1/4" Al Angle	2236		
4"x4" IWCB	3360		
4"x6" IWCB	4470		
8"x8" IWCB	7550		
1 - 500 MCM CU	810	1296	
1 - 750 MCM CU	1040	1664	
1 - 1000 MCM CU	1240	1984	

Note:

Current ratings based on 30°C temperature rise over 40°C ambient horizontally mounted conductors with a 2ft/sec crosswind.

NEMA Clearances for Outdoor Substations							
Nom. Voltage (kV)	15	25	34.5	46	69	115	161
BIL (kV)	110	150	200	250	350	550	750
Cond Spacing							
Ph-Ph (CI to CI)	2'0"	2'6"	3'0"	4'0"	5'0"	7'0"	9'0"
Ph-Ground	10"	12"	15"	1'6"	2'5"	3'7.5"	4'10"
Clearance above Grade	9'	10'	10'	10'	11'	12'	14'
Switch Spacing (CI to CI)							
Horngap	3'0"	4'0"	5'0"	6'0"	7'0"	10'0"	14'0"
Vert. Break Disc.	2'0"	2'6"	3'0"	4'0"	5'0"	7'0"	9'0"
Hor. Break Disc.	2'6"	3'0"	4'0"	5'0"	6'0"	9'0"	13'0"
Min. Phase Spacing							
Metal to Metal	12"	15"	18"	21"	31"	53"	72"
Strain Insulators 10" Dia.							
Number per String	2	3	4	4	5	8	12

Station Post Insulators

BIL KV	TR No	Upright Cantilever (lbs)	Underhung Cantilever (Lbs)	Top BC (in)	Bottom BC (in)	Height (in)	Leakage (in)
95	202	2000	2000	3	3	7.5	10.5
95	222	4000	4000	5	5	7.5	10.5
110	205	2000	2000	3	3	10	15.5
110	225	4000	4000	5	5	12	15.5
150	208	2000	2000	3	3	14	24
150	227	4000	4000	5	5	15	24
200	210	2000	2000	3	3	18	37
200	231	4000	4000	5	5	20	37
250	214	2000	2000	3	3	22	43
250	267	4000	4000	5	5	24	43
350	216	1500	1500	3	3	30	72
350	278	3000	3000	5	5	30	72
550	286	1700	1700	5	5	45	99
550	287	2600	2600	5	5	45	99
650	288	1400	1400	5	5	54	116
650	289	2200	2200	5	5	54	116
750	291	1200	1200	5	5	62	132
750	295	1850	1850	5	5	62	132
900	304	950	950	5	5	80	165
900	308	1450	1450	5	5	80	165