Section 22
APPENDICES

22.1 Metric Conversion

Figure 22a

POUNDS TO KILOGRAMS FROM 0 TO 10.9 POUNDS
(1 pound = 0.45359265 of a kilogram)

Pounds	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
	Kgs	Kgs	Kgs	Kgs	Kgs	Kgs	Kgs	Kgs	Kgs	Kgs
0	0.00000	0.01536	0.09072	0.13508	0.18144	0.22680	0.27216	0.31751	0.36287	0.40823
1	.45359	.49895	.51431	.58967	.63503	.68039	.72575	.77111	.81647	.86183
2	.90719	.95254	.99790	1.01326	1.08862	1.13398	1.17931	1.22470	1.27006	1.31542
3	1.36078	1.40614	1.45150	1.49686	1.54222	1.58757	1.63293	1.67829	1.72365	1.76901
4	1.81437	1.85973	1.90509	1.95015	1.99581	2.04117	2.08653	2.13189	2.17724	2.22260
5	2.26796	2.31332	2.35868	2.40404	2.44910	2.49176	2.54012	2.58548	2.63084	2.67620
6	2.72156	2.76692	2.81227	2.85763	2.90299	2.94835	2.99371	3.03907	3.08443	3.12979
7	3.17515	3.22051	3.26587	3.31123	3.35659	3.40194	3.44730	3.49266	3.53802	3.58338
8	3.62874	3.67410	3.71946	3.76482	3.81018	3.85554	3.90090	3.94626	3.99162	4.03697
9	4.08233	4.12769	4.17305	4.21841	4.26377	4.30913	4.35449	4.39985	4.44521	4.49057
10	4.53593	4.58129	4.62664	4.67200	4.71736	4.76272	4.80808	4.85344	4.89880	4.94416

Figure 22b

U.S. GALLONS TO LITERS FROM 0 TO 100 GALLONS
(1 gallon = 3.7853323 liters)

Gallons	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
	Liters	Liters	Liters	Liters	Liters	Liters	Liters	Liters	Liters	Liters
0	00.0000	3.7853	7.5707	11.3560	15.1413	18.9267	22.7120	26.4973	30.2827	34.0680
10	37.8533	41.6387	45.4240	49.2093	52.9947	56.7800	60.5653	64.3506	68.1360	71.9213
20	75.7066	79.4920	83.2773	87.0626	90.8480	94.6333	98.4186	102.2040	105.9893	109.7746
30	113.5600	117.3453	121.1306	124.9160	128.7013	132.4866	136.2720	140.0573	143.8426	147.6280
40	151.4133	155.1986	158.9840	162.7693	166.5546	170.3400	174.1253	177.9106	181.0960	185.4813
50	189.2666	193.0519	196.8373	200.6226	204.4079	208.1933	211.9786	215.7639	219.5493	223.3346
60	227.1199	230.9053	234.6906	238.4759	242.2613	246.0466	249.8319	253.6173	257.4026	261.1879
70	264.9733	268.7586	272.5439	276.3293	280.1146	283.8999	287.6853	291.4706	295.2559	299.0413
80	302.8266	306.6119	310.3972	314.1826	317.9679	321.7532	325.5386	329.3239	333.1092	336.8946
90	340.6799	344.4652	348.2506	352.0359	355.8212	359.6066	363.3919	367.1772	370.9626	374.7479
100	378.533									

NOTE: This table may be read from 100 to 1000 gallons in steps of 10 gallons by moving decimal points one place to right.

Figure 22c

NOMINAL ELEVATOR CAR SPEEDS IN FEET PER MINUTE TO METERS PER MINUTE AND METERS PER SECOND

Feet per Min.	Meters per Min.	Meters per Sec.	Feet per Min.	Meters per Min.	Meters per Sec.	Feet per Min.	Meters per Min.	Meters per Sec.	Feet per Min.	Meters per Min.	Meters per Sec.
5	1.5	.03	105	32.0	.53	205	62.4	1.04	325	99.0	1.65
10	3.0	.05	110	33.0	.56	210	64.0	1.07	350	107.0	1.78
15	4.6	.03	115	35.0	.58	215	65.0	1.09	375	114.0	1.91
20	6.0	.10	120	36.0	.61	220	67.0	1.12	400	122.0	2.03
25	8.0	.13	125	38.0	.64	225	68.0	1.14	425	129.0	2.16
									450	137.0	2.29
30	9.0	.15	130	40.0	.66	230	70.0	1.17	475	145.0	2.41
35	11.0	.18	135	41.0	.69	235	71.0	1.19	500	152.0	2.54
40	12.0	.20	140	43.0	.71	240	73.0	1.22	525	160.0	2.67
45	14.0	.23	145	44.0	.74	245	74.0	1.24	550	168.0	2.79
50	15.0	.25	150	46.0	.76	250	76.0	1.27	575	175.0	2.92
									600	183.0	3.05
55	17.0	.28	155	47.0	.79	255	78.0	1.30	625	190.0	3.18
60	18.0	.30	160	49.0	.81	260	79.0	1.32	650	198.0	3.30
65	20.0	.33	165	50.0	.84	265	80.0	1.35	675	205.0	3.43
70	21.0	.36	170	52.0	.86	270	82.0	1.37	700	213.0	3.56
75	23.0	.38	175	53.0	.89	275	84.0	1.40	725	221.0	3.68
									750	229.0	3.81
80	24.0	.41	180	55.0	.91	280	85.0	1.42	775	236.0	3.94
85	26.0	.43	185	56.0	.94	285	87.0	1.45	800	244.0	4.06
90	27.0	.46	190	58.0	.97	290	88.0	1.47	825	251.0	4.19
95	29.0	.48	195	59.0	.99	295	90.0	1.50	850	259.0	4.32
100	30.0	.51	200	60.0	1.02	300	91.0	1.52	875	267.0	4.45
									900	274.0	4.57

Figure 22d

FRACTIONS OF AN INCH (FOR EACH 64th) TO MILLIMETERS

Fractions of Inch	64ths of Inch	Decimals	Millimeters
—	1	.015625	0.397
1/32	2	.031250	0.791
—	3	.046875	1.191
1/16	4	.062500	1.588
—	5	.078125	1.984
3/32	6	.093750	2.381
—	7	.109375	2.778
1/8	8	.125000	3.175
—	9	.140625	3.572
5/32	10	.156250	3.969
—	11	.171875	4.366
3/16	12	.187500	4.763
—	13	.203125	5.159
7/32	14	.218750	5.556
—	15	.234375	5.953
1/4	16	.250000	6.350
—	17	.265625	6.747
9/32	18	.281250	7.144
—	19	.296875	7.541
5/16	20	.312500	7.938
—	21	.328125	8.334
11/32	22	.343750	8.731
—	23	.359375	9.128
3/8	24	.375000	9.525
—	25	.390625	9.922
13/32	26	.406250	10.319
—	27	.421875	10.716
7/16	28	.437500	11.113
—	29	.453125	11.509
15/32	30	.468750	11.906
—	31	.484375	12.303
1/2	32	.500000	12.700

Figure 22d

FRACTIONS OF AN INCH (FOR EACH 64th) TO MILLIMETERS

Fractions of Inch	64ths of Inch	Decimals	Millimeters
—	33	.515625	13.097
17/32	34	.531250	13.494
—	35	.546875	13.891
9/16	36	.562500	14.288
—	37	.578125	14.684
19/32	38	.593750	15.081
—	39	.609375	15.478
5/8	40	.625000	15.875
—	41	.640625	16.272
21/32	42	.656250	16.669
—	43	.671875	17.066
11/16	44	.687500	17.463
—	45	.703125	17.859
23/32	46	.718750	18.256
—	47	.734375	18.653
3/4	48	.750000	19.050
—	49	.765625	19.447
25/32	50	.781250	19.844
—	51	.796875	20.241
13/16	52	.812500	20.638
—	53	.828125	21.034
27/32	54	.843750	21.431
—	55	.859375	21.828
7/8	56	.875000	22.225
—	57	.890625	22.622
29/32	58	.906250	23.019
—	59	.921875	23.416
15/16	60	.937500	23.813
—	61	.953125	24.209
31/32	62	.968750	24.606
—	63	.981375	25.003
1	64	1.000000	25.400

Figure 22e

FEET TO METERS FROM 0 T0 249 FEET

(1 foot = 0.3048004006 meter)

Feet	Meters	Feet	Meters	Feet	Meters	Feet	Meters	Feet	Meters
0	0.00000	50	15.24003	100	30.48006	150	45.72009	200	60.96012
1	.30480	1	15.54483	1	30.78436	1	46.02489	1	61.26492
2	.60060	2	15.84963	2	31.08966	2	46.32969	2	61.56972
3	.91440	3	16.15443	3	31.39446	3	46.63449	3	61.87452
4	1.21920	4	16.45923	4	31.69926	4	46.93929	4	62.17932
5	1.52400	5	16.76403	5	32.00406	5	47.24409	5	62.48412
6	1.82880	6	17.06883	6	32.30886	6	47.54890	6	62.78893
7	2.13360	7	17.37363	4	32.61367	7	47.85370	7	63.09373
8	2.43840	8	17.67844	8	32.91847	8	48.15850	8	63.39853
9	2.74321	9	17.98234	9	33.22327	9	48.46330	9	63.70333
10	3.04801	60	18.28804	110	33.52807	160	48.76810	210	64.00813
1	3.35281	1	18.59284	1	33.83287	1	49.07290	1	64.31293
2	3.65761	2	18.89764	2	34.13767	2	49.37770	2	64.61773
3	3.96241	3	19.20244	3	34.44247	3	49.68250	3	64.92253
4	4.26721	4	19.50724	4	34.74727	4	49.98730	4	65.22733
5	4.57201	5	19.81204	5	35.05207	5	50.29210	5	65.53213
6	4.87681	6	20.11684	6	35.35687	6	50.59690	6	65.83693
7	5.18161	7	20.42164	7	35.66167	7	50.90170	7	66.14173
8	5.48641	8	20.72644	8	35.96647	8	51.20650	8	66.44653
9	5.79121	9	21.03124	9	36.27127	9	51.51130	9	66.75133
20	6.09601	70	21.33604	120	36.57607	170	51.81610	220	67.05613
1	6.40081	1	21.64084	1	36.88087	1	52.12090	1	67.36093
2	6.70561	2	21.94564	2	37.18567	2	52.42570	2	67.66574
3	7.01041	3	22.25044	3	37.49047	3	52.73051	3	67.97054
4	7.31521	4	22.55525	4	37.79528	4	53.03531	4	68.27534
5	7.62002	5	22.86005	5	38.10008	5	53.34011	5	68.58014
6	7.92482	6	23.16485	6	38.40488	6	53.64491	6	68.88494
7	8.22962	7	23.46965	7	38.70968	7	53.94971	7	69.18974
8	8.53442	8	23.77445	8	39.01448	8	54.25451	8	69.49454
9	8.83922	9	24.07925	9	39.31928	9	54.55931	9	69.79934
30	9.14402	80	24.38405	130	39.62408	180	54.86411	230	70.10414
1	9.44882	1	24.68885	1	39.92888	1	55.16891	1	70.40894
2	9.75362	2	24.99365	2	40.23368	2	55.47371	2	70.71374
3	10.05842	3	25.29845	3	40.53848	3	55.77851	3	71.01854
4	10.36322	4	25.60325	4	40.84328	4	56.08331	4	71.32334
5	10.66802	5	25.90805	5	41.14808	5	56.38811	5	71.62814
6	10.97282	6	26.21285	6	41.45288	6	56.69291	6	71.93294
7	11.27762	7	26.51765	7	41.75768	7	56.99771	7	72.23774
8	11.58242	8	26.82245	8	42.06248	8	57.30251	8	72.54255
9	11.88722	9	27.12725	9	42.36728	9	57.60732	9	72.84735
40	12.19202	90	27.43205	140	42.67209	190	57.91212	240	73.15215
1	12.49682	1	27.73686	1	42.97689	1	58.21692	1	73.45695
2	12.80163	2	28.04166	2	43.28169	2	58.52172	2	73.76175
3	13.10643	3	28.34646	3	43.58649	3	58.82652	3	74.06655
4	13.41123	4	28.65126	4	43.89129	4	59.13132	4	74.37135
5	13.71603	5	28.95606	5	44.19609	5	59.43612	5	74.67615
6	14.02083	6	29.26086	6	44.50089	6	59.74092	6	74.98095
7	14.32563	7	29.56566	7	44.80569	7	60.04572	7	75.28575
8	14.63043	8	29.87046	8	45.11049	8	60.35052	8	75.59055
9	14.93523	9	30.17526	9	45.41529	9	60.65532	9	75.89535

1 inch = 0.02540 meter	4 inches = 0.10460 meter	7 inches = 0.17780 meter	10 inches = 0.25400 meter
2 inches = 0.05080 meter	5 inches = 0.20320 meter	8 inches = 0.12700 meter	11 inches = 0.27960 meter
3 inches = 0.07620 meter	6 inches = 0.15240 meter	9 inches = 0.22860 meter	12 inches = 0.30480 meter

Figure 22f

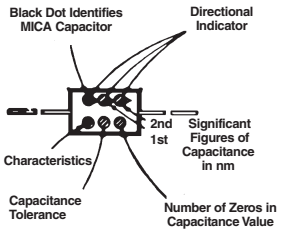
COLOR CODE FOR FIXED RESISTORS – VALUES IN OHMS

Resistor with axial wire leads. Resistor with radial wire leads.

BODY	END	DOT OR BAND	END
1st Band	2nd Band	3rd Band	End Band
Color Value	Color Value	Color Value	Color Tolerance
Black 0	Black 0	Black . . . . . None	Gold . . . . . ±5%
Brown 1	Brown 1	Brown. 0	Silver . . . . . ±10%
Red 2	Red 2	Red 00	None . . . . . ±20%
Orange 3	Orange 3	Orange. 000	
Yellow 4	Yellow 4	Yellow. 0000	
Green 5	Green 5	Green. 00000	
Blue. 6	Blue. 6	Blue 000000	
Violet 7	Violet 7	Violet 0000000	
Grey 8	Grey. 8	Grey 00000000	
White. 9	White 9	White . 000000000	

Figure 22g

COLOR CODE FOR JAN FIXED MICA CAPACITORS



Color code scheme for JAN standard fixed mica capacitors. The significance of the letters denoting "characteristic" will be found in the joint Army-Navy Specification JAN-G-5.

Color	CAPACITANCE		Tolerance	Character-istic
	Significant Figure	Decimal Multipler		
Black	0	1	20%(M)	A
Brown	1	10	.....	B
Red	2	100	2%(G)	C
Orange	3	1,000	.....	D
Yellow	4	.....	.....	E
Green	5	.....	.....	F
Blue	6	.....	.....	G
Violet	7	.....	.....	..
Grey	8	.....	.....	..
White	9	.....	.....	..
Gold	...	0.1	5%(J)	..
Silver	...	0.01	10%(K)	..

Figure 22h

TIMBER USED FOR HEADBEAMS
(THE LOADS GIVEN ARE FOR DRESSED BEAMS, WHICH ARE SLIGHTLY SMALLER THAN NOMINAL SIZES LISTED)
Loads are in lbs concentrated at center of span.
Reduced listed loads to allow for beam weights.

VERTICAL

HORIZONTAL

SIZE (INCHES)	BEAM SPAN (FEET)										
	4	6	8	10	12	14	16	18	20	24
4 x 4 Hor	990	660	500	390	330	280				
4 x 6 Hor	1,530	1,000	750	600	500	430	370	330		
4 x 6 Vert	2,280	1,520	1,140	910	760	650	570	510	455	380
6 x 6	3,460	2,310	1,730	1,380	1,150	990	860	770	690	570
6 x 8 Hor	4,710	3,140	2,360	1,880	1,570	1,340	1,170	1,040	940	780
6 x 8 Vert	6,400	4,290	3,220	2,580	2,150	1,840	1,610	1,430	1,290	1,070
8 x 8	8,540	5,870	4,400	3,520	2,930	2,510	2,200	1,950	1,750	1,460
8 x 12 Vert	12,820	12,820	10,330	8,270	6,890	5,910	5,170	4,590	4,130	3,440
8 x 14 Vert	14,920	14,920	14,260	11,400	9,500	8,150	7,120	6,830	5,700	4,750
8 x 16 Vert	17,070	17,070	17,070	15,020	12,510	10,700	9,390	8,340	7,500	6,260
10 x 10	13,330	11,900	8,930	7,140	5,950	5,100	4,470	3,970	3,570	2,970
10 x 12 Vert	16,000	16,000	13,080	10,470	8,720	7,480	6,540	5,820	5,230	4,360
10 x 14 Vert	18,660	18,660	18,020	14,420	12,020	10,300	9,020	8,010	7,210	6,010

*General Note: 1 in. = 25.4 mm; 1 ft = 0.305 m; 1 lb = 0.454 kg

Figure 22i

ALLOWABLE CONCENTRATED LOADS ON AMERICAN STANDARD BEAMS

LOAD IN CENTER OF SPAN WITH BEAM FIXED AGAINST HORIZONTAL MOVEMENT

LOAD IN KIPS (1,000 LBS.)

SPAN (FEET)	NOMINAL DEPTH & WIDTH – WEIGHT PER FEET													
	10 x 4-3/4		8 x 4		7 x 3-3/4		6 x 3-3/8		5 x 3		4 x 2-3/4		3 x 2-3/8	
	35	25.4	23	18.4	20	15.3	17.25	12.15	14.75	10	9.5	7.7	7.5	5.7
3	65		35		26			16	13	10	7	6	4	3
4	48		26	23	20	17	14	12	10	8	5	5	3	2
5	39	32	21	19	16	14	11	9	8	6	4	4	2	2
6	32	27	18	16	13	11	9	8	6	5	3	3	2	1
7	28	23	15	13	11	9	8	6	5	4	3	2	1	1
8	24	20	13	12	10	8	7	6	5	4	2	2		
9	21	18	12	10	8	7	6	5	4	3	2	2		
10	19	16	10	9	8	6	5	4	4	3				
11	17	15	9		7									
12	16													

*General Note: 1 in. = 25.4 mm; 1 ft = 0.305 m; 1 lb = 0.454 kg

ALLOWABLE LOADS FOR WOOD PLANKS

(Pounds)

Total allowable uniformly distributed loads for timber planks supported at ends. The allowable concentrated load shall be one-half the distributed load.

Based on unit stress of 1,000 psi

	PLANKS							
Nom. Size (Inches)	6 x 2	8 x 2	10 x 2	12 x 2	14 x 2	8 x 3	10 x 3	12 x 3
Actual Size (Inches)	5-5/8 x 1-5/8	7-1/2 x 1-5/8	9-1/2 x 1-5/8	11-1/2 x 1-5/8	13-1/2 x 1-5/8	7-1/2 x 2-5/8	9-1/2 x 2-5/8	11-1/2 x 2-5/8
Area $In.^2$	9.15	12.20	15.45	18.70	21.95	19.70	25.0	30.2
Span (Feet)								
4	410	550	700	850	990	1440	1820	2200
5	330	440	560	680	790	1150	1460	1770
6	280	370	470	560	660	960	1220	1470
7	240	320	400	480	570	820	1040	1260
8	210	280	350	420	500	720	910	1100
9	180	250	310	380	440	640	810	980
10	.....	220	280	340	400	580	730	880
11	.....	200	250	310	360	520	660	800
12	.....	180	230	280	330	480	610	740
13	.....	.....	220	260	310	440	560	680
14	.....	.....	200	240	280	410	520	630
15	.....	.....	180	230	270	380	490	590
16	.....	.....	.....	210	250	360	460	550
17	.....	.....	.....	200	240	340	430	520
18	.....	.....	.....	190	220	320	400	490
19	.....	.....	.....	.....	210	300	380	460
20	.....	.....	.....	.....	200	290	370	440

*General Note: 1 in. = 25.4 mm; 1 ft = 0.305 m; 1 psi = 6.89 kPa; 1 $in.^2$ = 6.451 E-04 m^2

Figure 22j

ALLOWABLE LOADS FOR BEAMS

(Pounds)

Allowable uniformly distributed loads for timber beams supported at ends. The allowable concentrated load shall be one-half (1/2) the distributed load.

Based on unit stress of 1,000 psi

	BEAMS								
Nom. Size (Inches)	2 x 4	2 x 6	2 x 8	2 x 10	2 x 12	2 x 14	4 x 4	4 x 6	6 x 6
Actual Size (Inches)	1-5/8 x 3-5/8	1-5/8 x 5-5/8	1-5/8 x 7-1/2	1-5/8 x 9-1/2	1-5/8 x 11-1/2	1-5/8 x 13-1/2	3-5/8 x 3-5/8	3-5/8 x 5-5/8	5-1/2 x 5-1/2
Area In.^{2}	5.90	9.15	12.20	15.45	18.70	21.95	13.15	20.4	30.2
Span (Feet)									
4	600	1430	2540	4070	5970	8230	1330	3190	4600
5	480	1140	2030	3260	4780	6580	1060	2550	3690
6	400	950	1700	2720	3980	5490	890	2120	3080
7	340	820	1450	2320	3410	4700	760	1820	2630
8	300	710	1270	2040	2990	4110	660	1590	2300
9	.....	630	1130	1810	2650	3660	590	1420	2050
10	.....	570	1010	1630	2390	3290	530	1270	1840
11	.....	520	920	1480	2170	3000	480	1160	1670
12	.....	470	840	1360	1990	2740	440	1060	1530
13	.....	.....	780	1250	1840	2530	.....	980	1410
14	.....	.....	720	1160	1710	2350	.....	910	1310
15	.....	.....	670	1090	1590	2190	.....	850	1220
16	.....	.....	630	1020	1490	2060	.....	800	1150
17	.....	.....	.....	960	1400	1930	.....	750	1080
18	.....	.....	.....	900	1320	1820	.....	710	1020
19	.....	.....	.....	860	1260	1730	.....	670	970
20	.....	.....	.....	810	1200	1640	.....	640	930
*Allowable Load for Shear at 100 lbs/in.^{2}	800	1230	1640	2080	2520	2950	1770	2740	4050

*General Note: 1 in. = 25.4 mm; 1 ft = 0.305 m; 1 psi = 6.89 kPa; 1 in.^{2} = 6.451 E-04 m^2