

TABLE XI
MAP SCALES AND EQUIVALENTS

Feet Per Inch	Fractional Scale	Inches Per 1000 Ft.	Inches Per Mile	Miles Per Inch	Acres Per Sq. Inch	Sq. Inch Per Acre	Sq. Mi. Per Sq. Inch
20.00	1:240	50.000	264.000	0.004	0.0092	108.9000	0.000014
40.00	1:480	25.000	132.000	0.008	0.0367	27.2250	0.000057
50.00	1:600	20.000	105.600	0.009	0.0574	17.4240	0.000090
100.00	1:1200	10.000	52.800	0.019	0.2296	4.3560	0.000359
200.00	1:2400	5.000	26.400	0.379	0.9183	1.0890	0.001435
400.00	1:4800	2.500	13.200	0.076	3.6731	0.2723	0.005739
500.00	1:6000	2.000	10.560	0.095	5.7392	0.1742	0.008968
1000.00	1:12000	1.000	5.280	0.189	22.9568	0.0436	0.035870
1320.00	1:15840	0.758	4.000	0.250	40.0000	0.0250	0.062500
1666.667	1:20000	0.600	3.168	0.316	63.7690	0.0157	0.099639
2000.00	1:24000	0.500	2.640	0.379	91.8274	0.0109	0.143480
2640.00	1:31680	0.379	2.000	0.500	160.0000	0.0063	0.250000
4000.00	1:48000	0.250	1.320	0.758	367.3095	0.0027	0.573921
5280.00	1:63360	0.189	1.000	1.000	640.0000	0.0016	1.000000
8000.00	1:96000	0.125	0.660	1.515	1469.2378	0.0007	2.295684
10560.00	1:126720	0.095	0.500	2.000	2560.0000	0.0004	4.000000
16000.00	1:192000	0.063	0.330	3.030	5876.9513	0.0002	9.182736
20833.333	1:250000	0.048	0.253	3.946	9963.9067	0.0001	15.568604
21120.00	1:253440	0.047	0.250	4.000	10240.0000	0.0001	16.000000

TABLE XII

ENGINEERING CONSTANTS AND MEASURING EQUIVALENTS

32 deg. F. (0 deg. C) = Freezing point of water
 212 deg. F. (100 deg. C) = Boiling point of water under pressure of one atmosphere
 1 cu. ft. of water at 60° F. = 62.37 lbs.
 1 gal. of water at 60° F. = 8.3377 lbs.
 33,000 ft. lbs. per min. = 1 horsepower (hp)
 1.3410 hp = 1 kilowatt (kw)
 $\pi = 3.14159265$ = number of diameters in circumference of a circle

LINEAR MEASURE EQUIVALENTS

Inches	Feet	Yards	Rods	Miles
1	0.0833	0.0278	0.00505	0.0000158
12	1	0.3333	0.06061	0.0001894
36	3	1	0.18182	0.0005682
198	16.5	5.5	1	0.0031250
63,360	5,280	1,760	320	1

1 kilometer (km) = 1,000 meters (m) = 10,000 decimeters (dm)
 = 100,000 centimeters (cm) = 1,000,000 millimeters (mm)
 1 kilometer = 3,280.83 ft. = 0.621369 mile
 1 meter = 3.280833 ft. = 39.37 in.

SQUARE MEASURE EQUIVALENTS

Square Inches	Square Feet	Square Yards	Square Rods	Acres	Square Miles
1	0.00694	0.00077			
144	1	0.11111			
1,296	9	1	0.03306	0.0002066	
39,204	272.25	30.25	1	0.0062500	0.00000977
	43,560	4,840	160	1	0.00156250
				640	1

CUBIC MEASURE EQUIVALENTS

Cubic Inches	Gallons	Cubic Feet	Cubic Yards
1	0.004329	0.0005787	0.000021433
231	1	0.1336806	0.004951132
1,728	7.480519	1	0.037037037
46,656	201.974026	27	1

TABLE XII
ENGINEERING CONSTANTS AND MEASURING
EQUIVALENTS

STANDARD RAILROAD CONSTANTS

Dist. between inside edges of rails = 4 ft. 8½ in. at ⅝" below top of rail	
Height of 90 lb. Rail = 5.63"	Width of 90 lb. Rail = 2.56"
Height of 100 lb. Rail = 6.0"	Width of 100 lb. Rail = 2.69"
Height of 115 lb. Rail = 6.63"	Width of 115 lb. Rail = 2.72"
Height of 132 lb. Rail = 7.13"	Width of 132 lb. Rail = 3.00"

CEMENT CONSTANTS

1 Sack Cement = 94 lbs.
1 Sack Cement = 1.0 cu. ft. (approx.)
1 Gal. Water = 8.3453 lbs. at 39.2° F.
4 Sacks Cement = 1 Barrel
1 Barrel Cement = 376 lbs.
1 Barrel Cement = 4.0 cu. ft. (approx.)

TABLE XIII

DEFORMED STEEL BARS FOR REINFORCED CONCRETE
NOMINAL DIMENSIONS

Bar Designation Number ^a	Unit Weight, lb. per ft.	Diameter, in.	Cross Sectional Area, sq. in.	Perimeter, in.
3	0.376	0.375	0.11	1.178
4	0.668	0.500	0.20	1.571
5	1.043	0.625	0.31	1.963
6	1.502	0.750	0.44	2.356
7	2.044	0.875	0.60	2.749
8	2.670	1.000	0.79	3.142
9 ^b	3.400	1.128	1.00	3.544
10 ^b	4.303	1.270	1.27	3.990
11 ^b	5.313	1.410	1.56	4.430
14s	7.65	1.693	2.25	5.32
18s	13.60	2.257	4.00	7.09

(^a) Bar numbers are based on the number of eighths of an inch included in the nominal diameter of the bars. The nominal diameter of a deformed bar is equivalent to the diameter of a plain bar having the same weight per foot as the deformed bar.

(^b) Bars of designation Nos. 9, 10, and 11 correspond to the former 1-in. square, 1⅛-in. square, and 1¼-in. square sizes and are equivalent to those former standard bar sizes in weight and nominal cross-sectional areas.
