

Table IV. Unit Working Stresses for Static Loads

From various building codes

Classification of stresses	Working stresses, in lb per sq in			
	1928 * San Fran- cisco	1929, Philadelphia		1930 Boston
		Proportionment by arbitrary volumes†	Proportionment by water/ cement ratio‡	
Extreme fiber-stress in concrete in compression:				
In general.....	715	650	40% f'_c	715
Adjacent to supports of continuous beams.....	825	747	45% f'_c	825
Concentric compression in concrete	495	500	25% f'_c	495
Shearing-stress in concrete when no steel is provided to resist diagonal-tension.....	40	2% f'_c	44
Vertical shearing-stress when the diagonal-tension requirements are satisfied.....	132	120	9% f'_c	132
Bond-stress:				
Between concrete and plain bars.	88	80	4% f'_c	88
Between concrete and deformed bars.....	110	100	5% f'_c	110
Maximum tensile stress in steel reinforcement.....	18 000	18 000	18 000	18 000
Maximum tensile stress in cold-drawn steel wire.....	20 000	22 500

* Values based on a 28-day compressive strength of 2 200 lb per sq in, and corresponding to a mixture of one part cement to six parts of combined aggregate, where the coarse aggregate is of granite or trap-rock. The proportions are by volume of cement to the combined aggregates, measured separately. For example, a 1 : 2 : 4 mixture might also be referred to as a 1 : 6 mixture.

† Values based on a 28-day compressive strength of 2 000 lb per sq in; proportions, one part of cement to six parts of combined aggregate. The amount of water, including the moisture content of the aggregate, is limited to $7\frac{1}{4}$ gallons per bag of cement.

‡ The value of f'_c represents the 28-day compressive strength as determined by actual tests. The concrete is proportioned by the inspector. The following table gives the approximate quantities of combined aggregates, water ratios, and corresponding minimum 28-day strengths for the various mixtures. Water or moisture contained in the aggregates and ascertained by daily tests, is to be included in determining the amount of water corresponding to a required water-cement ratio.

§ Beams with web-reinforcement and longitudinal bars having special anchorage.

Approximate volume of Portland cement to sum of separate volumes of dry and rodded fine and coarse aggregate	Water-cement ratio, United States gal per 94-lb sack of cement	Assumed ultimate strength at 28 days
1 : $8\frac{1}{2}$	8 $\frac{1}{4}$	1 500
1 : $6\frac{1}{2}$	7 $\frac{1}{2}$	2 000
1 : $5\frac{1}{2}$	6 $\frac{3}{4}$	2 500
1 : 5	6	3 000