# TEKNOLOGI BETON LANJUT

# Sifat-sifat beton keras

Kecendrungan bleeding dipengaruhi oleh

- Kandungan air dalam campuran
- w/c
- Sifat semen
- suhu

Kecendrungan bleeding menurun adalah pada

- Semen dengan kadar alkali tinggi ($C_3A$ tinggi)
- Semen diberi tambahan $CaCl_2$
- Pozzolan
- Bubuk aluminum
- Air entrainment agent

Bleeding

- Adalah bentuk segregasi dimana air dari campuran mengalir naik ke permukaan.
- Terajadi karena komponen-komponen padat dari campuran tidak mampu mengikat air pada saat mereka memadat.
- Standar pengujian ASTM C232.

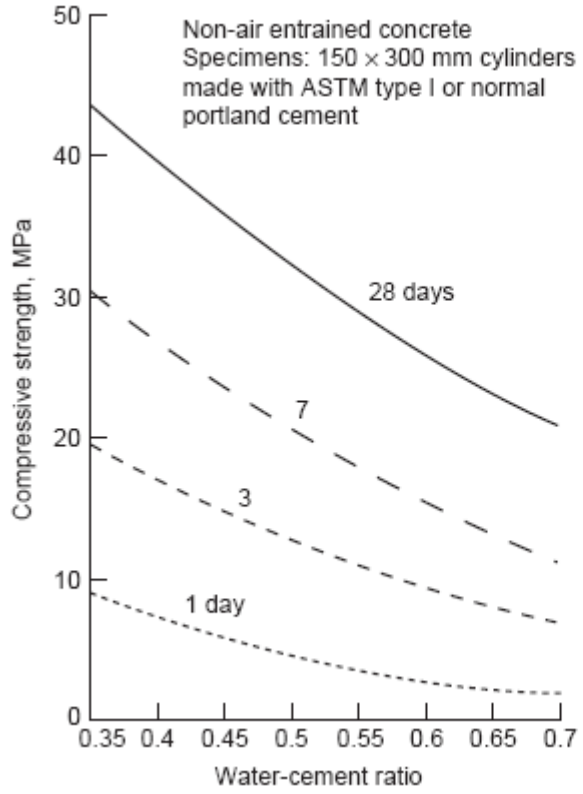
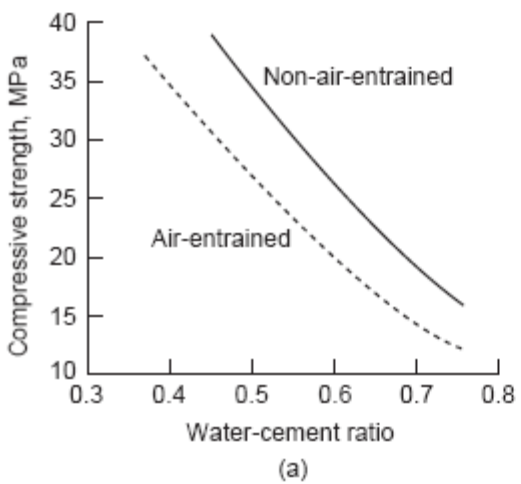
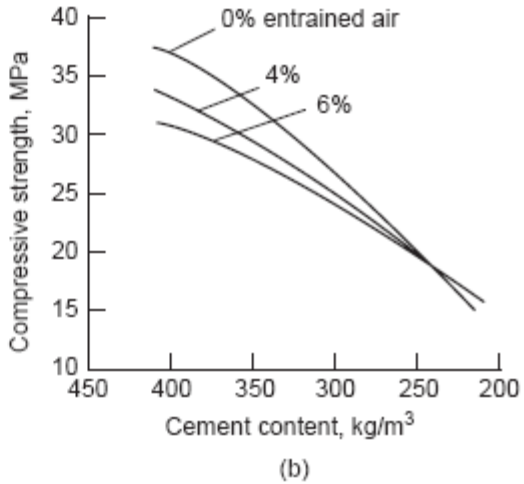



**Figure 3-3** Influence of the water-cement ratio and moist curing age on concrete strength. (From *Design and Control of Concrete Mixtures*, 13th ed., Portland Cement Association, Skokie, III., p. 6, 1988.)



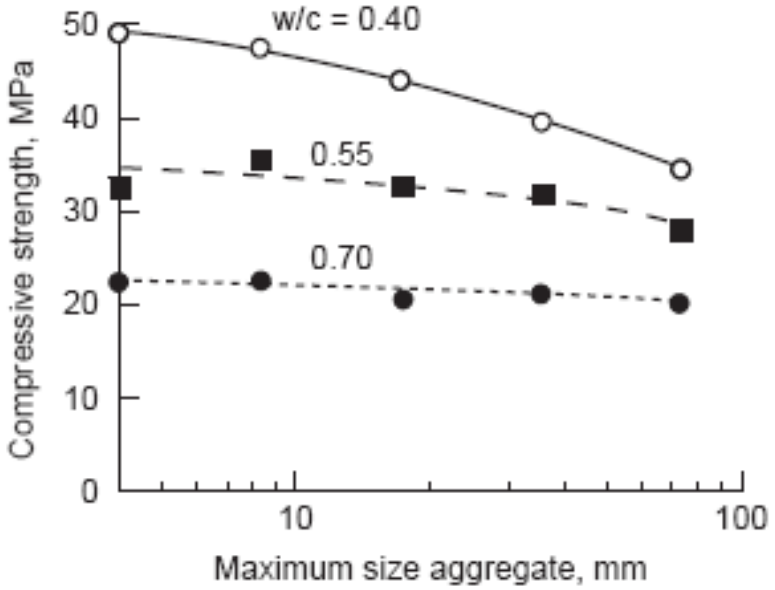
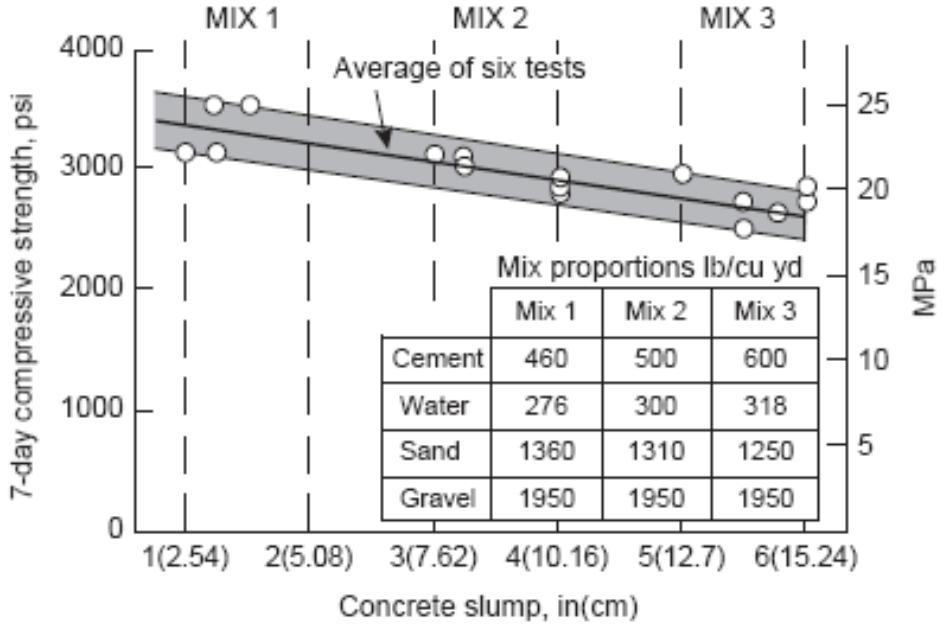



**Figure 3-5** Influence of the aggregate size and the water-cement ratio on concrete strength. (From Cordon, W.A., and H.A. Gillespie, *J. ACI, Proc.*, Vol. 60, No. 8, 1963.)



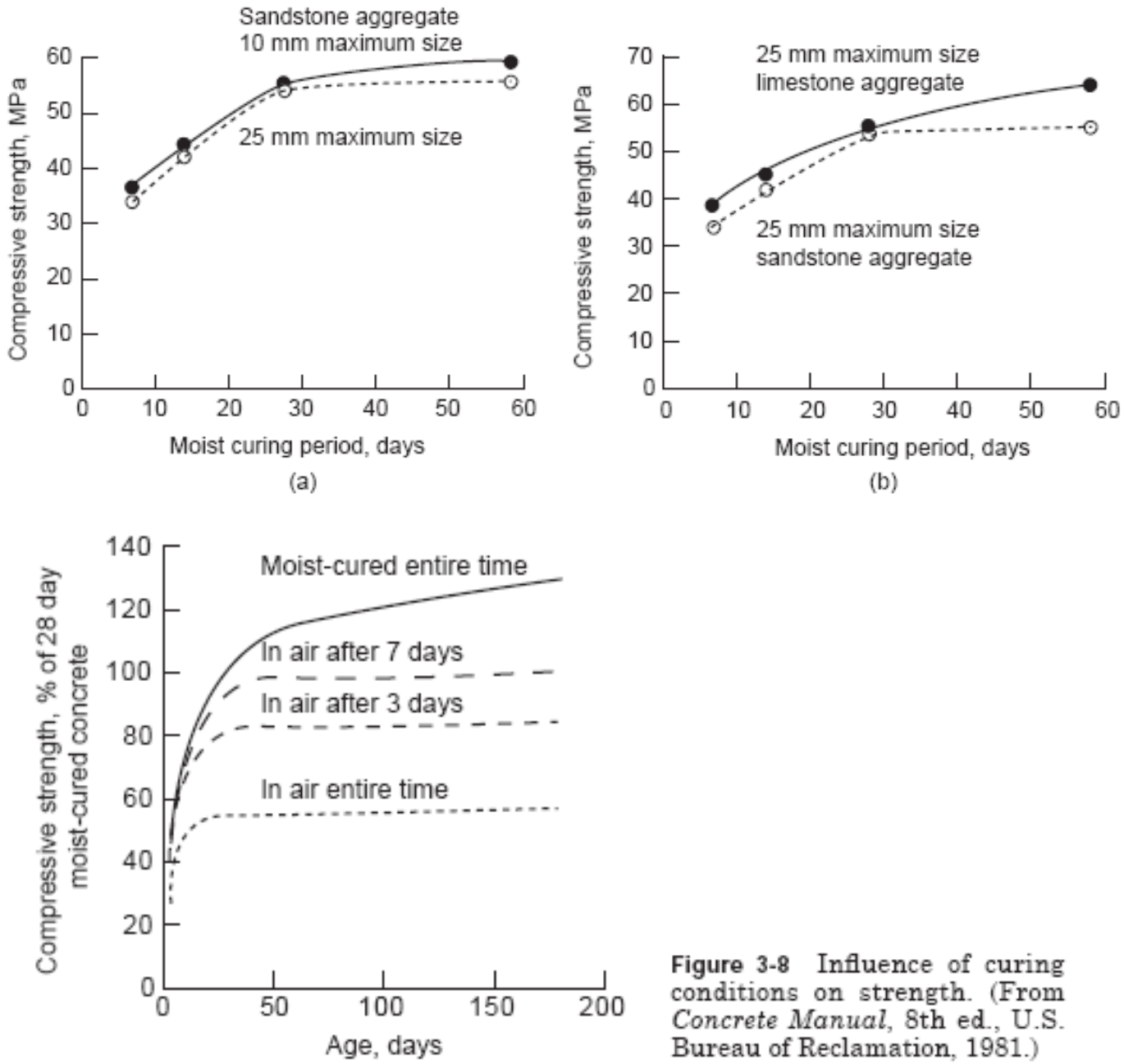



**Figure 3-8** Influence of curing conditions on strength. (From *Concrete Manual*, 8th ed., U.S. Bureau of Reclamation, 1981.)

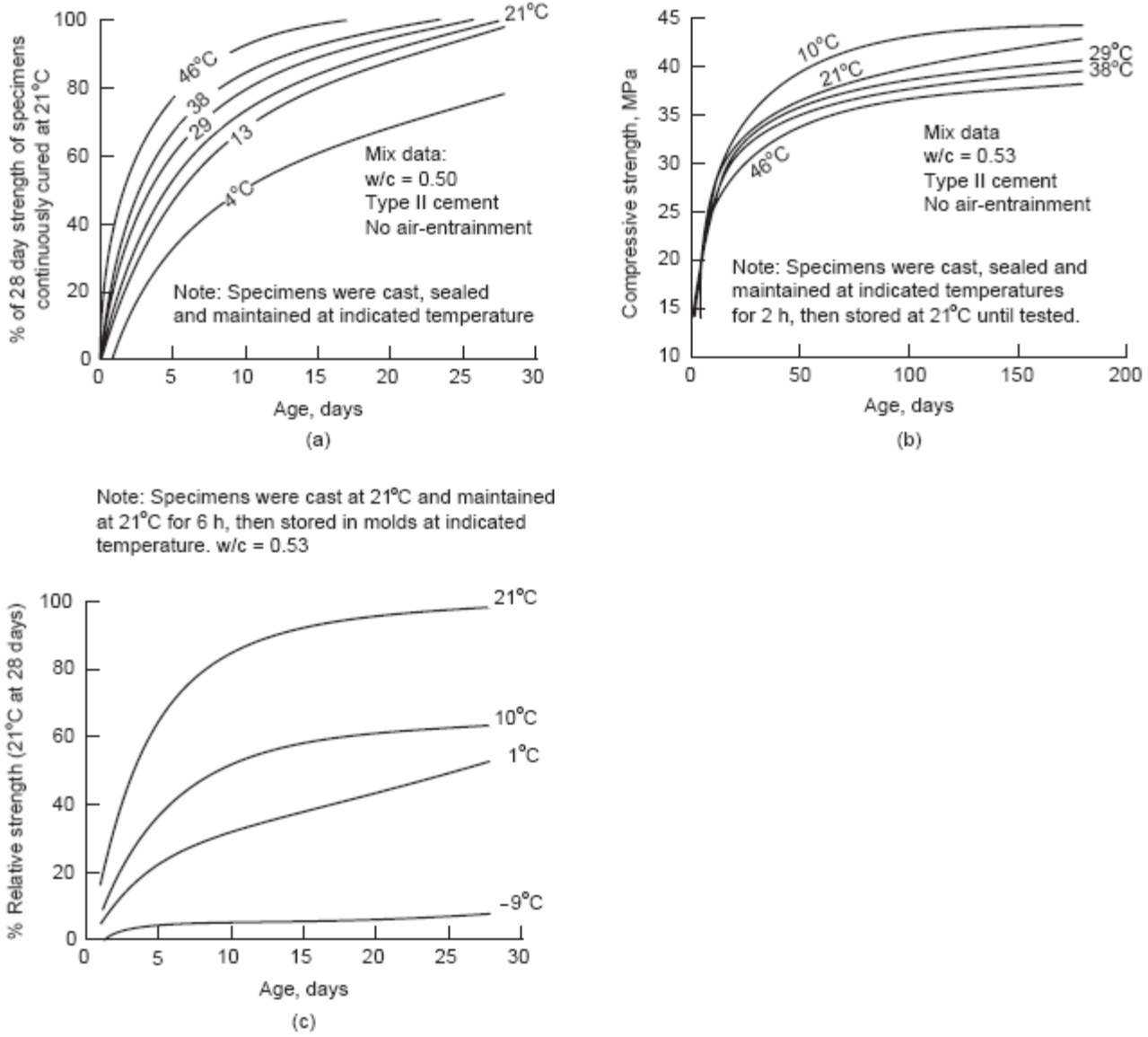



**Figure 3-9** Influence of casting and curing temperatures on concrete strength. (From *Concrete Manual*, U.S. Bureau of Reclamation, 1975.)

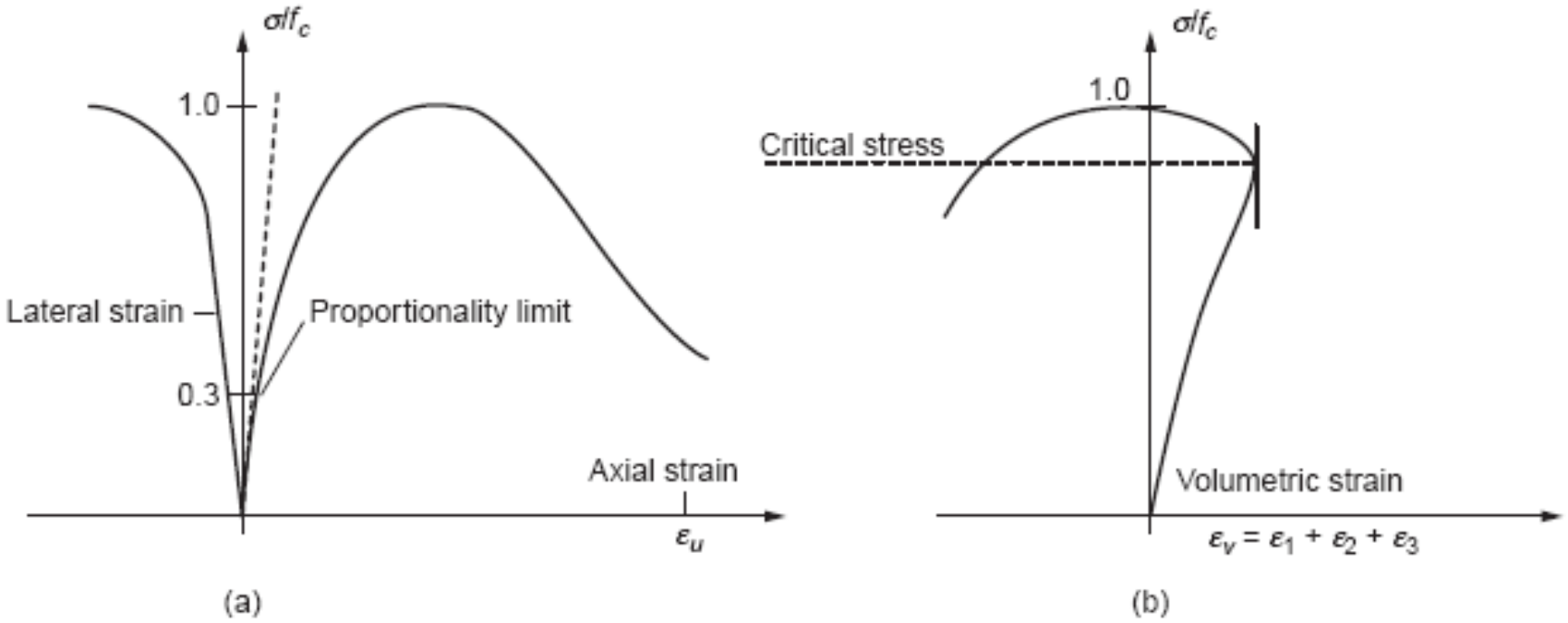



**Figure 3-13** Typical plots of compressive stress vs. (*a*) axial and lateral strains, and (*b*) volumetric strains. (From Chen, W.F., *Plasticity in Reinforced Concrete*, McGraw-Hill,, New York, p. 20, 1982.)

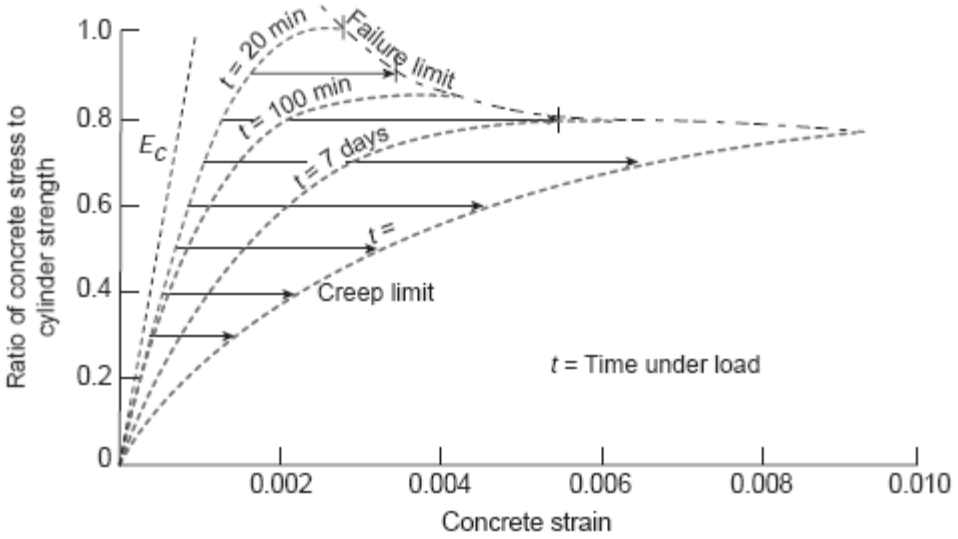
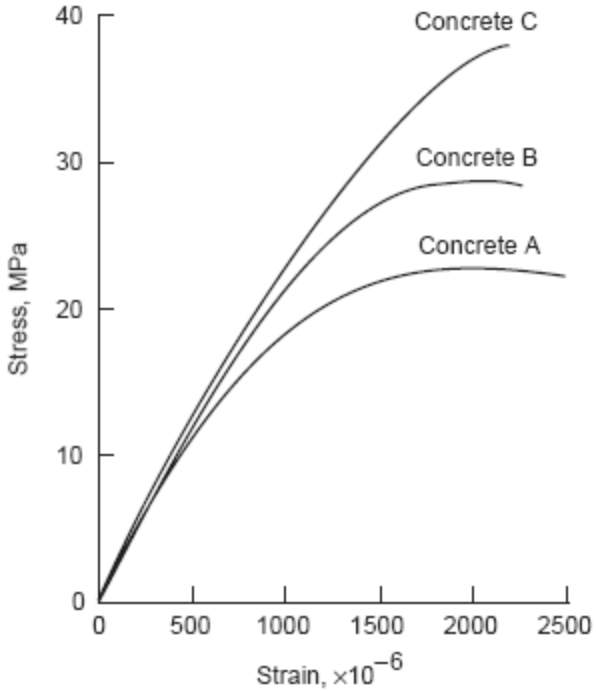



**Figure 3-14** Relationship between the short-term and long-term loading strengths. (From Rusch, H., *J. ACI, Proc.*, Vol. 57, No. 1, 1960.)




**Mix Proportions and Properties of Non-Air-Entrained Concrete***

| Mix No. → | A | B | C |
|---|---|---|---|
| Water-cement ratio | 0.68 | 0.57 | 0.48 |
| Slump, mm | 165 | 180 | 170 |
| $f'_c$, MPa | 22.4 | 29.0 | 40.0 |
| $f'_{st}$, MPa | 2.6 | 2.9 | 3.5 |
| $f'_{st}/f'_c$ | 0.11 | 0.10 | 0.09 |

*Unpublished data from students experiments, University of California at Berkeley.

**Figure 3-17** Influence of the water-cement ratio on tensile and compressive strengths.

# Kuat tarik:

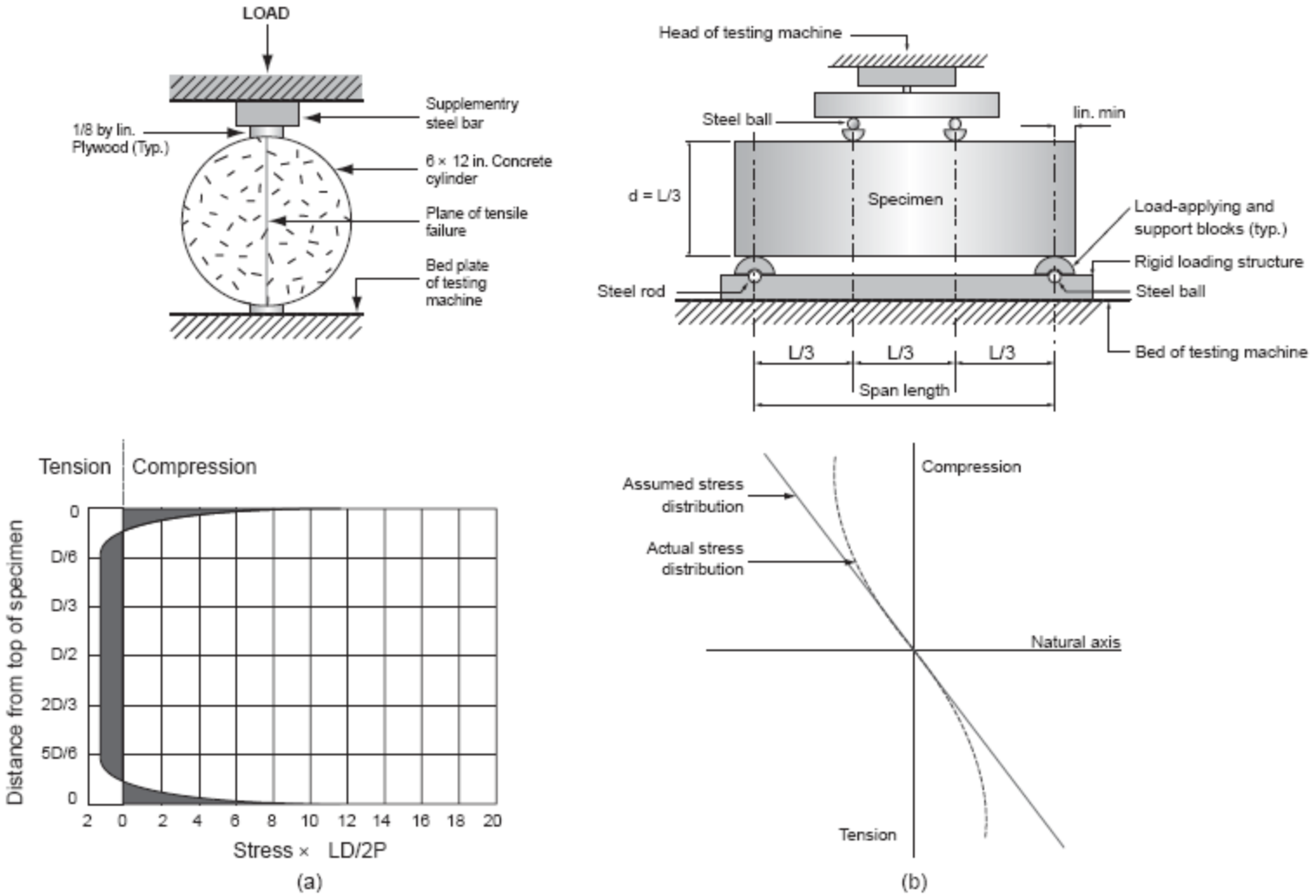



**Figure 3-16** (*a*) Splitting tension test (ASTM C 496): top, diagrammatic arrangement of the test; bottom, stress distribution across the loaded diameter of a cylinder compressed between two plates. (*b*) Flexural test by third-point loading (ASTC C 78): top, diagrammatic arrangement of the test; bottom, stress distribution across the depth of a concrete beam under flexure.