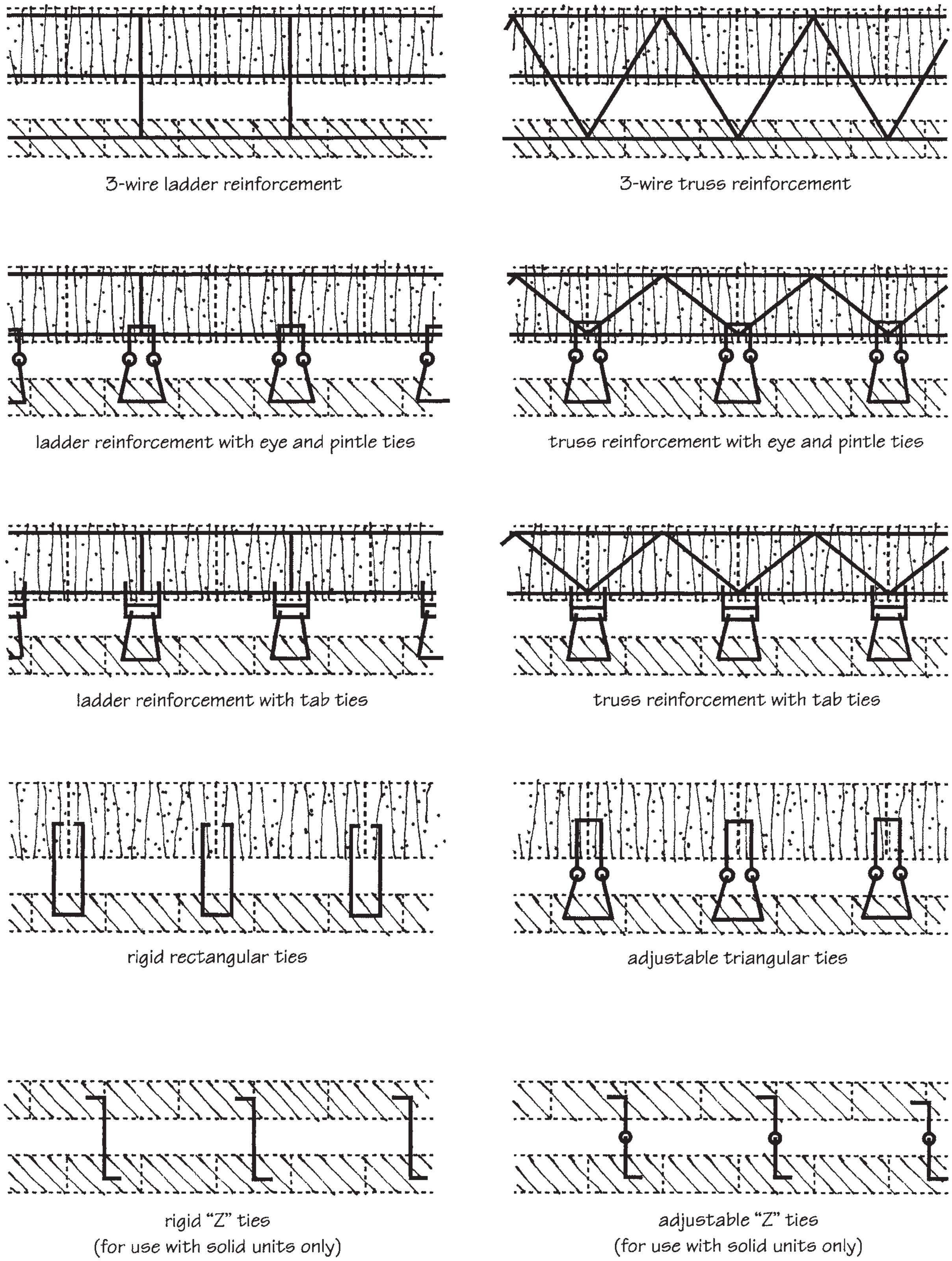

Figure 12-30 Metal ties and joint reinforcement for bonding multi-wythe masonry walls. (*From Beall and Jaffe,* Concrete and Masonry Databook, *McGraw-Hill, New York, 2003.*)

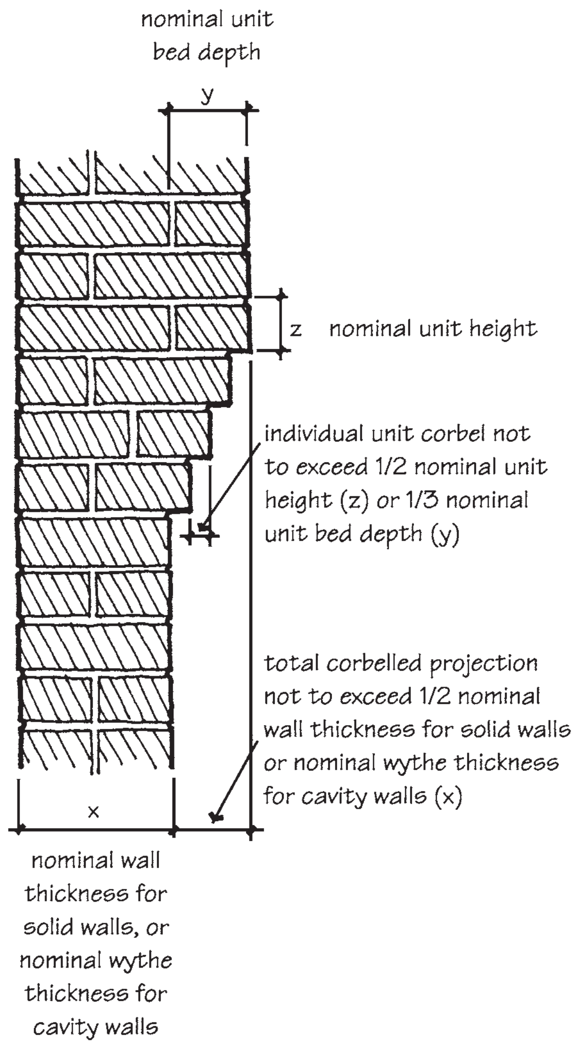

Figure 12-31 Empirical design limitations for corbelled masonry.

thermal and moisture movements. All critical loading conditions must be calculated. Fixity, or end restraint, must also be considered, as it affects resistance to applied loads.

Flexural, shear, and axial stresses resulting from wind or earthquake forces must be added to the stress of dead and live loads, and connections must be designed to resist such forces acting either inward or outward.

Strength design normally includes minimum and maximum reinforcement ratios, maximum allowable deflections under load, and ultimate moment capacity requirements. Even more important than the economy and efficiency which strength design provides by using masonry to its full structural capabilities is the fact that the performance of masonry is predicted more accurately than with the allowable stress method. Under severe earthquake loading, where wall response may be inelastic because of flexural yielding of the reinforcement under combined axial, bending, and shear loads, strength design provides greater safety because of its accuracy.