USE OF ARCHES IN BRIDGES AND BUILDINGS

(a) Rigid arches used in bridges. The bridge deck is suspended from the arch. The transverse members stabilize the structure with respect to lateral forces through frame action.

(b) The rigidity of the arches makes it possible for concentrated loads on the bridge deck to be carried. In the structure shown, rigidity is achieved through triangularization of discrete elements.

(c) Rigid arches used in buildings. Roof decks are usually placed directly on transverse members, which are, in turn, supported by the arches. Lateral stability is usually achieved through diagonal bracing elements.

(d) The rigidity of the arches makes it possible to carry nonuniform roof loadings. Either deformed rigid members can be used, or, in larger buildings, a triangulated built-up member of the type illustrated in (b).