

**FIGURE 4.13** Connection of interior columns to rafter in multiple-span rigid frames. (Steelox Systems Inc.)

a smaller building volume to be heated or cooled and thus in lower energy costs. Therefore, trusses are most appropriate for the applications with a lot of piping and utilities, such as manufacturing facilities and distribution centers.

An example of simply supported truss framing is Butler Manufacturing Company's Landmark Structural System. Figure 4.14 illustrates the details of 3- and 4-ft-deep trusses common in that system. Note the deflection pad between the bottom chord of the truss and the column, intended to allow for some member rotation under gravity loads without inducing bending moments into the column. In effect, this is a good "wind connection," discussed above for a tapered-beam system, that provides lateral resistance in the plane of the truss. In Landmark, lateral resistance along the length of the building is provided by fixed-base endwall columns, an approach not without some pitfalls, as will be discussed later in this chapter.

## 4.7 LEAN-TO FRAMING

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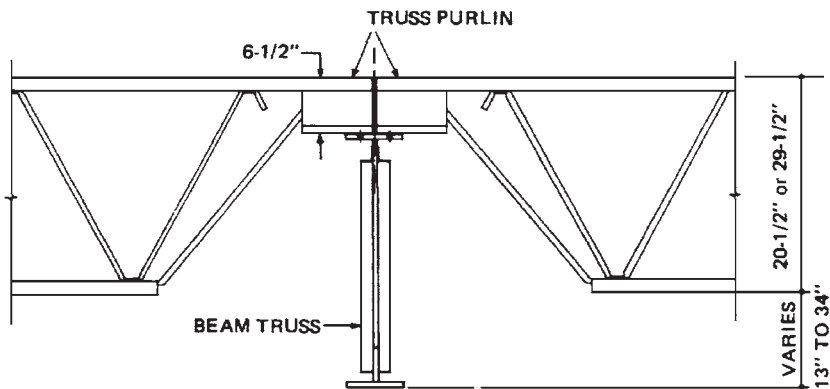
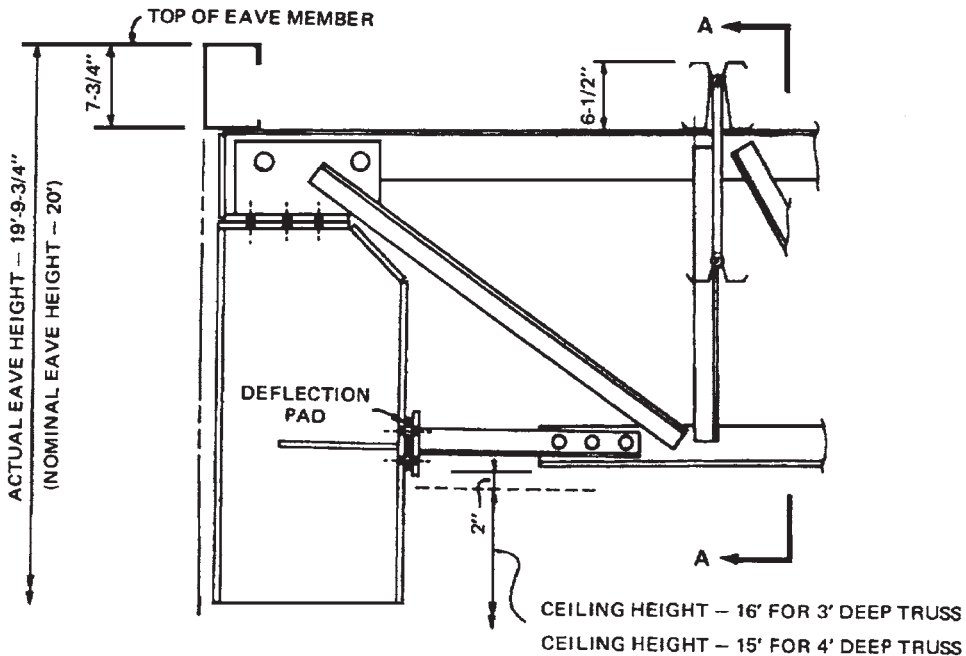
*Lean-to* framing, also known as wing unit (Fig. 4.1g), is not a true self-contained structural system but rather an add-on to another building system. Tapered beams and straight columns are common in this type of construction (Fig. 4.15). For the optimum efficiency, the system is best specified for clear spans from 15 to 30 ft.

Lean-to framing is typically used for building additions, equipment rooms, storage, and a host of other minor attached structures. Structural details are similar to those of a tapered-beam system, except that a single slope is usually provided at the top surface and the beam taper precludes the bottom surface from being horizontal.

## 4.8 OTHER FRAMING SYSTEMS

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In addition to the framing described above, the marketplace contains several proprietary systems that are truly unique as well as those that only pretend to be different by adopting an unfamiliar name and some unusual details. Some of the "significant others" are mentioned below.



SECTION A-A

FIGURE 4.14 Details of Butler's Landmark Building. (Butler Manufacturing Co.)