

FIGURE 6.16 Details of standing-seam roofing with trapezoidal profile at roof step. (MBMA.)

Standard length of panels varies among manufacturers. The length is best kept under 40 ft, a practical limit imposed by shipping and handling constraints, although panels up to 60 ft can be shipped by rail. For wider roofs, the panels have to be spliced. The end splices, which are normally staggered from panel to panel, can be aided by special clamping plates and prepunched holes (Fig. 6.17). This detail avoids direct panel-to-support connections that restrict movement. The endlap details deserve close attention, since endlaps, along with roof penetrations, account for a lion's share of problems with metal roofs.

Through-the-roof fasteners are not totally eliminated in structural standing-seam roofs—after all, roofing must be positively attached to supports *somewhere*—but their number is reduced by about 80 percent. Through-fastening (fixity) of panels usually occurs at the eave strut, allowing the panels to expand toward the ridge covered with a flexible flashing cap.

### 6.5.2 Overcoming the System's Limitations

The biggest disadvantage of the structural standing-seam roof system can be traced to its biggest advantage—movement ability. Lacking a direct attachment to supports, the roofing provides little or no lateral bracing to the purlins and offers little diaphragm action. Wherever this type of roofing is used, a separate system of purlin bracing and a separate horizontal diaphragm structure are needed. For architectural roofing, which needs a supporting surface, both these functions can be served by a metal deck substrate. The metal deck can also be used under structural roofing, but most manufacturers prefer purlin bracing and rod diaphragms instead. Alternatively, some manufacturers attempt to resolve this issue by offering separate liner panels that provide some limited bracing and diaphragm action. To be truly useful, however, the liner panels should be quite rigid, perhaps as rigid

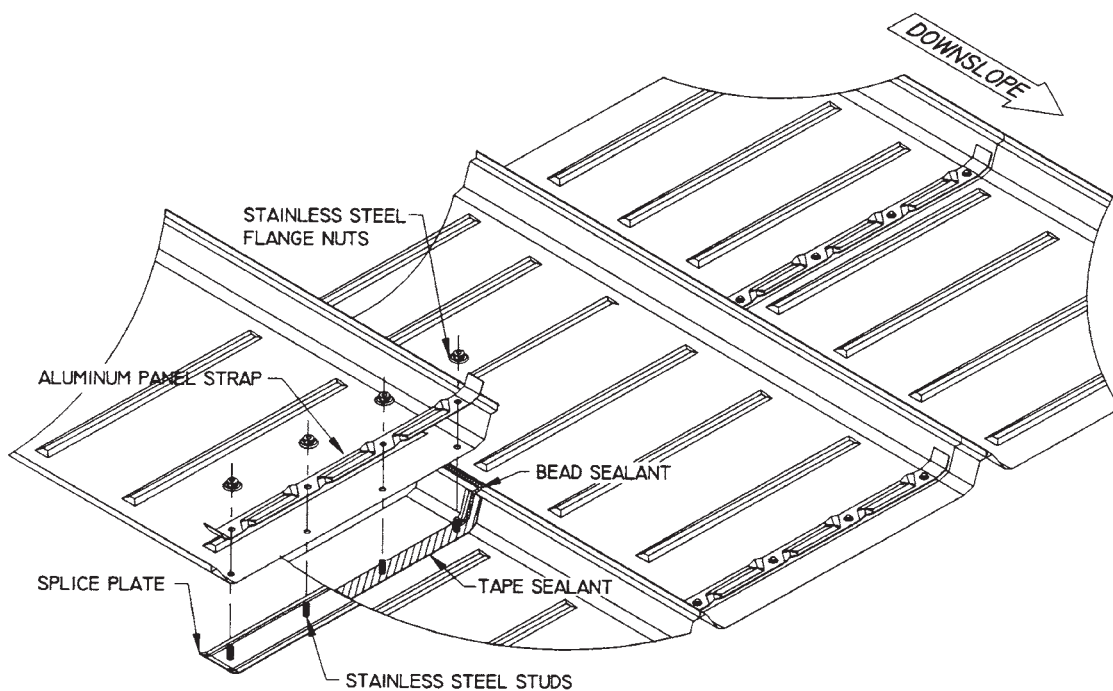


FIGURE 6.17 Panel endlap splice. (Butler Manufacturing Co.)