

The second type of purlin bracing is provided by discrete braces, whose spacing is determined by analysis. An additional purlin brace is normally provided at each concentrated load. Perhaps the most effective discrete purlin bracing system is provided by closely spaced parallel lines of channel sections bolted between the purlins (Fig. 5.17). The channels are similar to solid blocking used in wood construction. They represent a superior method of stabilizing purlins against rotation, although this type of bracing may be more labor-intensive than other systems.

Less effective, but also less expensive, discrete purlin bracing can be provided by steel angles or strapping running from eave to eave perpendicular to the purlins. These braces are attached to each purlin and at the ends to the eave struts. The braces can be located either parallel to the roof or in a diagonal fashion, running from the top flange of one purlin to the bottom flange of the next. Some of the many variations of discrete purlin bracing are examined immediately below.

5.4.3 Purlin Braces Parallel to Roof Slope

Purlin braces running parallel to the roof slope from eave to eave are perhaps the most common. Flat strapping connected to purlin flanges by screws is the easiest and cheapest to install (Fig. 5.18). However, purlin bracing needs to be taut to perform properly, yet flat straps and round rods have a tendency to sag and are near useless in that condition. In addition, unlike precut angle sections, flat strapping does not facilitate purlin alignment and can even lock the purlins in temporarily displaced positions. Finally, because strapping can function only in tension, parallel lines of strapping cannot fulfill the last two functions of the purlin bracing: assuring torsional stability and restraining the whole assembly of purlins and roofing from lateral translation under load. For these reasons, bracing purlins by flat strapping is not particularly effective.

Some manufacturers try to overcome the disadvantages of using strapping by crisscrossing the straps at regular intervals. In Fig. 5.19, the straps are crisscrossed at every third purlin space and at

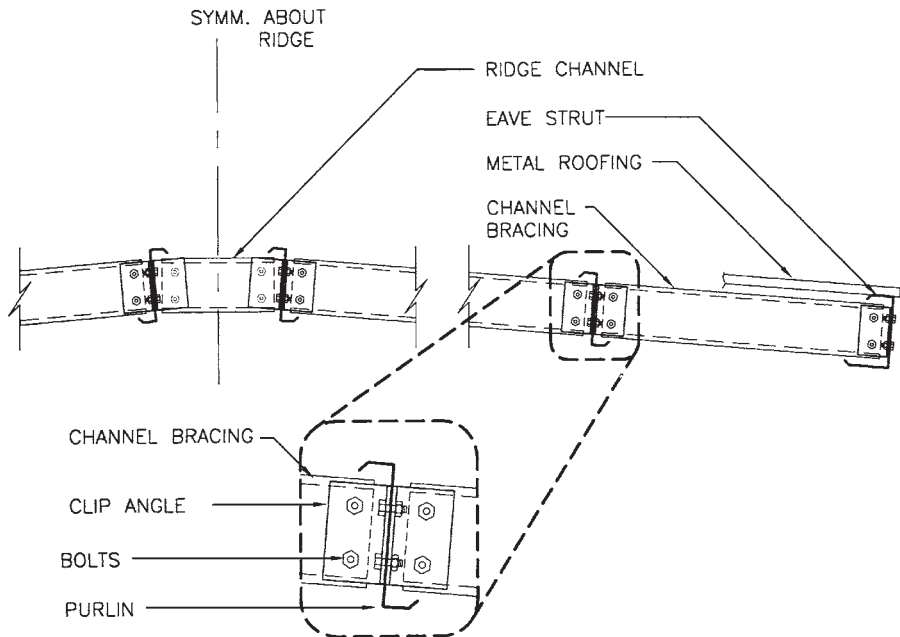


FIGURE 5.17 Perhaps the most effective system of purlin bracing is provided by closely spaced bolted channels.

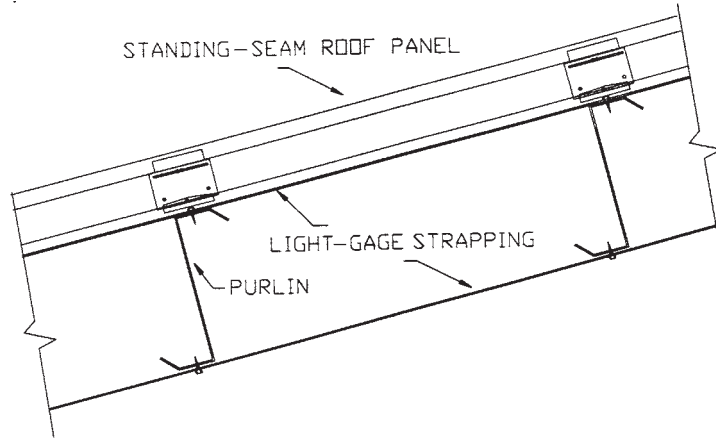
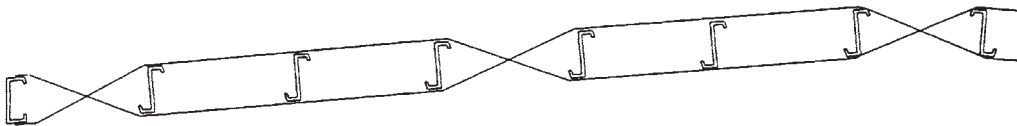


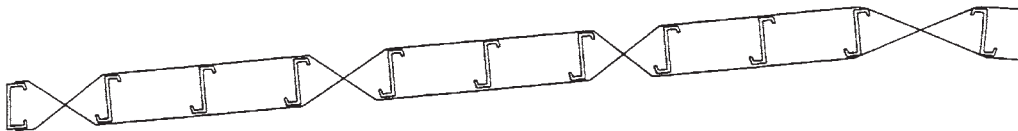
FIGURE 5.18 Lateral bracing of both purlin flanges with strapping. (LGS.)

SEE BUILDING ROOF PLAN FOR LOCATIONS
ATTACH STRAP W/#12 X 1 1/4" SDS W/O WASHER
AT EACH PURLIN



SAG STRAP INSTALLATION FOR SIX OR LESS PURLINS

SEE BUILDING ROOF PLAN FOR LOCATIONS
ATTACH STRAP W/#12 X 1 1/4" SDS W/O WASHER
AT EACH PURLIN



SAG STRAP INSTALLATION FOR MORE THAN SIX PURLINS

FIGURE 5.19 Crisscrossing sag straps. (A&S Building Systems.)