

of black iron or galvanized iron. If galvanized iron is used all covering and flashing for the ventilator roof, sides and ends, and all bolts, clips, clinch rivets or other fastenings, any part of which shows on the outside of the covering or finishing, should also be galvanized.

Fig. 40 shows a monitor roof ventilator with fixed sash and all on framing, and Fig. 41 shows a similar construction with movable sash. Figs. 42 and 43 show monitor roof ventilators with fixed and swing sash, respectively, all wood framing. Fig. 44 shows a skylight on roof of monitor made of translucent fabric. It should be noted that the roofing sheets run lengthwise of the building and are 6 ft. 3 ins. x 3 ft. 3 ins. in size. This size of sheet should be used whenever possible, although sheets may be readily cut to smaller sizes. The width of the lap should be 2 ins. and both edges should be securely fastened. For fastening the fabric wire nails 1¼-in. long, or 3d nails, should be used; the amount required being 1¼ lbs. per 100 ft. of seam. Lap joints or lock joints can be used for all seams, but capped joints can be used only for seams running in the direction of the roof slope.

**GUTTERS AND DOWN SPOUTS.**—The sizes of gutters and down spouts and their distance apart for roofs with ¼ pitch and of different spans are shown by the following table:

½ roof span, ft.	10	20	30	40	50	60	70	80
Size of gutter, ins.	5	5	6	6	7	7	8	8
Size of down spouts, ins.	3	3	4	4	5	5	6	6
Spacing of down spouts, ft.	50	50	50	50	40	40	40	40

The slope of gutters should be at least 1 ft. in 50 ft. When the length of the roof overruns the spacing more than 10 ft. an extra down spout should be put on.

Fig. 45 shows details of single and double gutters with both angle and channel purlin connections, and Fig. 46 shows different forms of hanging and box gutters. Regarding hanging gutters it may be noted that ordinarily gutters should slope 1 in. in 15 ft. A 6-in. gutter takes a 4-in. leader and will drain about 3,000 sq. ft. of horizontal surface. A 4-in. gutter will take a 3-in. leader and will drain about 1,700 sq. ft. of horizontal surface. Hangers for hanging gutters should be spaced about 2 ft. 6 ins. apart.