



## Technical Bulletin

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### USE OF SNOW GUARDS

Snow guards are used to hold snow and ice on the roof until they can melt and run off as water. Their use should be restricted to areas where snow and ice falling off the roof could cause damage to items below, including lower roofs, or bodily harm to people entering, leaving, or walking along the outside of the building. They are also used above valleys to prevent snow and ice from building up in the valleys and damming up water. For this application, heat tape is usually used in the valley to keep the water flowing and the snow guards used above the valleys to minimize the drifting in the valleys. The snow guards also minimize the damage to the heat tape that can be caused by sliding snow and ice. Where snow will merely fall to the ground it is best to allow it to do so and remove the weight from the roof.

The steeper the pitch, the more snow will tend to slide off a metal roof. On very steep pitches, such as 12:12 pitches, snow will tend to slide off immediately and not build up to the point where it will create a problem. As a result, snow guards may not be required on very steep pitches. On shallow pitches, below 2:12, the snow will not tend to slide off the roof; it will melt in place and run off as water. Again, snow guards will not do much good and may not be necessary. Pitches between 2:12 and 12:12 are where snow guards should be considered for use where sliding snow will cause damage to property or people below.

One nice thing about snow guards is the fact that they can be added after the installation of the roof panels if sliding snow is a problem. Several things, however, must be considered when doing this. First, intentionally holding snow on the roof will add to the live loads on the structure. Most structures are designed based on snow being on the roof, so this should not normally be a problem. But, many of us that live in Northern climates have been thru "snow of a decade" winters where we have been up on our roofs trying to get the weight off the roof. Snow guards make this worse. Next, the additional weight on the roof causes additional drag forces on the standing seam panels. These forces must be resisted by sufficient fasteners at the fix point of the roof, which is normally under the ridge cap. A good rule of thumb is that twice the number of fasteners at the fixed point are required when snow guards are used. (Six per panel instead of the normal three.) The steeper the pitch, the more load on the snow guards and the fixed point fasteners. For systems with non-integral seam caps or batten caps make sure they are also rigidly attached at the fixed point to keep them from sliding off the roof due to the drag of snow and ice or from thermal movement.

When snow guards are used it is better to use several rows spread out up the slope that one row at the eave. This helps to hold the snow in place instead of letting it slide down the slope and impact the snow guard at the eave. On short runs this is not a problem, but on long runs and steep slopes that impact force can pull the snow guards off. Snow guards are normally placed about 1 foot from the eave and 3 or 4 feet above a valley.



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There are three ways to attach snow guards to a metal roof. They can be screwed to, or thru, the roof panels, glued on, or clamped on. Fabral does not recommend the use of screwed on snow guards. On standing seam roofs they can restrain the designed thermal movement of the panel system. Also, if they do get torn off they leave a hole in the roof. Glued on snow guards can be used, but they have a tendency to come off. Also, sometimes they are installed with clear silicone sealant and many clear silicones are acid cured and can damage the paint and metal substrate. Our recommendation is to use clamped on snow guards. Fabral carries the S-5 snow guard system, which has been tested for design strength on all of our standing seam systems. (See our S-5 Snowguard Systems Design and Installation Manual, A-600, for details of the design and installation of this system.) When clamping the S-5 or other clamping snow guard systems to our panels the installation procedures are critical. On the S-5 system all the set screws must be installed from the same direction so the mounting bracket is clamped against one side of the rib. Alternating sides on the bracket with set screws will deform the panel side joint and can rip the panel under snow load. This was particularly true with our old bracket that had 3 set screws. The new bracket with two set screws is more likely to be installed properly since putting the two set screws in on alternating sides would badly twist the bracket. Also, even though there are holes on both sides of the bracket, only two set screws are used and they are to be installed from the same side.