

# Laminated Blanket Insulation for Metal Buildings

## Conventional Over-the-Purlin Installation Methods

### Background

Guardian Building Products Distribution, Inc. takes great care in the manufacture and lamination of your faced fiberglass metal building insulation to help insure that the products will deliver their maximum possible thermal performance. Our fiberglass insulation is manufactured to exacting standards that include control of such key items as fiber diameter, binder content and roll compression. In our lamination process we use hot melt adhesive technology and surface rewind systems that improve recovery over traditional water-based adhesive and center wind systems. It is equally important that the material be installed correctly in order to provide maximum in-place thermal performance.

Because fiberglass insulation works by trapping air between the interwoven fibers, it is important to allow it to recover to its maximum thickness in order to optimize performance. Proper installation involves placing the insulation with enough drape over the purlins or girts to allow it to recover to its full thickness in the central zone of the purlin or girt space.

Because faced metal building insulation often provides the finished appearance on the interior of the building, **it is not uncommon for the installer to apply excessive tension to the insulation during installation in order to create a smoother interior finish.** Doing so is likely to prevent the insulation from recovering to its maximum possible thickness and **which would not allow the material to perform as designed. Improperly installed insulation may not meet building code requirements.**

### Vapor Retarders

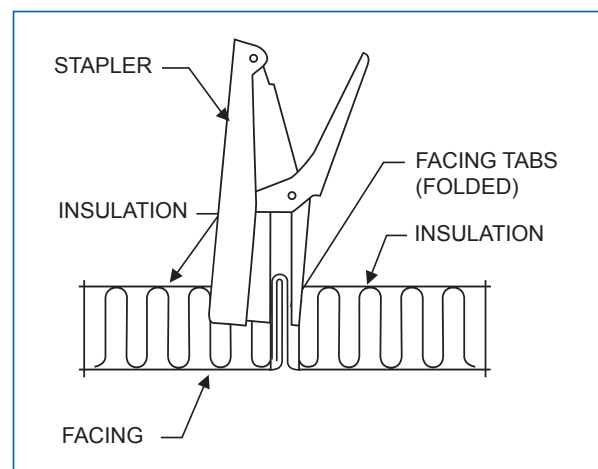
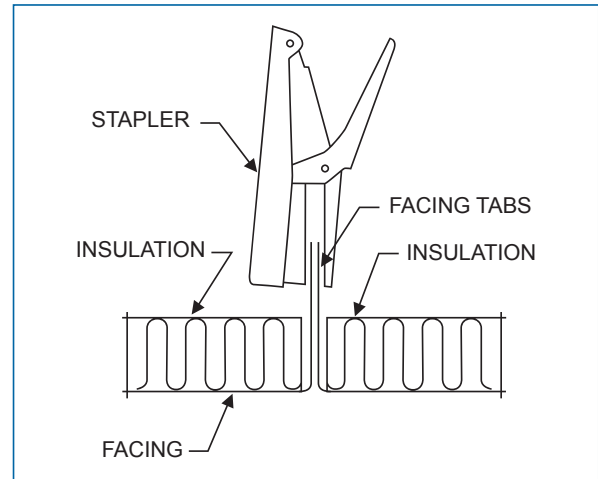
Vapor retarders (commonly called "facing") materials serve numerous purposes. They primarily provide a pleasing interior appearance and to have a low water vapor transmission rate (or "perm" rating). Permeance is a measure of the flow of water vapor through a material and the lower the permeating the better the vapor retarder. Facing materials should also have good strength characteristics so that they function well during installation and provide some degree of durability once installed.

### Connecting Rolls of Faced Blanket Insulation

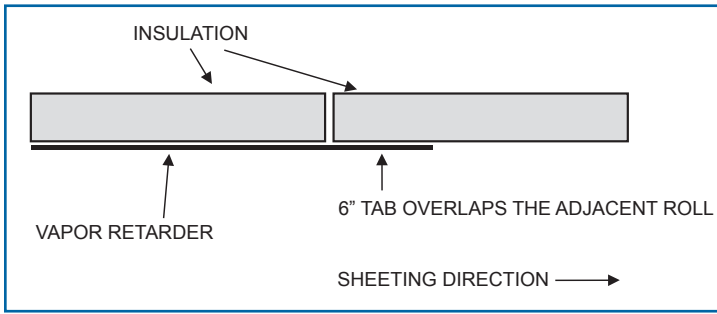
For a standard (single layer) metal building application, the vapor retarder or facing material is customarily 6" wider

than the fiberglass insulation. That extra facing is referred to as a "tab" and may be supplied as two-3" tabs (fiberglass centered on the facing) or one-6" tab (fiberglass shifted completely to one side).

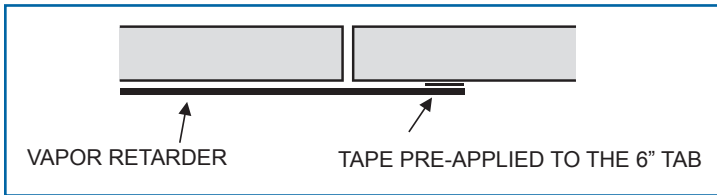
If two-3" tabs are supplied, a plier stapler should be used to connect adjacent rolls of insulation. At the seam where the two rolls join, pull the tabs upward and staple approximately every 8". The initial staples should be placed 1/2" from the end of the tabs (as shown below). Once this initial stapling is complete, fold the tab over and staple in between each original staple. The tabs will now be folded over and stapled approximately every 4". Tuck the completely sealed tab back into the joint. Caution should be taken not to staple too close to the base of the tabs as the staples may pull out during the sheeting process; resulting in poor appearance and a poor vapor seal.



In a one-6" tab application the full width of the facing is laid flat on the purlins or against the girts with the tab extended in the sheathing direction. The flush edge of the next roll is placed tightly against the previously installed roll and positioned on to the 6" tab (see illustration).



Guardian Building Products can apply double stick tape to the tab(s) during lamination for a minimal upcharge. We refer to this as a "tape tab" or a "seal tab".



### Starter Roll

A starter roll is a standard roll of faced insulation. The width is specifically chosen such that it is slightly wider (12" or so) than the first roof or wall panel. This extra width establishes an "offset" which places the leading edge of the first roll of insulation a foot away from the point where the panels overlap. This allows the installer to connect the rolls in a more comfortable and safe and efficient manner.

### Primary Rolls

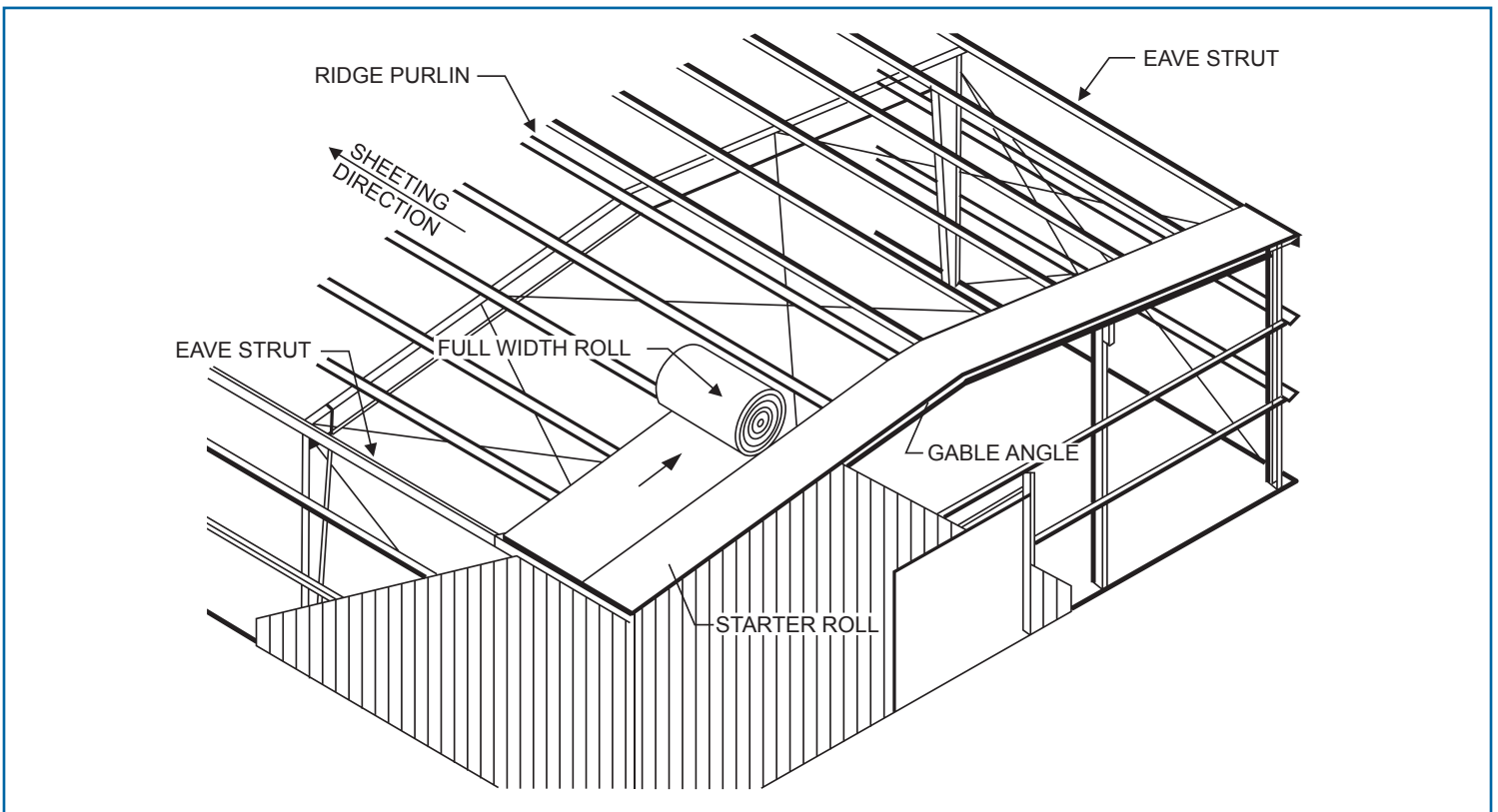
Primary (or "full") roll width is customarily chosen such that they are even multiples of the width of the roof panels. As roof panels are installed, the combination of the starter and primary roll widths will maintain the desired insulation joint offset. For a roof panel width of 36", most erectors choose a 48" starter roll and either 36" or 72" primary rolls. The 48" starter establishes the desired offset and since the primary rolls are an even multiple of the panel width, the offset is maintained throughout the sheathing process. For 24" wide roof panels, most erectors choose a 36" starter roll and either 48" or 72" primary rolls.

### Installation Recommendations

#### Roof

Roof insulation rolls are provided in lengths that are specifically calculated to allow enough length that the rolls will fit properly from the eave strut to the ridge (see sketch which follows), or eave strut to eave strut, while hanging between the purlins with enough drape to allow the insulation to recover to its full thickness in the center of the purlin space and allow an extra twelve inches of material on each end to hang over the last purlin or strut.

Several factors must be taken into consideration in order to insure a proper fit: roof pitch, purlin spacing, roof type (standing seam or screw-down), standing seam roof clip size, and whether or not there is a thermal block present. All must be considered when calculating the correct length roll to allow proper fit. Guardian Building Products proprietary IQPlus estimating software is designed to calculate proper length.



One of the two tab choices which were discussed previously are generally used.

Begin by installing the starter roll. Many erectors do this from a lift positioned outside the structure or by unwinding the roll on some temporarily positioned roof panels. The vapor retarder should face into the building interior and then the initial run of roof panels can be placed on the insulation and fastened to the building. The next roll of insulation is typically unwound on the installed roof area and lifted out over the purlins by the roofing crew. Some erectors prefer to tape the ends of the rolls to the eave purlins with two-sided tape or by mechanically fastening with clamps, screws and washers, or strapping. Check the distribution of the excess insulation length allowing an equal amount of drape between each purlin space.

The proper amount of drape between purlins would allow that the topside of the insulation blanket will be in light contact with the underside of the roof panel. Avoid excess drape that will result in an air space between the roof panel and the top of the insulation as this may allow condensation to develop under certain conditions. Uniform draping of each roll of insulation should allow the facing tabs to be stapled or lapped with a minimum amount of wrinkling.

**DO NOT stretch insulation tightly across the purlins as this is likely to prevent the material from recovering to its maximum possible thickness and from achieving its maximum possible in-place thermal value.**

### Joining Rolls at the Ridge

Due to building width or roof type it is oftentimes necessary to seam or join opposing roof rolls at the ridge of a double slope building. This sketch shows the typical technique for

### Walls

Similar to roof rolls, sidewall and endwall insulation rolls are provided in lengths calculated to allow the insulation to be installed from the base angle to the top of the eave strut with enough additional length for the insulation to reach its full thickness in the middle of each girt space and to leave 12" of additional length.

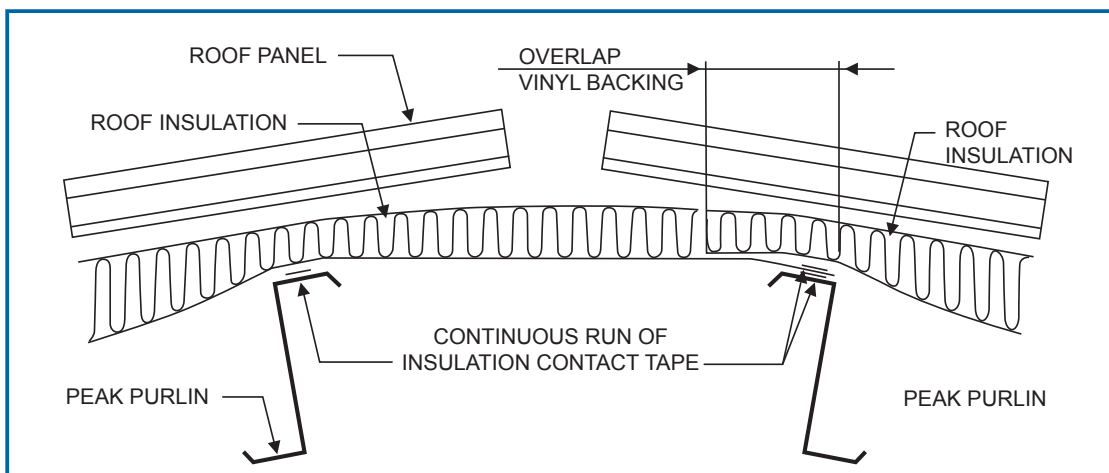
Begin installation by paying out the roll of insulation so that the bottom is in contact with the bottom of the base angle. Two sided tape may be used at the base angle if desired. Secure the opposite end of the roll of insulation to the eave strut with two-sided tape or by mechanically fastening with clamps. Leave approximately 10" – 12" extending above the top of the eave strut. To allow the insulation to expand fully into each girt space, place the wall panel against the base angle and tilt it slowly into contact with the eave strut above. This will allow the additional length of the roll to fill out into each succeeding girt space from ground to eave.

**DO NOT stretch the insulation tightly from base angle to eave strut prior to applying the wall panel as this is likely to prevent the material from recovering to its maximum possible thickness and from achieving its maximum possible in-place thermal value.**

### Storage of Faced Fiberglass Insulation at the Job Site

Guardian Building Products takes care with each order so you receive quality material that is to your specifications. Please inspect your order upon arrival to insure that it is exactly as expected and **note any damage or shortages on the bill of lading**. If there is anything wrong with the insulation, DO NOT INSTALL IT. Please contact Guardian Building Products immediately.

- 1) Vapor retarder materials are fragile and subject to impact damage so care should be used during handling. Do not allow insulation rolls to be thrown off the shipping vehicle, kicked, or placed in contact with sharp objects during storage.
- 2) Every effort should be made to store insulation in a dry, protected area.
- 3) Water can easily permeate poly bags, so rolls should be elevated above the ground or slab, preferably on a flat surface, to prevent contact with surface water.
- 4) If a dry protected area is not available at the site, the contractor should place the insulation in a storage trailer or at the end of the building where the roof sheets will first be applied.



NOTE: Whenever possible, the contractor should use the insulation as soon as possible after he receives it. It follows that the sooner the insulation is up, the less likely it is to get damaged in storage.

Guardian Building Products proudly guarantees our laminated metal building insulation to recover to full thickness and to provide at least the labeled R-value when it is delivered to your jobsite and prior to installation. Insulation products that fail to meet the labeled R value will be replaced fully at our expense. It should be noted that fiberglass does not recover to full thickness instantaneously. See our Guardian Laminated Fiberglass Recovered R-Value Limited Warranty document (available at [www.guardianbp.com](http://www.guardianbp.com) – click on “GBP Corporate Center” then on “Metal Building Insulation”) for additional details.

## Miscellaneous

### Thermal Spacer Blocks

When fiberglass insulation is compressed its' R-Value is reduced. In a conventional steel building application, this will occur above the purlins and outside the girts. Optional thermal spacer blocks can be installed at those compression points and can restore some of the lost R Value. The blocks are typically 1" thick and can be anywhere from 3" to 6" wide. High compressive strength materials such as extruded polystyrene insulation are good choices for thermal block material.

Note: **This document does not address code compliance, or the actual calculated or tested in-place thermal performance of any particular product.** In a conventional over-the-purlin steel building application, the insulation is significantly compressed directly above and adjacent to the purlins. This compression reduces the amount of trapped air and correspondingly reduces the resistance to heat flow (the R value) of the insulation. Guardian Building Products has many high R value (low U value) systems that help maximize insulation thickness by reducing the amount of compression. Contact your sales representative if you need help evaluating a given situation.

### Trim Strips

The purpose of Trim Strips is to provide a finished appearance to the insulation facing tabs. They are typically 3 ½" to 4" wide and are installed parallel to the insulation rolls directly beneath the joint where one roll sits next to another. Roll lengths vary by supplier, but Trim Strips are generally provided in 500' or 1000' coils.

For the walls, pre-cut the strips to the wall height. With the finished side to the interior of the building, attach one end of the strip to the side of the eave strut. Pull down on the outside of each girt flange and fasten the base angle. It is suggested that you install the trim strips at the same time you install each piece of insulation, so that you avoid misalignment.

Roof installation is accomplished in the same manner as the walls. Once the first roll of insulation is in place, position the center line of the strip directly beneath the edge of the insulation. Be sure to place the finished side of the strip toward the building interior and attach end of the strip to the top of the eave strut and to one of the ridge purlins. Additional fastening points may be advisable on wider buildings.

For both wall and roof installation, do not over tension the trim strips as this is likely to adversely affect the R-value of the insulation by not allowing it to recover to its maximum possible thickness.



979 Batesville Road • Greer, SC 29651

(800) 569-4262