

SHINGLE UNDERLAYMENTS AND FLINTLASTIC® SA ROOF SYSTEMS



YOUR OBJECTIVE:

To learn the differences between the various underlayments available.

To learn when a particular type of underlayment is the best choice for a particular situation, and to learn how to correctly install the different types of underlayments and Flintlastic® Self-Adhered roof systems.

There are two major types of shingle underlayment: water-resistant and waterproof. Within these types are many variations both between brands and within brands.

UNDERLAYMENT SPECIFICATIONS

WATER RESISTANT UNDERLAYMENT

Two common grades of water resistant shingle underlayment are available; #15, also known as standard shingle underlayment, and #30, also known as heavy duty shingle underlayment. However, within those grades there are many choices. For example, among standard shingle underlayment (#15), the following can be found:

- ◆ **UNRATED SHINGLE UNDERLAYMENT.** Generally the lowest priced and having the most unpredictable levels of asphalt saturation. Quality may vary from batch to batch.
- ◆ **ASTM D 4869 (TYPE 1).** All ASTM rated materials should be superior to “unrated” underlayment. However, an ASTM rating is not enforced by any independent organization. This rating is the “standard” specification for asphalt saturated organic felt shingle underlayment used in roofing.” It covers standard #15 shingle underlayment, also known as “Type 15” or “Type 1.” Because of a higher saturation level this product should not be subject to serious wrinkling. CertainFeed ShingleFelt 15 & 30 and RoofWrap 15 fall into this category.
- ◆ **ASTM D6757 HIGH PERFORMANCE SHINGLE UNDERLAYMENT.** CertainFeed Roofers’ Select™ is an organic felt reinforced with fiber glass fibers. Roofers’ Select is thoroughly saturated with asphalt, demonstrates a higher resistance to tearing than does any other #15 type underlayment and it is very resistant to wrinkling. It carries a UL classification, meets the ASTM D6757 standards and all performance requirements of ASTM D4869 and ASTM D226.

There is also a wide selection among heavy duty underlayment products:

- ◆ **UNRATED HEAVY DUTY SHINGLE UNDERLAYMENT (#30).** These heavy duty products are built using a heavier weight of organic felt; however, as mentioned above, unrated products are subject to wide variation in saturation. Under-saturated underlayments are subject to severe wrinkling. Under-saturated #30 underlayment has been known to wrinkle even after shingles are installed, telegraphing the wrinkles through the installed shingles after the job is finished.
- ◆ **ASTM D4869 (TYPE II).** A more predictable quality of heavy duty underlayment, much more resistant to wrinkling. CertainFeed RoofWrap 30 meets this standard.
- ◆ **ASTM D226 (NONPERFORATED).** This is a heavier felt normally used in built-up roofing systems. These felts have a greater asphalt content and exhibit superior strength and resistance to wrinkling. Both RoofWrap 15 and 30 meet this standard.

WATERPROOFING SHINGLE UNDERLAYMENT

Waterproofing Shingle Underlayment (WSU) is a very different kind of material. It is used in vulnerable locations on the roof deck that are most likely to leak during storms with high winds or when ice dams develop. Along the eaves, around roof penetrations and in the valleys are the areas most likely to require waterproof underlayment.

WHEN UNDERLAYMENTS ARE REQUIRED

The installation of water-resistant underlayment beneath shingles is **required** by many shingle manufacturers. Generally, CertainFeed recommends that underlayment be installed but does not require it except as noted below.

LOW SLOPE: All roof shingles applied to a low slope deck (2" to 4" per foot) require the use of CertainFeed WinterGuard™ Waterproofing Shingle Underlayment, or its equivalent,* applied over the entire deck surface. Consult the WinterGuard and individual shingle application instructions for details.

* For low slopes, underlayment equivalents to WinterGuard include:

- 1) waterproofing shingle underlayments meeting ASTM D1970; and
- 2) two layers of 36" (915 mm) wide felt shingle underlayment lapped 19" (485 mm). Shingle underlayment should meet ASTM D6757, ASTM D4869 Type I or ASTM D226 Type I (except when applying LandMark TL or Presidential TL Shake shingles.)

COLD WEATHER CLIMATES (ALL SLOPES): Applying WinterGuard Waterproofing Shingle Underlayment, or its equivalent,** is strongly recommended wherever there is a possibility of icing along the eaves causing a backup of water.

- ** For ice dam leak protection, the equivalents to WinterGuard include:
- 1) waterproofing shingle underlayments meeting ASTM D1970; and
 - 2) two layers of 36" (915 mm) wide felt shingle underlayment lapped 19" (485 mm) and fully adhered to each other with asphalt roofing cement meeting ASTM D4586 Type II. Shingle underlayment should meet ASTM D6757, ASTM D4869 Type I or ASTM D226 Type I.

VALLEY FLASHING : Line valley by centering 36" (915 mm) wide CertainTeed WinterGuard, or equivalent,** in the valley and applying directly to deck. Consult the WinterGuard and individual shingle application instructions for details.

- *** For valley liner, the equivalents to WinterGuard include:
- 1) waterproofing shingle underlayments meeting ASTM D1970;
 - 2) one layer of 50 lb. or heavier asphalt coated roll roofing; 3) one layer of mineral-surfaced roll roofing; and 4) two layers of 36" (915 mm) wide felt shingle underlayment. Coated roll roofing should meet ASTM D224; shingle underlayment should meet ASTM D6757, ASTM D4869 Type I or ASTM D226 Type I.

REQUIREMENTS BY UNDERWRITERS LABORATORIES (UL) FOR FIRE-RATED PREPARED ROOFING

- ◆ UL classified underlayment is required under Class A fire-resistant shingles when plywood or non-veneer (OSB, WB, etc.) APA sheathing is at least $\frac{3}{8}$ " thick but less than $\frac{15}{32}$ ".
- ◆ When sheathing thicker than $\frac{15}{32}$ " is used under fiber glass-type shingles, shingle underlayment is not required for a UL Class A fire rating.
- ◆ UL does not require underlayment under Class C shingles applied to sheathing with a minimum thickness of $\frac{3}{8}$ " due to a large safety margin.

WATER-RESISTANT UNDERLAYMENTS

Water resistant underlayment is a product that consists of organic felt impregnated with asphalt saturant. Some water-resistant underlayments, such as CertainTeed's Roofers' Select, also contain a fiber glass reinforcement which increases tear strength and reduces wrinkling.

Water-resistant underlayment was originally invented to keep the roof decking dry until shingles could be applied. Applying this underlayment was originally called "drying-in the roof." It was also useful as a separation sheet between the roof sheathing boards (before OSB and plywood sheets were used as roof decking) and the asphalt shingles. This was important because resin pockets in the pine planks caused the asphalt to degrade prematurely unless the underlayment separated the resin and asphalt from each other.

Water-resistant underlayment is made to shed most of the water that falls on it unless it is torn or punctured. Its ability to be water-resistant is temporary. As the sun degrades the exposed asphalt the materials begin to dry, absorb more moisture, lose its strength and eventually begin to tear. The less asphalt used to saturate the underlayment sheet during manufacturing, the shorter its life. Since asphalt is the most expensive component of shingle underlayment, lower priced materials will have less asphalt and a shorter life when exposed to the sun. Lower priced shingle underlayment, for the same reason, is also subject to severe wrinkling when it gets wet or even just damp.

Underlayment is used under asphalt shingles for a variety of reasons, such as providing:

- ◆ Backup for water-shedding protection of the deck if shingles fail from wind-driven rain. The lower the slope, the more important underlayment is, since water flows more easily under shingles on low slopes.
- ◆ A protective barrier to the elements between the time the old shingles have been torn off and prior to the new shingle being applied. However, the underlayment should not be relied on as a temporary roof system, especially when the drip edge flashing is not yet in place. It is unlikely to prevent leaking in the event of heavy wind and rain.
- ◆ An agent to hide minor imperfections of the decking material and reduce "picture framing" of deck panels.
- ◆ Fire ratings (Class A or C) when used in conjunction with shingles.

INSTALLATION GUIDELINES FOR WATER-RESISTANT UNDERLAYMENTS

The following is a general guide for the installation of water-resistant shingle underlayment. These guidelines can be used regardless of the weight of the underlayment. However, always be sure to consider the local codes.

OVERNIGHT EXPOSURE

If underlayment has been exposed overnight, moisture from dew should be allowed to completely dry before shingling over. If this does not happen, the moisture will become trapped beneath the shingles. Wrinkling can telegraph through the shingle and make a good shingle job look terrible. The worse part is that the job can look good when you leave in the evening but the wrinkles can reappear the next morning when the homeowner will notice them.

While we've discussed underlayment being exposed overnight, it is highly recommended that the roofing contractor only tear off what he can shingle over that same day. This prevents the most common underlayment installation problems.

APPLYING UNDERLAYMENT BETWEEN SHINGLE LAYERS

CertainTeed advises against applying underlayment over existing roofing. The underlayment may cover or create soft areas in the roof surface. These soft spots can cause shingle fasteners to be under- or over-driven, thereby weakening the shingle hold-down strength (potential blow-offs) or tearing holes in the shingles that can allow water intrusion (potential leaks). Underlayment applied over existing roofing interferes with the ability to nest the new shingles into the old. Nesting is an accepted and time-proven method of applying same-size new shingles over old ones.

So, if the old shingles are to be left in place and the new shingles can be nested into the old, then no additional underlayment is required. There are some who believe that the introduction of an additional vapor retarder between the roofing layers can cause moisture collection and deterioration.

Here Are Some Tips...

For roof pitches above 7:12 consider adding a third row of fasteners, making each row 9" apart instead of 12" apart.

Dennis Torback from Fulton, KS tells us: "I always use Plasti Top nails on felt, it resists tearing under foot and has held up during an unexpected storm with high winds."

FASTENER TYPE

CertainTeed recommends using nails rather than staples. Nails provide more resistance against underlayment tear out. It is very important, whether hand nailing or using a pneumatic gun, that the fasteners be driven flush.

INSTALLATION METHOD:

When applying underlayment the key is to keep the product as wrinkle free as possible.

1. Unroll the underlayment parallel with the eaves. The eaves edge of the underlayment should go **OVER** the drip edge eaves flashing, but go **UNDER** the drip edge flashing along the rake.

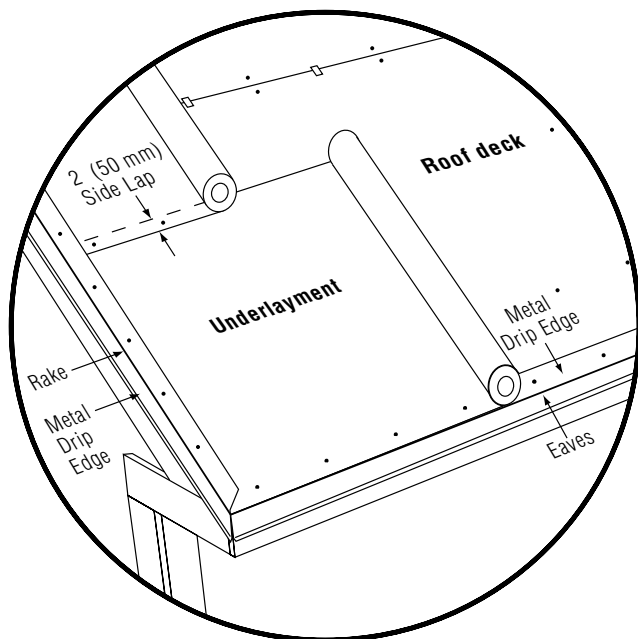


Figure 5-1: Applying Water-Resistant Underlayment Along The Eaves And Rake

2. Around the perimeter of the underlayment, place the nails approximately 6 inches apart and about 1 inch in from the edge. In the main area of the underlayment, two rows of nails are used. The first is placed 12" up from the bottom edge and the second is 24" from that same edge (or in fact 12" from the upper edge). This nicely separates the 36" wide underlayment sheet into thirds. Nail along these two rows 12-15" apart. Nail placement should be alternated so that one row places the nail opposite the open area of the first, creating a sort of zigzag pattern. This will result in

a simple pattern with all nails being approximately 12-15" apart. (See tips above.)

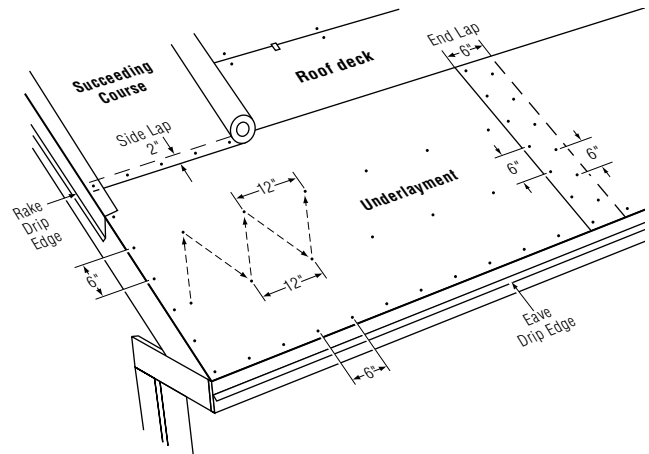


Figure 5-2: Standard Nailing Pattern For Water-Resistant Underlayment

3. Succeeding courses should be unrolled in a similar manner overlapping the previous course by 2". Be careful to roll it out straight as the underlayment will tend to slide down the pitch of the roof and end up crooked. The spacing of nails in this overlap area should be approximately 6" apart, centered in the 2" area. (See tips below.)
4. If the length of the roll is not sufficient to complete the entire run, an end lap of 6" is required. We recommend two rows of nails 6" apart to hold the lapped edges in place. End laps should be located 6-8' from any other end lap that may be in the preceding underlayment course.

WARNING

When installing underlayment where hot vent stacks protrude (from wood burning stoves etc.), it is important to allow a minimum 2" clearance. Check fire codes.

HIGH WIND / OVERNIGHT RECOMMENDATIONS:

If planning to leave water-resistant underlayment exposed overnight, or for a longer period of time, or if high winds are expected, any of the following suggestions or a combination of them can be used for additional protection:

- ◆ Use cap nails or tin caps.
- ◆ Decrease the nailing spacing recommended above, using additional fasteners.
- ◆ Nail 2x4 stringers across lap areas.

Here's a Tip... The plastic release film on WinterGuard is slippery. Avoid stepping on the release film after it has been removed, or on WinterGuard itself when the release film is still attached.

DEALING WITH WRINKLES AND BUCKLES

Organic felts expand when wet. They can wrinkle after being applied to a wet deck or if moisture is absorbed from dew, rain, or snow. If shingles are applied over an uneven underlayment surface, some of the wrinkles may “telegraph” (show) through on the finished roof. Of course, wrinkles and buckles can also result from incorrect installation.

If these problems appear, several approaches are available to eliminate them. First, the underlayment can be replaced. Second, the wrinkles can be cut and repaired with patches and asphalt plastic cement. Third, wet and wrinkled underlayment can be allowed to dry out naturally from exposure to the sun. As the underlayment dries, the wrinkles often “pull down” and disappear.

The best solution for wrinkled underlayment is prevention. Applying high quality, well-saturated felt, such as Roofers’ Select™, will eliminate many wrinkling type problems. Ask your supplier for the highest quality he can obtain. Do not assume the underlayment he stocks is the best available. Be willing to pay more for a superior product. The cost of high quality underlayment adds very little to the cost of a job and can often be offset by the savings from reduced rework and repair. Installers who insist on the lowest prices for underlayment are the cause of the low quality underlayment generally found in supplier warehouses.

WATERPROOFING SHINGLE UNDERLAYMENT

CertainTeed’s waterproofing shingle underlayment is called WinterGuard™. WinterGuard is a long-lasting self-sticking modified asphalt on a glass mat reinforcement. In all cases the product must be applied to a clean dry roof deck. The cost is much higher than standard water-resistant underlayment because of the high percentage of asphalt and polymer modifier. WinterGuard is warranted against leaks and it is not destroyed when nails are driven through it because it seals around nails as they are driven. It is designed to seal the roof and prevent water from getting inside a building due to ice dams and/or wind-driven rain. ASTM standard D1970 applies to WinterGuard and other similar products.

WHERE IS WINTERGUARD USED?

WinterGuard can be used on both new or existing decks. It is installed beneath shingles, slate, tile, cedar shakes, or metal roofing. WinterGuard is easy to apply and an excellent underlayment for low-slope shingle applications. It is commonly used to protect against water backup caused by ice dams at the roof eaves. It is also used in critical areas such as valleys, as concealed flashing around roof penetrations and on rakes. In addition, WinterGuard is very useful on roofs exposed to occasional high winds where wind-driven rain can penetrate beneath shingles.

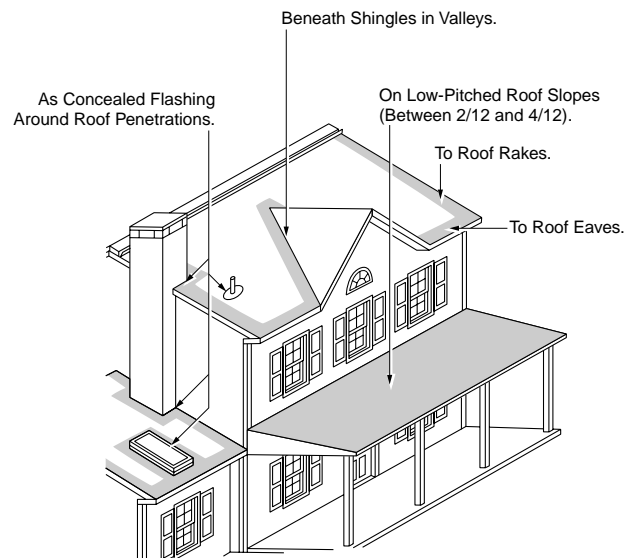


Figure 5-3: WinterGuard’s many uses.

WHAT IS THE DIFFERENCE BETWEEN WINTERGUARD AND STANDARD UNDERLAYMENT?

All the No. 15 and No. 30 underlayment products will wrinkle somewhat when dampened. Some will wrinkle very badly. All felt underlayments can leak, especially if they are cut to make them lie flat after they have wrinkled, and they can leak around nails driven through them.

Waterproofing shingle underlayments, such as CertainTeed’s WinterGuard, do not wrinkle from moisture absorption. They do not need to be cut to flatten wrinkles, because when properly installed, there are no wrinkles. Once adhered, they will not blow off the roof. They do not leak around nails driven through them, because the thick layer of polymer-modified asphalt coating is designed to be sticky and flexible, so it seals around the nails that puncture it. Therefore, these underlayments are not just water-resistant, they are waterproof. But they must be applied fully adhered to a clean, dry wood deck, in accordance with the manufacturer’s specifications, in order to get the promised performance. And nails must be properly set according to manufacturer’s requirements.

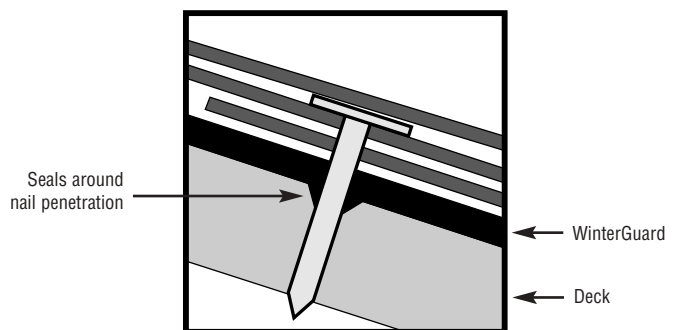


Figure 5-4: How WinterGuard seals around fasteners.

Note: . . . CertainTeed CertaFlash™ is a waterproof barrier made with the same technology as WinterGuard™ HT roofing underlayment. It is available in pre-cut widths of 6" and 9". CertaFlash can be used as flashing or under metal flashing on roof penetrations such as skylights, chimneys, vent pipes, etc. Use CertainTeed FlintPrime™ or an equivalent primer when applying CertaFlash over metal.

Here's a Tip... Over time, shingles applied above WinterGuard may become permanently adhered. This will make removal very difficult. This can be prevented by applying underlayment over top of WinterGuard before installing shingles.

HOW IS WINTERGUARD MADE AND HOW DOES IT WORK?

WinterGuard is a composite material of asphalt and elastomeric polymers reinforced with a fiber glass membrane. It is formed into a rolled sheet. The rubberized asphalt provides the waterproofing. The polymers make the asphalt elastic and sticky all the way through the membrane. This means WinterGuard has the ability to both stretch and cling, and not rip when stressed. It seals like a gasket around nails driven through it. It sticks to a clean roof deck like glue and is warranted to remain effective for the life of the new asphalt shingle system applied over it, up to 50 years.

HERE ARE SOME OTHER FACTS ABOUT WINTERGUARD™

- ◆ WinterGuard is available in two different surface styles – sand and granular.
- ◆ WinterGuard - HT (high tack and high temperature) has a film surface. It is more flexible than sand or granular surfaced WinterGuard and can withstand high temperature roof applications, including metal or tile.
- ◆ The standard roll of WinterGuard is 65' in length and 3' wide. One standard roll contains 195 square feet of material. Sand-surfaced WinterGuard and WinterGuard HT also comes in a handy "Short Roll" that is 32½' long and 3' wide. It contains 97½ square feet of material.
- ◆ During installation, an initial light "tack" (stickiness) makes WinterGuard easy to lift if you accidentally put it in the wrong place. The aggressive "tack" of WinterGuard - HT is not as forgiving.
- ◆ Once WinterGuard is installed, however, it locks tight after being warmed by the sun. If an immediate seal is desired, press overlaps firmly with a roller. A heavy-duty wallpaper seam roller or "J" roller works well.
- ◆ WinterGuard is classified by Underwriters Laboratories (UL) for use under UL Class A and Class C fire resistance-rated shingle systems.

CAUTION:

- ◆ WinterGuard may not come in contact with excessive amounts of petroleum solvent-based cements, such as asphalt plastic cement. For use with WinterGuard, CertainTeed recommends urethanes or polymer-modified cements, such as Karnak AR Elasto Caulk, Karnak No. 81, Monsey MBA Gold, GEO 2000, or comparable products offering high performance and flexibility. Use such materials sparingly.
- ◆ Do not apply over shingles or water-resistant underlayment. If necessary, you may apply a new piece of WinterGuard over an older fully adhered piece of WinterGuard. However, if you do this, be sure to "feather" the high edge of the application to avoid telegraphing its double-thickness.
- ◆ Do not use WinterGuard as a permanently exposed roofing surface because it will begin to degrade after too much exposure to ultraviolet light. However, after being properly applied to an acceptable deck, WinterGuard granular and sand-surfaced can be left exposed for three to six months (depending on the weather) prior to the installation of the roofing shingles – without significantly damaging WinterGuard's performance in the finished system. When exposing WinterGuard for more than one day, we strongly recommended that you:

- ◆ Press down all laps with a wallpaper seam roller to assure immediate adhesion. End laps should be 6". Side laps for film and granular surfaced should be 4"; sand surfaced requires a 6" side lap.
- ◆ Use additional fasteners to hold the sheet in place (especially if cool, windy weather is anticipated).
- ◆ Close-off holes and joints in the roofs, since the finished roofing system and its flashing components will not be in place to prevent leakage.
- ◆ Prior to roofing over the exposed WinterGuard, inspect it for damage and replace or recover any worn areas. If any fasteners are removed, the WinterGuard must be replaced or the holes must be filled with one of the adhesives mentioned above so that it remains watertight.

WARNINGS

- ◆ Always remember that roofing activity can be dangerous. All necessary precautions and safety guidelines should be observed in accordance with proper roofing trade practices.
- ◆ Film-surfaced WinterGuard HT can be slippery when walked on.
- ◆ When sand-surfaced WinterGuard is left exposed for long period of time, the sand embedded in its top surface will gradually come loose, possibly creating a slippery condition. Be sure to sweep the loose sand off "long-exposed" WinterGuard before walking on it. If, for any reason, you must leave WinterGuard exposed for a long period of time, you can possibly avoid the "loose-sand" situation by completely covering the WinterGuard with a standard water-resistant underlayment such as #15.
- ◆ WinterGuard's release film can be slippery. We suggest that you get the release film off the roof immediately after pulling it off each section of WinterGuard.
- ◆ WinterGuard is applied along the eaves and up the roof no less than 24" beyond the interior wall line to protect against leaks caused by ice dams. In areas of severe icing, it must be applied at least up to the highest water level that might conservatively be expected to occur from ice dams. This will vary by climate, amount of ventilation and insulation, and roof slope. For additional information on ice dams, visit www.certainteed.com.
- ◆ WinterGuard is a vapor retarder. If you apply it over the entire roof, special care must be taken to ensure there is sufficient ventilation beneath the roof deck to prevent condensation. Refer to Chapter 7 for more information on ventilation.
- ◆ WinterGuard will temporarily lose most of its sticky nature at temperatures under 40°F or even at higher temperatures, depending on its age. We recommend that it be applied in fair weather, at temperatures above 40°. If you need to apply it at colder temperatures, we suggest that you:
 - ◆ Nail it in place with fasteners. Nailing, however, cannot provide protection from ice dams.
 - ◆ Seal the laps with a heat gun or use one of the caulks/adhesives mentioned above.

Installed according to instructions, WinterGuard will become sticky again and adhere when temperatures rise.

Here's a Tip... Using the "Fly-In" Method, place your thumbs down. It makes the job easier in hot weather, to let go of the sticky WinterGuard. (Thanks to Mike Dempsey of Eagle River, WI.)

- ◆ Carefully walking on WinterGuard to help it adhere to the deck is recommended. Otherwise, for safety reasons, never walk over WinterGuard until it is well adhered to the deck or is mechanically fastened.

DECK PREPARATION

- ◆ Remove all roofing material down to a clean, dry, and smooth deck.
- ◆ Get rid of anything that is sticking up, such as nails or wood splinters. Also eliminate dust, dirt, loose objects, and moisture.
- ◆ If you are covering a concrete or masonry roof surface, prime the surface first with an asphalt primer meeting ASTM D41 requirements. Follow the manufacturer's instructions for applying the primer. The primer must be dry before installing WinterGuard.

THREE INSTALLATION METHODS

(1) THE "ROLL-OUT" APPLICATION METHOD

NOTE: This method requires two workers.

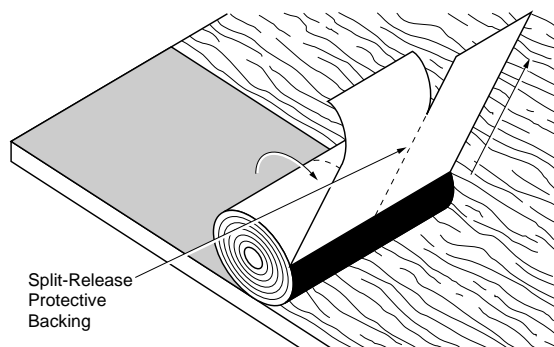


Figure 5-5: Application using the "Roll-Out" Method.

1. WinterGuard can be applied in any length convenient to the applicator.
2. First, unroll the material (keeping protective release film in place), line up with the lower edge of the roof, and hold it in place.
3. Lift the starting-end of the material (approximately 1'), peel back, and fold under at least 6" of both protective release film sections.
4. Carefully return the exposed adhesive surface to the deck and press it firmly in place. It is recommended that you walk over WinterGuard to set it firmly to the deck.
5. If it's cold and the material does not stick immediately, tack in place with a few fasteners.
6. Reroll the material from the other end until the peeled and folded-back film is exposed.
7. Beginning with the already peeled release film, continue to peel both sections of film from the roll, pulling the roll parallel to the eaves (Figure 5-5). Be sure the WinterGuard lays flat and is sticking well.
8. Press overlaps firmly into place with a hard roller.

(2) THE "PEEL AND FLOP" APPLICATION METHOD

NOTE: This method is recommended for one-worker applications.

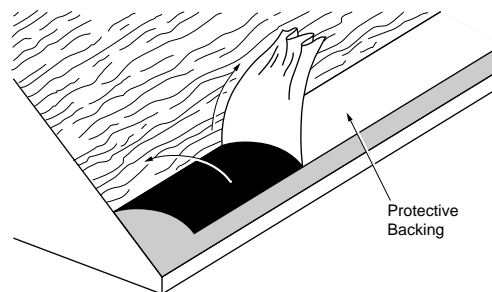


Figure 5-6: Application using the "Peel and Flop" Method.

You can apply WinterGuard with the "Peel and Flop" method, using the "two-piece, split-sheet, release-film" feature to adhere the longitudinal halves, one at a time. This feature allows one person to position the sheet before removing the protective plastic sheeting on the underside, then flop it back, peel off the release film, and set it, all without help. It is recommended that you walk over WinterGuard to set it firmly to the deck, and press overlaps firmly into place with a hard roller. It is best to cut the product into manageable lengths of about 12' when applying WinterGuard by this method.

(3) THE "FLY-IN" APPLICATION METHOD

NOTE: This method requires two workers.

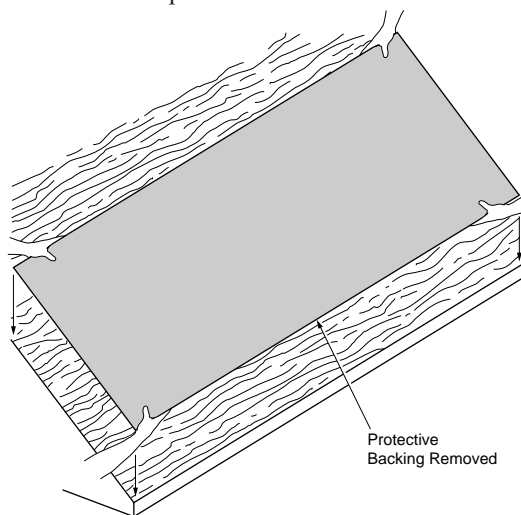


Figure 5-7: Application using the "Fly-In" Method.

1. Cut WinterGuard to a convenient length and dry-fit the sheet to its proper location before removing the plastic release film.
2. Turn the entire sheet over and remove all the protective release film.
3. Pick up the sheet of WinterGuard from both ends and turn it over. Be careful that the wind doesn't catch the sheet when it's raised off the roof. In fact, don't even try this method on a windy day.
4. Drop or "fly" the sheet into place, using great care to assure correct placement (Figure 5-7).

- Press the sheet firmly against the deck to be sure of complete adhesion. It is recommended that you walk over WinterGuard to set it firmly to the deck.

APPLYING DRIP EDGE

- Drip edge must be applied so that the higher pieces will overlap the lower pieces.
- At the rake, drip edge may be installed under or over WinterGuard. When drip edge is installed over WinterGuard, the WinterGuard must cover the top of rake board.
- At the eaves, if there is a chance of snow or ice build-up in the gutters, install drip edge over WinterGuard. WinterGuard must cover top of fascia board. In severe ice dam regions, WinterGuard can be wrapped over the fascia board and, if desired, onto the soffit. Cover all exposed WinterGuard with drip edge, gutter, wood or other weather-resistant material to protect it from damage. If there is no chance of snow or ice build-up in the gutters, install drip edge under the WinterGuard.

DEFEATING ICE BUILD-UP IN GUTTERS: Ice build-up in gutters will often allow meltwater to intrude behind fascia boards. Depending on construction of the eaves, deterioration of soffits or even interior damage can occur that looks like a roof leak. One method to solve this problem is shown in *Figure 5-8*. Another method is to wrap WinterGuard™ down the fascia onto the soffit, and nail a furring strip to hold WinterGuard tightly in place. This strip also serves as a UV block. Install the gutter in front of the WinterGuard-covered fascia. Then install the drip edge on the eaves over WinterGuard. Make sure the drip edge extends well into the rain gutter as shown in *Figure 5-8*, so UV rays are prevented from reaching WinterGuard. If the fascia is wider than about 6" WinterGuard must be stopped behind the gutter to prevent exposure to UV. This approach won't be acceptable on many aluminum or vinyl fascia systems. Also, refer to *Figure 5-10* for proper gutter placement.

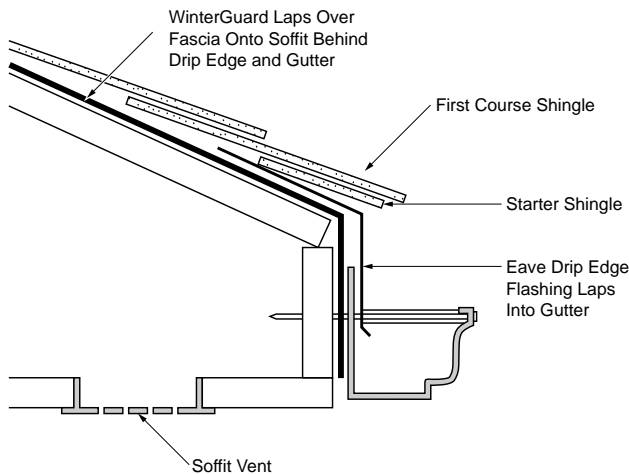


Figure 5-8: Application down the fascia to protect against ice build-up in gutters.

APPLYING WINTERGUARD ON VALLEYS

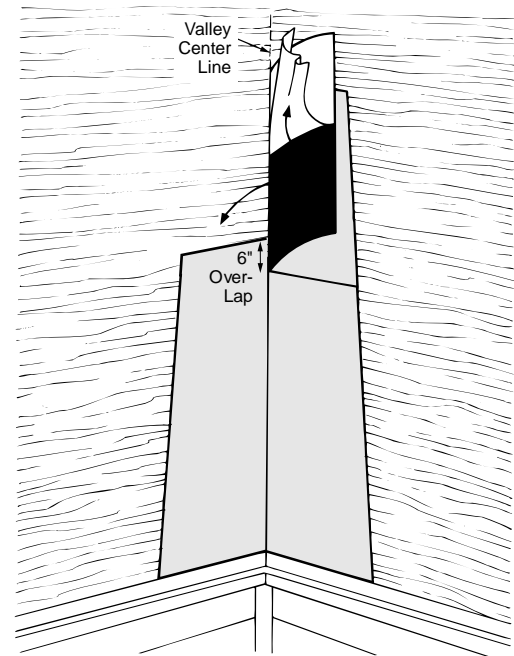


Figure 5-9: Valley application using the two-man "Peel and Flop" Method.

- In valleys, the width of the material must be 36" minimum.
- Apply WinterGuard using the "Peel and Flop" method described earlier. This time, however, be sure to use two workers to handle the sheet.
- Be sure you're getting good adhesion down the valley centerline. WinterGuard must conform smoothly to the valley. If fasteners are required (because of cold weather or a steep slope), they must be no closer than 6" to the valley centerline.
- In valleys, start the application at the low point and work upward.
- To assure waterproofing, overlap all WinterGuard sheets 6" at lap joints. The uppermost portion must overlap the lower portion. A hard roller is recommended to roll and press WinterGuard in place at the laps.
- Do not use WinterGuard as a permanent weathering surface in open valleys (or elsewhere).

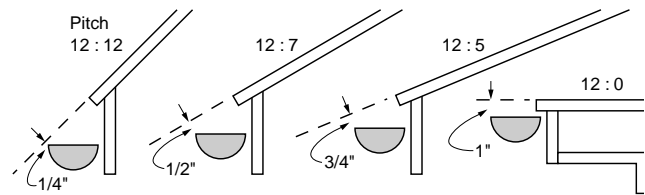


Figure 5-10: Gutter placement. Place gutters below slope line to allow snow and ice to slide clear.

Here's a Tip... When applying felt paper to the roof deck, use 3/8" staples every 16", staple nylon string along all laps and joints in the paper. We use string that is typically used by a mason and have never tripped on it since it's small and lies flat on the paper. The string will prevent wind blow offs and avoid the need to nail down strapping which will have to be removed before shingle installation. Simply shingle right over the string. We use this method whenever the roof deck will be open to the weather and wind overnight. (Thanks to Ken Cowan, Winnisquam, NH.)

APPLYING WINTERGUARD ON LOW SLOPES

1. WinterGuard can be applied under shingles to provide protection against wind-driven rain water on low-slope applications.
2. The minimum approved slope for WinterGuard application is 2/12. If applied to cover the entire roof, ensure sufficient ventilation to avoid condensation.
3. It is especially important to assure adhesion at the laps by pressing all overlaps into place with a hard roller.

FLINTLASTIC® SA ROOF SYSTEMS

SELF-ADHERING SBS MODIFIED BITUMEN ROOFING SYSTEM FOR LOW SLOPE ROOFS

CertainTeed Flintlastic SA is a premium, self-adhering SBS modified bitumen roofing system comprised of a nailable base with a top surface designed to accept self-adhering membrane, a self-adhering Mid Ply and self-adhering Cap for a total roofing system.

The Flintlastic SA products can be used in various system configurations, depending upon the roof requirements. For small projects such as decks, additions and porches, two-ply systems comprised of Flintlastic SA Base and Flintlastic SA Cap sheet may be appropriate (in conjunction with FlintFlash™ SA flashing membrane as specified by CertainTeed). For larger roofs and commercial applications, three-ply systems comprised of Flintlastic SA Base covered with Mid Ply and Cap are recommended.

Roofs and decks must have proper drainage.

The advantages of self-adhering membrane are ease of application, minimum of installation tools or equipment needed, cleanliness, and the fact that no hot asphalt or torches are required for installation.

In keeping with the CertainTeed tradition of quality, our Flintlastic SA roofing membrane product line is

premium quality material and the roof system specifications have been engineered to provide roofs that offer the best in longevity and performance.

Refer to the CertainTeed Commercial Roof Systems Specification Manual for product data sheets and complete specification details. Product application must comply with CertainTeed installation instructions.



Figure 5-12: FlintFlash and SA Base.



Figure 5-13: SA Mid-Ply and SA Cap.

INSTALLATION OVERVIEW

DECK PREPARATION: CertainTeed recommends the use of Flintlastic SA Base in conjunction with all self-adhering membrane roof installations. The SA Base can be mechanically attached to nailable substrates or applied using hot asphalt (non-nailable substrates). For non-nailable substrates where use of hot asphalt to adhere the base sheet may not be appropriate, Flintlastic SA Mid Ply may be used in lieu of the SA Base to surfaces properly primed with Flintlastic SA Primer. However, note that without the use of a base sheet, the membrane may be difficult to later remove (if necessary) and certain UL and FM listings for the products may not apply.

Consult the CertainTeed Commercial Roof Systems Specification Manual for complete application and specification details. Prior to application of Flintlastic SA products, ensure roofs have adequate slope and drainage. Consult the local building official for minimum slope and drainage requirements.

WEATHER CONDITIONS: Do not attempt application if ice, snow, moisture or dew are present. Bonding substrates must be clean, dry and free of dust or other inhibitors of proper adhesion. Ambient temperature must be 50°F or above.

STORAGE: Store Flintlastic SA rolls indoors on pallets, protected from the elements. Rolls that are improperly stored or have been warehoused for prolonged periods of time may lose their tack. Do not attempt to install rolls that do not exhibit an adequate bond.

WARRANTY: 12-Year Warranty: Flintlastic SA Mid Ply and Flintlastic SA Cap (for non-nailable substrates); 12-Year Warranty: Flintlastic SA Base and Flintlastic SA Cap; 15-Year Warranty: Flintlastic SA Base and Flintlastic SA Mid Ply and Flintlastic SA Cap.

(See warranty for complete details including coverages, limitations and exclusions.)

APPLICATION OF FLINTLASTIC SA BASE

Beginning at the low point of the roof, mechanically fasten SA Base to nailable deck using appropriate fasteners. Start with an appropriate roll width (1/3 or 1/2 roll width) to accommodate offsetting of sidelaps of subsequent layers of Mid Ply and/or Cap sheet. Install so that no sidelaps are against the flow of water. A minimum fastening pattern is every 9" o.c. on sidelaps and every 18" o.c. in two staggered rows in the field of the sheet.

Prime non-nailable substrates such as concrete using FlintPrime SA water-based primer. Allow to dry thoroughly, but not more than 4 hours to retain tack-enhancing properties. Apply SA Base using ASTM Type III or IV hot asphalt* at the rate of 25 lbs. per 100ft².

* (Type III, Slopes under 3" per foot; Type IV, Slopes over 3" per foot)

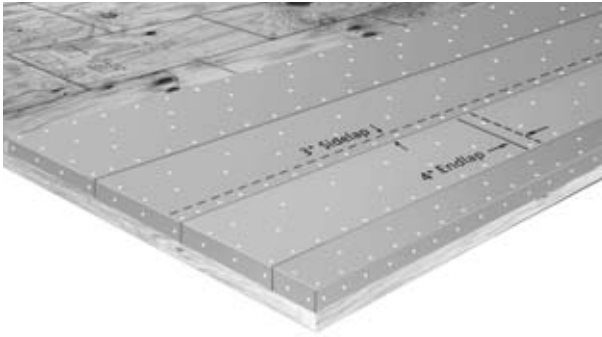


Figure 5-14: Fastening SA Base on a nailable deck.

Overlap base sheet sidelaps 3" and endlaps 4". Offset endlaps a minimum of 3 feet. Turn base sheet over fascia and fasten. Do not leave installed base exposed; cover in the same day with Flintlastic SA Mid Ply and/or Flintlastic SA Cap.

APPLICATION OF FLINTLASTIC SA MID PLY

(Note, proceed to "Before Installing Flintlastic SA Cap," if not installing Mid Ply.) Before installing Flintlastic SA Mid Ply, sweep the underlying base sheet or primed surface to remove any dust, dirt or sand particles that could interfere with adhesion.

Apply Mid Ply over installed Flintlastic SA Base or, for non-nailable decks such as concrete, properly primed substrates. Surface must be dry and free from dust or dirt.

Start Mid Ply application at the low point of the roof with appropriate roll width to offset sidelaps 18" from sidelaps of base sheet. Install flush to roof edge if over base sheet, otherwise turn the Mid Ply over the fascia minimum 2" and nail. Design layout so that no sidelaps are against the flow of water.

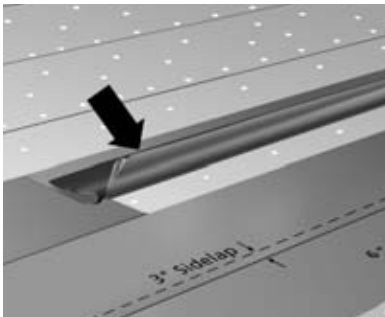


Figure 5-15: Fold back halfway and remove release film.

On smaller roofs, cut rolls into manageable lengths. Fold the membrane back halfway lengthwise to remove the split release film. Press membrane securely into place, and repeat with the opposite half of the membrane. Use a heavy, weighted roller over the entire surface of the Flintlastic SA Mid Ply membrane to secure the membrane. Work outwards to eliminate voids.

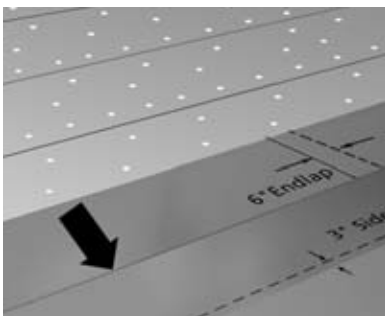


Figure 5-16: Roll seams with a heavy weighted roller.

When working with full rolls on large roofs, you can leave the membrane in position and remove the split release film from underneath the membrane. (This technique requires two workers to prevent shifting.)

Overlap sidelaps of subsequent Mid Ply membrane lengths 3" and endlaps 6". Offset (stagger) endlaps minimum 3 feet. Cut endlaps at opposing diagonal corners at a 45° angle approx. 3" from the corners to minimize "T"-seams. Apply a bead or small trowel dab (quarter size) of FlintBond SBS Modified Bitumen Adhesive, trowel grade or caulk grade at the edge of the angled cut to avoid a capillary. Use of a hand-held hot air gun at the joint area prior to rolling the membrane will maximize adhesion. It is recommended to apply a bead of FlintBond SBS Modified Bitumen Adhesive, caulk grade, at all Mid Ply side and endlaps to eliminate a capillary.

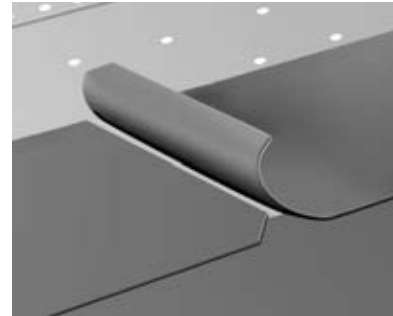


Figure 5-17: Cut endlaps at a 45 degree angle at opposing diagonal corners.

Don't leave the installed Flintlastic SA Mid Ply exposed to the weather; cover with Flintlastic SA Cap Sheet the same day.

BEFORE INSTALLING FLINTLASTIC SA CAP

All vertical details and flashing details require application of FlintFlash SA or cut strips of Mid Ply as base flashing prior to application of Flintlastic SA Cap Sheet. Install the smooth flashing strip before installing the cap sheet and secure using trowel grade FlintBond Modified Bitumen Adhesive. Mechanically fasten top of vertically adhered membrane before applying counterflashing. (See "Typical Construction Details.")

If roof edge detail utilizes edge metal, proceed as follows:

If Mid Ply has been installed: Install minimum 26 gauge edge metal using appropriate fasteners and set entirely in a uniform 1/8-1/4" thick troweling of FlintBond Modified Bitumen Adhesive, trowel grade. Remove any oil from the metal surface using a vinegar and water solution. Prime the horizontal surface of the metal with FlintPrime™ SA and allow primer to dry. Apply a bead of caulk grade FlintBond adhesive to the edge of the metal where it meets the Mid Ply. Over the metal install a FlintFlash SA 9 3/4" wide strip (or a strip of Mid Ply cut to similar size) extending min. 3" onto the metal and 6" onto the Mid Ply. Apply a bead of adhesive to the roof side edge of the Mid Ply strip. As an alternate, set the roof side edge (the side towards the field of the roof) of the Mid Ply strip in a uniform 1/2" width troweling of FlintBond, trowel grade. Proceed with Flintlastic SA Cap Sheet installation.

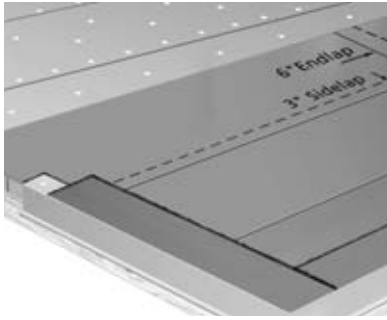


Figure 5-18: Apply FlintFlash SA over roof edge metal.

If Mid Ply is not specified: Over the Flintlastic SA Base Sheet, install a FlintFlash SA 9 $\frac{3}{4}$ " wide strip (or cut a strip of Mid Ply to that dimension) extending min. 6" onto the field of the roof and flush to the roof edge, self-adhered. Install minimum 26 gauge edge metal using appropriate fasteners, set entirely in a uniform 1/8-1/4" thick troweling of FlintBond Modified Bitumen Adhesive, trowel grade. Prime the horizontal surface of the metal with FlintPrime SA and allow primer to dry. Apply a bead of caulk grade FlintBond Modified Bitumen Adhesive at the roof side edge of the metal where it meets the Mid Ply strip. Proceed with cap sheet installation.

Similarly, complete your base flashing installation using cut Mid Ply strips or FlintFlash SA at all flashing details prior to Flintlastic SA Cap Sheet application. Seal edges of Mid Ply or FlintFlash Flashing Strips with a bead of FlintBond. See "Typical Construction Details" for examples. If Mid Ply has been installed as part of the system, set flanges in trowel grade FlintBond, and properly fasten. Apply the cut Mid Ply strip or FlintFlash SA flashing self-adhered, and over this install the Flintlastic SA Cap Sheet and Cap Sheet counterflashing as specified. Cap sheet flashing installed to transitions that overlap onto mineral surface must be set in a uniform troweling of FlintBond Trowel Grade Adhesive.

APPLICATION OF FLINTLASTIC SA CAP

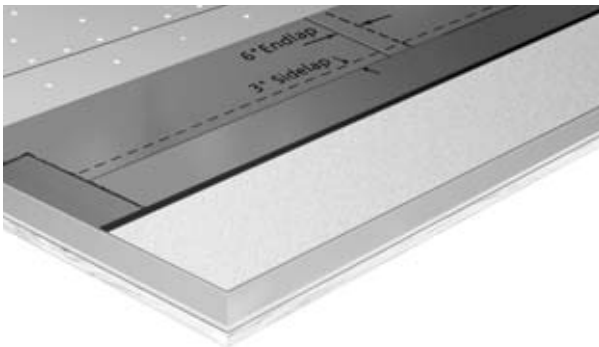


Figure 5-19: Apply Cap sheet to offset underlying sidelaps at least 18 inches.

Before installing the Flintlastic SA Cap sheet, sweep the surface of the installed SA Base or Mid Ply clean. To install Flintlastic SA Cap Sheet, start at the low point of the roof with an appropriate roll width to offset sidelaps from the underlying membrane a minimum of 18". Work with manageable lengths for proper handling. Position SA Cap with selvage edge release strip at high side of roof. Install in weather-lapped fashion, with no laps against the flow of water.

Once positioned, lift and fold back lengthwise the lower half of the membrane, remove the split release film, and press firmly into place. Then repeat with the other (high side of the roof) half of the membrane. Follow the same layout and split release film procedures as for Mid Ply, but overlap sidelaps 4" and endlaps 6". Use a heavy, weighted roller over the entire surface of the Flintlastic SA Cap Sheet to secure it in place and prevent voids, working outward from the center of the sheet.

As subsequent membrane lengths are installed, **remove the selvage edge release strip** just prior to overlapping (to keep the adhesive area protected and clean). Cut endlaps at opposing diagonal corners at a 45° angle approx. 4" from the corners to minimize "T"-seams. Use FlintBond SBS Modified Bitumen Adhesive, trowel grade, the full 6" width of each endlap prior to overlapping. Apply a uniform 1/8-1/4" troweling of the FlintBond the full width of the endlaps to the underlying membrane; then install the overlapping sheet. **Always apply FlintBond the width of any overlap when applying the SA Cap over another mineral surface such as the SA Cap endlap.**

At all vertical and other flashing details, install Flintlastic SA Cap Sheet over the smooth flashing strip already installed. Before installing cap flashing to mineral surfaced field ply, apply FlintBond Modified Bitumen Adhesive, trowel grade, wherever the overlap onto mineral surfacing will occur.

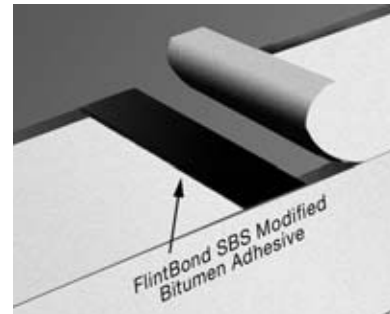


Figure 5-20: Apply FlintBond where overlaps onto mineral surface occur.

Once the membrane has had a chance to bond, check all laps and joints for full adhesion. If the membrane can be lifted at any area it is not properly adhered. A seam probing tool can be helpful to check for small voids at laps. If necessary, use appropriate hand-held hot air welding tool and seam roller to seal small unbonded areas if they exist.

NOTE: CertainTeed offers a variety of commercial roofing products (MOD-BIT, BUR and self-adhered membrane) that can be used on residential flat roofs such as carports, porches, Florida rooms, etc. Visit us @ www.certainteed.com or request a CertainTeed Commercial Systems Specifications Manual to learn more.

IMPORTANT APPLICATION CONSIDERATIONS

- ◆ Do not install in inappropriate weather... SA membranes rely on warm, dry conditions for proper adhesion.
- ◆ Store the SA material properly to protect it before use. Keep dry and above 50°F.
- ◆ Do not apply membrane that has been improperly stored, exposed to moisture, or has lost its tack. **IF THE MATERIAL ISN'T BONDING... STOP THE APPLICATION!**
- ◆ Always remember to put safety first and follow all OSHA safety guidelines with any roofing installation.
- ◆ Refer to the CertainTeed Commercial Roof Systems Specification Manual for complete requirements.
- ◆ Substrates must be free of dust, dirt, oil, debris and moisture.
- ◆ Primer, if used, must be applied at the specified rate and must be allowed to thoroughly dry.
- ◆ Work with manageable lengths of Mid Ply and Cap for the particular job. Where appropriate, cut rolls into 1/3 or 1/2 roll lengths and allow material to relax prior to installation.
- ◆ In cooler weather, a hand held hot air welding gun can be used to warm the sidelap areas and improve adhesion (prior to application of the FlintBond SBS Modified Bitumen Adhesive).
- ◆ Use caution with the weighted roller at endlap areas... don't squeeze out too much adhesive.
- ◆ When applying Mid Ply directly to substrate, design adequate roof ventilation into the system through the use of roof relief vents.
- ◆ Do not mix Flintlastic SA membranes with other types of roof membranes. Flintlastic SA membranes are specifically designed to be applied together. The permanent top film of the Mid Ply and Base cannot receive torching, hot asphalt or other non self-adhering application method. The Flintlastic SA Cap Sheet and Mid Ply cannot be applied to any surfaces other than as described herein.
- ◆ Do not use cold adhesives with Flintlastic SA membranes other than for flashing details and cap sheet overlaps as described herein.

THE PROPER T-SEAM JOINT DETAIL

Before adhering Flintlastic SA Mid Ply or Cap endlaps, trim the underlying sheet's lower outside corner at the end of the roll. Follow with the overlapping sheet, trimming the upper outside corner. Corners shall be trimmed on a diagonal angle $5\frac{1}{2}$ " long from end of roll to outside edge. Width of trim shall be equal in width to the sidelap specified (4" for Flintlastic SA Cap and 3" for Flintlastic SA Mid Ply). Trimmed corners shall be completely covered by application of succeeding courses. Note: If Flintlastic SA Mid Ply, apply quarter size dab of FlintBond Trowel Grade at T-joint area. If Flintlastic SA Cap, the endlap is completely set in trowel grade FlintBond the full 6" lap width.

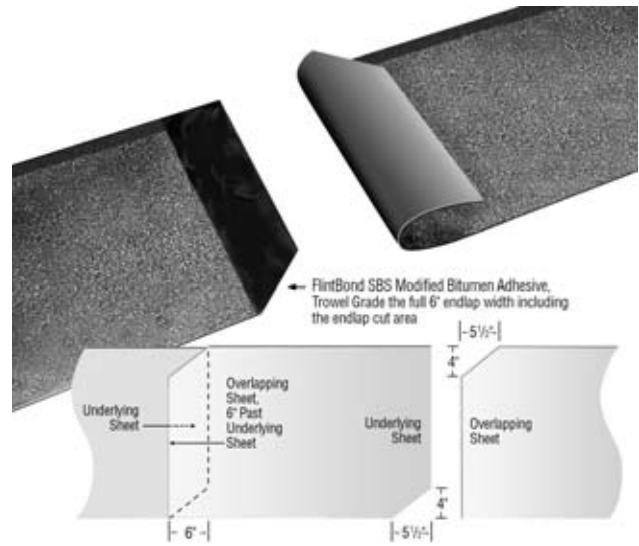


Figure 5-21: Trim the corners of the underlying and overlapping sheets as shown.

TYPICAL CONSTRUCTION DETAILS – FLINTLASTIC SA 2 PLY SYSTEM

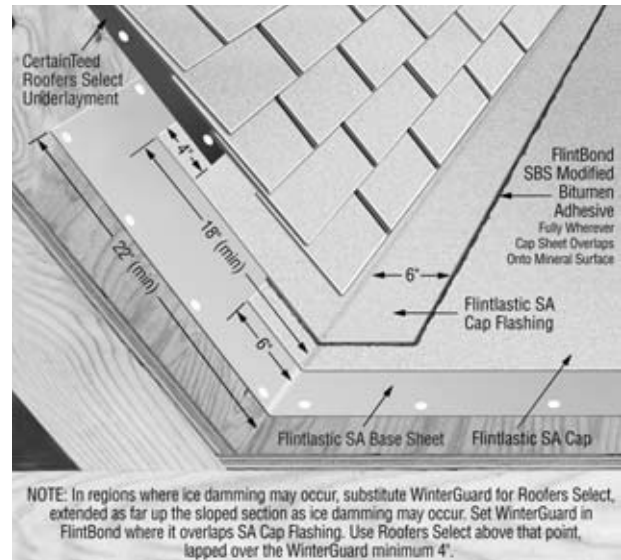


Figure 5-22: Shingle Transition 2 Ply

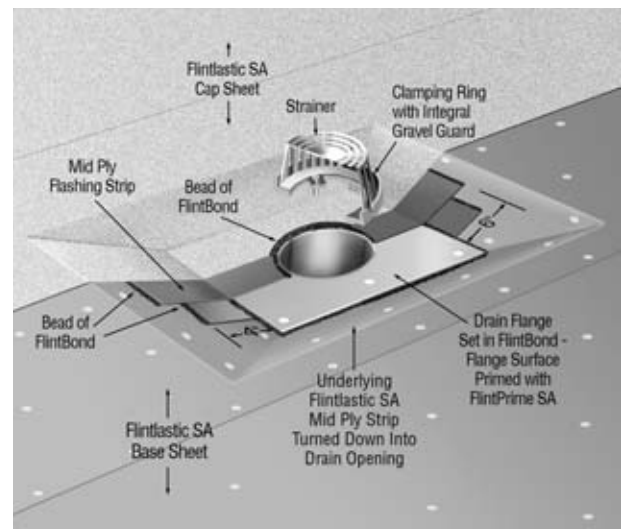


Figure 5-23: Drain 2 Ply

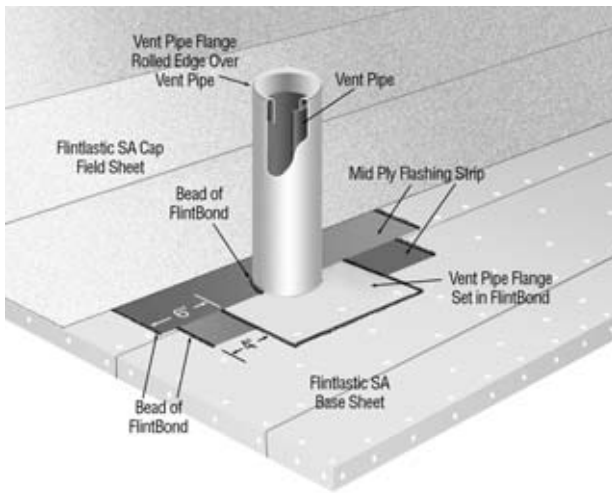


Figure 5-24: Vent 2 Ply

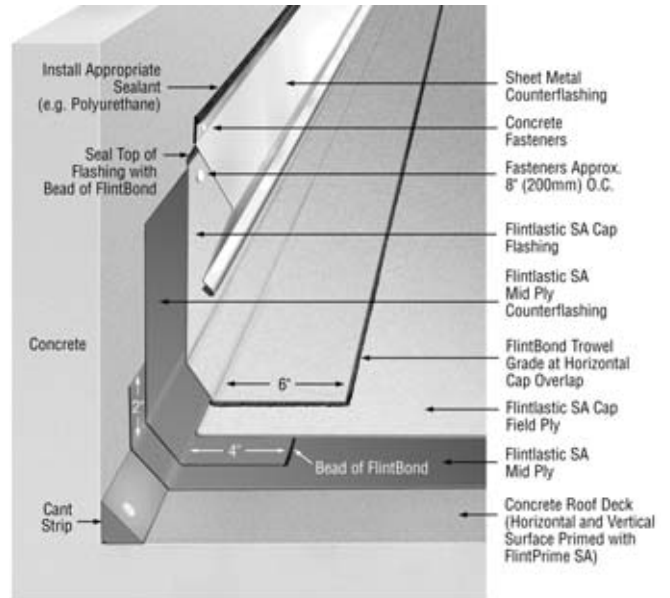


Figure 5-27: Concrete Term 2 Ply

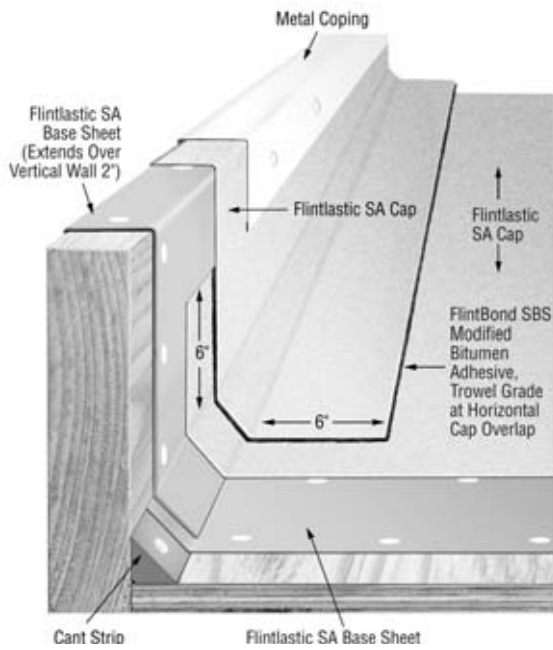


Figure 5-25: Parapet Wall 2 Ply

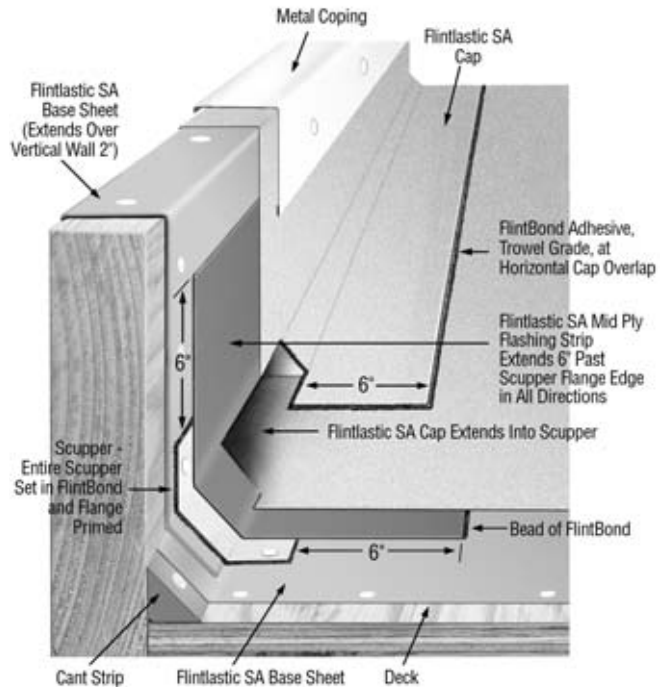


Figure 5-28: Scupper

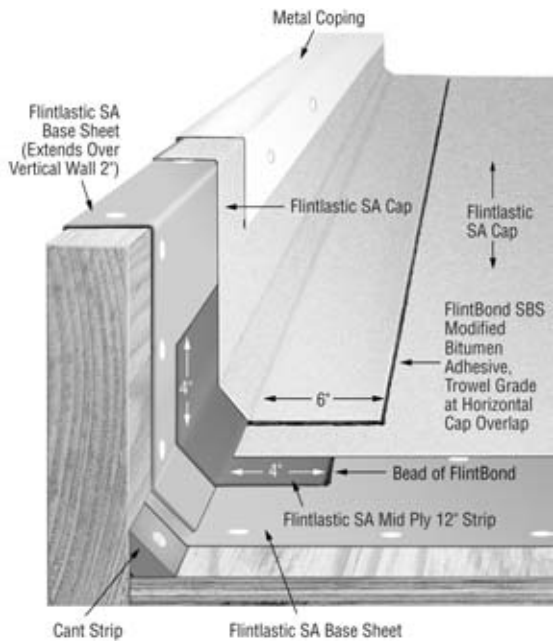


Figure 5-26: Alternate Parapet Wall 2 Ply

**TYPICAL CONSTRUCTION DETAILS –
FLINTLASTIC SA 3 PLY SYSTEM**

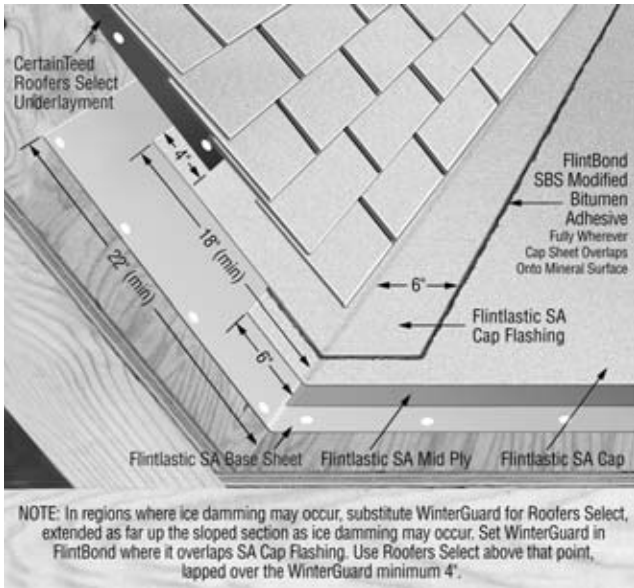


Figure 5-29: Shingle Transition 3 Ply

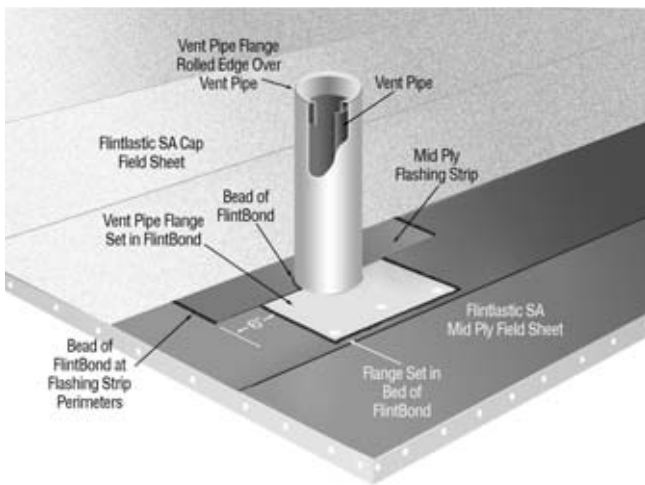


Figure 5-30: Vent 3 Ply

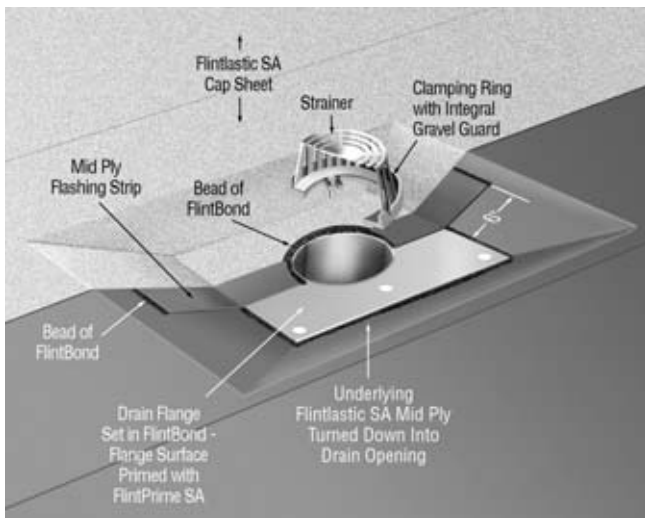


Figure 5-31: Drain 3 Ply

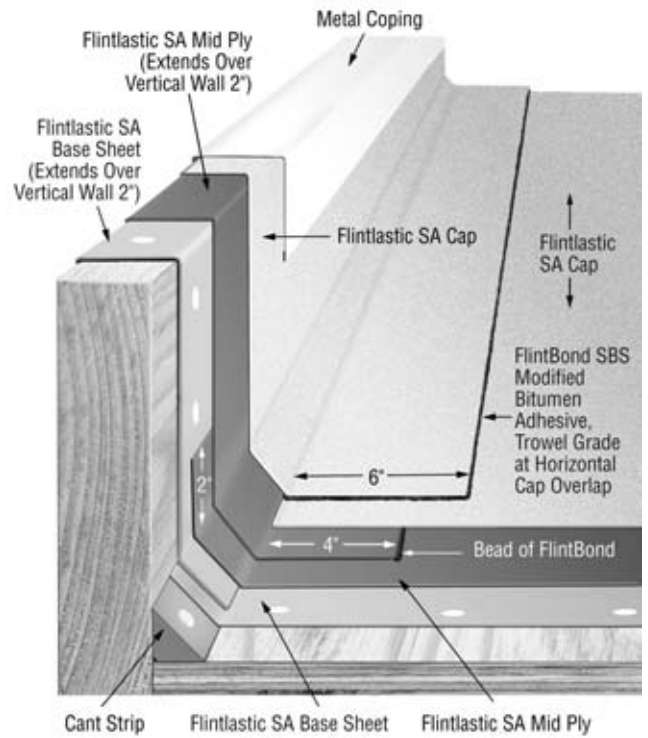


Figure 5-32: Parapet Wall 3 Ply

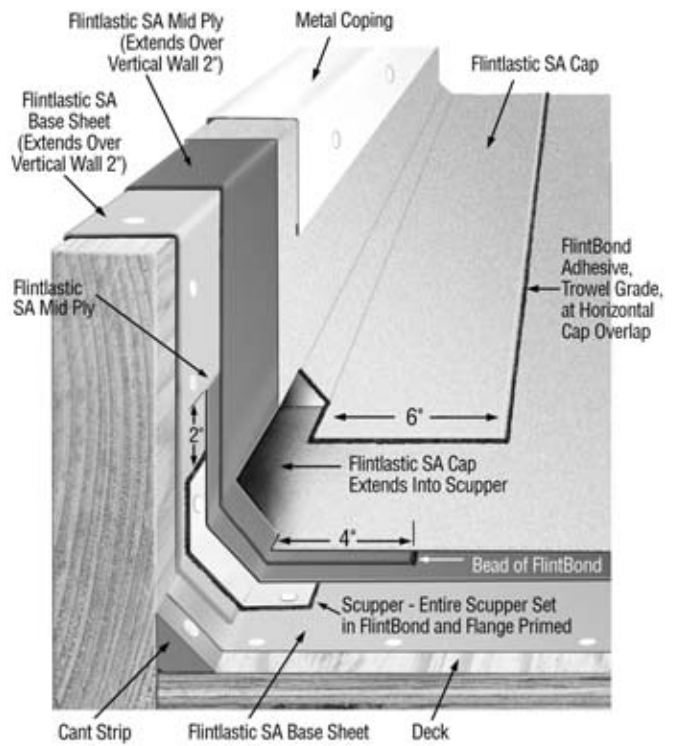


Figure 5-33: Scupper