



SPEC MANUAL

B.U.R., MODIFIED & SHINGLE
ROOFING SYSTEMS

Chapter 2B

OmniSeal®

Installation Instructions

2B.1 OMNISEAL® ROOFING SYSTEM

Malarkey's *OmniSeal® Self-Adhering Roofing System* (OmniSeal® System) is an all-in-one package of SBS polymer modified roll roofing membranes and ideal for roof areas with less than 2" (51 mm) in 12" (305 mm) slope, projects where hot, cold, and torch applications are not viable. An OmniSeal® System can also be used as an underlayment for clay and concrete tile.

2B.2 GENERAL INSTRUCTIONS

Install the OmniSeal® System in accordance with adopted building code and local amendments. To qualify for warranty protection and obtain stated coverage, the installation instructions detailed here must be followed. Contact Malarkey Technical Services or check our website at WWW.MALARKEYROOFING.COM for the most current version.

We assume no responsibility when there has been improper application, failure to properly prepare the surface or provide adequate ventilation according to FHA or HUD minimum property standard requirements and adopted building code.

For current warranty information, please visit: WWW.MALARKEYROOFING.COM/warranty-center.

2B.3 PRODUCT DESCRIPTIONS

OmniSeal® Base is an SBS polymer modified, 40 lbs./square, fiberglass base sheet which can be used over various combustible and non-combustible substrates as the initial ply in the OmniSeal® System. It is finished on top with a factory-coated primer to enhance adhesion and surfaced on the underside with a mineral parting agent. OmniSeal® Base is designed to be mechanically fastened.

Optional base sheet: Paragon® ULTRA SA Base is a self-adhering, premium SBS polymer modified, 85 lbs./square, fiberglass base/ply sheet (with fiberglass scrim) developed for use in multi-ply SBS roofing systems. It is surfaced with mineral fines while the underside has an aggressive bonding compound covered with a split-surface release film for easy use and application. ULTRA SA Base carries the Paragon® name since it is often used with Paragon® cap sheets.

OmniSeal® Ply is a self-adhering, SBS polymer modified, 40 lbs./square, fiberglass sheet used as a base or ply sheet in the OmniSeal® System. It is finished on top with a factory-coated primer to enhance adhesion and surfaced on the underside with an aggressive bonding compound covered with a split-surface release film for easy use and application.

OmniSeal® Cap is a self-adhering, SBS polymer modified, 78 lbs./square, fiberglass cap sheet which can be used over various combustible and non-combustible substrates as the surface membrane in the OmniSeal® System. It is surfaced with color-coated,

ceramic granules for ultraviolet protection and weatherability, and the topside edge has a 4" (102 mm) selvage strip of adhesive covered by release film. OmniSeal® Cap is surfaced on the underside with an aggressive bonding compound covered with a split-surface release film for easy use and application.

OmniSeal® Cap FR is a robust, self-adhering, SBS polymer modified, 88 lbs./square, fiberglass cap sheet which can be used over various combustible and non-combustible substrates as the surface membrane in a high-performance OmniSeal® System. It is surfaced with color-coated, ceramic granules for ultraviolet protection and weatherability, and the topside edge has a 4" (102 mm) selvage strip of adhesive covered by release film. OmniSeal® Cap FR is surfaced on the underside with an aggressive bonding compound covered with a split-surface release film for easy use and application.

Note: Any text reference in the instructions to OmniSeal "Cap" includes both OmniSeal Cap and Cap FR. An OmniSeal roofing system with Base, Ply, and Cap sheets rates a Class 4 impact rating (the highest possible) per UL 2218.

2B.4 FASTENING

1" (25 mm) diameter round or 1" (25 mm) square, 11-12 ga., metal cap nails are suitable for fastening OmniSeal® Base to nailable decks. Fasteners must be long enough to penetrate the roof deck at least ¾" (19 mm) or completely through roof sheathing less than ¾" (19 mm) thick.

Roofing nails with a ⅜" (10 mm) diameter head and 1" (25 mm) long are used to secure perimeter *drip edge flashing*.

Although Ply and Cap are self-adhering, a hand-held, hot air welding gun can be employed to activate the membrane adhesive if necessary in cooler weather to facilitate proper adhesion.

Trowel-grade adhesive complying with ASTM D3019 Type III or D4586 is required for laps when any membrane is applied over one with a granule surface, one example being end laps of cap sheets. *Polymer modified*, trowel grade adhesive provides better performance than non-polymer modified.

As OmniSeal® membranes are installed, use a hand roller on end laps, walls, base flashings, etc. and a weighted, 75-80 lb. (34-36 kg) roller over the entire surface to promote complete adhesion.

2B.5 STORAGE PRECAUTIONS

All rolls in the OmniSeal® System require dry, well-ventilated storage and protection from the weather. Store off the floor on pallets, and keep the rolls on end to prevent them from flattening.

Do not store at temperatures above 120°F (49°C) or below 50°F (10°C). Store the material at a minimum temperature of 55°F (13°C) for at least 24 hours prior to installation.

2B.6 HANDLING AND APPLICATION PRECAUTIONS

Do not install material that has lost adhesion, been damaged, improperly stored, or exposed to moisture.

OmniSeal® roll roofing membranes are constructed with fiberglass mats and therefore have *dimensional memory*, meaning in cooler weather they may wrinkle and/or buckle as the roof warms up if not fully relaxed before installing. Before application, roll out the material, cut into manageable, job-appropriate lengths for easier handling, and in cooler temperatures, allow them to relax.

Condition of the roof deck, temperature, and ambient moisture/humidity affect the application of self-adhering roof systems. The weather forecast and temperature on the day of application are very important, i.e., 40°F (4°C) and rising throughout the process. Do not attempt installation after rain or when cold temperatures have produced frost, snow, or ice.

Do not leave OmniSeal® Base or Ply exposed overnight. **Install only as much material as can be covered by OmniSeal® Cap on the same day.**

2B.7 ROOF DECKS

Roof decks should be sound, smooth (free of protrusions), meet necessary local requirements, provide positive drainage, and be dry at the time of installation. The deck must be swept clean of dirt and debris.

Nailable substrates should be solidly sheathed and either $\frac{15}{32}$ " (12 mm) thick, exterior grade plywood or $\frac{7}{16}$ " (11 mm) oriented strand board (OSB), and fully blocked. Deteriorated or rotted decking should be replaced. For excessively resinous areas, loose knots, and gaps in the wood greater than $\frac{1}{4}$ " (6 mm), cover with minimum 32-gauge galvanized sheet metal and fasten in place.

Finally, any OmniSeal® System should begin with mechanically-fastened OmniSeal® Base as installing self-adhering sheets directly to wood decks will make them difficult to remove later, if and when you re-roof.

2B.8 APPLICATION: THREE-PLY SYSTEM

OmniSeal® Base

Roll out OmniSeal® Base, cut into manageable, job-appropriate lengths, and allow the material to relax. OmniSeal® Base must be installed completely flat with no wrinkles or buckles.

Start at a lower corner of roof and begin by positioning a *starter strip*, one-third the width ($13\frac{1}{8}$ " [334 mm]) of a regular sheet, along the eave. Use of this lesser-width starter strip is necessary to offset the side laps of overlying membrane layers to come. (See Figure 1)

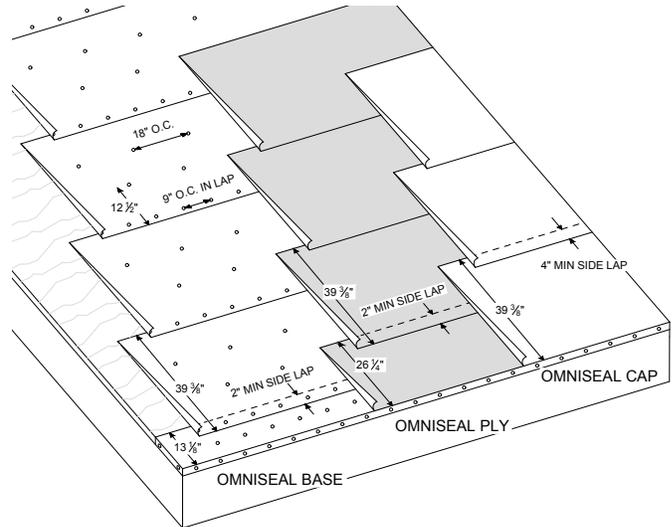


Figure 1 - 3-Ply Layout of OmniSeal® Membranes (Drip Edge Not Shown for Clarity)

Extend OmniSeal® Base over roof edges and down the face $\frac{3}{4}$ " (19 mm) past the sheathing or nailer(s). Secure with specified metal cap nails, spaced 5" - 6" (127-152 mm) back from the roof edge and 9" (229 mm) O.C. along the perimeter and edges of the roof.

Continue working up the roof with full-width sheets, lapping subsequent courses a minimum of 2" (51 mm) over the preceding sheet.

Fasten each course in the field of the sheet using a minimum of two staggered rows, approximately $12\frac{1}{2}$ " (318 mm) in from the edge and 18" (457 mm) O.C. Fasten side and end laps at 9" (229 mm) O.C.

End laps should be a minimum of 6" (152 mm), and offset a minimum of 3' (0.9 m) from course to course. (See Figure 2)

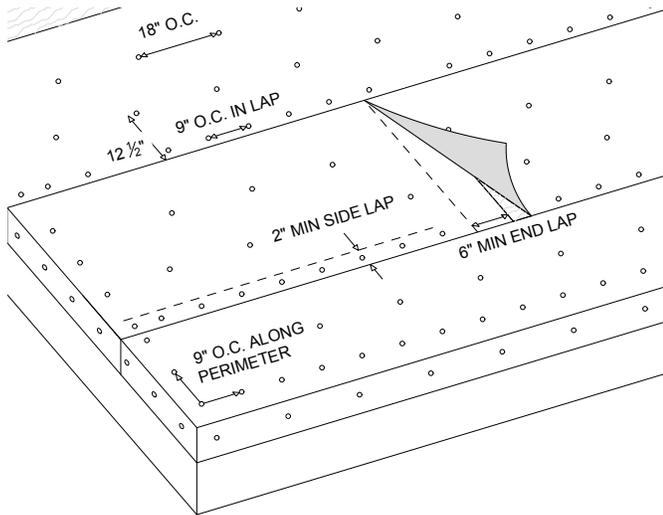


Figure 2 - Installation of OmniSeal® Base

OmniSeal® Base must be covered with OmniSeal® Ply or Cap the same day. Do not leave exposed.

OmniSeal® Ply

To aid adhesion of the self-adhering OmniSeal® Ply layer to come next, sweep or blow the OmniSeal® Base layer clean of debris.

Roll out the material, cut OmniSeal® Ply into manageable, job-appropriate lengths, and allow to relax. OmniSeal® Ply must be installed completely flat with no wrinkles or buckles.

Start at the same low side of roof and begin by positioning a *two-thirds width starter strip* (26¼" [667 mm]), adhesive/release side down. (As mentioned before, a starter of this width will accommodate the offsetting of side laps in the courses of OmniSeal® Base already laid and the OmniSeal® Cap to come.)

Application Method 1 (for less than full-width sheets): With the sheet held steady in position, lift the starting end, and peel back the release film until there is enough exposed adhesive to secure that end to the corner with heavy hand pressure. Once in place, pull off the remaining release film in a continuous motion at a 45° angle, re-check membrane placement, and lower the starter strip to the deck.

Courses to follow are all *full-width sheets* with minimum 2" (51 mm) side laps and 6" (152 mm) end laps (see next section for more information about constructing T-joints at end laps). End laps should be offset a minimum of 3' (0.9 m) from course to course.

Application Method 2 (for full-width sheets): Situate the second course of OmniSeal® Ply properly up the roof from the starter, and fold the upper half of the membrane back on itself (lengthwise) to expose the release film on that side.

Peel off the release film in a continuous motion at a 45° angle, and carefully lay that portion back down into place on the roof deck, making sure the membrane's position does not change. Ensure adhesion with firm, even pressure and smooth the membrane flat to the Base sheet below.

With the upper half of the Ply sheet stuck to the deck, repeat the process with the lower half. (See Figure 3)

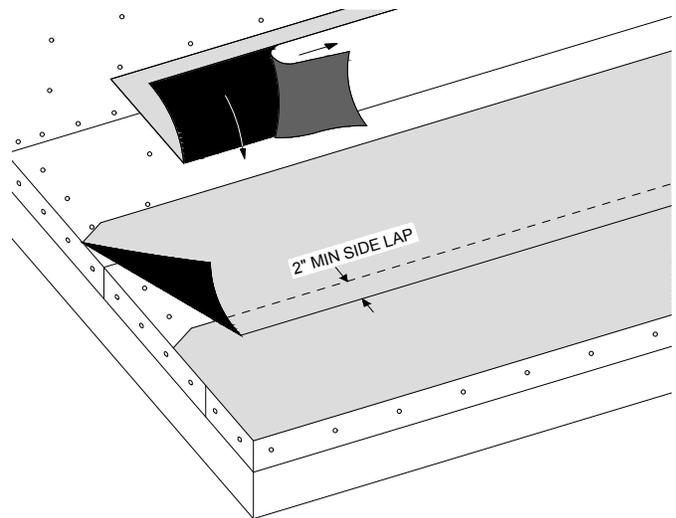


Figure 3 - Application Technique for Installation of OmniSeal® Ply and Angled Corners at Perimeter Edges

Make sure wrinkles and buckles are avoided. All OmniSeal® Ply field sheets, side laps and end laps must be rolled with a weighted, 75-80 lb. (34-36 kg) roller as they are being installed to promote proper adhesion. Work outward from the center of the sheet.

T-Joints at End Laps: Make angled, 45° cuts at opposing diagonal corners in the ends of both underlying and overlapping membranes. The width of the cut should be equal to the amount of side laps. The underlying piece will have a cut in its down-side corner while the overlapping piece will have a cut in the high-side corner. (See Figure 4)

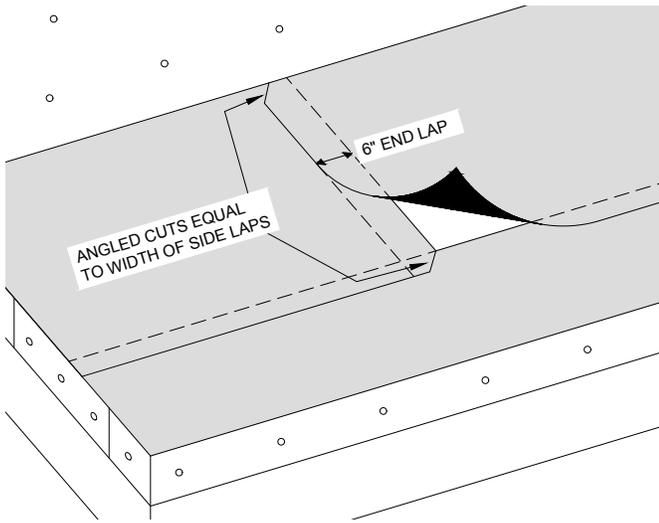


Figure 4 - Construction of T-Joints at End Laps of OmniSeal® Ply

Trimmed corners should be completely covered by application of succeeding courses. Follow with a roller to promote complete adhesion.

Application at Perimeter Edges: Like T-joints, make angled, 45° cuts in the high-side corner of membranes that terminate at perimeter edges (see Figure 3). Fully adhere the ends, and roll to ensure adhesion.

Application in Elevated Temperatures: Begin at a lower corner of roof and roll out 2-3 feet of material (610-914 mm). From the front of the roll, score the release film all the way across with a straight blade knife, taking care not to cut the membrane itself.

Peel back both ends of the release film *on the side of the roll closest to you*, and pull it completely off the *starting end* of the roll, exposing the adhesive. Lay the starting end down on the deck and adhere with hand or foot pressure.

Returning to the front of the roll, grasp the remaining release film, both sides, stand up, and begin walking backwards while pulling up on the release film. Be aware of roof edges.

Do this in a continuous motion; once started, do not stop. Should you have to stop, a quick tug or jerk on the release film may help restart removal and get you going again. If this doesn't work, cover the partially installed roll with a tarp or synthetic underlayment until it cools, then remove the covering and resume installation. (See Figure 5)

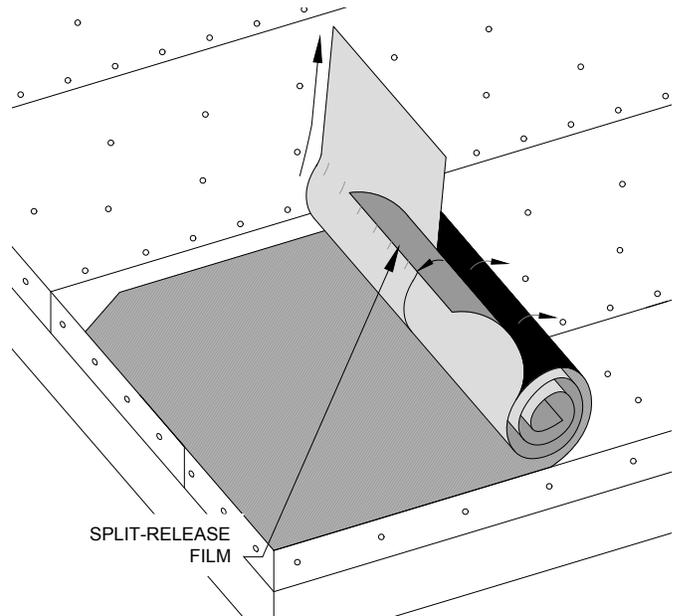


Figure 5 - Application Technique in Elevated Temperatures

Drip Edge Flashing: Following application of OmniSeal® Base and Ply layers, install non-corrosive, minimum 26-gauge, sheet metal drip edge flashing along perimeter edges of the roof. Use drip edge with flanges a minimum of 4" (102 mm) wide so the flashing can extend down over the edge sufficiently to cover the vertical face.

Remove any oil from the surface of the metal with a vinegar and water solution prior to installation. Painted metal should be scuffed or lightly primed and allowed to dry. Doing so makes the metal more receptive to adhesion from the self-adhering OmniSeal® Cap layer to follow.

Using a ¼" (6 mm) notched trowel, apply a thin, uniform coat (⅛" [3 mm] thick) of trowel-grade adhesive along the edges of the roof, and set the drip edge into it. Ensure the flashing conforms tightly to the roof perimeter, and secure the top flange with roofing nails, staggered in two rows, 6" (152 mm) O.C.

Install drip edge first along the low side of the roof, and follow by flashing up the slopes. Laps in the metal should be a minimum of 4" (102 mm) and set in sealant/mastic. (See Figure 6)

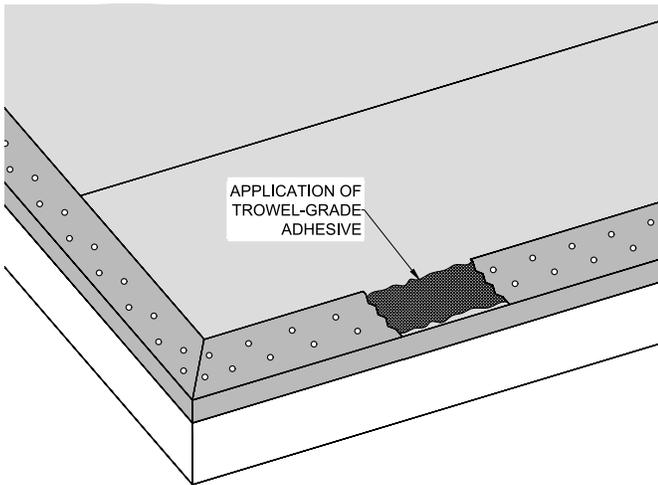


Figure 6 - Installation of Drip Edge Flashing

OmniSeal® Cap

To aid adhesion of the self-adhering OmniSeal® Cap layer to come next, sweep or blow the roof clean of debris.

Roll out OmniSeal® Cap, cut into manageable, job appropriate lengths, and allow the material to relax. It must be installed completely flat without wrinkles or buckles.

Start at the same low side of roof, and begin by applying a *full-width* roll along the eave, granule side up (selvage edge at the top), and flush to the edges of the drip edge.

Situate the material, lift and fold back (lengthwise) the upper half of the membrane, making sure the material's position does not change.

Carefully remove the split release film from that portion of the membrane, pulling it off in a continuous motion at a 45° angle, and flip the material back down onto the Ply sheet. Ensure adhesion by putting firm, even pressure on the material.

With the upper half of the Cap sheet stuck to the deck, repeat the process with the lower half.

Courses to follow are all full-width, have 4" (102 mm) side laps, and 6" (152 mm) end laps. End laps should be offset a minimum of 3' (0.9 m) from course to course.

When installing subsequent courses, remove the release film from the selvage edge of the underlying course just before overlapping it. This will keep the adhesive area protected and clean.

Make sure wrinkles and buckles are avoided. OmniSeal® Cap sheets must be rolled with a weighted roller as they are being installed to promote proper adhesion. Work outward from the center of the sheet.

T-Joints at End Laps: End laps in the same course of OmniSeal® Cap are constructed like those for OmniSeal® Ply with angled cuts at opposing diagonal corners, but because Cap has a granulated surface, use a ¼" (6 mm) notched trowel and apply a thin, uniform coat (⅛" [3 mm] thick) of trowel-grade adhesive to the entire 6" (152 mm) end lap of the underlying section (including the notched corner), and press the overlapping end down over it. Follow with a roller to promote complete adhesion. (See Figure 7)

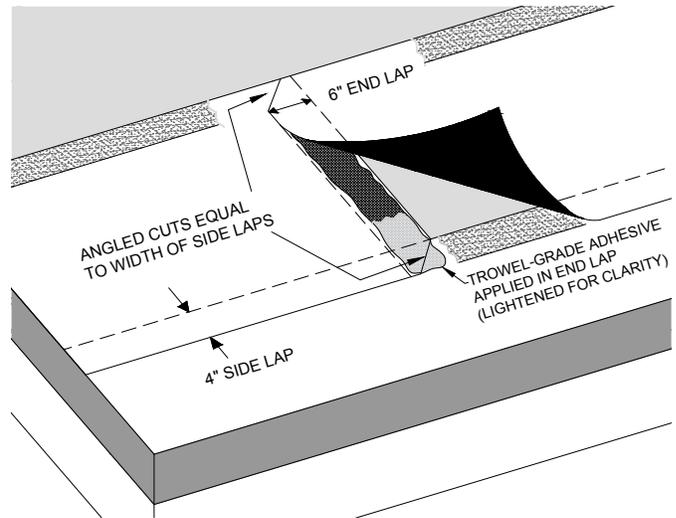


Figure 7 - Installation of OmniSeal® Cap and Construction of T-Joints at End Laps

Another Technique for Adhering Granulated Surfaces: Using a hand-held, *hot air welding gun* with a tapered tip, direct the heat from the welder to the granule surface of the cap sheet being overlapped. Move it back and forth over the surface at a 45° angle, distributing the heat evenly while slowly folding the overlapping sheet down into it, applying uniform pressure with a silicone roller. As the sheets begin to bond, continue applying heat and rolling until the entire surface is covered.

The size of the tip (or nozzle) on the welder will determine how many passes are necessary to facilitate the bond. A 2" tip would typically take three (3) passes and a 3½" tip, two (2) passes. Move the welder steadily back and forth to avoid smoke from applying too much heat in one spot.

After the two granulated surfaces have had time to set and the area sufficiently rolled, check for areas along the seams that may not have bonded completely by using a *seam tester*. Should any voids be found, employ the hot air gun and silicone roller again to reheat the area and close any gaps. If desired, a bead of UV stable caulking/sealant can also be applied along the edge of the seam.

Application at Perimeter Edges: Like T-joints, make angled, 45° cuts in the high-side corner of the Cap's selvage edge, and fully adhere the ends of membranes that terminate at perimeter edges with trowel-grade adhesive. Roll to ensure adhesion.

2B.9 APPLICATION: TWO-PLY SYSTEMS

Options for two-ply systems can be constructed with either OmniSeal® Base and Cap, OmniSeal® Ply and Cap, or even Paragon® ULTRA SA Base and Cap. With OmniSeal® pairings, the initial Base and/or Ply layers begin with a 20¾" (527 mm) starter strip along the eave, with full-width courses to follow. (On the sheet, the first lay line past halfway indicates 20¾" [527 mm]).

The starter strip for ULTRA SA Base will be 18¼" (464 mm) wide. On the sheet, the second lay line from the edge is 18¼" (464 mm).

The same membrane installation techniques apply; employ 4" (102 mm) side laps (3" [76 mm] for ULTRA SA Base) and 6" (152 mm) end laps; offset end laps a minimum of 3' (0.9 m) from course to course, and construct T-joints as explained above with notched corners and adhesive.

Install drip edge flashing after the initial application of Base or Ply, and follow with Cap.

Note: If you choose not to use nailable OmniSeal® Base and instead start with self-adhering OmniSeal® Ply or ULTRA SA Base as the base sheet, the roofing materials may be difficult to remove later, if and when you re-roof.

2B.10 BASE FLASHING: THREE-PLY SYSTEMS

At roof-to-wall transitions like a parapet wall, curb or mounting pedestal, install a *cant strip* either nailed or fully adhered to the roof substrate.

From the field, install OmniSeal® Base to the top of the cant, and fasten at both the toe of the cant and up at the termination with just enough fasteners to hold it in place.

Apply a *base flashing base sheet* next, starting up on the backside of the parapet wall, 2" (51 mm) from the top, and run it forward across the top of the wall, down the vertical face, and terminate at the toe of the cant. Fasten with scatter nailing, no less than 12" (305 mm) O.C.

From the field, install OmniSeal® Ply to the top of the cant and slightly above.

Apply a *base flashing ply sheet*, starting on the backside of the parapet wall, 2" (51 mm) from the top, and run it forward across the top of the wall, down the vertical face, across the cant, and out onto the field 3" (76 mm) beyond the toe of the cant.

From the field, extend OmniSeal® Cap to the top of the cant.

Apply a *base flashing cap sheet*, starting on the backside of the parapet wall, 2" (51 mm) from the top, and run it forward across the top of the wall, down the vertical face, across the cant, and out onto the field 6" (152 mm) beyond the toe of the cant.

Where the *granulated* base flashing cap sheet laps onto the *granulated* field cap sheet, use a ¼" (6 mm) notched trowel and apply a thin coat (⅛" [3 mm] thick) of trowel-grade adhesive to the entire surface of the field cap sheet to which the base flashing cap sheet will be applied.

Thoroughly hand-roll the area to promote good adhesion. When complete, the top of the parapet wall can be capped with metal coping. (See Figure 8)

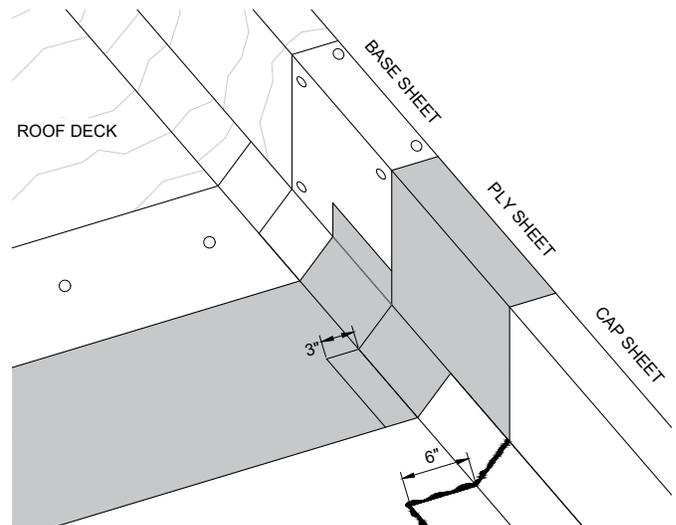


Figure 8 - Application of the OmniSeal® System at Vertical Transitions

Tie-In to a Shingle Roof

Common to residential applications is the transition from a relatively flat roof over a porch or carport to the incline plane of a shingle roof. Integrating very different roofing materials at this critical juncture is covered next.

From the field, extend OmniSeal® Base up the angled roof 16" (406 mm), and scatter-nail to fasten the membrane in place. Follow with OmniSeal® Ply in the same fashion, running it up 20" (508 mm) and then repeat with OmniSeal® Cap, extending it a minimum of 24" (610 mm) above the roof deck.

Ensure each membrane is forced into the break of the roof at the transition (*fasten* the Base in that spot), and roll to ensure good adhesion and the elimination of creases and trapped air bubbles.

Next install a *base flashing cap sheet*. Because this involves adhering one membrane to another with a

granulated surface, employ a ¼" (6 mm) notched trowel, and apply a thin coat (⅛" [3 mm] thick) of adhesive to the entire granulated surface of the field cap sheet to which the base flashing cap sheet will be applied.

Remove the release film from the base flashing cap sheet, position a minimum of 8" (203 mm) up the incline and a minimum of 6" (152 mm) onto the field, and apply it to the field cap sheet. Follow with a roller to promote adhesion, but take care not to displace the adhesive.

To begin tying shingle roofing materials to the OmniSeal® System, lap your initial course (or starter course) of specified underlayment over the base flashing a minimum of 4" (102 mm) and work your way up the roof from there. (See Figure 9)

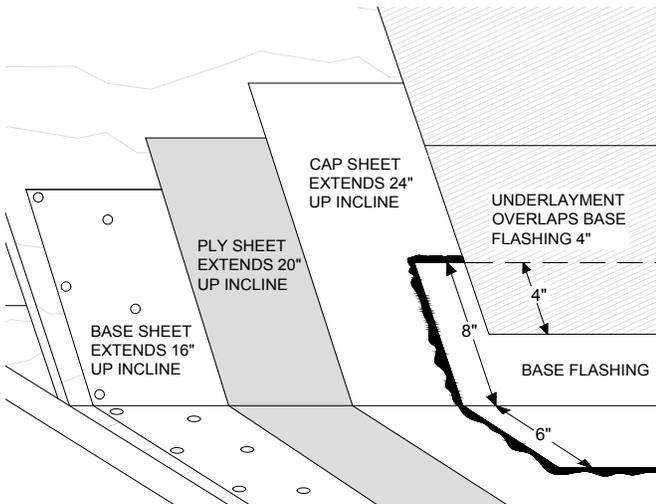


Figure 9 - Application of the OmniSeal® System at the Transition to a Shingle Roof

2B.11 VENT PIPE (AND OTHER FLANGED PENETRATION) FLASHING

Install OmniSeal® Base/OmniSeal® Ply over the approved substrate according to the instructions above. Roof penetration flashings like a pipe jack should have flanges a minimum 4" (102 mm) wide.

Set the pipe jack down over the vent pipe and into a thin, uniform bed of trowel-grade adhesive (mechanically fasten non-lead flanges), and strip-off the entire flange with OmniSeal® Ply, extending it onto the field a minimum of 4" (102 mm) past the flange.

Follow with a layer of OmniSeal® Cap, installed according to the instructions above, and cut as necessary to fit snugly around the pipe.

Finish by applying a bead of adhesive around the neck of the pipe jack where it protrudes through the OmniSeal® Cap.

Note: Other types of roof penetrations with flanges (exhaust fan vents, wind turbines, sump drain pans, etc.) can be treated in similar fashion. (See Figure 10)

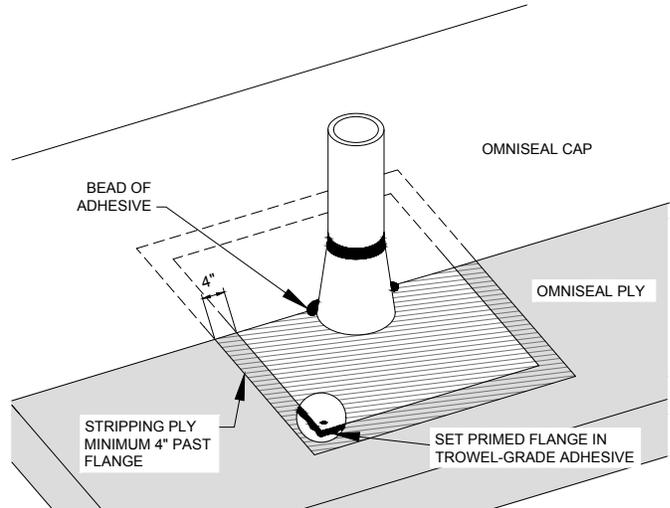


Figure 10 - Application of the OmniSeal® System at Flanged Penetrations like a Vent Pipe

2B.12 SCUPPERS

The installation of a pre-formed, 4" (102 mm) flanged, lead scupper and incorporated cant combines elements from base flashing a parapet wall and flashing a vent pipe.

For scuppers placed in a parapet wall (or curb), apply OmniSeal® Base and Ply as instructed in the Vertical Transition/Base Flashing, Figure 8.

Clean any oil from the surface of the metal (if galvanized) with a vinegar and water solution prior to installation. Painted metal should be scuffed or lightly primed and allowed to dry.

Insert the scupper in the wall, and set flanges in a bed of trowel-grade adhesive (non-lead flanges should be mechanically fastened). Install stripping ply of OmniSeal® Ply, extending a minimum of 3" (76 mm) past the edge of the flange.

Cover with a layer of fully-adhered OmniSeal® Cap, running the field sheet 2" (51 mm) up beyond the top of the cant.

Install Cap sheet base flashing, fully-adhered, from the top of the parapet wall, down the vertical face, across the cant, and out onto the field a minimum of 3" (76 mm) beyond the stripping ply.

Employ trowel-grade adhesive at all laps onto granulated surfaces, and roll the area thoroughly. (See Figure 11)

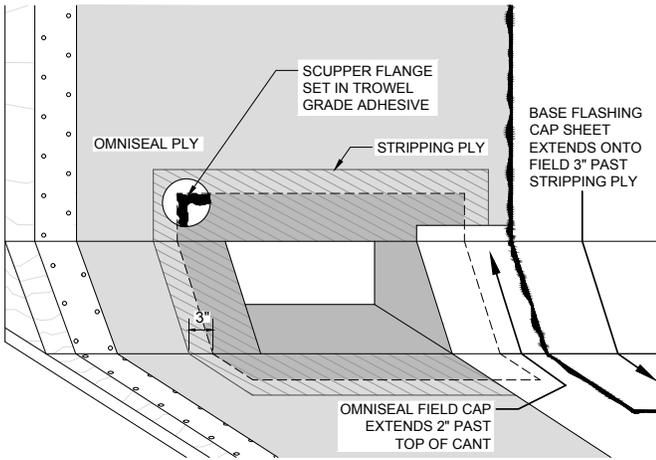


Figure 11 - Application of the OmniSeal® System at Scuppers

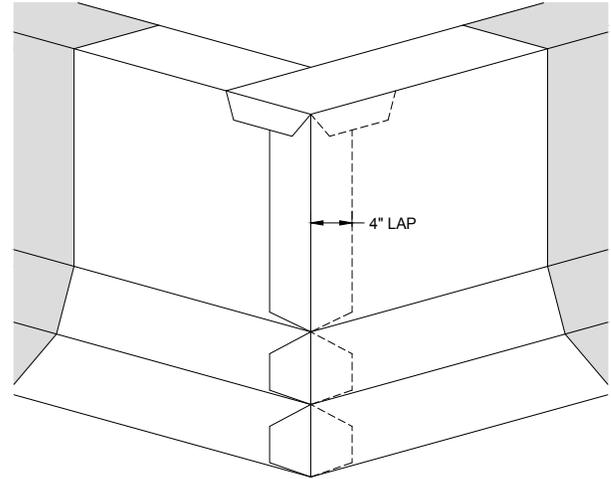


Figure 13 - Application of the OmniSeal® System at Outside Corners of Vertical Transitions

2B.13 INSIDE CORNERS

Apply field membranes and base flashings as described above, but at inside corners, install one side at a time, making V-shaped relief cuts so flaps made by the cuts can be both lapped 4" (102 mm) through the corner and onto the opposite side, and over the top of the parapet.

Install the membranes tight to the corner, fully adhere them onto opposing surfaces, and hand-roll all laps of material to ensure proper adhesion. (See Figure 12)

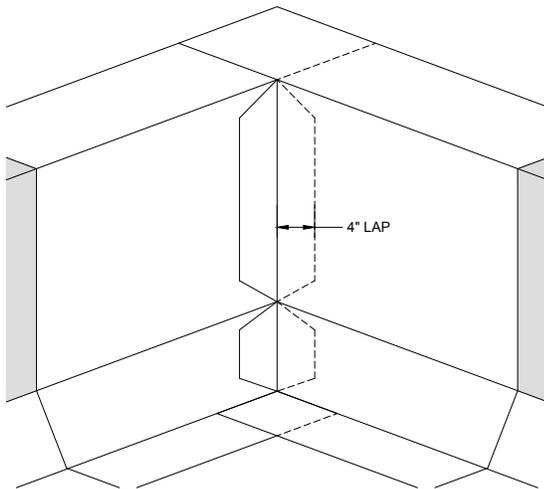


Figure 12 - Application of the OmniSeal® System at Inside Corners of Vertical Transitions

2B.14 OUTSIDE CORNERS

Application at outside corners is the same as inside corners. Take care when applying adhesive so the appearance of the Cap isn't diminished. (See Figure 13)

2B.15 INSTALLATION FOR ROOF SLOPES GREATER THAN 1:12

OmniSeal® Systems installed on roof decks greater than 1:12 slope require *strapped* installation. The application of membranes in strapped installations are the same but run *parallel* to roof slope.

T-joints at end laps are treated the same way for both ply and cap sheet layers but widened from 6" (152 mm) to 7"-8" (178-203 mm) in order to add fasteners: five (5), 1" (25 mm) diameter metal cap nails. Position them an inch (25 mm) back from the leading edge of the underlying sheet and 8" (203 mm) O.C. The overlapping *head lap* should terminate a minimum of 6" (152 mm) past the fasteners. (See Figure 14)

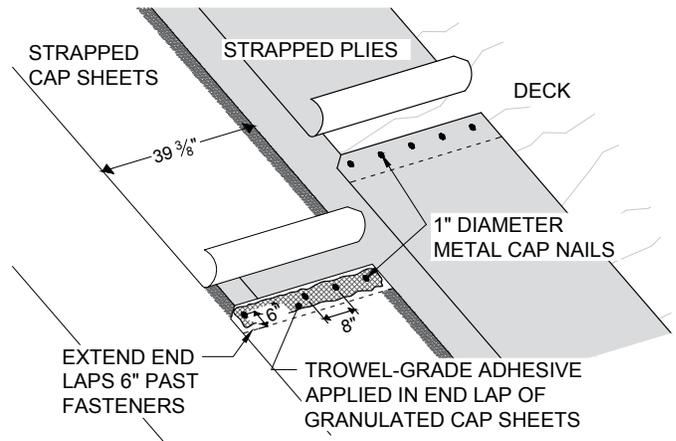


Figure 14 - Construction of T-Joints at End Laps in Strapped Installations

2B.16 FINAL NOTE

These instructions are meant to act as a general guide. If you have questions about this installation or any Malarkey roofing product, please contact our Technical Services Department weekdays at (800) 545-1191 or (503) 283-1191, 7:00 am to 5:00 pm, Pacific Time. You can also email us at malarkey.technicalinquiries@holcim.com. Thank you.