Johns Manville

Hot Asphalt | Cold Applied | Heat Weld | Self-Adhered | Mechanically Fastened

SBS Roofing Systems

Commercial Roofing Application Guide

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Roof Insulation Application Guide, and Fastening Patterns

Insulation Installation Considerations

It is important to know that all Johns Manville polyiso boards are printed with installation directions of "This side down". This installation method is required for adhered systems and recommended when used under mechanically attached membranes. Foam insulation products are combustible and should be properly protected from exposure to fire during storage, transit, and application.

Storage

JM roof insulations (polyiso, Invinsa®, and FESCO®) are shipped with plastic shrouds that are intended to temporarily protect the insulation while in transit. There are two packaging methods (plastic wrap or plastic bag) that are used depending upon the product and the manufacturing facility. No matter how packaged, JM insulation should not be stored in or around standing water. Since all packaging is 5-sided, the pallets should be elevated and stored on a finished surface rather than on dirt or grass. Exercise care during handling to prevent insulation damage; avoid pushing pallets off the truck, rolling pallets on the ground or roof, and removing the package support feet. No more insulation should be installed than can be completely covered with membrane on the same day.

- **Plastic Wrap Packaging** is shipped to the job site with tarps. At the job site this packaging is adequate for outside storage without tarps provided the insulation arrives intact with the original undamaged weather-tight plastic wrap, for two weeks or less. For storage greater than two weeks, JM recommends slitting the plastic shrink wrap prior to covering the pallet with a breathable tarpaulin, to allow for venting. For storage greater than one month, insulation should be stored indoors in a dry, well-ventilated warehouse.

- **Plastic Bag Packaging** is shipped to the job site without tarps as this packaging protects the insulation during shipment. For storage less than two weeks, the packaging is adequate for outside storage without tarps provided the insulation arrives intact with the original undamaged weather-tight plastic bag. For storage greater than two weeks, JM recommends slitting the plastic shrink bag prior to covering the pallet with a breathable tarpaulin, to allow for venting. For storage greater than one month, insulation should be stored indoors in a dry, well-ventilated warehouse.

Installation

Insulation must be independently fastened to the roof deck in mechanically attached and adhered systems. Adhering certain insulations in hot asphalt or cold adhesives is sometimes acceptable for adhered systems (only for 4'x4' boards). For specific requirements, contact the JM Technical Services Group.

Always cut insulation to fit closely around all roof penetrations. Around drains, and primary scuppers, taper insulation a minimum of 36"x 36" (91.44 cm x 91.44 cm) for proper drainage.

Apply rigid insulation directly over fluted steel decks to provide smooth, continuous membrane support. Insulation should be installed with long edges parallel to the direction of the deck and supported by the deck flange. When butting insulation layers, do not allow the edge of either board to overlap an open flute. Cut the

insulation so the edge of the board is about at the center of, and supported by, the flange. Any gaps between insulation greater than 1/4" should be filled.

Double Insulation Layers.

Installing roof insulation in multiple layers provides the designer with improved thermal performance. It also contributes to the overall performance of the roof system for the following reasons:

- Recent studies indicate that as much as 8% of the thermal efficiency of the insulation can be lost through the insulation joints and exposed insulation fasteners of single layer installations. Insulation joints that are staggered in multiple layer installations block the flow of heat.
- Multiple layer insulation installation reduces the stress accumulation of a thick, single insulation joint and distributes the stress more evenly over the multiple, thinner insulation joints.
- The bottom side of the membrane is protected from physical damage from insulation plates and fasteners by the second layer of insulation if the top layer is adhered.
- Roof decks may be stiffened.

Asphalt Temperatures

JM endorses the guidelines established by the NRCA and ARMA for heating asphalt for proper insulation applications. Asphalt should be applied at the Equiviscous Temperature (EVT), ± 25°F (±14°C).

Cold Weather Application

Hot asphalt chills rapidly at 40°F (4°C). To avoid problems associated with "cold" asphalt application, insulation may be applied with mechanical fasteners. Another method when using hot asphalt may be the "mop and flop" method. The "mop and flop" method entails mopping the back of the insulation so that the asphalt retains its adhesive qualities for a longer period. When adhering insulation, including hot asphalt, board size shall not exceed 4' x 4' (1.22 m x 1.22 m). Care should be taken in any application below 40°F (4°C).

Mechanical Application to Steel Decks

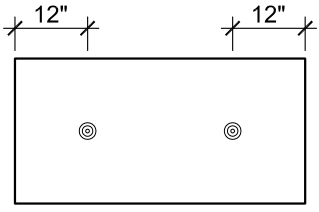
Mechanical attachment of insulation to steel decks is the only acceptable attachment method. For current information regarding Factory Mutual requirements over insulated steel decks, please check with a JM Technical Services Specialist, or the current FM Approvals℠ RoofNav®.

Adhesive Application

JM insulations may be installed in Insulation Adhesives:

- Two-Part Urethane Insulation Adhesive (2P-UIA) Bead Application Only
- One-Step Foamable Adhesive
- Roofing Systems Urethane Adhesive

Board sizes shall not exceed 4' x 4' (1.22 m x 1.22 m). Refer to product data sheets for adhesive coverage rates.



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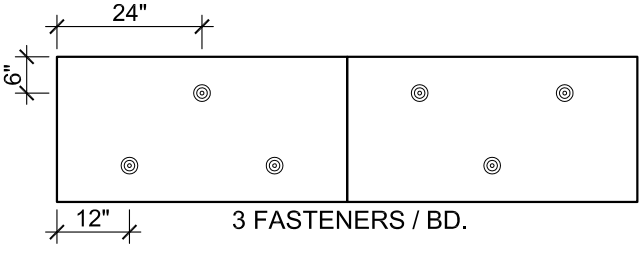

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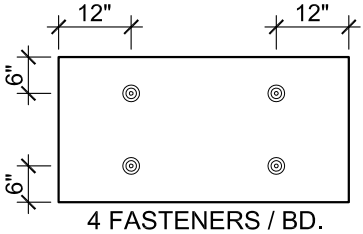

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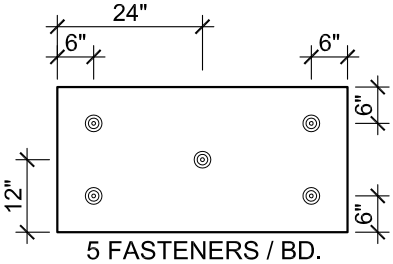

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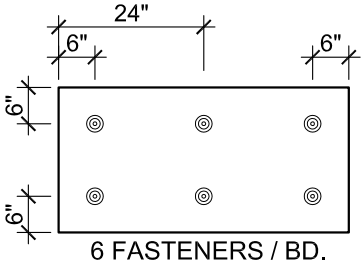

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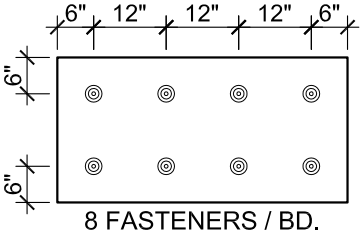

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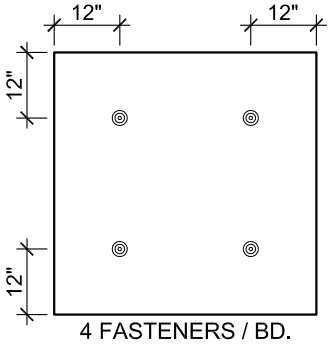
Roof Insulations Fastener Placement

4′ x 4′ (1.22 m x 1.22 m) Boards



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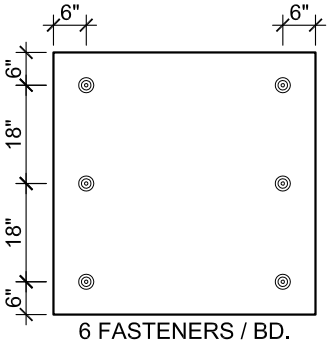

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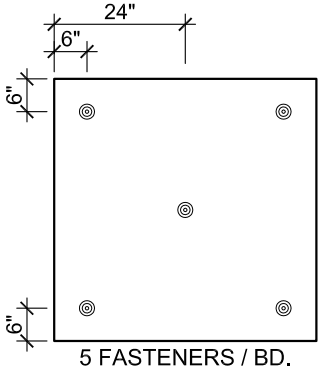

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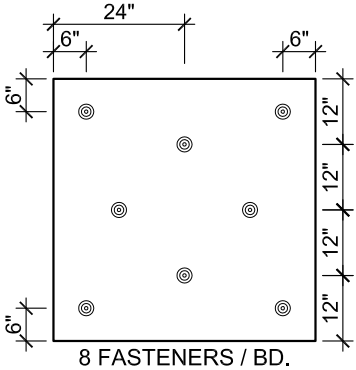

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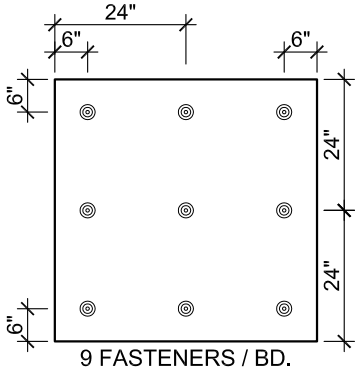

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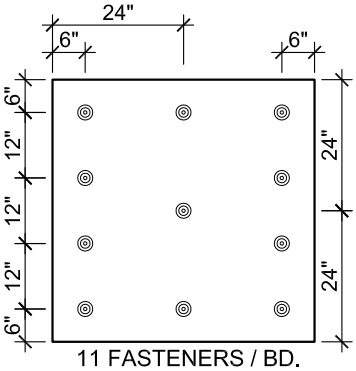
Roof Insulations
Fastener Placement

4′ x 4′ (1.22 m x 1.22 m) Boards



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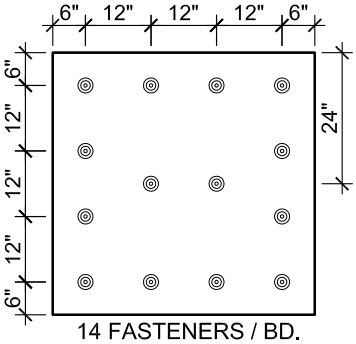

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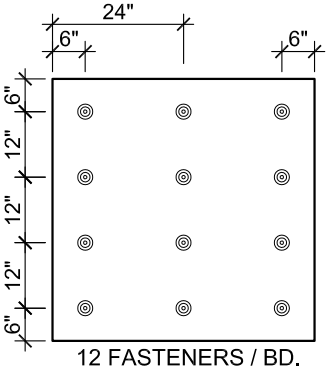

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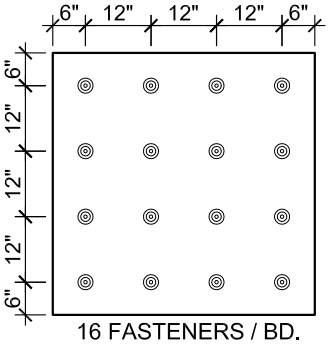

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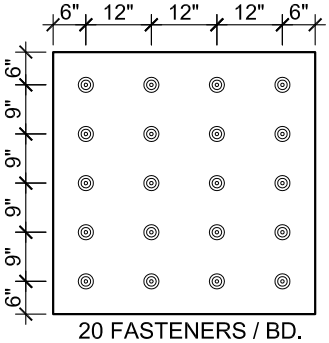

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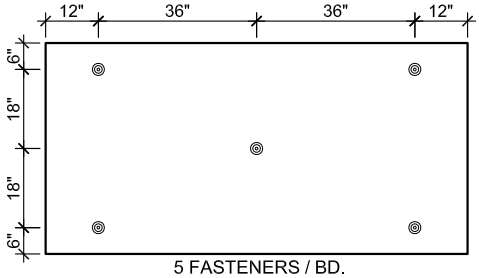
Roof Insulations Fastener Placement

4′ x 8′ (1.22 m x 2.44 m) Boards



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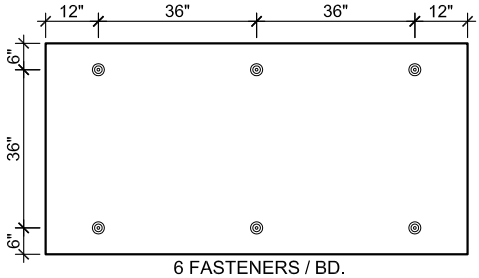

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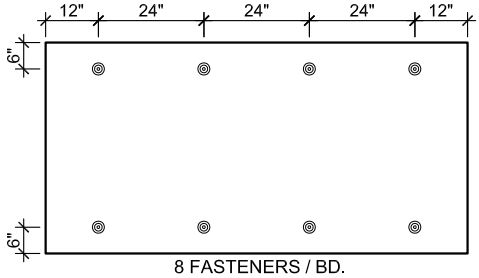

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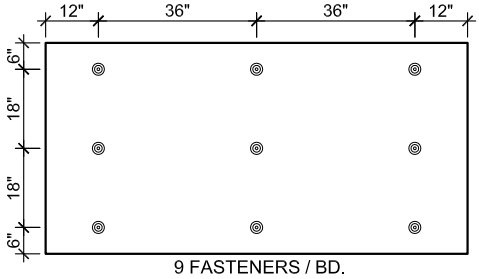

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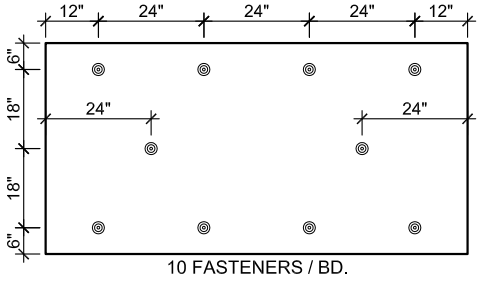

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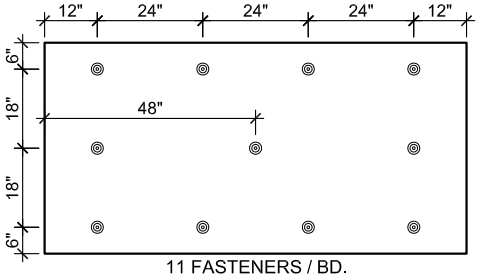
Roof Insulations
Fastener Placement

4′ x 8′ (1.22 m x 2.44 m) Boards



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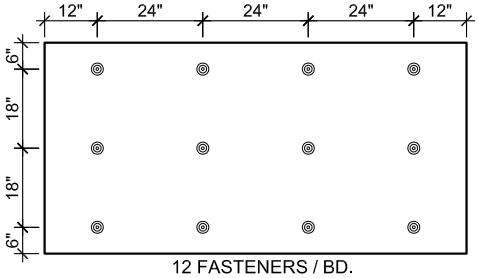

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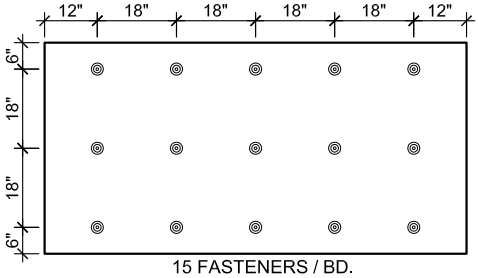

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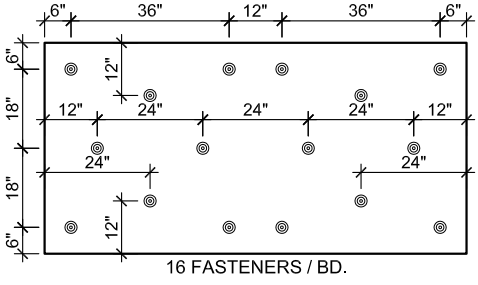

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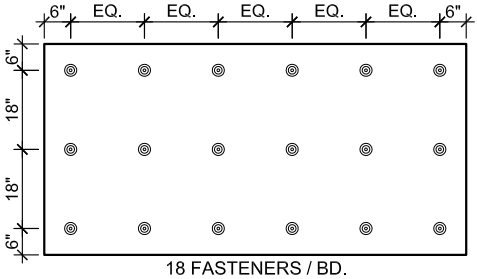
Roof Insulations
Fastener Placement

4′ x 8′ (1.22 m x 2.44 m) Boards



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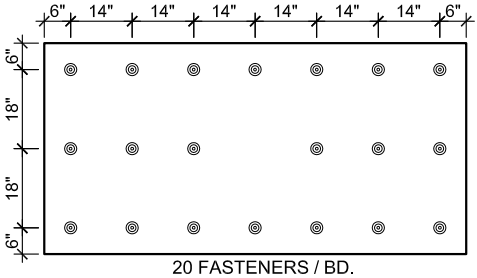

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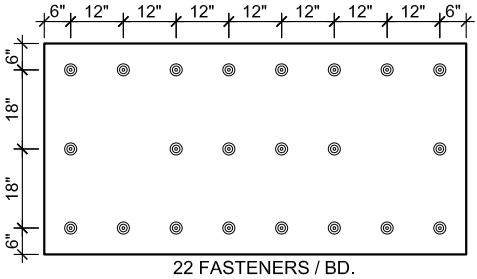

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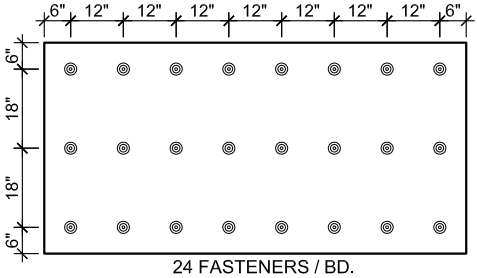

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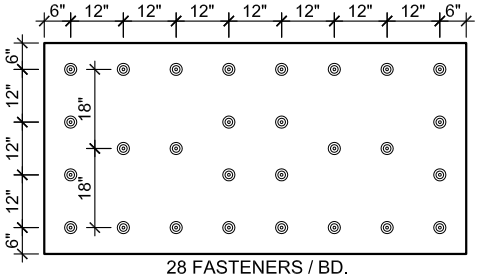

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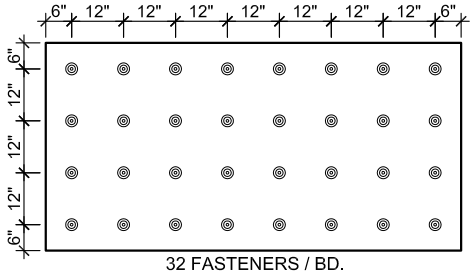
Roof Insulations
Fastener Placement

4′ x 8′ (1.22 m x 2.44 m) Boards



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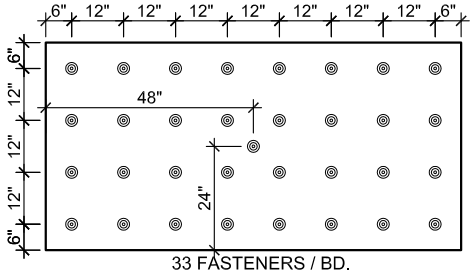

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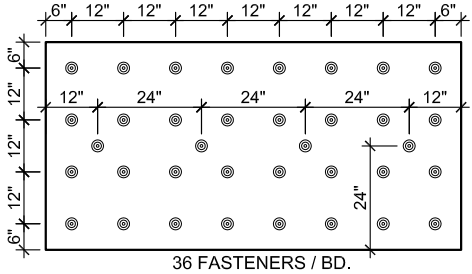

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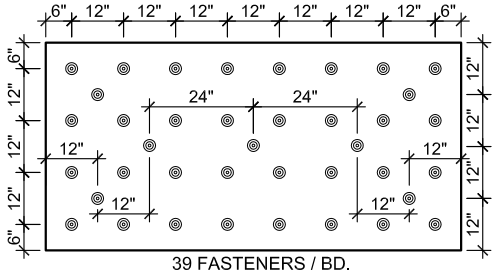

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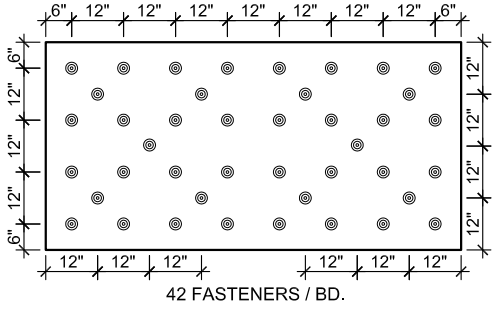
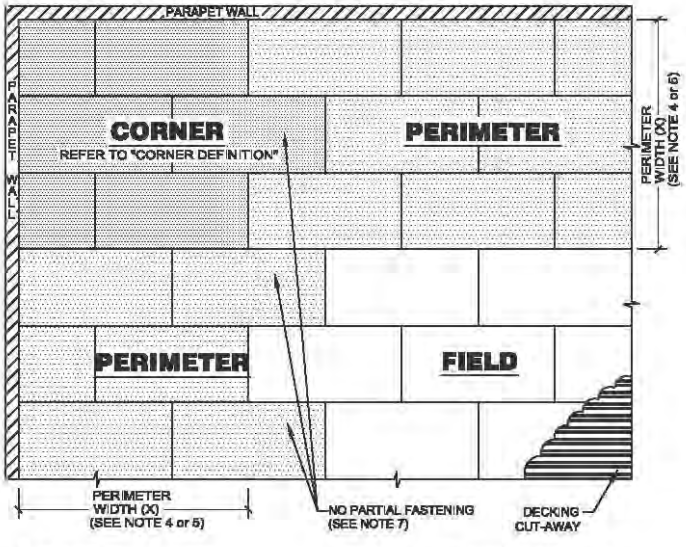
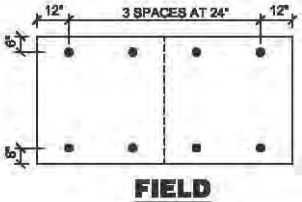


42 FASTENERS / BD.

BOARD LAYOUT

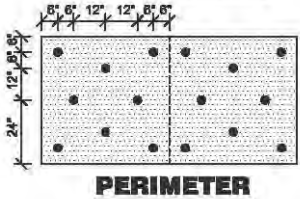


8 FASTENERS (1:4 FT²)



FIELD

16 FASTENERS (1:2 FT²)



PERIMETER

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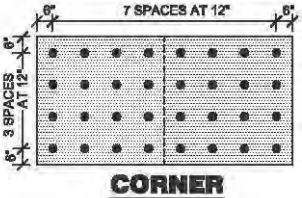
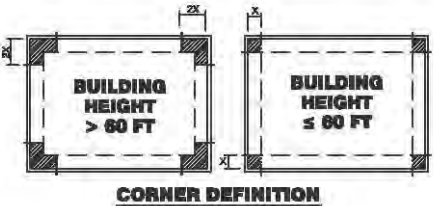


CORNER



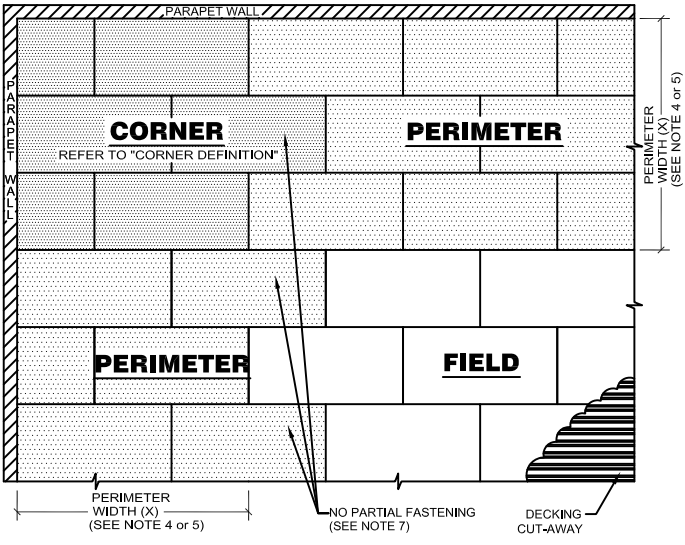
CORNER DEFINITION

(SEE NOTES 4, 5 & 6)

NOTES

1. CALCULATE UPLIFT DESIGN PRESSURES IN ACCORDANCE WITH ASCE-7.
2. INSTALL INSULATION WITH LONG JOINTS IN A CONTINUOUS STRAIGHT LINE WITH END JOINTS STAGGERED.
3. ROOF HEIGHT ≤ 60 FT, THE PERIMETER (X) IS THE SMALLER DIMENSION OF:
   10% OF THE SHORTEST SIDE (PLAN VIEW)
   OR
   40% OF THE ROOF HEIGHT,
   BUT
   NOT LESS THAN 4% OF THE SHORTEST SIDE (PLAN VIEW) OR 3 FT.
4. ROOF HEIGHT > 60 FT, THE PERIMETER (X) IS:
   10% OF THE SHORTEST SIDE (PLAN VIEW) BUT NOT LESS THAN 3 FT.
5. THE CORNERS MAY BE TREATED AS PERIMETERS IF THE PARAPET IS GREATER THAN OR EQUAL TO 3 FT ON ALL SIDES ACCORDING TO ASCE-7.
6. IF ANY PORTION OF THE BOARD LIES IN A PERIMETER OR CORNER ZONE, ENHANCE THE FASTENING OF ENTIRE BOARD.

BOARD LAYOUT



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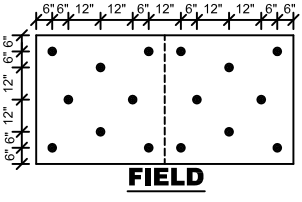
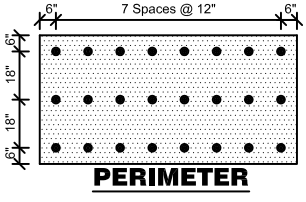
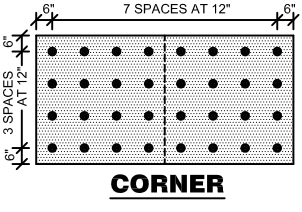
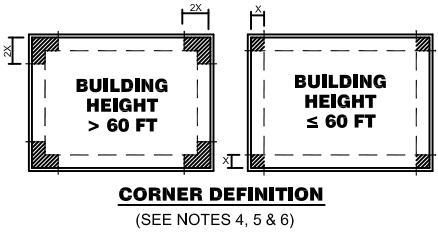


24 FASTENERS (1:1 FT²)



32 FASTENERS (1:1 FT²)





CORNER DEFINITION

(SEE NOTES 4, 5 & 6)

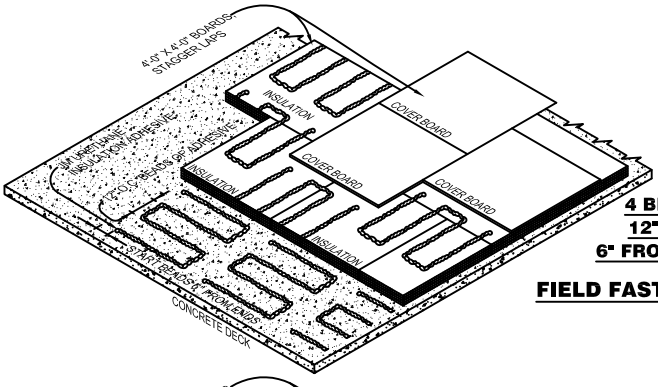
NOTES

1. CALCULATE UPLIFT DESIGN PRESSURES IN ACCORDANCE WITH ASCE-7.
2. INSTALL INSULATION WITH LONG JOINTS IN A CONTINUOUS STRAIGHT LINE WITH END JOINTS STAGGERED.
3. ROOF HEIGHT ≤ 60 FT, THE PERIMETER (X) IS THE SMALLER DIMENSION OF:
   10% OF THE SHORTEST SIDE (PLAN VIEW)
   OR
   40% OF THE ROOF HEIGHT,
   BUT
   NOT LESS THAN 4% OF THE SHORTEST SIDE (PLAN VIEW) OR 3 FT.
4. ROOF HEIGHT > 60 FT, THE PERIMETER (X) IS:
   10% OF THE SHORTEST SIDE (PLAN VIEW) BUT NOT LESS THAN 3 FT.
5. THE CORNERS MAY BE TREATED AS PERIMETERS IF THE PARAPET IS GREATER THAN OR EQUAL TO 3 FT ON ALL SIDES ACCORDING TO ASCE-7.
6. IF ANY PORTION OF THE BOARD LIES IN A PERIMETER OR CORNER ZONE, ENHANCE THE FASTENING OF ENTIRE BOARD.

INSTALLATION NOTES:

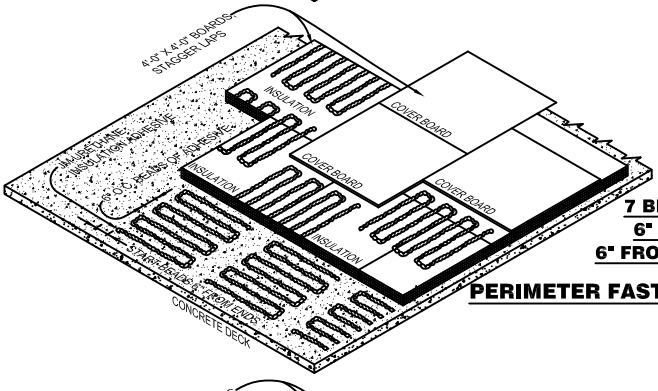
A. ALL INSULATION/COVER BOARDS SHOULD BE 4'-0" x 4'-0".

B. WHEN APPLYING MULTIPLE LAYERS OF INSULATION, IT IS REQUIRED TO RUN THE BEADS PERPENDICULAR TO THE PRECEDING LAYER. IT IS OPTIONAL WHEN USING WITH JM 2-PART URETHANE ADHESIVE.



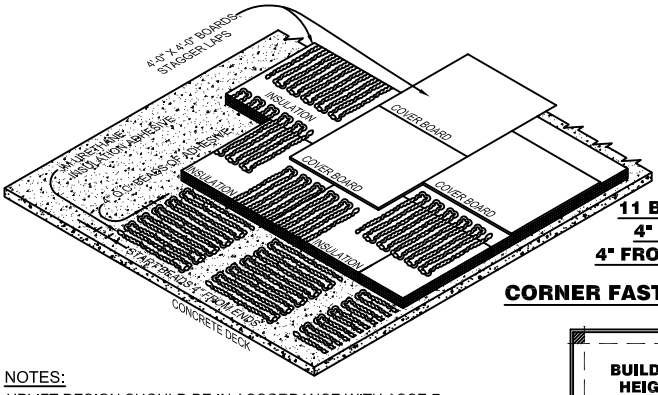
4 BEADS
12" O.C.
6" FROM ENDS

FIELD FASTENING



7 BEADS
6" O.C.
6" FROM ENDS

PERIMETER FASTENING

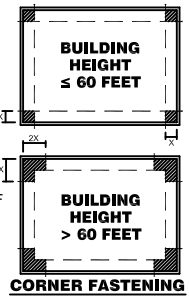


11 BEADS
4" O.C.
4" FROM ENDS

CORNER FASTENING

NOTES:

1. UPLIFT DESIGN SHOULD BE IN ACCORDANCE WITH ASCE-7.
2. UPLIFT RESISTANCE SHOWN IS BASED ON FMG 1-29 REQUIREMENTS AND RECOMMENDATIONS.
3. SYSTEM COMPONENTS AND DESIGN MUST BE VERIFIED TO BE IN ACCORDANCE WITH THIS LAYOUT.
4. ASCE-7 DEFINES THE PERIMETER (X) AS THE LESSER OF 10% OF LEAST HORIZONTAL DIMENSION OR .4 x THE HEIGHT, BUT NOT LESS THAN 4% OF LEAST HORIZONTAL DIMENSION OR 3 FEET FOR BUILDINGS UNDER 60 FT. IN HEIGHT. OVER 60 FEET IN HEIGHT, ASCE-7 DEFINES THE PERIMETER (X) AS THE LESSER OF 10% OF LEAST HORIZONTAL DIMENSION ONLY.
5. THE CORNERS MAY BE TREATED AS PERIMETERS IF THE PARAPET IS GREATER THAN OR EQUAL TO 3 FEET ACCORDING TO ASCE-7.

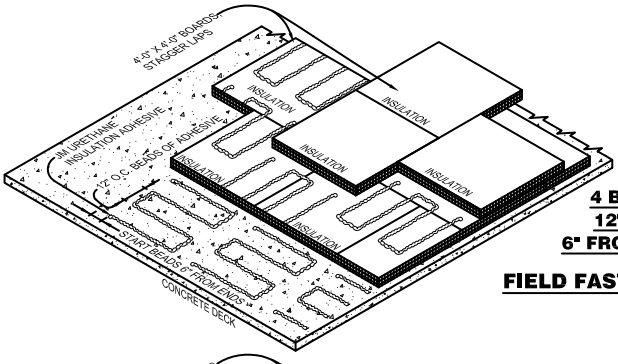


CORNER FASTENING

INSTALLATION NOTES:

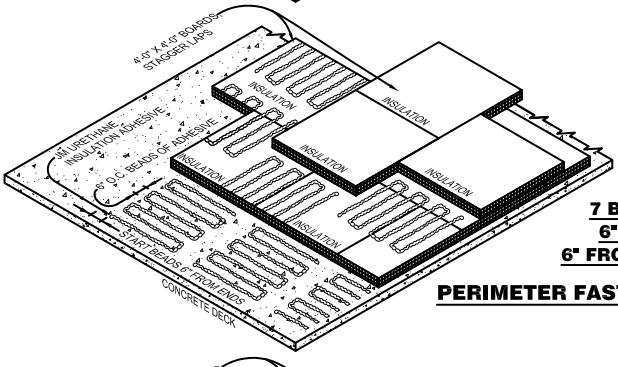
A. ALL INSULATION/COVER BOARDS SHOULD BE 4'-0" x 4'-0".

B. WHEN APPLYING MULTIPLE LAYERS OF INSULATION, IT IS REQUIRED TO RUN THE BEADS PERPENDICULAR TO THE PRECEDING LAYER WHEN USING 1-PART JM URETHANE ADHESIVE. IT IS OPTIONAL WITH JM 2-PART URETHANE ADHESIVE.



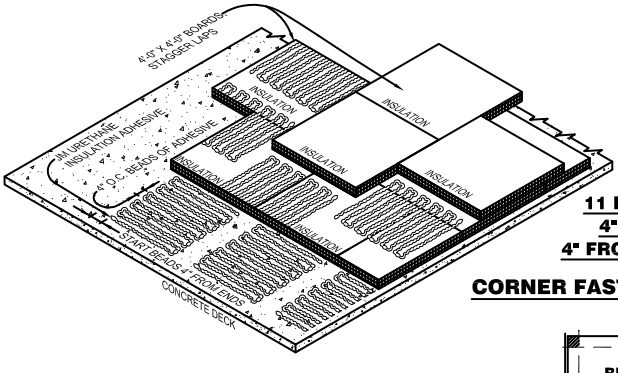
4 BEADS
12" O.C.
6" FROM ENDS

FIELD FASTENING



7 BEADS
6" O.C.
6" FROM ENDS

PERIMETER FASTENING

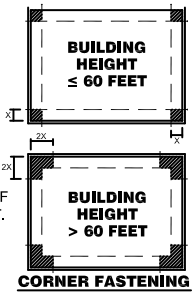


11 BEADS
4" O.C.
4" FROM ENDS

CORNER FASTENING

NOTES:

1. UPLIFT DESIGN SHOULD BE IN ACCORDANCE WITH ASCE-7.
2. UPLIFT RESISTANCE SHOWN IS BASED ON FMG 1-29 REQUIREMENTS AND RECOMMENDATIONS.
3. SYSTEM COMPONENTS AND DESIGN MUST BE VERIFIED TO BE IN ACCORDANCE WITH THIS LAYOUT.
4. ASCE-7 DEFINES THE PERIMETER (X) AS THE LESSER OF 10% OF LEAST HORIZONTAL DIMENSION OR .4 x THE HEIGHT, BUT NOT LESS THAN 4% OF LEAST HORIZONTAL DIMENSION OR 3 FEET FOR BUILDINGS UNDER 60 FT. IN HEIGHT. OVER 60 FEET IN HEIGHT, ASCE-7 DEFINES THE PERIMETER (X) AS THE LESSER OF 10% OF LEAST HORIZONTAL DIMENSION ONLY.
5. THE CORNERS MAY BE TREATED AS PERIMETERS IF THE PARAPET IS GREATER THAN OR EQUAL TO 3 FEET ACCORDING TO ASCE-7.



CORNER FASTENING

2A

SBS Asphalt-Applied and Cold Adhesive-Applied Application Guide

Section Two Contents

1.0 General Information

1.1 This section provides application information, and outlines specifications currently available from JM roofing systems for SBS (Styrene-Butadiene-Styrene) Modified Bitumen Roofing Membranes. They may be applied with hot asphalt or cold adhesive. Some of these specifications also allow the use of heat welding. This same application information applies to SBS hot asphalt or cold adhesive applied specifications.
Note: For the most current information on general guidelines, please refer to the System Considerations tab under Systems Introduction & Selection on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the System Application tab.

1.2 All general instructions contained in this guide book and the current JM Commercial Roofing Product Manual should be considered part of this specification.

1.3 Specifications are available for systems installed over insulation, nailable, non-nailable, and lightweight fill substrates. JM offers systems that can be installed using either hot asphalt, heat welding or cold application cements.

1.4 For hot-applied, modified bitumen roofing system applications, JM-approved asphalt is required. JM-approved asphalts are thoroughly evaluated before they are accepted for use in any modified bitumen system. Contact your JM Sales Representative for current approved asphalt suppliers.

1.5 JM does not recommend the use of traditional asphalt cut-back mastics installed under any SBS modified bitumen product. The use of cut-back mastics over the SBS modified bitumen product (e.g., to strip in the edges of a base flashing) is acceptable. JM has developed two field adhesives — MBR Cold Application Adhesive and MBR Bonding Adhesive — and two flashing adhesives — MBR Flashing Cement and MBR Utility Cement. All four are compatible with all of the JM modified bitumen products; they should be used whenever a cold adhesive application is necessary or preferred.

1.6 Each specification in this section is eligible to receive a JM Peak Advantage Guarantee. The system must be installed by a JM Peak Advantage Roofing Contractor who is approved for SBS Modified Bitumen roofing systems. The JM Peak Advantage Roofing Contractor must use Trumbull®* asphalt or other JM-approved asphalt.

1.6.1 This manual clearly differentiates between **requirements** and **recommendations**. This manual has been written to assist the specifier to develop a comprehensive bid package. The information is presented in an explanatory fashion rather than the authoritative, instructive manner commonly utilized in construction specifications. When experience, technical knowledge or established testing procedures support a policy or position, it is clearly identified, (i.e., **"JM requires"** or "is not acceptable"). When the use of a particular product or practice is desirable, the reference is stated as an opinion rather than an absolute fact, (i.e., **"JM recommends"** or **"JM suggests"**). ***It is mandatory that all requirements be complied with; however, it may not be necessary to follow all recommendations to qualify for a guarantee.***

1.7 Drainage of water off any roof membrane is necessary to prolong the service life of the system. JM, therefore, has the following policy:

Drainage: Design and installation of the deck and/or membrane substrate must result in the roof draining freely, to outlets numerous enough and so located as to remove water promptly and completely. Areas where water ponds for more than 24 hours are unacceptable and will not be eligible for a JM Peak Advantage Guarantee.

1.8 Flashings: Refer to Flashing Details in Section 3 of this Application Guide.

2.0 Membrane Substrate

2.1 The surface on which the modified bitumen roofing membrane is to be applied should be one of JM's roof insulations (Fesco Board, Tapered Fesco Board, Fesco Foam, Tapered Fesco Foam, DuraBoard, DuraFoam, ENRGY 3, Tapered ENRGY 3 or ½" Retro-Fit Board) or an approved structural substrate. **For heat-weld application directly to the insulation, the top layer of insulation must be DuraBoard or DuraFoam.** The surface must be clean, smooth, flat and dry. SBS modified bitumen roofing should not be applied directly to foam plastic insulations, as referenced in NRCA Bulletin #9.

3.0 Roofing Over Non-nailable Decks

3.1 These specifications are for use over any type of structural deck which is not nailable, and which offers a suitable surface to receive the roof. Poured and precast concrete decks require priming with Asphalt Primer prior to the application of hot asphalt.

3.2 These specifications are also for use over JM roof insulations — Fesco Board, Tapered Fesco Board, Fesco Foam, Tapered Fesco Foam, DuraBoard, DuraFoam, ENRGY 3, Tapered ENRGY 3, and ½" Retro-Fit Board — or other approved insulations which are not nailable and which offer a suitable surface to receive the roof. SBS modified bitumen roofing should not be applied directly to foam plastic insulations, as referenced in NRCA Bulletin #9.

3.3 These specifications are denoted by an "I" as the third character in the specification designation (e.g., 3CID). See the "Roof Finder Index" on page 2-120 of this book for further information.

4.0 Roofing Over Nailable Decks

4.1 These specifications are for use over any type of structural deck (without roof insulation) which can receive and adequately retain nails or other types of mechanical fasteners recommended by the deck manufacturer. Examples of such decks are wood and plywood. Certain specifications are suitable for use over lightweight insulating concrete decks or over fills made of lightweight insulating concrete. Consult the "Roof Decks" section of the current JM Commercial Roofing Product Manual, or contact a JM Technical Services Specialist for approval of the lightweight concrete to be used.

4.2 These specifications are denoted by an "N" or an "L" as the third character in the specification designation (e.g., 3CND, 3CLG). See the "Roof Finder Index" on page 2-120 of this book for further information.

4.3 One ply of sheathing paper must be used over wood board decks under the base felt. Sheathing paper is not required over wood decks.

4.4 All of the specifications in this section require the use of a nailable base felt. Use nails or fasteners appropriate to the type of deck. See the "Roof Decks" section of the current JM Commercial Roofing Product Manual.

5.0 General Guidelines for Application of Materials

5.1 The proper application of roofing materials is as important to the satisfactory performance of the roofing system as the materials themselves. JM strongly recommends the following guidelines for the application of SBS modified bitumen roofing materials be followed.

A. Never use wet or damaged materials.

B. Never apply any roofing materials during rain or snow, or to wet or damp surfaces. Moisture trapped within the roofing system may cause severe damage to the roofing membrane, insulation and deck.

C. Take special care when applying any roofing felt in cold weather. Check the temperature of the asphalt at the mop or spreader to determine that it is at the proper temperature.

D. Heed the specific cold weather application procedures in this manual.

E. Always start application at the low edge of the roof per the individual specification diagram.

F. Never mop ahead of the modified bitumen rolls more than 6' (1.83 m) and, in temperatures below 50°F (10°C), no more than 4' (1.22 m). Observe temperature guidelines for asphalt application.

G. When using mechanical bitumen applicators or felt laying equipment, be sure that all orifices are open.

H. All roofing felts should be well set into the hot asphalt utilizing a squeegee or some other device. All ply felts shall be rolled (not "flown") into the hot asphalt.

I. SBS modified bitumen sheets shall be rolled or scrolled into a full mopping of hot asphalt. Back-mopping and flopping into a full coating of asphalt is also acceptable for certain SBS products. Base sheets and cap sheets with polyester reinforcement must be allowed to relax in an unrolled position prior to installation.

J. Do not mix different grades of asphalt or dilute an asphalt with any other material.

K. Heat the asphalt according to the manufacturer's recommendations. Check the temperature of the asphalt at the kettle and at the point of application. Have accurate thermometers on the roofing kettles. Adhere to the guidelines for the heating of asphalt that are outlined in this manual.

L. Always use the proper grade of asphalt. SBS membranes require the use of Type III or IV asphalt.

M. It is essential that traffic be minimized on a freshly laid roof, while the asphalt is still fluid. Asphalt displacement through the porous fiber glass ply felts can result from rooftop traffic during asphalt "set" time. Depending on specific job factors, this set time can be as long as 45 minutes. Asphalt displacement can result in "phantom" leaks and blistering of the membrane.

N. Do not use coal tar pitch or coal tar asphalt with any of JM's modified bitumen products. They are not compatible.

O. Do not use traditional cut-back asphalt cements under SBS modified bitumen products. The use of these mastics over the top of SBS products, to strip in or to cover nail heads, is acceptable; however, the MBR cement products are preferred.

P. Install the entire roofing system at one time. Phased construction may result in slippage of felts due to excessive amounts of asphalt between the plies of felt. Blisters due to entrapment of moisture are also a common problem, as well as poor adhesion due to dust or foreign materials collecting on the exposed felts of an incomplete roofing system.

Q. Always install a water cut-off at the end of each day's work to prevent moisture from getting into and under the completed roof system. Water cut-offs should be completely removed prior to resuming work.

R. Always comply with published safety procedures for all products being used. See the "Introduction" section of the current JM Commercial Roofing Product Manual, SDS and container labels for health and safety recommendations.

6.0 Roofing Felts

6.1 JM manufactures different felts for a variety of roofing needs: felts for roof membranes, flashing, venting and vapor retarders.

6.2 Roofing felts are furnished in rolls consisting typically of one or more squares, except for flashing materials which are sold in rolls containing a specific number of square feet. A "factory" square of roofing contains sufficient material to cover about 100 ft^2 (9.29 m^2) of roof area.

6.3 For more information on these products, refer to Section 2 of the current JM Commercial Roofing Product Manual.

7.0 Roofing Bitumens

7.1 JM modified bitumen products are designed to be installed with hot asphalt or special cold application cements. Some others may be heat welded. PermaMop, coal tar pitch and coal tar asphalt are not permitted.

7.2 Asphalt can come from a variety of crude sources. Many of these sources produce high-quality mopping grade asphalts and many do not. Various physical properties of asphalts can affect the performance of the roofing system. For this reason, JM qualifies asphalt sources throughout the country and requires that only these asphalts be used to assure good performance and compatibility with the roofing products being used.

JM requires the use of Trumbull®* or another JM-approved asphalt within systems which require a JM Peak Advantage Guarantee. These approved asphalts are periodically tested to assure conformance to both ASTM and JM asphalt specifications. For the names of approved asphalt suppliers in your area, contact a JM sales representative.

8.0 Asphalt Health and Safety Information

See Section 1 for health and safety information.

8.1 Roofing asphalts are available in four grades. In general, they are grade specified by softening point. JM recommends the use of only two grades in SBS modified bitumen specifications — Type III and Type IV. The slope of the roof, as well as the climate, governs the grade of asphalt to be used. The success or failure of a roofing system depends greatly on the use of the proper grade of asphalt, as called for in the roofing specification.

8.2 Asphalts are susceptible to damage from overheating. Overheating, even for short periods, can "crack" or degrade the asphalt; a drop in softening point or a slight oiliness is a symptom. Overheating may result in a "fallback" in softening point which can cause slippage of the roof membrane. As the softening point decreases, the viscosity or "holding power" of the asphalt decreases. This can allow slippage to occur. If the overheating is more gradual, the asphalt may "age,"to the extent that premature failure of the system may result. Application temperatures must be in the range which permit a continuous layer of asphalt, regardless of the application technique used.

8.3 JM, in conjunction with the National Roofing Contractors Association (NRCA) and the Asphalt Roofing Manufacturers Association (ARMA), has been involved with considerable research into a system for classifying mopping grade asphalts. The system gives guidelines for proper heating and application.

8.4 With this system, which is used in the continental United States, the following information is printed on the cartons of asphalt, or on the bill of lading for asphalt shipments:

1. The Softening Point, as determined by ASTM D 312.
2. The Minimum Flash Point (FP) of the asphalt, as determined by ASTM Method D 92.
3. The Equiviscous Temperature (EVT), as currently defined by ASTM, is the temperature at which the asphalt viscosity is 125 centistokes. Asphalt applied within ±25°F (±14°C) of the EVT at the point of application will provide a nominal 23 - 25 lb/100 ft^2 (1.12 - 1.22 kg/m^2) of asphalt .
4. The Finished Blowing Temperature (FBT) is occasionally provided. This is the tem

perature at which the blowing of the asphalt was completed.

Note: Work done by the NRCA has shown that different EVT values should be used for mop-applied vs. machine-applied asphalt. The original EVT is applicable to mop applications. Asphalt installed by machine should be applied using an EVT based on 75 centipoise. Some asphalt suppliers are now including both EVT values on their products. If only the 125 centipoise (centistokes) EVT value is provided, and a machine installation is to be used, apply the asphalt at 25°F (14°C) higher temperature.

* Trumbull is a registered trademark of Owens Corning.

8.5 JM requires adherence to the following guidelines when the above information is furnished:

1. Use the proper softening point asphalt as specified for the roof slope, type of roofing system and climate.
2. For optimum application, the asphalt should be at the Equiviscous Temperature, ±25°F (±14°C), at the point of application. **However, SBS modified bitumen products shall be installed in asphalt with a minimum temperature of 400°F (204°C) at point of application.**
3. Never heat the asphalt to or above the Flash Point, to avoid danger of fire.
4. Heating above the Finished Blowing Temperature shall be strictly regulated, never for longer than 4 hours to preclude excessive asphalt degradation.

8.6 If the EVT is not available, heating temperature guidelines of the asphalt recommended for use with modified bitumen systems are as follows:

Recommended Temperatures

Asphalt Type	Heating	Application
190 Grade (Type III)	500°F (260°C)	400°F to 475°F (204°C to 246°C)
220 Grade (Type IV)	500°F (260°C)	400°F to 475°F (204°C to 246°C)

8.7 Use of insulated buckets and insulated circulating lines for cold weather application is always desirable. However, if ambient temperatures are low and the distance from asphalt source to the application point of the SBS membrane is great, their use is imperative.

8.8 The recommended quantity of asphalt has been indicated on each specification in this section. It is important that the asphalt be uniformly spread, without voids, so that felt does not touch felt, and so there is complete adhesion between all plies of the system.

8.9 JM considers a ±25% deviation from the specified asphalt quantity to be acceptable.

8.10 The use of the proper asphalt, as called for in the various JM specifications, is critical to the performance of the roofing system. A contractor shall not deviate from the asphalt requirements of the roofing system specified, unless the deviation is approved in advance by a JM Technical Services Specialist.

9.0 Gravel or Slag Surfacings

9.1 Some of the SBS modified bitumen systems are designed to be surfaced with gravel or slag. Gravel or slag must be dry before using. Wet gravel or slag will cause foaming of the asphalt and prevent proper adhesion of the surfacing. In cold weather, if difficulty is experienced in obtaining proper embedment in the asphalt, the gravel or slag should be heated prior to application.

9.2 JM will approve the use of clean slag or gravel meeting ASTM Specification D 1863, which covers aggregates specified both for use in road construction and roofing. Aggregates meeting ASTM D 1863 are generally available commercially throughout the country.

9.3 Other surfacing material used in place of gravel or slag should be fairly cubical in

shape, non-water absorbent, hard and opaque, and of such size and nature as to result in firm embedment in the asphalt.

9.4 Do not use transparent or translucent stones, dolomite or crushed masonry.

9.5 Gravel should be spread at the rate of approximately 400 lb/100 ft^2 (19.5 kg/m^2), and slag, because of its lower density, at the rate of 300 lb/100 ft^2 (14.6 kg/m^2). Full coverage of the underlying asphalt is required.

10.0 Application of SBS Modified Bitumens

10.1 JM SBS products are installed using hot asphalt or special cold adhesives. Only certain SBS products may be installed using heat weld application techniques, and these products are designated as such. JM does not recommend the use of typical solvent based adhesives to bond the membrane to the roof. Traditional solvent-based roofing cements can be used to strip-in laps and other terminations, provided that the mastic is not placed under the modified bitumen sheet. Roofing cements used in this manner will allow the solvent in the adhesive to flash off rapidly and not degrade the modified bitumen blend.

10.2 SBS materials are frequently installed over traditional asphaltic base and ply felts which are applied using typical built-up roofing techniques. However, the use of SBS modified bitumen base felts is becoming more common, and these products should be installed using the modified bitumen application techniques described in this section.

11.0 Hot Asphalt Application

11.1 The installation techniques for SBS modified bitumens in hot asphalt are similar to those used for built-up roofing. The sheets must be firmly and uniformly placed in a full mopping of hot asphalt, without voids, and with all edges well sealed.

11.2 There are, however, a few unique conditions that the applicator must be aware of when installing these materials.

11.3 The temperature of the asphalt at the point of application is very important, and differs from the requirements for built-up roofing. The asphalt must have a minimum temperature of 400°F (204°C) when the sheet is set into it. This will cause the back coating to remelt or "flux," assuring proper bonding to the substrate.

12.0 Mop-applied Asphalt

12.1 There are several application techniques that can be used when the asphalt is installed by mopping. The modified bitumen sheet can be rolled, scrolled or flopped into the asphalt. Regardless of the application technique employed, the crucial factor is that the modified bitumen sheet make complete contact and embed in the hot asphalt. This can be accomplished by lightly brooming the modified bitumen sheet immediately after it has been installed. It is also good roofing practice to "scuff in" the side and end laps to assure that they are completely sealed.

12.2 When rolling the modified bitumen sheet into the asphalt, the mechanic should mop no more than 6' (1.83 m) in front of the roll to assure that the temperature of the asphalt does not cool and fall below the temperature necessary for good embedment. If the asphalt is allowed to cool too much, an inadequate bond may result. In addition, the viscosity of the asphalt increases, which can result in a wavy appearance or excessive quantities of asphalt. Excessive asphalt can increase the potential for slippage of the membrane.

12.3 When using this application technique, brooming of the modified bitumen sheet is especially important at the end of the sheet where there may not be sufficient weight from the roll to provide the necessary pressure to embed the sheet into the asphalt.

12.4 The scrolling technique is also used by many mechanics. This technique was originally used to allow the modified bitumen sheet to relax, to reduce some of the wrinkling and shrinkage associated with the early modified bitumen products. Although this is not required with fiber glass and fiber glass/polyester composite-reinforced products, this method is occasionally used. The modified bitumen roll is completely unwound, usually turned upside down, and allowed to "relax." After the sheet has warmed, it is then turned right-side-up, placed on the roof in the area where it is to be installed and rerolled or scrolled from both ends. The product is then mopped into place using the same mopping techniques and precautions described for rolling the product into place.

12.5 Another application technique, called "mop and flop," is frequently used in the western portion of the United States. The modified bitumen sheet is cut to short lengths, usually between 12' and 16' (3.66 and 4.88 m) long. It is placed upside down, adjacent to the roof area where it will be installed, along the laying line of the preceding course. The entire area to be covered by the sheet is then mopped with hot asphalt, as well as the lap area of the upside-down sheet. Mechanics then pick the sheet up by the ends and "flop" it, right side up, into the hot asphalt, making certain to align it with the asphalt line created by the sheet itself. Again, brooming the sheet and scuffing the lap are recommended.

12.6 Polyester-reinforced SBS modified bitumen sheets should be unrolled and allowed to relax. Rerolling or scrolling of the sheet is then employed to set the sheet. The "mop and flop" technique is not acceptable for polyester-reinforced SBS modified bitumen sheets.

13.0 Mechanically Applied Asphalt

13.1 The asphalt can be applied using a mechanical asphalt spreader, which can increase productivity. Some contractors have found that installing the material with a felt layer can also improve production.

14.0 Cold Adhesive Application

14.1 There are situations where the use of hot asphalt is undesirable or prohibited. In such cases, it may be necessary to use alternative materials such as cold adhesives (typically referred to as "cold process cements" or "cold application cements/adhesives"). JM's research and development staff has determined that traditional cut-back asphalt mastics, as well as some of the newer "modified bitumen adhesives," can have an adverse effect on SBS modified bitumen products. This is due to the very high levels of solvent used in most of these products. Softening, blistering and excessive granule loss can occur as the solvent passes through the membrane. This can cause accelerated aging of the underlying waterproofing with the potential for premature membrane failure.

14.2 Through the evaluation of numerous alternate adhesive systems, JM has developed two viable cold application systems for use with SBS modified bitumen products.

14.3 Two-part Adhesive JM offers a unique premium-grade, two-part flashing adhesive. This product has extraordinary physical, adhesive and waterproofing properties, and is compatible with both SBS modified bitumen products and with conventional asphaltic materials. MBR Flashing Cement is a trowel-grade cement, for terminations, base flashing and penetration (pitch) pans. This adhesive requires mixing of two components immediately prior to application. MBR Flashing Cement is available in pails containing 4 gal (15.1 l) of base material. The pails are large enough to accommodate the addition of approximately 1 pint (0.47 l) of MBR Cement Activator and the necessary mixing process.

14.4 One-part Adhesive JM offers two mastic-type, one-part adhesives. These materials are compatible with SBS modified bitumen products. They contain very low levels of solvent, about one third of that found in most traditional roofing mastics. These

adhesives are elastomeric and have good waterproofing properties, and, over time, develop adhesive properties that exceed those of traditional mopping asphalt. These products are MBR Cold Application Adhesive, for the field of the roof, and MBR Utility Cement, a trowel-grade cement, for terminations and base flashings.

14.5 For more information on these cold application products, refer to the Section 2 of the current JM Commercial Roofing Product Manual.

15.0 Heat-weld Application

15.1 The surface over which the SBS membrane is to be installed must be firm, dry, smooth, flat and free of debris and loose material. All surfaces must be designed and installed in accordance with manufacturer, industry and acceptable association standards.

15.2 Drainage: Design and installation of the deck and/or the substrate must result in the roof draining freely and to outlets numerous enough and so located as to remove water promptly and completely. Areas where water ponds for more than 24 hours are unacceptable and will not be eligible for a JM Peak Advantage Guarantee.

15.3 Roofing shall commence at the lowest point of the roof deck with laps installed so that water flows over and not against the lap. Align the roll in the course to be followed and unroll completely. Then reroll both ends to the middle of the roll (scrolling). Using the heat-welding apparatus, apply the heat to the surface of the coiled portion of the roll until the surface reaches the proper application temperature (approximately 330°F [166°C]). The flame should be moved from side to side and the membrane slowly unrolled while pressing the heated portion of the roll into the underlying surface. Apply the heat across the full width of the roll and along the 4" (102 mm) side lap area of the previously installed roll, making an "L" shape. As the surface of the roll is heated, it will develop a sheen. **The generation of smoke is an indication that the material is being overheated.** Repeat the operation with subsequent rolls, while maintaining a 4" (102 mm) side lap and a 6" (152 mm) end lap. On mineral-surfaced membranes, prior to seaming the 6" (152 mm) end lap, the granules must be embedded by heating the end lap area and then pressing the granules into the compound using a rounded-point trowel or an embedding tool. All laps should be rolled with a lap roller, and a ⅛" (3 mm) to ⅜" (10 mm) bleed out of SBS compound should extend beyond the lap. Check all laps for proper adhesion.

16.0 Health and Safety

16.1 JM develops and maintains Safety Data Sheets (SDS) for all of its products. These SDS contain health and safety information for development of appropriate product handling procedures to protect the users of our products. These SDS are available on the JM Web site, www.jm.com/roofing, and should be read and understood by all involved personnel prior to using and handling JM materials. In addition to the SDS, JM products have health and safety precautions printed on the product label or packaging. The user is strongly urged to familiarize himself with this information prior to using the product, and observe certain precautions during use.

17.0 Precautions For Two-part Cold Adhesive

17.1 There are some application precautions that must be taken when using these materials.

A. JM MBR cement products are significantly different from the adhesive materials used for built-up roofing. The mechanic must use a great deal more care since these adhesives are prepared on the job site. Roofing contractors must advise their crews to precisely follow all storage, handling, preparation, application and health/

safety instructions. JM will not accept responsibility for any use of these products that does not comply with the instructions printed on the cement base container.

B. MBR Cement Activator must be stored indoors in an area maintained above 60°F (16°C) or crystallization will occur. If crystallization does occur, it can be reversed by carefully warming the container. Refer to the package label for the precise procedures.

18.0 Two-part Cold Adhesive Equipment

18.1 The following equipment is necessary for the safe and efficient preparation and application of JM MBR Bonding Cement.

18.2 Safety and Personal Protective Equipment: The following items shall be available for, and used by, every worker:

A. Impervious gloves, 1 pair for each worker.

B. Rubber or plastic apron, 1 for every person mixing.

C. Organic cartridge respirator mask. Note: Air-supplied respirators may be required for some applications.

D. Chemical safety goggles, 1 for each person mixing or spraying.

E. Soap and water.

F. Hand cleaner.

G. Supply of clean rags.

H. Solvent: paint thinner or mineral spirits.

I. Portable fire extinguisher.

J. Squeeze bottle filled with clean water for use as an eye wash.

18.3 The following items may be required at the job site to protect the installation and surrounding areas during application:

A. Heavy wrapping paper or suitable protective sheeting.

B. 2" (51 mm) wide masking tape.

18.4 Mixing Equipment:

A. Jiffy Mixer Model PS, or equivalent.

B. ½" (13 mm) electric drill motor and power source.

C. Plastic graduated container for measuring activator and base material.

18.5 Application Equipment:

(Some of the items listed below are optional, depending on whether squeegee or spray application is used.)

A. 3⁄16" (5 mm) saw-tooth squeegee.

B. Binks "Hawk 4L" Spray Unit (or equivalent) to fit a 5 gal (18.9 l) pail, and Type 7E2 spray gun (or equivalent) with 47 x ¼" (6 mm) nozzle with 25' (7.6 m) of ¾" (19 mm) fluid hose and 25' (7.6 m) of ⅜" (10 mm) air hose.

C. 125 cfm (3.54 cmm), 100 psi (690 kPa) air compressor and hose.

D. Clean 5 gal (18.9 l) metal pails.

E. Solvent: paint thinner or mineral spirits.

F. All tools normally used in the application of built-up roofing materials.

19.0 One-part Cold Adhesive Application

19.1 MBR Cold Application Adhesive and MBR Utility Cement are similar in consistency and application to traditional built-up roofing cold process cements. These adhesives form a durable, elastomeric and waterproof layer once cured.

19.2 MBR Cold Application Adhesive is for use in the field of the roof and is used to adhere roofing plies, modified bitumen sheets, and roof insulation. Fiber glass ply sheets, such as GlasPly Premier and GlasPly IV, cannot be used with this material. The adhesive is ready to use as shipped and does not require mixing. Do not thin with additional solvents.

19.3 The adhesive is applied at a nominal rate of 1½ gal/100 ft² (0.61 l/m²) over nonporous substrates, e.g., primed concrete or fiber glass base felts. If applied to porous materials, such as insulations, the application rate will increase, depending on the absorbency of the material.

19.4 The simplest method of adhesive application is by pouring a 2" to 4" (51 to 102 mm) wide bead of the adhesive along the substrate, about 12" (305 mm) from the lower edge of the work area. The adhesive is spread with a ¼" (6 mm) (max.) saw-toothed rubber squeegee to obtain a uniform bed of adhesive. Spread the adhesive first toward the lower edge of the work area, or to the appropriate laying line of the adjoining felt, creating a uniform coating of adhesive. Continue to spread the adhesive up the roof until the bed of adhesive is wide enough to receive the sheet.

20.0 One-Part Cold Adhesive Membrane Specifications

20.1 Refer to the SBS DESIGN AND INSTALLATION CONSIDERATIONS page on JM.com for membrane construction recommendations.

21.0 Steep Slope Requirements – Asphalt and Adhesive Applied

21.1 Non-nailable Decks: On decks with a slope over ½" per ft (41 mm/m), the roofing felts must be installed parallel to the incline and must be nailed. Pressure-treated wood nailers shall be attached to the deck, run perpendicular to the incline, be capable of retaining the nails securing the roofing felts, have the same thickness as the insulation and be at least 3½" (89 mm) wide. Wood nailers shall be provided at the ridge and at the following approximate intermediate points:

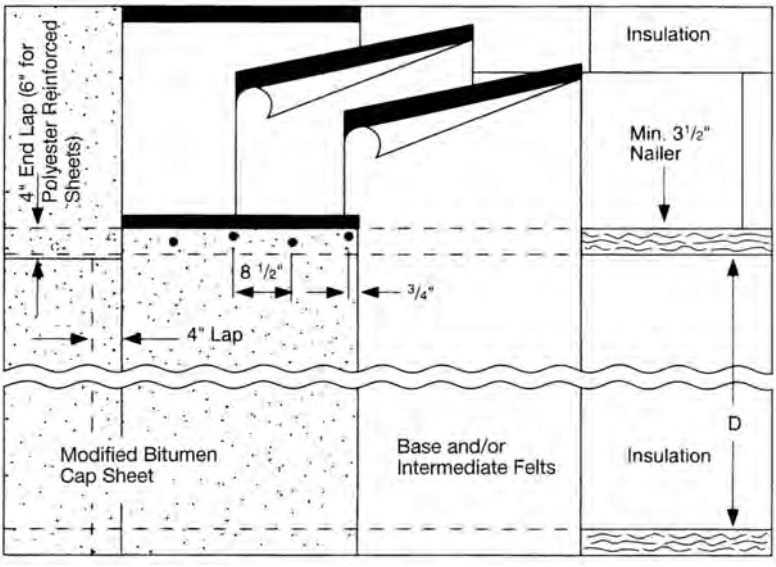
Incline (Inches/Foot)	Nailer Spacing (D)	Type of Asphalt
0"-½" (0-41 mm/m)	Not required	Type III or IV*
½"-2" (41-167 mm/m)	32' (9.8 m) *(max.)* face to face	Type IV
2"-3" (167-250 mm/m)	10' (3.1 m) *(max.)* face to face	Type IV

* Consult with a JM Technical Services Specialist regarding projects in hot climates, as Type III asphalt may not be permitted in some areas.

Nailers may also be laid out to conform to the roll length being used. For slopes between ½" to 2" per ft (41 to 167 mm/m), nailers should be spaced to accommodate full-length modified bitumen rolls. For slopes between 2" to 3" per ft (167 to 250 mm/m), the nailers should be spaced to accommodate half-length rolls.

21.2 Cut the modified bitumen cap sheet to conform to the nailer spacing. Nail the end lap across the width of the sheet, with the first nail spaced ¾" (19 mm) from the leading edge of the sheet, and the remaining nails spaced approximately 8½" (216 mm) o.c. The nails shall be staggered across the width of the nailer to reduce the risk of the sheet tearing along the nail line. Nails must have an integral 1" (25 mm) (min.) diameter cap. Where capped nails are not used, fasteners must be driven through caps having a 1" (25 mm) (min.) diameter.

21.3 Nailers must also be used around the roof perimeter, openings and penetrations, for nailing felts, gravel stops, roof fixtures and fascia systems.



21.4 Nailable and Lightweight Concrete Decks: On decks with a slope over ½" per ft (41 mm/m), the roofing felts must be installed parallel to the incline. Nail the end laps of the modified bitumen cap sheet across the width of the sheet on 8½" (216 mm) centers. All nails are to be mopped over and covered by the lap of the next sheet. For slopes from ½" to 2" per ft (41 mm to 167 mm/m), a full-length sheet can be used. For slopes from 2" to 3" per ft (167 mm to 250 mm/m), a half length sheet should be used.

Incline (Inches/Foot)	Type of Asphalt
0"-½" (0-41 mm/m)	Type III or IV*
½"-2" (41-167 mm/m)	Type IV
2"-3" (167-250 mm/m)	Type IV

* Consult with a JM Technical Services Specialist regarding projects in hot climates, as Type III asphalt may not be permitted in some areas.

22.0 Steep Slope Requirements – Heat-welded Systems

22.1 Heat-welded SBS roofing membranes can be applied on inclines up to 3" per ft (250 mm/m) when proper precautions are taken. On non-nailable decks, wood nailers must be used. Nailers act as insulation stops for the roof insulation and as a facility to back nail the membrane.

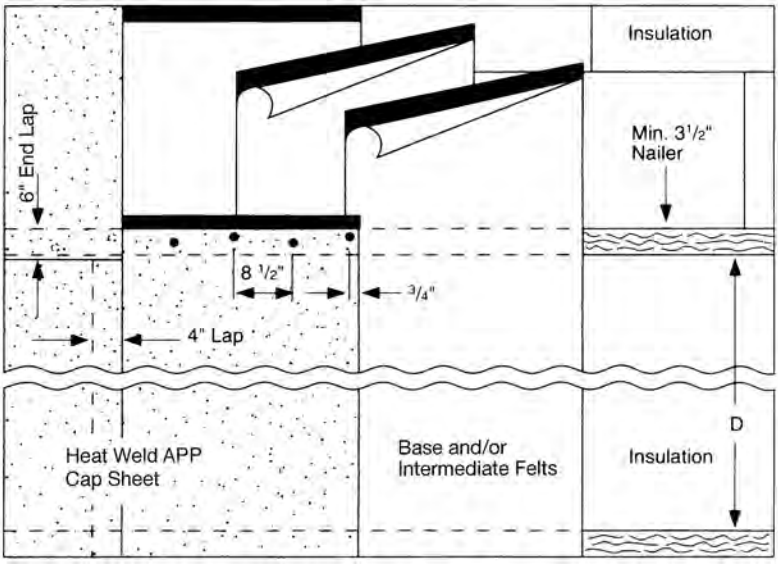
On slopes up to 2½" per ft (208 mm/m), the roofing sheets may be installed either perpendicular or parallel to the roof incline.

22.2 Non-nailable Decks: On decks with a slope over 3½" per ft (291 mm/m), the roofing felts must be installed parallel to the incline and must be back nailed. Pressure-treated wood nailers shall be attached to the deck, run perpendicular to the incline, be capable of retaining the nails securing the roofing sheets, have the same thickness as the insulation and be at least 3½" (89 mm) wide. They should be securely attached to the deck with mechanical fasteners to resist a pullout force of 200 lb (890 N). Wood nailers shall be provided at the ridge and at the following approximate intermediate points:

Incline (Inches/Foot)	Nailer Spacing (D)
0"-1½" (0-125 mm/m)	Not required
½"-3" (125-250 mm/m)	32' (9.8 m) *(max.)* face to face

22.3 Nail the modified bitumen cap sheet at the end lap across the width of the sheet, with the first nail spaced ¾" (19 mm) from the leading edge of the sheet, and the remaining nails spaced approximately 8½" (216 mm) o.c. The nails shall be staggered across the width of the nailer to reduce the risk of the sheet tearing along the nail line. Nails must have an integral 1" (25 mm) (min.) diameter cap. Where capped nails are not used, fasteners must be driven through caps having a 1" (25 mm) (min.) diameter. All nails are to be covered by the lap of the next sheet.

22.4 Nailers must also be used around the roof perimeter, openings and penetrations, for nailing felts, gravel stops, roof fixtures and fascia systems.



22.5 Nailable and Lightweight Concrete Decks: On decks with a slope over 1½" per ft (125 mm/m), the roofing felts must be installed parallel to the incline. Nail the end laps of the modified bitumen cap sheet across the width of the sheet on 8½" (216 mm) centers. All nails are to be covered by the lap of the next sheet.

23.0 Phase Construction

23.1 One of the greatest hazards of roof construction is the application of a roofing system in "phases," where a partially completed roof system is left exposed to the weather overnight or longer. This can lead to entrapped moisture which can cause premature failure of the membrane.

23.2 When the installation of the cap sheet is delayed for any reason, the following procedures should be followed:

A. Low spots and valleys must be glazed with Type III or IV asphalt at the rate of 10 - 15 lb/100 ft^2 (0.49 - 0.73 kg/m^2).

B. Prior to the application of the modified bitumen cap sheet, the surface of the membrane must be examined thoroughly for the presence of any moisture. If moisture is present, the application of the cap sheet is not to proceed until the moisture has been removed or evaporated and the surface is dry. If frothing or bubbling of the

hot asphalt occurs, construction must stop immediately.

C. The surface of the membrane must be properly cleaned and primed if contaminated by dirt, dust or debris. The primer must be completely dry prior to installation of the modified bitumen cap sheet.

D. Caution must also be exercised to avoid traffic over the newly installed modified bitumen cap sheet while the asphalt is still fluid. This can also contribute to the formation of voids.

23.3 Under no circumstances shall the installation of the modified bitumen cap sheet be delayed more than 5 days after completion of the intermediate plies of the roofing system.

23.4 Only multiple felt systems (two or three felts with modified cap sheet) or DynaBase, DynaPly and DynaLastic 180 S should be considered as the base felt(s) for the delay in application of the modified bitumen cap sheet. Single ply felt or base felt systems must receive the modified bitumen cap sheet on the same day.

24.0 Cold Weather Application – Asphalt or Adhesive Applied

24.1 SBS modified bitumens require special application techniques when they are being installed in cold weather. The following precautions shall be taken when the ambient temperature drops below 50°F (10°C), and are mandatory below 40°F (4°C):

A. Modified bitumen products shall be kept warm, or warmed prior to installation. Store these materials indoors or in heated storage units or warming boxes. If these facilities are not available, placing the materials in direct sunlight may help. Make certain that modified bitumen rolls are stored on end only; do not store rolls on their side.

B. The mopping asphalt must be 425°F (218°C) at point of application. This will improve the likelihood of fluxing the back coating on the sheet and the probability of an adequate bond.

C. When the rolling or scrolling techniques are used, the asphalt must be mopped in front of the roll no more than 4' (1.22 m), and the asphalt must not be allowed to cool before the sheet is laid into it. In cold temperatures, asphalt will "skin over" rapidly, which will prevent adhesion of the membrane.

D. When the conditions are extreme (below 40°F [4°C]) these precautions may prove to be inadequate to achieve a smooth installation. If prevailing conditions demand that the job continue, the rolls must be heated or completely unwound and allowed to warm for 12 to 15 minutes or until there are no apparent "waves" in the sheet. This shall be done with the darker side of the sheet up. The sheet may then be installed using rolled, scrolled or "mop and flop" techniques.

E. The adhesive can be installed in temperatures between 40°F and 100°F (4°C and 38°C). However, when the temperature is below 50°F (10°C), the adhesive must be stored in a warm area (approximately 70°F [21°C]) for 24 hours before being used, to facilitate spreading. Note: Temperature affects the cure rate of the adhesive. Even in cooler weather, the product will develop bond strengths comparable to fully adhered single ply systems in a relatively short time. The membrane ultimately will develop adhesive bonds that exceed those of systems using asphalt as the adhesive.

25.0 Heat Weld Application

25.1 The surface over which the SBS membrane is to be installed must be firm, dry, smooth, flat and free of debris and loose material. All surfaces must be designed and installed in accordance with manufacturer's, industry and acceptable association standards.

25.2 Drainage: Design and installation of the deck and/or the substrate must result in the roof draining freely and to outlets numerous enough and so located as to remove water promptly and completely. Areas where water ponds for more than 24 hours are unacceptable and will not be eligible for a JM Peak Advantage Guarantee.

25.3 Roofing shall commence at the lowest point of the roof deck with laps installed so that water flows over and not against the lap. Align the roll in the course to be followed and unroll completely. Then reroll both ends to the middle of the roll (scrolling). Using the heat welding apparatus, apply the heat to the surface of the coiled portion of the roll until the surface reaches the proper application temperature (approximately 330°F [166°C]). The flame should be moved from side to side and the membrane slowly unrolled while pressing the heated portion of the roll into the underlying surface. Apply the heat across the full width of the roll and along the 4" (102 mm) side lap area of the previously installed roll, making an "L" shape. As the surface of the roll is heated, it will develop a sheen. **The generation of smoke is an indication that the material is being overheated.** Repeat the operation with subsequent rolls, while maintaining a 4" (102 mm) side lap and a 6" (152 mm) end lap. On mineral-surfaced membranes, prior to seaming the 6" (152 mm) end lap, the granules must be embedded by heating the end lap area and then pressing the granules into the compound using a rounded point trowel or an embedding tool. All laps should be rolled with a lap roller and a 1/8" (3 mm) to 3/8" (10 mm) bleed out of SBS compound should extend beyond the lap. Check all laps for proper adhesion.

Note: The "mop and flop" technique has proven to be very effective in cold weather situations, when short lengths of material are set in asphalt applied with a mechanical spreader. Polyester-reinforced SBS modified bitumen may not be installed in this manner.

26.0 Temporary Roof Coverings

26.1 At times, an owner or general contractor may require the building to be closed at a time when the weather is not conducive to good roof construction, or the roof area may have to be used as a work platform during construction. Historically, this situation has led to phase construction, which has resulted in premature roof failure.

26.2 When the complete roof cannot be installed in one operation, the following procedures are recommended:

A. Nailable Decks:

1. Apply one layer of an approved JM base felt, lapping the felt 2" (51 mm), and nailing 9" (229 mm) o.c. along the lap and 12" (305 mm) o.c. through the center of the sheet. (Sheathing paper should first be installed on wood board decks.)
2. Mop one ply of an approved JM ply felt in ASTM D 312, Type III asphalt and apply a glaze coat of 10 - 15 lb/100 ft^2 (0.49 - 0.73 kg/m^2) of Type III asphalt.
3. When the permanent roof is to be installed, inspect the roof and remove all damaged and blistered areas. Apply a layer of approved JM base felt nailed through the temporary roof and into the deck as the first layer of the roofing system. As an alternate, a layer of approved JM roof insulation may be mechanically fastened (with appropriate fasteners) through the temporary roof into the deck.
4. Proceed with installing the appropriate permanent roof specification.

B. Steel Decks:

1. Apply a minimum layer of Fesco Board insulation of adequate thickness to the steel deck using appropriate length UltraFast fasteners.
2. Install a ply of a JM ply or base felt and an additional ply of fiber glass felt, both in hot steep asphalt.
3. Finish with an 10 - 15 lb/100 ft^2 (0.49 - 0.73 kg/m^2) glaze coat of hot steep asphalt.
4. When the permanent roof is to be applied, inspect the roof area. If the insulation has not been damaged and is dry, remove any blistered or damaged felt. Prime the

temporary roof with Asphalt Primer at the rate of 1 gal/100 ft² (0.4 l/m²) and then solid mop a layer of insulation board to the temporary roof with hot asphalt. Then apply the permanent roof system. In some regions of the country a JM base felt may be machine spot mopped directly to the sound temporary roof, followed by the roofing membrane. Consult a JM Technical Services Specialist for acceptability.

5. If the membrane and/or roof insulation has been excessively damaged, remove all unusable material and replace.

C. Non-Nailable Decks, Other than Steel:

1. Prepare the deck as would be done for a permanent roof.
2. Solid mop two plies of approved JM ply felt in hot Type III asphalt.
3. Finish with a 10 - 15 lb/100 ft² (0.49 - 0.73 kg/m²) glaze coat of Type III asphalt.
4. When the permanent roof is to be installed, inspect and repair all defects in the temporary roof. Clean the surface of the temporary roof and prime with Asphalt Primer if the surface is unusually worn. Proceed with the installation of the permanent roof.
5. As an alternate to step 2, spot mop an approved JM base sheet using a mechanical spot mopping machine. Next, solid mop one ply of approved JM ply felt in hot Type III asphalt. When the permanent roof is to be installed, remove the entire temporary roof, prime the deck as required in the "Roof Decks" section of the current JM Commercial Roofing Product Manual, and proceed with the installation of the permanent roof.

26.3 The decision as to whether or not a temporary roof is to be left in place is a judgment factor that must be made by the building owner or his representative. Although a JM representative may make suggestions in this area, JM will not be responsible for any problems that may develop with the roofing system due to the fact that the temporary roof is left in place.

27.0 Protected Roofing Membrane Assemblies (PRMA)

27.1 General Information. All general information contained in this section and the current JM Commercial Roofing Product Manual shall be considered part of these specifications.

JM modified bitumen specifications are eligible for use with protected roofing membrane assemblies. When these specifications are modified, the last digit of the specification designation should be changed to a "P" to denote "Protected."

Flashings: All flashings must conform to the requirements stated in this section and in Section 3 of this Application Guide. The flashing material must extend above the top of the extruded polystyrene insulation a minimum of 8" (203 mm). The standard flashing details for modified bitumen roofing can be found in Section 3.

Drainage: Design and installation of the deck and/or roof substrate must result in the roof draining freely, to outlets numerous enough and so located as to remove water promptly and completely. Areas where water ponds for more than 24 hours are unacceptable, and will not be eligible for a JM Peak Advantage Guarantee.

27.2 When designing a protected membrane roofing system, the designer must make sure that positive drainage exists on the roof. Even though some extruded polystyrene roof insulation products are designed with integral drainage channels, they will retard the flow of water due to the contact between the membrane and the insulation. JM recommends a minimum of ¼" per ft (21 mm/m) slope be obtained on the finished roof membrane. This will greatly reduce the amount of water that will be retained against the membrane after a rain.

28.0 Asphalt Recommendations (PRMA)

28.1 JM allows the use of only two grades of asphalt in SBS modified bitumen specifications — Type III and Type IV. This recommendation also applies to PRMA specifications, in order to prevent adhesion of the extruded polystyrene insulation to the asphalt top pour.

28.2 Ballast requirements (for use with extruded polystyrene roof insulation):

28.3 The ballast should be similar to ASTM D 448, Gradation #57. The following gradation is typical:

Passing ½" (13 mm)	10-60%
Passing ¾" (19 mm)	100%

28.4 Ballast is applied at a rate of approximately 10 to 12 lb/ft^2 (48.8 - 58.6 kg/m^2) in the field of the roof over a layer of filter fabric. Twenty (20) lb/ft^2 (97.6 kg/m^2) of ballast is required over a 4' (1.22 m) wide area at the roof perimeter and at all penetrations. The following fabrics have been found to be acceptable:

A. Confil 689H – 3.0 oz/yd (93.5 g/m) black polyester from International Paper Company.

B. Rufon P3B – 3.0 oz/yd (93.5 g/m) black polypropylene from Phillips Fiber Corporation.

28.5 JM makes no claims as to the quality of these products nor their performance when exposed on the roof. See the product warranty supplied by the fabric manufacturer.

28.6 When pavers are used as ballast, the pavers must be placed on supports or pedestals. These supports or pedestals can either be commercially available products or 6" (152 mm) square pieces of JM DynaTred Plus (to give a minimum ½" [13 mm] air space). These supports should be located at the intersection of the corners of the paver blocks, such that where the four corners come together, all rest on the same 6" (152 mm) square piece of DynaTred Plus or pedestal. The ½" (13 mm) air space between the pavers and the insulation will allow moisture vapor to vent to the atmosphere. If the moisture is not allowed to vent to the atmosphere, the top surface of the insulation will begin to absorb water and the thermal performance will be reduced. ROOF AREAS THAT HAVE PAVERS IN DIRECT CONTACT WITH THE INSULATION ARE EXCLUDED FROM COVERAGE UNDER A JOHNS MANVILLE PEAK ADVANTAGE GUARANTEE, INCLUDING THE THERMAL OVERLAY PORTION OF THE GUARANTEE.

28.7 The use of pavers in high traffic areas, to and around equipment and other maintenance areas, is strongly recommended.

28.8 It is the owner's and/or specifier's responsibility to determine if the building structure can support the required amount of ballast and still meet the code design requirements for anticipated dead and live loads (including snow, wind, etc.).

29.0 Decks (PRMA)

29.1 Precast slabs and prestressed "T" or "TT" decks require a minimum of one layer of approved JM roof insulation as a leveling course prior to the installation of the roof membrane.

29.2 For lightweight insulating concrete, gypsum decks, etc., consult a JM Technical Services Specialist for specifications and guarantee information.

29.3 For information on roof deck requirements not mentioned here, refer to the "Roof Decks" section of the current JM Commercial Roofing Product Manual, or contact a JM Technical Services Specialist.

29.4 Warning: Extruded polystyrene insulation is combustible and may constitute a fire hazard if improperly used or installed. It should be adequately protected. Use only as

directed by the specific instructions for this product. This material should **NEVER** be exposed to an open flame or other source of ignition.

29.5 All roof deck systems over which the protected system is installed should provide an adequate fire barrier for the extruded polystyrene insulation.

29.6 For proper protection of plastic foam in storage, consult the National Fire Protection Association (NFPA) standards or the authority having jurisdiction.

30.0 Installing Ballasted PRMA Roof Insulation over Modified Bitumen Roof Membranes

30.1 The following are general recommendations for installing ballasted PRMA roof insulation over modified bitumen roof membranes.

Materials per 100 ft² (9.29 m²) of Membrane Area

Insulation:	Extruded polystyrene roof insulation 100 ft² (9.29 m²) per layer
Fabric:	12′ wide, 105 ft² (3.66 m wide, 9.75 m²) 10′ wide, 106 ft² (3.05 m wide, 9.84 m²) 8′ wide, 107 ft² (2.44 m wide, 9.94 m²)
Ballast:	¾″ (19 mm) stone or crushed rock, 1,000 - 1,200 lb/100 ft² (48.8 - 58.6 kg/m²)*

*Additional ballast is required at the perimeter and at penetrations.

30.2 Insulation: Place extruded polystyrene roof insulation directly on the membrane with channel side down. The insulation boards should be tightly butted together. The maximum allowable gap between boards is ⅜″ (10 mm). The boards shall be installed to within approximately ¾″ (19 mm) of, but not touching, projections and cant strips.

30.3 For multilayer installations, install subsequent layers, unattached over the first layer. Stagger all joints in relation to the underlying layer. The bottom layer in multilayer applications must be at least 2″ (51 mm) thick and as thick or thicker than the top layer.

30.4 Fabric: Loose lay an approved fabric over the extruded polystyrene roof insulation, with all joints lapped a minimum of 12″ (305 mm). There should not be any end laps within 6′ (1.83 m) of the perimeter. The fabric should extend 2″ to 3″ (51 - 76 mm) above the stone at the perimeter and at penetrations.

30.5 Wetting the fabric is helpful in holding it in place on the insulation until the ballast is installed.

30.6 Ballast: Apply the correct size ballast at the rate of 1,000 to 1,200 lb per 100 ft² (10 - 12 lb/ft² [48.8 - 58.6 kg/m²]), over the fabric, as the fabric is being laid out in the field of the roof. For a width of 4′ (1.22 m) at the roof perimeter or penetrations, install ballast at a rate of 20 lb/100 ft² (97.6 kg/m²) or pavers at a rate of 22 lb/lin ft (32.7 kg/ lin m). If pavers are used, the fabric is not required. Pavers must be placed on pedestals. Pedestals can be either commercially available products or 6″ (152 mm) square pieces of JM DynaTred Plus.

30.7 Ballast should be washed ¾″ (19 mm) gravel or crushed stone, with fines (smaller than ½″ [13 mm]) accounting for not less than 10% or more than 60%. This gradation is similar to ASTM D 448, Gradation #57.

31.0 Safety Guidelines for Heat-welded Modified Bitumen

31.1 Heat-welded modified bitumen products require special safety precautions prior to, during and after installation. When working with an open flame, contractors must use extra care and extreme caution to prevent accidents. Carelessness can lead to loss of life, injury and loss of property. The following safety recommendations should be followed:

1. All contractors must be licensed and insured in the geographic area where they will conduct business. The work area must be properly prepared before the welding process begins and weather conditions must be favorable. Procedures and equipment must comply with all applicable code requirements including guidelines mandated by the Occupational Safety and Health Administration (OSHA).
2. The roofing contractor must ensure that all mechanics or applicators involved with the application of heat-welded modified bitumens are properly trained not only in application and equipment handling, but also safety measures. The contractor should verify that all roofing applicators involved with open flame application maintain and carry a valid **Certified Roofing Torch Applicator** (CERTA) card as evidence of proper training. Further, the general contractor, jobsite superintendents and the building owner or its representative must also be knowledgeable and/or advised of the proper and necessary safety precautions applicable to heat-welded roofing products.
3. **All mechanics or applicators must carry, review, understand and adhere to the safety information and guidelines contained in "Torch Applied/Do's and Don't's" as published and supplied by the Asphalt Roofing Manufacturers Association (ARMA) which may be supplemented or amended, as well as the ARMA/NRCA "Guide to Torch Safety on Modified Bitumen" videotape. These are available from ARMA at: ARMA, 4041 Powder Mill Road, Ste. 404, Calverton, MD 20705-3016 (Ph. (301) 348-2002). Do not begin application procedures until you read and fully understand these safety procedures and installation practices.**
4. Written notice must be given to the local fire department where required, and any required or necessary permits must be obtained. Even if not required, it is always recommended to give notice to the fire department, particularly when using LP gas.
5. Supervisors must ensure that all roofing applicators wear adequate protective equipment, including nonsynthetic long-sleeved shirts, boots, long pants with no cuffs that extend over the top of the boot, heat-resistant gloves, safety glasses and a face shield during application.
6. Never heat weld directly to, or near (e.g., the 35' [10.7 m] rule) combustible materials or surfaces. Extra care must be taken to identify all potentially combustible and flammable material and similar combustible and flammable aspects of a building's use and design. Be aware of insulation type, parapet walls, curbs, cants, wood, edge strips, expansion joints, electrical wires and conduits, gas lines, chemicals, grease, oil, vapors, exhausts, spills or other materials that could ignite. Combustible materials present on a roof must be moved and materials that are not moveable must be protected from the heat-weld process and other fire hazards with fire blankets or shields. Be sure to identify similar materials on adjoining buildings and exercise proper precautions. A fiber glass base sheet should be installed to minimize the risk of fire. Always use combustion-resistant cant strips or other fire resistant materials.
7. Never heat weld near or into vents, openings or cracks around edges, corners, voids or other penetrations in the building or near any rooftop equipment. Shut off fans and cover openings.
8. Never leave lighted torches unattended.
9. Use only equipment that is specifically designed for heat-welded roofing applications, and be sure the equipment is listed by a nationally recognized independent testing laboratory. The equipment must be operated in accordance with the manufacturer's instructions and in accordance with all applicable codes and regulations. All mechanics

must be properly trained and familiar with all safety precautions in the use and handling of tanks, regulators and LP gas. Be familiar with National Fire Protection Association (NFPA) 58 **"Standard for the Storage and Handling of Liquefied Petroleum Gases"** and appropriate publications of the National Propane Gas Association, 1600 Eisenhower Lane, Ste. 100, Lisle, IL 60532 (Ph. (630) 515-0600), and the National Fire Protection Association, 11 Tracy Dr., Avon, MA 02322 (Ph. (800) 344-3555). Do not work in areas where LP gas can accumulate. Proper ventilation in accordance with OSHA and the National Institute for Occupational Safety and Health (NIOSH) is required. Ensure that all equipment is in good working condition and inspected daily.

10. Maintain at least one fully charged 20 lb (min) ABC-type dry chemical fire extinguisher for each roofing mechanic on the project, and have more available near the application area (e.g. within 50' [15.3 m]) based on jobsite conditions. Roofing mechanics must have fire extinguisher use training at least annually per OSHA 29 CFR1910.157.
11. Follow fire protection and prevention procedures mandated or recommended by OSHA and/or the National Roofing Contractors Association (NRCA) and ensure compliance with all other federal, state and local regulations, including but not limited to those listed in OSHA 29 CFR1962.1 150, 152.1, 153 and 191-110 as they apply to heat-weld application.
12. A fire watch of sufficient length must be kept during and after all heat welding is completed. A fire watch is never shorter than 1 hour after all application has been completed for a given day. A fire watch may need to be longer depending on the size of the roofing project and the design or configuration of the building. Special attention should be given to potential hot spots or smoldering material, such as carts, wall flashings and around penetrations, rooftop equipment and the roof perimeter. The person performing the fire watch should use an infrared heat-sensing device to detect hot spots and smoldering materials. For more information, contact the NFPA. Should fire result, take immediate appropriate action; notify the owner of fire response.
13. Remember, it is the contractor's responsibility to observe all fire prevention and safety policies and practices during the installation of the roof system, as well as provide training to their personnel for proper roofing and safety practices as well as responding to emergency situations at the job site. Always keep a first aid kit on the job site; individuals administering first aid must be properly qualified per OSHA 29 CFR1910.151(b).

JOHNS MANVILLE DOES NOT SUPERVISE BUILDING OWNERS, CONTRACTORS, MECHANICS OR ANY OTHER PERSON IN THE APPLICATION OF HEAT-WELDED APPLIED MODIFIED BITUMENS AND ASSUMES NO RESPONSIBILITY FOR FIRE DAMAGE OR ANY OTHER DAMAGES.

2B

SBS Heat-Welded Application Guide

Section Two Contents

1.0 General Information

1.1 This section provides application information, and outlines specifications currently available from JM Roofing Systems for SBS (Styrene-Butadiene-Styrene) Modified Bitumen Roofing Membranes. They may be applied with hot asphalt or cold adhesive. Some of these specifications also allow the use of heat welding. This same application information applies to SBS hot asphalt or cold adhesive applied specifications.
Note: For the most current information on general guidelines, please refer to the System Considerations tab under Systems Introduction & Selection on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the System Application tab.

1.2 All general instructions contained in this guide book and the current JM Roofing Systems Product Manual should be considered part of this specification.

1.3 Specifications are available for systems installed over insulation, nailable, non-nailable, and lightweight fill substrates. JM offers systems that can be installed using either hot asphalt, heat welding or cold application cements.

1.4 For hot-applied, modified bitumen roofing system applications, JM-approved asphalt is required. JM-approved asphalts are thoroughly evaluated before they are accepted for use in any modified bitumen system. Contact your JM Sales Representative for current approved asphalt suppliers.

1.5 JM does not recommend the use of traditional asphalt cut-back mastics installed under any SBS modified bitumen product. The use of cut-back mastics over the SBS modified bitumen product (e.g., to strip in the edges of a base flashing) is acceptable. JM has developed two field adhesives — MBR Cold Application Adhesive and MBR Bonding Adhesive — and two flashing adhesives — MBR Flashing Cement and MBR Utility Cement. All four are compatible with all of the JM modified bitumen products; they should be used whenever a cold adhesive application is necessary or preferred.

1.6 Each specification in this section is eligible to receive a JM Peak Advantage Guarantee. The system must be installed by a JM Peak Advantage Roofing Contractor who is approved for SBS Modified Bitumen Roofing Systems. The JM Peak Advantage Roofing Contractor must use Trumbull®* asphalt or other JM-approved asphalt.

1.6.1 This manual clearly differentiates between **requirements** and **recommendations**. This manual has been written to assist the specifier to develop a comprehensive bid package. The information is presented in an explanatory fashion rather than the authoritative, instructive manner commonly utilized in construction specifications. When experience, technical knowledge or established testing procedures support a policy or position, it is clearly identified, (i.e., **"JM requires"** or "is not acceptable"). When the use of a particular product or practice is desirable, the reference is stated as an opinion rather than an absolute fact, (i.e., **"JM recommends"** or **"JM suggests"**). ***It is mandatory that all requirements be complied with; however, it may not be necessary to follow all recommendations to qualify for a guarantee.***

1.7 Drainage of water off any roof membrane is necessary to prolong the service life of the system. JM, therefore, has the following policy:

Drainage: Design and installation of the deck and/or membrane substrate must result in the roof draining freely, to outlets numerous enough and so located as to remove water promptly and completely. Areas where water ponds for more than 24 hours are unacceptable and will not be eligible for a JM Peak Advantage Guarantee.

1.8 Flashings: Refer to Flashing Details in Section 3 of this Application Guide.

2.0 Membrane Substrate

2.1 The surface on which the modified bitumen roofing membrane is to be applied should be one of JM's roof insulations (Fesco Board, Tapered Fesco Board, Fesco Foam, Tapered Fesco Foam, DuraBoard, DuraFoam, ENRGY 3, Tapered ENRGY 3 or ½" Retro-Fit Board) or an approved structural substrate. **For heat-weld application directly to the insulation, the top layer of insulation must be DuraBoard or DuraFoam.** The surface must be clean, smooth, flat and dry. SBS modified bitumen roofing should not be applied directly to foam plastic insulations, as referenced in NRCA Bulletin #9.

3.0 Roofing Over Non-nailable Decks

3.1 These specifications are for use over any type of structural deck which is not nailable, and which offers a suitable surface to receive the roof. Poured and precast concrete decks require priming with Asphalt Primer prior to the application of hot asphalt.

3.2 These specifications are also for use over JM roof insulations — Fesco Board, Tapered Fesco Board, Fesco Foam, Tapered Fesco Foam, DuraBoard, DuraFoam, ENRGY 3, Tapered ENRGY 3, and ½" Retro-Fit Board — or other approved insulations which are not nailable and which offer a suitable surface to receive the roof. SBS modified bitumen roofing should not be applied directly to foam plastic insulations, as referenced in NRCA Bulletin #9.

3.3 These specifications are denoted by an "I" as the third character in the specification designation (e.g., 3CID). See the "Roof Finder Index" on page 2-120 of this book for further information.

4.0 Roofing Over Nailable Decks

4.1 These specifications are for use over any type of structural deck (without roof insulation) which can receive and adequately retain nails or other types of mechanical fasteners recommended by the deck manufacturer. Examples of such decks are wood and plywood. Certain specifications are suitable for use over lightweight insulating concrete decks or over fills made of lightweight insulating concrete. Consult the "Roof Decks" section of the current JM Roofing Systems Product Manual, or contact a JM Technical Services Specialist for approval of the lightweight concrete to be used.

4.2 These specifications are denoted by an "N" or an "L" as the third character in the specification designation (e.g., 3CND, 3CLG). See the "Roof Finder Index" on page 2-120 of this book for further information.

4.3 One ply of sheathing paper must be used over wood board decks under the base felt. Sheathing paper is not required over wood decks.

4.4 All of the specifications in this section require the use of a nailable base felt. Use nails or fasteners appropriate to the type of deck. See the "Roof Decks" section of the current JM Roofing Systems Product Manual.

5.0 General Guidelines for Application of Materials

5.1 The proper application of roofing materials is as important to the satisfactory performance of the roofing system as the materials themselves. JM strongly recommends the following guidelines for the application of SBS modified bitumen roofing materials be followed.

A. Never use wet or damaged materials.

B. Never apply any roofing materials during rain or snow, or to wet or damp surfaces. Moisture trapped within the roofing system may cause severe damage to the roofing membrane, insulation and deck.

C. Take special care when applying any roofing felt in cold weather. Check the temperature of the asphalt at the mop or spreader to determine that it is at the proper temperature.

D. Heed the specific cold weather application procedures in this manual.

E. Always start application at the low edge of the roof per the individual specification diagram.

F. Never mop ahead of the modified bitumen rolls more than 6' (1.83 m) and, in temperatures below 50°F (10°C), no more than 4' (1.22 m). Observe temperature guidelines for asphalt application.

G. When using mechanical bitumen applicators or felt laying equipment, be sure that all orifices are open.

H. All roofing felts should be well set into the hot asphalt utilizing a squeegee or some other device. All ply felts shall be rolled (not "flown") into the hot asphalt.

I. SBS modified bitumen sheets shall be rolled or scrolled into a full mopping of hot asphalt. Back-mopping and flopping into a full coating of asphalt is also acceptable for certain SBS products. Base sheets and cap sheets with polyester reinforcement must be allowed to relax in an unrolled position prior to installation.

J. Do not mix different grades of asphalt or dilute an asphalt with any other material.

K. Heat the asphalt according to the manufacturer's recommendations. Check the temperature of the asphalt at the kettle and at the point of application. Have accurate thermometers on the roofing kettles. Adhere to the guidelines for the heating of asphalt that are outlined in this manual.

L. Always use the proper grade of asphalt. SBS membranes require the use of Type III or IV asphalt.

M. It is essential that traffic be minimized on a freshly laid roof, while the asphalt is still fluid. Asphalt displacement through the porous fiber glass ply felts can result from rooftop traffic during asphalt "set" time. Depending on specific job factors, this set time can be as long as 45 minutes. Asphalt displacement can result in "phantom" leaks and blistering of the membrane.

N. Do not use coal tar pitch or coal tar asphalt with any of JM's modified bitumen products. They are not compatible.

O. Do not use traditional cut-back asphalt cements under SBS modified bitumen products. The use of these mastics over the top of SBS products, to strip in or to cover nail heads, is acceptable; however, the MBR cement products are preferred.

P. Install the entire roofing system at one time. Phased construction may result in slippage of felts due to excessive amounts of asphalt between the plies of felt. Blisters due to entrapment of moisture are also a common problem, as well as poor adhesion due to dust or foreign materials collecting on the exposed felts of an incomplete roofing system.

Q. Always install a water cut-off at the end of each day's work to prevent moisture from getting into and under the completed roof system. Water cut-offs should be completely removed prior to resuming work.

R. Always comply with published safety procedures for all products being used. See the "Introduction" section of the current JM Roofing Systems Product Manual, MSDS and container labels for health and safety recommendations.

6.0 Roofing Felts

6.1 JM manufactures different felts for a variety of roofing needs: felts for roof membranes, flashing, venting and vapor retarders.

6.2 Roofing felts are furnished in rolls consisting typically of one or more squares, except for flashing materials which are sold in rolls containing a specific number of square feet. A "factory" square of roofing contains sufficient material to cover about 100 ft^2 (9.29 m^2) of roof area.

6.3 For more information on these products, refer to Section 2 of the current JM Roofing Systems Product Manual.

7.0 Roofing Bitumens

7.1 JM modified bitumen products are designed to be installed with hot asphalt or special cold application cements. Some others may be heat welded. PermaMop, coal tar pitch and coal tar asphalt are not permitted.

7.2 Asphalt can come from a variety of crude sources. Many of these sources produce high-quality mopping grade asphalts and many do not. Various physical properties of asphalts can affect the performance of the roofing system. For this reason, JM qualifies asphalt sources throughout the country and requires that only these asphalts be used to assure good performance and compatibility with the roofing products being used.

JM requires the use of Trumbull®* or another JM-approved asphalt within systems which require a JM Peak Advantage Guarantee. These approved asphalts are periodically tested to assure conformance to both ASTM and JM asphalt specifications. For the names of approved asphalt suppliers in your area, contact a JM sales representative.

8.0 Asphalt Health and Safety Information

See Section 1 for health and safety information.

8.1 Roofing asphalts are available in four grades. In general, they are grade specified by softening point. JM recommends the use of only two grades in SBS modified bitumen specifications — Type III and Type IV. The slope of the roof, as well as the climate, governs the grade of asphalt to be used. The success or failure of a roofing system depends greatly on the use of the proper grade of asphalt, as called for in the roofing specification.

8.2 Asphalts are susceptible to damage from overheating. Overheating, even for short periods, can "crack" or degrade the asphalt; a drop in softening point or a slight oiliness is a symptom. Overheating may result in a "fallback" in softening point which can cause slippage of the roof membrane. As the softening point decreases, the viscosity or "holding power" of the asphalt decreases. This can allow slippage to occur. If the overheating is more gradual, the asphalt may "age,"to the extent that premature failure of the system may result. Application temperatures must be in the range which permit a continuous layer of asphalt, regardless of the application technique used.

8.3 JM, in conjunction with the National Roofing Contractors Association (NRCA) and the Asphalt Roofing Manufacturers Association (ARMA), has been involved with considerable research into a system for classifying mopping grade asphalts. The system gives guidelines for proper heating and application.

8.4 With this system, which is used in the continental United States, the following information is printed on the cartons of asphalt, or on the bill of lading for asphalt shipments:

1. The Softening Point, as determined by ASTM D 312.
2. The Minimum Flash Point (FP) of the asphalt, as determined by ASTM Method D 92.

3. The Equiviscous Temperature (EVT), as currently defined by ASTM, is the temperature at which the asphalt viscosity is 125 centistokes. Asphalt applied within ±25°F (±14°C) of the EVT at the point of application will provide a nominal 23 - 25 lb/100 ft^2 (1.12 - 1.22 kg/m^2) of asphalt .
4. The Finished Blowing Temperature (FBT) is occasionally provided. This is the temperature at which the blowing of the asphalt was completed.

Note: Work done by the NRCA has shown that different EVT values should be used for mop-applied vs. machine-applied asphalt. The original EVT is applicable to mop applications. Asphalt installed by machine should be applied using an EVT based on 75 centipoise. Some asphalt suppliers are now including both EVT values on their products. If only the 125 centipoise (centistokes) EVT value is provided, and a machine installation is to be used, apply the asphalt at 25°F (14°C) higher temperature.

* Trumbull is a registered trademark of Owens Corning.

8.5 JM requires adherence to the following guidelines when the above information is furnished:

1. Use the proper softening point asphalt as specified for the roof slope, type of roofing system and climate.
2. For optimum application, the asphalt should be at the Equiviscous Temperature, ±25°F (±14°C), at the point of application. **However, SBS modified bitumen products shall be installed in asphalt with a minimum temperature of 400°F (204°C) at point of application.**
3. Never heat the asphalt to or above the Flash Point, to avoid danger of fire.
4. Heating above the Finished Blowing Temperature shall be strictly regulated, never for longer than 4 hours to preclude excessive asphalt degradation.

8.6 If the EVT is not available, heating temperature guidelines of the asphalt recommended for use with modified bitumen systems are as follows:

Recommended Temperatures

Asphalt Type	Heating	Application
190 Grade (Type III)	500°F (260°C)	400°F to 475°F (204°C to 246°C)
220 Grade (Type IV)	500°F (260°C)	400°F to 475°F (204°C to 246°C)

8.7 Use of insulated buckets and insulated circulating lines for cold weather application is always desirable. However, if ambient temperatures are low and the distance from asphalt source to the application point of the SBS membrane is great, their use is imperative.

8.8 The recommended quantity of asphalt has been indicated on each specification in this section. It is important that the asphalt be uniformly spread, without voids, so that felt does not touch felt, and so there is complete adhesion between all plies of the system.

8.9 JM considers a ±25% deviation from the specified asphalt quantity to be acceptable.

8.10 The use of the proper asphalt, as called for in the various JM specifications, is critical to the performance of the roofing system. A contractor shall not deviate from the asphalt requirements of the roofing system specified, unless the deviation is approved in advance by a JM Technical Services Specialist.

9.0 Gravel or Slag Surfacings

9.1 Some of the SBS modified bitumen systems are designed to be surfaced with gravel or slag. Gravel or slag must be dry before using. Wet gravel or slag will cause foaming of the asphalt and prevent proper adhesion of the surfacing. In cold weather, if difficulty is experienced in obtaining proper embedment in the asphalt, the gravel or slag should be heated prior to application.

9.2 JM will approve the use of clean slag or gravel meeting ASTM Specification D 1863, which covers aggregates specified both for use in road construction and roofing. Aggregates meeting ASTM D 1863 are generally available commercially throughout the country.

9.3 Other surfacing material used in place of gravel or slag should be fairly cubical in shape, non-water absorbent, hard and opaque, and of such size and nature as to result in firm embedment in the asphalt.

9.4 Do not use transparent or translucent stones, dolomite or crushed masonry.

9.5 Gravel should be spread at the rate of approximately 400 lb/100 ft^2 (19.5 kg/m^2), and slag, because of its lower density, at the rate of 300 lb/100 ft^2 (14.6 kg/m^2). Full coverage of the underlying asphalt is required.

10.0 Application of SBS Modified Bitumens

10.1 JM SBS products are installed using hot asphalt or special cold adhesives. Only certain SBS products may be installed using heat weld application techniques, and these products are designated as such. JM does not recommend the use of typical solvent based adhesives to bond the membrane to the roof. Traditional solvent-based roofing cements can be used to strip-in laps and other terminations, provided that the mastic is not placed under the modified bitumen sheet. Roofing cements used in this manner will allow the solvent in the adhesive to flash off rapidly and not degrade the modified bitumen blend.

10.2 SBS materials are frequently installed over traditional asphaltic base and ply felts which are applied using typical built-up roofing techniques. However, the use of SBS modified bitumen base felts is becoming more common, and these products should be installed using the modified bitumen application techniques described in this section.

11.0 Hot Asphalt Application

11.1 The installation techniques for SBS modified bitumens in hot asphalt are similar to those used for built-up roofing. The sheets must be firmly and uniformly placed in a full mopping of hot asphalt, without voids, and with all edges well sealed.

11.2 There are, however, a few unique conditions that the applicator must be aware of when installing these materials.

11.3 The temperature of the asphalt at the point of application is very important, and differs from the requirements for built-up roofing. The asphalt must have a minimum temperature of 400°F (204°C) when the sheet is set into it. This will cause the back coating to remelt or "flux," assuring proper bonding to the substrate.

12.0 Mop-applied Asphalt

12.1 There are several application techniques that can be used when the asphalt is installed by mopping. The modified bitumen sheet can be rolled, scrolled or flopped into the asphalt. Regardless of the application technique employed, the crucial factor is that the modified bitumen sheet make complete contact and embed in the hot asphalt. This can be accomplished by lightly brooming the modified bitumen sheet immediately after it has been installed. It is also good roofing practice to "scuff in" the side and end laps to assure that they are completely sealed.

12.2 When rolling the modified bitumen sheet into the asphalt, the mechanic should mop no more than 6' (1.83 m) in front of the roll to assure that the temperature of the asphalt does not cool and fall below the temperature necessary for good embedment. If the asphalt is allowed to cool too much, an inadequate bond may result. In addition, the viscosity of

the asphalt increases, which can result in a wavy appearance or excessive quantities of asphalt. Excessive asphalt can increase the potential for slippage of the membrane.

12.3 When using this application technique, brooming of the modified bitumen sheet is especially important at the end of the sheet where there may not be sufficient weight from the roll to provide the necessary pressure to embed the sheet into the asphalt.

12.4 The scrolling technique is also used by many mechanics. This technique was originally used to allow the modified bitumen sheet to relax, to reduce some of the wrinkling and shrinkage associated with the early modified bitumen products. Although this is not required with fiber glass and fiber glass/polyester composite-reinforced products, this method is occasionally used. The modified bitumen roll is completely unwound, usually turned upside down, and allowed to "relax." After the sheet has warmed, it is then turned right-side-up, placed on the roof in the area where it is to be installed and rerolled or scrolled from both ends. The product is then mopped into place using the same mopping techniques and precautions described for rolling the product into place.

12.5 Another application technique, called "mop and flop," is frequently used in the western portion of the United States. The modified bitumen sheet is cut to short lengths, usually between 12' and 16' (3.66 and 4.88 m) long. It is placed upside down, adjacent to the roof area where it will be installed, along the laying line of the preceding course. The entire area to be covered by the sheet is then mopped with hot asphalt, as well as the lap area of the upside-down sheet. Mechanics then pick the sheet up by the ends and "flop" it, right side up, into the hot asphalt, making certain to align it with the asphalt line created by the sheet itself. Again, brooming the sheet and scuffing the lap are recommended.

12.6 Polyester-reinforced SBS modified bitumen sheets should be unrolled and allowed to relax. Rerolling or scrolling of the sheet is then employed to set the sheet. The "mop and flop" technique is not acceptable for polyester-reinforced SBS modified bitumen sheets.

13.0 Mechanically Applied Asphalt

13.1 The asphalt can be applied using a mechanical asphalt spreader, which can increase productivity. Some contractors have found that installing the material with a felt layer can also improve production.

14.0 Cold Adhesive Application

14.1 There are situations where the use of hot asphalt is undesirable or prohibited. In such cases, it may be necessary to use alternative materials such as cold adhesives (typically referred to as "cold process cements" or "cold application cements/adhesives"). JM's research and development staff has determined that traditional cut-back asphalt mastics, as well as some of the newer "modified bitumen adhesives," can have an adverse effect on SBS modified bitumen products. This is due to the very high levels of solvent used in most of these products. Softening, blistering and excessive granule loss can occur as the solvent passes through the membrane. This can cause accelerated aging of the underlying waterproofing with the potential for premature membrane failure.

14.2 Through the evaluation of numerous alternate adhesive systems, JM has developed two viable cold application systems for use with SBS modified bitumen products.

14.3 Two-part Adhesive JM offers a unique premium-grade, two-part flashing adhesive. This product has extraordinary physical, adhesive and waterproofing properties, and is compatible with both SBS modified bitumen products and with conventional asphaltic materials. MBR Flashing Cement is a trowel-grade cement, for terminations, base flashing and penetration (pitch) pans. This adhesive requires mixing of two components immediately prior to application. MBR Flashing Cement is available in pails containing

4 gal (15.1 l) of base material. The pails are large enough to accommodate the addition of approximately 1 pint (0.47 l) of MBR Cement Activator and the necessary mixing process.

14.4 One-part Adhesive JM offers two mastic-type, one-part adhesives. These materials are compatible with SBS modified bitumen products. They contain very low levels of solvent, about one third of that found in most traditional roofing mastics. These adhesives are elastomeric and have good waterproofing properties, and, over time, develop adhesive properties that exceed those of traditional mopping asphalt. These products are MBR Cold Application Adhesive, for the field of the roof, and MBR Utility Cement, a trowel-grade cement, for terminations and base flashings.

14.5 For more information on these cold application products, refer to the Section 2 of the current JM Roofing Systems Product Manual.

15.0 Heat-weld Application

15.1 The surface over which the SBS membrane is to be installed must be firm, dry, smooth, flat and free of debris and loose material. All surfaces must be designed and installed in accordance with manufacturer, industry and acceptable association standards.

15.2 Drainage: Design and installation of the deck and/or the substrate must result in the roof draining freely and to outlets numerous enough and so located as to remove water promptly and completely. Areas where water ponds for more than 24 hours are unacceptable and will not be eligible for a JM Peak Advantage Guarantee.

15.3 Roofing shall commence at the lowest point of the roof deck with laps installed so that water flows over and not against the lap. Align the roll in the course to be followed and unroll completely. Then reroll both ends to the middle of the roll (scrolling). Using the heat-welding apparatus, apply the heat to the surface of the coiled portion of the roll until the surface reaches the proper application temperature (approximately 330°F [166°C]). The flame should be moved from side to side and the membrane slowly unrolled while pressing the heated portion of the roll into the underlying surface. Apply the heat across the full width of the roll and along the 4" (102 mm) side lap area of the previously installed roll, making an "L" shape. As the surface of the roll is heated, it will develop a sheen. **The generation of smoke is an indication that the material is being overheated.** Repeat the operation with subsequent rolls, while maintaining a 4" (102 mm) side lap and a 6" (152 mm) end lap. On mineral-surfaced membranes, prior to seaming the 6" (152 mm) end lap, the granules must be embedded by heating the end lap area and then pressing the granules into the compound using a rounded-point trowel or an embedding tool. All laps should be rolled with a lap roller, and a ⅛" (3 mm) to ⅜" (10 mm) bleed out of SBS compound should extend beyond the lap. Check all laps for proper adhesion.

16.0 Health and Safety

16.1 JM develops and maintains Material Safety Data Sheets (MSDS) for all of its products. These MSDS contain health and safety information for development of appropriate product handling procedures to protect the users of our products. These MSDS are available on the JM Web site, www.jm.com/roofing, and should be read and understood by all involved personnel prior to using and handling JM materials. In addition to the MSDS, JM products have health and safety precautions printed on the product label or packaging. The user is strongly urged to familiarize himself with this information prior to using the product, and observe certain precautions during use.

17.0 Precautions For Two-part Cold Adhesive

17.1 There are some application precautions that must be taken when using these materials.

A. JM MBR cement products are significantly different from the adhesive materials used for built-up roofing. The mechanic must use a great deal more care since these adhesives are prepared on the job site. Roofing contractors must advise their crews to precisely follow all storage, handling, preparation, application and health/safety instructions. JM will not accept responsibility for any use of these products that does not comply with the instructions printed on the cement base container.

B. MBR Cement Activator must be stored indoors in an area maintained above 60°F (16°C) or crystallization will occur. If crystallization does occur, it can be reversed by carefully warming the container. Refer to the package label for the precise procedures.

18.0 Two-part Cold Adhesive Equipment

18.1 The following equipment is necessary for the safe and efficient preparation and application of JM MBR Bonding Cement.

18.2 Safety and Personal Protective Equipment: The following items shall be available for, and used by, every worker:

A. Impervious gloves, 1 pair for each worker.

B. Rubber or plastic apron, 1 for every person mixing.

C. Organic cartridge respirator mask. Note: Air-supplied respirators may be required for some applications.

D. Chemical safety goggles, 1 for each person mixing or spraying.

E. Soap and water.

F. Hand cleaner.

G. Supply of clean rags.

H. Solvent: paint thinner or mineral spirits.

I. Portable fire extinguisher.

J. Squeeze bottle filled with clean water for use as an eye wash.

18.3 The following items may be required at the job site to protect the installation and surrounding areas during application:

A. Heavy wrapping paper or suitable protective sheeting.

B. 2" (51 mm) wide masking tape.

18.4 Mixing Equipment:

A. Jiffy Mixer Model PS, or equivalent.

B. ½" (13 mm) electric drill motor and power source.

C. Plastic graduated container for measuring activator and base material.

18.5 Application Equipment:

(Some of the items listed below are optional, depending on whether squeegee or spray application is used.)

A. 3⁄16" (5 mm) saw-tooth squeegee.

B. Binks "Hawk 4L" Spray Unit (or equivalent) to fit a 5 gal (18.9 l) pail, and Type 7E2 spray gun (or equivalent) with 47 x ¼" (6 mm) nozzle with 25' (7.6 m) of ¾" (19 mm) fluid hose and 25' (7.6 m) of ⅜" (10 mm) air hose.

C. 125 cfm (3.54 cmm), 100 psi (690 kPa) air compressor and hose.

D. Clean 5 gal (18.9 l) metal pails.

E. Solvent: paint thinner or mineral spirits.

F. All tools normally used in the application of built-up roofing materials.

19.0 One-part Cold Adhesive Application

19.1 MBR Cold Application Adhesive and MBR Utility Cement are similar in consistency and application to traditional built-up roofing cold process cements. These adhesives form a durable, elastomeric and waterproof layer once cured.

19.2 MBR Cold Application Adhesive is for use in the field of the roof and is used to adhere roofing plies, modified bitumen sheets, and roof insulation. Fiber glass ply sheets, such as GlasPly Premier and GlasPly IV, cannot be used with this material. The adhesive is ready to use as shipped and does not require mixing. Do not thin with additional solvents.

19.3 The adhesive is applied at a nominal rate of 1½ gal/100 ft^2 (0.61 l/m^2) over nonporous substrates, e.g., primed concrete or fiber glass base felts. If applied to porous materials, such as insulations, the application rate will increase, depending on the absorbency of the material.

19.4 The simplest method of adhesive application is by pouring a 2" to 4" (51 to 102 mm) wide bead of the adhesive along the substrate, about 12" (305 mm) from the lower edge of the work area. The adhesive is spread with a ¼" (6 mm) (max.) saw-toothed rubber squeegee to obtain a uniform bed of adhesive. Spread the adhesive first toward the lower edge of the work area, or to the appropriate laying line of the adjoining felt, creating a uniform coating of adhesive. Continue to spread the adhesive up the roof until the bed of adhesive is wide enough to receive the sheet.

20.0 One-Part Cold Adhesive Membrane Specifications

20.1 Refer to the SBS DESIGN AND INSTALLATION CONSIDERATIONS page on JM.com for membrane construction recommendations.

21.0 Steep Slope Requirements – Asphalt and Adhesive Applied

21.1 Non-nailable Decks: On decks with a slope over ½" per ft (41 mm/m), the roofing felts must be installed parallel to the incline and must be nailed. Pressure-treated wood nailers shall be attached to the deck, run perpendicular to the incline, be capable of retaining the nails securing the roofing felts, have the same thickness as the insulation and be at least 3½" (89 mm) wide. Wood nailers shall be provided at the ridge and at the following approximate intermediate points:

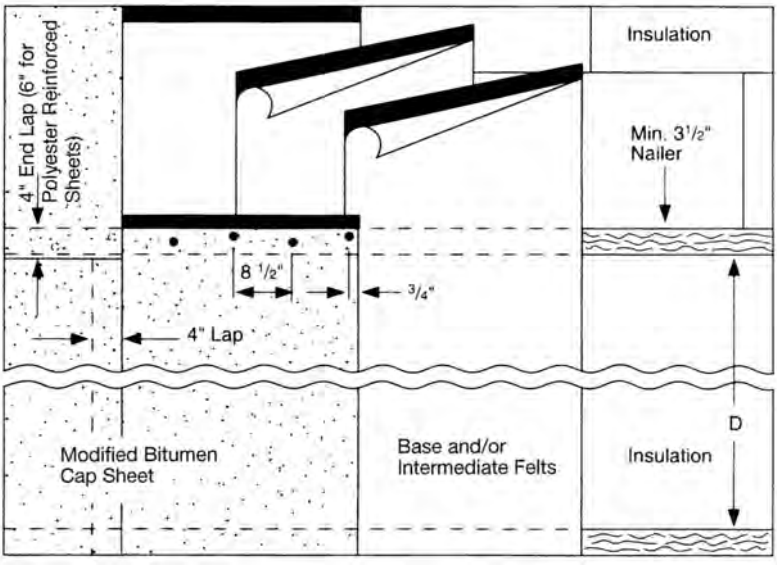
Incline (Inches/Foot)	Nailer Spacing (D)	Type of Asphalt
0"-½" (0-41 mm/m)	Not required	Type III or IV*
½"-2" (41-167 mm/m)	32' (9.8 m) *(max.)* face-to-face	Type IV
2"-3" (167-250 mm/m)	10' (3.1 m) *(max.)* face-to-face	Type IV

* Consult with a JM Technical Services Specialist regarding projects in hot climates, as Type III asphalt may not be permitted in some areas.

Nailers may also be laid out to conform to the roll length being used. For slopes between ½" to 2" per ft (41 to 167 mm/m), nailers should be spaced to accommodate full-length modified bitumen rolls. For slopes between 2" to 3" per ft (167 to 250 mm/m), the nailers should be spaced to accommodate half-length rolls.

21.2 Cut the modified bitumen cap sheet to conform to the nailer spacing. Nail the end lap across the width of the sheet, with the first nail spaced ¾" (19 mm) from the leading edge of the sheet, and the remaining nails spaced approximately 8½" (216 mm) o.c. The nails shall be staggered across the width of the nailer to reduce the risk of the sheet tearing along the nail line. Nails must have an integral 1" (25 mm) (min.) diameter cap. Where capped nails are not used, fasteners must be driven through caps having a 1" (25 mm) (min.) diameter.

21.3 Nailers must also be used around the roof perimeter, openings and penetrations, for nailing felts, gravel stops, roof fixtures and fascia systems.



21.4 Nailable and Lightweight Concrete Decks: On decks with a slope over ½" per ft (41 mm/m), the roofing felts must be installed parallel to the incline. Nail the end laps of the modified bitumen cap sheet across the width of the sheet on 8½" (216 mm) centers. All nails are to be mopped over and covered by the lap of the next sheet. For slopes from ½" to 2" per ft (41 mm to 167 mm/m), a full-length sheet can be used. For slopes from 2" to 3" per ft (167 mm to 250 mm/m), a half length sheet should be used.

Incline (Inches/Foot)	Type of Asphalt
0"-½" (0-41 mm/m)	Type III or IV*
½"-2" (41-167 mm/m)	Type IV
2"-3" (167-250 mm/m)	Type IV

* Consult with a JM Technical Services Specialist regarding projects in hot climates, as Type III asphalt may not be permitted in some areas.

22.0 Steep Slope Requirements – Heat-welded Systems

22.1 Heat-welded SBS roofing membranes can be applied on inclines up to 3" per ft (250 mm/m) when proper precautions are taken. On non-nailable decks, wood nailers must be used. Nailers act as insulation stops for the roof insulation and as a facility to back nail the membrane.

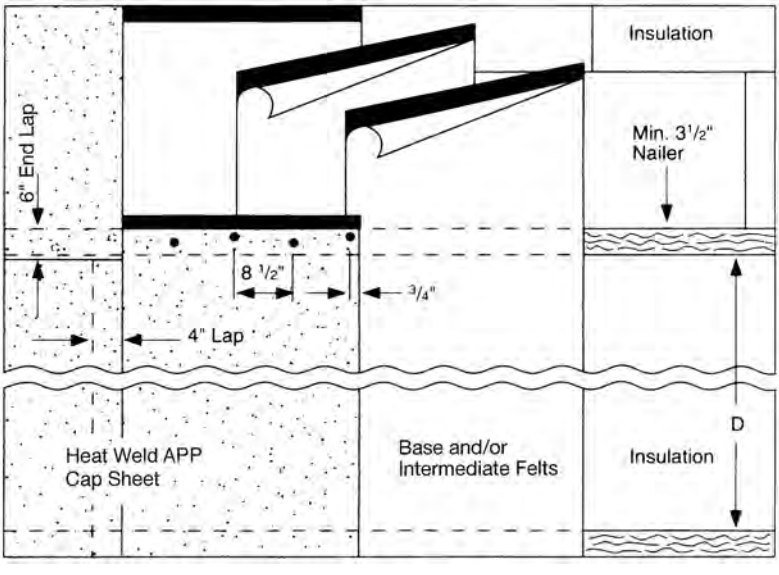
On slopes up to 2½" per ft (208 mm/m), the roofing sheets may be installed either perpendicular or parallel to the roof incline.

22.2 Non-nailable Decks: On decks with a slope over 3½" per ft (291 mm/m), the roofing felts must be installed parallel to the incline and must be back nailed. Pressure-treated wood nailers shall be attached to the deck, run perpendicular to the incline, be capable of retaining the nails securing the roofing sheets, have the same thickness as the insulation and be at least 3½" (89 mm) wide. They should be securely attached to the deck with mechanical fasteners to resist a pullout force of 200 lb (890 N). Wood nailers shall be provided at the ridge and at the following approximate intermediate points:

Incline (Inches/Foot)	Nailer Spacing (D)
0"-1½" (0-125 mm/m)	Not required
½"-3" (125-250 mm/m)	32' (9.8 m) *(max.)* face-to-face

22.3 Nail the modified bitumen cap sheet at the end lap across the width of the sheet, with the first nail spaced ¾" (19 mm) from the leading edge of the sheet, and the remaining nails spaced approximately 8½" (216 mm) o.c. The nails shall be staggered across the width of the nailer to reduce the risk of the sheet tearing along the nail line. Nails must have an integral 1" (25 mm) (min.) diameter cap. Where capped nails are not used, fasteners must be driven through caps having a 1" (25 mm) (min.) diameter. All nails are to be covered by the lap of the next sheet.

22.4 Nailers must also be used around the roof perimeter, openings and penetrations, for nailing felts, gravel stops, roof fixtures and fascia systems.



22.5 Nailable and Lightweight Concrete Decks: On decks with a slope over 1½" per ft (125 mm/m), the roofing felts must be installed parallel to the incline. Nail the end laps of the modified bitumen cap sheet across the width of the sheet on 8½" (216 mm) centers. All nails are to be covered by the lap of the next sheet.

23.0 Phase Construction

23.1 One of the greatest hazards of roof construction is the application of a roofing system in "phases," where a partially completed roof system is left exposed to the weather overnight or longer. This can lead to entrapped moisture which can cause premature failure of the membrane.

23.2 When the installation of the cap sheet is delayed for any reason, the following procedures should be followed:

A. Low spots and valleys must be glazed with Type III or IV asphalt at the rate of 10 - 15 lb/100 ft^2 (0.49 - 0.73 kg/m^2).

B. Prior to the application of the modified bitumen cap sheet, the surface of the membrane must be examined thoroughly for the presence of any moisture. If moisture is present, the application of the cap sheet is not to proceed until the moisture has been removed or evaporated and the surface is dry. If frothing or bubbling of the hot asphalt occurs, construction must stop immediately.

C. The surface of the membrane must be properly cleaned and primed if contaminated by dirt, dust or debris. The primer must be completely dry prior to installation of the modified bitumen cap sheet.

D. Caution must also be exercised to avoid traffic over the newly installed modified bitumen cap sheet while the asphalt is still fluid. This can also contribute to the formation of voids.

23.3 Under no circumstances shall the installation of the modified bitumen cap sheet be delayed more than 5 days after completion of the intermediate plies of the roofing system.

23.4 Only multiple felt systems (two or three felts with modified cap sheet) or DynaBase, DynaPly and DynaLastic 180 S should be considered as the base felt(s) for the delay in application of the modified bitumen cap sheet. Single ply felt or base felt systems must receive the modified bitumen cap sheet on the same day.

24.0 Cold Weather Application – Asphalt or Adhesive Applied

24.1 SBS modified bitumens require special application techniques when they are being installed in cold weather. The following precautions shall be taken when the ambient temperature drops below 50°F (10°C), and are mandatory below 40°F (4°C):

A. Modified bitumen products shall be kept warm, or warmed prior to installation. Store these materials indoors or in heated storage units or warming boxes. If these facilities are not available, placing the materials in direct sunlight may help. Make certain that modified bitumen rolls are stored on end only; do not store rolls on their side.

B. The mopping asphalt must be 425°F (218°C) at point of application. This will improve the likelihood of fluxing the back coating on the sheet and the probability of an adequate bond.

C. When the rolling or scrolling techniques are used, the asphalt must be mopped in front of the roll no more than 4' (1.22 m), and the asphalt must not be allowed to cool before the sheet is laid into it. In cold temperatures, asphalt will "skin over" rapidly, which will prevent adhesion of the membrane.

D. When the conditions are extreme (below 40°F [4°C]) these precautions may prove to be inadequate to achieve a smooth installation. If prevailing conditions demand that the job continue, the rolls must be heated or completely unwound and allowed to warm for 12 to 15 minutes or until there are no apparent "waves" in the sheet. This shall be done with the darker side of the sheet up. The sheet may then be installed using rolled, scrolled or "mop and flop" techniques.

E. The adhesive can be installed in temperatures between 40°F and 100°F (4°C and 38°C). However, when the temperature is below 50°F (10°C), the adhesive must be stored in a warm area (approximately 70°F [21°C]) for 24 hours before being used, to facilitate spreading. Note: Temperature affects the cure rate of the adhesive. Even in cooler weather, the product will develop bond strengths comparable to fully adhered single ply systems in a relatively short time. The membrane ultimately will develop adhesive bonds that exceed those of systems using asphalt as the adhesive.

25.0 Heat Weld Application

25.1 The surface over which the SBS membrane is to be installed must be firm, dry, smooth, flat and free of debris and loose material. All surfaces must be designed and installed in accordance with manufacturer's, industry and acceptable association standards.

25.2 Drainage: Design and installation of the deck and/or the substrate must result in the roof draining freely and to outlets numerous enough and so located as to remove water promptly and completely. Areas where water ponds for more than 24 hours are unacceptable and will not be eligible for a JM Peak Advantage Guarantee.

25.3 Roofing shall commence at the lowest point of the roof deck with laps installed so that water flows over and not against the lap. Align the roll in the course to be followed and unroll completely. Then reroll both ends to the middle of the roll (scrolling). Using the heat welding apparatus, apply the heat to the surface of the coiled portion of the roll until the surface reaches the proper application temperature (approximately 330°F [166°C]). The flame should be moved from side to side and the membrane slowly unrolled while pressing the heated portion of the roll into the underlying surface. Apply the heat across the full width of the roll and along the 4" (102 mm) side lap area of the previously installed roll, making an "L" shape. As the surface of the roll is heated, it will develop a sheen. **The generation of smoke is an indication that the material is being overheated.** Repeat the operation with subsequent rolls, while maintaining a 4" (102 mm) side lap and a 6" (152 mm) end lap. On mineral-surfaced membranes, prior to seaming the 6" (152 mm) end lap, the granules must be embedded by heating the end lap area and then pressing the granules into the compound using a rounded point trowel or an embedding tool. All laps should be rolled with a lap roller and a 1/8" (3 mm) to 3/8" (10 mm) bleed out of SBS compound should extend beyond the lap. Check all laps for proper adhesion.

Note: The "mop and flop" technique has proven to be very effective in cold weather situations, when short lengths of material are set in asphalt applied with a mechanical spreader. Polyester-reinforced SBS modified bitumen may not be installed in this manner

26.0 Temporary Roof Coverings

26.1 At times, an owner or general contractor may require the building to be closed at a time when the weather is not conducive to good roof construction, or the roof area may have to be used as a work platform during construction. Historically, this situation has led to phase construction, which has resulted in premature roof failure.

26.2 When the complete roof cannot be installed in one operation, the following procedures are recommended:

A. Nailable Decks:

1. Apply one layer of an approved JM base felt, lapping the felt 2" (51 mm), and nailing 9" (229 mm) o.c. along the lap and 12" (305 mm) o.c. through the center of the sheet. (Sheathing paper should first be installed on wood board decks.)
2. Mop one ply of an approved JM ply felt in ASTM D 312, Type III asphalt and apply a glaze coat of 10 - 15 lb/100 ft^2 (0.49 - 0.73 kg/m^2) of Type III asphalt.
3. When the permanent roof is to be installed, inspect the roof and remove all damaged and blistered areas. Apply a layer of approved JM base felt nailed through the temporary roof and into the deck as the first layer of the roofing system. As an alternate, a layer of approved JM roof insulation may be mechanically fastened (with appropriate fasteners) through the temporary roof into the deck.
4. Proceed with installing the appropriate permanent roof specification.

B. Steel Decks:

1. Apply a minimum layer of Fesco Board insulation of adequate thickness to the steel deck using appropriate length UltraFast fasteners.

2. Install a ply of a JM ply or base felt and an additional ply of fiber glass felt, both in hot steep asphalt.
3. Finish with an 10 - 15 lb/100 ft² (0.49 - 0.73 kg/m²) glaze coat of hot steep asphalt.
4. When the permanent roof is to be applied, inspect the roof area. If the insulation has not been damaged and is dry, remove any blistered or damaged felt. Prime the temporary roof with Asphalt Primer at the rate of 1 gal/100 ft² (0.4 l/m²) and then solid mop a layer of insulation board to the temporary roof with hot asphalt. Then apply the permanent roof system. In some regions of the country a JM base felt may be machine spot mopped directly to the sound temporary roof, followed by the roofing membrane. Consult a JM Technical Services Specialist for acceptability.
5. If the membrane and/or roof insulation has been excessively damaged, remove all unusable material and replace.

C. Non-Nailable Decks, Other than Steel:

1. Prepare the deck as would be done for a permanent roof.
2. Solid mop two plies of approved JM ply felt in hot Type III asphalt.
3. Finish with a 10 - 15 lb/100 ft² (0.49 - 0.73 kg/m²) glaze coat of Type III asphalt.
4. When the permanent roof is to be installed, inspect and repair all defects in the temporary roof. Clean the surface of the temporary roof and prime with Asphalt Primer if the surface is unusually worn. Proceed with the installation of the permanent roof.
5. As an alternate to step 2, spot mop an approved JM base sheet using a mechanical spot mopping machine. Next, solid mop one ply of approved JM ply felt in hot Type III asphalt. When the permanent roof is to be installed, remove the entire temporary roof, prime the deck as required in the "Roof Decks" section of the current JM Roofing Systems Product Manual, and proceed with the installation of the permanent roof.

26.3 The decision as to whether or not a temporary roof is to be left in place is a judgment factor that must be made by the building owner or his representative. Although a JM representative may make suggestions in this area, JM will not be responsible for any problems that may develop with the roofing system due to the fact that the temporary roof is left in place.

27.0 Protected Roofing Membrane Assemblies (PRMA)

27.1 General Information. All general information contained in this section and the current JM Roofing Systems Product Manual shall be considered part of these specifications.

JM modified bitumen specifications are eligible for use with protected roofing membrane assemblies. When these specifications are modified, the last digit of the specification designation should be changed to a "P" to denote "Protected."

Flashings: All flashings must conform to the requirements stated in this section and in Section 3 of this Application Guide. The flashing material must extend above the top of the extruded polystyrene insulation a minimum of 8" (203 mm). The standard flashing details for modified bitumen roofing can be found in Section 3.

Drainage: Design and installation of the deck and/or roof substrate must result in the roof draining freely, to outlets numerous enough and so located as to remove water promptly and completely. Areas where water ponds for more than 24 hours are unacceptable, and will not be eligible for a JM Peak Advantage Guarantee.

27.2 When designing a protected membrane roofing system, the designer must make sure that positive drainage exists on the roof. Even though some extruded polystyrene roof insulation products are designed with integral drainage channels, they will retard

the flow of water due to the contact between the membrane and the insulation. JM recommends a minimum of ¼" per ft (21 mm/m) slope be obtained on the finished roof membrane. This will greatly reduce the amount of water that will be retained against the membrane after a rain.

28.0 Asphalt Recommendations (PRMA)

28.1 JM allows the use of only two grades of asphalt in SBS modified bitumen specifications — Type III and Type IV. This recommendation also applies to PRMA specifications, in order to prevent adhesion of the extruded polystyrene insulation to the asphalt top pour.

28.2 Ballast requirements (for use with extruded polystyrene roof insulation):

28.3 The ballast should be similar to ASTM D 448, Gradation #57. The following gradation is typical:

Passing ½" (13 mm)	10-60%
Passing ¾" (19 mm)	100%

28.4 Ballast is applied at a rate of approximately 10 to 12 lb/ft^2 (48.8 - 58.6 kg/m^2) in the field of the roof over a layer of filter fabric. Twenty (20) lb/ft^2 (97.6 kg/m^2) of ballast is required over a 4' (1.22 m) wide area at the roof perimeter and at all penetrations. The following fabrics have been found to be acceptable:

A. Confil 689H – 3.0 oz/yd (93.5 g/m) black polyester from International Paper Company.
B. Rufon P3B – 3.0 oz/yd (93.5 g/m) black polypropylene from Phillips Fiber Corporation.

28.5 JM makes no claims as to the quality of these products nor their performance when exposed on the roof. See the product warranty supplied by the fabric manufacturer.

28.6 When pavers are used as ballast, the pavers must be placed on supports or pedestals. These supports or pedestals can either be commercially available products or 6" (152 mm) square pieces of JM DynaTred Plus (to give a minimum ½" [13 mm] air space). These supports should be located at the intersection of the corners of the paver blocks, such that where the four corners come together, all rest on the same 6" (152 mm) square piece of DynaTred Plus or pedestal. The ½" (13 mm) air space between the pavers and the insulation will allow moisture vapor to vent to the atmosphere. If the moisture is not allowed to vent to the atmosphere, the top surface of the insulation will begin to absorb water and the thermal performance will be reduced. ROOF AREAS THAT HAVE PAVERS IN DIRECT CONTACT WITH THE INSULATION ARE EXCLUDED FROM COVERAGE UNDER A JOHNS MANVILLE PEAK ADVANTAGE GUARANTEE, INCLUDING THE THERMAL OVERLAY PORTION OF THE GUARANTEE.

28.7 The use of pavers in high traffic areas, to and around equipment and other maintenance areas, is strongly recommended.

28.8 It is the owner's and/or specifier's responsibility to determine if the building structure can support the required amount of ballast and still meet the code design requirements for anticipated dead and live loads (including snow, wind, etc.).

29.0 Decks (PRMA)

29.1 Precast slabs and prestressed "T" or "TT" decks require a minimum of one layer of approved JM roof insulation as a leveling course prior to the installation of the roof membrane.

29.2 For lightweight insulating concrete, gypsum decks, etc., consult a JM Technical Services Specialist for specifications and guarantee information.

29.3 For information on roof deck requirements not mentioned here, refer to the "Roof Decks" section of the current JM Roofing Systems Product Manual, or contact a JM Technical Services Specialist.

29.4 Warning: Extruded polystyrene insulation is combustible and may constitute a fire hazard if improperly used or installed. It should be adequately protected. Use only as directed by the specific instructions for this product. This material should **NEVER** be exposed to an open flame or other source of ignition.

29.5 All roof deck systems over which the protected system is installed should provide an adequate fire barrier for the extruded polystyrene insulation.

29.6 For proper protection of plastic foam in storage, consult the National Fire Protection Association (NFPA) standards or the authority having jurisdiction.

30.0 Installing Ballasted PRMA Roof Insulation over Modified Bitumen Roof Membranes

30.1 The following are general recommendations for installing ballasted PRMA roof insulation over modified bitumen roof membranes.

Materials per 100 ft² (9.29 m²) of Membrane Area

Insulation:	Extruded polystyrene roof insulation 100 ft² (9.29 m²) per layer
Fabric:	12′ wide, 105 ft² (3.66 m wide, 9.75 m²) 10′ wide, 106 ft² (3.05 m wide, 9.84 m²) 8′ wide, 107 ft² (2.44 m wide, 9.94 m²)
Ballast:	¾" (19 mm) stone or crushed rock, 1,000 - 1,200 lb/100 ft² (48.8 - 58.6 kg/m²)*

*Additional ballast is required at the perimeter and at penetrations.

30.2 Insulation: Place extruded polystyrene roof insulation directly on the membrane with channel side down. The insulation boards should be tightly butted together. The maximum allowable gap between boards is ⅜" (10 mm). The boards shall be installed to within approximately ¾" (19 mm) of, but not touching, projections and cant strips.

30.3 For multilayer installations, install subsequent layers, unattached over the first layer. Stagger all joints in relation to the underlying layer. The bottom layer in multilayer applications must be at least 2" (51 mm) thick and as thick or thicker than the top layer.

30.4 Fabric: Loose lay an approved fabric over the extruded polystyrene roof insulation, with all joints lapped a minimum of 12" (305 mm). There should not be any end laps within 6′ (1.83 m) of the perimeter. The fabric should extend 2" to 3" (51 - 76 mm) above the stone at the perimeter and at penetrations.

30.5 Wetting the fabric is helpful in holding it in place on the insulation until the ballast is installed.

30.6 Ballast: Apply the correct size ballast at the rate of 1,000 to 1,200 lb per 100 ft² (10 - 12 lb/ft² [48.8 - 58.6 kg/m²]), over the fabric, as the fabric is being laid out in the field of the roof. For a width of 4′ (1.22 m) at the roof perimeter or penetrations, install ballast at a rate of 20 lb/100 ft² (97.6 kg/m²) or pavers at a rate of 22 lb/lin ft (32.7 kg/ lin m). If pavers are used, the fabric is not required. Pavers must be placed on pedestals. Pedestals can be either commercially available products or 6" (152 mm) square pieces of JM DynaTred Plus.

30.7 Ballast should be washed ¾" (19 mm) gravel or crushed stone, with fines (smaller than ½" [13 mm]) accounting for not less than 10% or more than 60%. This gradation is similar to ASTM D 448, Gradation #57.

31.0 Safety Guidelines for Heat-welded Modified Bitumen

31.1 Heat-welded modified bitumen products require special safety precautions prior to, during and after installation. When working with an open flame, contractors must use extra care and extreme caution to prevent accidents. Carelessness can lead to loss of life, injury and loss of property. The following safety recommendations should be followed:

1. All contractors must be licensed and insured in the geographic area where they will conduct business. The work area must be properly prepared before the welding process begins and weather conditions must be favorable. Procedures and equipment must comply with all applicable code requirements including guidelines mandated by the Occupational Safety and Health Administration (OSHA).
2. The roofing contractor must ensure that all mechanics or applicators involved with the application of heat-welded modified bitumens are properly trained not only in application and equipment handling, but also safety measures. The contractor should verify that all roofing applicators involved with open flame application maintain and carry a valid **Certified Roofing Torch Applicator** (CERTA) card as evidence of proper training. Further, the general contractor, jobsite superintendents and the building owner or its representative must also be knowledgeable and/or advised of the proper and necessary safety precautions applicable to heat-welded roofing products.
3. **All mechanics or applicators must carry, review, understand and adhere to the safety information and guidelines contained in "Torch Applied/Do's and Don't's" as published and supplied by the Asphalt Roofing Manufacturers Association (ARMA) which may be supplemented or amended, as well as the ARMA/NRCA "Guide to Torch Safety on Modified Bitumen" videotape. These are available from ARMA at: ARMA, 4041 Powder Mill Road, Ste. 404, Calverton, MD 20705-3016 (Ph. (301) 348-2002). Do not begin application procedures until you read and fully understand these safety procedures and installation practices.**
4. Written notice must be given to the local fire department where required, and any required or necessary permits must be obtained. Even if not required, it is always recommended to give notice to the fire department, particularly when using LP gas.
5. Supervisors must ensure that all roofing applicators wear adequate protective equipment, including nonsynthetic long-sleeved shirts, boots, long pants with no cuffs that extend over the top of the boot, heat-resistant gloves, safety glasses and a face shield during application.
6. Never heat weld directly to, or near (e.g., the 35' [10.7 m] rule) combustible materials or surfaces. Extra care must be taken to identify all potentially combustible and flammable material and similar combustible and flammable aspects of a building's use and design. Be aware of insulation type, parapet walls, curbs, cants, wood, edge strips, expansion joints, electrical wires and conduits, gas lines, chemicals, grease, oil, vapors, exhausts, spills or other materials that could ignite. Combustible materials present on a roof must be moved and materials that are not moveable must be protected from the heat-weld process and other fire hazards with fire blankets or shields. Be sure to identify similar materials on adjoining buildings and exercise proper precautions. A fiber glass base sheet should be installed to minimize the risk of fire. Always use combustion-resistant cant strips or other fire resistant materials.
7. Never heat weld near or into vents, openings or cracks around edges, corners, voids or other penetrations in the building or near any rooftop equipment. Shut off fans and cover openings.
8. Never leave lighted torches unattended.
9. Use only equipment that is specifically designed for heat-welded roofing applications, and be sure the equipment is listed by a nationally recognized independent testing laboratory. The equipment must be operated in accordance with the manufacturer's instructions and in accordance with all applicable codes and regulations. All mechanics

must be properly trained and familiar with all safety precautions in the use and handling of tanks, regulators and LP gas. Be familiar with National Fire Protection Association (NFPA) 58 **"Standard for the Storage and Handling of Liquefied Petroleum Gases"** and appropriate publications of the National Propane Gas Association, 1600 Eisenhower Lane, Ste. 100, Lisle, IL 60532 (Ph. (630) 515-0600), and the National Fire Protection Association, 11 Tracy Dr., Avon, MA 02322 (Ph. (800) 344-3555). Do not work in areas where LP gas can accumulate. Proper ventilation in accordance with OSHA and the National Institute for Occupational Safety and Health (NIOSH) is required. Ensure that all equipment is in good working condition and inspected daily.

10. Maintain at least one fully charged 20 lb (min) ABC-type dry chemical fire extinguisher for each roofing mechanic on the project, and have more available near the application area (e.g. within 50' [15.3 m]) based on jobsite conditions. Roofing mechanics must have fire extinguisher use training at least annually per OSHA 29 CFR1910.157.
11. Follow fire protection and prevention procedures mandated or recommended by OSHA and/or the National Roofing Contractors Association (NRCA) and ensure compliance with all other federal, state and local regulations, including but not limited to those listed in OSHA 29 CFR1962.1 150, 152.1, 153 and 191-110 as they apply to heat-weld application.
12. A fire watch of sufficient length must be kept during and after all heat welding is completed. A fire watch is never shorter than 1 hour after all application has been completed for a given day. A fire watch may need to be longer depending on the size of the roofing project and the design or configuration of the building. Special attention should be given to potential hot spots or smoldering material, such as carts, wall flashings and around penetrations, rooftop equipment and the roof perimeter. The person performing the fire watch should use an infrared heat-sensing device to detect hot spots and smoldering materials. For more information, contact the NFPA. Should fire result, take immediate appropriate action; notify the owner of fire response.
13. Remember, it is the contractor's responsibility to observe all fire prevention and safety policies and practices during the installation of the roof system, as well as provide training to their personnel for proper roofing and safety practices as well as responding to emergency situations at the job site. Always keep a first aid kit on the job site; individuals administering first aid must be properly qualified per OSHA 29 CFR1910.151(b).

JOHNS MANVILLE DOES NOT SUPERVISE BUILDING OWNERS, CONTRACTORS, MECHANICS OR ANY OTHER PERSON IN THE APPLICATION OF HEAT-WELDED APPLIED MODIFIED BITUMENS AND ASSUMES NO RESPONSIBILITY FOR FIRE DAMAGE OR ANY OTHER DAMAGES.

2C

SBS Self-Adhered Application Guide

1. Inspect the substrate. Remove any dust, dirt, debris and other loose material. Make sure all nails, screws and fasteners are flush with the surface. Also make sure the surface is dry and that the ambient temperature is at least 45˚F (7˚C).

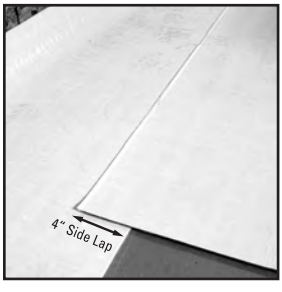
2. Unroll the *JM*CleanBond Base Sheet and cut a starter roll down the sheet's length. The width dimension will vary depending on the roof design. Make sure to cut the sheet so that the base sheet side lap will align directly under the center of the *JM*CleanBond® Cap Sheet when installed.

3. Using the starter base sheet, move it into position with the side lap up slope. (Refer to the "Bituminous Flashings" for specific techniques for various roof edge treatments.)

4. Once properly aligned, start approximately 24" (610 mm) in from the end lap, peel the release film off the back of the sheet and apply pressure to set the end of the sheet.

5. Continue to pull the release film from under the membrane until it is completely removed. Note: It is important to peel the release film at a 45° angle to avoid ripping and tearing the film.

6. Apply pressure with a 75 lb to 100 lb (34 kg to 45 kg) split-wheel, weighted roller to ensure proper adhesion. Roll across the width of the sheet first, then across its length.



7. Install the second adjoining base sheet. The second sheet should be a full-width sheet. Place the new sheet by matching up the edge of the second base sheet with the first base sheet's 4" (102 mm) perforated side lap line.

8. Strip off the 4" (102 mm) plastic film from the selvage of the previously installed sheet. Fold the sheet in half along its length and strip off the leading half of its plastic release film.

9. Lower the second base sheet slowly from the center out, carefully aligning along the 4" (102 mm) exposed self-adhering selvage.

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Systems Introduction & Selection on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the System Application tab.

Refer to the Material Safety Data Sheet and product label prior to using this product.

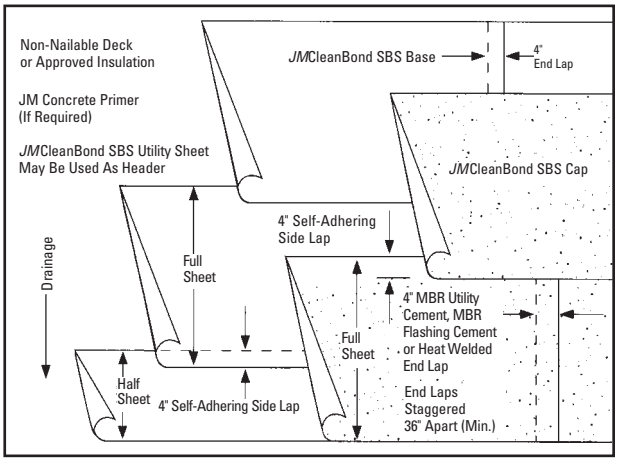
10. Fold back the other half of the base sheet, and remove the remainder of the plastic film. Lower it slowly from the center out and use a weighted roller to set the sheet. Roll across the width of the sheet first, then lengthwise to ensure full adhesion. The remaining base sheets are to be installed full width in the same manner.

11. All end laps must be staggered.

Note: End Laps (Head Laps)

1. For the base sheet, end laps should always be staggered between rolls.
2. Where two rolls come together, overlap the end laps by 4" (102 mm).
3. Where a "T" joint exists, cut off the corner of the selvage at a 45° angle where the end overlaps the side lap of the previously installed base sheet. This will reduce membrane thickness when the next sheet is applied.
4. It is essential that adequate pressure is applied at "T" lap areas to ensure full adhesion. Roll these areas carefully with a 4" (102 mm) hand roller.
5. The base sheet needs to be covered with cap sheet within 48 hours of exposure to direct sunlight. Note: If the base sheet is exposed for an extended period of time because of inclement weather or for other reasons, it can be cleaned and the stickiness reactivated with a light coating of JM Concrete Primer. Allow the primer to flash off before proceeding with installation.

2FID-SA1 FR



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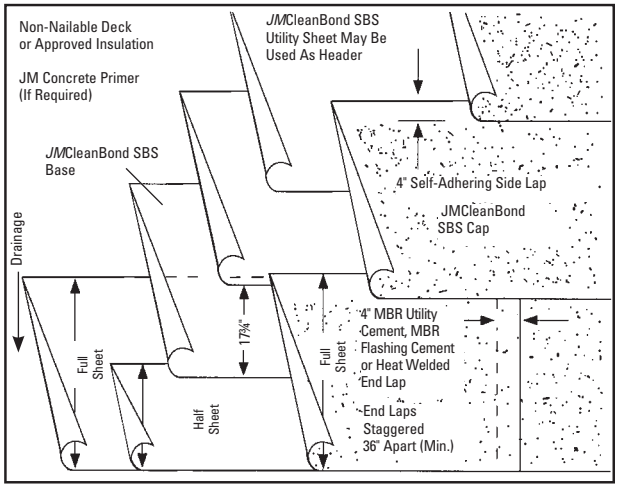
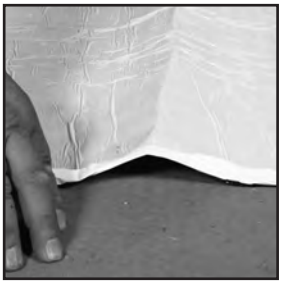


Note: For the most current information on general guidelines, please refer to the System Considerations tab under Systems Introduction & Selection on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the System Application tab.

Refer to the Material Safety Data Sheet and product label prior to using this product.

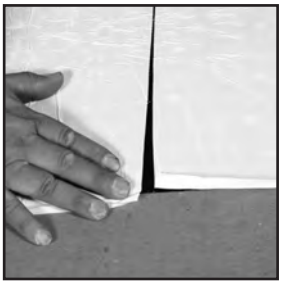
Note: Wrinkles If a small wrinkle appears in the base sheet during application, take these steps:



1. Adhere the area around the wrinkle.

2. Use a utility knife to cut the base sheet down the ridge of the wrinkle.

3. Remove a sliver of release liner from one lap of wrinkle, and adhere to the substrate.



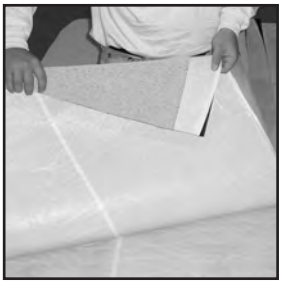
4. Lay the second wrinkle lap down on the first.

5. Roll the lap with a 4" (102 mm) hand roller.

Note: Debris
Special care must be taken to keep the bitumen surface of the base sheet clean. However, if debris such as small leaves or pine needles become embedded, it may be better to coat the debris area with MBR® Utility Cement rather than risk damaging the base sheet by cutting the debris out.

Note: Scoring release liner
Use a careful hand and sharp utility knife when scoring release film. It is acceptable if the knife cuts into the black bitumen. However, if the fiber glass mat is cut, the area should be patched with an additional layer of base.

1. Cut to usable lengths and set aside, allowing them to relax. Make certain that the *JM*CleanBond® Base ply is clean and dry and that the ambient temperature is 45°F (7°C) or higher.



2. Begin at the lowest point on the roof and lay in a full-width sheet of *JM*CleanBond Cap over the *JM*CleanBond Base, leaving the plastic release film adhered for both the base and cap sheet. Note: The base sheet side lap should be centered under the cap sheet.

3. Fold the cap sheet in half along its length and strip off the leading half of its plastic film. Next, strip off the matching plastic film from the base sheet.

4. Lower the cap sheet slowly onto the base sheet, from the center out.

5. Fold back the other half of the cap sheet and repeat the steps used for installing the first half of the sheet.

6. To install another cap sheet, pick up a relaxed sheet and align it on the 4" (102 mm) selvage of the piece already installed.

7. Where a "T" joint exists, cut off the corner of the selvage at a 45° angle where the end overlaps the side lap of the previously installed cap sheet. This will reduce membrane thickness when the next sheet is applied.

8. Fold the cap sheet in half along its length. Remove the plastic film from the leading half of the bottom of the new cap sheet, the top of the installed base sheet, and the selvage of the already installed cap sheet. Slowly lower the cap sheet into place taking care to keep it aligned and free from wrinkling.

9. Fold back the second half of the cap sheet, remove the plastic film and the matching film portion from the base sheet. Slowly lower it into place from the center out.

10. Note: Where two sheets come together at the end laps, score and leave a 4" (102 mm) piece of release film on the bottom of the overlapping sheet's end lap area. This will reduce the chance of the sheet adhering to the granules of the lower sheet.

11. Once the cap sheet is installed, special care must be taken to heat sink the granules with a hot air gun for all end lap areas. Note: MBR® Flashing Cement or MBR® Utility Cement can be substituted for heat welding, if required.

12. Prepare the end lap by removing all loose granules. With a hot air gun, apply heat to the 4" (102 mm) end lap area making sure both sheets have a good compound flow to adhere the two surfaces.

12a. Alternatively, apply a thin coat of MBR Utility Cement to the end lap area with a trowel.

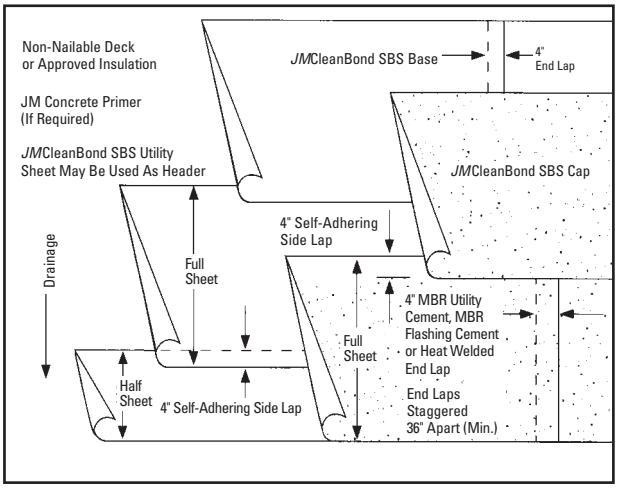
12b. Set the lap in place, and roll with a hand roller.

13. End laps must be rolled with a rounded edge roller and a 1⁄8" (3 mm) bleed-out of SBS compound is required.

14. After all cap sheets are installed, roll across the width of the sheet first, then across its length with a 75 lb to 100 lb (34 kg to 45 kg) split-wheel, weighted roller to set the cap sheets, paying special attention to the selvage seams.

15. All end laps must be staggered unless terminated at the utility sheet.

2FID-SA1 FR



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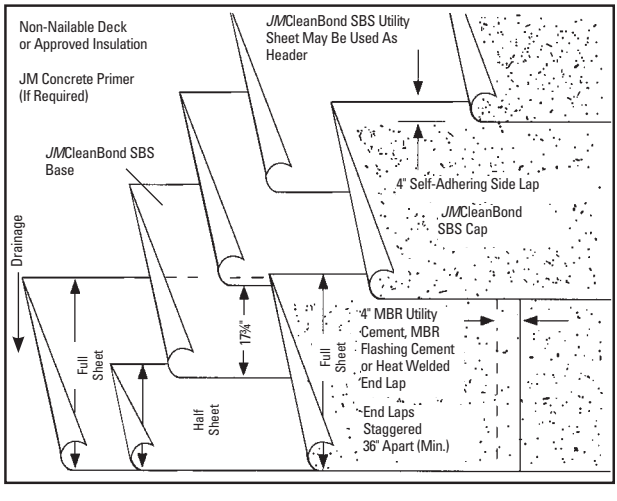


Note: For the most current information on general guidelines, please refer to the System Considerations tab under Systems Introduction & Selection on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the System Application tab.

Refer to the Material Safety Data Sheet and product label prior to using this product.

Note: T-laps must be treated with MBR® Utility Cement or a combination of MBR Utility Cement and heat welding.

1. Apply a thin bead of cement along the diagonal side of the T-lap.

2. Use a hot air gun to weld the top lap to the bottom lap. Make sure both sheets have good compound flow.

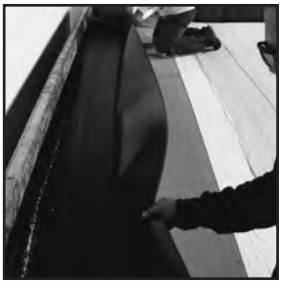
3. T-laps can also be seated with a smooth coating of MBR Utility Cement in the triangle of the lap area.

Note: Backwater Laps
JM recommends that all backwater laps – laps that are perpendicular to the flow of water on the roof and where the lower sheet is up and under – be dressed with MBR Utility Cement or heat welded.

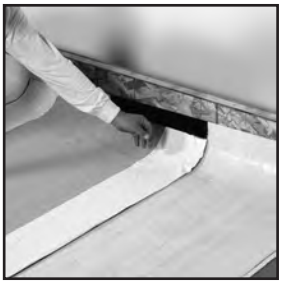
Note: Rerolling
To accelerate the permanent bonding of base to cap sheet, return to the job site later in the day or on a warm, sunny day and re-roll the *JM*CleanBond installation with a weighted roller.

SBS Self-Adhering Specifications *JM*CleanBond® Glass Utility Sheet Installation Instructions

1. Cut JMCleanBond Utility Sheet and JMCleanBond® Cap Sheet to usable lengths and set aside, allowing them to relax. Make certain that the JMCleanBond® Base ply is clean and dry and that the ambient temperature is 45°F (7°C) or higher.



2. To use JMCleanBond Utility Sheet as a valley starter sheet, position the utility sheet so that it is centered down the middle of the drain, leaving the plastic release film adhered. Note: The base sheets should already be installed so the seam of the finished side lap is centered down the drain and will be centered under the utility sheet. The sides of the utility sheet should align with the perforation down the centers of the two base sheets.



3. To use JMCleanBond Utility Sheet as a header sheet, begin at the lowest point on the roof. Lay in a full-width piece of the utility sheet over the already installed base ply, leaving the plastic release film adhered for both the base and utility sheets. Note: The base sheet side lap should be centered under the utility sheet.

4. Fold the utility sheet in half along its length and strip off the leading half of its plastic film and the matching plastic film from the base sheet.

5. Lower the utility sheet slowly from the center out.

6. Fold back the other half of the utility sheet and repeat the steps used for installing the first half of the sheet.

7. To install a parallel cap sheet, pick up a relaxed sheet and align it on the 8" (203 mm) selvage of the previously installed utility sheet.

8. To install a cap sheet parallel to the utility sheet, fold the cap sheet in half along its length. Remove the plastic film from the leading half of the cap sheet, the top of the installed base sheet, and the selvage of the installed utility sheet. Slowly lower the cap sheet into place taking care to keep it aligned and free from wrinkling.

9. Fold back the second half of the cap sheet, remove the plastic film and the matching film portion from the base sheet. Slowly lower it into place from the center out.

10. To install a cap sheet perpendicular to the utility sheet, pick up a relaxed sheet and position it so the end aligns with the 8" (203 mm) selvage of the installed utility sheet.

11. Holding the cap sheet in position and using its sides as a guide, score the plastic release film at the end of the base sheets below, so that you will be able to remove only those portions of release film that are directly under the cap sheet. You will also need to score the sides of the release film on the selvage of the utility sheet where the cap sheet overlaps it.

12. To execute a proper "T"-joint, cut off the corner of the cap sheet selvage where the end overlaps the selvage of the utility sheet. This will reduce membrane thickness when the next sheet is applied.

13. Fold the cap sheet in half along its length. Remove the plastic film from the leading half of the cap sheet, the top of the installed base sheet, and that portion of the utility sheet selvage that is directly under the cap sheet. Slowly lower the cap sheet into place taking care to keep it aligned and free from wrinkling.

14. Fold back the second half of the cap sheet, remove its plastic film and the matching film portion from the base sheet and utility sheet selvage. Slowly lower it into place from the center out.

15. Note: Where two sheets will come together at the end laps, score and leave a 4" (102 mm) piece of release film on the bottom of the overlapping sheet's end lap area. This will reduce the chance of the sheet adhering to the granules of the lower sheet.

16. Once the cap sheet is installed, special care must be taken to heat sink the granules with a hot air gun for all end lap areas. Note: MBR® Flashing Cement or MBR® Utility Cement can be substituted for heat welding.

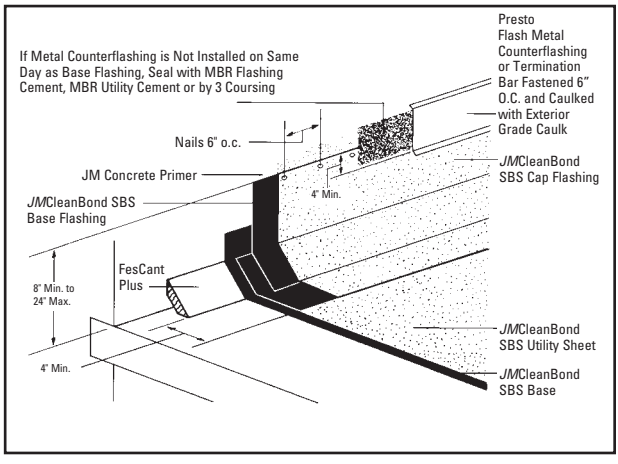
17. Prepare the end lap by removing all loose granules. With a hot air gun, apply heat to the 4" (102 mm) end lap area making sure both sheets have a good compound flow to adhere the two surfaces.

18. End laps must be rolled with a rounded edge roller and a 1⁄8" (3 mm) bleedout of SBS compound is required.

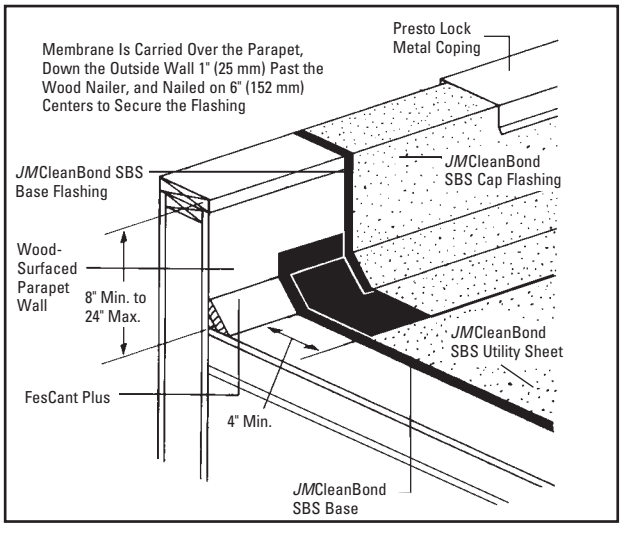
19. After all cap and utility sheets are installed, roll across the width of the sheet first, then across its length with a 75 lb to 100 lb (34 kg to 45 kg) split-wheel, weighted roller to set the cap sheets, paying special attention to the selvage seams.

20. All end laps must be staggered unless terminated at the utility sheet.

CBE-1 (LB)



CBE-3 (WL)



Note: For the most current information on general guidelines, please refer to the System Considerations tab under Systems Introduction & Selection on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the System Application tab.

Refer to the Material Safety Data Sheet and product label prior to using this product.

3

Mechanically Fastened Base Sheet Fastening Patterns

Fastening Patterns Compatibility Guide and Contents

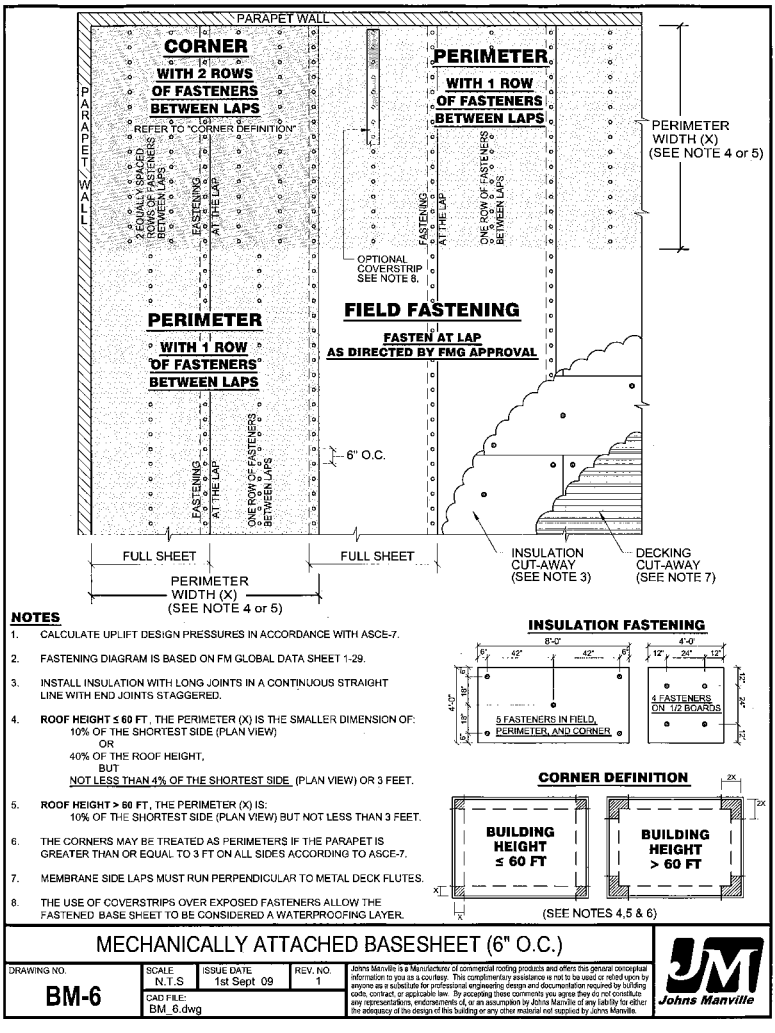
Description	Pattern Number	APP	BUR		SBS		Page
		CA	HA	CA	HA	CA	
4x2 Ft. Roof Insulation Fastener Placement	–	X	X	X	X	X	1-3
4x4 Ft. Roof Insulation Fastener Placement	–	X	X	X	X	X	1-4
4x8 Ft. Roof Insulation Fastener Placement	–	X	X	X	X	X	1-6
Fully Adhered Cover (8-16-32)	AD-8	X	X	X	X	X	1-10
Fully Adhered Cover (16-24-32)	AD-16	X	X	X	X	X	1-11
Mecanically Fastened Base Sheet (6" o.c.)	BM-6		X		X		3-2
Mecanically Fastened Base Sheet (7", 7", 7" o.c.)	BM-7,7,7	X	X	X	X	X	3-3
Mecanically Fastened Base Sheet (7", 9", 9" o.c.)	BM-7,9,9	X	X	X	X	X	3-4
Mecanically Fastened Base Sheet (7.5", 7.5", 7.5" o.c.)	BM-75,75,75	X	X	X	X	X	3-5
Mecanically Fastened Base Sheet (9", 9", 9" o.c.)	BM-9,9,9	X	X	X	X	X	3-6
Mecanically Fastened Base Sheet (9", 12", 12" o.c.)	BM-9,12,12	X	X	X			3-7
Mecanically Fastened Base Sheet (9", 18", 18" o.c.)	BM-9,18,18	X	X	X	X	X	3-8
Mecanically Fastened Base Sheet (12" o.c.)	BM-12		X				3-9
Mecanically Fastened Base Sheet (12", 12", 12" o.c.)	BM-12,12,12	X	X	X	X	X	3-10
Mecanically Fastened Base Sheet (18" o.c.)	BM-18		X		X		3-11
Mecanically Fastened DynaFast® Base Sheet (18", 12", 6" o.c.)	BM-18, 12, 6				X	X	3-12

Key: **HA** = Hot Applied **CA** = Cold Applied **MF** = Mechanically Fastened **FA** = Fully Adhered

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

Mechanically Fastened Base Sheet Fastening Pattern BM-6



NOTES

1. CALCULATE UPLIFT DESIGN PRESSURES IN ACCORDANCE WITH ASCE-7.
2. FASTENING DIAGRAM IS BASED ON FM GLOBAL DATA SHEET 1-29.
3. INSTALL INSULATION WITH LONG JOINTS IN A CONTINUOUS STRAIGHT LINE WITH END JOINTS STAGGERED.
4. **ROOF HEIGHT ≤ 60 FT**, THE PERIMETER (X) IS THE SMALLER DIMENSION OF:
   10% OF THE SHORTEST SIDE (PLAN VIEW)
   OR
   40% OF THE ROOF HEIGHT,
   BUT
   NOT LESS THAN 4% OF THE SHORTEST SIDE (PLAN VIEW) OR 3 FEET.
5. **ROOF HEIGHT > 60 FT**, THE PERIMETER (X) IS:
   10% OF THE SHORTEST SIDE (PLAN VIEW) BUT NOT LESS THAN 3 FEET.
6. THE CORNERS MAY BE TREATED AS PERIMETERS IF THE PARAPET IS GREATER THAN OR EQUAL TO 3 FT ON ALL SIDES ACCORDING TO ASCE-7.
7. MEMBRANE SIDE LAPS MUST RUN PERPENDICULAR TO METAL DECK FLUTES.
8. THE USE OF COVERSTRIPS OVER EXPOSED FASTENERS ALLOW THE FASTENED BASE SHEET TO BE CONSIDERED A WATERPROOFING LAYER.

INSULATION FASTENING

CORNER DEFINITION

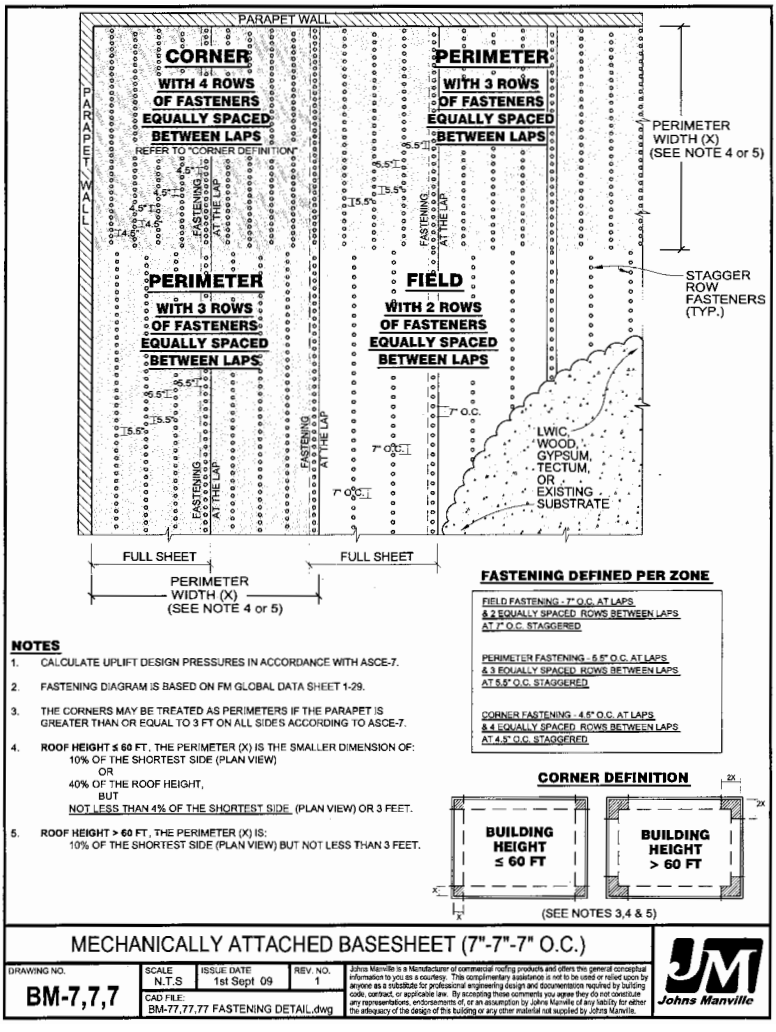
MECHANICALLY ATTACHED BASESHEET (6" O.C.)

DRAWING NO.	SCALE	ISSUE DATE	REV. NO.
BM-6	N.T.S	1st Sept 09	1
	CAD FILE: BM_6.dwg		

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

Mechanically Fastened Base Sheet Fastening Pattern BM-7,7,7



FASTENING DEFINED PER ZONE

FIELD FASTENING - 7" O.C. AT LAPS
& 2 EQUALLY SPACED ROWS BETWEEN LAPS AT 7" O.C. STAGGERED

PERIMETER FASTENING - 5.5" O.C. AT LAPS
& 3 EQUALLY SPACED ROWS BETWEEN LAPS AT 5.5" O.C. STAGGERED

CORNER FASTENING - 4.5" O.C. AT LAPS
& 4 EQUALLY SPACED ROWS BETWEEN LAPS AT 4.5" O.C. STAGGERED

NOTES

1. CALCULATE UPLIFT DESIGN PRESSURES IN ACCORDANCE WITH ASCE-7.
2. FASTENING DIAGRAM IS BASED ON FM GLOBAL DATA SHEET 1-29.
3. THE CORNERS MAY BE TREATED AS PERIMETERS IF THE PARAPET IS GREATER THAN OR EQUAL TO 3 FT ON ALL SIDES ACCORDING TO ASCE-7.
4. **ROOF HEIGHT ≤ 60 FT.** THE PERIMETER (X) IS THE SMALLER DIMENSION OF:
   10% OF THE SHORTEST SIDE (PLAN VIEW)
   OR
   40% OF THE ROOF HEIGHT,
   BUT
   NOT LESS THAN 4% OF THE SHORTEST SIDE (PLAN VIEW) OR 3 FEET.
5. **ROOF HEIGHT > 60 FT.** THE PERIMETER (X) IS:
   10% OF THE SHORTEST SIDE (PLAN VIEW) BUT NOT LESS THAN 3 FEET.

CORNER DEFINITION

MECHANICALLY ATTACHED BASESHEET (7"-7"-7" O.C.)

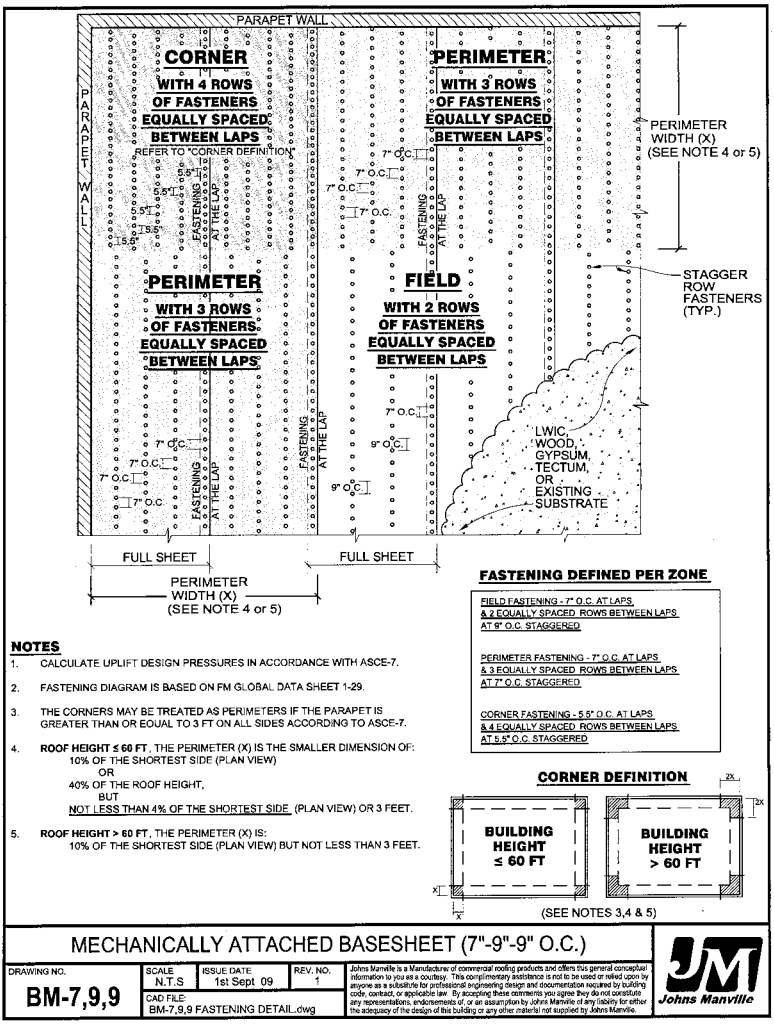
DRAWING NO.	SCALE	ISSUE DATE	REV. NO.
BM-7,7,7	N.T.S	1st Sept 09	1

CAD FILE: BM-77,77,77 FASTENING DETAIL.dwg

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

Mechanically Fastened Base Sheet Fastening Pattern BM-7,9,9



FASTENING DEFINED PER ZONE

FIELD FASTENING - 7" O.C. AT LAPS & 2 EQUALLY SPACED ROWS BETWEEN LAPS AT 9" O.C. STAGGERED

PERIMETER FASTENING - 7" O.C. AT LAPS & 3 EQUALLY SPACED ROWS BETWEEN LAPS AT 7" O.C. STAGGERED

CORNER FASTENING - 5.5" O.C. AT LAPS & 4 EQUALLY SPACED ROWS BETWEEN LAPS AT 5.5" O.C. STAGGERED

NOTES

1. CALCULATE UPLIFT DESIGN PRESSURES IN ACCORDANCE WITH ASCE-7.
2. FASTENING DIAGRAM IS BASED ON FM GLOBAL DATA SHEET 1-29.
3. THE CORNERS MAY BE TREATED AS PERIMETERS IF THE PARAPET IS GREATER THAN OR EQUAL TO 3 FT ON ALL SIDES ACCORDING TO ASCE-7.
4. **ROOF HEIGHT ≤ 60 FT**, THE PERIMETER (X) IS THE SMALLER DIMENSION OF:
   10% OF THE SHORTEST SIDE (PLAN VIEW)
   OR
   40% OF THE ROOF HEIGHT,
   BUT
   NOT LESS THAN 4% OF THE SHORTEST SIDE (PLAN VIEW) OR 3 FEET.
5. **ROOF HEIGHT > 60 FT**, THE PERIMETER (X) IS:
   10% OF THE SHORTEST SIDE (PLAN VIEW) BUT NOT LESS THAN 3 FEET.

CORNER DEFINITION

MECHANICALLY ATTACHED BASESHEET (7"-9"-9" O.C.)

DRAWING NO.	SCALE	ISSUE DATE	REV. NO.
BM-7,9,9	N.T.S	1st Sept 09	1

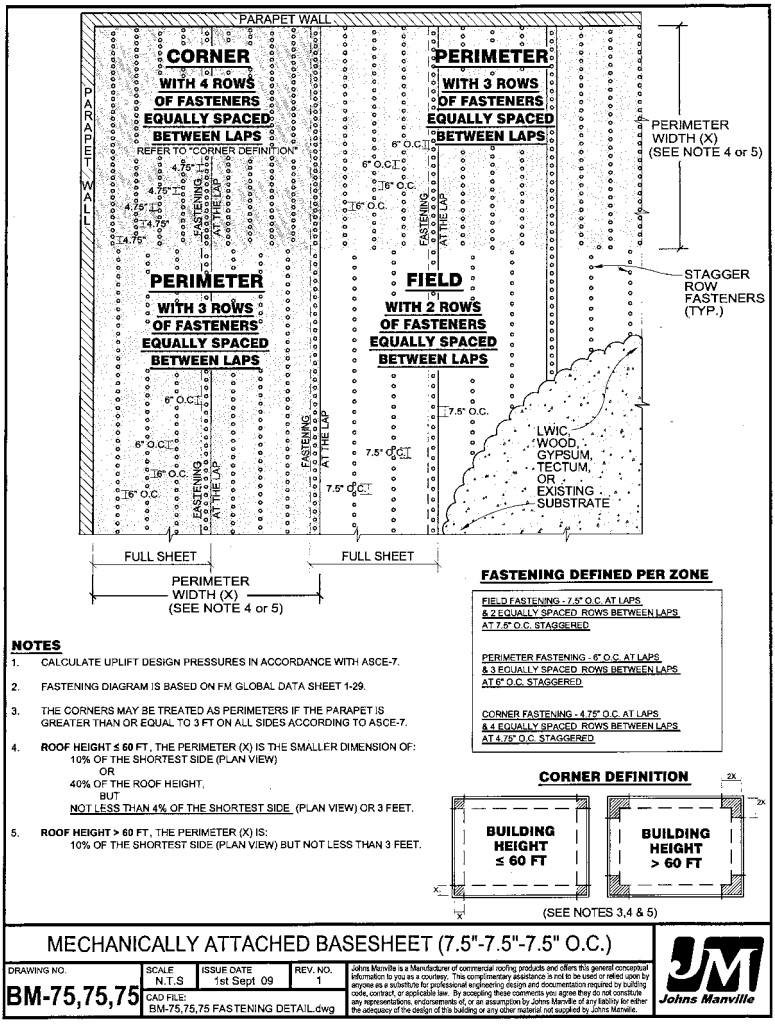
CAD FILE: BM-7,9,9 FASTENING DETAIL.dwg

Johns Manville

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

Mechanically Fastened Base Sheet Fastening Pattern BM-75,75,75



FASTENING DEFINED PER ZONE

FIELD FASTENING - 7.5" O.C. AT LAPS & 2 EQUALLY SPACED ROWS BETWEEN LAPS AT 7.5" O.C. STAGGERED

PERIMETER FASTENING - 6" O.C. AT LAPS & 3 EQUALLY SPACED ROWS BETWEEN LAPS AT 6" O.C. STAGGERED

CORNER FASTENING - 4.75" O.C. AT LAPS & 4 EQUALLY SPACED ROWS BETWEEN LAPS AT 4.75" O.C. STAGGERED

NOTES

1. CALCULATE UPLIFT DESIGN PRESSURES IN ACCORDANCE WITH ASCE-7.
2. FASTENING DIAGRAM IS BASED ON FM GLOBAL DATA SHEET 1-29.
3. THE CORNERS MAY BE TREATED AS PERIMETERS IF THE PARAPET IS GREATER THAN OR EQUAL TO 3 FT ON ALL SIDES ACCORDING TO ASCE-7.
4. **ROOF HEIGHT ≤ 60 FT**, THE PERIMETER (X) IS THE SMALLER DIMENSION OF:
   10% OF THE SHORTEST SIDE (PLAN VIEW)
   OR
   40% OF THE ROOF HEIGHT,
   BUT
   NOT LESS THAN 4% OF THE SHORTEST SIDE (PLAN VIEW) OR 3 FEET.
5. **ROOF HEIGHT > 60 FT**, THE PERIMETER (X) IS:
   10% OF THE SHORTEST SIDE (PLAN VIEW) BUT NOT LESS THAN 3 FEET.

CORNER DEFINITION

(SEE NOTES 3,4 & 5)

MECHANICALLY ATTACHED BASESHEET (7.5"-7.5"-7.5" O.C.)

DRAWING NO.	SCALE	ISSUE DATE	REV. NO.
BM-75,75,75	N.T.S	1st Sept 09	1

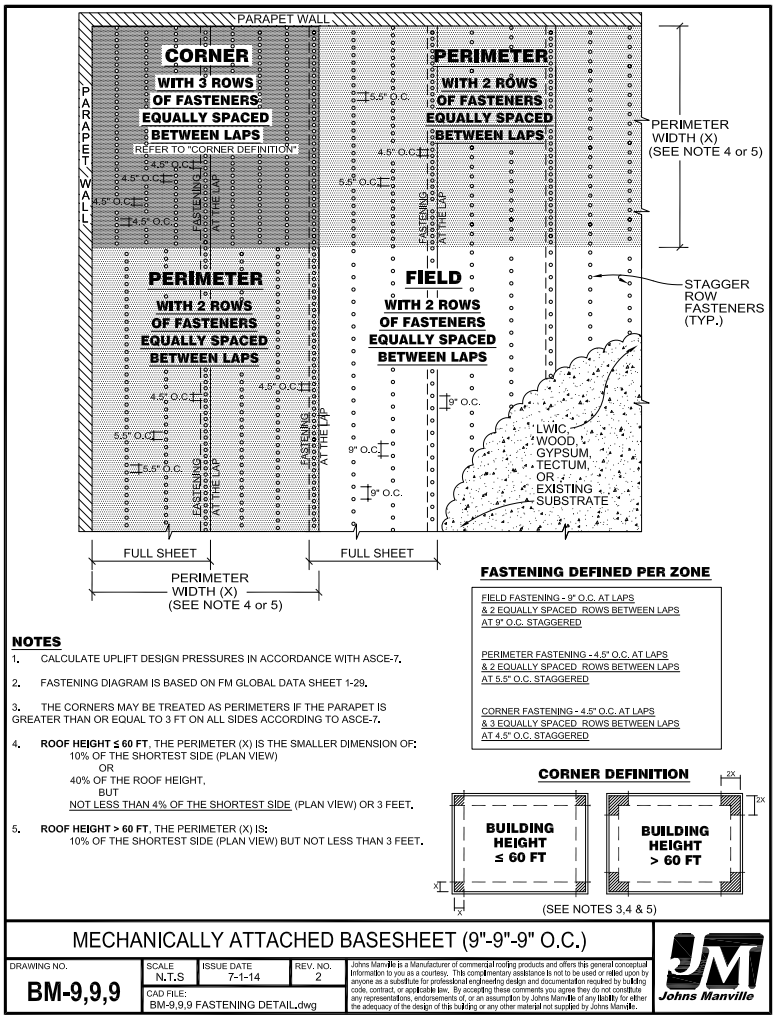
CAD FILE: BM-75,75,75 FASTENING DETAIL.dwg

Johns Manville

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

Mechanically Fastened Base Sheet Fastening Pattern BM-9,9,9



FASTENING DEFINED PER ZONE

FIELD FASTENING - 9" O.C. AT LAPS & 2 EQUALLY SPACED ROWS BETWEEN LAPS AT 9" O.C. STAGGERED

PERIMETER FASTENING - 4.5" O.C. AT LAPS & 2 EQUALLY SPACED ROWS BETWEEN LAPS AT 5.5" O.C. STAGGERED

CORNER FASTENING - 4.5" O.C. AT LAPS & 3 EQUALLY SPACED ROWS BETWEEN LAPS AT 4.5" O.C. STAGGERED

NOTES

1. CALCULATE UPLIFT DESIGN PRESSURES IN ACCORDANCE WITH ASCE-7.
2. FASTENING DIAGRAM IS BASED ON FM GLOBAL DATA SHEET 1-29.
3. THE CORNERS MAY BE TREATED AS PERIMETERS IF THE PARAPET IS GREATER THAN OR EQUAL TO 3 FT ON ALL SIDES ACCORDING TO ASCE-7.
4. **ROOF HEIGHT ≤ 60 FT**, THE PERIMETER (X) IS THE SMALLER DIMENSION OF:
   10% OF THE SHORTEST SIDE (PLAN VIEW)
   OR
   40% OF THE ROOF HEIGHT,
   BUT
   NOT LESS THAN 4% OF THE SHORTEST SIDE (PLAN VIEW) OR 3 FEET.
5. **ROOF HEIGHT > 60 FT**, THE PERIMETER (X) IS:
   10% OF THE SHORTEST SIDE (PLAN VIEW) BUT NOT LESS THAN 3 FEET.

CORNER DEFINITION

(SEE NOTES 3,4 & 5)

MECHANICALLY ATTACHED BASESHEET (9"-9"-9" O.C.)

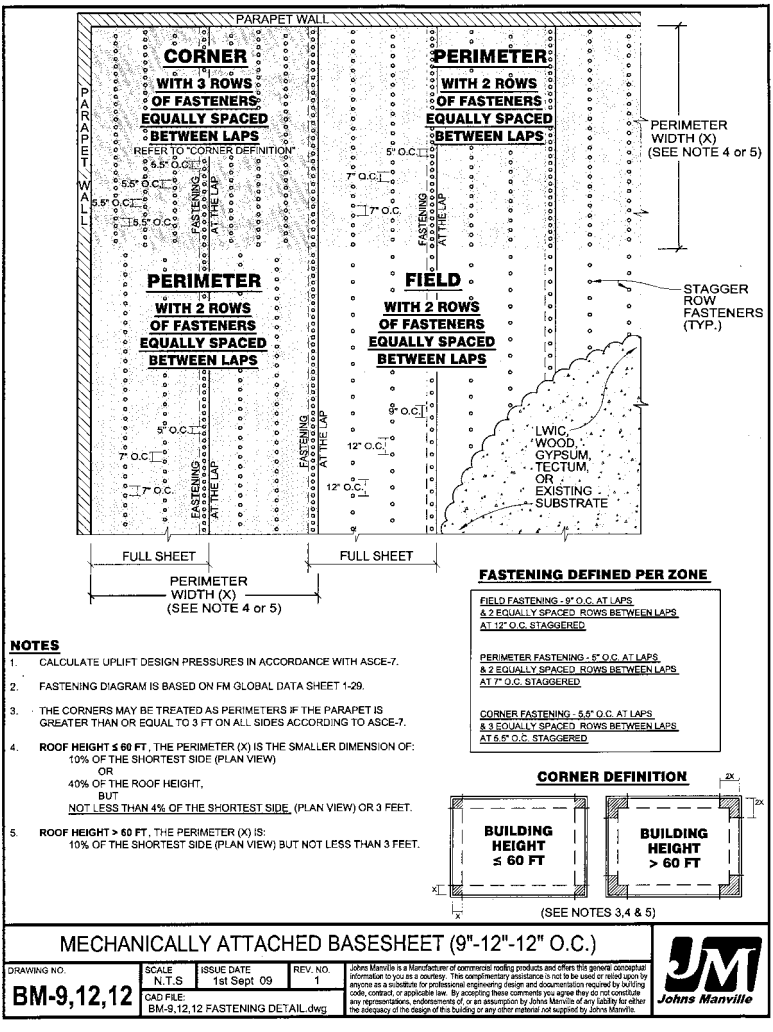
DRAWING NO.	SCALE	ISSUE DATE	REV. NO.
BM-9,9,9	N.T.S	7-1-14	2

CAD FILE: BM-9,9,9 FASTENING DETAIL.dwg

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

Mechanically Fastened Base Sheet Fastening Pattern BM-9,12,12



FASTENING DEFINED PER ZONE

FIELD FASTENING - 9" O.C. AT LAPS & 2 EQUALLY SPACED ROWS BETWEEN LAPS AT 12" O.C. STAGGERED

PERIMETER FASTENING - 5" O.C. AT LAPS & 2 EQUALLY SPACED ROWS BETWEEN LAPS AT 7" O.C. STAGGERED

CORNER FASTENING - 5.5" O.C. AT LAPS & 3 EQUALLY SPACED ROWS BETWEEN LAPS AT 5.5" O.C. STAGGERED

NOTES

1. CALCULATE UPLIFT DESIGN PRESSURES IN ACCORDANCE WITH ASCE-7.
2. FASTENING DIAGRAM IS BASED ON FM GLOBAL DATA SHEET 1-29.
3. THE CORNERS MAY BE TREATED AS PERIMETERS IF THE PARAPET IS GREATER THAN OR EQUAL TO 3 FT ON ALL SIDES ACCORDING TO ASCE-7.
4. **ROOF HEIGHT ≤ 60 FT**, THE PERIMETER (X) IS THE SMALLER DIMENSION OF:
   10% OF THE SHORTEST SIDE (PLAN VIEW)
   OR
   40% OF THE ROOF HEIGHT,
   BUT
   NOT LESS THAN 4% OF THE SHORTEST SIDE (PLAN VIEW) OR 3 FEET.
5. **ROOF HEIGHT > 60 FT**, THE PERIMETER (X) IS:
   10% OF THE SHORTEST SIDE (PLAN VIEW) BUT NOT LESS THAN 3 FEET.

CORNER DEFINITION

MECHANICALLY ATTACHED BASESHEET (9"-12"-12" O.C.)

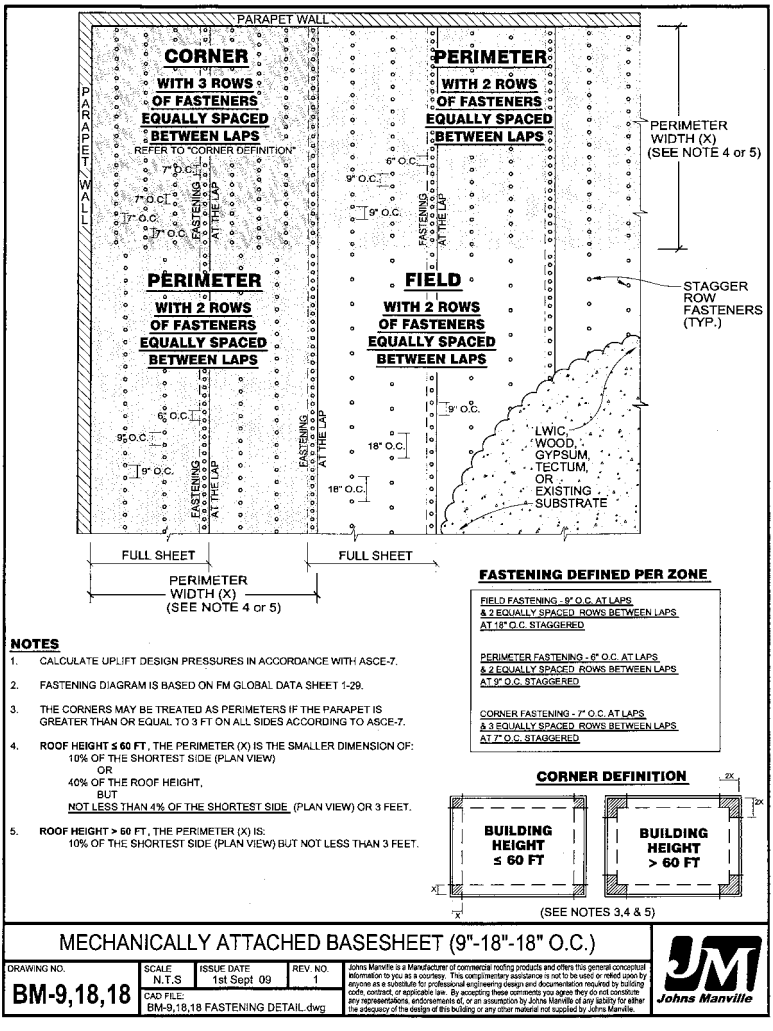
DRAWING NO.	SCALE	ISSUE DATE	REV. NO.
BM-9,12,12	N.T.S	1st Sept 09	1

CAD FILE: BM-9,12,12 FASTENING DETAIL.dwg

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

Mechanically Fastened Base Sheet Fastening Pattern BM-9,18,18



FASTENING DEFINED PER ZONE

FIELD FASTENING - 9" O.C. AT LAPS & 2 EQUALLY SPACED ROWS BETWEEN LAPS AT 18" O.C. STAGGERED

PERIMETER FASTENING - 6" O.C. AT LAPS & 2 EQUALLY SPACED ROWS BETWEEN LAPS AT 9" O.C. STAGGERED

CORNER FASTENING - 7" O.C. AT LAPS & 3 EQUALLY SPACED ROWS BETWEEN LAPS AT 7" O.C. STAGGERED

NOTES

1. CALCULATE UPLIFT DESIGN PRESSURES IN ACCORDANCE WITH ASCE-7.
2. FASTENING DIAGRAM IS BASED ON FM GLOBAL DATA SHEET 1-29.
3. THE CORNERS MAY BE TREATED AS PERIMETERS IF THE PARAPET IS GREATER THAN OR EQUAL TO 3 FT ON ALL SIDES ACCORDING TO ASCE-7.
4. **ROOF HEIGHT ≤ 60 FT**, THE PERIMETER (X) IS THE SMALLER DIMENSION OF:
   10% OF THE SHORTEST SIDE (PLAN VIEW)
   OR
   40% OF THE ROOF HEIGHT,
   BUT
   NOT LESS THAN 4% OF THE SHORTEST SIDE (PLAN VIEW) OR 3 FEET.
5. **ROOF HEIGHT > 60 FT**, THE PERIMETER (X) IS:
   10% OF THE SHORTEST SIDE (PLAN VIEW) BUT NOT LESS THAN 3 FEET.

CORNER DEFINITION

MECHANICALLY ATTACHED BASESHEET (9"-18"-18" O.C.)

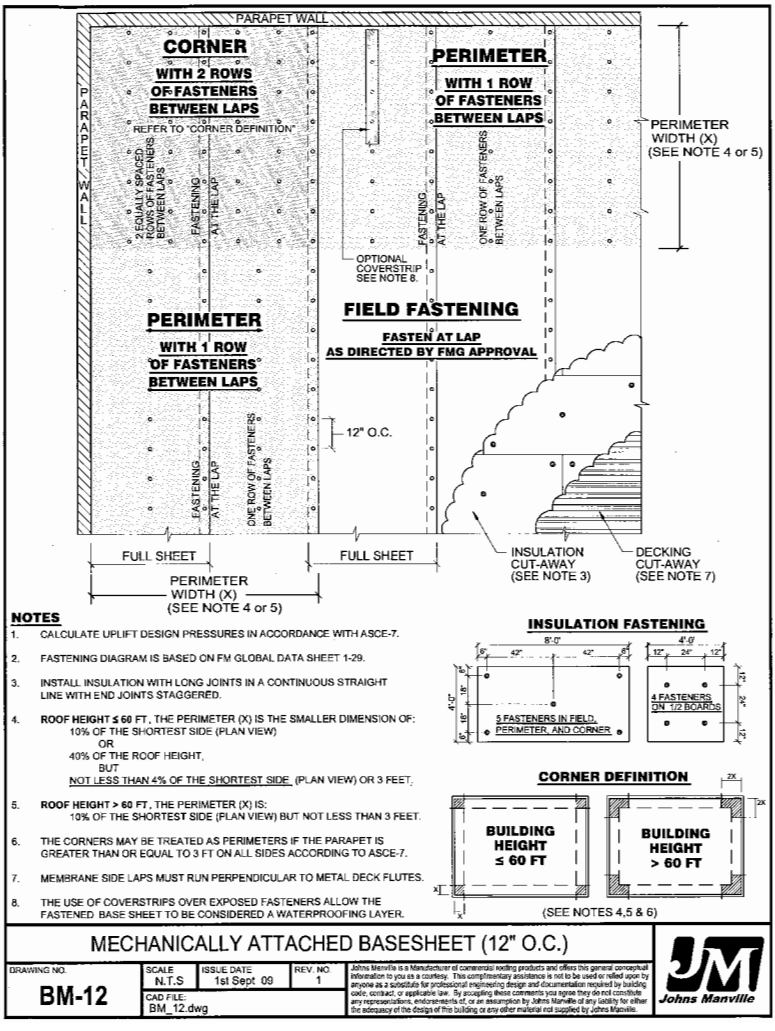
DRAWING NO.	SCALE	ISSUE DATE	REV. NO.
BM-9,18,18	N.T.S	1st Sept 09	1

CAD FILE: BM-9,18,18 FASTENING DETAIL.dwg

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

Mechanically Fastened Base Sheet Fastening Pattern BM-12



NOTES

1. CALCULATE UPLIFT DESIGN PRESSURES IN ACCORDANCE WITH ASCE-7.
2. FASTENING DIAGRAM IS BASED ON FM GLOBAL DATA SHEET 1-29.
3. INSTALL INSULATION WITH LONG JOINTS IN A CONTINUOUS STRAIGHT LINE WITH END JOINTS STAGGERED.
4. **ROOF HEIGHT ≤ 60 FT**, THE PERIMETER (X) IS THE SMALLER DIMENSION OF:
   10% OF THE SHORTEST SIDE (PLAN VIEW)
   OR
   40% OF THE ROOF HEIGHT,
   BUT
   NOT LESS THAN 4% OF THE SHORTEST SIDE (PLAN VIEW) OR 3 FEET.
5. **ROOF HEIGHT > 60 FT**, THE PERIMETER (X) IS:
   10% OF THE SHORTEST SIDE (PLAN VIEW) BUT NOT LESS THAN 3 FEET.
6. THE CORNERS MAY BE TREATED AS PERIMETERS IF THE PARAPET IS GREATER THAN OR EQUAL TO 3 FT ON ALL SIDES ACCORDING TO ASCE-7.
7. MEMBRANE SIDE LAPS MUST RUN PERPENDICULAR TO METAL DECK FLUTES.
8. THE USE OF COVERSTRIPS OVER EXPOSED FASTENERS ALLOW THE FASTENED BASE SHEET TO BE CONSIDERED A WATERPROOFING LAYER.

MECHANICALLY ATTACHED BASESHEET (12" O.C.)

DRAWING NO.	SCALE	ISSUE DATE	REV. NO.
BM-12	N.T.S	1st Sept 09	1
	CAD FILE: BM_12.dwg		

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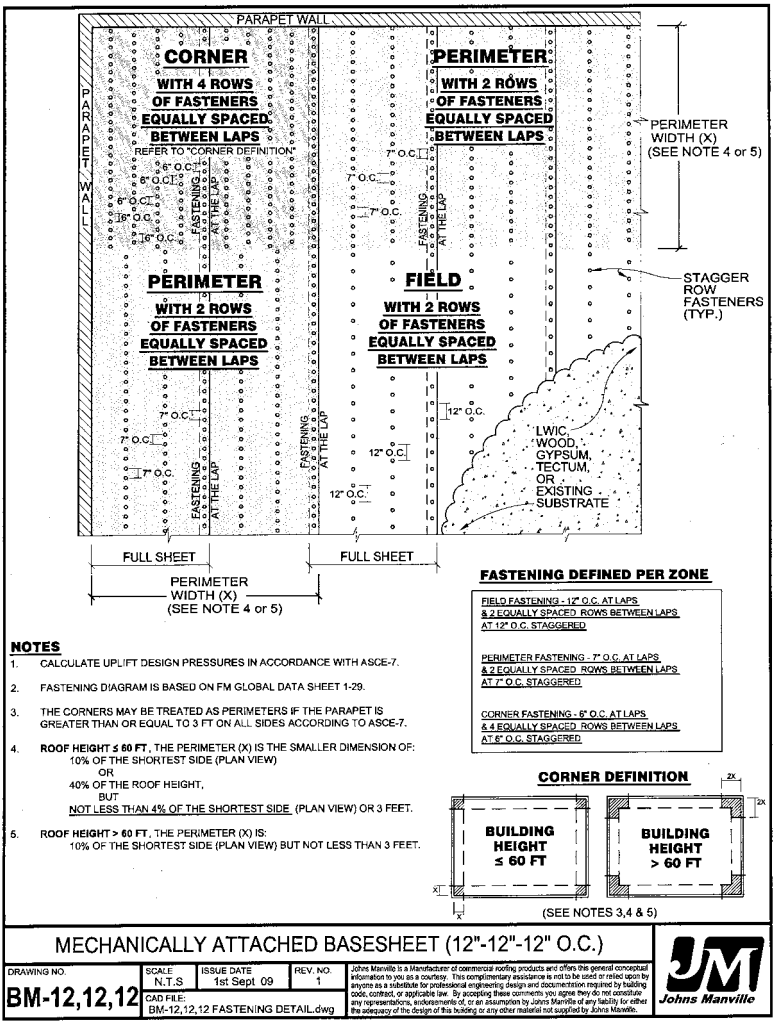
Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

Mechanically Fastened Base Sheet Fastening Pattern BM-12,12,12



FASTENING DEFINED PER ZONE

FIELD FASTENING - 12" O.C. AT LAPS & 2 EQUALLY SPACED ROWS BETWEEN LAPS AT 12" O.C. STAGGERED

PERIMETER FASTENING - 7" O.C. AT LAPS & 2 EQUALLY SPACED ROWS BETWEEN LAPS AT 7" O.C. STAGGERED

CORNER FASTENING - 6" O.C. AT LAPS & 4 EQUALLY SPACED ROWS BETWEEN LAPS AT 6" O.C. STAGGERED

NOTES

1. CALCULATE UPLIFT DESIGN PRESSURES IN ACCORDANCE WITH ASCE-7.
2. FASTENING DIAGRAM IS BASED ON FM GLOBAL DATA SHEET 1-29.
3. THE CORNERS MAY BE TREATED AS PERIMETERS IF THE PARAPET IS GREATER THAN OR EQUAL TO 3 FT ON ALL SIDES ACCORDING TO ASCE-7.
4. **ROOF HEIGHT ≤ 60 FT**, THE PERIMETER (X) IS THE SMALLER DIMENSION OF:
   10% OF THE SHORTEST SIDE (PLAN VIEW)
   OR
   40% OF THE ROOF HEIGHT,
   BUT
   NOT LESS THAN 4% OF THE SHORTEST SIDE (PLAN VIEW) OR 3 FEET.
5. **ROOF HEIGHT > 60 FT**, THE PERIMETER (X) IS:
   10% OF THE SHORTEST SIDE (PLAN VIEW) BUT NOT LESS THAN 3 FEET.

CORNER DEFINITION

(SEE NOTES 3,4 & 5)

MECHANICALLY ATTACHED BASESHEET (12"-12"-12" O.C.)

DRAWING NO.	SCALE	ISSUE DATE	REV. NO.
BM-12,12,12	N.T.S	1st Sept 09	1

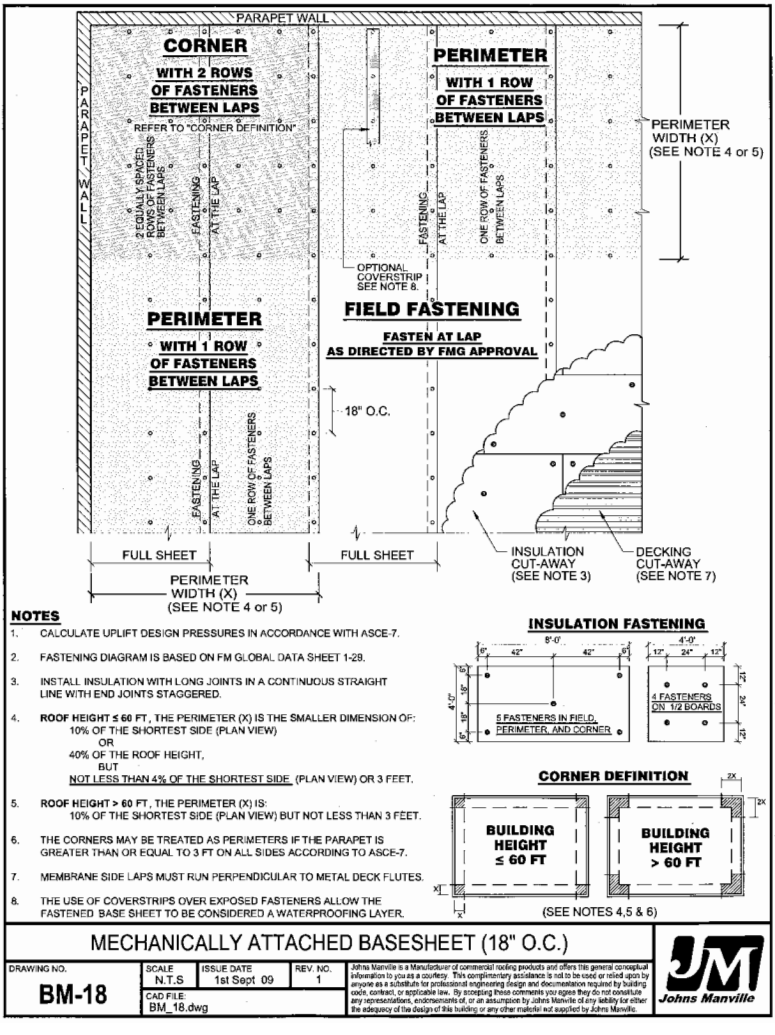
CAD FILE: BM-12,12,12 FASTENING DETAIL.dwg

Johns Manville

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

Mechanically Fastened Base Sheet Fastening Pattern BM-18



NOTES

1. CALCULATE UPLIFT DESIGN PRESSURES IN ACCORDANCE WITH ASCE-7.
2. FASTENING DIAGRAM IS BASED ON FM GLOBAL DATA SHEET 1-28.
3. INSTALL INSULATION WITH LONG JOINTS IN A CONTINUOUS STRAIGHT LINE WITH END JOINTS STAGGERED.
4. **ROOF HEIGHT ≤ 60 FT**, THE PERIMETER (X) IS THE SMALLER DIMENSION OF:
   10% OF THE SHORTEST SIDE (PLAN VIEW)
   OR
   40% OF THE ROOF HEIGHT,
   BUT
   NOT LESS THAN 4% OF THE SHORTEST SIDE (PLAN VIEW) OR 3 FEET.
5. **ROOF HEIGHT > 60 FT**, THE PERIMETER (X) IS:
   10% OF THE SHORTEST SIDE (PLAN VIEW) BUT NOT LESS THAN 3 FEET.
6. THE CORNERS MAY BE TREATED AS PERIMETERS IF THE PARAPET IS GREATER THAN OR EQUAL TO 3 FT ON ALL SIDES ACCORDING TO ASCE-7.
7. MEMBRANE SIDE LAPS MUST RUN PERPENDICULAR TO METAL DECK FLUTES.
8. THE USE OF COVERSTRIPS OVER EXPOSED FASTENERS ALLOW THE FASTENED BASE SHEET TO BE CONSIDERED A WATERPROOFING LAYER.

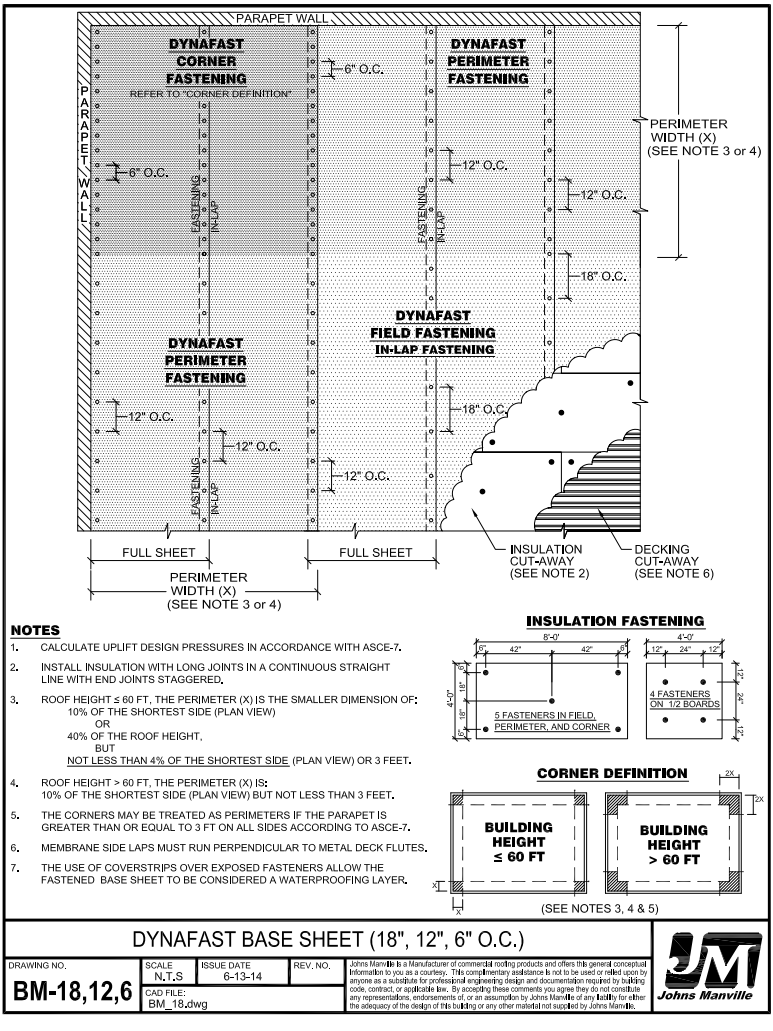
MECHANICALLY ATTACHED BASESHEET (18" O.C.)

DRAWING NO.	SCALE	ISSUE DATE	REV. NO.
BM-18	N.T.S	1st Sept 09	1
	CAD FILE: BM_18.dwg		

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

Mechanically Fastened Base Sheet Fastening Pattern BM-18, 12, 6



NOTES

1. CALCULATE UPLIFT DESIGN PRESSURES IN ACCORDANCE WITH ASCE-7.
2. INSTALL INSULATION WITH LONG JOINTS IN A CONTINUOUS STRAIGHT LINE WITH END JOINTS STAGGERED.
3. ROOF HEIGHT ≤ 60 FT, THE PERIMETER (X) IS THE SMALLER DIMENSION OF:
   10% OF THE SHORTEST SIDE (PLAN VIEW)
   OR
   40% OF THE ROOF HEIGHT,
   BUT
   NOT LESS THAN 4% OF THE SHORTEST SIDE (PLAN VIEW) OR 3 FEET.
4. ROOF HEIGHT > 60 FT, THE PERIMETER (X) IS:
   10% OF THE SHORTEST SIDE (PLAN VIEW) BUT NOT LESS THAN 3 FEET.
5. THE CORNERS MAY BE TREATED AS PERIMETERS IF THE PARAPET IS GREATER THAN OR EQUAL TO 3 FT ON ALL SIDES ACCORDING TO ASCE-7.
6. MEMBRANE SIDE LAPS MUST RUN PERPENDICULAR TO METAL DECK FLUTES.
7. THE USE OF COVERSTRIPS OVER EXPOSED FASTENERS ALLOW THE FASTENED BASE SHEET TO BE CONSIDERED A WATERPROOFING LAYER.

INSULATION FASTENING

CORNER DEFINITION

(SEE NOTES 3, 4 & 5)

DYNAFAST BASE SHEET (18", 12", 6" O.C.)

DRAWING NO.	SCALE	ISSUE DATE	REV. NO.
BM-18,12,6	N.T.S	6-13-14	
CAD FILE: BM_18.dwg			

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

4

SBS Flashing Details

Section Two Contents

Download a free QR Reader app on your smart phone. When you see a QR code, use your phone to scan the code. It will then redirect your phone to a specific video or detail. These codes will allow you to view step by step instructional videos and will allow you to zoom in on details for better readability. If you are viewing this booklet online you can click on these codes to direct you to the online videos and details as well.

1.0 General Information

1.1 Flashings are used to make watertight any roof area where the roof membrane terminates, is interrupted or intersects an area or projection having a marked change in slope or direction. This condition can occur at gravel stops, curbs, parapets, walls, built-in gutters, expansion joints, skylights, vents, drains, pipes and other penetrations.

1.2 Flashings are generally divided into several categories: bituminous flashing (base flashings and stripping), counterflashings/cap flashings, copings, perimeter edge metal and "flanged" metal flashings.

A. Base flashings are, in a sense, a continuation of the membrane, turned up onto a surface that is in a different plane from the field of the roof, and installed as a separate operation. They are usually fabricated using a nonmetallic material, such as a bituminous-coated felt. Stripping is a bituminous flashing used to waterproof metal flanges.

B. Perimeter edge metal (gravel stop, drip edge, gutter edge, fascia) is available in various configurations and is critical in sealing the roof membrane edges and roof system attachments.

C. "Flanged" metal flashings are those metal flashings in which the horizontal deck flange is "sandwiched" between the primary roof membrane and bituminous stripping materials. Examples include vent stack leads, metal cone jacks, penetration pans, etc. JM recommends the use of better, more maintenance-free details for flashing roof projections. JM also recognizes that, at times, these types of flashings may be the best or only alternative.

D. Counterflashings, or cap flashings, can be fabricated with metal, coated felt or other materials. They shield and seal the exposed edges of the base flashing.

E. Copings also shield and seal the exposed edges of the base flashing. The vast majority of copings are fabricated from metal. Stone and tile are also common coping materials.

1.3 JM markets several different metal coping and perimeter edge metal systems. These systems are manufactured to meet stringent JM standards and, therefore, can be incorporated into the JM Peak Advantage Guarantee. It is permissible to incorporate "shop-fabricated" copings and perimeter edge metal into the roof system; however, these components are not generally covered under the JM guarantee. In some instances, JM will extend coverage on shop-fabricated metal if the request is made prior to job start. JM must review and approve all metal details. There may be additional fees for this service

1.4 All general instructions contained in the current JM Roofing Solutions Product Manual are to be considered part of this specification.

1.5 All health, safety and environmental procedures involving the storage, use and disposal of roofing materials should be followed. These precautions are outlined in the "Introduction" section of the current Johns Manville Roofing Systems Product Manual.

2.0 Flashing Principles

2.1 The performance of any flashing system is ultimately dependent on proper design, attachment and preparation.

2.2 Flashings must allow for differential movement in the flashing system, particularly when the deck and wall are not directly tied to each other (non-load-bearing construction). Differential movement between the roof deck and the wall is usually evidenced by diagonal wrinkles in the base flashing. Continued movement can cause tears in the flashing, particularly at the most restricted areas. Use roof-to-wall expansion joint details if the movement cannot be handled by standard base flashing systems. Expansion joints are typically installed at changes in the structural deck type,

changes in the direction of metal decking, at the base, transition of non-wall-supported decks and/or any area where significant differential movement is anticipated.

2.3 Avoid sharp bends in built-up and modified bitumen base flashings. Right-angle bends in bituminous flashings create high stress areas and can result in premature aging of the flashing material. To alleviate this condition and to provide solid backing, which protects the flashing from impact, the use of cant strips is necessary.

2.4 The combined use of nonmetallic materials for base flashings and metal for counterflashings brings out the best in each material. Bituminous base flashing materials have the same coefficient of expansion and contraction as the roof membrane, and they work together as a unit. They are the only type of material acceptable for use in constructing base flashings in bituminous systems.

2.5 Because of the rigidity of metal and its extreme movement with temperature changes, its use is not acceptable for base flashings. Cap flashings or counter flashings made of metal, removed from any area of possible standing water are acceptable, provided they are properly installed in accordance with industry-accepted sheet metal details.

3.0 Substrate/Flashing Preparation

3.1 All surfaces to be flashed/stripped should be inspected before any flashing work is started. Surfaces must be sound, dry and free of any loose materials or contaminants. Fins, sharp ridges, metal rods, etc., or any other circumstance that would puncture or cut the bituminous flashing/stripping or prevent proper adhesion of the same must be corrected.

3.2 Provide wood blocking (pressure treated with a salt preservative) to serve as a base for attaching the flanges of metal edging and "flanged" metal flashings. Treatment of the nailers with creosote or asphaltic preservatives is not acceptable. Extend the wood nailers horizontally beyond the flanges of the metal edgings and flashings. All new and existing wood nailers must be firmly attached to the structure with the appropriate fasteners at a rate sufficient for the project as required by the local building code. Information on nailer attachment can be found in FM Global Loss Prevention Data Sheet 1-49, entitled "Perimeter Flashing," found on www.roofnav.com.

3.3 Any sheet metal flanges that are to be "sandwiched" between the primary roof membrane and bituminous flashing materials shall be properly cleaned and primed with JM Asphalt Primer on both top and bottom surfaces. Allow the primer to dry thoroughly prior to application.

3.4 Masonry Construction: Walls should be built with hard-burned brick, sound-reinforced concrete or waterproof concrete block construction. Common faults encountered are:

1. Soft or scaling brick or concrete.
2. Poor mortar or faulty pointing of joints.
3. Broken copings and inadequate pointing of joints between copings. Walls of ordinary hollow tile, or other materials that in themselves are not waterproof, are not suitable to receive flashings unless they are properly waterproofed. Prime all masonry surfaces that are to receive bituminous flashing with JM Asphalt Primer. Allow the primer to dry thoroughly prior to application of flashing.

3.5 Frame Construction: Frame walls are not acceptable to receive flashing unless suitable solid backing for the flashing is provided. A bituminous base sheet is typically mechanically attached over the surface prior to flashing installation. Gypsum wallboard is not acceptable as a substrate for bituminous flashings. Suitable stops and sheet metal flashing should be provided in EIFS and stucco construction to seal the top of the base flashing.

3.6 Any previously installed metal coping or counterflashing must be lifted or removed, to permit application of the base flashing.

4.0 Typical Flashing Conditions

4.1 Bituminous Base Flashing

A. Install all layers comprising the primary roof membrane to the top of the cant before installing the base flashing. Do not carry the roofing membrane all the way up a wall, parapet or curb to act as a base flashing.

B. The completed base flashing should extend between 8" (203 mm) and 24" (610mm) above the level of the roof and onto the roof membrane a minimum of 4" (102 mm). In multiple-layer flashings, all layers shall be offset a minimum of 6" (152 mm) from each other. All vertical joints are to be overlapped a minimum of 4" (102 mm) and well sealed.

C. Good roofing practice dictates that the top edge of all base flashings must be carried a minimum of 8" (203 mm) above the roof. Certain project conditions may necessitate lower base flashing heights. The decision to incorporate base flashing heights less than 8" (203 mm) into a roof system rests solely with the building owner and the design professional. Typically, this decision is made as an initial cost-saving initiative on behalf of the owner. The building owner and design professional take full responsibility for this decision and acknowledge that the guarantee effectively stops at the top of the membrane base flashing.

D. Secure all base flashings at the top edge with appropriate mechanical fasteners, spaced 6" (152 mm) o.c. maximum. The fasteners shall have a minimum 1" (25 mm) diameter head or plate. Fasteners shall be placed 1.5" (38 mm) from the top edge of the base flashing.

E. Never install new base flashing above or over the top of existing thru-wall flashing. If the existing thru-wall flashing prohibits proper flashing height, the building owner and the design professional must be notified promptly. The decision to incorporate base flashing heights less than 8" (203 mm) into a roof system rests solely with the building owner and the design professional. Both the building owner and design professional take full responsibility for this decision and acknowledge that the guarantee effectively stops at the top of the membrane base flashing.

4.2 Perimeter Edge Metal (drip edge, gravel stop, etc.)

A. Install all layers of the primary roof membrane so that it fully covers the perimeter wood blocking.

B. All perimeter edge metal must be securely anchored over the top of the primary roof membrane. The solid attachment of all edge-metal-to-wood nailers is critical. The wood nailers must extend horizontally beyond the metal flange. Perimeter edge metal shall be attached at a rate sufficient for the project as required by the local building code. Information on perimeter edge metal attachment can be found in FM Global Loss Prevention Data Sheet 1-49, entitled "Perimeter Flashing," found on www.roofnav.com. Movement due to poor securement will result in abnormal stress on the membrane and flashing, which can cause leaks.

C. Locate metal flanges (drip edge, gravel stop, etc.) that will be flashed or "stripped in" above the highest water level on the roof. Good roofing practice dictates that roof edges should be raised above the plane of the roof, whenever possible.

D. All edge metal flanges (drip edge, gravel stop, etc.) that will be flashed or "stripped in" should be thoroughly cleaned to remove oil, oxidation or other contaminants, and then primed on both sides with JM Asphalt Primer. Set the metal sections on top of the primary roof membrane and into a ⅛" (3 mm) thick bed of MBR Flashing Cement or MBR Utility Cement, and fasten 3" (76 mm) o.c. on the horizontal flange, staggering the fasteners. Strip in the horizontal flange with the appropriate flashing material.

4.3 "Flanged" Metal Flashings (pipe jacks, cone jacks, penetration pans, etc.)

A. Install all layers of the primary roof membrane so that it fully covers the wood blocking around the penetration.

B. All "flanged" metal flashings must be securely anchored over the top of the primary roof membrane. The solid attachment of all metal flanges to wood nailers is critical. The wood nailers must extend horizontally beyond the metal flanges. Movement due to poor securement will result in abnormal stress on the membrane and flashing, which can cause leaks.

C. Locate metal flanges that will be flashed or "stripped in" above the highest water level on the roof. Good roofing practice dictates that "sandwiched" metal flanges should be raised above the plane of the roof whenever possible.

D. All metal flashing flanges that will be flashed or "stripped in" should be thoroughly cleaned to remove oil, oxidation or other contaminants and then primed on both sides with JM Asphalt Primer. Set the metal sections on top of the primary roof membrane and into a ⅛" (3 mm) thick bed of MBR Flashing Cement or MBR Utility Cement, and fasten 3" (76 mm) o.c. on the horizontal flange, staggering the fasteners. Flash the horizontal flange with the appropriate flashing material.

E. JM does not recommend the use of penetration pan details, as by definition they require regular maintenance on the part of the owner.

4.4 High Wall Flashings

A. High wall flashings or wall coverings are defined as membrane flashings on a vertical element in excess of 24" (610 mm) above the roof level. Bituminous flashings are very durable, but are also comparatively heavy. Two different flashing approach es are provided below.

B. EPDM membrane: Apply base flashing, as outlined above. The completed base flashing should extend between 8" (203 mm) and 24" (610 mm) above the level of the roof membrane. Terminate the base flashing with an approved surface-mounted metal counterflashing, fastened 6" (152 mm) o.c. maximum with the appropriate fasteners. Apply JM EPDM membrane over the top of the wall and extending down over the metal counterflashing, using JM EPDM Bonding Cement. The EPDM wall cover should cover the metal counterflashing to the top of its drip edge, and must cover the fasteners in the metal counterflashing by a minimum of 2" (51 mm). The JM EPDM membrane shall be bonded to the properly primed sheet metal counter flashing with JM EPDM Seam Tape. Terminate the top of the EPDM membrane wall cover as required.

C. Self-adhering flashings are not acceptable for this application.

4.5 Sheet Metal: All sheet metal (counterflashing, cap flashing, coping, edge metal, etc.) shall be installed in accordance with and conform to SMACNA guidelines and the manufacturer's requirements. All counterflashing and coping should overlap the base flashing by a minimum of 4" (102 mm).

4.6 Coping: All copings, regardless of their makeup, should be set/installed on top of a waterproofing membrane, metal flashing, or both, so as to prevent any moisture originating from the coping entering the roof system.

4.7 Surfacing of Bituminous Flashing: Granule, "CR" and foil-surfaced flashings do not require additional surfacing. Unsurfaced flashing materials may be surfaced with any one of the appropriate coating materials provided by JM.

5.0 Recommend JM SBS and JM APP

5.1 Products for use in heat-weld installations:

SBS – Cap Sheets	SBS – Base Sheets
DynaWeld Cap FR DynaWeld Cap FR CR DynaWeld Cap 180 FR Dynaweld Cap 180 FR CR DynaWeld Cap 250 FR DynaWeld Cap 250 FR CR DynaWeld Cap DynaKap FR HW	DynaWeld Base DynaBase HW DynaWeld 180S DynaWeld 250S DynaPly HW
APP – Cap Sheets	**APP – Base Sheets**
APPeX 4.5M APPeX 4.5M FR Tricor M FR Bicor M FR	APPeX 4S Tricor 2 Bicor S

JM DynaFlex® Flashing Details

JM PermaFlash® Flashing Details

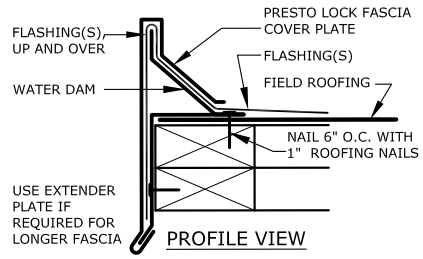
JM DynaGrip® Flashing Details

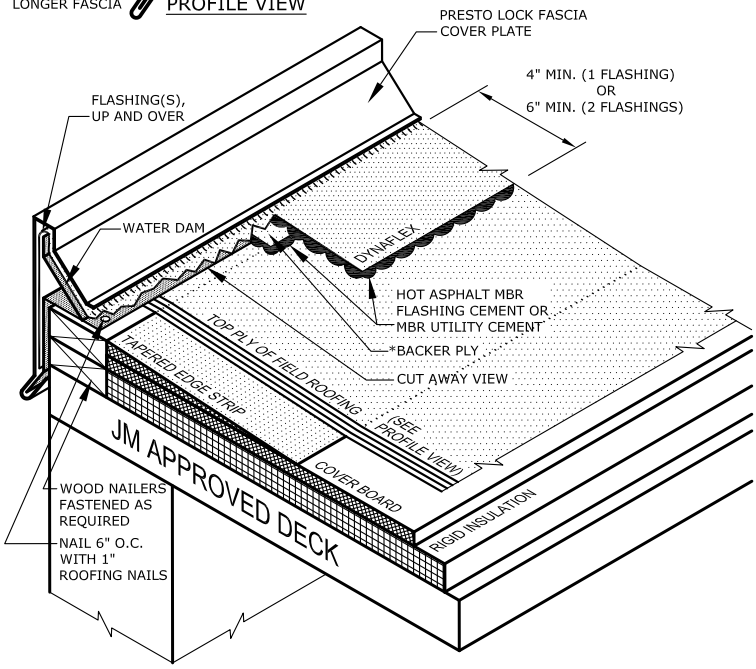
JMCleanBond® Flashing Details

Cool Roof Flashing Details

Vapor Barriers

Facia, Presto Lock™ Fascia System

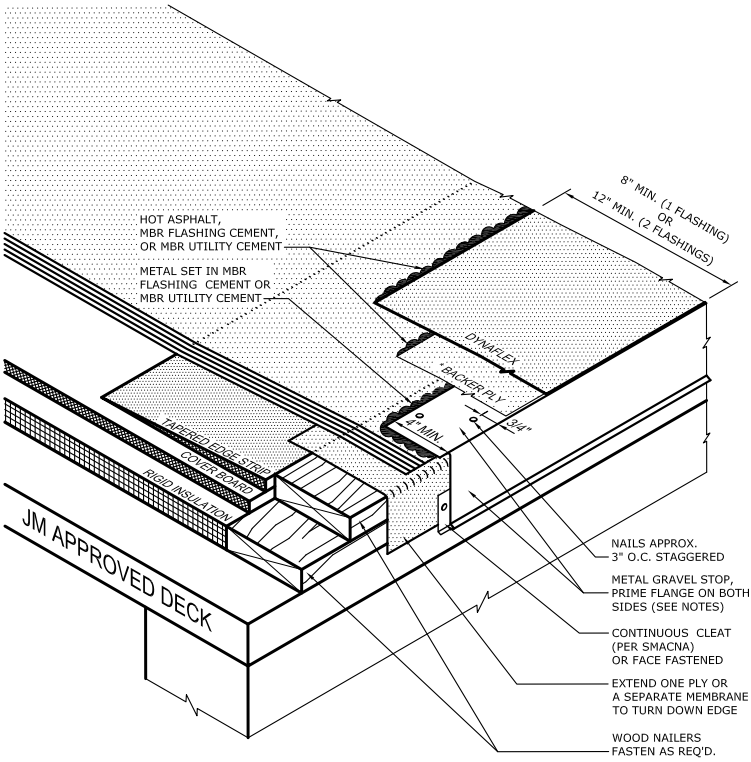




NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. *AN SBS BACKER PLY EXTENDING 2" MIN. FROM TOE OF CANT IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEES.
3. THE TAPERED EDGE STRIP (OPTIONAL), IS USED FOR NON-DRAINING EDGES TO KEEP PONDING WATER OFF THE FLASHING LAPS OR TO TRANSITION SUBSTRATE FLUSH WITH PERIMETER NAILER HEIGHT.
4. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
5. PRESTO LOCK GRAVEL STOP SHOULD BE INSTALLED IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS ARE AVAILABLE TO COMPLETE THE INSTALLATION.
6. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

Gravel Stop



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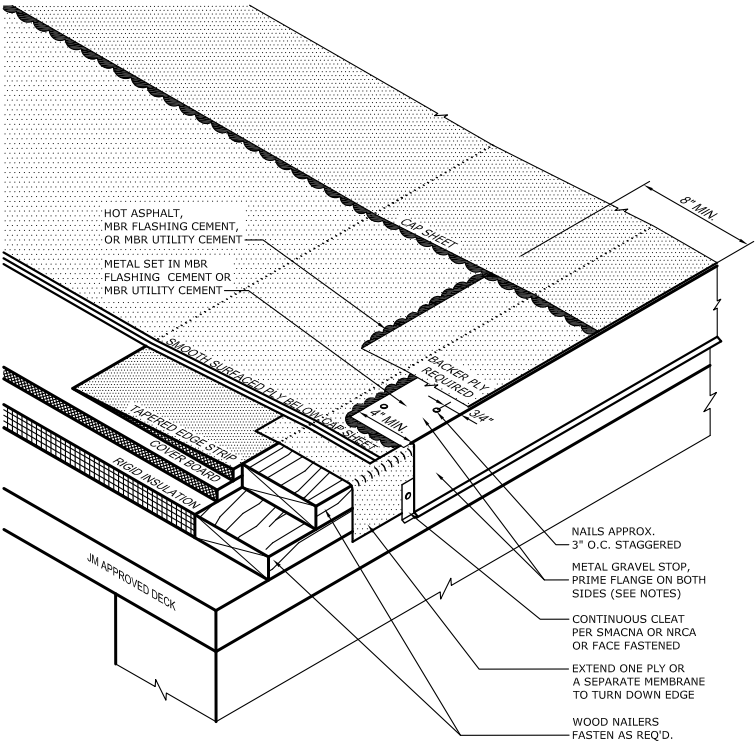
2. THE TAPERED EDGE STRIP (OPTIONAL), IS USED FOR NON-DRAINING EDGES TO KEEP PONDING WATER OFF THE FLASHING LAPS. IF THE EDGE IS DESIGNED TO EVACUATE WATER FROM THE ROOF, THE TAPERED EDGE STRIP IS ELIMINATED AND THE TOP OF THE WOOD NAILER WILL BE AT A HEIGHT FLUSH WITH THE TOP OF THE FLAT COVER BOARD OR SUBSTRATE.
3. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
4. SHOP FABRICATED GRAVEL STOP SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA AND/OR NRCA GUIDELINES. LAPS SHALL UTILIZE EITHER APPROVED SPLICE PLATES OR 4" MINIMUM OVERLAPS WITH A APPROVED SEALANT.
5. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL
6. USE ASPHALT PRIMER ON GRAVEL STOP FLANGES WHEN USING MBR UTILITY CEMENT. USE PERMAFLASH PRIMER ON GRAVEL STOP FLANGES WHEN USING MBR FLASHING CEMENT.

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

Gravel Stop (Alternate)



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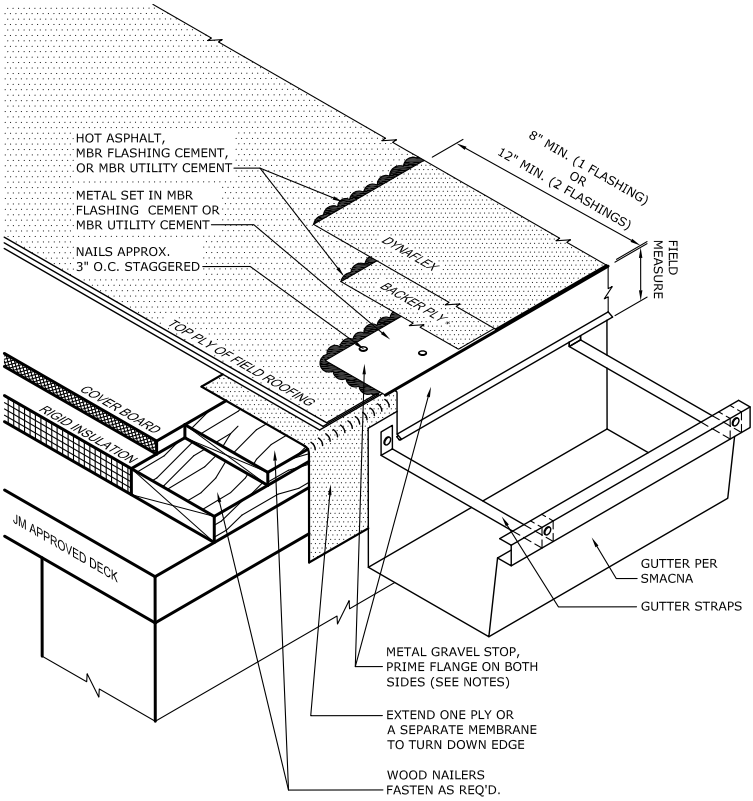
2. THE TAPERED EDGE STRIP (OPTIONAL), IS USED FOR NON-DRAINING EDGES TO KEEP PONDING WATER OFF THE FLASHING LAPS. IF THE EDGE IS DESIGNED TO EVACUATE WATER FROM THE ROOF, THE TAPERED EDGE STRIP IS ELIMINATED AND THE TOP OF THE WOOD NAILER WILL BE AT A HEIGHT FLUSH WITH THE TOP OF THE FLAT COVER BOARD OR SUBSTRATE.
3. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
4. SHOP FABRICATED GRAVEL STOP SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA AND/OR NRCA GUIDELINES. LAPS SHALL UTILIZE EITHER APPROVED SPLICE PLATES OR 4" MINIMUM OVERLAPS WITH A APPROVED SEALANT.
5. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
6. USE ASPHALT PRIMER ON GRAVEL STOP FLANGES WHEN USING MBR UTILITY CEMENT. USE PERMAFLASH PRIMER ON GRAVEL STOP FLANGES WHEN USING MBR FLASHING CEMENT.

Gutter



NOTES:

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2. *AN SBS BACKER PLY EXTENDING 8" FROM THE EDGE OF THE ROOF IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEES.
3. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
4. SHOP FABRICATED GRAVEL STOPS AND GUTTERS SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA AND/OR NRCA GUIDELINES. GRAVEL STOP LAPS SHALL UTILIZE EITHER APPROVED SPLICE PLATES OR 4" MINIMUM OVERLAPS WITH APPROVED SEALANT.
5. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL
6. USE ASPHALT PRIMER ON GRAVEL STOP FLANGES WHEN USING MBR UTILITY CEMENT. USE PERMAFLASH PRIMER ON GRAVEL STOP FLANGES WHEN USING MBR FLASHING CEMENT.

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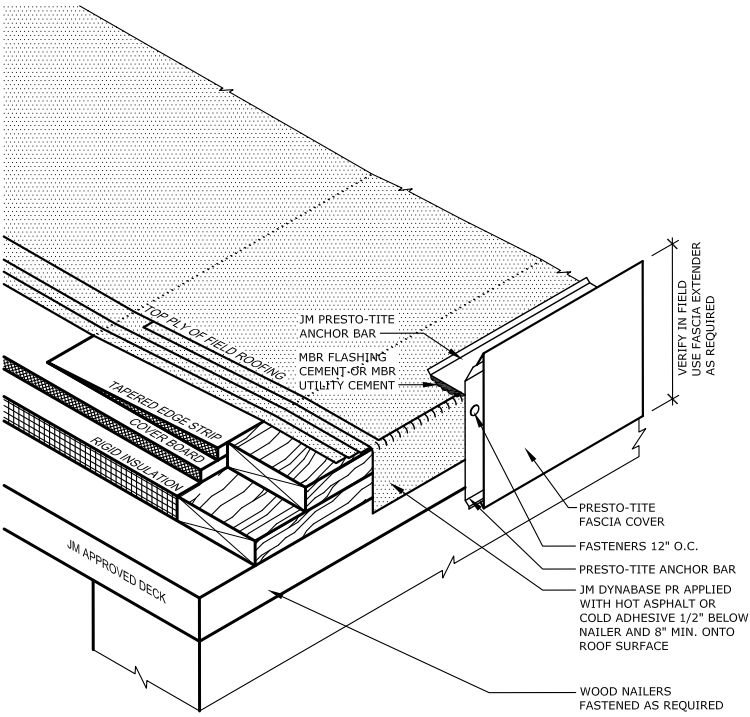
Presto-Tite



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4. PRESTO LOCK GRAVEL STOP SHOULD BE INSTALLED IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS ARE AVAILABLE TO COMPLETE THE INSTALLATION.
5. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

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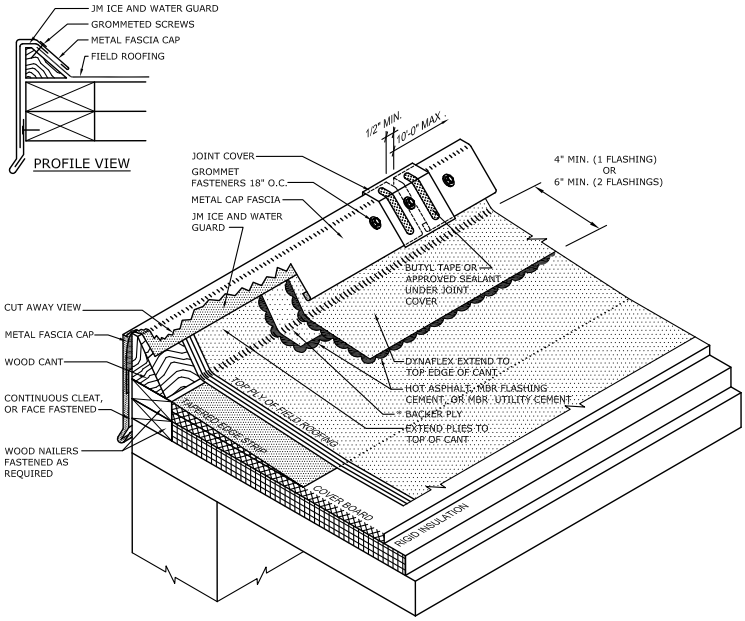
Refer to the Safe Use Instructions and product label prior to using this product.

Raised Metal Cant Fasia



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2. *AN SBS BACKER PLY EXTENDING 2" MIN. FROM TOE OF CANT IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEES.
3. THE TAPERED EDGE STRIP (OPTIONAL), IS USED FOR NON-DRAINING EDGES TO KEEP PONDING WATER OFF THE FLASHING LAPS OR TO TRANSITION SUBSTRATE FLUSH WITH PERIMETER NAILER HEIGHT.
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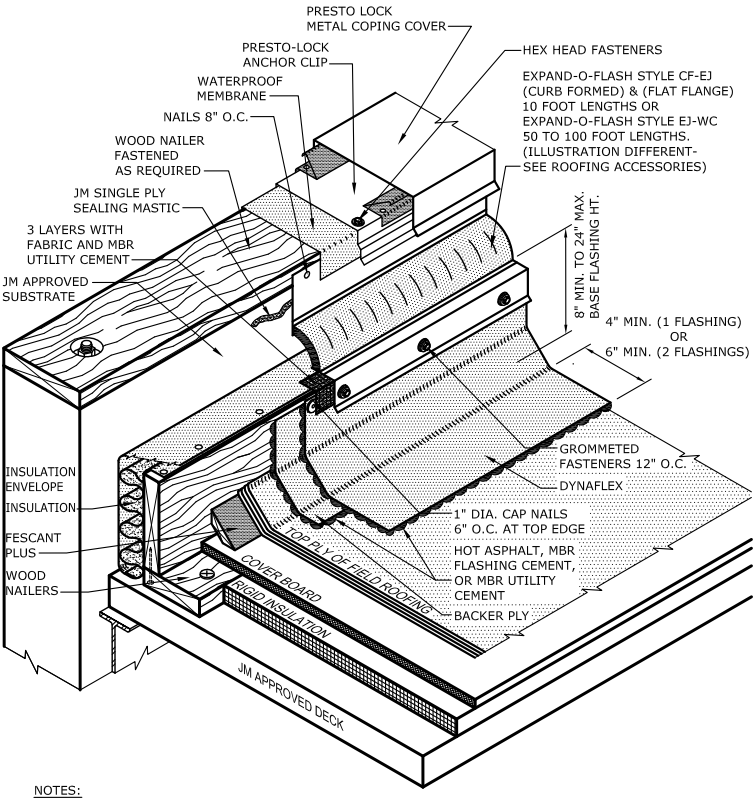
5. SHOP FABRICATED GRAVEL STOP SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA AND/OR NRCA GUIDELINES. LAPS SHALL UTILIZE EITHER APPROVED SPLICE PLATES OR 4" MIN. OVERLAPS WITH APPROVED SEALANT.
6. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

Curb to Wall Expansion Joint



NOTES:

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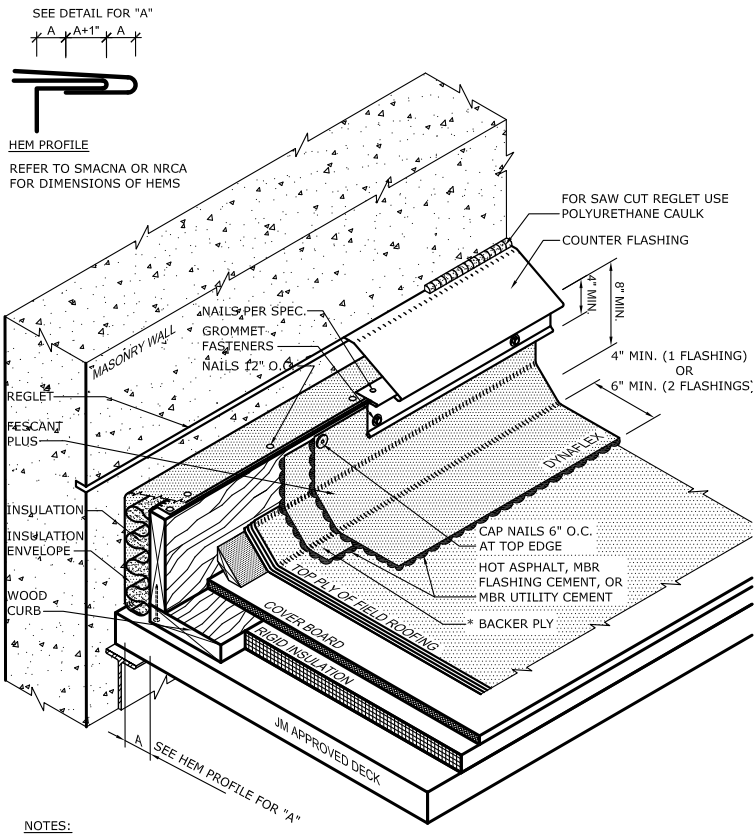
2. *AN SBS BACKER PLY EXTENDING 2" MIN. FROM TOE OF CANT IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEES.
3. INSTALL EXPAND-O-FLASH IN ACCORDANCE WITH APPLICATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED TRANSITIONS, INSIDE/OUTSIDE CORNERS, ETC. ARE AVAILABLE TO COMPLETE THE INSTALLATION.
4. INSTALL PRESTO LOCK COPING IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS AND END CAPS ARE AVAILABLE TO COMPLETE THE INSTALLATION. SHOP FABRICATED COPINGS SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES.
5. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
6. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
7. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL

Metal Expansion Joint (Alternate)



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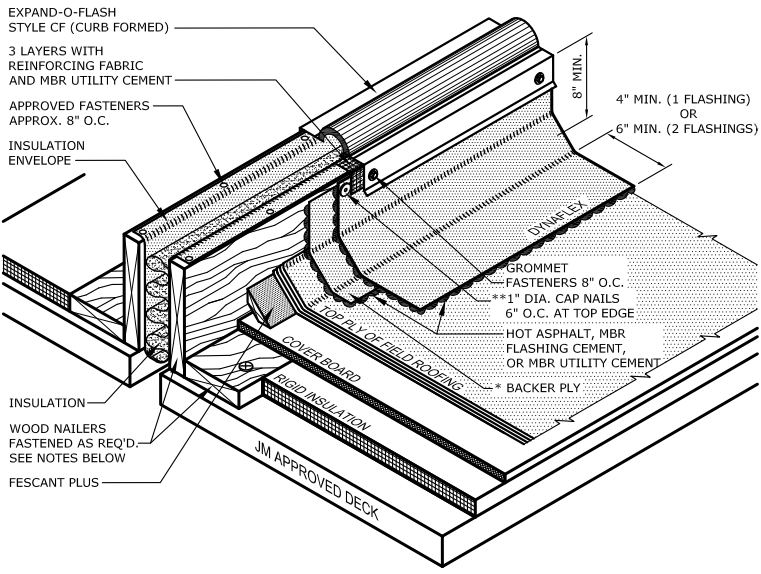
2. *AN SBS BACKER PLY EXTENDING 2" MIN. FROM TOE OF CANT IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEES.
3. SHOP FABRICATED METAL EXPANSION JOINT SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA OR NRCA. LAPS SHALL UTILIZE EITHER APPROVED SPLICE PLATES OR 4" MINIMUM OVERLAPS WITH APPROVED SEALANT.
4. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
5. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
6. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
7. THE VERTICAL WOOD CURB SHOULD BE FASTENED TO THE DECK ONLY.

Roof-to-Roof, Curb Mounted, Expand-O-Flash®



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3. **A TERMINATION BAR FASTENED 6" O.C. IS AN ACCEPTABLE SECUREMENT ALTERNATIVE ALONG THE TOP EDGE OF THE FLASHING.
4. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
5. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
6. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
7. INSTALL EXPAND-O-FLASH IN ACCORDANCE WITH APPLICATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED TRANSITIONS, INSIDE/OUTSIDE CORNERS, ETC. ARE AVAILABLE TO COMPLETE THE INSTALLATION.
8. THE VERTICAL WOOD CURB SHOULD BE FASTENED TO THE DECK ONLY.

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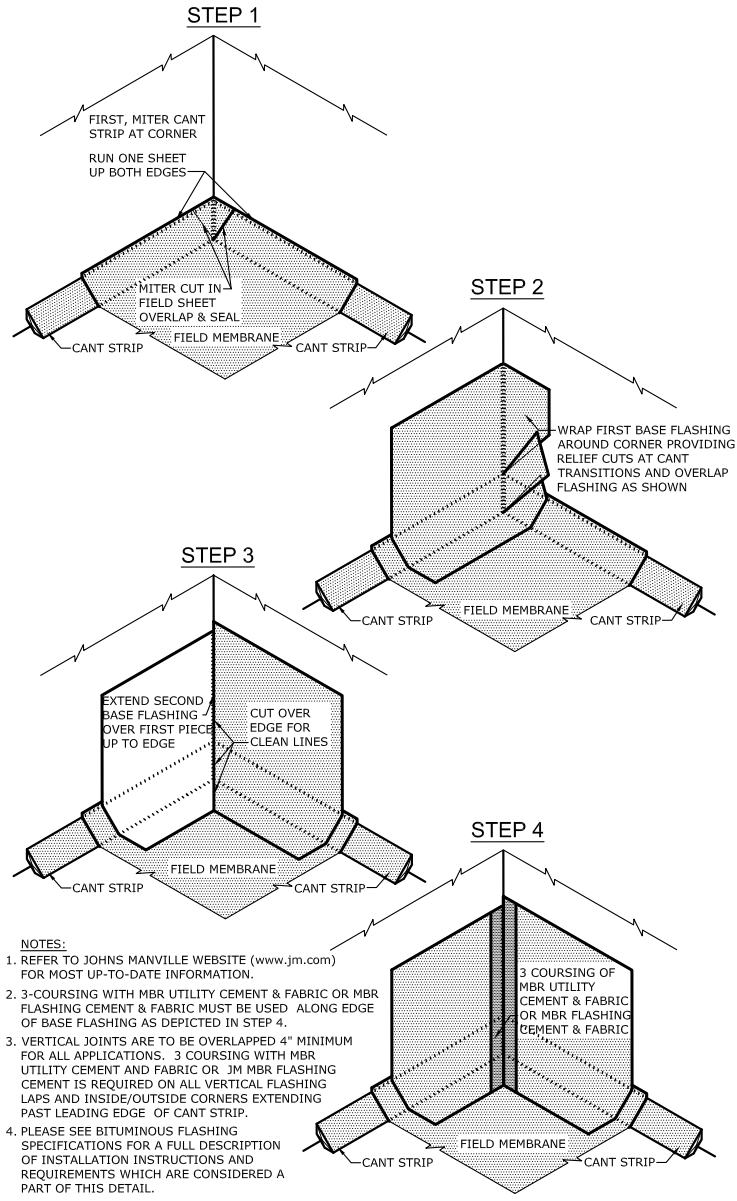
Refer to the Safe Use Instructions and product label prior to using this product.

Inside Corner



NOTES:

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2. 3-COURSING WITH MBR UTILITY CEMENT & FABRIC OR MBR FLASHING CEMENT & FABRIC MUST BE USED ALONG EDGE OF BASE FLASHING AS DEPICTED IN STEP 4.
3. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
4. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

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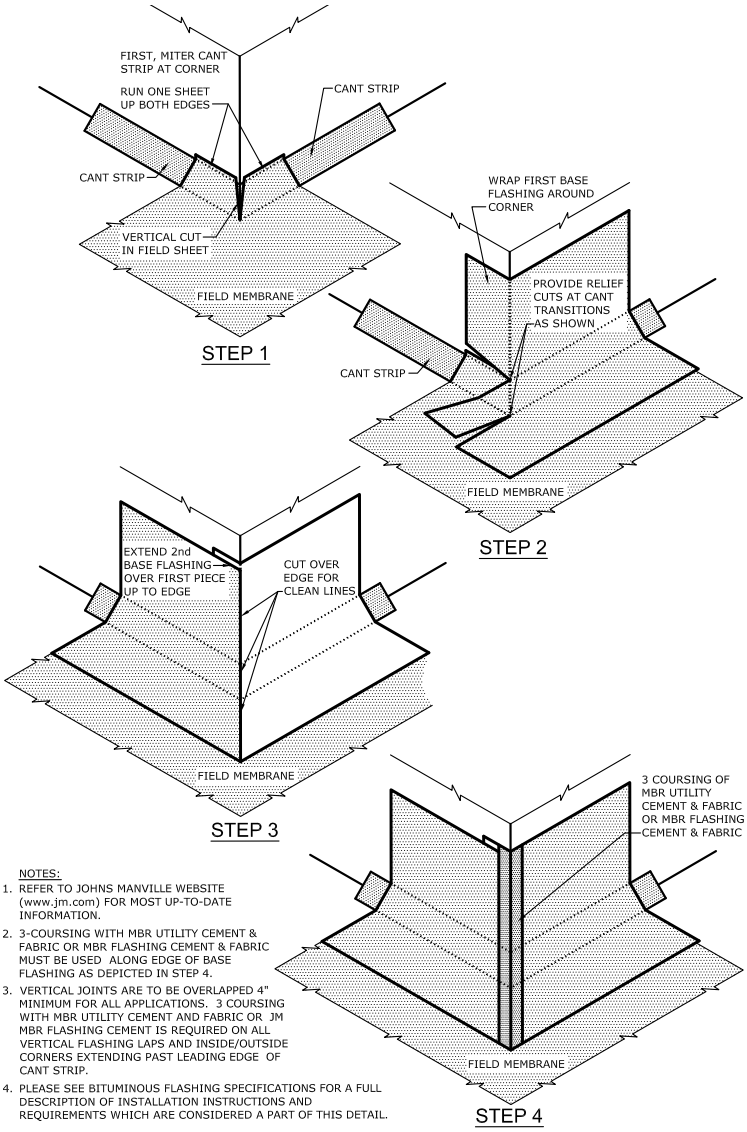
Outside Corner



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4. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

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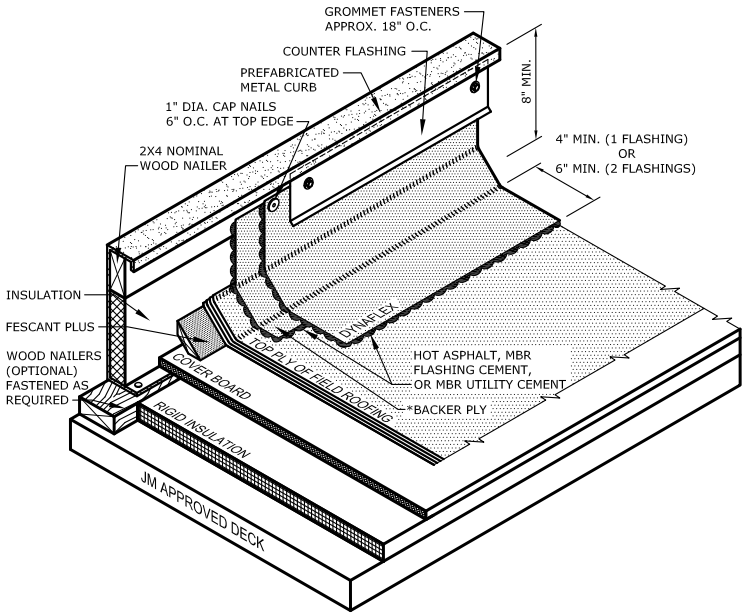
Prefabricated



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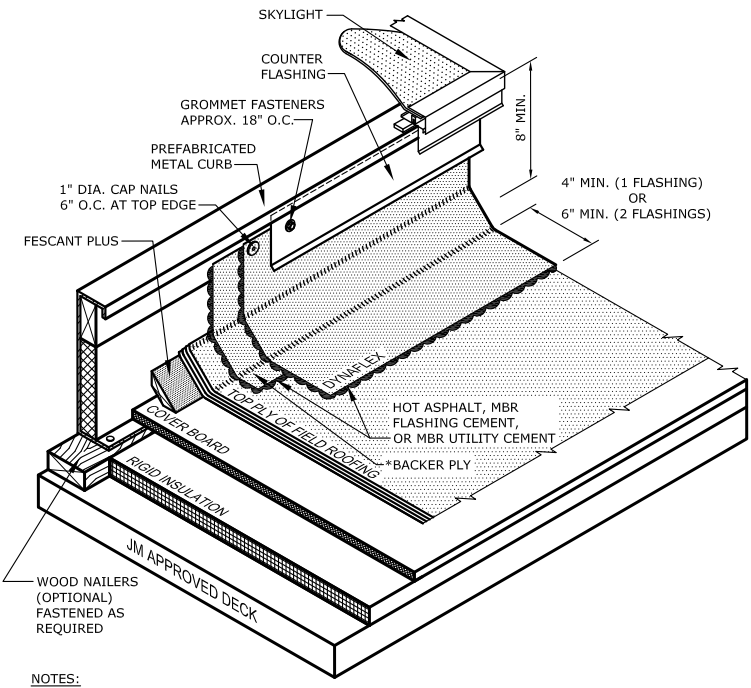
2. *AN SBS BACKER PLY EXTENDING 2" MIN. FROM TOE OF CANT IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEES.
3. HEIGHT OF CURB TO BE ADJUSTED WITH NAILERS. IT IS PREFERRED TO RAISE ROOF HATCH WITH NAILERS TO EXTEND FLASHING HEIGHT.
4. THE VERTICAL WOOD CURB SHOULD BE FASTENED TO THE DECK ONLY.
5. CURB INSULATION MUST BE MECHANICALLY ATTACHED OR ADHERED SOLIDLY TO METAL CURB.
6. CURB MUST BE SET SO AS TO PROVIDE 8" MIN FLASHING HEIGHT.
7. METAL COUNTERFLASHING IS REQUIRED FOR ALL INSTALLATIONS.
8. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
9. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
10. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

HOT & COLD Prefabricated Curb



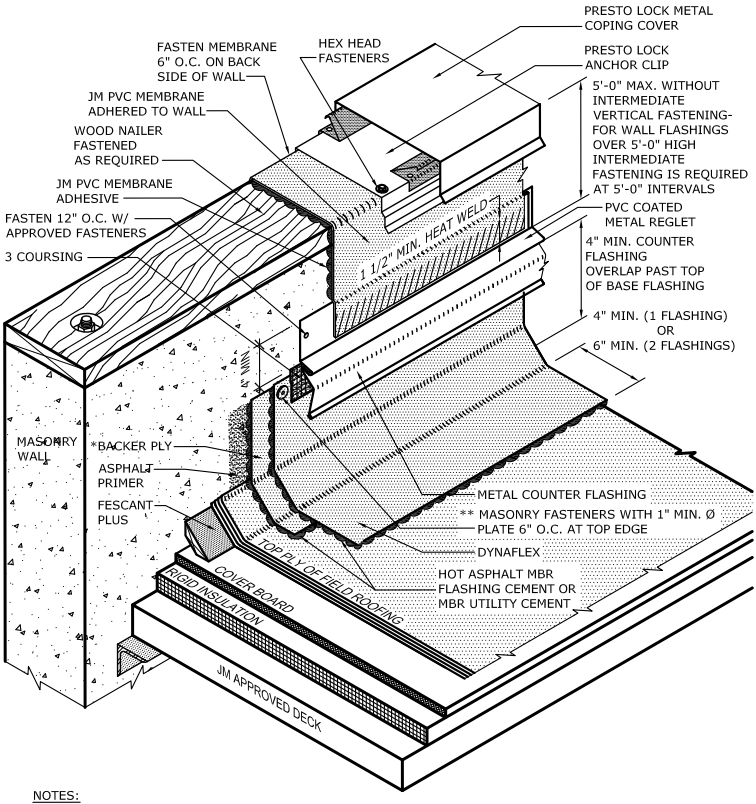
NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. *AN SBS BACKER PLY EXTENDING 2" MIN. FROM TOE OF CANT IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEE.
3. CURB INSULATION MUST BE MECHANICALLY ATTACHED OR ADHERED SOLIDLY TO METAL CURB.
4. HEIGHT OF CURB TO BE ADJUSTED WITH NAILERS. IT IS PREFERRED TO RAISE ROOF HATCH WITH NAILERS TO EXTEND FLASHING HEIGHT.
5. CURB MUST BE SET SO AS TO PROVIDE 8" MIN FLASHING HEIGHT.
6. METAL COUNTERFLASHING IS REQUIRED FOR ALL INSTALLATIONS.
7. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
8. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
9. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

Hot & Cold PVC Wall Covering with Bituminous Base Flashing



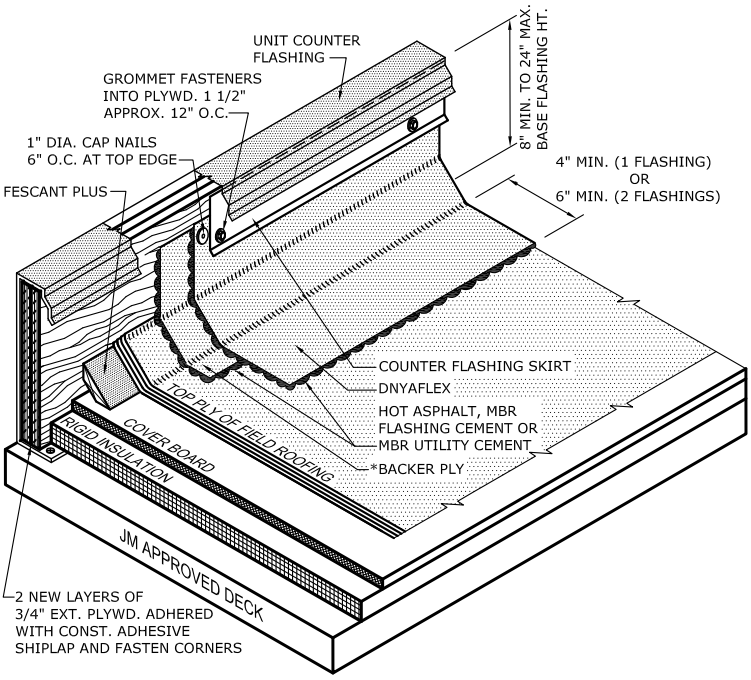
NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. *AN SBS BACKER PLY EXTENDING 2" MIN. FROM TOE OF CANT IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEES.
3. **A TERMINATION BAR FASTENED 6" O.C. IS AN ACCEPTABLE SECUREMENT ALTERNATIVE ALONG THE TOP EDGE OF THE FLASHINGS.
4. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
5. INSTALL PRESTO LOCK COPING IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS AND END CAPS ARE AVAILABLE TO COMPLETE THE INSTALLATION. SHOP FABRICATED COPINGS SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES.
6. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
7. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

Roof Hatch Curb



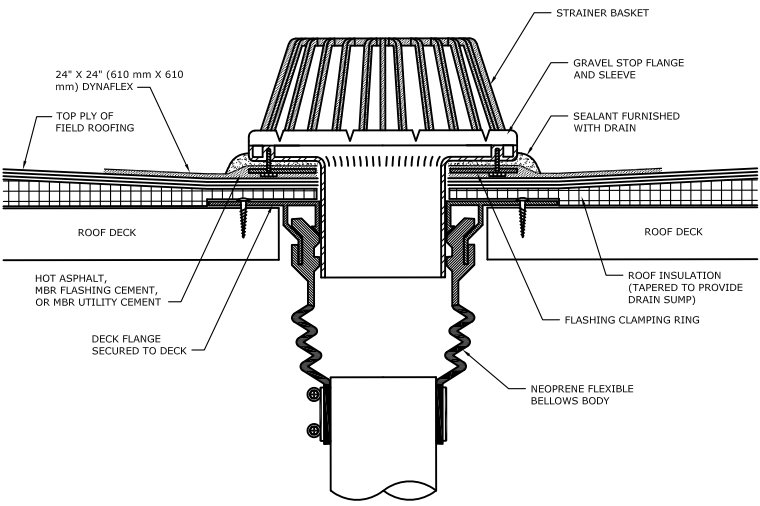
NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. *AN SBS BACKER PLY EXTENDING 2" MIN. FROM TOE OF CANT IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEES.
3. HEIGHT OF CURB TO BE ADJUSTED WITH NAILERS. IT IS PREFERRED TO RAISE ROOF HATCH ONTO NAILERS TO EXTEND FLASHING HEIGHT.
4. CURB INSULATION MUST BE MECHANICALLY ATTACHED OR ADHERED SOLIDLY TO METAL CURB.
5. CURB MUST BE SET SO AS TO PROVIDE 8" MIN FLASHING HEIGHT.
6. METAL COUNTER FLASHING IS REQUIRED FOR ALL INSTALLATIONS.
7. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
8. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
9. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

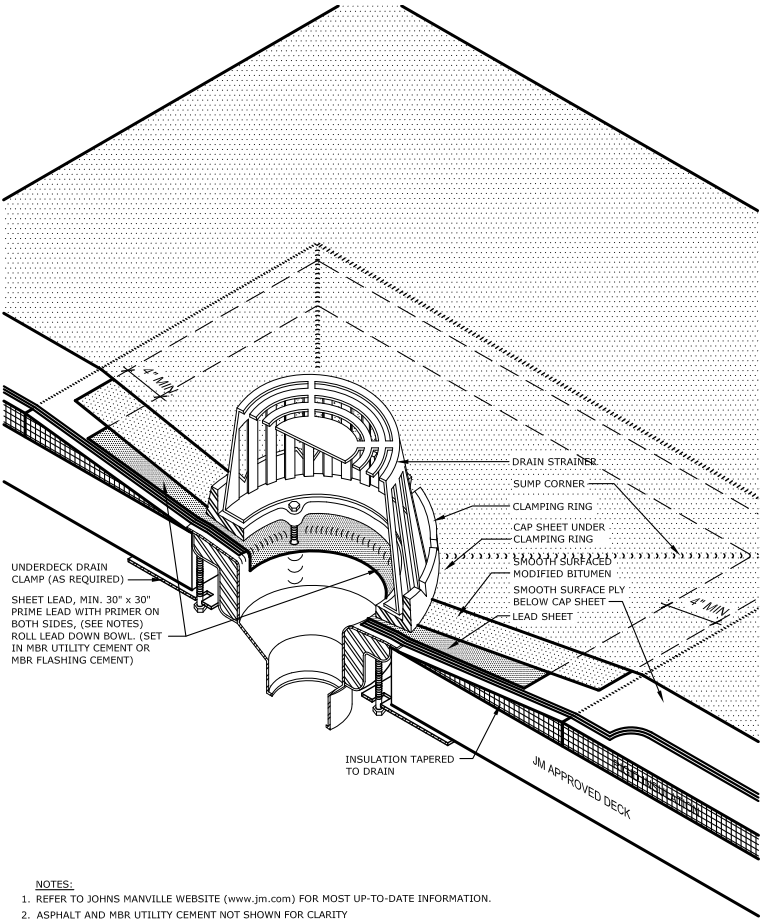
JM Flex-I-Drain®



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. SEE JM FLEX-I-DRAIN INSTALLATION INSTRUCTIONS FOR FURTHER INFORMATION.
3. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
4. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

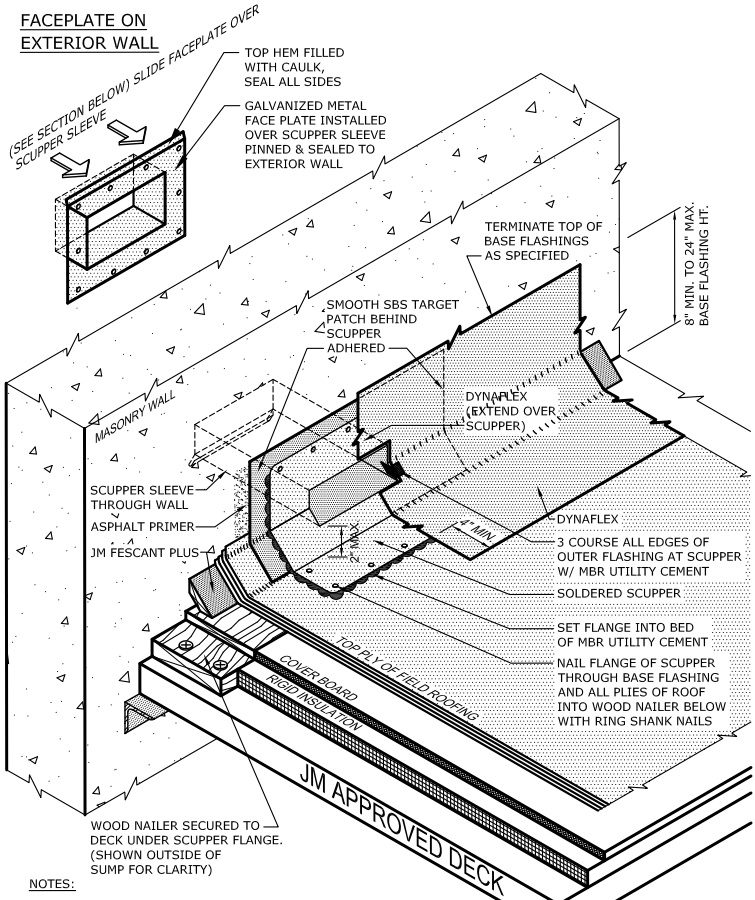
Metal



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. ASPHALT AND MBR UTILITY CEMENT NOT SHOWN FOR CLARITY
3. LEAD FLASHING SHALL BE 2.5 LBS. PER SQUARE FOOT MINIMUM.
4. IT IS ACCEPTABLE TO RUN FIELD MEMBRANE PLY THROUGH DRAIN CENTER AND OMIT TARGET SHEET IF DRAIN SUMP IS SHALLOW ENOUGH TO ALLOW INSTALLATION WITHOUT WRINKLES OR FISHMOUTHS. STEEP SUMPS WILL REQUIRE THE INSTALLATION OF A TARGET PATCH WITHIN DRAINSUMP.
5. USE ASPHALT PRIMER ON LEAD FLANGES WHEN USING MBR UTILITY CEMENT. USE PERMAFLASH PRIMER ON LEAD FLANGES WHEN USING MBR FLASHING CEMENT.
6. EXTEND ALL PLIES TO EDGE OF DRAIN BOWL.
7. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
8. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

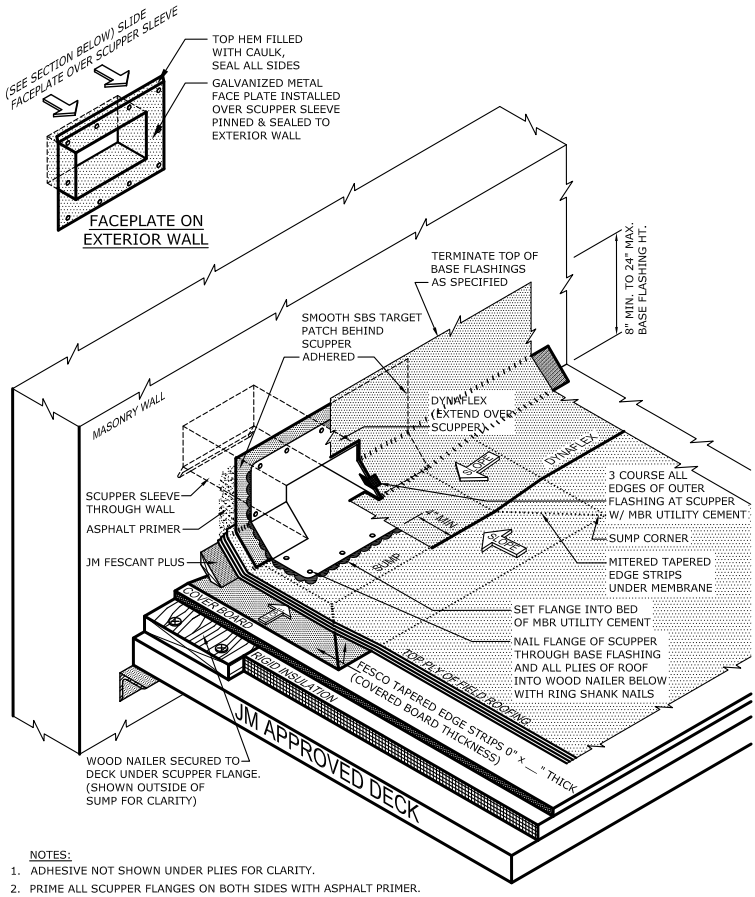
Overflow Metal Scupper



NOTES:

1. ADHESIVE NOT SHOWN UNDER PLIES FOR CLARITY.
2. SCUPPER FACEPLATE ON EXTERIOR SHOWN AS AN EXAMPLE.
3. PRIME ALL SCUPPER FLANGES ON BOTH SIDES WITH ASPHALT PRIMER.
4. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
5. ALL SCUPPER FLANGES SHALL BE 4" WIDE. PLEASE REFER TO LOCAL CODES AND SMACNA FOR METAL SCUPPER AND CONDUCTOR HEAD FABRICATION REQUIREMENTS.
6. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
7. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

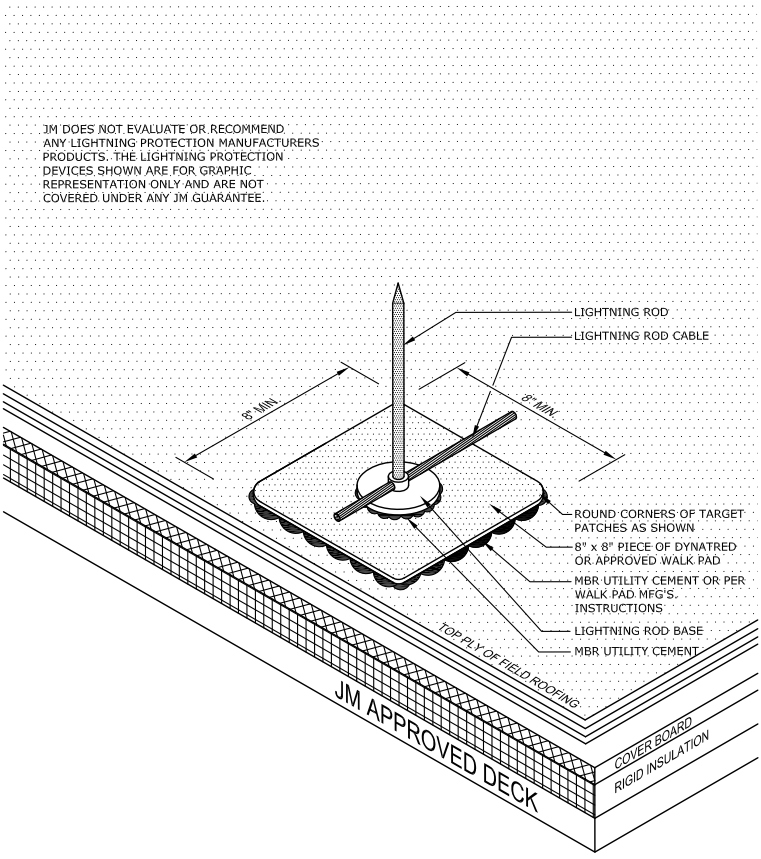
Primary Metal Scupper In Sump



NOTES:

1. ADHESIVE NOT SHOWN UNDER PLIES FOR CLARITY.
2. PRIME ALL SCUPPER FLANGES ON BOTH SIDES WITH ASPHALT PRIMER.
3. ALL SCUPPER FLANGES SHALL BE 4" WIDE. PLEASE REFER TO LOCAL CODES AND SMACNA FOR METAL SCUPPER AND CONDUCTOR HEAD FABRICATION REQUIREMENTS.
4. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
5. SCUPPER FACEPLATE ON EXTERIOR SHOWN AS AN EXAMPLE.
6. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
7. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

Lightning Rod, Surface Mount



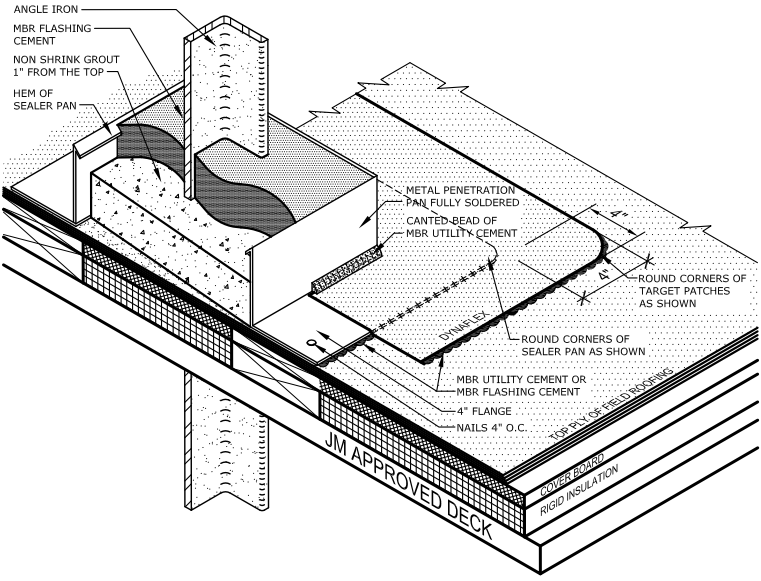
NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
3. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
4. A SACRIFICIAL LAYER OF MEMBRANE IS RECOMMENDED UNDER THE LENGTH OF GROUND WIRE(S) TO PREVENT CONTACT WITH ROOFING MATERIAL.

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

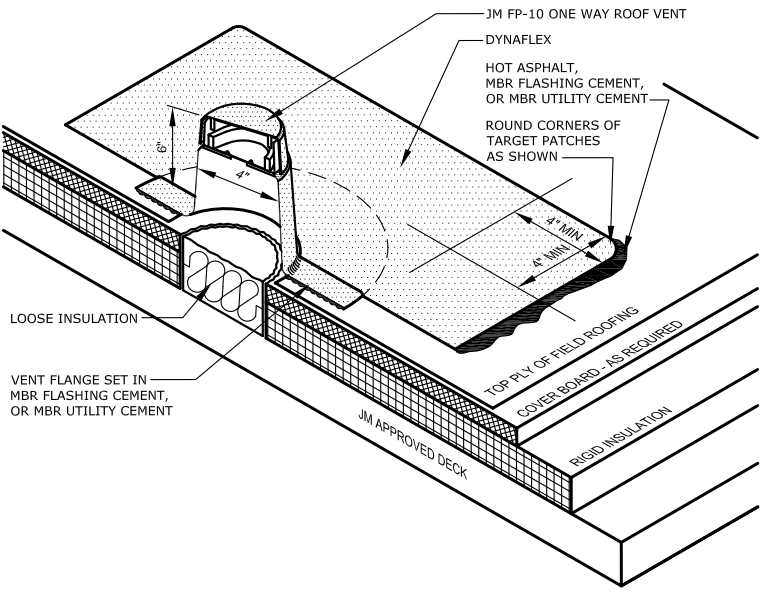
Penetration Pocket



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. MAINTAIN 2" MIN. CLEARANCE FROM PENETRATION TO EDGE OF METAL PAN.
3. ROUND FLANGE CORNERS ON METAL PAN.
4. PRIME INSIDE OF METAL PAN WITH PERMAFLASH PRIMER WHERE MBR FLASHING CEMENT WILL BE PLACED.
5. PENETRATION PANS ARE CONSIDERED MAINTENANCE ITEMS AND ARE NOT GUARANTEED BY JOHNS MANVILLE.
6. USE ASPHALT PRIMER ON FLANGES WHEN USING MBR UTILITY CEMENT. USE PERMAFLASH PRIMER ON FLANGES WHEN USING MBR FLASHING CEMENT.
7. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
8. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

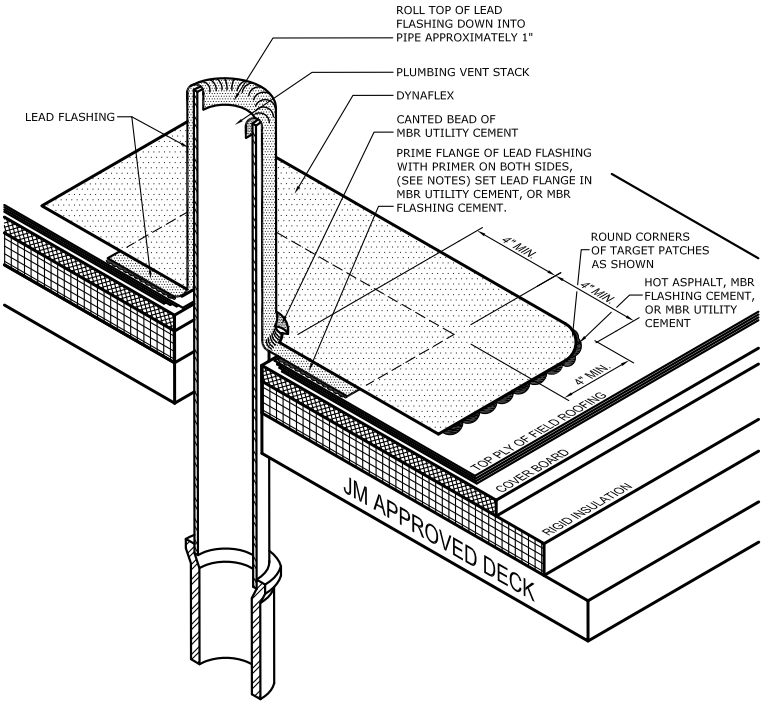
FP-10 One Way® Roof Vent



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. CUT A HOLE IN MEMBRANE PRIOR TO INSTALLATION. REMOVE ALL OR PART OF THE INSULATION TO FACILITATE VENTING. LOOSE INSULATION CAN REMAIN TO MAINTAIN R VALUE AND PREVENT CONDENSATION.
3. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
4. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

Plumbing, Lead



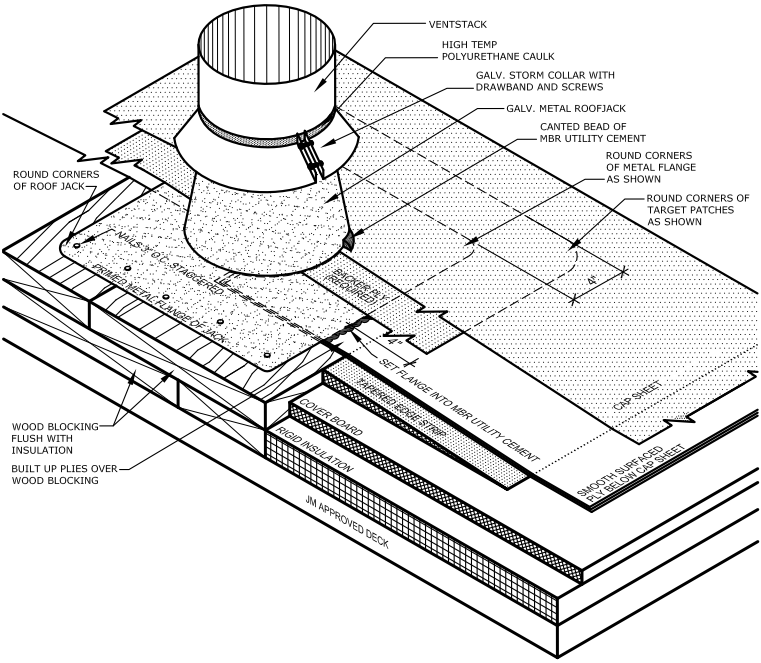
NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. LEAD FLASHING SHALL BE 2.5 LBS. PER SQUARE FOOT MINIMUM.
3. IF LEAD FLASHING IS NOT DESIRED OR PIPE IS TOO TALL, SEE PERMAFLASH DETAIL PMF-6 & PMF-6S FOR A SUITABLE ALTERNATIVE.
4. USE ASPHALT PRIMER ON LEAD FLANGES WHEN USING MBR UTILITY CEMENT.
5. USE PERMAFLASH PRIMER ON LEAD FLANGES WHEN USING MBR FLASHING CEMENT.
6. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
7. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

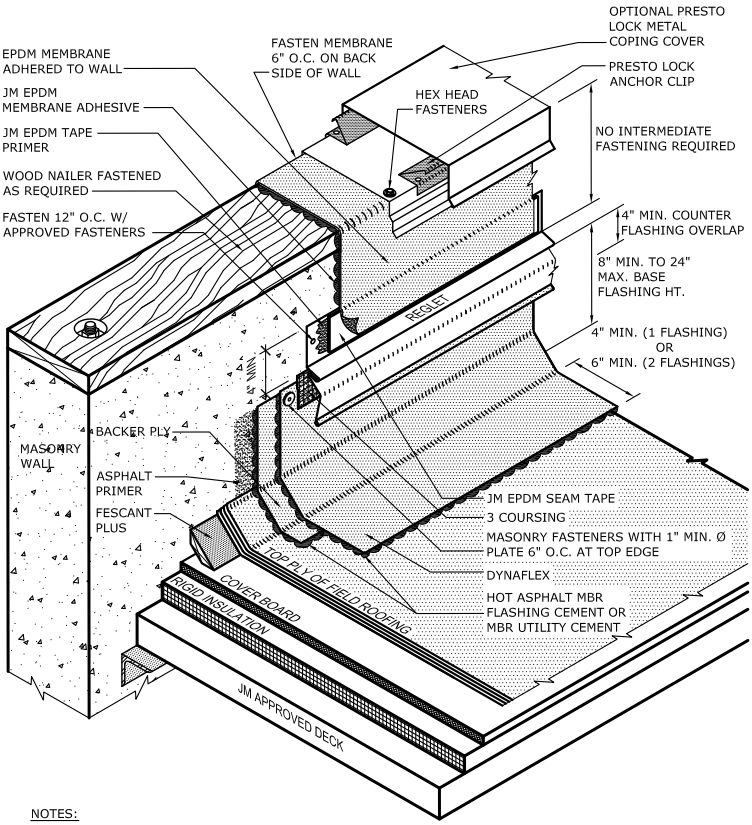
Vent Stack (Warm)



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
3. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
4. SEAL SEAMS OF ROOF JACK.
5. DISTANCE BETWEEN TOP OF ROOF JACK AND VENT STACK SHOULD BE A MINIMUM OF 1".
6. THE TAPERED EDGE STRIP IS OPTIONAL. THE NAILERS AND ROOF SUBSTRATE MUST BE FLUSH.
7. FLASHING ROOF JACK WITH A TARGET PATCH OVER CAP SHEET IS ACCEPTABLE. SEE DFE-9 FOR TYPICAL FLASHING INSTALLATION.

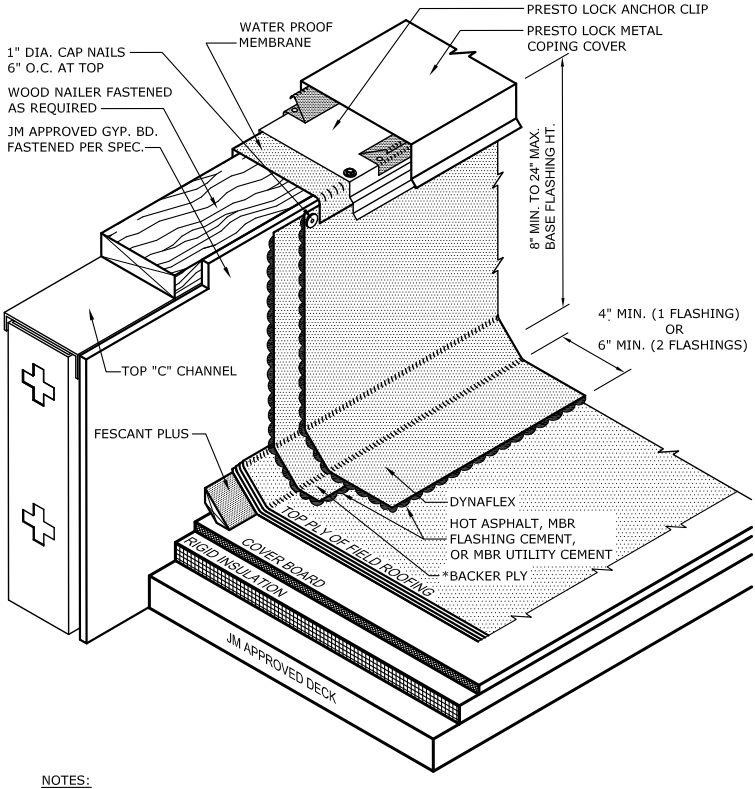
EPDM Wall Covering with Bituminous Base Flashing



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. *AN SBS BACKER PLY EXTENDING 2" MIN. FROM TOE OF CANT IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEES.
3. INSTALL PRESTO LOCK COPING IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS AND END CAPS ARE AVAILABLE TO COMPLETE THE INSTALLATION. SHOP FABRICATED COPINGS SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES.
4. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS AND THE JM EPDM APPLICATION GUIDE FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
5. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
6. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
7. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

Gypsum Wall on Metal Studs < 24" w/Coping



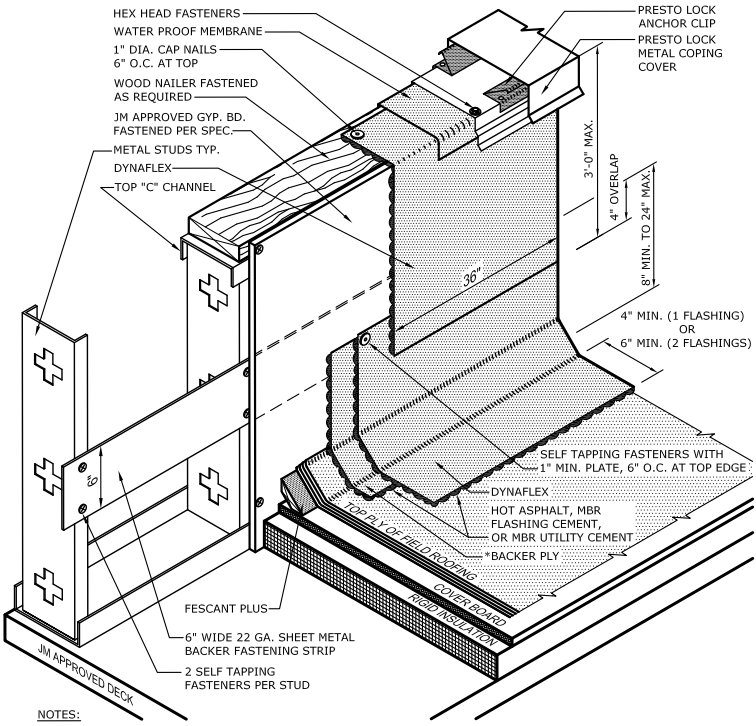
NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. *AN SBS BACKER PLY EXTENDING 2" MIN. FROM TOE OF CANT IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEES.
3. **A TERMINATION BAR FASTENED 6" O.C. IS AN ACCEPTABLE SECUREMENT ALTERNATIVE ALONG THE TOP EDGE OF THE FLASHING.
4. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
5. INSTALL PRESTO LOCK COPING IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS AND END CAPS ARE AVAILABLE TO COMPLETE THE INSTALLATION. SHOP FABRICATED COPINGS SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES.
6. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
7. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
8. A SUFFICIENT BACKER FASTENING STRIP MUST BE INSTALLED BEHIND SUBSTRATES DIRECTLY TO STUDS FOR INSTALLATION OF TERMINATION BARS AND FLASHINGS WHEN SUBSTRATES WILL NOT SUPPORT A PROPER, SECURE INSTALLATION.

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

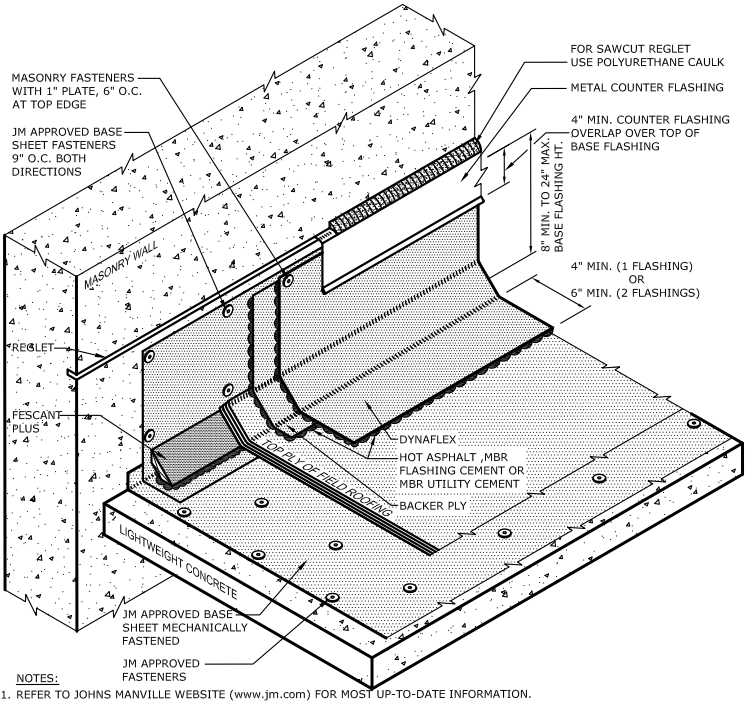
Gypsum Wall on Metal Studs > 24" w/Coping



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. *AN SBS BACKER PLY EXTENDING 2" MIN. FROM TOE OF CANT IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEES.
3. **A TERMINATION BAR FASTENED 6" O.C. IS AN ACCEPTABLE SECUREMENT ALTERNATIVE ALONG THE TOP EDGE OF THE FLASHING.
4. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
5. INSTALL PRESTO LOCK COPING IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS AND END CAPS ARE AVAILABLE TO COMPLETE THE INSTALLATION. SHOP FABRICATED COPINGS SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES.
6. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
7. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
8. A SUFFICIENT BACKER FASTENING STRIP MUST BE INSTALLED BEHIND SUBSTRATES DIRECTLY TO STUDS FOR INSTALLATION OF TERMINATION BARS AND FLASHINGS WHEN SUBSTRATES WILL NOT SUPPORT A PROPER, SECURE INSTALLATION.

Base Flashing for Venting Lightweight Concrete



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. *AN SBS BACKER PLY EXTENDING 2" MIN. FROM TOE OF CANT IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEES.
3. EXTEND VENTSULATION ONE INCH MIN. PAST TOP OF BASEFLASHING TO PROMOTE AIRFLOW.
4. METAL COUNTER FLASHING IS RECOMMENDED FOR ALL INSTALLATIONS AND IS REQUIRED FOR ALL GUARANTEES 15 YEARS OR LONGER. A 3 COURSING OF PERMAFLASH MAY BE USED TO SEAL THE TOP EDGE OF THE FLASHING ON 10 YEAR NDL'S IN LIEU OF METAL COUNTER FLASHING.
5. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
6. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
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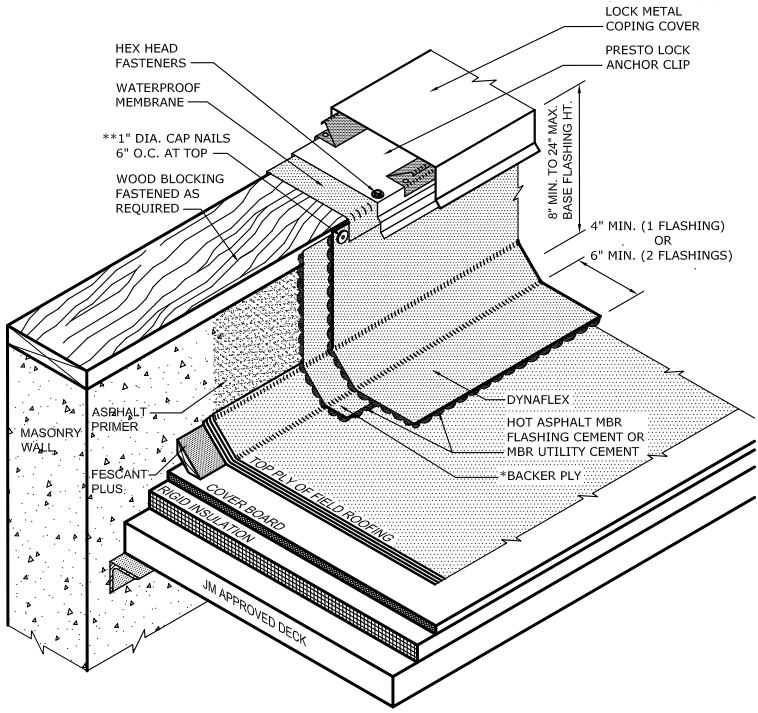
Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

Masonry Wall < 24" with Coping



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2. *AN SBS BACKER PLY EXTENDING 2" MIN. FROM TOE OF CANT IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEES.
3. **A TERMINATION BAR FASTENED 6" O.C. IS AN ACCEPTABLE SECUREMENT ALTERNATIVE ALONG THE TOP EDGE OF THE FLASHING.
4. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
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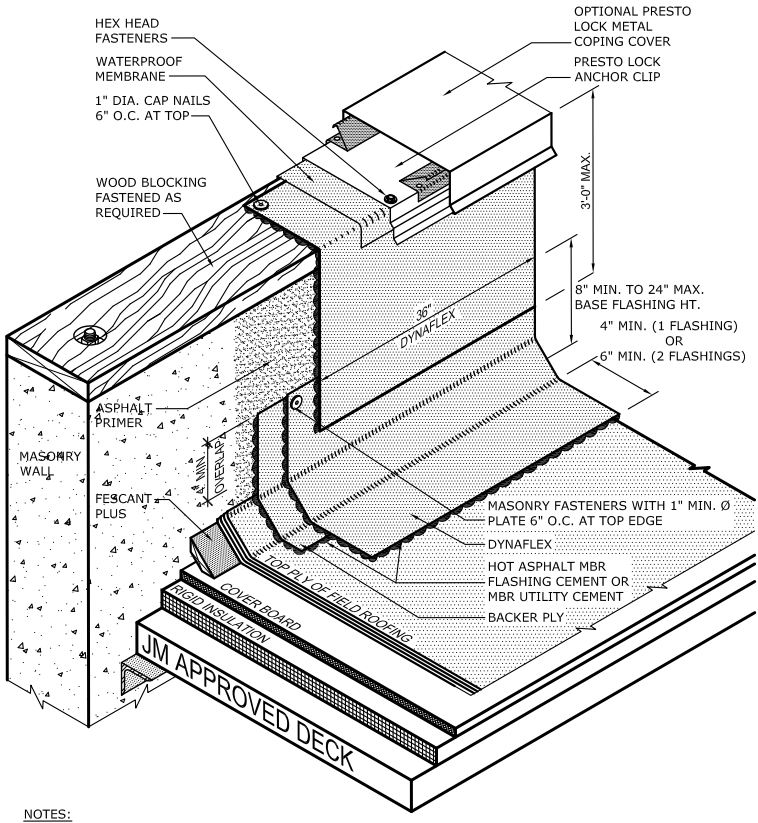
6. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
7. INSTALL PRESTO LOCK COPING IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS AND END CAPS ARE AVAILABLE TO COMPLETE THE INSTALLATION. SHOP FABRICATED COPINGS SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES.

Masonry Wall > 24" with Coping



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2. *AN SBS BACKER PLY EXTENDING 2" MIN. FROM TOE OF CANT IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEE.
3. SHOP FABRICATED METAL EXPANSION JOINT SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA OR NRCA. LAPS SHALL UTILIZE EITHER APPROVED SPLICE PLATES OR 4" MINIMUM OVERLAPS WITH APPROVED SEALANT.
4. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
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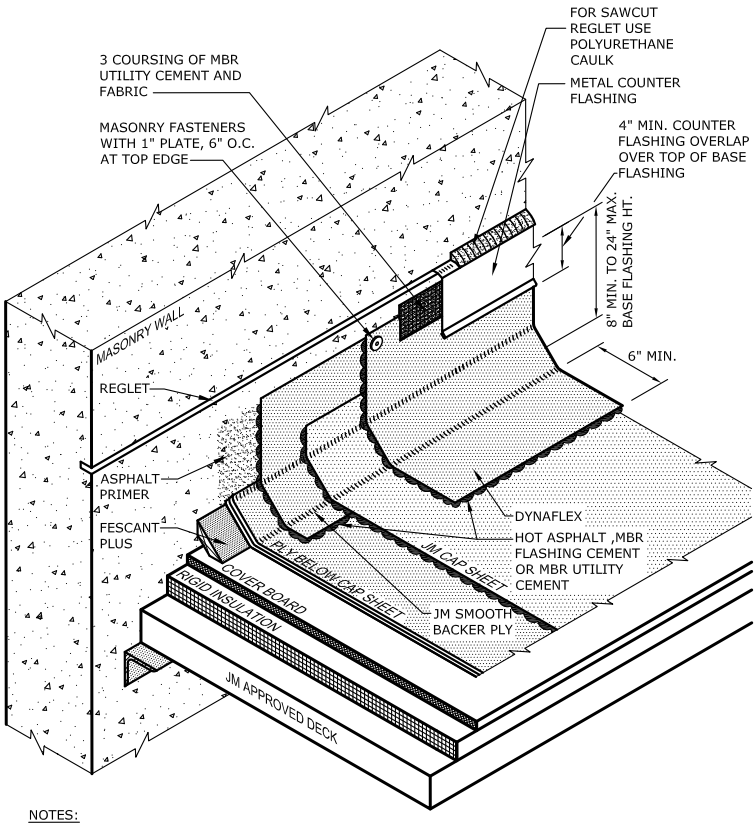
Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

Optional Two Ply Base Flashing for Load-Bearing Masonry Wall w/ Counter Flashing



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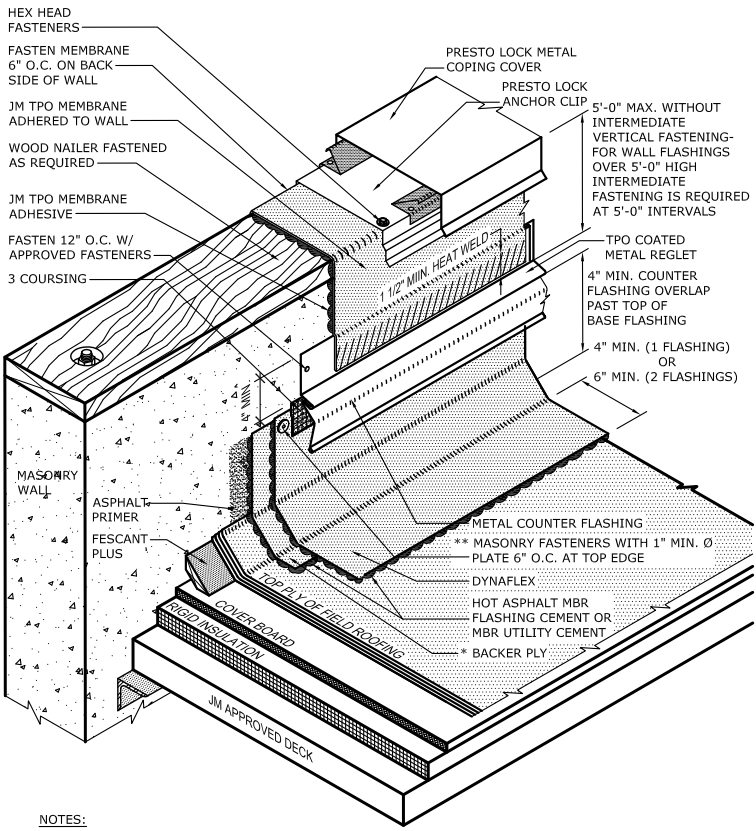
6. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

TPO Wall Covering with Bituminous Base Flashing



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5. INSTALL PRESTO LOCK COPING IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS AND END CAPS ARE AVAILABLE TO COMPLETE THE INSTALLATION. SHOP FABRICATED COPINGS SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES.
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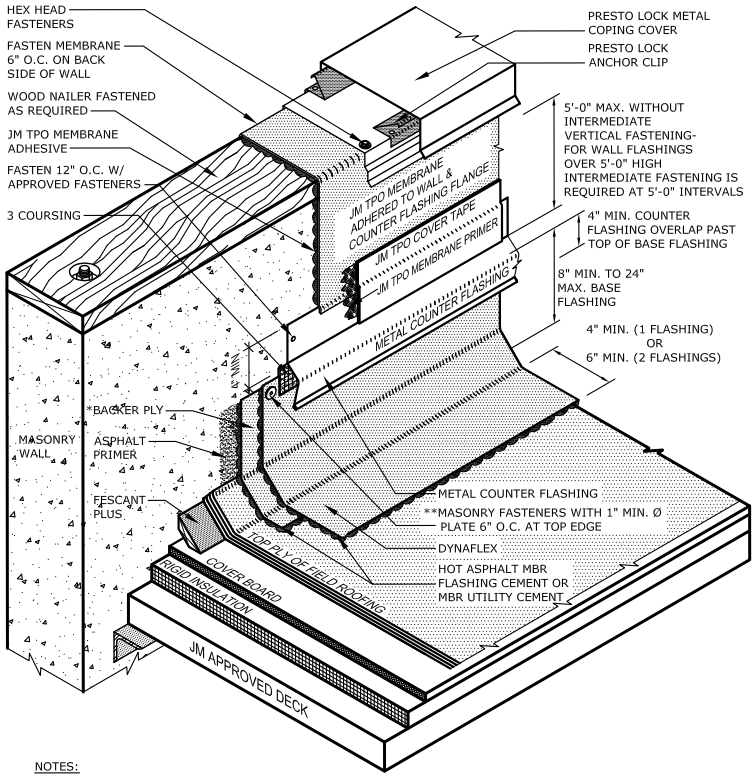
7. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

TPO Wall Covering with Bituminous Base Flashing (Alternate)



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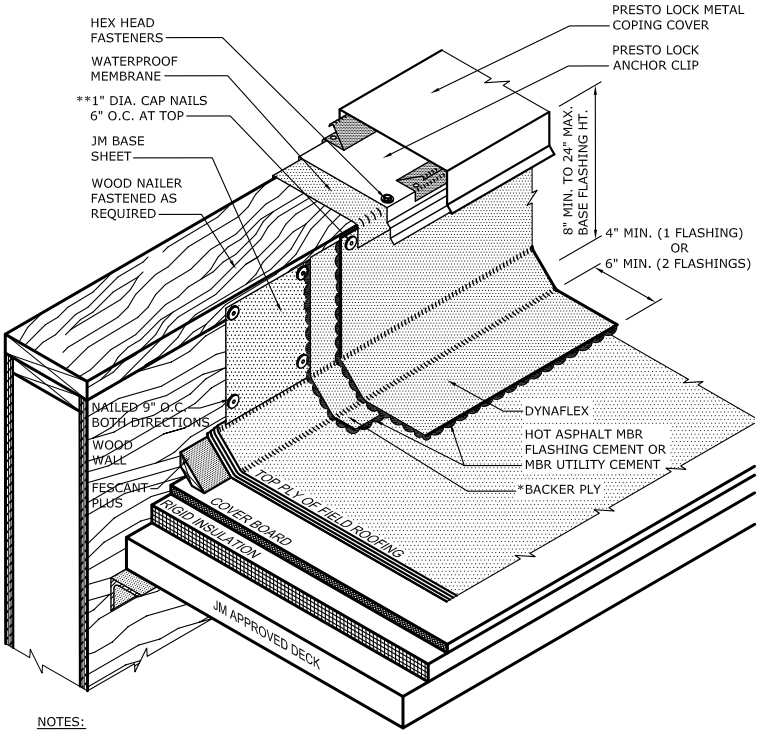
7. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

Wood Wall < 24" with Coping



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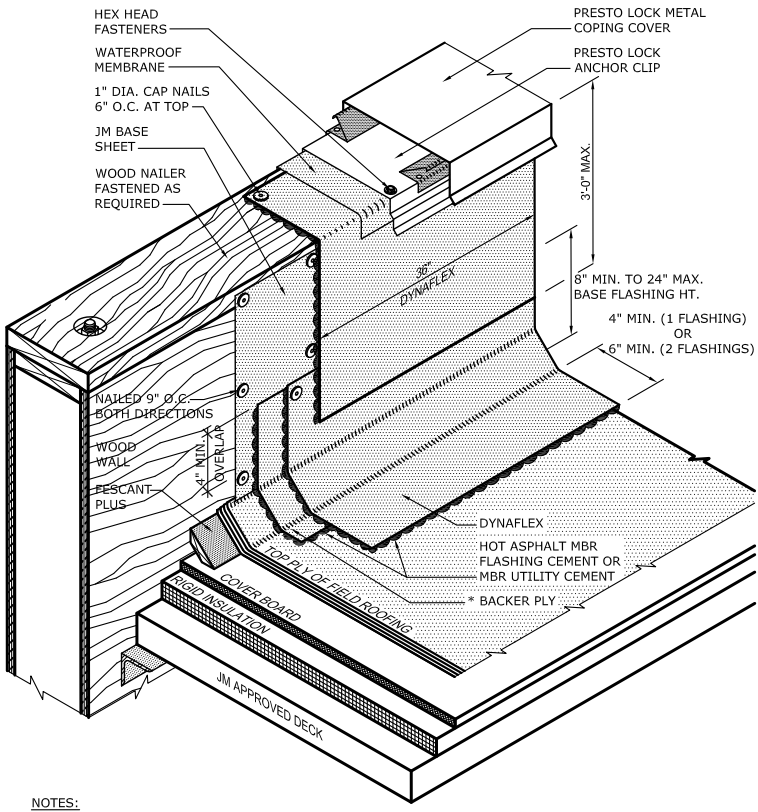
Wood Wall > 24" with Coping



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PermaFlash™ Bituminous Flashing System Penetration Flashing Application Guide

Ensure all surfaces are clean, dry and free of any loose debris, dust, dirt and rust before coating.

1. **Items you will need:**
   - MBR® Flashing Cement Cartridges
   - Applicator (Gun), Nozzle and Restrictor
   - PermaFlash Primer
   - PermaFlash Scrim
   - Scissors
   - Masking Tape
   - Brush or Roller
   - Tape Measure or Ruler
   - Clean Rag or Spray Bottle for Applying Primer
   - Xylene* or other Cleaner
   - Rubber Gloves

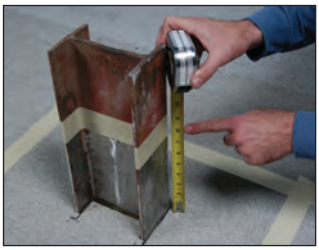
* Caution: Xylene may cause skin, eye and respiratory irritation. Review the manufacturer's Safety Data Sheet for safety and personal protective equipment information for the cleaning product used.

2. Where necessary, prepare surfaces using a grinder or other suitable means.

3. Prime the penetration with a light coating of PermaFlash Primer. A rag or spray bottle works best; a brush may apply too liberally.

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.



4. Use tape to mask off the top of the detail 8" (203 mm) above the roof and an 8" (203 mm) perimeter surrounding the detail.

5. Precut the first piece of PermaFlash Scrim. Start 6" (152 mm) above the roof surface and extend fingers 6" (152 mm) onto the roof surface. PermaFlash Scrim is 12" (305 mm) wide for ease of application.

6. Precut the second piece of PermaFlash Scrim to serve as a target piece laying flat on the roof surrounding the penetration. Extend a minimum of 6" (152 mm) on the roof surface in all directions. (This will be 2" (51 mm) inside the masked off perimeter.)

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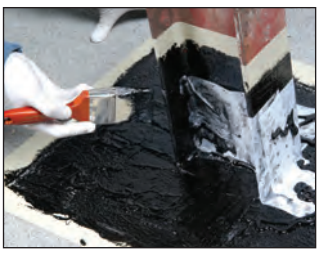
Refer to the Safe Use Instructions and product label prior to using this product.

7. Coat the masked off area with a very thin coating [30 mil (0.76 mm)] of MBR Flashing Cement. A brush works best.

8. Embed the first piece of PermaFlash Scrim.



9. Apply a light coating of MBR Flashing Cement.

10. Embed the second piece of PermaFlash Scrim.

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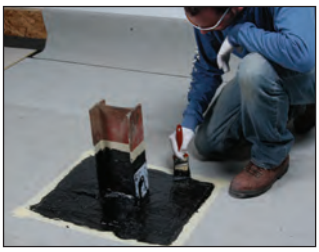
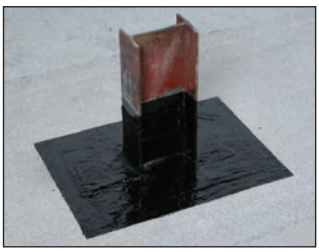


11. Re-coat the entire masked off area with a thicker [60 mil (1.52 mm)] coating of MBR Flashing Cement.

12. After drying, remove masking tape.



Completed Detail. ½ cartridge of MBR Flashing Cement used to complete detail.

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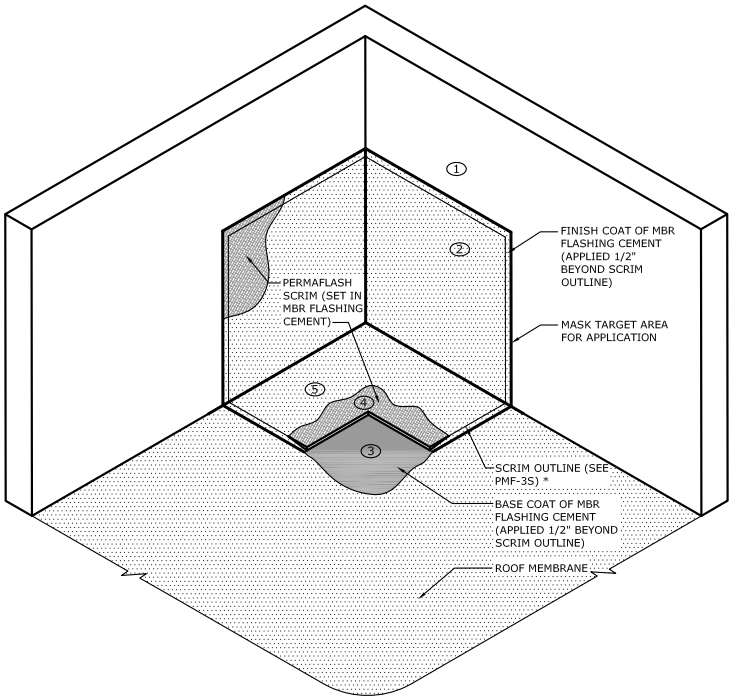
PermaFlash® Inside Corner Detail



NOTES:

A. USE THIS DETAIL IN CONJUNCTION WITH THE PERMAFLASH INSIDE CORNER SCRIM LAYOUT, DRAWING PMF-3S.

B. ENSURE TOTAL TARGET AREA OF FLASHING IS NO LESS THAN 16" x 16".

C. AN EXTRA COAT OF MBR FLASHING CEMENT MUST BE PLACED BETWEEN SCRIM LAYERS WHERE THEY OVERLAP TO ENSURE A PROPER BOND.

D. REFER TO PERMAFLASH APPLICATION INSTRUCTIONS FOR GENERAL GUIDELINES REGARDING THE PERMAFLASH SYSTEM.

E. JM RECOMMENDS DIMENSION "x" TO BE AT LEAST 8", BUT VARIATION IS ALLOWED FOR LOWER THRESHOLDS.

* SEE PMF-3S IF DETAIL UTILIZES CANT STRIP

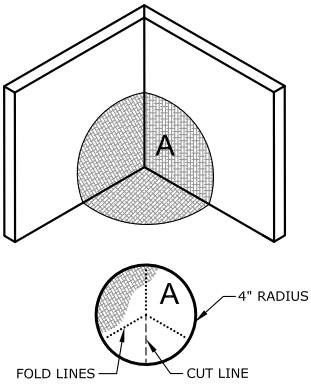
ASSEMBLY

1. MASK TARGET AREA ON ROOF MEMBRANE AND PENETRATION.
2. CLEAN & PRIME ALL NON-POROUS AREAS (METAL, ETC...) REQUIRING LIQUID MEMBRANE WITH PERMAFLASH PRIMER.
3. APPLY 30 MIL. BASE COAT OF MBR FLASHING CEMENT WITHIN TARGET AREA. (A BRUSH WORKS BEST).
4. EMBED SCRIM(S) INTO WET BASE COAT OF MBR FLASHING CEMENT, 1/2" SHORT OF TARGET AREA.
5. IMMEDIATELY AFTER EMBEDDING THE SCRIM, APPLY 60 MIL. FINISH COAT OF MBR FLASHING CEMENT OVER SCRIM AND 1/2" BEYOND, ENSURING SCRIM IS COMPLETELY EMBEDDED.
6. REMOVE MASKING TAPE IMMEDIATELY AFTER APPLICATION OF FINISH COAT.

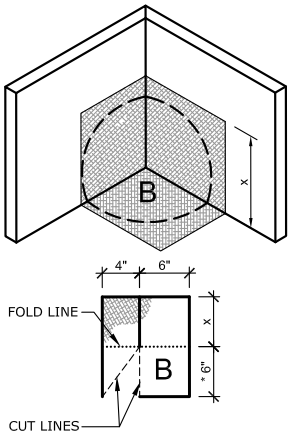
Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

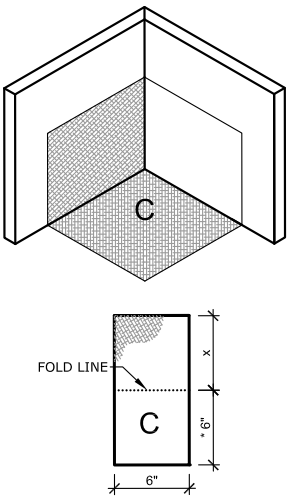
PermaFlash® Inside Corner Scrim Detail



A CORNER REINFORCEMENT
STEP A



B WALL TRANSITION
STEP B



C WALL REINFOCEMENT
STEP C

NOTES:

A. USE SCRIM LAYOUT IN CONJUNCTION WITH THE PERMAFLASH INSIDE CORNER DETAIL DRAWING, PMF-3.

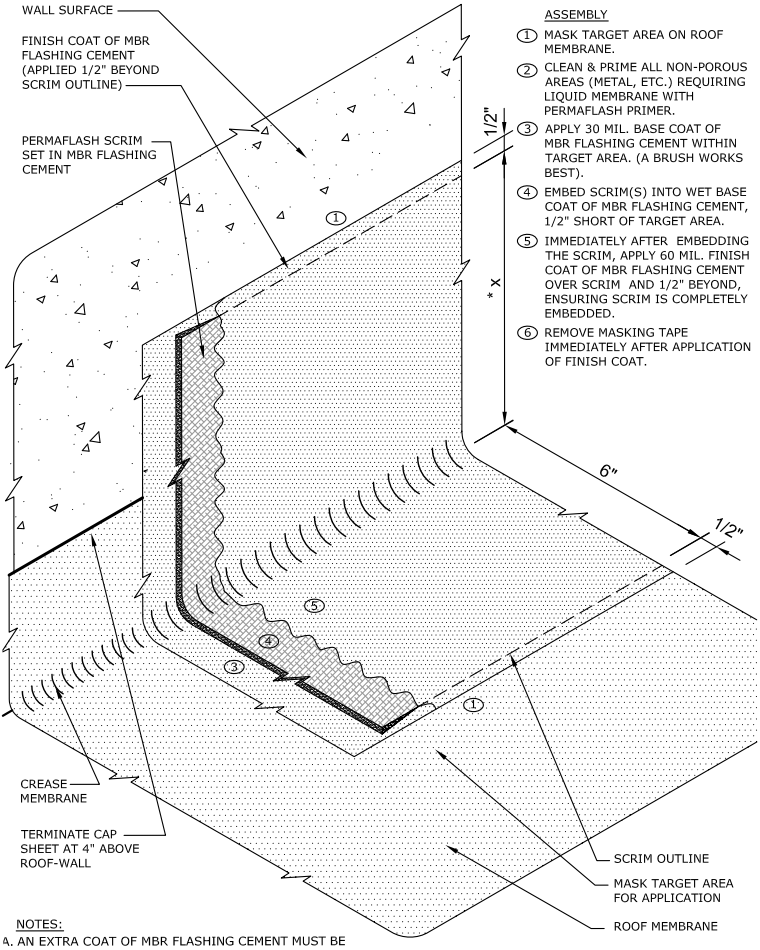
B. ALL FOLD LINES REPRESENTED AS ····· ALL CUT LINES REPRESENTED AS – – – – –

C. AN EXTRA COAT OF MBR FLASHING CEMENT MUST BE PLACED BETWEEN SCRIM LAYERS WHERE THEY OVERLAP TO ENSURE A PROPER BOND.

D. JM RECOMMENDS DIMENSION "x" TO BE AT LEAST 6", BUT VARIATION IS ALLOWED FOR LOWER THRESHOLDS.

* ADD 3 ½" IF DETAIL UTILIZES CANT STRIP

PermaFlash® Standard Base Flashing Detail



ASSEMBLY

1. MASK TARGET AREA ON ROOF MEMBRANE.
2. CLEAN & PRIME ALL NON-POROUS AREAS (METAL, ETC.) REQUIRING LIQUID MEMBRANE WITH PERMAFLASH PRIMER.
3. APPLY 30 MIL. BASE COAT OF MBR FLASHING CEMENT WITHIN TARGET AREA. (A BRUSH WORKS BEST).
4. EMBED SCRIM(S) INTO WET BASE COAT OF MBR FLASHING CEMENT, 1/2" SHORT OF TARGET AREA.
5. IMMEDIATELY AFTER EMBEDDING THE SCRIM, APPLY 60 MIL. FINISH COAT OF MBR FLASHING CEMENT OVER SCRIM AND 1/2" BEYOND, ENSURING SCRIM IS COMPLETELY EMBEDDED.
6. REMOVE MASKING TAPE IMMEDIATELY AFTER APPLICATION OF FINISH COAT.

NOTES:

A. AN EXTRA COAT OF MBR FLASHING CEMENT MUST BE PLACED BETWEEN SCRIM LAYERS WHERE THEY OVERLAP TO ENSURE A PROPER BOND.

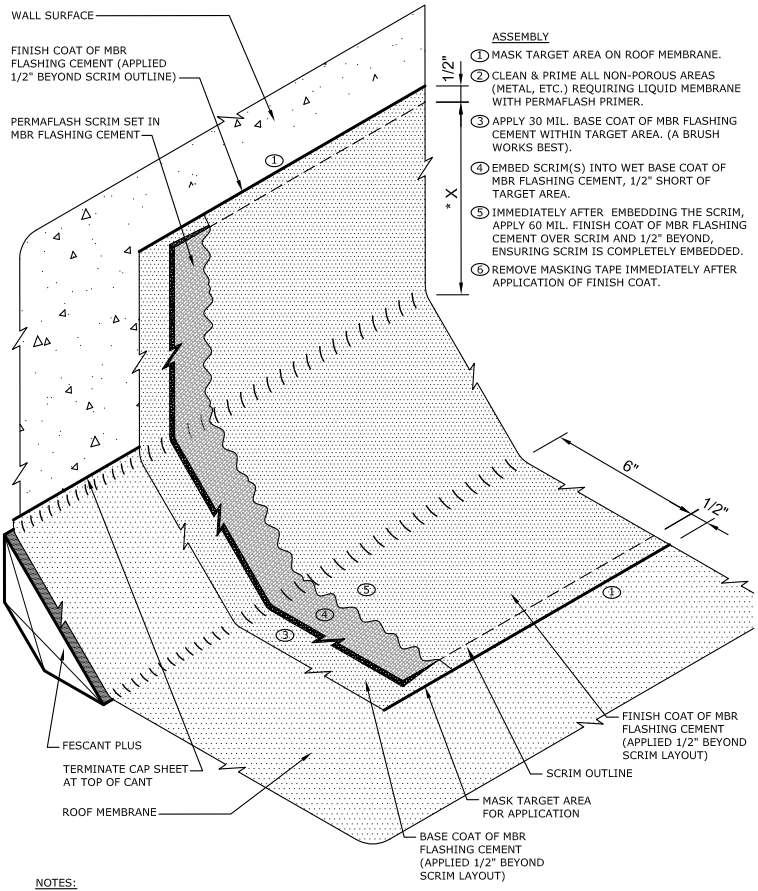
B. REFER TO PERMAFLASH APPLICATION INSTRUCTIONS FOR GENERAL GUIDELINES REGARDING THE PERMAFLASH SYSTEM.

* "x" DIMENSION DEPENDANT UPON APPLICATION.

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

PermaFlash® Standard Canted Base Flashing Detail



NOTES:

A. AN EXTRA COAT OF MBR FLASHING CEMENT MUST BE PLACED BETWEEN SCRIM LAYERS WHERE THEY OVERLAP TO ENSURE A PROPER BOND.

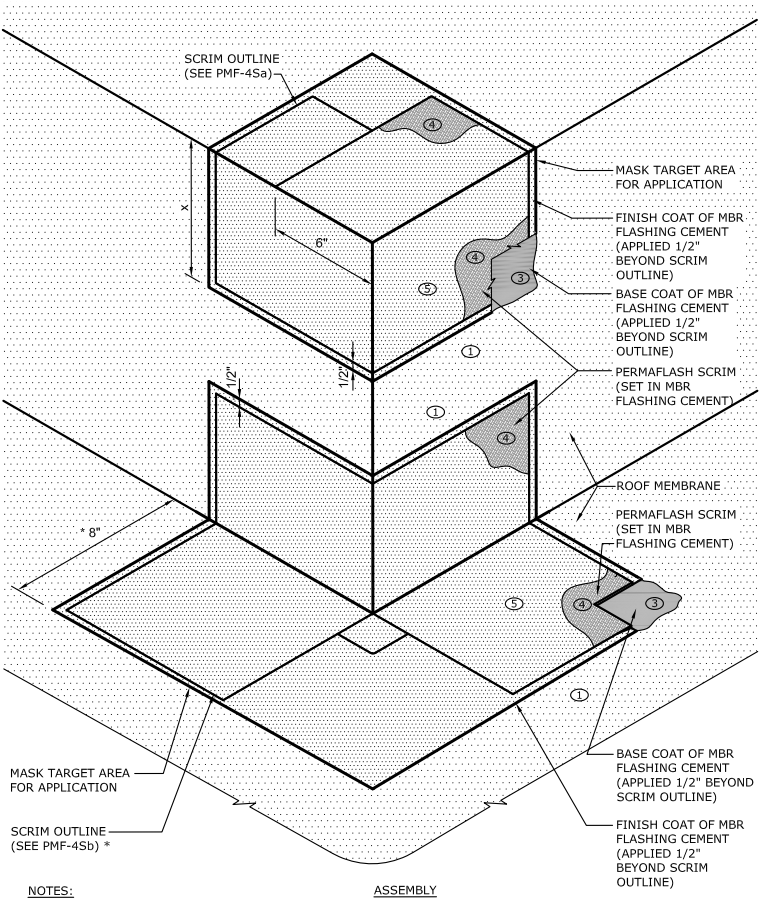
B. REFER TO PERMAFLASH APPLICATION INSTRUCTIONS FOR GENERAL GUIDELINES REGARDING THE PERMAFLASH SYSTEM.

* "x" DIMENSION DEPENDANT UPON APPLICATION.

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

PermaFlash® Curb Corner Detail



NOTES:

A. USE THIS DETAIL IN CONJUNCTION WITH THE PERMAFLASH OUTSIDE CORNER SCRIM DETAILS PMF-4Sa & PMF-4Sb.

B. ENSURE TOTAL TARGET AREA OF FLASHING IS NO LESS THAN 16" x 16".

C. AN EXTRA COAT OF MBR FLASHING CEMENT MUST BE PLACED BETWEEN SCRIM LAYERS WHERE THEY OVERLAP TO ENSURE A PROPER BOND.

D. REFER TO PERMAFLASH APPLICATION INSTRUCTIONS FOR GENERAL GUIDELINES REGARDING THE PERMAFLASH SYSTEM.

E. JM RECOMMENDS DIMENSION "x" TO BE AT LEAST 8", BUT VARIATION IS ALLOWED FOR LOWER THRESHOLDS.

* SEE PMF-4Sb IF DETAIL UTILIZES CANT STRIP

ASSEMBLY

① MASK TARGET AREA ON ROOF MEMBRANE AND PENETRATION.

② CLEAN & PRIME ALL NON-POROUS AREAS (METAL, ETC...) REQUIRING LIQUID MEMBRANE WITH PERMAFLASH PRIMER.

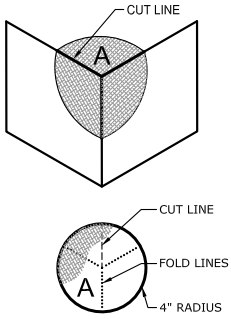
③ APPLY 30 MIL. BASE COAT OF MBR FLASHING CEMENT WITHIN TARGET AREA. (A BRUSH WORKS BEST).

④ EMBED SCRIM(S) INTO WET BASE COAT OF MBR FLASHING CEMENT, 1/2" SHORT OF TARGET AREA.

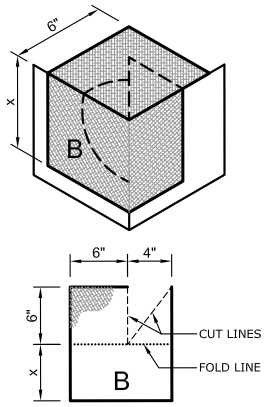
⑤ IMMEDIATELY AFTER EMBEDDING THE SCRIM, APPLY 60 MIL. FINISH COAT OF MBR FLASHING CEMENT OVER SCRIM AND 1/2" BEYOND, ENSURING SCRIM IS COMPLETELY EMBEDDED.

⑥ REMOVE MASKING TAPE IMMEDIATELY AFTER APPLICATION OF FINISH COAT.

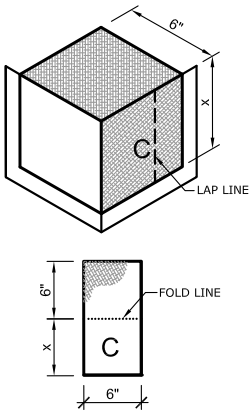
PermaFlash® OS Corner Scrim Layout (Top)



A CORNER REINFORCEMENT
STEP A



B WALL TRANSITION
STEP B



C WALL REINFORCEMENT
STEP C

NOTES:

A. USE SCRIM LAYOUT IN CONJUNCTION WITH THE PERMAFLASH CURB CORNER DETAIL DRAWING, PMF-4.

B. ALL FOLD LINES REPRESENTED AS ····· ALL CUT LINES REPRESENTED AS – – – – –

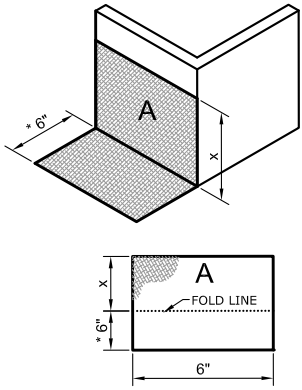
C. AN EXTRA COAT OF MBR FLASHING CEMENT MUST BE PLACED BETWEEN SCRIM LAYERS WHERE THEY OVERLAP TO ENSURE A PROPER BOND.

D. JM RECOMMENDS DIMENSION "x" TO BE AT LEAST 6", BUT VARIATION IS ALLOWED FOR LOWER THRESHOLDS.

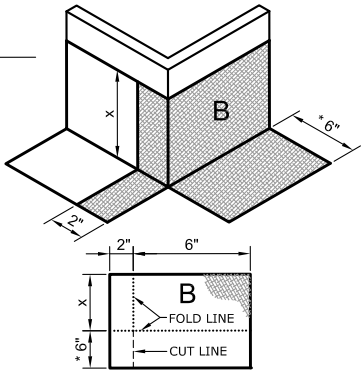
Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

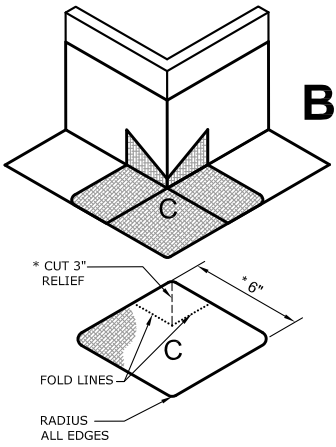
PermaFlash® OS Corner Scrim Layout (Bottom)



A WALL REINFORCEMENT
STEP A



B WALL TRANSITION
STEP B



C CORNER REINFORCEMENT
STEP C

NOTES:

A. USE SCRIM LAYOUT IN CONJUNCTION WITH THE PERMAFLASH CURB CORNER DETAIL DRAWING, PMF-4.

B. ALL FOLD LINES REPRESENTED AS ····· ALL CUT LINES REPRESENTED AS – – – – –

C. AN EXTRA COAT OF MBR FLASHING CEMENT MUST BE PLACED BETWEEN SCRIM LAYERS WHERE THEY OVERLAP TO ENSURE A PROPER BOND.

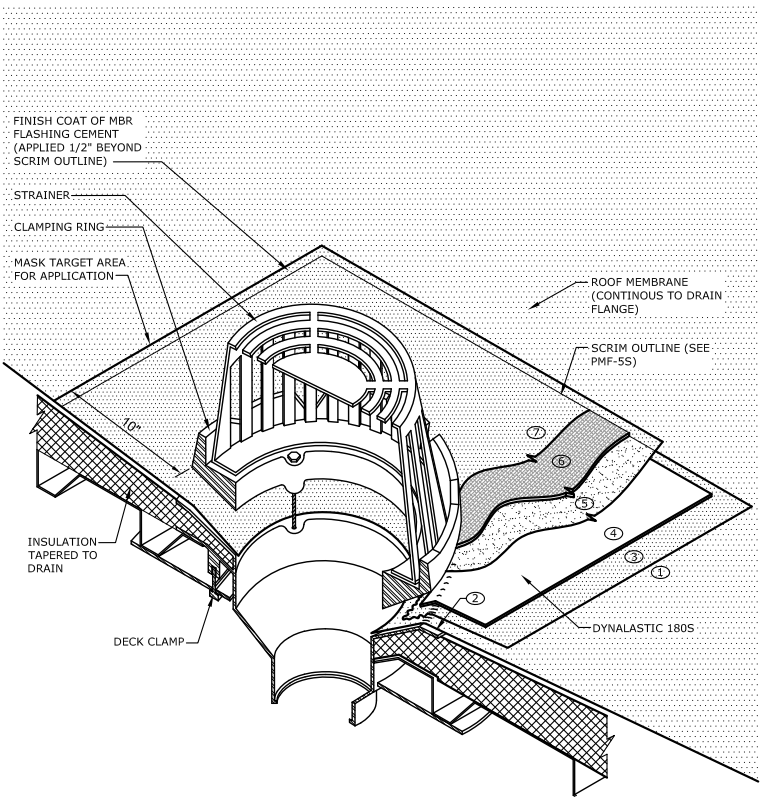
D. JM RECOMMENDS DIMENSION "x" TO BE AT LEAST 6", BUT VARIATION IS ALLOWED FOR LOWER THRESHOLDS.

* ADD 3 ½" IF DETAIL UTILIZES CANT STRIP

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

PermaFlash®-To-Drain-Detail



ASSEMBLY

1. MASK TARGET AREA ON ROOF MEMBRANE.
2. CLEAN & PRIME ALL NON-POROUS AREAS (METAL, ETC.) REQUIRING LIQUID MEMBRANE WITH PERMAFLASH PRIMER.
3. APPLY 30 MIL. COAT OF MBR FLASHING CEMENT WITHIN TARGET AREA AS SHOWN. (A BRUSH WORKS BEST).
4. EMBED DYNALASTIC 180S INTO WET COAT OF MBR FLASHING CEMENT, 1/2" SHORT OF TARGET AREA.
5. APPLY 30 MIL. BASE COAT OF PERMAFLASH OVER DYNALASTIC 180S AND 1/2" BEYOND, ENSURING IT IS COMPLETELY EMBEDDED.
6. EMBED SCRIM INTO WET BASE COAT OF MBR FLASHING CEMENT, 2" SHORT OF TARGET AREA.
7. IMMEDIATELY AFTER EMBEDDING THE SCRIM, APPLY 60 MIL. FINISH COAT OF MBR FLASHING CEMENT OVER SCRIM AND 1/2" BEYOND, ENSURING SCRIM IS COMPLETELY EMBEDDED.
8. REMOVE MASKING TAPE IMMEDIATELY AFTER APPLICATION OF FINISH COAT.

NOTES:

A. USE THIS DETAIL IN CONJUNCTION WITH THE PERMAFLASH DRAIN SCRIM LAYOUT, DRAWING PMF-5S.

B. ENSURE TOTAL TARGET AREA OF FLASHING IS NO LESS THAN 28"x28".

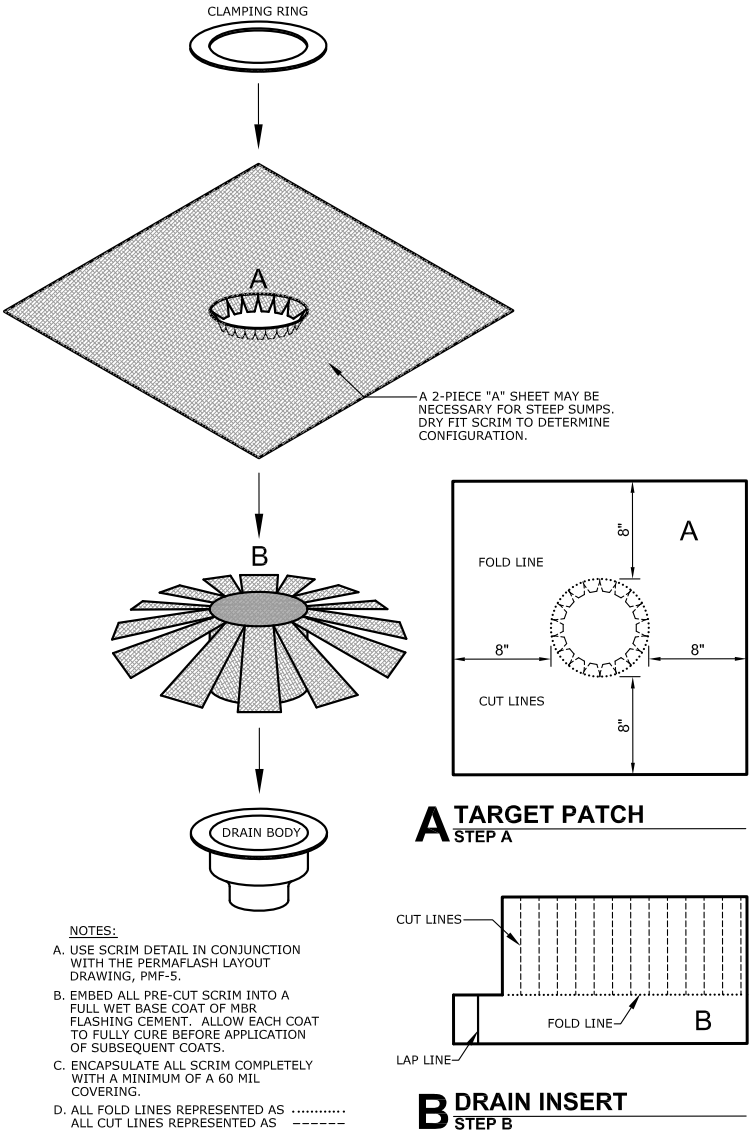
C. AN EXTRA COAT OF MBR FLASHING CEMENT MUST BE PLACED BETWEEN SCRIM LAYERS WHERE THEY OVERLAP TO ENSURE A PROPER BOND.

D. REFER TO PERMAFLASH APPLICATION INSTRUCTIONS FOR GENERAL GUIDELINES REGARDING THE PERMAFLASH SYSTEM.

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

PermaFlash® Drain Scrim Detail



NOTES:

A. USE SCRIM DETAIL IN CONJUNCTION WITH THE PERMAFLASH LAYOUT DRAWING, PMF-5.

B. EMBED ALL PRE-CUT SCRIM INTO A FULL WET BASE COAT OF MBR FLASHING CEMENT. ALLOW EACH COAT TO FULLY CURE BEFORE APPLICATION OF SUBSEQUENT COATS.

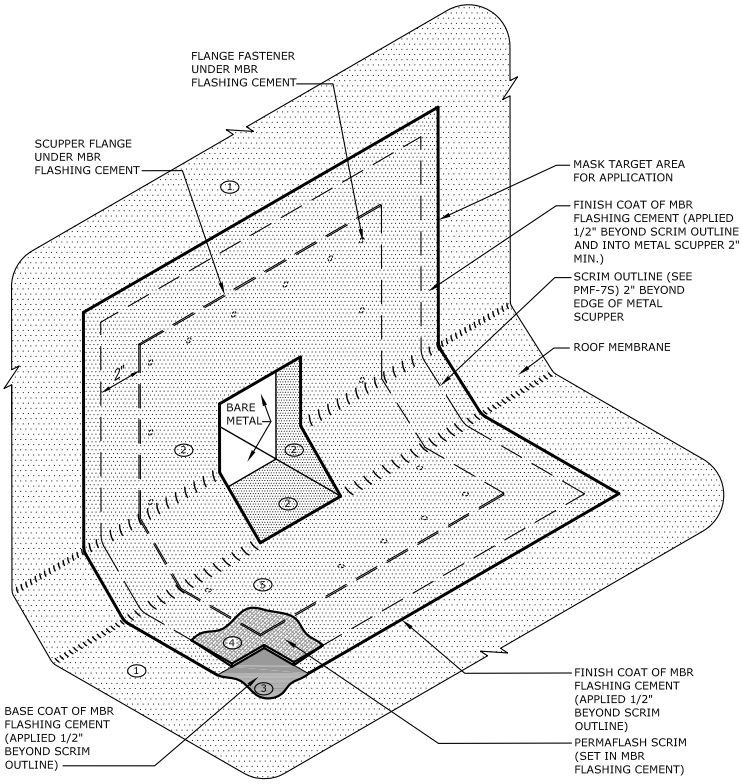
C. ENCAPSULATE ALL SCRIM COMPLETELY WITH A MINIMUM OF A 60 MIL COVERING.

D. ALL FOLD LINES REPRESENTED AS ..... ALL CUT LINES REPRESENTED AS ------

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

PermaFlash® Through-Wall Scupper Detail



NOTES:

A. USE THIS DETAIL IN CONJUNCTION WITH THE PERMAFLASH THROUGH WALL SCUPPER SCRIM LAYOUT, DRAWING PMF-7S.

B. ENSURE TOTAL TARGET AREA OF FLASHING IS NO LESS THAN 16" x 16".

C. AN EXTRA COAT OF MBR FLASHING CEMENT MUST BE PLACED BETWEEN SCRIM LAYERS WHERE THEY OVERLAP TO ENSURE A PROPER BOND.

D. REFER TO PERMAFLASH APPLICATION INSTRUCTIONS FOR GENERAL GUIDELINES REGARDING THE PERMAFLASH SYSTEM.

ASSEMBLY

(1) MASK TARGET AREA ON ROOF MEMBRANE AND PENETRATION.

(2) CLEAN & PRIME ALL NON-POROUS AREAS (METAL, ETC.) REQUIRING LIQUID MEMBRANE WITH PERMAFLASH PRIMER.

(3) APPLY 30 MIL. BASE COAT OF MBR FLASHING CEMENT WITHIN TARGET AREA. (A BRUSH WORKS BEST).

(4) EMBED SCRIM(S) INTO WET BASE COAT OF MBR FLASHING CEMENT, 1/2" SHORT OF TARGET AREA.

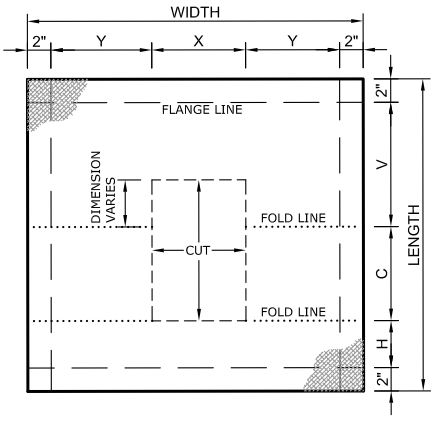
(5) IMMEDIATELY AFTER EMBEDDING THE SCRIM, APPLY 60 MIL. FINISH COAT OF MBR FLASHING CEMENT OVER SCRIM AND 1/2" BEYOND, ENSURING SCRIM IS COMPLETELY EMBEDDED.

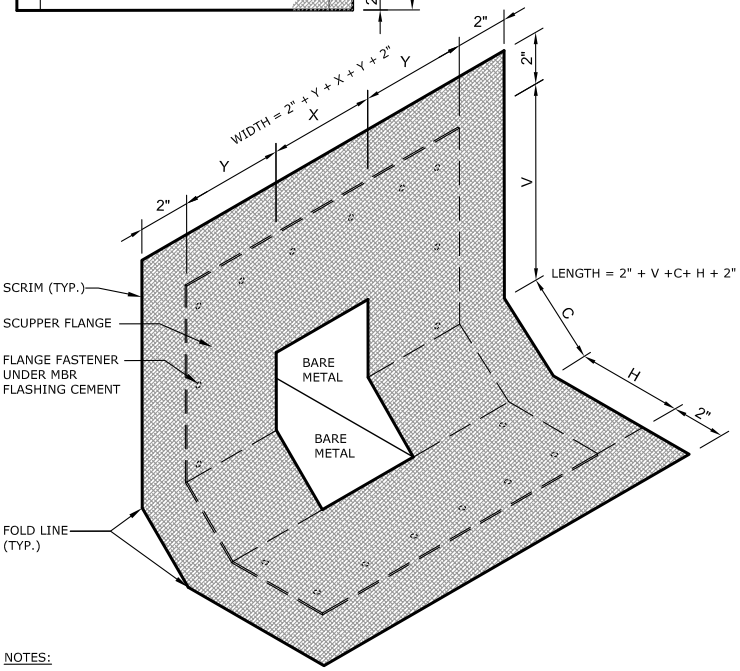
(6) REMOVE MASKING TAPE IMMEDIATELY AFTER APPLICATION OF FINISH COAT.

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

PermaFlash® Through-Wall Scupper Scrim Detail





NOTES:

A. USE SCRIM DETAIL IN CONJUNCTION WITH THE THROUGH WALL SCUPPER DETAIL DRAWING, PMF-7.

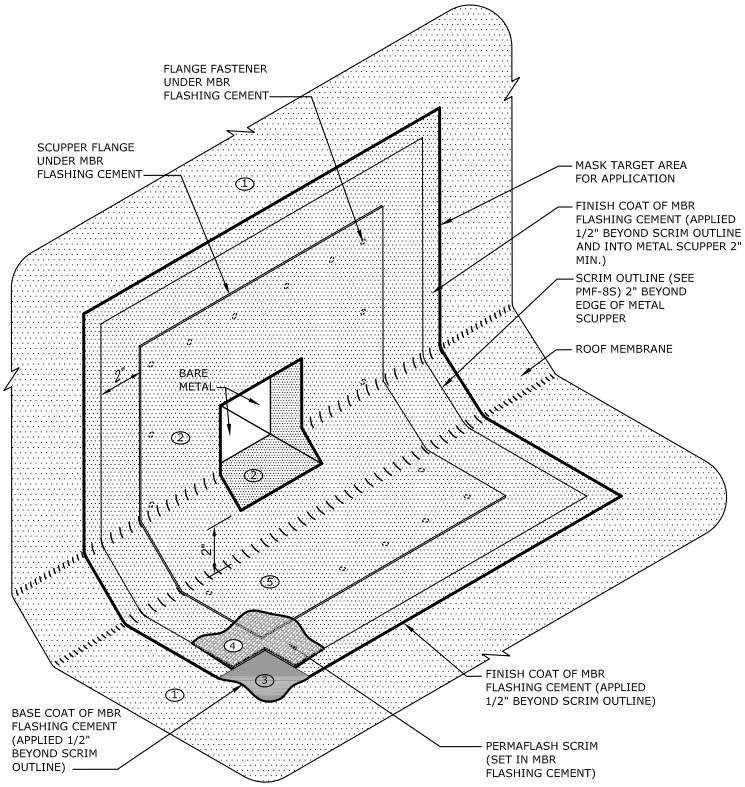
B. ALL FOLD LINES REPRESENTED AS ····· ALL CUT LINES REPRESENTED AS — — —

C. AN EXTRA COAT OF MBR FLASHING CEMENT MUST BE PLACED BETWEEN SCRIM LAYERS WHERE THEY OVERLAP TO ENSURE A PROPER BOND.

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

PermaFlash® Overflow Scupper Detail



NOTES:

A. USE THIS DETAIL IN CONJUNCTION WITH THE PERMAFLASH OVERFLOW SCUPPER SCRIM LAYOUT, DRAWING PMF-8S.

B. ENSURE TOTAL TARGET AREA OF FLASHING IS NO LESS THAN 16" x 16".

C. AN EXTRA COAT OF MBR FLASHING CEMENT MUST BE PLACED BETWEEN SCRIM LAYERS WHERE THEY OVERLAP TO ENSURE A PROPER BOND.

D. REFER TO PERMAFLASH APPLICATION INSTRUCTIONS FOR GENERAL GUIDELINES REGARDING THE PERMAFLASH SYSTEM.

ASSEMBLY

(1) MASK TARGET AREA ON ROOF MEMBRANE AND PENETRATION.

(2) CLEAN & PRIME ALL NON-POROUS AREAS (METAL, ETC.) REQUIRING LIQUID MEMBRANE WITH PERMAFLASH PRIMER.

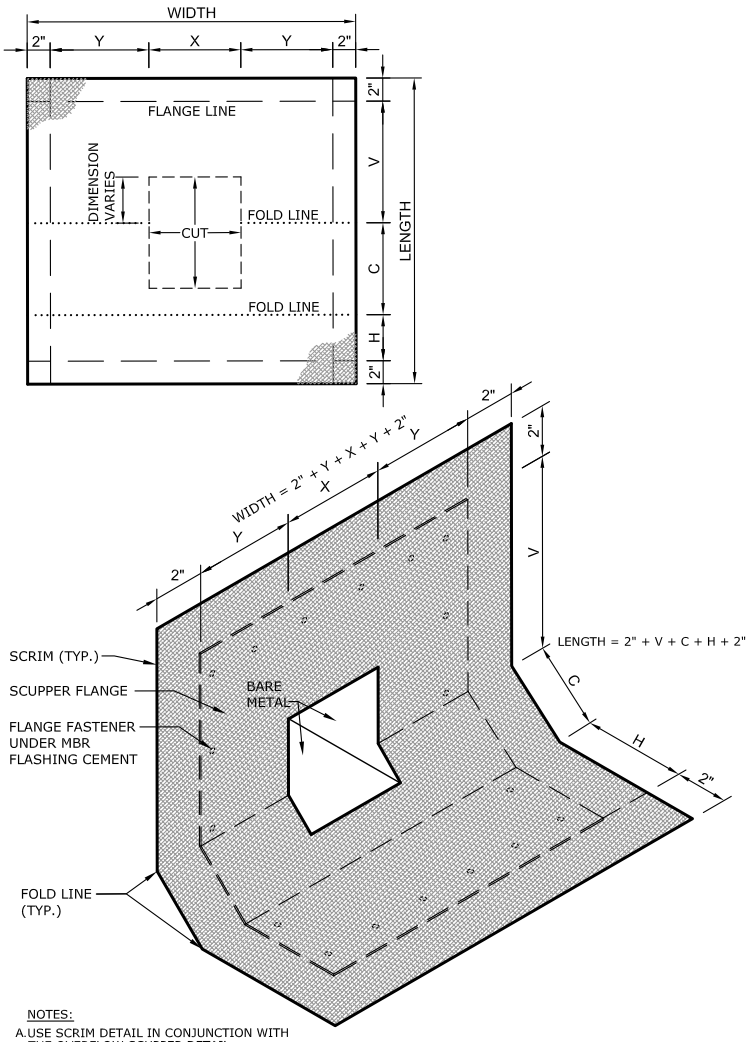
(3) APPLY 30 MIL. BASE COAT OF MBR FLASHING CEMENT WITHIN TARGET AREA. (A BRUSH WORKS BEST).

(4) EMBED SCRIM(S) INTO WET BASE COAT OF MBR FLASHING CEMENT, 1/2" SHORT OF TARGET AREA.

(5) IMMEDIATELY AFTER EMBEDDING THE SCRIM, APPLY 60 MIL. FINISH COAT OF MBR FLASHING CEMENT OVER SCRIM AND 1/2" BEYOND, ENSURING SCRIM IS COMPLETELY EMBEDDED.

(6) REMOVE MASKING TAPE IMMEDIATELY AFTER APPLICATION OF FINISH COAT.

PermaFlash® Overflow Scupper Scrim Detail



NOTES:

A. USE SCRIM DETAIL IN CONJUNCTION WITH THE OVERFLOW SCUPPER DETAIL DRAWING, PMF-8.

B. ALL FOLD LINES REPRESENTED AS ALL CUT LINES REPRESENTED AS .....

C. AN EXTRA COAT OF MBR FLASHING CEMENT MUST BE PLACED BETWEEN SCRIM LAYERS WHERE THEY OVERLAP TO ENSURE A PROPER BOND.

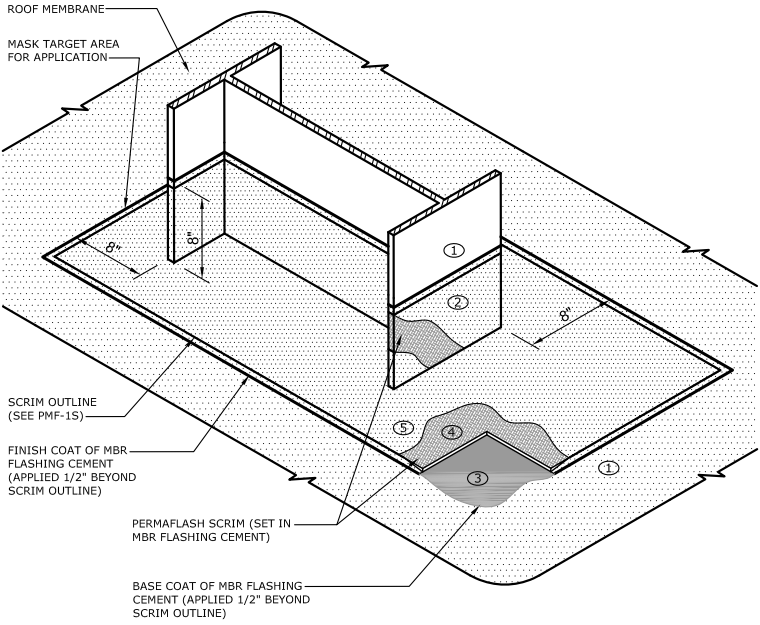
Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

PermaFlash® I-Beam Detail

ASSEMBLY

1. MASK TARGET AREA ON ROOF MEMBRANE AND PENETRATION.
2. CLEAN & PRIME ALL NON-POROUS AREAS (METAL, ETC.) REQUIRING LIQUID MEMBRANE WITH PERMAFLASH PRIMER.
3. APPLY 30 MIL. BASE COAT OF MBR FLASHING CEMENT WITHIN TARGET AREA. (A BRUSH WORKS BEST).
4. EMBED SCRIM(S) INTO WET BASE COAT OF MBR FLASHING CEMENT, 1/2" SHORT OF TARGET AREA.
5. IMMEDIATELY AFTER EMBEDDING THE SCRIM, APPLY 60 MIL. FINISH COAT OF MBR FLASHING CEMENT OVER SCRIM AND 1/2" BEYOND, ENSURING SCRIM IS COMPLETELY EMBEDDED.
6. REMOVE MASKING TAPE IMMEDIATELY AFTER APPLICATION OF FINISH COAT.



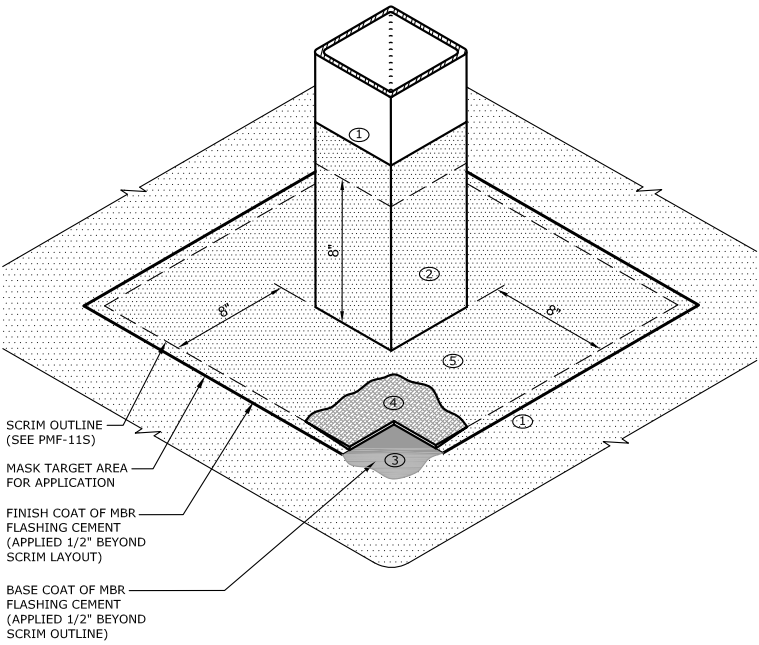
NOTES:

1. USE THIS DETAIL IN CONJUNCTION WITH THE PERMAFLASH I-BEAM SCRIM LAYOUT, DRAWING PMF-1S.
2. ENSURE TOTAL TARGET AREA OF FLASHING IS NO LESS THAN 16" x 16".
3. AN EXTRA COAT OF MBR FLASHING CEMENT MUST BE PLACED BETWEEN SCRIM LAYERS WHERE THEY OVERLAP TO ENSURE A PROPER BOND.
4. REFER TO PERMAFLASH APPLICATION INSTRUCTIONS FOR GENERAL GUIDELINES REGARDING THE PERMAFLASH SYSTEM.

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

PermaFlash® Square Metal Tube Detail



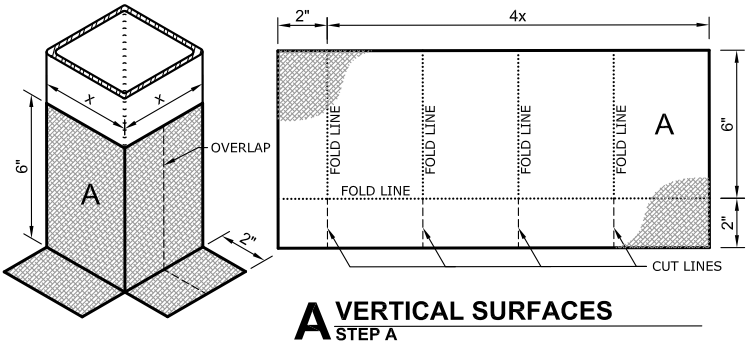
NOTES:

A. USE THIS DETAIL IN CONJUNCTION WITH THE PERMAFLASH SQUARE METAL TUBE SCRIM LAYOUT, DRAWING PMF-11S.
B. ENSURE TOTAL TARGET AREA OF FLASHING IS NO LESS THAN 16" x 16".
C. AN EXTRA COAT OF MBR FLASHING CEMENT MUST BE PLACED BETWEEN SCRIM LAYERS WHERE THEY OVERLAP TO ENSURE A PROPER BOND.
D. REFER TO PERMAFLASH APPLICATION INSTRUCTIONS FOR GENERAL GUIDELINES REGARDING THE PERMAFLASH SYSTEM.

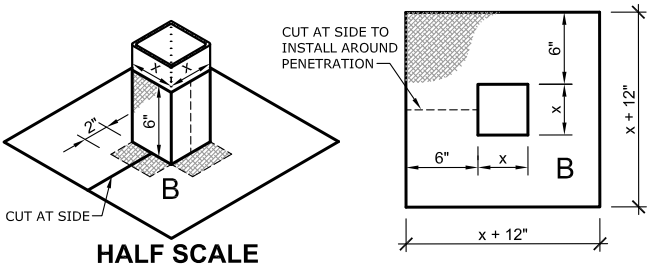
ASSEMBLY

1. MASK TARGET AREA ON ROOF MEMBRANE.
2. CLEAN & PRIME ALL NON-POROUS AREAS (METAL, ETC.) REQUIRING LIQUID MEMBRANE WITH PERMAFLASH PRIMER.
3. APPLY 30 MIL. BASE COAT OF MBR FLASHING CEMENT WITHIN TARGET AREA. (A BRUSH WORKS BEST).
4. EMBED SCRIM(S) INTO WET BASE COAT OF MBR FLASHING CEMENT, 1/2" SHORT OF TARGET AREA.
5. IMMEDIATELY AFTER EMBEDDING THE SCRIM, APPLY 60 MIL. FINISH COAT OF MBR FLASHING CEMENT OVER SCRIM AND 1/2" BEYOND, ENSURING SCRIM IS COMPLETELY EMBEDDED.
6. REMOVE MASKING TAPE IMMEDIATELY AFTER APPLICATION OF FINISH COAT.

PermaFlash® Square Metal Tube Scrim Detail



A VERTICAL SURFACES
STEP A



B HORIZONTAL SURFACE
STEP B

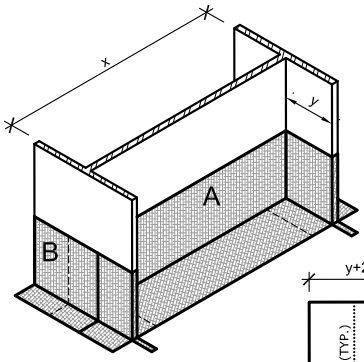
NOTES:

A. USE SCRIM LAYOUT IN CONJUNCTION WITH THE PERMAFLASH SQUARE METAL TUBE DETAIL DRAWING, PMF-11.

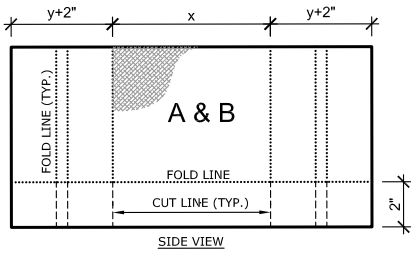
B. ALL FOLD LINES REPRESENTED AS ..... ALL CUT LINES REPRESENTED AS – – – – –

C. AN EXTRA COAT OF MBR FLASHING CEMENT MUST BE PLACED BETWEEN SCRIM LAYERS WHERE THEY OVERLAP TO ENSURE A PROPER BOND.

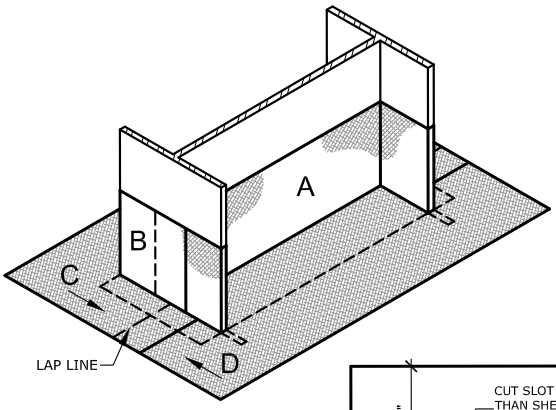
PermaFlash® I-Beam Scrim Detail



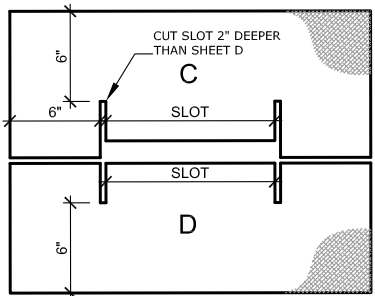
VERTICAL SURFACES
STEPS A & B



SIDE VIEW



HORIZONTAL SURFACES
STEPS C & D



NOTES:

A. USE SCRIM LAYOUT IN CONJUNCTION WITH THE PERMAFLASH I-BEAM DETAIL DRAWING, PMF-1.

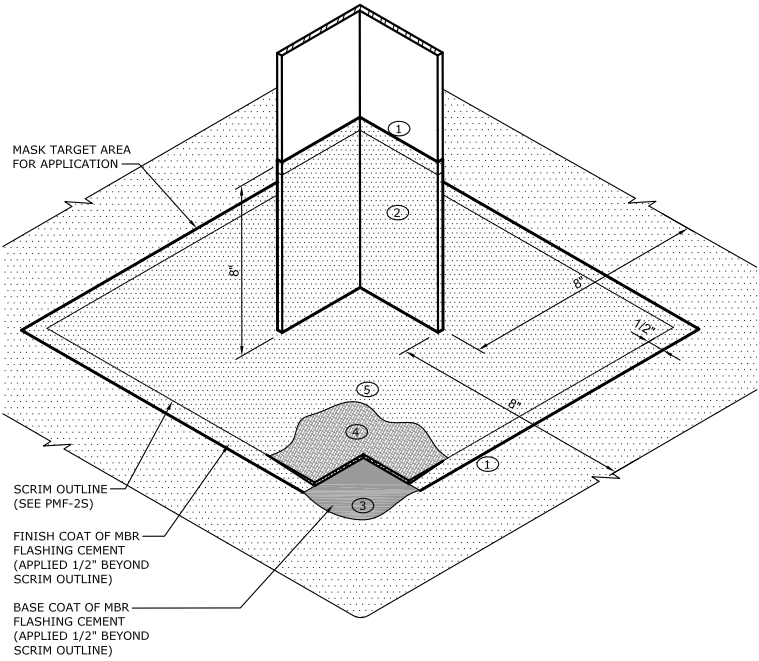
B. ALL FOLD LINES SHOWN AS, ALL CUT LINES SHOWN AS

C. AN EXTRA COAT OF MBR FLASHING CEMENT MUST BE PLACED BETWEEN SCRIM LAYERS WHERE THEY OVERLAP TO ENSURE A PROPER BOND.

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

PermaFlash® Angle Iron Detail



NOTES:

A. USE THIS DETAIL IN CONJUNCTION WITH THE PERMAFLASH ANGLE IRON SCRIM LAYOUT, DRAWING PMF-2S.

B. ENSURE TOTAL TARGET AREA OF FLASHING IS NO LESS THAN 16" x 16".

C. AN EXTRA COAT OF MBR FLASHING CEMENT MUST BE PLACED BETWEEN SCRIM LAYERS WHERE THEY OVERLAP TO ENSURE A PROPER BOND.

D. REFER TO PERMAFLASH APPLICATION INSTRUCTIONS FOR GENERAL GUIDELINES REGARDING THE PERMAFLASH SYSTEM.

ASSEMBLY

1. MASK TARGET AREA ON ROOF MEMBRANE AND PENETRATION.
2. CLEAN & PRIME ALL NON-POROUS AREAS (METAL, ETC...) REQUIRING LIQUID MEMBRANE WITH PERMAFLASH PRIMER.
3. APPLY 30 MIL. BASE COAT OF MBR FLASHING CEMENT WITHIN TARGET AREA. (A BRUSH WORKS BEST).
4. EMBED SCRIM(S) INTO WET BASE COAT OF MBR FLASHING CEMENT, 1/2" SHORT OF TARGET AREA.
5. IMMEDIATELY AFTER EMBEDDING THE SCRIM, APPLY 60 MIL. FINISH COAT OF MBR FLASHING CEMENT OVER SCRIM AND 1/2" BEYOND, ENSURING SCRIM IS COMPLETELY EMBEDDED.
6. REMOVE MASKING TAPE IMMEDIATELY AFTER APPLICATION OF FINISH COAT.

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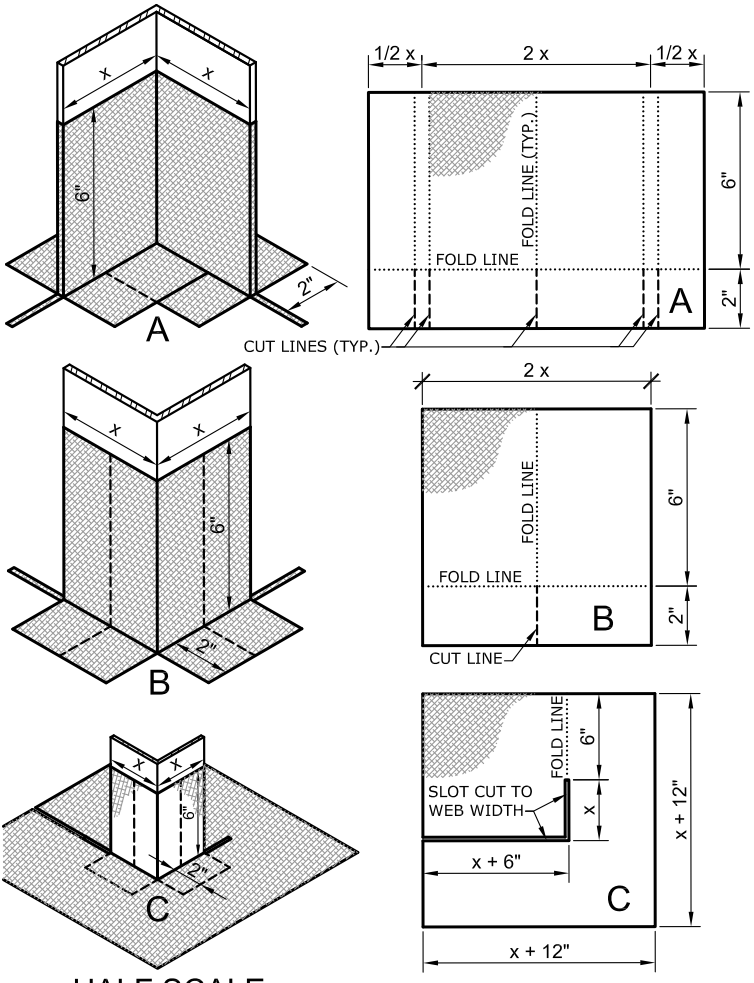
Refer to the Safe Use Instructions and product label prior to using this product.

PermaFlash® Angle Iron Scrim Detail



HALF SCALE

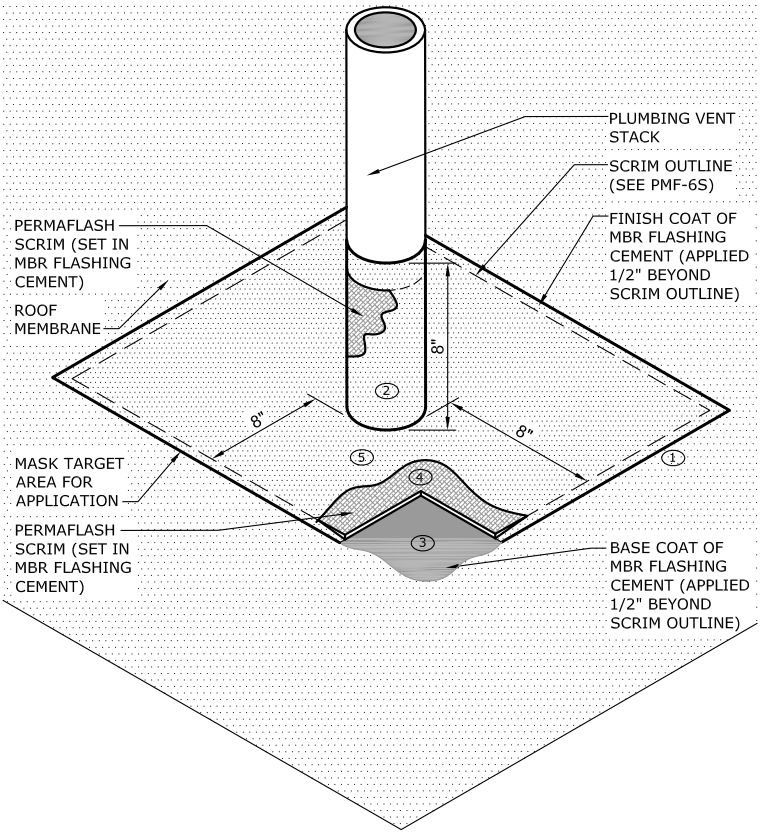
NOTES:

A. USE SCRIM LAYOUT IN CONJUNCTION WITH THE PERMAFLASH ANGLE IRON DETAIL DRAWING, PMF-2.

B. ALL FOLD LINES REPRESENTED AS ····· ALL CUT LINES REPRESENTED AS – – – – –

C. AN EXTRA COAT OF MBR FLASHING CEMENT MUST BE PLACED BETWEEN SCRIM LAYERS WHERE THEY OVERLAP TO ENSURE A PROPER BOND.

PermaFlash® Pipe Penetration Detail



NOTES:

A. USE THIS DETAIL IN CONJUNCTION WITH THE PERMAFLASH PIPE PENETRATION SCRIM LAYOUT, DRAWING PMF-6S.

B. ENSURE TOTAL TARGET AREA OF FLASHING IS NO LESS THAN 16" x 16".

C. AN EXTRA COAT OF MBR FLASHING CEMENT MUST BE PLACED BETWEEN SCRIM LAYERS WHERE THEY OVERLAP TO ENSURE A PROPER BOND.

D. REFER TO PERMAFLASH APPLICATION INSTRUCTIONS FOR GENERAL GUIDELINES REGARDING THE PERMAFLASH SYSTEM.

ASSEMBLY

1. MASK TARGET AREA ON ROOF MEMBRANE AND PENETRATION.
2. CLEAN & PRIME ALL NON-POROUS AREAS (METAL, ETC.) REQUIRING LIQUID MEMBRANE WITH PERMAFLASH PRIMER.
3. APPLY 30 MIL. BASE COAT OF MBR FLASHING CEMENT WITHIN TARGET AREA. (A BRUSH WORKS BEST).
4. EMBED SCRIM(S) INTO WET BASE COAT OF MBR FLASHING CEMENT, 1/2" SHORT OF TARGET AREA.
5. IMMEDIATELY AFTER EMBEDDING THE SCRIM, APPLY 60 MIL. FINISH COAT OF MBR FLASHING CEMENT OVER SCRIM AND 1/2" BEYOND, ENSURING SCRIM IS COMPLETELY EMBEDDED.
6. REMOVE MASKING TAPE IMMEDIATELY AFTER

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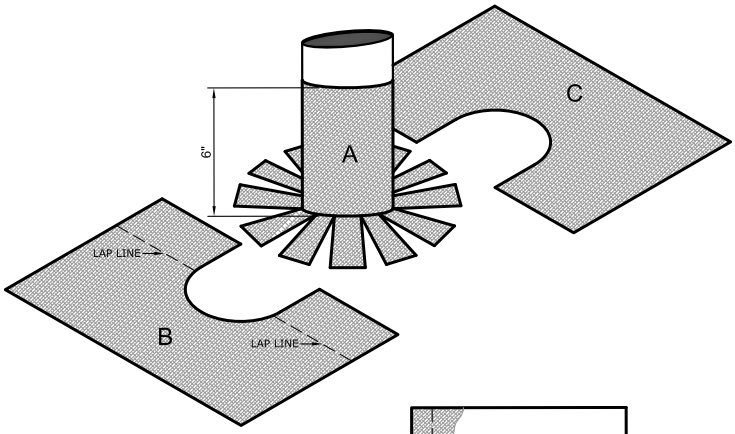
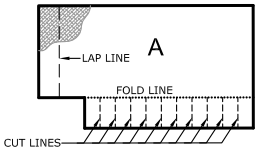
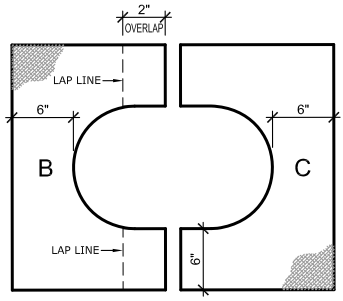
PermaFlash® Pipe Penetration Scrim Detail





A FINGER CUTS
STEP A



B & C TARGET REINFORCEMENT
STEP B & C

NOTES:

A. USE SCRIM DETAIL IN CONJUNCTION WITH THE PERMAFLASH PIPE PENETRATION DETAIL DRAWING, PMF-6.

B. ALL FOLD LINES REPRESENTED AS ····· ALL CUT LINES REPRESENTED AS – – – – –

C. AN EXTRA COAT OF MBR FLASHING CEMENT MUST BE PLACED BETWEEN SCRIM LAYERS WHERE THEY OVERLAP TO ENSURE A PROPER BOND.

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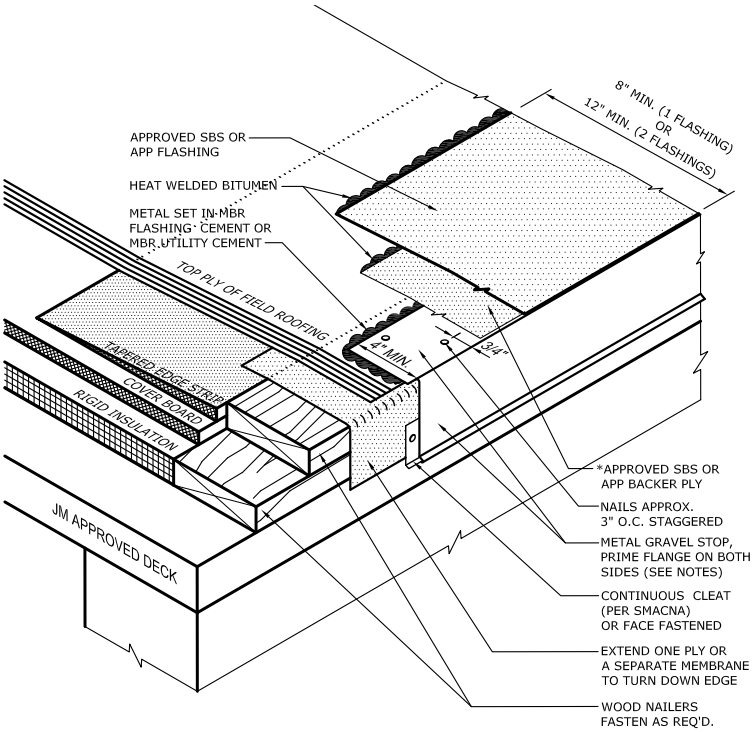
Refer to the Safe Use Instructions and product label prior to using this product.

Gravel Stop



NOTES:

1. SBS HEAT WELDED FLASHINGS CAN ONLY BE USED WITH SBS OR BUR SYSTEMS. APP HEAT WELDED FLASHINGS CAN ONLY BE USED WITH APP OR BUR SYSTEMS. (PLEASE REFER TO THE APPROPRIATE TABLE IN THE BITUMINOUS FLASHING SPECIFICATION INDICATING ACCEPTABLE FLASHING PRODUCTS FOR EACH OF THE SBS OR APP HEAT WELDED SYSTEMS.)
2. *A BACKER PLY IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEES.
3. THE TAPERED EDGE STRIP (OPTIONAL), IS USED FOR NON-DRAINING EDGES TO KEEP PONDING WATER OFF THE FLASHING LAPS. IF THE EDGE IS DESIGNED TO EVACUATE WATER FROM THE ROOF, THE TAPERED EDGE STRIP IS ELIMINATED AND THE TOP OF THE WOOD NAILER WILL BE AT A HEIGHT FLUSH WITH THE TOP OF THE FLAT COVER BOARD OR SUBSTRATE.
4. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
5. SHOP FABRICATED GRAVEL STOP SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA AND/OR NRCA GUIDELINES. LAPS SHALL UTILIZE EITHER APPROVED SPLICE PLATES OR 4" MINIMUM OVERLAPS WITH A APPROVED SEALANT.
6. USE ASPHALT PRIMER ON GRAVEL STOP FLANGES WHEN USING MBR UTILITY CEMENT. USE PERMAFLASH PRIMER ON GRAVEL STOP FLANGES WHEN USING MBR FLASHING CEMENT.
7. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL
8. CAUTION: IMPROPER USE OF THESE MATERIALS AND APPLICATION EQUIPMENT CAN RESULT IN SEVERE BURNS, AND/ OR DAMAGE TO PROPERTY. THE MECHANIC MUST INSTALL THESE MATERIALS USING THE TECHNIQUES RECOMMENDED BY JM AND THOSE FOUND IN THE CERTIFIED ROOFING TORCH APPLICATOR (CERTA) PROGRAM AVAILABLE THROUGH THE NATIONAL ROOFING CONTRACTORS ASSOCIATION.

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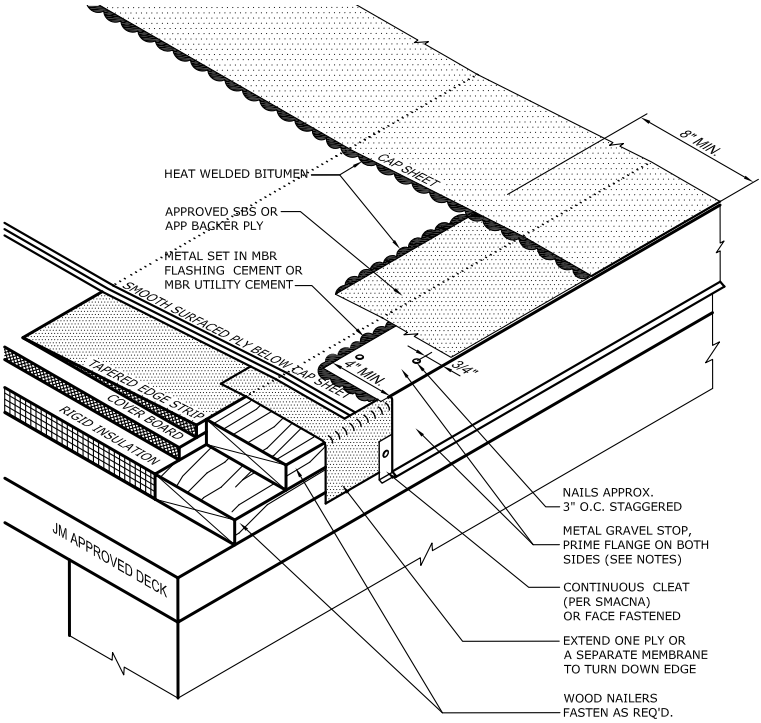
Gravel Stop Alternate



NOTES:

1. SBS HEAT WELDED FLASHINGS CAN ONLY BE USED WITH SBS OR BUR SYSTEMS. APP HEAT WELDED FLASHINGS CAN ONLY BE USED WITH APP OR BUR SYSTEMS. (PLEASE REFER TO THE APPROPRIATE TABLE IN THE BITUMINOUS FLASHING SPECIFICATION INDICATING ACCEPTABLE FLASHING PRODUCTS FOR EACH OF THE SBS OR APP HEAT WELDED SYSTEMS.)
2. THE TAPERED EDGE STRIP (OPTIONAL), IS USED FOR NON-DRAINING EDGES TO KEEP PONDING WATER OFF THE FLASHING LAPS. IF THE EDGE IS DESIGNED TO EVACUATE WATER FROM THE ROOF, THE TAPERED EDGE STRIP IS ELIMINATED AND THE TOP OF THE WOOD NAILER WILL BE AT A HEIGHT FLUSH WITH THE TOP OF THE FLAT COVER BOARD OR SUBSTRATE.
3. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
4. SHOP FABRICATED GRAVEL STOP SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA AND/OR NRCA GUIDELINES. LAPS SHALL UTILIZE EITHER APPROVED SPLICE PLATES OR 4" MINIMUM OVERLAPS WITH A APPROVED SEALANT.
5. USE ASPHALT PRIMER ON GRAVEL STOP FLANGES WHEN USING MBR UTILITY CEMENT. USE PERMAFLASH PRIMER ON GRAVEL STOP FLANGES WHEN USING MBR FLASHING CEMENT.
6. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL
7. CAUTION: IMPROPER USE OF THESE MATERIALS AND APPLICATION EQUIPMENT CAN RESULT IN SEVERE BURNS, AND/OR DAMAGE TO PROPERTY. THE MECHANIC MUST INSTALL THESE MATERIALS USING THE TECHNIQUES RECOMMENDED BY JM AND THOSE FOUND IN THE CERTIFIED ROOFING TORCH APPLICATOR (CERTA) PROGRAM AVAILABLE THROUGH THE NATIONAL ROOFING CONTRACTORS ASSOCIATION.

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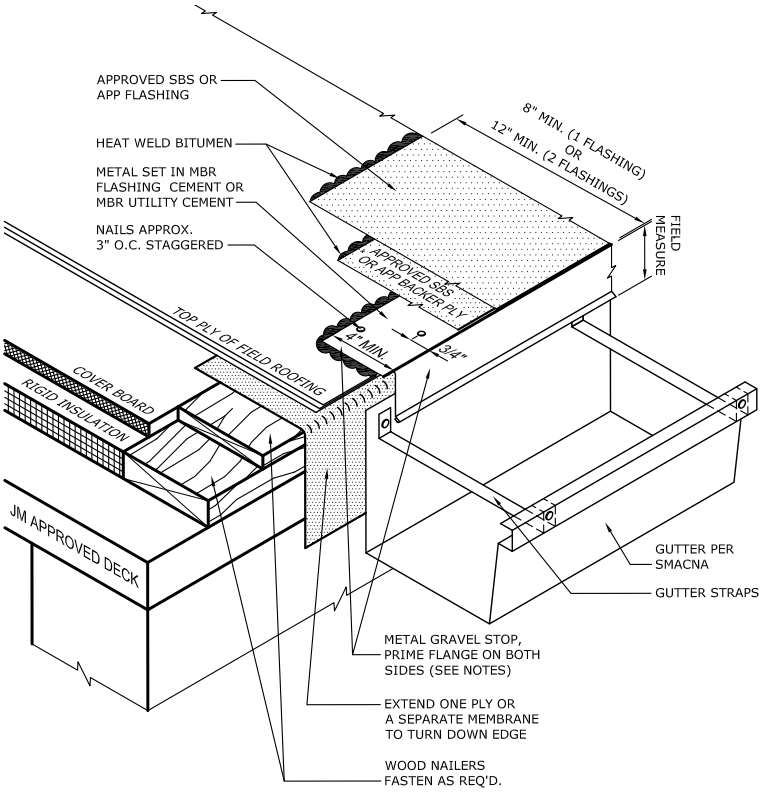
Gutter



NOTES:

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2. *A BACKER PLY IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEES.
3. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
4. SHOP FABRICATED GRAVEL STOP SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA AND/OR NRCA GUIDELINES. LAPS SHALL UTILIZE EITHER APPROVED SPLICE PLATES OR 4" MINIMUM OVERLAPS WITH A APPROVED SEALANT.
5. USE ASPHALT PRIMER ON GRAVEL STOP FLANGES WHEN USING MBR UTILITY CEMENT. USE PERMAFLASH PRIMER ON GRAVEL STOP FLANGES WHEN USING MBR FLASHING CEMENT.
6. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL
7. CAUTION: IMPROPER USE OF THESE MATERIALS AND APPLICATION EQUIPMENT CAN RESULT IN SEVERE BURNS, AND/ OR DAMAGE TO PROPERTY. THE MECHANIC MUST INSTALL THESE MATERIALS USING THE TECHNIQUES RECOMMENDED BY JM AND THOSE FOUND IN THE CERTIFIED ROOFING TORCH APPLICATOR (CERTA) PROGRAM AVAILABLE THROUGH THE NATIONAL ROOFING CONTRACTORS ASSOCIATION.

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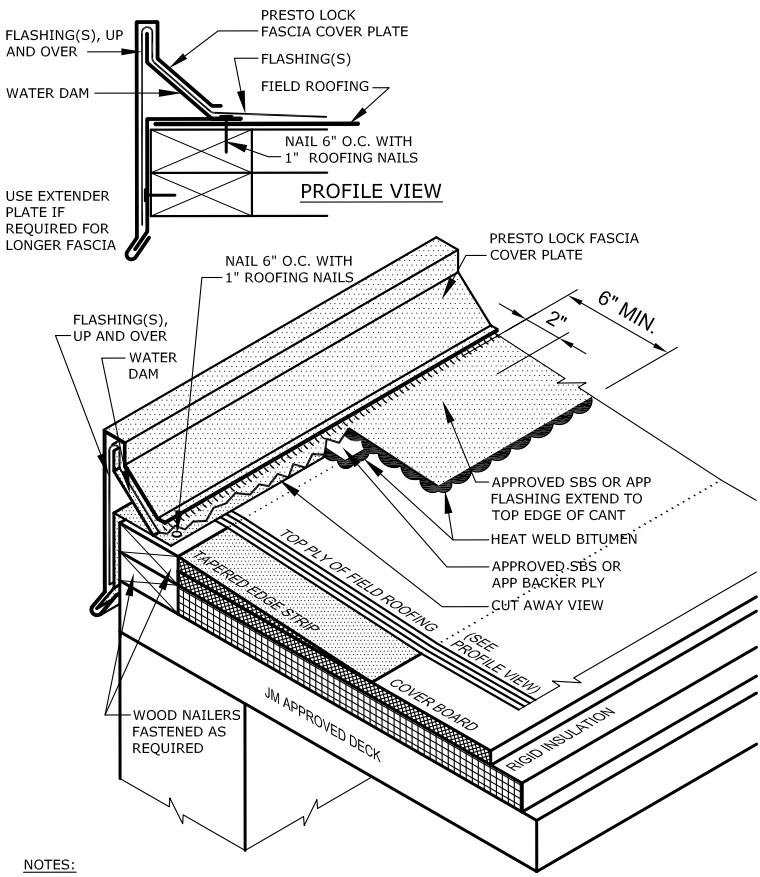
Presto Lock Fascia System



NOTES:

1. SBS HEAT WELDED FLASHINGS CAN ONLY BE USED WITH SBS OR BUR SYSTEMS. APP HEAT WELDED FLASHINGS CAN ONLY BE USED WITH APP OR BUR SYSTEMS. (PLEASE REFER TO THE APPROPRIATE TABLE IN THE BITUMINOUS FLASHING SPECIFICATION INDICATING ACCEPTABLE FLASHING PRODUCTS FOR EACH OF THE SBS OR APP HEAT WELDED SYSTEMS.)
2. THE TAPERED EDGE STRIP (OPTIONAL), IS USED FOR NON-DRAINING EDGES TO KEEP PONDING WATER OFF THE FLASHING LAPS OR TO TRANSITION SUBSTRATE FLUSH WITH PERIMETER NAILER HEIGHT.
3. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
4. PRESTO LOCK GRAVEL STOP SHOULD BE INSTALLED IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS ARE AVAILABLE TO COMPLETE THE INSTALLATION.
5. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL
6. CAUTION: IMPROPER USE OF THESE MATERIALS AND APPLICATION EQUIPMENT CAN RESULT IN SEVERE BURNS, AND/ OR DAMAGE TO PROPERTY. THE MECHANIC MUST INSTALL THESE MATERIALS USING THE TECHNIQUES RECOMMENDED BY JM AND THOSE FOUND IN THE CERTIFIED ROOFING TORCH APPLICATOR (CERTA) PROGRAM AVAILABLE THROUGH THE NATIONAL ROOFING CONTRACTORS ASSOCIATION.

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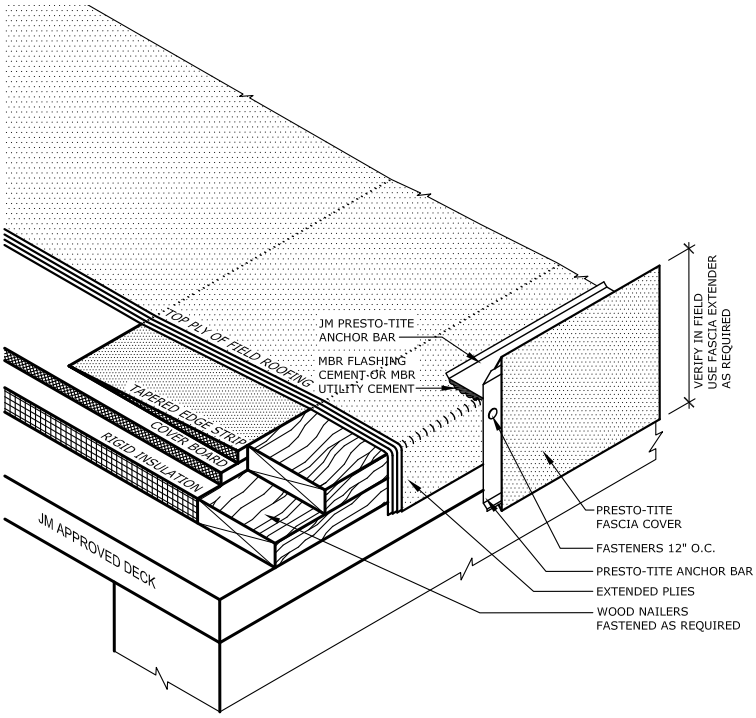
Presto-Tite Edge Metal System



NOTES:

1. THE TAPERED EDGE STRIP (OPTIONAL), IS USED FOR NON-DRAINING EDGES TO KEEP PONDING WATER OFF THE FLASHING SEAL OR TO TRANSITION SUBSTRATE FLUSH WITH PERIMETER NAILER HEIGHT.
2. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
3. PRESTO TITE GRAVEL STOP SHOULD BE INSTALLED IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS ARE AVAILABLE TO COMPLETE THE INSTALLATION.
4. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL
5. CAUTION: IMPROPER USE OF THESE MATERIALS AND APPLICATION EQUIPMENT CAN RESULT IN SEVERE BURNS, AND/ OR DAMAGE TO PROPERTY. THE MECHANIC MUST INSTALL THESE MATERIALS USING THE TECHNIQUES RECOMMENDED BY JM AND THOSE FOUND IN THE CERTIFIED ROOFING TORCH APPLICATOR (CERTA) PROGRAM AVAILABLE THROUGH THE NATIONAL ROOFING CONTRACTORS ASSOCIATION.

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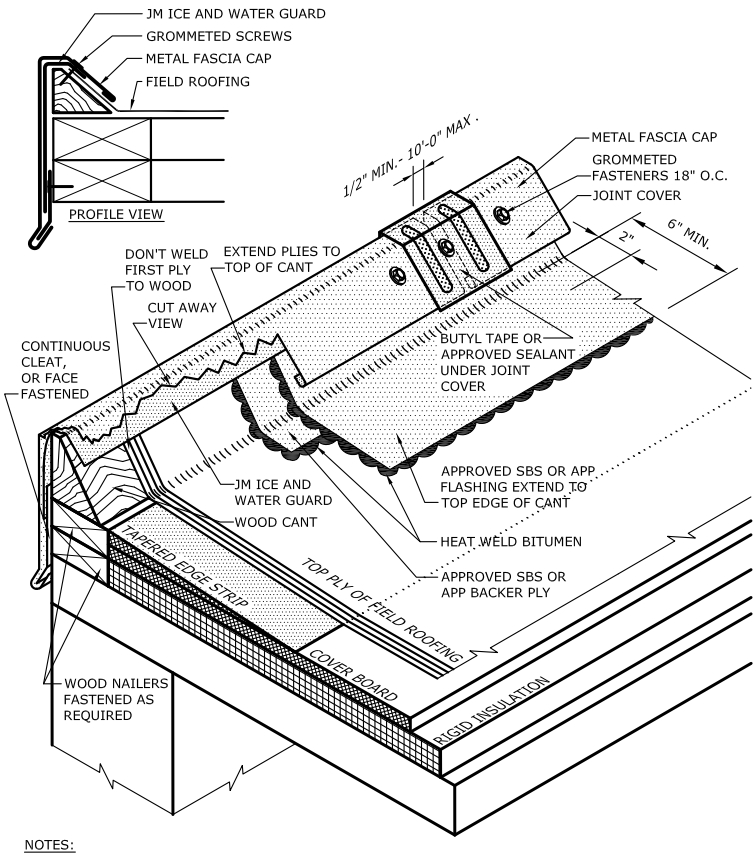
Raised Metal Cant Fascia



NOTES:

1. SBS HEAT WELDED FLASHINGS CAN ONLY BE USED WITH SBS OR BUR SYSTEMS. APP HEAT WELDED FLASHINGS CAN ONLY BE USED WITH APP OR BUR SYSTEMS. (PLEASE REFER TO THE APPROPRIATE TABLE IN THE BITUMINOUS FLASHING SPECIFICATION INDICATING ACCEPTABLE FLASHING PRODUCTS FOR EACH OF THE SBS OR APP HEAT WELDED SYSTEMS.)
2. THE TAPERED EDGE STRIP (OPTIONAL), IS USED FOR NON-DRAINING EDGES TO KEEP PONDING WATER OFF THE FLASHING LAPS OR TO TRANSITION SUBSTRATE FLUSH WITH PERIMETER NAILER HEIGHT.
3. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
4. SHOP FABRICATED GRAVEL STOP SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA AND/OR NRCA GUIDELINES. LAPS SHALL UTILIZE EITHER APPROVED SPLICE PLATES OR 4" MINIMUM OVERLAPS WITH APPROVED SEALANT.
5. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL
6. CAUTION: IMPROPER USE OF THESE MATERIALS AND APPLICATION EQUIPMENT CAN RESULT IN SEVERE BURNS, AND/ OR DAMAGE TO PROPERTY. THE MECHANIC MUST INSTALL THESE MATERIALS USING THE TECHNIQUES RECOMMENDED BY JM AND THOSE FOUND IN THE CERTIFIED ROOFING TORCH APPLICATOR (CERTA) PROGRAM AVAILABLE THROUGH THE NATIONAL ROOFING CONTRACTORS ASSOCIATION.

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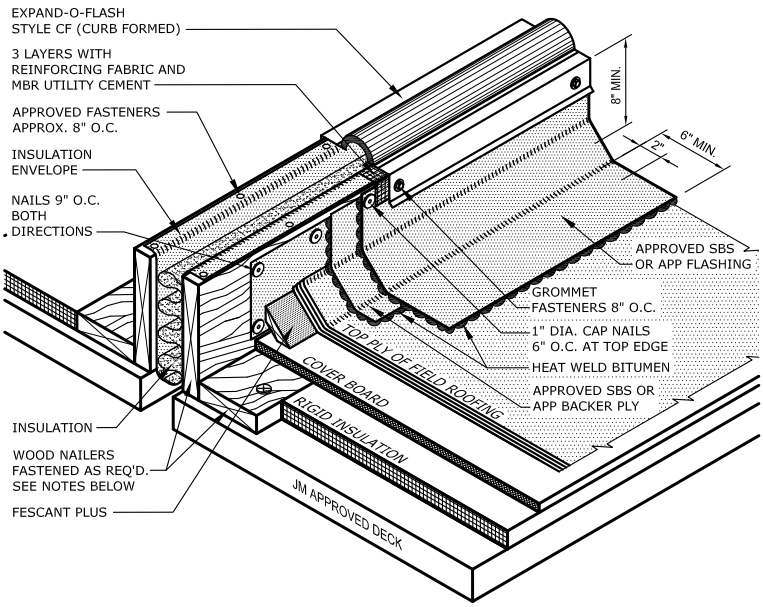
Curb Mounted Roof-to-Roof Expansion Joint Cover



NOTES:

1. SBS HEAT WELDED FLASHINGS CAN ONLY BE USED WITH SBS OR BUR SYSTEMS. APP HEAT WELDED FLASHINGS CAN ONLY BE USED WITH APP OR BUR SYSTEMS. (PLEASE REFER TO THE APPROPRIATE TABLE IN THE BITUMINOUS FLASHING SPECIFICATION INDICATING ACCEPTABLE FLASHING PRODUCTS FOR EACH OF THE SBS OR APP HEAT WELDED SYSTEMS.)
2. THE VERTICAL WOOD CURB SHOULD BE FASTENED TO THE DECK ONLY.
3. INSTALL EXPAND-O-FLASH IN ACCORDANCE WITH APPLICATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED TRANSITIONS, INSIDE/OUTSIDE CORNERS, ETC. ARE AVAILABLE TO COMPLETE THE INSTALLATION.
4. INSTALL PRESTO LOCK COPING IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS AND END CAPS ARE AVAILABLE TO COMPLETE THE INSTALLATION. SHOP FABRICATED COPINGS SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES.
5. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
6. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL
7. CAUTION: IMPROPER USE OF THESE MATERIALS AND APPLICATION EQUIPMENT CAN RESULT IN SEVERE BURNS, AND/ OR DAMAGE TO PROPERTY. THE MECHANIC MUST INSTALL THESE MATERIALS USING THE TECHNIQUES RECOMMENDED BY JM AND THOSE FOUND IN THE CERTIFIED ROOFING TORCH APPLICATOR (CERTA) PROGRAM AVAILABLE THROUGH THE NATIONAL ROOFING CONTRACTORS ASSOCIATION.

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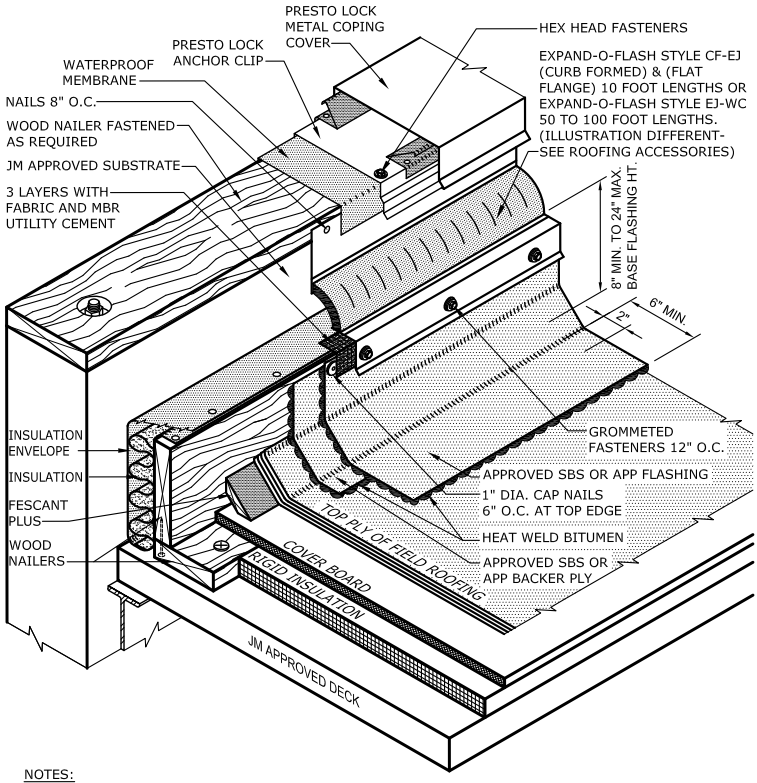
Curb to Wall E.J.



NOTES:

1. SBS HEAT WELDED FLASHINGS CAN ONLY BE USED WITH SBS OR BUR SYSTEMS. APP HEAT WELDED FLASHINGS CAN ONLY BE USED WITH APP OR BUR SYSTEMS. (PLEASE REFER TO THE APPROPRIATE TABLE IN THE BITUMINOUS FLASHING SPECIFICATION INDICATING ACCEPTABLE FLASHING PRODUCTS FOR EACH OF THE SBS OR APP HEAT WELDED SYSTEMS.)
2. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
3. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
4. INSTALL EXPAND-O-FLASH IN ACCORDANCE WITH APPLICATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED TRANSITIONS, INSIDE/OUTSIDE CORNERS, ETC. ARE AVAILABLE TO COMPLETE THE INSTALLATION.
5. INSTALL PRESTO LOCK COPING IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS AND END CAPS ARE AVAILABLE TO COMPLETE THE INSTALLATION. SHOP FABRICATED COPINGS SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES.
6. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL
7. CAUTION: IMPROPER USE OF THESE MATERIALS AND APPLICATION EQUIPMENT CAN RESULT IN SEVERE BURNS, AND/ OR DAMAGE TO PROPERTY. THE MECHANIC MUST INSTALL THESE MATERIALS USING THE TECHNIQUES RECOMMENDED BY JM AND THOSE FOUND IN THE CERTIFIED ROOFING TORCH APPLICATOR (CERTA) PROGRAM AVAILABLE THROUGH THE NATIONAL ROOFING CONTRACTORS ASSOCIATION.

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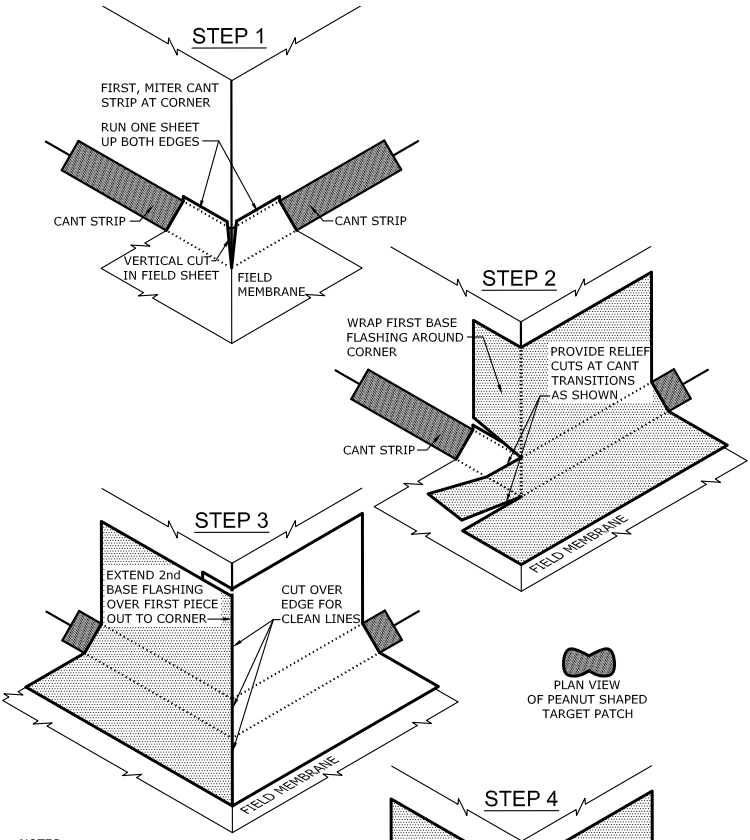
Base Flashing at Outside Corner



NOTES:

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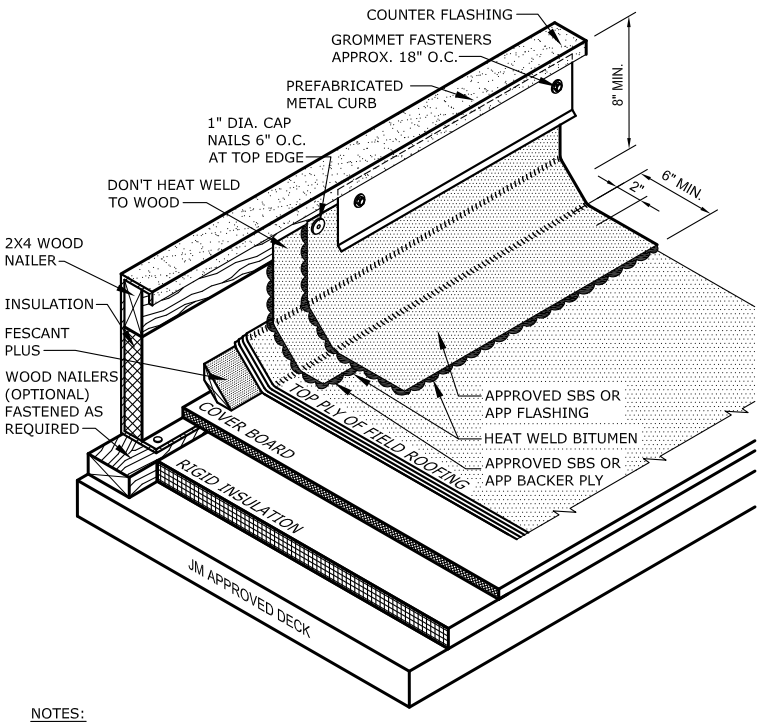
2. 3-COURSING WITH MBR UTILITY CEMENT & FABRIC OR MBR FLASHING CEMENT & FABRIC MAY BE USED IN LIEU OF TARGET PATCHES ALONG EDGE OF BASE FLASHING. REFER TO DETAIL DFE 26.
3. CAUTION: IMPROPER USE OF THESE MATERIALS AND APPLICATION EQUIPMENT CAN RESULT IN SEVERE BURNS, AND/ OR DAMAGE TO PROPERTY. THE MECHANIC MUST INSTALL THESE MATERIALS USING THE TECHNIQUES RECOMMENDED BY JM AND THOSE FOUND IN THE CERTIFIED ROOFING TORCH APPLICATOR (CERTA) PROGRAM AVAILABLE THROUGH THE NATIONAL ROOFING CONTRACTORS ASSOCIATION.
4. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

Prefabricated Curb



NOTES:

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2. CURB INSULATION MUST BE MECHANICALLY ATTACHED OR ADHERED SOLIDLY TO METAL CURB.
3. CURB MUST BE SET SO AS TO PROVIDE 8" MIN FLASHING HEIGHT.
4. METAL COUNTERFLASHING IS REQUIRED FOR ALL INSTALLATIONS.
5. HEIGHT OF CURB TO BE ADJUSTED WITH NAILERS. IT IS PREFERRED TO RAISE ROOF HATCH ONTO NAILERS TO EXTEND FLASHING HEIGHT.
6. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
7. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
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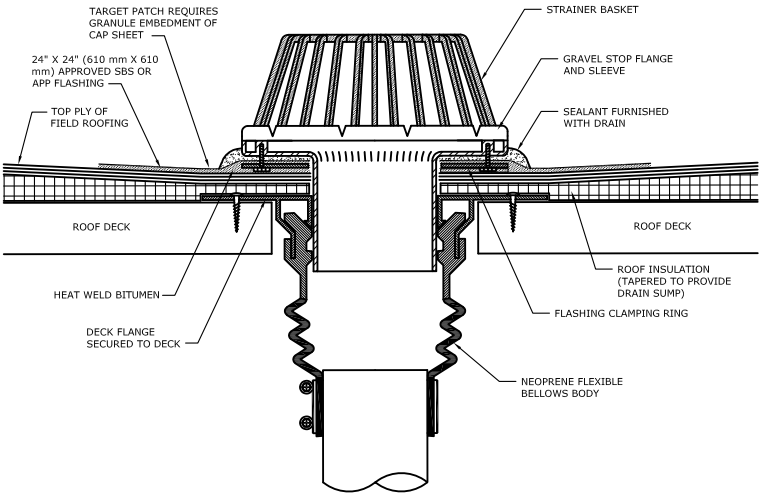
JM Flex-I-Drain



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. SEE JM FLEX-I-DRAIN INSTALLATION INSTRUCTIONS FOR FURTHER INFORMATION.
3. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
4. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
7. SBS HEAT WELDED FLASHINGS CAN ONLY BE USED WITH SBS OR BUR SYSTEMS. APP HEAT WELDED FLASHINGS CAN ONLY BE USED WITH APP OR BUR SYSTEMS. (PLEASE REFER TO THE APPROPRIATE TABLE IN THE BITUMINOUS FLASHING SPECIFICATION INDICATING ACCEPTABLE FLASHING PRODUCTS FOR EACH OF THE SBS OR APP HEAT WELDED SYSTEMS.)
8. CAUTION: IMPROPER USE OF THESE MATERIALS AND APPLICATION EQUIPMENT CAN RESULT IN SEVERE BURNS, AND/ OR DAMAGE TO PROPERTY. THE MECHANIC MUST INSTALL THESE MATERIALS USING THE TECHNIQUES RECOMMENDED BY JM AND THOSE FOUND IN THE CERTIFIED ROOFING TORCH APPLICATOR (CERTA) PROGRAM AVAILABLE THROUGH THE NATIONAL ROOFING CONTRACTORS ASSOCIATION.

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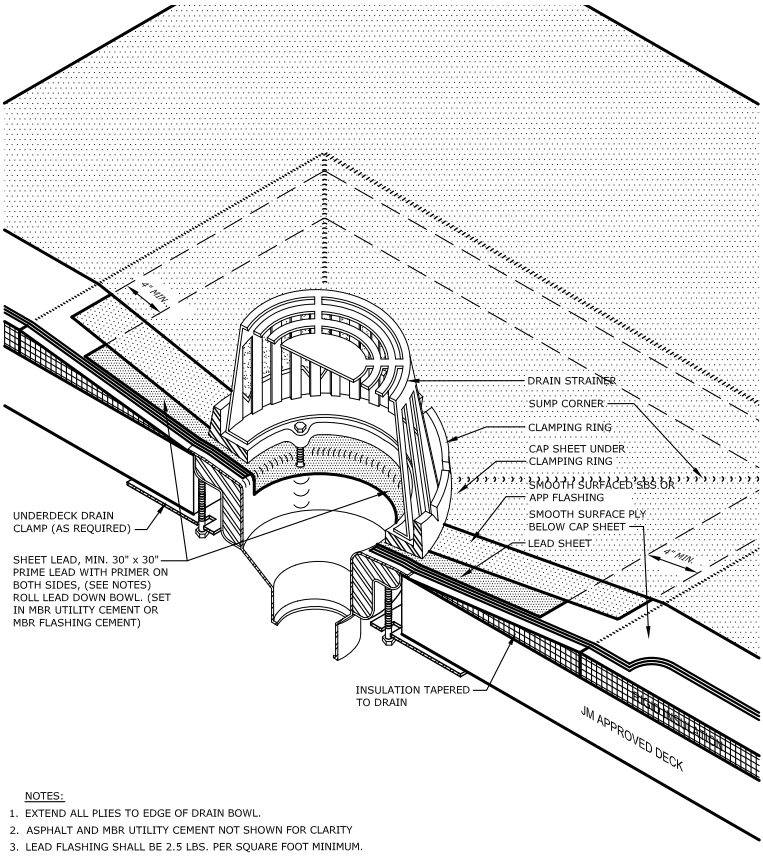
Metal Drain



NOTES:

1. EXTEND ALL PLIES TO EDGE OF DRAIN BOWL.
2. ASPHALT AND MBR UTILITY CEMENT NOT SHOWN FOR CLARITY
3. LEAD FLASHING SHALL BE 2.5 LBS. PER SQUARE FOOT MINIMUM.
4. IT IS ACCEPTABLE TO RUN FIELD MEMBRANE PLY THROUGH DRAIN CENTER AND OMIT TARGET SHEET IF DRAIN SUMP IS SHALLOW ENOUGH TO ALLOW INSTALLATION WITHOUT WRINKLES OR FISHMOUTHS. STEEP SUMPS WILL REQUIRE THE INSTALLATION OF A TARGET PATCH WITHIN DRAIN SUMP.
5. USE ASPHALT PRIMER ON LEAD FLANGES WHEN USING MBR UTILITY CEMENT. USE PERMAFLASH PRIMER ON LEAD FLANGES WHEN USING MBR FLASHING CEMENT.
6. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL
7. SBS HEAT WELDED FLASHINGS CAN ONLY BE USED WITH SBS OR BUR SYSTEMS. APP HEAT WELDED FLASHINGS CAN ONLY BE USED WITH APP OR BUR SYSTEMS. (PLEASE REFER TO THE APPROPRIATE TABLE IN THE BITUMINOUS FLASHING SPECIFICATION INDICATING ACCEPTABLE FLASHING PRODUCTS FOR EACH OF THE SBS OR APP HEAT WELDED SYSTEMS.)
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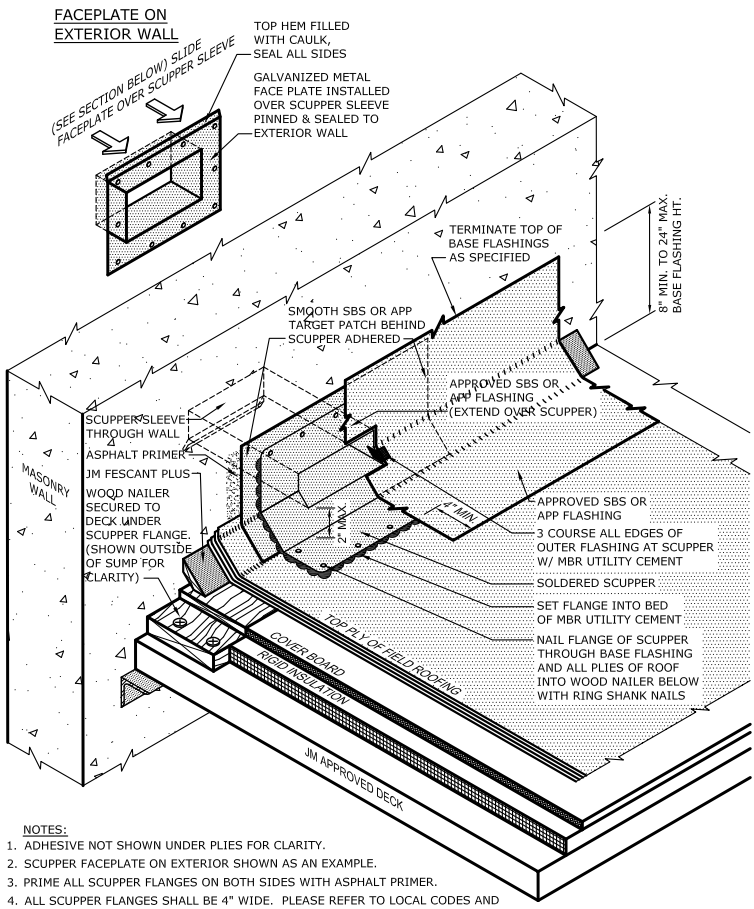
Overflow Metal Scupper



NOTES:

1. ADHESIVE NOT SHOWN UNDER PLIES FOR CLARITY.
2. SCUPPER FACEPLATE ON EXTERIOR SHOWN AS AN EXAMPLE.
3. PRIME ALL SCUPPER FLANGES ON BOTH SIDES WITH ASPHALT PRIMER.
4. ALL SCUPPER FLANGES SHALL BE 4" WIDE. PLEASE REFER TO LOCAL CODES AND SMACNA FOR METAL SCUPPER AND CONDUCTOR HEAD FABRICATION REQUIREMENTS.
5. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
6. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
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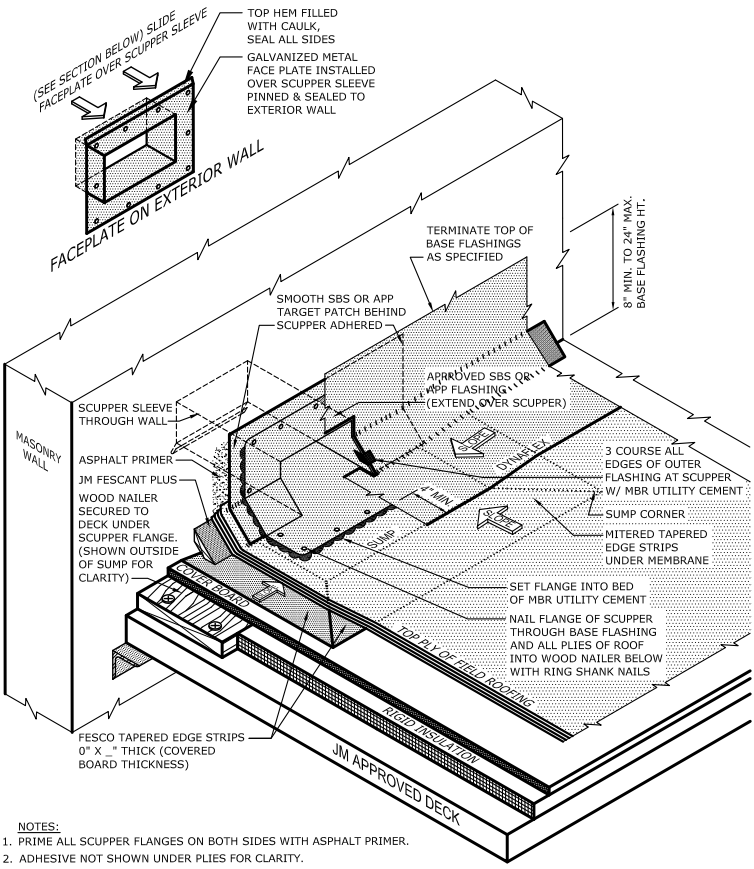
Primary Metal Scupper in Sump



NOTES:

1. PRIME ALL SCUPPER FLANGES ON BOTH SIDES WITH ASPHALT PRIMER.
2. ADHESIVE NOT SHOWN UNDER PLIES FOR CLARITY.
3. SCUPPER FACEPLATE ON EXTERIOR SHOWN AS AN EXAMPLE.
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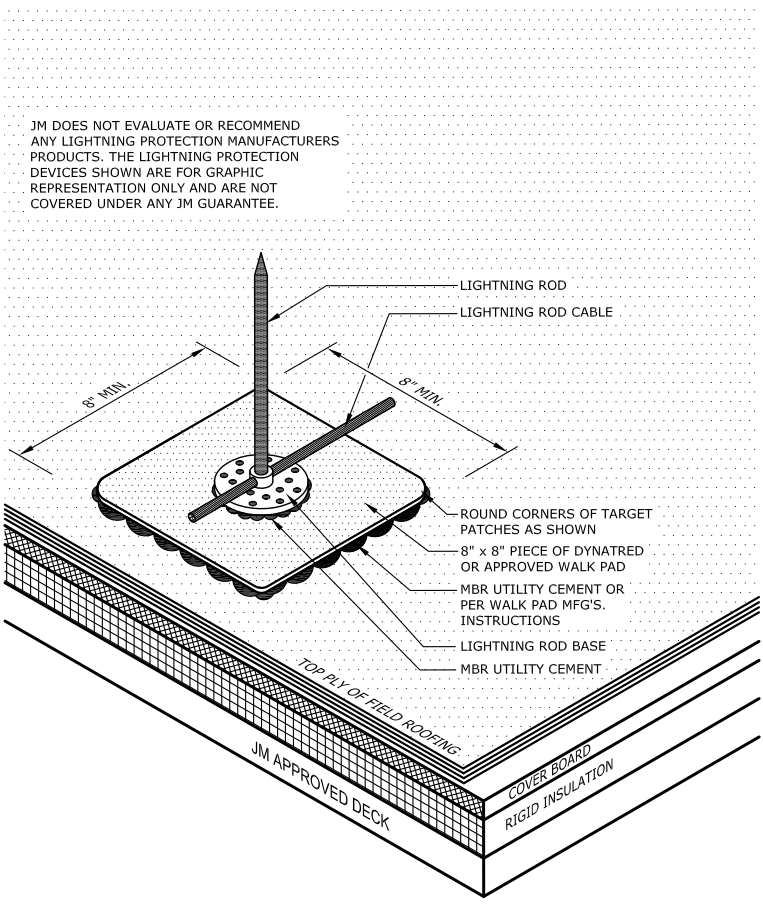
Lightning Rod on Roof Surface



NOTES:

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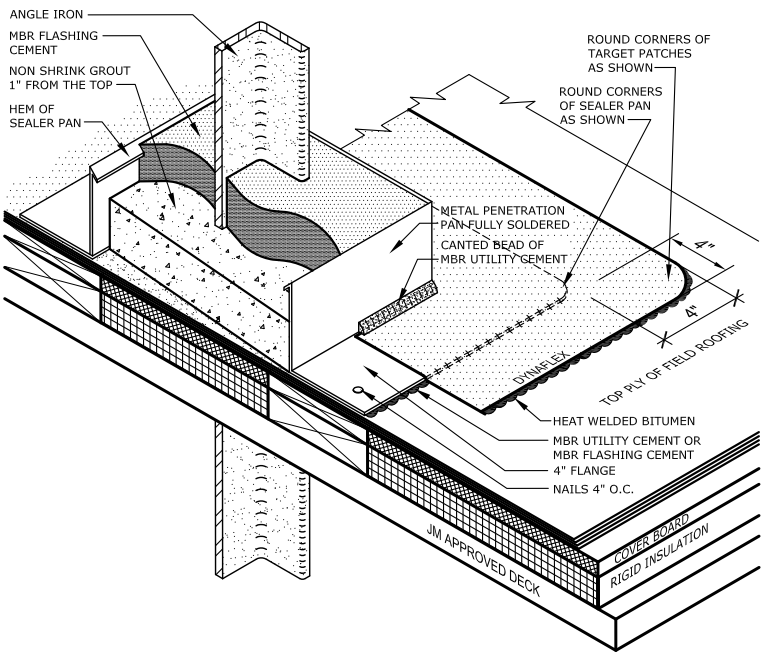
3. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
4. LIGHTNING ROD GROUND WIRE MUST NOT COME IN CONTACT WITH THE ROOFING MATERIAL. A SACRIFICIAL LAYER OF MEMBRANE IS RECOMMENDED UNDER THE ENTIRE LENGTH OF GROUND WIRE(S).

Penetration Pocket



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2. MAINTAIN 2" MIN. CLEARANCE FROM PENETRATION TO EDGE OF METAL PAN.
3. ROUND FLANGE CORNERS ON METAL PAN.
4. PRIME INSIDE OF METAL PAN WITH PERMAFLASH PRIMER WHERE MBR FLASHING CEMENT WILL BE PLACED.
5. PENETRATION PANS ARE CONSIDERED MAINTENANCE ITEMS AND ARE NOT GUARANTEED BY JOHNS MANVILLE.
6. USE ASPHALT PRIMER ON FLANGES WHEN USING MBR UTILITY CEMENT. USE PERMAFLASH PRIMER ON FLANGES WHEN USING MBR FLASHING CEMENT.
7. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
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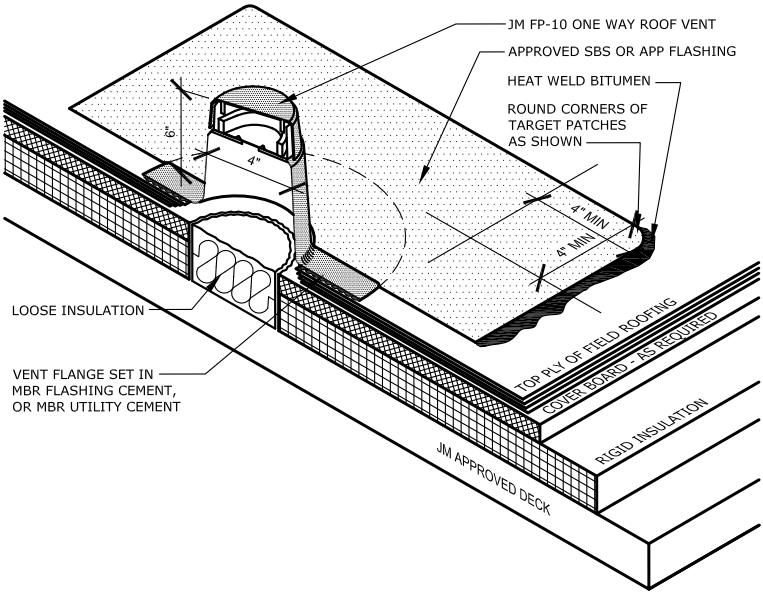
FP-10 One Way® Roof Vent



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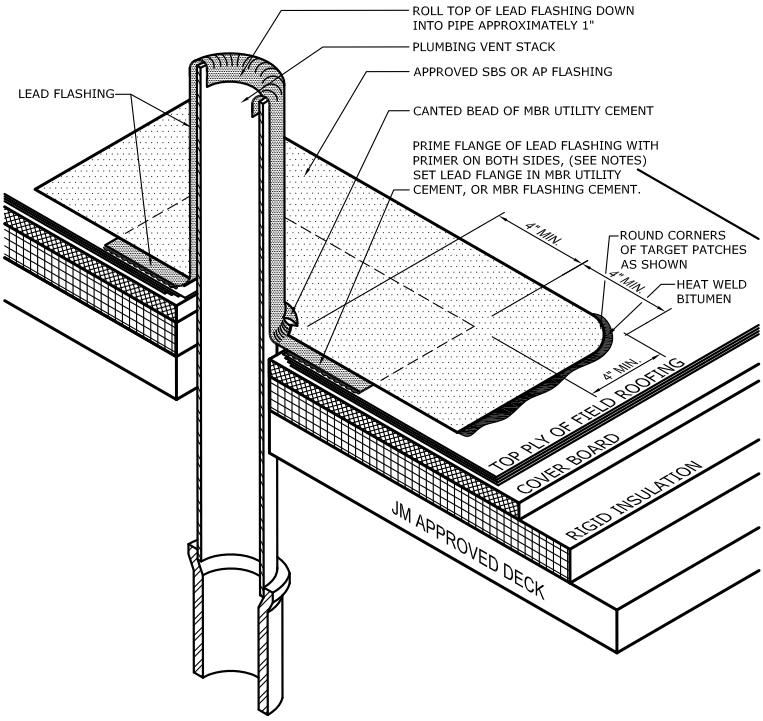
2. CUT A 5" DIAMETER HOLE IN MEMBRANE PRIOR TO INSTALLATION. REMOVE ALL OR PART OF THE INSULATION TO FACILITATE VENTING. LOOSE INSULATION CAN REMAIN TO MAINTAIN R VALUE AND PREVENT CONDENSATION.
3. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL
4. CAUTION: IMPROPER USE OF THESE MATERIALS AND APPLICATION EQUIPMENT CAN RESULT IN SEVERE BURNS, AND/ OR DAMAGE TO PROPERTY. THE MECHANIC MUST INSTALL THESE MATERIALS USING THE TECHNIQUES RECOMMENDED BY JM AND THOSE FOUND IN THE CERTIFIED ROOFING TORCH APPLICATOR (CERTA) PROGRAM AVAILABLE THROUGH THE NATIONAL ROOFING CONTRACTORS ASSOCIATION.

Plumbing Vent



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2. LEAD FLASHING SHALL BE 2.5 LBS. PER SQUARE FOOT MINIMUM.
3. IF LEAD FLASHING IS NOT DESIRED OR PIPE IS TOO TALL, SEE PERMAFLASH DETAIL PMF-6 & PMF-6S FOR A SUITABLE ALTERNATIVE.
4. USE ASPHALT PRIMER ON LEAD FLANGES WHEN USING MBR UTILITY CEMENT. USE PERMAFLASH PRIMER ON LEAD FLANGES WHEN USING MBR FLASHING CEMENT.
5. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL
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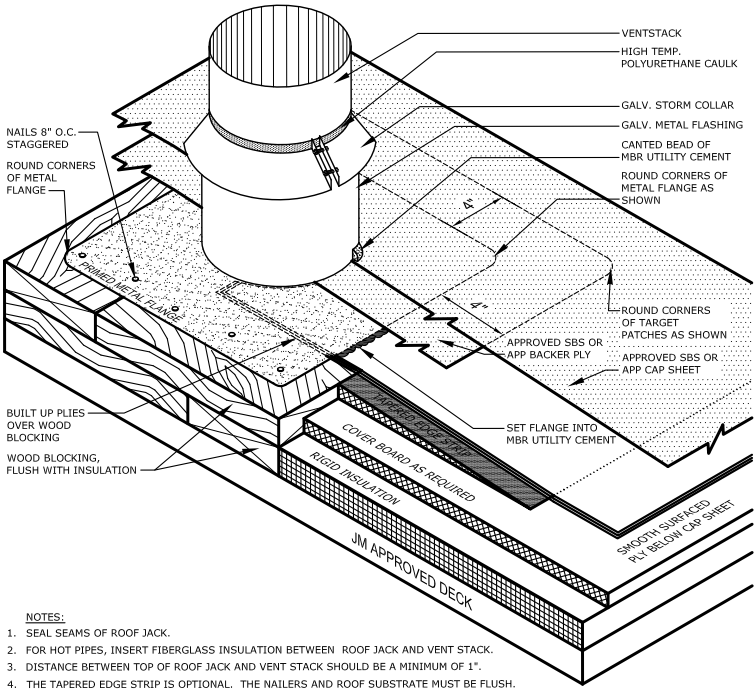
Vent Stack (Warm)



NOTES:

1. SEAL SEAMS OF ROOF JACK.
2. FOR HOT PIPES, INSERT FIBERGLASS INSULATION BETWEEN ROOF JACK AND VENT STACK.
3. DISTANCE BETWEEN TOP OF ROOF JACK AND VENT STACK SHOULD BE A MINIMUM OF 1".
4. THE TAPERED EDGE STRIP IS OPTIONAL. THE NAILERS AND ROOF SUBSTRATE MUST BE FLUSH.
5. PRIME BOTH SIDES OF FLANGE ON JACK WITH ASPHALT PRIMER.
6. FLASHING ROOF JACK WITH A TARGET PATCH OVER CAP SHEET IS ACCEPTABLE. SEE DFE-9 FOR TYPICAL FLASHING INSTALLATION.
7. SBS HEAT WELDED FLASHINGS CAN ONLY BE USED WITH SBS OR BUR SYSTEMS. APP HEAT WELDED FLASHINGS CAN ONLY BE USED WITH APP OR BUR SYSTEMS. (PLEASE REFER TO THE APPROPRIATE TABLE IN THE BITUMINOUS FLASHING SPECIFICATION INDICATING ACCEPTABLE FLASHING PRODUCTS FOR EACH OF THE SBS OR APP HEAT WELDED SYSTEMS.)
8. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
9. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
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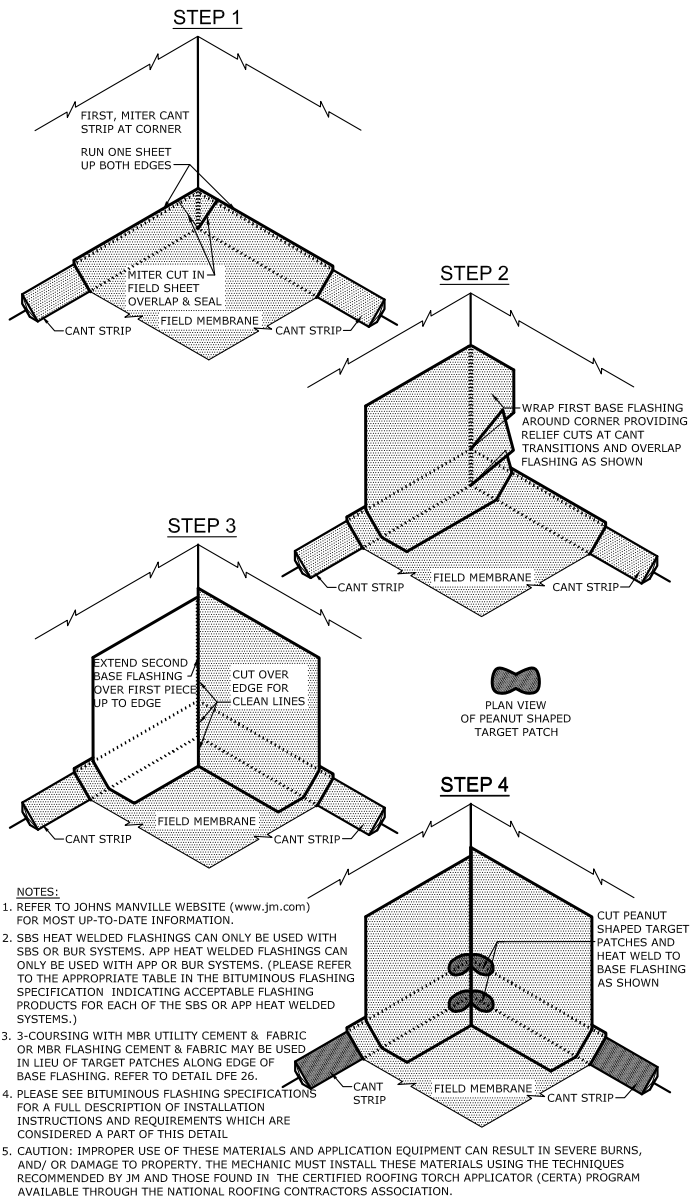
Base Flashing at Inside Corner



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3. 3-COURSING WITH MBR UTILITY CEMENT & FABRIC OR MBR FLASHING CEMENT & FABRIC MAY BE USED IN LIEU OF TARGET PATCHES ALONG EDGE OF BASE FLASHING. REFER TO DETAIL DFE 26.
4. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL
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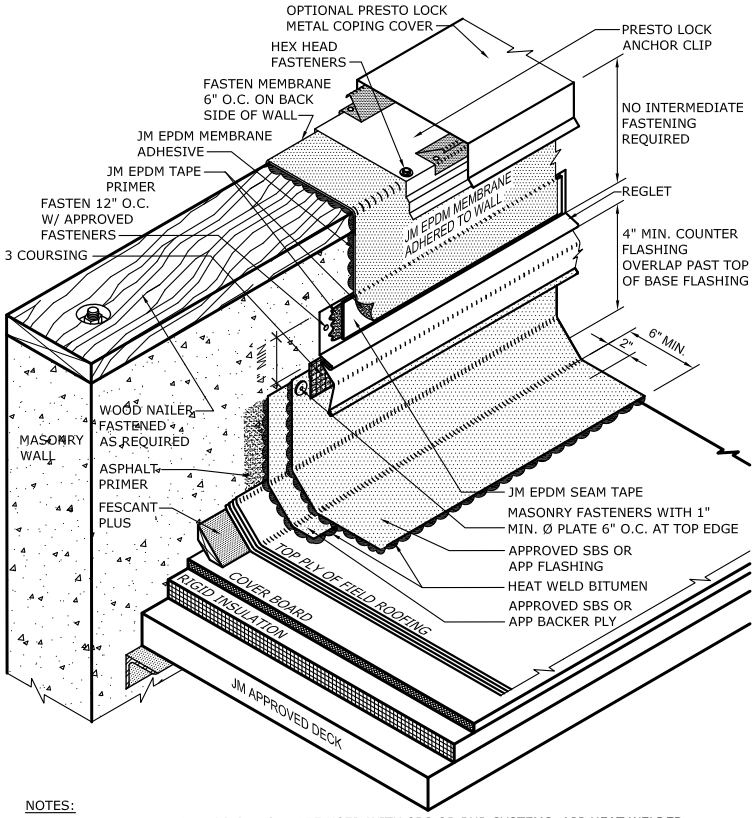
EPDM Wall Covering with Bituminous Base Flashing



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2. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
3. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
4. INSTALL PRESTO LOCK COPING IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS AND END CAPS ARE AVAILABLE TO COMPLETE THE INSTALLATION. SHOP FABRICATED COPINGS SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES.
5. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL
6. A TERMINATION BAR FASTENED 6" O.C. IS AN ACCEPTABLE SECUREMENT ALTERNATIVE ALONG THE TOP EDGE OF THE FLASHING.
7. CAUTION: IMPROPER USE OF THESE MATERIALS AND APPLICATION EQUIPMENT CAN RESULT IN SEVERE BURNS, AND/ OR DAMAGE TO PROPERTY. THE MECHANIC MUST INSTALL THESE MATERIALS USING THE TECHNIQUES RECOMMENDED BY JM AND THOSE FOUND IN THE CERTIFIED ROOFING TORCH APPLICATOR (CERTA) PROGRAM AVAILABLE THROUGH THE NATIONAL ROOFING CONTRACTORS ASSOCIATION.

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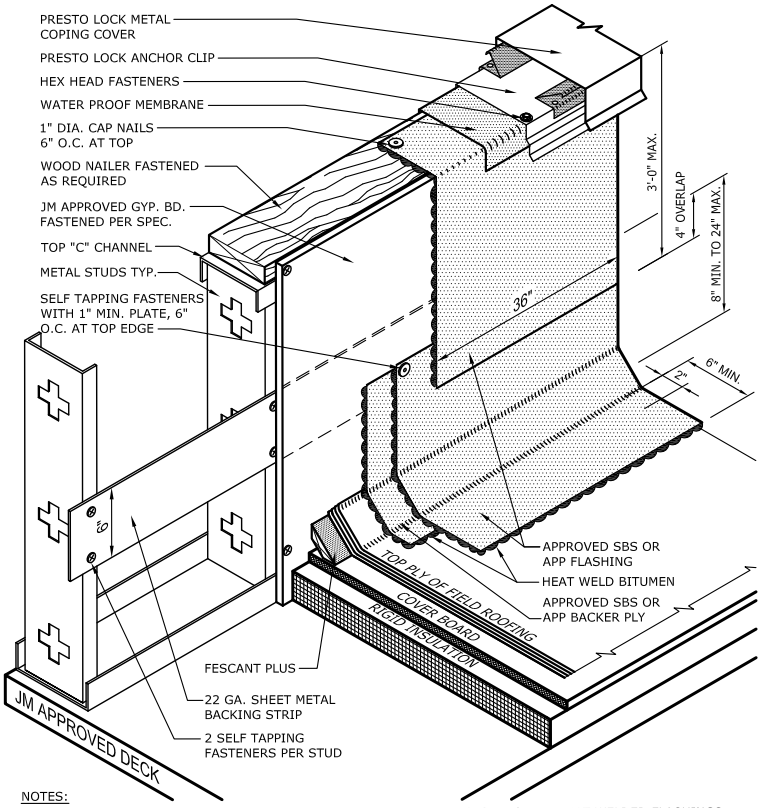
Gypsum Wall on Metal Studs >24" w/ Coping



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2. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
3. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
4. INSTALL PRESTO LOCK COPING IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS AND END CAPS ARE AVAILABLE TO COMPLETE THE INSTALLATION. SHOP FABRICATED COPINGS SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES.
5. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL
6. CAUTION: IMPROPER USE OF THESE MATERIALS AND APPLICATION EQUIPMENT CAN RESULT IN SEVERE BURNS, AND/ OR DAMAGE TO PROPERTY. THE MECHANIC MUST INSTALL THESE MATERIALS USING THE TECHNIQUES RECOMMENDED BY JM AND THOSE FOUND IN THE CERTIFIED ROOFING TORCH APPLICATOR (CERTA) PROGRAM AVAILABLE THROUGH THE NATIONAL ROOFING CONTRACTORS ASSOCIATION.

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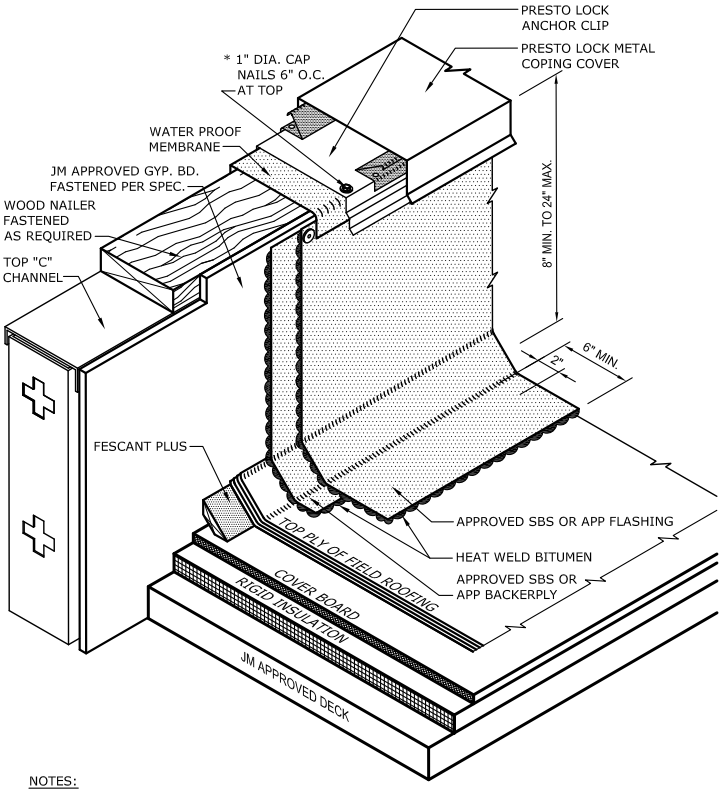
Gypsum Wall on Metal Studs <24" w/ Coping



NOTES:

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5. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL
6. *A TERMINATION BAR FASTENED 6" O.C. IS AN ACCEPTABLE SECUREMENT ALTERNATIVE ALONG THE TOP EDGE OF FLASHING.
7. CAUTION: IMPROPER USE OF THESE MATERIALS AND APPLICATION EQUIPMENT CAN RESULT IN SEVERE BURNS, AND/ OR DAMAGE TO PROPERTY. THE MECHANIC MUST INSTALL THESE MATERIALS USING THE TECHNIQUES RECOMMENDED BY JM AND THOSE FOUND IN THE CERTIFIED ROOFING TORCH APPLICATOR (CERTA) PROGRAM AVAILABLE THROUGH THE NATIONAL ROOFING CONTRACTORS ASSOCIATION.

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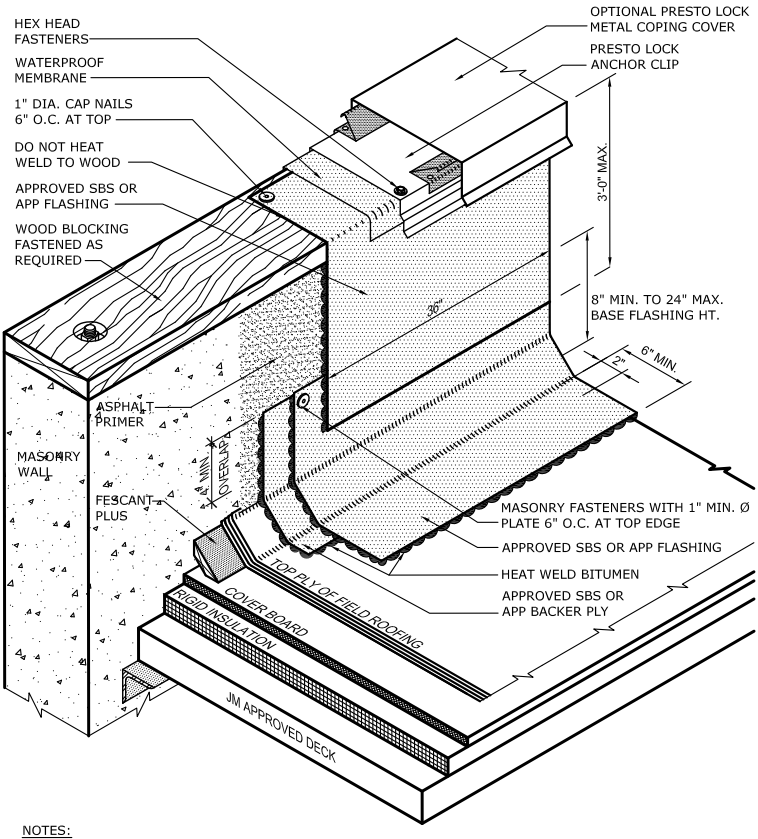
Masonry Wall >24" with Coping



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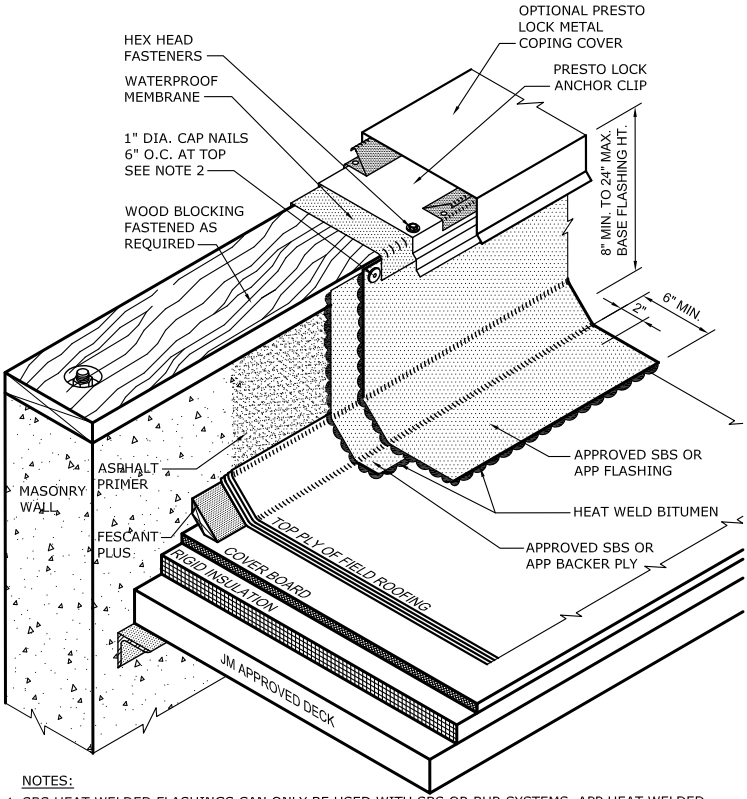
Masonry Wall <24" with Coping



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3. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
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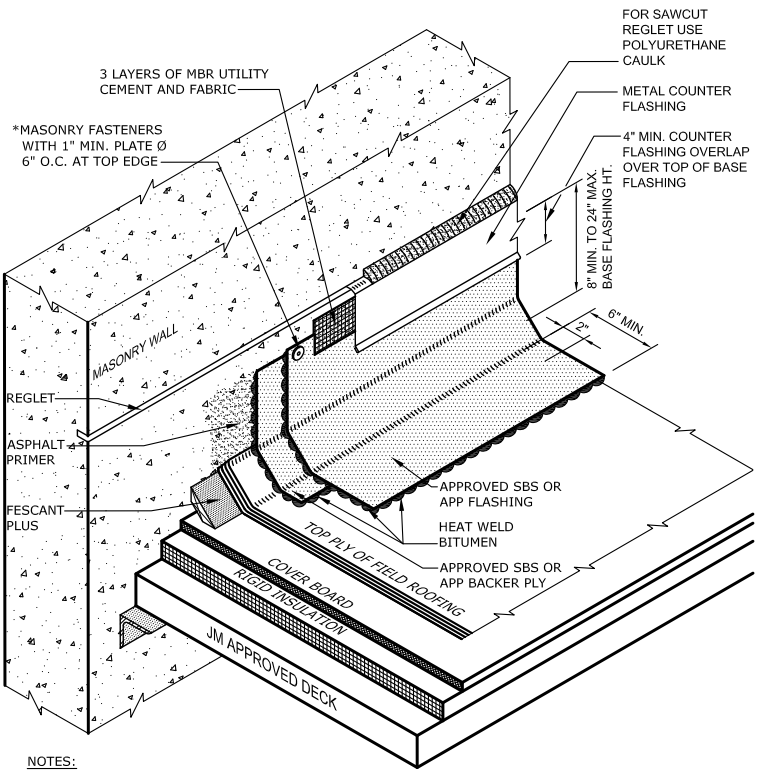
Masonry Wall w/ Counterflashing



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2. *A TERMINATION BAR FASTENED 6" O.C. IS AN ACCEPTABLE SECUREMENT ALTERNATIVE ALONG THE TOP EDGE OF THE FLASHING.
3. METAL COUNTER FLASHING IS RECOMMENDED FOR ALL INSTALLATIONS AND IS REQUIRED FOR ALL GUARANTEES 15 YEARS OR LONGER. A 3 COURSING OF PERMAFLASH MAY BE USED TO SEAL THE TOP EDGE OF THE FLASHING ON 10 YEAR NDL'S IN LIEU OF METAL COUNTER FLASHING.
4. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
5. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
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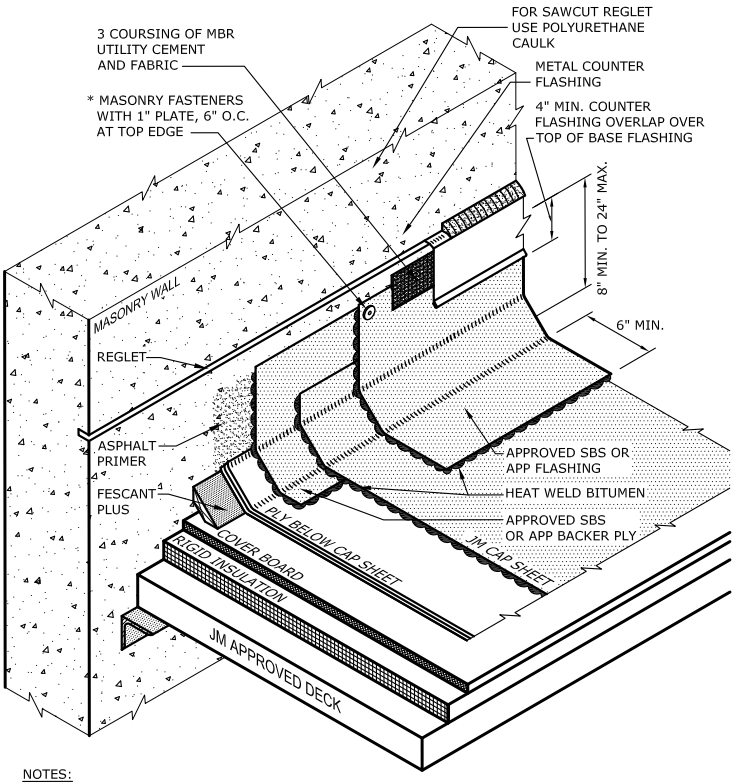
Optional Two-Ply Base Flashing for Load-Bearing Masonry Wall w/ Counterflashing



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2. EXTEND SMOOTH SURFACED SBS BACKER PLY 2" MIN. FROM TOE OF CANT.
3. *A TERMINATION BAR FASTENED 6" O.C. IS AN ACCEPTABLE SECUREMENT ALTERNATIVE ALONG THE TOP EDGE OF FLASHING.
4. METAL COUNTER FLASHING IS RECOMMENDED FOR ALL INSTALLATIONS AND IS REQUIRED FOR ALL GUARANTEES 15 YEARS OR LONGER. A 3 COURSING OF PERMAFLASH MAY BE USED TO SEAL THE TOP EDGE OF THE FLASHING ON 10 YEAR NDL'S IN LIEU OF METAL COUNTER FLASHING.
5. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
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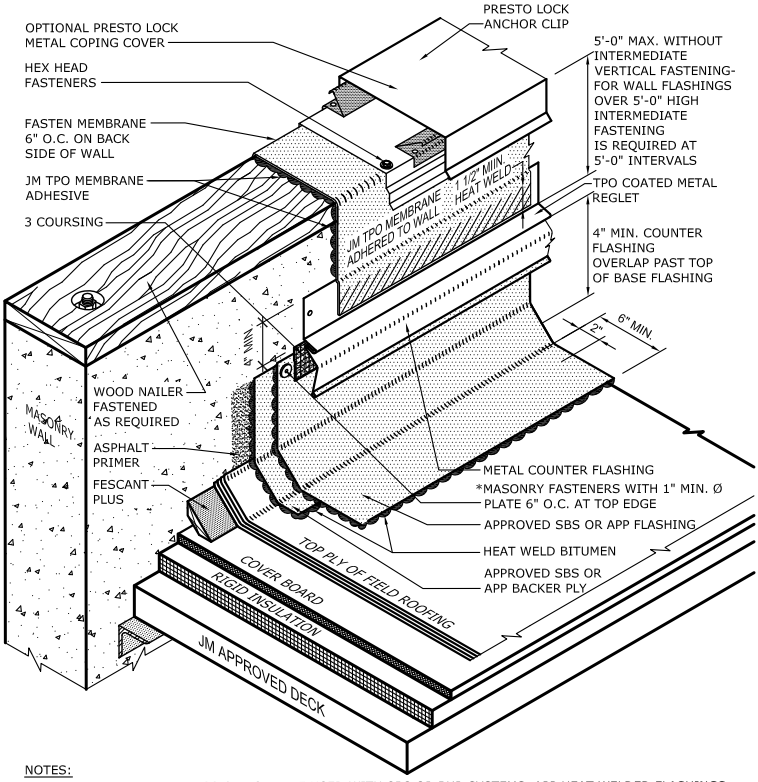
TPO Wall Covering with Bituminous Base Flashing



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4. INSTALL PRESTO LOCK COPING IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS AND END CAPS ARE AVAILABLE TO COMPLETE THE INSTALLATION. SHOP FABRICATED COPINGS SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES.
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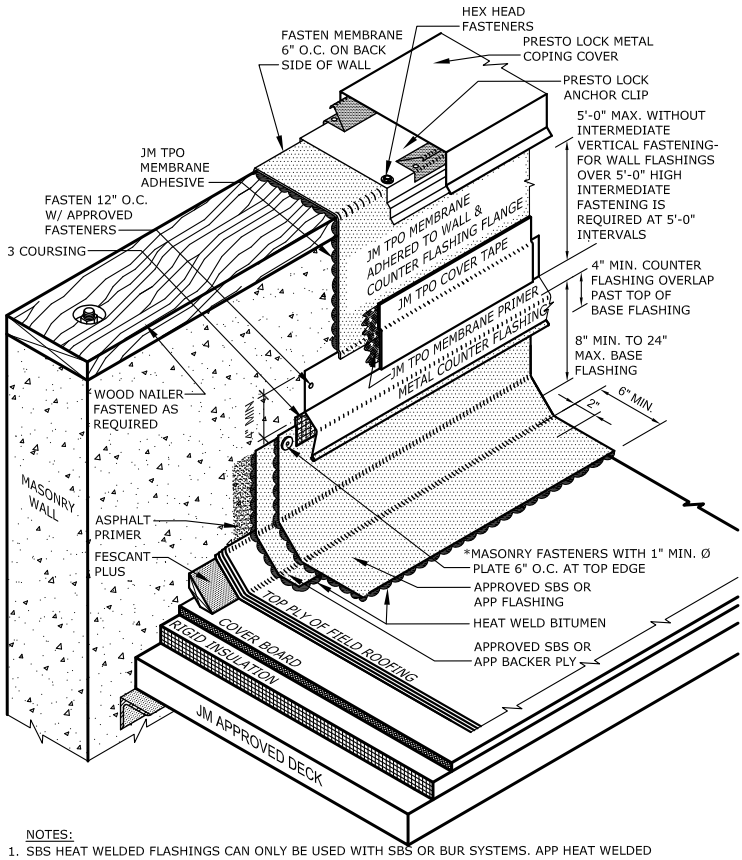
TPO Wall Covering with Bituminous Base Flashing



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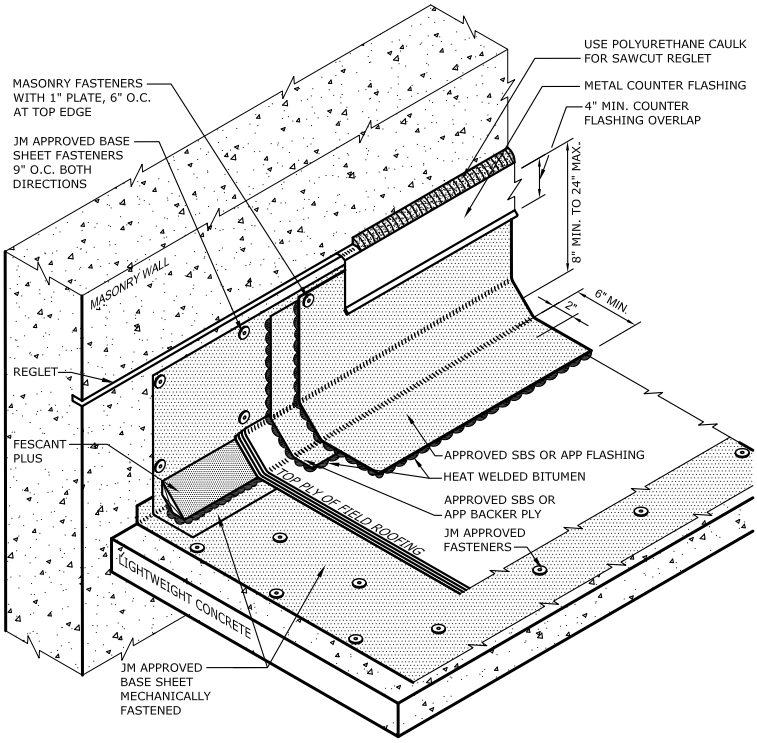
Venting Lightweight Concrete



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2. EXTEND VENTSULATION ONE INCH MIN. PAST TOP OF BASEFLASHING TO PROMOTE AIRFLOW.
3. A TERMINATION BAR FASTENED 6" O.C. IS AN ACCEPTABLE SECUREMENT ALTERNATIVE ALONG THE TOP EDGE OF THE FLASHING.*
4. METAL COUNTER FLASHING IS RECOMMENDED FOR ALL INSTALLATIONS AND IS REQUIRED FOR ALL GUARANTEES 15 YEARS OR LONGER. A 3 COURSING OF PERMAFLASH MAY BE USED TO SEAL THE TOP EDGE OF THE FLASHING ON 10 YEAR NDL'S IN LIEU OF METAL COUNTER FLASHING.
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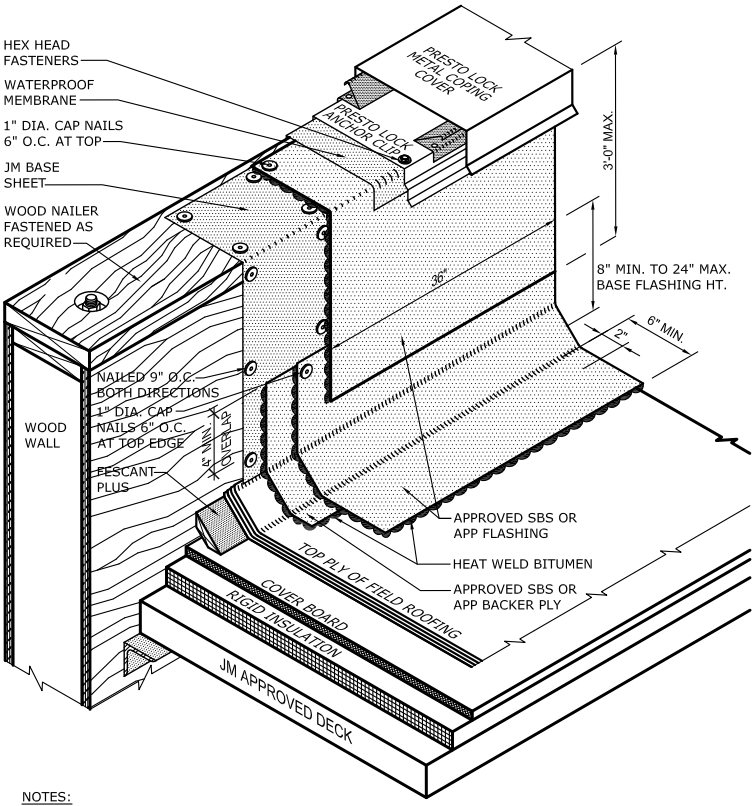
Wood Wall >24" with Coping



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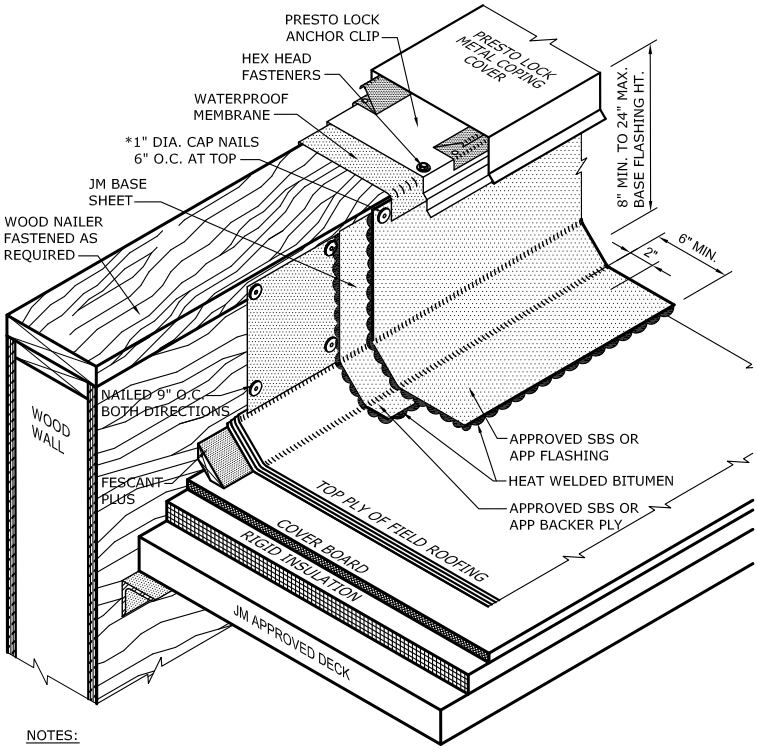
Wood Wall <24" with Coping



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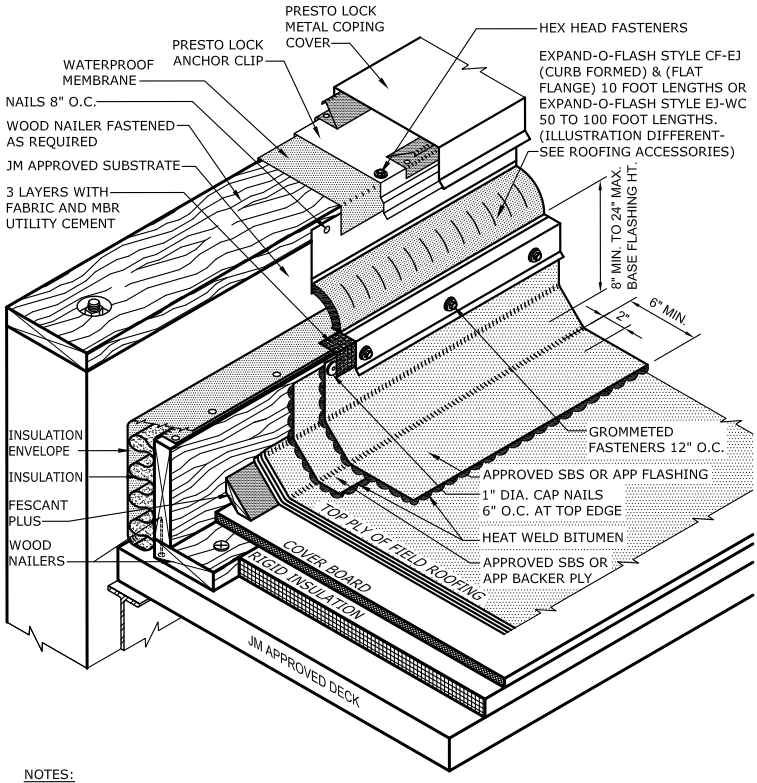
1. SBS HEAT WELDED FLASHINGS CAN ONLY BE USED WITH SBS OR BUR SYSTEMS. APP HEAT WELDED FLASHINGS CAN ONLY BE USED WITH APP OR BUR SYSTEMS. (PLEASE REFER TO THE APPROPRIATE TABLE IN THE BITUMINOUS FLASHING SPECIFICATION INDICATING ACCEPTABLE FLASHING PRODUCTS FOR EACH OF THE SBS OR APP HEAT WELDED SYSTEMS.)
2. *A TERMINATION BAR FASTENED 6" O.C. IS AN ACCEPTABLE SECUREMENT ALTERNATIVE ALONG THE TOP EDGE OF THE CEILING.
3. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
4. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
5. INSTALL PRESTO LOCK COPING IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS AND END CAPS ARE AVAILABLE TO COMPLETE THE INSTALLATION. SHOP FABRICATED COPINGS SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES.
6. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL
7. CAUTION: IMPROPER USE OF THESE MATERIALS AND APPLICATION EQUIPMENT CAN RESULT IN SEVERE BURNS, AND/ OR DAMAGE TO PROPERTY. THE MECHANIC MUST INSTALL THESE MATERIALS USING THE TECHNIQUES RECOMMENDED BY JM AND THOSE FOUND IN THE CERTIFIED ROOFING TORCH APPLICATOR (CERTA) PROGRAM AVAILABLE THROUGH THE NATIONAL ROOFING CONTRACTORS ASSOCIATION.

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

Curb to Wall E.J.



NOTES:

1. SBS HEAT WELDED FLASHINGS CAN ONLY BE USED WITH SBS OR BUR SYSTEMS. APP HEAT WELDED FLASHINGS CAN ONLY BE USED WITH APP OR BUR SYSTEMS. (PLEASE REFER TO THE APPROPRIATE TABLE IN THE BITUMINOUS FLASHING SPECIFICATION INDICATING ACCEPTABLE FLASHING PRODUCTS FOR EACH OF THE SBS OR APP HEAT WELDED SYSTEMS.)
2. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
3. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
4. INSTALL EXPAND-O-FLASH IN ACCORDANCE WITH APPLICATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED TRANSITIONS, INSIDE/OUTSIDE CORNERS, ETC. ARE AVAILABLE TO COMPLETE THE INSTALLATION.
5. INSTALL PRESTO LOCK COPING IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS AND END CAPS ARE AVAILABLE TO COMPLETE THE INSTALLATION. SHOP FABRICATED COPINGS SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES.
6. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL
7. CAUTION: IMPROPER USE OF THESE MATERIALS AND APPLICATION EQUIPMENT CAN RESULT IN SEVERE BURNS, AND/ OR DAMAGE TO PROPERTY. THE MECHANIC MUST INSTALL THESE MATERIALS USING THE TECHNIQUES RECOMMENDED BY JM AND THOSE FOUND IN THE CERTIFIED ROOFING TORCH APPLICATOR (CERTA) PROGRAM AVAILABLE THROUGH THE NATIONAL ROOFING CONTRACTORS ASSOCIATION.

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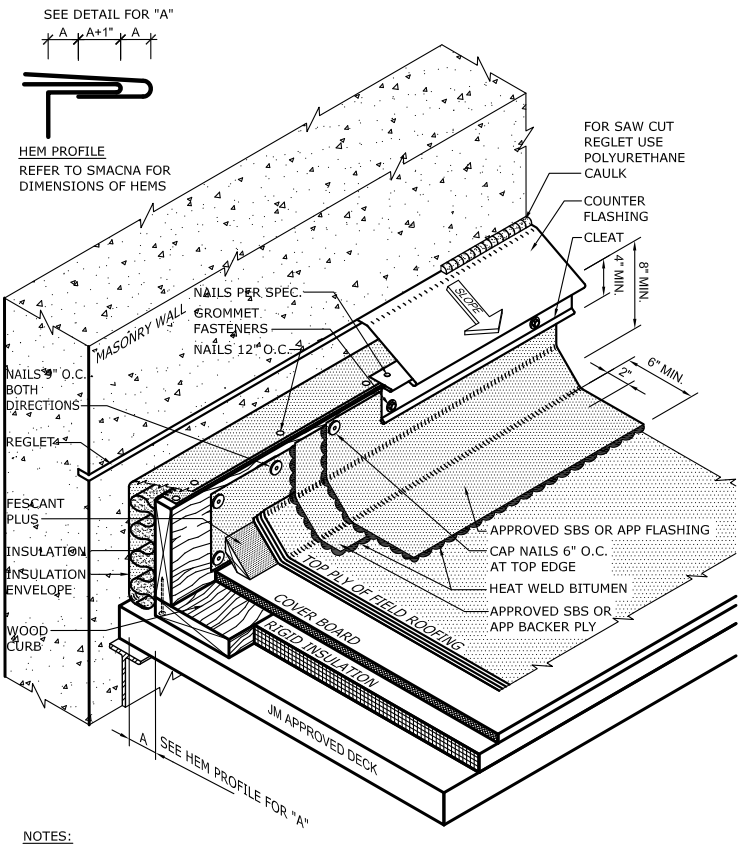
Refer to the Safe Use Instructions and product label prior to using this product.

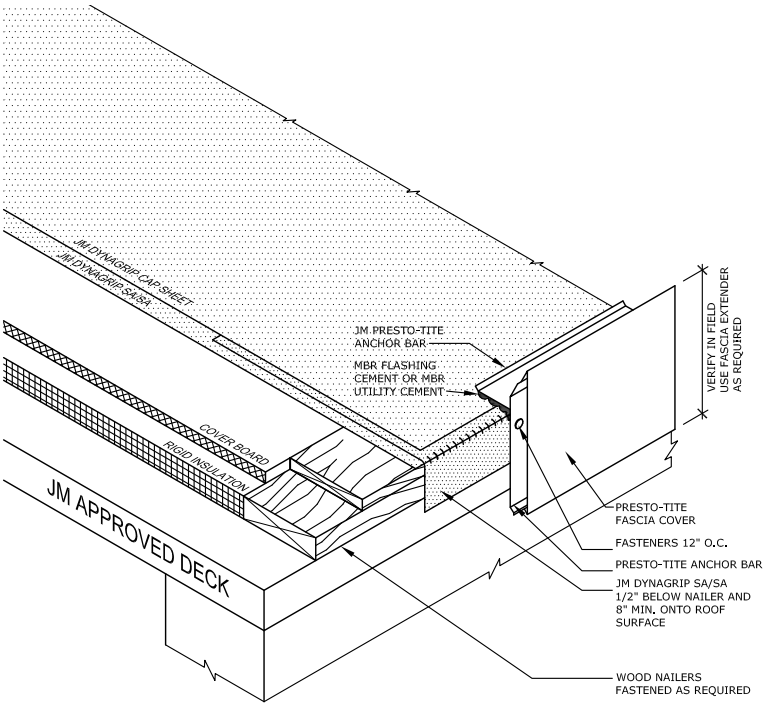
Metal E.J. Alternate



NOTES:

1. SBS HEAT WELDED FLASHINGS CAN ONLY BE USED WITH SBS OR BUR SYSTEMS. APP HEAT WELDED FLASHINGS CAN ONLY BE USED WITH APP OR BUR SYSTEMS. (PLEASE REFER TO THE APPROPRIATE TABLE IN THE BITUMINOUS FLASHING SPECIFICATION INDICATING ACCEPTABLE FLASHING PRODUCTS FOR EACH OF THE SBS OR APP HEAT WELDED SYSTEMS.)
2. THE VERTICAL WOOD CURB SHOULD BE FASTENED TO THE DECK ONLY.
3. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
4. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
5. SHOP FABRICATED GRAVEL STOP SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA AND/OR NRCA GUIDELINES. LAPS SHALL UTILIZE EITHER APPROVED SPLICE PLATES OR 4" MINIMUM OVERLAPS WITH APPROVED SEALANT.
6. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL
7. CAUTION: IMPROPER USE OF THESE MATERIALS AND APPLICATION EQUIPMENT CAN RESULT IN SEVERE BURNS, AND/ OR DAMAGE TO PROPERTY. THE MECHANIC MUST INSTALL THESE MATERIALS USING THE TECHNIQUES RECOMMENDED BY JM AND THOSE FOUND IN THE CERTIFIED ROOFING TORCH APPLICATOR (CERTA) PROGRAM AVAILABLE THROUGH THE NATIONAL ROOFING CONTRACTORS ASSOCIATION.

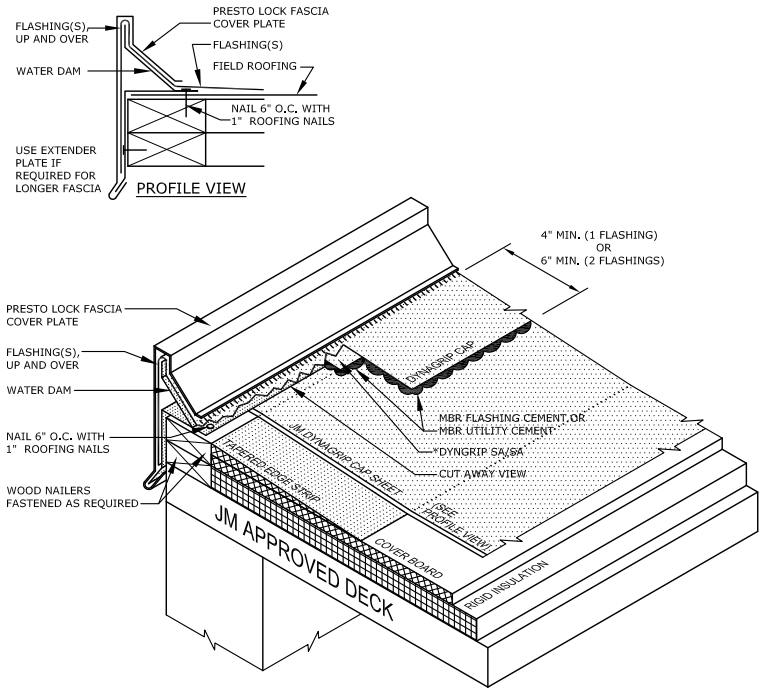
Drip Edge with Presto-Tite™



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. THE TAPERED EDGE STRIP (OPTIONAL), IS USED FOR NON-DRAINING EDGES TO KEEP PONDING WATER OFF THE FLASHING LAPS OR TO TRANSITION SUBSTRATE FLUSH WITH PERIMETER NAILER HEIGHT.
3. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL. CONTACT JM TECHNICAL FOR METAL OPTIONS TO BE INCLUDED WITHIN THE JM NDL GUARANTEE.
4. PRESTO-TITE GRAVEL STOP SHOULD BE INSTALLED IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS ARE AVAILABLE TO COMPLETE THE INSTALLATION.
5. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

Facia, Presto Lock™ Fascia System



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. *AN SBS BACKER PLY EXTENDING 2" MIN. FROM TOE OF CANT IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEES.
3. THE TAPERED EDGE STRIP (OPTIONAL), IS USED FOR NON-DRAINING EDGES TO KEEP PONDING WATER OFF THE FLASHING LAPS OR TO TRANSITION SUBSTRATE FLUSH WITH PERIMETER NAILER HEIGHT.
4. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL. CONTACT JM TECHNICAL FOR METAL OPTIONS TO BE INCLUDED WITHIN THE JM NDL GUARANTEE.
5. PRESTO LOCK GRAVEL STOP SHOULD BE INSTALLED IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS ARE AVAILABLE TO COMPLETE THE INSTALLATION.
6. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

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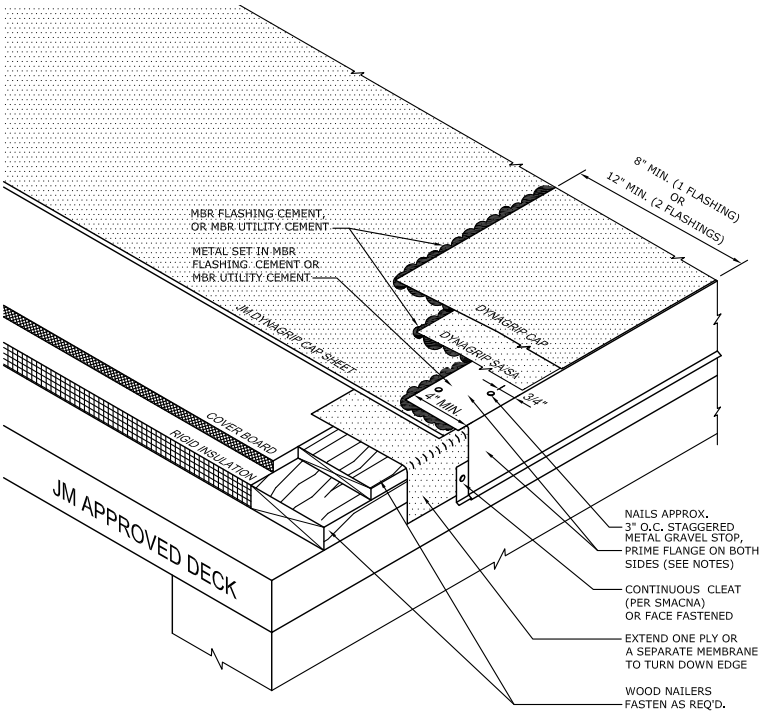
Refer to the Safe Use Instructions and product label prior to using this product.

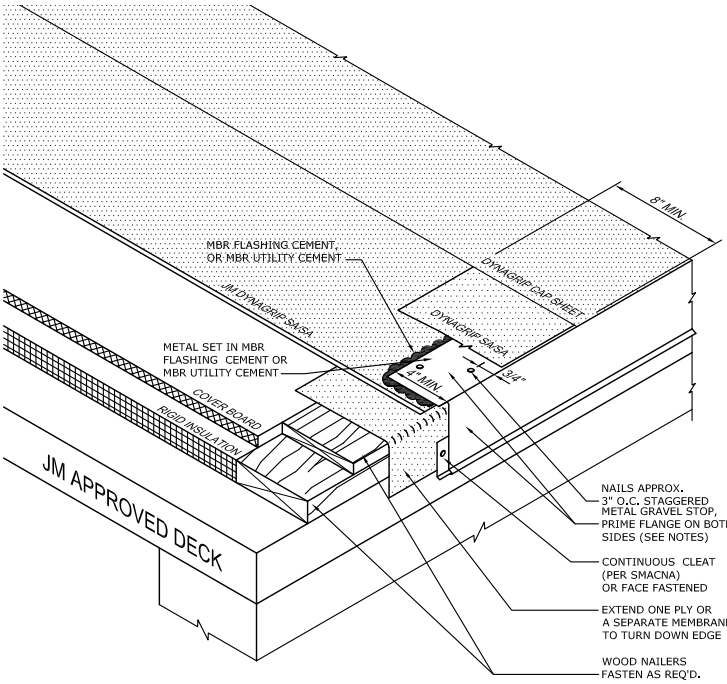
Gravel Stop



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. THE TAPERED EDGE STRIP (OPTIONAL), IS USED FOR NON-DRAINING EDGES TO KEEP PONDING WATER OFF THE FLASHING LAPS. IF THE EDGE IS DESIGNED TO EVACUATE WATER FROM THE ROOF, THE TAPERED EDGE STRIP IS ELIMINATED AND THE TOP OF THE WOOD NAILER WILL BE AT A HEIGHT FLUSH WITH THE TOP OF THE FLAT COVER BOARD OR SUBSTRATE.
3. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL. CONTACT JM TECHNICAL FOR METAL OPTIONS TO BE INCLUDED WITHIN THE JM NDL GUARANTEE.
4. SHOP FABRICATED GRAVEL STOP SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA AND/OR NRCA GUIDELINES. LAPS SHALL UTILIZE EITHER APPROVED SPLICE PLATES OR 4" MINIMUM OVERLAPS WITH A APPROVED SEALANT.
5. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL
6. USE ASPHALT PRIMER ON GRAVEL STOP FLANGES WHEN USING MBR UTILITY CEMENT. USE PERMAFLASH PRIMER ON GRAVEL STOP FLANGES WHEN USING MBR FLASHING CEMENT.

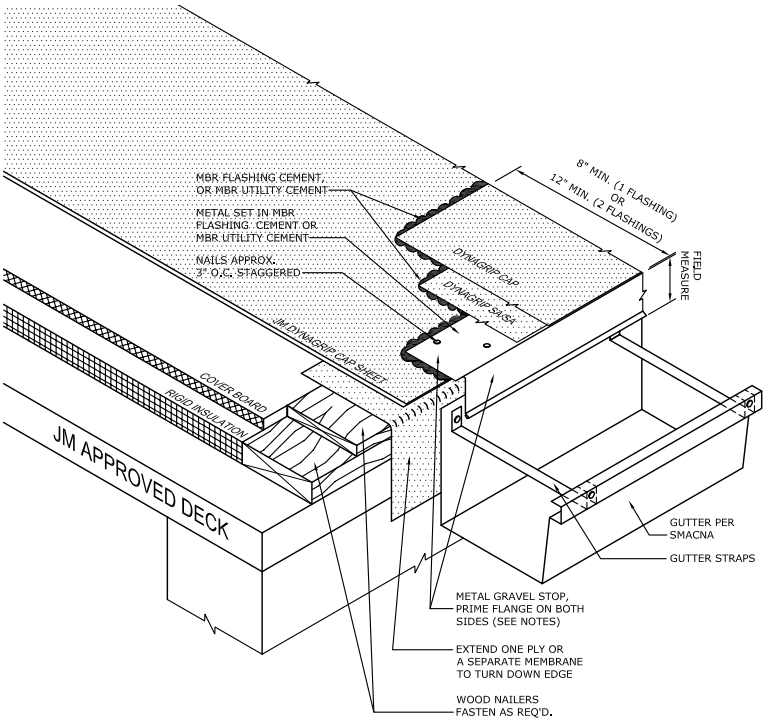
Gravel Stop, Alternate



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. THE TAPERED EDGE STRIP (OPTIONAL), IS USED FOR NON-DRAINING EDGES TO KEEP PONDING WATER OFF THE FLASHING LAPS. IF THE EDGE IS DESIGNED TO EVACUATE WATER FROM THE ROOF, THE TAPERED EDGE STRIP IS ELIMINATED AND THE TOP OF THE WOOD NAILER WILL BE AT A HEIGHT FLUSH WITH THE TOP OF THE FLAT COVER BOARD OR SUBSTRATE.
3. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL. CONTACT JM TECHNICAL FOR METAL OPTIONS TO BE INCLUDED WITHIN THE JM NDL GUARANTEE.
4. SHOP FABRICATED GRAVEL STOP SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA AND/OR NRCA GUIDELINES. LAPS SHALL UTILIZE EITHER APPROVED SPLICE PLATES OR 4" MINIMUM OVERLAPS WITH A APPROVED SEALANT.
5. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
6. USE ASPHALT PRIMER ON GRAVEL STOP FLANGES WHEN USING MBR UTILITY CEMENT. USE PERMAFLASH PRIMER ON GRAVEL STOP FLANGES WHEN USING MBR FLASHING CEMENT.

Gutter



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. *AN SBS BACKER PLY EXTENDING 8" FROM THE EDGE OF THE ROOF IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEES.
3. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL. CONTACT JM TECHNICAL FOR METAL OPTIONS TO BE INCLUDED WITHIN THE JM NDL GUARANTEE.
4. SHOP FABRICATED GRAVEL STOPS AND GUTTERS SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA AND/OR NRCA GUIDELINES. GRAVEL STOP LAPS SHALL UTILIZE EITHER APPROVED SPLICE PLATES OR 4" MINIMUM OVERLAPS WITH APPROVED SEALANT.
5. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL
6. USE ASPHALT PRIMER ON GRAVEL STOP FLANGES WHEN USING MBR UTILITY CEMENT. USE PERMAFLASH PRIMER ON GRAVEL STOP FLANGES WHEN USING MBR FLASHING CEMENT.

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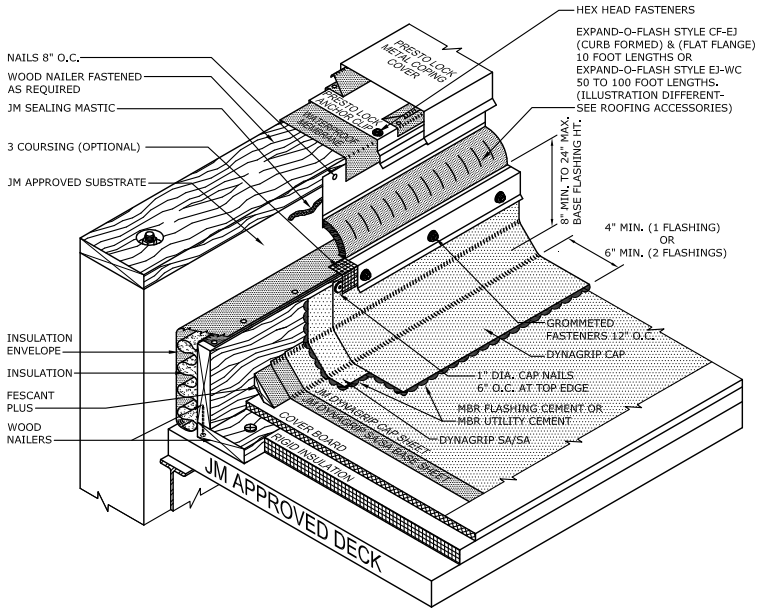
Refer to the Safe Use Instructions and product label prior to using this product.

Masonry With Nailing Facilities, Expansion Joint



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. *AN SBS BACKER PLY EXTENDING 2" MIN. FROM TOE OF CANT IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEES.
3. INSTALL EXPAND-O-FLASH IN ACCORDANCE WITH APPLICATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED TRANSITIONS, INSIDE/OUTSIDE CORNERS, ETC. ARE AVAILABLE TO COMPLETE THE INSTALLATION.
4. INSTALL PRESTO LOCK COPING IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS AND END CAPS ARE AVAILABLE TO COMPLETE THE INSTALLATION. SHOP FABRICATED COPINGS SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES.
5. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
6. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL. CONTACT JM TECHNICAL FOR METAL OPTIONS TO BE INCLUDED WITHIN THE JM NDL GUARANTEE.
7. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL

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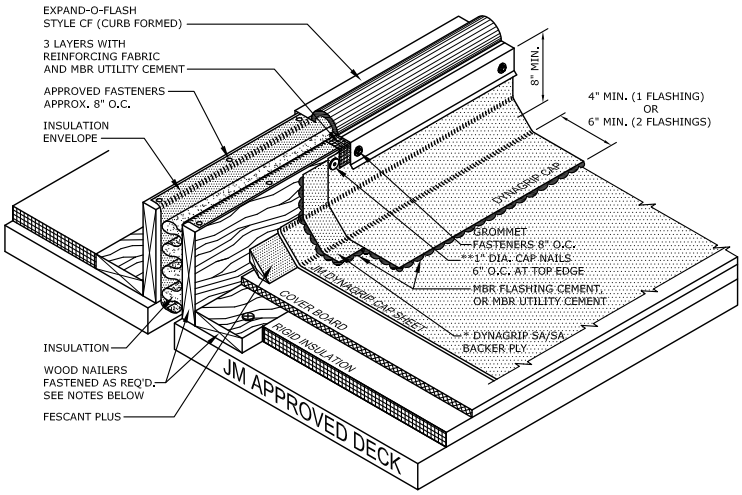
Refer to the Safe Use Instructions and product label prior to using this product.

Roof-to-Roof, Curb Mounted, Expand-O-Flash®



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. *AN SBS BACKER PLY EXTENDING 2" MIN. FROM TOE OF CANT IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEES.
3. **A TERMINATION BAR FASTENED 6" O.C. IS AN ACCEPTABLE SECUREMENT ALTERNATIVE ALONG THE TOP EDGE OF THE FLASHING.
4. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
5. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
6. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
7. INSTALL EXPAND-O-FLASH IN ACCORDANCE WITH APPLICATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED TRANSITIONS, INSIDE/OUTSIDE CORNERS, ETC. ARE AVAILABLE TO COMPLETE THE INSTALLATION.
8. THE VERTICAL WOOD CURB SHOULD BE FASTENED TO THE DECK ONLY.

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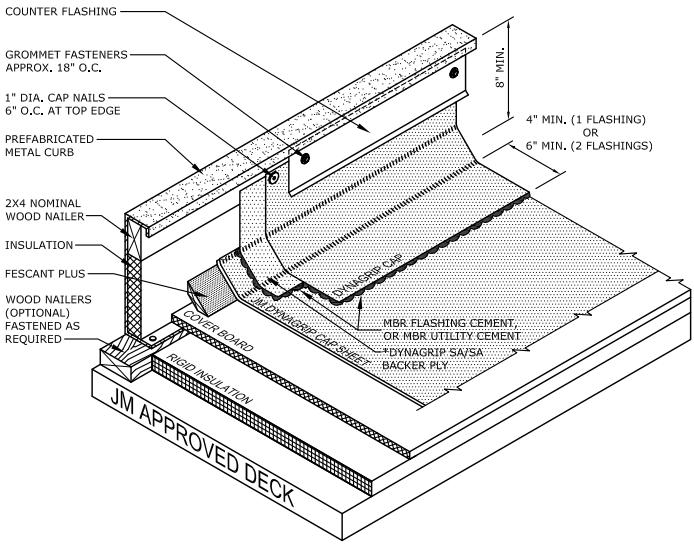
Refer to the Safe Use Instructions and product label prior to using this product.

Prefabricated



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. *AN SBS BACKER PLY EXTENDING 2" MIN. FROM TOE OF CANT IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEES.
3. HEIGHT OF CURB TO BE ADJUSTED WITH NAILERS. IT IS PREFERRED TO RAISE ROOF HATCH WITH NAILERS TO EXTEND FLASHING HEIGHT.
4. THE VERTICAL WOOD CURB SHOULD BE FASTENED TO THE DECK ONLY.
5. CURB INSULATION MUST BE MECHANICALLY ATTACHED OR ADHERED SOLIDLY TO METAL CURB.
6. CURB MUST BE SET SO AS TO PROVIDE 8" MIN FLASHING HEIGHT.
7. METAL COUNTERFLASHING IS REQUIRED FOR ALL INSTALLATIONS.
8. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
9. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
10. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

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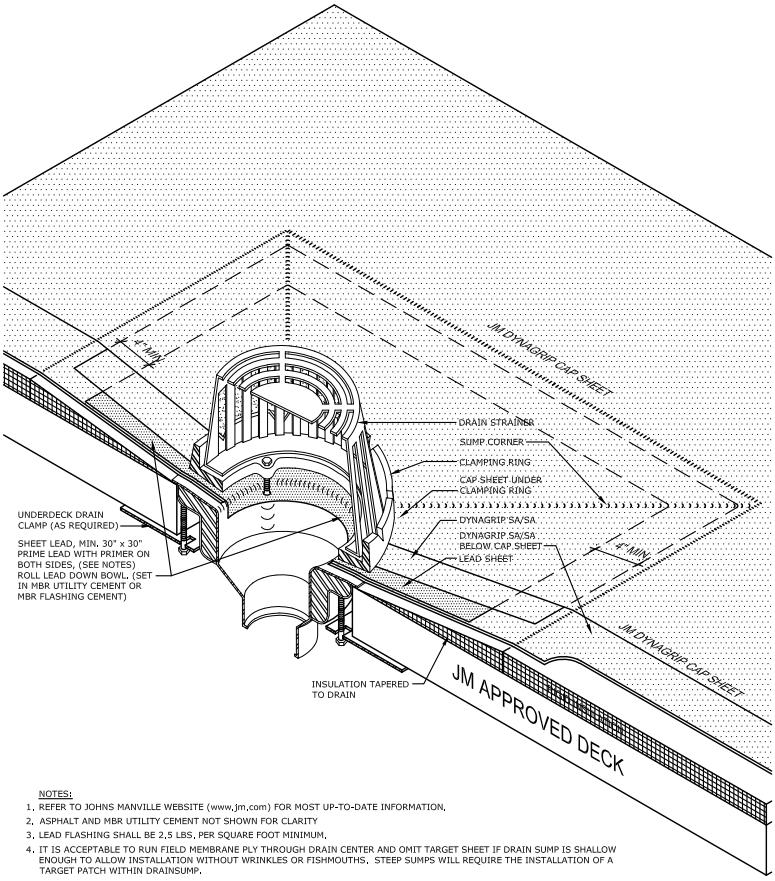
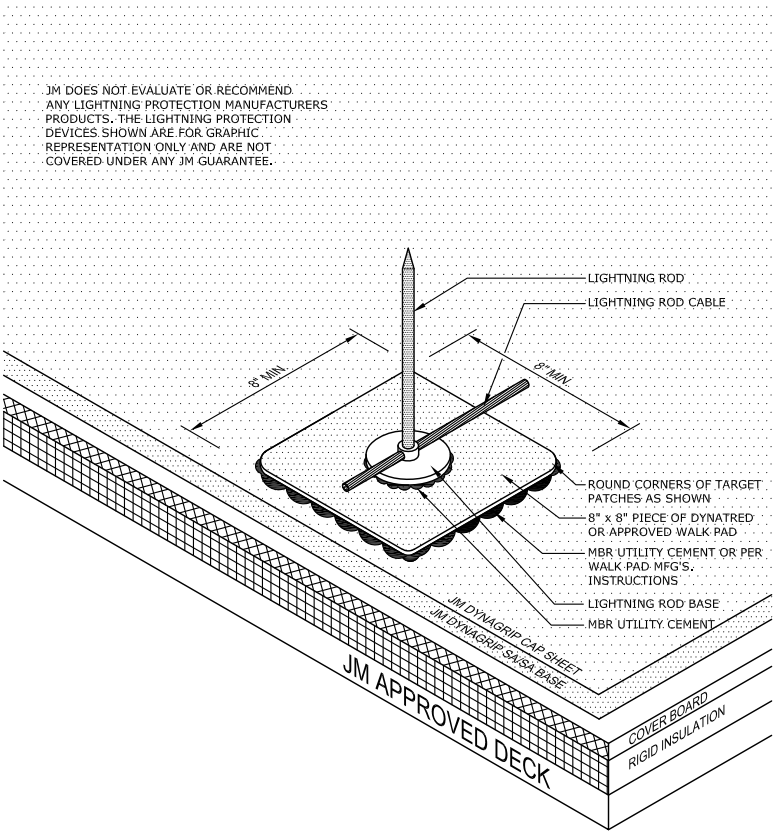
Cast Iron



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. ASPHALT AND MBR UTILITY CEMENT NOT SHOWN FOR CLARITY
3. LEAD FLASHING SHALL BE 2.5 LBS. PER SQUARE FOOT MINIMUM.
4. IT IS ACCEPTABLE TO RUN FIELD MEMBRANE PLY THROUGH DRAIN CENTER AND OMIT TARGET SHEET IF DRAIN SUMP IS SHALLOW ENOUGH TO ALLOW INSTALLATION WITHOUT WRINKLES OR FISHMOUTHS. STEEP SUMPS WILL REQUIRE THE INSTALLATION OF A TARGET PATCH WITHIN DRAINSUMP.
5. USE ASPHALT PRIMER ON LEAD FLANGES WHEN USING MBR UTILITY CEMENT. USE PERMAFLASH PRIMER ON LEAD FLANGES WHEN USING MBR FLASHING CEMENT.
6. EXTEND ALL PLIES TO EDGE OF DRAIN BOWL.
7. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
8. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

Lightning Rod, Surface Mount



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3. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
4. A SACRIFICIAL LAYER OF MEMBRANE IS RECOMMENDED UNDER THE LENGTH OF GROUND WIRE(S) TO PREVENT CONTACT WITH ROOFING MATERIAL.

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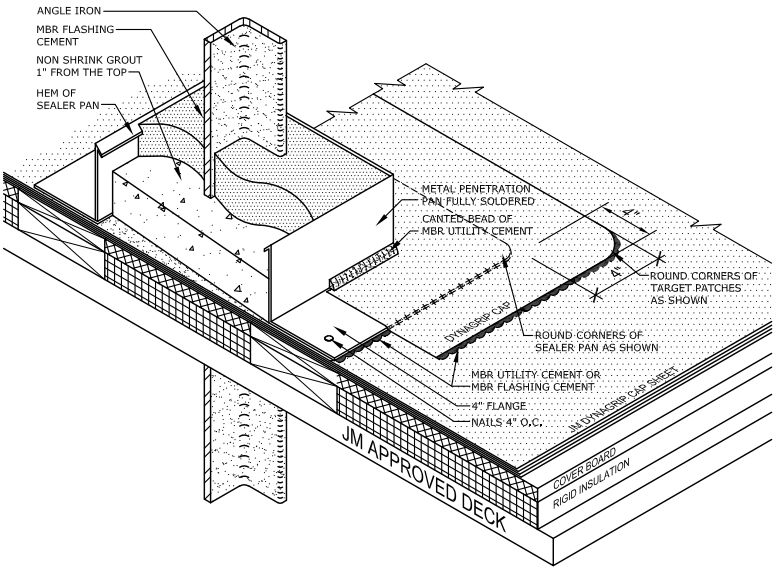
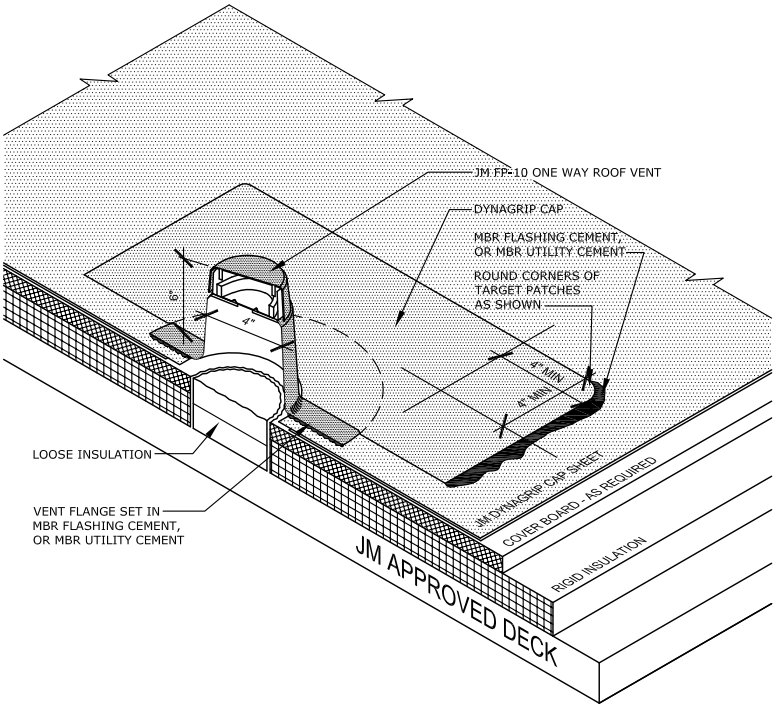
Penetration Pocket



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. MAINTAIN 2" MIN. CLEARANCE FROM PENETRATION TO EDGE OF METAL PAN.
3. ROUND FLANGE CORNERS ON METAL PAN.
4. PRIME INSIDE OF METAL PAN WITH PERMAFLASH PRIMER WHERE MBR FLASHING CEMENT WILL BE PLACED.
5. PENETRATION PANS ARE CONSIDERED MAINTENANCE ITEMS AND ARE NOT GUARANTEED BY JOHNS MANVILLE.
6. USE ASPHALT PRIMER ON FLANGES WHEN USING MBR UTILITY CEMENT. USE PERMAFLASH PRIMER ON FLANGES WHEN USING MBR FLASHING CEMENT.
7. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
8. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

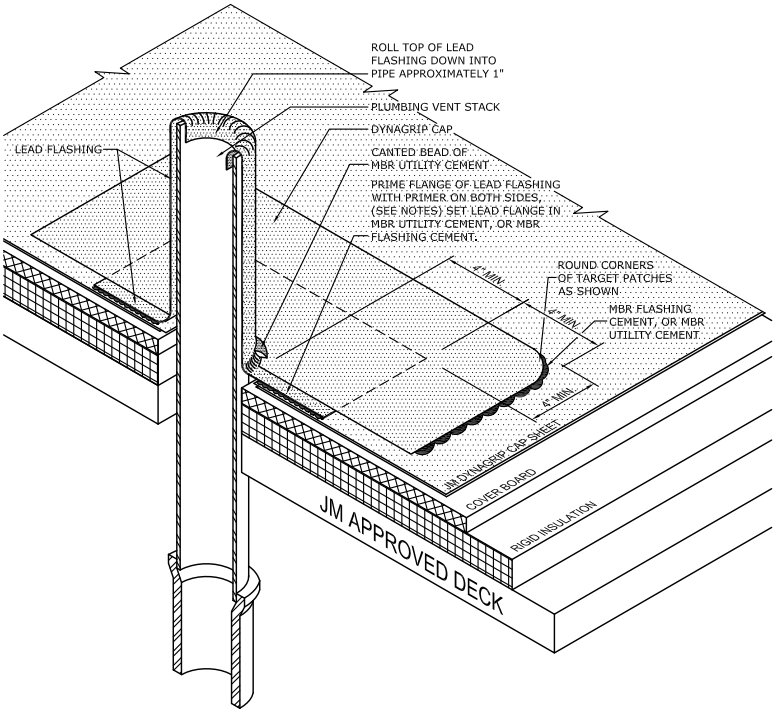
FP-10 One Way® Roof Vent



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. CUT A HOLE IN MEMBRANE PRIOR TO INSTALLATION. REMOVE ALL OR PART OF THE INSULATION TO FACILITATE VENTING. LOOSE INSULATION CAN REMAIN TO MAINTAIN R VALUE AND PREVENT CONDENSATION.
3. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
4. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

Plumbing, Lead



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. LEAD FLASHING SHALL BE 2.5 LBS. PER SQUARE FOOT MINIMUM.
3. IF LEAD FLASHING IS NOT DESIRED OR PIPE IS TOO TALL, SEE PERMAFLASH DETAIL PMF-6 & PMF-6S FOR A SUITABLE ALTERNATIVE.
4. USE ASPHALT PRIMER ON LEAD FLANGES WHEN USING MBR UTILITY CEMENT.
5. USE PERMAFLASH PRIMER ON LEAD FLANGES WHEN USING MBR FLASHING CEMENT.
6. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
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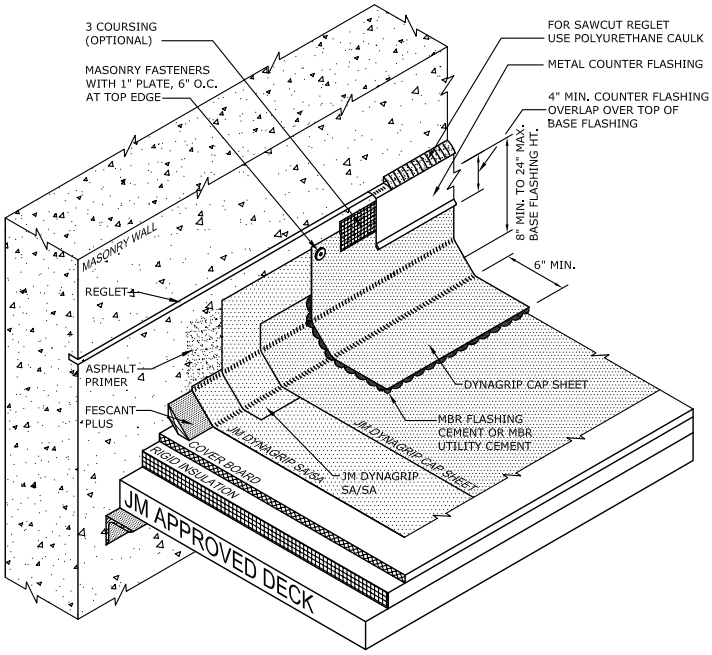
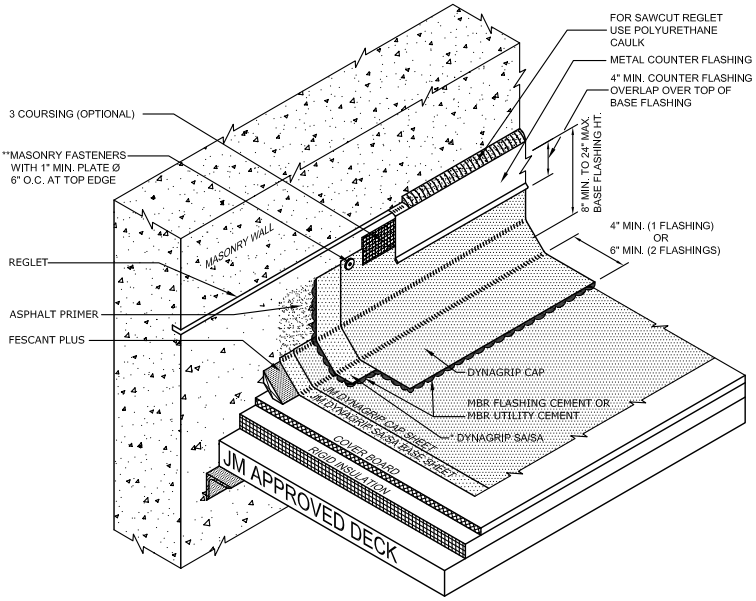
Masonry



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. *AN SBS BACKER PLY EXTENDING 2" MIN. FROM TOE OF CANT IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEES.
3. METAL COUNTERFLASHING IS RECOMMENDED FOR ALL INSTALLATIONS AND IS REQUIRED FOR ALL GUARANTEES 15 YEARS OR LONGER. A 3 COURSING OF PERMAFLASH MAY BE USED TO SEAL THE TOP EDGE OF THE FLASHING ON 10 YEAR NDL'S IN LIEU OF METAL COUNTERFLASHING.
4. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
5. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
6. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

Masonry With Nailing Facilities



NOTES:

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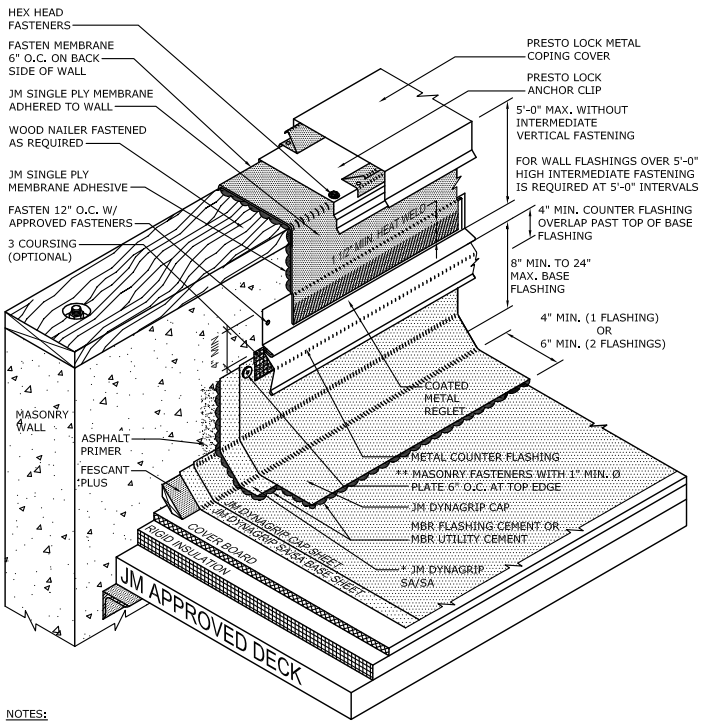
2. *AN SBS BACKER PLY EXTENDING 2" MIN. FROM TOE OF CANT IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEES.
3. **A TERMINATION BAR FASTENED 6" O.C. IS AN ACCEPTABLE SECUREMENT ALTERNATIVE ALONG THE TOP EDGE OF THE FLASHING.
4. METAL COUNTER FLASHING IS RECOMMENDED FOR ALL INSTALLATIONS AND IS REQUIRED FOR ALL GUARANTEES 15 YEARS OR LONGER. A 3 COURSING OF PERMAFLASH MAY BE USED TO SEAL THE TOP EDGE OF THE FLASHING ON 10 YEAR NDL'S IN LIEU OF METAL COUNTER FLASHING.
5. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
6. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
7. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL

Masonry, High, Metal Coping



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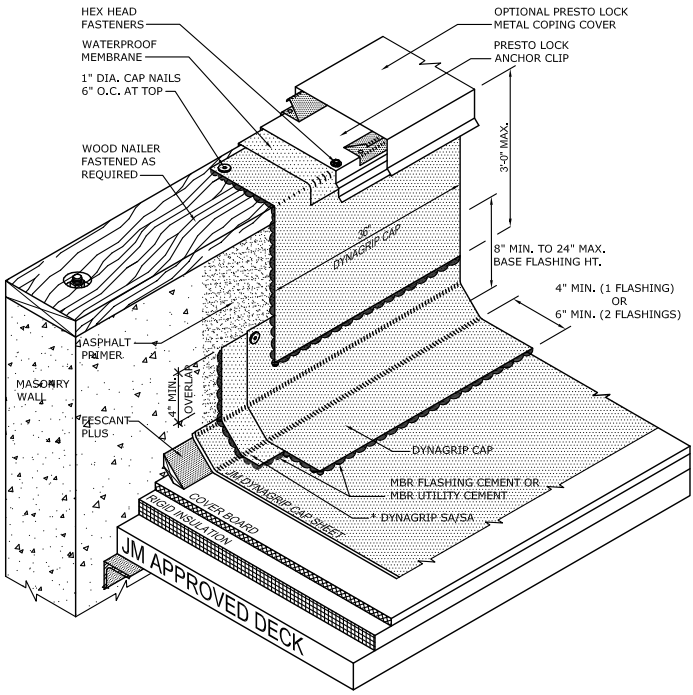
5. INSTALL PRESTO LOCK COPING IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS AND END CAPS ARE AVAILABLE TO COMPLETE THE INSTALLATION. SHOP FABRICATED COPINGS SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES.
6. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
7. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

Tilt-Up, High



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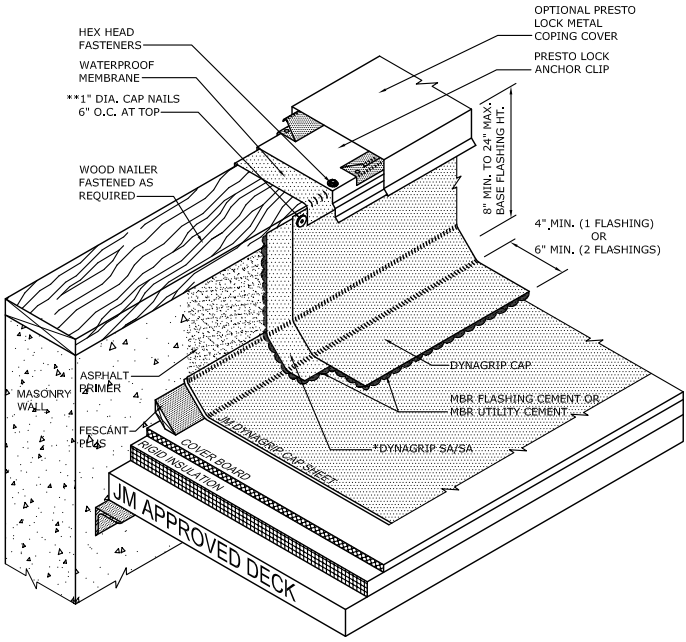
4. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
5. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
6. INSTALL PRESTO LOCK COPING IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS AND END CAPS ARE AVAILABLE TO COMPLETE THE INSTALLATION. SHOP FABRICATED COPINGS SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES.

Tilt-Up, Low



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Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

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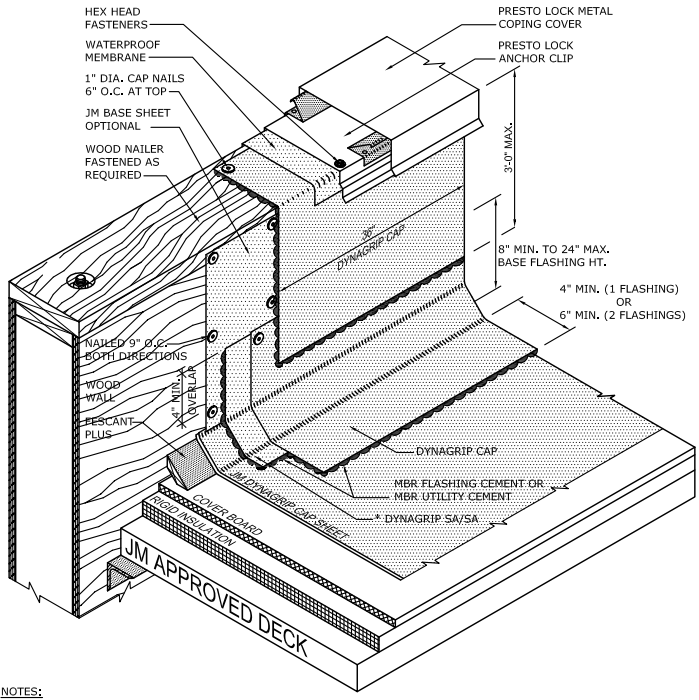
Wood, High



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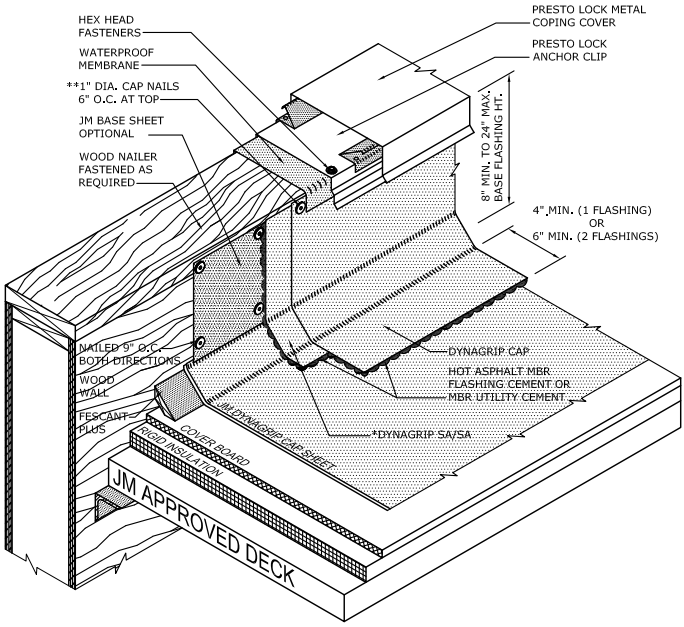
Wood, Low



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4. PREFABRICATED INSIDE/OUTSIDE CORNERS AND END CAPS ARE AVAILABLE TO COMPLETE THE INSTALLATION. SHOP FABRICATED COPINGS SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES.
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7. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL

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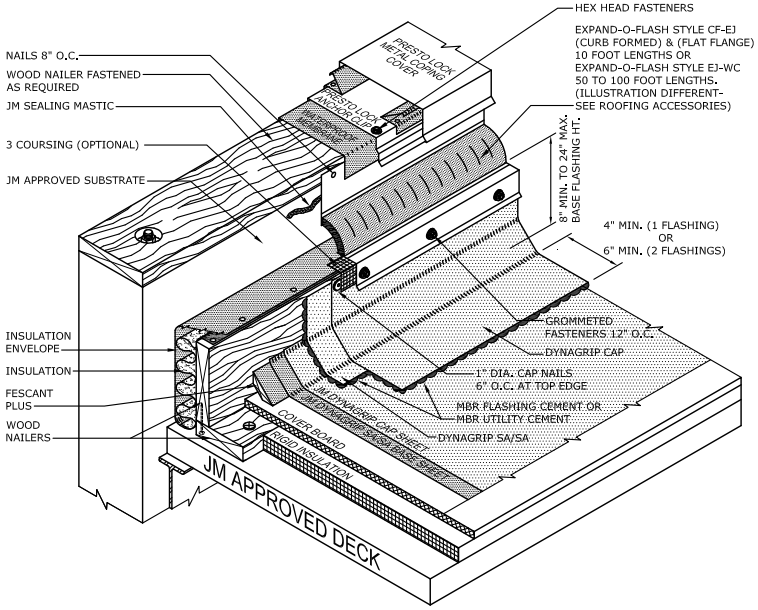
Masonry With Nailing Facilities, Expansion Joint



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2. *AN SBS BACKER PLY EXTENDING 2" MIN. FROM TOE OF CANT IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEES.
3. INSTALL EXPAND-O-FLASH IN ACCORDANCE WITH APPLICATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED TRANSITIONS, INSIDE/OUTSIDE CORNERS, ETC. ARE AVAILABLE TO COMPLETE THE INSTALLATION.
4. INSTALL PRESTO LOCK COPING IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS AND END CAPS ARE AVAILABLE TO COMPLETE THE INSTALLATION. SHOP FABRICATED COPINGS SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES.
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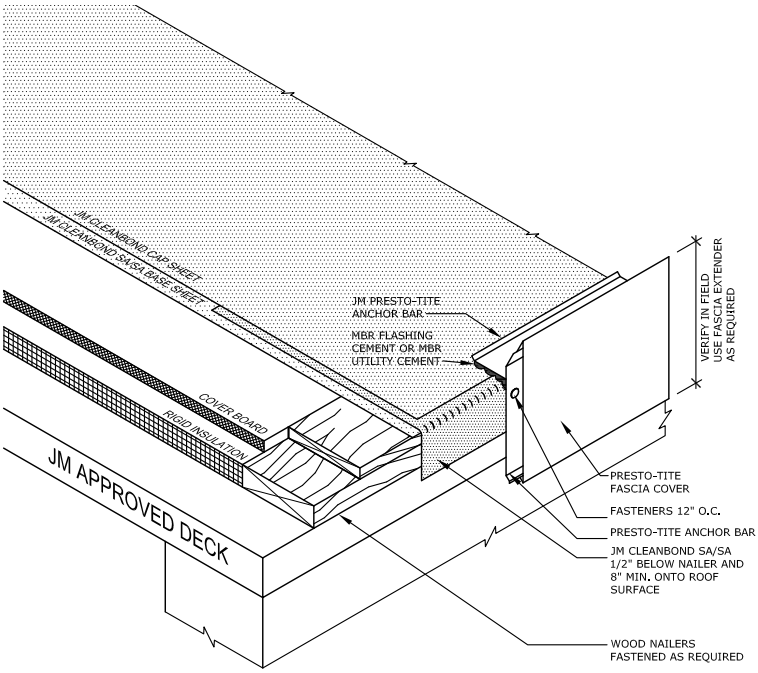
7. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL

Drip Edge with Presto-Tite™



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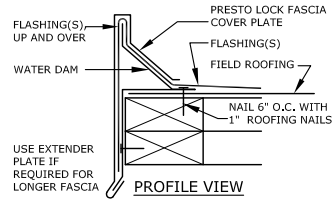
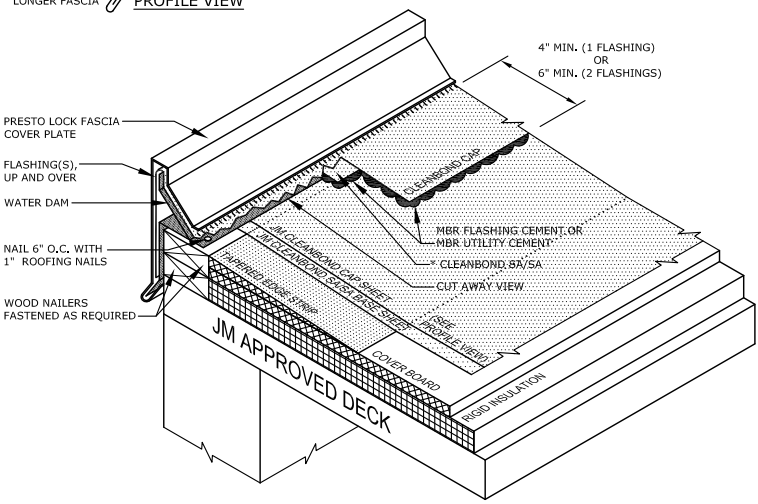
3. PRESTO-TITE GRAVEL STOP SHOULD BE INSTALLED IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS ARE AVAILABLE TO COMPLETE THE INSTALLATION.
4. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

Facia, Presto Lock™ Fascia System





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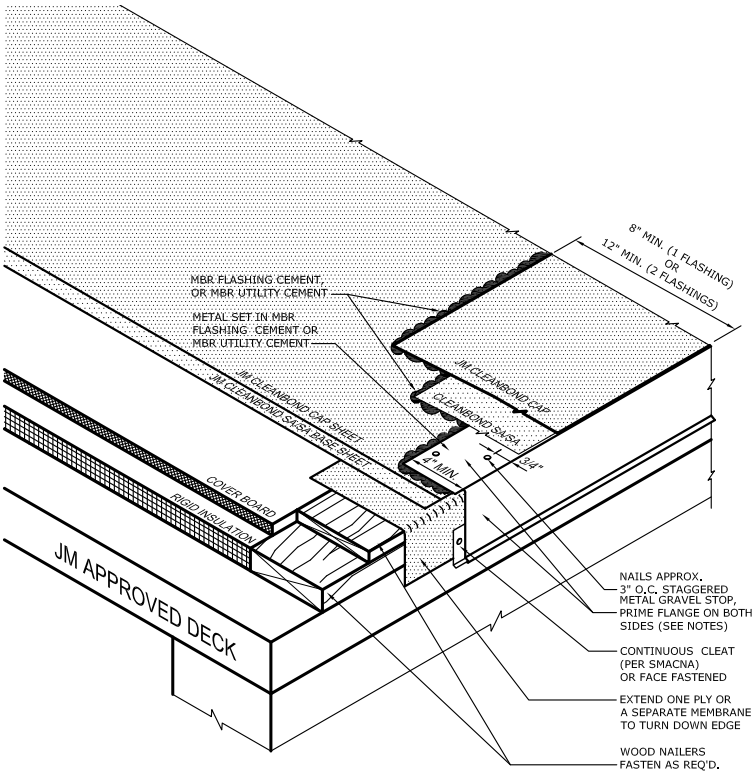
2. *AN SBS BACKER PLY EXTENDING 2" MIN. FROM TOE OF CANT IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEES.
3. THE TAPERED EDGE STRIP (OPTIONAL), IS USED FOR NON-DRAINING EDGES TO KEEP PONDING WATER OFF THE FLASHING LAPS OR TO TRANSITION SUBSTRATE FLUSH WITH PERIMETER NAILER HEIGHT.
4. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL. CONTACT JM TECHNICAL FOR METAL OPTIONS TO BE INCLUDED WITHIN THE JM NDL GUARANTEE.
5. PRESTO LOCK GRAVEL STOP SHOULD BE INSTALLED IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS ARE AVAILABLE TO COMPLETE THE INSTALLATION.
6. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

Gravel Stop



NOTES:

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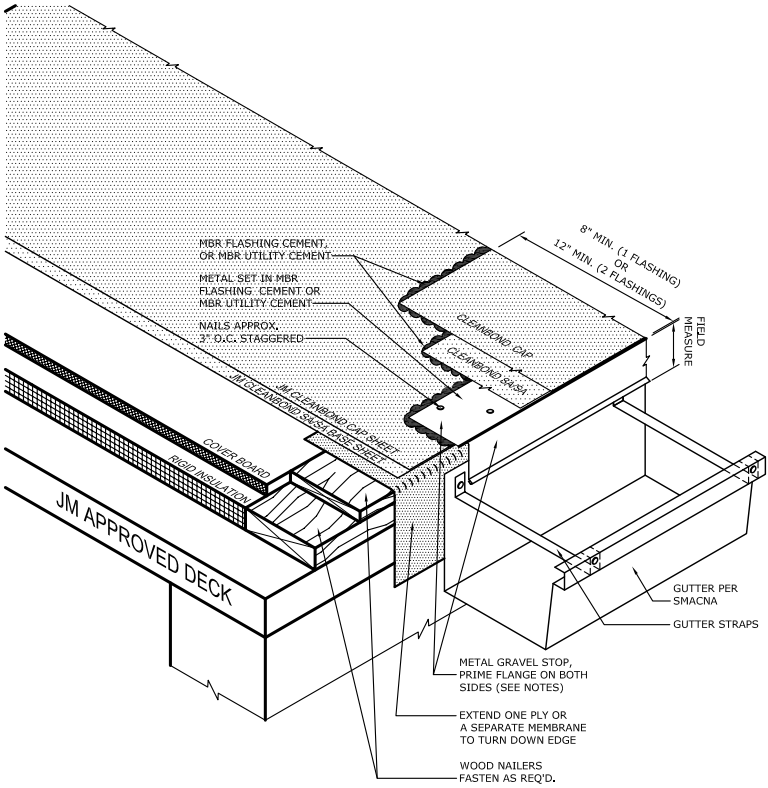
2. THE TAPERED EDGE STRIP (OPTIONAL), IS USED FOR NON-DRAINING EDGES TO KEEP PONDING WATER OFF THE FLASHING LAPS. IF THE EDGE IS DESIGNED TO EVACUATE WATER FROM THE ROOF, THE TAPERED EDGE STRIP IS ELIMINATED AND THE TOP OF THE WOOD NAILER WILL BE AT A HEIGHT FLUSH WITH THE TOP OF THE FLAT COVER BOARD OR SUBSTRATE.
3. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL. CONTACT JM TECHNICAL FOR METAL OPTIONS TO BE INCLUDED WITHIN THE JM NDL GUARANTEE.
4. SHOP FABRICATED GRAVEL STOP SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA AND/OR NRCA GUIDELINES. LAPS SHALL UTILIZE EITHER APPROVED SPLICE PLATES OR 4" MINIMUM OVERLAPS WITH A APPROVED SEALANT.
5. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL
6. USE ASPHALT PRIMER ON GRAVEL STOP FLANGES WHEN USING MBR UTILITY CEMENT. USE PERMAFLASH PRIMER ON GRAVEL STOP FLANGES WHEN USING MBR FLASHING CEMENT.

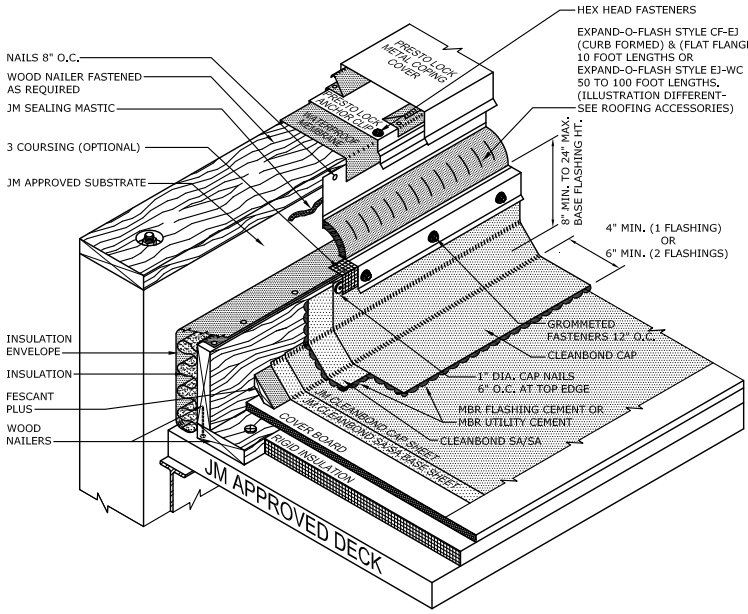
Gutter



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. *AN SBS BACKER PLY EXTENDING 8" FROM THE EDGE OF THE ROOF IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEES.
3. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL. CONTACT JM TECHNICAL FOR METAL OPTIONS TO BE INCLUDED WITHIN THE JM NDL GUARANTEE.
4. SHOP FABRICATED GRAVEL STOPS AND GUTTERS SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA AND/OR NRCA GUIDELINES. GRAVEL STOP LAPS SHALL UTILIZE EITHER APPROVED SPLICE PLATES OR 4" MINIMUM OVERLAPS WITH APPROVED SEALANT.
5. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL
6. USE ASPHALT PRIMER ON GRAVEL STOP FLANGES WHEN USING MBR UTILITY CEMENT. USE PERMAFLASH PRIMER ON GRAVEL STOP FLANGES WHEN USING MBR FLASHING CEMENT.

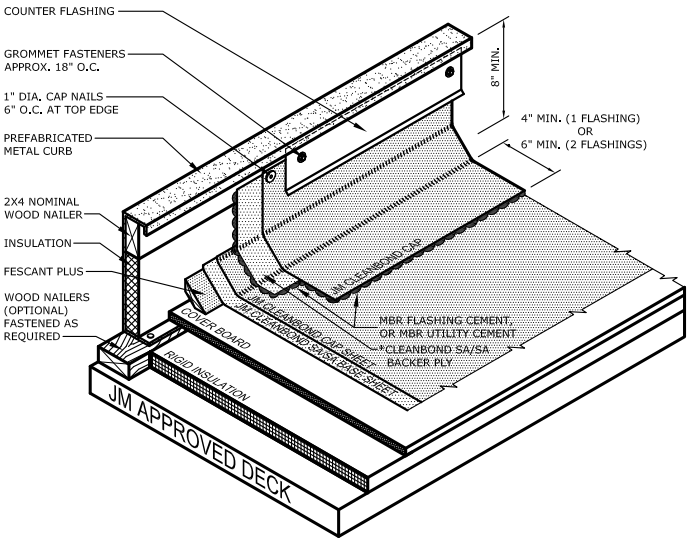
Masonry With Nailing Facilities, Expansion Joint



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. *AN SBS BACKER PLY EXTENDING 2" MIN. FROM TOE OF CANT IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEES.
3. INSTALL EXPAND-O-FLASH IN ACCORDANCE WITH APPLICATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED TRANSITIONS, INSIDE/OUTSIDE CORNERS, ETC. ARE AVAILABLE TO COMPLETE THE INSTALLATION.
4. INSTALL PRESTO LOCK COPING IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS AND END CAPS ARE AVAILABLE TO COMPLETE THE INSTALLATION. SHOP FABRICATED COPINGS SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES.
5. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
6. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL. CONTACT JM TECHNICAL FOR METAL OPTIONS TO BE INCLUDED WITHIN THE JM NDL GUARANTEE.
7. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL

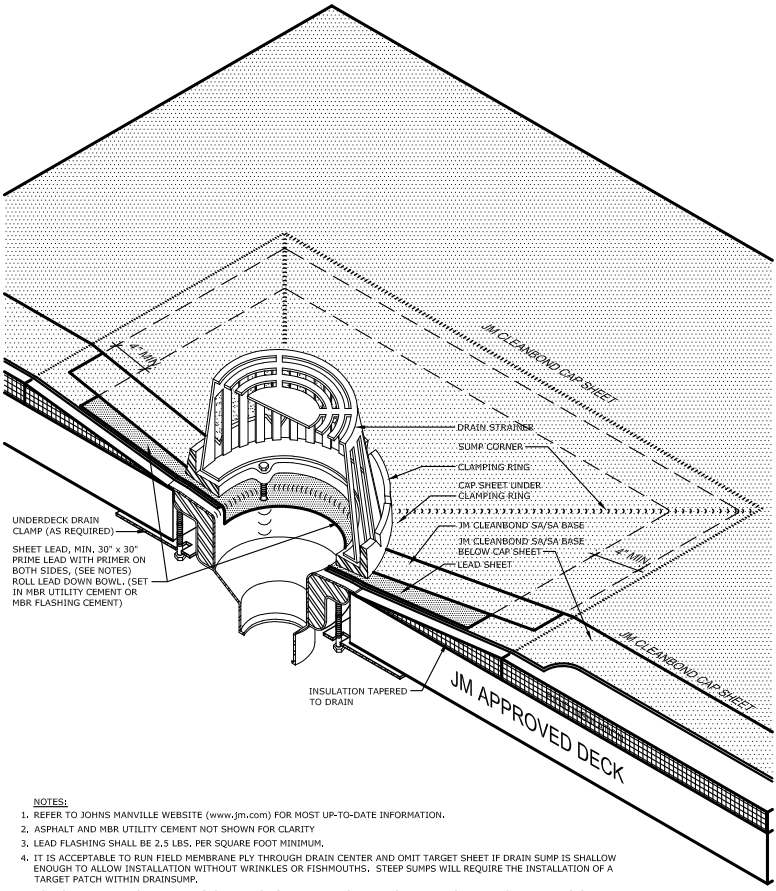
Prefabricated



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. *AN SBS BACKER PLY EXTENDING 2" MIN. FROM TOE OF CANT IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEES.
3. HEIGHT OF CURB TO BE ADJUSTED WITH NAILERS. IT IS PREFERRED TO RAISE ROOF HATCH WITH NAILERS TO EXTEND FLASHING HEIGHT.
4. THE VERTICAL WOOD CURB SHOULD BE FASTENED TO THE DECK ONLY.
5. CURB INSULATION MUST BE MECHANICALLY ATTACHED OR ADHERED SOLIDLY TO METAL CURB.
6. CURB MUST BE SET SO AS TO PROVIDE 8" MIN FLASHING HEIGHT.
7. METAL COUNTERFLASHING IS REQUIRED FOR ALL INSTALLATIONS.
8. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
9. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
10. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

Cast Iron



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. ASPHALT AND MBR UTILITY CEMENT NOT SHOWN FOR CLARITY
3. LEAD FLASHING SHALL BE 2.5 LBS. PER SQUARE FOOT MINIMUM.
4. IT IS ACCEPTABLE TO RUN FIELD MEMBRANE PLY THROUGH DRAIN CENTER AND OMIT TARGET SHEET IF DRAIN SUMP IS SHALLOW ENOUGH TO ALLOW INSTALLATION WITHOUT WRINKLES OR FISHMOUTHS. STEEP SUMPS WILL REQUIRE THE INSTALLATION OF A TARGET PATCH WITHIN DRAINSUMP.
5. USE ASPHALT PRIMER ON LEAD FLANGES WHEN USING MBR UTILITY CEMENT. USE PERMAFLASH PRIMER ON LEAD FLANGES WHEN USING MBR FLASHING CEMENT.
6. EXTEND ALL PLIES TO EDGE OF DRAIN BOWL.
7. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
8. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

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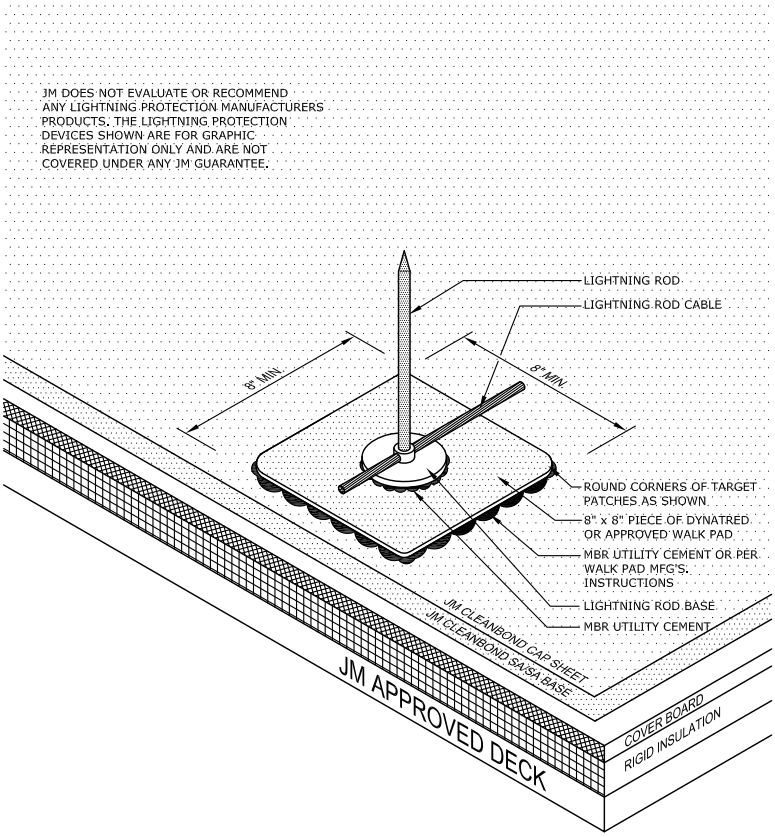
Refer to the Safe Use Instructions and product label prior to using this product.

Lightning Rod, Surface Mount



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3. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
4. A SACRIFICIAL LAYER OF MEMBRANE IS RECOMMENDED UNDER THE LENGTH OF GROUND WIRE(S) TO PREVENT CONTACT WITH ROOFING MATERIAL.

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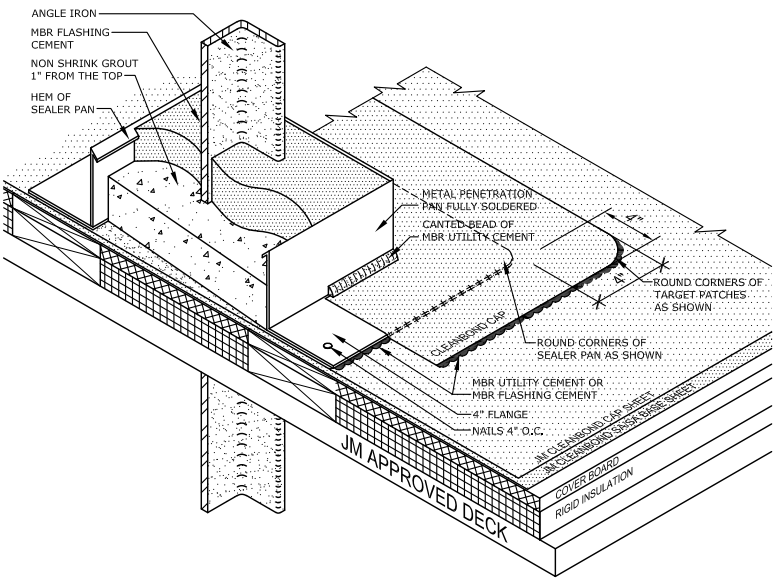
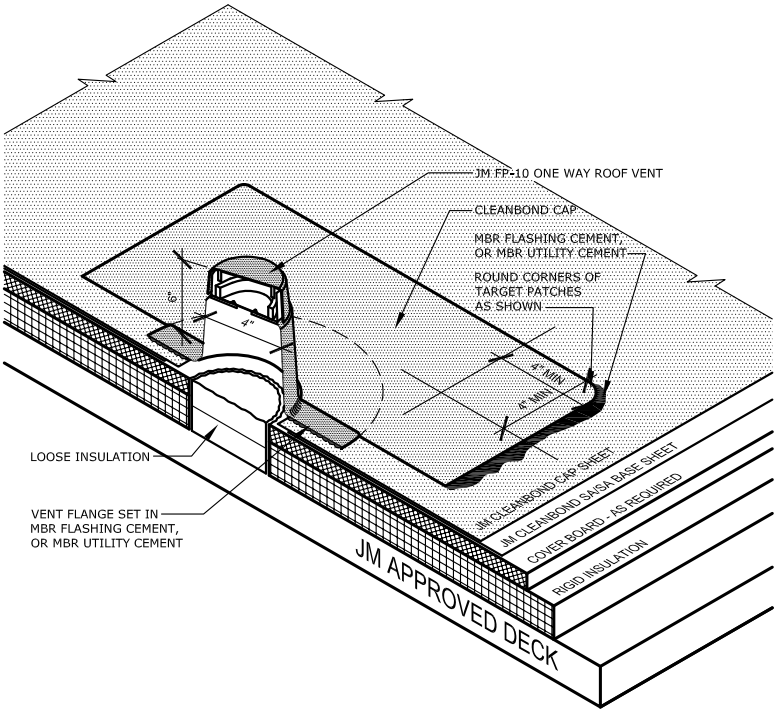
Penetration Pocket



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. MAINTAIN 2" MIN. CLEARANCE FROM PENETRATION TO EDGE OF METAL PAN.
3. ROUND FLANGE CORNERS ON METAL PAN.
4. PRIME INSIDE OF METAL PAN WITH PERMAFLASH PRIMER WHERE MBR FLASHING CEMENT WILL BE PLACED.
5. PENETRATION PANS ARE CONSIDERED MAINTENANCE ITEMS AND ARE NOT GUARANTEED BY JOHNS MANVILLE.
6. USE ASPHALT PRIMER ON FLANGES WHEN USING MBR UTILITY CEMENT. USE PERMAFLASH PRIMER ON FLANGES WHEN USING MBR FLASHING CEMENT.
7. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
8. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

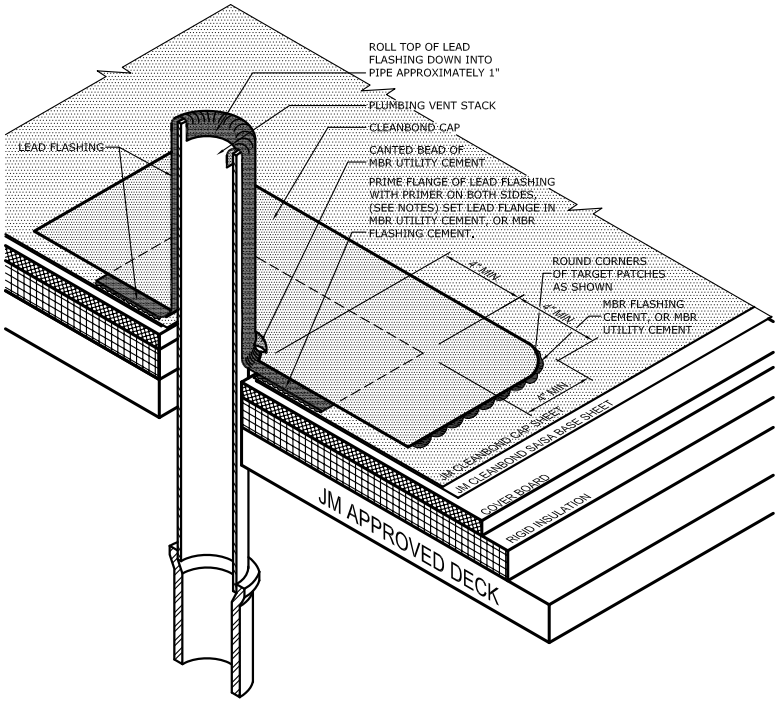
FP-10 One Way® Roof Vent



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. CUT A HOLE IN MEMBRANE PRIOR TO INSTALLATION. REMOVE ALL OR PART OF THE INSULATION TO FACILITATE VENTING. LOOSE INSULATION CAN REMAIN TO MAINTAIN R VALUE AND PREVENT CONDENSATION.
3. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
4. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

Plumbing, Lead



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. LEAD FLASHING SHALL BE 2.5 LBS. PER SQUARE FOOT MINIMUM.
3. IF LEAD FLASHING IS NOT DESIRED OR PIPE IS TOO TALL, SEE PERMAFLASH DETAIL PMF-6 & PMF-6S FOR A SUITABLE ALTERNATIVE.
4. USE ASPHALT PRIMER ON LEAD FLANGES WHEN USING MBR UTILITY CEMENT.
5. USE PERMAFLASH PRIMER ON LEAD FLANGES WHEN USING MBR FLASHING CEMENT.
6. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
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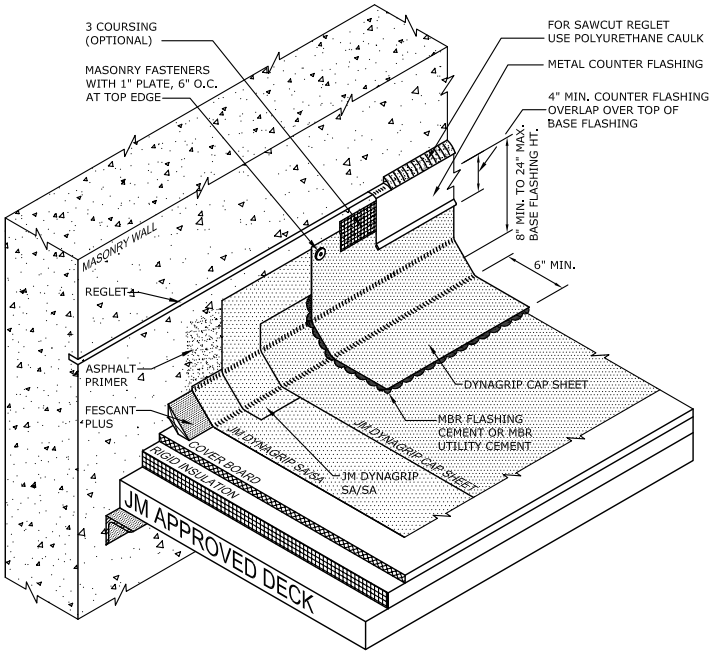
Masonry



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. *AN SBS BACKER PLY EXTENDING 2" MIN. FROM TOE OF CANT IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEES.
3. METAL COUNTERFLASHING IS RECOMMENDED FOR ALL INSTALLATIONS AND IS REQUIRED FOR ALL GUARANTEES 15 YEARS OR LONGER. A 3 COURSING OF PERMAFLASH MAY BE USED TO SEAL THE TOP EDGE OF THE FLASHING ON 10 YEAR NDL'S IN LIEU OF METAL COUNTERFLASHING.
4. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
5. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
6. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

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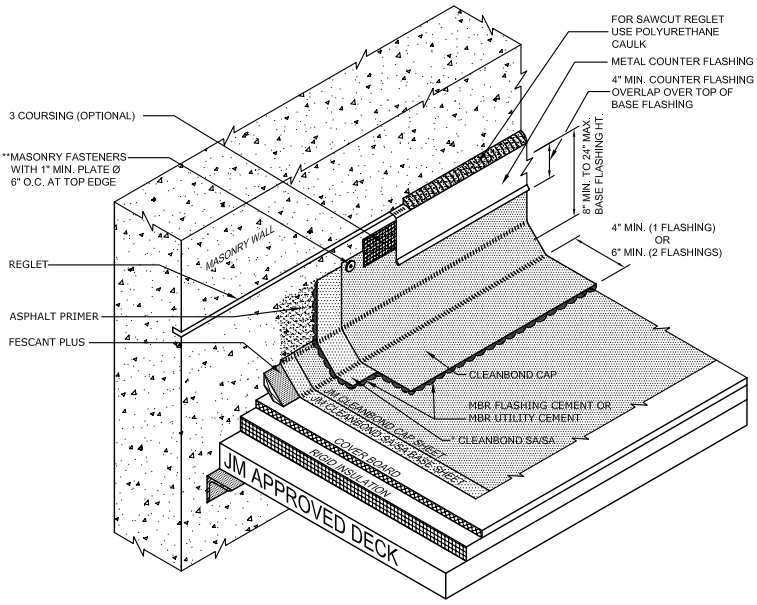
Masonry With Nailing Facilities



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2. *AN SBS BACKER PLY EXTENDING 2" MIN. FROM TOE OF CANT IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEES.
3. **A TERMINATION BAR FASTENED 6" O.C. IS AN ACCEPTABLE SECUREMENT ALTERNATIVE ALONG THE TOP EDGE OF THE FLASHING.
4. METAL COUNTER FLASHING IS RECOMMENDED FOR ALL INSTALLATIONS AND IS REQUIRED FOR ALL GUARANTEES 15 YEARS OR LONGER. A 3 COURSING OF PERMAFLASH MAY BE USED TO SEAL THE TOP EDGE OF THE FLASHING ON 10 YEAR NDL'S IN LIEU OF METAL COUNTER FLASHING.
5. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
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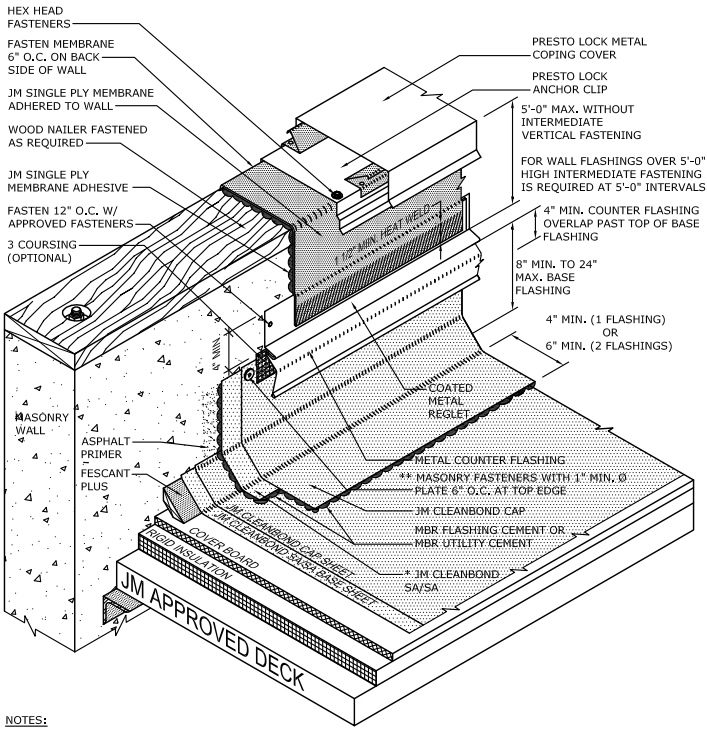
Refer to the Safe Use Instructions and product label prior to using this product.

Masonry, High, Metal Coping



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2. *AN SBS BACKER PLY EXTENDING 2" MIN. FROM TOE OF CANT IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEES.
3. **A TERMINATION BAR FASTENED 6" O.C. IS AN ACCEPTABLE SECUREMENT ALTERNATIVE ALONG THE TOP EDGE OF THE FLASHING.
4. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
5. INSTALL PRESTO LOCK COPING IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS AND END CAPS ARE AVAILABLE TO COMPLETE THE INSTALLATION. SHOP FABRICATED COPINGS SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES.
6. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
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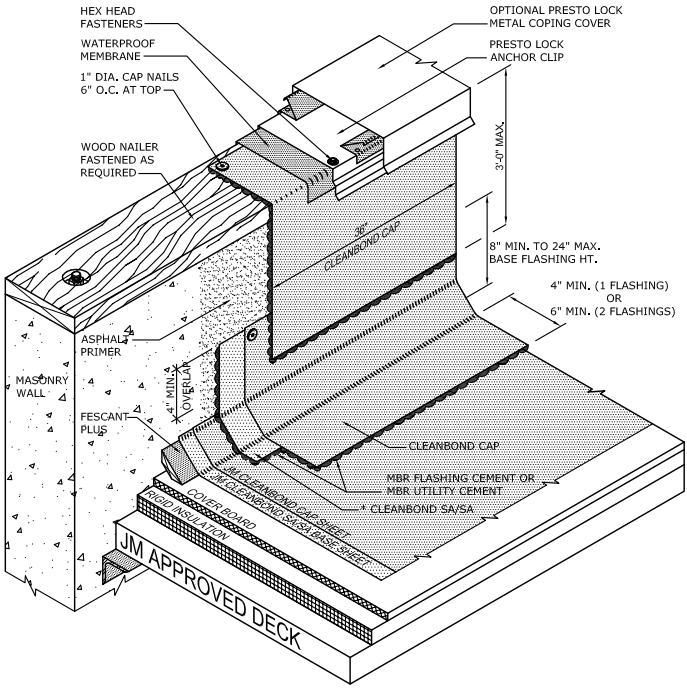
Tilt-Up, High



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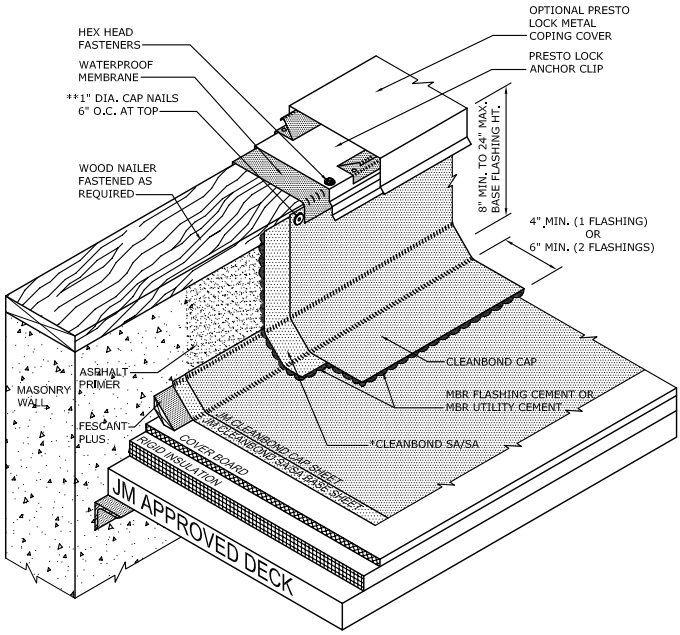
6. INSTALL PRESTO LOCK COPING IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS AND END CAPS ARE AVAILABLE TO COMPLETE THE INSTALLATION. SHOP FABRICATED COPINGS SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES.

Tilt-Up, Low



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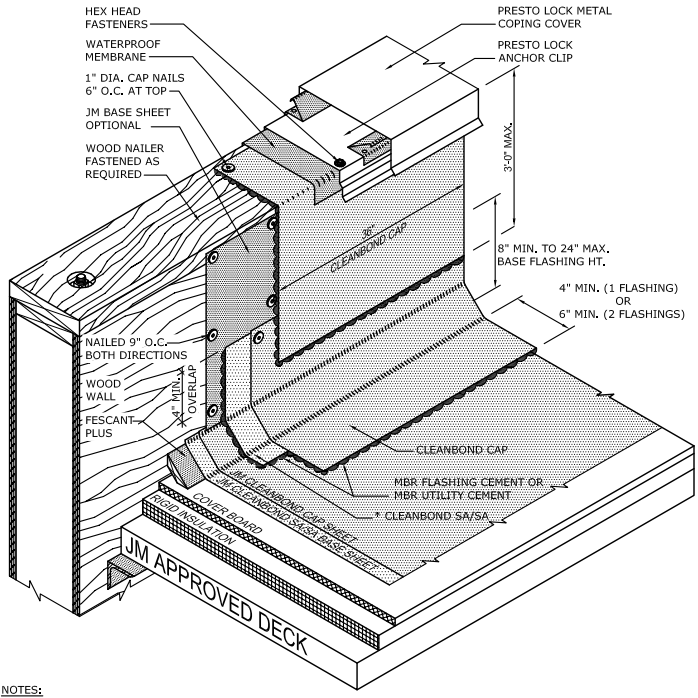
Wood, High



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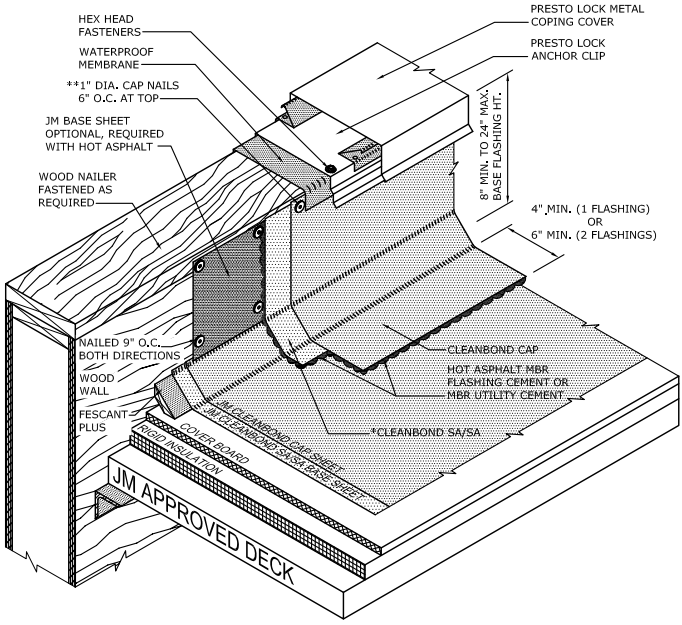
Wood, Low



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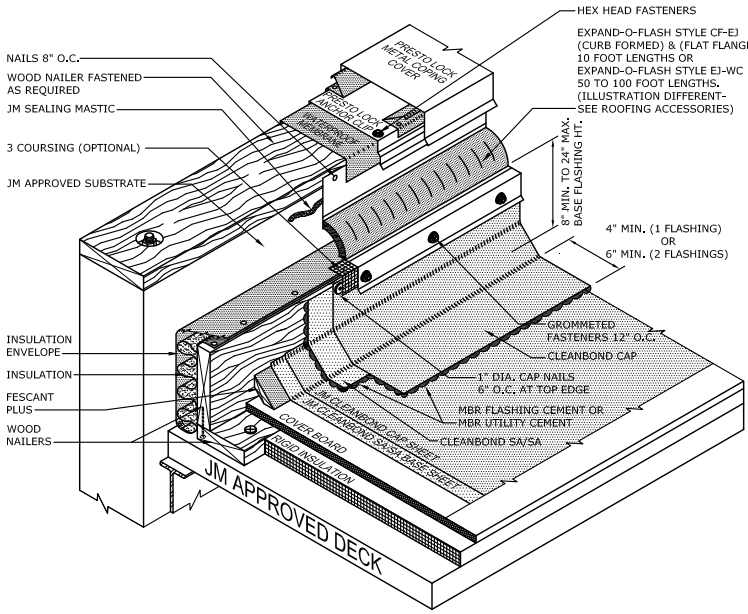
5. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
6. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL. CONTACT JM TECHNICAL FOR METAL OPTIONS TO BE INCLUDED WITHIN THE JM NDL GUARANTEE.
7. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL

Masonry With Nailing Facilities, Expansion Joint



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. *AN SBS BACKER PLY EXTENDING 2" MIN. FROM TOE OF CANT IS REQUIRED FOR EXTENDED TERM 25 AND 30 YEAR GUARANTEES.
3. INSTALL EXPAND-O-FLASH IN ACCORDANCE WITH APPLICATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED TRANSITIONS, INSIDE/OUTSIDE CORNERS, ETC. ARE AVAILABLE TO COMPLETE THE INSTALLATION.
4. INSTALL PRESTO LOCK COPING IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS AND END CAPS ARE AVAILABLE TO COMPLETE THE INSTALLATION. SHOP FABRICATED COPINGS SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES.
5. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
6. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL. CONTACT JM TECHNICAL FOR METAL OPTIONS TO BE INCLUDED WITHIN THE JM NDL GUARANTEE.
7. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL

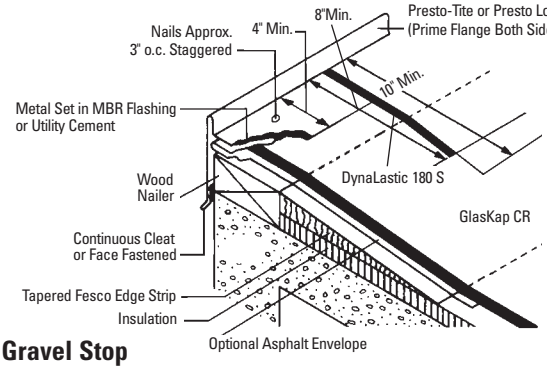
Roof Edge Details

Roof edges and gravel stops

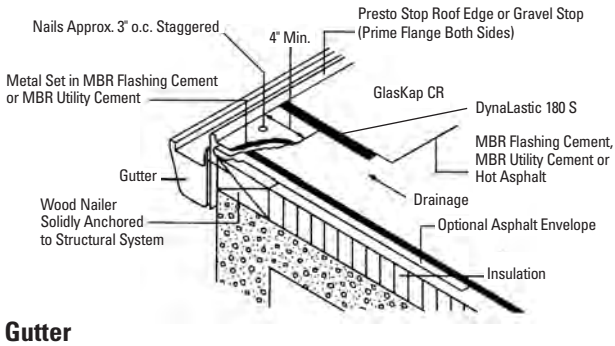
General

The constructions shown are for use at the perimeter of the roof when no parapet exists.

Note: Consider all general instructions contained in this Application Guide Book as part of the specification.



CR-4 Gravel Stop



CR-4 Gutter

Presto Stop Gravel Stop/Gutter

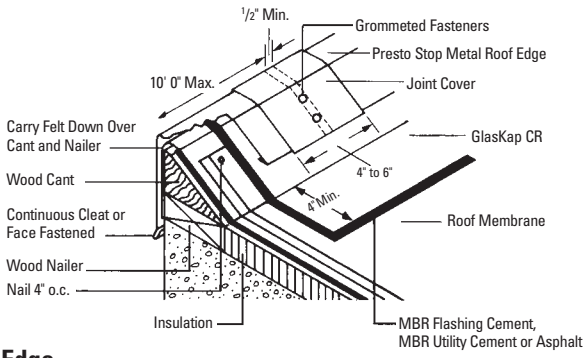
Prior to the application of any metal edging, the membrane is carried up and secured to the wood nailer, with nails having a 1" (25 mm) head or disc, at 6" (152 mm) o.c. Where desired, a felt envelope can wrap the end of the membrane, to prevent asphalt drippage down the face of the building. Wood nailers must extend horizontally beyond the metal flange of the edge piece. Nailers must be pressure treated with a salt preservative. Treatment of the nailers with creosote or asphaltic preservatives is not acceptable. The wood nailers must be solidly anchored to the structure.

Light gauge metals will be used, such as copper, hot galvanized steel, or aluminum. Refer to the manufacturer's recommendations on metal gauge, size, and cleat requirements on the Specialty Roofing Products tab on the JM Roofing website. or in accordance with SMACNA procedures. The metal should be thoroughly cleaned to remove oil or other contaminants, and primed on both sides with JM Metal Primer, before applying the MBR Flashing Cement, MBR Utility Cement or hot asphalt.

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

Set the metal sections into a ⅛" (3 mm) thick bed of MBR Flashing Cement or MBR Utility Cement, and fasten 3" (76 mm) o.c. on the horizontal flange, staggering the fasteners. The vertical face of the metal can be held either by a continuous cleat or face fastened. Strip in the metal edge with a minimum 8" (203 mm) wide piece of DynaLastic 180 S, set in MBR Flashing Cement, MBR Utility Cement or hot asphalt. PermaMop may not be used to install the modified bitumen material. Using the same technique, install a 10" (254 mm) piece of GlasKap CR.



CR-4 Roof Edge

Roof Edge

Prior to the application of any metal edging, the membrane is carried up and secured to the wood cant, with nails having a 1" (25 mm) head or disc, at 4" (102 mm) o.c. Wood nailers and cants must be pressure treated with a salt preservative. Treatment with creosote or asphaltic preservatives is not acceptable. The wood nailers and cants must be solidly anchored to the structure.

Cut the membrane into sections that can be easily handled and installed (6' - 8' [1.83 m - 2.44 m]). Starting at the top of the cant, mop the surface of the felts on the cant, and out onto the roof membrane with hot Type III or IV asphalt. Lay the DynaLastic 180 S into place on the cant and out onto the membrane a minimum of 4" (102 mm). The sheet should be "worked in" to ensure that it is firmly and uniformly bonded. In cool or cold weather, the back of the flashing sheet should also be mopped with the hot asphalt, and shorter lengths of DynaLastic 180 S should be used. The DynaLastic 180 S may also be installed using MBR Flashing Cement or MBR Utility Cement. PermaMop may not be used to install DynaLastic 180 S.

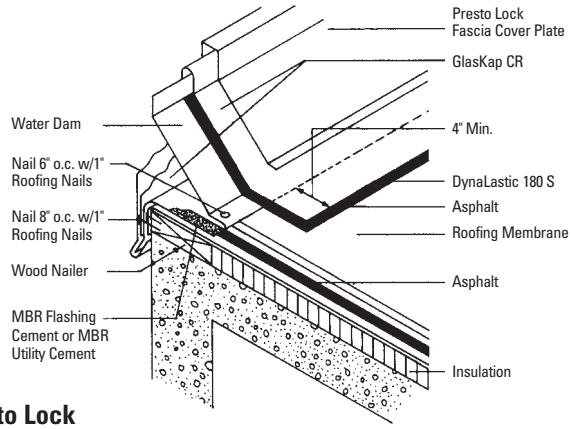
Repeat procedure with GlasKap CR. The GlasKap CR should extend out onto the membrane 2" (51 mm) farther than the Dynalastic 180 S.

Mechanically fasten the GlasKap CR on 6" (152 mm) centers along the top edge. Fasteners must have 1" (25 mm) minimum integral caps, or be driven through 1" (25 mm) minimum rigid metal discs.

It is recommended that light gauge metals, such as copper, hot galvanized steel, or aluminum, be used for the edge metal. Refer to the Specialty Roofing Products tab on the JM Roofing website for manufacturer's recommendations on metal gauge, size, and cleat requirements, or in accordance with SMACNA procedures. The metal sections are secured to the wood cant with rubber-grommeted fasteners, at the center of the section and at the cover plates. The vertical face of the metal can be either held by a continuous cleat, or face fastened.

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.



CR-4 Presto Lock

Presto Lock Fascia and Flashing System

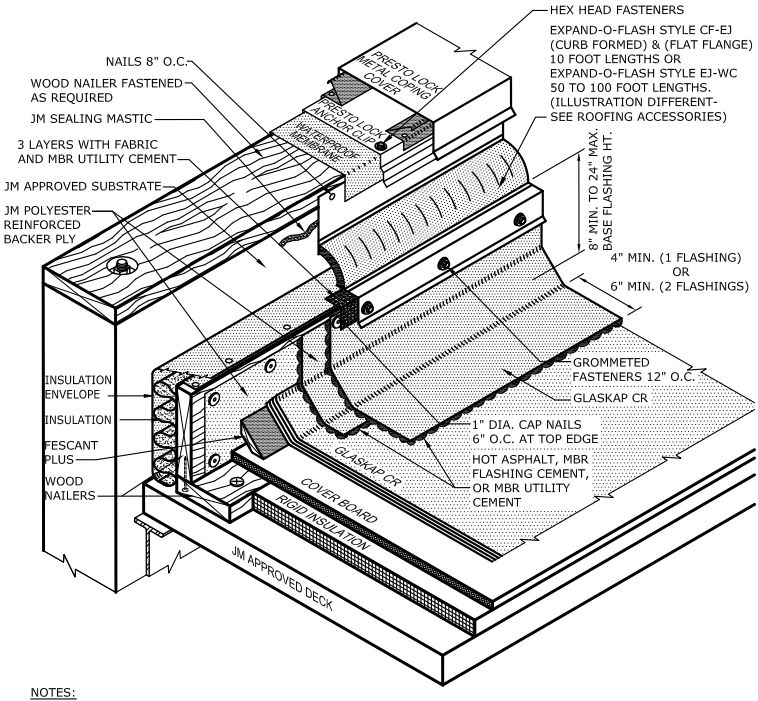
Prior to the application of the Presto Lock, the membrane is secured to the wood nailer, with nails having a 1" (25 mm) head or disc, at 6" (152 mm) o.c. Where desired, a felt envelope can wrap the end of the membrane, to prevent asphalt drippage down the face of the building. Wood nailers must extend horizontally beyond the metal flange of the edge piece. Nailers must be pressure treated with a salt preservative. Treatment of the nailers with creosote or asphaltic preservatives is not acceptable. The wood nailers must be solidly anchored to the structure.

Install the Presto Lock Fascia System in accordance with the installation instructions provided with the product.

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

Masonry With Nailing Facilities, Expansion Joint



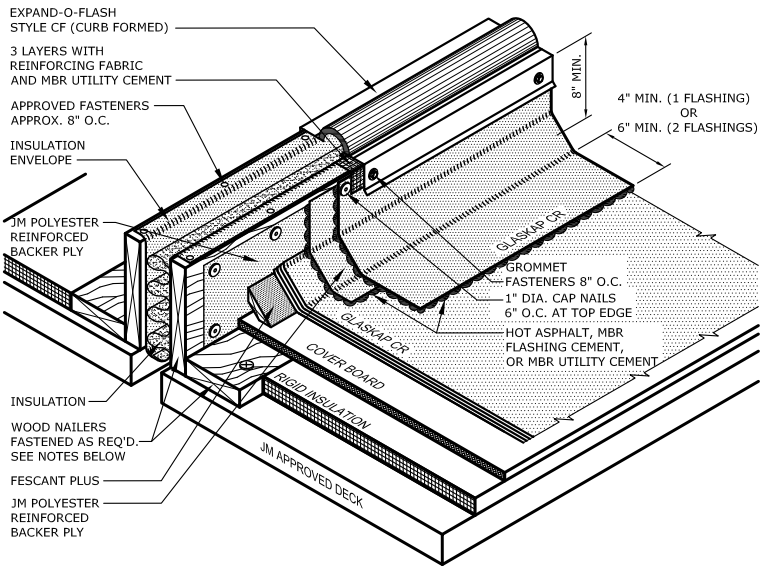
NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. JM POLYESTER BACKER PLY INCLUDES DYNABASE PR OR DYNALASTIC 180 S.
3. INSTALL EXPAND-O-FLASH IN ACCORDANCE WITH APPLICATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED TRANSITIONS, INSIDE/OUTSIDE CORNERS, ETC. ARE AVAILABLE TO COMPLETE THE INSTALLATION.
4. INSTALL PRESTO LOCK COPING IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS AND END CAPS ARE AVAILABLE TO COMPLETE THE INSTALLATION. SHOP FABRICATED COPINGS SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES.
5. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
6. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
7. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL
8. MASONRY SUBSTRATES REQUIRE PRIMING WITH ASPHALT PRIMER PRIOR TO BACKER PLY INSTALLATION. WOOD SUBSTRATES REQUIRE A MECHANICALLY FASTENED BACKER PLY FASTENED 9" O.C. IN BOTH DIRECTIONS.

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

Roof-to-Roof, Curb Mounted, Expand-O-Flash®



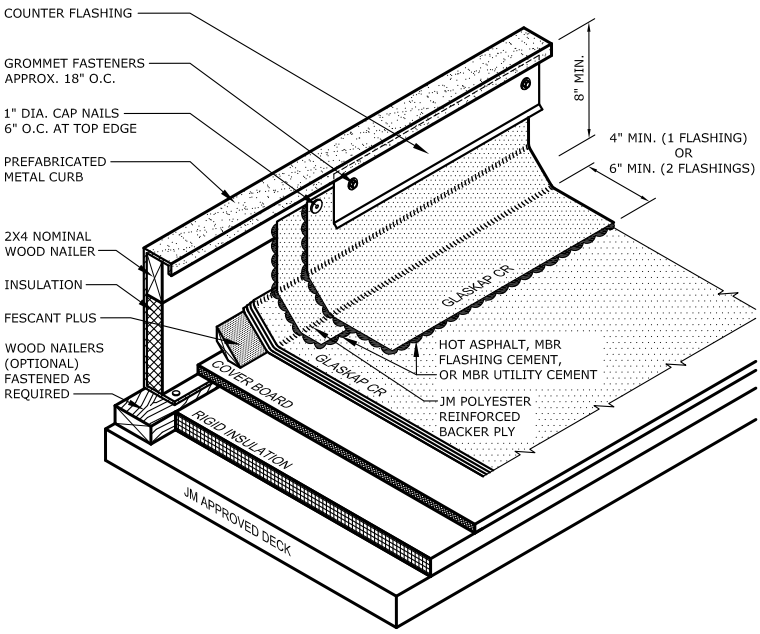
NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. JM POLYESTER REINFORCED BACKER PLY INCLUDES DYNABASE PR OR DYNALASTIC 180 S.
3. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
4. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
5. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
6. INSTALL EXPAND-O-FLASH IN ACCORDANCE WITH APPLICATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED TRANSITIONS, INSIDE/OUTSIDE CORNERS, ETC. ARE AVAILABLE TO COMPLETE THE INSTALLATION.
7. THE VERTICAL WOOD CURB SHOULD BE FASTENED TO THE DECK ONLY.

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

Prefabricated



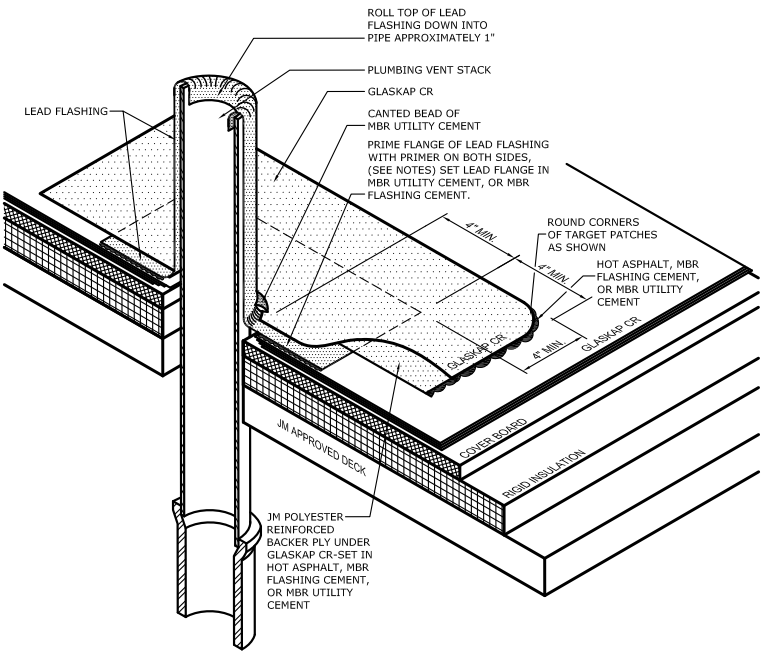
NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. JM POLYESTER REINFORCED BACKER PLY INCLUDES DYNABASE PR OR DYNALASTIC 180 S.
3. HEIGHT OF CURB TO BE ADJUSTED WITH NAILERS. IT IS PREFERRED TO RAISE ROOF HATCH WITH NAILERS TO EXTEND FLASHING HEIGHT.
4. THE VERTICAL WOOD CURB SHOULD BE FASTENED TO THE DECK ONLY.
5. CURB INSULATION MUST BE MECHANICALLY ATTACHED OR ADHERED SOLIDLY TO METAL CURB.
6. CURB MUST BE SET SO AS TO PROVIDE 8" MIN FLASHING HEIGHT.
7. METAL COUNTERFLASHING IS REQUIRED FOR ALL INSTALLATIONS.
8. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
9. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
10. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

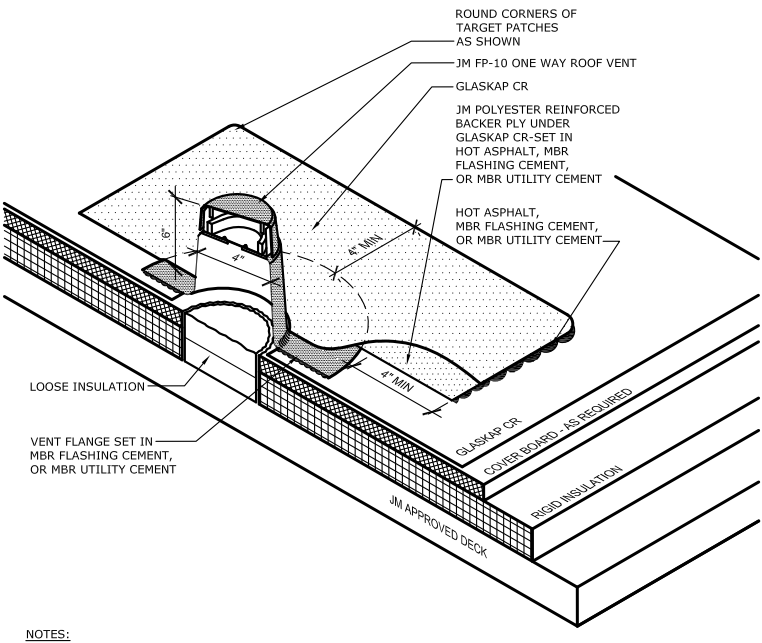
Plumbing, Lead



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. LEAD FLASHING SHALL BE 2.5 LBS. PER SQUARE FOOT MINIMUM.
3. IF LEAD FLASHING IS NOT DESIRED OR PIPE IS TOO TALL, SEE PERMAFLASH DETAIL PMF-6 & PMF-6S FOR A SUITABLE ALTERNATIVE.
4. USE ASPHALT PRIMER ON LEAD FLANGES WHEN USING MBR UTILITY CEMENT.
5. USE PERMAFLASH PRIMER ON LEAD FLANGES WHEN USING MBR FLASHING CEMENT.
6. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
7. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
8. JM POLYESTER REINFORCED BACKER PLY INCLUDES DYNABASE PR OR DYNALASTIC 180 S.

FP-10 One Way® Roof Vent



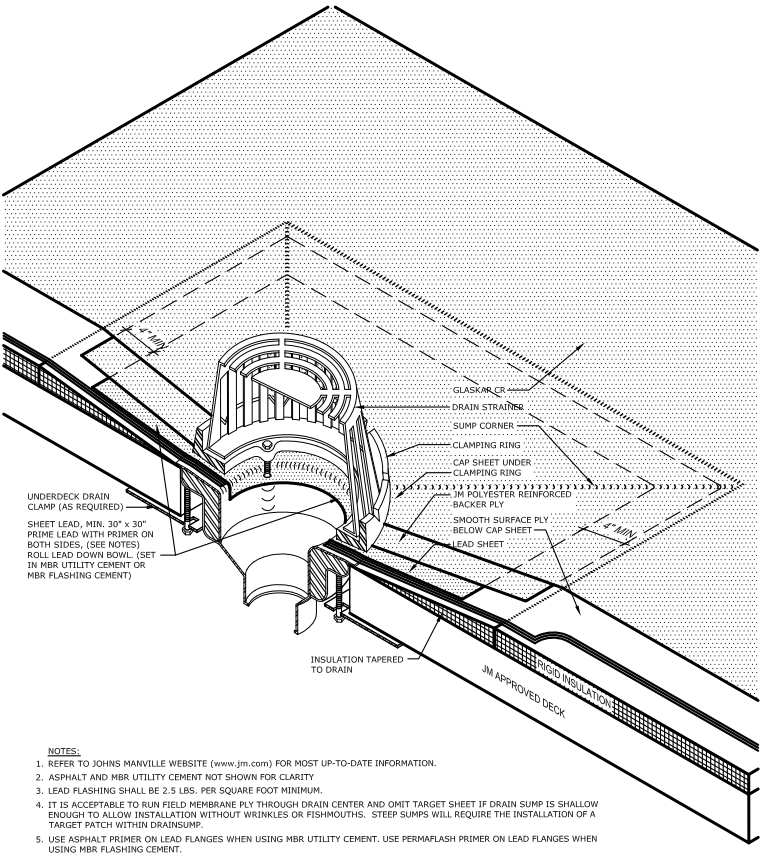
NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. CUT A HOLE IN MEMBRANE PRIOR TO INSTALLATION. REMOVE ALL OR PART OF THE INSULATION TO FACILITATE VENTING. LOOSE INSULATION CAN REMAIN TO MAINTAIN R VALUE AND PREVENT CONDENSATION.
3. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
4. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
5. JM POLYESTER REINFORCED BACKER PLY INCLUDES DYNABASE PR OR DYNALASTIC 180 S.

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

Cast Iron



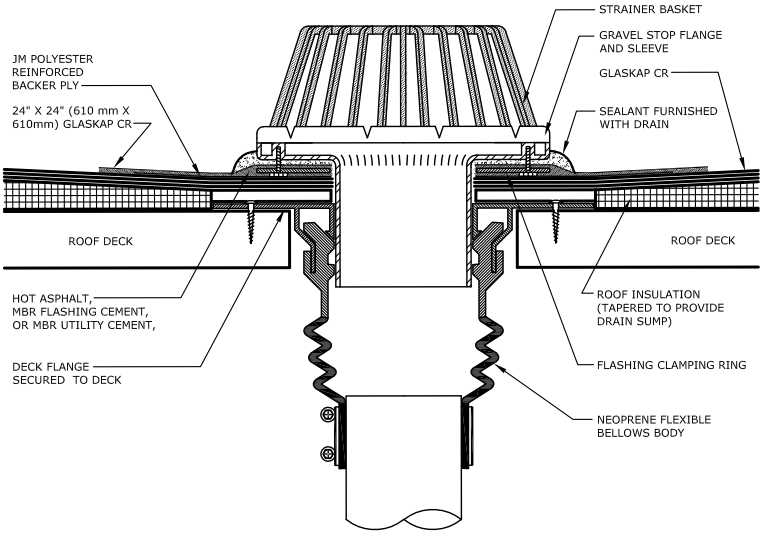
NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. ASPHALT AND MBR UTILITY CEMENT NOT SHOWN FOR CLARITY
3. LEAD FLASHING SHALL BE 2.5 LBS. PER SQUARE FOOT MINIMUM.
4. IT IS ACCEPTABLE TO RUN FIELD MEMBRANE PLY THROUGH DRAIN CENTER AND OMIT TARGET SHEET IF DRAIN SUMP IS SHALLOW ENOUGH TO ALLOW INSTALLATION WITHOUT WRINKLES OR FISHMOUTHS. STEEP SUMPS WILL REQUIRE THE INSTALLATION OF A TARGET PATCH WITHIN DRAINSUMP.
5. USE ASPHALT PRIMER ON LEAD FLANGES WHEN USING MBR UTILITY CEMENT. USE PERMAFLASH PRIMER ON LEAD FLANGES WHEN USING MBR FLASHING CEMENT.
6. EXTEND ALL PLIES TO EDGE OF DRAIN BOWL. NO SEAMS ARE ALLOWED THROUGH THE DRAIN.
7. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
8. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
9. JM POLYESTER REINFORCED BACKER PLY INCLUDES DYNABASE PR OR DYNALASTIC 180 S.

Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

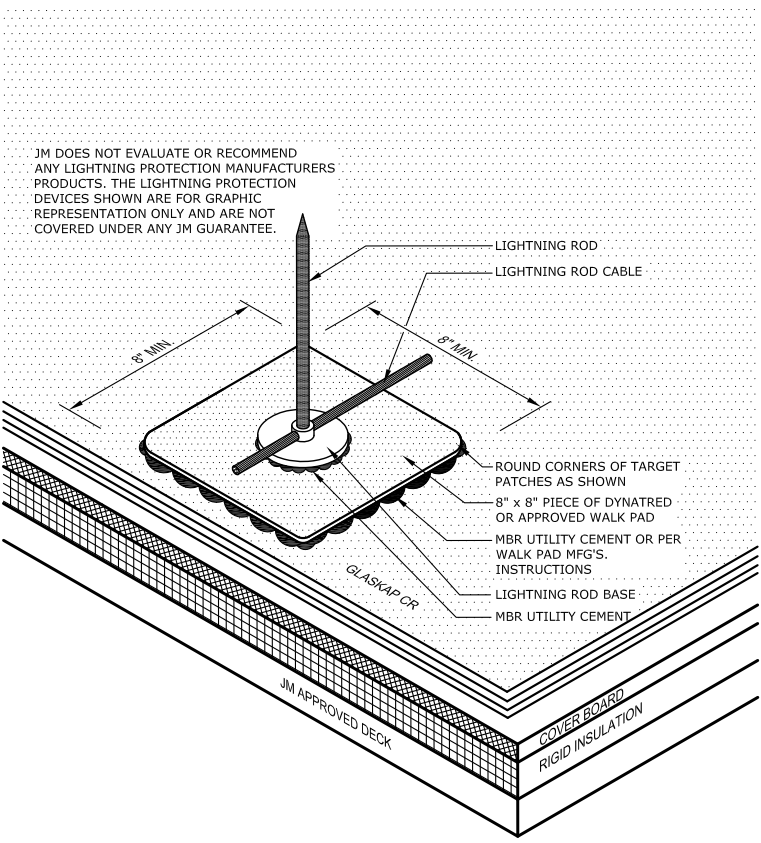
JM Flex-I-Drain



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. SEE JM FLEX-I-DRAIN INSTALLATION INSTRUCTIONS FOR FURTHER INFORMATION.
3. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
4. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
5. JM POLYESTER REINFORCED BACKER PLY INCLUDES DYNABASE PR OR DYNALASTIC 180 S.

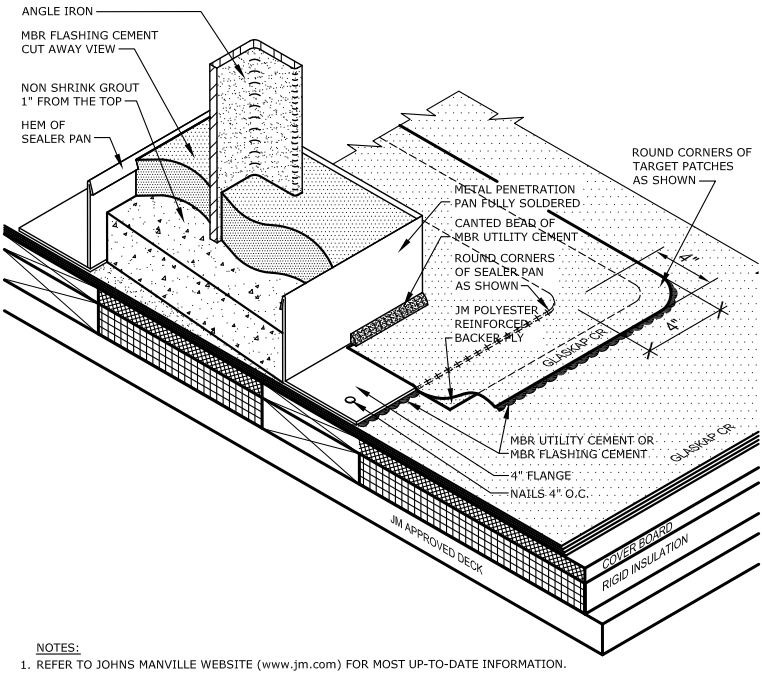
Lightning Rod, Surface Mount



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
3. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
4. LIGHTNING ROD GROUND WIRE MUST NOT COME IN CONTACT WITH THE ROOFING MATERIAL. A SACRIFICIAL LAYER OF MEMBRANE IS RECOMMENDED UNDER THE ENTIRE LENGTH OF GROUND WIRE(S).

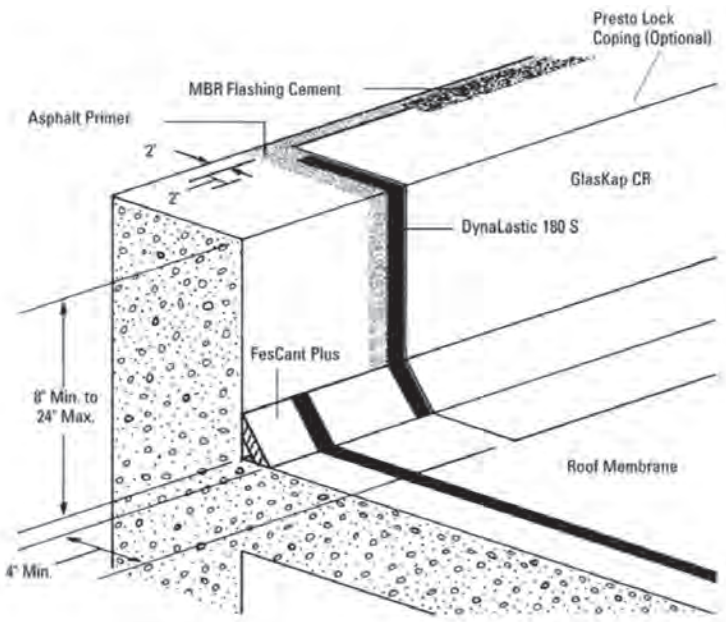
Penetration Pocket



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. MAINTAIN 2" MIN. CLEARANCE FROM PENETRATION TO EDGE OF METAL PAN.
3. ROUND FLANGE CORNERS ON METAL PAN.
4. PRIME INSIDE OF METAL PAN WITH PERMAFLASH PRIMER WHERE MBR FLASHING CEMENT WILL BE PLACED.
5. PENETRATION PANS ARE CONSIDERED MAINTENANCE ITEMS AND ARE NOT GUARANTEED BY JOHNS MANVILLE.
6. USE ASPHALT PRIMER ON FLANGES WHEN USING MBR UTILITY CEMENT. USE PERMAFLASH PRIMER ON FLANGES WHEN USING MBR FLASHING CEMENT.
7. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
8. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
9. JM POLYESTER REINFORCED BACKER PLY INCLUDES DYNABASE PR OR DYNALASTIC 180 S.

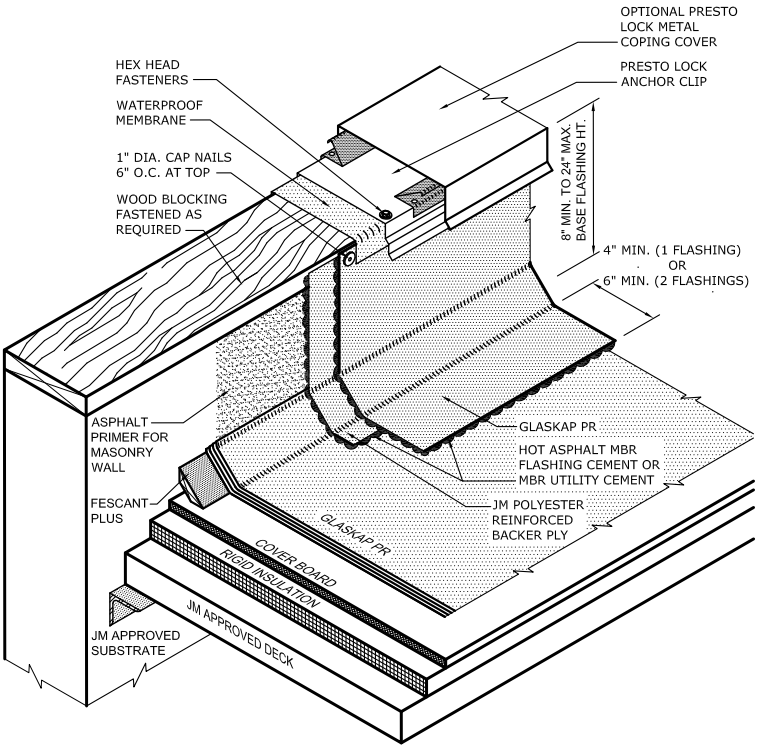
Masonry



Note: For the most current information on general guidelines, please refer to the System Considerations tab under Commercial Roofing Products on the JM Roofing Web site. For specifications, flashing details and general installation information please refer to the Application Tools tab.

Refer to the Safe Use Instructions and product label prior to using this product.

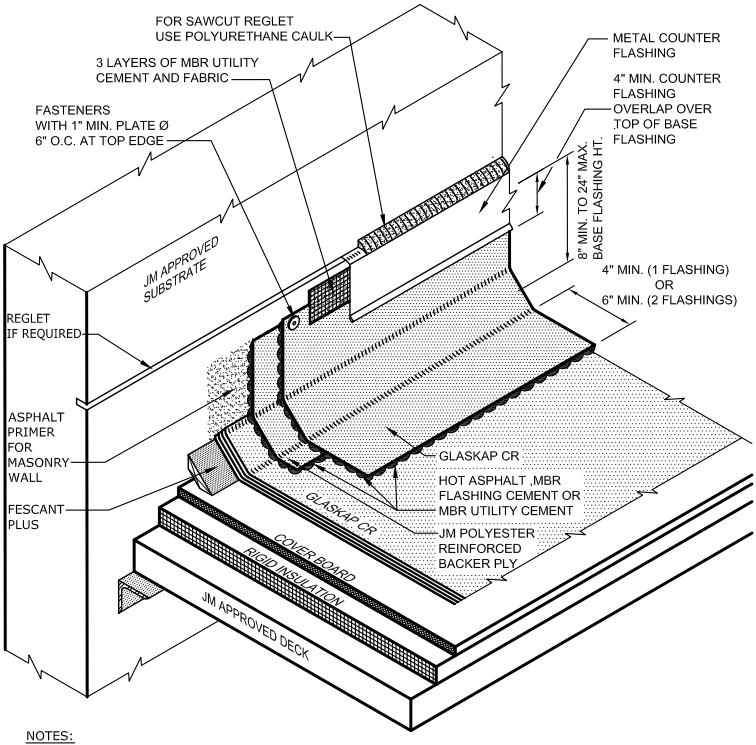
Base Flashing for Wall Less Than 24-inches



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. JM REINFORCED POLYESTER BACKER PLY INCLUDES DYNABASE PR OR DYNALASTIC 180 S.
3. MASONRY SUBSTRATES REQUIRE PRIMING WITH ASPHALT PRIMER PRIOR TO BACKER PLY INSTALLATION. WOOD SUBSTRATES REQUIRE A MECHANICALLY FASTENED BACKER PLY FASTENED 9" O.C. IN BOTH DIRECTIONS.
4. ANY CARPENTRY, METAL WORK, OR MASONRY CONSTRUCTION SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
5. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
6. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
7. INSTALL PRESTO LOCK COPING IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS AND END CAPS ARE AVAILABLE TO COMPLETE THE INSTALLATION. SHOP FABRICATED COPINGS SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES.

Masonry With Nailing Facilities



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4. METAL COUNTER FLASHING IS RECOMMENDED FOR ALL INSTALLATIONS AND IS REQUIRED FOR ALL GUARANTEES 15 YEARS OR LONGER. A 3 COURSING OF PERMAFLASH MAY BE USED TO SEAL THE TOP EDGE OF THE FLASHING ON 10 YEAR NDL'S IN LIEU OF METAL COUNTER FLASHING.
5. VERTICAL JOINTS ARE TO BE OVERLAPPED 4" MINIMUM FOR ALL APPLICATIONS. 3 COURSING WITH MBR UTILITY CEMENT AND FABRIC OR JM MBR FLASHING CEMENT IS REQUIRED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
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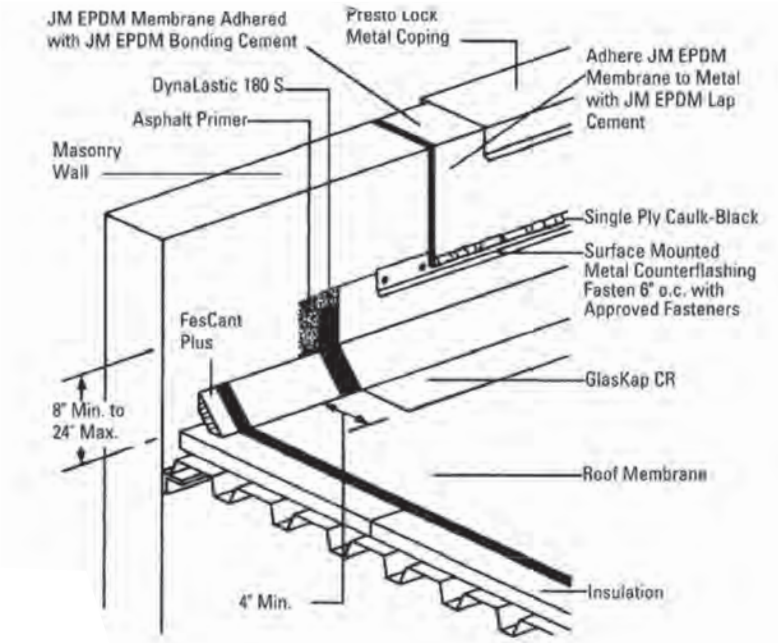
Masonry, High, Metal Coping



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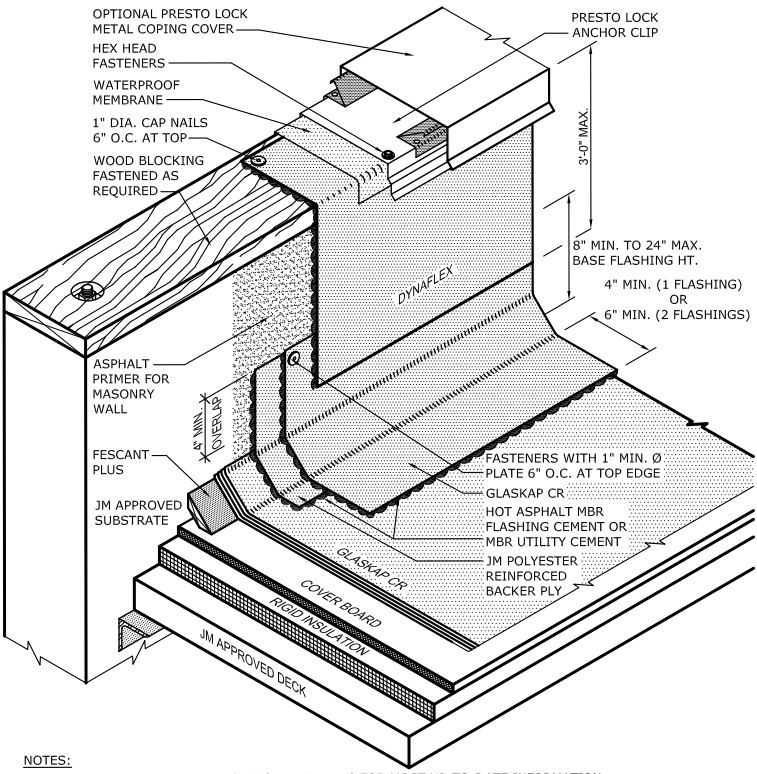
Tilt-Up, High



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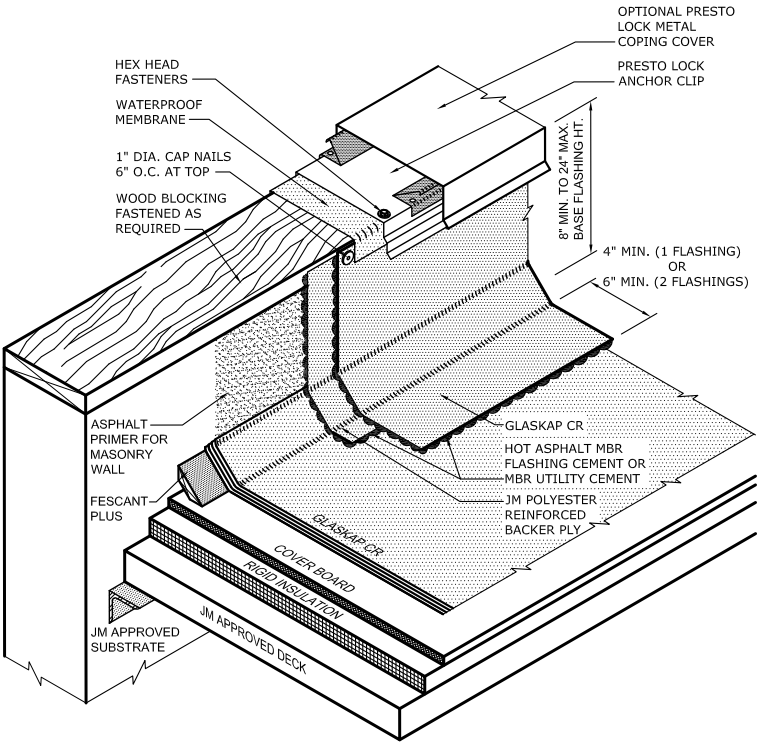
Tilt-Up, Low



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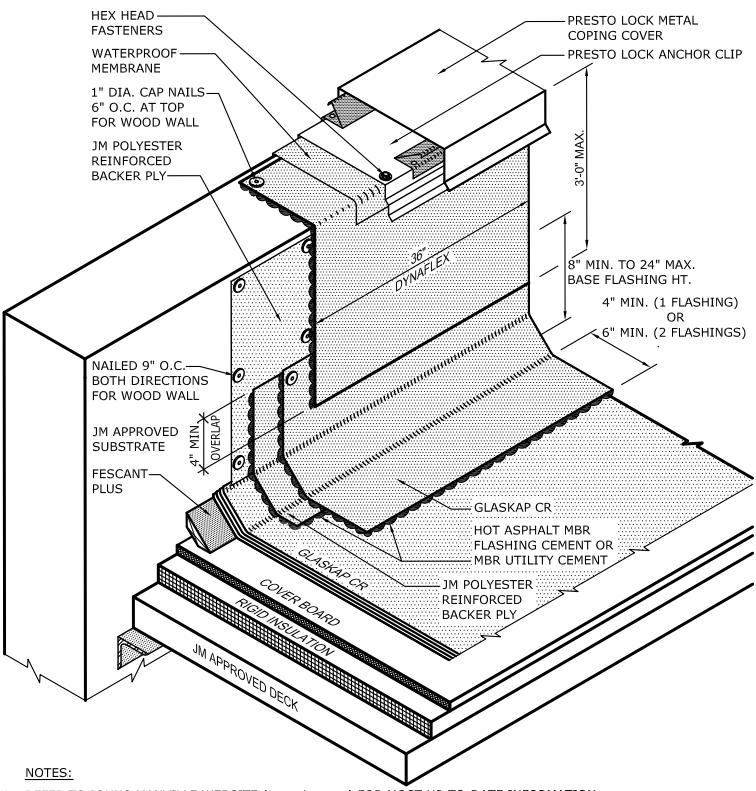
Wood, High



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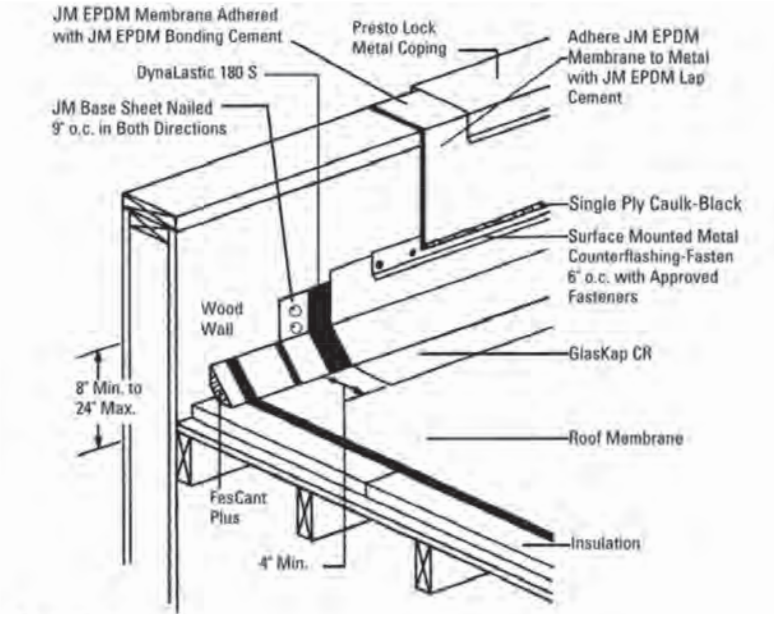
Wood, High, Metal Coping



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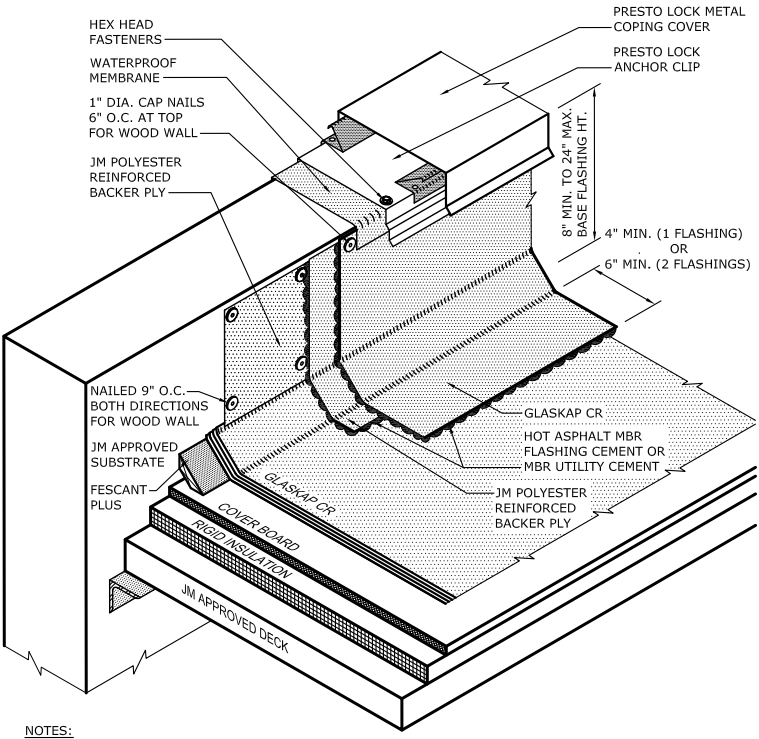
Wood, Low



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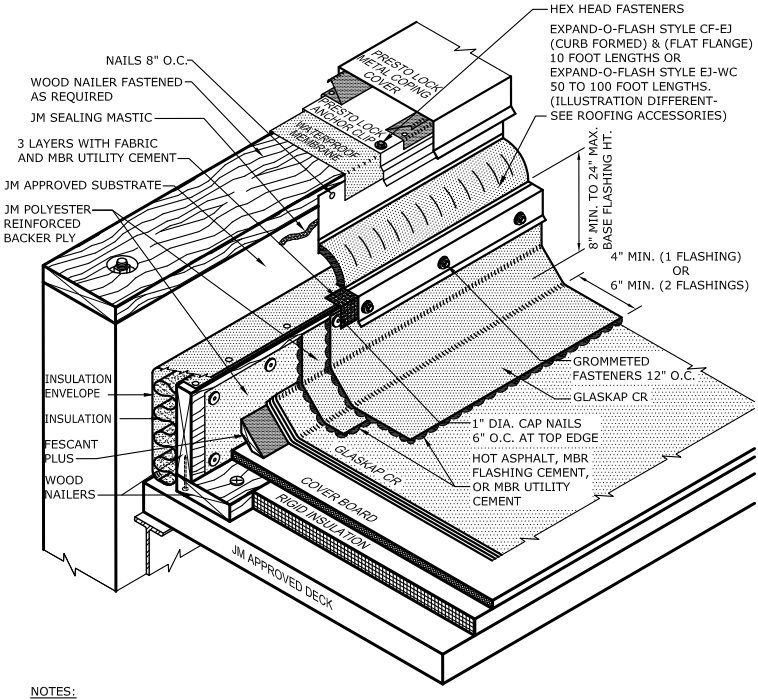
Masonry With Nailing Facilities



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3. INSTALL EXPAND-O-FLASH IN ACCORDANCE WITH APPLICATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED TRANSITIONS, INSIDE/OUTSIDE CORNERS, ETC. ARE AVAILABLE TO COMPLETE THE INSTALLATION.
4. INSTALL PRESTO LOCK COPING IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT. PREFABRICATED INSIDE/OUTSIDE CORNERS AND END CAPS ARE AVAILABLE TO COMPLETE THE INSTALLATION. SHOP FABRICATED COPINGS SHOULD BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES.
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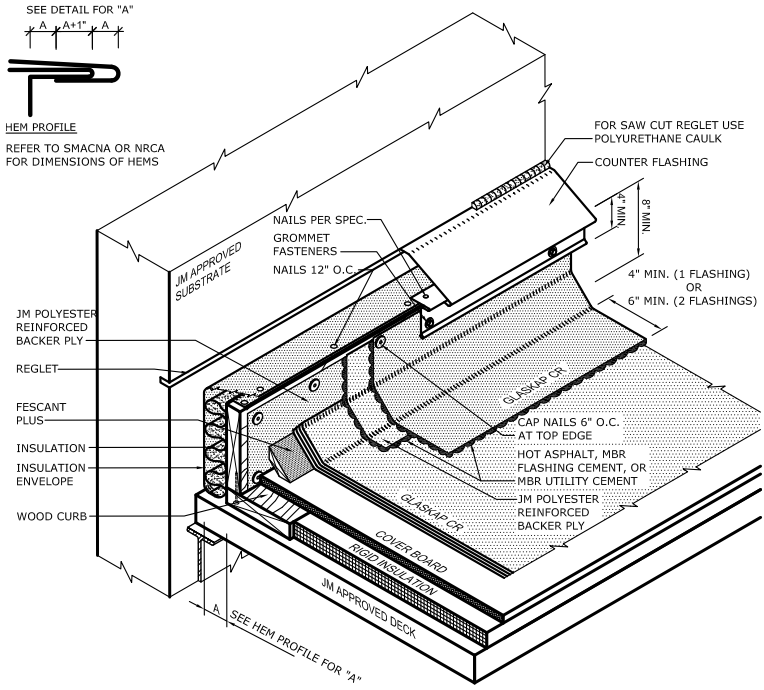
Vertical Termination, Counterflashing, Alternate



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6. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
7. THE VERTICAL WOOD CURB SHOULD BE FASTENED TO THE DECK ONLY.
8. MASONRY SUBSTRATES REQUIRE PRIMING WITH ASPHALT PRIMER PRIOR TO BACKER PLY INSTALLATION. WOOD SUBSTRATES REQUIRE A MECHANICALLY FASTENED BACKER PLY FASTENED 9" O.C. IN BOTH DIRECTIONS.

Vapor Barrier Flashing Details

Introduction

Vapor barriers can play an important role in the construction of a roof system and proper installation of these products are critical to their performance. Although many products can be used as a vapor barrier, this installation guide is specific to the JM Vapor Barrier SA product and the corresponding primers, SA Primer and SA Primer Low VOC.

General Application Instructions

Surface Preparation: All surfaces must be swept clean and free from oil, grease, rust, scale, loose paint and dirt. NOTE: If the material has been left exposed, the membrane must be free of dust, frost or any other debris prior to application of any adhesives to the top surface. The surface may need to be broomed or cleaned with a light rinse and allowed to dry prior to application of any adhesives. An adhesion test may need to be performed to determine if the polyethylene is a viable substrate.

Primer

SA Primer and SA Primer Low VOC must be mixed well before use. Do not thin. Please see data sheet for coverage information. Apply with a roller or a spray can. Primers should be applied uniform with no streaks or puddles. Allow to dry completely. Do not accelerate drying of primers by heating with a torch. Primer should be tacky but should not transfer to a clean dry finger.

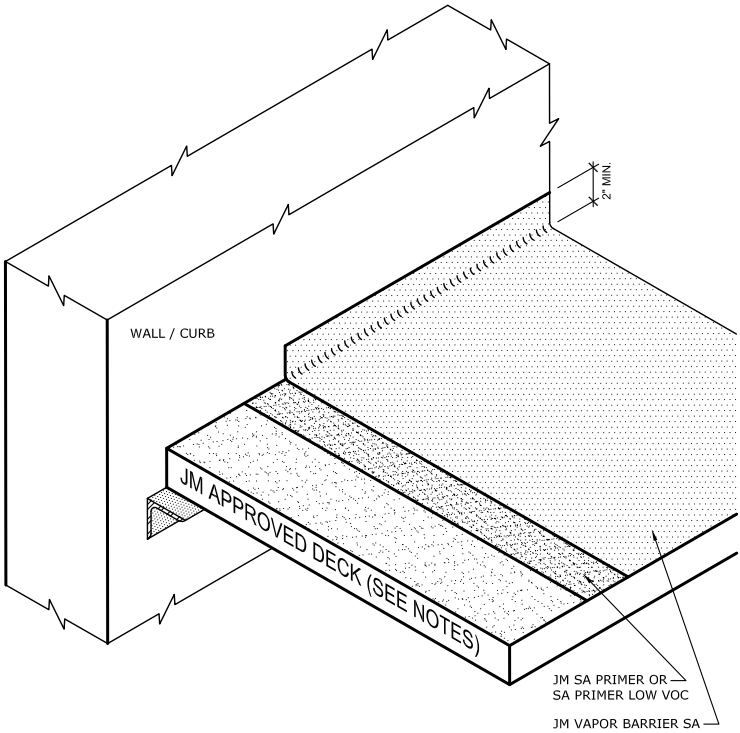
Vapor Barrier SA

Roll out Vapor Barrier SA membrane over the areas that have received the SA Primer or SA Primer Low VOC. Be sure to stagger the end laps and overlap the side laps by a minimum of 3". Once the membrane is in the desired location, hold the membrane tight while peeling away the silicone release liner at an angle. Install additional rolls in the same way, with 3" side laps and 6" end laps. A minimum 75 lb split linoleum roller should be used over the entire surface and a 4" rubber roller should be used in the overlap areas.

Clean Up

Tools can be cleaned with petroleum solvents such as mineral spirits. Use care when handling solvents. Clean hands with waterless hand cleaner.

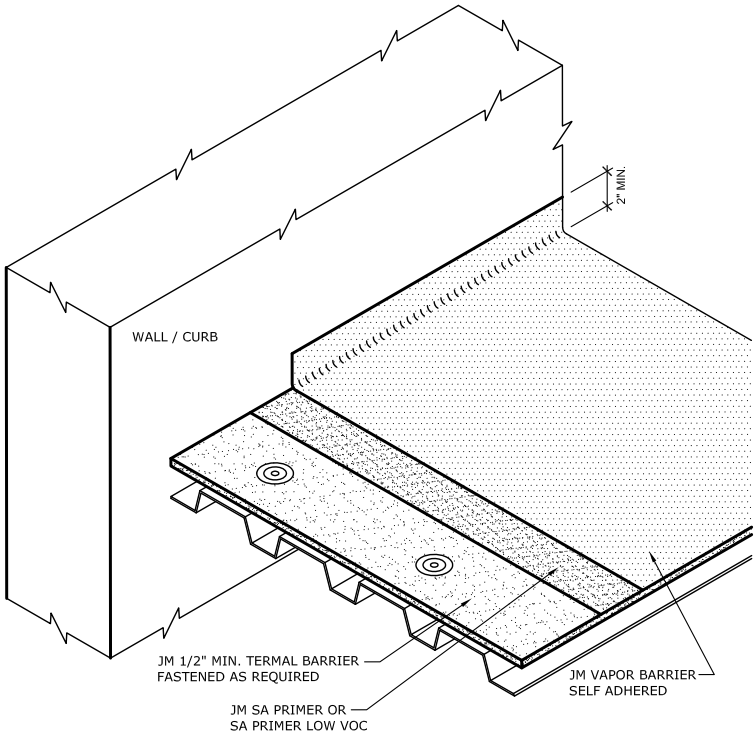
JM Vapor Barrier SA - Wall Base Detail



NOTES

1. USE DETAIL IN CONJUNCTION WITH THE STANDARD CURB DETAIL FOR APPROVED ROOF SYSTEM.
2. REFER TO JM VAPOR BARRIER AND PRIMER INSTALLATION INSTRUCTIONS FOR GENERAL GUIDELINES REGARDING THESE SYSTEMS.
3. FOR STEEL DECK SYSTEMS IT IS REQUIRED TO HAVE A MINIMUM OF 1/2" THERMAL BARRIER FASTENED TO STEEL DECK BEFORE JM VAPOR BARRIER IS ADHERED.

JM Vapor Barrier SA - Wall Base Detail (Alt)



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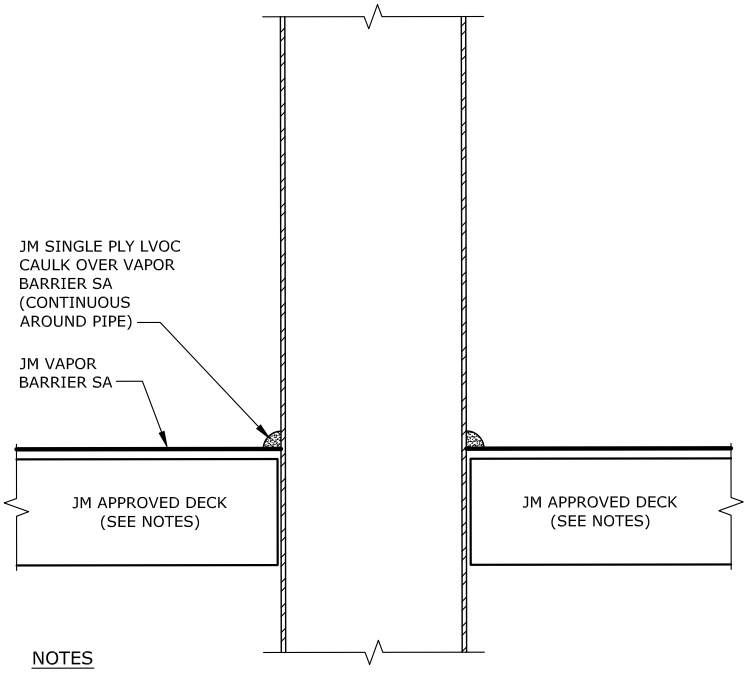
JM Vapor Barrier SA - Pipe Penetration Detail



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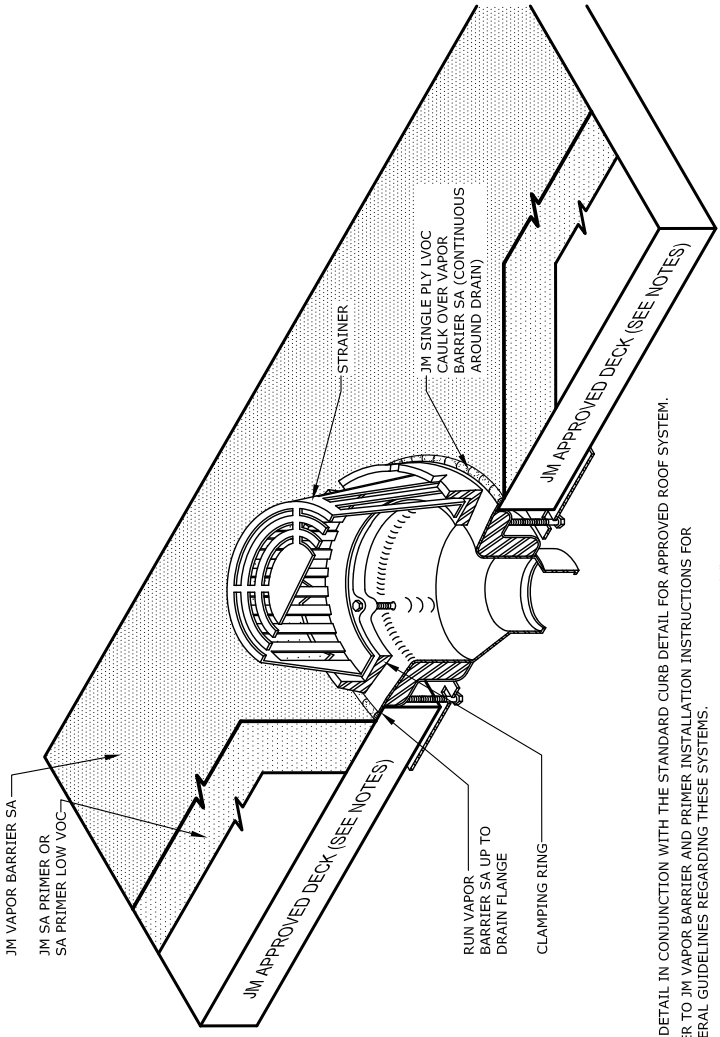
JM Vapor Barrier SA - Drain Detail



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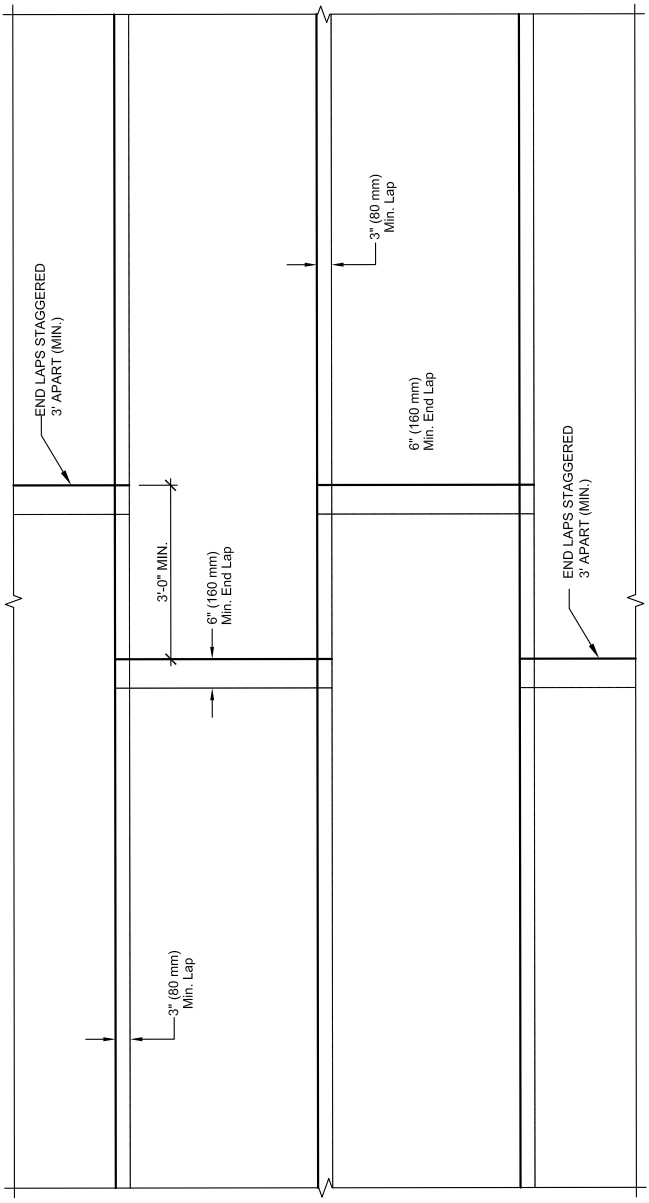
JM Vapor Barrier SA - Detail at Field Laps



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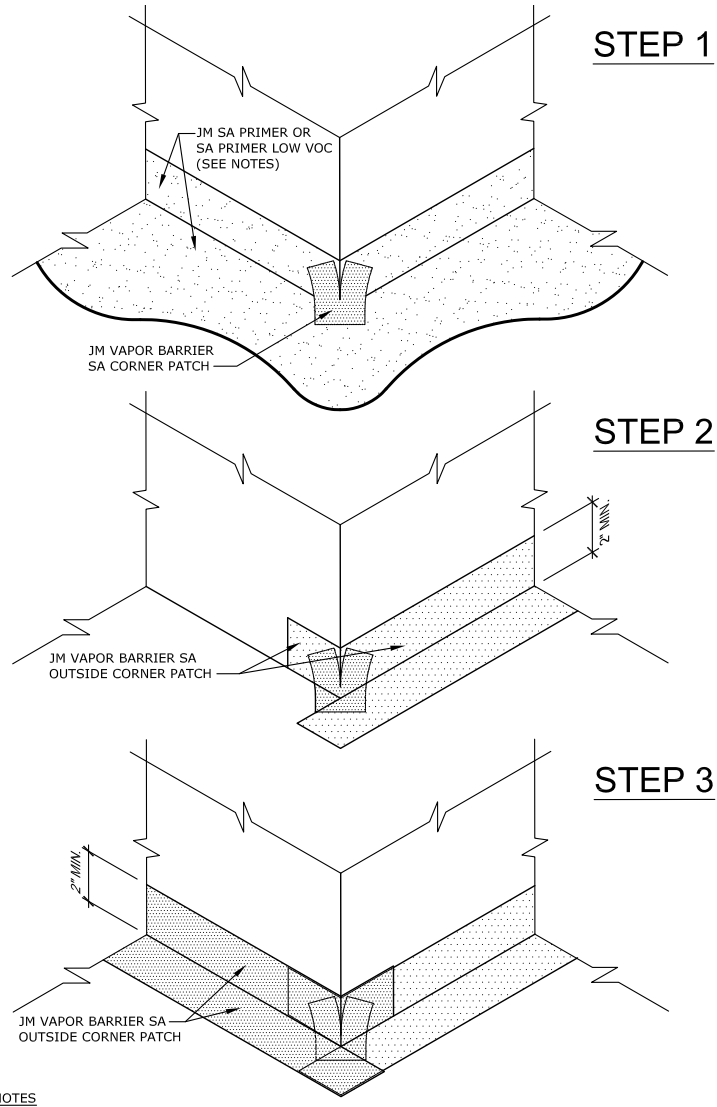
JM Vapor Barrier SA - Outside Curb Detail



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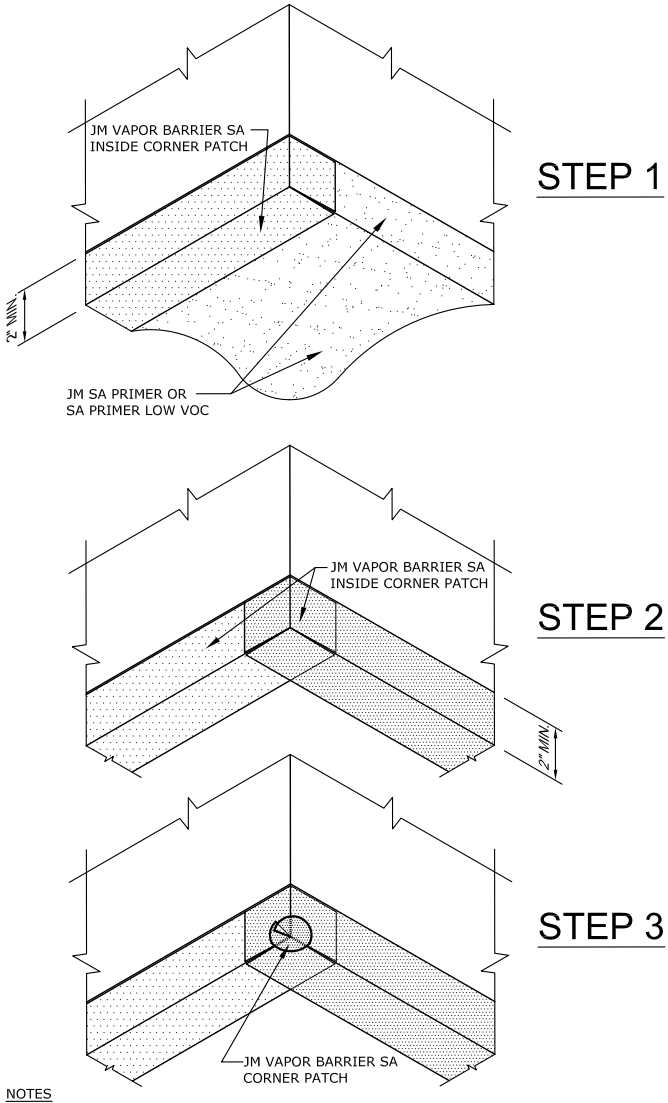
JM Vapor Barrier SA - Inside Curb Detail



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PEAK ADVANTAGE Johns Manville

One manufacturer, one full-system guarantee

Johns Manville offers one of the most comprehensive guarantees in the roofing industry. That's the advantage you can expect from a longtime, dependable leader with the financial backing of Berkshire Hathaway.

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Johns Manville
A Berkshire Hathaway Company

717 17th St,
Denver, CO 80202
(800) 922-5922

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