Johns Manville

Hot Asphalt

Mechanically Fastened

BUR Roofing Systems

Commercial Roofing Application Guide

Built-Up Roofing Application Guide

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Disclaimer:
This Application Guide is intended as a guide only; actual conditions encountered during installation may vary from jobsite to jobsite. By providing this guidance, Johns Manville assumes no responsibility for quality of installation, field workmanship, building code compliance, or job safety. Johns Manville Safety Data Sheets (MSDS) are available with specific product safety information. For information on other Johns Manville thermal insulations and systems, call (800) 922-5922 or visit JM.com.

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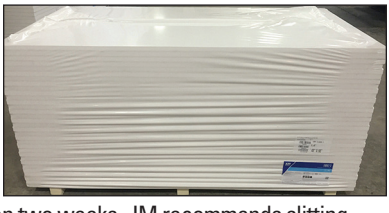
Roof Insulation Application Guide, and Fastening Patterns

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, ProtectoR, SeparatoR, 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 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 Application

JM endorses the guidelines established by the NRCA and ARMA for heating asphalt for proper application. However, when installing insulation, asphalt should be applied approximately 25°F - 35°F (14°C - 19°C) cooler than the Equiviscous Temperature (EVT) for the specific grade to be used. This will allow the required 30 pounds per 100 square feet nominal application rate to be achieved.

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®. See data sheet for FM Approved Fastening patterns for ProtectoR® HD and SepratatoR® CGF.

Adhesive Application

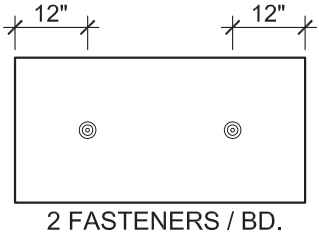
JM insulations may be installed in Insulation Adhesives:

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

Board stock attachment requires the board stock to be walked in to ensure positive contact between the board stock, adhesive and substrate. Weigh the board stock down with readily available load on the rooftop; example pails of bonding adhesive, screw/plate buckets or other sources of weight (minimum 32 lbs) that will not damage the roof insulation. Special attention should be paid to the corners of the board and ensure the board makes continuous contact with the 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.

Roof Insulations
Fastener Placement

2′ x 4′ (.61 m x 1.22 m) Boards



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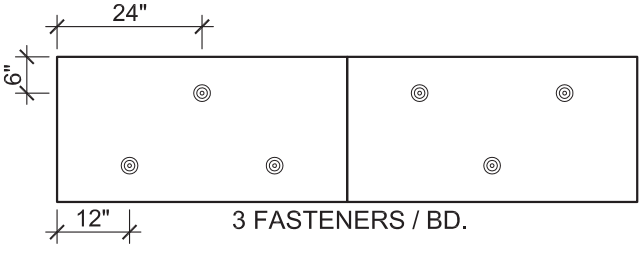

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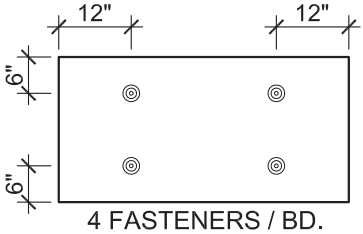

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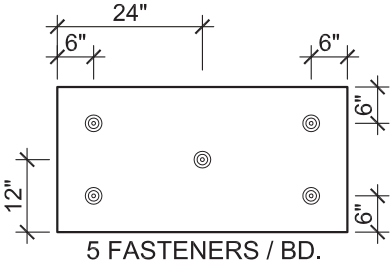

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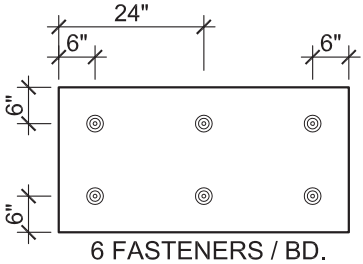

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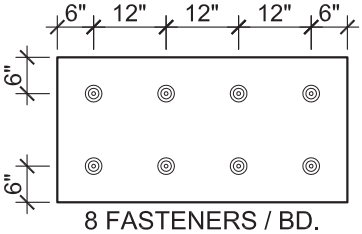

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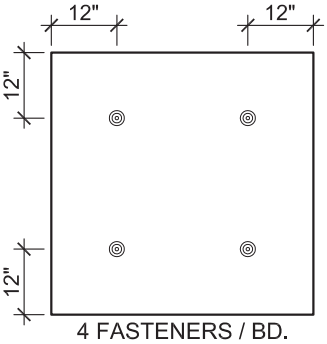
Roof Insulations Fastener Placement

4′ x 4′ (1.22 m x 1.22 m) Boards



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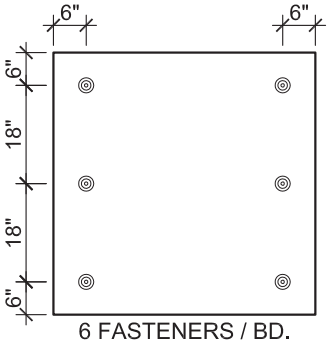

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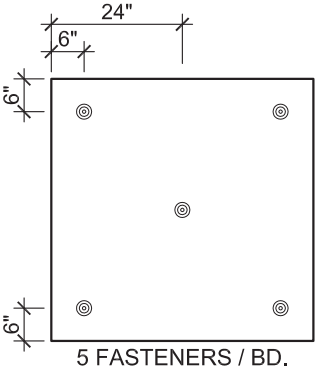

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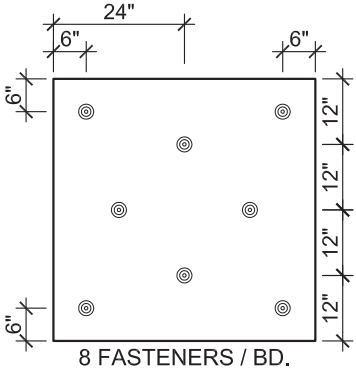

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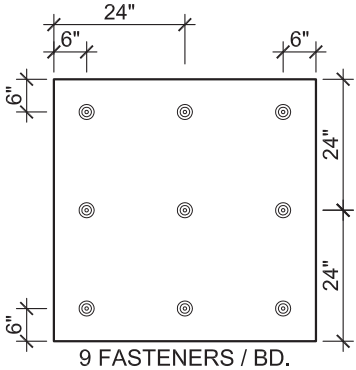

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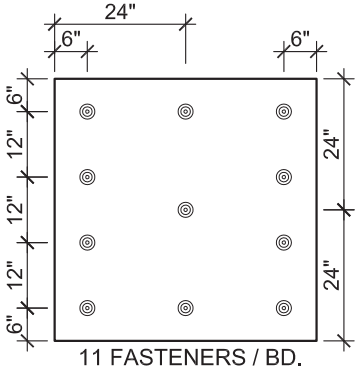
Roof Insulations
Fastener Placement

4' x 4' (1.22 m x 1.22 m) Boards



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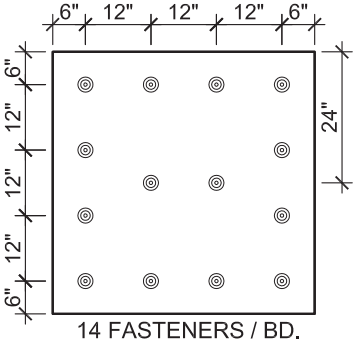

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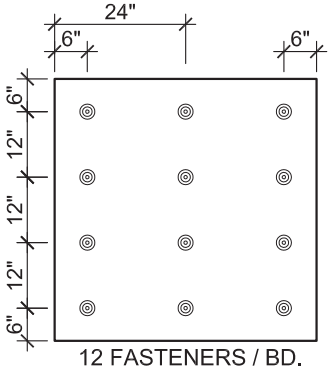

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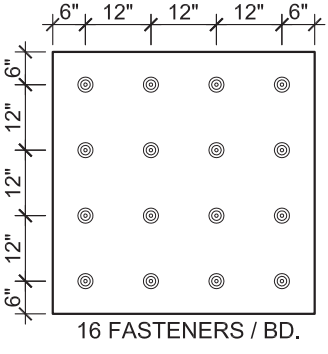

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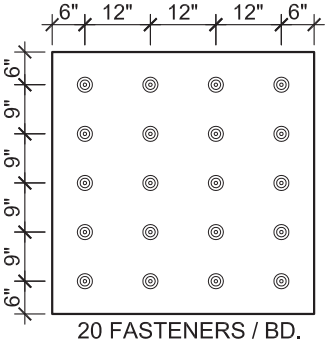

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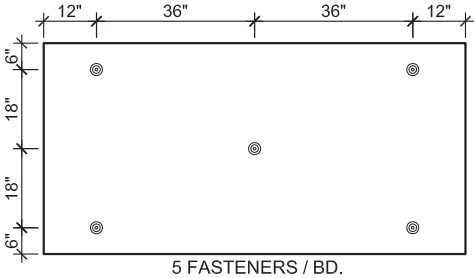
Roof Insulations
Fastener Placement

4′ x 8′ (1.22 m x 2.44 m) Boards



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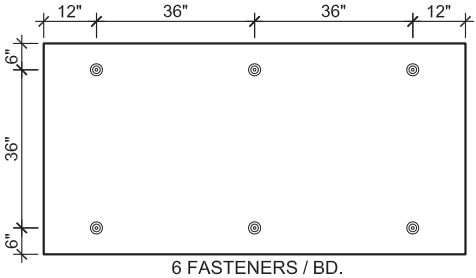

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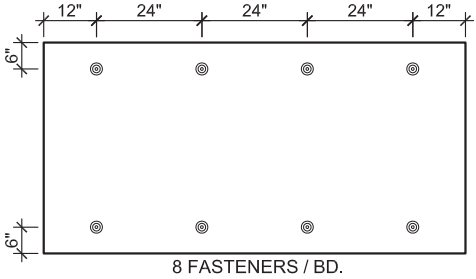

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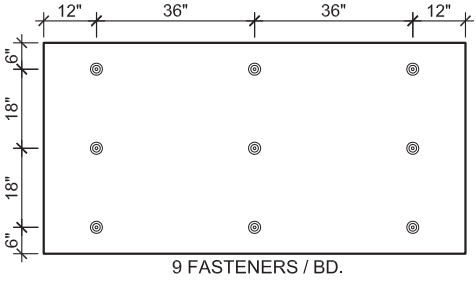

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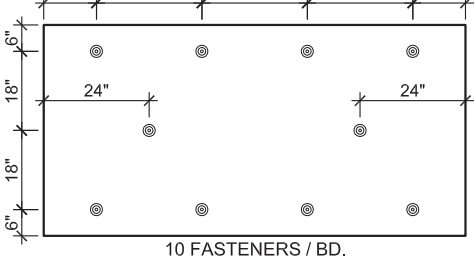

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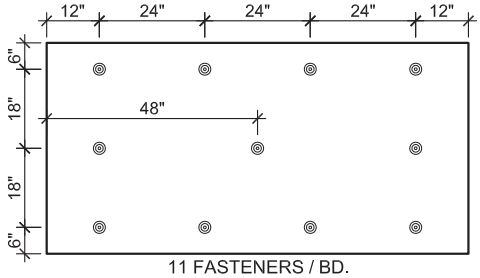
Roof Insulations
Fastener Placement

4′ x 8′ (1.22 m x 2.44 m) Boards



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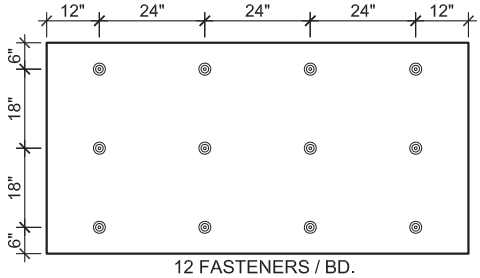

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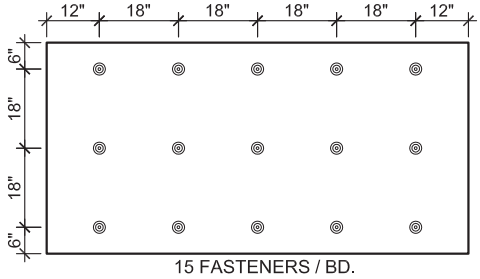

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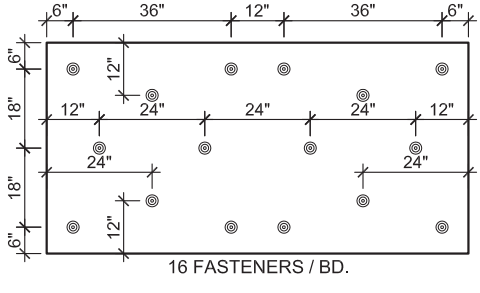

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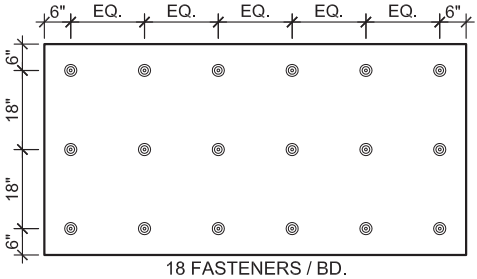
Roof Insulations
Fastener Placement

4′ x 8′ (1.22 m x 2.44 m) Boards



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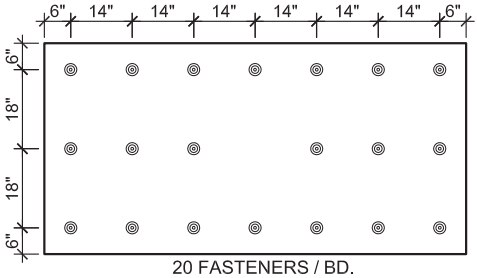

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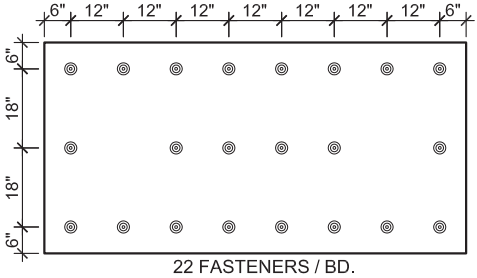

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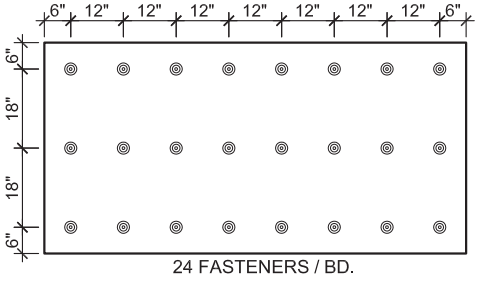

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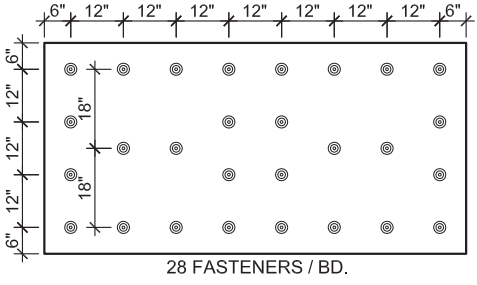
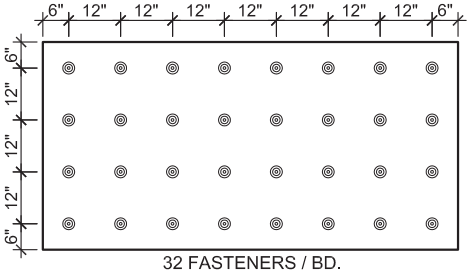


28 FASTENERS / BD.

Roof Insulations
Fastener Placement

4′ x 8′ (1.22 m x 2.44 m) Boards



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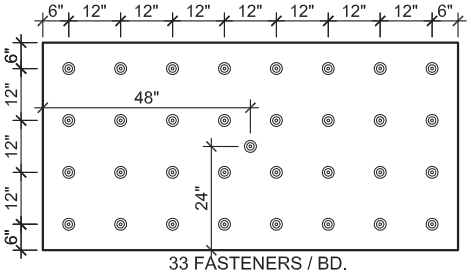

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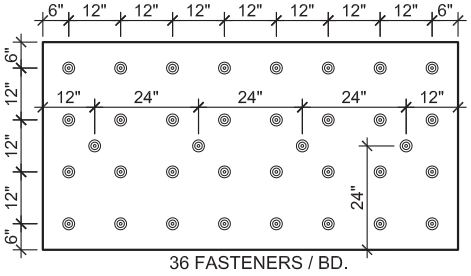

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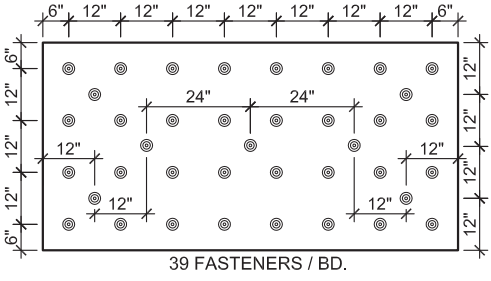

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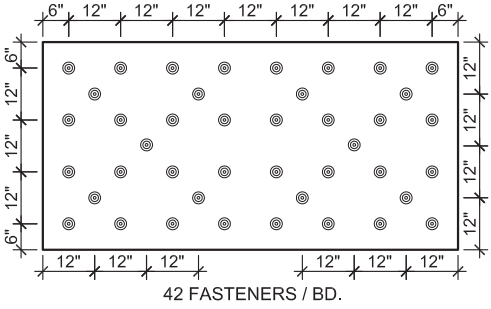
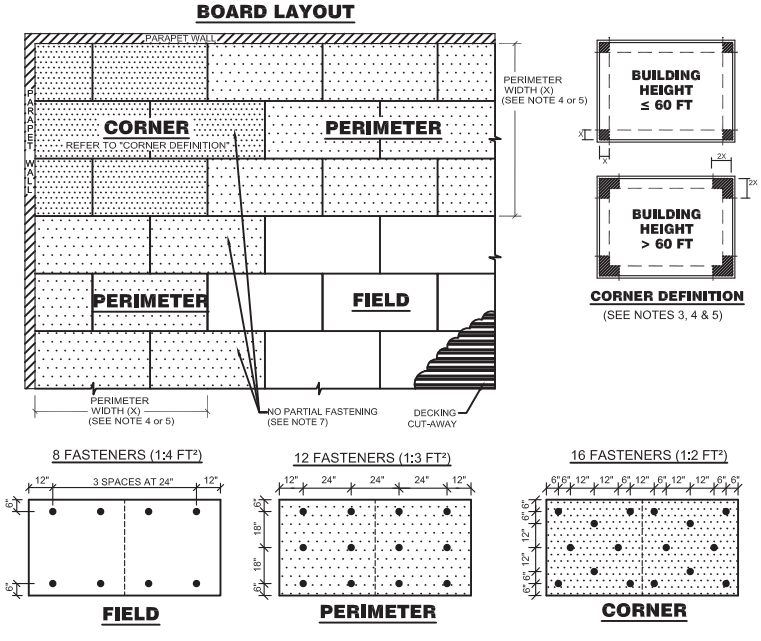


42 FASTENERS / BD.

Insulation Fastening Patterns for Adhered Membrane AD-8-12-16



NOTES

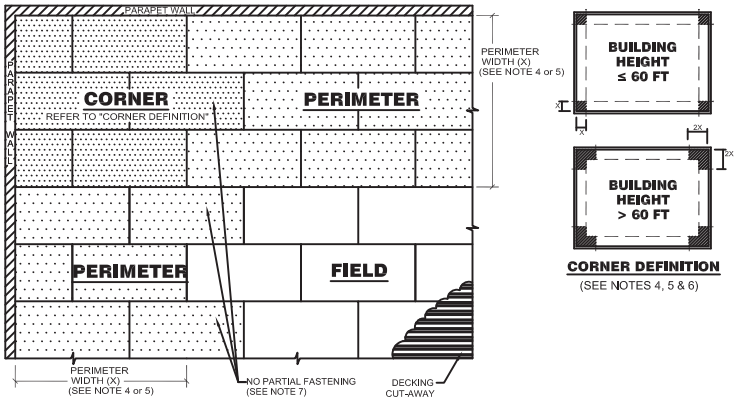
1. CALCULATE UPLIFT DESIGN PRESSURES IN ACCORDANCE WITH ASCE-7.
2. INSTALL INSULATION WITH LONG JOINTS IN A CONTINUOUS STRAIGHT LINE WITH END JOINTS STAGGERED.
3. ROOF HEIGHT ≤ 60 FT, THE PERIMETER (X) IS THE SMALLER DIMENSION OF:
   10% OF THE SHORTEST SIDE (PLAN VIEW)
   OR
   40% OF THE ROOF HEIGHT,
   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. IF ANY PORTION OF THE BOARD LIES IN A PERIMETER OR CORNER ZONE, ENHANCE THE FASTENING OF ENTIRE BOARD.

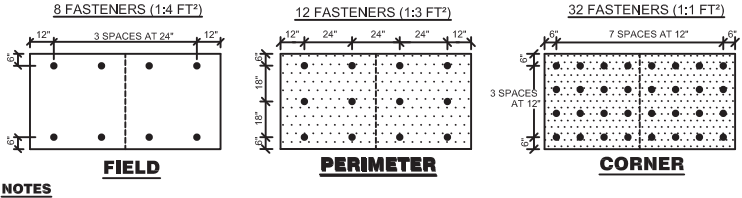
Note: For the most current information on general guidelines, please refer to the membrane-specific System Considerations pages under the Commercial Roofing portion of www.JM.com.

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

Insulation Fastening Patterns for Adhered Membrane AD-8-12-32

BOARD LAYOUT





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.

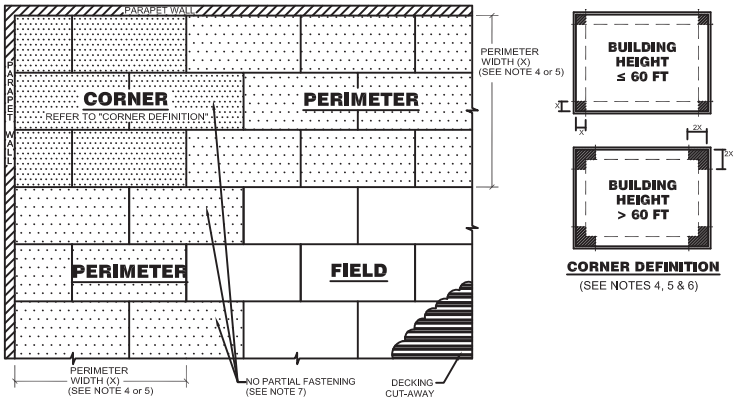
7. IF ANY PORTION OF THE BOARD LIES IN A PERIMETER OR CORNER ZONE, ENHANCE THE FASTENING OF ENTIRE BOARD.

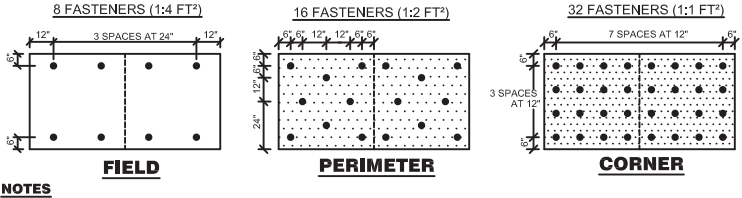
Note: For the most current information on general guidelines, please refer to the membrane-specific System Considerations pages under the Commercial Roofing portion of www.JM.com.

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

Insulation Fastening Patterns for Adhered Membrane AD-8

BOARD LAYOUT





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:
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   40% OF THE ROOF HEIGHT,
   BUT
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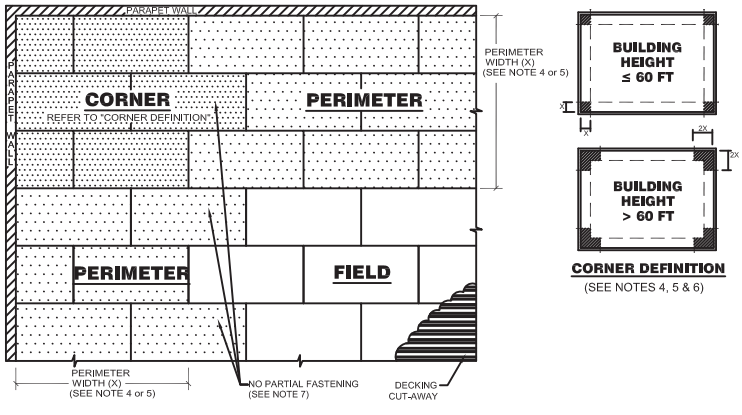
7. IF ANY PORTION OF THE BOARD LIES IN A PERIMETER OR CORNER ZONE, ENHANCE THE FASTENING OF ENTIRE BOARD.

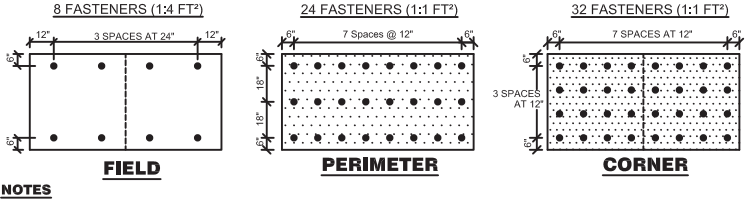
Note: For the most current information on general guidelines, please refer to the membrane-specific System Considerations pages under the Commercial Roofing portion of www.JM.com.

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

Insulation Fastening Patterns for Adhered Membrane AD-8-24-32

BOARD LAYOUT





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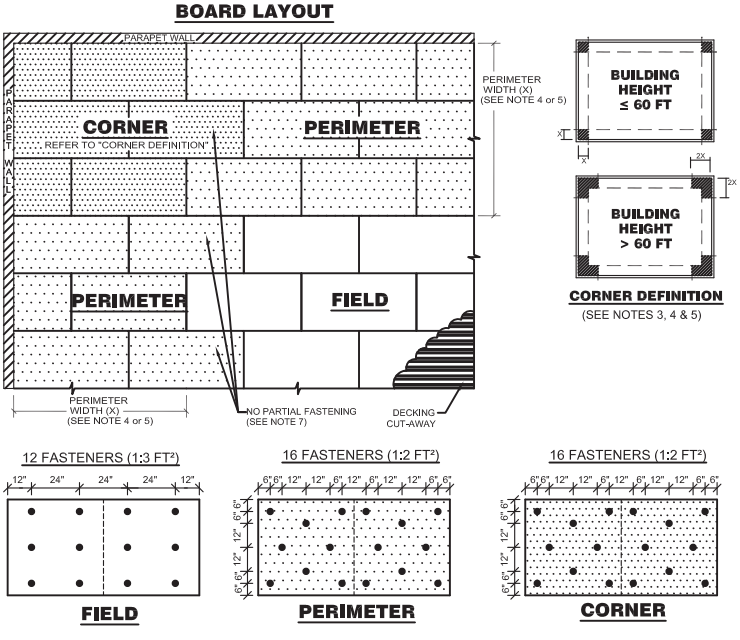
Insulation Fastening Patterns for Adhered Membrane AD-12-16-16



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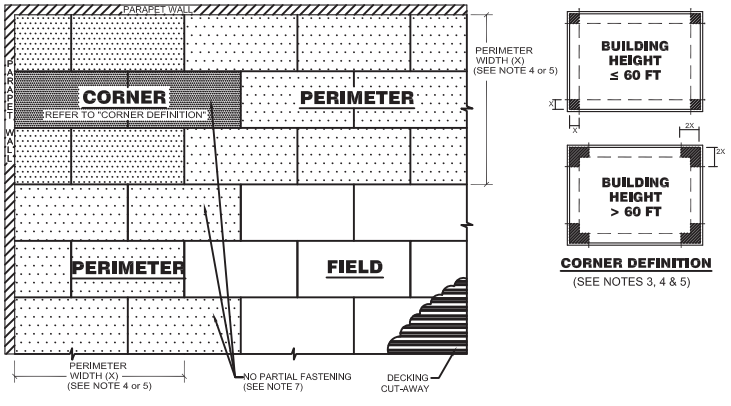
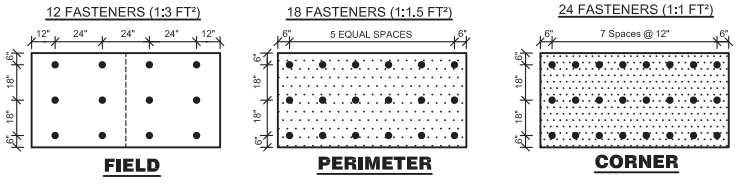
Insulation Fastening Patterns for Adhered Membrane AD-12-18-24

BOARD LAYOUT





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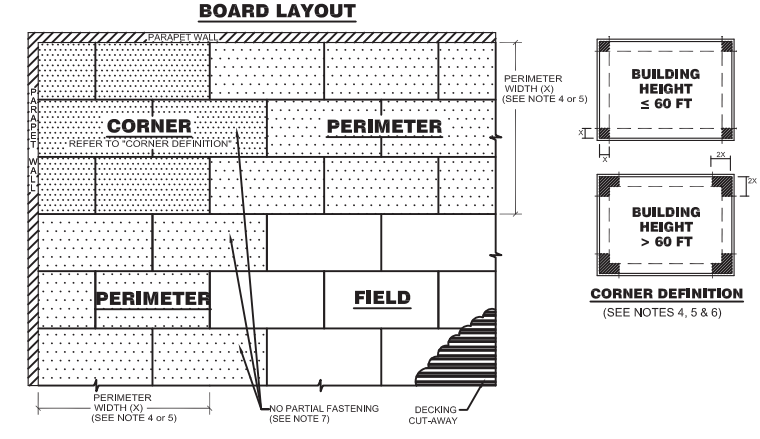

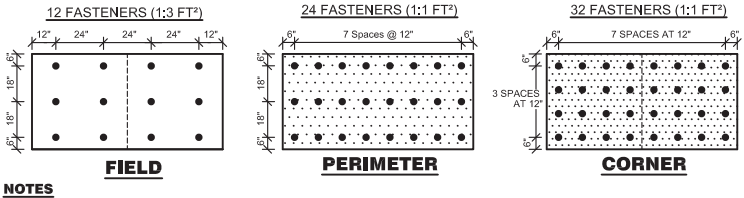

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2

Built-Up Roofing Application Guide

Section Two Contents

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1.0 General Information

1.1 The following section provides the application specifications currently available from Johns Manville (JM) for built-up roofing membranes and covers both hot asphalt and cold adhesive applications included in this application guide. **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 should be considered part of this specification.

1.3 Specifications are available for systems installed over insulation, nailable, non-nailable and lightweight insulating fill substrates. JM offers systems that can be installed in hot asphalt and cold adhesive.

1.4 For hot applied built-up roofing system applications, JM-approved asphalt is required. Asphalts are thoroughly evaluated before they are approved for use in any JM built-up roofing system. JM acknowledges that some specifiers choose to use coal tar pitch in built-up roofing systems. However, the use of coal tar pitch is not eligible for use within JM Peak Advantage Guarantees.

1.5 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 that is approved for built-up roofing systems. Refer to the information on technical, guarantee and warranty services web page (https://www.jm.com/en/commercial-roofing/technical-guarantee-and-warranty-services/) , or contact the nearest JM sales representative.

1.6 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 undesirable or questionable, 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 recognized as being critical to the proper performance of any roofing system.

1.8 Drainage: Design and installation of the deck and/or 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 48 hours are unacceptable and will not be eligible for a JM Peak Advantage Guarantee.

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

2.0 Membrane Substrate

2.1 Structural Deck Considerations and Preparation- New Construction and Reroof

The primary function of a roof deck is to provide structural support and restraint for the roofing system. The deck must have adequate strength and rigidity to support all anticipated live and dead loads, foot or construction traffic, wind, rain and snow loads. The deck must have adequate strength and rigidity to carry the weight of the roofers and their equipment during construction, without deflecting to the point where roofing components rupture, fracture, delaminate or are weakened.

Some decks are designed to furnish inside appearance as well as sound control; however, JM's concern is for the roof deck as a base for the roofing system. To perform this function, the deck must be rigid. It must be smooth and free of large cracks, holes or sharp changes in elevation of the surface. It must be able to receive the roof system by some method which will hold the system securely, either by adhesion, ballast or mechanical fasteners. Before roofing work is started, the deck should be inspected carefully by the roofing contractor, the deck contractor and the owner's representative, to determine that it satisfies these conditions. The roofing contractor and JM are only concerned that the surface of the deck will accept the roofing system. Neither JM nor the roofing contractor have any responsibility regarding the adequacy of the deck from a structural standpoint.

Surface preparation should include filling and smoothing all holes, depressions, irregularities, etc., before the roof is applied.

Roof-mounted equipment should not rest on the deck or roofing system. It should be supported by the structural framing of the building. Leaks resulting from improperly mounted rooftop equipment are excluded from coverage under the JM Peak Advantage® Guarantee.

To be a satisfactory substrate for any roofing system, a roof deck must have:

1. Proper construction, following the deck manufacturer's instructions.

2. Proper design to carry maximum anticipated live and dead loads which may be encountered during and after construction, without excessive deflection.

3. Positive drainage or be level without undulations or depressions for a tapered installation so that the final surface will not allow water to pond. (See Roof Drainage paragraphs in this section.)

4. Expansion joints to allow for movement of the structure without causing strain on the roofing membrane. To be effective, expansion joints must extend through all elements of the roof and structural system.

5. A smooth, dry and properly cured surface to which the roofing system can be installed. Concrete decks are of particular concern for moisture content. Please note that the addition of additives to concrete and certain finishes can greatly affect the ability of certain adhesives to bond sufficiently with the surface. Repair holes or cracks in concrete, greater than ¼" (6.35 mm) wide with non-shrink grout.

6. A solid, rigid assembly when using precast deck units. Units must be securely fastened to supporting members to prevent movement and any misalignment or gaps grouted to create a smooth surface without voids into the interior space.

7. A continuous, uninterrupted surface. Installation of conduits on the top surface of a roof deck is not acceptable, unless the area between the conduits is filled with an acceptable roof insulation, properly secured, and a full thickness of roof insulation is installed over the conduits. Systems utilizing mechanical attachment are not recommended when this condition is present and full documentation of the location and routing of the conduits is highly recommended.

8. A clean surface. Before roofing application is started, the deck should be free of all dust, dirt, debris and foreign material. Only the roofer's tools and equipment should be allowed on the deck during roof application.

9. Have sufficient anchorage to the building structure to meet the required resistance to wind uplift and prevent rupture of the roof membrane.

10. Adequate means of membrane securement. Provisions for special attachment procedures must be made on steep-slope decks.

11. Appropriate termination details. Under certain conditions, consideration should be given to isolating the roof membrane from stresses caused by deck or structural movement. This can be accomplished by securing base flashing to curbs attached to the structural deck. On tilt wall construction, special consideration should be given to the flashing details at perimeter walls. (See System Application section for flashing details.)

12. It is highly recommended that a bonded pull test be performed on any deck surface that will utilize an adhesive to anchor the roof insulation or membrane. In cases where the insulation or membrane will be mechanically attached, a pull test is recommended with the specific fastener being used on the project to confirm the fastener resistance meets the requirements for that particular system.

Any decks or substrates not listed in the current JM Commercial Roofing Product Manual must be approved by a JM Technical Services Specialist in writing prior to the installation of a roof which is to receive a Peak Advantage® Guarantee. Such approval only indicates that JM accepts the deck surface to receive a JM roofing system. By such acceptance, JM accepts no responsibility of the structural adequacy or performance of the deck.

2.2 Nailers
After properly preparing the roof deck, install wood nailers when required. Place nailers on the perimeter of the roof edge, along the top of parapet walls and, where required, around roof penetrations and along roof expansion joints. Set the height of the nailers slightly lower than the height of the roof insulation (approx. ¼").

This will promote positive drainage across the edge where necessary and reduce the possibility of ponding at the edge of the building.

Space fasteners for wood nailers per the job specifications, but not greater than 24" (60.96 cm) oc. with at least three fasteners per nailer, depending on nailer length. Each fastener must resist a minimum pull-out force of 200 lb/ft (298 kg/m) in any direction. Refer to FM data sheet 1-49 for wood nailer securement design considerations.

2.3 Vapor Retarders
Vapor retarders prevent moisture or condensation from entering the building or passing from the building into the roof system. To provide an effective shield against water vapor, seal off all vapor retarders at roof edges and penetrations.

2.4 Air Barriers
Air barriers should be considered on jobs where high internal air pressure exists, such as airport hangars or distribution warehouses with many outside openings (such as loading docks), outdoor amphitheaters, etc.

2.5 Insulation
Refer to Roof Insulation Application Guide in Section One and Recover Considerations and Surface Preparation in this section for details.

2.6 Recover Considerations and Surface Preparation
Determining the condition of an existing roof and the need for a new roof involves complex evaluation procedures. Each project has its own specific challenges that require individual assessment. The following guidelines are for use in re-covering existing roof systems. They outline the means to prepare various substrates and provide divorcement from the old roof. Once a suitable substrate has been established, any built-up or modified bitumen roofing specification shown in the current JM Commercial/Industrial Roofing Systems Manual may be selected for installation. Proper roof substrate preparation is essential to simplify installation and prevent future conditions that may lead to roof leaks, blow-offs, or other undesirable conditions.

Because of the complexity of re-covers, no set of recommendations can account for all of the variables which may exist on any particular job. It is the responsibility of the design professional to thoroughly evaluate all of the existing conditions involved in a specific project and choose an appropriate system. **No JM Peak Advantage® Roofing Systems Guarantee will be issued on any re-roofing project unless specifically approved prior to the start of work. For assistance and approval, contact a JM Technical Services Specialist.**

A moisture test is most often the first step in evaluating if an existing roof is suitable for re-cover and should be considered mandatory in cases where the existing membrane will remain in place or the roof is over an impervious deck such as concrete or gypsum. The scan can then be used to locate all areas of wet materials for removal and replacement. Provide protection for any adjacent roof areas prior to beginning work. Remove any trash, construction debris or abandoned equipment and carefully sweep all roof surfaces to remove any debris and dirt. Wood blocking/nailers must be replaced or added to accommodate the new roofing system and any insulation or cover board.

Remove Membrane: Local agencies and building codes should be consulted regarding removal and disposal of potentially hazardous materials. Remove only as much membrane as can be completely covered with a new roofing system in the same work day. If removal reveals wet or damaged insulation or decking, suitable repairs or replacement must be made prior to installing the new system. Ensure new materials match existing heights. Existing insulation must be primed with JM Asphalt Primer prior to the application of hot asphalt. Applications using urethane-based adhesives should ensure the existing insulation is dry and that any facers are still well bonded. Minor to moderate loss of the facer is acceptable. All existing base flashings and penetrations must be removed. Once all existing membrane materials are removed and the underlying surface is swept or blown off, proceed with the installation of an approved JM roofing system specification.

Disable Membrane: All existing single ply membranes must be cut at a maximum of 10′ (3.05 m) on center in the field of the roof and at all baseflashings and penetrations. Similar disabling of existing bituminous membranes is typically not necessary though a minimum 6″ (152 mm) core cut to the deck is required every 100 ft2 (9.2 m2) to prevent issues related to vapor drive and moisture from leaks becoming entrapped. On some applications, it may be acceptable to leave existing baseflashings in place though all penetration flashings must be removed. It is never acceptable to install bituminous flashings over existing single ply membranes. Disable only as much membrane as can be completely covered with a new roofing system in the same work day. Ensure that the finished surface and all transitions are smooth. Once the existing membrane has been disabled and the flashings removed as required, proceed with the installation of an approved JM roofing system specification.

Reuse Membrane as Substrate: Using a manual or mechanical method, remove the loose gravel or granules from the surface of the existing roof system. Cut out and remove large blisters on asphalt-based systems. Ensure that the finished surface and all transitions are smooth. Once completed, sweep or blow off roof surface to ensure all surfaces are free of dirt and debris. Care should be taken to ensure that the existing membrane and membrane surface is dry. Areas that are determined to be wet or damaged must be completely removed and replaced with materials that are compatible with the new system. The existing membrane should then be cored an approximate rate of one 6" (152 mm) cut per 10 ft2 (0.92 m2). Remove all existing penetration flashings. In some applications, it may be necessary to remove the existing baseflashings. When a new membrane will be adhered directly to the existing surface, it will be necessary to lightly power wash and dry the surface. Once the existing membrane surface and flashings have been properly prepared proceed with the installation of an approved JM roofing system specification.

Spud Surface: Using a manual or mechanical method, remove all the gravel from the surface of the existing roof system. After removal of the gravel, the existing membrane surface must be flat and smooth with no remaining gravel or debris. If urethane adhesive will be used to attach new insulation or cover board, the roof surface must be hydro-vac'ed to remove all dirt and fines. Any dirt left on the surface will act as a bond breaker and prevent proper adhesion of the new materials. For applications utilizing hot asphalt, it is acceptable to sweep or blow off the surface. Wet or damaged areas of existing membrane must be removed and replaced with new, dry materials compatible with the new roofing system. The existing membrane should then be cored at an approximate rate of one 6" (152 mm) cut per 10 ft2 (0.92 m2). Once the existing membrane surface and flashings have been properly prepared proceed with the installation of an approved JM roofing system specification.

2.7 Membrane Substrate Attachment for Recovers
While some specifications may allow the new membrane to be installed directly over the existing membrane, it is most common to install a new substrate such as a cover board, or insulation over the existing surface. Listed below are the various installation guidelines for attaching a new substrate to, or through, the prepared re-cover surface. Apply only as much insulation as can be covered by a complete roof membrane in the same day. Do not leave insulation exposed to the weather.

If a vapor retarder is to be used with this construction, it should be placed on top of a minimal base layer of mechanically attached insulation. The bulk of the thermal roof insulation should be placed on top of the vapor retarder. Refer to section 2.3 and Vapor Barrier flashing details in section 4 (starting on 4-73) for more information.

Mechanically Attach Existing Insulation: All wet or damaged insulation boards must be completely removed and replaced with an approved insulation that is compatible with the new roofing system. Use an approved, corrosion-resistant fastener of sufficient length to penetrate through the existing insulation and into the structural deck. If fastening insulation to a metal deck, the fasteners must be of sufficient length to penetrate the decking a minimum of ¾". Wood plank should have a minimum of 1" (25 mm) embedment while fasteners should penetrate plywood a minimum of a ½" (13 mm). While top flange engagement of the metal deck is always recommended, in re-cover constructions, where the metal deck may not be visible or accessible, it is acceptable for insulation fasteners to engage the bottom flange of the deck. Fasteners should be placed in the pattern for the FM Global approval desired, but never closer than 6" (152 mm) from any edge of the insulation board. Fasteners are to be driven through the

appropriate insulation plates. Care should be taken not to overdrive or underdrive the fastener. Overdriving the fastener will cause the insulation plate to "cup" and can result in inadequate performance and damage to the membrane. Under-driving can cause the insulation to be loose from the deck and allow the fastener to penetrate into the membrane.

Mechanically Attach New Insulation: Apply the units of approved JM roof insulation with long joints continuous. End joints should be staggered so that they are offset at least 12" (305 mm) from the end joints in adjacent rows. If the new insulation is being installed over an existing layer of insulation, all joints in the insulation layers must be offset a minimum of 6" (152 mm) between layers. Use an approved mechanical fastener of sufficient length to penetrate through or into the deck, as required for the specific fastener. If fastening insulation to a metal deck, the fasteners must be of sufficient length to penetrate the decking a minimum of ¾". Wood plank should have a minimum of 1" (25 mm) embedment while fasteners should penetrate plywood a minimum of a ½" (13 mm). Fasteners should be placed in the pattern for the FM Global approval desired, but never closer than 6" (152 mm) from any edge of the insulation board. Fasteners are to be driven through the appropriate insulation plates. Care should be taken not to overdrive or underdrive the fastener. Overdriving the fastener will cause the insulation plate to "cup" and can result in inadequate performance and damage to the membrane. Under-driving can cause the insulation to be loose from the deck and allow the fastener to penetrate into the membrane.

Adhere New Insulation with Urethane Adhesive: Apply the units of approved JM roof insulation with long joints continuous. End joints should be staggered so that they are offset at least 12" (305 mm) from the end joints in adjacent rows. If the new insulation is being installed over an existing layer of insulation, all joints in the insulation layers must be offset a minimum of 6" (152 mm) between layers. Ensure all insulation boards are 4'x4' (1.22 m x 1.22 m) or smaller. All surfaces must be dry and free of any debris, dirt, oil and grease before using any urethane adhesive. Any dirt left on the surface will act as a bond breaker and prevent proper adhesion of the new materials. Follow all storage and application instructions for the particular adhesive being used. Allow urethane to rise and build body before placing boards into the adhesive. Pay particular attention to flash times and weigh down boards as instructed.

Solid Mop New Insulation: Firmly set the units of approved JM roof insulation, long joints continuous and short joints staggered, into a full mopping of hot asphalt (approximately 25°F - 35°F (14°C - 19°C) cooler than the EVT). The asphalt should be applied at nominal rate of 30 lb/100 ft2 (1.5 kg/ m2). Porous substrates may require greater amounts of asphalt. When adhering insulation with hot asphalt, board size must be no greater than 4' x 4' (1.22 m x 1.22 m). If insulation is being installed over an existing layer of insulation or in multiple layers, all joints must be offset a minimum of 6" (152 mm) between layers.

Mechanically Attach New Base Sheet: Using an approved JM base sheet, start with a 12" (305 mm) width (the use of a specific base sheet may be a condition of guarantee). The subsequent base sheet courses are to be applied full width, lapping the preceding felt 2" (51 mm) on the side laps and 4" (102 mm) on the end laps. Utilize the approved fastening pattern or at a minimum fasten the side laps 9" (229 mm) oc. Down the longitudinal center of each felt, place two rows of fasteners spaced approximately 11" (279 mm) apart, with the fasteners staggered on approximately 18" (457 mm) centers. Use nails or fasteners appropriate to the type of deck, with 1" (25 mm) minimum diameter caps. For additional fastener information, refer to the Fastener Data in the "Roof Decks" section of the current JM Commercial/Industrial Roofing Systems Manual.

3.0 Built-Up 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 require coating with JM Asphalt Primer prior to the application of hot asphalt. Precast concrete panels also require a layer of approved roof insulation prior to installing a roof membrane.

3.2 These specifications are also for use over JM roof insulations (Fesco, Tapered Fesco, Fesco Foam, Tapered Fesco Foam, ENRGY 3, Tapered ENRGY 3 and ½" [13 mm] Retro-Fit Board) or other approved insulations that offer a suitable surface to receive the roof. Built-up roofing should not be applied directly to foam plastic insulations, as referenced in NRCA Bulletin #9. These specifications are not to be used over lightweight insulating concrete decks or over a fill made of lightweight insulating concrete.

3.3 Non-nailable specifications are denoted by an "I" as the third character in the specification designation (e.g., 4GIG). See the BUR Design and Installation Considerations page on www.JM.com for more information.

4.0 Built-Up Roofing Over Nailable Decks

4.1 These specifications are for use over any type of structural deck (without 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 eligible for use over lightweight insulating concrete decks or over fill made of lightweight insulating concrete. Contact a JM Technical Services Specialist for approval of the lightweight fill to be used.

4.2 Nailable specifications are denoted by an"N" or an "L" as the third character in the specification designation (e.g., 4GNG, 4GLG). See the BUR Design and Installation Considerations page on www.jm.com for more information.

4.3 One ply of sheathing paper must be used over wood board decks under the base felt.

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 "Roofs Decks System Engineering" document under the BUR Installation Considerations page on www.jm.com.

5.0 Application of Materials

5.1 The proper application of roofing materials is as important to the satisfactory performance of the roof membrane as the materials themselves. JM suggests the following guidelines for application of all roofing materials.

A. Wet or damaged materials should not be used.

B. Never apply any roofing materials during rain or snow, or to wet surfaces. Moisture trapped within the roofing system as a result of this can cause severe damage to the roof membrane and insulation.

C. Review the guidelines for application of roofing, roof insulations, coatings and accessories shown in this guide and on www.jm.com.

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

E. Good roofing procedure restricts the application of hot asphalt to a maximum of 6' (1.83 m) in front of the roll.

F. When using mechanical felt laying equipment, be sure that all orifices are open.

G All roofing ply felts should be well set into the hot asphalt utilizing a squeegee or some other device.

H. Take special care when applying coated felts in cold weather. Roll out and cut all mineral surface BUR felts to specified lengths and allow them to flatten. Check the temperature of the asphalt at the mop or asphalt spreader to determine that it is at the proper application temperature. Do not apply mineral-surfaced cap sheet when the air temperature is below 50°F (10°C).

I. Do not mix different grades of asphalt or dilute asphalt with any material.

J. 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 all roofing kettles. Adhere to the guidelines for the heating of asphalts in this section of the manual.

K. Always use the proper grade asphalt. A good guideline to follow regarding the use of asphalt is "Use the softest grade of asphalt commensurate with the slope and climatic conditions."

L. Always install water cutoffs at the end of each day's work to prevent moisture infiltration into the completed work area. Water cut-offs should be completely removed prior to resuming work.

M. Heed the cold weather application procedures in paragraph 13.0 of this section.

N. Always install the complete roofing system at one time. Phased construction may result in slippage of felts due to excessive amounts of asphalt between the phased plies. Blisters due to entrapment of moisture, or poor adhesion of the membrane due to dust and foreign material collecting on the exposed felts, are other hazards of phased construction.

O. It is essential that traffic be minimized on a freshly laid roof, while the asphalt is still fluid. Asphaltic 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. Asphaltic displacement can result in "phantom" leaks and blistering of the membrane.

P. **Always comply with published safety procedures for all products being used. See the appropriate product data sheets, SDS and/or SUI documents and container labels for health and safety recommendations.**

6.0 Roofing Felts

6.1 JM manufactures different fiber glass roofing felts for a variety of roofing needs: felts for flashings, vapor retarders, roof plies, base sheets and special felts for venting.

6.2 Roofing felts are furnished in rolls consisting of one or more squares. A "factory" square of roofing contains sufficient material to cover 100 ft^2 (9.29 m^2) of roof surface accounting for nominal side and end laps.

7.0 Roofing Asphalts

7.1 Roofing asphalts are available in four grades, shown in paragraph 7.8 of this section. In general, they are grade specified by softening point. The slope of the roof governs the grade to be used, in conjunction with the climatic constraints. The success or failure of a roofing system depends on the use of the proper grade of asphalt as called for in the roofing specification.

7.2 Health and Safety See JM.coml for health and safety information.

7.3 Heating Asphalts are susceptible to damage from overheating. Overheating, even for short periods, can "crack" or degrade the asphalt (a drop in softening point and slight oiliness is a symptom). Fall back in softening point can result in slippage of felts in

the roofing system. As the softening point decreases, the viscosity or "holding power" of the interply asphalt decreases, resulting in slippage. If the overheating is more gradual, the asphalt may "age" prematurely, losing the beneficial light oils that help the roofing system weather and stay waterproof. Since asphalts are thermoplastic, their viscosity varies with temperature. Application temperature must be in the range which will permit an adequate film of asphalt, whether applied by mop or machine.

7.4 The JM Technical Center, in conjunction with the National Roofing Contractors Association (NRCA) and the Asphalt Roofing Manufacturing Association (ARMA), has been involved in considerable research developing guidelines for the proper heating and application of hot asphalt. These guidelines use the principle of Equiviscous Temperature.

7.5 In conjunction with these guidelines, 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 D 92.
3. The Equiviscous Temperature (EVT). As currently defined by ASTM, this 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 pounds of asphalt per 100 ft^2 (1.12 - 1.22 kg/m^2).
4. The Finished Blowing Temperature (FBT). This is the temperature at which the blowing of the asphalt is completed.

7.6 Work done by NRCA has shown that different EVT values should be used for mop-applied asphalt and machine-applied asphalt. Mop applied asphalt should be applied at an EVT based on 125 centipoise, while machine-applied asphalt should be applied using an EVT based on 75 centipoise. ASTM is currently evaluating incorporating this information into its specifications. Some asphalt suppliers are now including both EVT values on their product. If only the 125 centipoise (centistokes) value is provided, then for machine application, the asphalt should be applied at a 25°F (14°C) higher temperature than the 125 centipoise values.

7.7 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 and material.

2. For optimum application, the asphalt should be at the Equiviscous Temperature, ±25°F (±14°C), at the point of application.

3. Never heat the asphalt to or above the Flash Point (FP). Heating in excess of the Flash Point can cause the asphalt to ignite, causing a fire.

4. Heating above the Finished Blowing Temperature (FBT) should be strictly regulated, never for longer than 4 hours, to preclude excessive asphalt degradation.

7.8 The characteristics per ASTM D 312 of the various grades of asphalt are as follows:

Product	ASTM Type	Softening Point		Flash Point C.O.C.*
		Min	Max	Min
140°F (60°C) (dead level)	I	135°F (57°C)	151°F (66°C)	475°F (246°C)
170°F (77°C) (flat)	II	158°F (70°C)	176°F (80°C)	475°F (246°C)
190°F (88°C) (steep)	III	185°F (85°C)	205°F (96°C)	475°F (246°C)
220°F (104°C) (special steep)	IV	210°F (99°C)	225°F (107°C)	475°F (246°C)

* Cleveland Open Cup Method.

Product	Penetration (dmm) 32°F (0°C) 60 Sec. 200g Min	Max	77°F (25°C) 5 Sec. 100g Min	Max	115°F (46°C) 5 Sec. 50g Min	Max	Ductility @ 70°F (25°C) 5 cm / Min
140°F (60°C)	3	–	18	60	90	180	10.0
170°F (77°C)	6	–	18	40	–	100	3.0
190°F (88°C)	6	–	15	35	–	90	2.5
220°F (104°C)	6	–	12	25	–	75	1.5

7.9 If Equiviscous Temperature is not available, nominal heating temperature guidelines of the asphalt are as follows:

Recommended Temperatures

Asphalt Type	Heating	Application for BUR
140°F (60°C)	425°F (218°C)	335°F to 405°F (168°C to 207°C)
170°F (77°C)	450°F (232°C)	350°F to 415°F (177°C to 213°C)
190°F (88°C)	500°F (260°C)	365°F to 435°F (185°C to 224°C)
220°F (104°C)	500°F (260°C)	400°F to 475°F (204°C to 246°C)

7.10 Use of insulated buckets and insulated circulating lines for cold weather application can help maintain a proper EVT when temperatures are low and the distance from the asphalt source to the point of application is great.

7.11 When asphalts are applied within the EVT temperature ranges, the proper amount of asphalt will be placed between the plies. The recommended quantity of asphalt has been indicated on each specification in this JM Commercial Roofing Application Guide, and on JM.com (https://www.jm.com/en/commercial-roofing/bur-design-and-installation-considerations/). Regardless of the exact quantity of asphalt applied, it is important that the asphalt be continuous, so felt does not touch felt, and that there be full adhesion between all plies of the system. JM considers a ±25% deviation from the asphalt quantity listed to be acceptable.

7.12 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 ensure good performance and compatibility with the roofing products being used.

JM requires the use of 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 Modified Asphalt

8.1 PermaMop®* is a modified asphalt with a softening point of between 210-225°F (99-107°C). While the softening point is comparable to an ASTM D 312, Type IV asphalt, its other physical properties are more comparable to a lower melt point standard asphalt. As a result, PermaMop offers many of the adhesion and weathering advantages of a low melt point asphalt without the slope restrictions of a softer standard asphalt.

8.2 There is currently no ASTM standard which governs the physical property characteristics of this type of asphalt. The following chart lists some of the physical properties of PermaMop and other asphalts:

Property	PermaMop Asphalt		Type I Asphalt		Type II Asphalt		Type III Asphalt		Type IV Asphalt	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Softening Point	210°F (99°C)	225°F (107°C)	135°F (57°C)	151°F (66°C)	158°F (70°C)	176°F (80°C)	185°F (85°C)	205°F (96°C)	210°F (99°C)	225°F (107°C)
Flash Point	525°F (274°C)	625°F (329°C)	475°F (246°C)	–	475°F (246°C)	–	475°F (246°C)	–	475°F (246°C)	–
Penetration (dmm), @ 77°F (25°C)	15	35	18	60	18	40	15	35	12	25
Ductility, @ 77°F (25°C)	6.0 cm	–	10 cm	–	3.0 cm	–	2.5 cm	–	1.5 cm	–
Equiviscous Temperature (EVT)	355°F (179°C)	420°F (216°C)	350°F Avg. (177°C)		385°F Avg. (196°C)		410°F Avg. (210°C)		440°F Avg. (227°C)	

* PermaMop is a registered trademark of Owens Corning.

8.3 Safety
All safety guidelines applicable to standard asphalt should also be applied to the use of PermaMop modified asphalt.

8.4 Equiviscous Temperature
The Equiviscous Temperature of PermaMop asphalt is between 355-420°F (179-216°C). Care should be taken to ensure that the PermaMop is applied at the Equiviscous Temperature.

9.0 Cements, Coatings and Primer

9.1 JM's cold asphaltic cements and coatings are asbestos free and are designed especially for use in asphaltic built-up roofing systems. They are used for priming various surfaces to improve bonding of membranes and flashings, as coatings for smooth-surface fiber glass roofs, for roof repair, for adhering flashings, or for sealing metal and other materials.

9.2 Handling and Application
Cutback materials contain flammable solvents. Do not expose them to flame or high temperatures. Take all routine fire and safety precautions. Do not heat these materials in closed containers or in open containers above their flash point. Do not heat these materials under any circumstances with an open flame. Do not apply any solvent-containing material in a confined space. Do not combine or dilute any of these materials.

9.3 Coverage and Selection of Roof Coatings and Surfacings
9.3.1 The type and quantity of roof surfacing is dictated by the following: the specification selected, incline of the roof structure, and Underwriters Laboratories Classification required.

9.3.2 The following is a list of the surfacings available and typical application rates per 100 ft^2 (9.29 m^2):

Surfacing	
JM Coating Acrylic	1.5 - 3 gal (6 - 11 l)
JM Coating Acrylic CR	1.5 - 3 gal (6 - 11 l)
JM Coating Silicone	2 - 5 gal (8 - 19 l)
JM Coating Universal Base	1.5 - 4 gal (6 - 15 l)
Asphalt Emulsion	3 - 4 gal (11 - 15 l)
Fibrated Aluminum Roof Coating	1.5 - 2 gal (6 - 8 l)
TopGard 4000 (White or Tan)	1 - 2 gal (4 - 8 l)
TopGard 5000 (White or Tan)	1 - 2 gal (4 - 8 l)
TopGard Base Coat	1 - 2 gal (4 - 8 l)

* Coverage rates depend on weather conditions and substrate. Refer to specific code agency Web sites for exact constructions that may require a specific application rate for compliance.

9.3.3 Refer to individual product information sheets and the JM Coatings Application Guide for more detailed instructions.

9.3.4 When final surfacing is not possible following application of the membrane, JM recommends, as good practice, that a glaze coat of hot asphalt (10-15 lb/100 ft^2 [0.49-0.73 kg/m^2]) be mop or squeegee applied. To accommodate job conditions, the membrane may be left uncoated for a period of up to six months. Low spots and valleys should, however, be glazed to protect these areas of the roof. Following such delay, an appropriate repair must be made to all damaged areas and the entire roof surface cleaned and primed prior to final surfacing.

9.4 Asphalt Emulsion Base Coat, Fibrated Aluminum Roof Coating, TopGard Base Coat, 4000 or 5000

Store and apply Asphalt Emulsion Base Coat, Fibrated Aluminum Roof Coating, TopGard Base Coat, 4000 or 5000 at temperatures above 40°F (4°C). Do not use if it has frozen. Do not apply when rain or freezing temperatures are expected within 24 hours.

Apply Asphalt Emulsion Base Coat, Fibrated Aluminum Roof Coating, only to surfaces that are clean, dry, and free of dust and dirt. If the surface is not clean, dry, and free of dust or dirt, it must be primed with Asphalt Primer prior to the application of the coating. Allow Asphalt Emulsion Base Coat to dry for at least 72 hours before installing any other coating over it. See the appropriate product data sheet for more complete application directions.

9.5 Fibrated Aluminum Roof Coating

Asphalt surfacings, especially low softening point asphalts, continue to flex and flow after they are applied, therefore, it is not recommended that Fibrated Aluminum Roof Coating be applied over Type I and Type II asphalts. Higher softening point asphalts should weather at least one summer prior to the application of Fibrated Aluminum Roof Coating. If the Fibrated Aluminum Roof Coating must be applied right away, coat the roof with Asphalt Emulsion which has been allowed to dry for at least 72 hours, and then apply the Fibrated Aluminum Roof Coating. Fibrated Aluminum Roof Coating must be thoroughly mixed to a smooth consistency and uniform silver color prior to using.

No roof coating will resist standing water. Light-colored coatings such as Fibrated Aluminum Roof Coating are particularly susceptible to erosion and discoloration by ponded water. Valleys and low spots should be poured with asphalt and surfaced with gravel or a reflective aggregate such as marble chips.

Coatings and surfacings will require periodic re-coating. The frequency of re-coating will depend on the quantity and quality of application and numerous climatic and environmental factors.

10.0 Gravel and Slag Surfacings

10.1 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.

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

10.3 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.

10.4 Do not use transparent or translucent stones, such as dolomite or crushed masonry.

10.5 Flood the surface with the appropriate hot asphalt for the roof slope, at an approximate rate of 60 lb/100 ft^2 (2.9 kg/m^2). While the asphalt is still hot, embed the surfacing. After the interply adhesive has cured, apply JM Asphalt Emulsion at the rate of 6 gal/100 ft^2 (2.5 liters/m^2).

10.6 Gravel should be spread at the rate of 400 lb/100 ft^2 (19.5 kg/ m^2). Because of its lower weight in relation to volume, slag should be applied at the rate of 300 lb/100 ft^2 (14.6 kg/m^2). In any case, sufficient amounts of gravel or slag should be applied to result in full and complete coverage of the roof surface with approximately 50 percent of the aggregate solidly adhered in the asphalt.

11.0 BUR Steep Slope Requirements

11.1 Built-up roofing membranes utilizing asphalt can be applied on inclines up to 6" per ft (500 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 nail the fiber glass built-up roofing felts.

11.2 Spacing of Nailers
On decks where the incline is such that nailing of roofing felts is required (2" [51 mm] and over for smooth-surfaced roofs and 1" [25 mm] and over for gravel and mineral cap sheet surfaced roofs), wood nailing strips, 3½" [89 mm] minimum actual width) should be provided at the ridge and at the following approximate, intermediate points:

Nailer Spacing and Type of Asphalt/Cap Sheet Roofs:

Incline (Inches/Foot)	Nailer Spacing (D)[1]	Type of Asphalt
0"-½" (0-41 mm/m)	Not required	Type II[2]
½"-1" (41-83 mm/m)	Not required	Type III
1"-2" (83-167 mm/m)	20' (6.1m) face to face	Type III
2"-3" (167-250 mm/m)	10' (3.1m) face to face	Type III
3"-6" (250-500 mm/m)	4' (1.2 m) face to face	Type IV

Nailer Spacing and Type of Asphalt/Smooth-Surfaced Roofs:

Incline (Inches/Foot)	Nailer Spacing (D)[1]	Type of Asphalt
0"-½" (0-41 mm/m)	Not required	Type II[2]
½"-1" (41-83 mm/m)	Not required	Type II[2]
1"-2" (83-167 mm/m)	Not required	Type III
2"-3" (167-250 mm/m)	20' (6.1m) face to face	Type III
3"-4" (250-333 mm/m)	10' (3.1m) face to face	Type IV
4"-6" (333-500 mm/m)	4' (1.2 m) face to face	Type IV

Nailer Spacing and Type of Asphalt/Gravel-Surfaced Roofs:

Incline (Inches/Foot)	Nailer Spacing (D)[1]	Type of Asphalt
0"-½" (0-41 mm/m)	Not required	Type II[2]
½"-1" (41-83 mm/m)	Not required	Type III
1"-2" (83-167 mm/m)	20' (6.1m) face to face	Type III
2"-3" (167-250 mm/m)	10' (3.1m) face to face	Type III

1. Allow sufficient clearance between nailers for insulation units.
2. Consult a JM Technical Services Specialist regarding projects in hot climates as Type II Asphalt may not be permitted in some areas.

11.3 Nailing strips should be the same thickness as the insulation, and 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). Nailers should run at right angles to the incline of the roof slope.

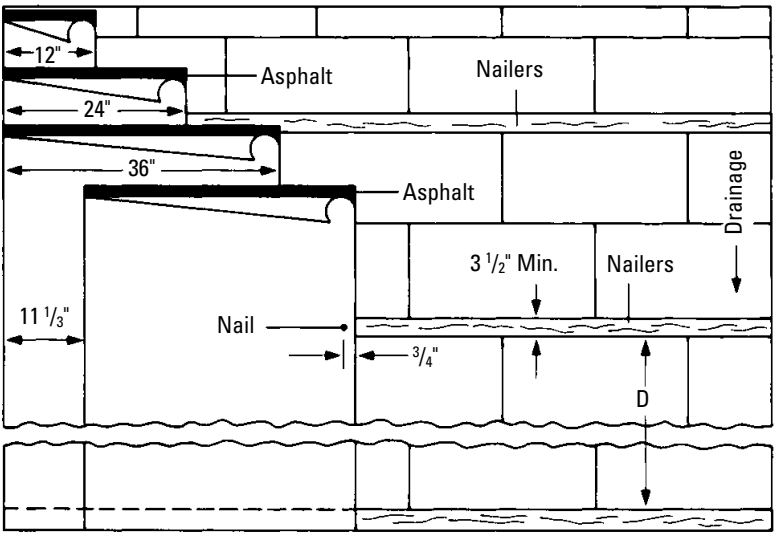
11.4 Nailable and Lightweight Concrete Decks
On decks where the incline is over 1" (25 mm) for gravel-surfaced or cap sheet systems and 2" (51 mm) for smooth-surfaced systems, the felts must be installed parallel to the incline. Ply felts and cap sheets are to be backnailed ¾" (19 mm) from the leading edge at intervals equivalent to the nailer spacing shown in the table above.

11.5 Felt Application
Felts used in smooth-surfaced roofs must be installed parallel to the roof incline, on slopes greater than 2" per ft (167 mm/m). This requirement applies to gravel and mineral-surfaced roofs at slopes greater than 1" per ft (83 mm/m). Nails must have a 1" (25 mm) minimum diameter cap. Where capped nails are not used, fasteners must be driven through caps having a minimum diameter of 1" (25 mm).

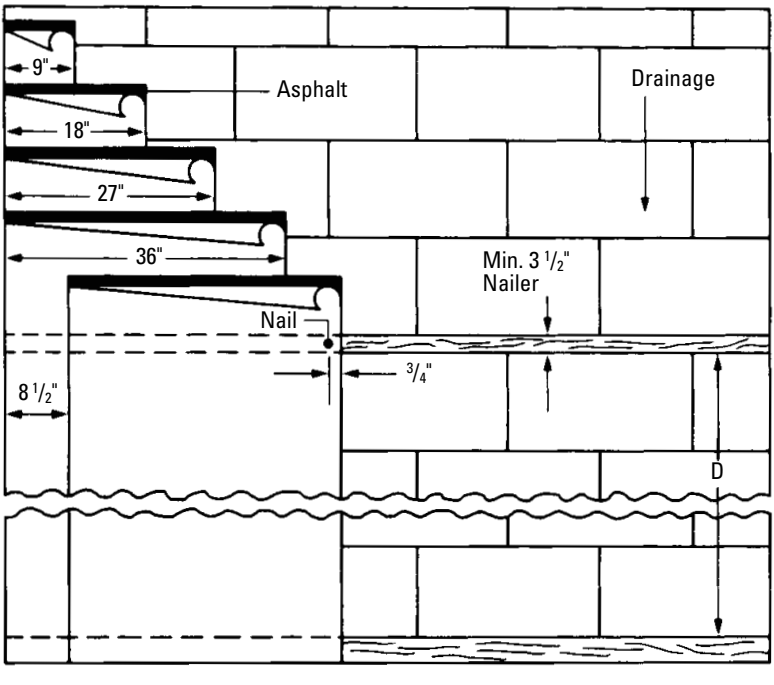
11.6 Fastener Spacing
For 3, 4 and 5-ply roofs, locate a nail at each nailer, spaced ¾" (19 mm) from the leading edge of each felt, as it is installed.

Termination of a continuous cap sheet MUST occur at a nailer. At points of termination, place 5 nails across the 36" (914 mm) width of the endlap of the cap sheet and into the nailer. The first nail is to be spaced ¾" (19 mm) from the leading edge of the cap sheet, with the remaining 4 nails spaced approximately 8½" (216 mm) o.c., with the nails staggered across the width of the nailer to reduce the chance of the cap sheet tearing along the nail line.

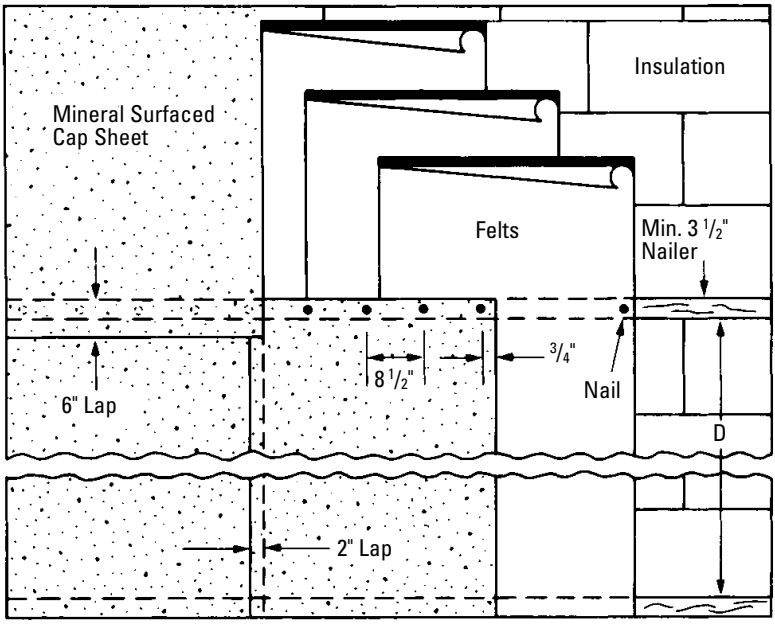
Nailing Pattern and Nailer Spacing shown with 3-Ply System.



Nailing Pattern and Nailer Spacing shown with 4-Ply System.



Nailing Pattern and Nailer Spacing shown with Cap Sheet Roofs.



12.0 Phase Construction

12.1 One of the greatest hazards of roof construction is the application of a roofing system in "phases." Phasing is a construction sequence in which a partially completed roof system is left exposed to the weather for a period of time, even overnight. The remainder of the roofing system is installed at a later time. This can lead to entrapped moisture, which can cause premature failure of the membrane.

12.2 Good roofing practice dictates that no more roofing materials should be applied at any one time than can be completed in one day. This means that the finished membrane MUST be installed all in the same day. Water cutoffs must be installed at all exposed edges of a day's completed work and completely removed prior to commencing the next day's work.

12.3 Aggregate surfacing may be postponed for up to six months over fiber glass asphalt roofs, provided valleys and low spots are glazed with 10-15 lb/100 ft^2 (0.49-0.73 kg/m^2) of the interply asphalt. The roof surface must be free of dirt, debris and moisture prior to the application of asphalt flood coat and aggregate surfacing to assure proper adhesion. Surfaces that are excessively dirty should first be washed and cleaned with water, allowed to dry thoroughly, and then primed with JM Asphalt Primer.

13.0 Cold Weather Application

13.1 Roof applications utilizing asphalt below 45°F (7°C) require special measures to ensure proper performance of the roofing system. JM strongly recommends that the following guidelines be followed when applying built-up roofing systems in cold weather:

A. Use extra care to ensure that any moisture is removed from the deck surface. The presence of moisture may cause poor adhesion or skips in the mopping asphalt, which in turn can entrap moisture within the roofing system.

B. Store materials in a heated warehouse or closed and heated trailer immediately prior to installing.

C. Do not overheat the asphalt. Insulated asphalt lines and insulated rooftop equipment should be used. Set up job site equipment to minimize the distance between asphalt heating source and application point.

D. Do not mop more than 4' (1.22 m) ahead of the roll. Embed the rolls into the hot asphalt immediately.

E. Squeegee all fiber glass ply felts to ensure adhesion.

F. Install only as much roofing material as can be completed and covered in one day.

G. The use of temporary roofs should be strongly considered if construction schedules require roof applications in cold or rainy weather.

14.0 Temporary Roof Coverings

14.1 At times, an owner or general contractor may require the building be closed 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. In the past, this situation has led to phase construction which has resulted in premature roof failure. When a completed roof system cannot be installed in one operation, it is recommend that the following procedures be observed:

A. Nailable Decks:

1. Apply one layer of 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. Sheathing paper is not required on plywood decks.)
2. Mop one ply of 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 the same grade 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 approved JM insulation, in adequate thickness to the steel deck using the appropriate mechanical fasteners.
2. Install two plies of fiber glass felt, both set in hot Type III asphalt to the insulation.
3. Finish with a 10 - 15 lb/100 ft^2 (0.49 - 0.73 kg/m^2) glaze coat of hot, Type III 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. Solid mop a layer of insulation board to the temporary roof with hot, Type III asphalt. Then apply the permanent roof system. In some regions of the country, a JM base felt may be machine spot mopped or mechanically attached with appropriate insulation screws and plates directly to the sound temporary roof, followed by an asphaltic roofing membrane. Consult a JM Technical Services Specialist for acceptability.
5. If the temporary 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 fiber glass ply felt in hot ASTM D 312, Type III asphalt.
3. Finish with a 10 - 15 lb/100 ft^2 (0.49 - 0.73 kg/m^2) glaze coat of ASTM D 312, Type III roofing 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 JM Asphalt Primer if the surface is unusually worn, and proceed with the installation of the permanent roof.
5. As an alternate to step 2 above, spot mop an approved JM base sheet using a mechanical spot mop machine. Next, solid mop one ply of an approved JM ply felt in hot ASTM D 312, Type III asphalt. When the permanent roof is to be installed, remove the entire temporary roof, prime the deck as required in the "Roofs Decks System Engineering" document under the BUR Installation Considerations page on www.jm.com.

14.2 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.

15.0 Protected Roofing Membrane Systems (PRMA)

15.1 General Information: All general information contained in this guide and in the current Johns Manville Commercial Roofing Product Manual should be considered part of these specifications.

15.2 The following JM Specifications are eligible for modification and use with Protected Roofing Membrane Systems: 4GIS, 3GIS, 5GNS, 4GNS, 3GNS, 5GLG, 4GLG. When these specifications are modified, the last digit of the specification number should be changed to a "P" to designate "Protected" (e.g., 4GIP).

15.3 Flashings: All flashings must conform to the requirements stated in this section and the current JM Commercial Roofing Product Manual. The flashing material must extend above the top of the extruded polystyrene insulation a minimum of 8" (203 mm). The standard flashing details for built-up roofing systems can be found in Section 3.

15.4 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 48 hours are unacceptable and will not be eligible for a JM Peak Advantage Guarantee.

15.5 When designing a PRMA 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 foot (20 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.

15.6 Decks (PRMA)
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.

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

For information on roof deck requirements not mentioned, refer to the "Roofs Decks System Engineering" document under the BUR Installation Considerations page on www.jm.com, or contact a JM Technical Services Specialist.

15.7 Asphalt Recommendations (PRMA)
Asphalts: The use of ASTM D 312, Type III asphalt is recommended to prevent adhesion of the extruded polystyrene insulation to the asphalt top pour. If a softer asphalt, such as a Type I or Type II is used, a separator sheet MUST be used. The minimum separator sheet is a 4 mil (0.1 mm) polyethylene sheet.

If a Type I or II asphalt is used without a separator sheet, the extruded polystyrene roof insulation can become adhered to the roof membrane. During periods of heavy rain, the buoyancy of the extruded polystyrene can cause strong upward forces to be exerted on the membrane. The buoyancy forces may be so severe as to tear the membrane.

15.8 Ballast Requirements (for use with extruded polystyrene roof insulation):
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%

15.9 Ballast is applied at a rate of approximately 10 - 12 lb/100 ft^2 (48.8 - 58.6 kg/m^2) in the field of the roof over a layer of filter fabric. Twenty (20) lb/100 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 filter 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

15.10 JM makes no claims as to the quality or performance of these products when exposed on the roof. See the product warranty supplied by the manufacturer.

15.11 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. All four corners of adjacent pavers should rest on the same 6" (152 mm) square piece of JM DynaTred Plus or pedestal. The ½" (13 mm) air space between the pavers and 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 IN A JM PEAK ADVANTAGE GUARANTEE, INCLUDING THE THERMAL OVERLAY PORTION OF THE GUARANTEE.

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

15.13 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.).

15.14 Installing Ballasted, Unadhered PRMA Roof Insulation Over Built-Up Roof Membranes

The following are general recommendations for installing ballasted PRMA roof insulation over built-up roof membranes.

Materials per 100 ft² (9.29 m²) of membrane area	
Separator Sheet, if required	108 ft² (10.03 m²)
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.

15.15 Separator Sheet: (If required) Over Type I or Type II asphalt, use a 4 mil (0.1 mm) thick (minimum) polyethylene separator sheet installed directly over the asphalt with 2″ (51 mm) minimum laps at all seams.

15.16 Insulation: Place extruded polystyrene insulation directly on the membrane (or separator sheet if used) with channel side down. The insulation boards should be tightly butted together. The maximum allowable gap between boards is 3⁄8″ (9.5 mm). The boards shall be installed to within and no closer than ¾″ (19 mm) of all projections and cant strips.

15.17 For multilayer installations, install subsequent layers of insulation, 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.

15.18 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.

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

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

15.19 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″ - 3″ (51 - 76 mm) above the stone at the perimeter and at all penetrations.

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

15.20 Ballast: Apply the correct size ballast at the rate of 1,000 - 1,200 lb/100 ft² (10 - 12 lb/100 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 the rate of 20 lb/100 ft² (97.6 kg/m²) or pavers at the 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) squares of DynaTred Plus.

Ballast should be washed ¾″ (19 mm) gravel or crushed stone ¾″ (19 mm), 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.

16.0 Coal Tar General Information

16.1 JM acknowledges that ASTM D 450, Type I Coal Tar Pitch is used in certain gravel-surfaced built-up roofing system specifications. However, coal tar pitch is not to be used within JM roofing systems.

Danger: Coal tar is considered a hazard by inhalation, ingestion and skin contact. The International Agency for Research on Cancer (IARC) has classified coal tar as an agent which is carcinogenic to humans (Group 1). JM does not make or sell a coal tar pitch waterproofing agent, and does not recommend its use. Alternative materials, such as asphalt, should be utilized.

3

Mechanically Fastened Base Sheet Fastening Patterns

Fastening Patterns Compatibility Guide and Contents

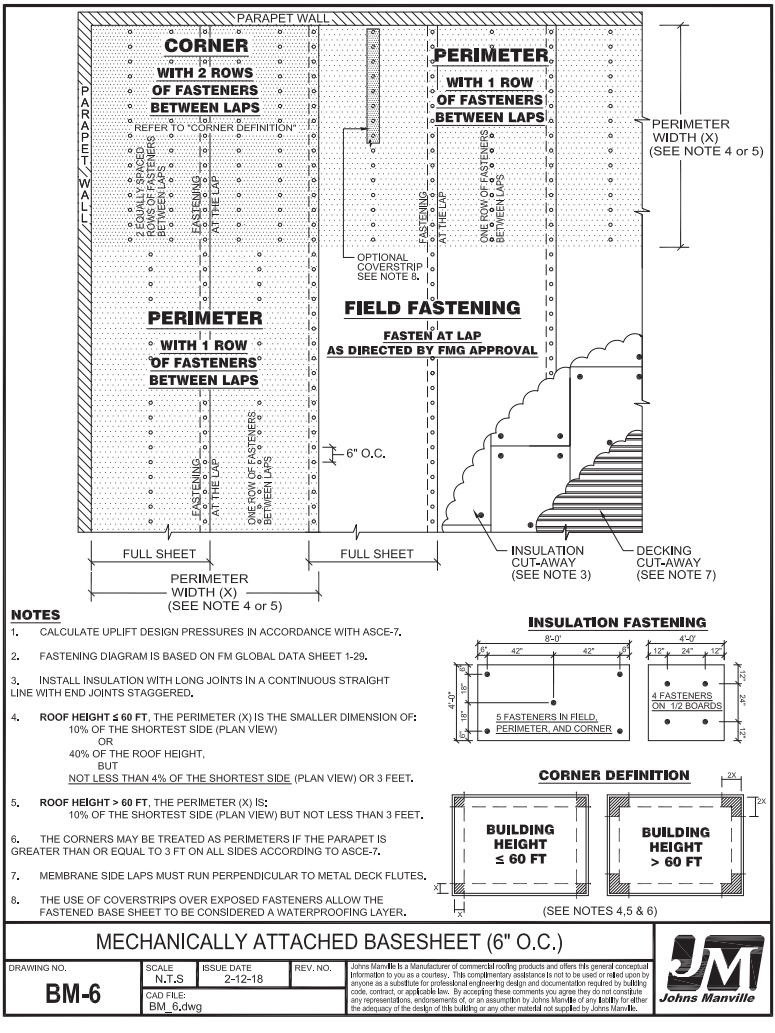
Description	Pattern Number	APP	BUR		SBS		Page
		CA	HA	CA	HA	CA	
4x2 Ft. Roof Insulation Fastener Placement	–	X	X	X	X	X	1-3
4x4 Ft. Roof Insulation Fastener Placement	–	X	X	X	X	X	1-4
4x8 Ft. Roof Insulation Fastener Placement	–	X	X	X	X	X	1-6
Fully Adhered Cover (8-16-32)	AD-8	X	X	X	X	X	1-10
Fully Adhered 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 membrane-specific System Considerations pages under the Commercial Roofing portion of www.JM.com.

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	2-12-18	
	CAD FILE: BM_6.dwg		

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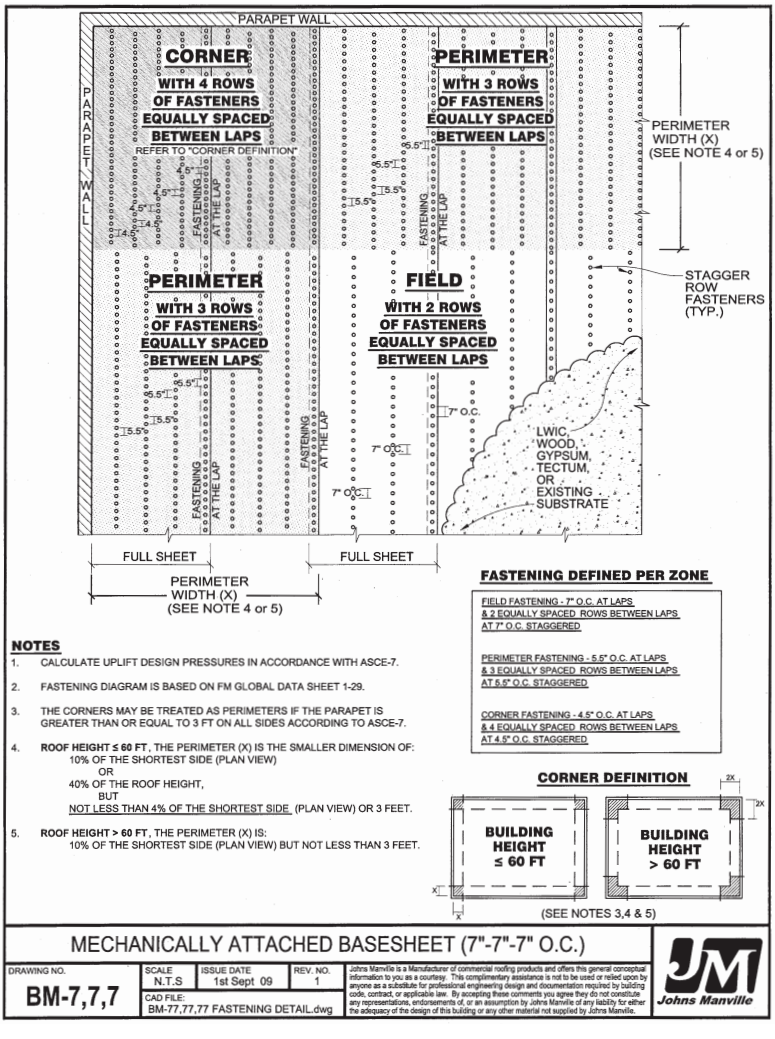
Refer to the Safe Use Instructions and product label prior to using this product.

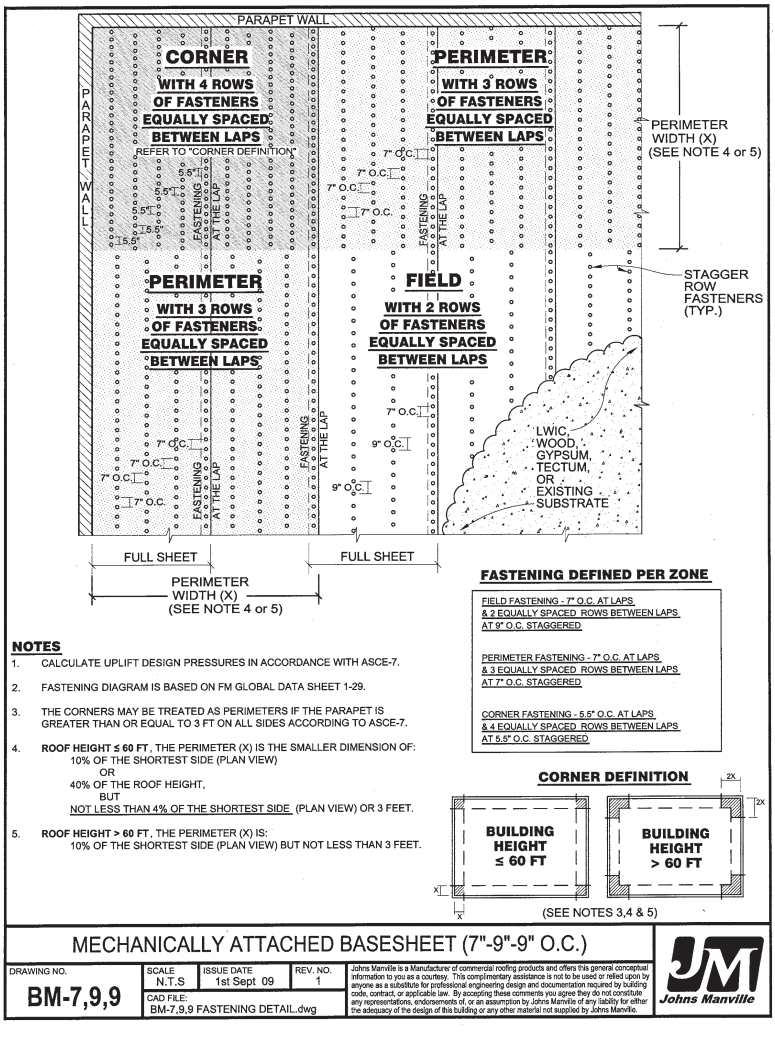
Mechanically Fastened Base Sheet Fastening Pattern BM-7,7,7



Note: For the most current information on general guidelines, please refer to the membrane-specific System Considerations pages under the Commercial Roofing portion of www.JM.com.

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

(SEE NOTES 3,4 & 5)

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

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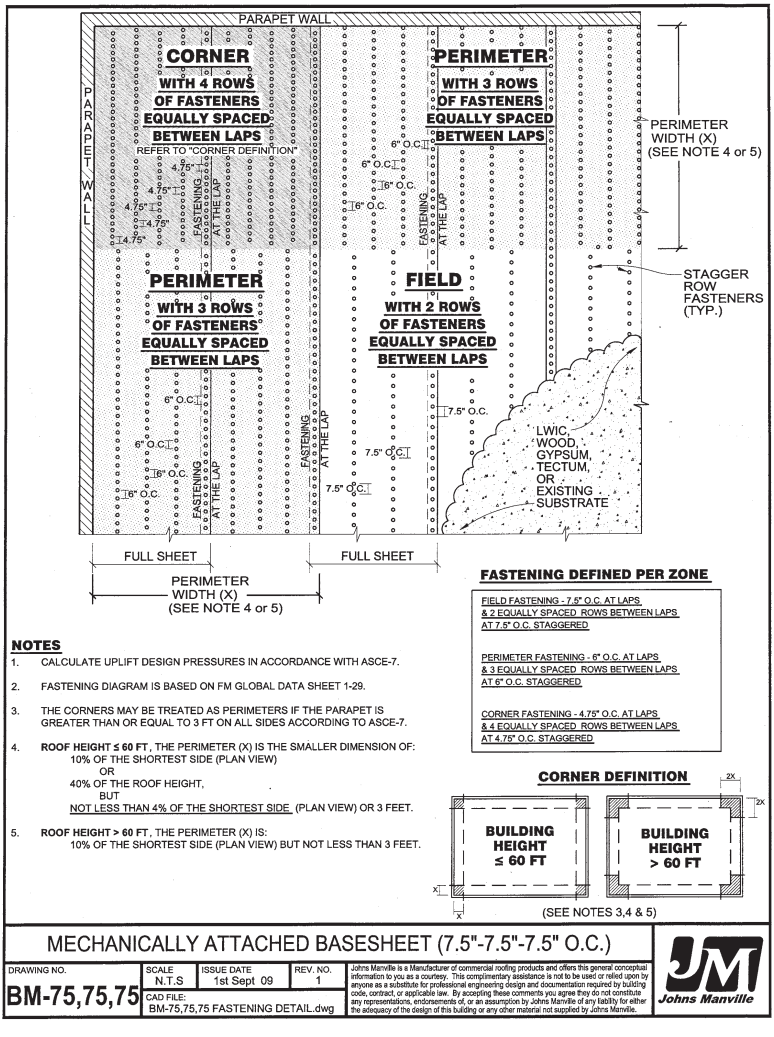
Refer to the Safe Use Instructions and product label prior to using this product.

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		

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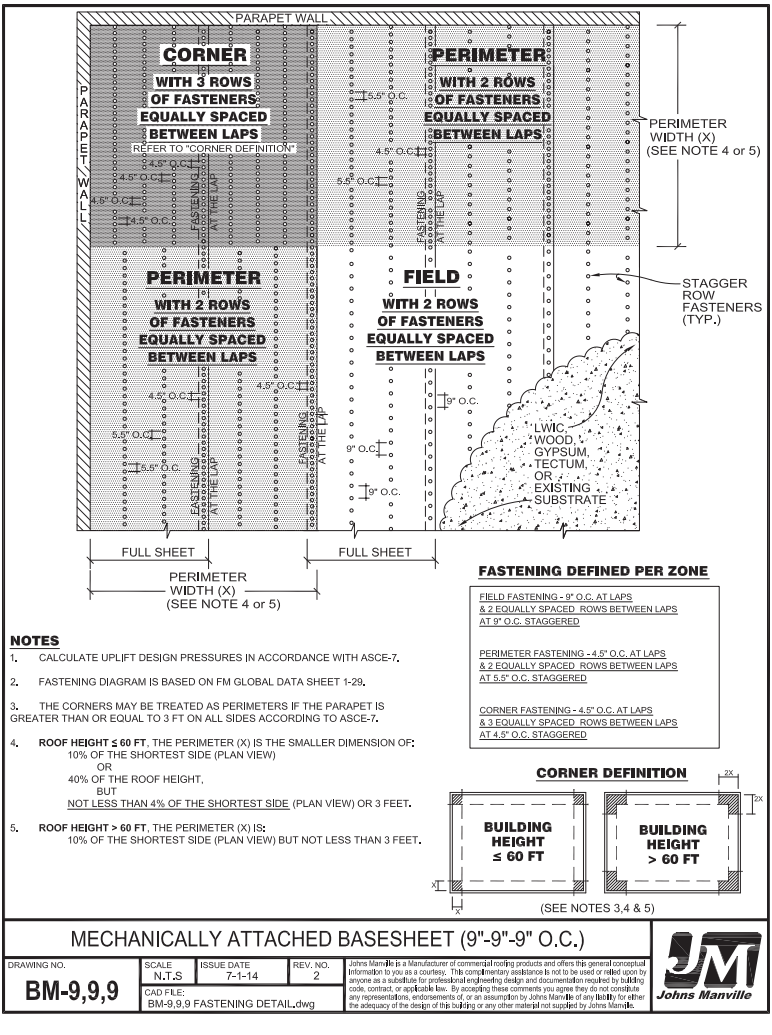
Refer to the Safe Use Instructions and product label prior to using this product.

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		

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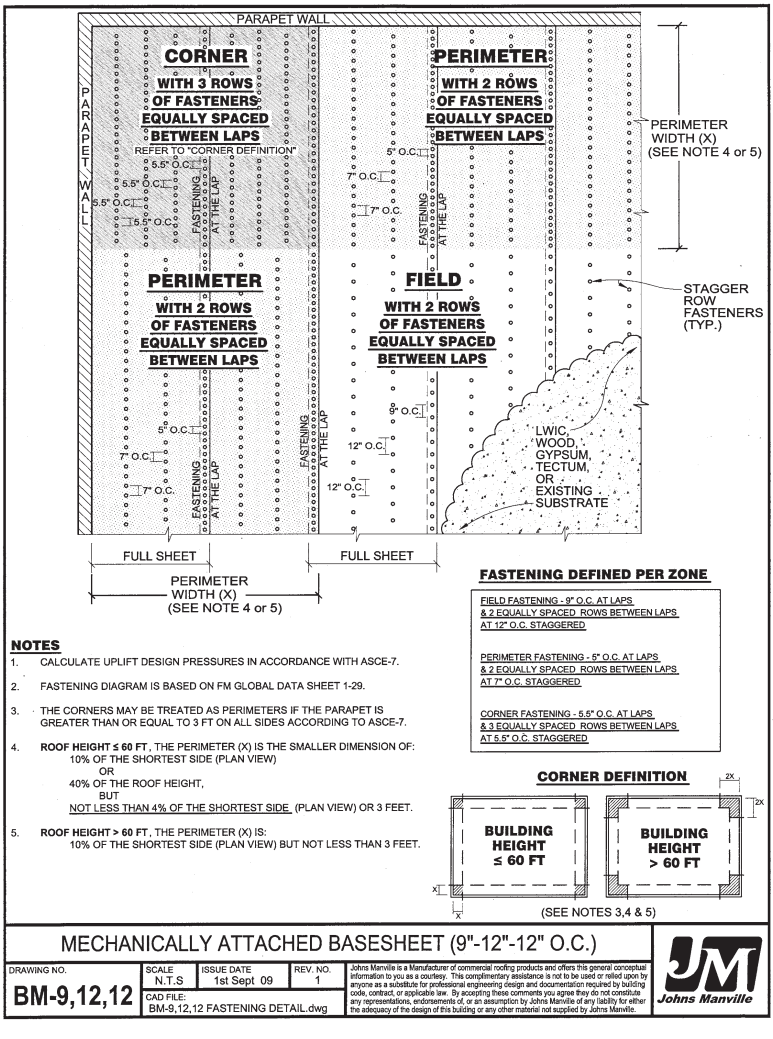
Mechanically Fastened Base Sheet Fastening Pattern BM-9,12,12



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

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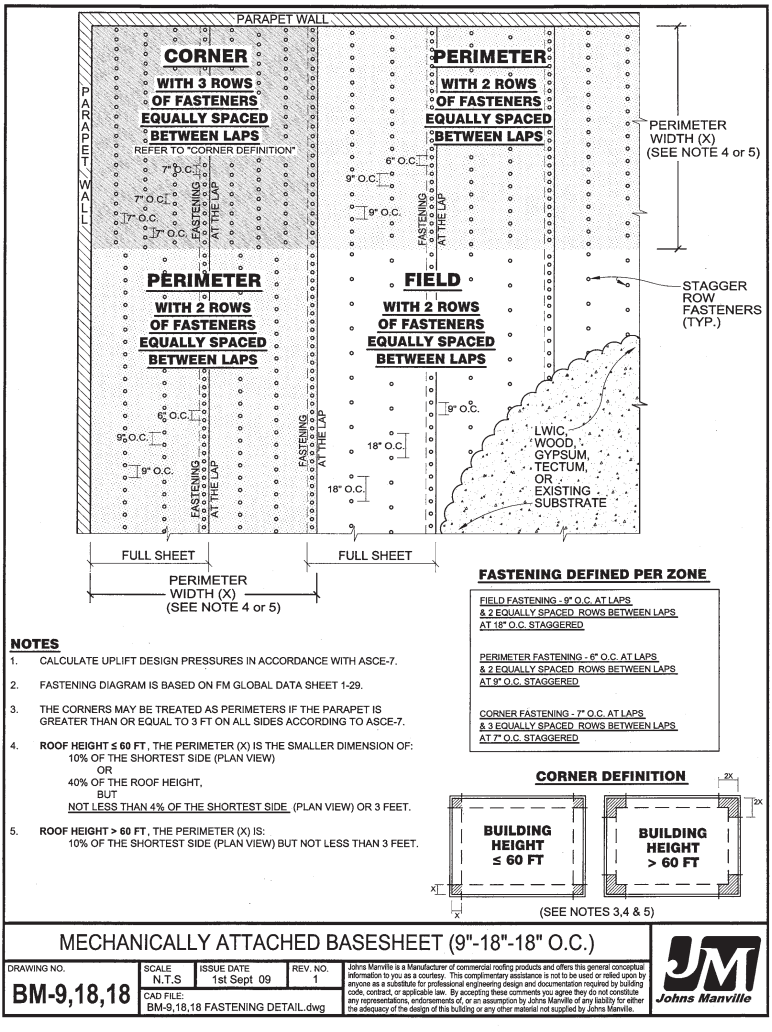
Note: For the most current information on general guidelines, please refer to the membrane-specific System Considerations pages under the Commercial Roofing portion of www.JM.com.

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

(SEE NOTES 3,4 & 5)

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

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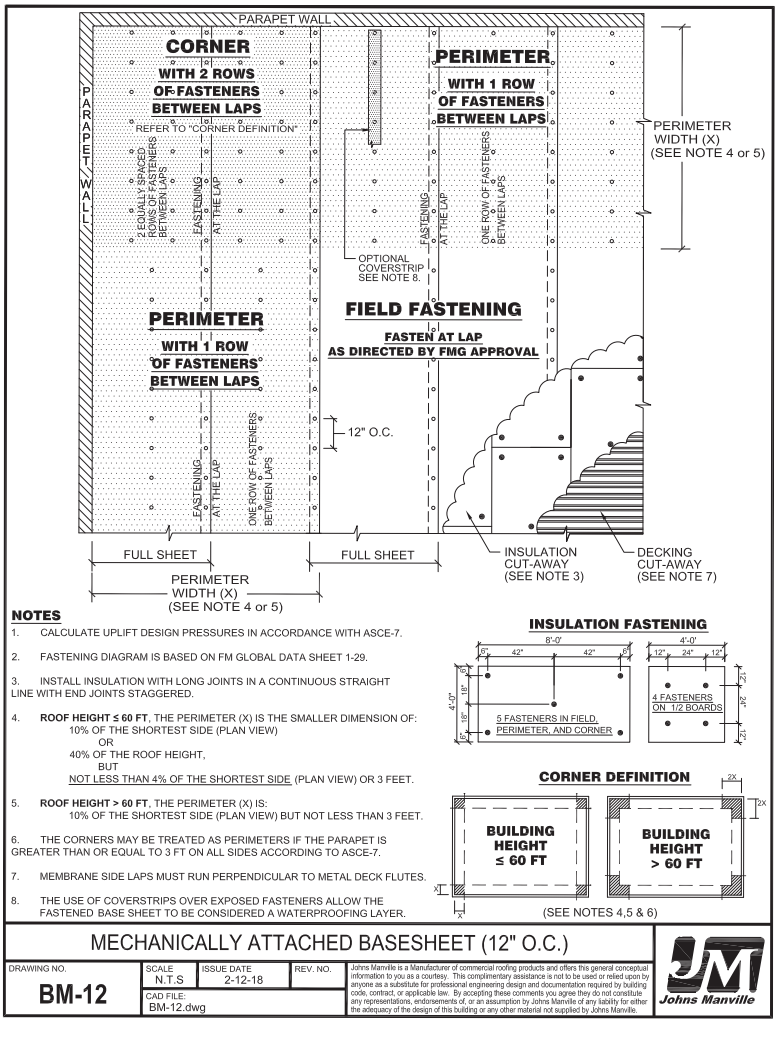
Note: For the most current information on general guidelines, please refer to the membrane-specific System Considerations pages under the Commercial Roofing portion of www.JM.com.

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.

INSULATION FASTENING

CORNER DEFINITION

MECHANICALLY ATTACHED BASESHEET (12" O.C.)

DRAWING NO.	SCALE	ISSUE DATE	REV. NO.
BM-12	N.T.S	2-12-18	
	CAD FILE: BM-12.dwg		

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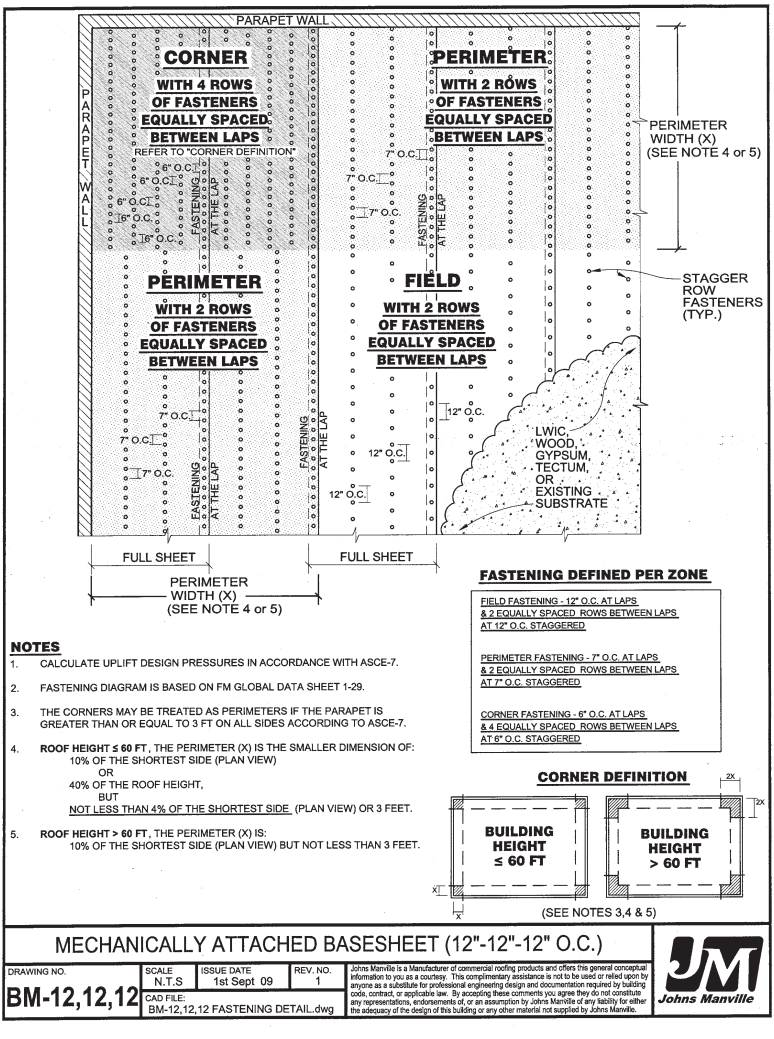
Note: For the most current information on general guidelines, please refer to the membrane-specific System Considerations pages under the Commercial Roofing portion of www.JM.com.

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



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

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		

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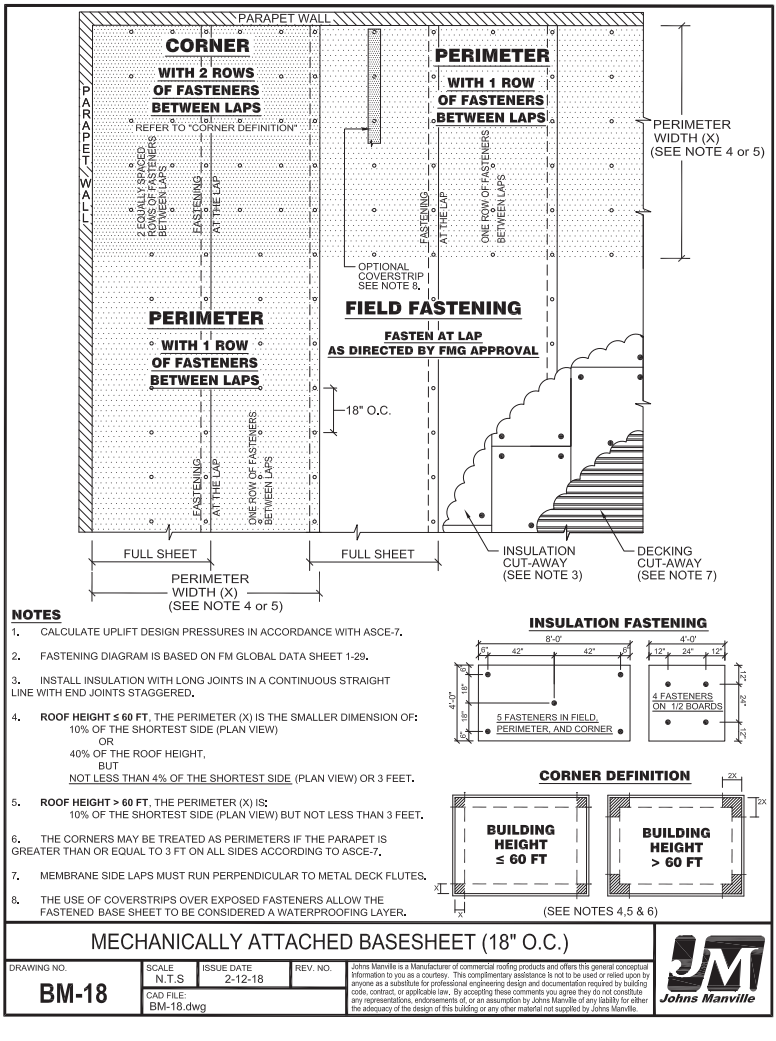
Refer to the Safe Use Instructions and product label prior to using this product.

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 1-29.
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:
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   OR
   40% OF THE ROOF HEIGHT,
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   NOT LESS THAN 4% OF THE SHORTEST SIDE (PLAN VIEW) OR 3 FEET.
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   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

(SEE NOTES 4,5 & 6)

MECHANICALLY ATTACHED BASESHEET (18" O.C.)

DRAWING NO.	SCALE	ISSUE DATE	REV. NO.
BM-18	N.T.S	2-12-18	
	CAD FILE: BM-18.dwg		

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

4

BUR Flashing Details

Section Two Contents

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2.0 Flashing Principles *4-1*
3.0 Substrate/Flashing Preparation *4-2*
4.0 Typical Flashing Conditions *4-3*
Flashing Details Table of Contents *4-5*

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 BUR Roofing Systems Commercial Roofing Application Guide 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 most common type of material used in constructing base flashings in bituminous systems along side Liquid Applied flashing materials.

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 installation.

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.

Bituminous Flashing Details

Roof Area

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Expansion, Tie-in and Transition

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JM DynaFlex® Flashing Details

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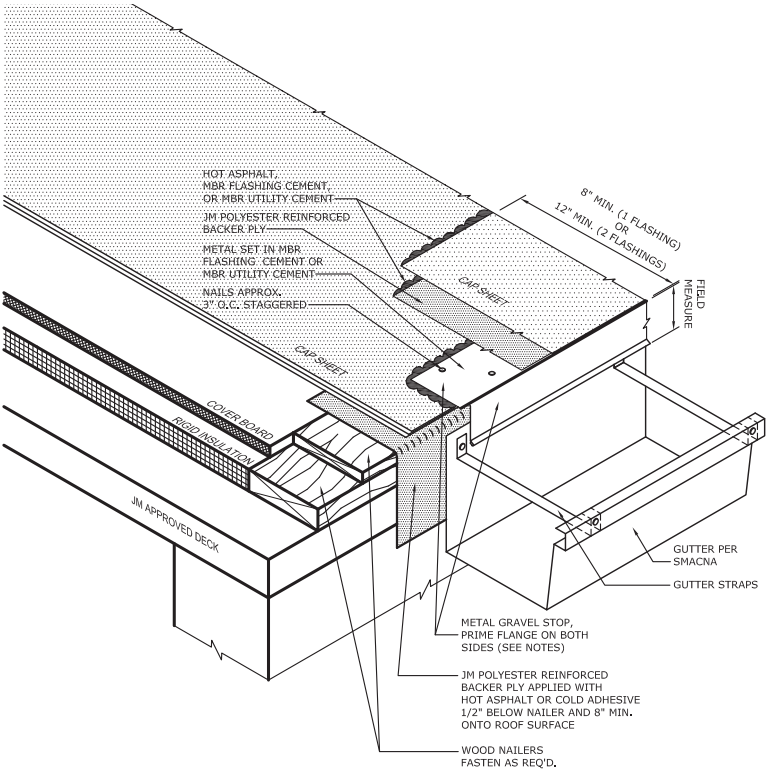
Roof Edge Gutter



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. 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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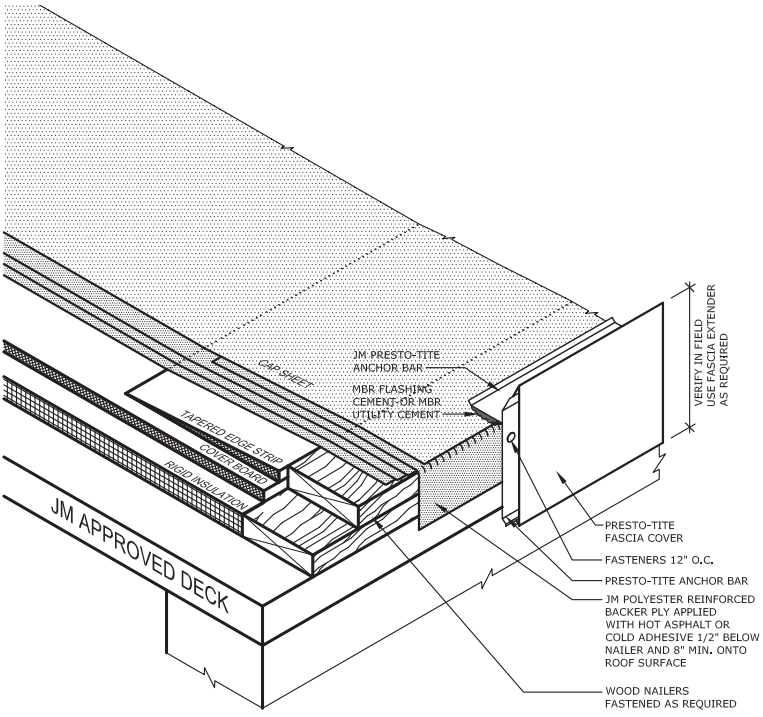
Roof Edge with Presto Tite



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.
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. JM POLYESTER REINFORCED BACKER PLY INCLUDES DYNABASE PR OR DYNALASTIC 180 S.

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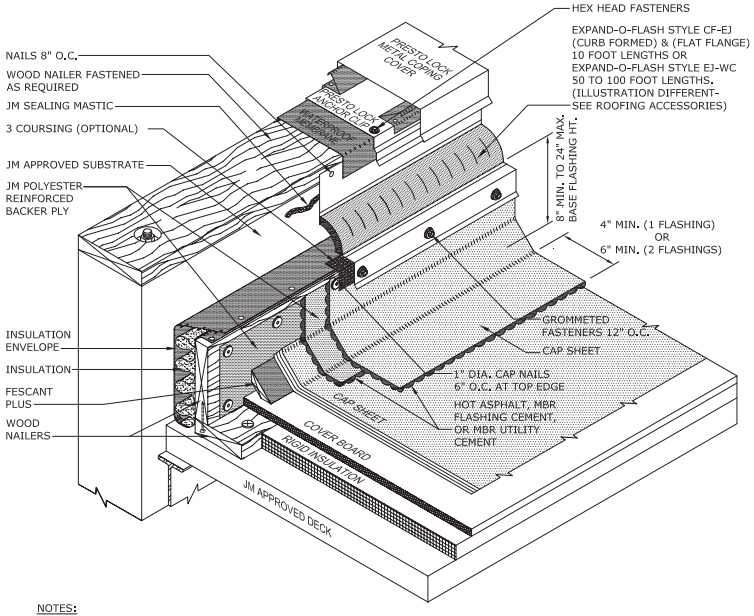
Base Flashing for Non Load Brng Wall-Curb to Wall EJ



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 RECOMMENDED 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.

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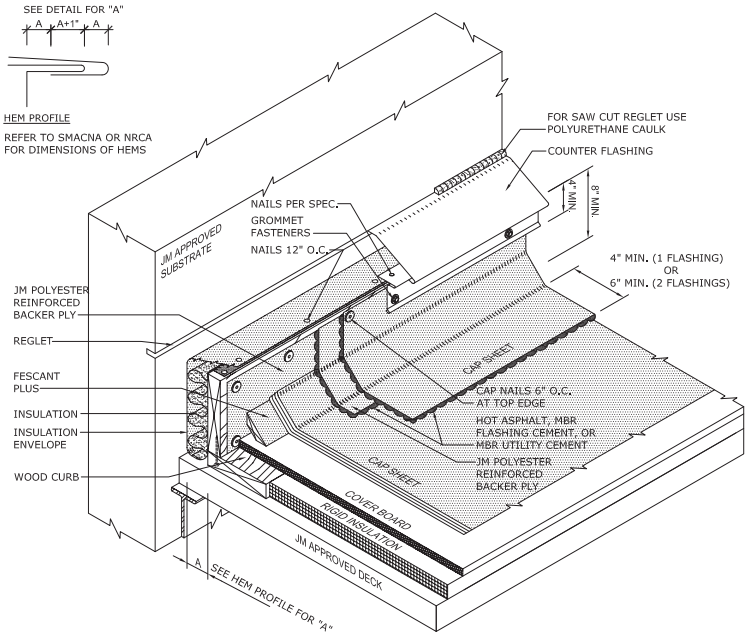
Base Flashing for Non Load Bearing Wall & Metal EJ



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. JM POLYESTER REINFORCED BACKER PLY INCLUDES DYNABASE OR DYNALASTIC 180 S.
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 RECOMMENDED 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.
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.

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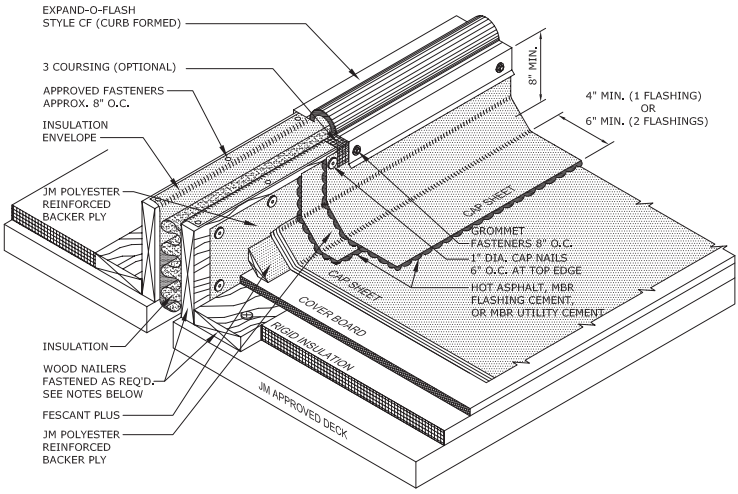
Curb Mounted Roof to Roof EJ Cover



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 RECOMMENDED 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.

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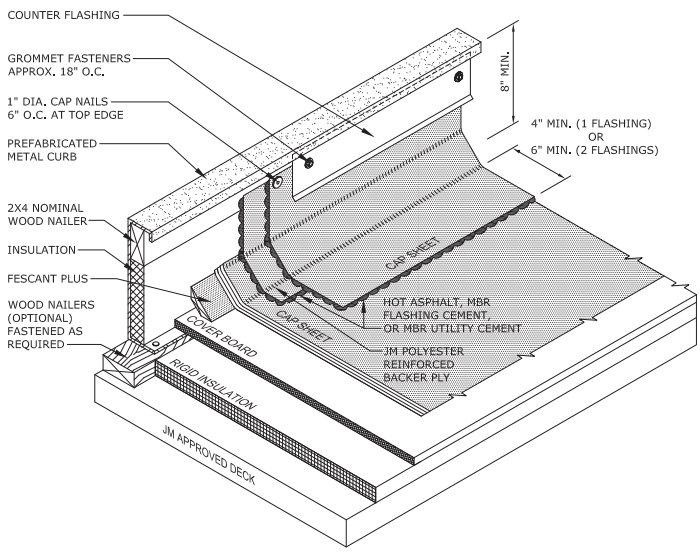
Prefabricated Curb



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 RECOMMENDED 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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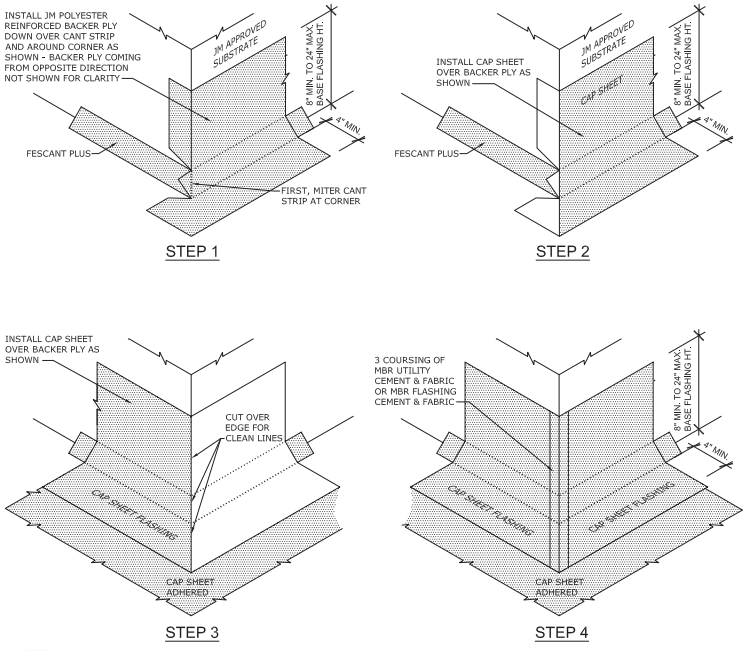
Base Flashing at Outside Corner



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
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 6.
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 RECOMMENDED 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.
5. JM POLYESTER REINFORCED BACKER PLY INCLUDES DYNABASE PR OR DYNALASTIC 180 S.
6. 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.

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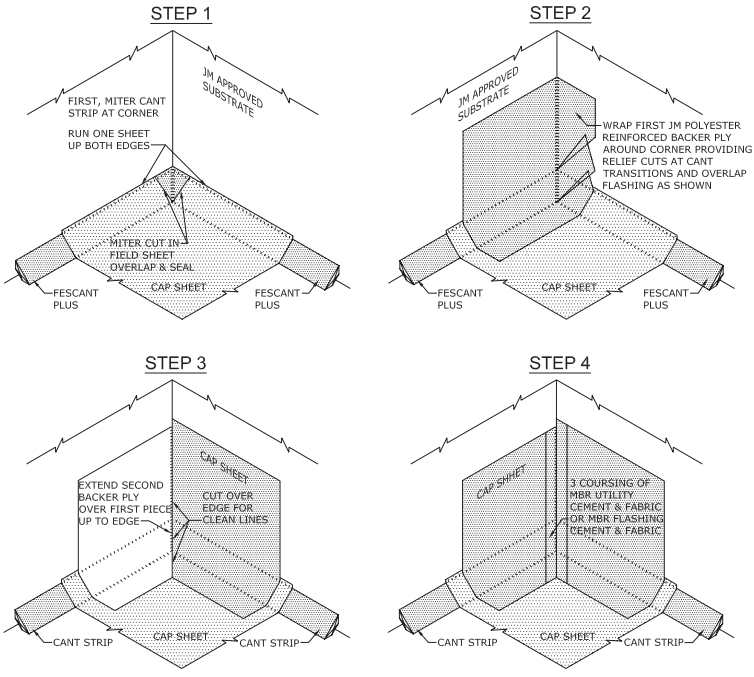
Base Flashing at Inside corner



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
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 RECOMMENDED 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.
5. JM POLYESTER REINFORCED BACKER PLY INCLUDES DYNABASE PR OR DYNALASTIC 180 S.
6. 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.

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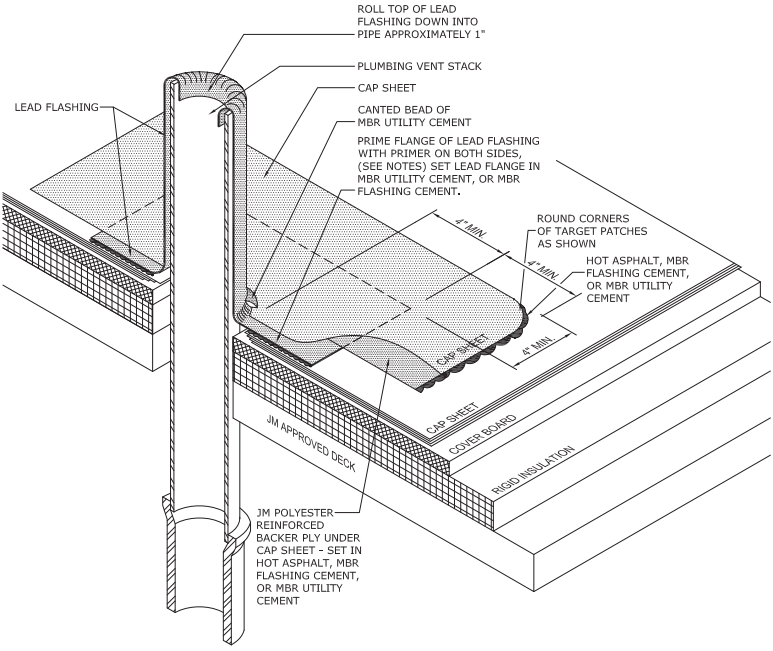
Plumbing Vent



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.

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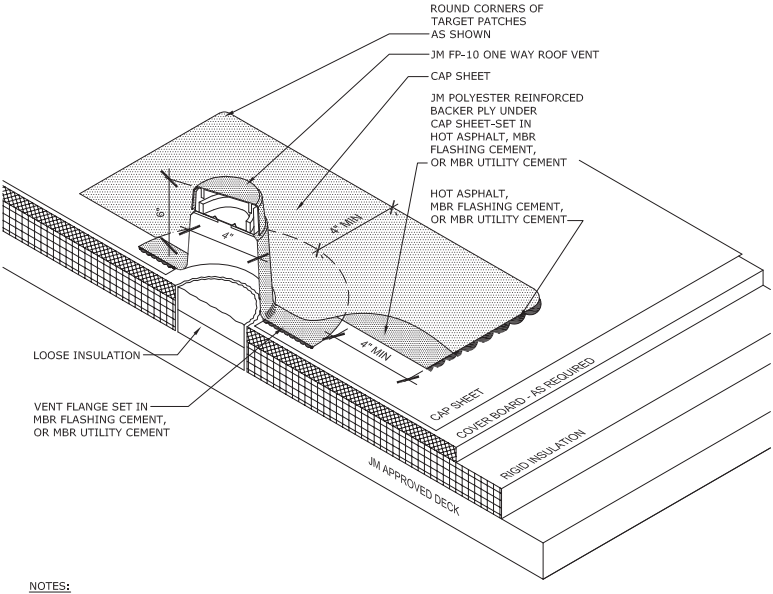
One Way Roof Vent - FP-10



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.

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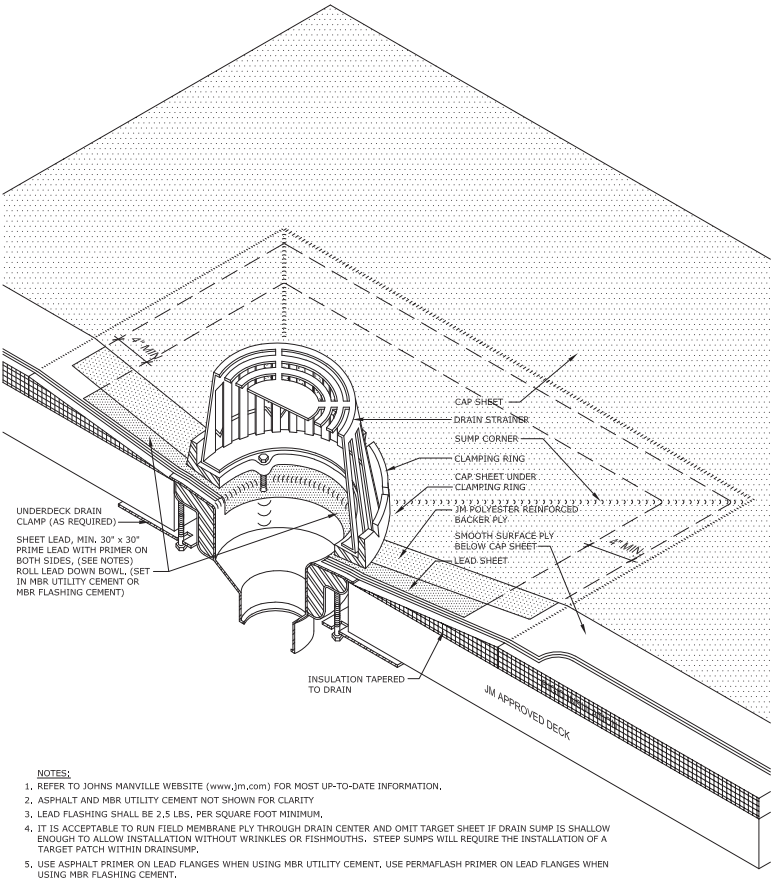
Metal Drain



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.

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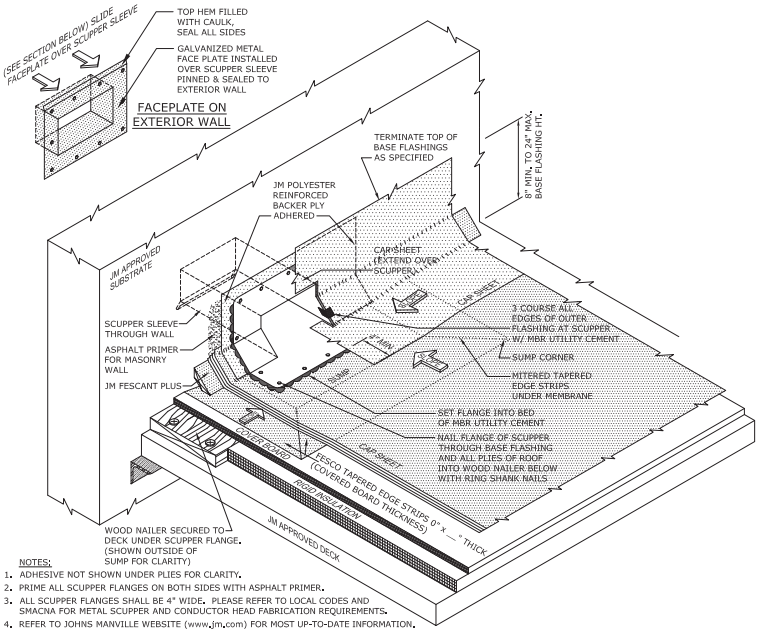
Primary Metal Scupper in Sump



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. JM POLYESTER REINFORCED BACKER PLY INCLUDES DYNABASE PR OR DYNALASTIC 180 S.
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. 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.

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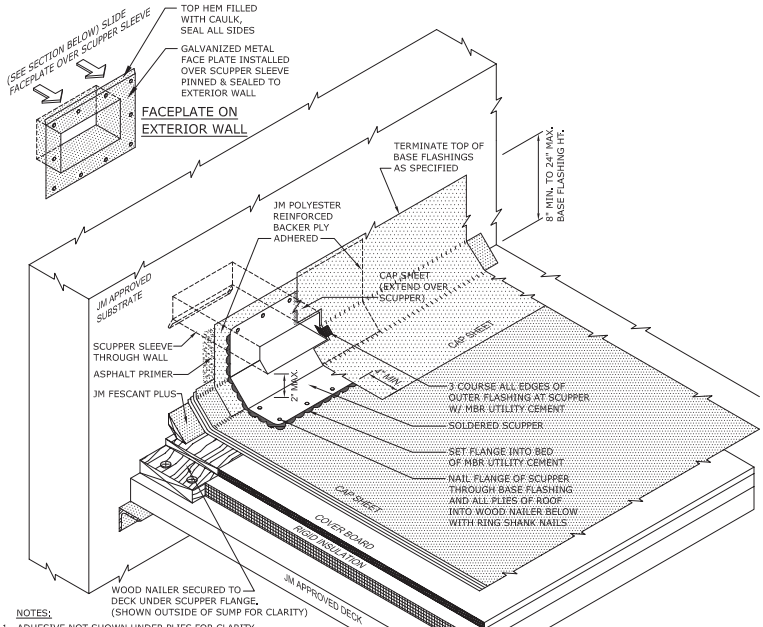
Overflow Metal Scupper



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. 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. JM POLYESTER REINFORCED BACKER PLY INCLUDES DYNABASE PR OR DYNALASTIC 180 S.
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. 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.

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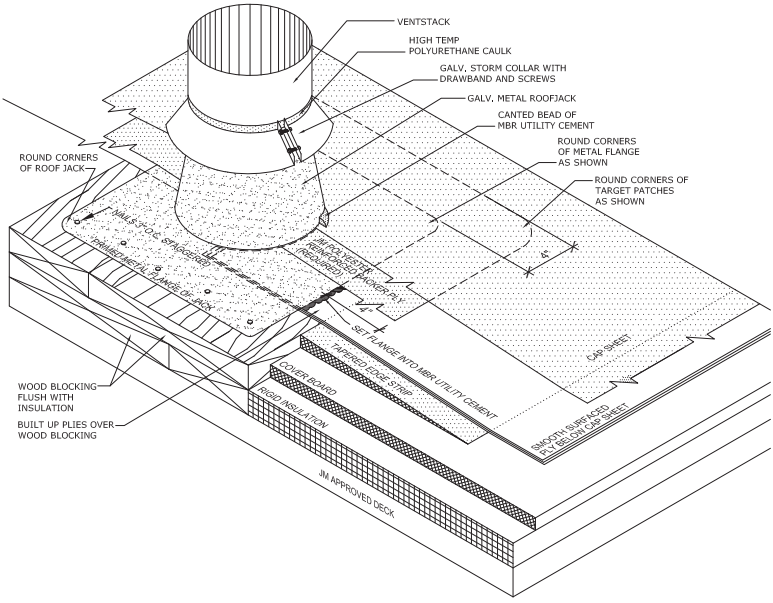
Vent Stack (Warm)



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND
2. 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.

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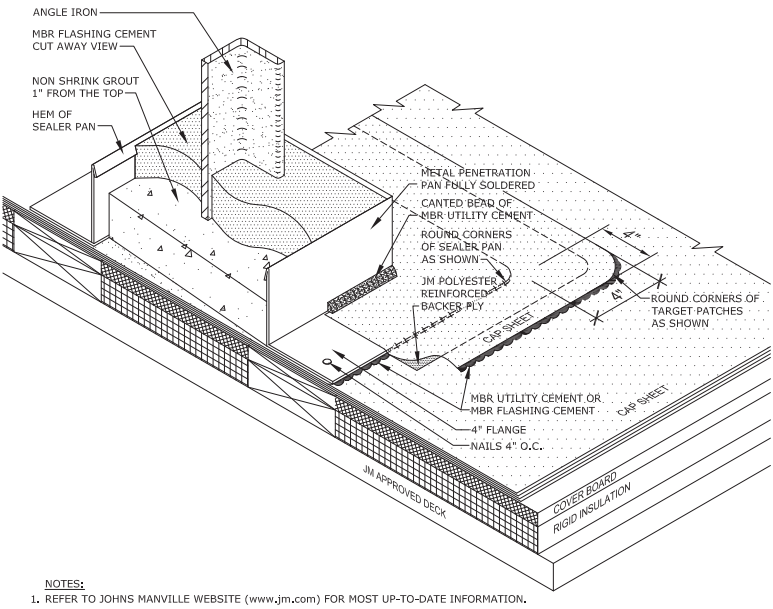
Roof Penetration Pan



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.

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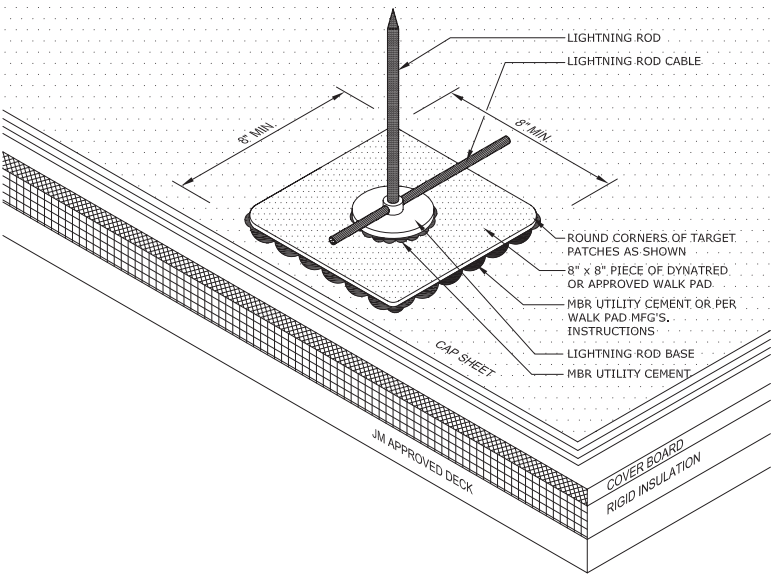
Lighting Rod on Roof Surface



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).

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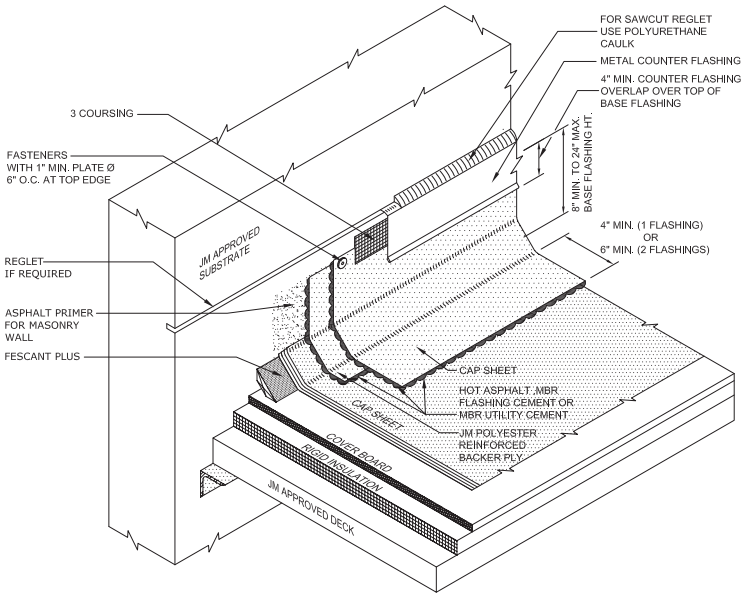
Base Flashing for Load Brng Wall with Counterflashing



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. 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. 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 RECOMMENDED ON ALL VERTICAL FLASHING LAPS. IT IS REQUIRED ON INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIPS.
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

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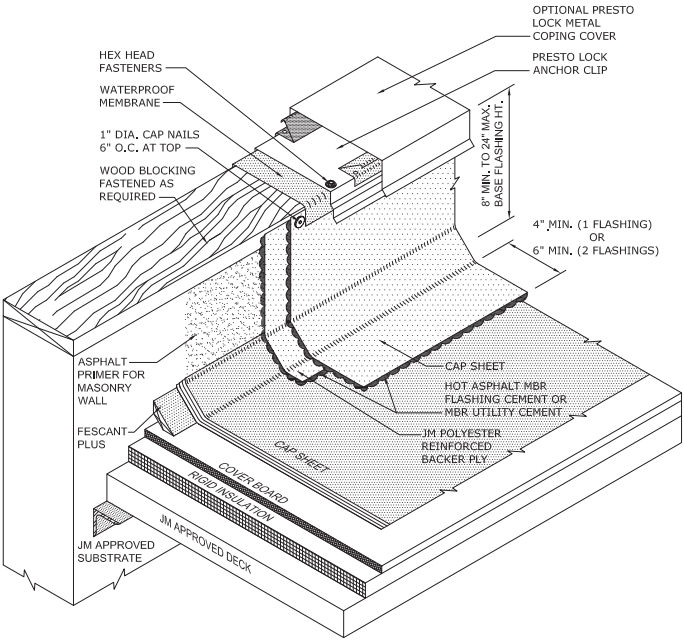
Base Flashing for Wall less than 24 inches



NOTES:

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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.
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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.

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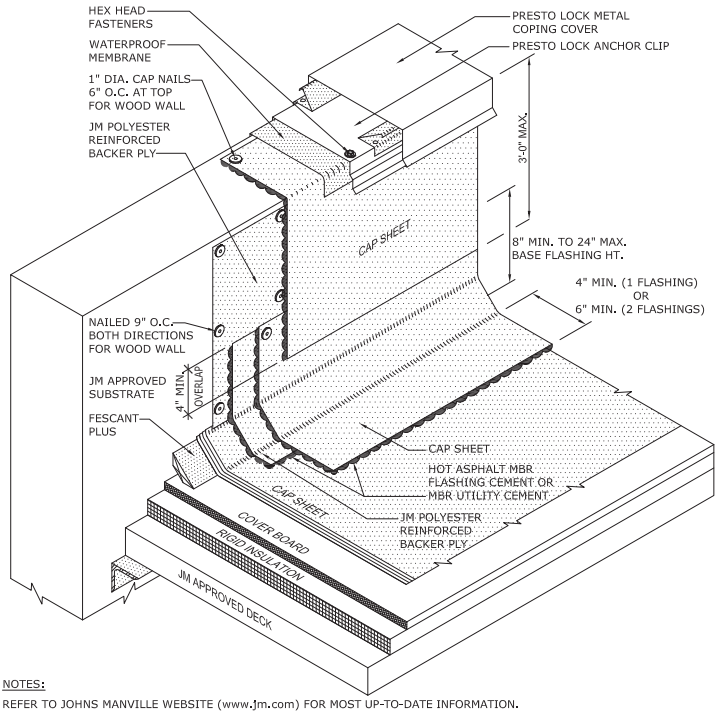
Base Flashing for Wall more than 24 inched with Coping



NOTES:

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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. 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 RECOMMENDED ON ALL VERTICAL FLASHING LAPS. IT IS REQUIRED ON INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIPS.
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7. 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.

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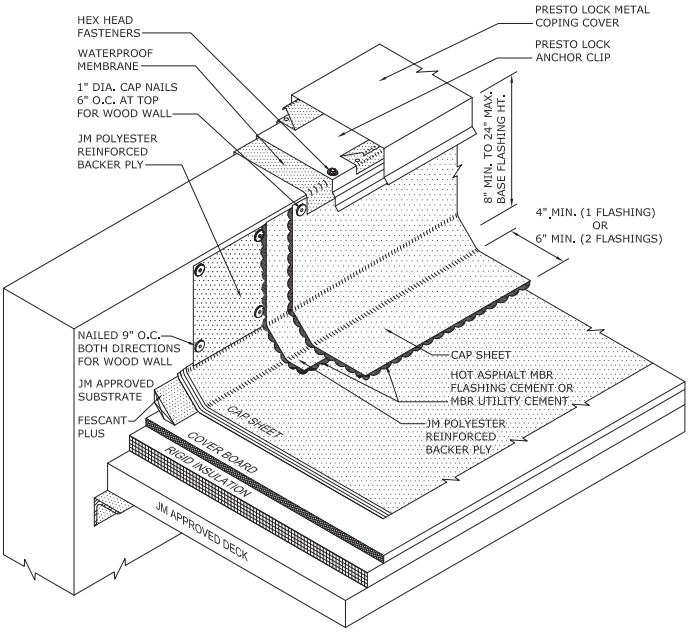
Base Flashing for Wall less than 24 inches with Coping



NOTES:

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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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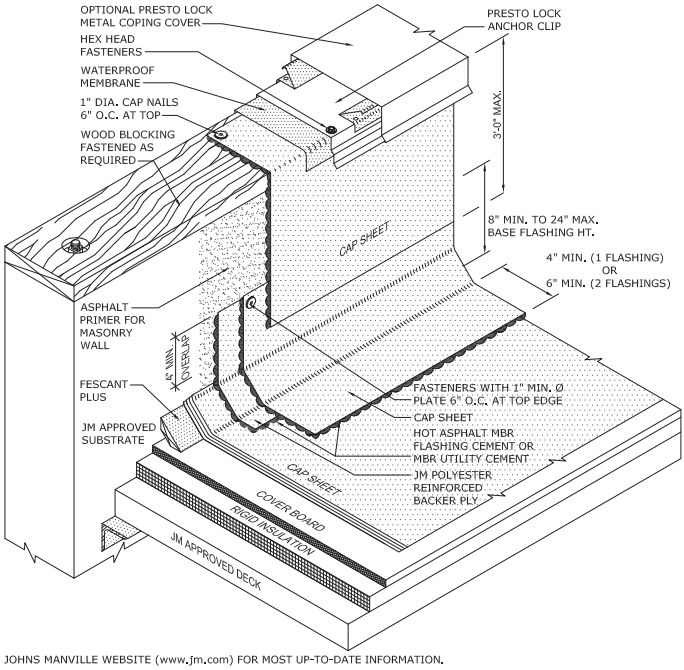
Base Flashing for Wall more than 24 inches with Coping



NOTES:

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2. JM POLYESTER REINFORCED BACKER PLY INCLUDES DYNABASE PR OR DYNALASTIC 180 S.
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 RECOMMENDED ON ALL VERTICAL FLASHING LAPS. IT IS REQUIRED ON INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIPS.
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.
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.

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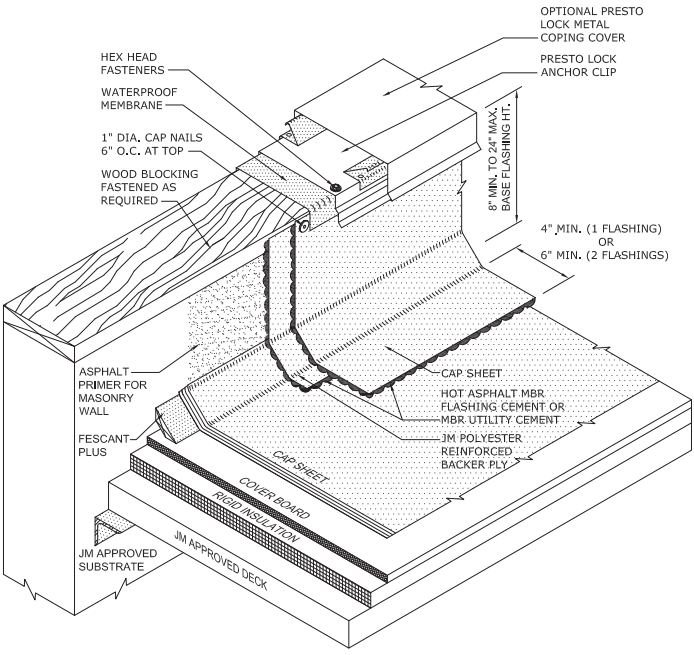
Base Flashing for Wall less than 24 inches with Coping



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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 RECOMMENDED ON ALL VERTICAL FLASHING LAPS. IT IS REQUIRED ON INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIPS.
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.

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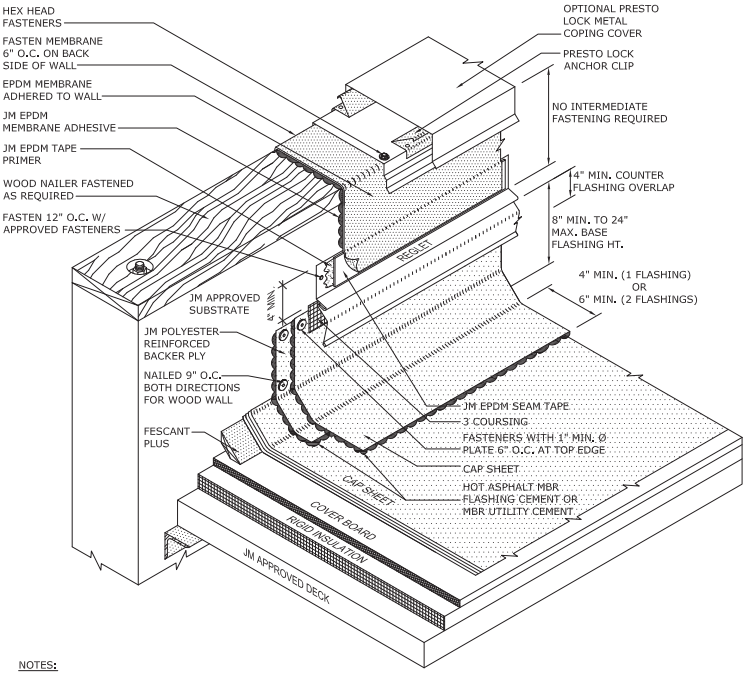
EPDM Wall Covering with BUR Base Flashing



NOTES:

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2. JM POLYESTER REINFORCED BACKER PLY INCLUDES DYNABASE PR OR DYNALASTIC 180 S.
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 RECOMMENDED ON ALL VERTICAL FLASHING LAPS. IT IS REQUIRED ON INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIPS.
7. 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.

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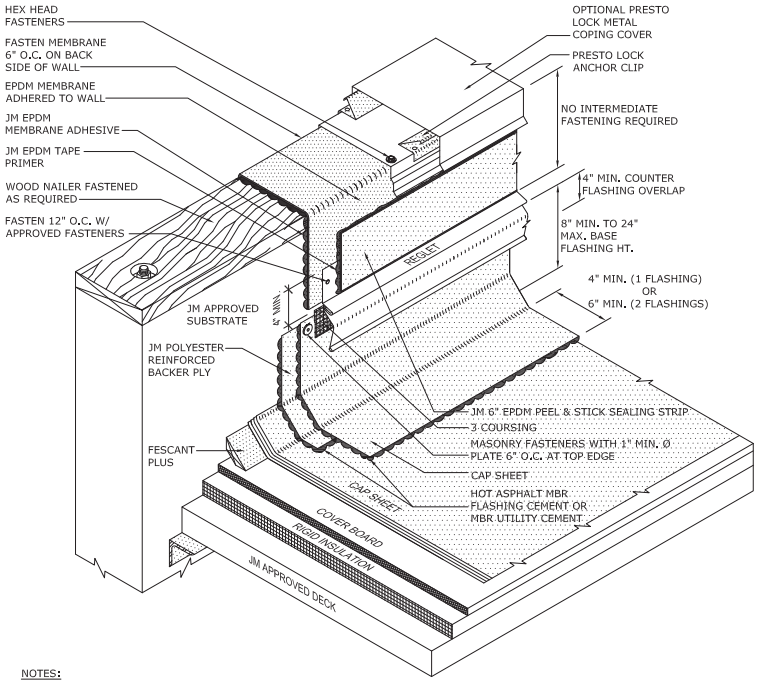
EPDM Wall Covering with BUR Base Flashing (Alternate)



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. 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 RECOMMENDED ON ALL VERTICAL FLASHING LAPS. IT IS REQUIRED ON INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIPS.
7. 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.

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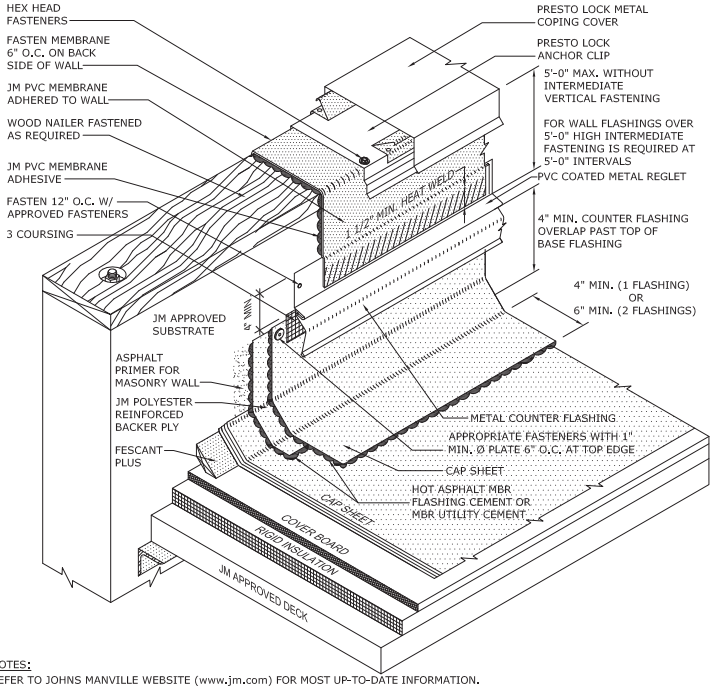
PVC Wall Covering with BUR Base Flashing



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. 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 RECOMMENDED ON ALL VERTICAL FLASHING LAPS. IT IS REQUIRED ON INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIPS.
6. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS AND THE JM PVC APPLICATION GUIDE FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
7. 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.

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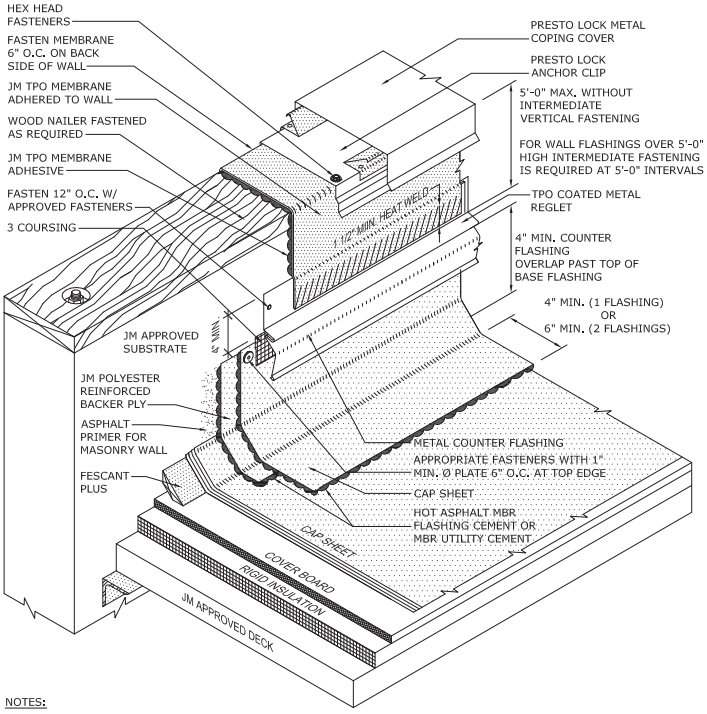
Refer to the Safe Use Instructions and product label prior to using this product.

TPO Wall Covering with BUR Base Flashing



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. 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 RECOMMENDED ON ALL VERTICAL FLASHING LAPS. IT IS REQUIRED ON INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIPS.
6. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS AND THE JM TPO APPLICATION GUIDE FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
7. 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.

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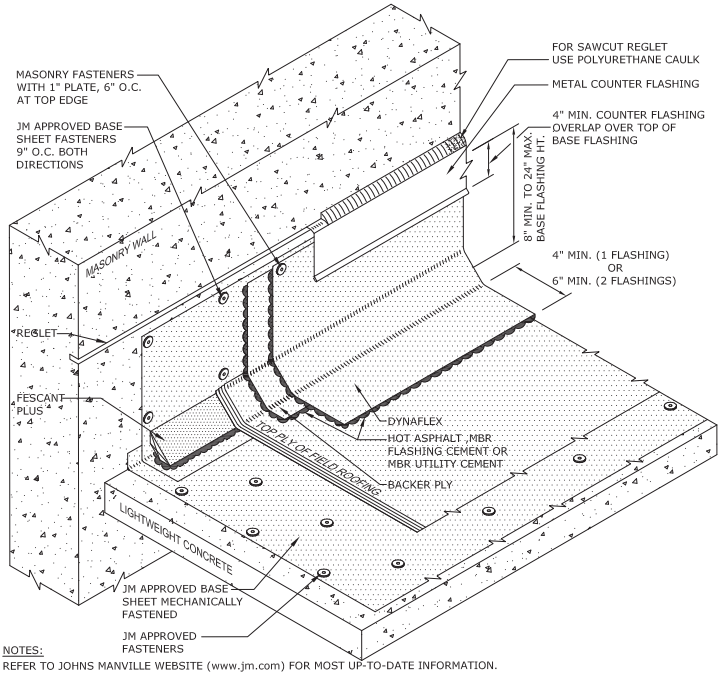
Venting Lightweight Concrete



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 RECOMMENDED ON ALL VERTICAL FLASHING LAPS. IT IS REQUIRED ON INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIPS.
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.

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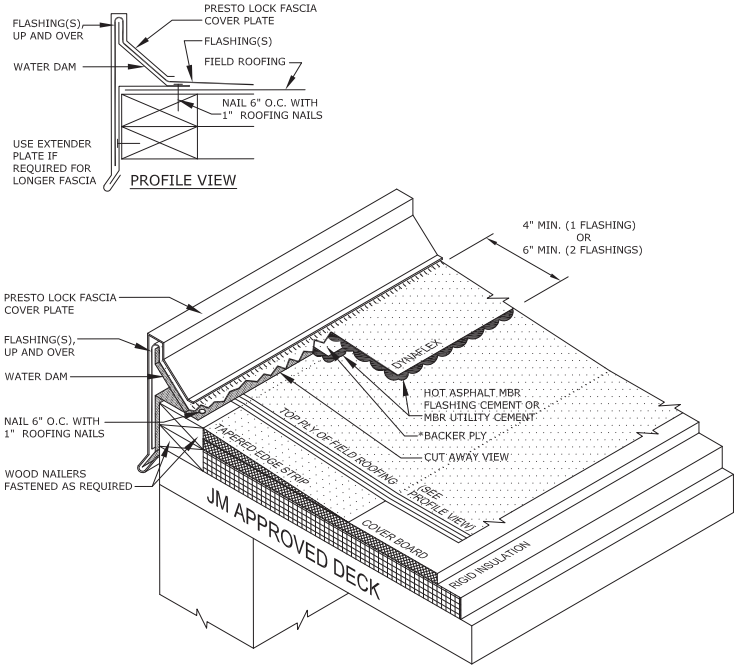
Facia, Presto Lock™ Fascia System



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.

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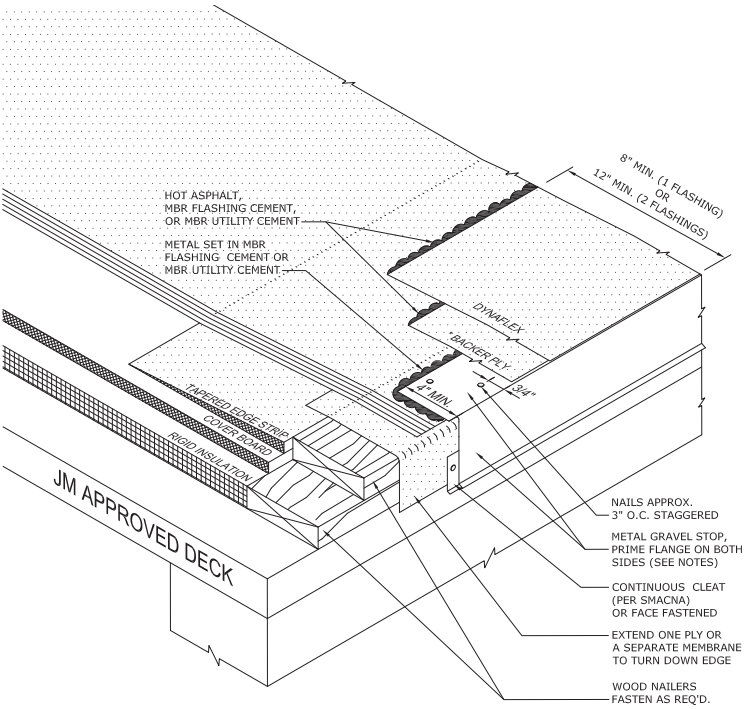
Gravel Stop



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.
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.

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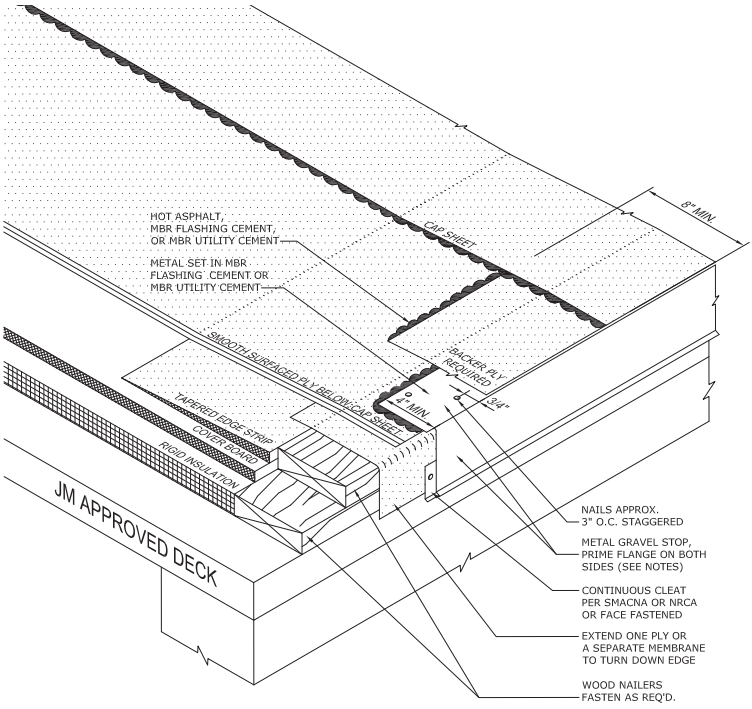
Gravel Stop (Alternate)



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.
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.

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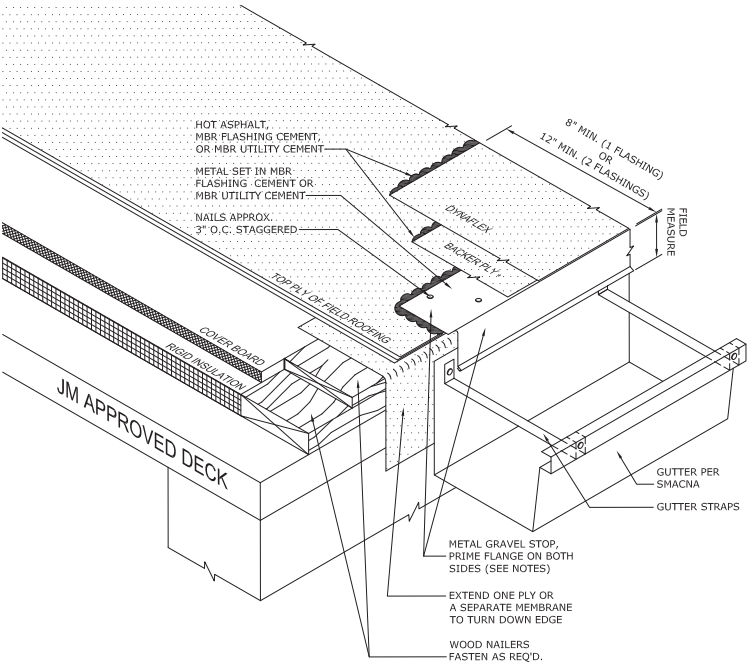
Gutter



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.
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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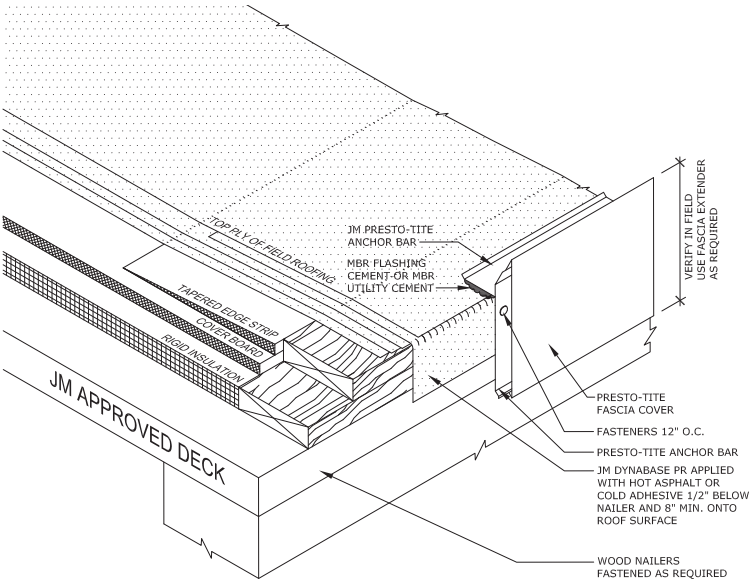
Presto-Tite



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.
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.

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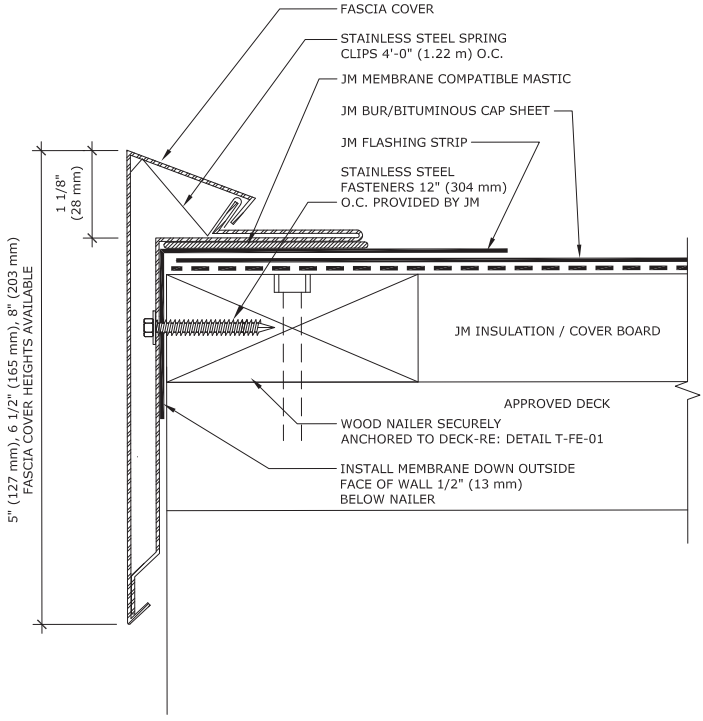
Rail Fascia System Roof Edge



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. PLEASE SEE SINGLE PLY FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
3. ANY CARPENTRY OR METAL WORK 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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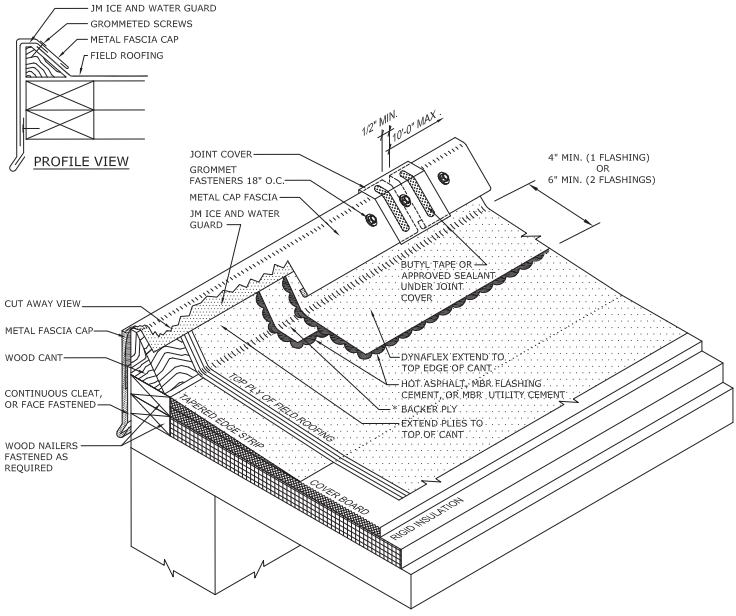
Raised Metal Cant Fasia



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. 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.

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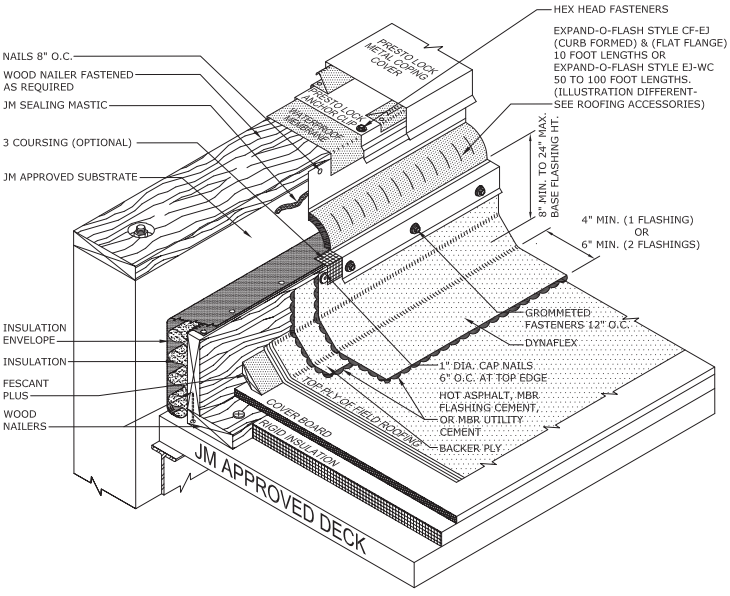
Curb to Wall Expansion Joint



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 RECOMMENDED 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

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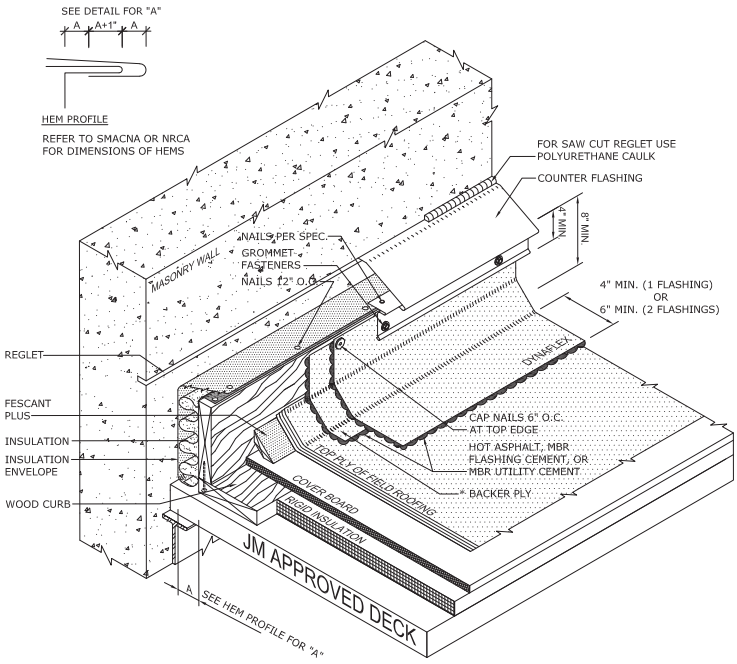
Metal Expansion Joint (Alternate)



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. 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 RECOMMENDED 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.

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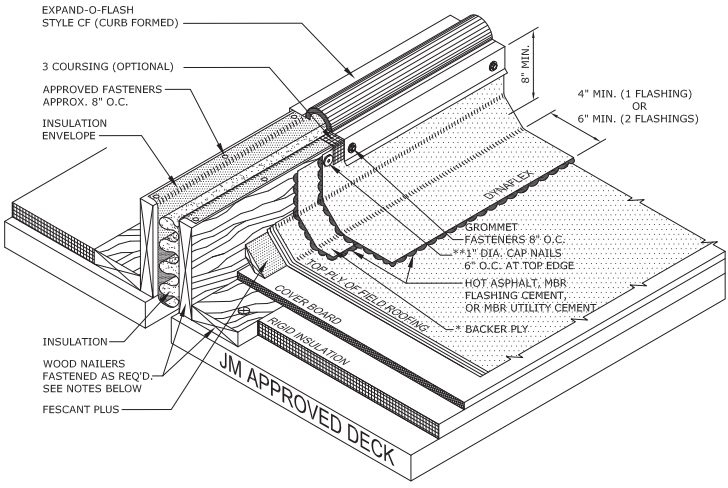
Roof-to-Roof, Curb Mounted, Expand-O-Flash®



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 RECOMMENDED 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.
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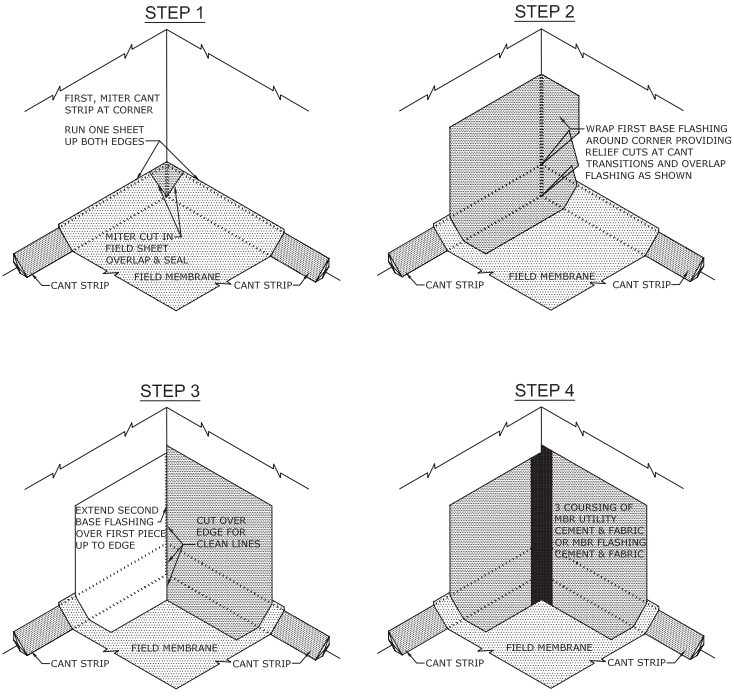
Inside Corner



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
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 RECOMMENDED 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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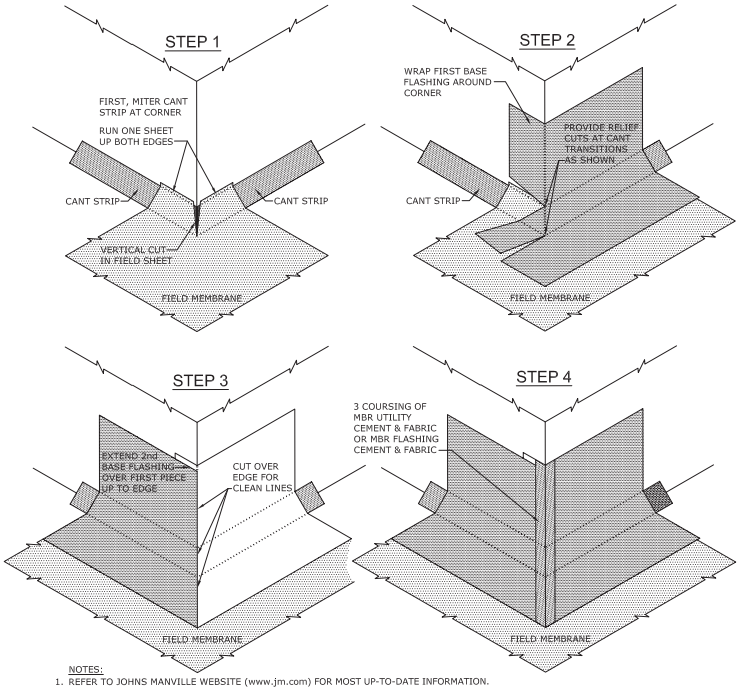
Outside Corner



NOTES:

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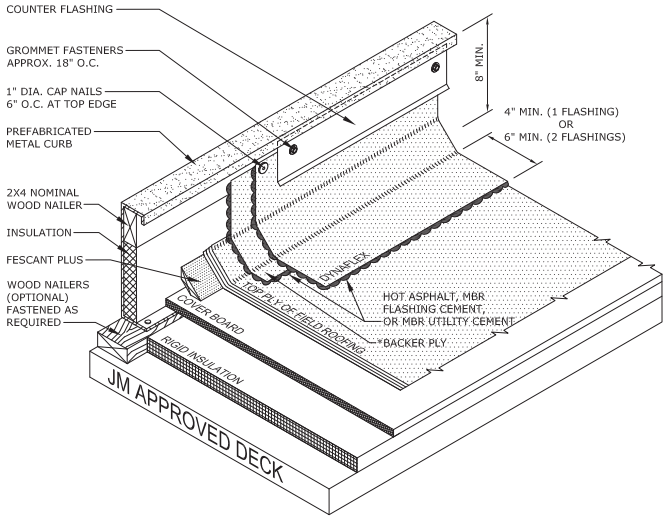
Prefabricated



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 RECOMMENDED ON ALL VERTICAL FLASHING LAPS AND INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIP.
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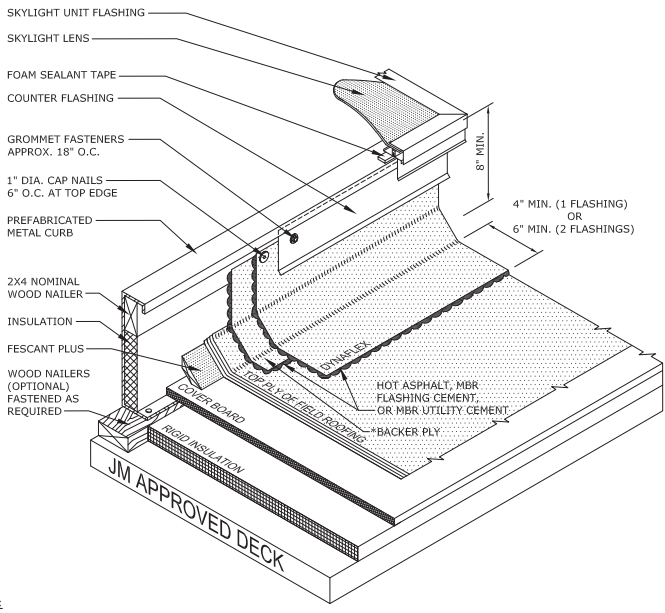
Prefabricated Curb



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. 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.
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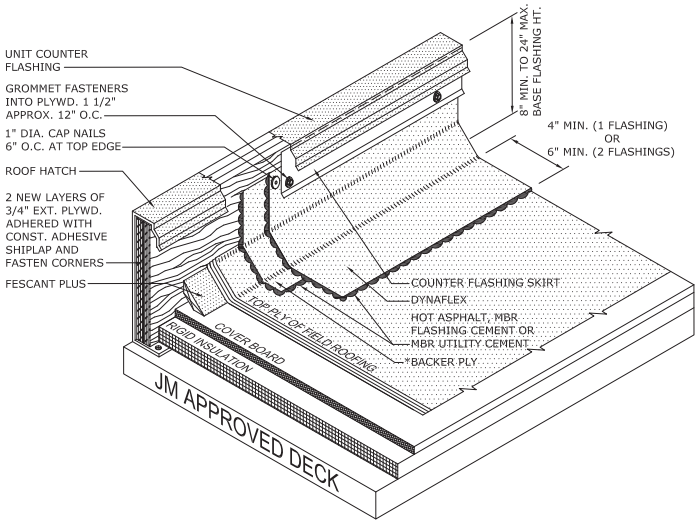
Roof Hatch Curb



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 RECOMMENDED 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.

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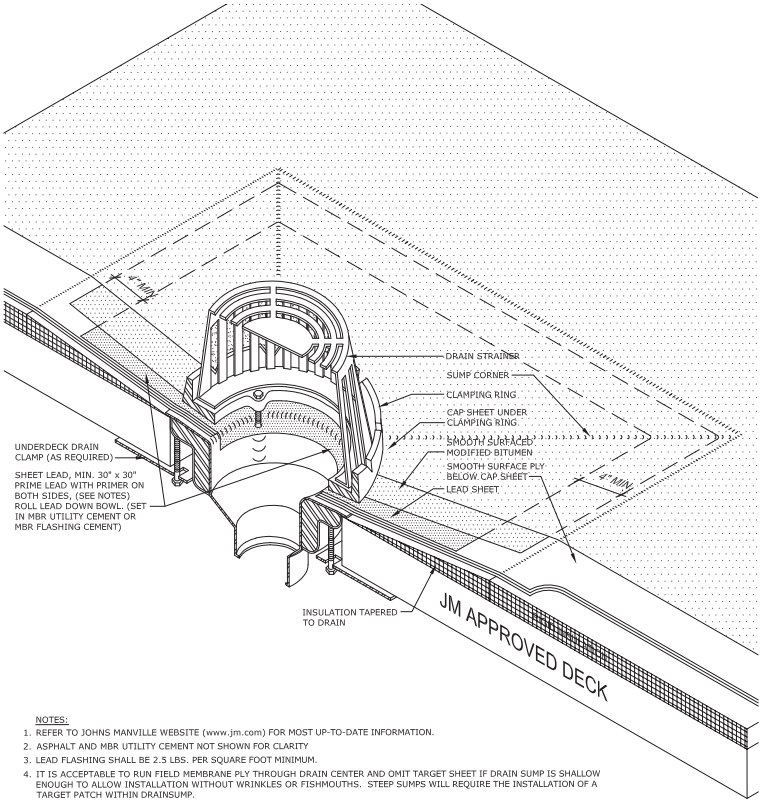
Metal



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.

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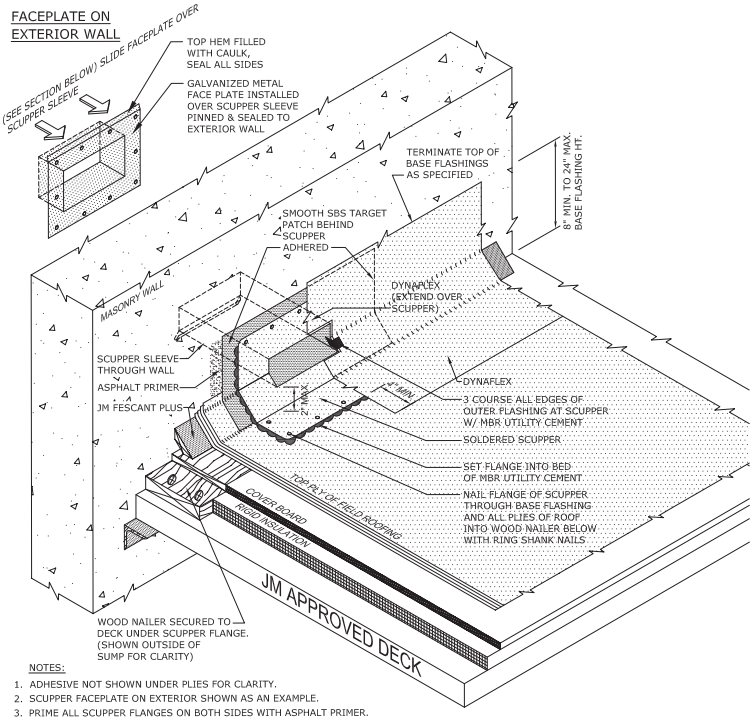
Overflow Metal Scupper



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. 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.

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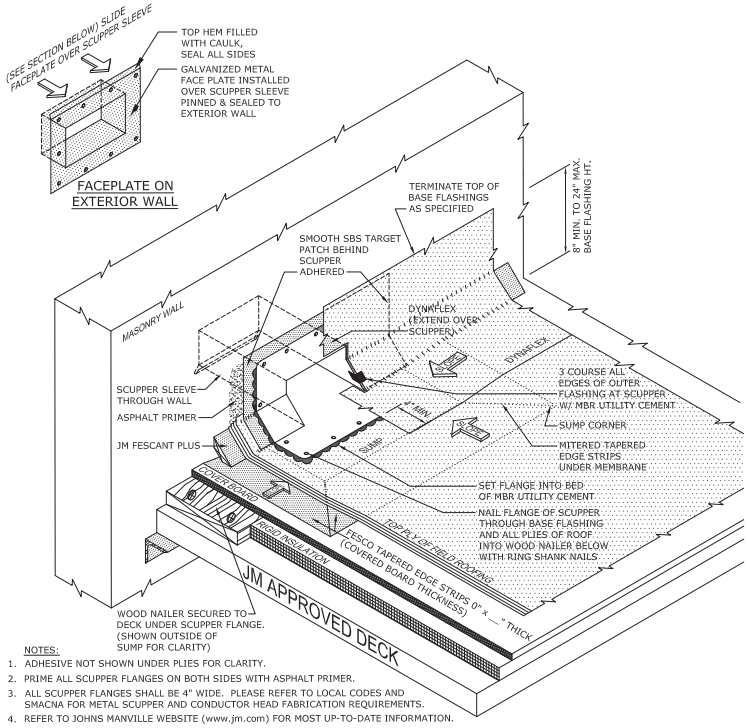
Primary Metal Scupper In Sump



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.
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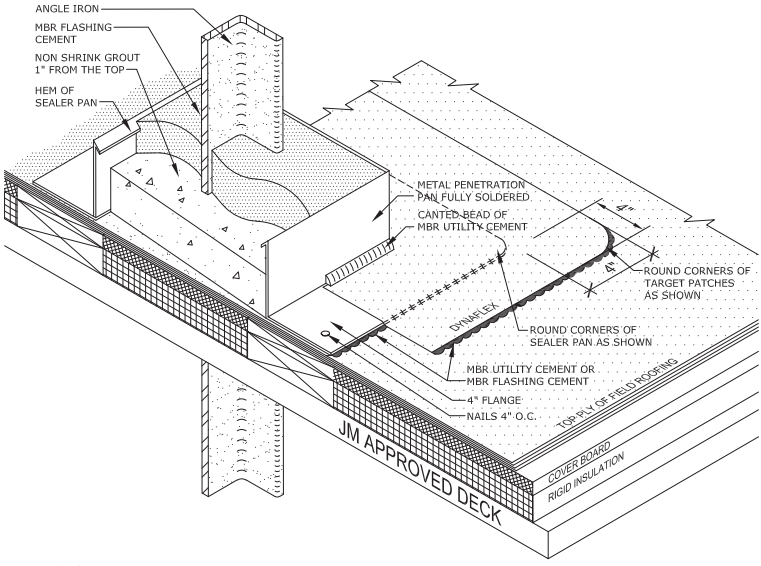
Penetration Pocket



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.
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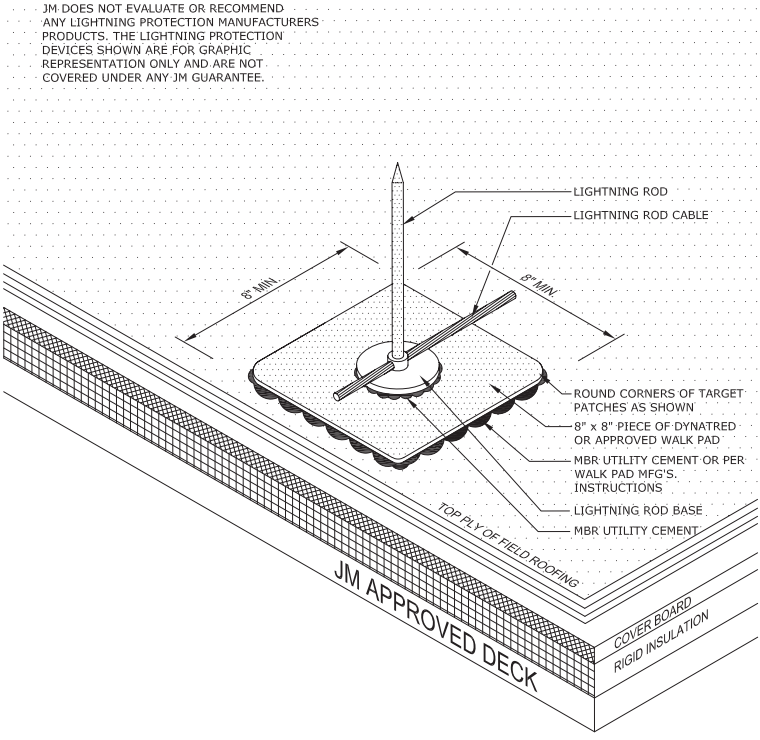
Lightning Rod, Surface Mount



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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.

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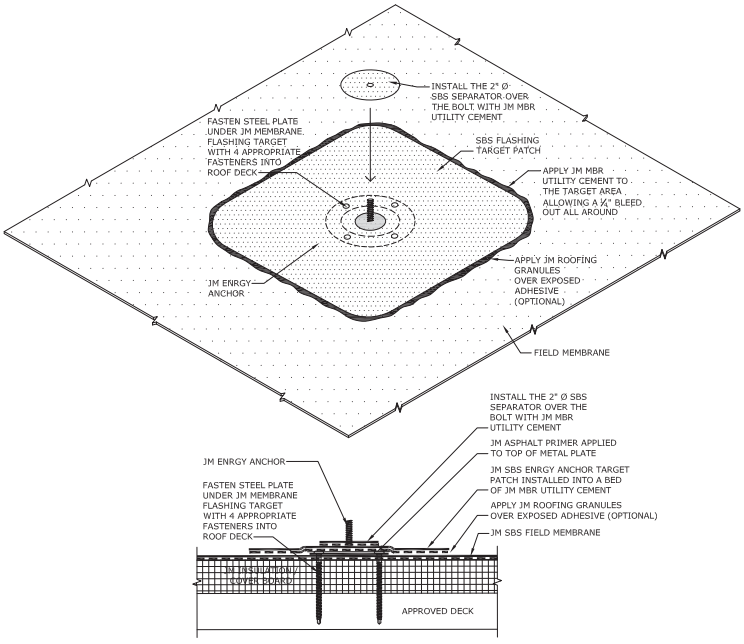
Refer to the Safe Use Instructions and product label prior to using this product.

JM ENRGY Anchor - SBS Adhered



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 OR METAL WORK 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. DO NOT INSTALL ENERGY ANCHORS OVER MEMBRANE SEAMS.

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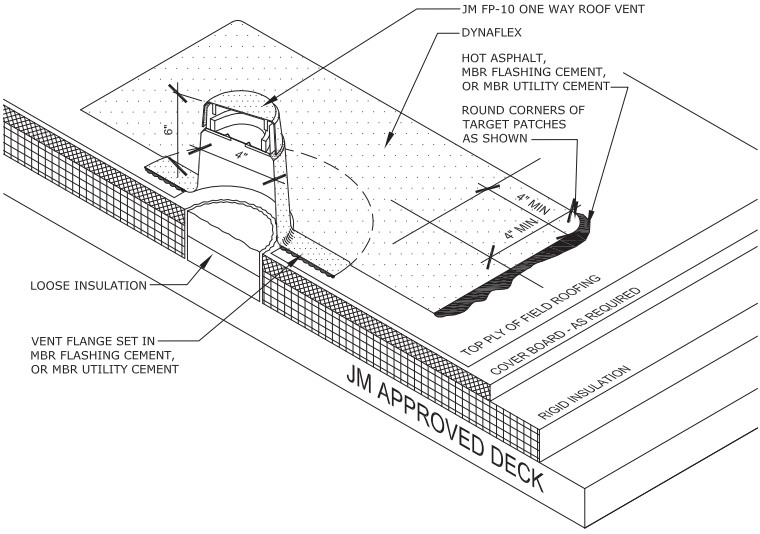
FP-10 One Way® Roof Vent



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.

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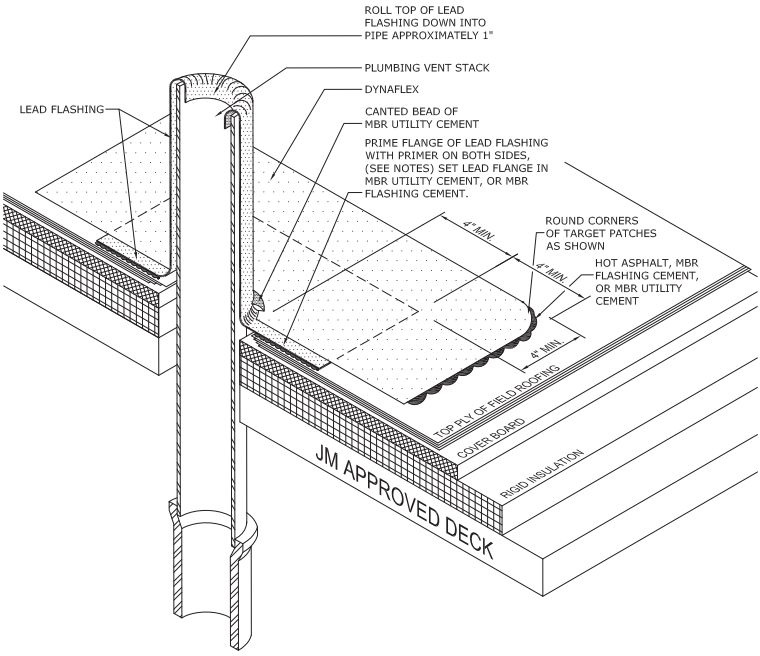
Plumbing, Lead



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.

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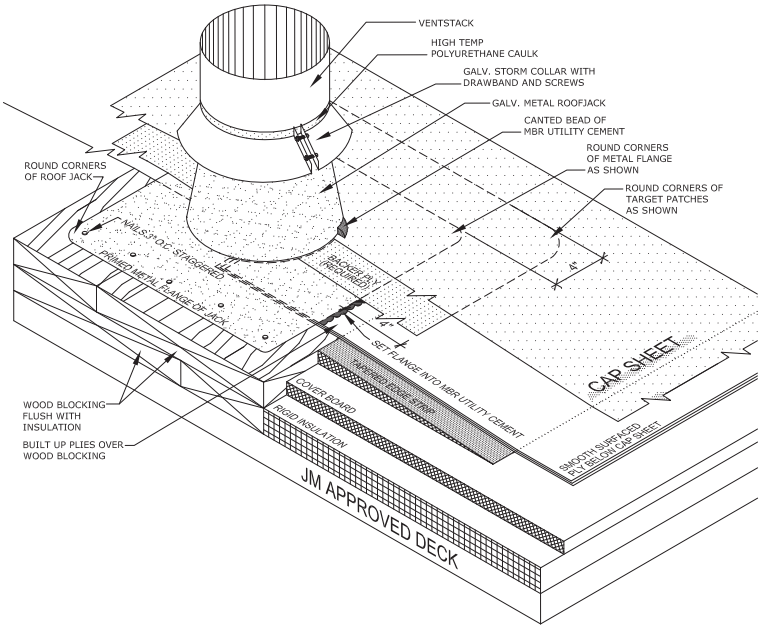
Vent Stack (Warm)



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
   PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND
2. 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.

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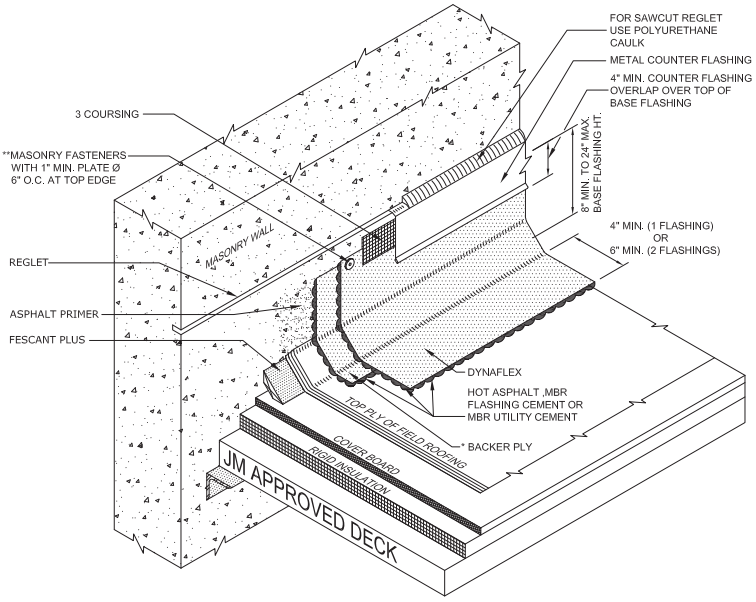
Masonry Wall with Counter Flashing



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 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 RECOMMENDED ON ALL VERTICAL FLASHING LAPS. IT IS REQUIRED ON INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIPS.
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

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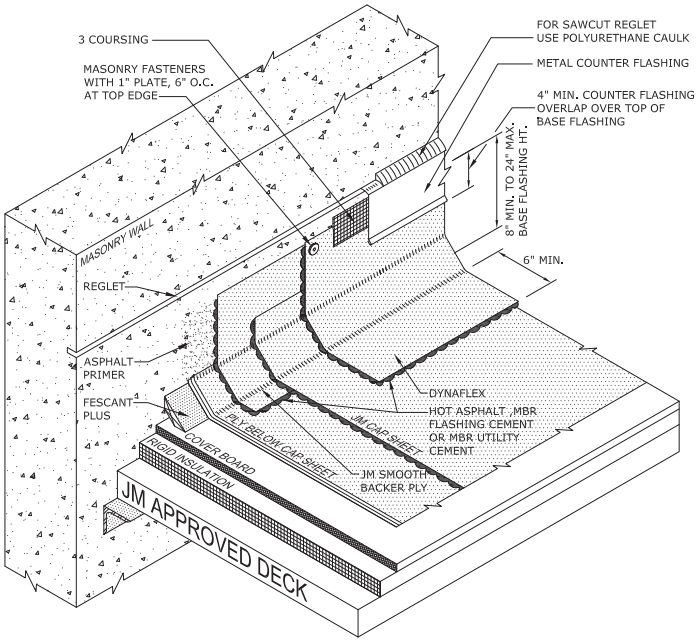
Two Ply Base Flashing for LB Masonary Wall Counter Flashing



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. 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 RECOMMENDED ON ALL VERTICAL FLASHING LAPS. IT IS REQUIRED ON INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIPS.
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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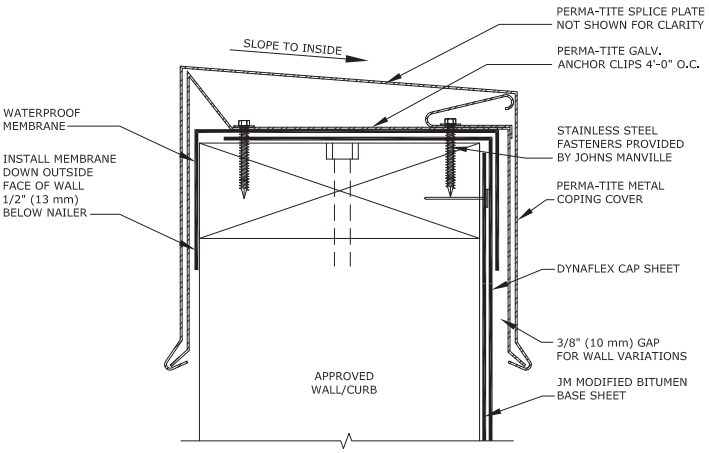
Refer to the Safe Use Instructions and product label prior to using this product.

Perma Tite Coping



NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. INSTALL PERMA-TITE 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.
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 RECOMMENDED ON ALL VERTICAL FLASHING LAPS. IT IS REQUIRED ON INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIPS.
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. 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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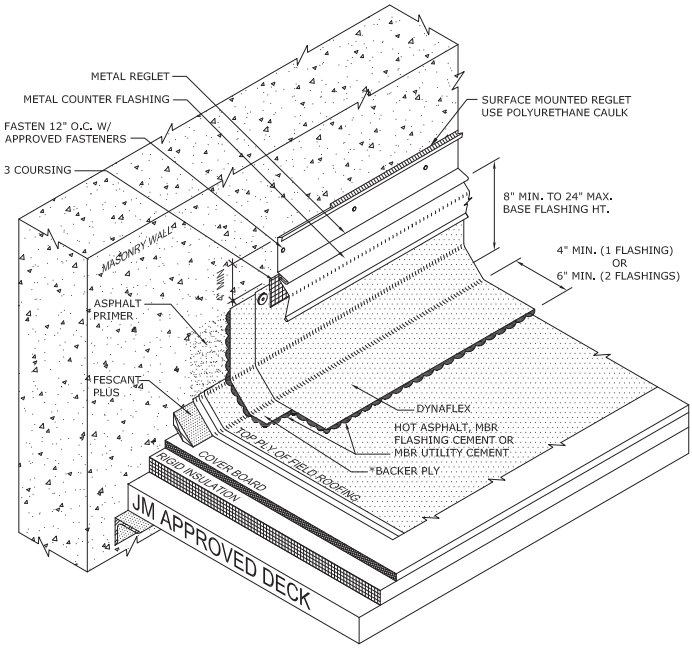
Base Flashing with Surface Mounted Counter Flashing



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. 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 RECOMMENDED ON ALL VERTICAL FLASHING LAPS. IT IS REQUIRED ON INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIPS.
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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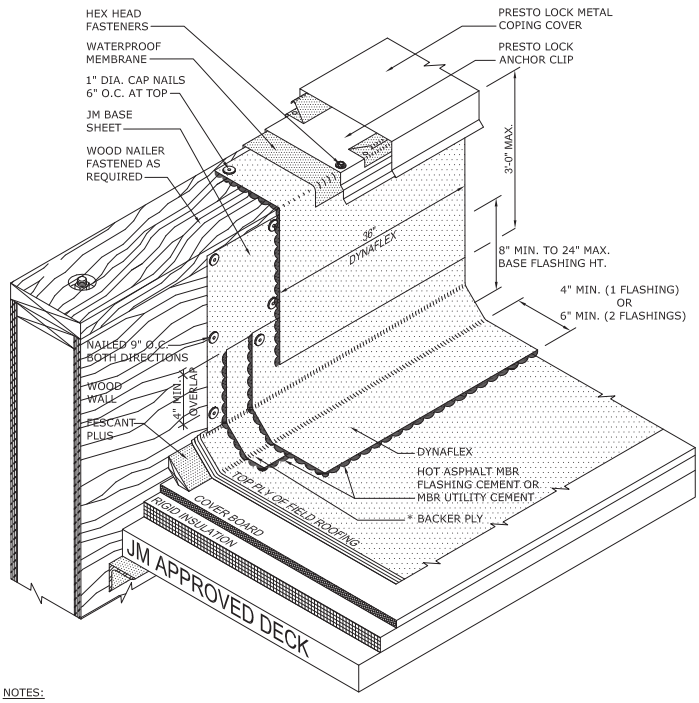
Wood Wall > 24" with Coping



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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. 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 RECOMMENDED ON ALL VERTICAL FLASHING LAPS. IT IS REQUIRED ON INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIPS.
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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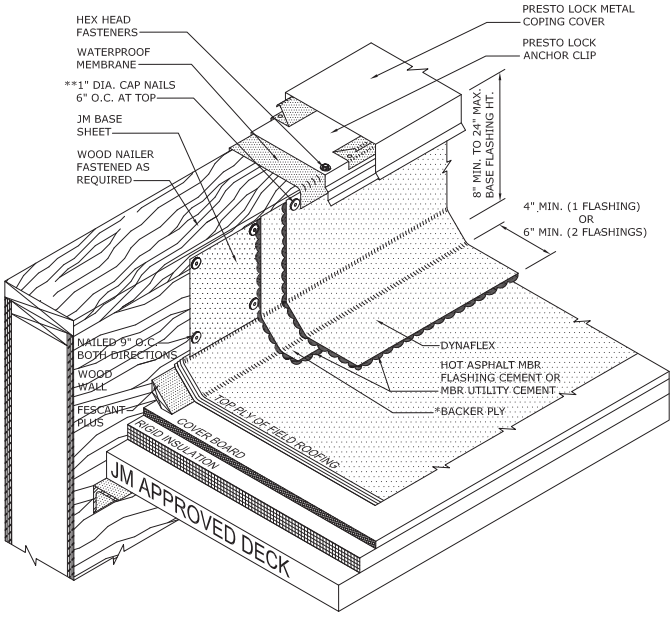
Wood Wall < 24" with Coping



NOTES:

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3. **A TERMINATION BAR FASTENED 6" O.C. IS AN ACCEPTABLE SECUREMENT ALTERNATIVE ALONG THE TOP EDGE OF THE FLASHING. INSTALL PRESTO LOCK COPING IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS INCLUDED WITH THE PRODUCT.
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.
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 RECOMMENDED ON ALL VERTICAL FLASHING LAPS. IT IS REQUIRED ON INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIPS.
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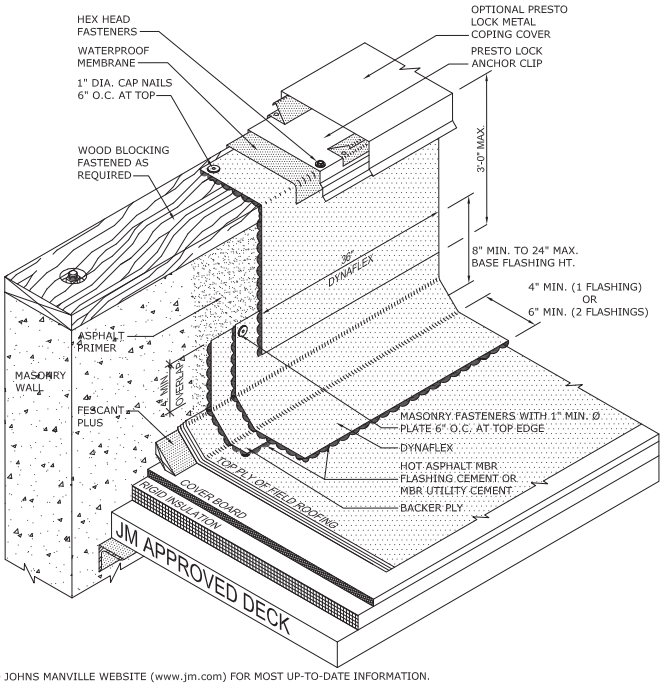
Masonry Wall > 24" with Coping



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. 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 RECOMMENDED ON ALL VERTICAL FLASHING LAPS. IT IS REQUIRED ON INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIPS.
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.

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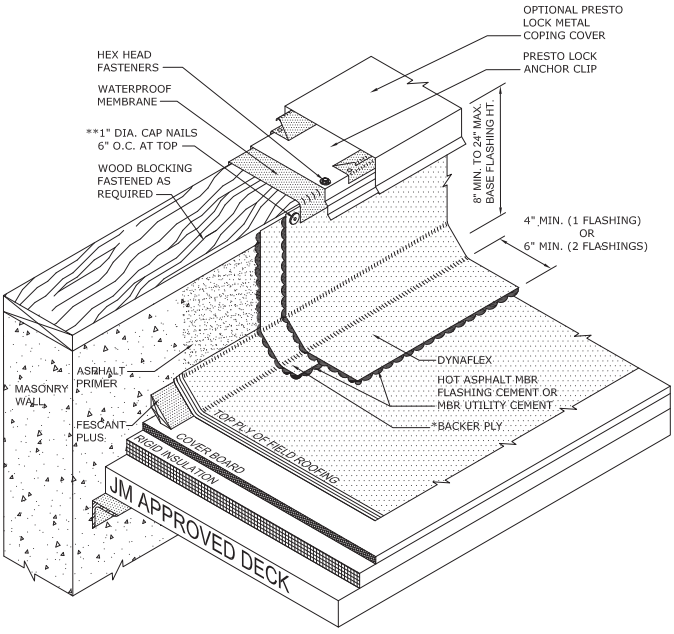
Masonry Wall < 24" with Coping



NOTES:

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3. **A TERMINATION BAR FASTENED 6" O.C. IS AN ACCEPTABLE SECUREMENT ALTERNATIVE ALONG THE TOP EDGE OF THE FLASHING.
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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 RECOMMENDED ON ALL VERTICAL FLASHING LAPS. IT IS REQUIRED ON INSIDE/OUTSIDE CORNERS EXTENDING PAST LEADING EDGE OF CANT STRIPS.
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.

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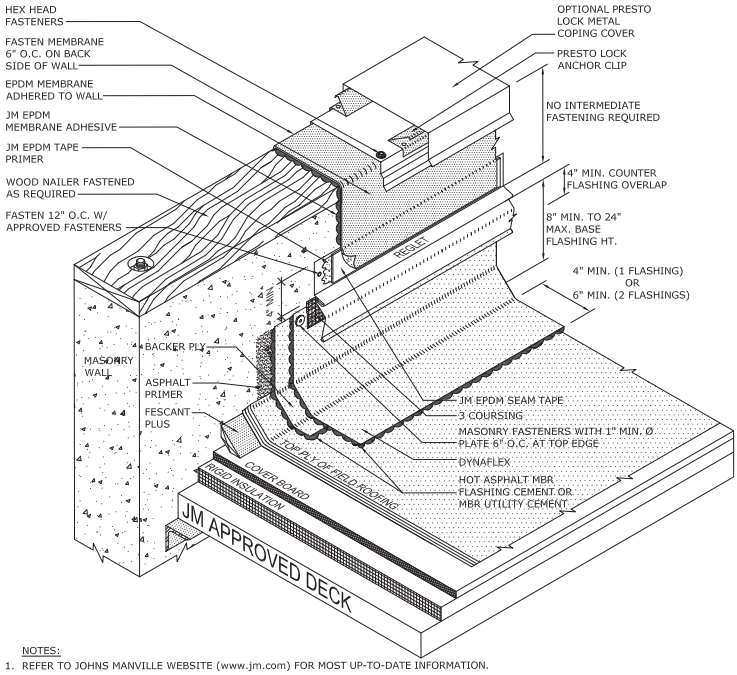
EPDM Wall Covering with Bituminous Base Flashing



NOTES:

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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.
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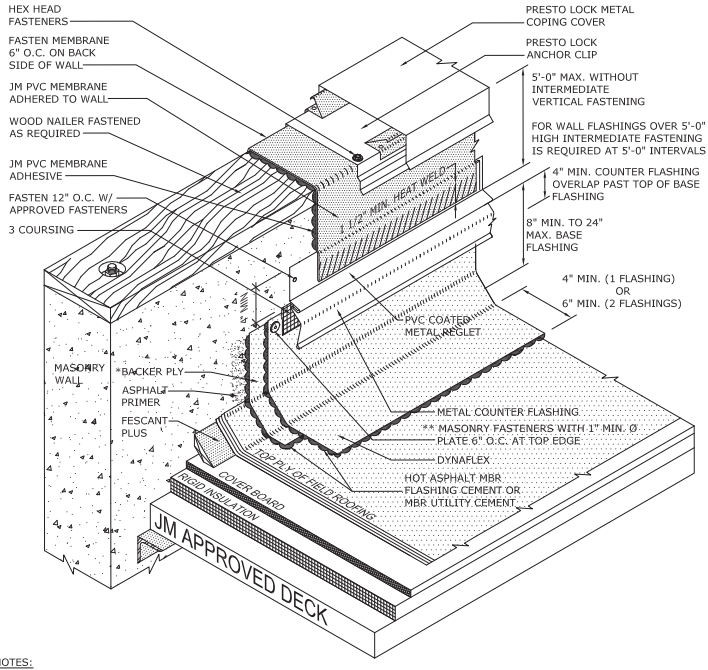
Hot & Cold PVC Wall Covering with Bituminous Base Flashing



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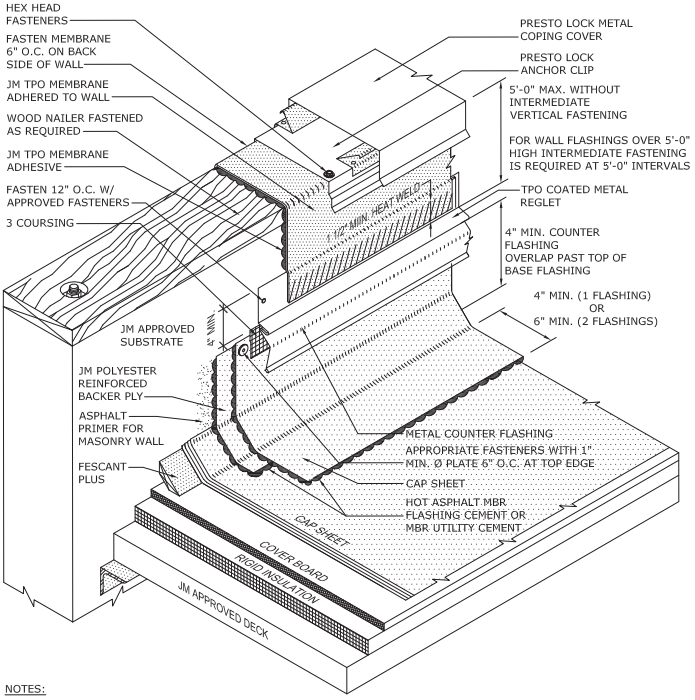
TPO Wall Covering with Bituminous Base Flashing



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.
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6. PLEASE SEE BITUMINOUS FLASHING SPECIFICATIONS AND THE JM TPO APPLICATION GUIDE FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
7. 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.

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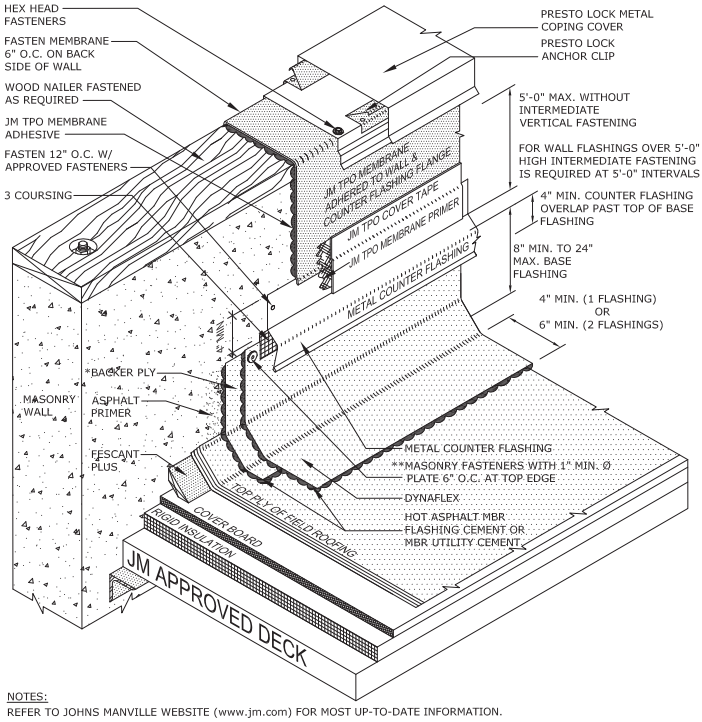
TPO Wall Covering with Bituminous Base Flashing (Alternate)



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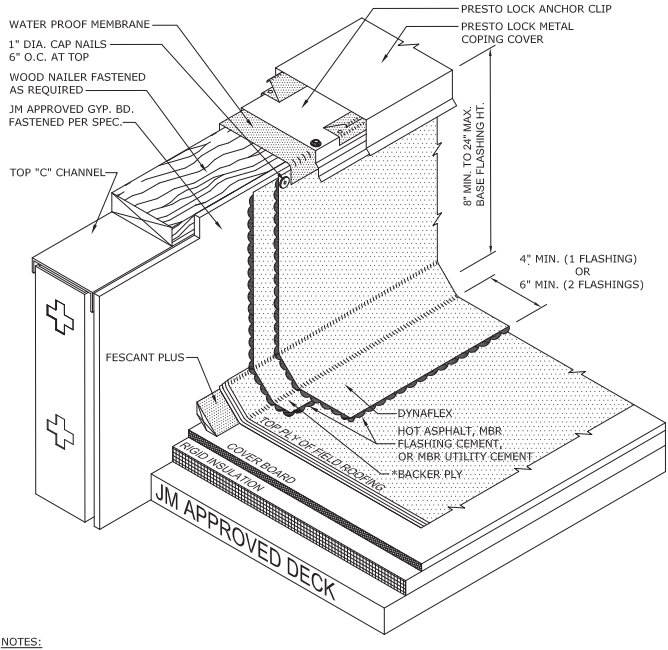
Gypsum Wall on Metal Studs < 24" w/Coping



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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.

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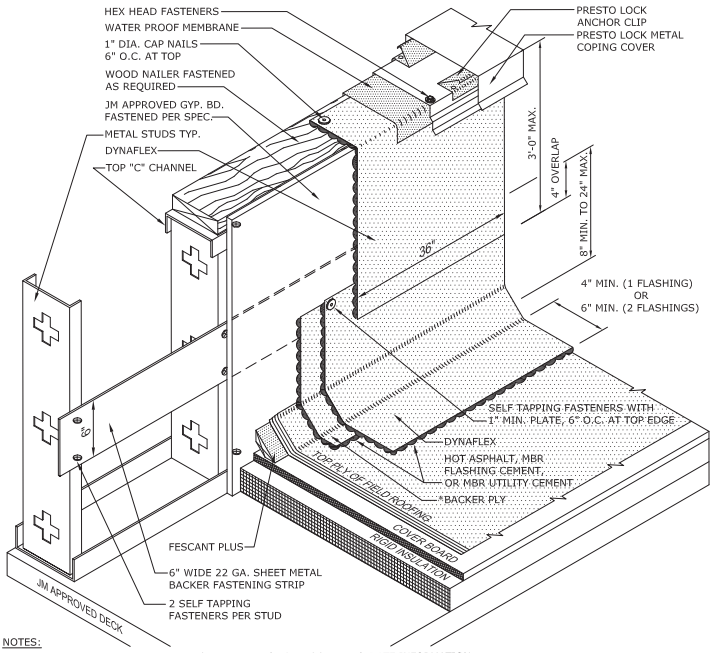
Gypsum Wall on Metal Studs > 24" w/Coping



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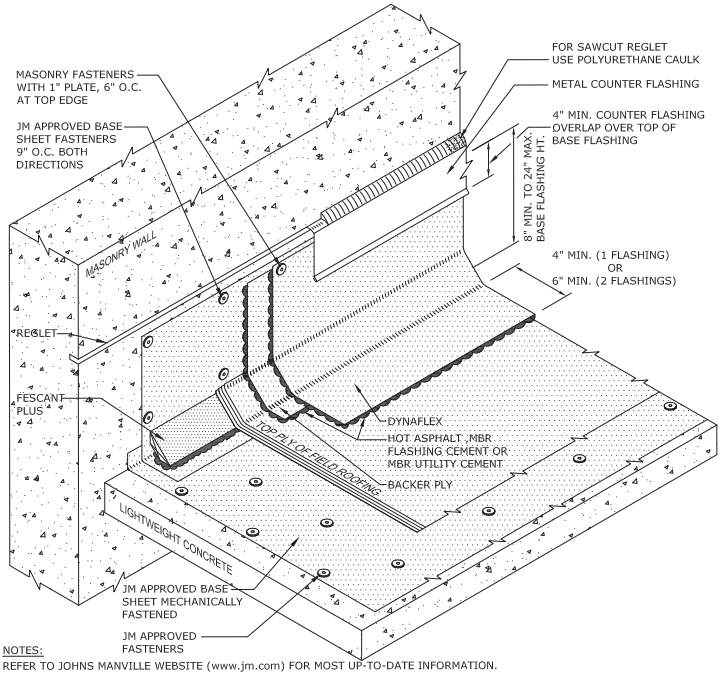
Base Flashing for Venting Lightweight Concrete



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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.
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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 and SAR 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.

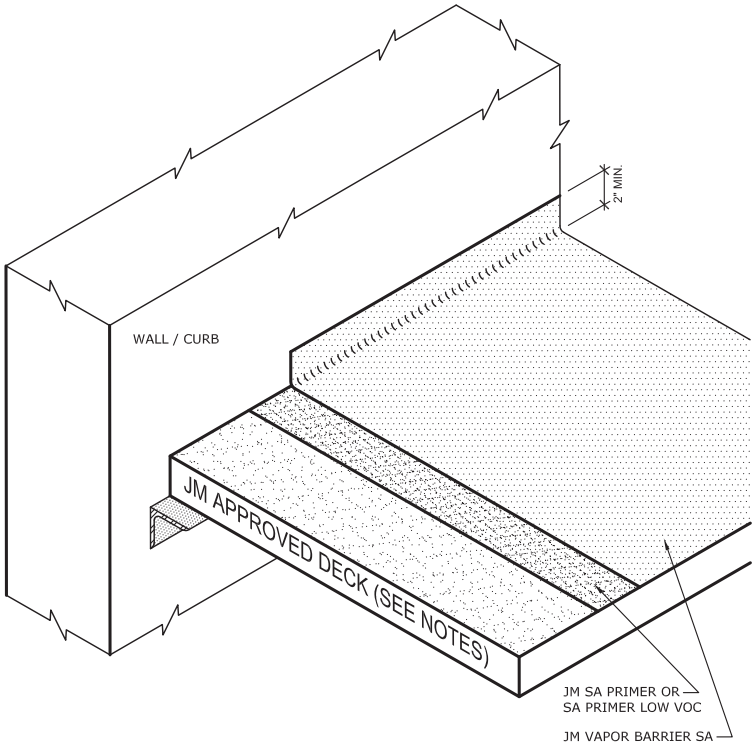
Vapor Barrier SA and SAR

Roll out Vapor Barrier SA or SAR 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.

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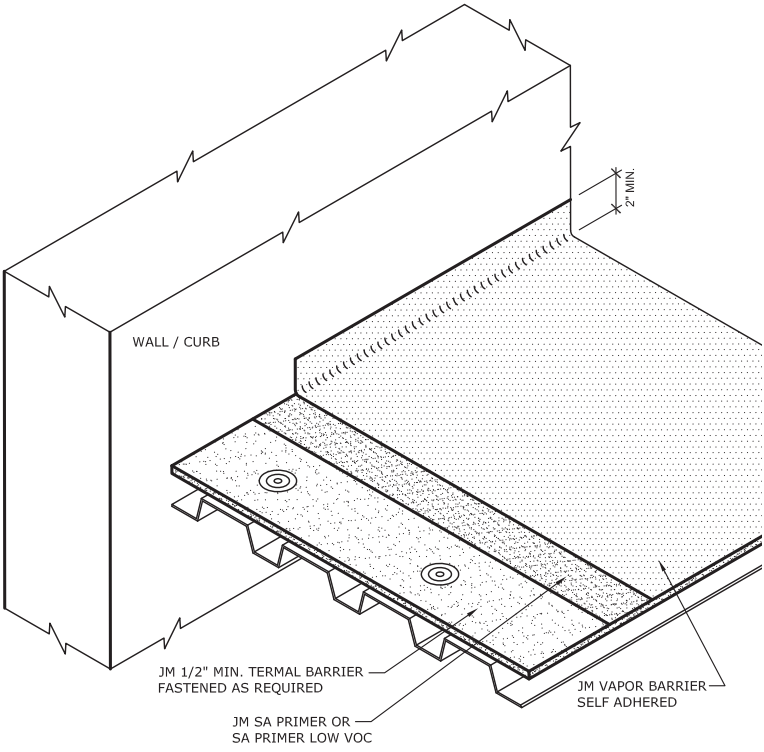
JM Vapor Barrier SA - Wall Base Detail (Alt)



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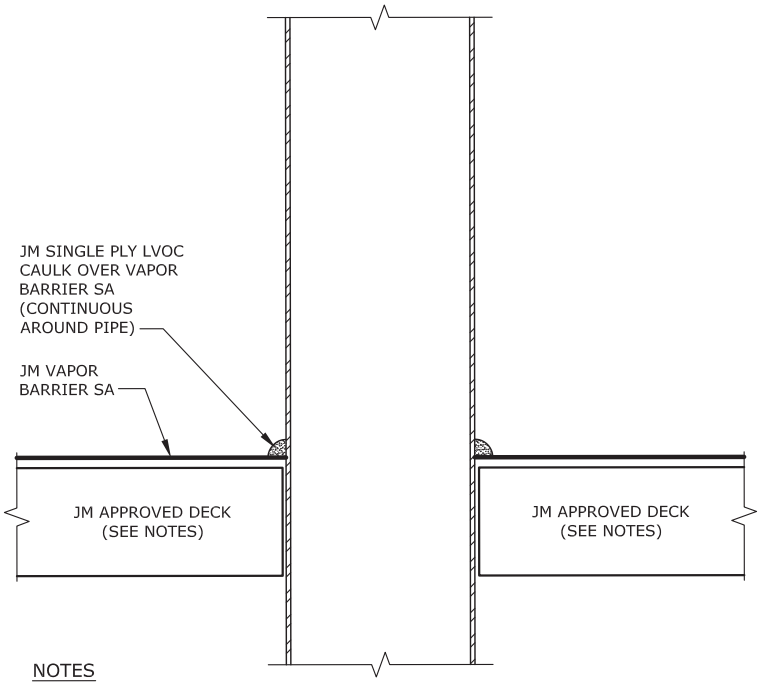
JM Vapor Barrier SA - Pipe Penetration Detail



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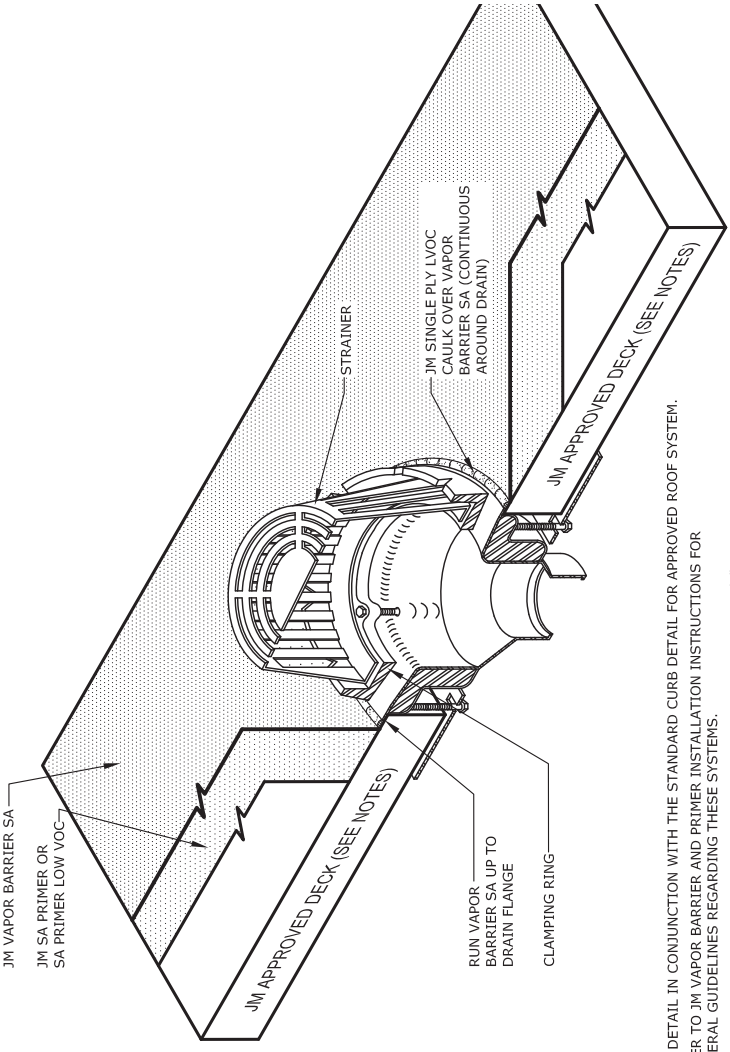
JM Vapor Barrier SA - Drain Detail



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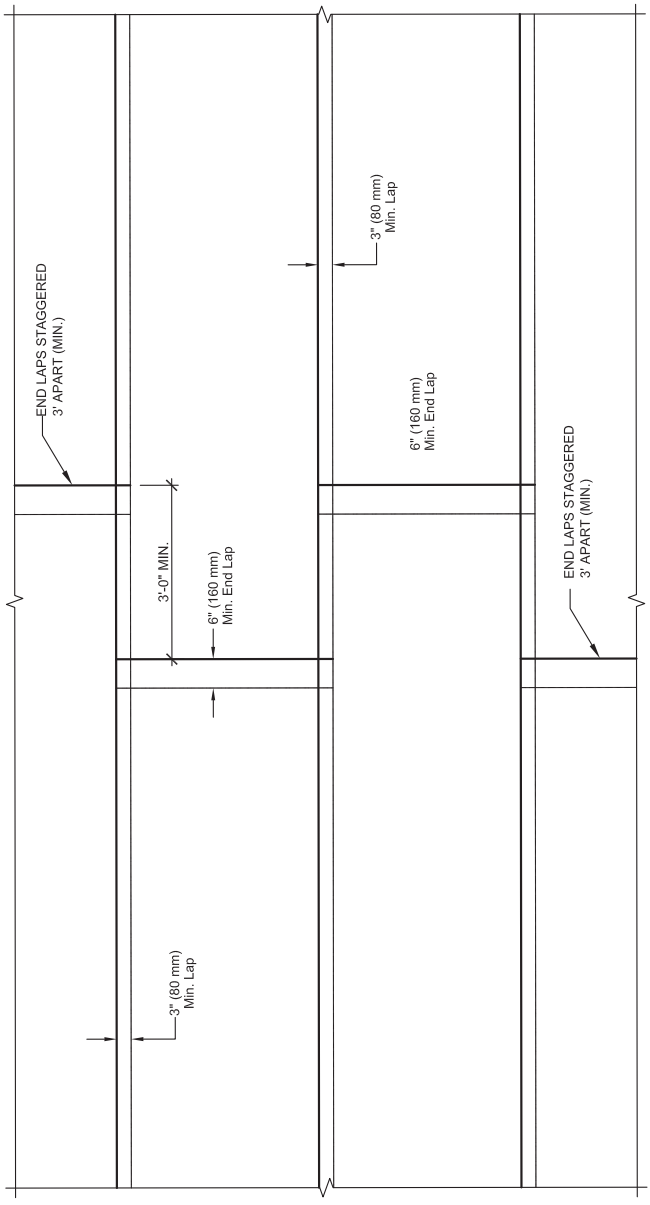
JM Vapor Barrier SA - Detail at Field Laps



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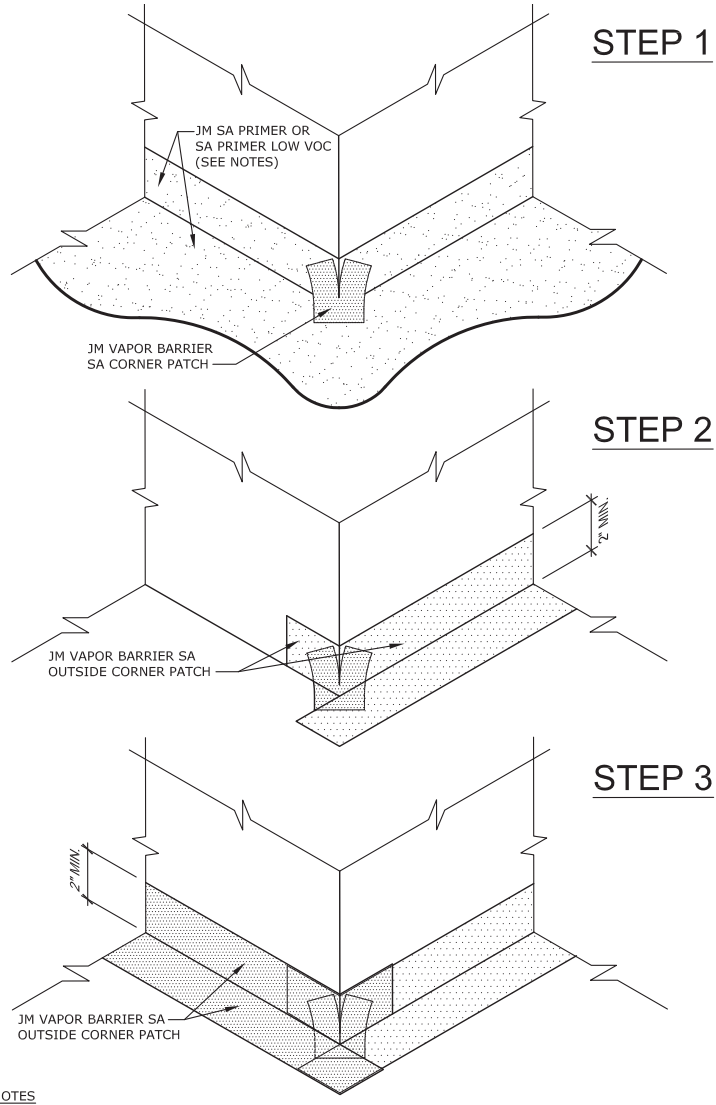
JM Vapor Barrier SA - Outside Curb Detail



NOTES

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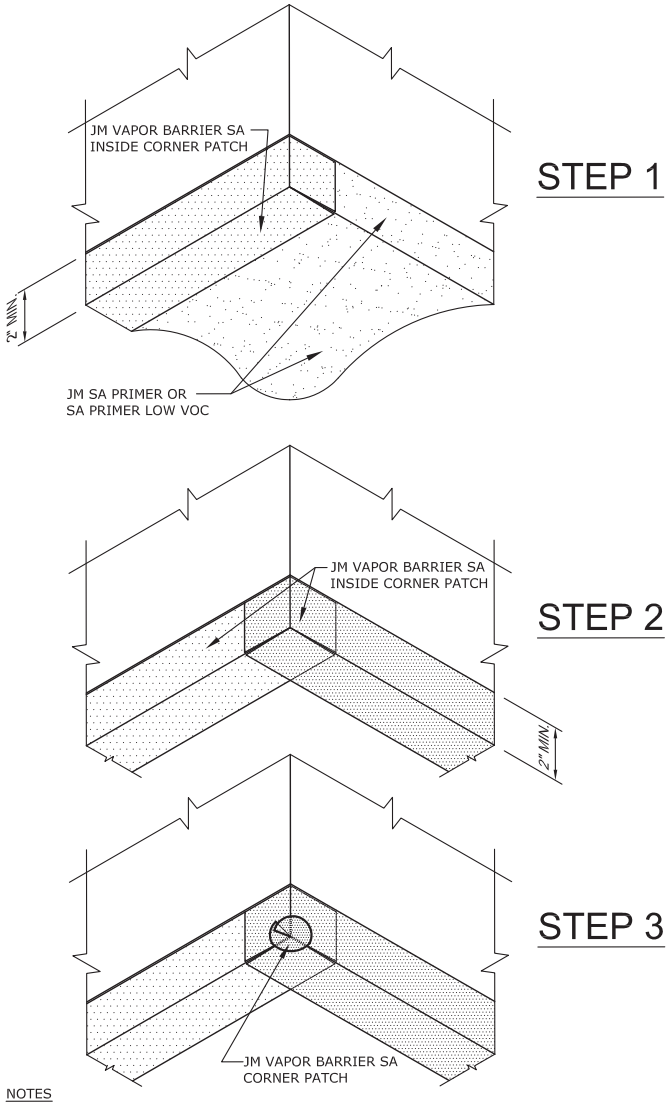
JM Vapor Barrier SA - Inside Curb Detail



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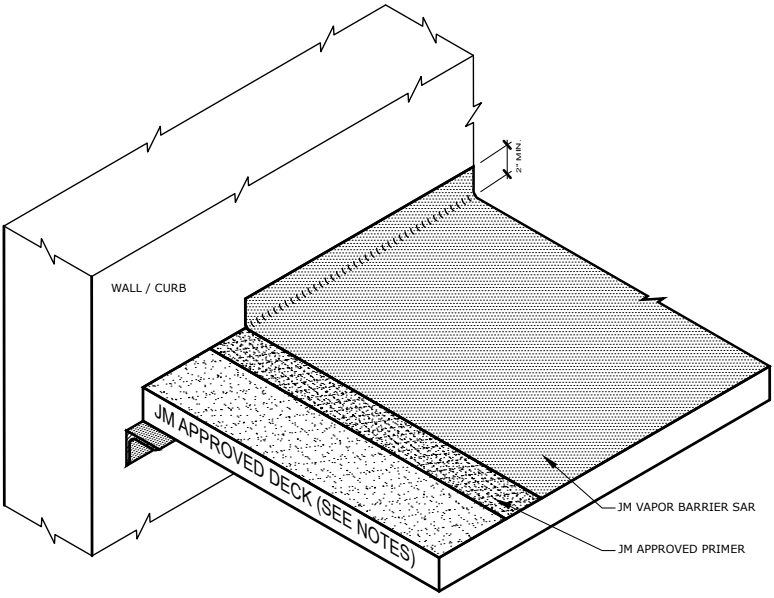
JM Vapor Barrier SAR - Wall Base Detail



NOTES

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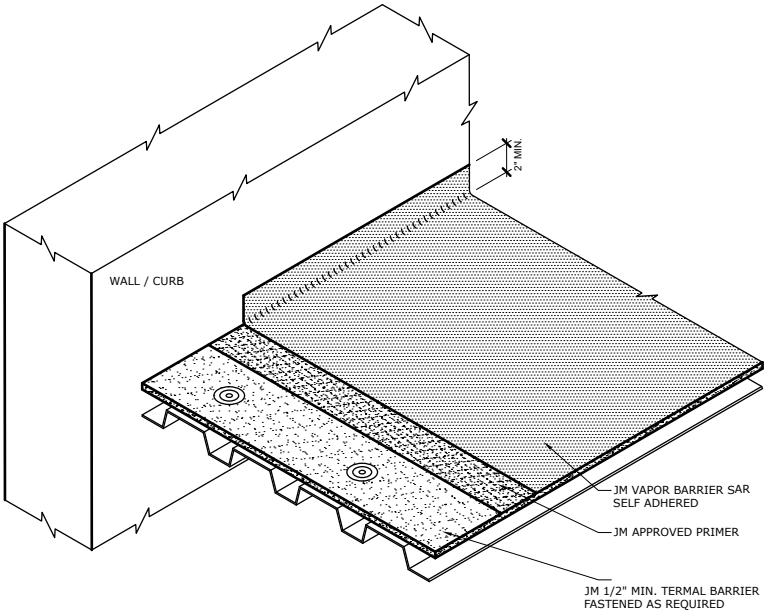
JM Vapor Barrier SAR - Wall Base Detail (Alt)



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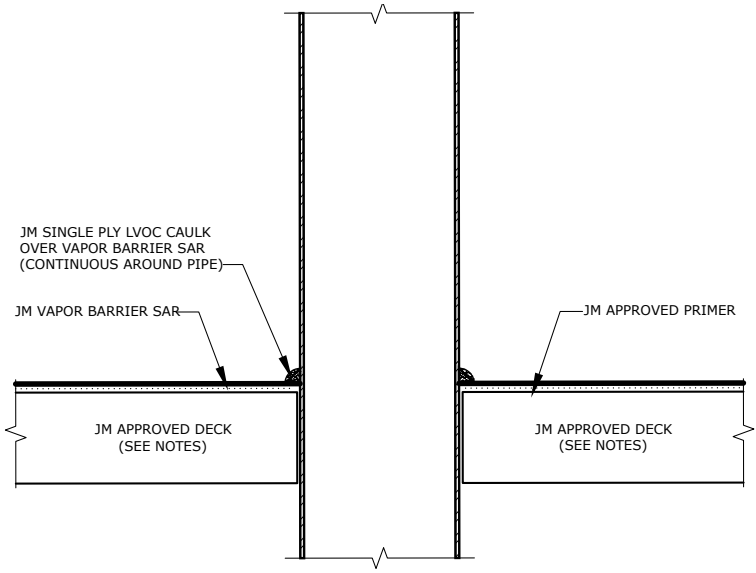
JM Vapor Barrier SAR - Pipe Penetration Detail



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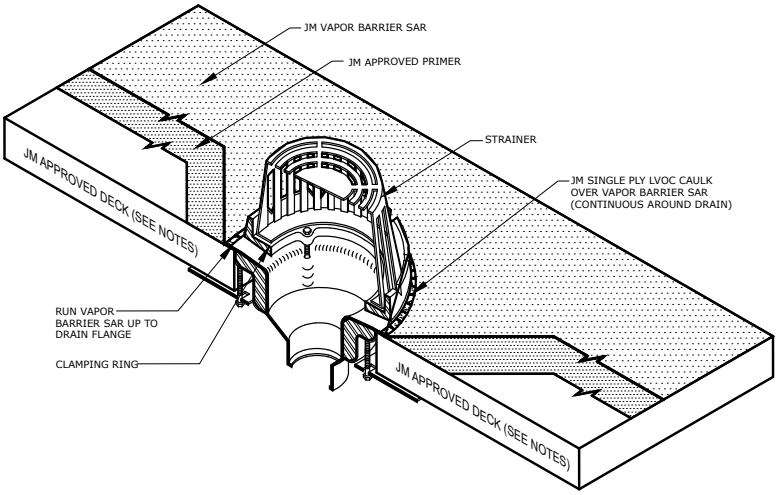
JM Vapor Barrier SAR - Drain Detail



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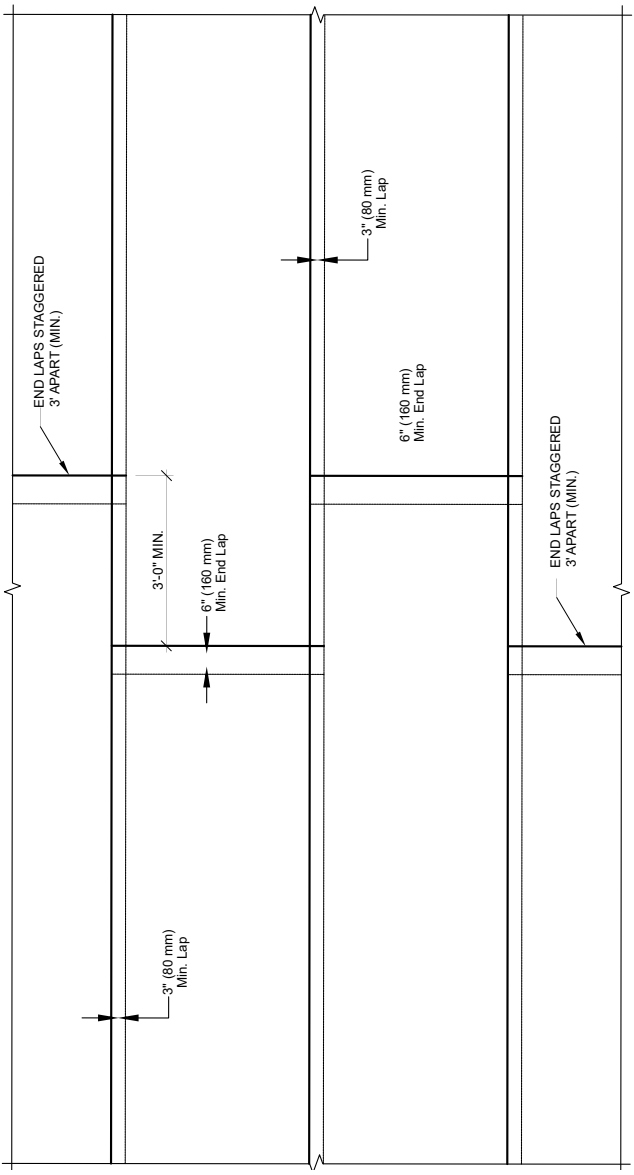
JM Vapor Barrier SAR - Detail at Field Laps



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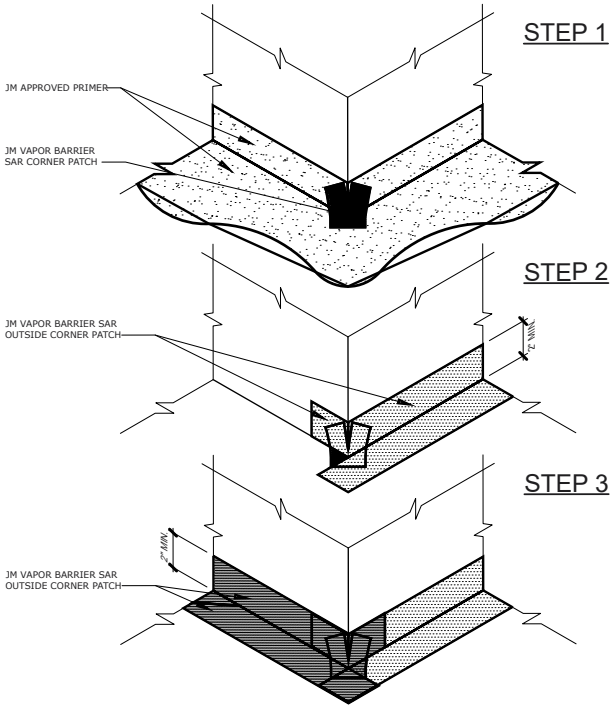
JM Vapor Barrier SAR - Outside Curb Detail



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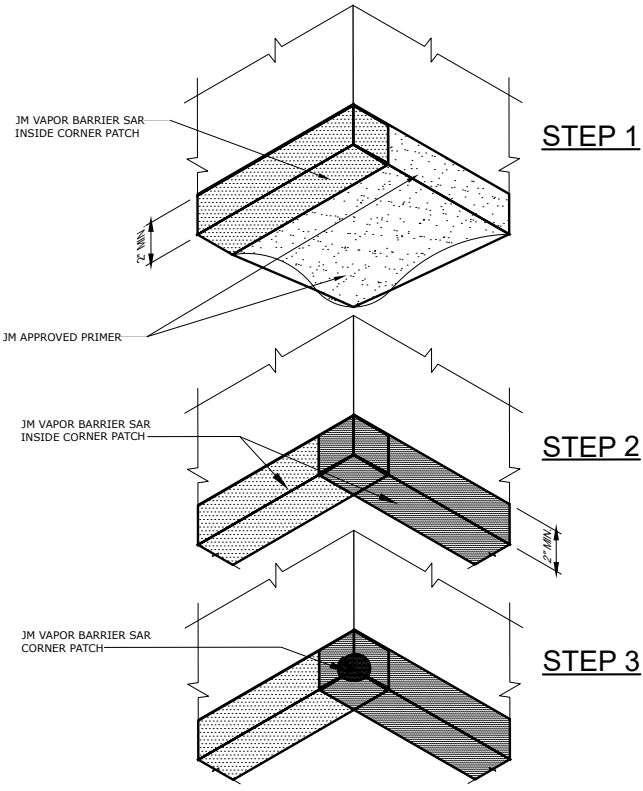
JM Vapor Barrier SAR - Inside Curb Detail



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