



ChannelDry Roof Assembly for Lightweight Structural Concrete Decks

Adhered, Ballasted or Induction Welding Attachment Method

July 2017

This document includes guidelines for roofing assembly installations over newly poured lightweight structural concrete decks (after achievement of full structural strength) or for retro-fitting (with tear off) over existing structural concrete deck.

The assembly described herein includes ChannelDry EPS and Carlisle SecurShield Polyiso or Securshield Polyiso HD, one-way and two-way roof vents, in addition to any of the Carlisle Single-ply membranes (EPDM, TPO or PVC) (**60-mil thick minimum**).

A. Description

The roofing assembly incorporates the ChannelDry EPS insulation directly over lightweight structural concrete deck with the subsequent layer(s) of SecurShield Polyiso Insulation or SecurShield Polyiso HD Cover Board.

With any of the membranes listed below, one-way roof vents are required at the rate of 1 per 2,000 SF and shall be positioned closer to the perimeter and two-way roof vents in the field of the roof at the rate of 1 per 8,000 SF. For projects with individual roof sections less than 2,000 SF, Contact Carlisle for vent number recommendations, also refer to appropriate detail for recommended locations.

Regardless of the membrane attachment method, Adhered, Induction Welded or Ballasted, a continuous air seal must be provided by sealing any gaps or joints at walls, around penetrations, roof projections and around roof drains. Refer to appropriate detail at the end of this document.

1. Adhered Assemblies – Using EPDM, TPO or PVC, the ChannelDry EPS Insulation may be fastened directly to the structural deck at a rate of 1 fastener and plate per 4 SF. With subsequent layers of insulation or coverboard set in Flexible FAST bead adhesive at 6" O.C. The membrane shall be fully adhered using the appropriate bonding adhesive per Carlisle's Thermoset or Thermoplastic Specification.

NOTE: In lieu of fastening and adhering individual layers of insulation, fasteners may be secured through all layers of insulation directly to concrete deck.

2. Induction Welded Assemblies – Using TPO or PVC, the ChannelDry EPS Insulation is overlaid with SecurShield Polyiso or SecurShield Polyiso HD, Carlisle's CD-10 or HD-14-10 fastener and TPO or PVC Induction Welding Plates are used to secure both layers to the structural deck. The fastening density of the plates and fasteners shall be in compliance the Induction Welding Attachment (Attachment I) of the Thermoplastic Specification.
3. Ballasted Assemblies – This option which is only available with Sure-Seal EPDM. Loose-lay the ChannelDry EPS and the Securshield Polyiso, directly over the concrete deck. If insulation securement is specified (not required for Carlisle warranty) it must be accomplished by mechanically fastening the ChannelDry EPS and adhering the subsequent layer(s) of SecurShield Insulation. Consult the Carlisle published Specification for Ballasted Roof Assemblies, for additional requirements not listed herein.

Any of the assemblies described herein, using 60-mil membrane, are eligible for a 5, 10, 15 or 20 Year Membrane System Warranty and Warranty wind speed up to 72 mph. For higher wind speed coverage, project may be submitted to Carlisle for Approval.

NOTE: This system is not for use on Cold Storage/Freezer Buildings. Such projects may be submitted to Carlisle for other design options.

B. Quality Assurance

1. The specified roofing system must be installed by a Carlisle Authorized Roofing Applicator in compliance with drawings and specifications as approved by Carlisle SynTec.
2. Do not install this assembly before the concrete deck has reached its' initial structural strength. Project Engineer must be consulted prior to job start-up.

C. Submittals

1. Shop drawings must be submitted to Carlisle by the Carlisle Authorized Roofing Applicator along with a completely executed Notice of Award (Page 1 of Carlisle's Request For Warranty form) for approval. Approved shop drawings are required for inspection of the roof and on projects where on-site technical assistance is requested.
2. Upon completion of the installed work, submit copies of the manufacturer's final inspection to the specifier prior to the issuance of the manufacturer's warranty.

D. Products

Products listed in "Part II" of the Carlisle Thermoset/Thermoplastic Roofing System Specification can be used as part of the ChannelDry Roofing System.

1. **ChannelDry EPS:** A 4' x 4' x 2" thick, closed cell, expanded polystyrene (Type IX - 1.8 pcf (min.) nominal density) board with 5/8" wide channels routed, bi-directionally, on the bottom facer. The 2" thick board has an R-Value of 7.1.
2. **One- and Two-Way Pressure Relief Vent:** Heavy-gauge spun aluminum vent are engineered to reduce moisture within the roofing system and release trapped air pressure within the building. Base diameter 11", Stack diameter at base of 5" and overall height of 8". For identification purposes, One-Way Pressure Relief vent is marked with a single dimple on the top (cap) versus two dimples for the two-way pressure relief vents.
3. **Flexible FAST Adhesive:** A bead-applied, two-component polyurethane, construction grade, low-rise expanding foam adhesive used for attaching approved insulations to other approved insulations and coverboards. Also may be used to fill voids between deck to wall junctions and around pipe penetrations.
4. **VapAir Seal Flashing Foam** – a low pressure foam system that utilizes a non-flammable blowing agent. The foam is used to seal penetrations and reduce air leakage, especially at roof perimeters.
5. **Sure-Seal (black)/Sure-White (white) Pressure-Sensitive Elastoform® Flashing:** A 6" X 100' and 9" or 12" wide by 50' long, 60-mil thick Sure-Seal or Sure-White **uncured** EPDM Flashing laminated to a 30-mil Pressure-Sensitive TAPE used in conjunction with EPDM/TPO/PVC Primer.

Sure-Seal/Sure-White uncured Pressure-Sensitive Elastoform Flashing is used to flash one-way and two-way roof vents.
6. **Sure-Flex PVC non-reinforced Flashing** is 80-mil thick (white on gray) and available in rolls **12" and 24" wide by 50' long**. Flashing is used for field fabricated flashings for one-way and two-way roof vents.
7. **RhinoBond or Isoweld TPO or PVC Welding Plate:** A 3" diameter, 0.028" thick, corrosion-resistant steel plate with hot melt coating on the top surface. The plate is used in conjunction with Carlisle's HP-X Fasteners to attach the roofing assembly and is activated using the RhinoBond or Isoweld Induction Welding Tool.
8. **Sure-Seal or Sure-White SecurTAPE:** A 3" or 6" wide by 100' long splice tape used for attaching the one-way and two-way roof vents to the membrane before flashing the vent.
9. For other products needed to complete roof assembly, SecurShield Polyiso and Securshield Polyiso HD, refer to

listings in Part II of the Thermoset and Thermoplastic Specification.

E. Execution

Follow current specifications for installing roof membranes and seaming per specific membrane. [Sure-Seal (EPDM), Sure-Weld (TPO) or Sure-Flex (PVC)].

1. General

- a. When feasible, begin the application at the highest point of the highest roof level and work to the lowest point to prevent moisture infiltration and minimize construction traffic on completed sections. This will include completion of all flashings and terminations.

2. Roof Deck Criteria and Preparation

- a. Roofing Assembly described herein intended for use on newly poured structural concrete decks (normal and lightweight) once they have reached their designed structural strength.
- b. Surface imperfections, fins or cracks, must be documented and reported to the specifier, general contractor and building owner for assessment. The Carlisle Authorized Roofing Applicator shall not proceed unless the defects are corrected.
- c. The substrate must be free of debris, foreign materials and must be free of accumulated water, ice, snow or frost.
- d. Cracks or voids in the substrate greater than 1/4" must be filled with Flexible FAST Adhesive, VapAir Seal Flashing Foam or urethane sealant (by others).
- e. For Deck-to-Wall Junctions and roof penetrations, fill gap with foam backer rod and Flexible FAST Adhesive, VapAir Seal Flashing Foam or urethane sealant (by others). Refer to Detail MM-2.

F. Installation

- 1. Follow guidelines above for the installation and air sealing of roof deck perimeters and penetrations.
- 2. Proceed with installation roofing system as described in this section and in accordance with Carlisle published Specifications for the specific membrane type.
- 3. After installation of the roofing membrane, mark locations for one-way and two-way roof vents. And cut a 5" diameter core through membrane and insulating material down to the concrete deck. Remove excess material.
- 4. Place the One-Way and Two-Way Roof Vents centered over void. Follow applicable details depending on type of membrane used. Flash One-Way and Two-Way Roof Vent per requirements outlined in the detail.
- 5. Repeat procedure at each vent location to comply with the required number of vents needed.
- 6. Complete all other flashing details per specification for membrane type used, refer to Carlisle published specifications.

G. Associated Installation Details

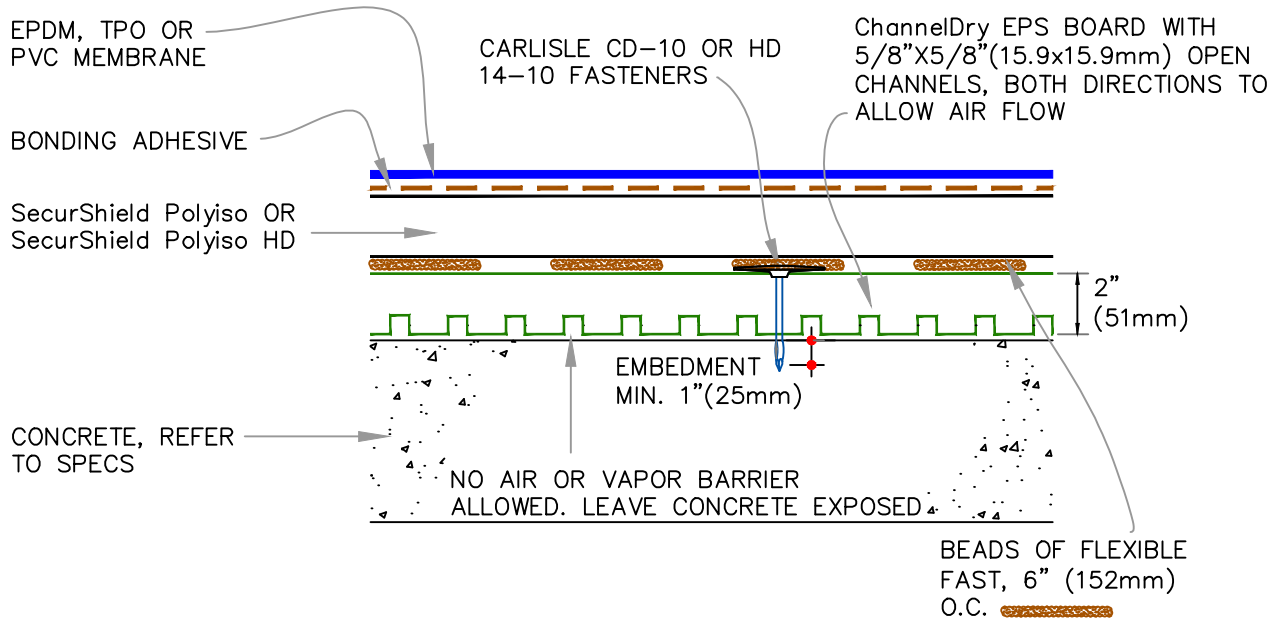
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|------------------------------------------------------------|------|
| Roof Assemblies Page 1 | MM-1 |
| Roof Assemblies Page 2 | MM-2 |
| Air Seal Detail: Roof-To-Wall & Pipe Penetration | MM-3 |
| Vent Flashing Adhered or Induction Welded Assemblies | MM-4 |
| Vent Flashing for Ballasted EPDM Assembly | MM-5 |
| Roof Plan – Typical Layout of Vents | MM-6 |

End of Section

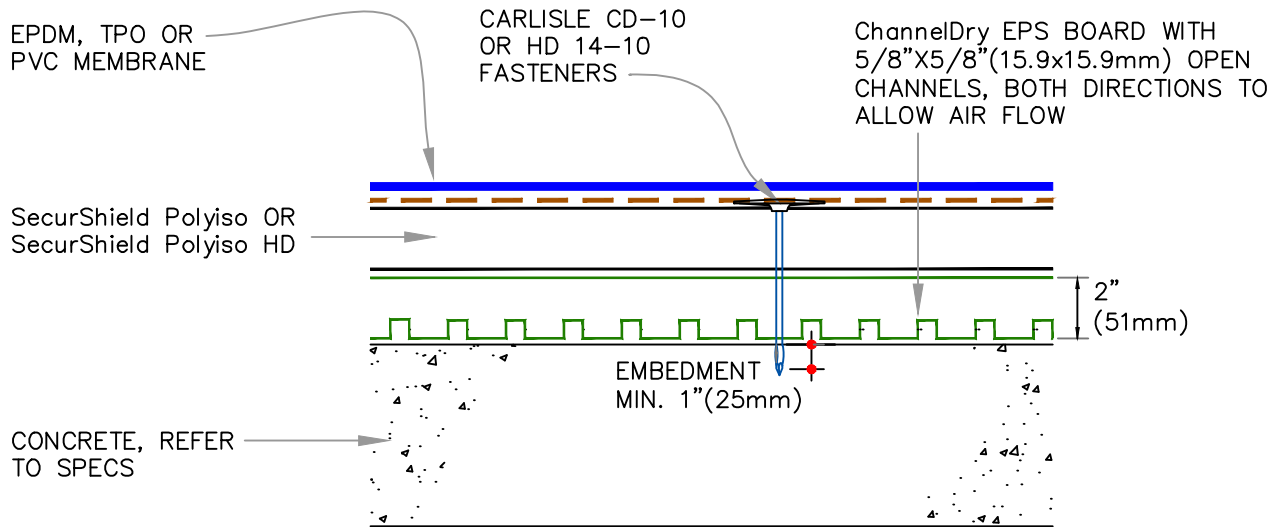
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This specification represents the applicable information available at the time of its publication. Owners, specifiers and Carlisle Authorized Roofing Applicators should consult Carlisle or their Carlisle Manufacturer's Representative for any information, which has subsequently been made available.

Review the appropriate Carlisle warranty for specific warranty coverage, terms, conditions and limitations.

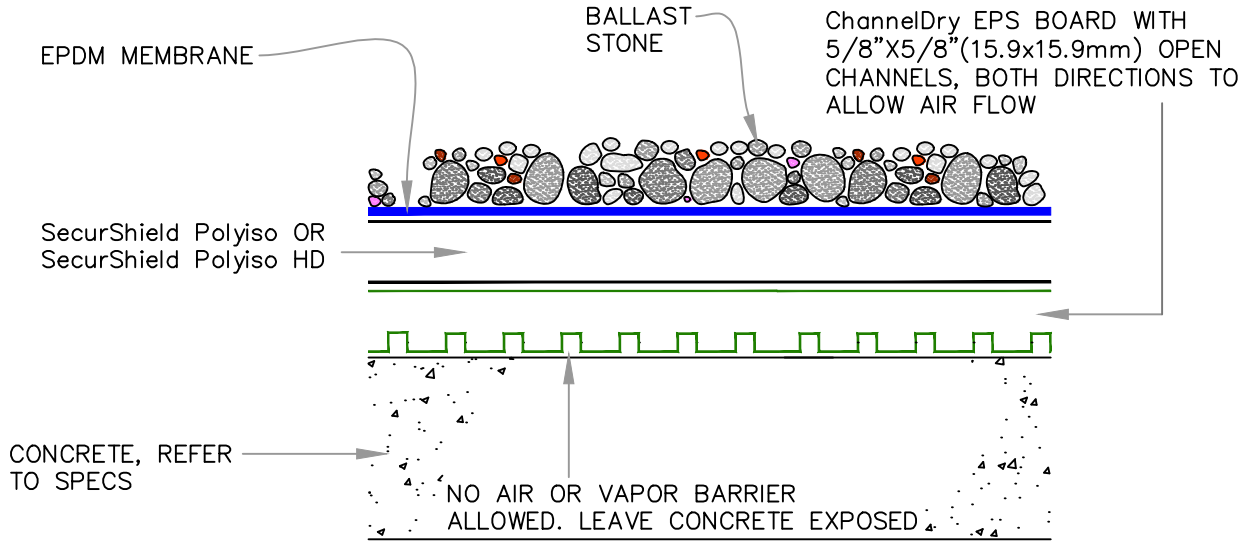


A FULLY ADHERED ROOF
MECHANICALLY FASTENED BOTTOM LAYER ONLY

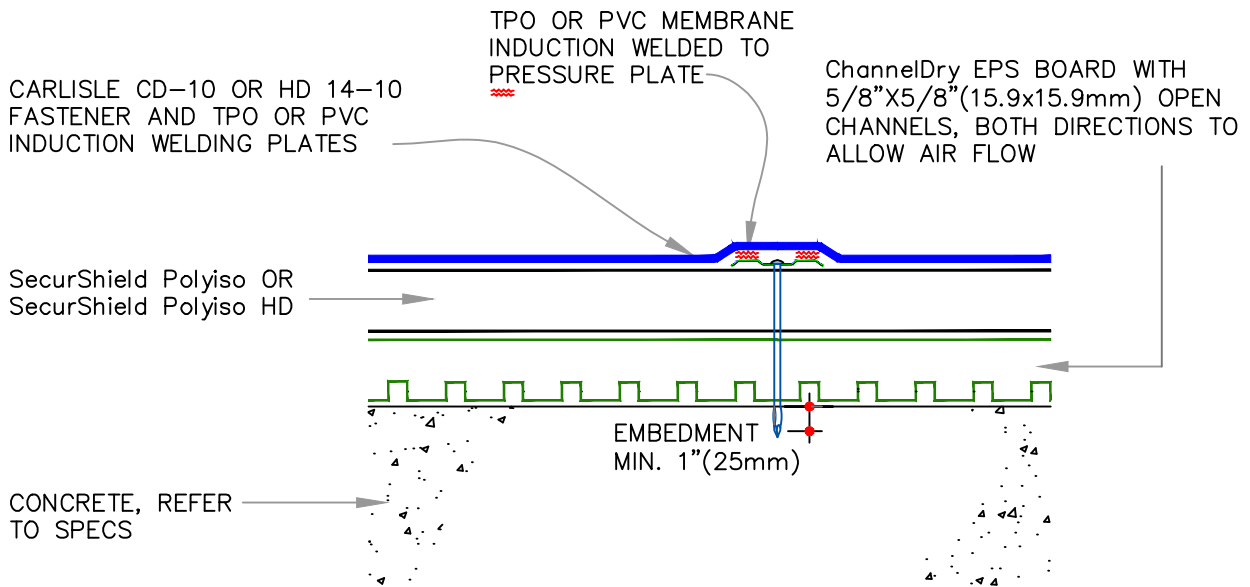


B FULLY ADHERED ROOF
MECHANICALLY FASTENED ALL LAYERS

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|-----------------------------------------------|------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------|
| <p>→ ROOF MEMBRANE</p> <p>0 → SEE NOTE(S)</p> | <p>ROOF ASSEMBLIES PAGE 1</p> <p>For additional information, refer to Specifications</p> | | <p>DETAIL NO.</p> <p>MM-1</p> <p>MM (MOISTURE MITIGATION)</p> |
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C BALLASTED EPDM ASSEMBLY

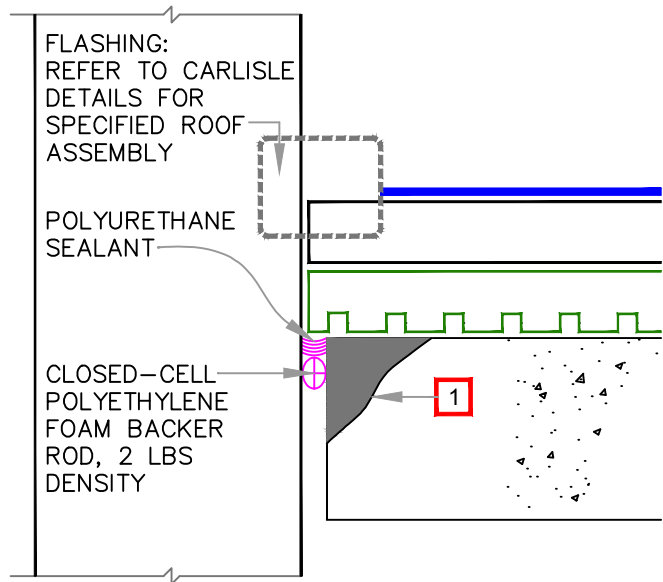


D TPO OR PVC INDUCTION WELDED ASSEMBLY

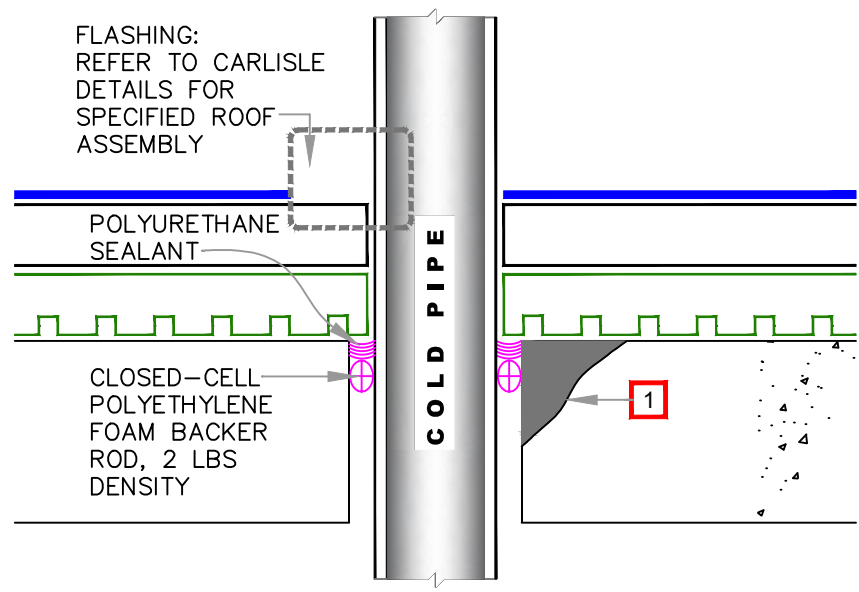
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| <p>→ ROOF MEMBRANE</p> <p>0 → SEE NOTE(S)</p> | <p>ROOF ASSEMBLIES PAGE 2</p> <p>For additional information, refer to Specifications</p> | <p>DETAIL NO.</p> <p>MM-2</p> <p>MM (MOISTURE MITIGATION)</p> |
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NOTE:

1. ENSURE CONCRETE EDGES ARE DRY, PRIOR TO SEALANT INSTALLATION.





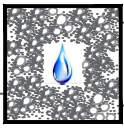
A AIR SEAL : ROOF-TO-WALL

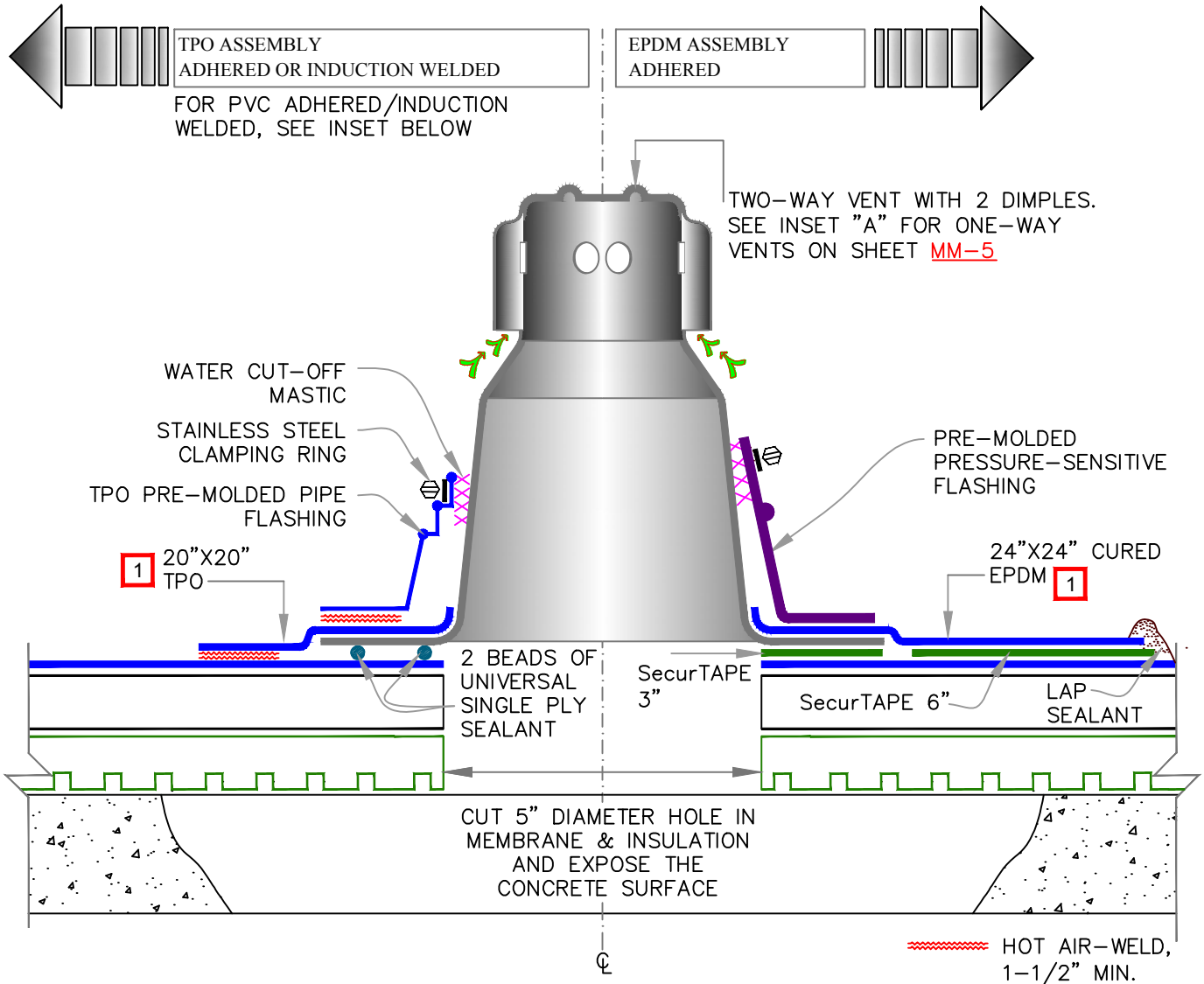


NOTE:

1. ENSURE CONCRETE EDGES ARE DRY, PRIOR TO SEALANT INSTALLATION

B AIR SEAL : PIPE PENETRATION

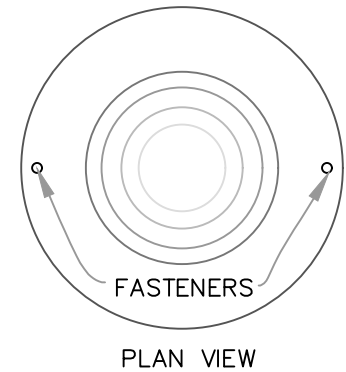
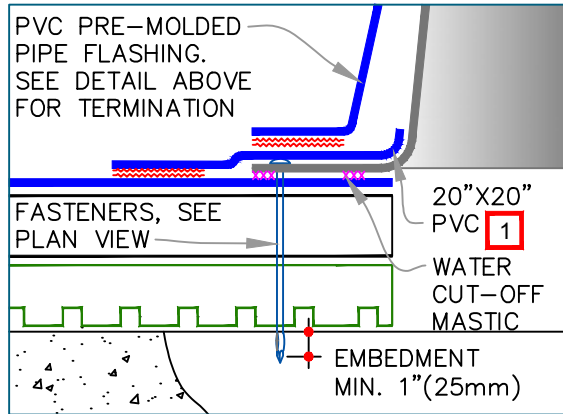
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| <p> → ROOF MEMBRANE</p> <p> → SEE NOTE(S)</p> | <p>AIR-SEAL DETAIL: ROOF-TO-WALL & PIPE PENETRATION</p> <p>For additional information, refer to Specifications</p> | <p>DETAIL NO.</p> <p>MM-3</p> <p>MM (MOISTURE MITIGATION)</p>  |
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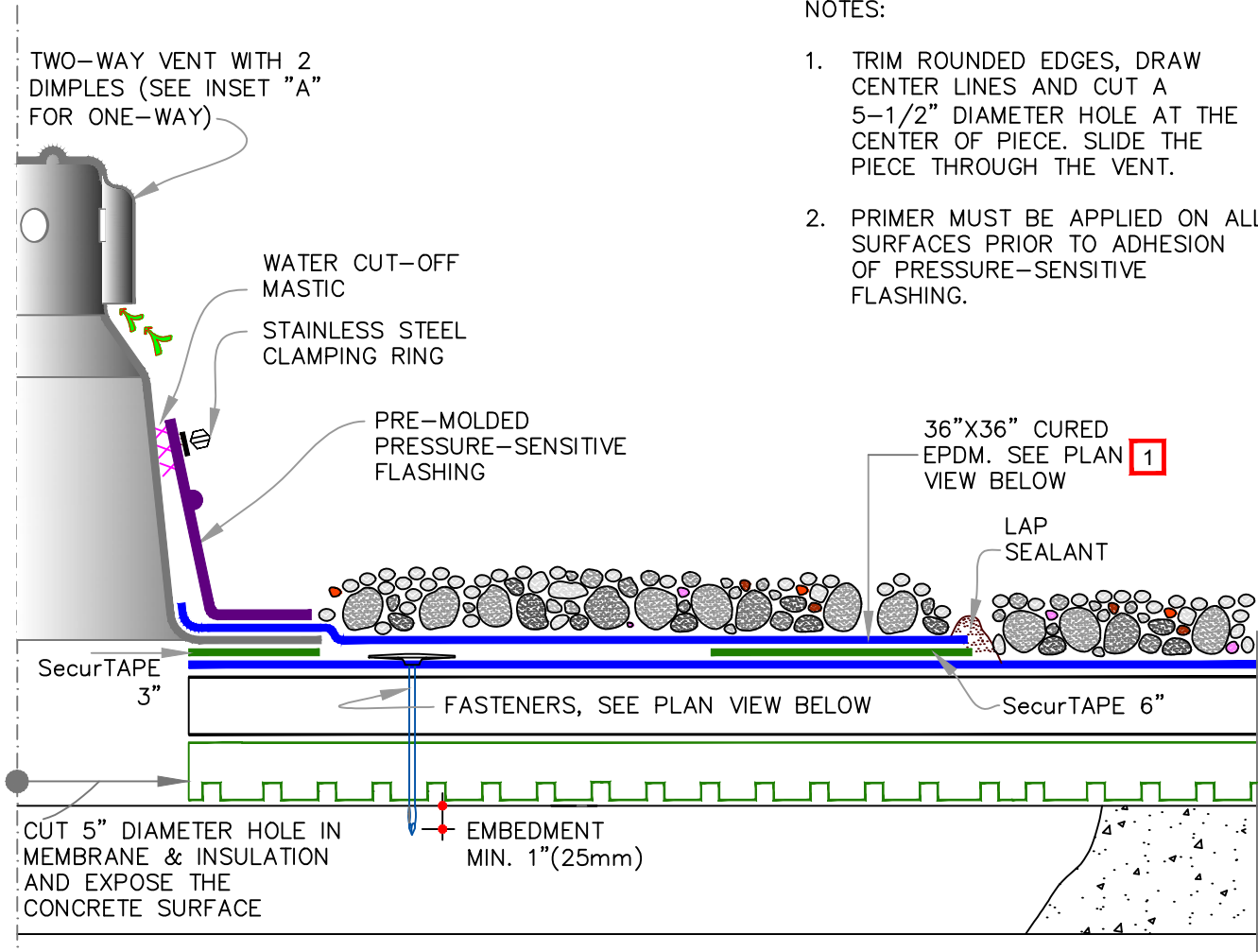
NOTES:

1. CUT SQUARE PIECE, TRIM ROUNDED EDGES, DRAW CENTER LINES AND CUT A 5-1/2" DIAMETER HOLE AT THE CENTER OF PIECE. SLIDE THE PIECE THROUGH THE VENT.
2. PRIMER MUST BE APPLIED ON ALL SURFACES PRIOR TO ADHESION OF PRESSURE-SENSITIVE FLASHING.

PVC ASSEMBLIES ADHERED OR INDUCTION WELDED

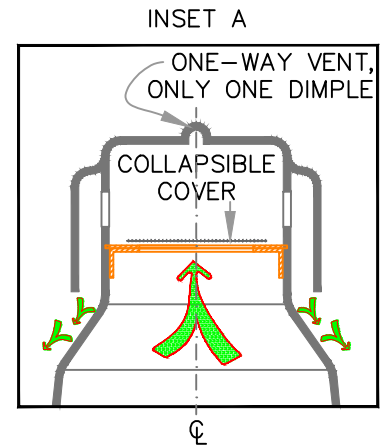
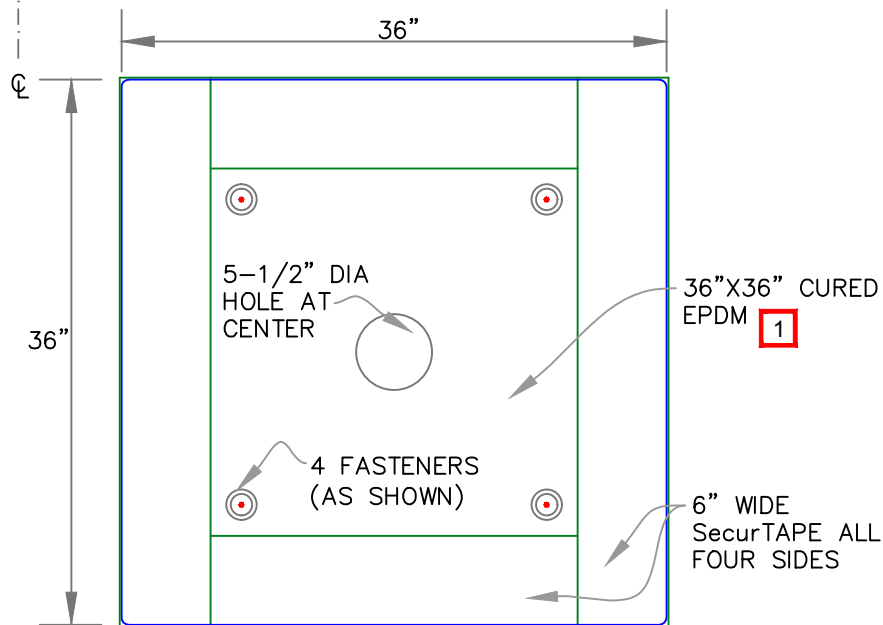


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| <p>— ROOF MEMBRANE</p> <p>0 — SEE NOTE(S)</p> | <p>VENT FLASHING ADHERED OR INDUCTION WELDED ASSEMBLIES</p> <p>For additional information, refer to Specifications</p> | | <p>DETAIL NO.</p> <p>MM-4</p> <p>MM (MOISTURE MITIGATION)</p> |
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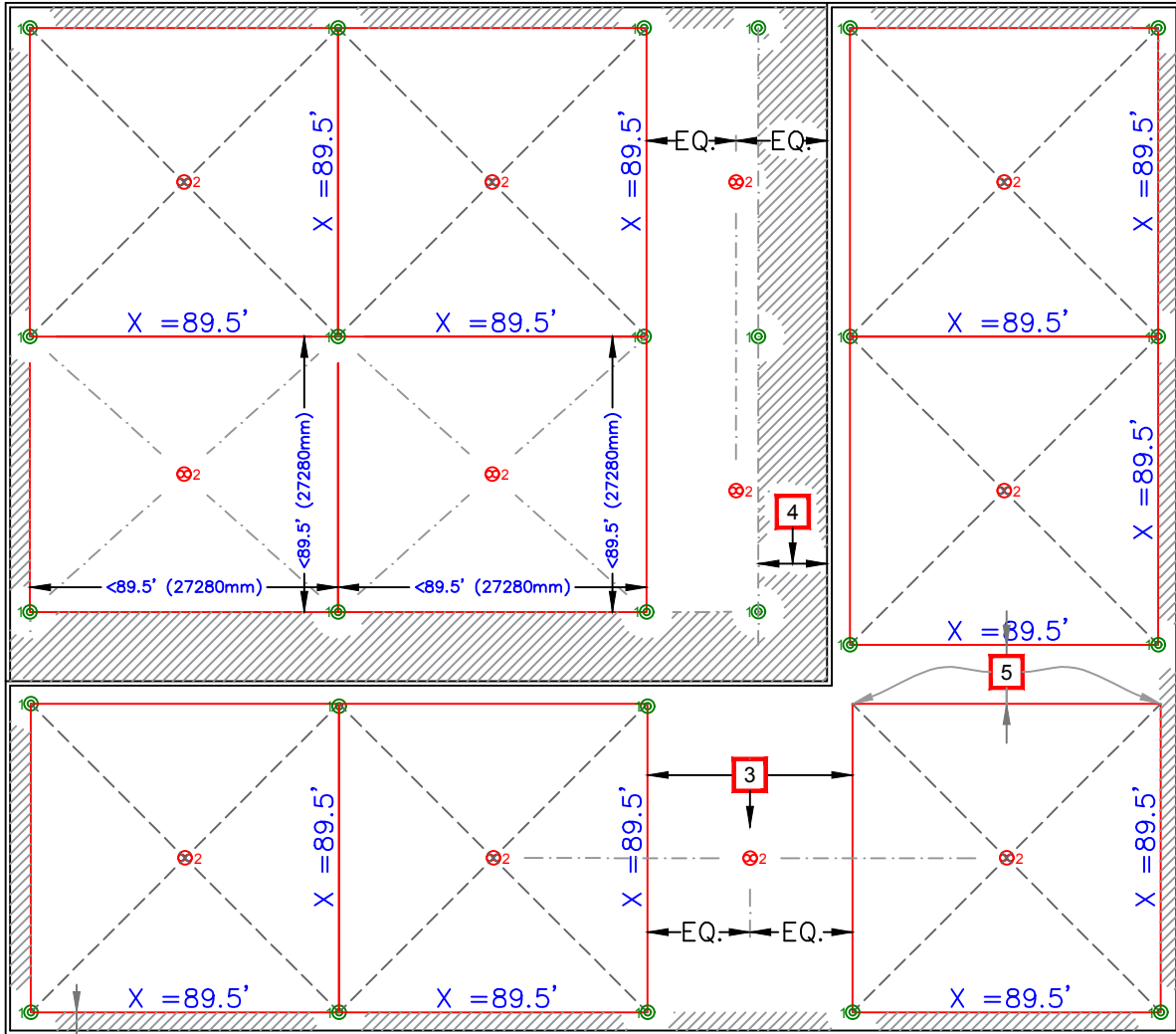


NOTES:

1. TRIM ROUNDED EDGES, DRAW CENTER LINES AND CUT A 5-1/2" DIAMETER HOLE AT THE CENTER OF PIECE. SLIDE THE PIECE THROUGH THE VENT.
2. PRIMER MUST BE APPLIED ON ALL SURFACES PRIOR TO ADHESION OF PRESSURE-SENSITIVE FLASHING.



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| <p>→ ROOF MEMBRANE</p> <p>0 → SEE NOTE(S)</p> | <p>VENT FLASHING FOR BALLASTED EPDM ASSEMBLY</p> <p>For additional information, refer to Specifications</p> | <p>DETAIL NO.</p> <p>MM-5</p> <p>MM (MOISTURE MITIGATION)</p> |
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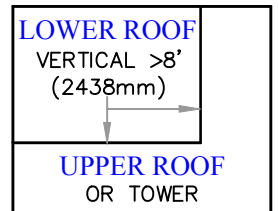


ONE-WAY VENTS' LINE 6' TO 8' (1829-2438mm) MAX. FROM ROOF EDGE 4

NOTES:

1. ONE-WAY VENTS: ONE EACH FOR 2,000 S.F. (186 S.M.) MAX.
2. TWO-WAY VENTS: ONE EACH FOR 8,000 S.F. (743 S.M.) MAX.
3. ADD TWO-WAY VENT UNLESS THIS DIMENSION IS LESS THAN 8' (2438mm)
4. WHEN THERE IS A TALL WALL OR HIGHER BUILDING (SEE KEY PLAN), THEN THE ONE-WAY VENTS' LINE SHOULD BE POSITIONED ~16' (4877mm) FROM HIGH WALL
5. SKIP VENT(S), IF LESS THAN 8' (2438)

- ⊙ ONE-WAY VENT
- ⊗ TWO-WAY VENT
- CENTER LINE
- DISTANCE FROM EDGE
- EQ. EQUAL



BUILDING KEY PLAN

| | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| <p> → ROOF MEMBRANE</p> <p>0 → SEE NOTE(S)</p> | <p>ROOF PLAN - TYPICAL LAYOUT OF VENTS</p> <p>For additional information, refer to Specifications</p> | <p>DETAIL NO.</p> <p style="font-size: 24px; font-weight: bold;">MM-6</p> <p>MM (MOISTURE MITIGATION)</p> |
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