

- RIGID OR OTHER MOISTURE TOLERANT INSULATION
- WALL DRAINAGE PLANE PRODUCT
- EXTERIOR GRADE (GLASS-MAT FACED SHOWN) SHEATHING (NOT APPLICABLE FOR CMU AND CONCRETE BACK-UP WALLS). ALL JOINTS SEALED WITH SELF-ADHESIVE COMPATIBLE MEMBRANE PRODUCT
- SEALANT JOINT - CHECK FOR COMPATIBILITY WITH STONE TO AVOID SEALANT STAINING
- THIN STONE VENEER
- MEMBRANE FLASHING OVER THROUGH-WALL FLASHING
- CORROSION-RESISTANT METAL THROUGH-WALL FLASHING
- BACK-UP WALL (CMU, CONCRETE, OR STEEL STUD) AND STRUCTURE
- ARCHITECTURAL PRECAST (BARRIER WALL SHOWN WITH DRAINED 2-STAGE JOINTS, NOT RAINSCREEN OR SANDWICH PANEL PRECAST ASSEMBLY) OR OTHER BARRIER WALL TYPE

NOTE: THE PRESENCE OF A CONTINUOUS RELIEVING ANGLE AND FLASHING AS SHOWN IS NOT REPRESENTATIVE OF TYPICAL STONE VENEER CONSTRUCTION, AND IS INTENDED TO CONVEY THE IMPORTANCE OF DESIGNING AN ANCHORING SYSTEM THAT MINIMIZES OR ELIMINATES THE NEED FOR PENETRATIONS THROUGH THE FLASHING IN CAVITY-TYPE EXTERIOR WALL CONSTRUCTION.

CONCEPTUAL - NOT FOR CONSTRUCTION

**KEY CONCEPTS:**  
 The dimensions and material relationships shown in this detail are **not to scale** and have been **exaggerated for clarity**. Actual dimensions will vary, and should be carefully coordinated with sequencing and construction tolerances to ensure the long-term durability and performance of this and similar exterior wall details.

Interface conditions between building envelope materials, components and systems should be fully detailed in a manner that is both technically sound and serviceable. Detailing should, at a minimum, allow for coordination of drainage planes when two or more different wall types are used in the same facade; allow for thermal and moisture-induced changes in material properties and differential thermal movement; and allow for in-service deflection, shrinkage, creep and similar behavior considered to be within the allowable structural limits of the project without compromise to the weather-tight integrity and thermal performance of the building envelope.

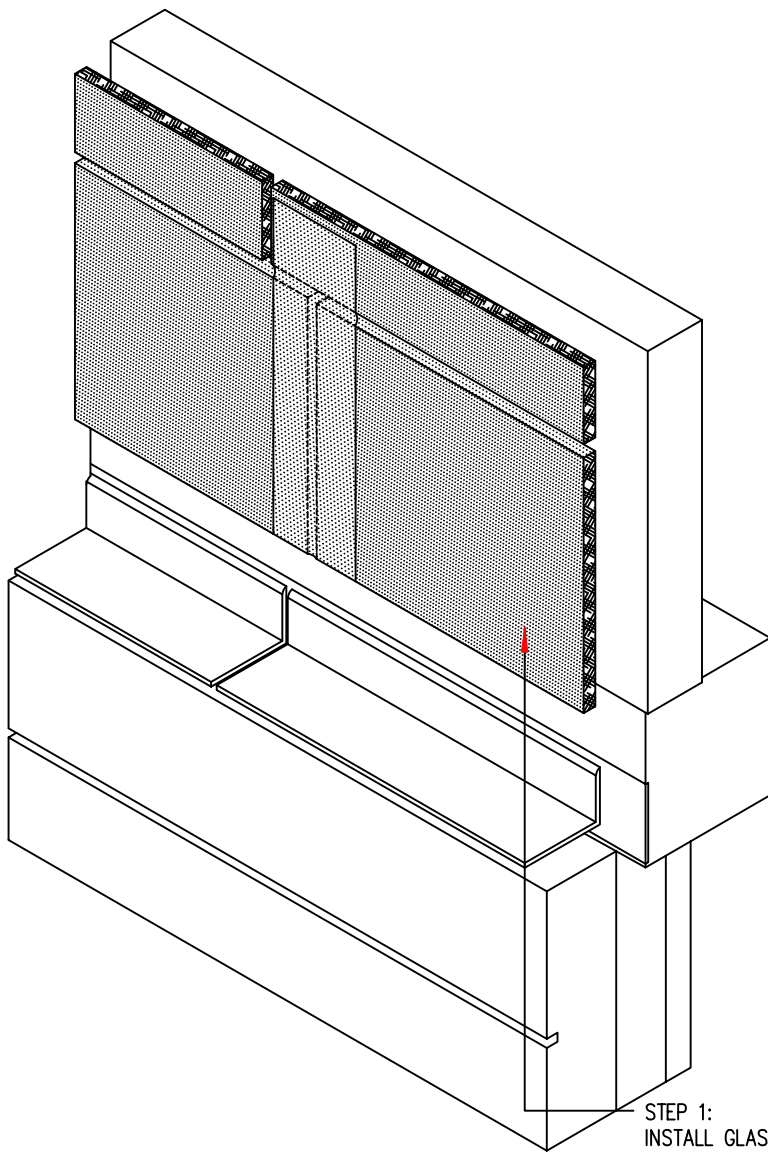
The air barrier can either be formed by an exterior side air barrier or by employing the interior side airtight drywall approach.

The location of or need for a vapor retarder within wall assemblies will vary based upon climate, and can be significantly influenced by the storage capacity and vapor permeance of the materials selected for each layer of the wall system. A climate-specific, hygrothermal analysis for any wall assembly should be considered to further evaluate this concern.

See the General section of the WBDG for additional information and guidance.

**STONE VENEER TO PRECAST HORIZONTAL INTERFACE - OVERALL DETAIL**

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STEP 1:  
 INSTALL GLASS MAT  
 FACED EXTERIOR SHEATHING OVER  
 BACK-UP WALL. INSTALL FOLLOWING ALL  
 MANUFACTURER INSTRUCTIONS. INSTALL  
 VERTICAL JOINT SEAL (PEEL-AND-STICK  
 MEMBRANE SHOWN) SECURE PER  
 MANUFACTURER INSTRUCTIONS. ENSURE  
 ALL SURFACES ARE PRIMED PRIOR TO  
 INSTALLING VERTICAL JOINT SEAL.

THE LOCATION OF THE JOINTS SHOWN  
 ARE FOR INFORMATIONAL PURPOSES ONLY  
 AND ARE INTENDED TO CONVEY EXTERIOR  
 SHEATHING JOINT SEALING CONCEPTS.

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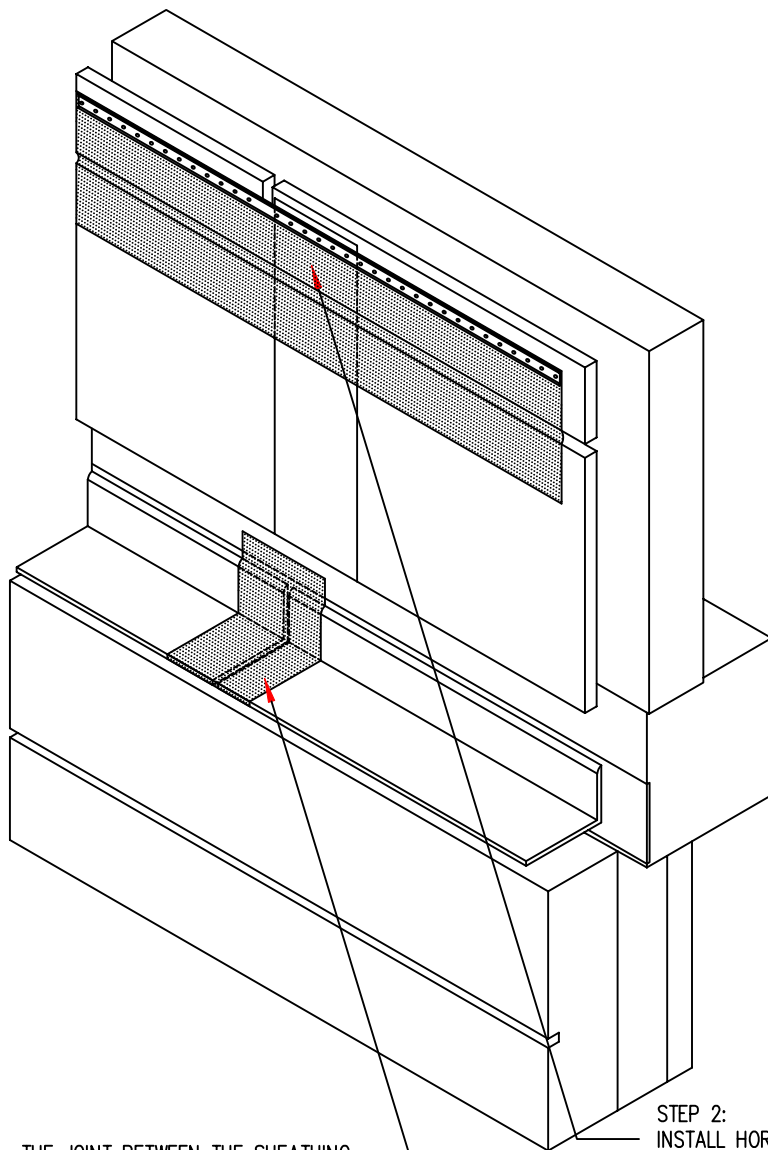
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**STONE VENEER TO  
 PRECAST HORIZONTAL  
 INTERFACE -  
 STEP 1**

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NOTE: THE JOINT BETWEEN THE SHEATHING AND SLAB IS TO BE SEALED WITH A HORIZONTAL JOINT SEAL (SELF-ADHESIVE FLASHING) TO PROVIDE AIR BARRIER CONTINUITY AT THIS INTERFACE. DEPENDING ON THE DRAINAGE PLANE PRODUCT, THIS PRODUCT MAY BE USED TO PROVIDE FOR THE AIR BARRIER CONTINUITY AT THIS INTERFACE. A DETAIL SHOULD BE INCLUDED IN THE DRAWINGS FOR THE PROJECT SHOWING WHAT METHOD IS TO BE USED AT THIS INTERFACE TO PROVIDE AIR BARRIER CONTINUITY. THE DETAILS IN THIS SET SHOW THIS USING THE DRAINAGE PLANE PRODUCT.

CONCEPTUAL – NOT FOR CONSTRUCTION

STEP 2:  
 INSTALL HORIZONTAL JOINT SEAL (PEEL-AND-STICK MEMBRANE SHOWN) SECURE PER MANUFACTURER INSTRUCTIONS. ENSURE ALL SURFACES ARE PRIMED PRIOR TO INSTALLING HORIZONTAL JOINT SEAL. INSTALL TERMINATION BAR AT UPPER EDGE (NOTE – TERMINATION BAR NOT SHOWN ON OTHER STEPS FOR CLARITY)

INSTALL SELF-ADHERING SHEET MEMBRANE FLASHING OVER ALL JOINTS IN THE RELIEVING ANGLE AND SECURE PER MANUFACTURER REQUIREMENTS. CARRY ABOVE ANGLE PER THE MANUFACTURER REQUIREMENTS

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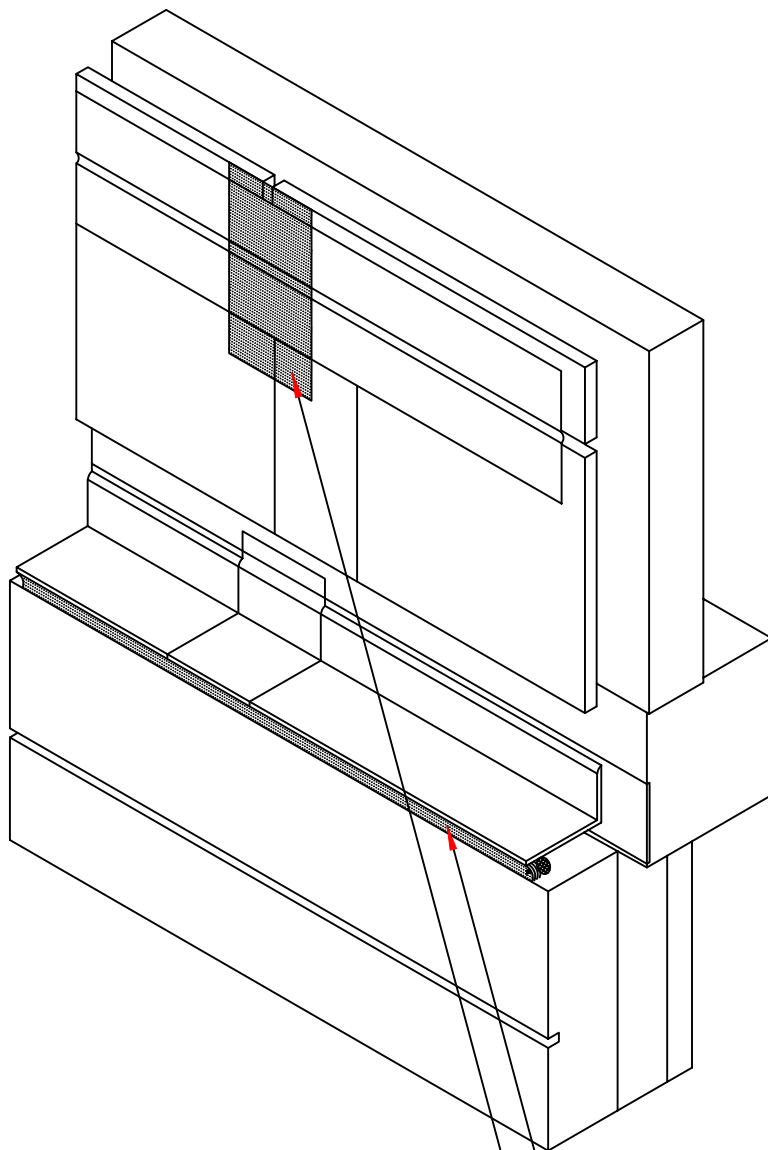
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**STONE VENEER TO PRECAST HORIZONTAL INTERFACE - STEP 2**

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STEP 3:  
 INSTALL BACKER ROD AND SEALANT  
 BETWEEN RELIEVING ANGLE BOTTOM AND  
 PRECAST PANEL. TIE-IN TO ALL  
 PRECAST TWO-STAGE VERTICAL JOINTS  
 THIS JOINT CROSSES.

INSTALL VERTICAL JOINT SEAL  
 (PEEL-AND-STICK MEMBRANE SHOWN)  
 SECURE PER MANUFACTURER  
 INSTRUCTIONS. ENSURE ALL SURFACES  
 ARE PRIMED PRIOR TO INSTALLING  
 VERTICAL JOINT SEAL.

CONCEPTUAL – NOT FOR CONSTRUCTION

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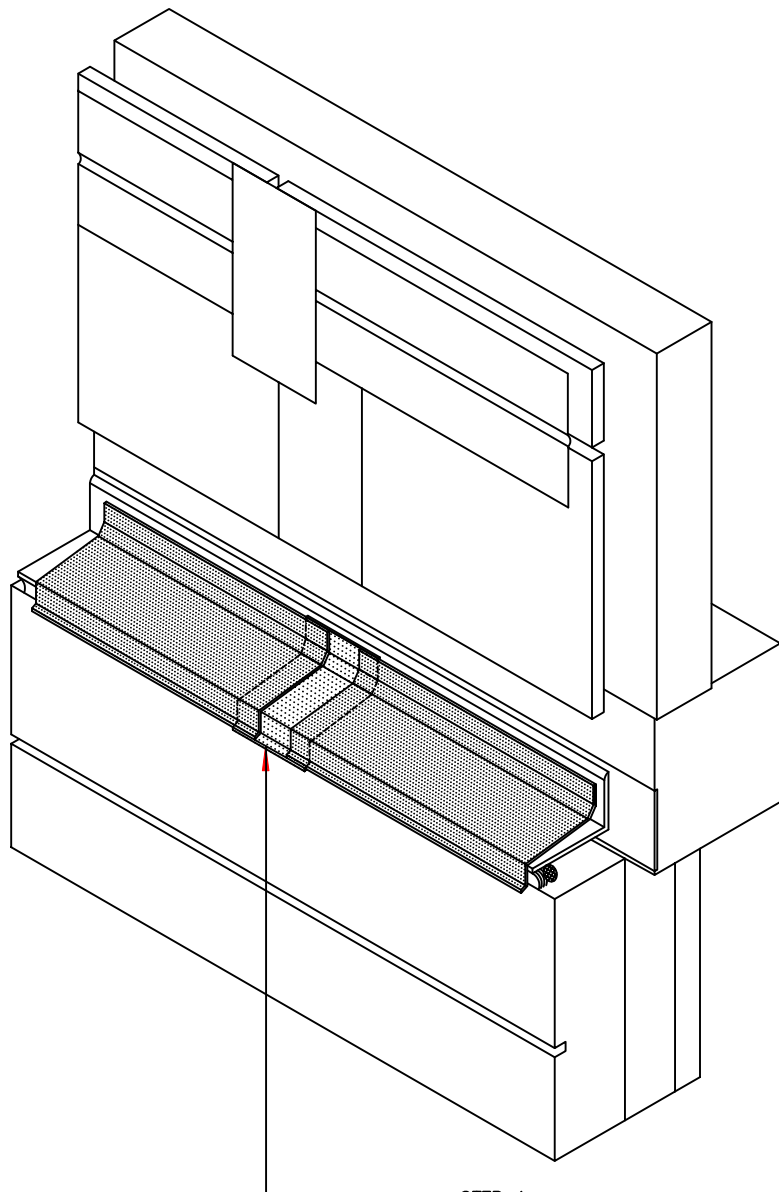
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**STONE VENEER TO  
 PRECAST HORIZONTAL  
 INTERFACE -  
 STEP 3**

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STEP 4:  
 INSTALL CORROSION-RESISTANT METAL THROUGH-WALL FLASHING. INSTALL ALL SPLICE PIECES BELOW MAIN FLASHING (AS SHOWN) WITH SUFFICIENT GAP TO ALLOW FOR CONTRACTION AND EXPANSION OF THE FLASHING MATERIAL. THE THROUGH-WALL FLASHING MATERIAL SHOWN ON THIS AND SIMILAR EXTERIOR WALL DETAILS AND ASSEMBLIES MUST INCLUDE FULLY SEALED, WATER-TIGHT END-DAMS AT ALL EXTERIOR WALL PENETRATION AND FLASHING TERMINATIONS AS NECESSARY TO COLLECT AND DRAIN RAINWATER AND/OR CONDENSATION TO THE BUILDING EXTERIOR.

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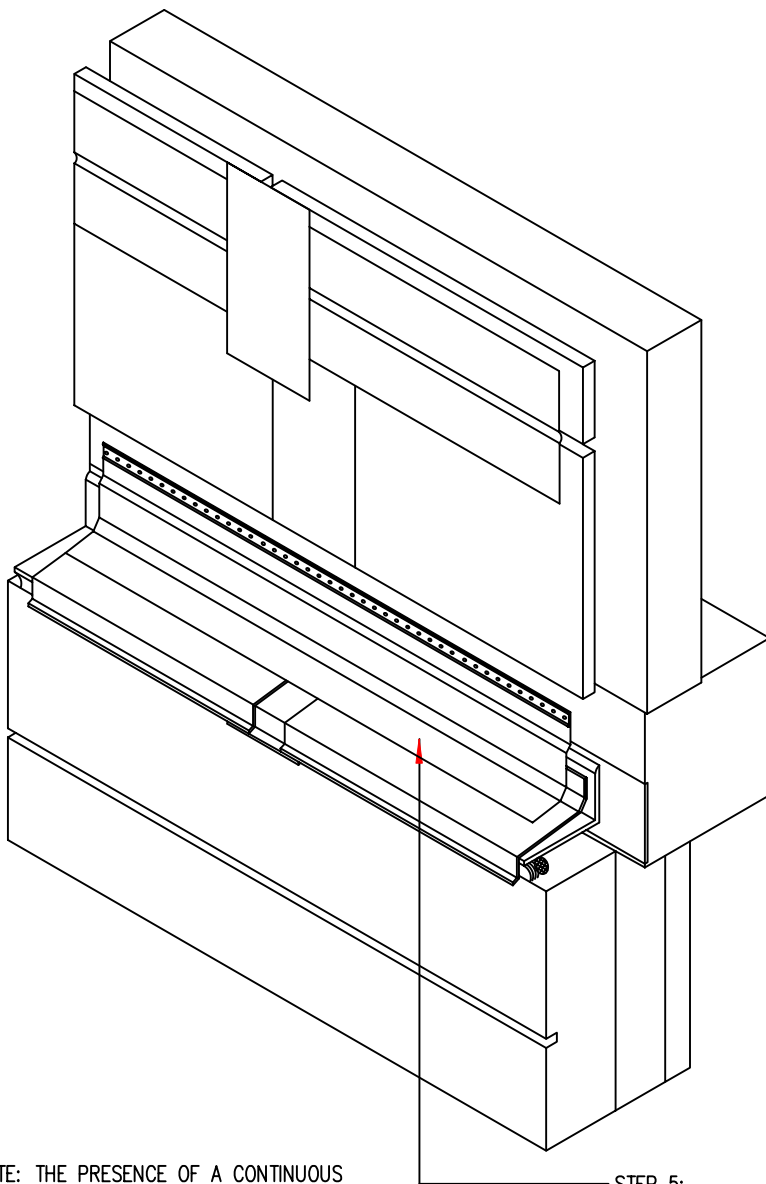
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 INTERFACE -  
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CONCEPTUAL – NOT FOR CONSTRUCTION

STEP 5:  
 INSTALL THE MEMBRANE FLASHING ABOVE THE METAL THROUGH-WALL FLASHING AND SECURE WITH A CONTINUOUSLY SEALED TERMINATION BAR AT THE UPPER EDGE. INSTALL FOLLOWING ALL MANUFACTURER GUIDELINES. CARRY ONTO THROUGH-WALL FLASHING PER THE MANUFACTURERS MINIMUM DISTANCE PLUS 1-INCH AND SECURE PER MANUFACTURER REQUIREMENTS. TREAT ALL JOINTS AND EDGES PER MANUFACTURER REQUIREMENTS (MASTIC OR OTHER REQUIRED PRODUCT) AND OVERLAP ALL JOINTS A MINIMUM OF 2-INCHES MORE THAN THAT REQUIRED BY THE MANUFACTURER.

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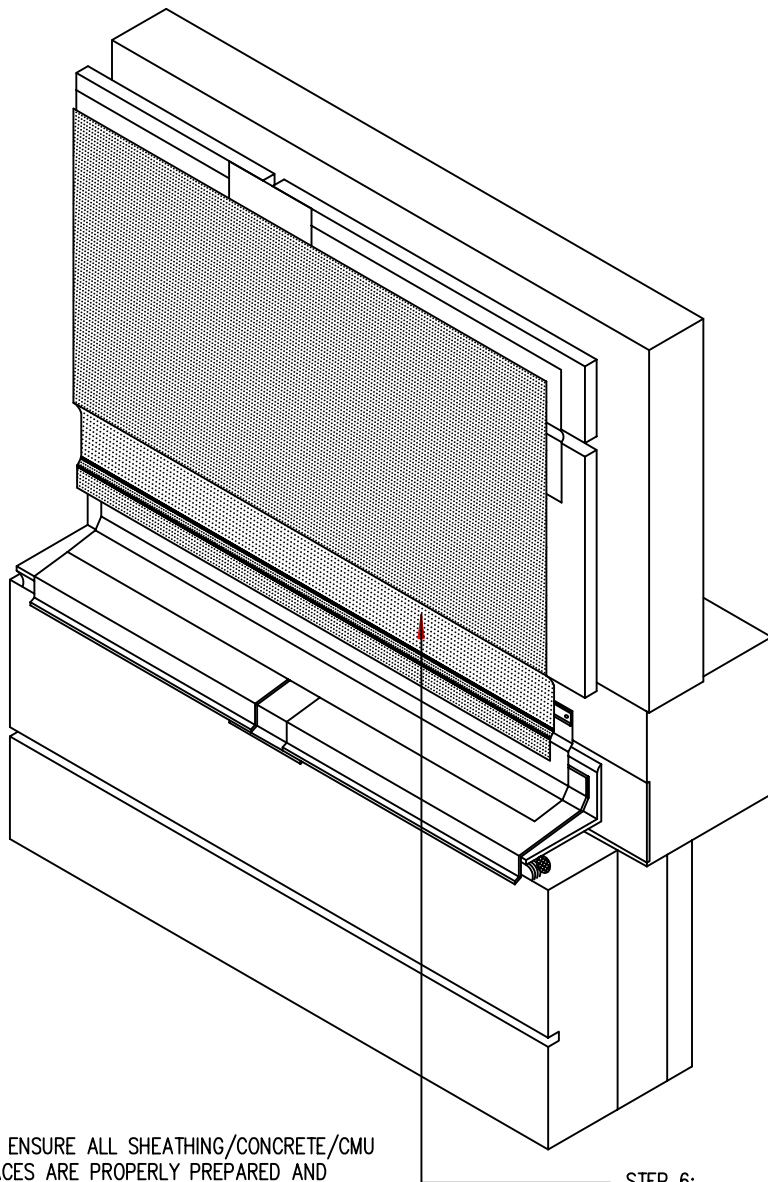
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**STONE VENEER TO  
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 STEP 5**

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NOTE: ENSURE ALL SHEATHING/CONCRETE/CMU SURFACES ARE PROPERLY PREPARED AND PRIMED IN ACCORDANCE WITH THE MANUFACTURER REQUIREMENTS PRIOR TO INSTALLING THE WALL DRAINAGE PLANE PRODUCT. DETAIL THE DRAINAGE PLANE PRODUCT TO PREVENT WATER INFILTRATION AT THE STONE VENEER ANCHORS AND OTHER PENETRATIONS. THE VARIOUS PRODUCTS THAT CAN BE USED FOR THE DRAINAGE PLANE MATERIAL HAVE A WIDE RANGE OF AIR AND VAPOR PERMEANCE VALUES; SEE THE TABLES AND THE GENERAL SECTION CONTAINED WITHIN THE WALL PORTION OF THE WBDG FOR MORE SPECIFIC INFORMATION WITH REGARDS TO VAPOR RETARDERS AND AIR BARRIERS.

STEP 6:  
INSTALL THE WALL MEMBRANE ABOVE THE THROUGH-WALL FLASHING, SECURE AT PENETRATION PER THE MANUFACTURER'S GUIDELINES. CARRY ONTO THROUGH-WALL FLASHING MEMBRANE PER THE MANUFACTURERS MINIMUM DISTANCE PLUS 1-INCH AND SECURE PER MANUFACTURER REQUIREMENTS.

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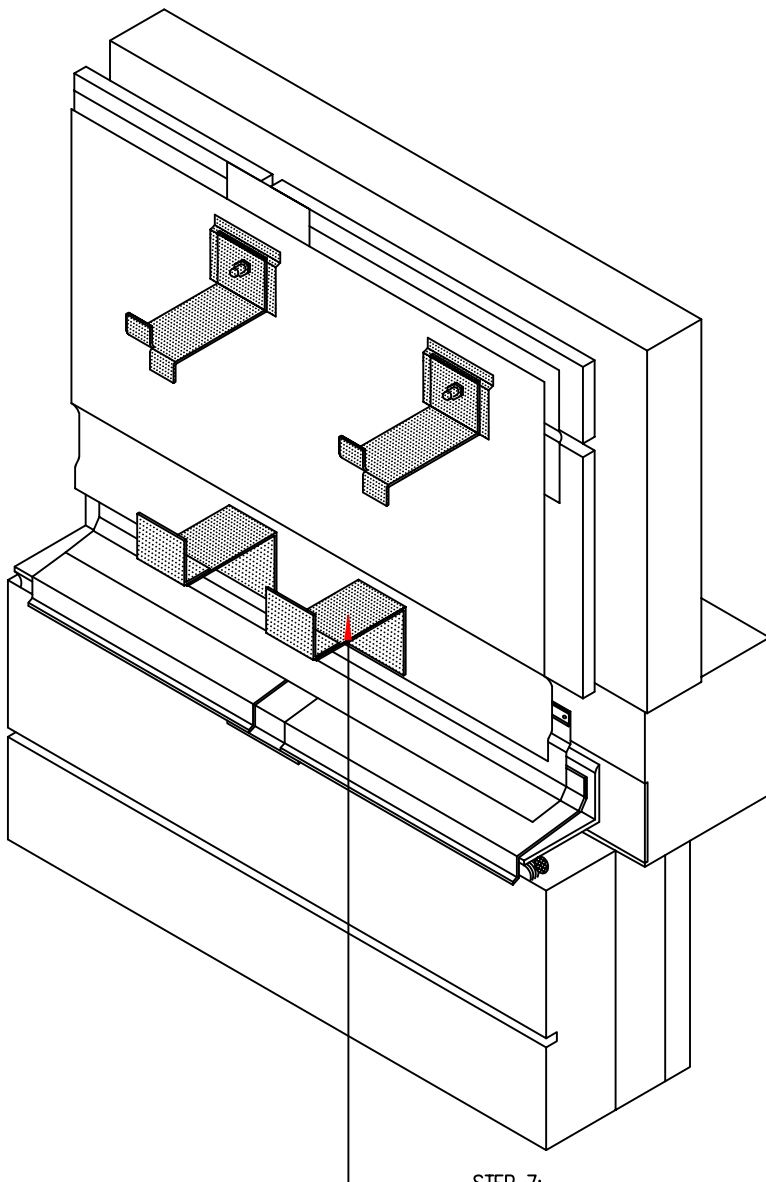
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**STONE VENEER TO  
PRECAST HORIZONTAL  
INTERFACE -  
STEP 6**

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STEP 7:  
 INSTALL STONE ANCHORS AND INSULATION SECUREMENT DEVICES (IMPALING PINS OR OTHER APPROVED METHOD), INCLUDING TWO REVERSE ANGLES. THE UPPER ANGLE MAY BE SECURED TO THE STONE FIRST. BOLTED CONNECTIONS ARE TYPICALLY USED. IF A TROWEL-APPLIED PRODUCT IS USED INSTEAD OF A WALL MEMBRANE OR SHEET PRODUCT, THE TROWEL-APPLIED PRODUCT MAY BE USED AS AN INSULATION ADHESIVE IN ADDITION TO THE MECHANICAL ADHESION METHOD SHOWN. CHECK WITH THE MANUFACTURER FOR ALL REQUIREMENTS. ALL METAL ACCESSORIES IN DIRECT CONTACT WITH NATURAL STONE VENEERS SHALL BE NON-CORROSIVE, 300 SERIES STAINLESS STEEL OR AN EQUIVALENT MATERIAL.  
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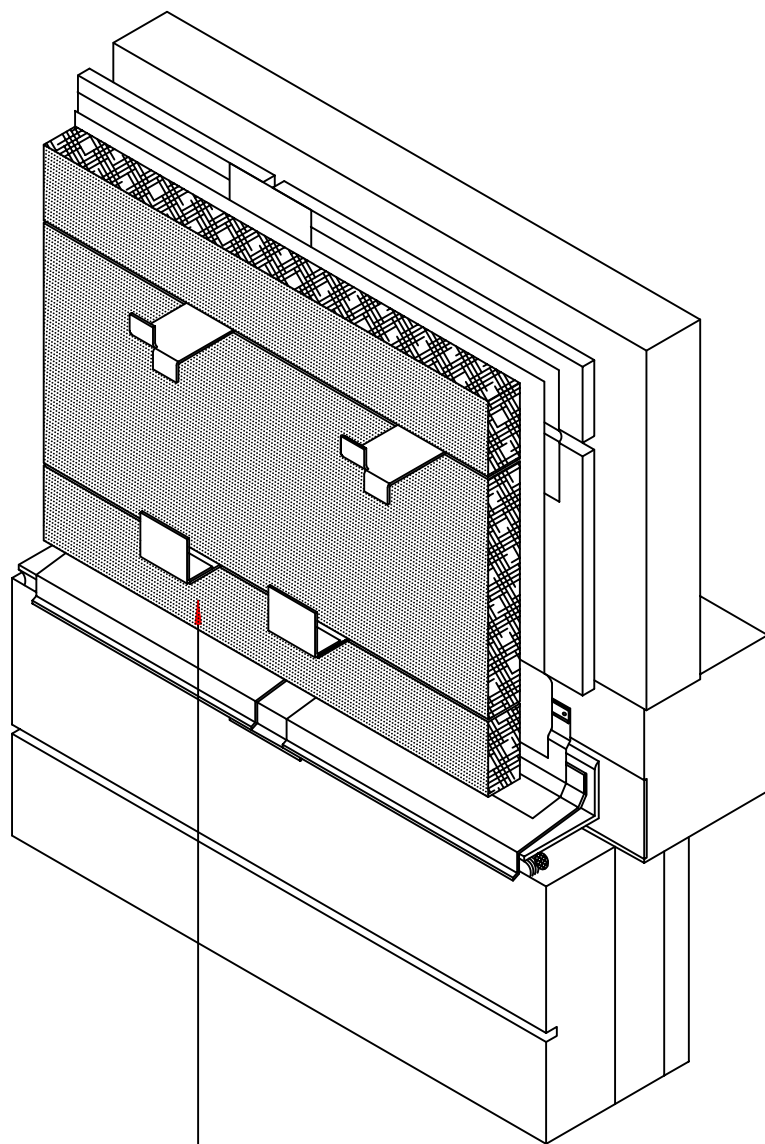
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**STONE VENEER TO  
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 INTERFACE -  
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STEP 8: INSTALL THE INSULATION (RIGID INSULATION SHOWN, SEMI-RIGID INSULATION MAY ALSO BE APPROPRIATE) AND SECURE WITH THE IMPALING PIN CAPS OR OTHER APPROVED METHOD, MAKING SURE ALL SHARP ENDS ARE CUT. SOME IMPALING PIN PRODUCTS ELIMINATE THE SHARP END CONCERN. SOME FOAM-APPLIED AND OTHER INSULATION PRODUCTS MAY BE APPROPRIATE FOR USE IN THE DRAINAGE CAVITY. CHECK WITH THE MANUFACTURER TO DETERMINE THE APPROPRIATENESS OF THE PRODUCT FOR USE WITHIN THE WET ZONE OF THE ASSEMBLY. INSULATING OUTBOUND OF THE BACK-UP WALL WITH THE FULL R-VALUE OF THE WALL IS MUCH MORE THERMALLY EFFICIENT.

CONCEPTUAL – NOT FOR CONSTRUCTION

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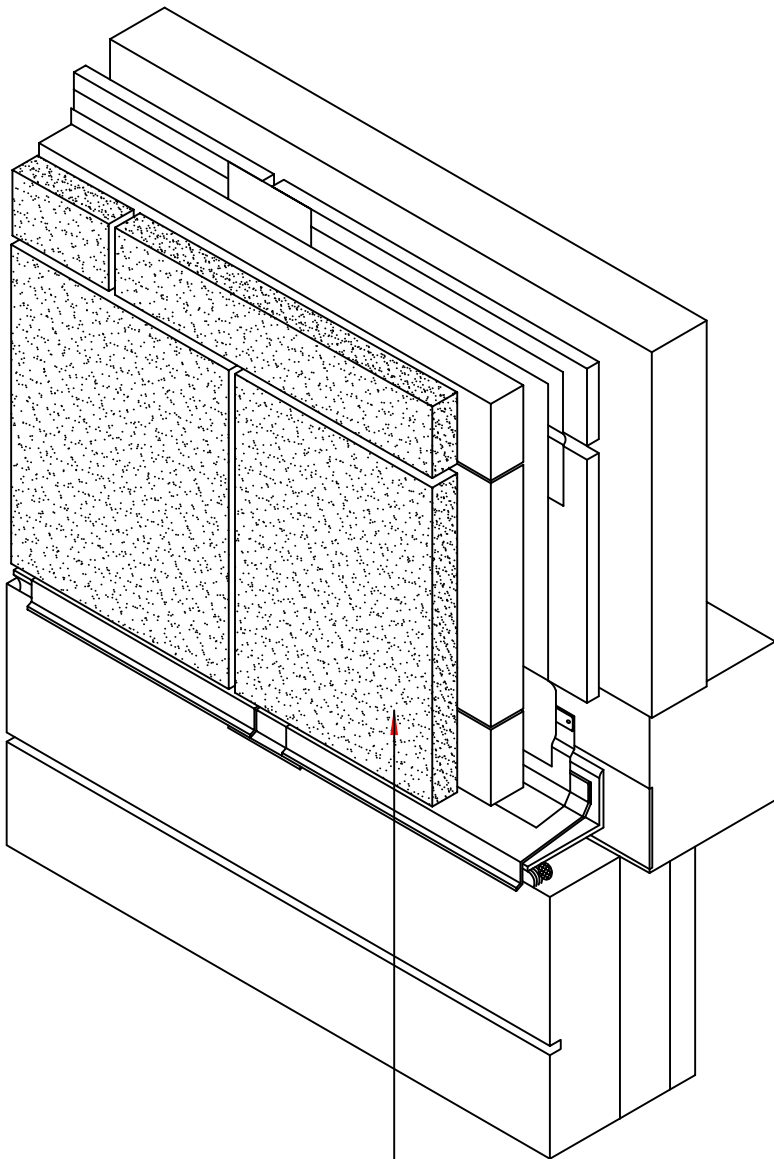
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### **STONE VENEER TO PRECAST HORIZONTAL INTERFACE - STEP 8**

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STEP 9:  
 INSTALL THE STONE VENEER ABOVE THE  
 THROUGH WALL FLASHING. PROVIDE  
 ALLOWANCE FOR THERMAL MOVEMENT OF THE  
 STONE BOTH VERTICALLY AND HORIZONTALLY.

CONCEPTUAL – NOT FOR CONSTRUCTION

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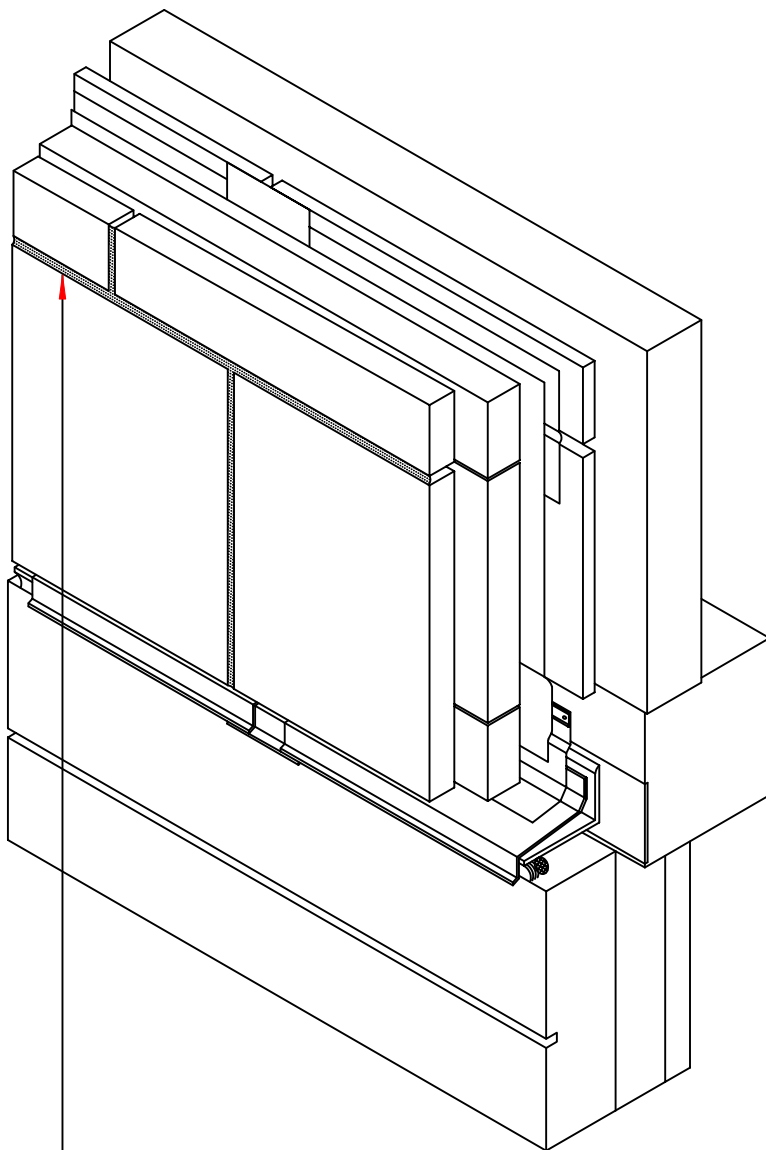
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**STONE VENEER TO  
 PRECAST HORIZONTAL  
 INTERFACE -  
 STEP 9**

The details, graphics and related information shown above are intended to illustrate basic design concepts and principles only and should be considered collectively with the appropriate narrative sections of the Whole Building Design Guide (WBDG). The information contained herein is not intended for actual construction, and is subject to revision based on changes and/or refinements in local, state and national building codes, emerging building envelope technologies, and advancements in the research and understanding of building envelope failure and failure mechanisms. The actual design and configuration of these and similar details will vary based upon applicable local, state and national building code requirements, climatic considerations, and economic constraints unique to each project. Full compliance with the manufacturer's recommendations and recognized industry standards for each building envelope material, component and system specified for this and similar exterior wall assemblies is recommended, and should be reflected in the appropriate sections of the project specifications.



STEP 10:  
 INSTALL BACKER ROD AND SEALANT AT ALL JOINTS AND AT THE PENETRATION. TWISTED AND UNDERSIZED BACKER ROD MUST NOT BE USED. PRIME JOINTS, IF REQUIRED BY THE MANUFACTURER. ENSURE THE SEALANT PROFILE WILL MEET THE MANUFACTURER REQUIREMENTS. THE JOINT AT THE FLASHING WILL REQUIRE WEEP HOLES, APPROXIMATELY EVERY 2-FEET. VENTED WEEPS MAY BE USED AT VERTICAL STONE JOINTS. ALTERNATIVELY, THE JOINT CAN BE LEFT OPEN. ENSURE ANY UV SENSITIVE MEMBRANE MATERIAL IS BACK FAR ENOUGH TO NOT UV DEGRADE IF THE JOINT IS LEFT OPEN. ALL JOINT SEALANT IN CONTACT WITH NATURAL STONE CLADDING SHALL BE TESTED PRIOR TO CONSTRUCTION FOR ADHESION, MOVEMENT CAPACITY, AND STAIN RESPONSE IN ACCORDANCE WITH APPLICABLE ASTM STANDARDS. FIELD PEEL-ADHESION TESTING OF INSTALLED JOINT SEALANT BY A QUALIFIED TECHNICAL REPRESENTATIVE OF THE SEALANT MANUFACTURER.

CONCEPTUAL – NOT FOR CONSTRUCTION

**KEY CONCEPTS:**

The dimensions and material relationships shown in this detail are not to scale and have been exaggerated for clarity. Actual dimensions will vary, and should be carefully coordinated with sequencing and construction tolerances to ensure the long-term durability and performance of this and similar exterior wall details.

Interface conditions between building envelope materials, components and systems should be fully detailed in a manner that is both technically sound and serviceable. Detailing should, at a minimum, allow for coordination of drainage planes when two or more different wall types are used in the same facade; allow for thermal and moisture-induced changes in material properties and differential thermal movement; and allow for in-service deflection, shrinkage, creep and similar behavior considered to be within the allowable structural limits of the project without compromise to the weather-tight integrity and thermal performance of the building envelope.

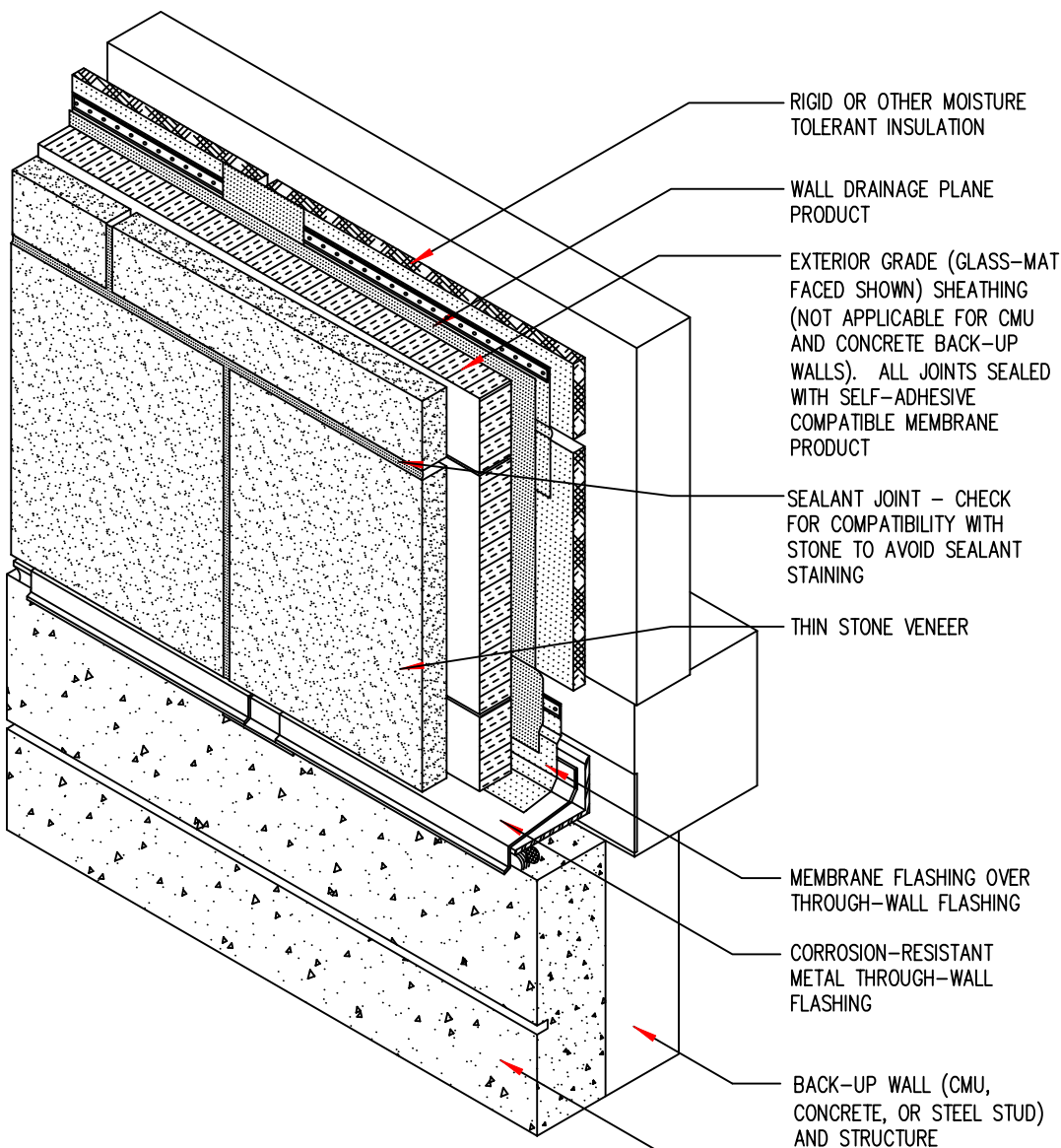
The air barrier can either be formed by an exterior side air barrier or by employing the interior side airtight drywall approach.

The location of or need for a vapor retarder within wall assemblies will vary based upon climate, and can be significantly influenced by the storage capacity and vapor permeance of the materials selected for each layer of the wall system. A climate-specific, hygrothermal analysis for any wall assembly should be considered to further evaluate this concern.

See the General section of the WBDG for additional information and guidance.

**STONE VENEER TO  
 PRECAST HORIZONTAL  
 INTERFACE -  
 STEP 10**

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- RIGID OR OTHER MOISTURE TOLERANT INSULATION
- WALL DRAINAGE PLANE PRODUCT
- EXTERIOR GRADE (GLASS-MAT FACED SHOWN) SHEATHING (NOT APPLICABLE FOR CMU AND CONCRETE BACK-UP WALLS). ALL JOINTS SEALED WITH SELF-ADHESIVE COMPATIBLE MEMBRANE PRODUCT
- SEALANT JOINT - CHECK FOR COMPATIBILITY WITH STONE TO AVOID SEALANT STAINING
- THIN STONE VENEER
- MEMBRANE FLASHING OVER THROUGH-WALL FLASHING
- CORROSION-RESISTANT METAL THROUGH-WALL FLASHING
- BACK-UP WALL (CMU, CONCRETE, OR STEEL STUD) AND STRUCTURE
- ARCHITECTURAL PRECAST (BARRIER WALL SHOWN WITH DRAINED 2-STAGE JOINTS, NOT RAINSCREEN OR SANDWICH PANEL PRECAST ASSEMBLY) OR OTHER BARRIER WALL TYPE

NOTE: THE PRESENCE OF A CONTINUOUS RELIEVING ANGLE AND FLASHING AS SHOWN IS NOT REPRESENTATIVE OF TYPICAL STONE VENEER CONSTRUCTION, AND IS INTENDED TO CONVEY THE IMPORTANCE OF DESIGNING AN ANCHORING SYSTEM THAT MINIMIZES OR ELIMINATES THE NEED FOR PENETRATIONS THROUGH THE FLASHING IN CAVITY-TYPE EXTERIOR WALL CONSTRUCTION.

CONCEPTUAL - NOT FOR CONSTRUCTION

**KEY CONCEPTS:**  
 The dimensions and material relationships shown in this detail are **not to scale** and have been **exaggerated for clarity**. Actual dimensions will vary, and should be carefully coordinated with sequencing and construction tolerances to ensure the long-term durability and performance of this and similar exterior wall details.

Interface conditions between building envelope materials, components and systems should be fully detailed in a manner that is both technically sound and serviceable. Detailing should, at a minimum, allow for coordination of drainage planes when two or more different wall types are used in the same facade; allow for thermal and moisture-induced changes in material properties and differential thermal movement; and allow for in-service deflection, shrinkage, creep and similar behavior considered to be within the allowable structural limits of the project without compromise to the weather-tight integrity and thermal performance of the building envelope.

The air barrier can either be formed by an exterior side air barrier or by employing the interior side airtight drywall approach.

The location of or need for a vapor retarder within wall assemblies will vary based upon climate, and can be significantly influenced by the storage capacity and vapor permeance of the materials selected for each layer of the wall system. A climate-specific, hygrothermal analysis for any wall assembly should be considered to further evaluate this concern.

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**STONE VENEER TO PRECAST HORIZONTAL INTERFACE - OVERALL DETAIL**

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