



## Technical Bulletin

Corporate: P.O. Box 397 • Fortson • Georgia • 31808 • 800-755-0825 • FAX 706-569-6704

### **MW# 149-210201**

### **Topic: Sealant Joint Design**

Good sealant joint design is one of the more important parts of a wall system's performance. Design professionals and architects must use the same quality/performance parameters in selecting a sealant as they would in selecting a door, window, or other building component. This is not an easy task, because joint design will vary by sealant material type and manufacturer. Designers must design the joint for the particular purpose.

#### **Types of Sealant Joints**

There are three basic types of sealant joints: Butt, Fillet, and "Band-Aid". Each has its own particular use and design parameters. All are designed to eliminate three-sided adhesion, which will shorten the service life of these dynamic (moving) joints.

All these joints use some form of bond breaker. Closed cell backer rod is one of the more common bond breakers for wide joints, typically sized 25% larger than the joint opening. The backer rod must be set into the opening a specific depth to meet the sealant manufacturer's width to depth ratio. Another option is the use of bond breaker tape. This method is especially useful for sealant joints that are too shallow to allow for a backer rod. Another method is to use a low-quality caulk as a bond breaker. Check with the sealant manufacturer to see if this method is approved.

#### **Sealant Joint Design**

The design of sealant joint will depend upon the sealant joint manufacturer's requirements and the thermal movement of the building components. For our examples, we will use the movement data in MW#147 and recommended sealants outlined in MW#131.

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### **Sealant Joint Design Calculations**

#### **Example 1**

Let us assume the window unit in example 1 is a residential unit meeting with Master Wall's Cemplaster Stucco. The window is moving 1/16" each side and we have selected Tremco Dymonic as the sealant (<http://www.roancorp.com>). It is a quality 1-part polyurethane sealant, which the manufacturer says is designed for +/-25% joint movement capability. We will plan on a fillet-type sealant joint to minimize the homeowner complaints over wide sealant joints.

If the anticipated movement is .0625" and the sealant material is designed for 25% movement, we need a sealant joint that is 1/4" wide ( $4 * .0625$ ). For joints up to 1/4" the manufacturer lists a 1/4" depth at the midpoint. Considering the depth to width ratios are identical it will probably be best to specify a latex bond breaker sealant followed by a sealant joint 1/4" to 3/8" wide.

#### **Example 2**

The ribbon window in example 2 is a commercial unit and the wall cladding is Master Wall's Aggre-flex Exterior Insulation and Finish System (EIFS). EIFS coatings require specific low modulus sealants and we've anticipated 3/8" movement on each side of the window.

The sealant planned for the window unit is Dow Corning #795 silicone sealant that is designed for +/- 50% movement and is low modulus for compatibility with the EIFS. The anticipated movement is .375" multiplied by 2 is .75" or 3/4" wide. Joints this wide typically use the closed cell backer rod.

#### **Non-Dynamic Joints**

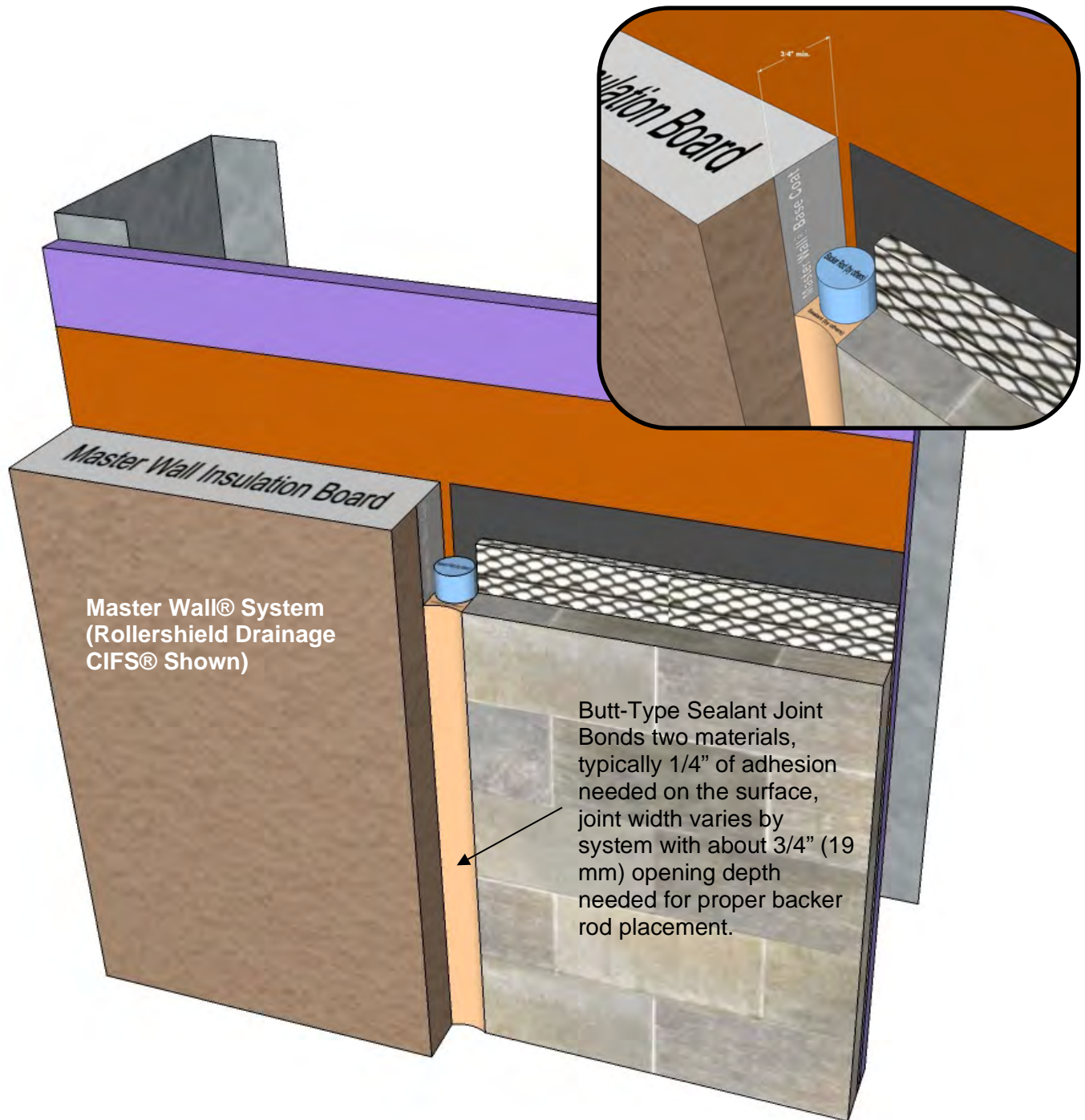
Moving joints are the most important ones in construction; however, there are other joints that are more aesthetic or limited in nature. For example, electrical light sealant required by the National Electrical Code or the sealant bead applied at the lower edge of a commercial roof coping cap are not moving to any significant degree, but it helps keep out wind-driven rain and cleans up the gap between the materials. Similarly, a soffit transition from EIFS to a direct-applied soffit could receive similar treatment provided structural movement is not anticipated. Usually, a bond breaker is not used with these type joints.

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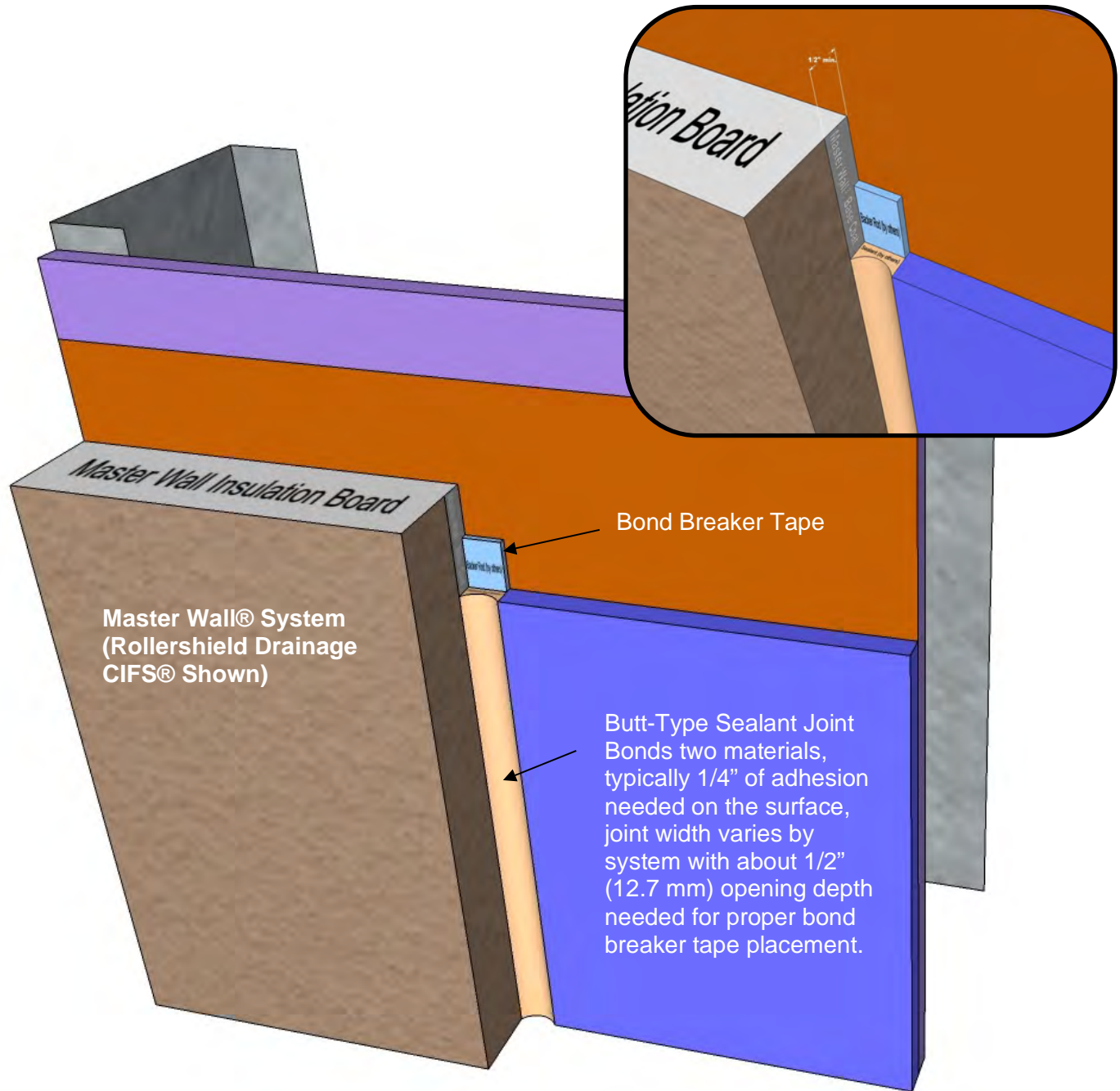
## System Detail



### **Butt Type Sealant Joint with Backer Rod**

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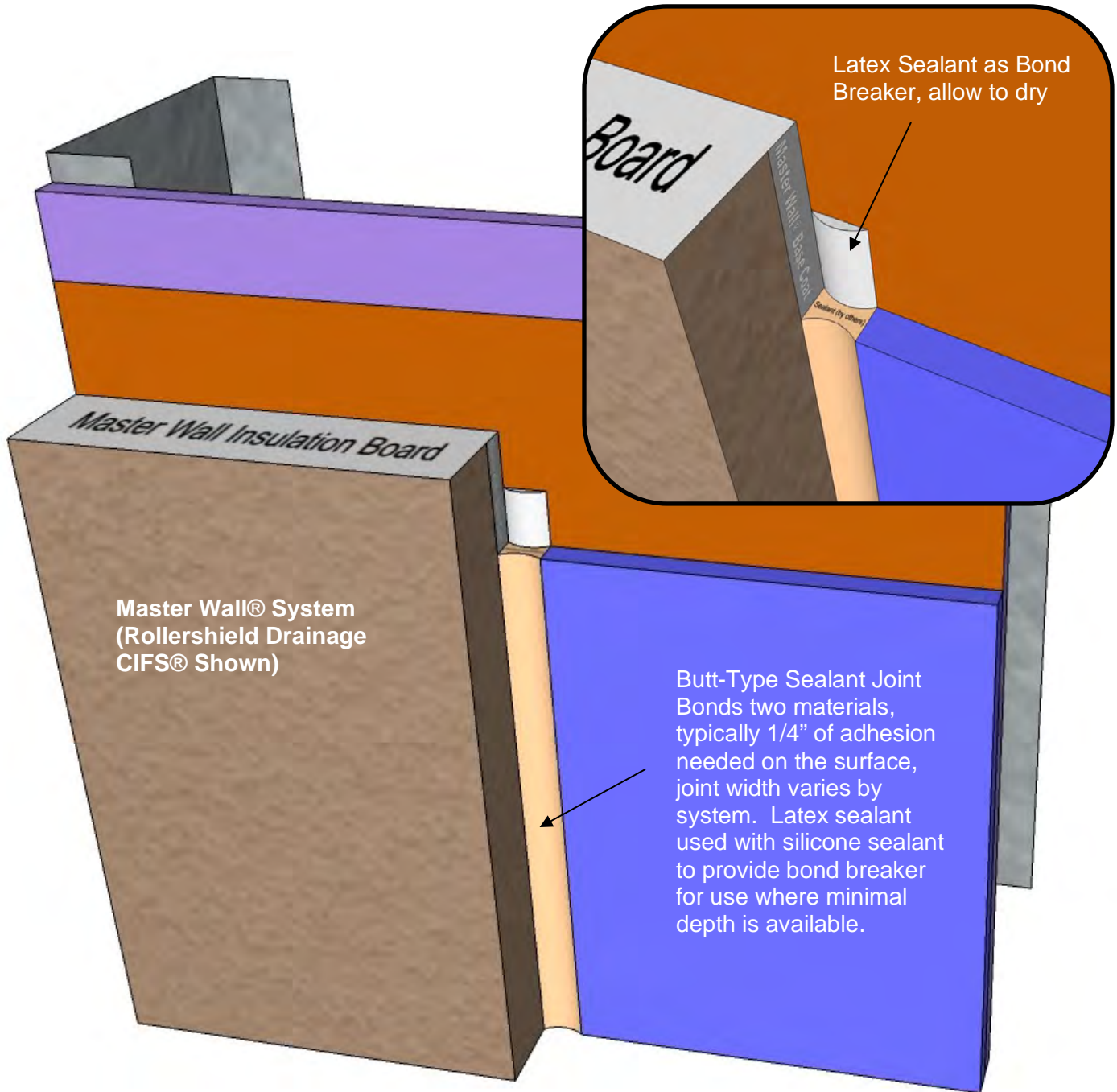
## System Detail



### **Butt Type Sealant Joint with Bond Breaker Tape**

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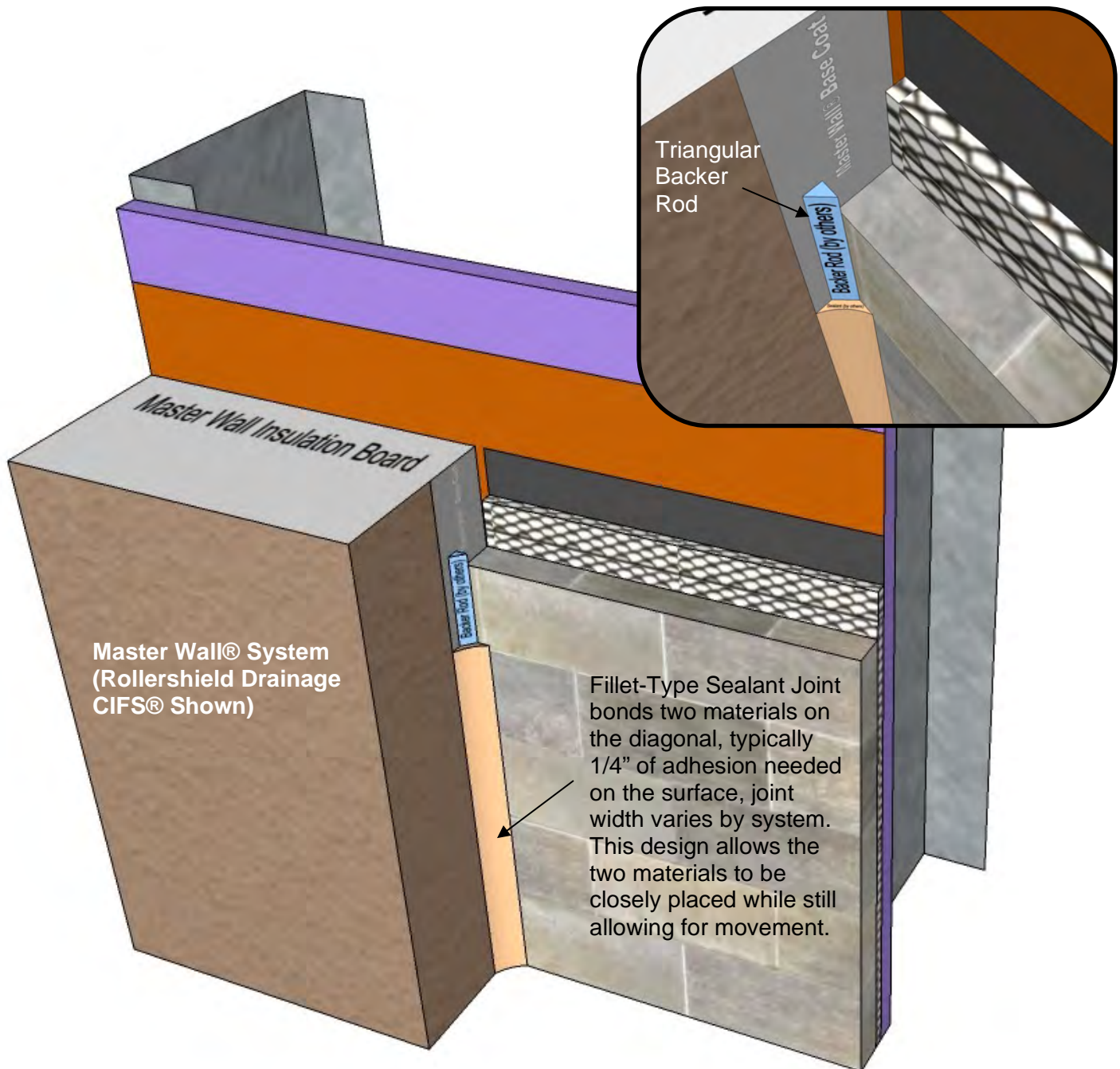
## System Detail



### **Butt Type Sealant Joint with Latex Sealant Bond Breaker**

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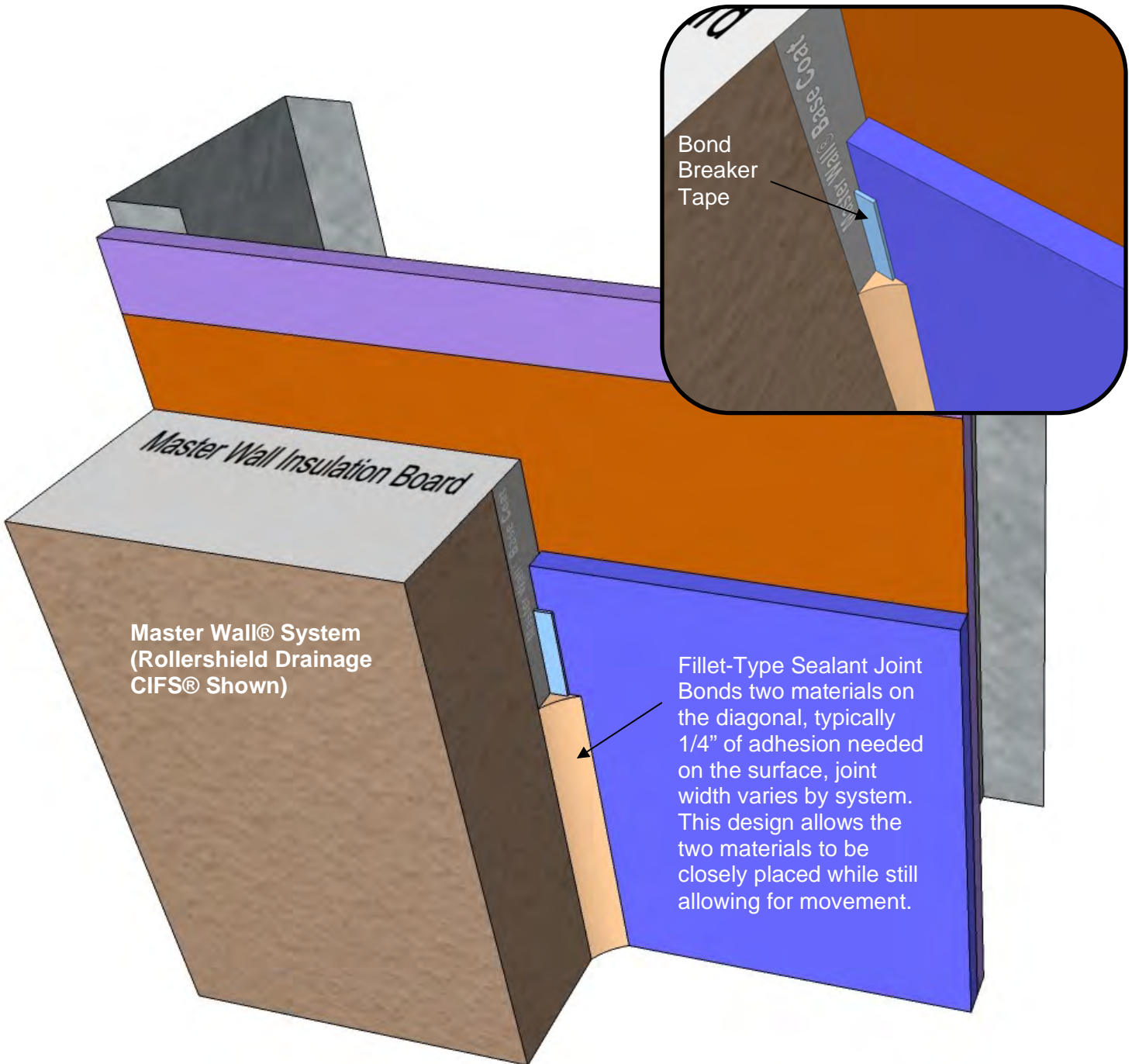
## System Detail



### **Fillet Type Sealant Joint with Triangular Backer Rod**

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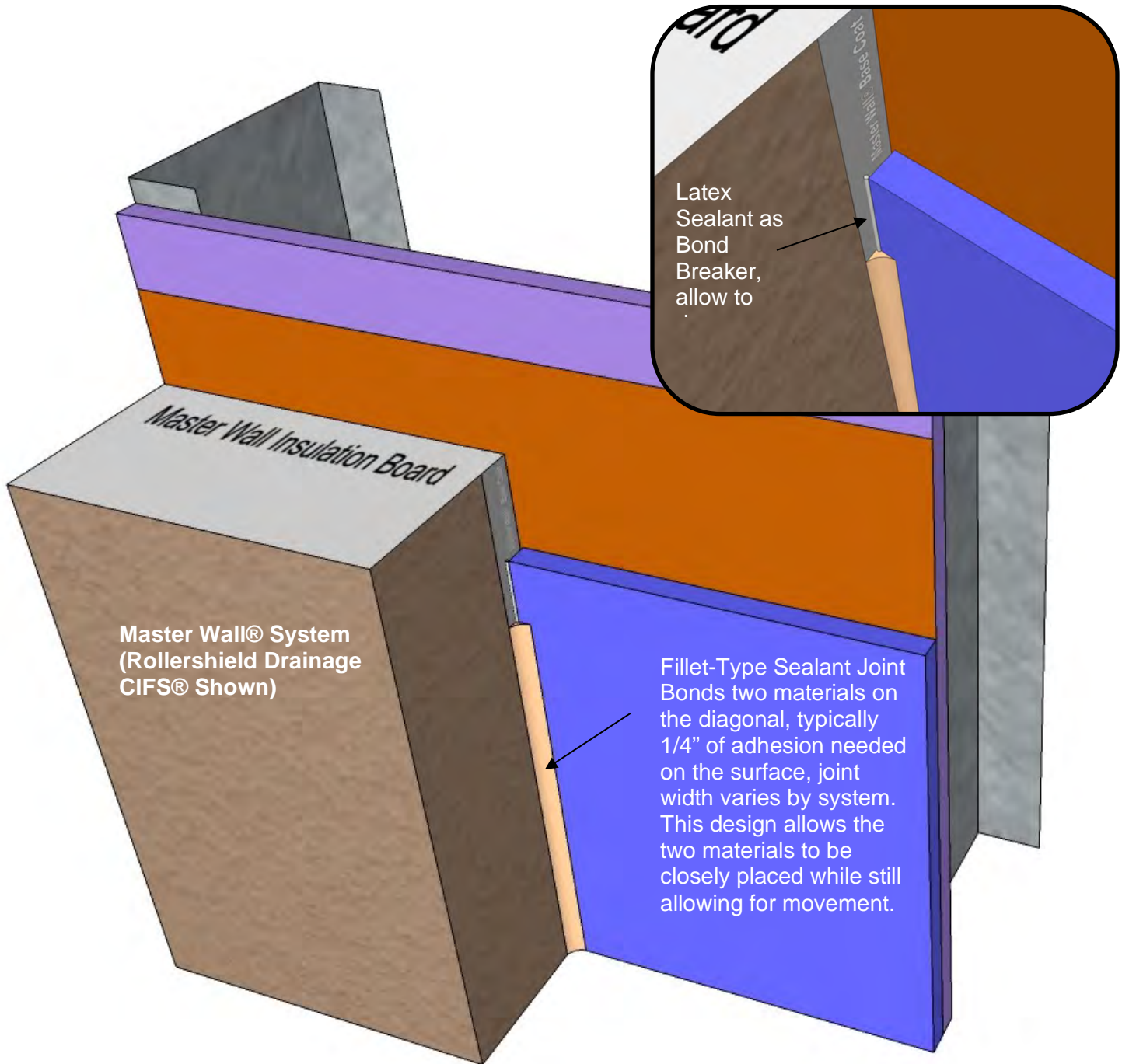
## System Detail



### **Fillet Type Sealant Joint with Bond Breaker Tape**

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## System Detail

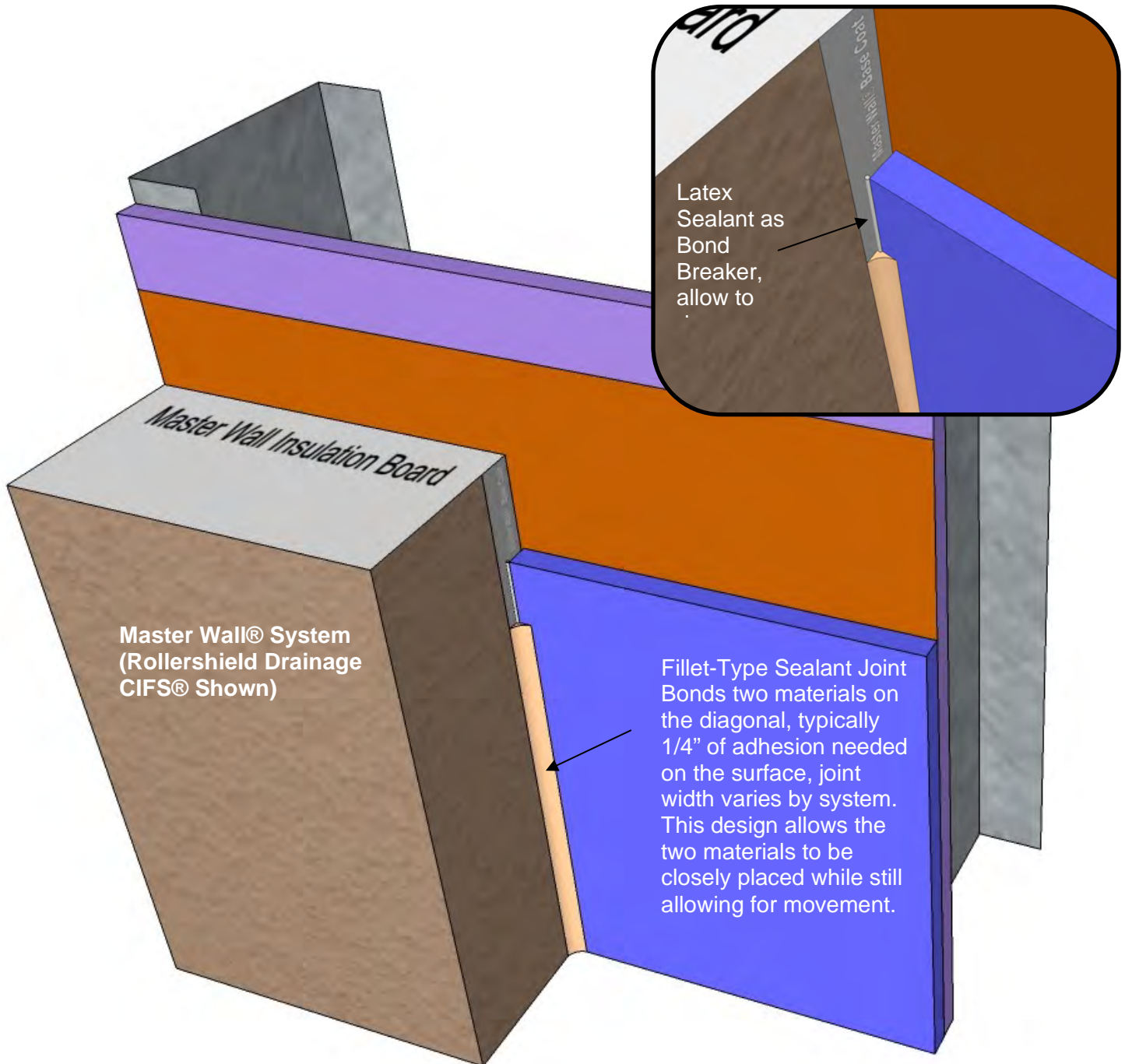


### **Fillet Type Sealant Joint with Latex Sealant Bond Breaker**

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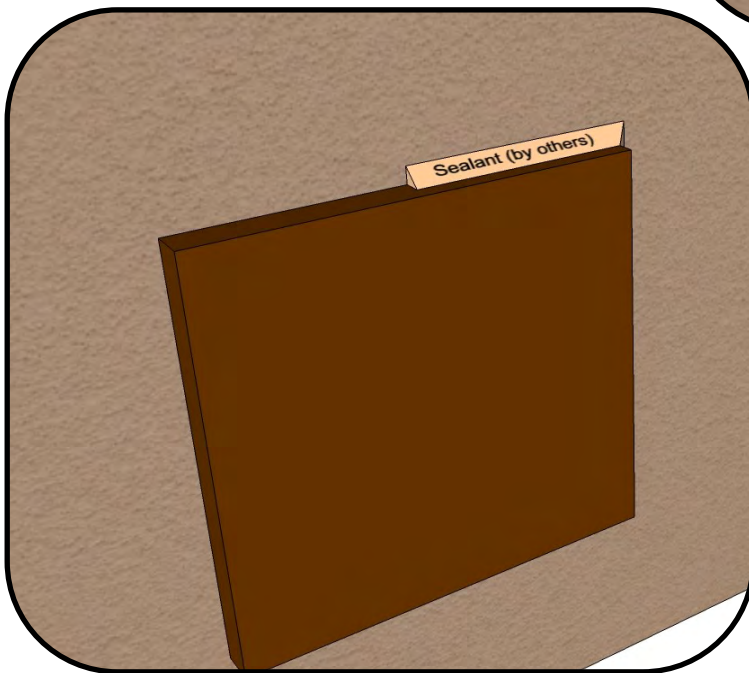
## System Detail



### **Band-Aid Type Sealant Joint with Bond Breaker Tape**

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## System Detail



Non-dynamic joints are typically used where movement is not anticipated but an aesthetic or gasketing function is needed.

### **Non-Dynamic Sealant Joints**

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