METL SPAN®
INSULATED METAL PANELS

ARCHITECTURAL DESIGN GUIDE

HPCI BARRIER™
INSULATED METAL PANEL

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INTRODUCTION

Ultimate Rainscreen Wall Solution

The HPCI Barrier™ insulated metal panel is the ultimate solution for rainscreen wall construction. Within a factory assembled composite unit, the barrier panel provides all of the functions of the water, air and vapor barriers, thermal insulation and rigid sheathing.

The HPCI Barrier™ panel's metal faces are impermeable and exceptionally durable. The panel's core material provides the most efficient thermal insulating performance available today. The factory unit construction provides for single source logistics and single trade installation efficiency unequaled by multiple component construction.

Metl-Span

The HPCI Barrier™ panel is manufactured by Metl-Span. Metl-Span has a long and proven history of leadership in insulated metal panel innovation, product quality, manufacturing capability, customer service and technical support. With six regional manufacturing plants and an extensive professional sales network, the Metl-Span product and services are readily available throughout North America.

Design Guide

This design guide is intended to provide understanding of the HPCI Barrier™ panel product, its intended use and typical project applications.

The project designer is responsible for assuring the HPCI Barrier panel is suitable for the purpose which it is to be used and that the HPCI Barrier™ panel's published credentials, application and installation meet all applicable local building codes and regulations. The building owner is responsible for assuring competent design and installation of the HPCI Barrier™ panel in accordance with good engineering and construction practices.

NOTE: For additional information and clarification of the information in this guide, contact the Metl-Span office:

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Lewisville, TX 75057
www.metlspan.com
Phone: 972-221-6656

RAINSCREEN WALL BASICS

The Building Envelope

Primary Purpose

The primary purpose of the building's envelope (walls and roof) is to protect the building's interior spaces from the exterior environment and provide the desired exterior aesthetics:

Protection Functions

Today's commercial building envelopes are expected to provide the following multiple and diverse protection functions:

- ***Physical Barrier*** - protection from wind forces, flying projectiles and falling debris and protection from unwanted intrusions and attacks
- ***Weather Barrier*** - protection from rain, snow, sleet, hail, dust, air pollution and solar radiation
- ***Thermal Barrier*** - protection from excessive heat loss or heat gain in the building interior
- ***Vapor Barrier*** - protection from excessive humidity, condensation, frost and ice in the building interior and envelope construction
- ***Fire Barrier*** - protection from spread of fire

Service Life

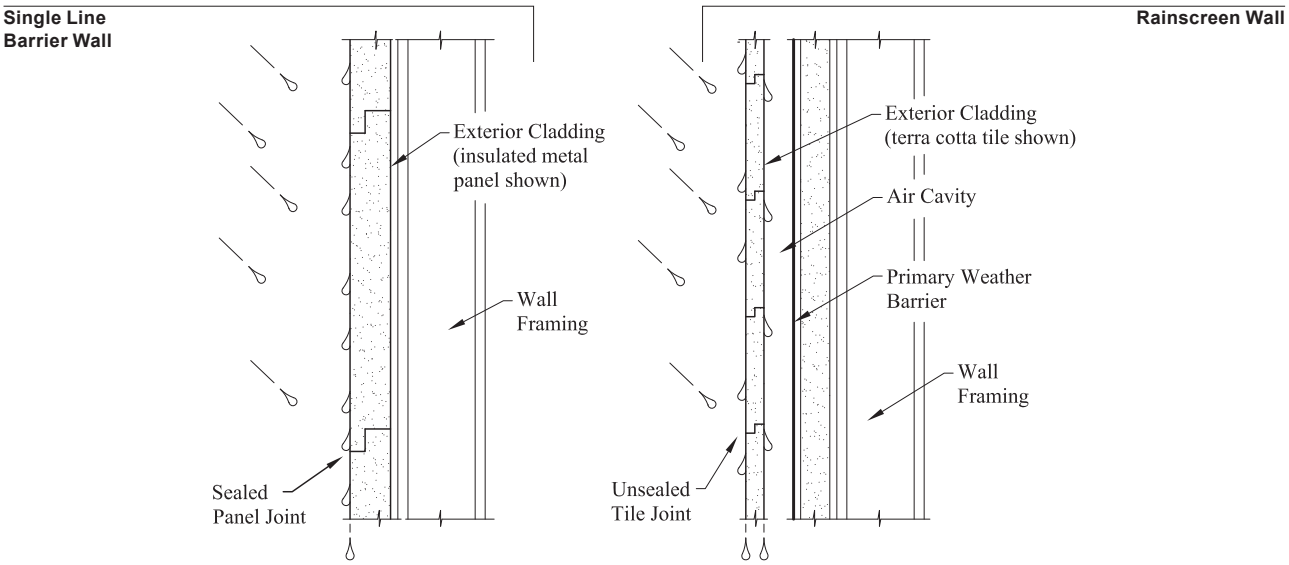
The building envelope is expected to perform these functions with absolute reliability and durability for the planned service life of the building.

Basic Wall Types

In modern construction there are two basic types of wall construction, single line barrier walls (also referenced as "perfect barrier wall") and rainscreen walls (also referenced as "cavity wall" or "back drained wall").

- ***Single Line Barrier Wall*** is a wall system in which the wall's exterior cladding by itself provides the building's wall envelope functions. Common examples are insulated metal panels and precast concrete panels.

- ***Rainscreen Wall*** is a wall system in which the exterior cladding by itself cannot feasibly be made weather tight and vapor tight. The rainscreen wall system allows the use of such claddings while the overall wall construction provides the necessary building envelope functions.



RAINSCREEN WALL DESIGN

Rainscreen Concept

In a rainscreen wall, the exterior cladding provides the physical barrier function, but provides only an initial weather barrier which is not capable of fully blocking air and water infiltration. A continuous air space (cavity) separates the exterior cladding from the inner wall construction. The inner wall construction provides the primary weather barrier, vapor barrier and thermal barrier functions.

Blocked from the influence of direct wind exposure, the cavity provides a static air gap (capillary break) to prevent bridging of infiltrating water from the cladding to the surface of the primary weather barrier and reduces the pressure differential influence on water and air infiltration through the weather barrier. The air cavity also provides for gravity draining of the infiltrating water and evaporative drying of residual water within the cavity.

Pressure Equalized Rainscreen

A variation of the rainscreen wall concept is the pressure equalized rainscreen (PER) design which is intended to minimize air pressure driven water infiltration through the exterior cladding.

The PER design requires balancing of the air flow through the exterior cladding with the air cavity configuration (divided into compartments) and the building's wind exposure conditions in order to equalize air pressure between the exterior and interior sides of the cladding.

Because of the unlimited variations of building configuration, wall construction and climatic conditions, a true and effective PER wall requires special design on a job specific basis and often requires per project performance confirmation by physical testing.

Wall Components

A rainscreen wall is constructed of the following components:

1. ***Exterior Cladding*** - the exterior cladding provides the primary physical barrier and an initial barrier against water penetration and wind forces.

2. ***Air Cavity*** - the exterior cladding is separated from the other wall components by a continuous air cavity. Blocked from the driving forces of the wind, the cavity allows free gravity draining of any water penetrating through the exterior cladding.

3. ***Cavity Drainage*** - at the base of the air cavity, provisions are made to direct the drained water to the exterior.

4. ***Cavity Venting*** - the cavity is vented at the top and bottom to provide for evaporative drying of residual water within the cavity.

5. ***Weather Barrier*** - at the back side of the cavity, a continuous membrane provides the primary barrier against the penetration of water and air into the wall construction and the building interior.

6. ***Flashing*** - flashing interfaces the wall's weather barrier to the adjacent construction (foundation, roof and openings), and directs water within the cavity to the exterior.

7. ***Sheathing*** - the weather barrier membrane is typically backed by a rigid sheathing to support the membrane and stabilize the membrane against differential air pressure forces.

8. ***Vapor Barrier*** - depending upon the building's vapor pressure dynamics, the vapor barrier may be incorporated into the weather barrier or be a separate membrane within the wall construction.

9. ***Thermal Barrier*** - within the wall construction, a layer of insulating material provides the primary protection against excessive heat gain or heat loss within the building interior space and interior surfaces. The insulating material may be located on either side of the weather barrier depending upon the building's vapor pressure dynamics and the insulation material's ability to withstand direct water exposure.

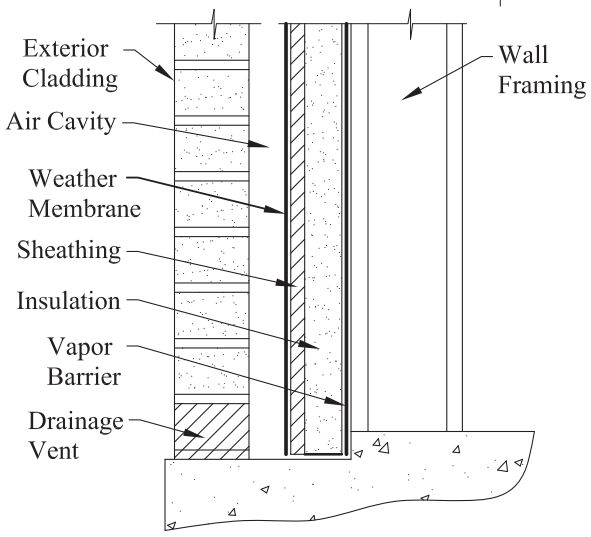
10. ***Wall Framing*** - the wall framing members support the wall assembly components and resist the loads imposed against the wall (such as wind and gravity forces).

11. ***Cladding Connectors*** - furring members, brick anchors, clips etc. support the exterior cladding and transfer the loads imposed upon the cladding to the wall framing members.

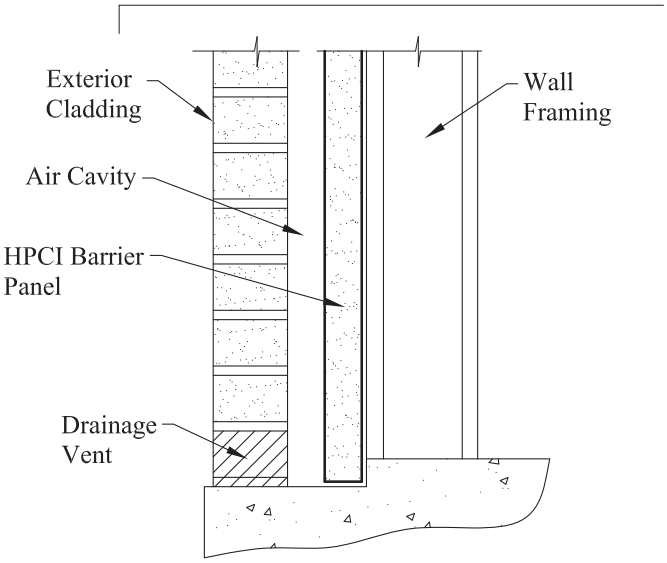
HPCI BARRIER™ PANEL ADVANTAGE

The HPCI Barrier™ panel provides the following advantages over the typical rainscreen wall construction using individual, field assembled barrier components:

Rainscreen Wall with Field Assembled Components



Rainscreen Wall with HPCI Barrier™ Panel



- ***Unitized Construction*** - the factory assembled barrier panel provides a practical and effective replacement of the multiple barrier components.

  Using the HPCI Barrier panel on your project eliminates the multiple source logistics, design complexity and critical field assembly of multiple component rainscreen construction.

- ***Full Function*** - the barrier panel performs the critical functions of the wall's primary and back-up water barriers, rigid sheathing, thermal insulation, air and vapor barrier.

- ***Impermeable Barriers*** - made of absolutely non-permeable steel, the panel's continuous metal facings provide positive and durable barriers against water, air and vapor penetration.

  The panel's exterior facing provides the primary water barrier. The interior facing provides the primary air/vapor barrier and back-up water barrier.

- ***Unequaled Thermal Efficiency*** - the panels provides a continuous insulating barrier of closed cell polyurethane foam, formulated for maximum thermal insulating efficiency.

  Optional panel thicknesses provide optimization of the wall's thermal resistance performance in accordance with the project's requirements.

- ***Strength*** - the panel's composite construction provides exceptional deflection resistance and connection strength capable of resisting the strongest winds and provides a solid surface for mounting of the exterior cladding's sub framing or anchors.

- ***Durability*** - unlike typical membrane barriers, the panel's steel facings are exceptionally resistant to physical damage (punctures, tearing, delaminated seams, etc.), are non-combustible and are corrosion protected for extended service life.

  Long term continuation of the thermal insulating performance is assured by the encasement of the insulation between the panel's steel facings where the insulation is protected from physical damage, moisture infiltration and atmospheric deterioration.

- ***Single Source*** - the HPCI Barrier™ panels provide a single source for the design, materials and pre-assembly of the barrier wall components, including flashing materials and the materials for connection of the barrier panels and furring members to the wall framing.

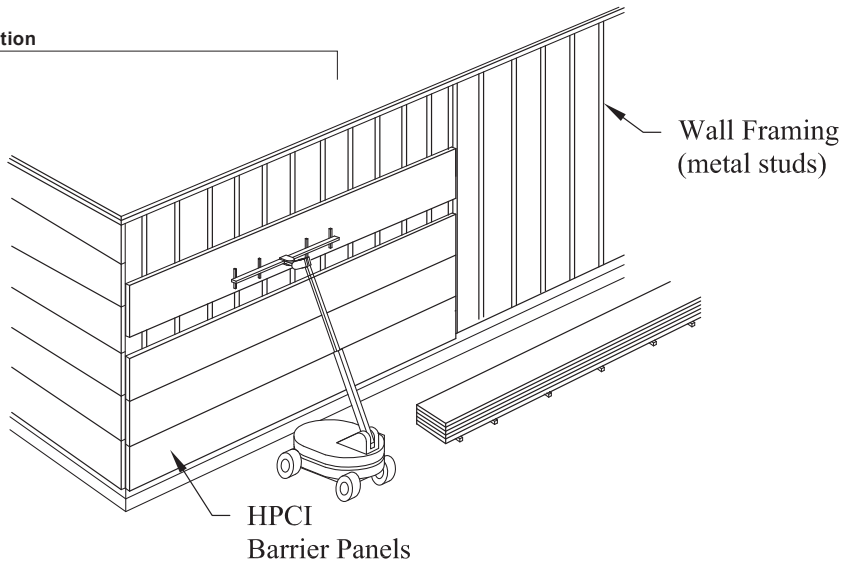
- ***Factory Assembly and Quality Control*** - the barrier components are assembled within the panel units under conditions of factory controlled materials and assembly with comprehensive quality control backed by physical testing of the assembled panels.

  The panel's factory design and factory assembly of the barrier components eliminate concern of component incompatibility, field assembly error and reduces jobsite weather constraints.

- ***Quick, Labor Efficient Installation*** - the barrier panel's unitized construction provides for simple and quick single trade installation with single source jobsite delivery.

  The relatively lightweight panels are readily set in place and connected directly to the exterior flanges of the wall framing with self-drilling fasteners that are water and thermal barrier protected.

Barrier Panel Installation



- ***Proven Panel Design*** - the HPCI Barrier™ panel is based upon the extensively proven Metl-Span CF wall panel design. Millions of sq ft. of CF wall panels are providing trouble free, long term performance as single line barrier walls on thousands of buildings throughout North America. This proven performance includes the extreme temperature differential and vapor drive conditions of cooler/freezer buildings.

  In a rainscreen wall, the panel's proven single line barrier wall performance is further enhanced by the exterior cladding's shielding of the barrier wall from direct weather exposure, solar radiation and physical abuse.

- ***Pre-Qualified Physical Performance*** - the HPCI Barrier™ panel's factory design and factory assembly provides for single source, pre-qualified performance certifications of the wall's overall barrier functions, such as: water and air penetration resistance, thermal insulating performance and wind pressure resistance.

- ***Pre-Qualified NFPA 285 Performance*** - the International Building Code specifies that multi-story wall constructions with combustible components, such as barrier membranes, sheathing and insulation materials, must be tested for Fire Propagation Characteristics in accordance with the NFPA 285 test standard.

  Because of the HPCI Barrier™ panel's factory design and assembly, a pre-qualified NFPA 285 certification is available for wall constructions using the HPCI Barrier™ panel and non-combustible exterior claddings.

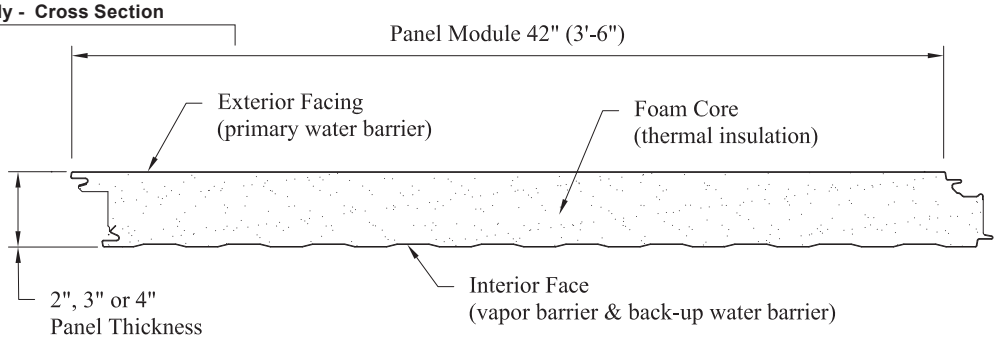
HPCI BARRIER™ PANEL DESCRIPTION

Factory Assembled Unit

The HPCI Barrier™ panel is a factory assembled unit consisting of the following components:

- ***Exterior Facing*** - impermeable steel facing functions as primary water barrier
- ***Foam Core*** - thermally efficient foam core functions as the wall's insulation
- ***Interior Facing*** - impermeable steel facing functions as primary air/vapor seal and back-up water barrier
- ***Composite Assembly*** - the panel composite strength and rigid surfaces function as the rigid sheathing support for the facings and foam core.

Panel Assembly - Cross Section



Panel Dimensions

- ***Panel Width*** - the panel's vertical module width is 42" (3'- 6").
  This panel width provides for practical handling with minimum frequency of joints (seams).

- ***Panel Length*** - the panel's horizontal length is available as 8'-0" to 24'-0".
  The variable length allows matching the panel lengths to the wall framing spacing.

- ***Panel Thickness*** - the panel's thicknesses options are 2", 3" & 4".
  These thickness options provide for optimizing the thermal insulating performance in accordance to the project's requirements.

Panel Assembly Process

The panels are assembled in a continuous line process as follows:

- ***Facings*** - the exterior & interior steel facings are roll formed from factory coated coil stock.
- ***Foam Core*** - the foam mixture is injected between the facings where it expands to completely fill the cavity and chemically bonds to the facings.
- ***Assembly*** - the facings are positioned in a continuous traveling fixture for pre-heating (for controlled foam bond), foam injection, panel thickness control and foam core edge molding.
- ***Finished Panels*** - panels are then cut to length, cured and packaged.

This automated manufacturing process provides optimization of the panel design and assures factory controlled uniformity and predictable performance.

Facings Description

The panel facings are made of the following non-permeable, non-combustible, corrosion protected steel:

- ***Material*** - .016" (.4 mm) thick steel substrate with G-90 Galvanized cladding on both sides, conforming to ASTM A653
- ***Protective Coating*** - .2 mil primer with .7 mil polyester top coat, reflective white color, USDA compliant
- ***Exterior Facing Profile*** - flush face, embossed surface, precision roll formed edges
- ***Interior Facing Profile*** - mesa stiffening ribs, embossed surface, precision roll formed edges

Foam Core Description

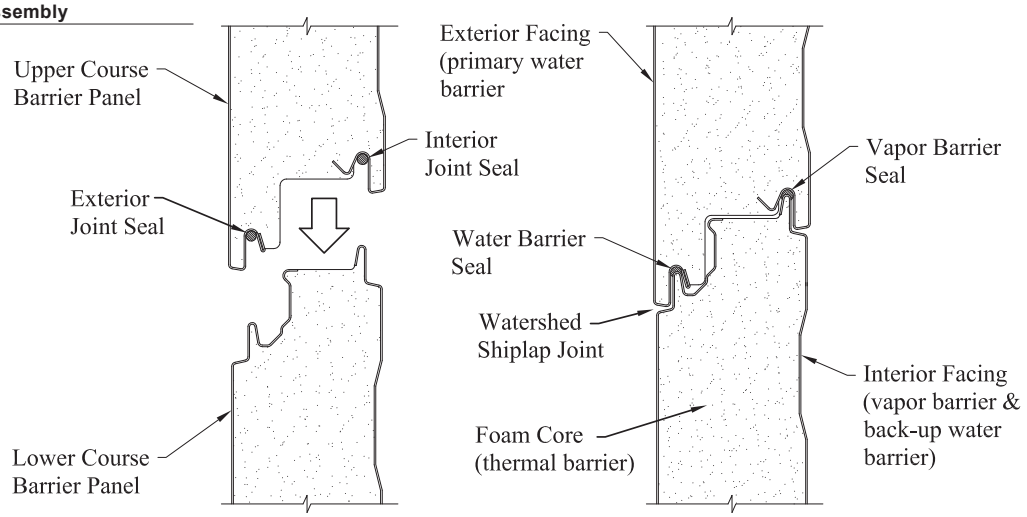
The panel's core is made of the following performance designed insulation system:

- ***Material*** - foamed in place, closed cell polyurethane foam, formulated for maximum thermal efficiency and composite strength
- ***Process*** - two part mixture with blowing agent mixed on line, injected between the panel facings and cured in place
- ***Environmentally Safe*** - zero ODP and zero VOC

Panel Joint Description

On any barrier system, positive and permanent sealing of the water and air/vapor barrier seams is most critical to provide continuity of the barrier function. The HPCI Barrier™ panel joints are positively joined together and sealed by the following proven panel joining system:

Panel Joint Assembly



Double Tongue & Groove Interlock - the panels are mechanically joined with a steel tongue & groove (T&G) interlock at both sides of the panel. The panel faces are extended at the panel's edges to form the T&G profiles and provide seamless barrier continuity between the facings and the joint seal.

The T&G profiles are designed to control the vertical and horizontal positioning of the opposing panels and limit stress on the joint seal caused by differential movement.

Sealant Cavity - on both the exterior and interior facings, the T&G edge profiles provide a cavity for retaining and protecting the joint's sealant. The special designed cavity controls the functional thickness of the sealant and assures the sealant's uniform contact and compression.

Joint Sealant - the T&G facing joints are sealed with a non-drying butyl sealant formulated for long term adhesive and cyclic elongation performance within the T&G profile and facing material.

The sealant system has been proven on millions of sq. ft. of wall panel installations, as well as millions of sq. ft. of low pitch, standing seam metal roofs which are subject to the severest weather extremes including the ultimate test of long term water ponding.

Water Shed Design - where the panels join, the exterior facing of the upper panel overlaps the lower panel to provide a water shed protection of the joint. The T&G profiles are also oriented to provide an additional water shed protection of the joint sealant.

Core Interface - continuity of the thermal insulation through the panel joints is provided by a shiplap joining of the foam core edges.

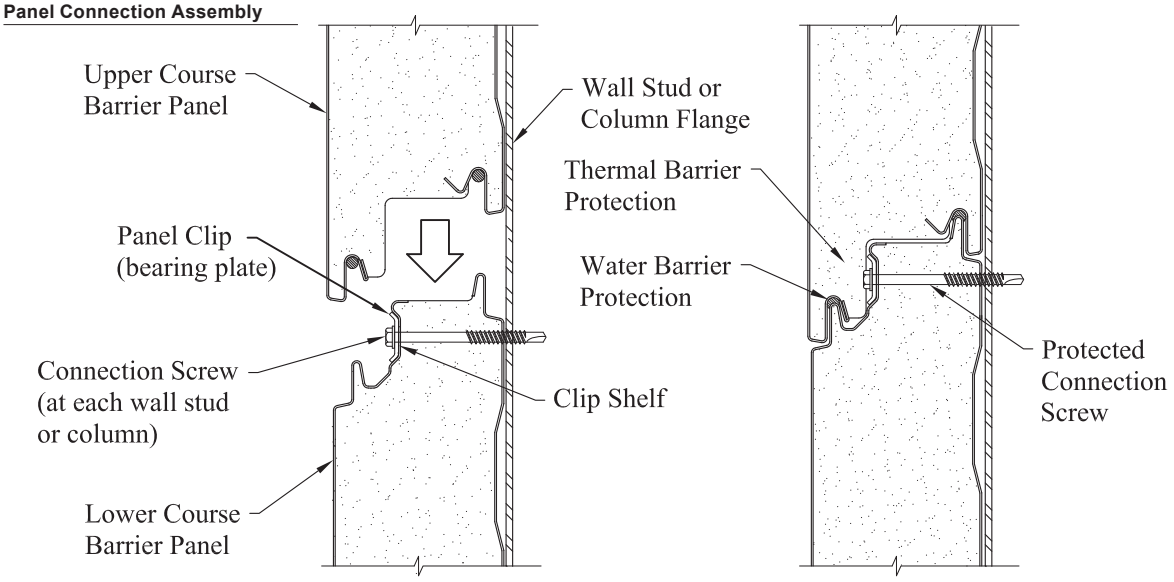
Fully Protected Joint - On the barrier panel, the joint interior is fully protected by the exterior and interior facing seals.

Other barrier panel systems often have an open joint design that allows water and air exposure into the depth of the panel. This causes a significant reduction of thermal resistance in the critical joint area and exposes unprotected insulation within the joint to moisture and atmospheric deterioration. On such open joint panels, only the interior facing is actually sealed. The exterior facing is only an unsealed water shed, not a continuous water barrier.

Panel Connection Description

The HPCI Barrier™ panels are connected directly to the wall's steel framing members with panel clips and self-drilling or tapping screws. The screws are positioned within the horizontal panel joints where they are protected from water exposure and have reduced thermal conductance.

Panel Connection Assembly



At perimeter conditions, such as base, eave and openings, the panel edges are connected to the framing members with through-panel screws.

Panel Clip - 4" long, 16 ga. G-90 Galvanized steel with factory holes for the connection screws.

The clips are located along the top edge of the barrier panel, at each wall framing stud or column. The clips function as bearing plates to distribute the connection loads over a greater panel edge area and provide a locating guide for the connection screw. The clips are positioned by a retaining shelf formed into the panel edge.

Clip Connection Screw - for panel clip connections, the standard screw is:
#1/4"-14, self drilling (type 3), hex head, carbon steel screw with corrosion protective coating.

Through Panel Screws (protected) - for perimeter connections where the screw is protected by flashing, the standard through-panel connection screw is: #1/4”-14, self drilling (type 3), low profile head, carbon steel screw with corrosion protective coating or cladding.

Through Panel Screws (unprotected) - for perimeter connections where the screw is not protected by flashing, the standard through-panel connection screw is: #1/4”-14, self drilling (type 3), hex head, carbon steel screw with an elastomeric sealing washer and corrosion protective coating or cladding.

Thicker Wall Framing Members - for connections to thicker framing member flanges, such as column flanges, self drilling (type 4 or type 5) screws or tapping screws may be specified.

Stainless Steel Screws - for more severe corrosive environments, stainless steel tapping screws may be specified.

Panel Weight

Following are the panel weights (packaging not included):

2” thick panel - 5.61 lb. per lin. ft. 1.60 lb. per sq. ft.
3” thick panel - 5.79 lb. per lin. ft. 1.65 lb. per sq. ft.
4” thick panel - 5.97 lb. per lin. ft. 1.71 lb. per sq. ft.

Panel Packaging

The finished panels are stacked in bundles with micro foam interleafing. The bundles are fitted with a full length bottom bearing pad and spaced blocking for fork lift access and jobsite staging. The bundles are then end capped and stretch wrapped for weather and abuse protection.

HPCI BARRIER™ PANEL PERFORMANCE

Air and Water Barrier Performance

The following air and water barrier performance is based upon testing the full scale wall construction (panels, support framing and flashing) at full story height.

Air Infiltration Rate - 0.01 cf/m when tested at 20 psf air pressure differential in accordance with ASTM E283.

Water Penetration - no penetration when tested at 20 psf air pressure differential in accordance with ASTM E331.

Water Penetration - no penetration when tested at @ 6.24 psf air pressure differential and 2 hour duration in accordance with ASTM 331 test standard (air pressure differential and duration are in accordance with IBC Section 1403.2.2.3 & 4).

Thermal Insulating Performance

Thermal Conductance - K factor of 0.14 btu/sf/hr/ºF per 1" thickness, when tested at 75ºF (24ºC) mean temperature in accordance with ASTM C518 test standard (does not include air film). HPCI Barrier Panels are available in 2", 3" or 4" thickness.

Fire Performance

Surface Burning Characteristics - no more than 25 flame spread index and 450 smoke developed index when tested per ASTM E84 test standard.

Exterior Wall Flammability - NFPA 285 certification for rainscreen assemblies consisting of the HPCI Barrier panel with non-combustible cladding.

DESIGN CONSIDERATIONS

Design Responsibility

Barrier Panel Suitability - the building designer is responsible to determine that the HPCI Barrier™ panel is suitable for the specific project's environmental, operational and construction conditions.

Rainscreen Wall Design - the building designer is responsible for the actual rainscreen wall design in accordance with its functional requirements and code requirements for the specific project. The design considerations presented in this design guide are general information intended to assist understanding and application of the HPCI Barrier™ panel.

Proper Installation - as with any barrier system within a rainscreen wall, the barrier panel and flashing will be concealed and inaccessible to inspection and repair after the exterior cladding is installed. It is of critical importance that the building designer ensures the barrier panel installation is monitored for proper assembly with the proper flashing, sealants and fasteners and given a complete detailed inspection before the installation of the exterior cladding.

Architectural Details - the details referenced in this section are found in the Architectural Details section at the back of this design guide. The details are general representations of HPCI Barrier™ panel applications. The actual construction details are the responsibility of the building designer.

Erection Sequence

Following is the normal installation sequence for the rainscreen wall assembly:

- Foundation
- Wall framing (including openings framing)
- Interface of adjacent construction vapor barriers to perimeter wall framing
- Base flashing and interior flashing
- Barrier panels (including opening cut-outs)
- Exterior flashing
- Sub framing or anchors for the exterior cladding system
- Exterior cladding system
- Interior gypsum board and finishing

The HPCI Barrier™ panel system allows the barrier panels and flashings to be fully assembled and sealed before installation of the exterior cladding system (reference detail HPCI-BP-01 for general barrier wall assembly).

With the insulation and joint seals protected within the steel panel facings, the assembled barrier panels and flashing can be directly exposed to wet weather without the immediate protection of the exterior cladding.

Wall Framing Requirements

Structural Adequacy - the wall framing members and connections must be properly designed and in satisfactory condition to accept the erection loads and service loads of the exterior cladding system and barrier panels in accordance with the project's specified design loads and allowable deflections.

Wall Framing Type - the information in this design guide is based upon the rainscreen wall assembly being supported by typical stud wall framing with 18 ga. or 16 ga. steel vertical support members (studs) at 24" spacing, and positioned and secured by top and bottom stud tracks.

Wall Configuration - the barrier panels are intended for application on horizontally straight and vertically plumb walls. Because of the barrier panel's composite strength, the panels cannot be bent to conform to curved walls.

Alternate Support Spacing - because of the strength of its composite construction, the barrier panel can be applied to framing with greater spans between the supports. However, the sub framing or veneer anchor spacing requirements for the exterior cladding is normally the controlling factor. For support spacing greater than 24", contact Metl-Span for specific barrier panel load/span information.

Support Member Alignment - following are the alignment tolerances for the vertical supports members at 24" max. spacing:

- 1/16" maximum misalignment between any two adjacent support members in the direction perpendicular to the wall plane
- +/- 1/8" maximum misalignment of any vertical support member from the nominal wall plane in the direction perpendicular to the wall plane

Allowable Deflection - in the direction perpendicular to the wall plane, the allowable deflection limit of the vertical support members for HPCI Barrier™ panel applications is L/120. However the allowable deflection criteria of the exterior cladding system often controls. Reference the cladding manufacturer's information for deflection limitations.

Beam Deflection - if the wall framing is subject to intermediate floor and roof beam deflection, it is critically important that vertical framing members have appropriate slip connections to assure the barrier panel and sub framing connections to the wall framing are not subjected to the beam deflection.

Thermal/Expansion - because the barrier panel's interior metal facing is in direct contact with the steel wall framing members and both are on the same side of the wall's thermal insulation, there is no significant temperature differential and resulting thermal expansion differential between the framing and the bearing face of the barrier panel.

On taller walls, differential thermal expansion between the exterior cladding and wall framing may require expansion joints for the cladding system and the vertical sub framing members (if applicable). Reference the cladding manufacturer's information for height limitations and expansion joint requirements.

Barrier Panel Loads - the barrier panels are connected directly to the wall framing members. In this manner, wind loads imposed upon the barrier panel and the barrier panel's gravity loads will be transferred to the wall framing. Reference the Panel Description section of this guide for the barrier panel weights.

Because the barrier panels are secured between the wall framing members and the exterior cladding's sub framing, the wind and gravity loads imposed upon the exterior cladding's sub framing normally control the loads applied to the wall framing members with exception of the additional gravity load of the barrier panel.

Caution: during the period between the barrier panel installation and the exterior cladding installation, the barrier panel will be directly exposed to wind loads. In high wind areas, the exterior cladding's sub framing may need to be installed concurrent with the barrier panel installation.

Exterior Cladding Loads - the exterior cladding's sub framing members are connected to the wall framing members by fasteners passing through the barrier panel. In this manner, loads imposed on the exterior cladding's sub framing or anchor bases are transferred to the wall framing members.

For terra cotta tile & track systems supported by horizontal furring channels, specific furring channel spacing requirements are charted on detail HPCI-TC-03 in the architectural details section of this guide. The furring channel spacing values are based upon the variables of: tile support track spacing, tile & support track weight and allowable negative wind pressure.

For horizontal metal panel cladding systems supported by vertical furring angles, specific furring angle connection spacing requirements are charted on detail HPCI-MP-03 provided in the architectural details section of this guide. The furring angle connection spacing values are based upon the variables of: metal panel connection spacing, metal panel weight and allowable negative wind pressure.

Barrier Panel Layout

Reference detail HPCI-BP-01 for general view of barrier wall assembly.

Panel Orientation - the HPCI Barrier™ panels are horizontally oriented for application to the vertical wall framing members. The panels are stacked to the required wall height.

Unlike other barrier panel systems, the HPCI system does not require the bottom edge of the bottom panel to be field cut flush. The bottom and intermediate panels are stacked as full width panels and the top panel is field cut to the wall height (if necessary).

The panels have a top and bottom edge orientation. The proper orientation is necessary for panel installation and to provide water shed protection of the joint seals between the stacked panels.

Vertical Modular Spacing - the vertical spacing of the barrier panel's horizontal joints is 3'-6" (42"). The vertical spacing module starts from the bottom edge of the bottom panel.

If the wall is continuously interrupted, such as by a floor or horizontal oriented expansion joint, the layout of each wall section above and below the interruption is as an independent wall.

Panel End Joint Spacing - the barrier panel's end joints (vertical joints) must be centered on a vertical wall framing member. Because the barrier panel length is limited to 24', the maximum allowable spacing of the panel end joints is 24'-0".

To provide bearing for the ends of the opposing panel, a double stud or wide flange column is required at the panel end joints.

Wall Corners - at the wall corners, one of the panels must extend past (overlap) the end of the opposing panel. The overall length of the overlapping panel includes the length of the overlap extension.

Wall Openings - wall openings require perimeter framing suitable for connection of the barrier panels at the perimeter of the opening.

The location of the opening perimeter is not dependent upon the barrier panel joint locations. However to avoid difficult to control thin panel strips, the top and bottom edges of the barrier panel cut-out are located not less than 3" from the nearest horizontal panel joint whenever feasible.

Sub-Framing

Sub Framing Types - the exterior cladding's sub framing may be horizontally or vertically oriented furring members or may be veneer anchors depending upon the claddings system's support requirements.

Horizontal Sub Framing - horizontal sub framing members are typically furring channels which are set against the face of the barrier panel and are connected to each wall framing members with structural screws passing through the barrier panel (reference details HPCI-TC-01 & 02 for typical horizontal sub-framing).

The vertical spacing of the sub framing members is determined by the exterior cladding system's loads imposed upon the sub framing member and the wall framing members. Because the sub framing connection is not dependent upon the barrier panel joint spacing (as required by other barrier panel systems), the sub framing connections may be located at the most efficient spacing.

Vertical Sub Framing - vertical sub framing members are typically furring angles or furring channels which are set against the face of the barrier panel and are connected to each wall framing members with structural screws passing though the barrier panel. In some cases the furring members may be supported by brackets which set against the barrier panel and are connected to the wall framing members (reference details HPCI-MP-01, 02 & 05 for typical vertical sub framing).

The required vertical spacing of the sub framing member's connections to the wall framing member is determined by the exterior cladding system's loads imposed upon the sub framing member and the wall framing members.

Veneer Anchors - for exterior cladding requiring veneer anchors (such as brick veneer), tie and bracket type anchors are required. The anchor brackets (bases) are set against the face of the barrier panel and are connected to each wall framing members with two screws passing through the barrier panel (reference details HPCI-BC-01 & 02 for typical veneer anchors).

The vertical spacing of the veneer anchors is determined by the cladding system's loads imposed upon the wall framing members.

Connections

Uniform Load Distribution - to uniformly distribute the panel loads to the wall framing members, the barrier panels and sub framing members are connected to each vertical wall framing member.

The furring member's connection to the wall framing members may require either one or two screws depending upon the load requirements.

Panel and Sub Framing Connections - the information in this guide is based upon the standard 1/4"-14 self drilling Tek 3 screws for panel and sub framing connections to 18 ga. and 16 ga. wall framing members at 24" max. spacing.

Following are the standard connection fastener pull out values:

- For 18 ga. framing members, design pull out value is 204.3 lbf (per safety factor of 3)
- For 16 ga. framing members, design pull out value is 293.3 lbf (per safety factor of 3)

For thicker wall framing members, the alternate panel connection fasteners may be 1/4" - 24 Tek 4, 4.5 or 5 self-drilling screws or appropriate 1/4" self-tapping screws with the pre-drilled holes sized according to the framing member thickness.

Anchor Connections - because of the normally close vertical spacing required for veneer anchors, the strength of the standard 1/4" screws may not be required for the anchor connections. The required screw size (and pull-out value) is determined by the cladding system's loads imposed upon the wall framing members.

Connection Fastener Seals - at each sub framing or veneer anchor connection, the connection screw's penetration through the barrier panel facing is sealed with an elastomeric butyl sealing pad positioned between the panel facing and the flange of the sub framing member or veneer anchor base.

To ensure proper placement and functioning of the sealing pad, the self adhering pad is applied to the back side of the sub framing or anchor base flange, over the pre-punched or pre-drilled connection holes in the flange. Upon installation of the sub framing member or anchor against the barrier panel, the sealant is fully compressed between the flange and panel facing by the connection screw and protected under the cover of the sub framing or anchor base flange.

Corrosion Resistance

Exposure to moisture within the air cavity requires that the sub framing members, veneer anchors and connection fasteners have corrosion protection. The building's corrosive exposure conditions will determine the required corrosion protection.

As a minimum, the steel sub framing members and veneer anchors will have a protective zinc cladding (Galvanized), and connection fasteners will have a protective plating or equally effective coating. More specific corrosion protection may be specified by building code or other criteria.

Caution: use in extreme corrosive exposure conditions will require approval by the barrier panel manufacturer and may require hot dipped Galvanized or stainless steel framing members and stainless steel connection fasteners.

Thermal Barrier

General Concept - the barrier panel's polyurethane foam core provides the wall's thermal barrier function. The ship lap joining of the insulation at the horizontal panel joints and the application of foam-in-place polyurethane insulation to fill the cavities at the perimeter junctions and panel end joints assures continuity of the wall's thermal barrier function around the building.

Thermal Resistance - the thermal efficiency of the barrier wall is determined by the barrier panel thickness. Following are the thermal resistance "R" values per panel thickness based upon the tested thermal conductance .14 "K" value (without air films):

- 2" thick panel = R 14.28
- 3" thick panel = R 21.42
- 4" thick panel = R 28.57

Thermal Barrier Stability - the encapsulation of the thermal insulation between the barrier panel's steel facing prevents the deterioration of the insulation and the reduction of insulating efficiency caused by water migration into the insulation.

Exterior Cladding Effects - in determining the thermal efficiency of the overall wall construction, consideration must be given to the following:

- The exterior cladding shields the surface of the barrier panel from direct wind effects.
- The exterior cladding shields the surface of the barrier panel from direct solar radiation.
- The barrier panel's reflective white finish reduces radiation effects from the exterior cladding.
- Convection air flow within the vented air cavity evacuates accumulated warm air.

Air/Vapor Barrier

General Concept - the barrier panel's interior facing functions as the wall's air/vapor barrier and back-up water barrier. The metal interior panel facing and metal interior flashing are lapped and sealed together at wall corners and panel end joints to provide complete continuity of the wall's air/vapor barrier around the building (reference details HPCI-BP-03 & 04).

At the base and eave, the interior barrier panel facing and flashing are sealed to the floor and roof assemblies (reference the respective perimeter condition details).

Vapor Barrier Integration - if the building has interior floor and ceiling vapor barrier membranes, the perimeters of the membranes are integrated with the barrier panel's interior perimeter seals to provide continuity of the overall building's air/vapor barrier function.

If the building has interior vapor barrier membranes at opening perimeters, the membranes are integrated with the exterior opening flashing.

The need and application of floor, roof/ceiling and opening vapor barriers is determined by the building designer in accordance with the building's climatic and operational conditions and expected vapor pressure differentials.

Perimeter Assemblies - at the base and eave, the wall framing stud tracks may be used as the air/vapor barrier bridge between wall and the floor and roof construction. In such case, the webs of the tracks are sealed to the floor and roof assemblies and the track butt joints and other holes are closed with vapor seal tape or equal.

The base flashing and interior flashing are installed and sealed to the stud tracks. The barrier panels are then installed with the panel's interior facing lapped and sealed to the exterior flange of the stud tracks. If applicable, the edge of the floor and roof/ceiling vapor barrier membranes are sealed between the stud track and panel facing or flashing (reference the respective perimeter condition details).

Air Cavity

General Concept - the air cavity separates the interior surface of the exterior cladding from the exterior facing of the barrier panel with a vented and drained air space.

Air Cavity Width - the cavity must be of sufficient width to provide:

- Clearance for the exterior cladding's sub framing or veneer anchors
- Clear space to prevent bridging of infiltrating water from the back side of cladding to the barrier panel facing
- Clear space for free gravity draining of infiltrating water from the back side of the cladding
- Clear space for effective air pressure equalization and effective convection air flow in the cavity for drying and warm air evacuation

The HPCI Barrier™ panel requires the cavity to be a continuous 1" minimum width clear space extending vertically the full height of the barrier wall. However the exterior cladding design or building code may require a greater cavity width. It is the building designer's responsibility to determine the appropriate air cavity design in accordance with the specific project's requirements.

Caution: when using horizontal sub framing, the depth to the sub framing members must be added to the required cavity width.

Air Cavity Venting - the air cavity must have sufficient vents at the bottom of the cavity for positive drainage of the infiltrating water to the exterior. The cavity's top and bottom vents together must provide sufficient vent area for effective convection air flow (reference respective perimeter condition details).

For tile and panel type exterior cladding with a projected base flashing, the drainage vent may be provided by a uniform vertical clear space between the bottom edge of the cladding and the base flashing.

For tile and panel type exterior cladding with a recessed base flashing, the drainage vent may be provided by a uniform horizontal clear space between the bottom interior edge of the cladding and the vertical face of the base flashing.

For brick veneer supported by the foundation, the drainage vent is typically open head brick end joints located to drain the base of the cavity. The vents are spaced at 24" min. or as required for effective drainage.

Bug Screens - to prevent insect and rodent entry into the air cavity, the vents are protected with cavity vent screening.

Mortar Nets - for brick (or other mortar jointed cladding), mortar netting is installed to prevent clogging of the drainage vents by excess mortar falling into the cavity.

Water Barrier and Flashing Assemblies

General Concept - the barrier panel's exterior facing functions as the wall's primary water barrier and the interior facing functions as the back-up water barrier. The barrier panel facings and flashing are lapped and sealed together to provide complete continuity of the wall's water barrier function around the building.

Base Assembly - at the foundation and intermediate floors, a metal or membrane base flashing seals the bottom edge of the barrier panel from the building interior and directs accumulated drainage water at the base of the air cavity to the exterior (reference the various base condition details).

With the HPCI Barrier panel, the base flashing may be extended and sealed to the back side of the barrier panel rather than applied to the panel's exterior surface. This eliminates the vulnerability of the upward exposed lap of a surface applied flashing and allows any moisture within the barrier wall/flashing assemblies to drain to the exterior without being trapped behind a surface applied flashing.

Bearing Block - the bottom exterior edge of the barrier panel is raised above the base flashing to provide a vent for drainage from under the panel. Rigid foam blocks may be provided for supporting the bottom edge of the barrier panel at the required height during the panel installation. The bearing block also protects the base flashing from damage during the barrier panel installation and insulates the space between the panel and foundation.

Foundation Ledge - as with any rainscreen system, a stepped ledge at the edge of the foundation positions the bottom of the air cavity below the floor line. In this manner, drainage water accumulating at the bottom of the cavity cannot infiltrate into the building interior even if there is a failure of the base flashing system (reference the respective base condition detail).

The foundation ledge must be located at sufficient height above grade to prevent subjecting the wall's base seals to flooding by exterior water and provide for positive drainage of the air cavity.

Caution: if the stepped ledge is omitted, the base assembly seals must have the long term capability of resisting the direct infiltration pressure of standing water at the floor line.

Vertical Joint Assemblies - at the junctions of the barrier panels at wall corners and panel end joints, the joint cavity is filled with a foam-in-place polyurethane insulation and covered by the exterior flashing (reference detail HPCI-BP-03 & 04).

On wall corners, where the barrier panel ends overlap, the interior facing of the overlapping panel is removed to eliminate through-metal conductance of the facing and to expose the panel's foam core for bonding with the foam-in-place insulation.

Eave and Parapet Assembly - at the roof eaves and parapets, the roof membrane is extended over the barrier panel's exterior facing in a water shed manner and sealed to the facing to provide continuity of the water barrier between the wall and roof assemblies (reference the respective eave and parapet details).

At the interface of the barrier panel to the roof insulation, the cavity is filled with foam-in-place insulation. The interior facing of the barrier panel is removed to eliminate through-metal conductance of the facing and to expose the panel's foam core for bonding with the foam-in-place insulation.

Opening Perimeter Assembly - at window and door openings, the barrier panels are cut to fit around the perimeter of the opening framing. A perimeter flashing is extended from the seal between the opening framing and the window or door frame and is lapped and sealed to the exterior facing of the barrier panel to provide continuity of the water barrier between the barrier panel and the window or door unit.

The head, jamb and sill flashing are lapped and sealed at the corners to form a complete perimeter weather seal around the opening. When feasible, the head flashing may be extended to the back side of the barrier panel in the same manner as a base flashing (reference the respective head, sill and jamb condition details).

If the opening framing is wood or other non-conductive material, the cavity at the junction between the edge of the barrier panel and the opening framing is filled with foam-in-place insulation to add continuity of the thermal barrier.

Cap Flashing - the use of a cap flashing above window and door openings provides additional protection of the critical head flashing seals by preventing the seal's exposure to standing water (reference the respective head condition detail).

With its ends bent up as end dams to minimize water spilling into the air cavity, the cap flashing collects and redirects infiltrating water to the exterior.

NFPA 285 Certification

The rainscreen wall assembly consisting of the HPCI Barrier™ panel and non-combustible exterior cladding is certified per Intertek Design Number MSI/MWP 30-01 as being in compliance with the requirements of NFPA 285.

The NFPA 285 certified design requires that the barrier panel's exposed foam core at the perimeter of the opening is protected by a steel fire block flashing and mineral fiber insulation packing. If barrier panel end joints are located above the opening, the design requires that the joint's cavity is packed with mineral fiber insulation.

Other window flashing designs may be acceptable per confirmation by NFPA 285 tests or by engineering evaluation. In any case, the wall design is subject to approval by the governing code authority.

Flashing Basics

General Concept - because the barrier panel facing is steel, the panel facing readily accepts self-drilling metal screws and rivets for attachment of metal flashing edges or membrane termination bars. The flashing is lapped over the barrier panel facing with sealant in the lap and secured with fasteners.

Metal vs. Membrane Flashing - the flashing may be metal or membrane depending upon the requirements of the specific application and the building designer's preferences.

Metal Flashing - because metal flashing is rigid, it holds its shape, is not subject to wind flapping and does not require termination bars to secure its edges. Metal flashing is more resistant to puncture and rupture damage, is mechanically secured at splices and corner joints and is non-combustible.

A suitable metal flashing material compatible with the HPCI Barrier™ panel is 26 ga. galvanized steel with polyester (or equal) coating, or stainless steel. Because of the greater exposure to abuse, the base flashing may be of thicker material (24 to 20 ga.).

Caution: dissimilar metals such as copper and aluminum are not suitable for barrier panel flashing because of the potential galvanic corrosion reaction with steel sub framing members and steel barrier panel facing.

Membrane Flashing - because membrane flashing is flexible, it can be more readily formed-in-place and field bonded for splices and corner joints. Membrane flashing also has low thermal conductance. Self adhered (peel & stick) membranes can simplify installation.

There is a broad selection of membrane materials and bonding methods. Reference membrane flashing manufacturer's information for performance and application suitability.

Membrane Termination Bar - the termination bar is used to secure the flexible edges of membrane flashing. When using self adhering membrane the termination bar may not always be necessary except for upward lapped flashing such as at some base and head conditions.

Positive sealing of upward lapping membrane edges is most critical because of the direct water exposure of the lap edge. At the top edge of all upward lapping membrane flashing (including self adhering membranes) a termination bar is required for a positive long term seal of the membrane edge to the barrier panel facing.

Caution: before specifying self adhering (peel & stick) membrane, it must be confirmed that the membrane has long term adhesion and sealing compatibility with the barrier panel's polyester enameled surface.

Flashing Fasteners - the information in this guide is based upon a standard #12 Tek 1 self- drilling screw for attachment of the metal flashing and membrane termination bar to the barrier panel facing.

The standard fastener for metal flashing splices and corner joints is the 1/8" dia. stainless steel rivet.

Flashing Sealant - the sealants specified on the details of this design guide are proven by certified performance testing and long term service performance as the most effective sealants for insulated metal panel construction.

For critical flashing most subject to water exposure, the specified sealant is a specifically formulated semi-solid butyl tape sealant. The tape sealant's adhesion, cohesion and compression resistance properties assure positive long term sealing performance. The tape sealant's self adhesive properties simplify sealant application and alignment, and helps secure the flashing in place prior to the fastener installation.

For other exterior flashing applications, where minimum thickness is required for sub framing clearance, the specified sealant is a urethane gun grade sealant formulated for exterior metal construction applications.

For interior perimeter vapor seals, the specified sealant is a non-drying butyl sealant formulated for metal construction. Such sealant allows alignment movement of the barrier panel during installation.

AVAILABILITY & WARRANTY

Material Availability

In addition to the HPCI Barrier™ panel, standard metal flashing, standard barrier panel and subframing connection screws, standard flashing fasteners and flashing sealants are available from Metl-Span as a single source order and shipment.

Material Warranty

The HPCI Barrier™ panels are warranted by Metl-Span to be free of defects of materials and workmanship for a period of two years after the date of substantial completion. Metl-Span makes no other warranties, expressed or implied pertaining to the suitability or merchantability of the HPCI Barrier™ panel.

ARCHITECTURAL DETAILS

The architectural details in this guide are provided to assist in the design of projects using the HPCI Barrier™ panel. The details show the application of the HPCI Barrier™ panel at typical rainscreen wall construction conditions.

The shown constructions are general representations only. Actual construction details are the responsibility of the building's designer. In all cases, the specific project's specifications and shop drawings will govern the actual application and installation.

DETAILS FORMAT AND SPECIFICS

Following is important information for understanding and using the architectural details:

HPCI Barrier Panel Details

The first set of the following details show the basic HPCI Barrier™ panel assembly and application to the building's wall framing.

Specific Cladding Details

For each exterior cladding type (such as: metal panel, terra cotta and brick veneer), there are a set of details showing the assembly of the barrier panel and cladding at specific building conditions, such as: foundation, roof, parapet and openings.

The details do not attempt to show all of the various designs of each cladding type. A typical cladding system is shown on the details with the understanding that application of the details for other cladding designs will be similar. In some cases, details are provided to show alternate designs.

For example: on the terra cotta cladding details, the shown system has vertical tile support tracks with integral hooks for tile attachment (such as the NeaCera® ADS system). Other systems using vertical tracks and tile clips would be similar.

On the metal panel cladding details, the shown system has horizontal panels with a concealed clip attachment system (such as the Fabral Silhouette HCF® series). Other horizontal panel systems would be similar.

Furring Members

Furring Orientation - furring members may be horizontally oriented or vertically oriented depending upon the specific cladding system. Horizontal furring is shown on the terra cotta cladding details. Vertical furring is shown on the metal panel cladding details.

The terra cotta cladding details show the horizontal furring supporting vertical tile support tracks. Other terra cotta tile systems may require vertical furring to support horizontal tile support tracks.

The metal panel cladding details show the vertical furring supporting horizontal oriented metal panels. Vertical oriented metal panels will require horizontal furring.

Vertical Furring Clearance - for vertical furring, the details show the use of extension channels to provide clearance between the furring members and horizontal flashing assemblies (such as eave, sill and head flashing). The clearance is needed to eliminate out-of-plumb deflection of the furring member caused by the built-up thickness of the flashing assemblies, eliminate clearance problems with membrane termination bars and minimize potential damage to the membrane flashing by furring member edges.

Stand-Off Furring - an alternate detail shows vertical furring members supported by stand-off brackets. This system provides the required clearance without need of extension channels.

Furring to Wall Framing Connections - furring members are connected through the barrier panel to the wall framing (metal studs) by specified structural screws. The penetration of the screw through the facing of the barrier panel is sealed by a self adhering elastomeric sealing pad.

Furring & Fastener Spacing - for terra cotta tile cladding and metal panel cladding, furring and fastener spacing guidelines and furring member installation details are provided for the specific cladding type.

Base Conditions

Base Flashing - at the foundation and floors, the details show the base flashing extending to the back side of the barrier panel rather than applied to the panel's exterior surface. This eliminates concern of failure of a surface applied flashing seal and provides assurance that any moisture within the vertical assemblies can freely drain to the exterior without being trapped behind a surface applied flashing.

Insulation/Bearing Block - the details show a foam block under the barrier panel at the base conditions. The foam block provides insulation of the cavity under the barrier panel, provides bearing support to the bottom edge of the barrier panel and provides protection of the base flashing during the barrier panel installation.

Foundation Ledge - the base condition details show the typical stepped ledge (brick or sheeting ledge) at the edge of the foundation. The stepped ledge is always recommended as assurance against water migration onto the building's floor in case of a base flashing failure. If the stepped ledge is omitted, it is the designer's responsibility to provide a positive, long term seal at the floor's edge.

Eave Conditions

Eave Flashing - the eave and parapet details show typical membrane covered roof and parapet assemblies with the roof membrane extended over the face of the barrier panel to provide continuity of the weather barrier from the wall to the roof assembly.

Roof Edge Support - at eave conditions, the roof edge is typically cantilevered over the air cavity and exterior cladding. The eave and parapet details show how cantilevered roof edges and parapet coping can be supported by vertical furring membranes or vertical tile support tracks.

Opening Conditions

Opening Types - the opening details show sill, head and jamb conditions for windows. Head and jamb conditions for doors will be similar.

Framing - the details show the opening conditions as wood framed and as metal framed. Wood framing (blocking) is often used to minimize thermal conductance and provide ease of shimming for alignment. Metal framing eliminates the extra material of wood blocking and simplifies fire protection.

Perimeter Flashing - the opening details show the use of either elastomeric membrane flashing or metal flashing at the perimeter of the openings to provide continuity of the weather barrier between the barrier panel and the opening framing.

Membrane flashing is shown on the wood framed opening details. Metal flashing is shown on the metal framed opening details.

Cap Flashing - the details show a typical cap flashing over the openings. The cap is always recommended to collect and drain infiltrating water to the exterior of the cladding and protect the critical head flashing seal from direct water exposure. The cap flashing is shown with end dams to prevent infiltrating water from pouring off the ends of the cap flashing into the air cavity.

Fire Barrier - for multi-story conditions where the opening is located below a floor above, metal flashing may be required at the opening perimeter to provide fire barrier protection for the upper story. The metal flashing blocks the barrier panel's open edges from the flames escaping through the opening. If the opening is wood framed, additional metal flashing may be required to protect the panel edges from the burning wood.

Vapor Barrier

The interior face of the barrier panels functions as the wall's primary vapor barrier. The details show a vapor seal between the perimeter of the barrier panels and metal framing at the perimeter of the wall and its openings. This assumes the framing member joints are sealed and the framing members are integrated with the interior vapor barrier system of the adjacent construction (floor, roof and openings).

ARCHITECTURAL DETAILS INDEX

HPCI Barrier™ Panel Details

Detail No.	Detail Title	CAD dwg no	Issue Date
HPCI-BP-01	Barrier Panel General Assembly	MSS229.401	Sept. 15, 2012
HPCI-BP-02	Barrier Panel Typical Section	MSS229.402	Sept. 15, 2012
HPCI-BP-03	Barrier Panel Side & End Joint Details	MSS229.403	Sept. 15, 2012
HPCI-BP-04	Barrier Panel Corner Details	MSS229.404	Sept. 15, 2012

HPCI Barrier™ Panel w/Terra Cotta Cladding

HPCI-TC-01	General Wall Assembly	MSS229.501	Aug. 15, 2012
HPCI-TC-02	Furring Channel Installation	MSS229.502	Aug. 15, 2012
HPCI-TC-03	Furring Channel Design and Spacing	MSS229.503	July 15, 2012
HPCI-TC-04	Tile Track Assembly w/Integral Hook Track	MSS229.518	Aug. 15, 2012
HPCI-TC-05	Tile Assembly w/Track & Clip (Alternate)	MSS229.516	Aug. 15, 2012
HPCI-TC-06	Terra Cotta Profile Options	MSS229.517	Aug. 15, 2012
HPCI-TC-07	General Wall Section	MSS229.506	Aug. 15, 2012
HPCI-TC-08	Base Detail	MSS229.505	Aug. 15, 2012
HPCI-TC-09	Base Detail w/ Extended Ledge	MSS229.504	Aug. 15, 2012
HPCI-TC-10	Eave Detail	MSS229.507	Aug. 15, 2012
HPCI-TC-11	Parapet Detail	MSS229.508	Aug. 15, 2012
HPCI-TC-12	Outside Corner Detail	MSS229.510	Aug. 15, 2012
HPCI-TC-13	Inside Corner Detail	MSS229.511	Aug. 15, 2012
HPCI-TC-14	Sill Detail - Wood Framed	MSS229.512	Aug. 15, 2012
HPCI-TC-15	Head Detail - Wood Framed	MSS229.513	Aug. 15, 2012
HPCI-TC-16	Jamb Detail - Wood Framed	MSS229.514	Aug. 15, 2012
HPCI-TC-17	Jamb Detail w/Tile Return	MSS229.515	Aug. 15, 2012
HPCI-TC-18	Sill Detail - Metal Framed	MSS229.519	Aug. 15, 2012
HPCI-TC-19	Head Detail - Metal Framed	MSS229.520	Aug. 15, 2012
HPCI-TC-20	Jamb Detail - Metal Framed	MSS229.521	Aug. 15, 2012

HPCI Barrier™ Panel w/Brick Veneer Cladding

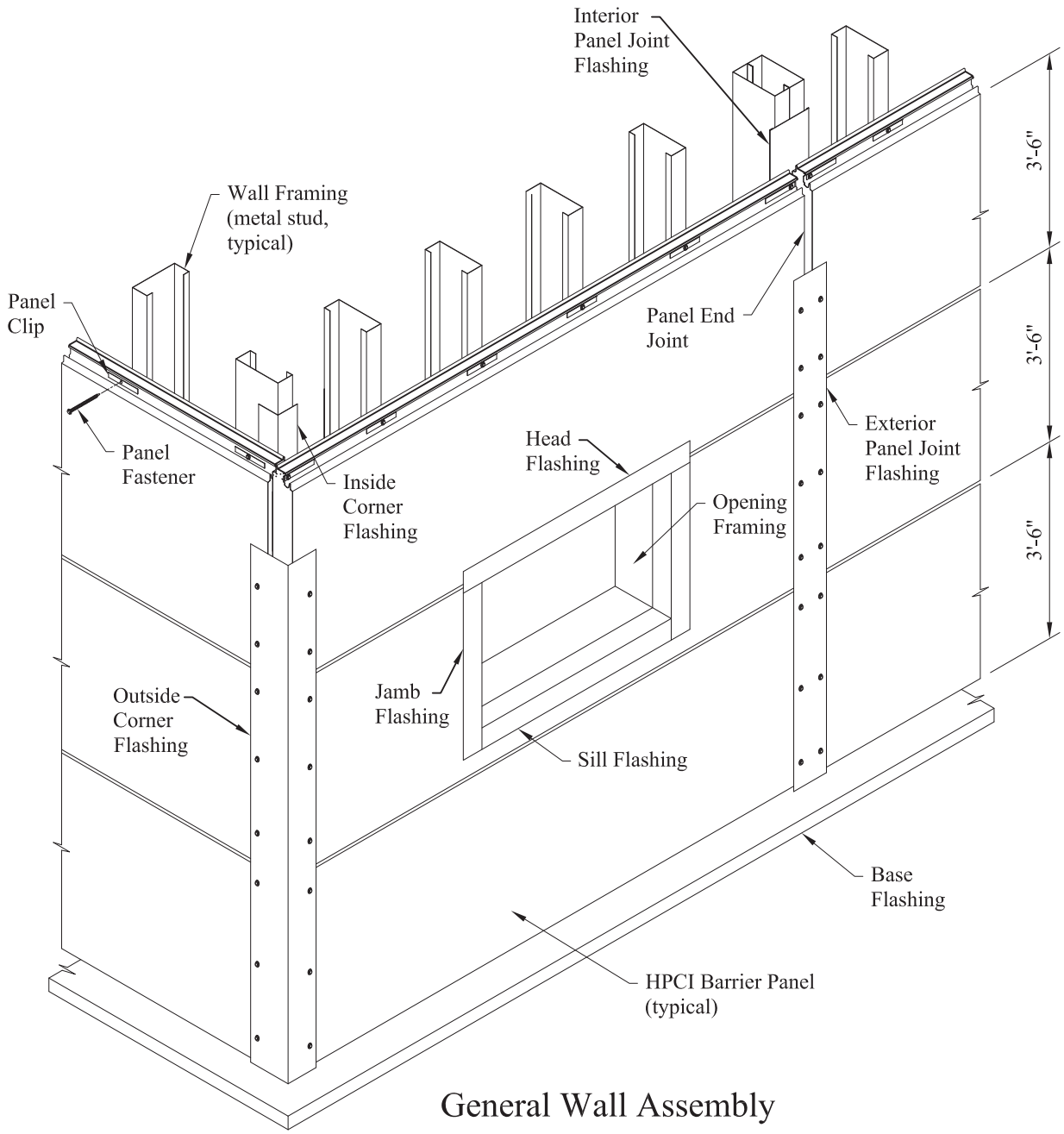
HPCI-BC-01	General Wall Assembly	MSS229.601	Aug. 31, 2012
HPCI-BC-02	Brick & Anchor Assembly	MSS229.616	Aug. 15, 2012
HPCI-BC-03	General Wall Section	MSS229.605	Aug. 15, 2012
HPCI-BC-04	Base Detail w/Metal Flashing	MSS229.602	Aug. 15, 2012
HPCI-BC-05	Base Detail w/Membrane Flashing	MSS229.603	Aug. 15, 2012
HPCI-BC-06	Base Detail Brick Below Grade	MSS229.604	Aug. 15, 2012
HPCI-BC-07	Multi-Story Shelf Angle Detail	MSS229.606	Aug. 15, 2012
HPCI-BC-08	Eave Detail	MSS229.607	Aug. 15, 2012
HPCI-BC-09	Parapet Detail	MSS229.608	Aug. 15, 2012
HPCI-BC-10	Outside Corner Detail	MSS229.610	Aug. 15, 2012
HPCI-BC-11	Inside Corner Detail	MSS229.611	Aug. 15, 2012
HPCI-BC-12	Sill Detail - Wood Framed	MSS229.612	Aug. 15, 2012
HPCI-BC-13	Head Detail - Wood Framed	MSS229.614	Aug. 15, 2012
HPCI-BC-14	Jamb Detail - Wood Framed	MSS229.613	Aug. 15, 2012
HPCI-BC-15	Sill Detail - Metal Framed	MSS229.617	Aug. 15, 2012
HPCI-BC-16	Head Detail - Metal Framed	MSS229.619	Aug. 15, 2012
HPCI-BC-17	Jamb Detail - Metal Framed	MSS229.618	Aug. 15, 2012

HPCI Barrier Panel™ w/Metal Panel Cladding

HPCI-MP-01	General Wall Assembly	MSS229.701	Sept. 15, 2012
HPCI-MP-02	Furring Zee Installation	MSS229.702	Sept. 15, 2012
HPCI-MP-03	Furring Zee Design and Spacing	MSS229.703	Sept. 15, 2012
HPCI-MP-04	Panel Assembly w/Surface Mounted Zee	MSS229.704	Sept. 15, 2012
HPCI-MP-05	Panel Assembly w/Bracket Mounted Zee (Alternate)	MSS229.705	Sept. 15, 2012
HPCI-MP-06	General Wall Section	MSS229.706	Sept. 15, 2012
HPCI-MP-07	Base Detail	MSS229.707	Sept. 15, 2012
HPCI-MP-08	Base Detail Extended Ledge	MSS229.708	Sept. 15, 2012
HPCI-MP-09	Eave Detail	MSS229.709	Sept. 15, 2012
HPCI-MP-10	Parapet Detail	MSS229.710	Sept. 15, 2012
HPCI-MP-11	Outside Corner Detail	MSS229.711	Sept. 15, 2012
HPCI-MP-12	Inside Corner Detail	MSS229.712	Sept. 15, 2012
HPCI-MP-13	Panel Butt Joint Detail	MSS229.713	Sept. 15, 2012
HPCI-MP-14	Sill Detail - Wood Framed	MSS229.714	Sept. 15, 2012
HPCI-MP-15	Head Detail - Wood Framed	MSS229.715	Sept. 15, 2012
HPCI-MP-16	Jamb Detail - Wood Framed	MSS229.716	Sept. 15, 2012
HPCI-MP-17	Sill Detail - Metal Framed	MSS229.717	Sept. 15, 2012
HPCI-MP-18	Head Detail - Metal Framed	MSS229.718	Sept. 15, 2012
HPCI-MP-19	Jamb Detail - Metal Framed	MSS229.719	Sept. 15, 2012

HPCI BARRIER™ PANEL DETAILS

General Assembly (HPCI-BP-01)



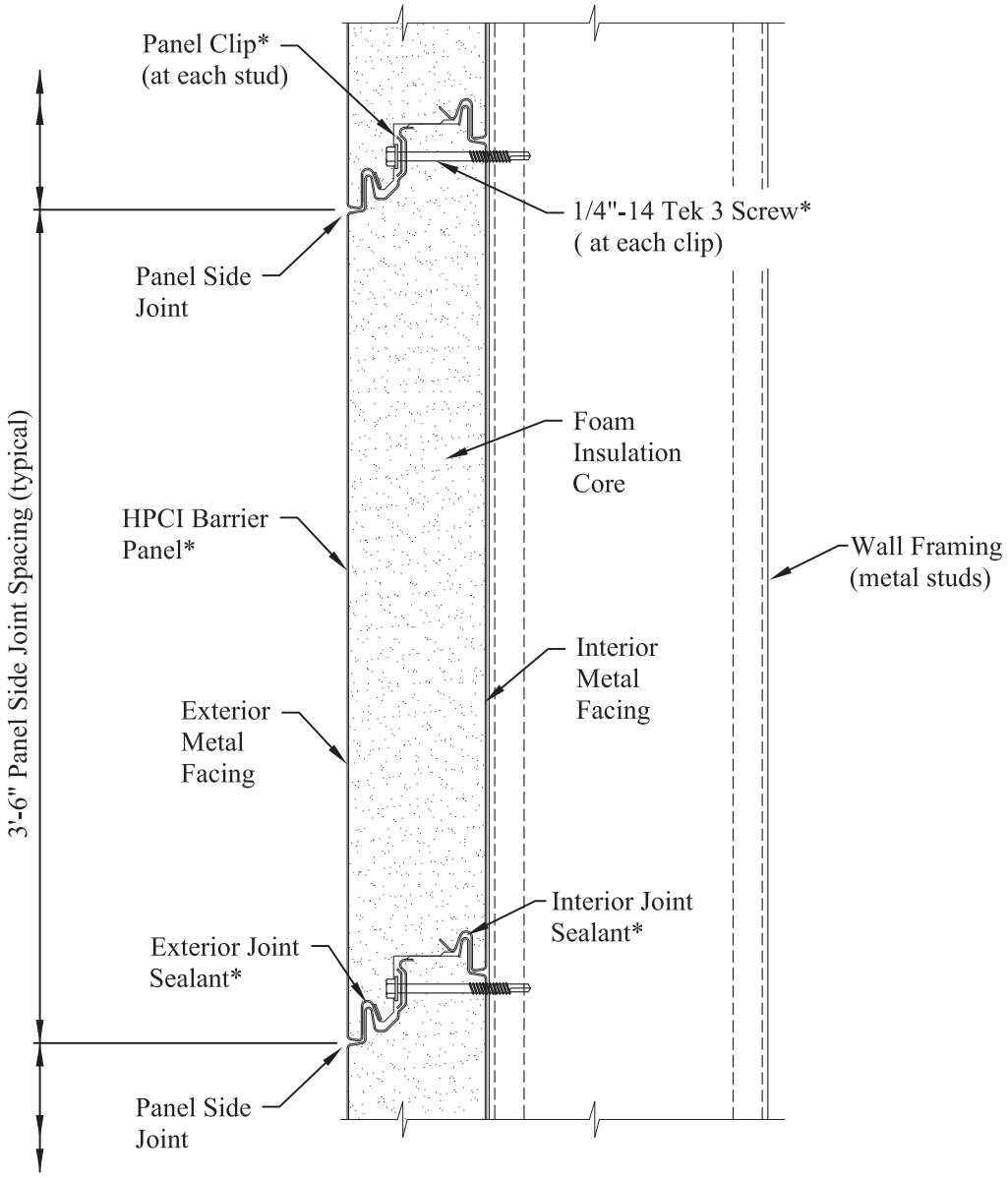
General Wall Assembly

Notes:

1. Shown is a general representation of a barrier wall assembly with metal stud wall framing, HPCI barrier panels and barrier panel flashing.
2. Reference the following details in this section for barrier panel to wall framing connections and flashing details.
3. Reference the HPCI Barrier Panel technical data sections for specific barrier panel information.
4. It is the project designer's responsibility to confirm the suitability, structural adequacy and code compliance of the actual wall assembly and its components.

HPCI BARRIER™ PANEL DETAILS

Typical Section (HPCI-BP-02)



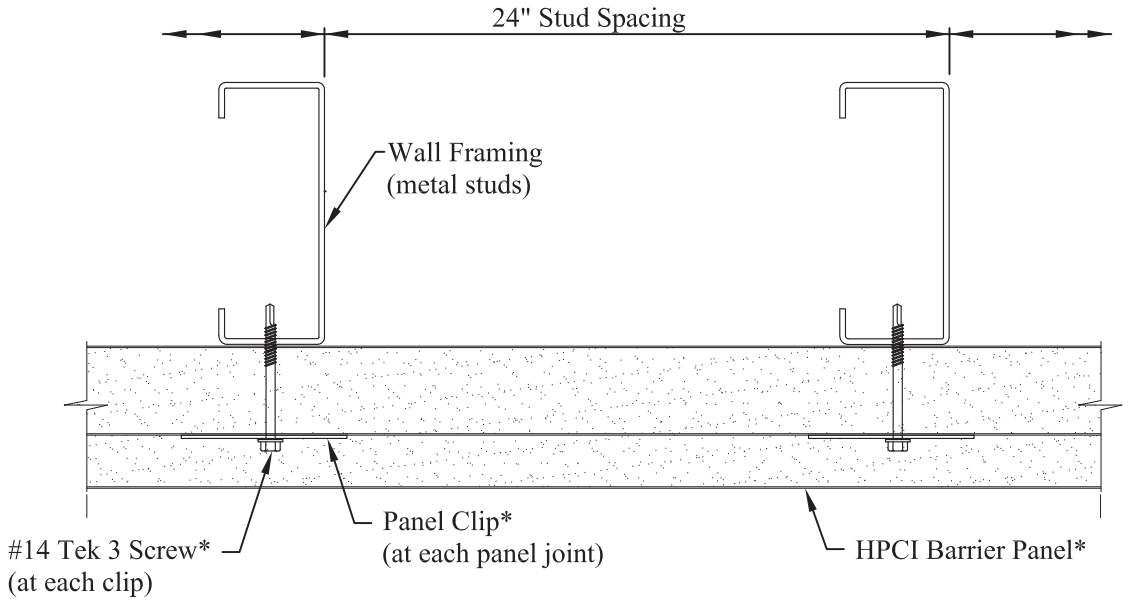
Barrier Panel Section

Notes:

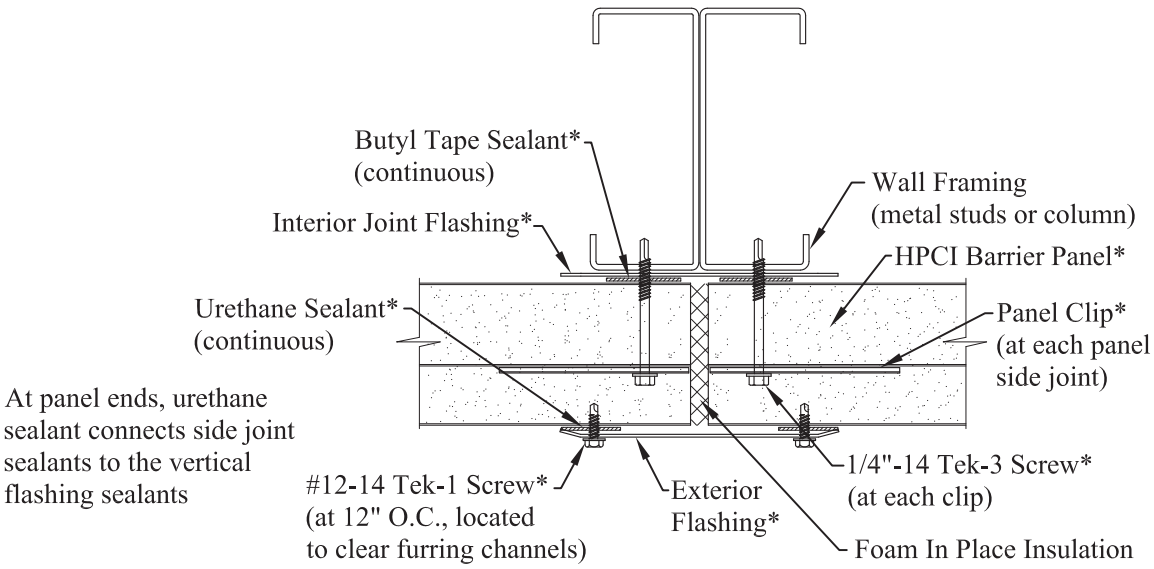
1. * Designates components provided by or available from Metl-Span.
2. Extending from base to eave (or header), vertical spacing of panel side joints is 3'-6".
3. At eave (or header), top panel is field cut to required height.

HPCI BARRIER™ PANEL DETAILS

Side & End Joint Details (HPCI-BP-03)



Barrier Panel Side Joint
Plan View



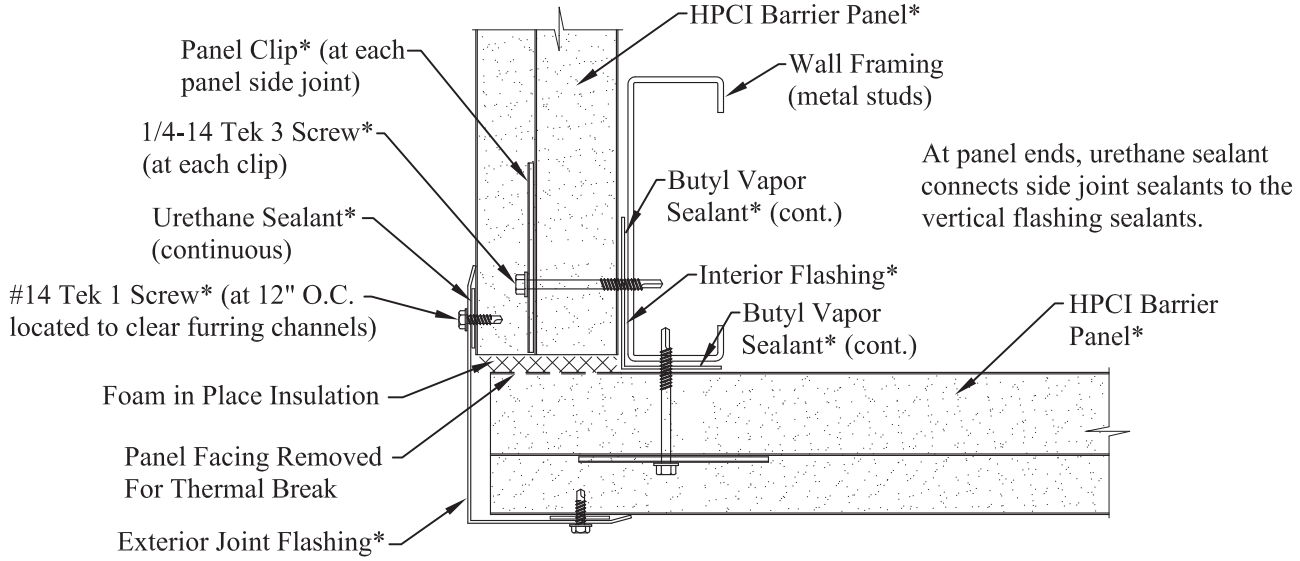
Barrier Panel End Joint
Plan View

Notes:

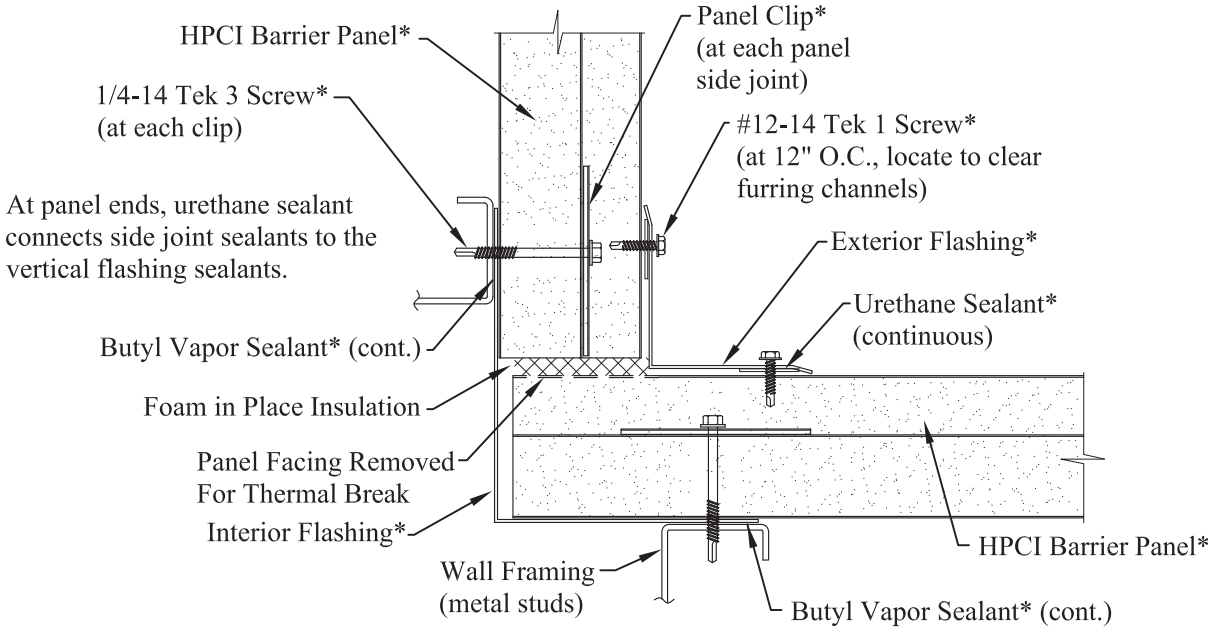
1. * Designates components provided by or available from Metl-Span.
2. Intermediate wall framing members to provide 2 1/2" min. panel bearing width.
3. At panel end joint, wall framing member to provide 5" min. panel bearing width.
4. At panel end joint, space between panels ends is 3/4".

HPCI BARRIER™ PANEL DETAILS

Corner Details (HPCI-BP-04)



Barrier Panel Outside Corner
Plan View



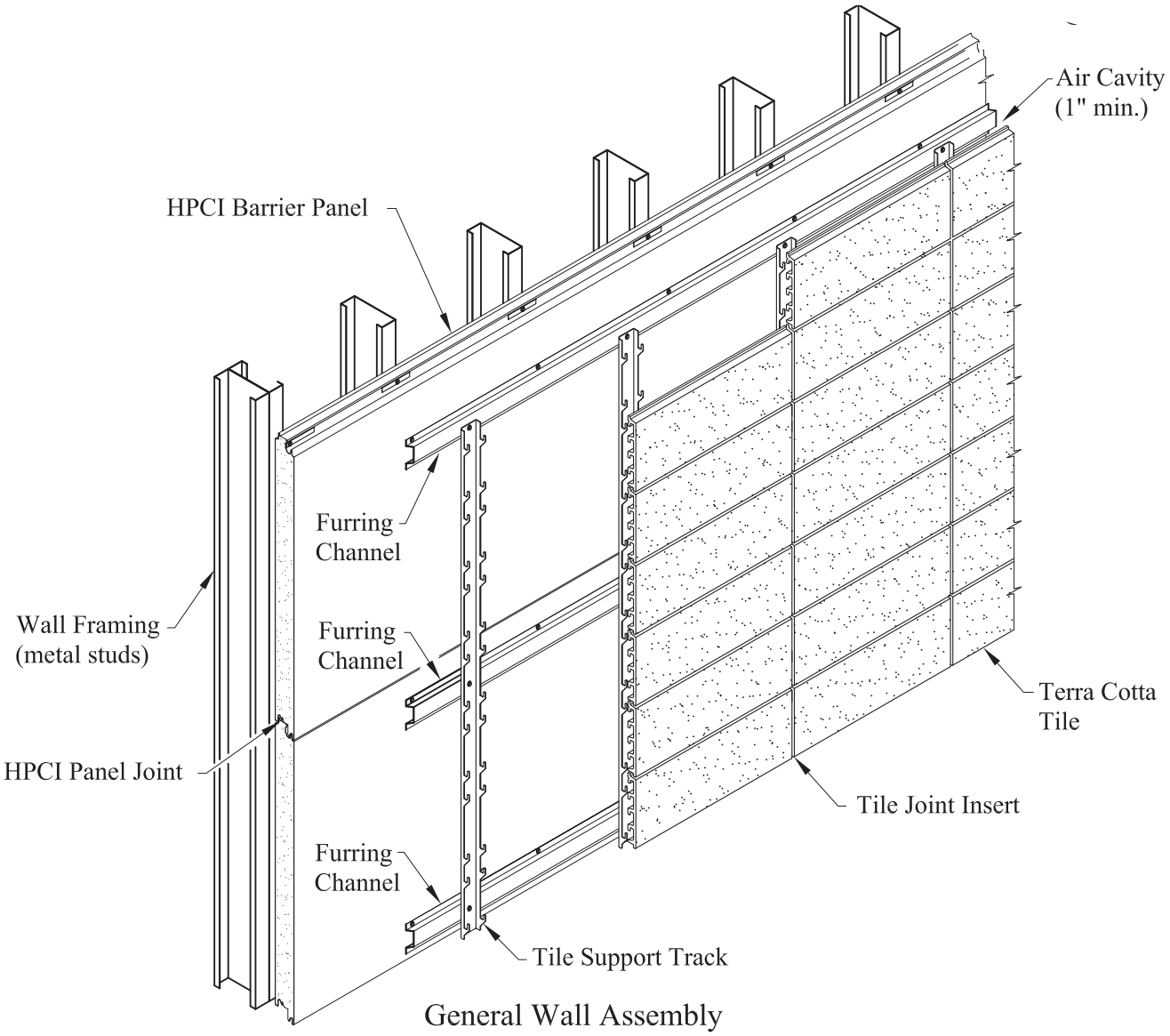
Barrier Panel Inside Corner
Plan View

Notes:

1. * Designates components provided or available from Metl-Span.
2. At corners, wall framing members to provide 2 1/2" min. panel bearing width.

HPCI BARRIER™ PANEL WITH TERRA COTTA CLADDING

General Wall Assembly (HPCI-TC-01)



General Wall Assembly

Notes:

1. Shown is a general representation of a wall assembly with metal stud wall framing, HPCI barrier panel, furring channels and terra cotta tile exterior cladding.

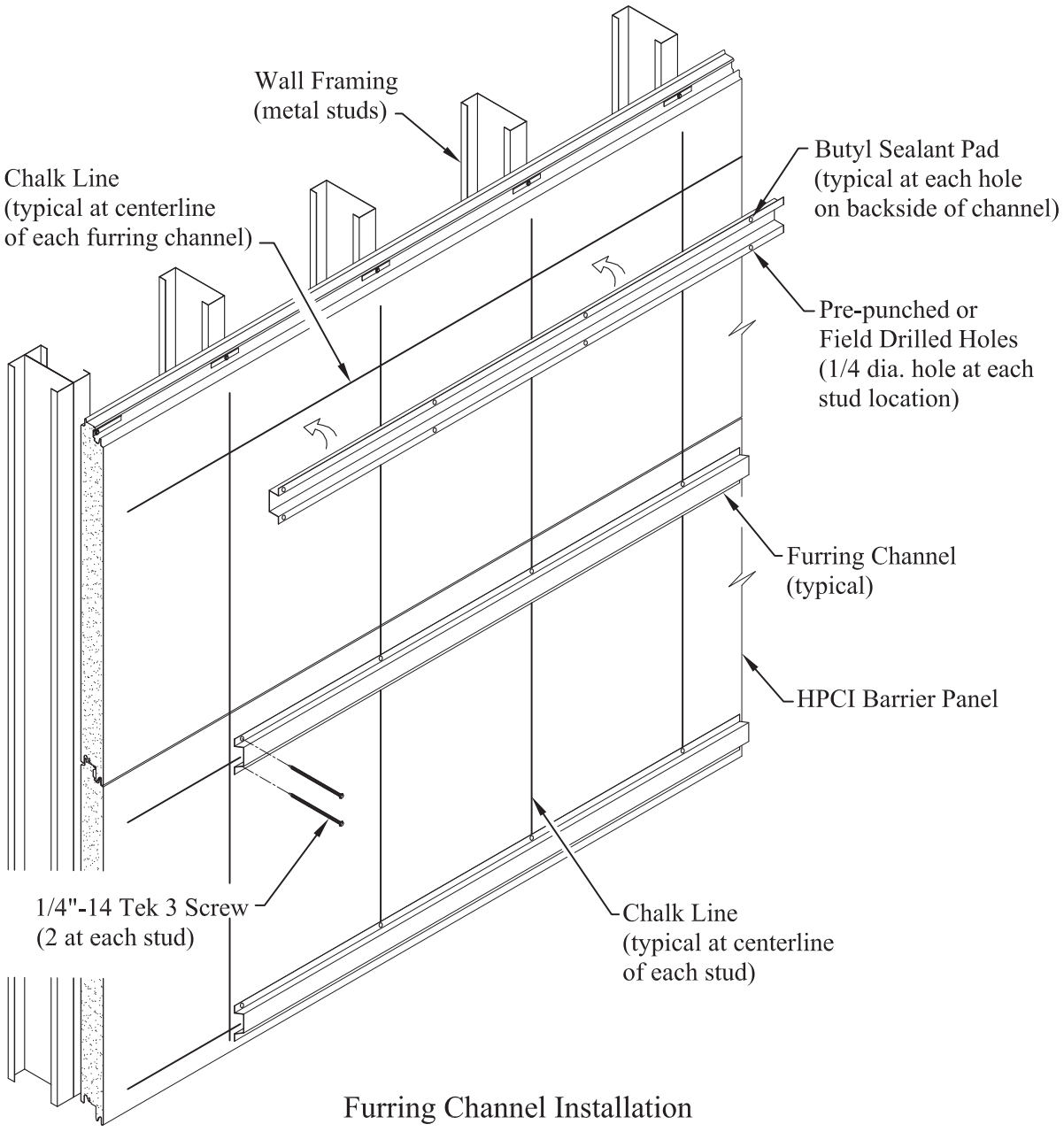
2. The furring channels transfer the terra cotta tile cladding's gravity loads and wind loads through the HPCI panels into the wall framing studs. Reference detail HPCI-TC-02 for furring channel installation.

3. The terra cotta tile support tracks are shown with integral tile hooks. Support tracks with tile clips are similar. Reference the terra cotta manufacturer's information for specific tile support tracks.

4. It is the project designer's responsibility to confirm the suitability, structural adequacy and code compliance of the actual wall assembly and its components.

HPCI BARRIER™ PANEL WITH TERRA COTTA CLADDING

Furring Channel Installation (HPCI-TC-02)



Furring Channel Installation

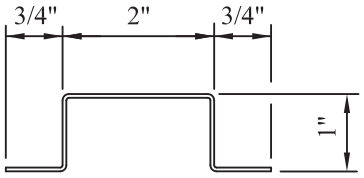
Notes:

1. See detail HPCI-TC-03 for furring channel design and spacing information.
2. Holes for furring channel attachment are field drilled in the furring channel flanges.
3. On back side of furring channel flanges, butyl sealant pads are applied over attachment holes.
4. Furring channels are butt joined at centerline of respective wall framing stud.

HPCI BARRIER™ PANEL WITH TERRA COTTA CLADDING

Furring Channel Design & Spacing (HPCI-TC-03)

Material : A653 SS Grade 33
Thickness: 16 ga. (0.0566")
Bend Radii 0.085"
Yield Strength: Fy=33 ksi
Tensile Strength: Fu=45 ksi
Modulus of Elasticity: E= 2.9 x 10



Furring Channel Section Properties

Allowable Negative Wind Pressure										
Tile & Support Track Weight		7.5 psf			10.0 psf			15.0 psf		
Furring Channel Spacing		24.0 in	30.0 in	36.0 in	24.0 in	30.0 in	36.0 in	24.0 in	30.0 in	36.0 in
Support Track Spacing	24.0 in	68.0 psf	50.8 psf	38.0 psf	68.0 psf	50.8 psf	38.0 psf	67.5 psf	50.4 psf	37.3 psf
	36.0 in	67.5 psf	50.4 psf	37.7 psf	67.5 psf	50.4 psf	37.3 psf	66.5 psf	49.6 psf	36.7 psf
	48.0 in	51.1 psf	40.9 psf	34.1 psf	51.1 psf	40.9 psf	34.1 psf	51.1 psf	40.9 psf	34.1 psf
	60.0 in	40.9 in	32.7 in	27.2 in	40.9 in	32.7 in	27.2 in	40.9 in	32.7 in	27.2 in
	72.0 in	34.1 psf	27.2 psf	22.7 psf	34.1 psf	27.2 psf	22.7 psf	34.1 psf	27.2 psf	22.7 psf

Notes:

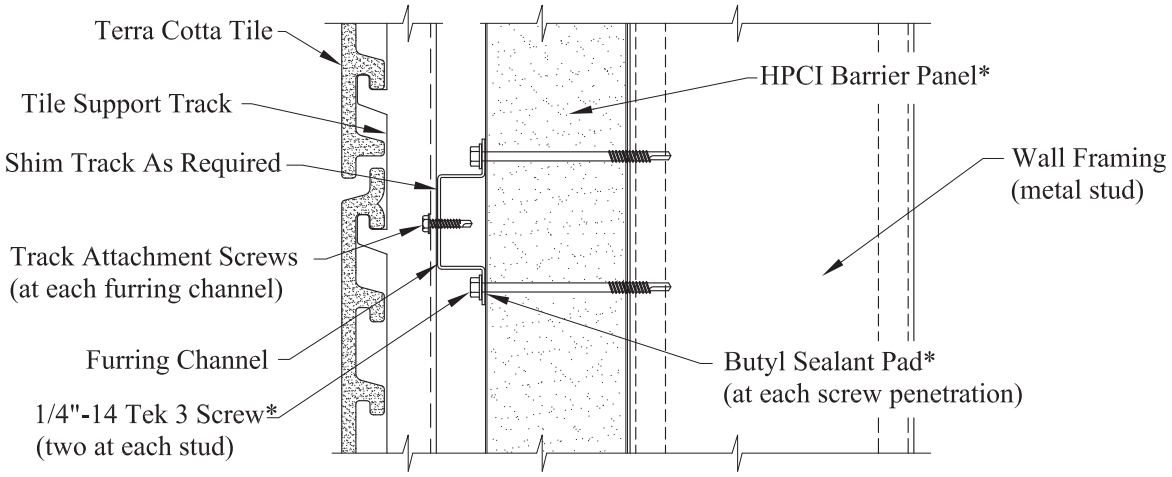
1. The allowable negative wind pressures shown in the chart above are based upon the following:
   a. Wall framing consisting of 18 ga. min. 33 ksi min. vertical steel studs at 24" max. spacing.
   b. Furring channels are 16 ga. 33 ksi min. horizontal steel hat section members spaced as specified.
   c. Furring channels are connected to each stud with 1/4"-14 Tek 3 screws extending through the HPCI barrier panel.
   d. Furring Channels are installed as specified on the Furring Channel Installation detail HPCI-TC 02.
   e. Negative pressure values specified in the chart above are based upon a 2.5 factor of safety.

2. The project designer is responsible for verifying the wall framing studs and furring channels are capable of supporting the horizontal and vertical loads imposed by the terra cotta tile and support track system in accordance to the project's design loads.

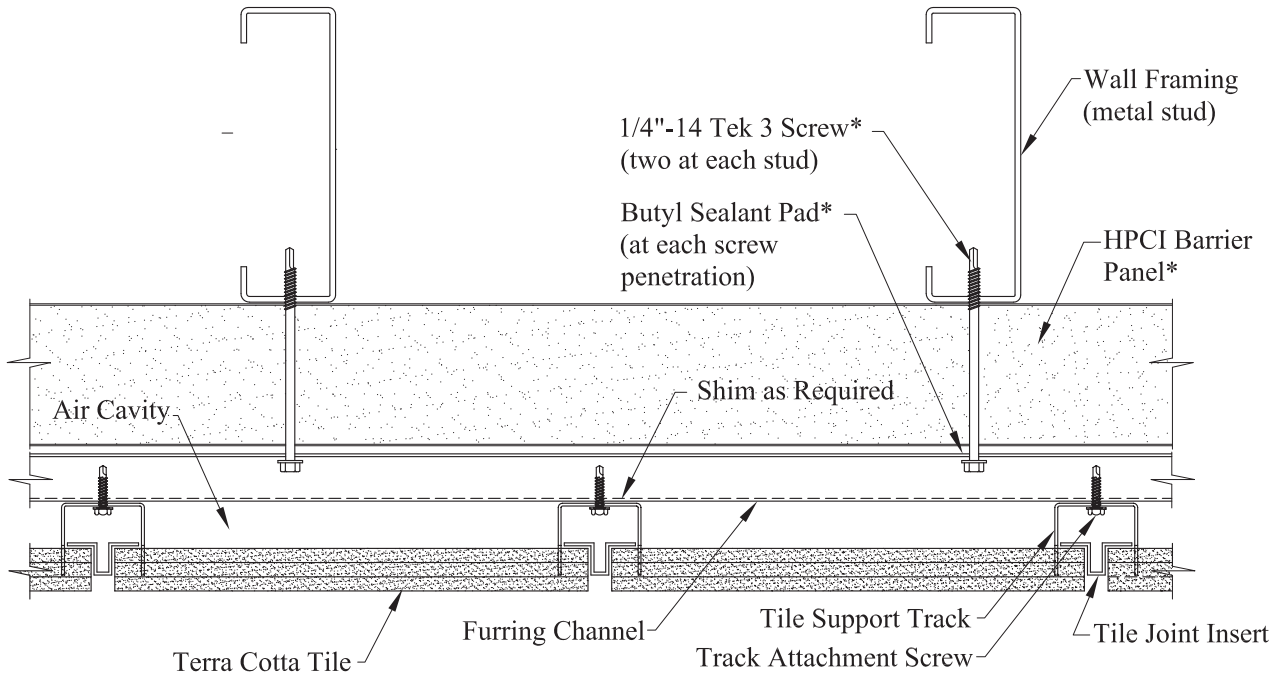
3. The project designer is responsible to specify the terra cotta tile sizes and support track spacing in accordance to the project's design loads and the tile manufacturer's specifications.

HPCI BARRIER™ PANEL WITH TERRA COTTA CLADDING

Tile Assembly w/ Integral Hook Track (HPCI-TC-04)



Assembly Section



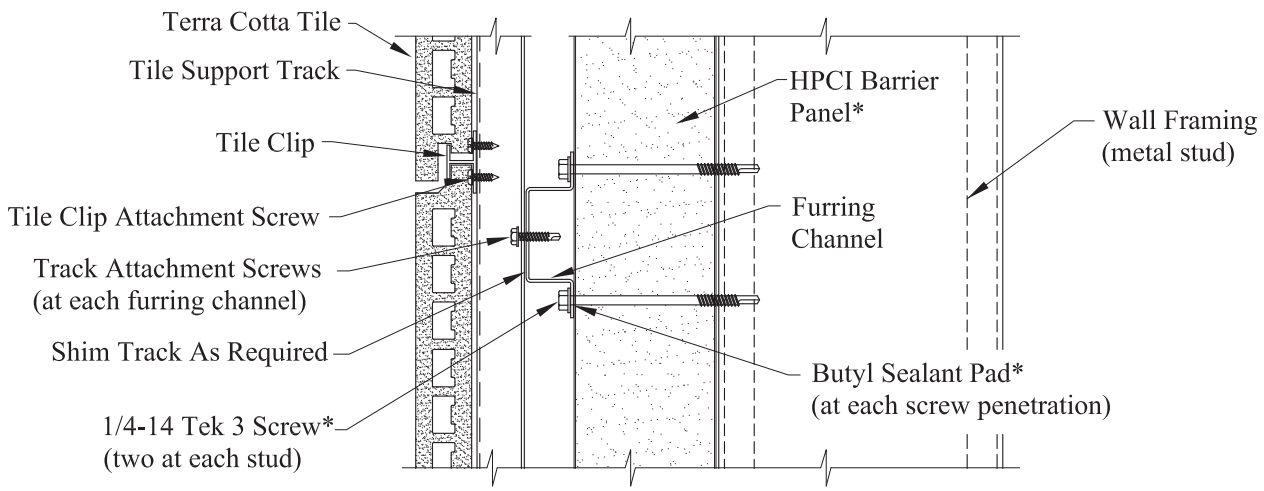
Assembly Plan View

Notes:

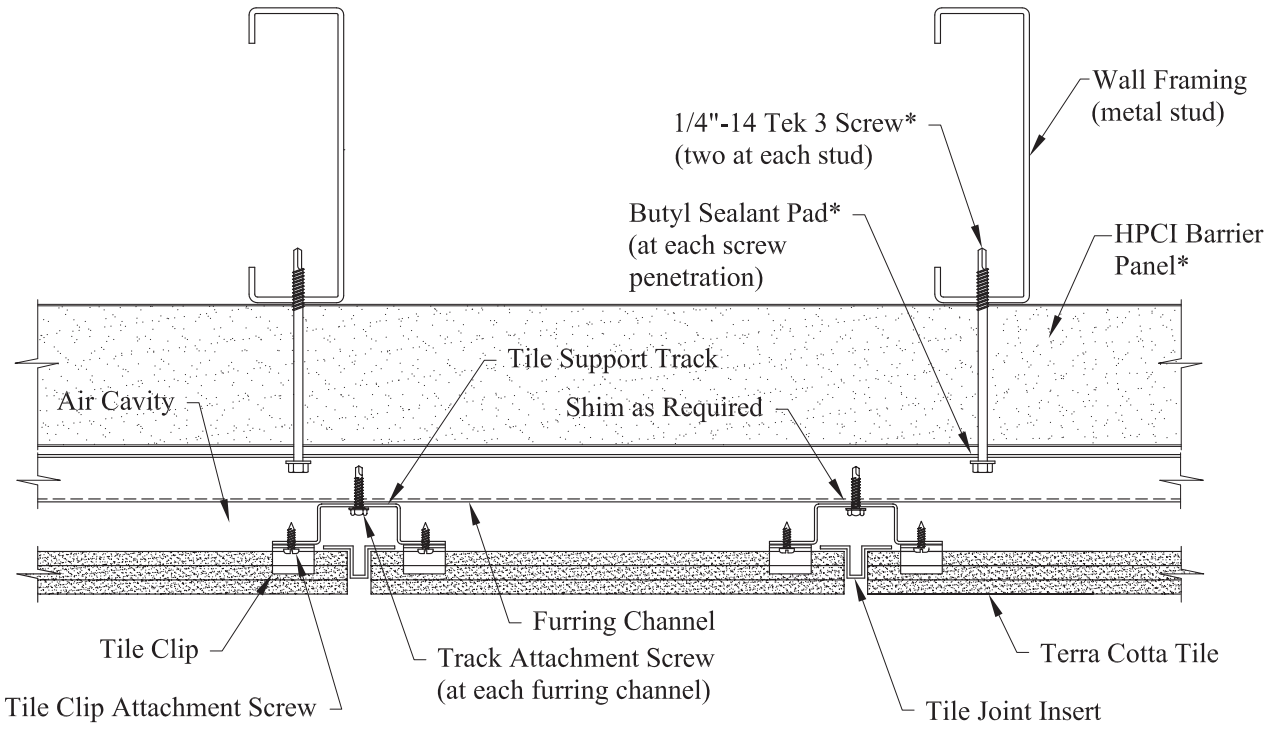
1. * Designates components provided or available from Metl-Span.
2. Reference detail HPCI-TC-03 for support track spacing information.
3. Reference terra cotta manufacturers information for tile and track details.

HPCI BARRIER™ PANEL WITH TERRA COTTA CLADDING

Tile Assembly w/ Track & Clip - Alternate (HPCI-TC-05)



Assembly Section



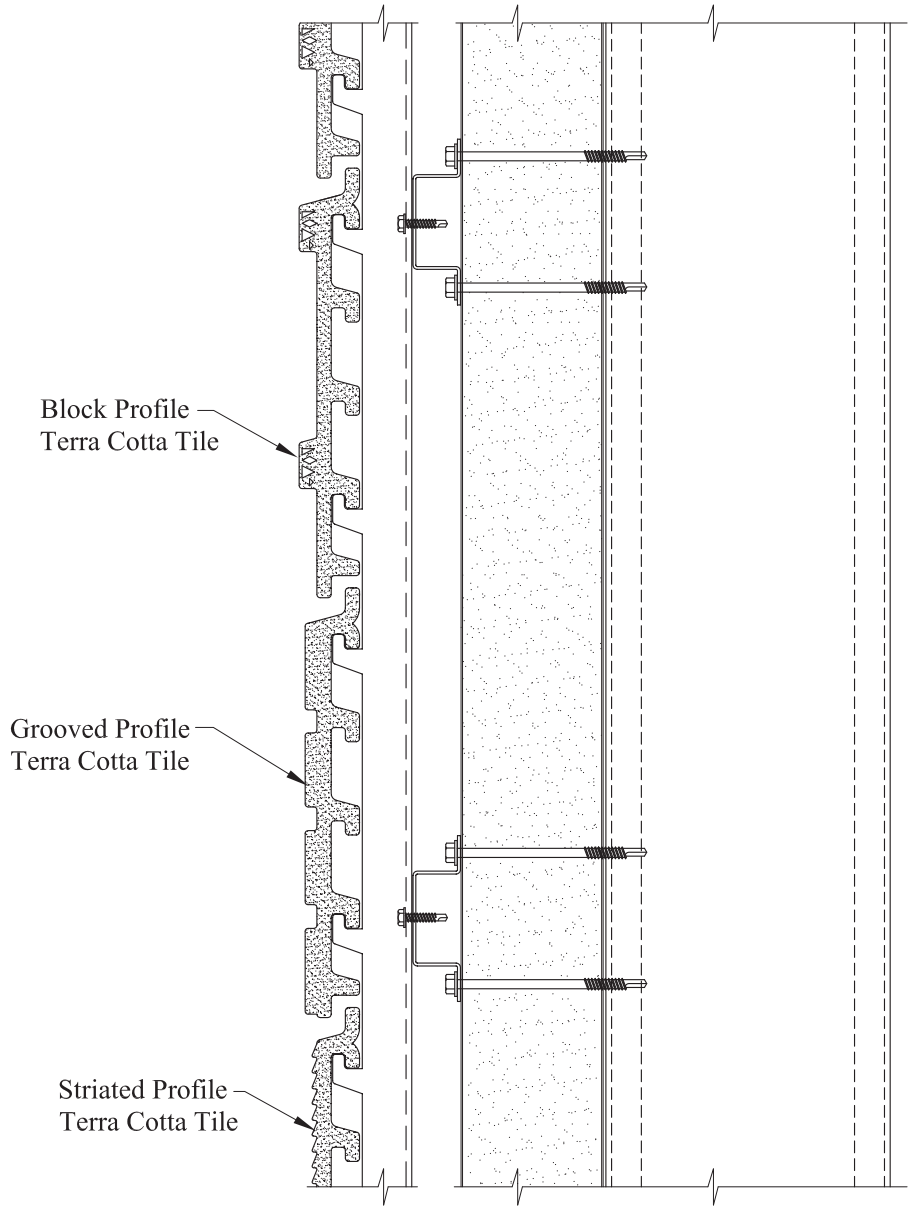
Assembly Plan View

Notes:

1. * Designates components provided or available from Metl-Span.
2. Reference detail HPCI-TC-03 for support track spacing information.
3. Reference terra cotta manufacturers information for tile and track details.

HPCI BARRIER™ PANEL WITH TERRA COTTA CLADDING

Terra Cotta Tile Profile Options (HPCI-TC-06)



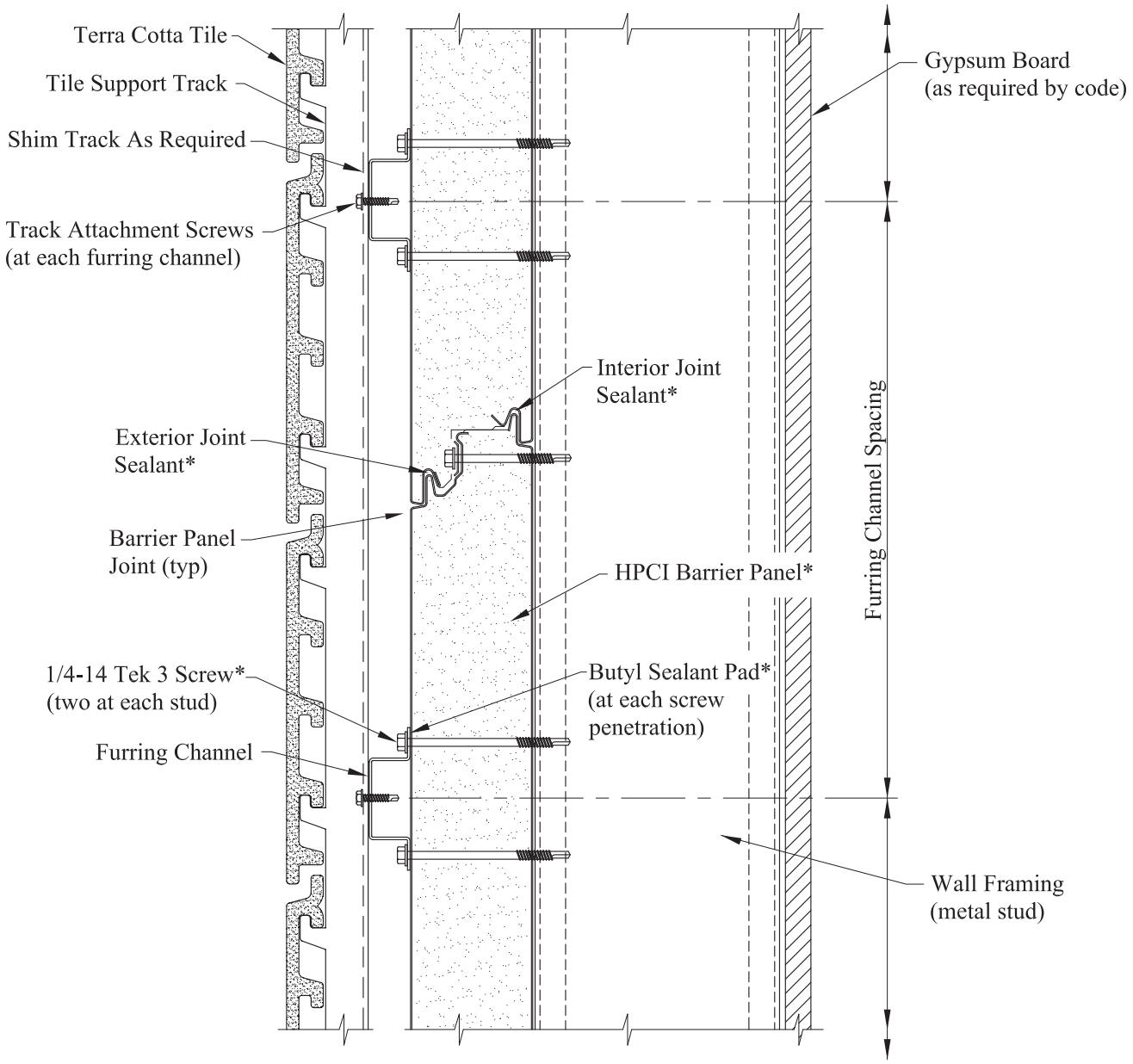
Wall Section with Typical Tile Options

Note:

Reference terra cotta manufacturer's information for tile options and details.

HPCI BARRIER™ PANEL WITH TERRA COTTA CLADDING

General Wall Section (HPCI-TC-07)



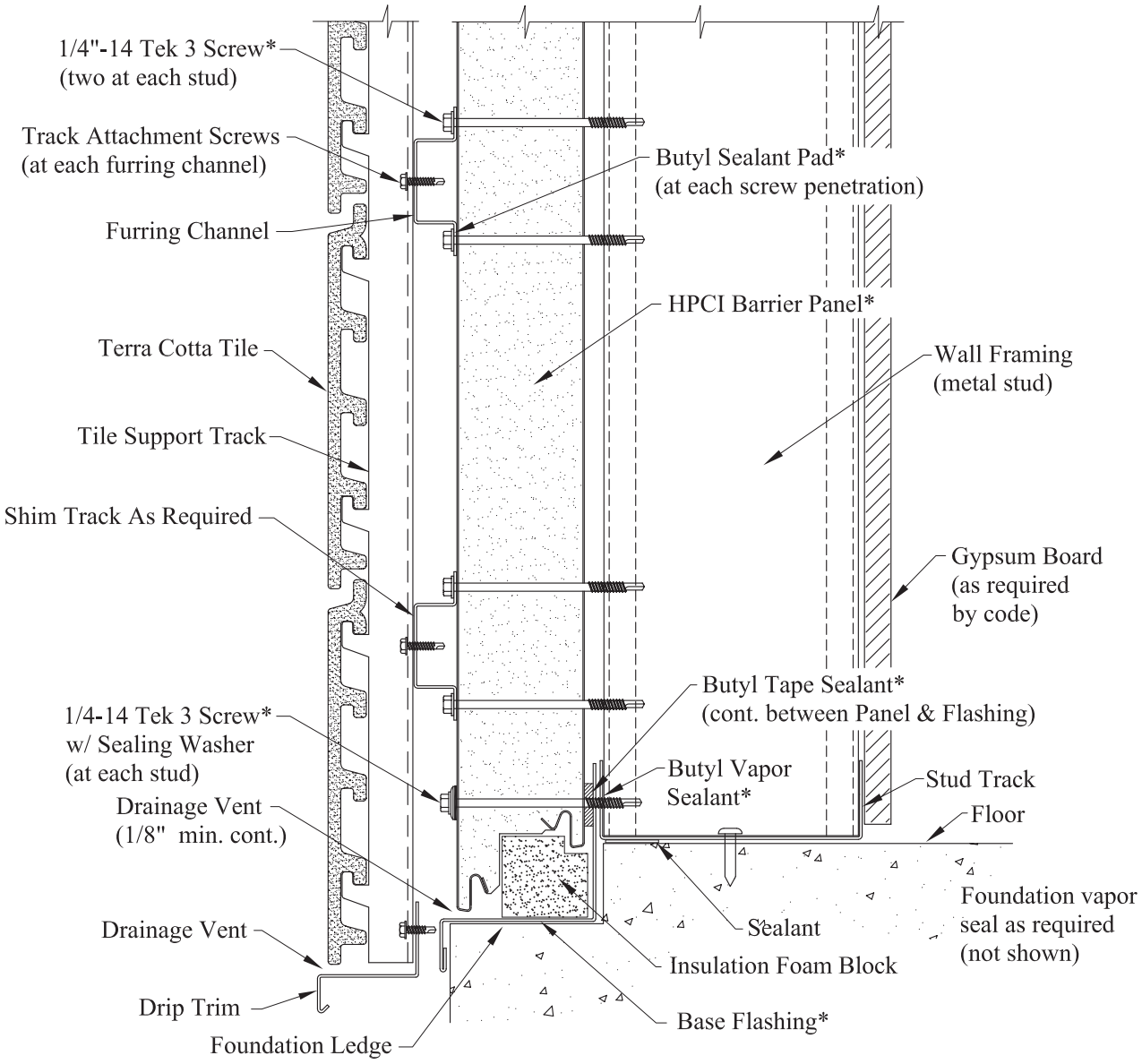
General Wall Section

Notes:

1. * Designates components provided or available from Metl-Span.
2. Reference detail HPCI-TC-03 for furring channel spacing information.
3. Reference terra cotta manufacturer's information for tile and track details.

HPCI BARRIER™ PANEL WITH TERRA COTTA CLADDING

Base Detail (HPCI-TC-08)



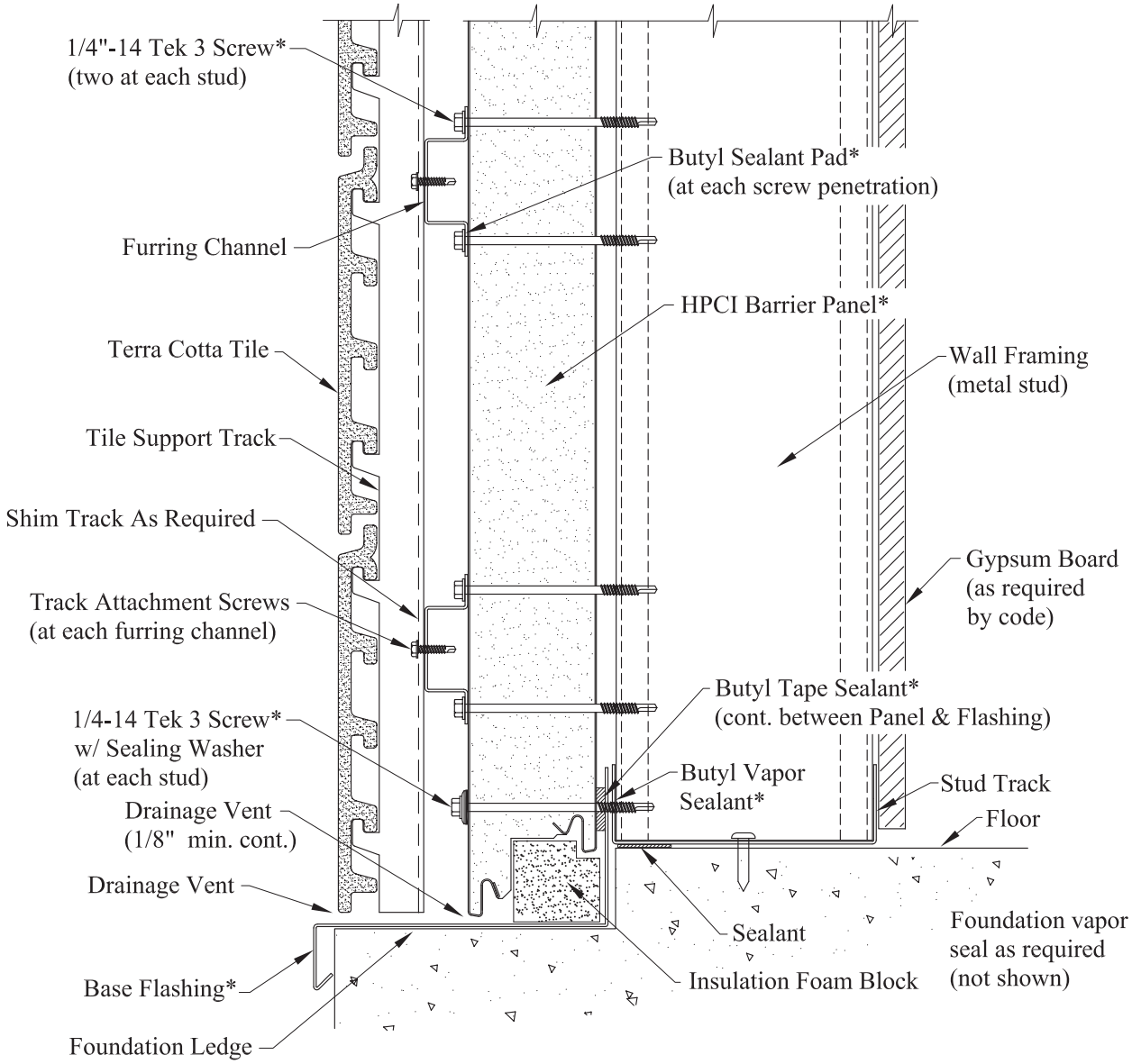
Wall Section @ Base
(Recessed Ledge)

Notes:

1. * Designates components provided or available from Metl-Span.
2. Reference detail HPCI-TC-03 for furring channel spacing information.
3. Bottom furring channel located no more than 12" from bottom end of tile support tracks.
4. Reference terra cotta manufacturer's information for tile and track details.

HPCI BARRIER™ PANEL WITH TERRA COTTA CLADDING

Base Detail w/ Extended Ledge (HPCI-TC-09)



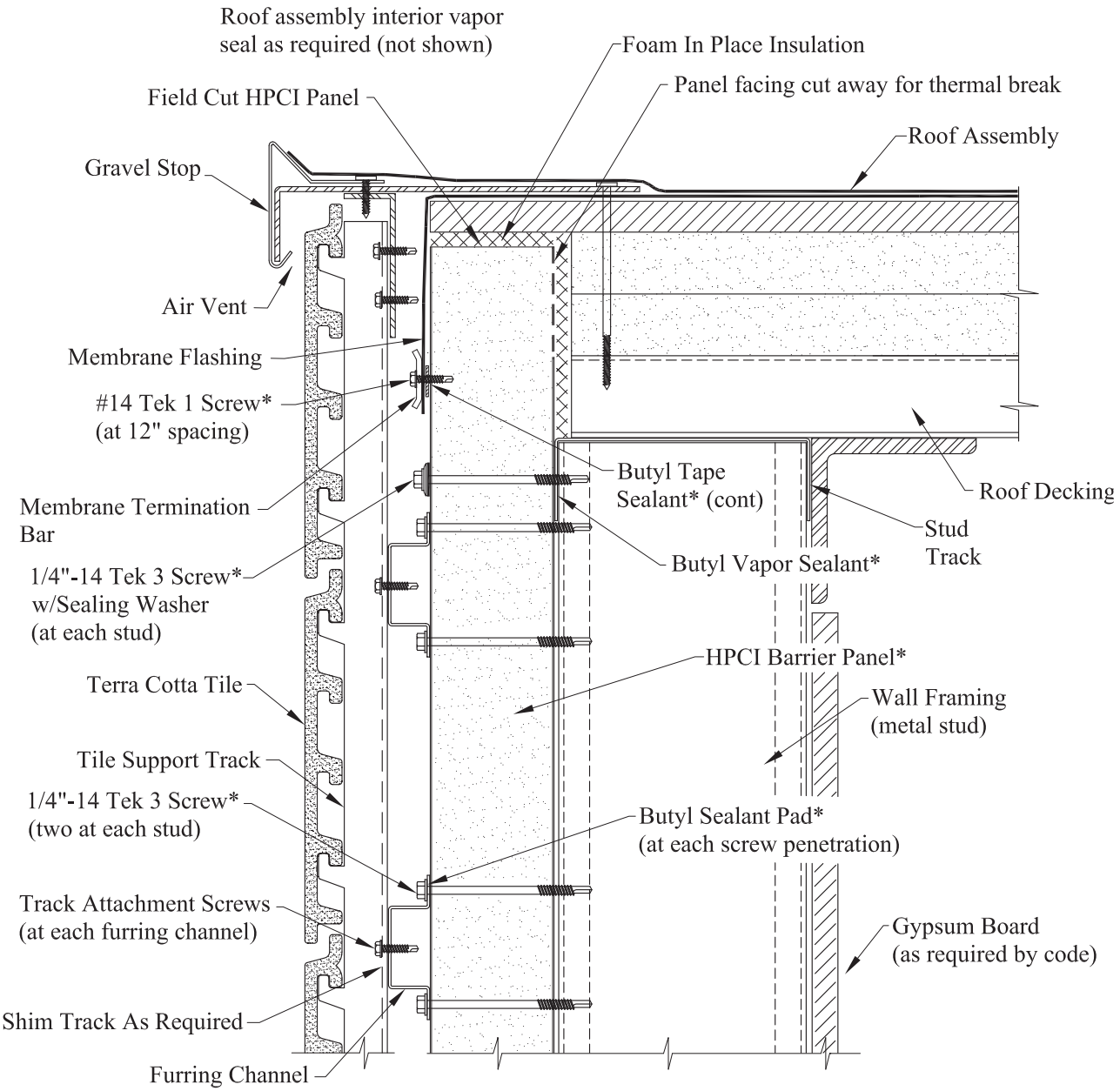
Wall Section @ Base
(Extended Ledge)

Notes:

1. * Designates components provided or available from Metl-Span.
2. Reference detail HPCI-TC-03 for furring channel spacing information.
3. Bottom furring channel located no more than 12" from bottom end of tile support tracks.
4. Reference terra cotta manufacturer's information for tile and track details.

HPCI BARRIER™ PANEL WITH TERRA COTTA CLADDING

Eave Detail (HPCI-TC-10)



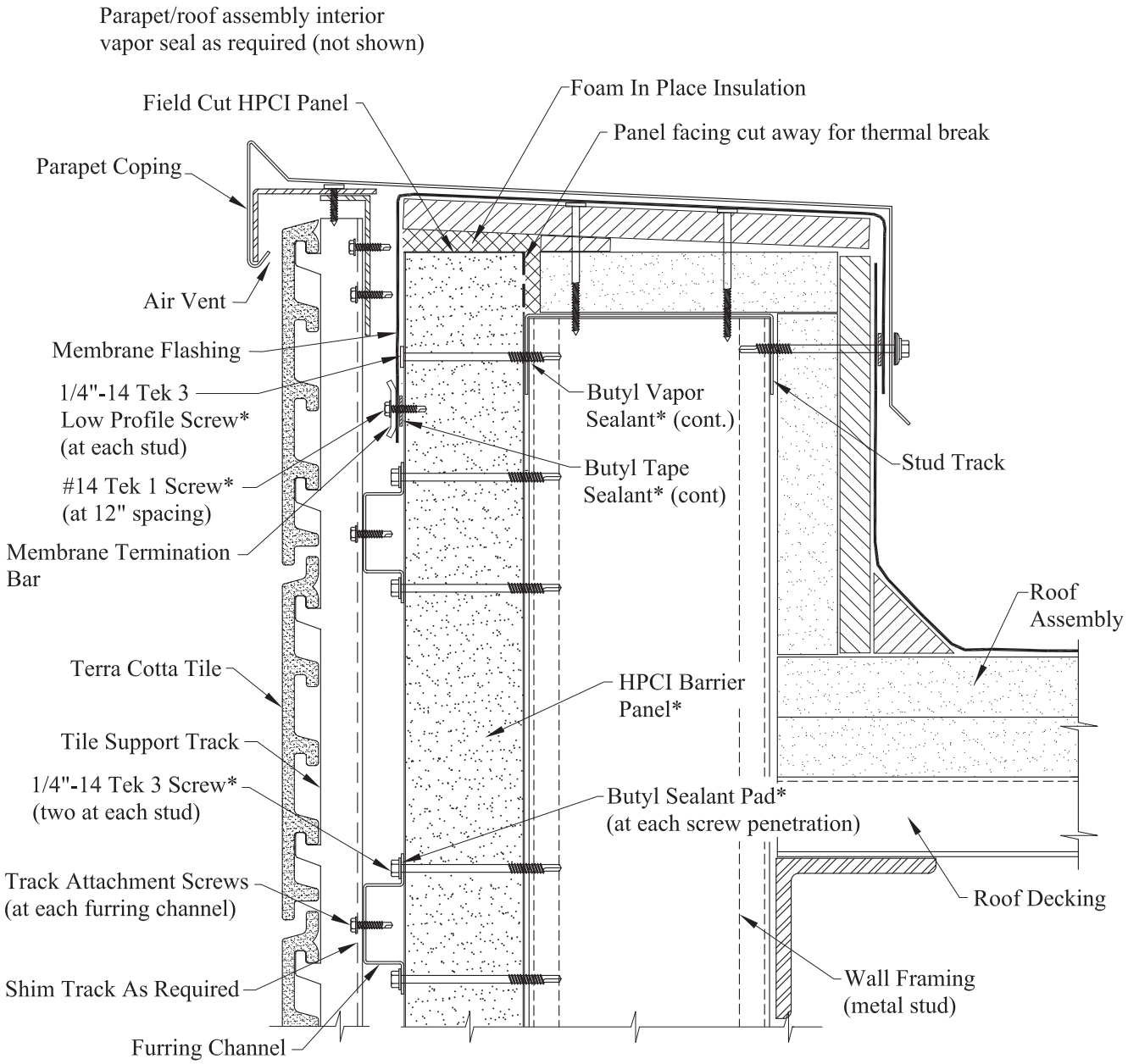
Wall Section @ Eave

Notes:

1. * Designates components provided or available from Metl-Span.
2. Reference detail HPCI-TC-03 for furring channel spacing information.
3. Top furring channel located no more than 12" from top end of tile support channels.
4. Reference terra cotta manufacturer's information for tile and track details.
5. Roof assembly shown as a generic representation only.
   Actual assembly as specified by the project designer.

HPCI BARRIER™ PANEL WITH TERRA COTTA CLADDING

Parapet Detail (HPCI-TC-11)



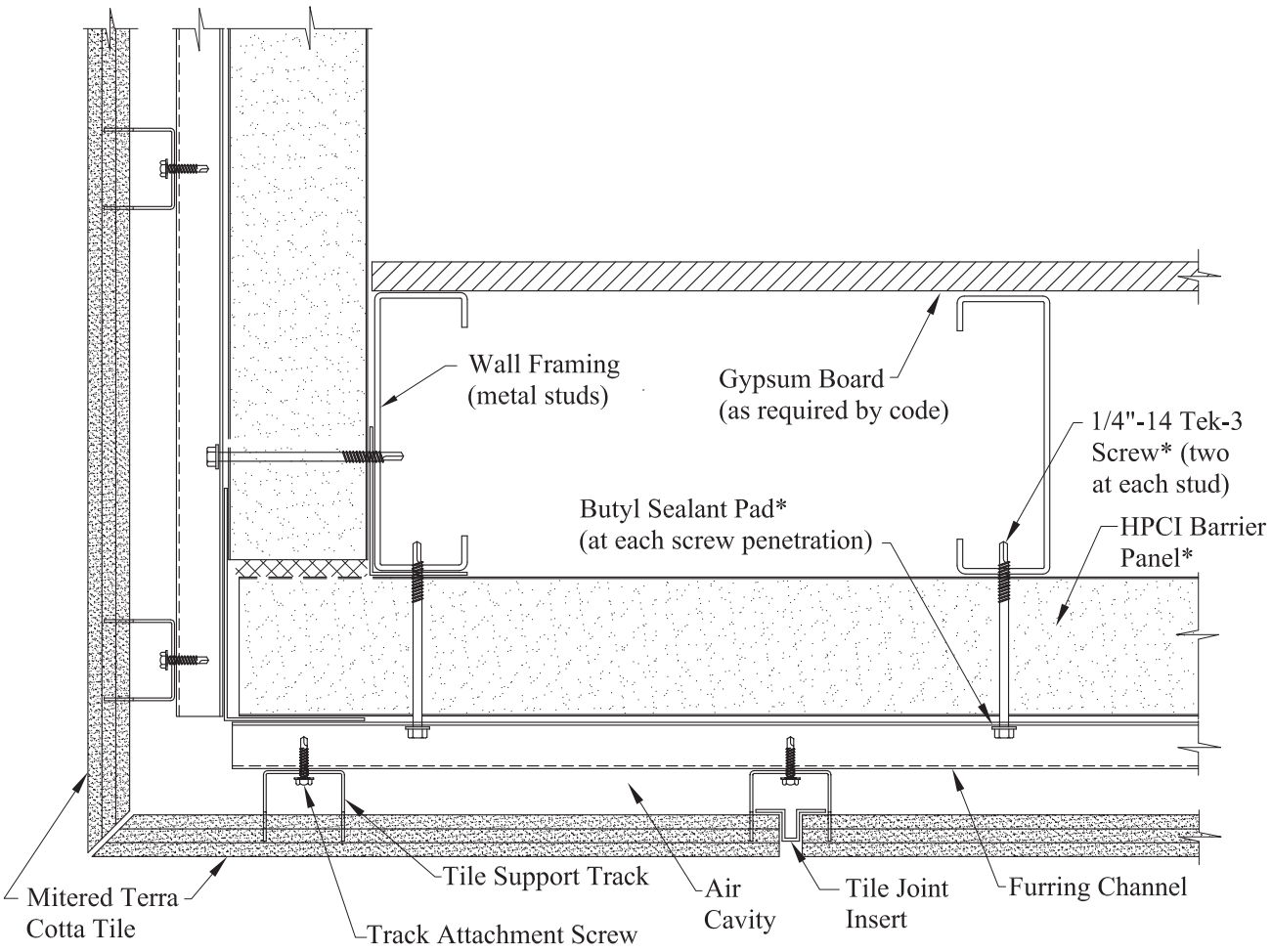
Wall Section At Parapet

Notes:

1. * Designates components provided or available from Metl-Span.
2. Reference detail HPCI-TC-03 for furring channel spacing information.
3. Top furring channel located no more than 12" from top end of tile support channels.
4. Reference terra cotta manufacturer's information for tile and track details.
5. Roof and parapet assembly shown as a generic representation only.
   Actual assembly as specified by the project designer.

HPCI BARRIER™ PANEL WITH TERRA COTTA CLADDING

Outside Corner Detail (HPCI-TC-12)



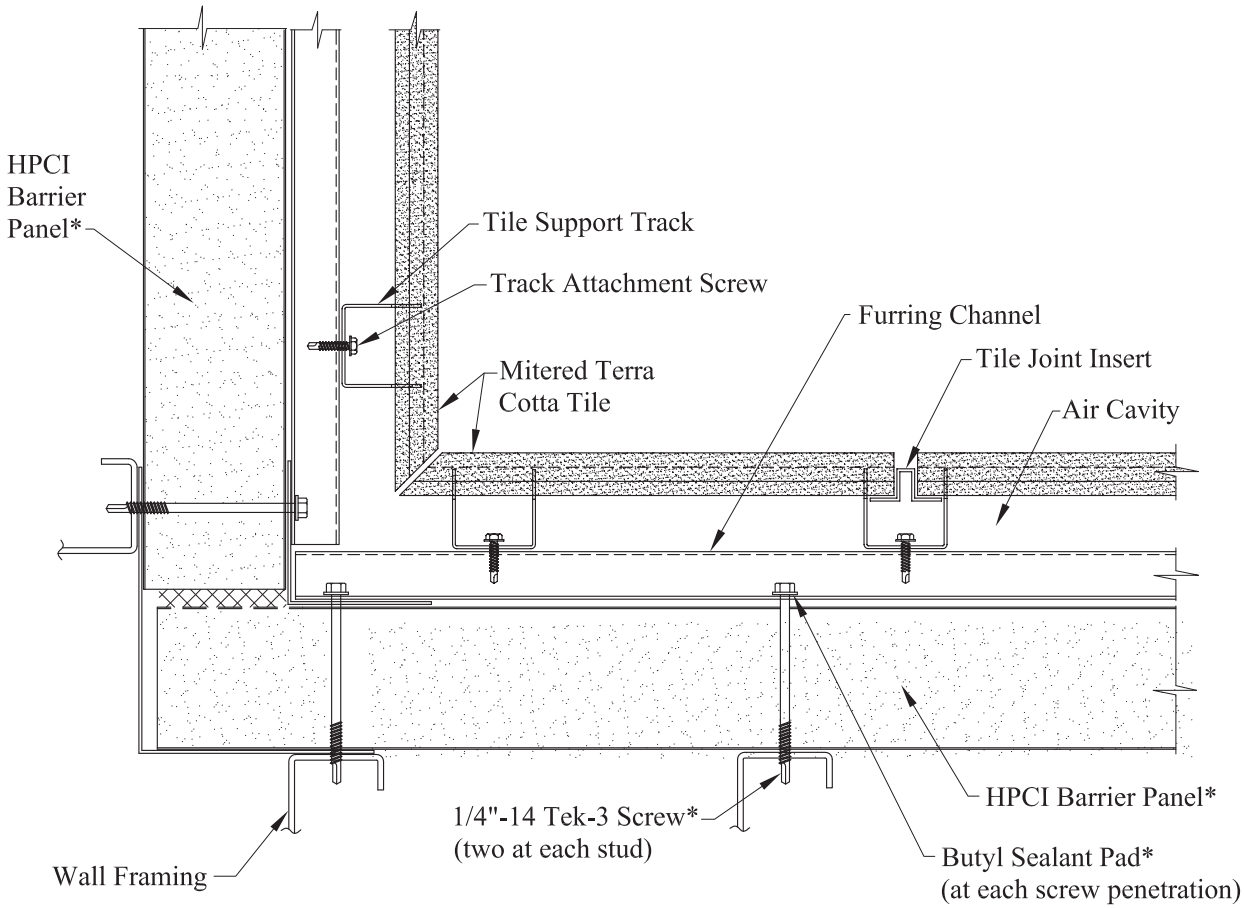
Wall Plan @ Outside Corner

Notes:

1. * Designates components provided or available from Metl-Span.
2. 12" max. from cantilevered end of furring channel to nearest stud connection.
3. Reference terra cotta manufacturer's information for tile and track details.

HPCI BARRIER™ PANEL WITH TERRA COTTA CLADDING

Inside Corner Detail (HPCI-TC-13)



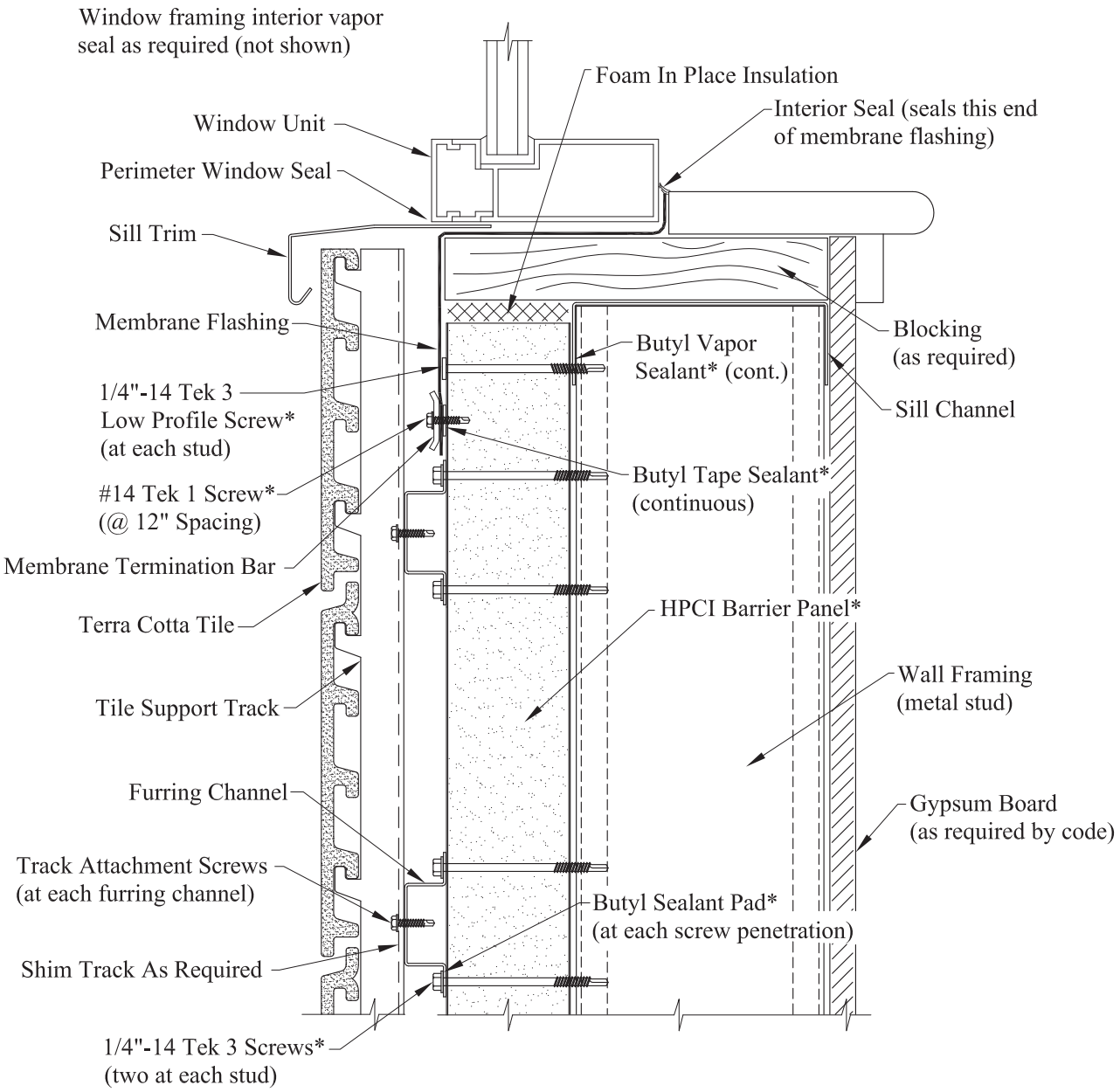
Wall Plan @ Inside Corner

Notes:

1. * Designates components provided or available from Metl-Span.
2. 12" max. from cantilevered end of furring channel to nearest stud connection.
3. Reference terra cotta manufacturer's information for tile and track details.

HPCI BARRIER™ PANEL WITH TERRA COTTA CLADDING

Sill Detail - Wood Framed (HPCI-TC-14)



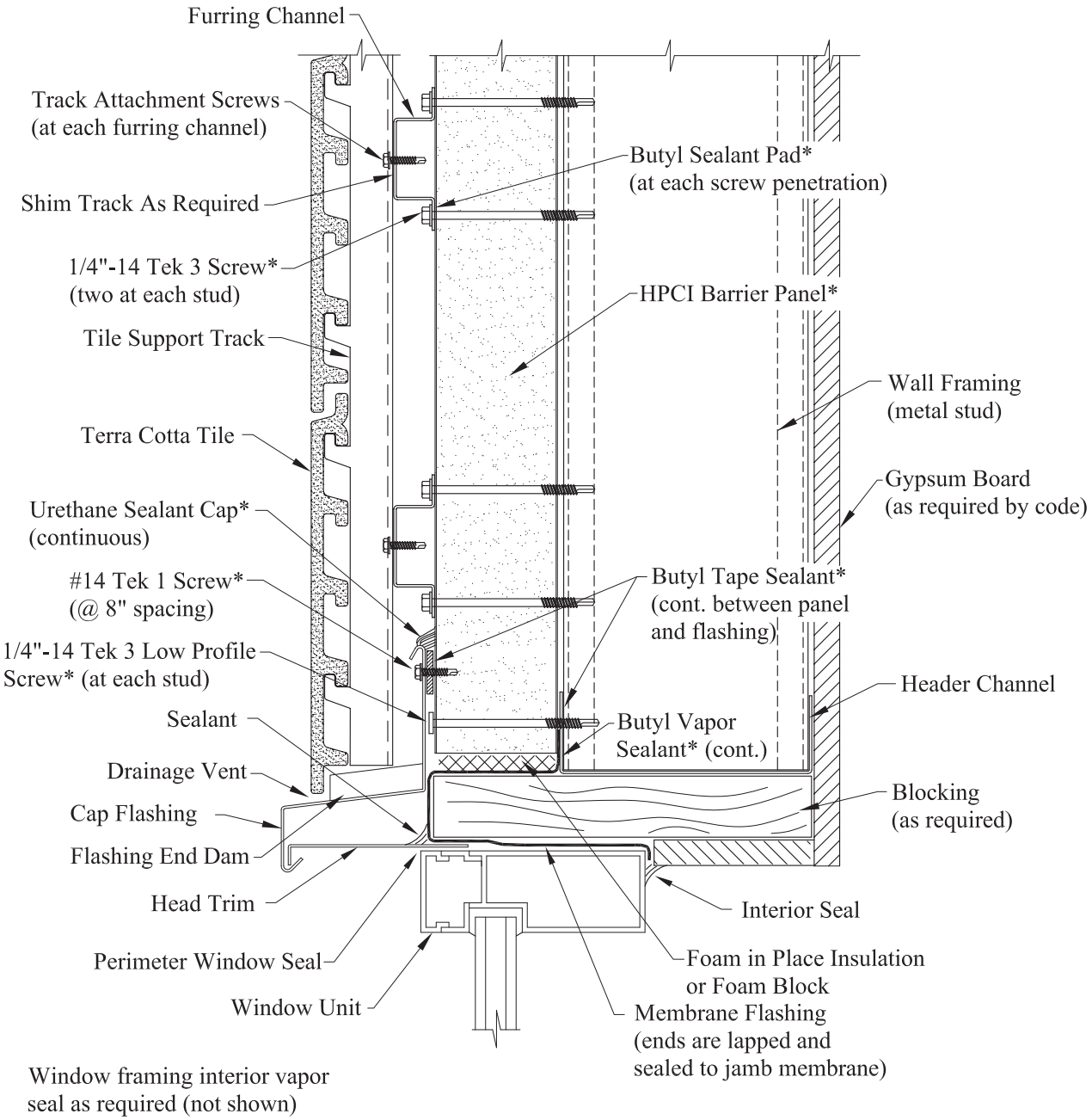
Wall Section @ Window Sill

Notes:

1. * Designates components provided or available from Metl-Span.
2. Furring channel located no more than 12" from top end of tile support track.
3. Reference terra cotta manufacturer's information for tile and track details.
4. Window assembly shown as generic representation only.
   Actual assembly as specified by the project designer.

HPCI BARRIER™ PANEL WITH TERRA COTTA CLADDING

Head Detail - Wood Framed (HPCI-TC-15)



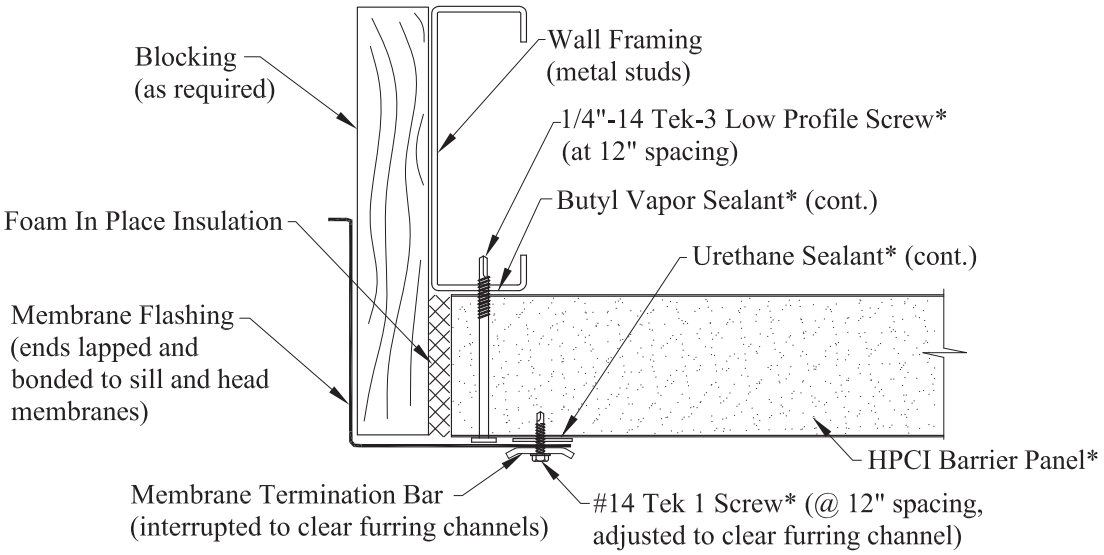
Wall Section @ Window Head

Notes:

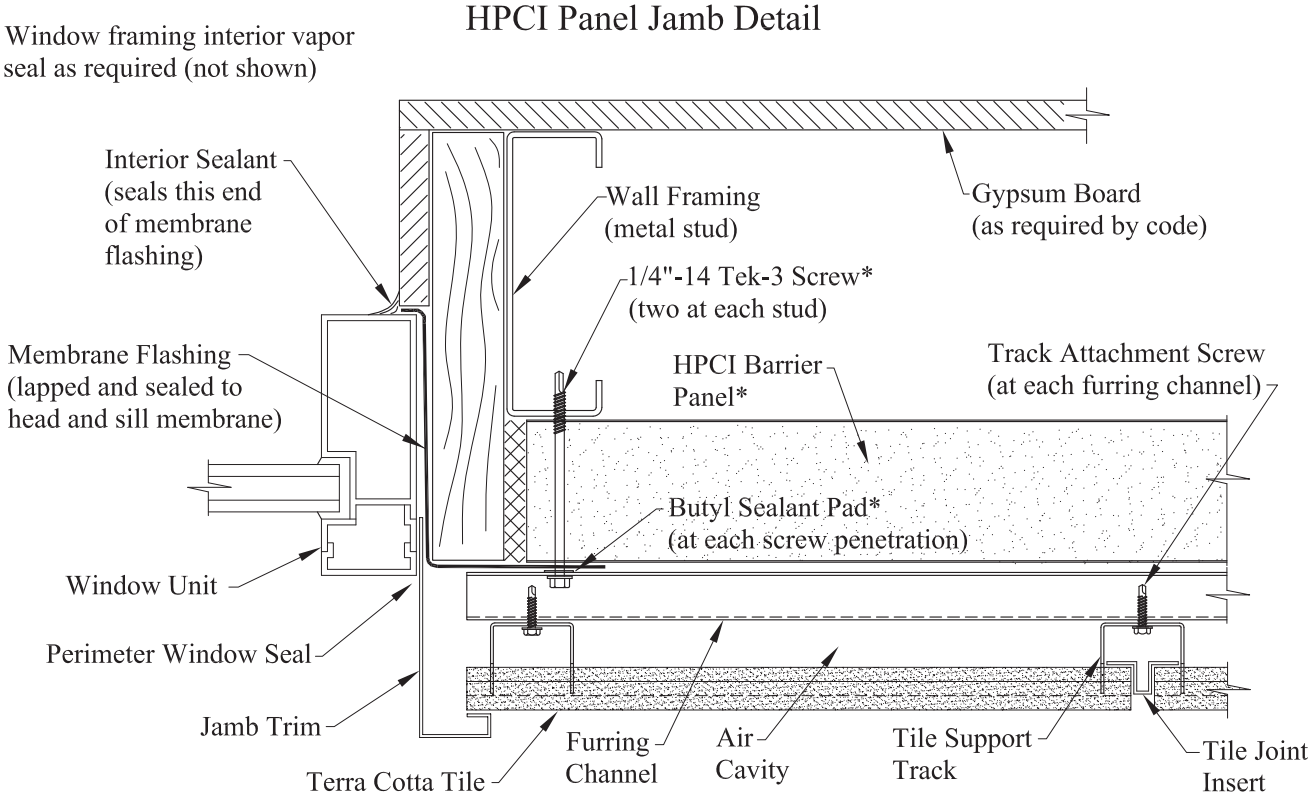
1. * Designates components provided or available from Metl-Span.
2. Furring channel located no more than 12" from bottom end of tile support track.
3. Reference terra cotta manufacturer's information for tile and track details.
4. Window assembly shown as a generic representation only.
   Actual assembly as specified by the project designer.

HPCI BARRIER™ PANEL WITH TERRA COTTA CLADDING

Jamb Detail - Wood Framed (HPCI-TC-16)



HPCI Panel Jamb Detail



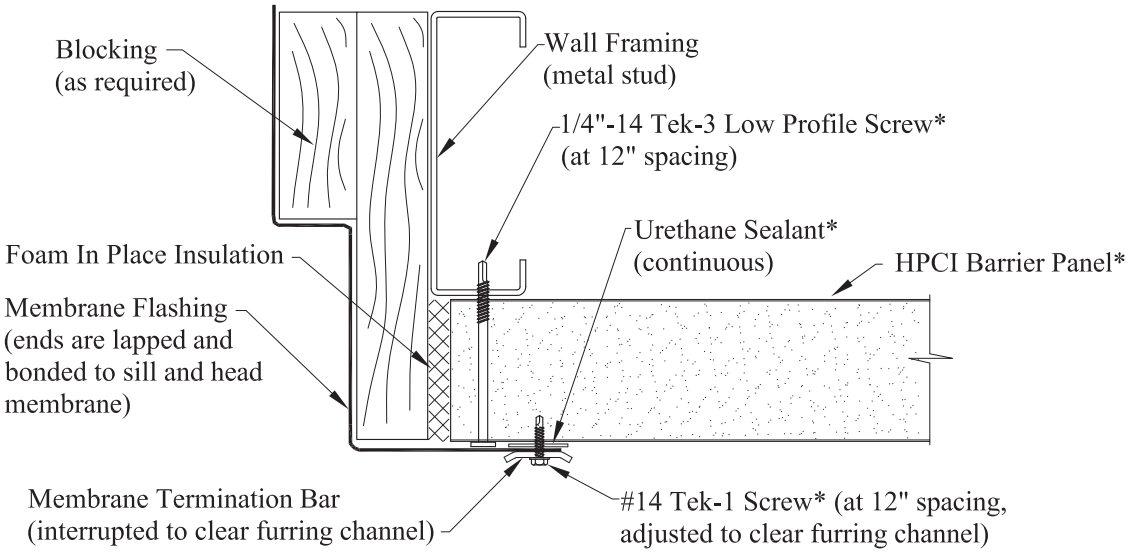
Wall Plan @ Window Jamb

Notes:

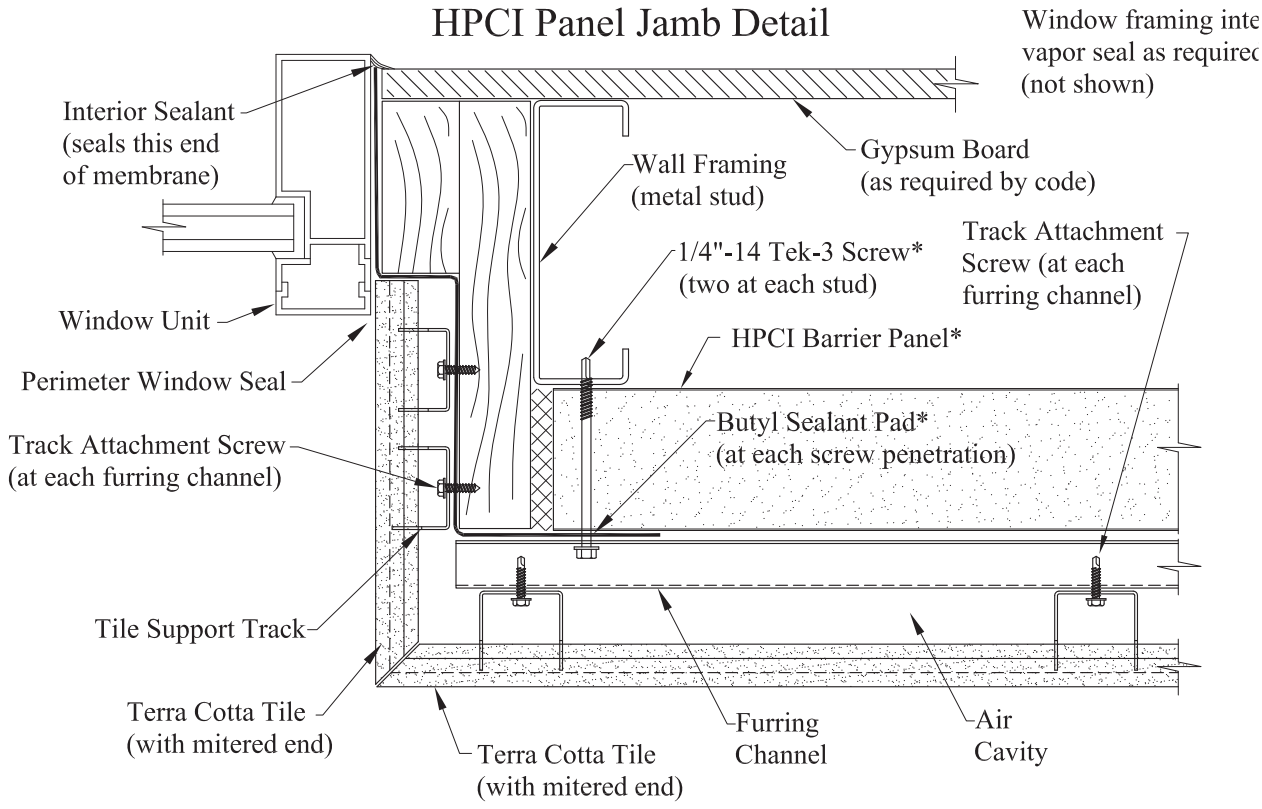
1. * Designates components provided or available from Metl-Span.
2. Membrane termination bar shown. Self adhering membrane is project designer's option.
3. Reference terra cotta manufacturer's information for tile and track details.
4. Window assembly shown as generic representation only. Actual assembly is as specified by the project designer.

HPCI BARRIER™ PANEL WITH TERRA COTTA CLADDING

Jamb Detail w/ Tile Return (HPCI-TC-17)



HPCI Panel Jamb Detail



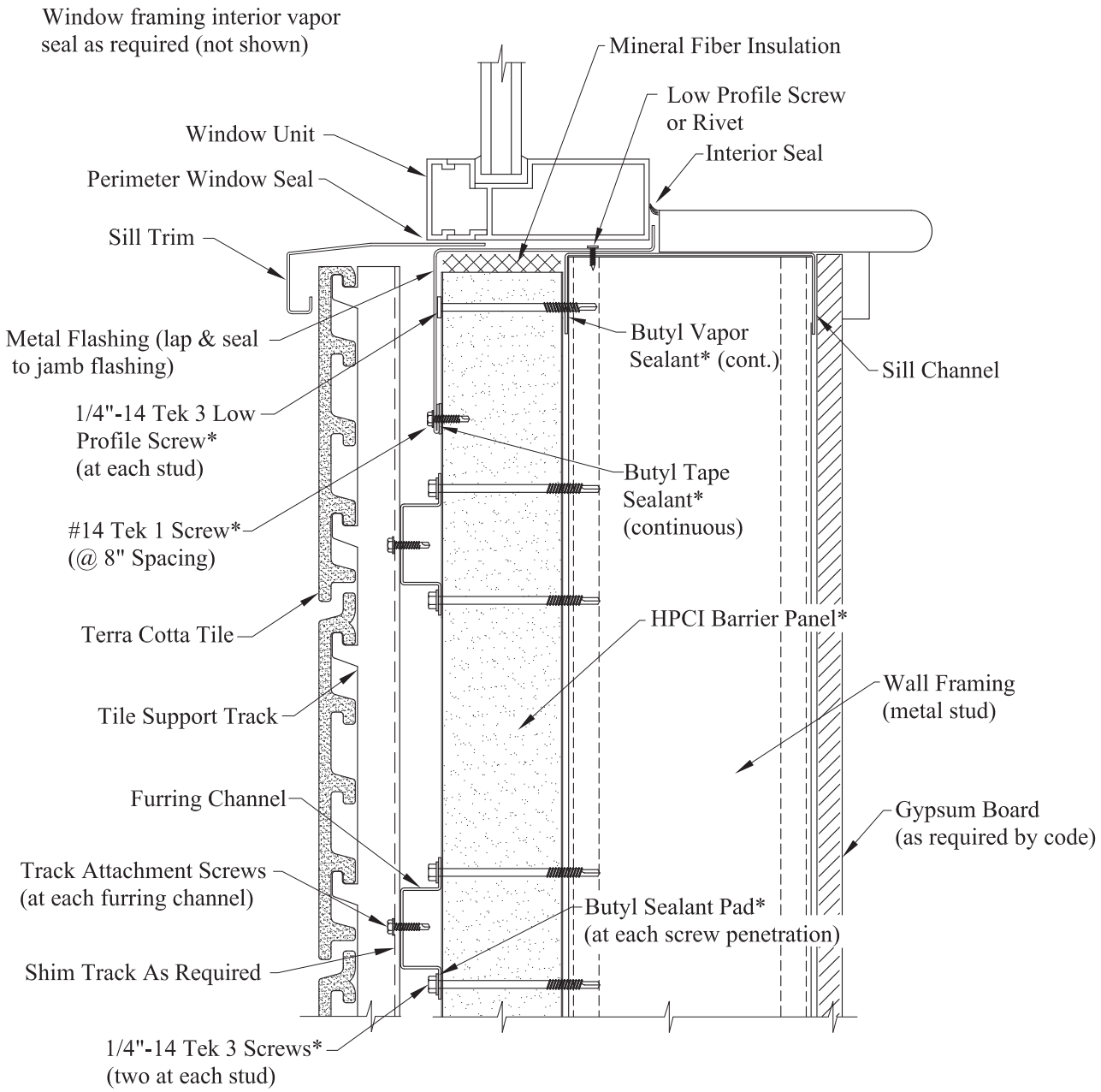
Wall Plan @ Window Jamb

Notes:

1. * Designates components provided or available from Metl-Span.
2. Membrane termination bar shown. Self adhering membrane is project designer's option.
3. Reference terra cotta manufacturer's information for tile and track details.
4. Window assembly shown as generic representation only. Actual assembly as specified by the project designer.

HPCI BARRIER™ PANEL WITH TERRA COTTA CLADDING

Sill Detail - Metal Framed (HPCI-TC-18)



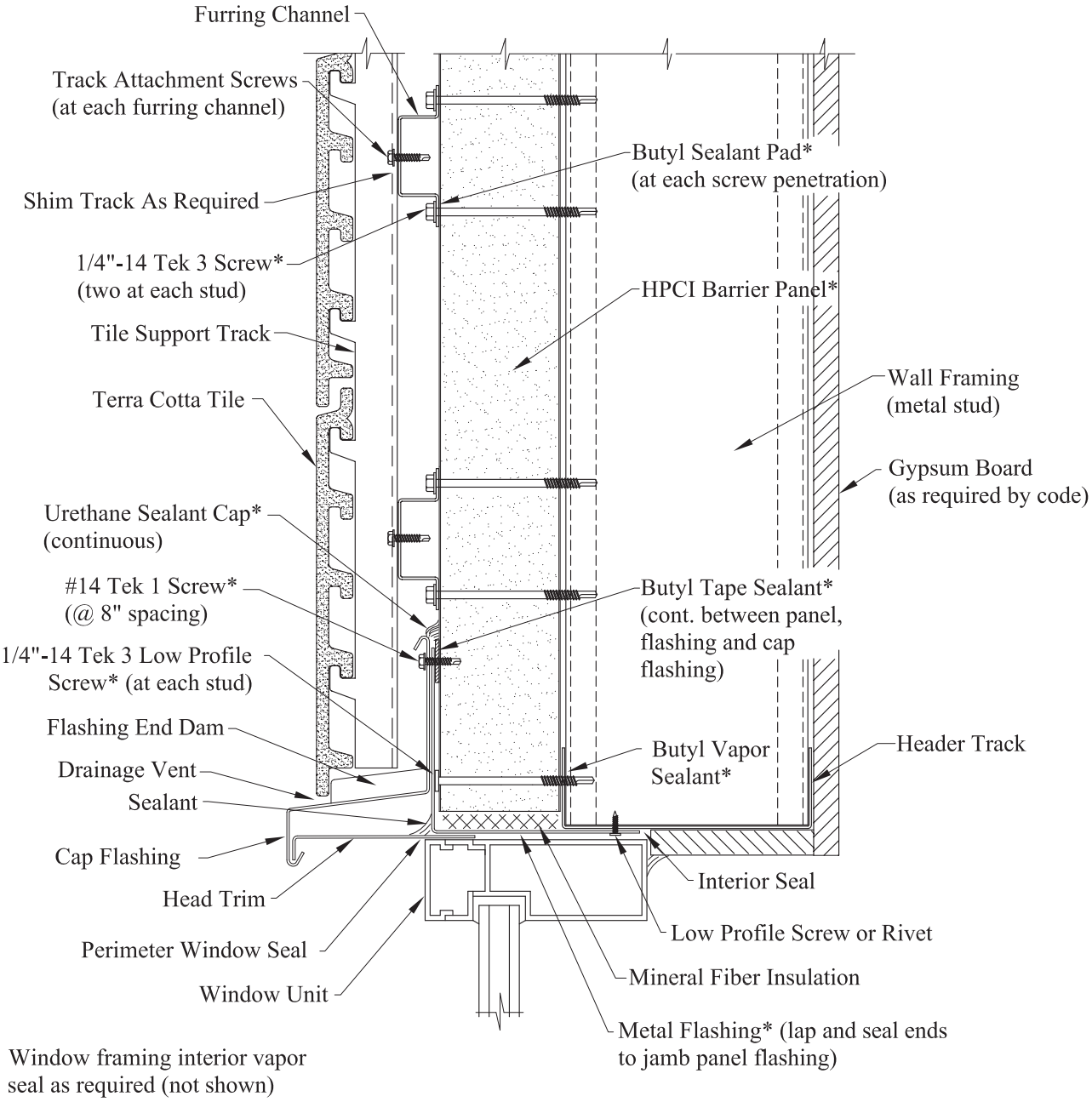
Wall Section @ Window Sill

Notes:

1. * Designates components provided or available from Metl-Span.
2. Furring channel is located no more than 12" from top end of tile support track.
3. Reference terra cotta manufacturer's information for tile and track details.
4. Window assembly shown as generic representation only. Actual assembly as specified by the project designer.
5. Metal fire block flashing of panel ends and air cavity is shown as required for multi-story code compliance.

HPCI BARRIER™ PANEL WITH TERRA COTTA CLADDING

Head Detail - Metal Framed (HPCI-TC-19)



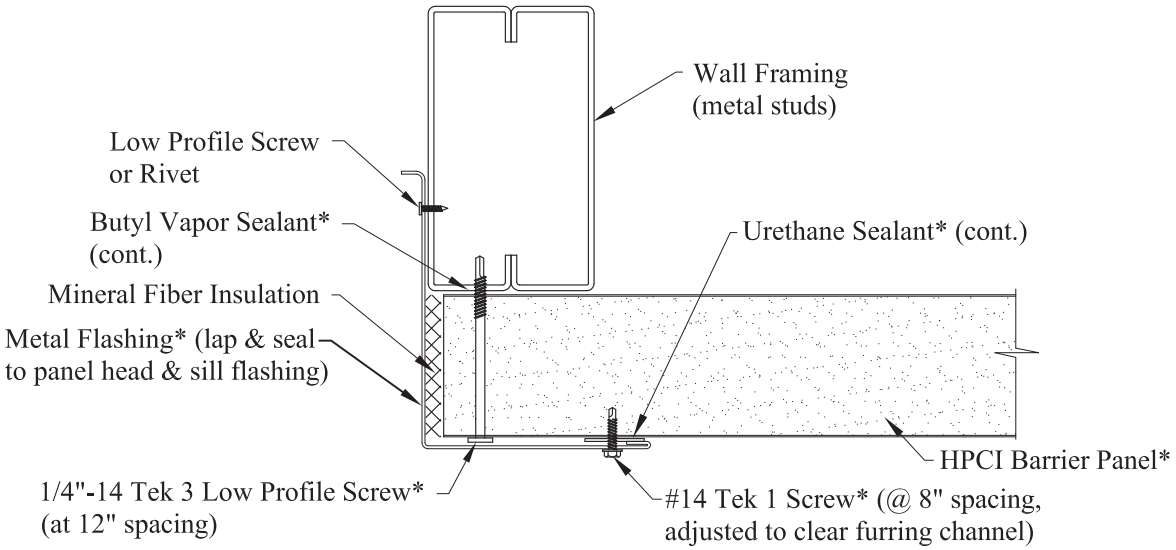
Wall Section @ Window Head

Notes:

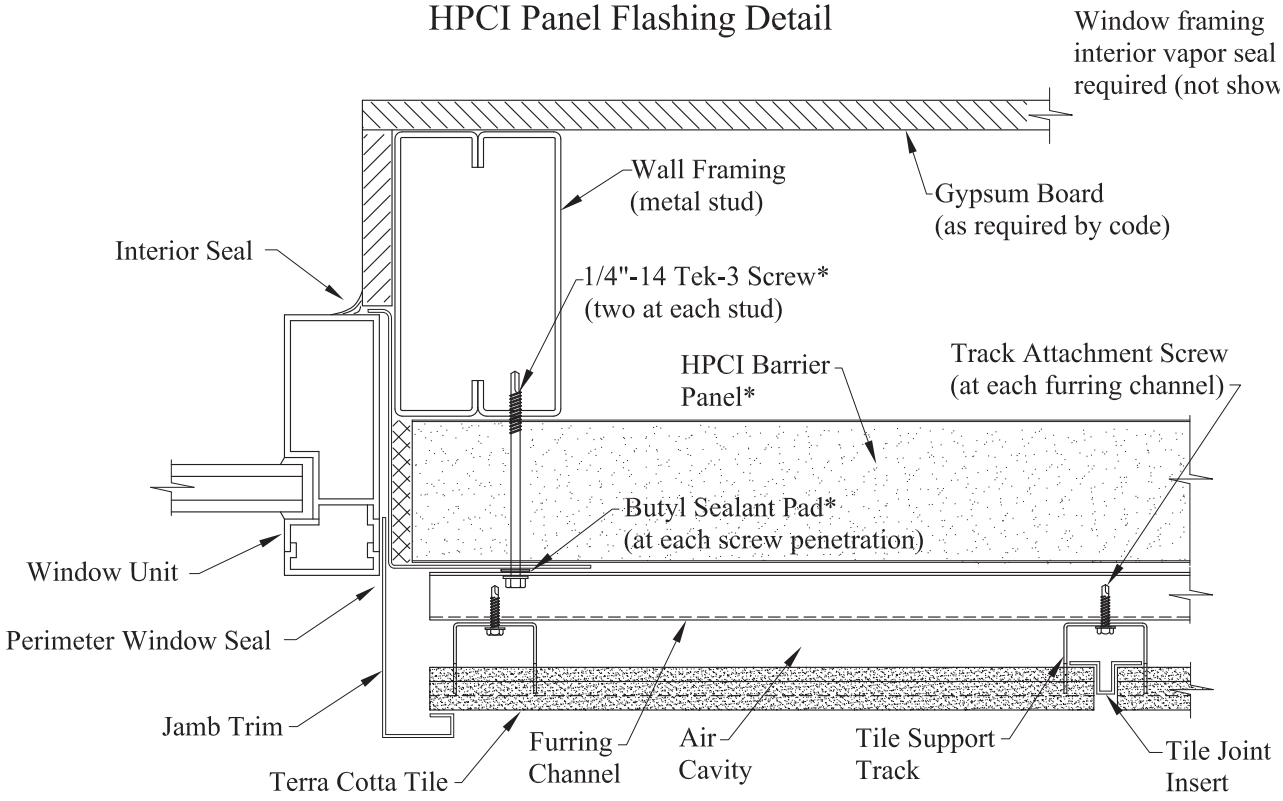
1. * Designates components provided or available from Metl-Span.
2. Furring channel is located no more than 12" from bottom end of tile support track.
3. Reference terra cotta manufacturer's information for tile and track details.
4. Window assembly shown as generic representation only. Actual assembly as specified by the project designer.
5. Metal fire block flashing of panel ends and air cavity is shown as required for multi-story code compliance.

HPCI BARRIER™ PANEL WITH TERRA COTTA CLADDING

Jamb Detail - Metal Framed (HPCI-TC-20)



HPCI Panel Flashing Detail



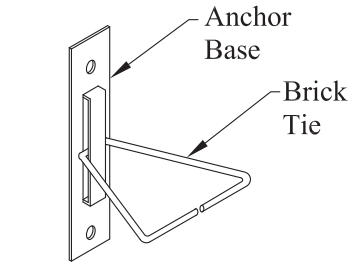
Wall Plan @ Window Jamb

Notes:

1. * Designates components provided or available from Metl-Span.
2. Reference terra cotta manufacturer's information for tile and track details.
3. Window assembly shown as generic representation only. Actual assembly is as specified by the project designer.
4. Metal fire block flashing of panel ends and air cavity is shown as required for multi-story compliance.

HPCI BARRIER™ PANEL WITH BRICK VENEER CLADDING

General Wall Assembly (HPCI-BC-01)



Brick Anchor Detail

General Wall Assembly

Notes:

1. Shown is a general representation of a wall assembly with metal stud framing, HPCI barrier panel, brick anchors and brick exterior cladding.

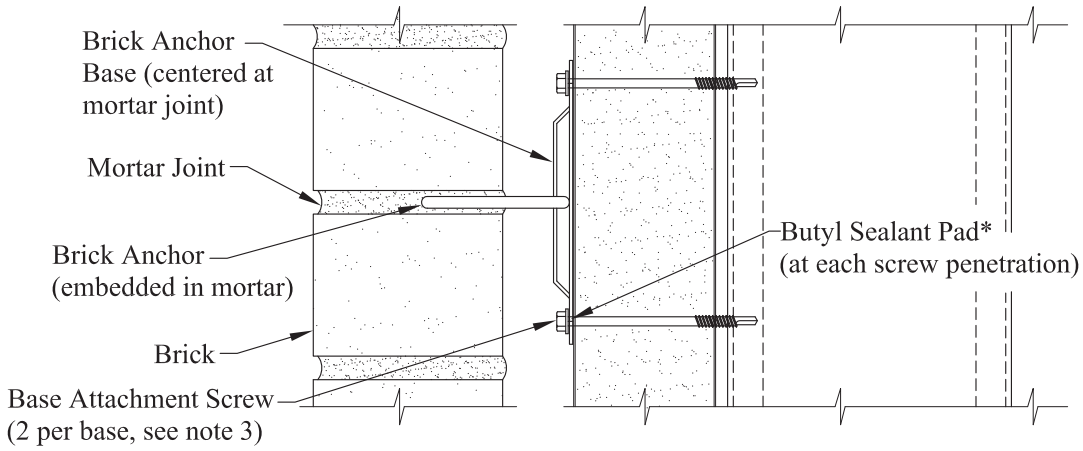
2. The brick anchors transfer the brick cladding's wind loads through the HPCI panels into the wall framing studs. Brick anchor screw size (pull out strength) is determined by negative wind pressure design requirements.

3. The brick anchors are shown as the bracket and wire tie type for mounting on rigid insulation. Reference the brick anchor manufacturer's information for specific brick anchor details.

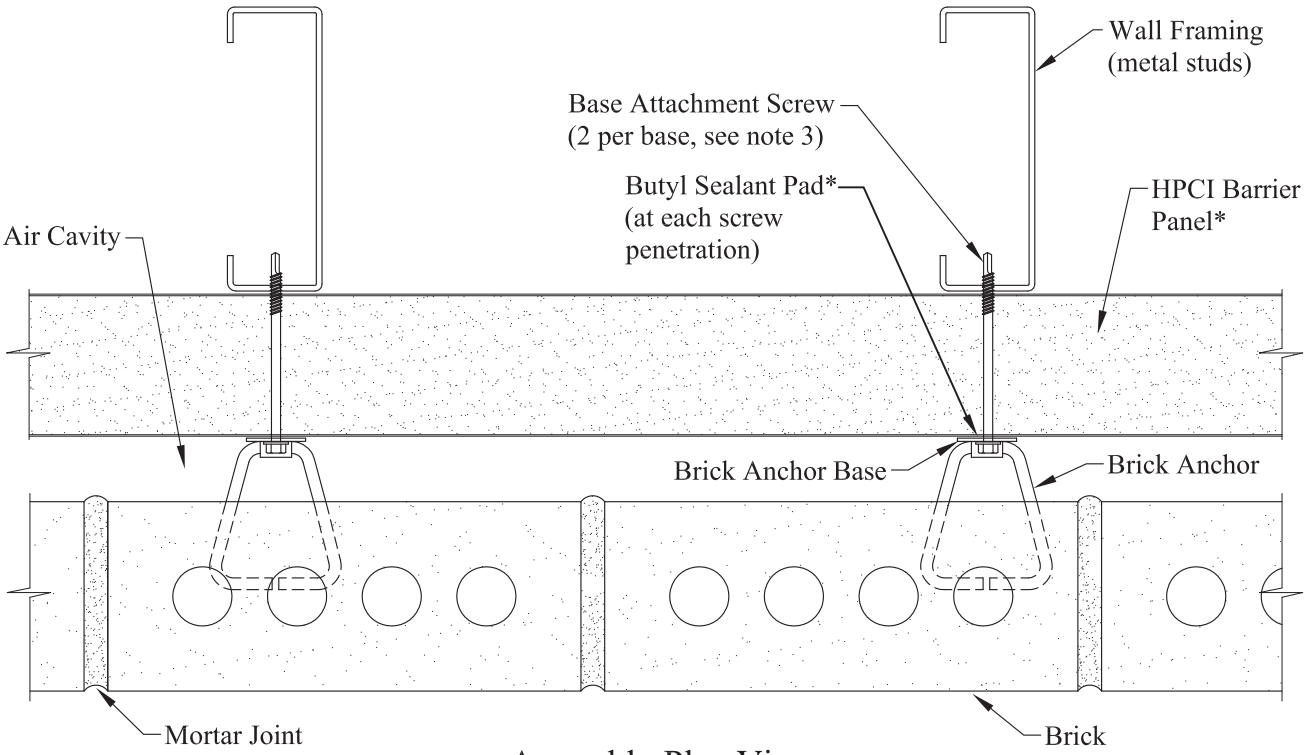
4. It is the project designer's responsibility to confirm the suitability, structural adequacy and code compliance of the actual wall assembly and its components.

HPCI BARRIER™ PANEL WITH BRICK VENEER CLADDING

Brick & Anchor Assembly (HPCI-BC-02)



Assembly Section



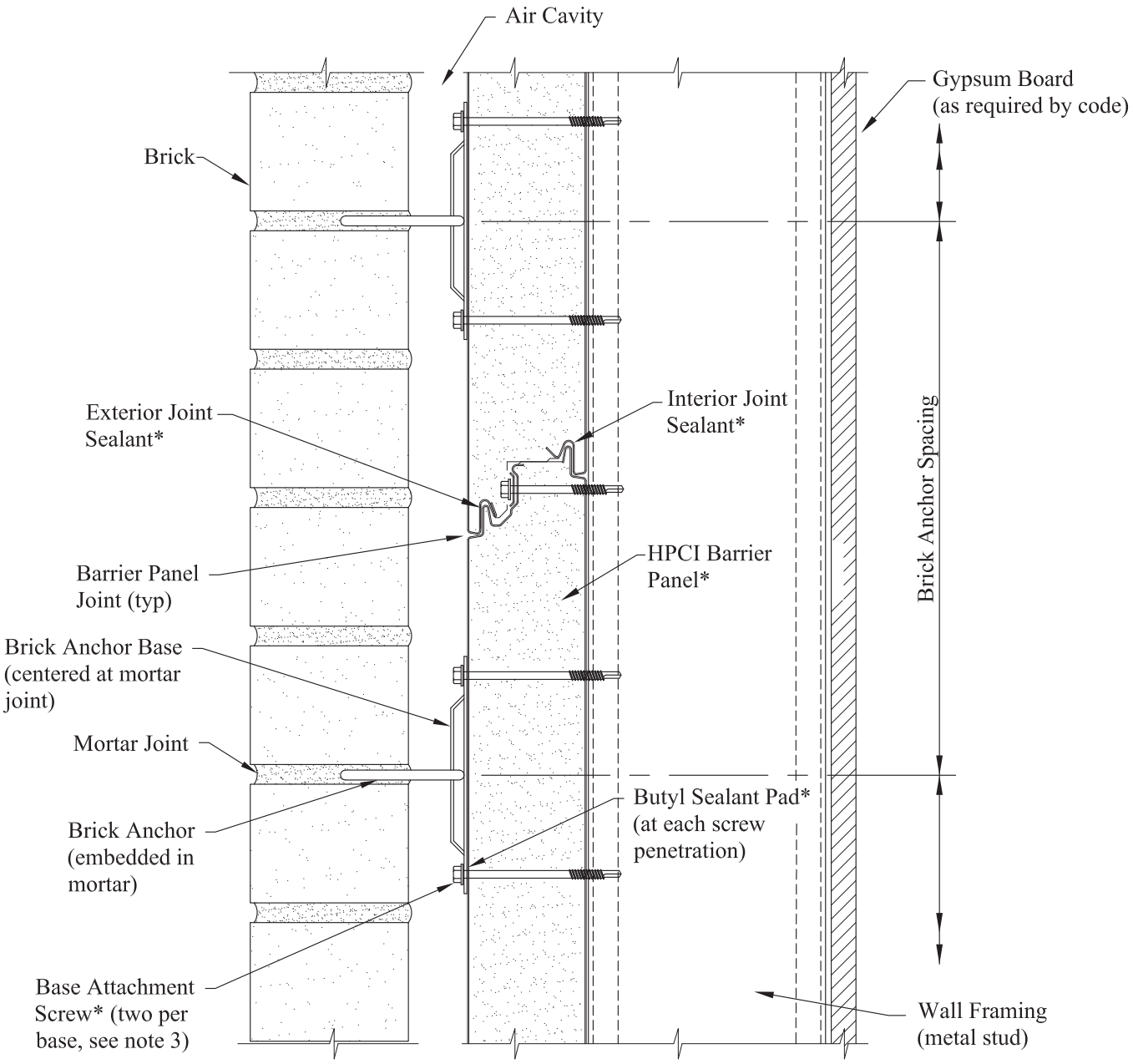
Assembly Plan View

Notes:

1. * Designates components provided or available from Metl-Span.
2. Reference the governing code for brick anchor spacing.
3. Brick anchor screw size (pull-out strength) is determined by negative wind pressure design requirements.
4. Reference brick and brick anchor manufacturer's information for specific brick and anchor details.

HPCI BARRIER™ PANEL WITH BRICK VENEER CLADDING

General Wall Section (HPCI-BC-03)



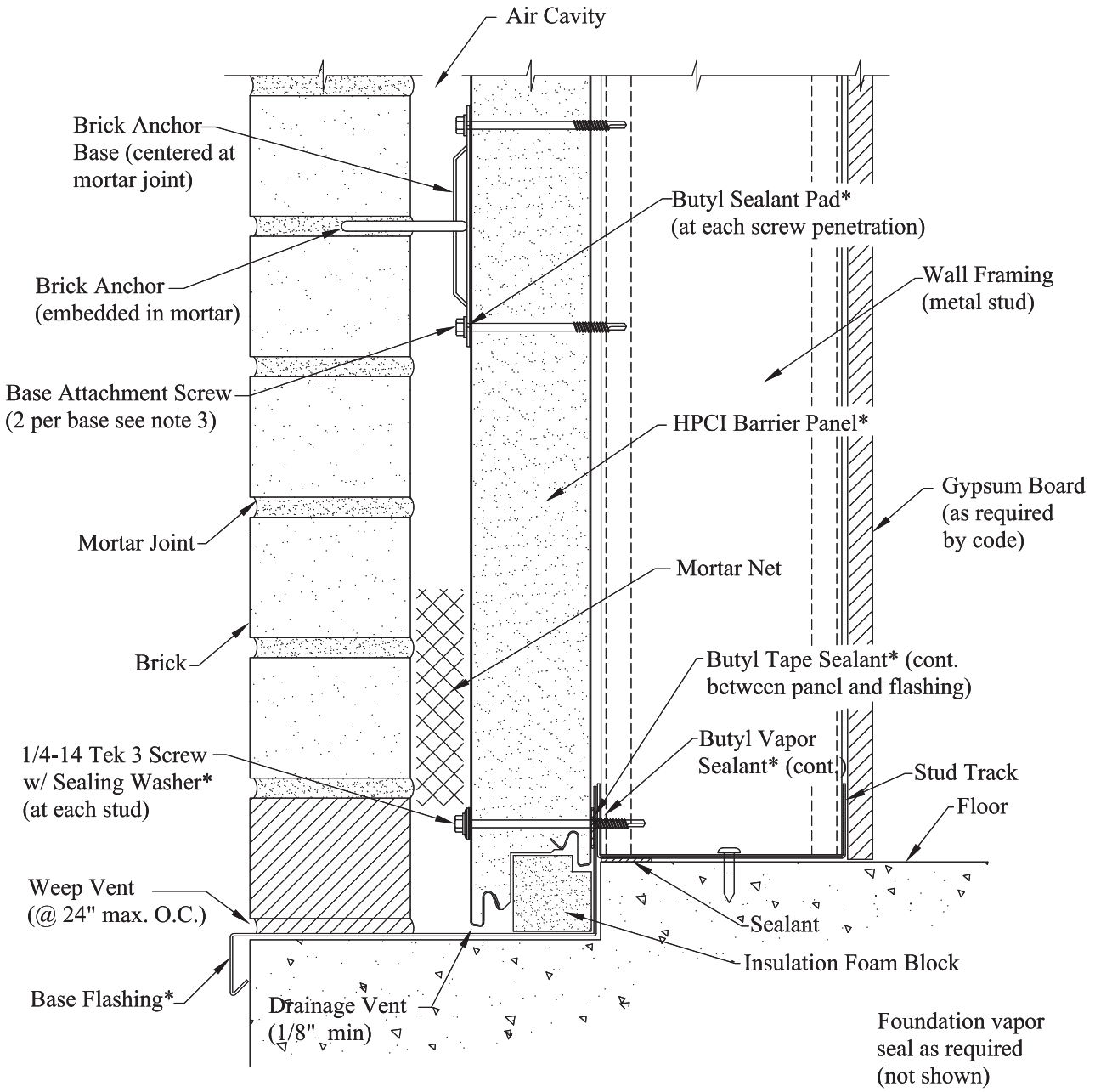
General Wall Section

Notes:

1. * Designates components provided or available from Metl-Span.
2. Reference the governing code for brick anchor spacing.
3. Brick anchor screw size (pull-out strength) is determined by negative wind pressure design requirements.
4. Reference brick and brick anchor manufacturer's information for specific brick and anchor details.

HPCI BARRIER™ PANEL WITH BRICK VENEER CLADDING

Base Detail w/ Metal Flashing (HPCI-BC-04)



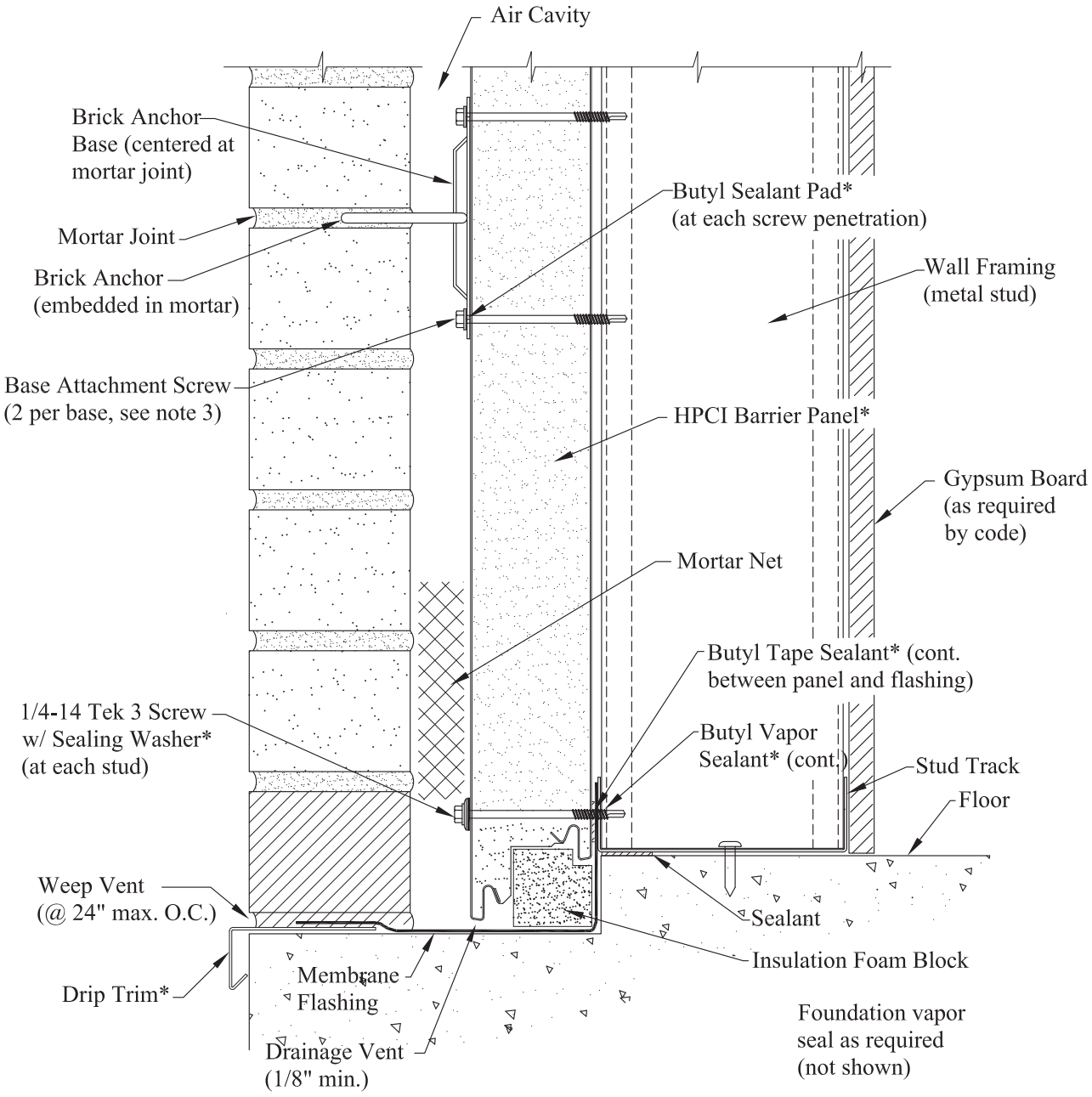
Wall Section @ Base
(Foundation Ledge w/ Metal Flashing)

Notes:

1. * Designates components provided or available from Metl-Span.
2. Reference the governing code for brick anchor spacing.
3. Brick anchor screw size (pull-out strength) is determined by negative wind pressure design requirements.
4. Reference brick and brick anchor manufacturer's information for specific brick and anchor details.

HPCI BARRIER™ PANEL WITH BRICK VENEER CLADDING

Base Detail w/ Membrane Flashing (HPCI-BC-05)



Wall Section @ Base

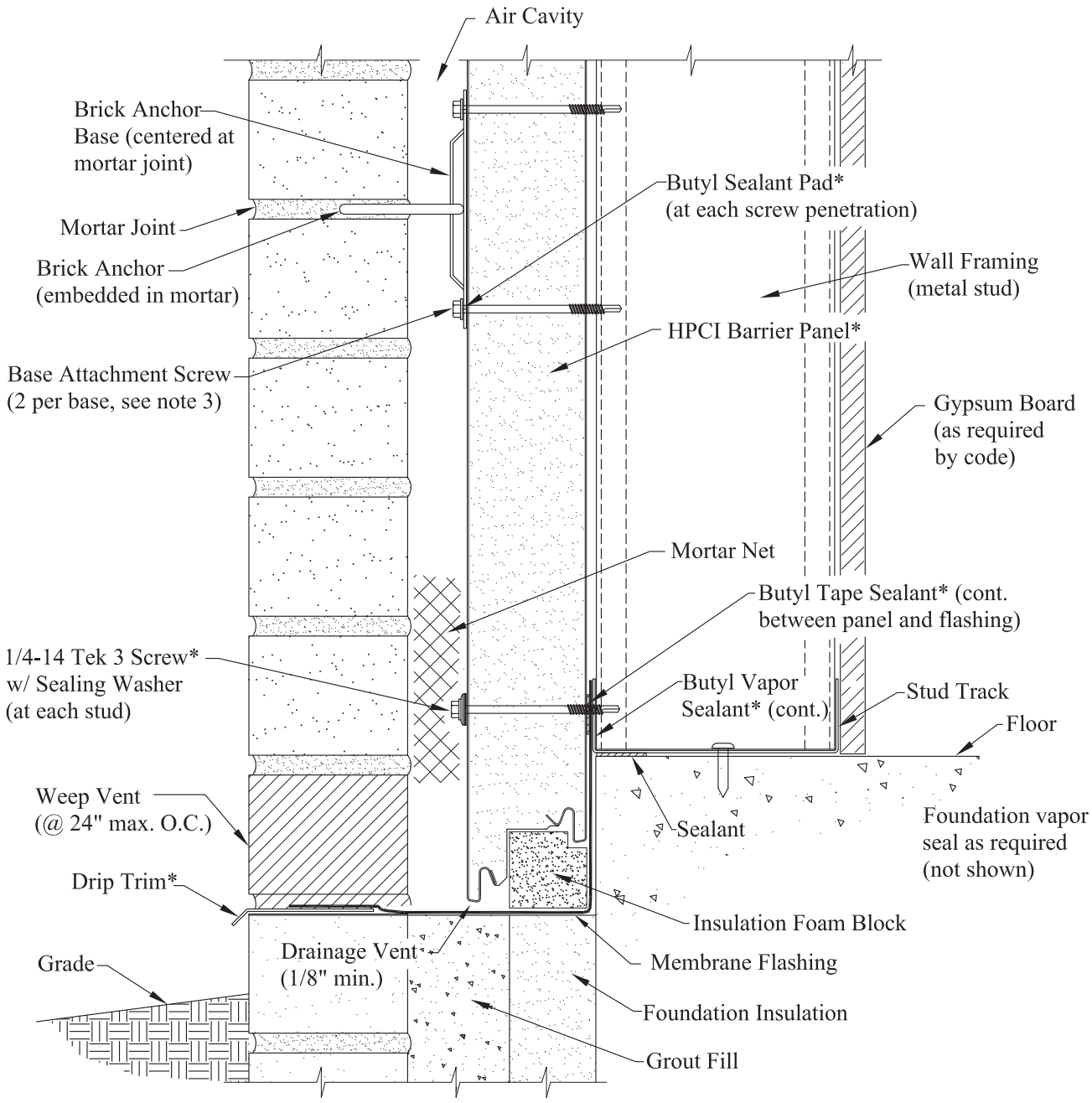
(Foundation Ledge w/ Membrane Flashing)

Notes:

1. * Designates components provided or available from Metl-Span.
2. Reference the governing code for brick anchor spacing.
3. Brick anchor screw size (pull-out strength) is determined by negative wind pressure design requirements.
4. Reference brick and brick anchor manufacturer's information for specific brick and anchor details.

HPCI BARRIER™ PANEL WITH BRICK VENEER CLADDING

Base Detail - Brick Below Grade (HPCI-BC-06)



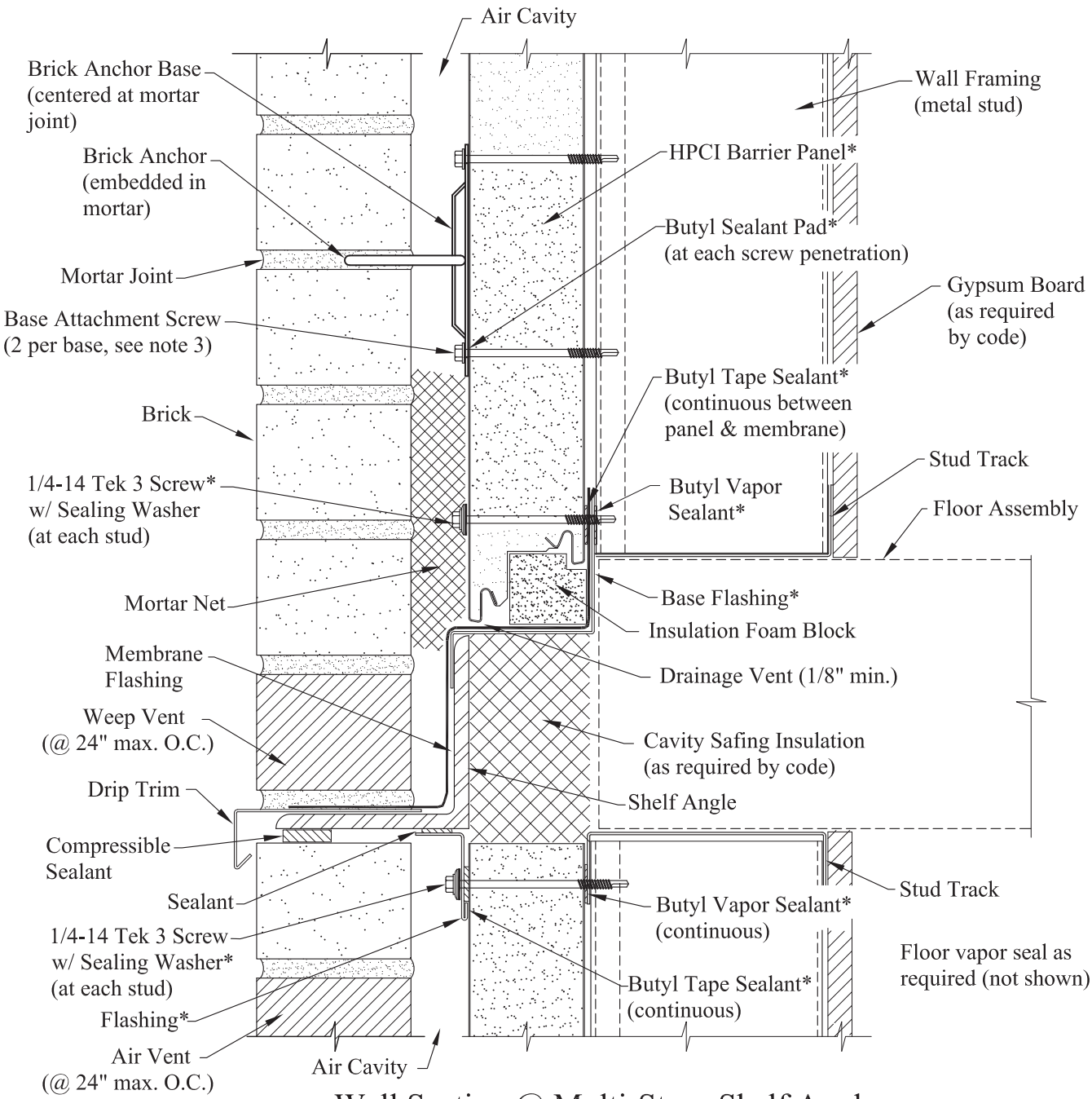
Wall Section @ Base
(Brick Below Grade)

Notes:

1. * Designates components provided or available from Metl-Span.
2. Reference the governing code for brick anchor spacing.
3. Brick anchor screw size (pull-out strength) is determined by negative wind pressure design requirements.
4. Reference brick and brick anchor manufacturer's information for specific brick and anchor details.

HPCI BARRIER™ PANEL WITH BRICK VENEER CLADDING

Multi-Story Shelf Angle Detail (HPCI-BC-07)



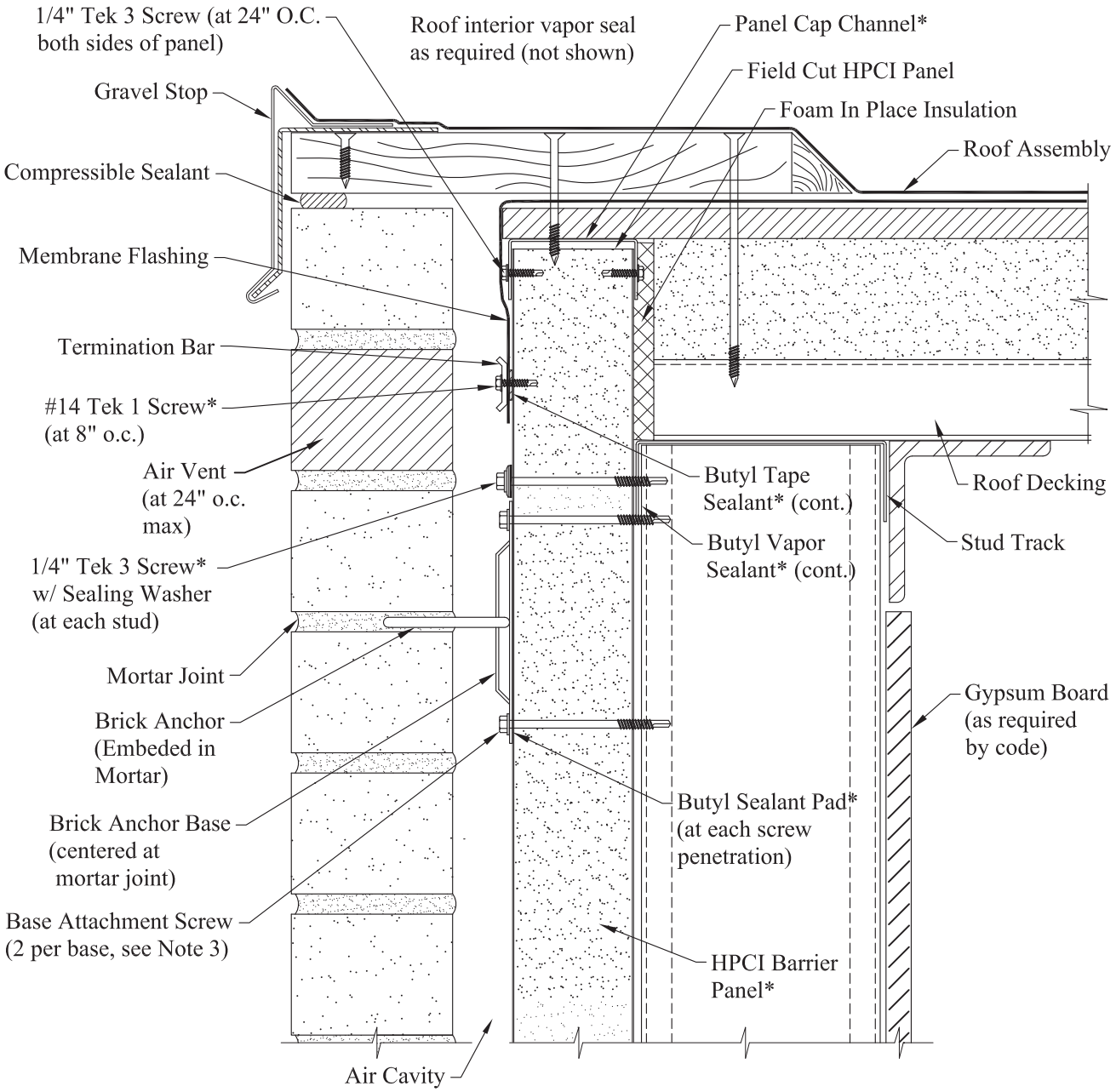
Wall Section @ Multi-Story Shelf Angle

Notes:

1. * Designates components provided or available from Metl-Span.
2. Reference the governing code for brick anchor spacing.
3. Brick anchor screw size (pull-out strength) is determined by negative wind pressure design requirements.
4. Reference brick and brick anchor manufacturer's information for specific brick and anchor details.
5. Floor assembly shown as generic representation only. Actual assembly is as specified by the project designer.

HPCI BARRIER™ PANEL WITH BRICK VENEER CLADDING

Eave Detail (HPCI-BC-08)



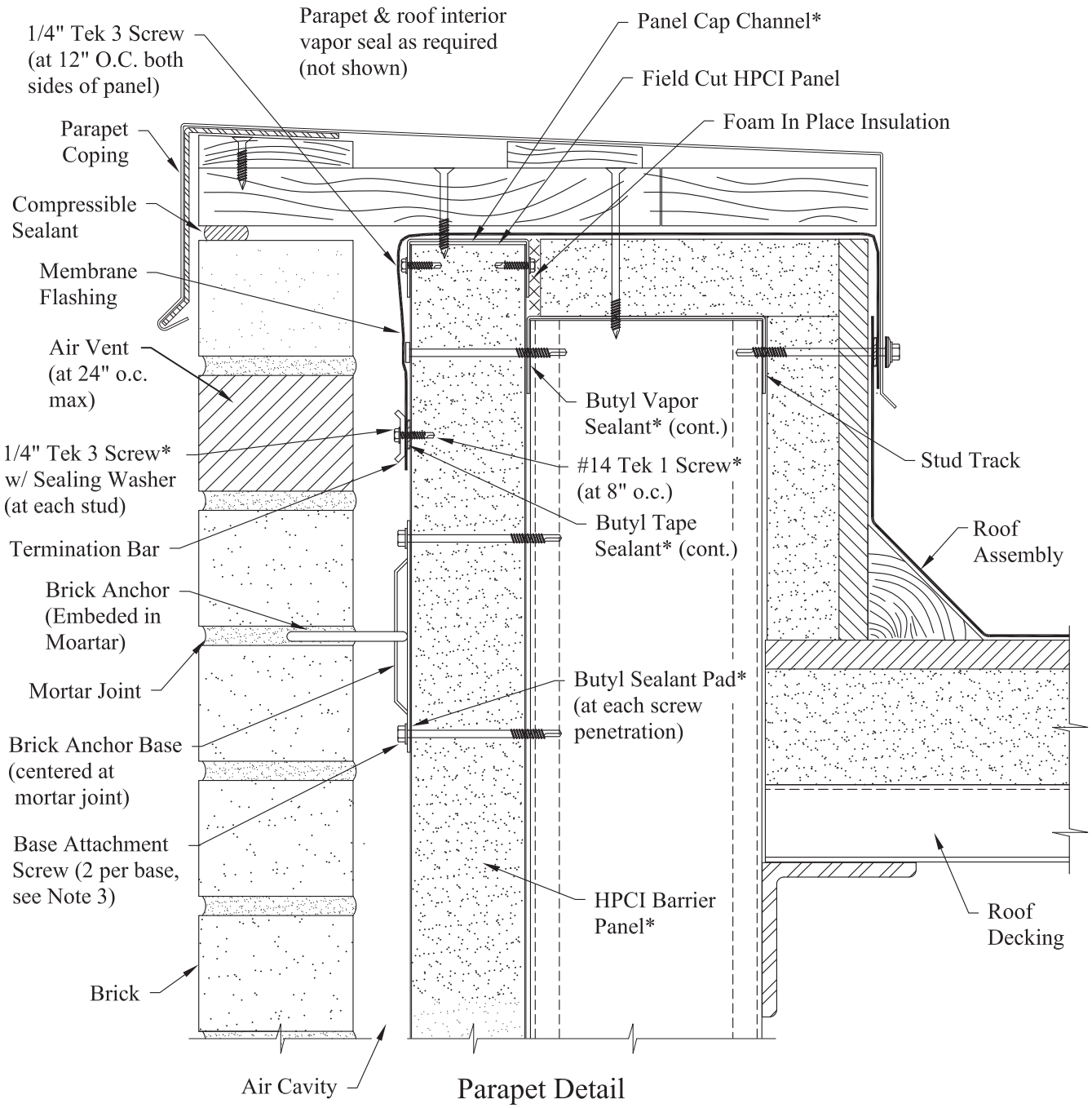
Wall Section @ Eave

Notes:

1. * Designates components provided or available from Metl-Span.
2. Reference the governing code for brick anchor spacing.
3. Brick anchor screw size (pull-out strength) is determined by negative wind pressure design requirements.
4. Reference brick and brick anchor manufacturer's information for specific brick and anchor details.
5. Roof assembly shown as a generic representation only. Actual assembly is as specified by the project designer.

HPCI BARRIER™ PANEL WITH BRICK VENEER CLADDING

Parapet Detail (HPCI-BC-09)



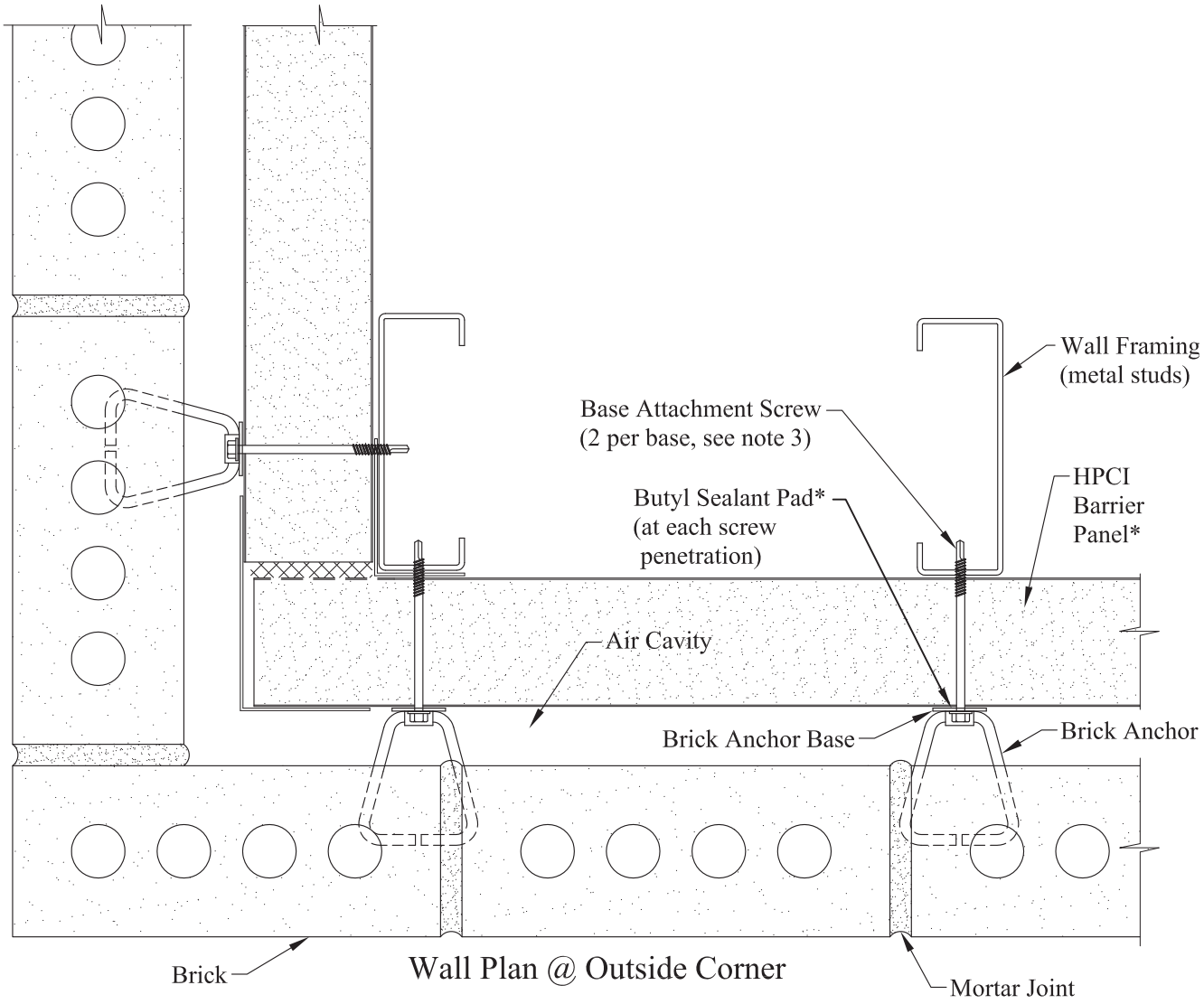
Parapet Detail

Notes:

1. * Designates components provided or available from Metl-Span.
2. Reference the governing code for brick anchor spacing.
3. Brick anchor screw size (pull-out strength) is determined by negative wind pressure design requirements.
4. Reference brick and brick anchor manufacturer's information for specific brick and anchor details.
5. Roof/Parapet assembly shown as a generic representation only. Actual assembly is as specified by the project designer.

HPCI BARRIER™ PANEL WITH BRICK VENEER CLADDING

Outside Corner Detail (HPCI-BC-10)

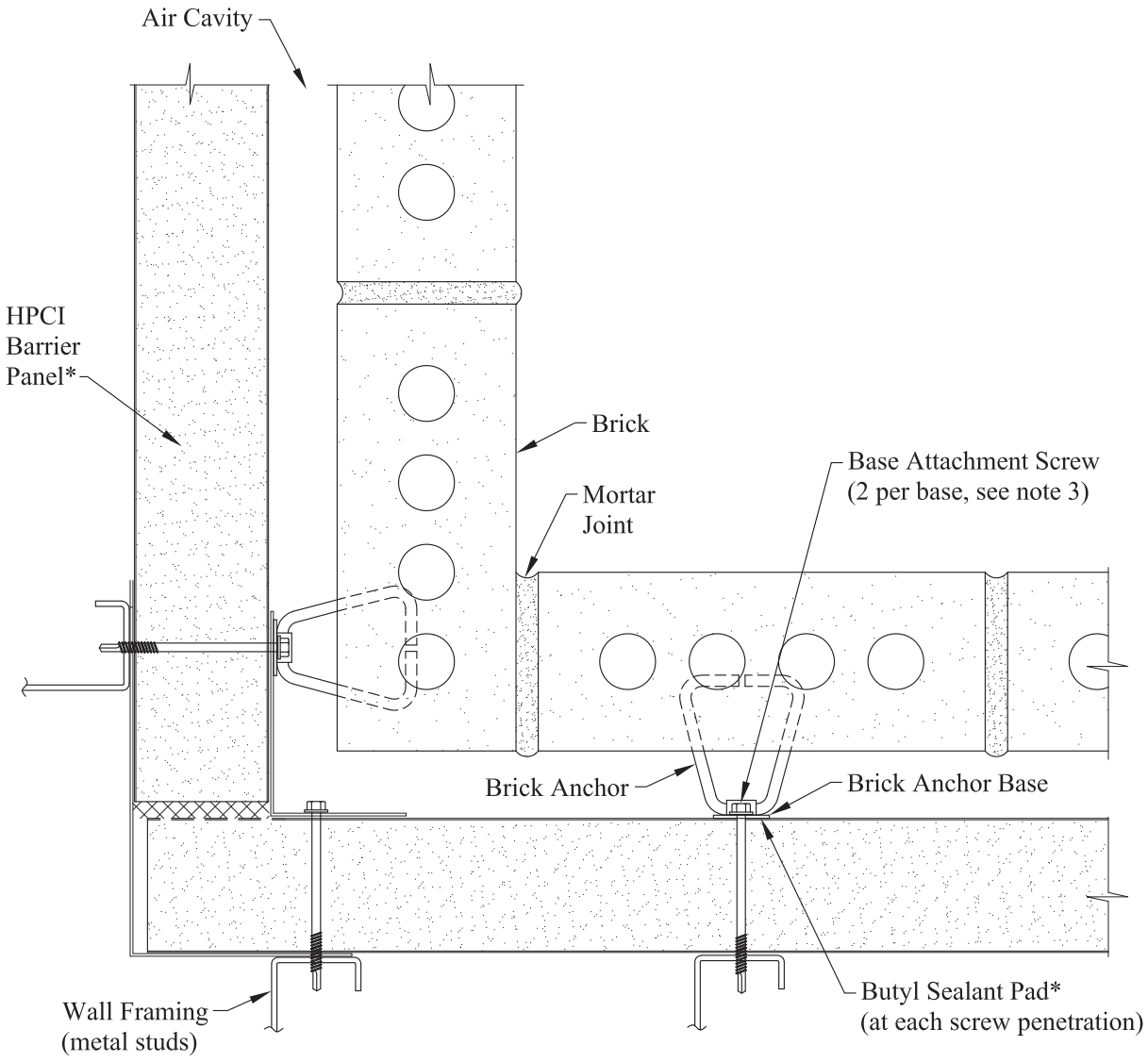


Notes:

1. * Designates components provided or available from Metl-Span.
2. Reference the governing code for brick anchor spacing.
3. Brick anchor screw size (pull-out strength) is determined by negative wind pressure design requirements.
4. Reference brick and brick anchor manufacturer's information for specific brick and anchor details.

HPCI BARRIER™ PANEL WITH BRICK VENEER CLADDING

Inside Corner Detail (HPCI-BC-11)



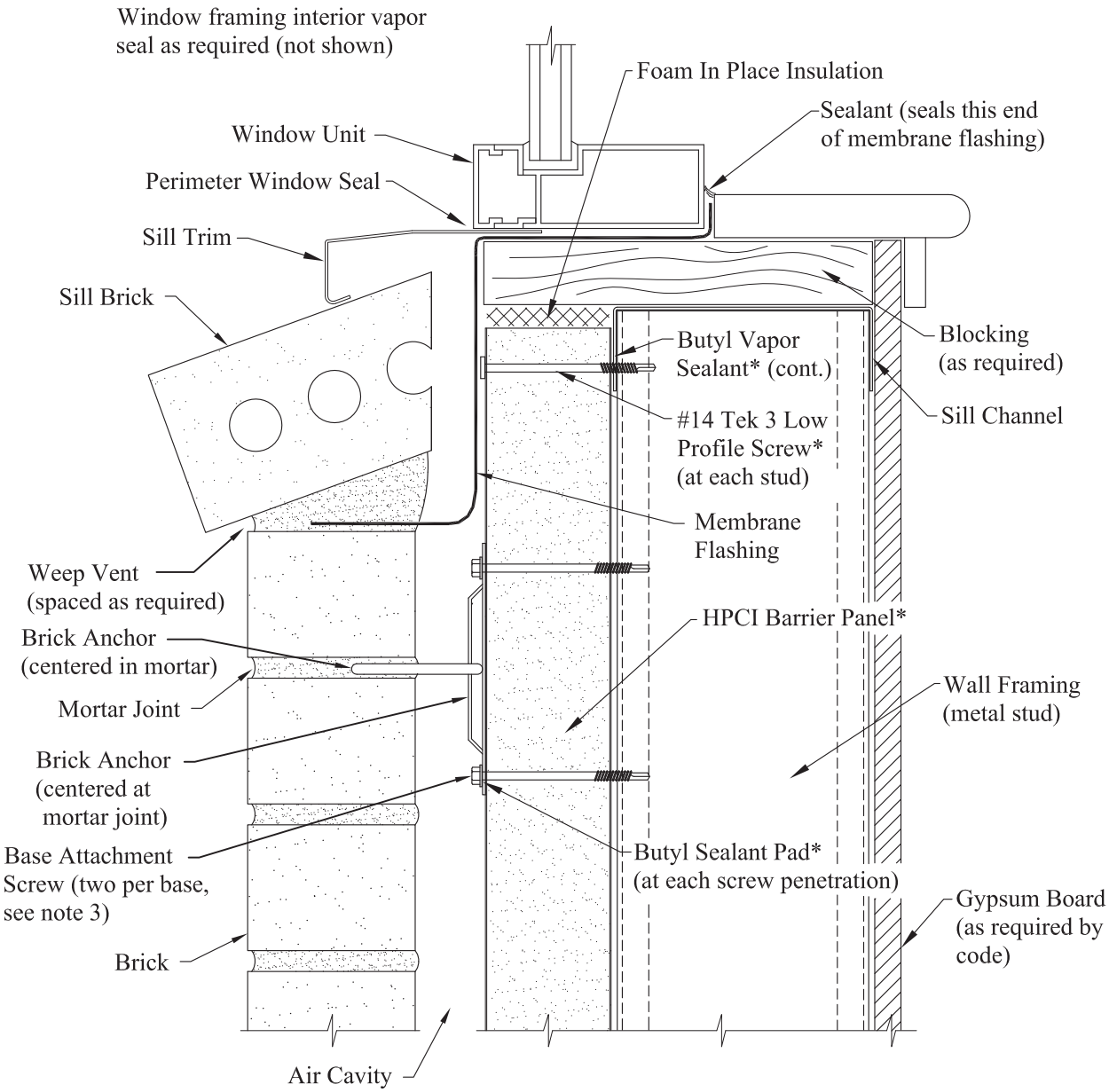
Wall Plan @ Inside Corner

Notes:

1. * Designates components provided or available from Metl-Span.
2. Reference the governing code for brick anchor spacing.
3. Brick anchor screw size (pull-out strength) is determined by negative wind pressure design requirements.
4. Reference brick and brick anchor manufacturer's information for specific brick and anchor details.

HPCI BARRIER™ PANEL WITH BRICK VENEER CLADDING

Sill Detail - Wood Framed (HPCI-BC-12)



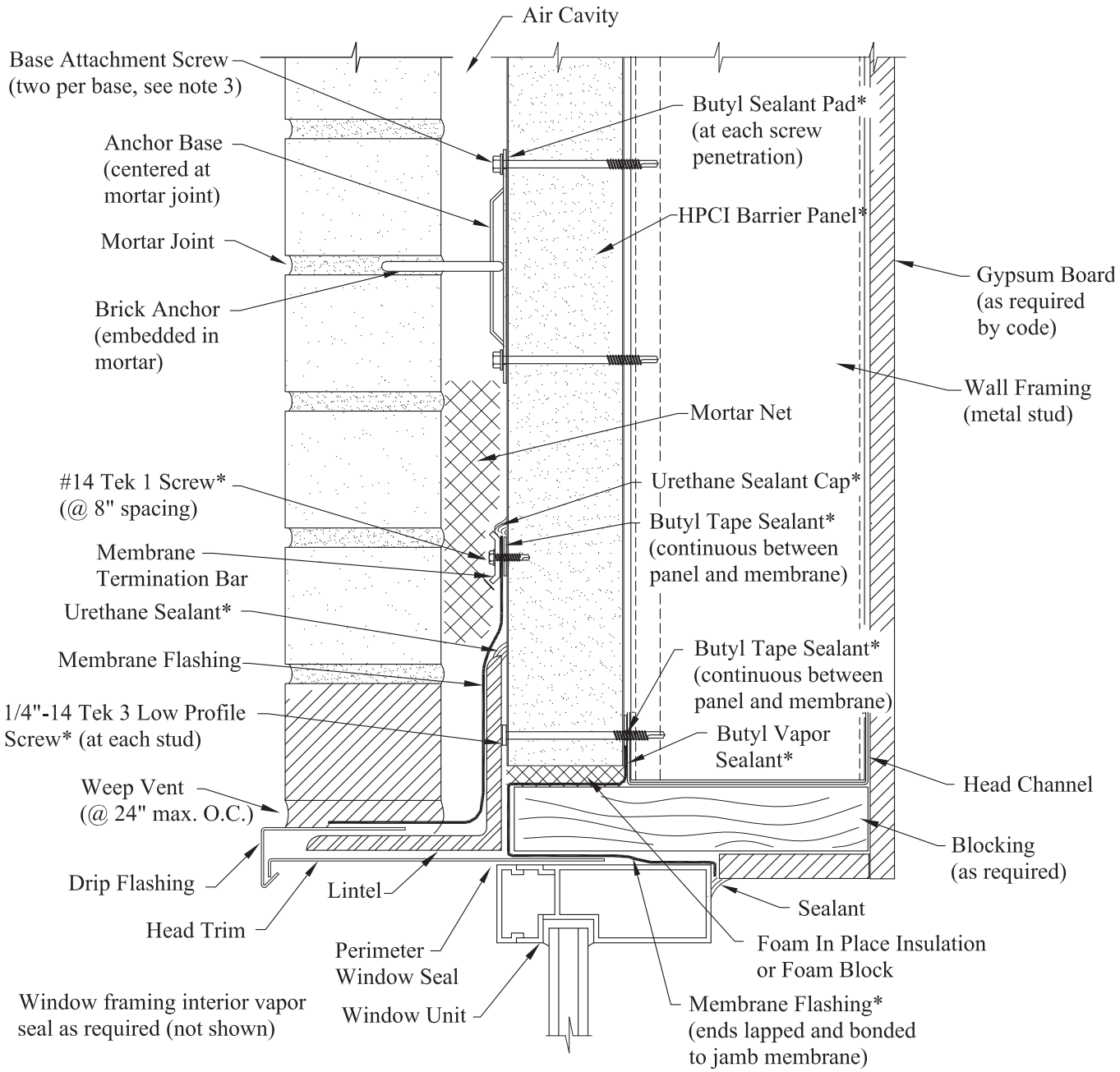
Wall Section @ Window Sill

Notes:

1. * Designates components provided or available from Metl-Span.
2. Reference the governing code for brick anchor spacing.
3. Brick anchor screw size (pull-out strength) is determined by negative wind pressure design requirements.
4. Reference brick and brick anchor manufacturer's information for specific brick and anchor details.
5. Window assembly shown as generic representation only.
   Actual assembly is as specified by the project designer.

HPCI BARRIER™ PANEL WITH BRICK VENEER CLADDING

Head Detail - Wood Framed (HPCI-BC-13)



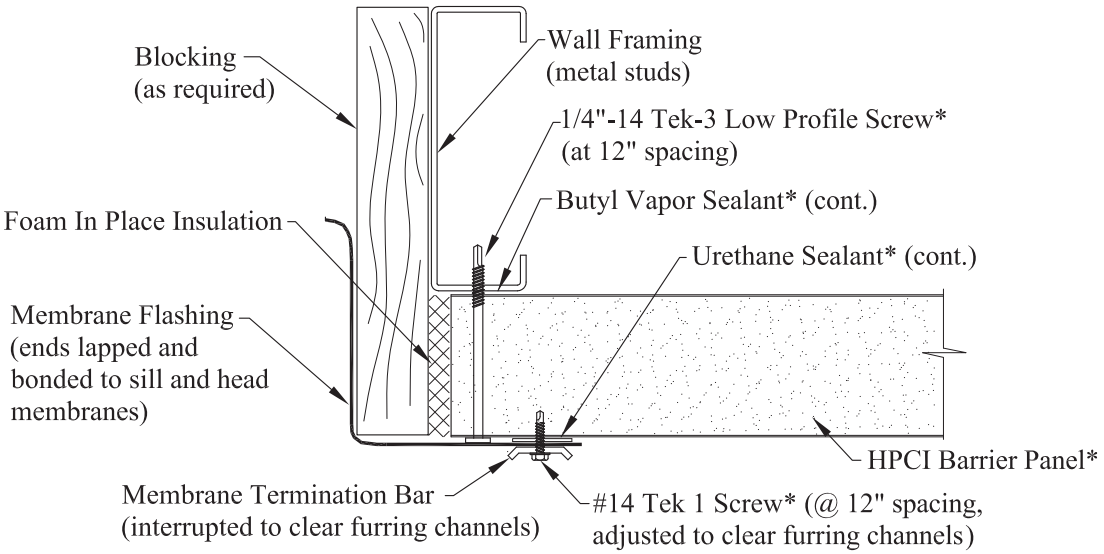
Wall Section At Window Head

Notes:

1. * Designates components provided or available from Metl-Span.
2. Reference the governing code for brick anchor spacing.
3. Brick anchor screw size (pull-out strength) is determined by negative wind pressure design requirements.
4. Reference brick and brick anchor manufacturer's information for specific brick and anchor details.
5. Window assembly shown as generic representation only.
   Actual assembly is as specified by the project designer.

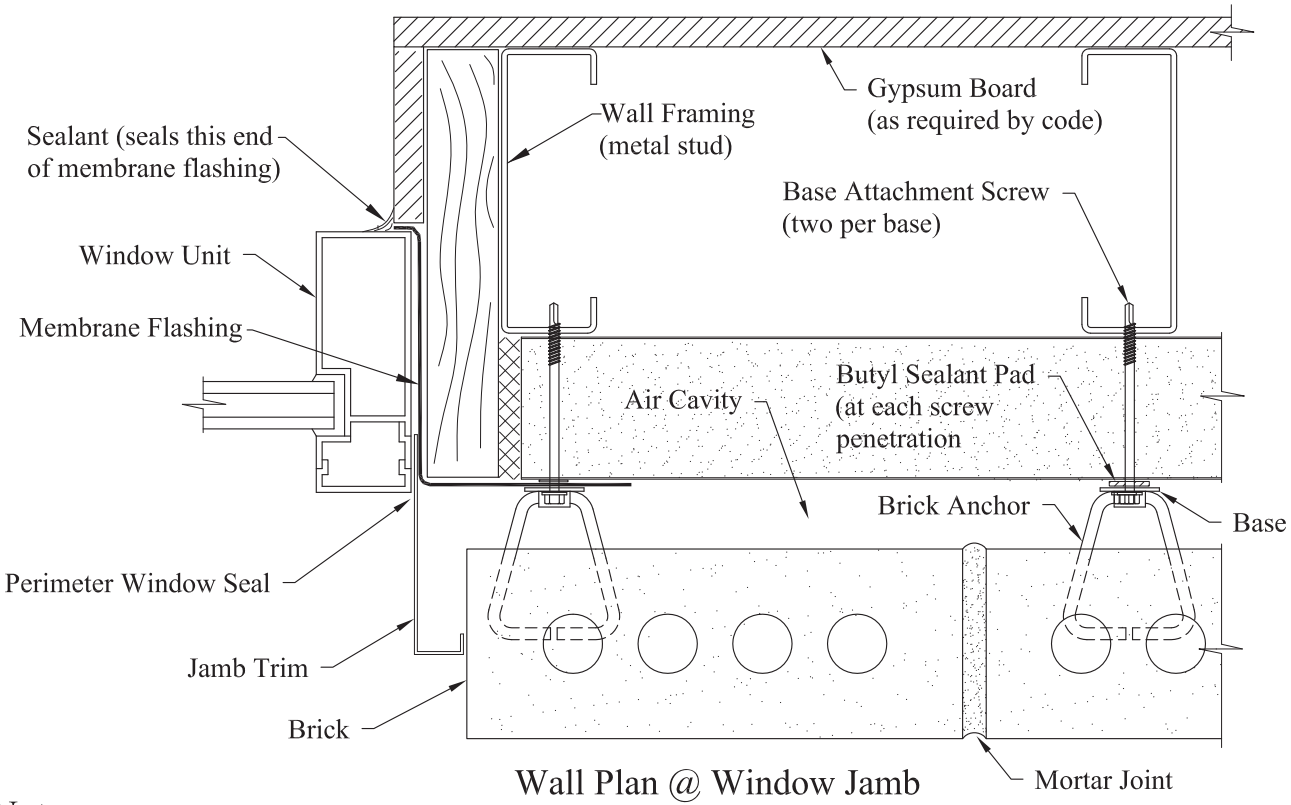
HPCI BARRIER™ PANEL WITH BRICK VENEER CLADDING

Jamb Detail - Wood Framed (HPCI-BC-14)



HPCI Panel Jamb Detail

Window framing interior vapor seal as required (not shown)



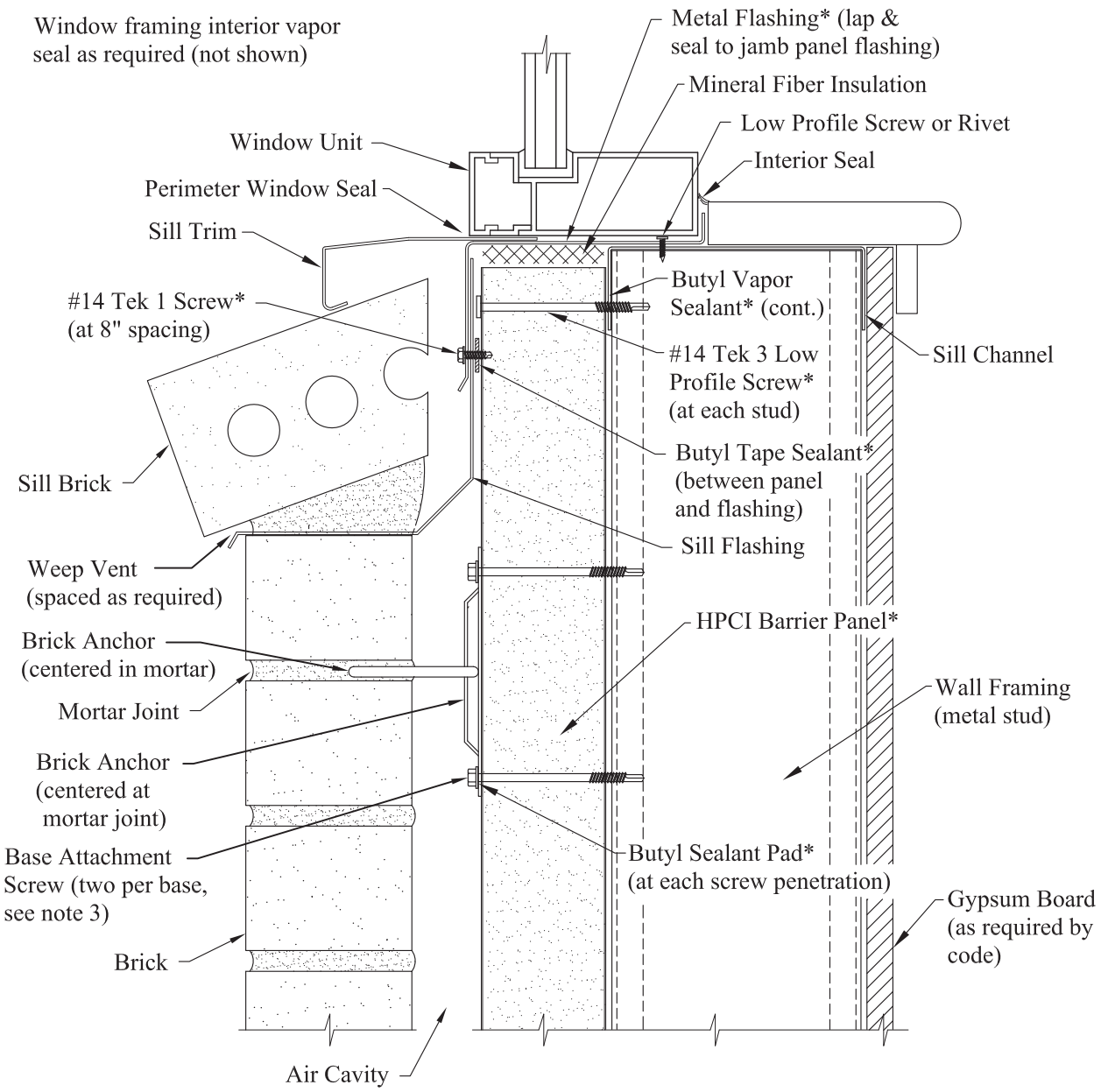
Wall Plan @ Window Jamb

Notes:

1. * Designates components provided or available from Metl-Span.
2. Membrane termination bar shown. Self adhering membrane is project designer's option.
3. Reference brick and anchor manufacturer's information for specific brick and anchor details.
4. Window assembly shown as generic representation only. Actual assembly is as specified by the project designer.

HPCI BARRIER™ PANEL WITH BRICK VENEER CLADDING

Sill Detail - Metal Framed (HPCI-BC-15)



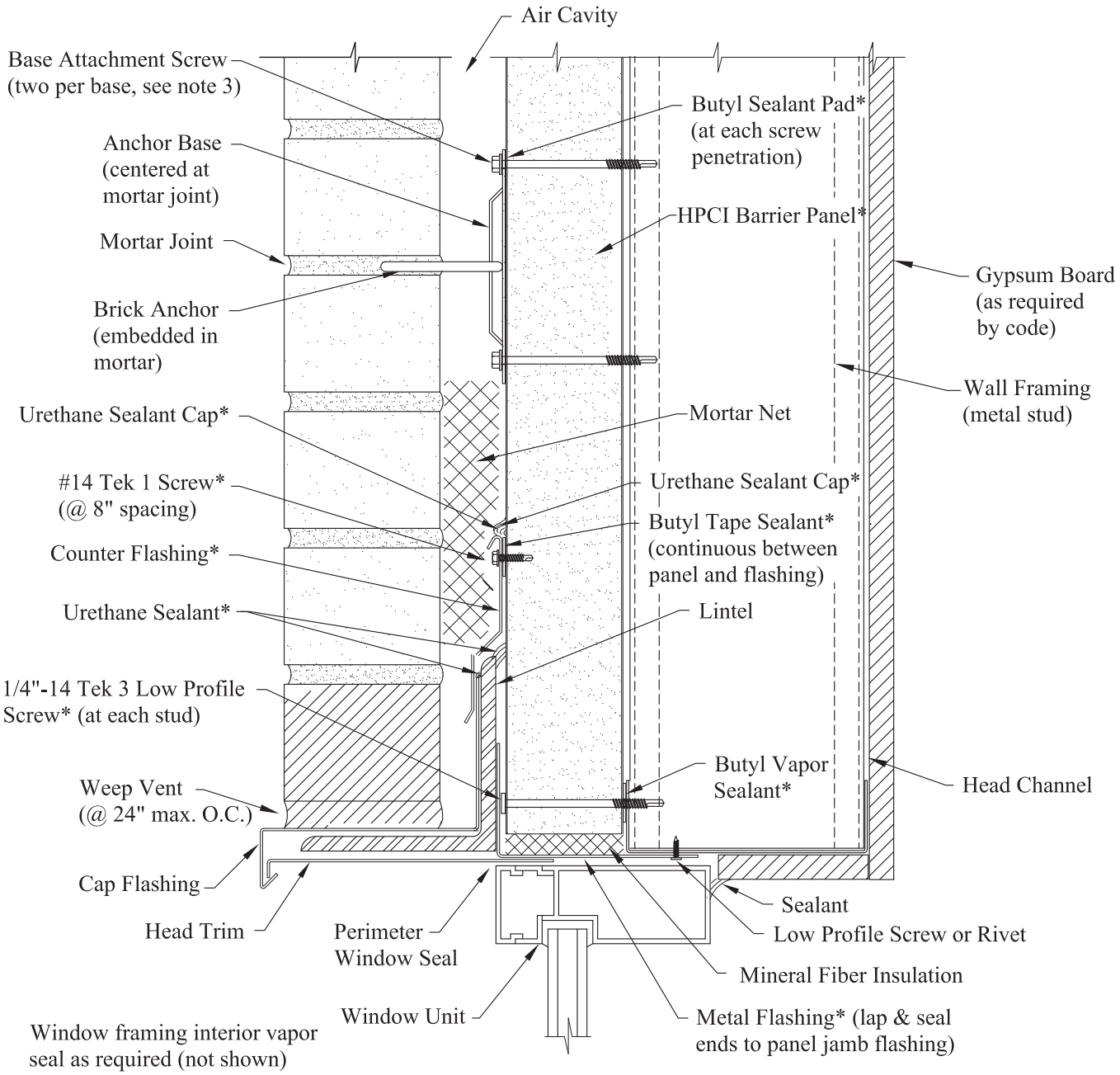
Wall Section @ Window Sill

Notes:

1. * Designates components provided or available from Metl-Span.
2. Reference the governing code for brick anchor spacing.
3. Brick anchor screw size (pull-out strength) is determined by negative wind pressure design requirements.
4. Reference brick and brick anchor manufacturer's information for specific brick and anchor details.
5. Window assembly shown as generic representation only. Actual assembly is as specified by the project designer.
6. Metal fire block flashing of panel ends and cavity is shown as required for multi-story compliance.

HPCI BARRIER™ PANEL WITH BRICK VENEER CLADDING

Head Detail - Metal Framed (HPCI-BC-16)



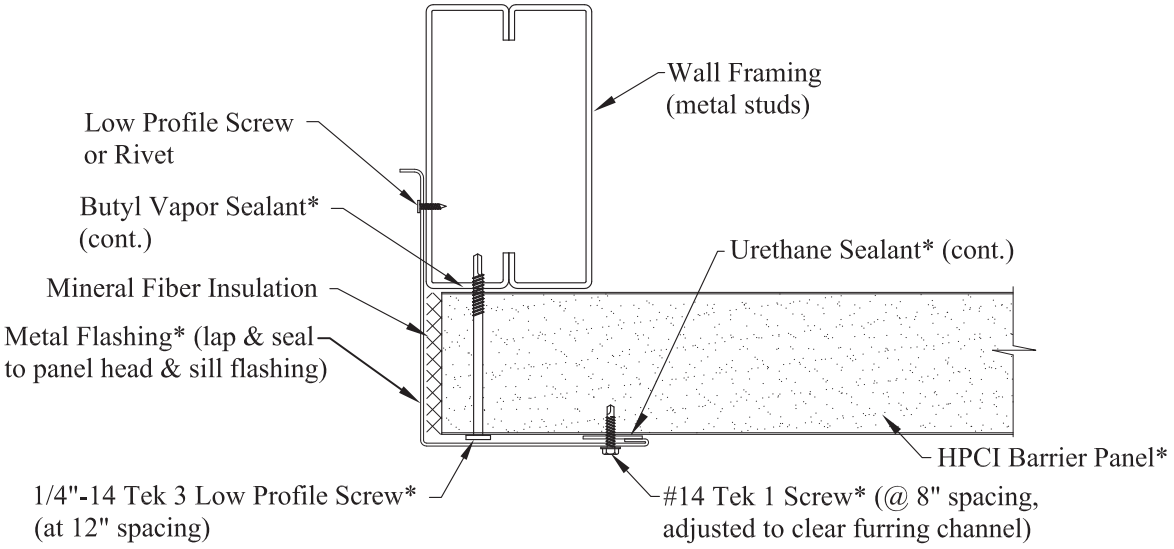
Wall Section At Window Head

Notes:

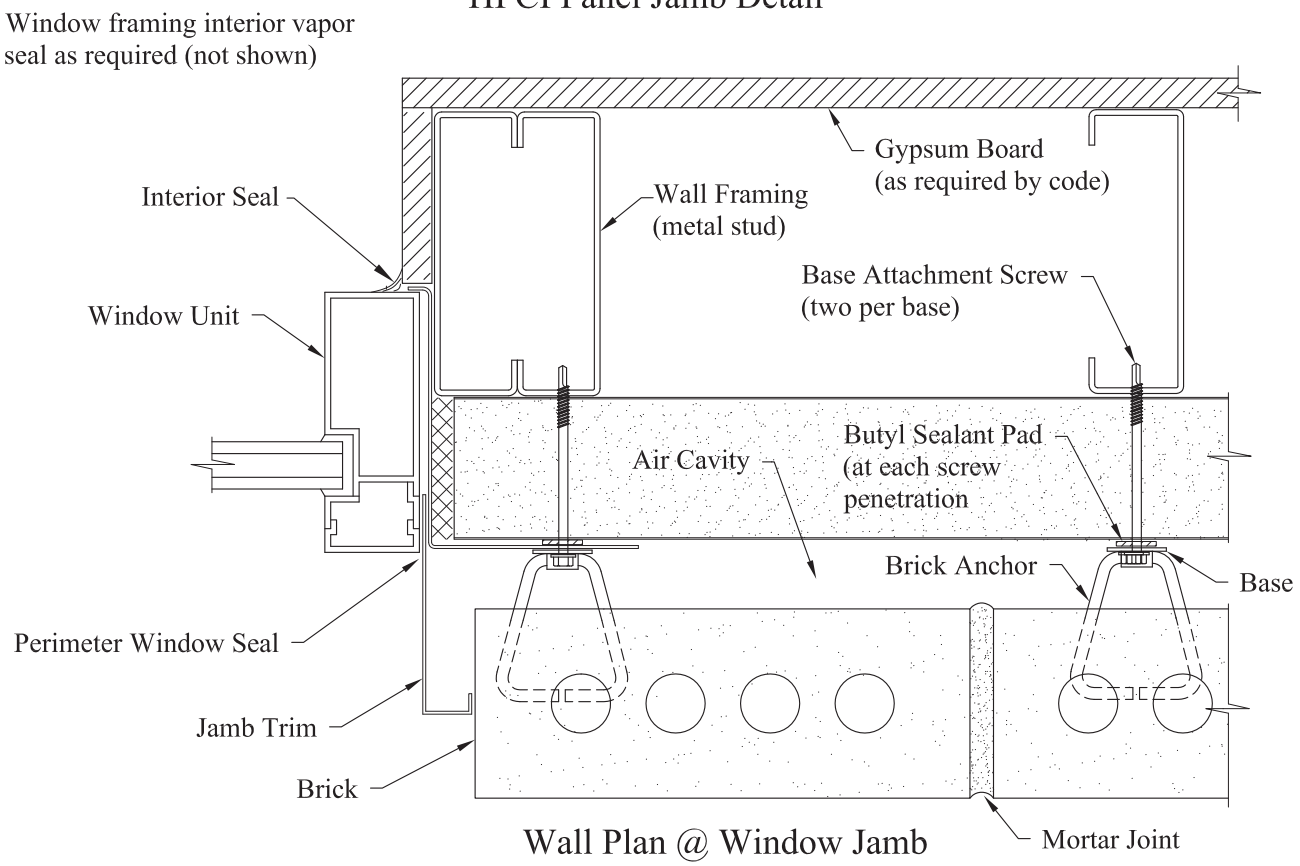
1. * Designates components provided or available from Metl-Span.
2. Reference the governing code for brick anchor spacing.
3. Brick anchor screw size (pull-out strength) is determined by negative wind pressure design requirements.
4. Reference brick and brick anchor manufacturer's information for specific brick and anchor details.
5. Window assembly shown as generic representation only. Actual assembly is as specified by the project designer.
6. Metal fire block flashing of panel ends and cavity is shown as required for multi-story compliance.

HPCI BARRIER™ PANEL WITH BRICK VENEER CLADDING

Jamb Detail - Metal Framed (HPCI-BC-17)



HPCI Panel Jamb Detail



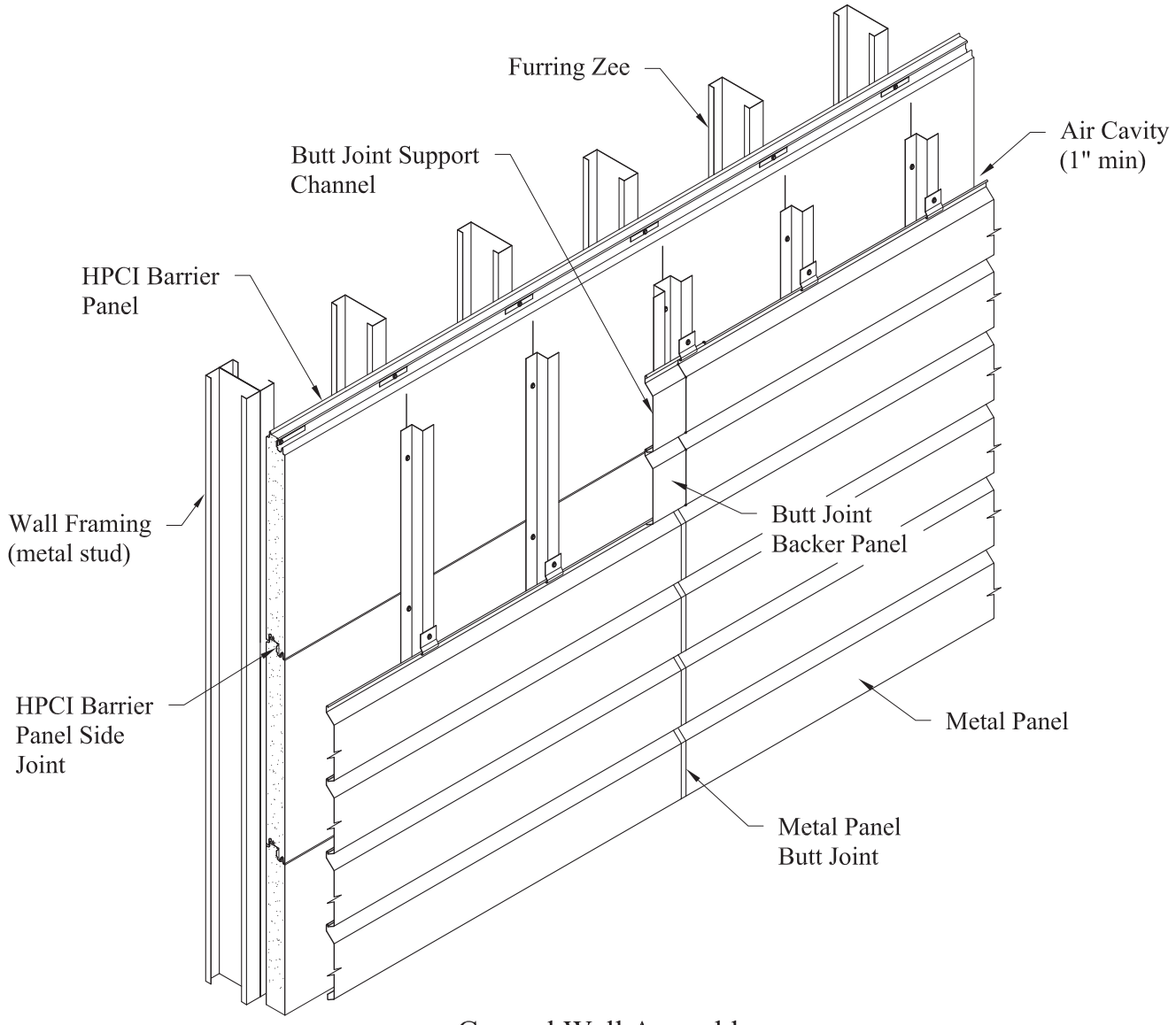
Wall Plan @ Window Jamb

Notes:

1. * Designates components provided or available from Metl-Span.
2. Reference brick and brick anchor manufacturer's information for specific brick and anchor details.
3. Window assembly shown as generic representation only. Actual assembly is as specified by the project designer.
4. Metal fire block flashing of panel ends and cavity is shown as required for multi-story compliance.

HPCI BARRIER™ PANEL WITH METAL PANEL CLADDING

General Wall Assembly (HPCI-MP-01)



General Wall Assembly

Notes:

1. Shown is a general representation of a wall assembly with metal stud wall framing, HPCI barrier panel, furring zees and metal panel exterior cladding.

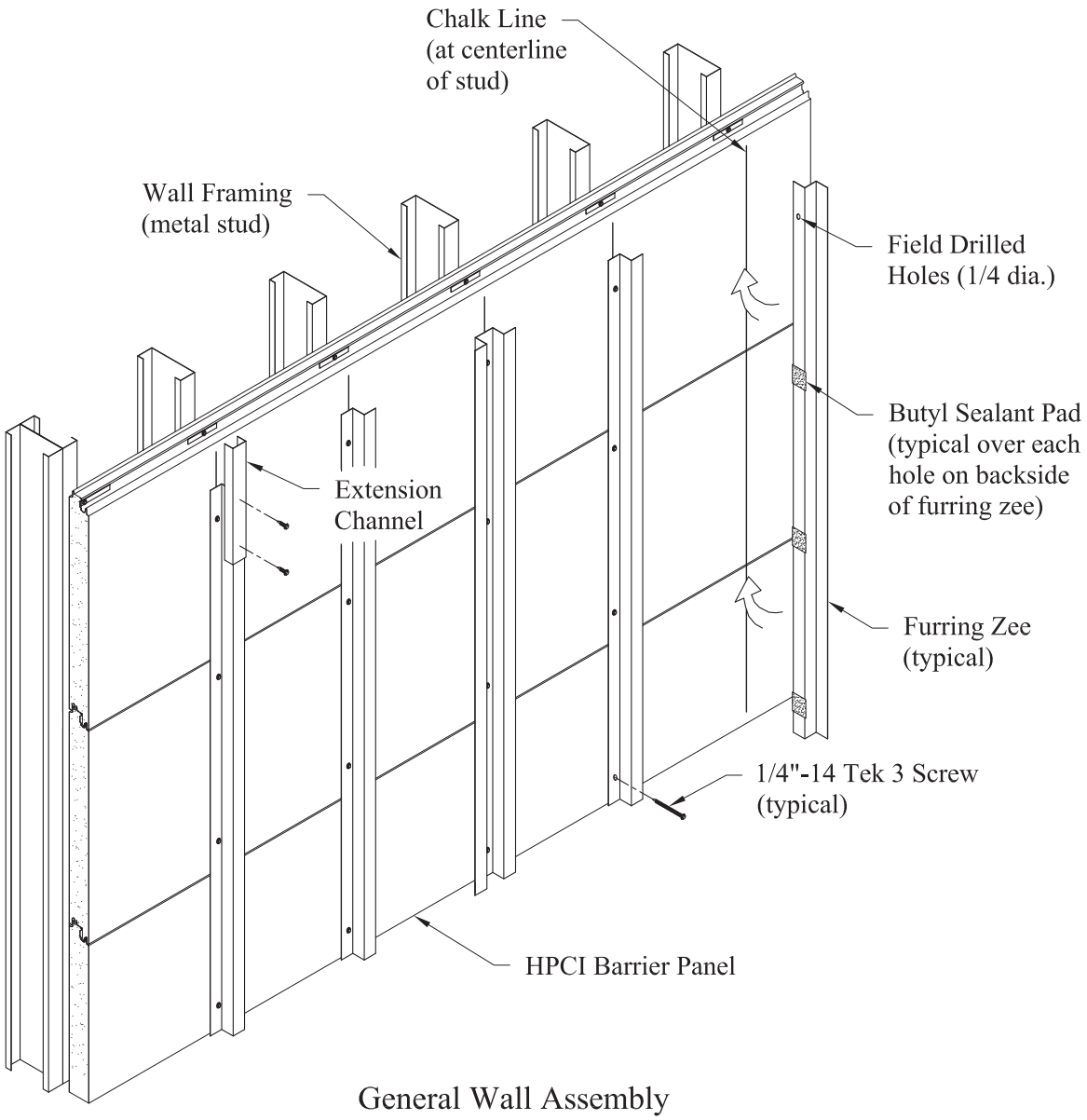
2. The furring zees transfer the metal panel cladding's gravity loads and wind loads through the HPCI barrier panels into the wall framing studs. Reference detail HPCI-MP-02 for furring zee installation.

3. Reference the metal panel manufacturer's information for the specific metal panels and accessory components.

4. It is the project designer's responsibility to confirm the suitability, structural adequacy and code compliance of the actual wall assembly and its components.

HPCI BARRIER™ PANEL WITH METAL PANEL CLADDING

Furring Zee Installation (HPCI-MP-02)



General Wall Assembly

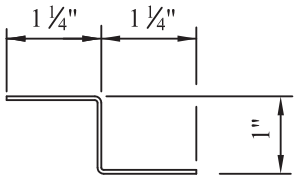
Notes:

1. See detail HPCI-MP-03 for furring zee design and spacing information.
2. Holes for furring zee attachment are field drilled in the furring zee flanges.
3. On back side of furring zee flanges, butyl sealant pads are applied over attachment holes.
4. Furring zees are butt joined as required for wall height.
5. Extension channels used where surface clearance is required.

HPCI BARRIER™ PANEL WITH METAL PANEL CLADDING

Furring Zee Design & Spacing (HPCI-MP-03)

Material : A653 SS Grade 33
Thickness: 16 ga. (0.0566")
Bend Radii 0.085"
Yield Strength: Fy=33 ksi
Tensile Strength: Fu=45 ksi
Modulus of Elasticity: E= 29,500 ksi



Furring Zee Section Properties

Allowable Negative Wind Pressure				
Panel System Weight		5.0 psf (max.)		
Panel Fastener Spacing		12"	16"	24"
Furring Zee Fastener Spacing	12"	75 psf	56 psf	38 psf
	24"	55 psf	58 psf	38 psf
	30"	40 psf	38 psf	42 psf
	36"	29 psf	30 psf	27 psf
	42"	22 psf	21 psf	20 psf

Notes:

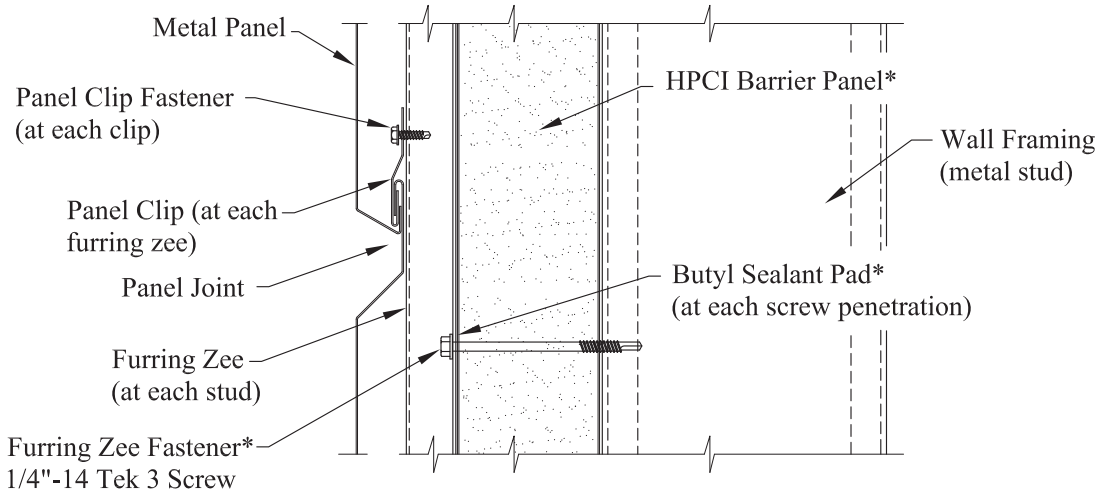
1. The allowable negative wind pressures shown in the chart above are based upon the following:
   a. Wall framing consisting of 18 ga. min. 33 ksi min. vertical steel studs at 24" max. spacing and L/120 max. deflection.
   b. Furring zees are 16 ga. 33 ksi min. vertical steel zee members.
   c. Furring zees are connected to each stud with 1/4"-14 Tek 3 screws extending through the HPCI barrier panel. The screws are spaced as specified on the chart above.
   d. Furring zees are installed as specified on the Furring Zee Installation detail HPCI-MP 02.
   e. Negative pressure values specified in the chart above are based upon a 2.5 factor of safety.

2. The project designer is responsible for verifying the wall framing studs and furring zees are capable of supporting the horizontal and vertical loads imposed by the metal panel system in accordance to the project's design loads.

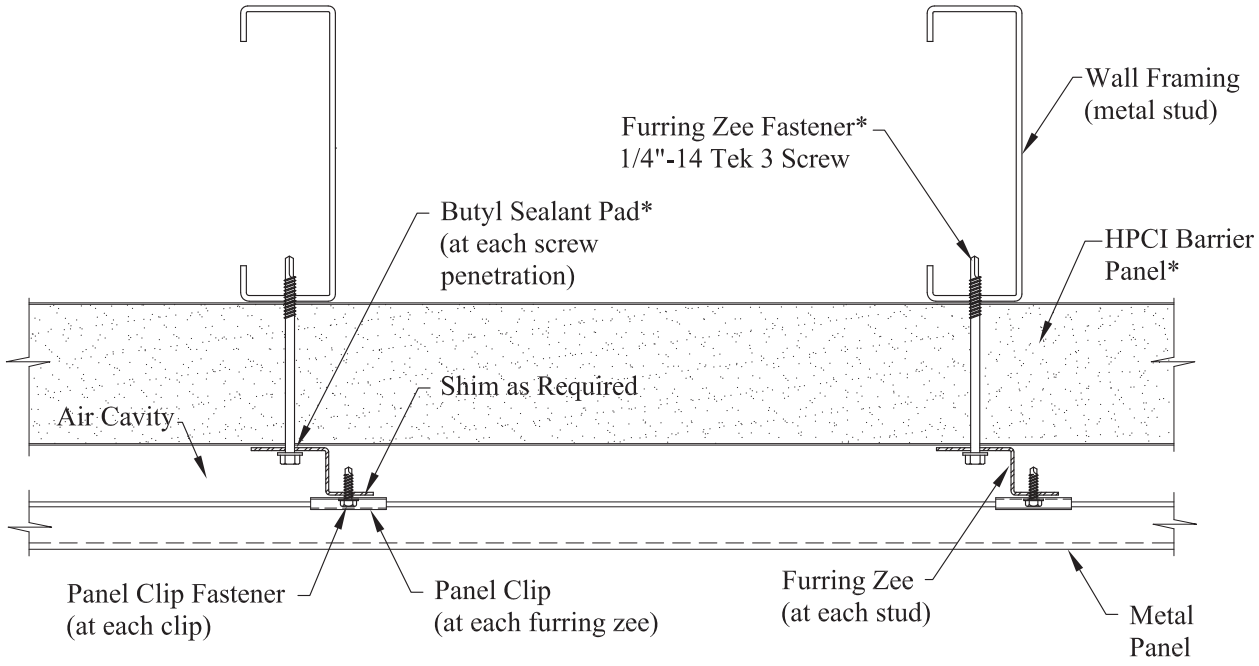
3. The project designer is responsible to specify the metal panel width, gauge and connections in accordance to the project's design loads and the metal panel manufacturer's specifications.

HPCI BARRIER™ PANEL WITH METAL PANEL CLADDING

Panel Assembly w/ Surface Mounted Zee (HPCI-MP-04)



Assembly Section



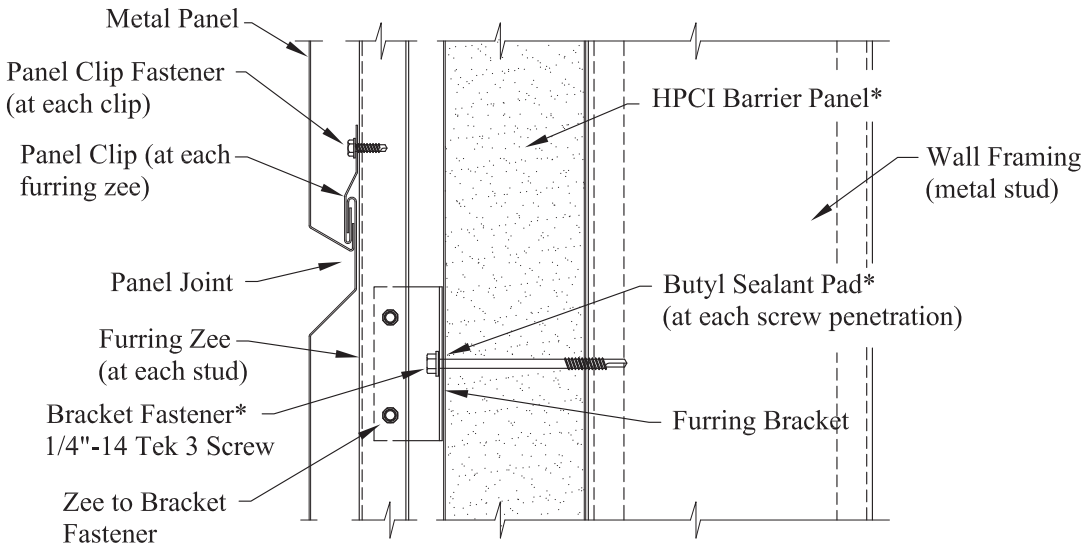
Assembly Plan View

Notes:

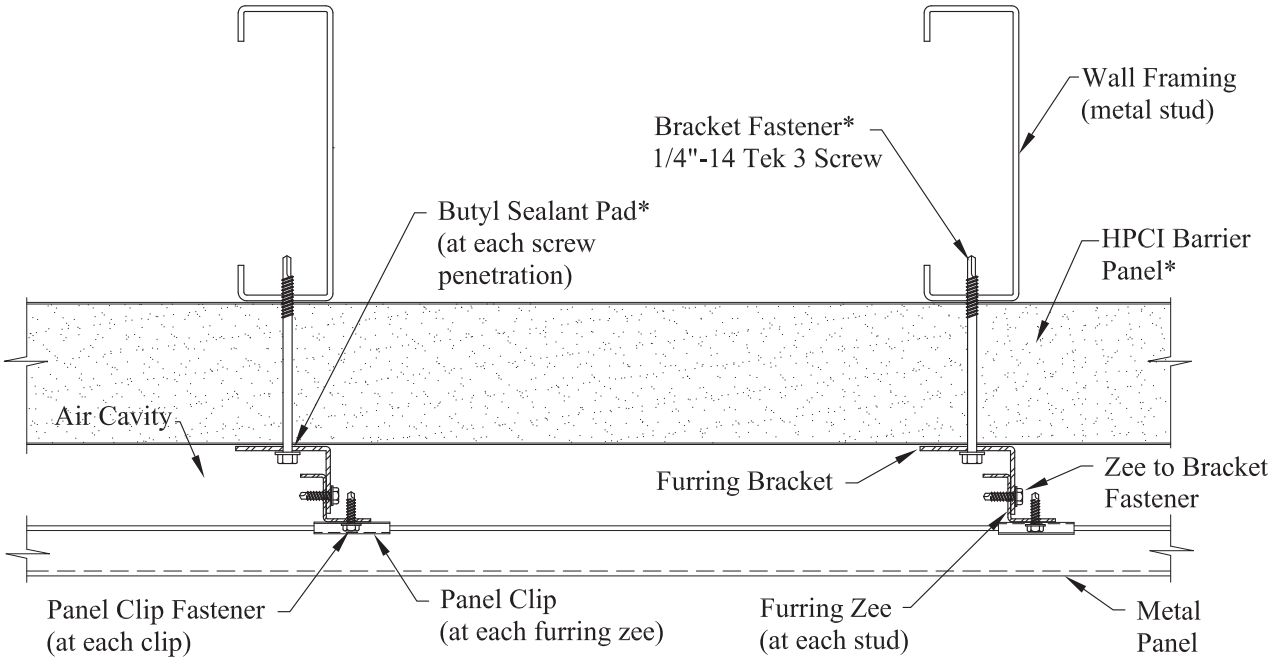
1. * Designates components provided or available from Metl-Span.
2. Reference metal panel manufacturers information for specific panel and clip details.

HPCI BARRIER™ PANEL WITH METAL PANEL CLADDING

Panel Assembly w/ Bracket Mounted Zee - Alternate (HPCI-MP-05)



Assembly Section



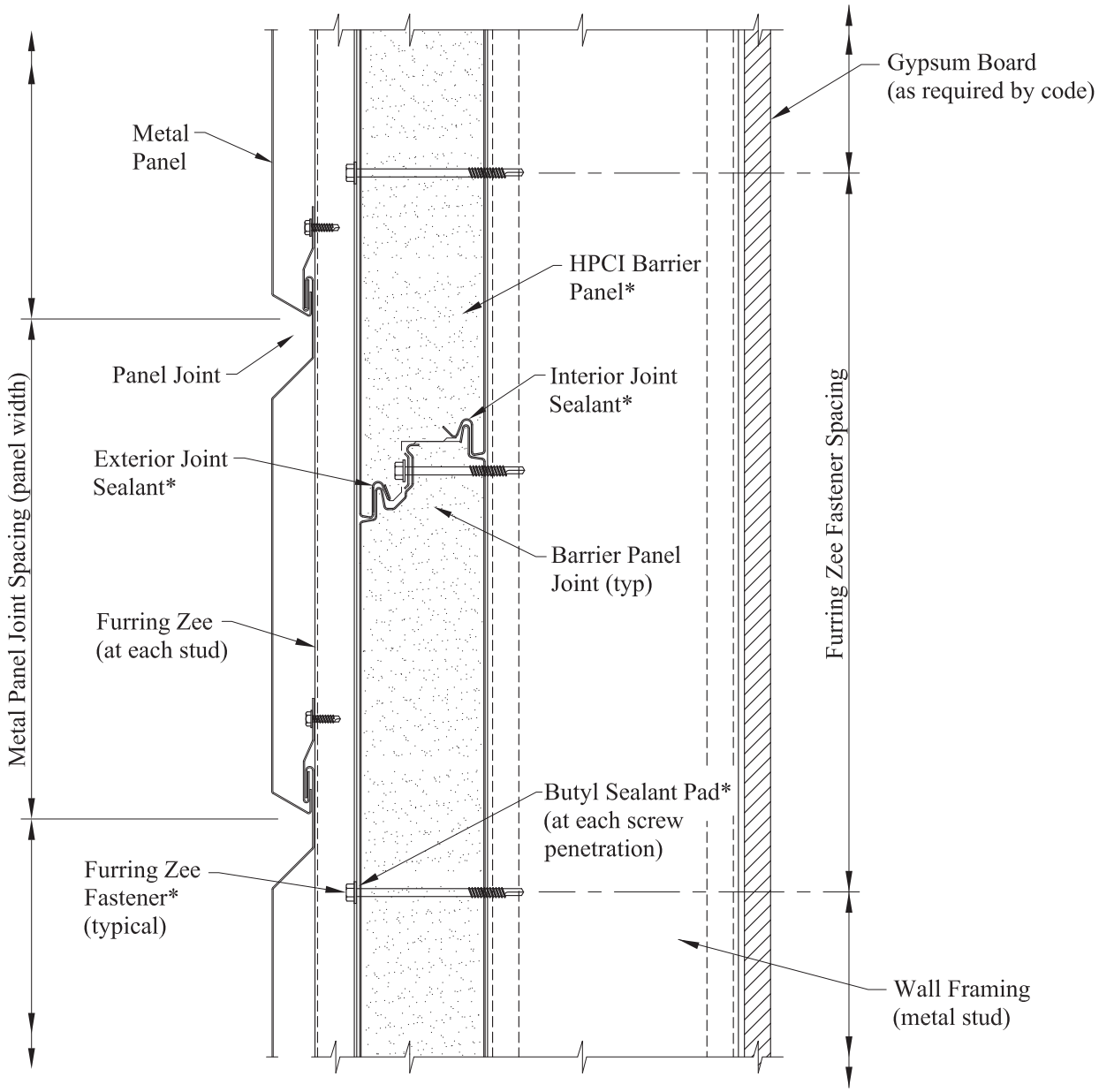
Assembly Plan View

Notes:

1. * Designates components provided or available from Metl-Span.
2. Reference metal panel manufacturers information for specific panel and clip details.

HPCI BARRIER™ PANEL WITH METAL PANEL CLADDING

General Wall Section (HPCI-MP-06)



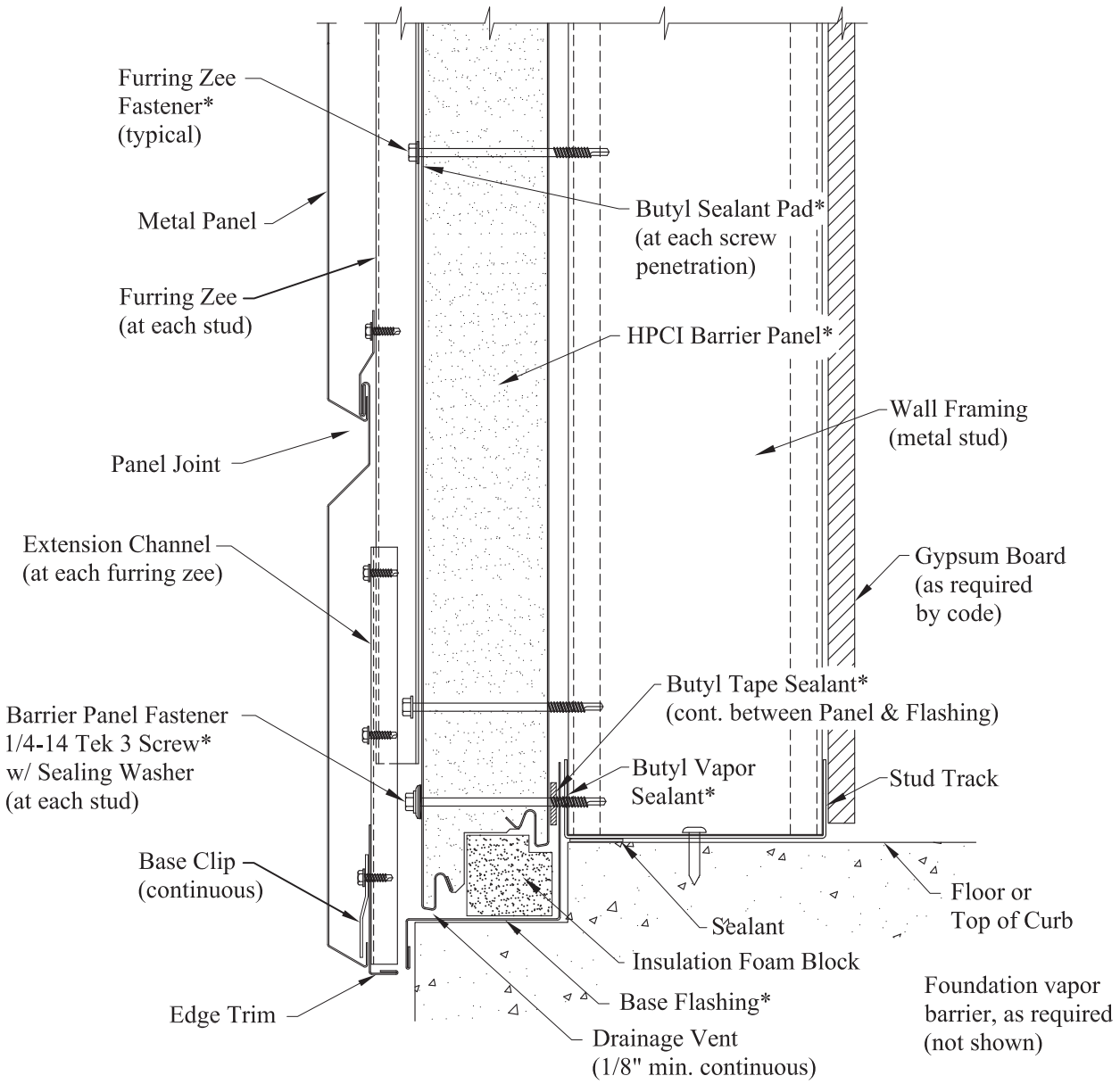
General Wall Section

Notes:

1. * Designates components provided or available from Metl-Span.
2. Reference detail HPCI-MP-03 for furring zee fastener spacing.
3. Reference metal panel manufacturer's information for specific panel and clip details.

HPCI BARRIER™ PANEL WITH METAL PANEL CLADDING

Base Detail (HPCI-MP-07)



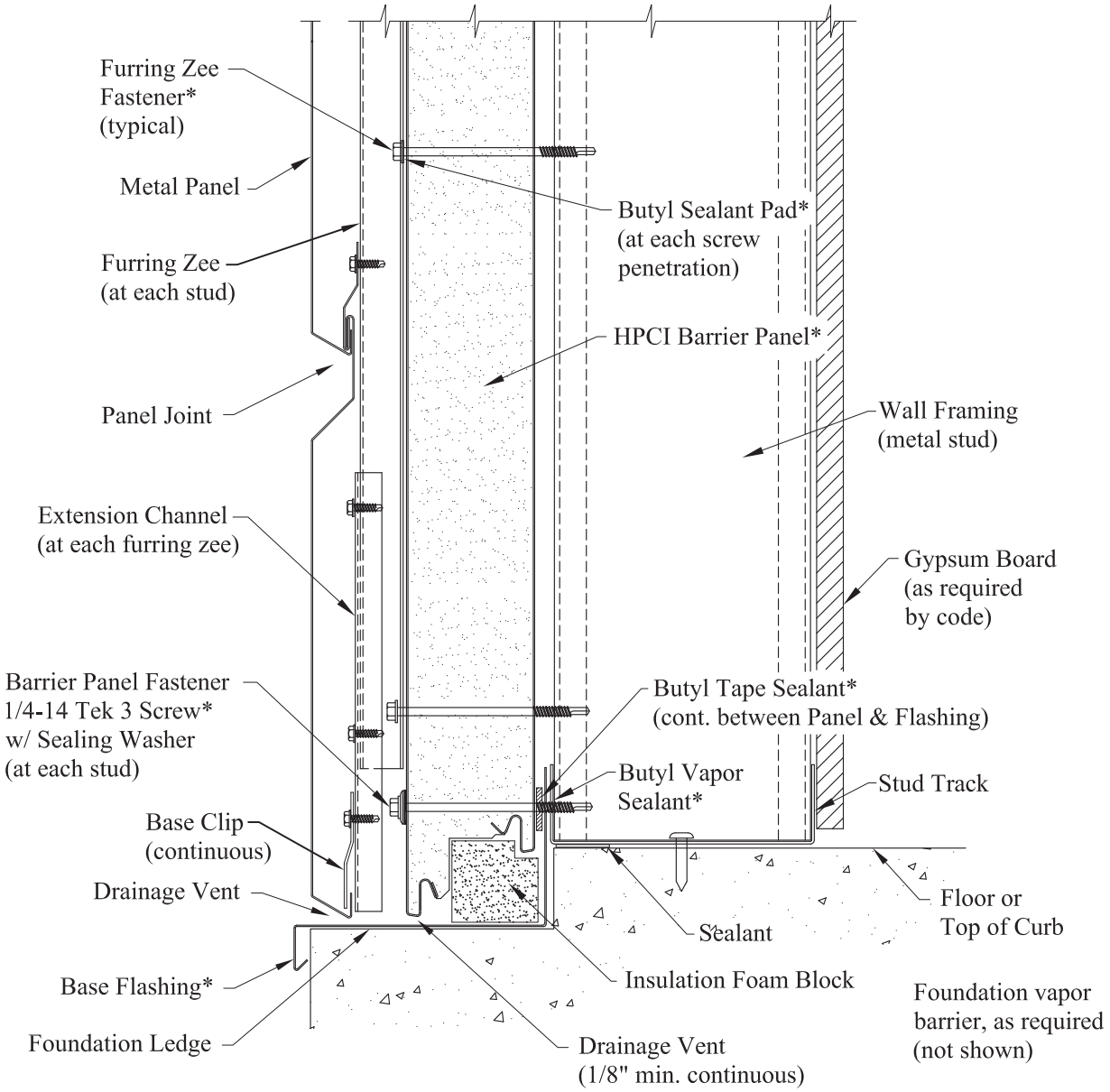
Wall Section @ Base

Notes:

1. * Designates components provided or available from Metl-Span.
2. 6" max. cantilevered projection of extension channel.
3. Reference metal panel manufacturer's information for specific panel and clip details.

HPCI BARRIER™ PANEL WITH METAL PANEL CLADDING

Base Detail - Extended Lodge (HPCI-MP-08)



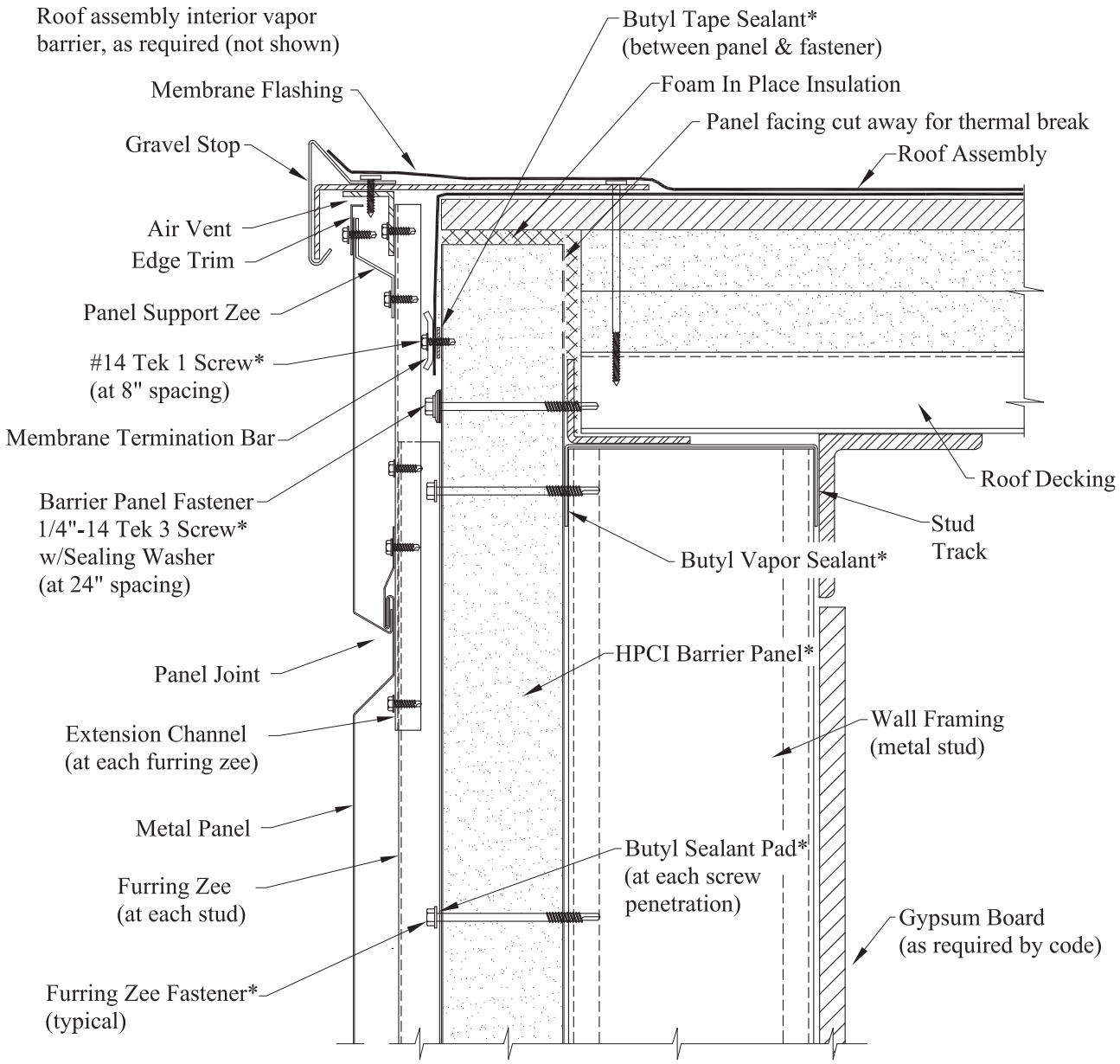
Wall Section @ Base
(Extended Foundation Ledge)

Notes:

1. * Designates components provided or available from Metl-Span.
2. 6" max. cantilevered projection of extension channel.
3. Reference metal panel manufacturer's information for specific panel and clip details.

HPCI BARRIER™ PANEL WITH METAL PANEL CLADDING

Eave Detail (HPCI-MP-09)



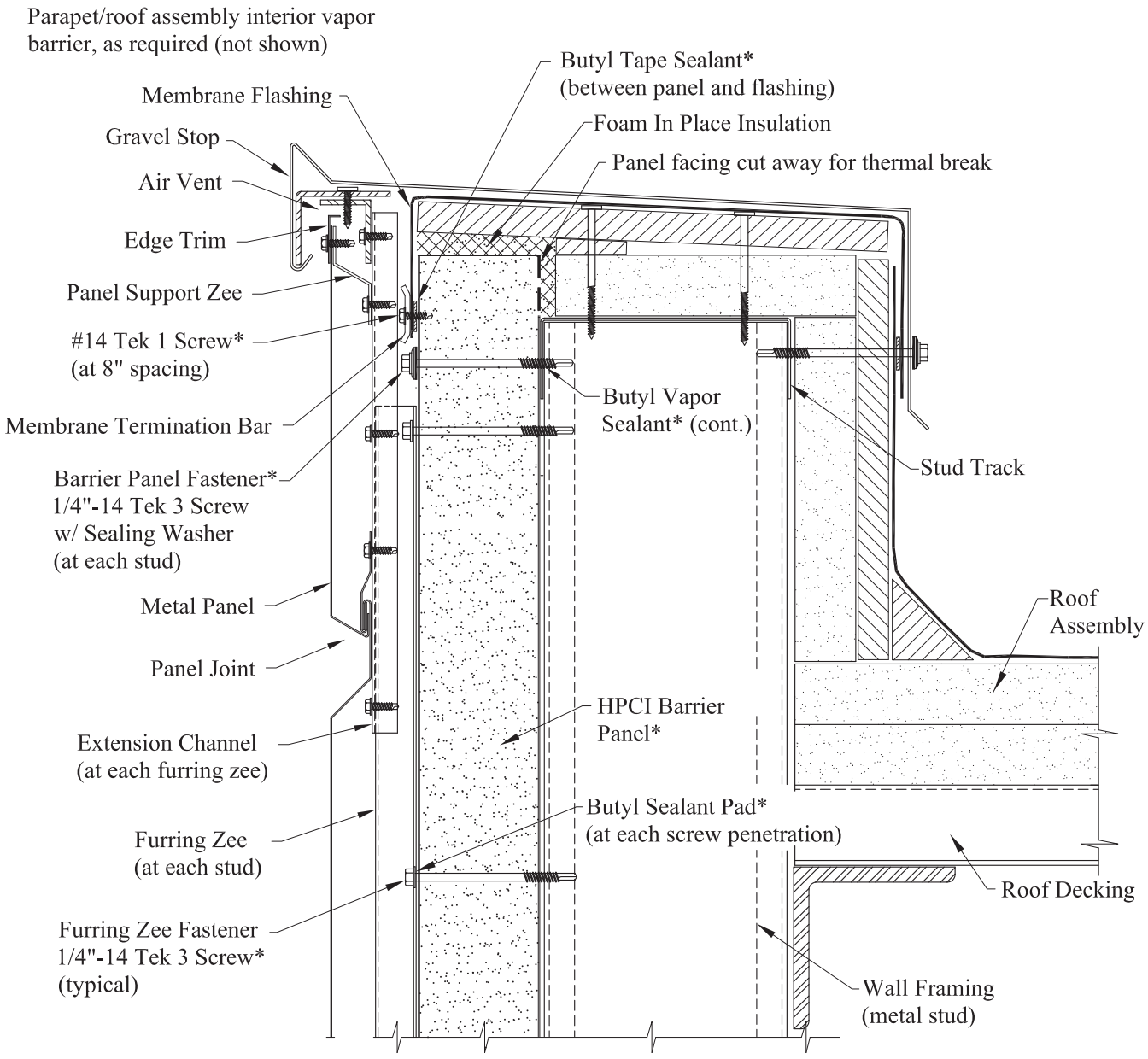
Wall Section @ Eave

Notes:

1. * Designates components provided or available from Metl-Span.
2. 6" maximum cantilever projection of extension channel.
3. Reference metal panel manufacturer's information for panel and clip details.
4. Roof assembly shown as a generic representation only. Actual assembly as specified by the project designer.

HPCI BARRIER™ PANEL WITH METAL PANEL CLADDING

Parapet Detail (HPCI-MP-10)



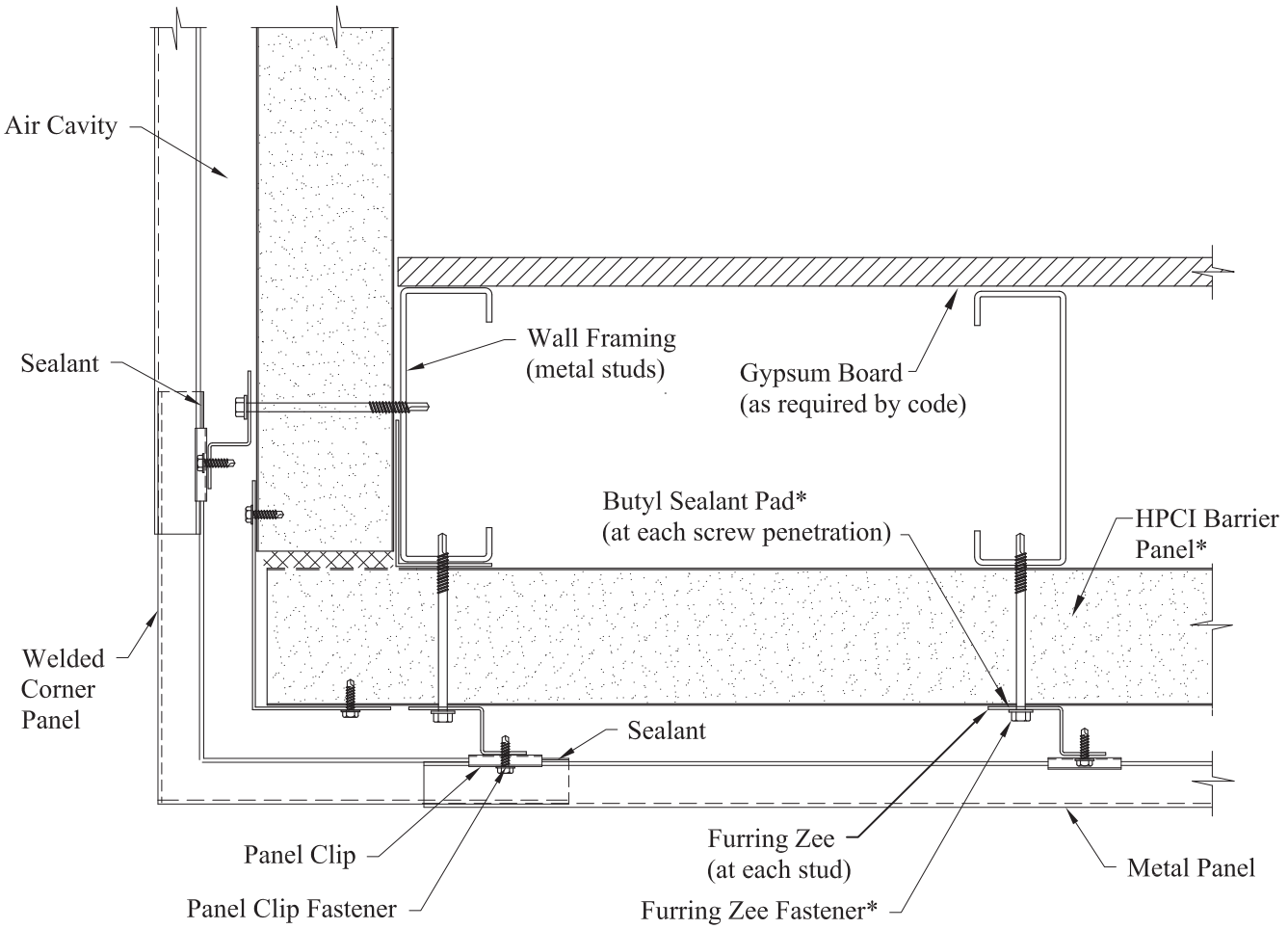
Wall Section At Parapet

Notes:

1. * Designates components provided or available from Metl-Span.
2. 6" maximum cantilever projection of extension channel.
3. Reference metal panel manufacturer's information for panel and clip details.
4. Roof assembly shown as a generic representation only. Actual assembly as specified by the project designer.

HPCI BARRIER™ PANEL WITH METAL PANEL CLADDING

Outside Corner Detail (HPCI-MP-11)



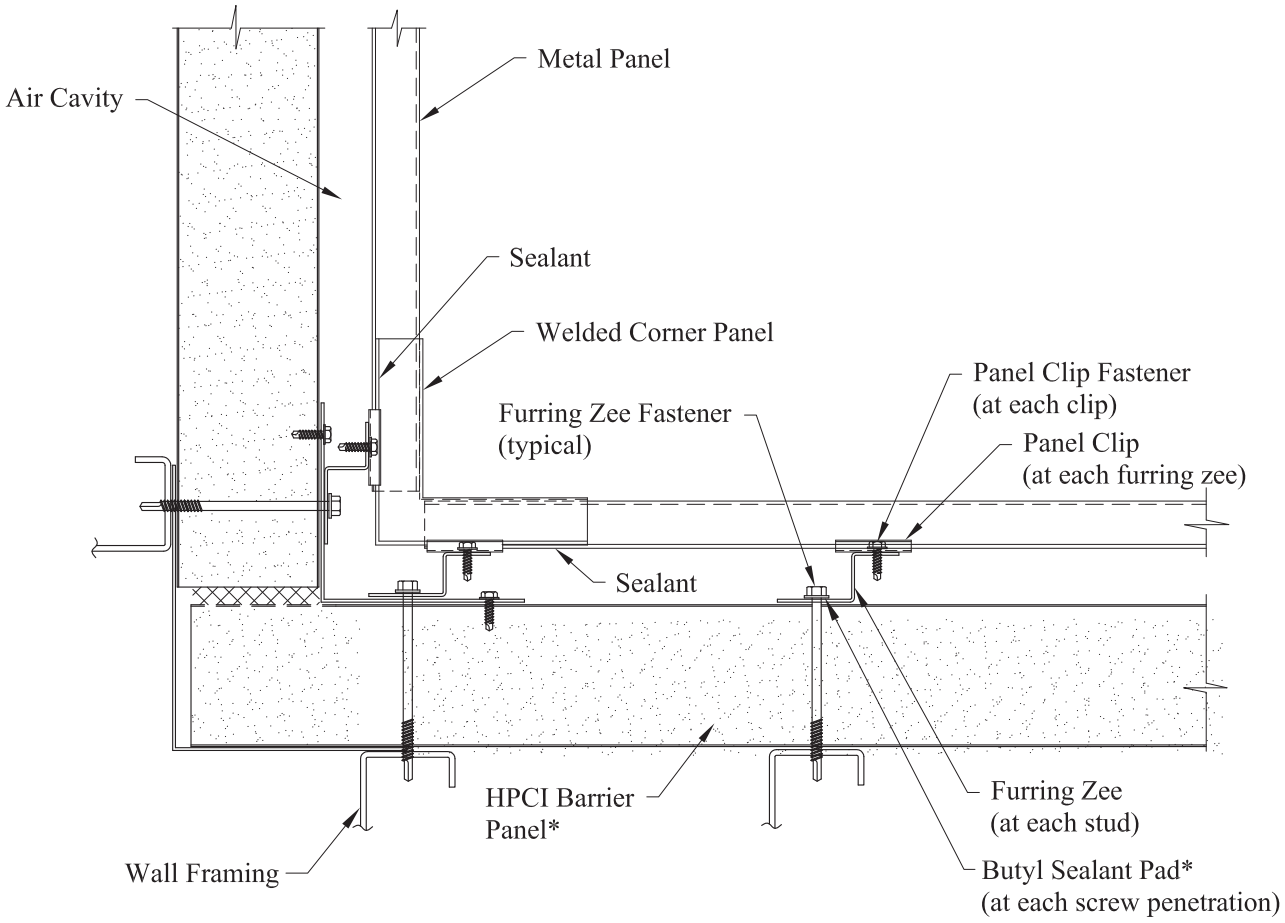
Wall Plan @ Outside Corner

Notes:

1. * Designates components provided or available from Metl-Span.
2. Reference HPCI-BP-404 for barrier panel flashing details.
3. Reference metal panel manufacturer's information for panel and clip details.

HPCI BARRIER™ PANEL WITH METAL PANEL CLADDING

Inside Corner Detail (HPCI-MP-12)



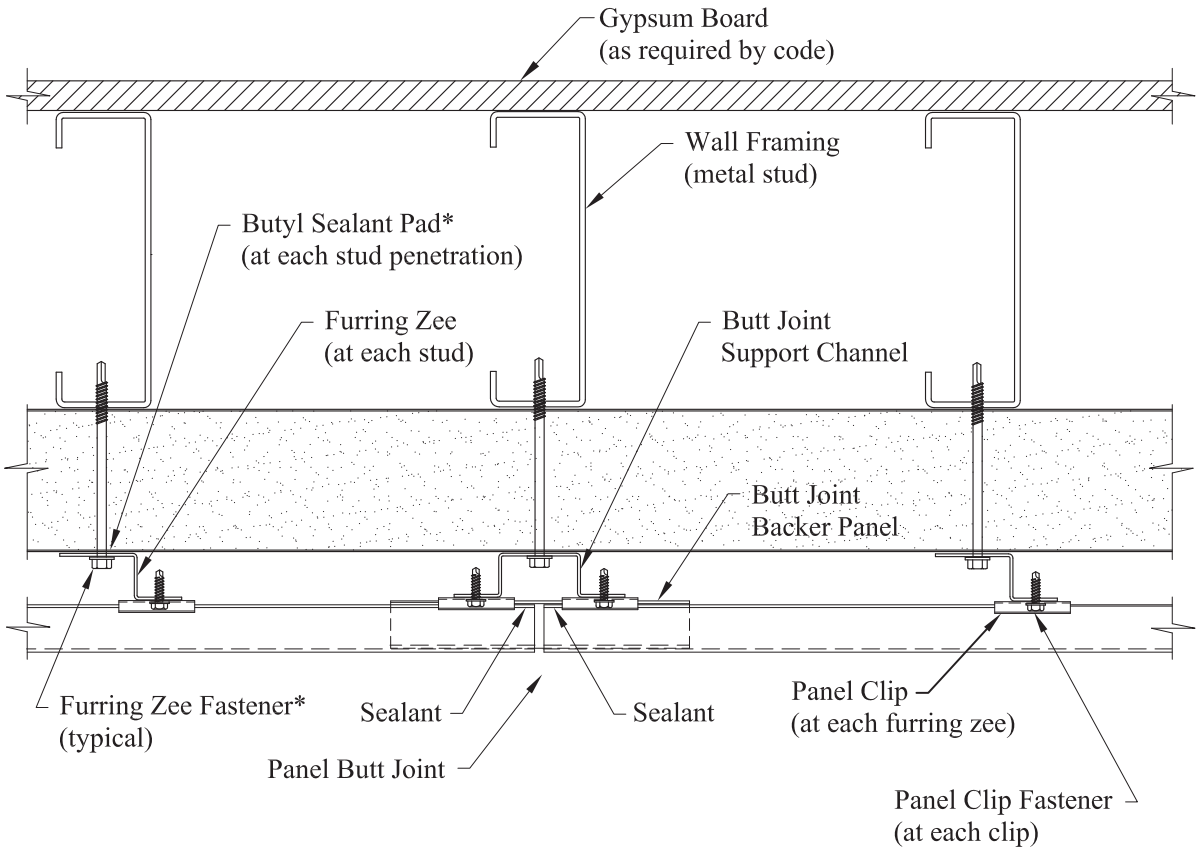
Wall Plan @ Inside Corner

Notes:

1. * Designates components provided or available from Metl-Span.
2. Reference HPCI-BP-404 for barrier panel flashing details.
3. Reference metal panel manufacturer's information for panel and clip details.

HPCI BARRIER™ PANEL WITH METAL PANEL CLADDING

Panel Butt Joint Detail (HPCI-MP-13)



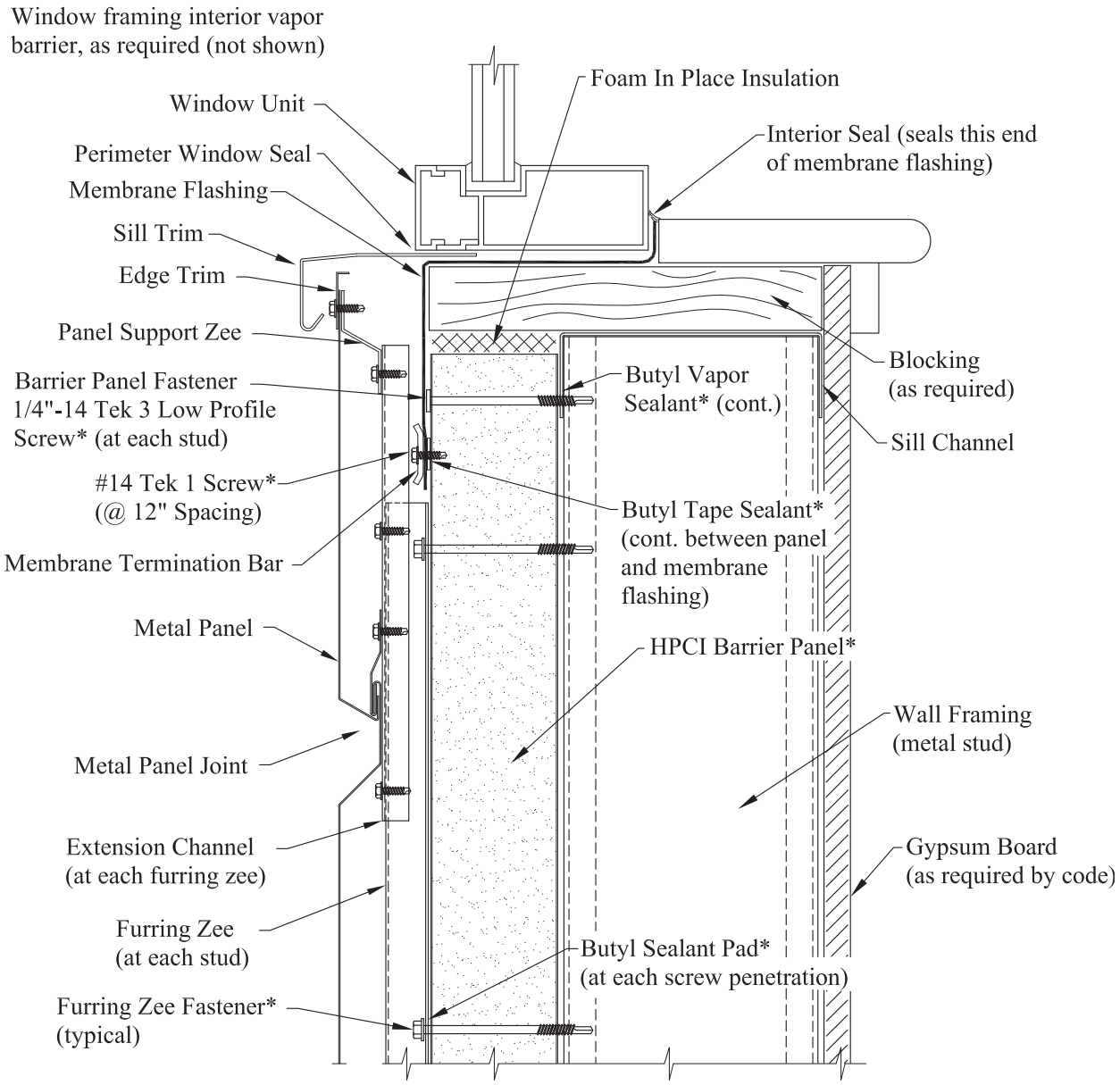
Wall Plan @ Panel Butt Joint

Notes:

1. * Designates components provided or available from Metl-Span.
2. Metal panel lengths determined by wall framing spacing.
3. Reference metal panel manufacturer's information for panel and clip details.

HPCI BARRIER™ PANEL WITH METAL PANEL CLADDING

Sill Detail - Wood Framed (HPCI-MP-14)



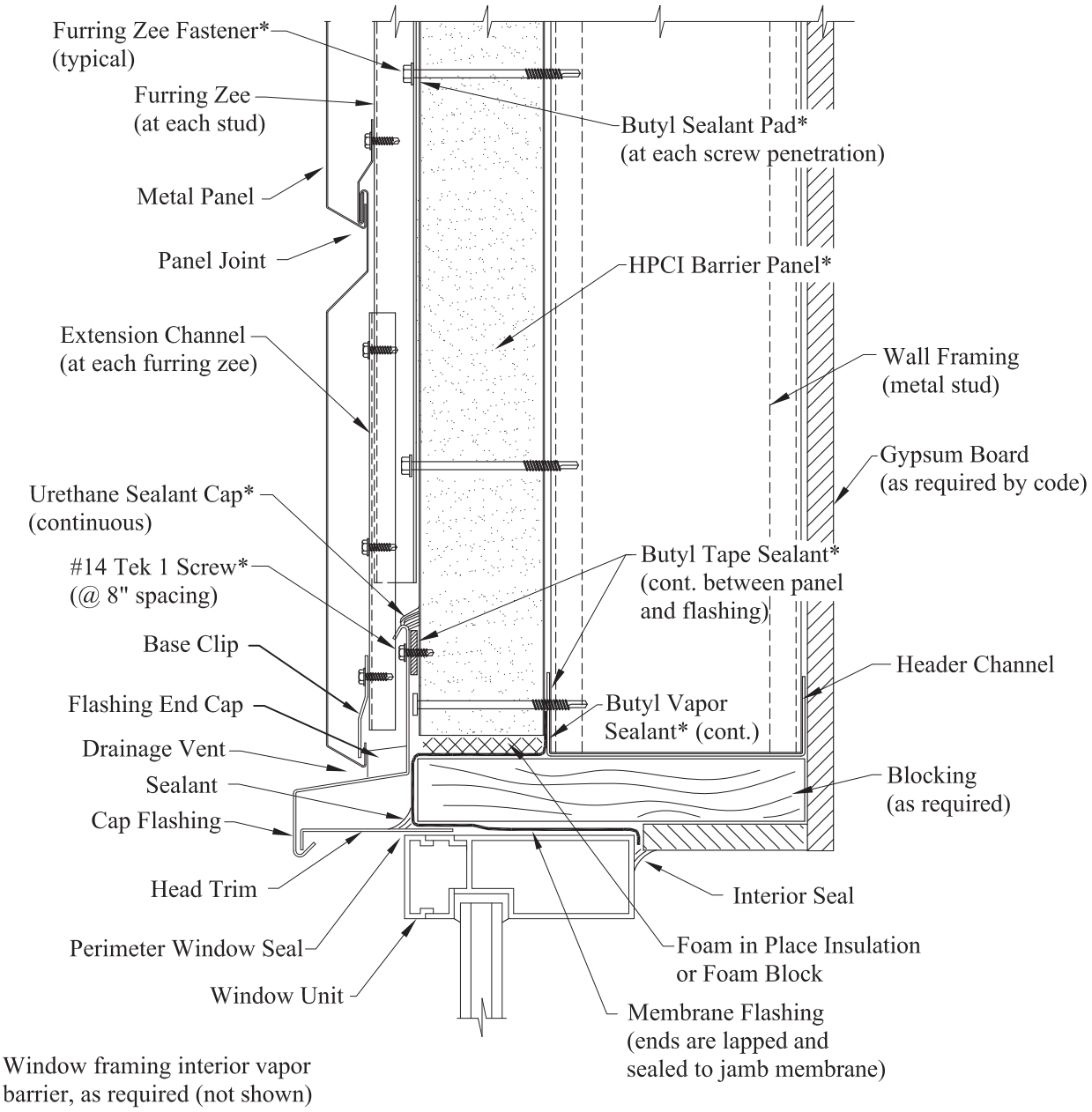
Wall Section @ Window Sill

Notes:

1. * Designates components provided or available from Metl-Span.
2. 6" maximum cantilevered projection of extension channel.
3. Membrane termination bar shown. Self adhered membrane is project designer's option
4. Reference metal panel manufacturer's information for specific panel and clip details.
5. Window assembly shown as generic representation only. Actual assembly as specified by the project designer.

HPCI BARRIER™ PANEL WITH METAL PANEL CLADDING

Head Detail - Wood Framed (HPCI-MP-15)



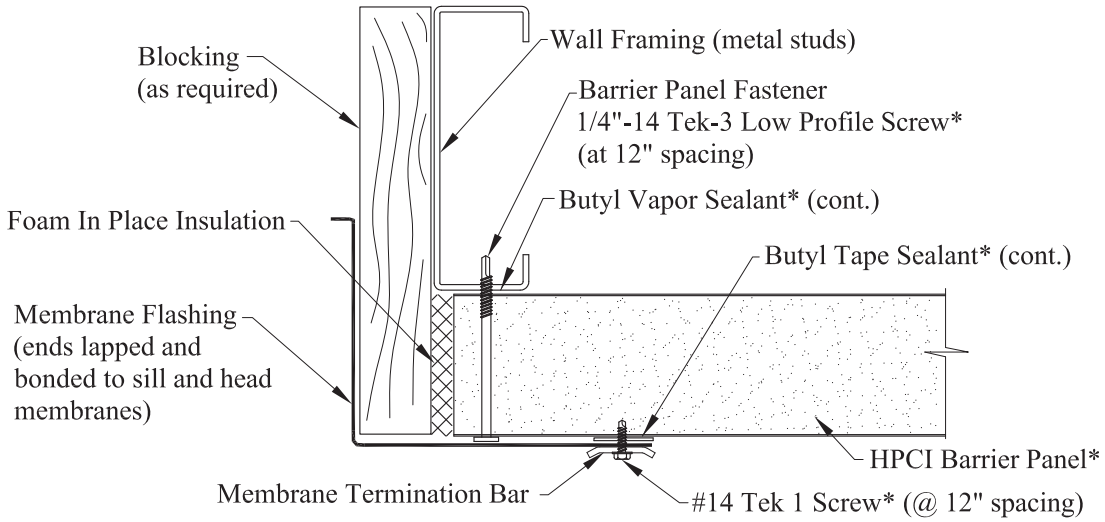
Wall Section @ Window Head

Notes:

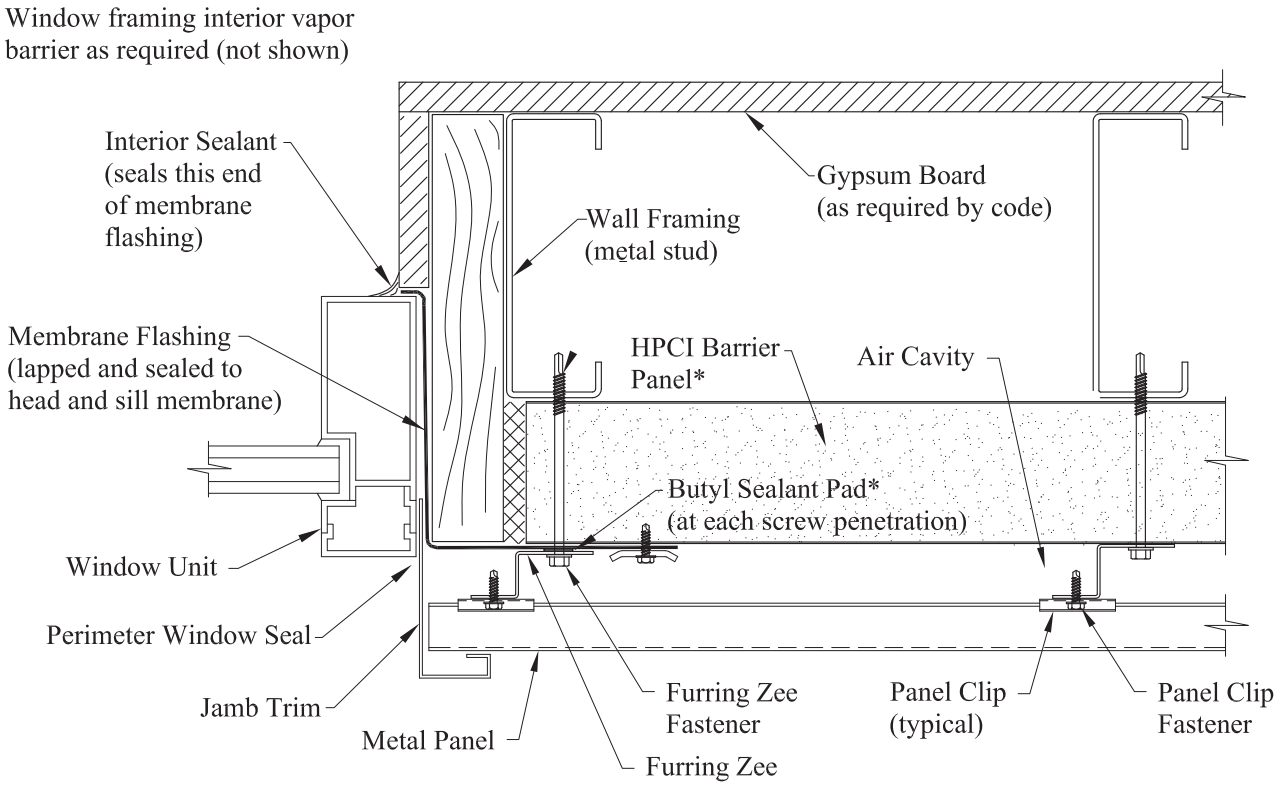
1. * Designates components provided or available from Metl-Span.
2. 6" maximum cantilevered projection of extension channel.
3. Reference metal panel manufacturer's information for specific panel and clip details.
4. Window assembly shown as generic representation only. Actual assembly as specified by the project designer.

HPCI BARRIER™ PANEL WITH METAL PANEL CLADDING

Jamb Detail - Wood Framed (HPCI-MP-16)



HPCI Panel Jamb Detail



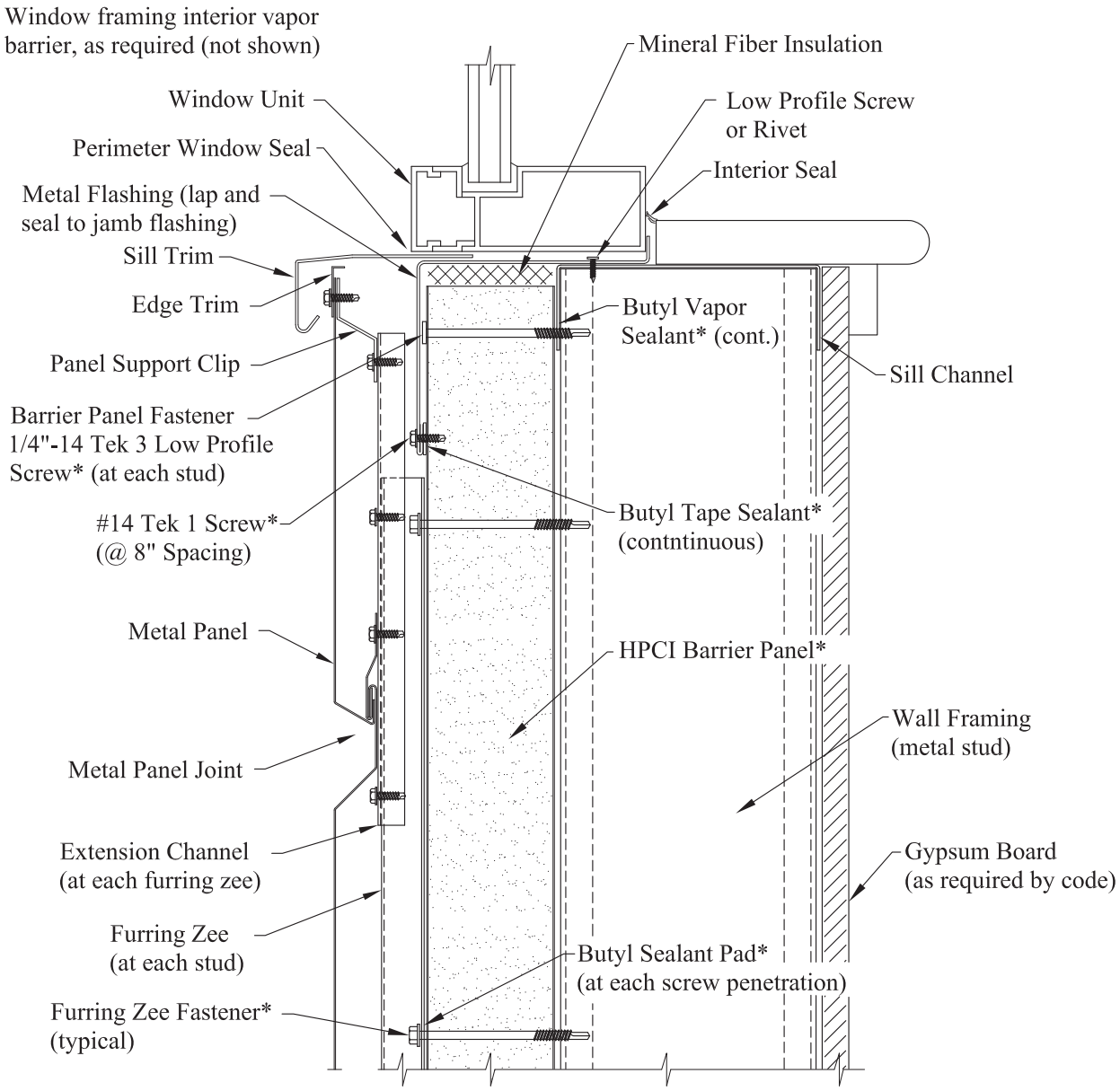
Wall Plan @ Window Jamb

Notes:

1. * Designates components provided or available from Metl-Span.
2. Membrane termination bar shown. Self adhering membrane is project designer's option.
3. Reference metal panel manufacturer's information for specific panel and clip details.
4. Window assembly shown as generic representation only. Actual assembly is as specified by the project designer.

HPCI BARRIER™ PANEL WITH METAL PANEL CLADDING

Sill Detail - Metal Framed (HPCI-MP-17)



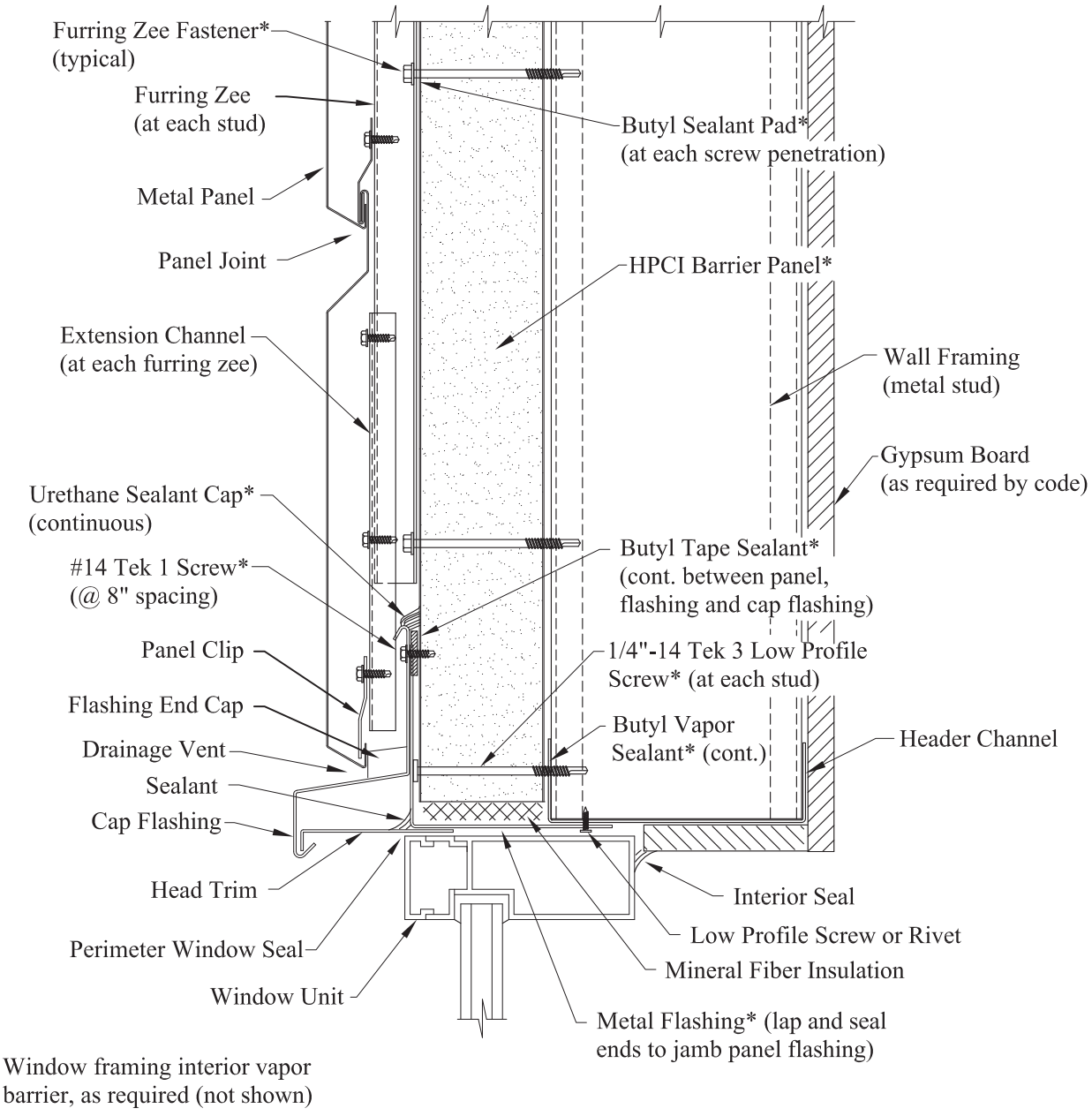
Wall Section @ Window Sill

Notes:

1. * Designates components provided or available from Metl-Span.
2. 6" maximum cantilevered projection of extension channel.
3. Reference metal panel manufacturer's information for specific panel and clip details.
4. Window assembly shown as generic representation only. Actual assembly as specified by the project designer.
5. Metal fire block flashing of panel ends and cavity is shown as required for multi-story code compliance.

HPCI BARRIER™ PANEL WITH METAL PANEL CLADDING

Head Detail - Metal Framed (HPCI-MP-18)



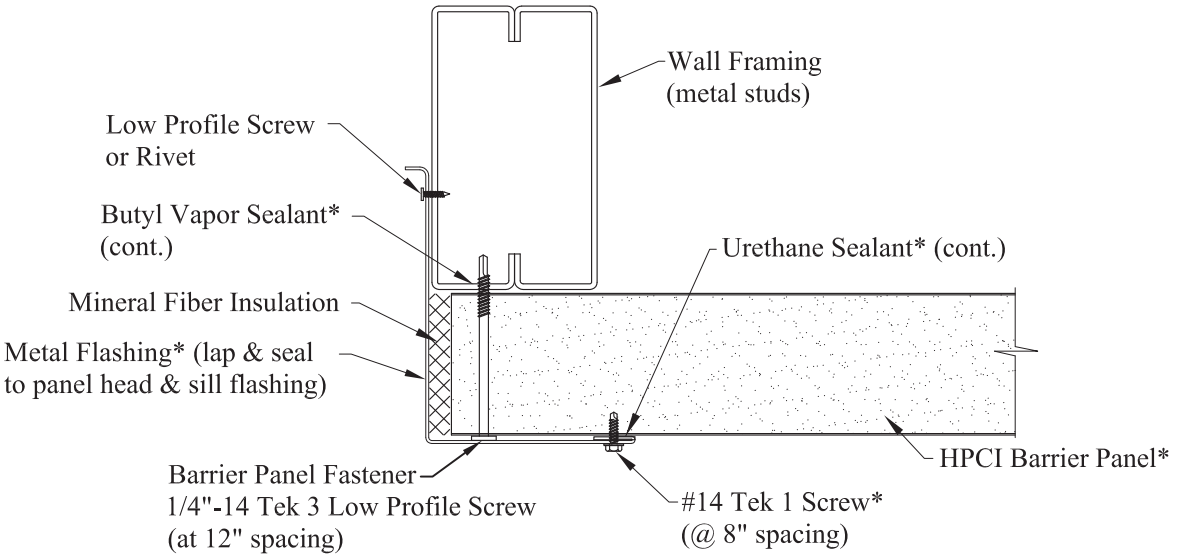
Wall Section @ Window Head

Notes:

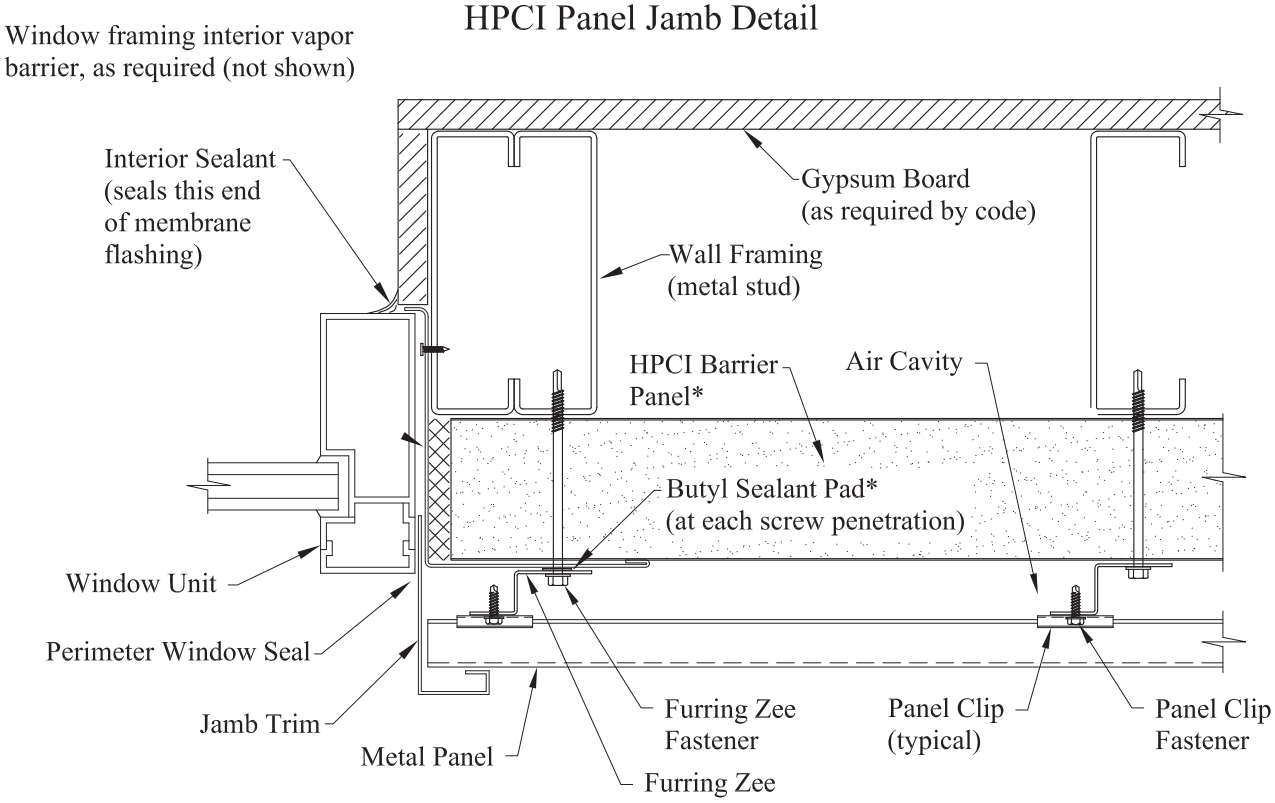
1. * Designates components provided or available from Metl-Span.
2. 6" maximum cantilevered projection of extension channel.
3. Reference metal panel manufacturer's information for specific panel and clip details.
4. Window assembly shown as generic representation only. Actual assembly as specified by the project designer.
5. Metal fire block flashing of panel ends and cavity is shown as required for multi-story code compliance.

HPCI BARRIER™ PANEL WITH METAL PANEL CLADDING

Jamb Detail - Metal Framed (HPCI-MP-19)



HPCI Panel Jamb Detail



Wall Plan @ Window Jamb

Notes:

1. * Designates components provided or available from Metl-Span.
2. Reference metal panel manufacturer's information for specific panel and clip details.
3. Window assembly shown as generic representation only. Actual assembly is as specified by the project designer.
4. Metal fire block flashing of panel ends and air cavity is shown as required for multi-story compliance.

Notes:

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INSULATED METAL PANELS

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