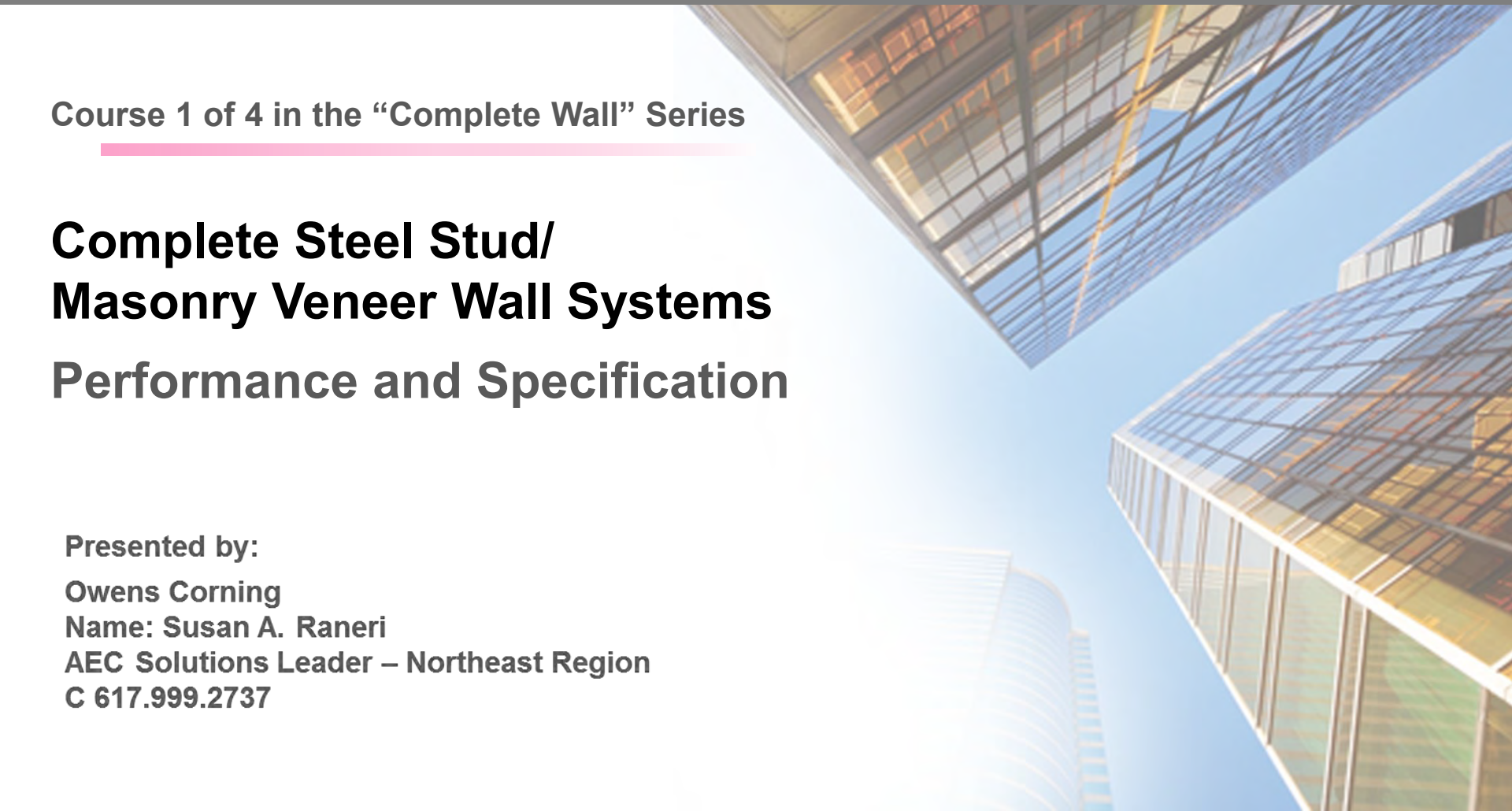
1.0 Hour, LU/HSW



Course 1 of 4 in the “Complete Wall” Series

Complete Steel Stud/ Masonry Veneer Wall Systems

Performance and Specification

Presented by:

Owens Corning
Name: Susan A. Raneri
AEC Solutions Leader – Northeast Region
C 617.999.2737

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CavityComplete® Wall Systems

Five
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Mortar Net SOLUTIONS

OWENS CORNING

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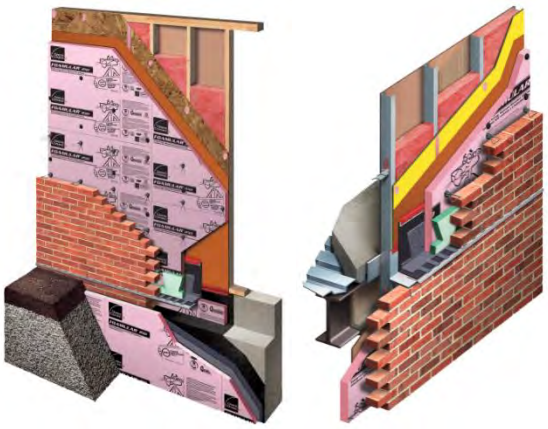
RODENHOUSE Fastening Systems

Three
Wall Systems



Wood Stud

Steel Stud

CMU

Complete
Performance

- Thermal Efficiency
- Moisture Management
- ASTM E2357 (Air Barrier)
- ASTM E331 (Water)
- NFPA 285 (Fire)
- ASTM E119 (Fire)
- ASTM E2307 (Fire)
- Masonry Anchorage
- Sustainability

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Course Description

In today's high performance building market, **specifying materials that work together as a complete wall system is more critical than ever**. Systems can help designers meet new energy codes, reduce costs and improve building function and sustainability while making the design process faster and simpler.

This course will educate participants on the **functional components and system attributes of the most common exterior wall system, steel stud with masonry veneer**. The course will detail key system components such as continuous and stud cavity insulation, air/water resistive barriers, air sealing practices, masonry wall ties and water drainage/management practices. Key codes and standards will be reviewed to define system interaction and key specification practices to insure wall system designs are consistent with recent advances in building analysis, new code requirements, revised test methods, and a comprehensive, systems approach to wall systems.

Learning Objectives

This course enables participants to:

1. **Understand the components of a complete wall construction system.**

2. **Understand how each component functions within the system and contributes to energy efficiency and weatherproofing.**

3. **Understand codes and standards that define the components and system function.**

4. **Understand specification practices for a wall system design that is consistent with the complete wall.**

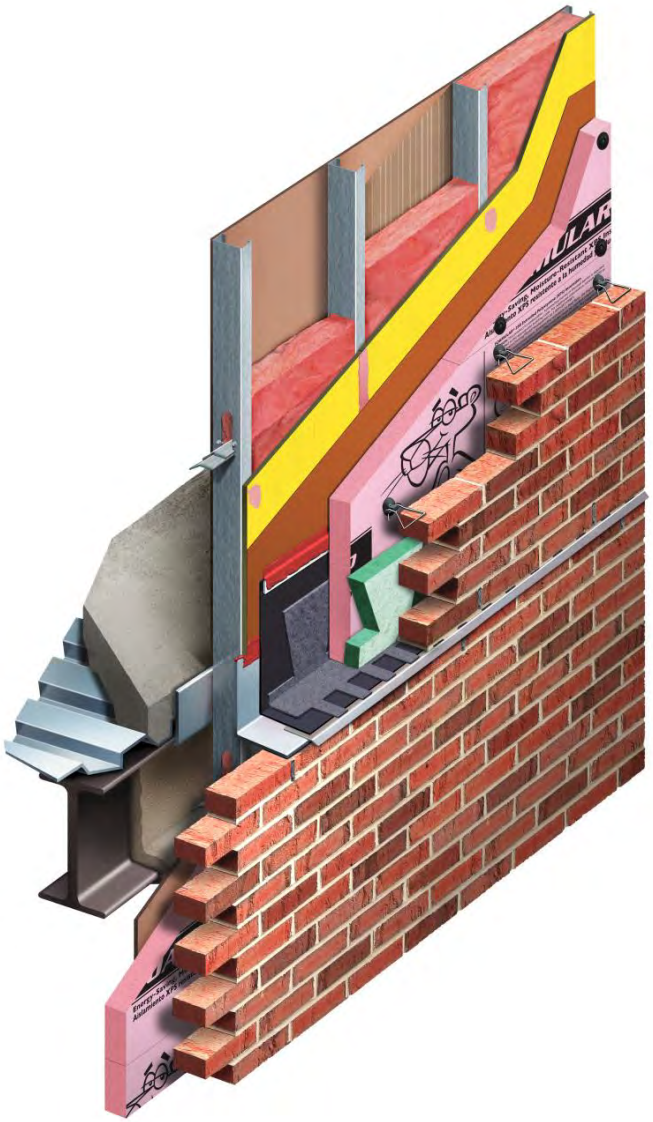
Functional Requirements of a Wall System

Key Design Considerations:

- Thermal Efficiency
- Air Resistance
- Moisture Management
- Fire Containment
- Structural Connections
- Multiple Warranties

It All Must Be in The Wall

Steel Stud with Masonry Veneer Wall Systems



Roles & Goals *(To create a complete wall)*

Architect

Goal: Achieving high performance

Roles: Researching & specifying

Challenges:

System Documentation:

- air leakage
- water & vapor resistance
- fire performance
- code approvals
- third-party verifications
- regional design variations
- structural and transitions
- CAD details, BIM
- material compatibility
- sustainability

Contractor

Goal: Achieving high performance

Roles: Efficient installation

Challenges:

- clear system specifications
- accurate bidding
- familiar methods & materials
- material availability
- sequencing
- material compatibility
- installation knowledge
- proper transitions & details
- job close-out documentation

What if something is missed?

Common Mistakes/Results

Sequencing

Detailing

Water Accumulation

Common Mistakes/Results

Boston Project Example, True Story…

During construction, it was discovered that the products selected for the exterior wall assembly:

- Met ASTM E2357 (air barrier assembly requirement)
- Did *not* meet NFPA 285 (fire assembly requirement)

Project was delayed over a week and cost $4,000 to obtain an engineering judgment letter for NFPA 285 compliance.

It costs time, and…what if a letter isn't enough?

The Solution:

A Complete Wall

… but, what is that?

Wall Systems: A Complete Design

Base Wall:
(steel studs/gyp sheathing)

Barriers, flashings, sealing washers, and drainage preservation

1

Air and water management
Water drainage

Insulation

2

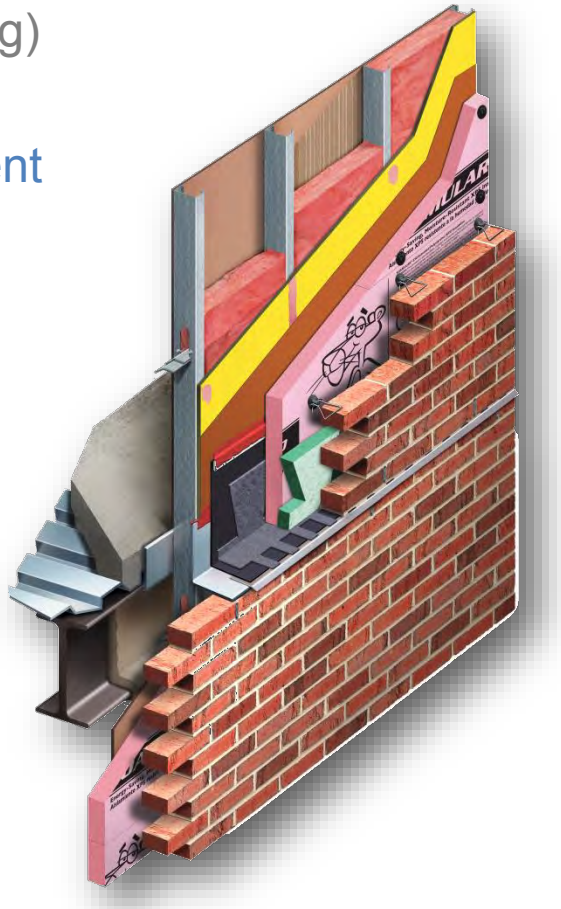
Thermal efficiency
Continuous insulation
Vapor management

Anchors & fasteners

3

Structural considerations

Exterior Cladding:
(Brick)



Systemization: All components must be compatible and work together as a **system**.

Wall Systems: Component Performance

Stud Cavity Insulation (Thermal)

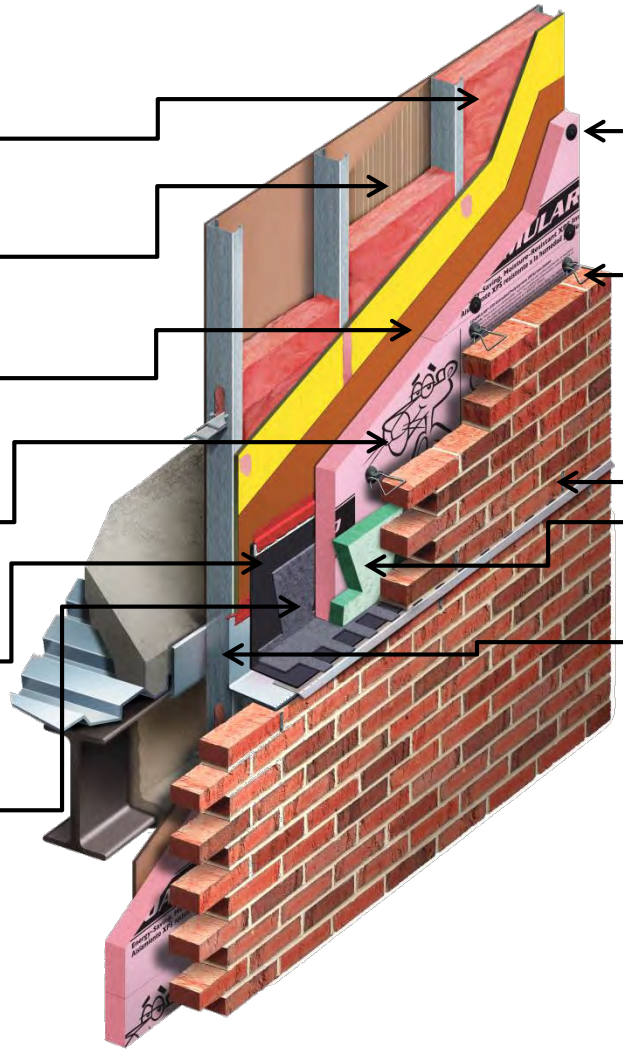
Vapor Retarder (Vapor)

Air/Barrier Resistive Layer (Air/Water)

Continuous Insulation (Thermal)

Through Wall Flashing (Water)

Secondary Drainage Plane (Water)



Fastener w/ Sealing Washer

Masonry Veneer Anchor w/ Sealing Washer (Structure)

Weep Hole Vent (Water Out/ Air Circulation)

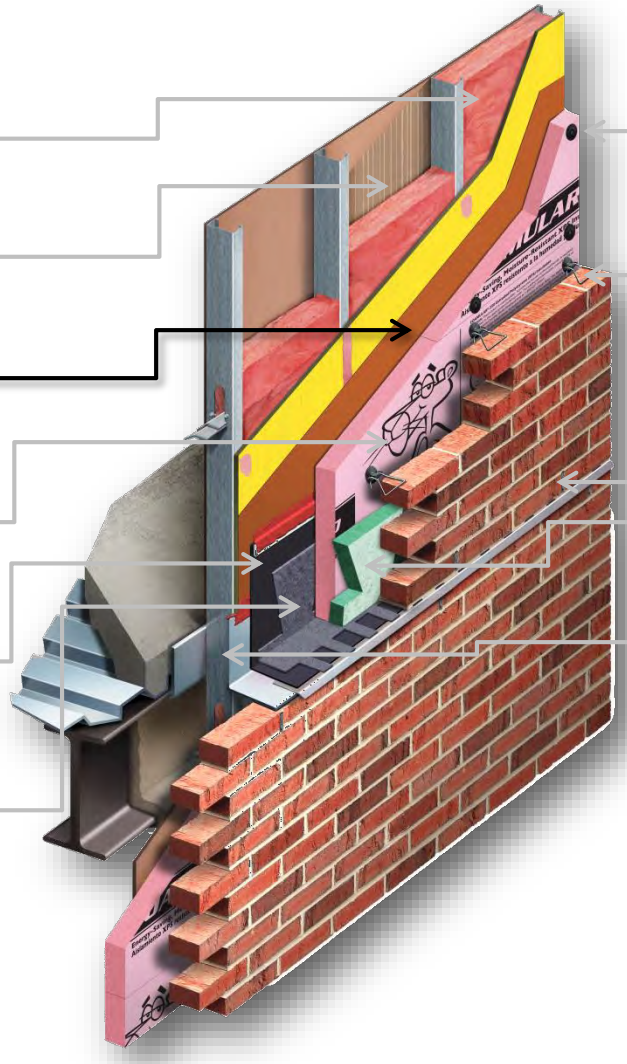
Mortar Droppings Protection (Water Out/ Air Circulation)

Safing Insulation (Fire)

What do all of these components do?

How must I specify them to make them work?

Wall Systems: Air Barrier



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What do all of these components do?

How must I specify them to make them work?

Function & Types of Air/Weather Barriers

Air Barriers:

- Restrict air leakage in and out
- Minimize
  - Leakage around transitions
  - Condensation (air currents)
  - Mold growth & corrosion
- Improve energy efficiency*
- Extend building life
- Improve occupant comfort

Weather Protection:

- Water resistant building envelope
- Prevent accumulation of water
- Establish a drainage plane in the wall

Vapor permeable or impermeable

Mechanically Attached Sheet
(Photo Courtesy Dupont)

Self-Adhered Sheet

Spray on Fluid-Applied

Roll on Fluid-Applied

* ABAA, cooling cost 10-15%, heating cost 30%-40%

Codes and Testing for Air/Weather Barriers

ASHRAE 90.1
Section 5.4.3.1.3

- Requires an air barrier
- Full wall system testing to ensure max air leakage 0.04 cfm/ft^2
  - Specify ASTM E2357

IBC
Section 1403.2

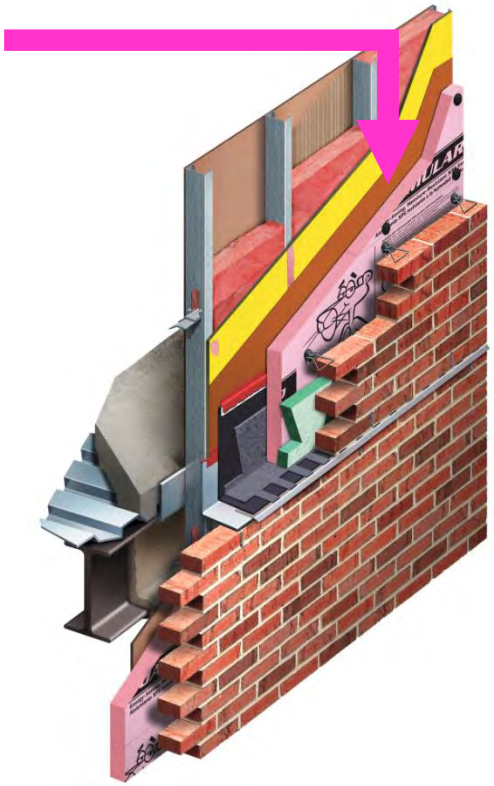
- Weather Protection
- Full wall system testing per ICC Acceptance Criteria 212
  - Specify ASTM E331

STP Air & Water Barriers (highest performing)

STP Air/Water Barriers

(Silyl Terminated Polymer)

- Highly flexible & tolerates movement
- Cures in the presence of moisture
- Fluid applied – rolled
- Monolithic & bonded to substrate
- Vapor permeable provides the most design flexibility in diverse climates
- Continuous air barrier (ASHRAE 90.1)
- Weather Barrier (IBC)
- NFPA 285 (Fire Propagation)



Seal screws and joints. Apply over entire surface for reliable seal. Incorporate accessories.

Wall Systems: Insulation

Stud Cavity Insulation (Thermal)

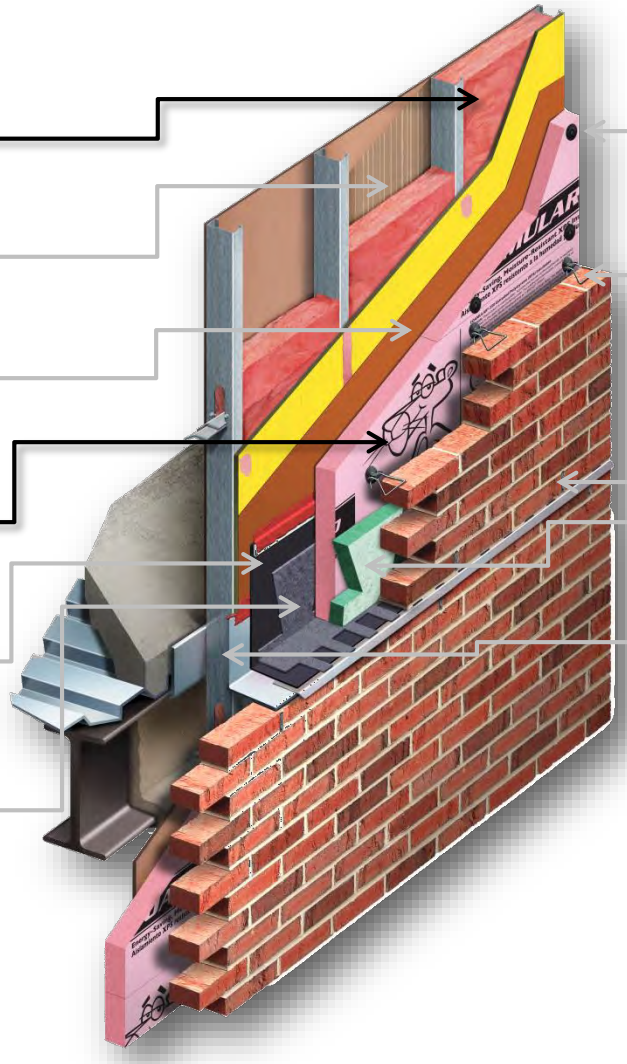
Vapor Retarder (Vapor)

Air/Barrier Resistive Layer (Air/Water)

Continuous Insulation (Thermal)

Through Wall Flashing (Water)

Secondary Drainage Plane (Water)



Fastener w/ Sealing Washer

Masonry Veneer Anchor w/ Sealing Washer (Structure)

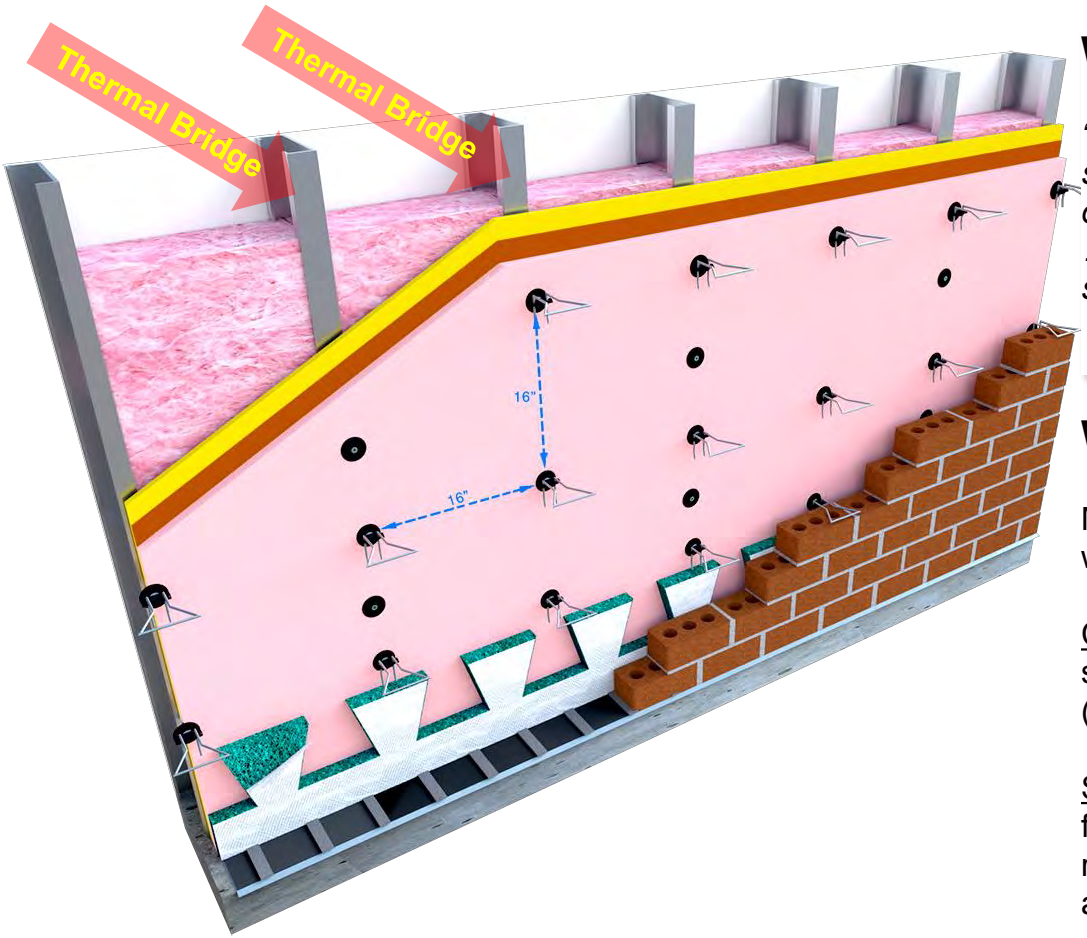
Weep Hole Vent (Water Out/ Air Circulation)

Mortar Droppings Protection (Water Out/ Air Circulation)

Safing Insulation (Fire)

Enhances thermal performance to meet energy codes and standards.

What is Continuous Insulation (ci)?



What is it?

"Insulation that is continuous across all structural members without thermal bridges other than fasteners and service openings …interior, exterior, or integral to any opaque surface."

ASHRAE 90.1

What does it do?

Minimizes thermal bridging and helps comply with energy codes and standards.

Continuous Insulation (CI) is *uninterrupted* by stud cavity framing and achieves its full R-Value (R-5/inch).

Stud Cavity Insulation is bridged by steel framing members, which conduct heat and can reduce the R-Value of stud cavity insulation by as much as 50%.

CI and stud cavity insulation work best together!

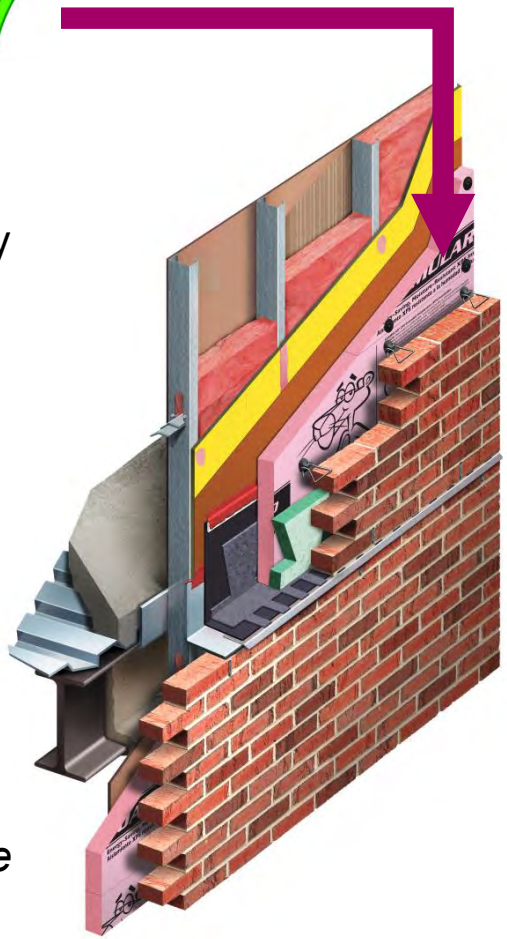
Types of Continuous Insulation

Highly water resistant during and after construction

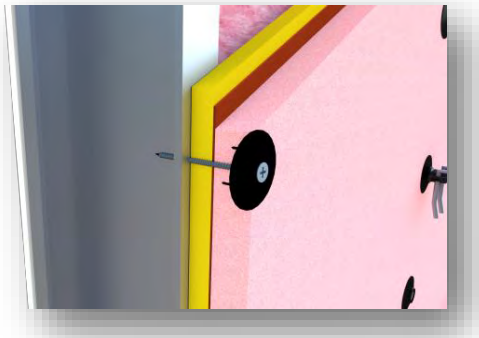
Lightweight, easy to handle and install

Extruded Polystyrene (XPS) Continuous Insulation (ci)

- Closed cell, highly water resistant
- Manufactured in a controlled factory setting to ensure reliable performance
- Not reliant on facers to resist water
- NFPA 285 compliant assemblies
- Predictable R-value performance across multiple mean temperatures
  - *Spray foam is "field manufactured"*
  - *Some ci solutions lose R-value in colder temperatures.*



XPS Installation

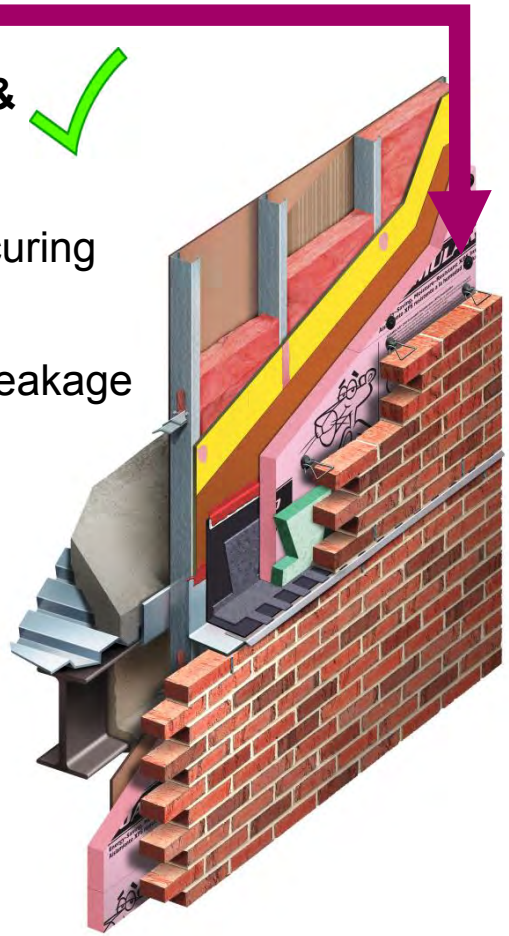


2” ci prong washers, ideal for pre-spotting

XPS Installs Easily With:

2” diameter “ci” Prong Washers & Ceramic Coated Screws

- Washers prevent blow-offs by securing XPS tightly to the wall
- Washers eliminate air and water leakage created by fastener penetrations



Screw gun with auto-feed belt

Corrosion resistant ceramic coated screws

Cavity Batt Insulation

Faced

Unfaced

Cut & tucked into hard to reach places

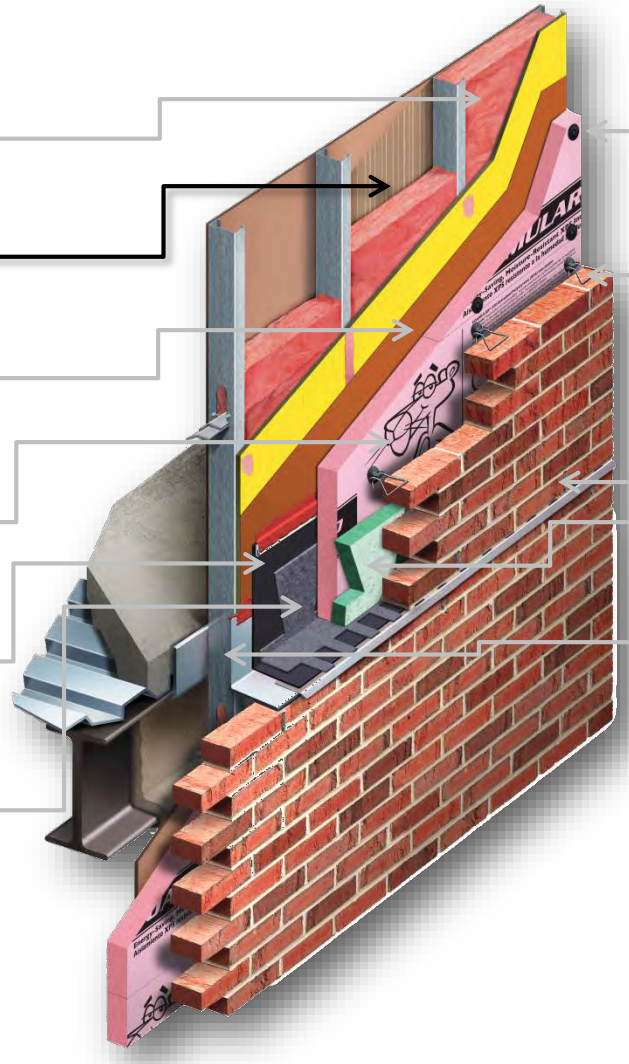
Fiberglass batts in Stud Cavity

- Uses valuable stud cavity space for thermal and acoustical benefit
- Manufactured in a controlled factory environment to ensure quality consistency
- Easy to inspect & verify
- No formaldehyde binder

Some (but not all) offer:

- Up to 65% recycled content
- GREENGUARD Gold
- Environmental Product Declaration
- Cradle to Cradle Certified™ Material Health | Gold

Wall Systems: Vapor Retarder



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Mortar Droppings Protection (Water Out/ Air Circulation)

Safing Insulation (Fire)

Let's discuss vapor retarders. Goal? Where? When?

Where Does the Vapor Retarder Go?

Inside? Outside? It depends?

It depends.

- Vapor flows from high pressure to low pressure.
  - Warm/high moisture load = high vapor pressure.
  - Cool/low moisture load = low vapor pressure.
- Normally placed on the high vapor pressure side
- Typically inside in Zones 5 thru 8.
  - "Warm in the winter" side of the wall
- Typically outside in Zones 1 & 2.
- Zones 3 & 4, it depends on the wall construction.

Which Vapor Retarder?

High perm? Low perm? It depends?

It depends.

- What is the typical vapor pressure difference?
  - High or low?
- How long does the difference persist?
  - Overnight?
  - Days?
  - Weeks?
  - Months?
- What is the walls ability to absorb and hold water?
- What is the ability to dry?

Vapor Retarder Classification

2015 IBC section 1405.3.2
Vapor Retarders

Class I ≤ 0.1 perm (Vapor Barrier)
Class II > 0.1 perm, ≤ 1.0 perm
Class III > 1.0 perm, ≤ 10 perm

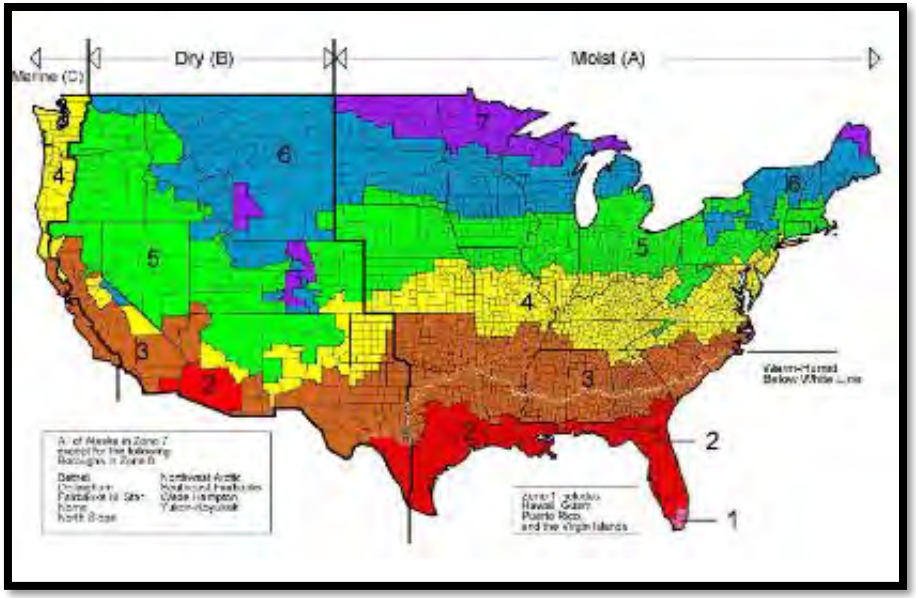
2015 IBC section 1405.3
Defines Where to Use

Class I or II NOT permitted inside in Zones 1 or 2
Class I or II REQ'D Zones 5, 6, 7, 8, Marine 4
Class III ALLOWED Zones 5, 6, 7, 8, Marine 4, *in walls where cavity is warmed with "ci" and/or cladding is vented (some wall designs are more forgiving)*

IBC specifications really don't go far enough into examining wall system performance.

Need **hygrothermal** analysis such as **WUFI** to fully assess performance.

WUFI and even actual test experience assistance is available from companies that offer building science support.



Vapor Retarder Flame Spread Rating?

What is the required flame spread rating for vapor retarding facers in commercial construction?

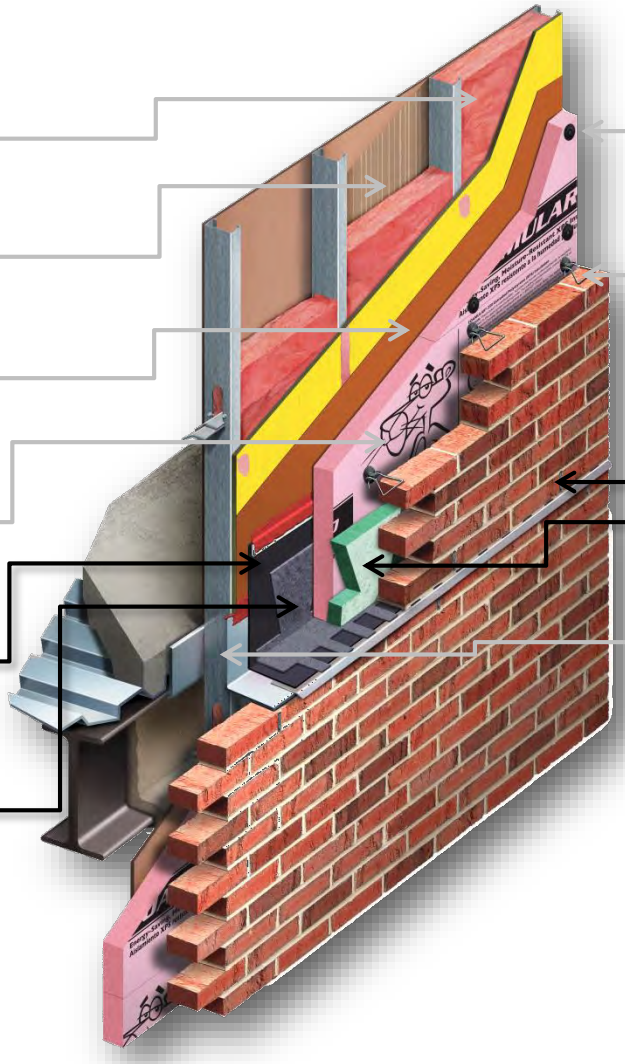
25? 75? It depends?

It depends.

IBC Section 720.2: Concealed installation.
Insulating materials…concealed…in buildings of any type of construction shall have a flame spread index of not more than 25…

Section 720.2.1: Facings.
Where…installed in buildings of Type III, IV or V construction, the flame spread limitations do not apply to facings.

Wall Systems: Drainage



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Safing Insulation (Fire)

When water gets in …
how do we make sure it gets out?

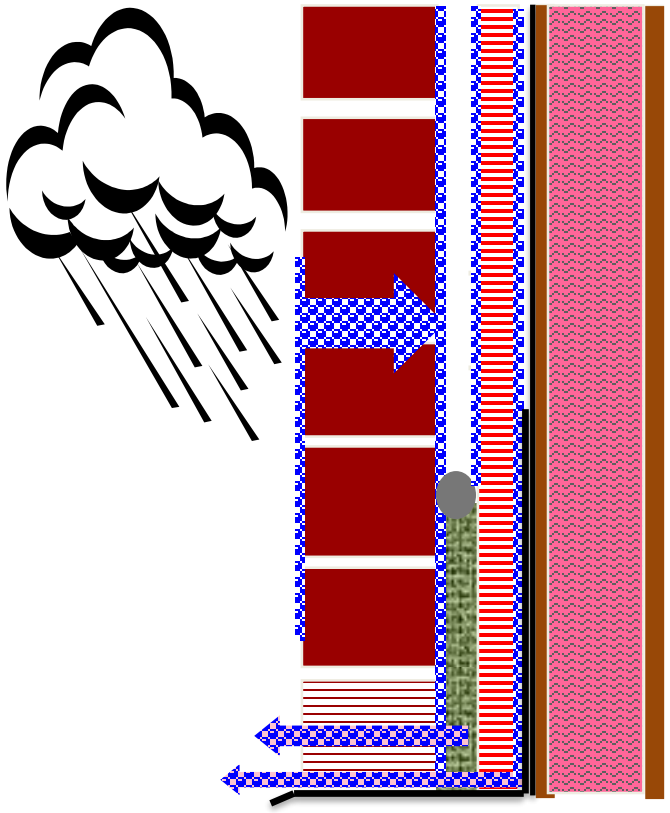
Masonry Wall Drainage System Design

Tips for well designed drainage systems:

- Provide multiple pathways for drainage
- Allow water to drain so it doesn't build up & linger
- Prevent mortar dropping dams (so weeps don't clog)
- Allow air to circulate

REDUNDANCY* is GOOD!

* Multiple planes to reduce moisture, minimizing condensation, efflorescence, spalling, and mold



Vertical Section

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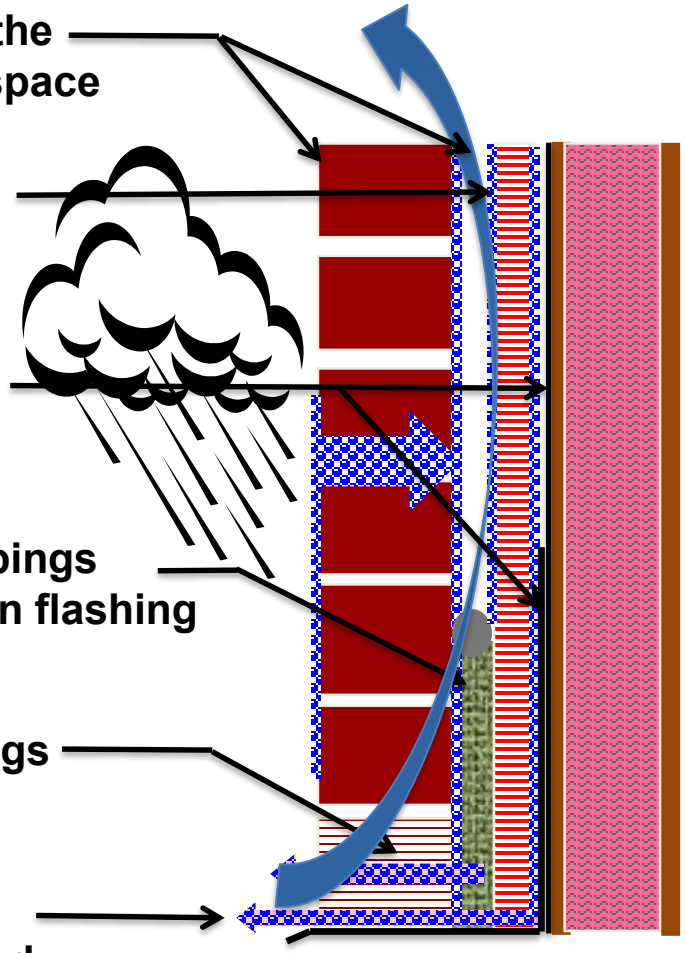
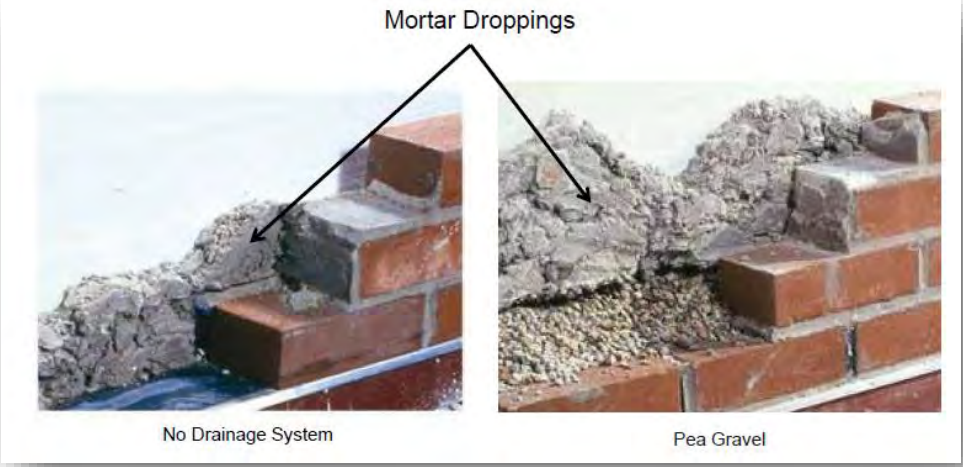
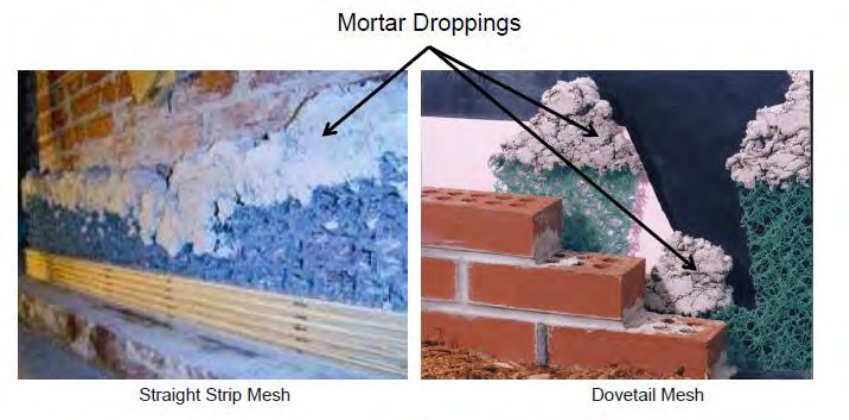


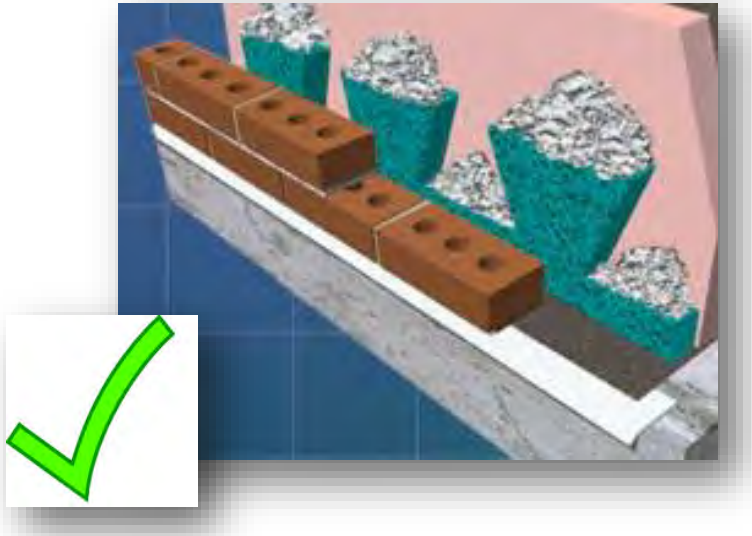
Types of Mortar Drop Protection

Mortar droppings protection keeps weep holes clear and open.

Dovetail shaped protection catches mortar on two levels and breaks it up.







Types of Weep Solutions

Weeps Should Provide:

- Exit path for water
- Barrier to insects and debris
- Air flow to dry cavity

Open Head Joint

Rigid Insert

Wicking Rope

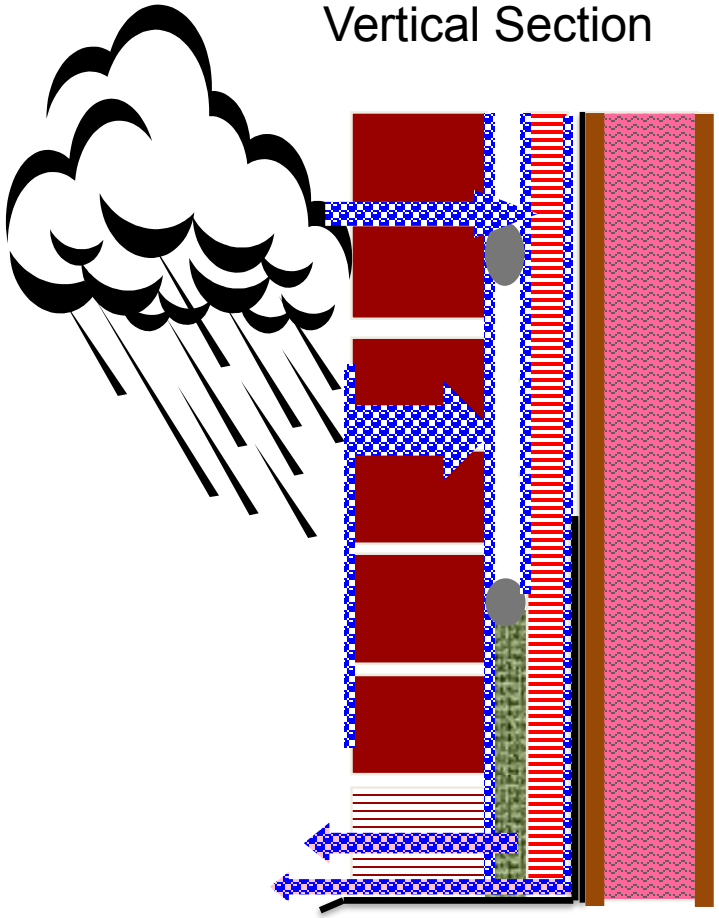
90% Open mesh “Weep Vents”
Compression fit

Continuous Insulation

Water can cross the air space so “ci” must play a role in drainage.

Some water will migrate across mortar bridges to reach the face of the “ci” sheathing.

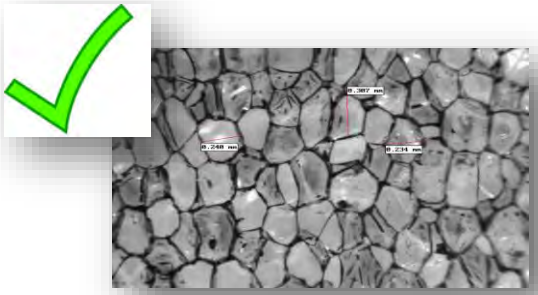
Vertical Section



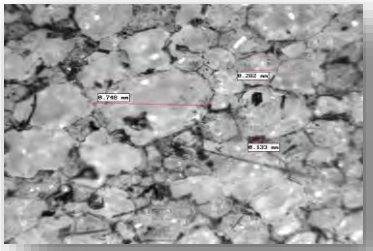
Choosing a Type of Continuous Insulation

To resist moisture, the Brick Industry Association Tech Note 28B recommends the use of **"<u>closed-cell insulating rigid foam</u>"** sheathing.

Such as closed cell extruded polystyrene or polyiso.

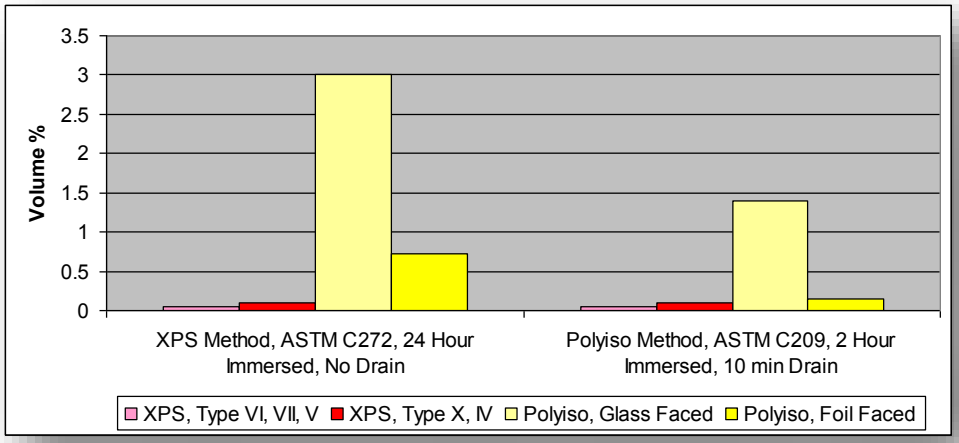


Closed Cell XPS (Hydrophobic)



Closed Cell Polyiso (Hydrophillic)

Water Absorption is Higher for Polyiso



Flashing

Flashing catches water at the base of the wall, window heads and other locations and directs it towards the exterior.

Traditional flashing is assembled on site … piece by piece.

Multiple Pieces

Termination Bar

Membrane

Drainage Mesh

Weep Tabs

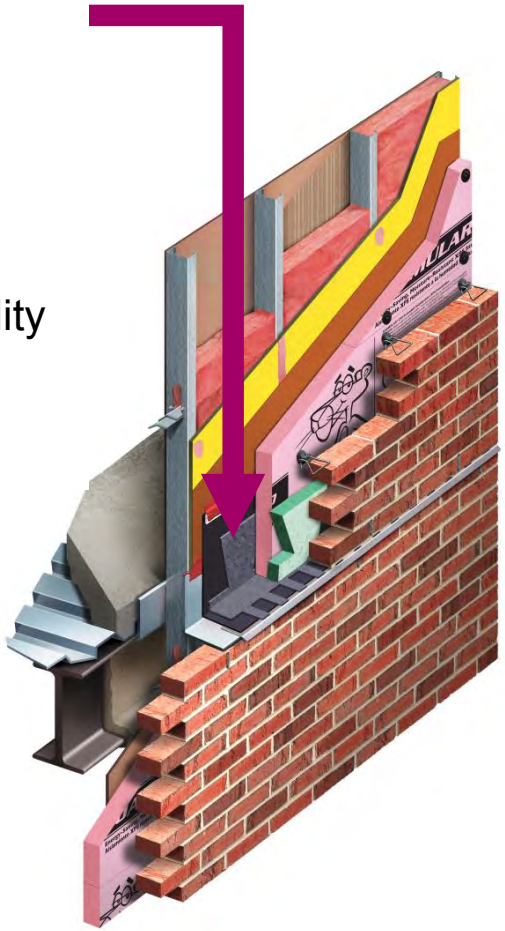
Drip Edge

Flashing (Unitized Systems)

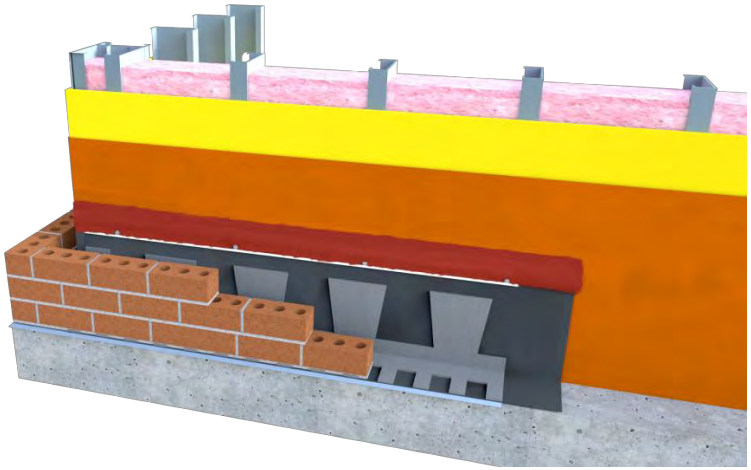
Unitized panels
delivered to job site

Unitized Flashing

- Combines flashing, termination bar, drainage mesh and drip edge
- Minimizes installation errors
- Minimizes field labor & puts more quality control in the factory
- Maintains free air passages in cavity

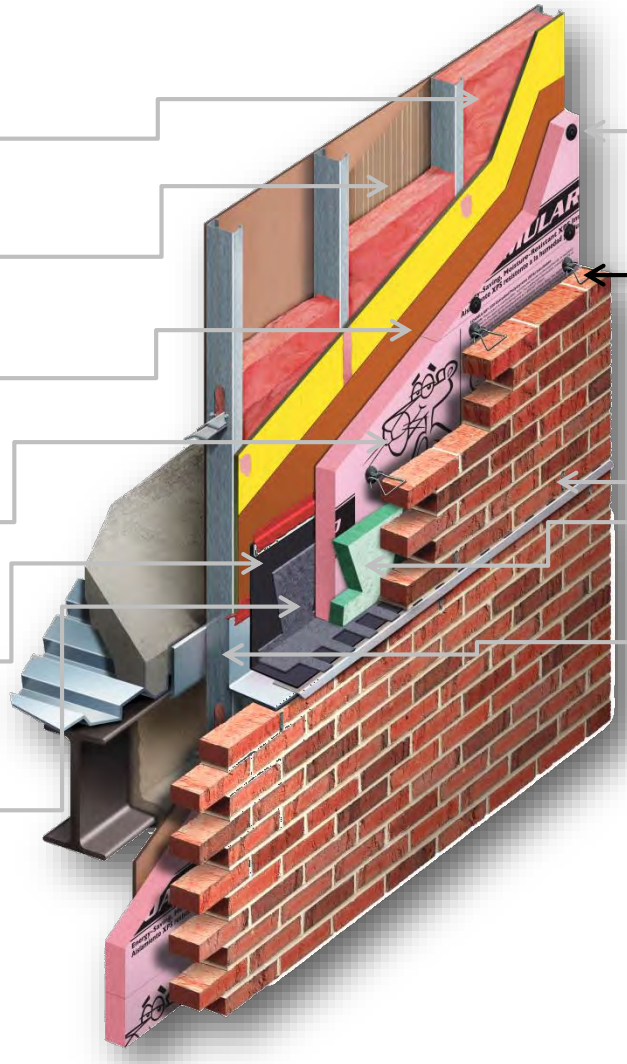


Prefab corners
& end dams



Integral mesh enhances drainage.
Custom widths available.

Wall Systems: Masonry Anchors



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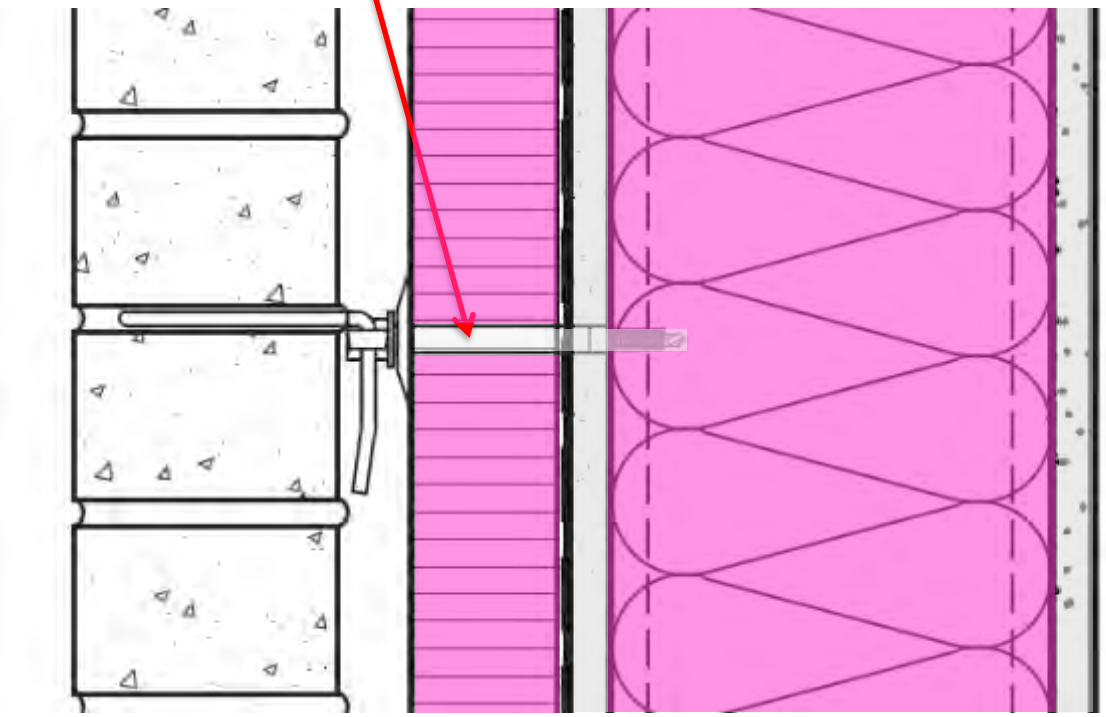
Safing Insulation (Fire)

Masonry Anchor Function

Masonry Anchors:

- Critical component
- Connects masonry to structural back-up
- Must be sized properly to span cavity and “ci” and gypsum sheathing
- Moisture resistant (typically hot-dipped galvanized, stainless steel, or zinc alloy)
- Need to provide air/water seal



Types of Masonry Anchors

Common Types

Corrugated:

- Not approved for commercial construction
- Does not adequately transfer loads

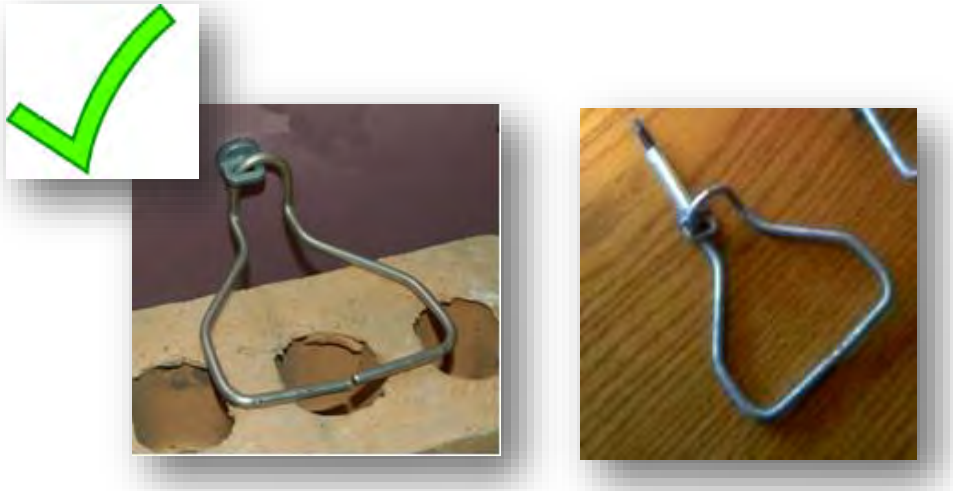
Bracket:

- Stable
- Requires 4 punctures through “ci”
- Multiple thermal short paths
- Difficult to seal

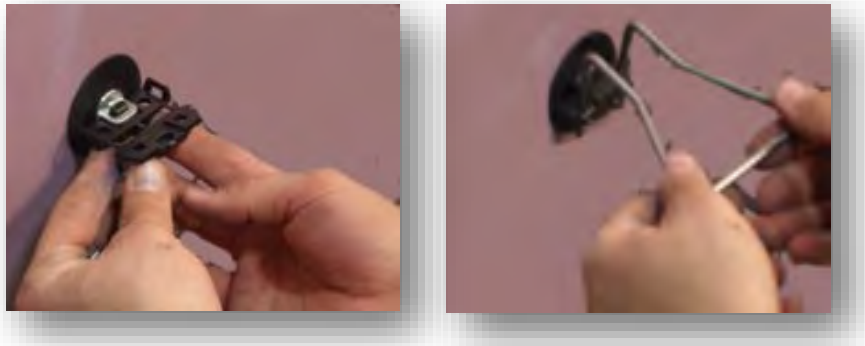
Types of Masonry Anchors

Barrel-Style

Barrel-style anchor:
- *Single* penetration
- Partial seal with integral washer head
- *Self drilling tip*
- *Corrosion resistant*



Barrel *enhanced* with a thermal break head & air/water sealing washer:
- High strength composite resin clips to barrel head
- Decouples pintle from anchor for thermal efficiency
- Washer provides tight air/water seal

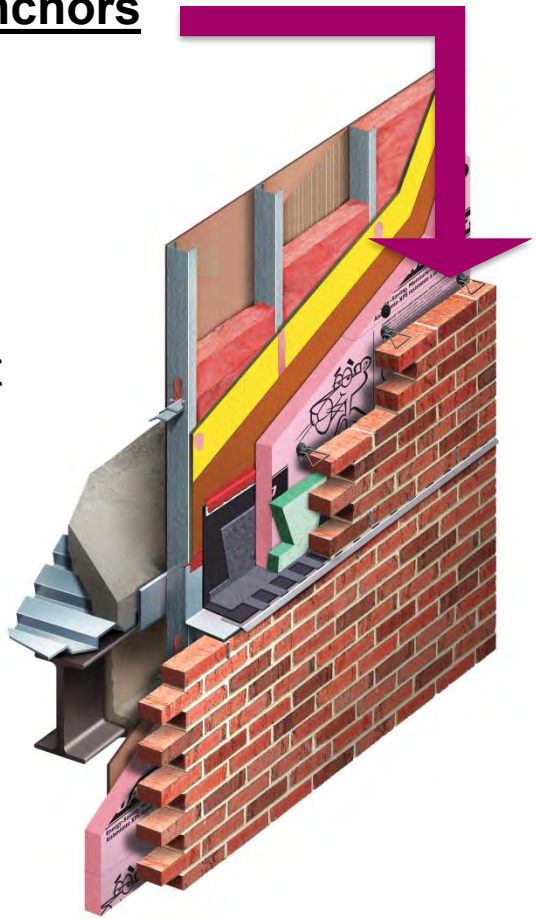


Thermal break head decouples pintle from barrel anchor for thermal efficiency

Air/Water Sealing Washers

2” Brick-Tie Washers for Barrel Anchors

- Solid cap design w/ UV inhibitor
- Pre-spotting prongs for on-the-wall anchor assembly
- Seals anchor penetrations against air & water leakage
- Provides stress relief, prevents wind blow-offs



Systemization

Base Wall:
(steel studs/gyp sheathing)

Barriers, flashings, sealing washers, and drainage preservation

1

Air and water management
Water drainage

Insulation

2

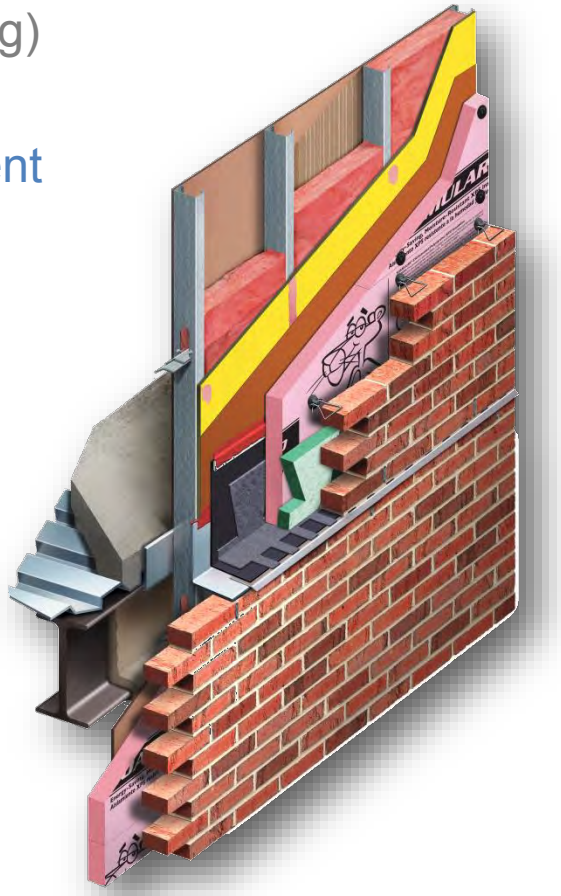
Thermal efficiency
Continuous insulation
Vapor management

Anchors & fasteners

3

Structural considerations

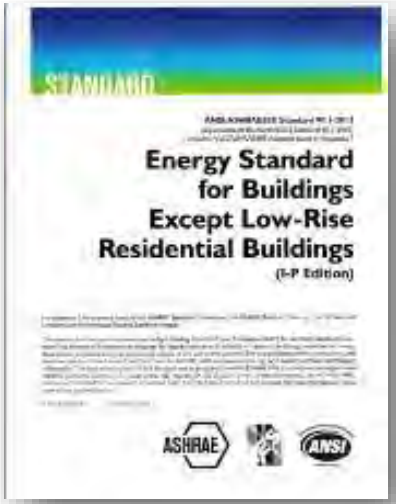
Exterior Cladding:
(Brick)

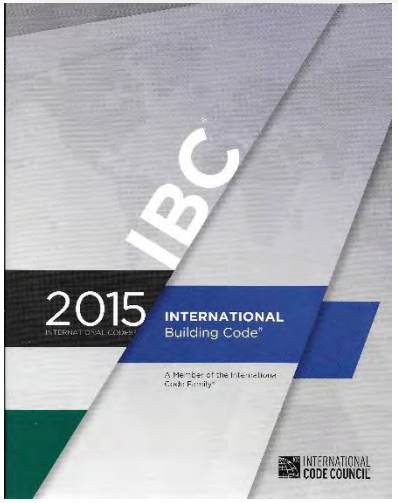


Systemization: All components must be compatible and work together as a **system**. Let's review the system performance requirements.

Systemization: Primary Codes & Standards

- **ASHRAE 90.1** (Energy Standard)
  - Thermal Resistance
  - ASTM E2357, Air Leakage Resistance
- **International Building Code**
  - ASTM E331, Weather Barrier
  - NFPA 285, Fire Propagation
  - ASTM E119, Fire Resistance
  - ASTM E2307, Perimeter Fire Containment
- **Compatibility**
  - AAMA 713, Chemical Compatibility
- **Adhesion**
  - ASTM C794, Peel Strengths



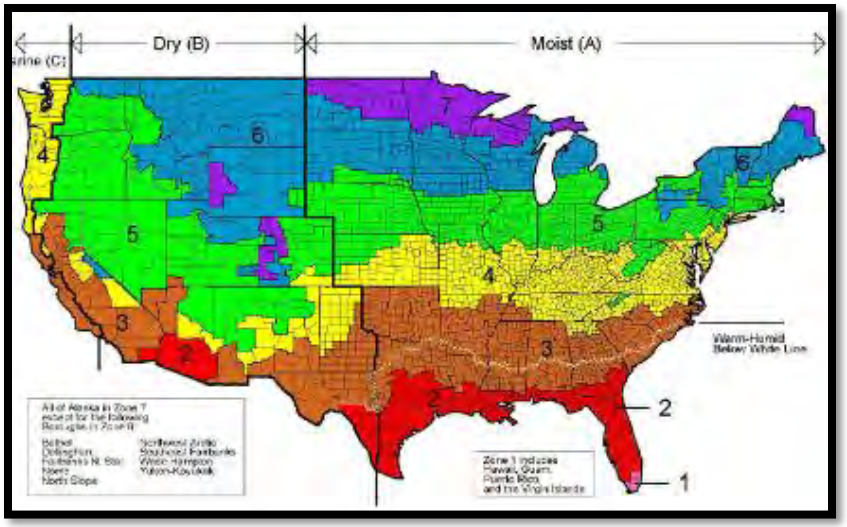


Systemization: Thermal Requirements

ASHRAE 90.1-2007 & 2010*:

Prescriptive requirements for continuous insulation “ci” over steel stud framing
(Red indicates change from previous edition)

ASHRAE 90.1: Climate Zones



ASHRAE 90.1

Zone	Steel Stud Framing	
	Non-Res	Res
1	13	13
2	13	13+7.5
3	13+3.8	13+7.5
4	13+7.5	13+7.5
5	13+7.5	13+7.5
6	13+7.5	13+7.5
7	13+7.5	13+15.6
8	13+7.5	13+18.8

*Current basis of energy code in 38 states
www.energycodes.gov

Note: There are multiple compliance paths.

Air Barrier Standard: ASTM E2357

ASHRAE 90.1, Air Barrier:

- Requires either individual material testing or full wall system testing
- ASTM E2357 requires two wall samples:
  - 1 opaque, 1 penetrated
- Prior to testing the walls are subjected to thousands of pressure deformation cycles
- Assembly is subjected to 1.57psf air pressure
- Qualifies as air barrier if assembly allows air leakage of no more than 0.04 CFM/ft^2

Deformation Loading Sequence

Test	# Cycles/Period	Pressure	Result
Deformation	1/60 minutes	+600 Pa (12.54 psf)	No Damage
Deformation	1/60 minutes	-600 Pa (12.54 psf)	No Damage
Cyclic Loading	2000/5 Seconds (1000 each infiltration and exfiltration)	+/- 800 Pa (+/- 16.27 psf)	No Damage
Gust Loading	2/3 seconds (1 each infiltration and exfiltration)	+/- 1200 Pa (+/- 25.06 psf)	No Damage

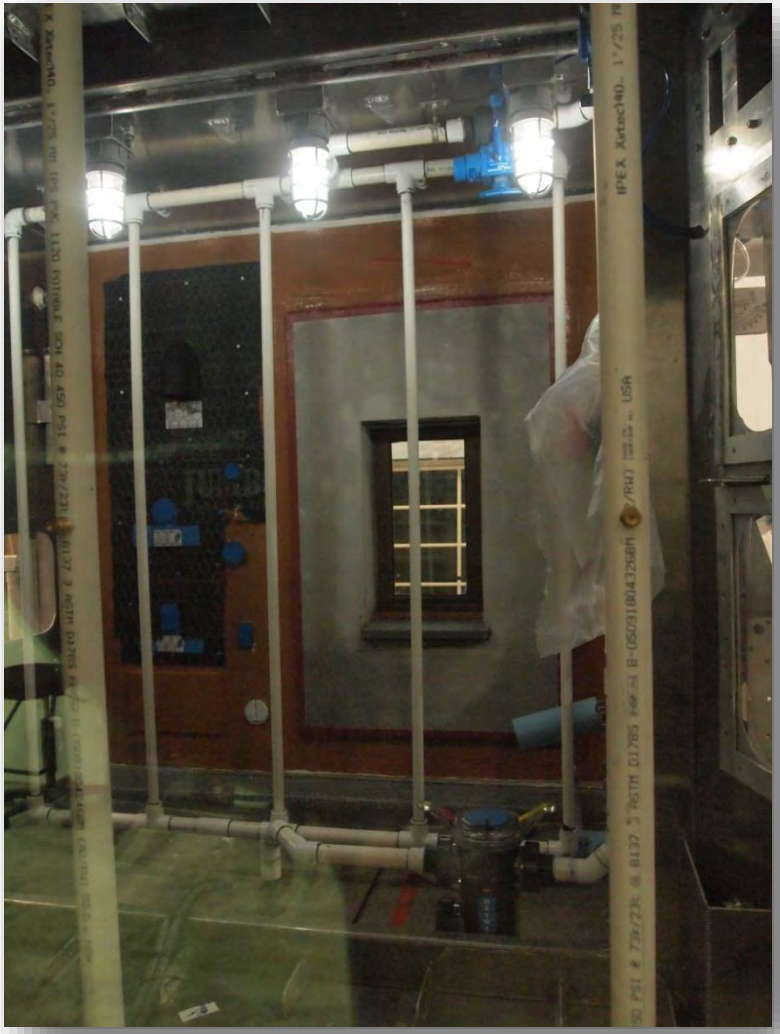
Look for wall system providers that provide this type of information for SYSTEMS

ASTM E2357, Air Leakage Rate After Loading Sequence (cfm/ft²)

Tested at 75 pa (1.57 psf)	Air Infiltration	Air Exfiltration	ASHRAE 90.1 and ABAA Air Barrier Criteria	Qualifies as an Air Barrier Assembly
Opaque Wall	0.0062	0.0053	0.04 maximum	Yes
Penetrated Wall	0.0010	0.0006	0.04 maximum	Yes

Look for wall system providers that provide this type of information for SYSTEMS

Water Resistance Standard: ASTM E331



International Building Code (2015)
Weather Protection, Section 1403.2

- ICC Acceptance Criteria 212*
- Requires ASTM E331 testing
- 2.86 psf pressure differential across wall to push/pull water into system
- Passes if there is no visible water penetration after 15 minutes

*AC 212 “Acceptance Criteria for Water Resistive Coatings Used as Water Resistive Barriers over Exterior Sheathing”

Water Resistance: Standards

Look for wall system providers that provide this type of information for SYSTEMS

(hr:min:sec)	00:15:00	00:45:00	00:53:26	Qualifies Against Water Penetration Testing per ICC Acceptance Criteria 212 Section 4.5, Water Penetration Resistance Criteria
Tested at 137 Pa (2.86 psf)	No Leakage	N/A	N/A	Yes No Visible Water Penetration at 15 minutes
Tested at 300 Pa (6.27 psf)	No Leakage	No Leakage	Leakage reported at square outlet box, between box and opening, and at 1 screw	N/A

*AC 212 “Acceptance Criteria for Water Resistive Coatings Used as Water Resistive Barriers over Exterior Sheathing”

Fire Propagation Standard: NFPA 285

International Building Code (2015)
Exterior Walls, Sections 1403.5 and 2603.5

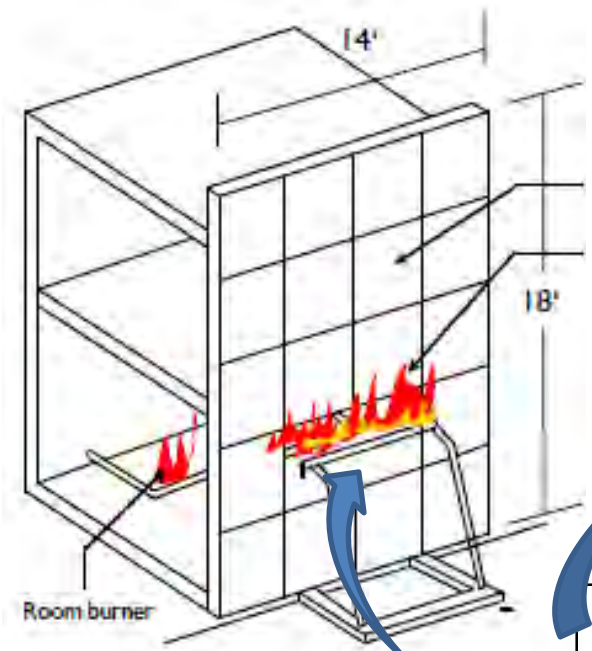
- Required for Types I, II, III or IV construction

Triggers for Masonry Veneer Wall Systems:

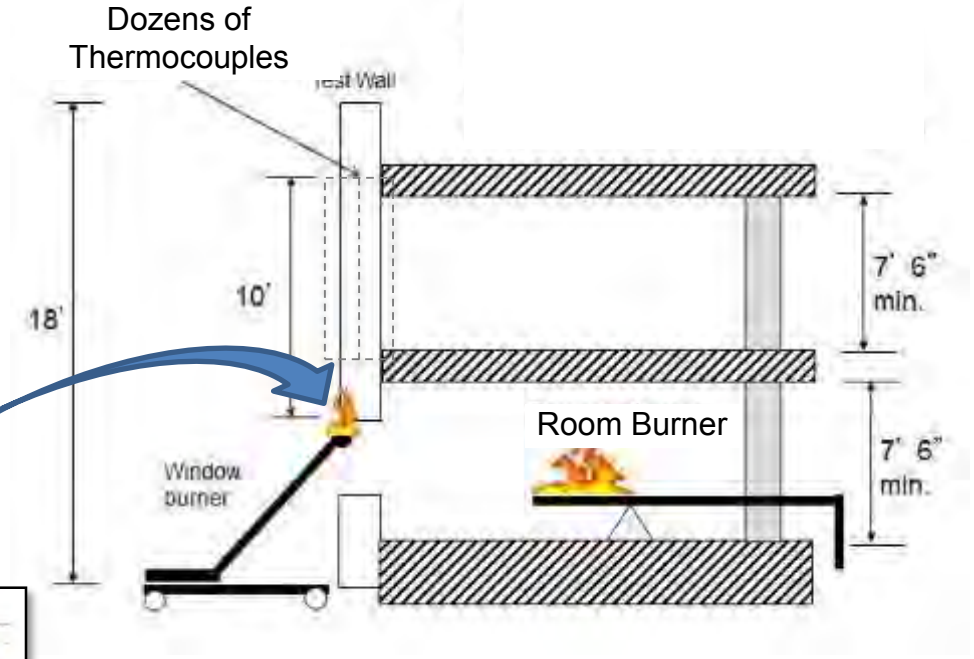
- Building >1 story if it has foam plastic “ci”
- Buildings >40’ if only has a combustible air barrier
- Must be **tested as a complete system**

Conducting an NFPA 285 Test

Test Apparatus and Premise



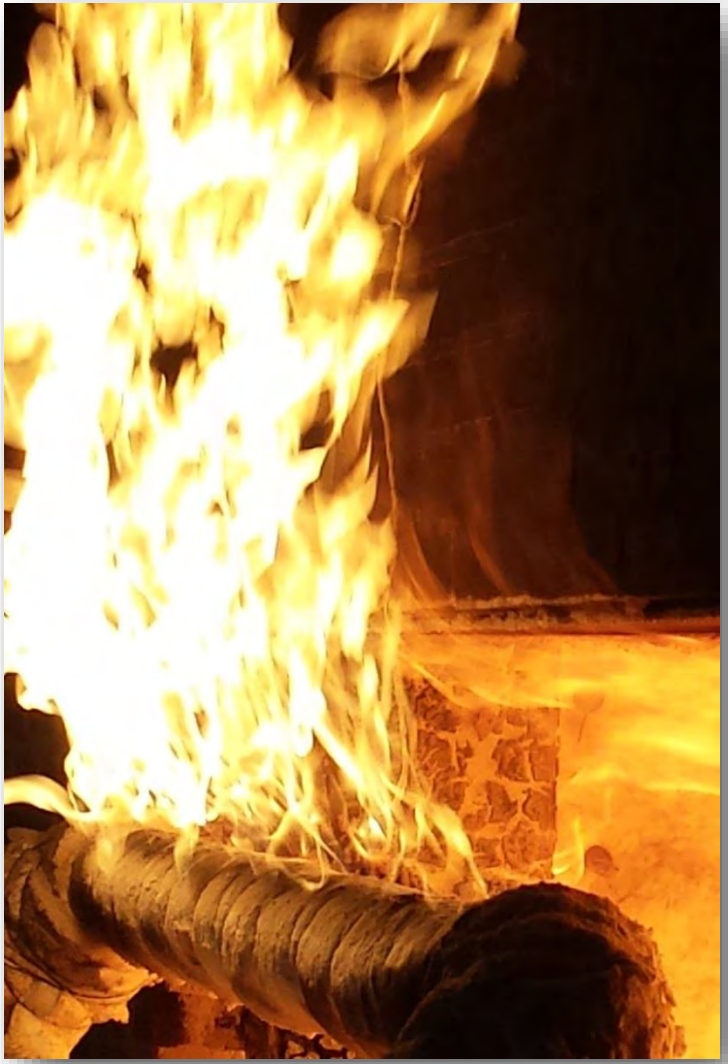
3-Sided Test Rig



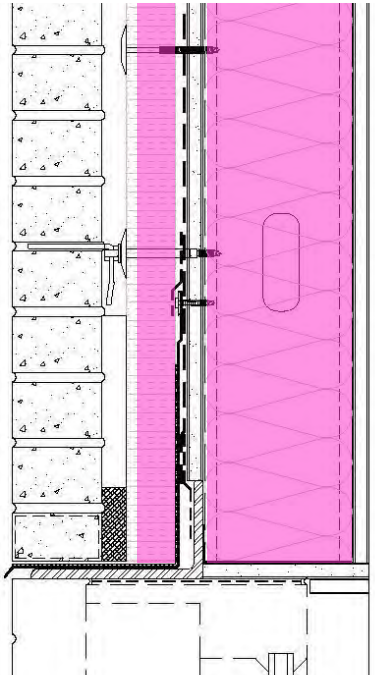
Simulation of potential fire spreading:

- Room burner is turned on
- 5 Minutes – Window burner #2 turns on
- 30 Minutes - Fire is terminated
- Monitor Distance fire spreads - visually
- Monitor Internal wall temperatures

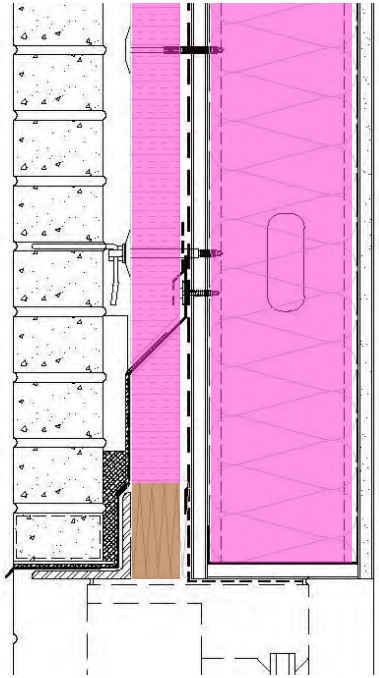
Fire Propagation Standard: NFPA 285



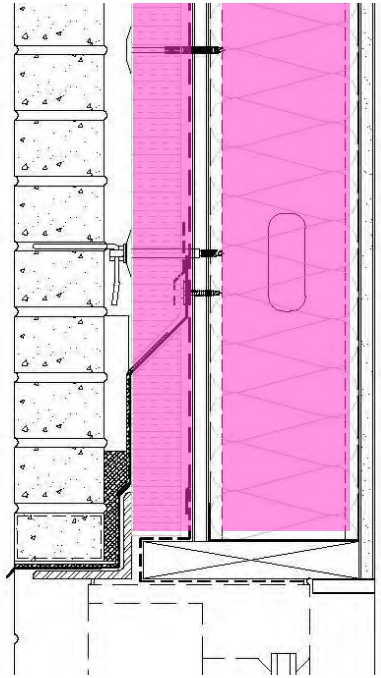
Opening Details: Head



Head Vertical Section
(Continuous Angle)

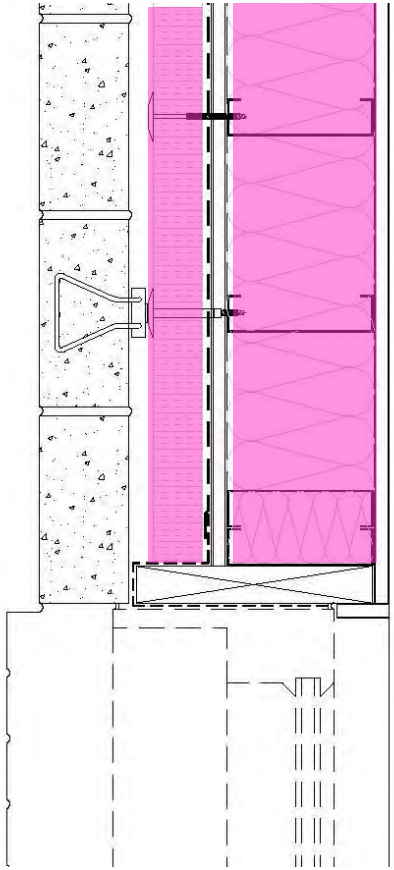


Head Vertical Section
(Loose Lintel)

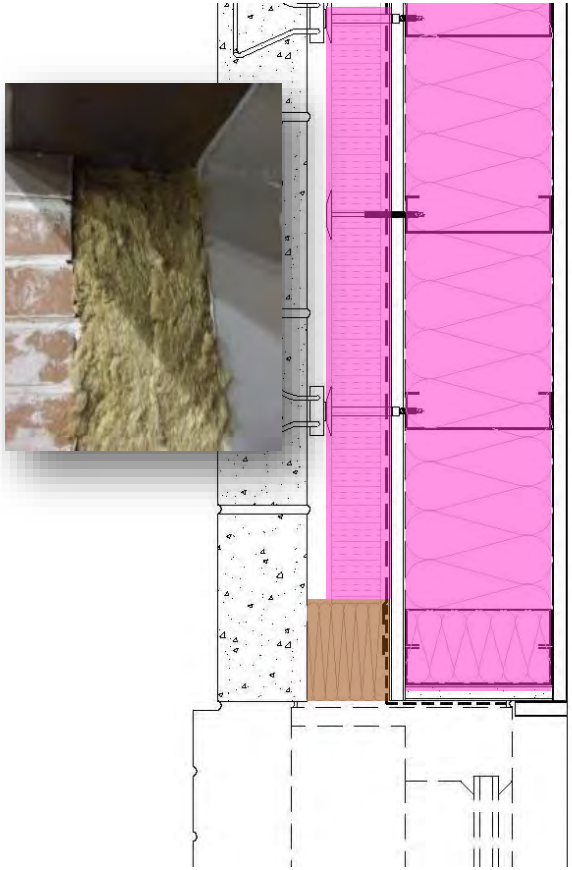


Head Vertical Section
(FRT Wood Closure)

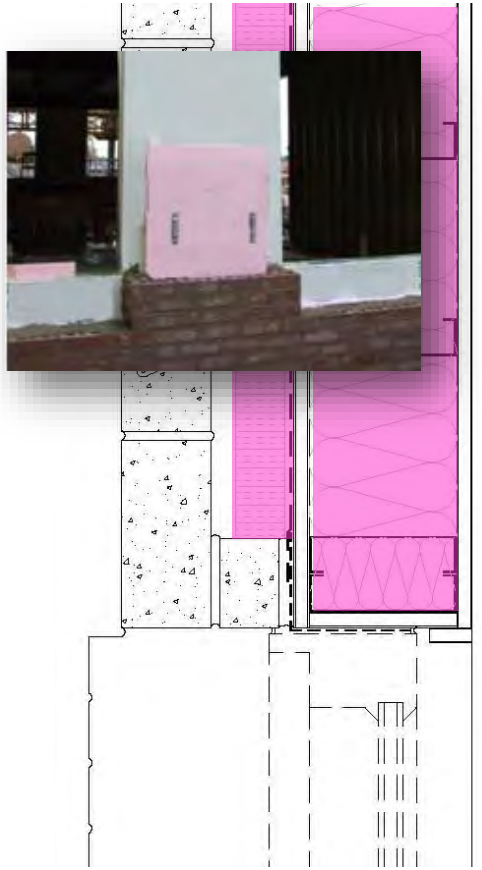
Opening Details: Jamb



Jamb Horizontal Section
(FRT Wood Blocking)



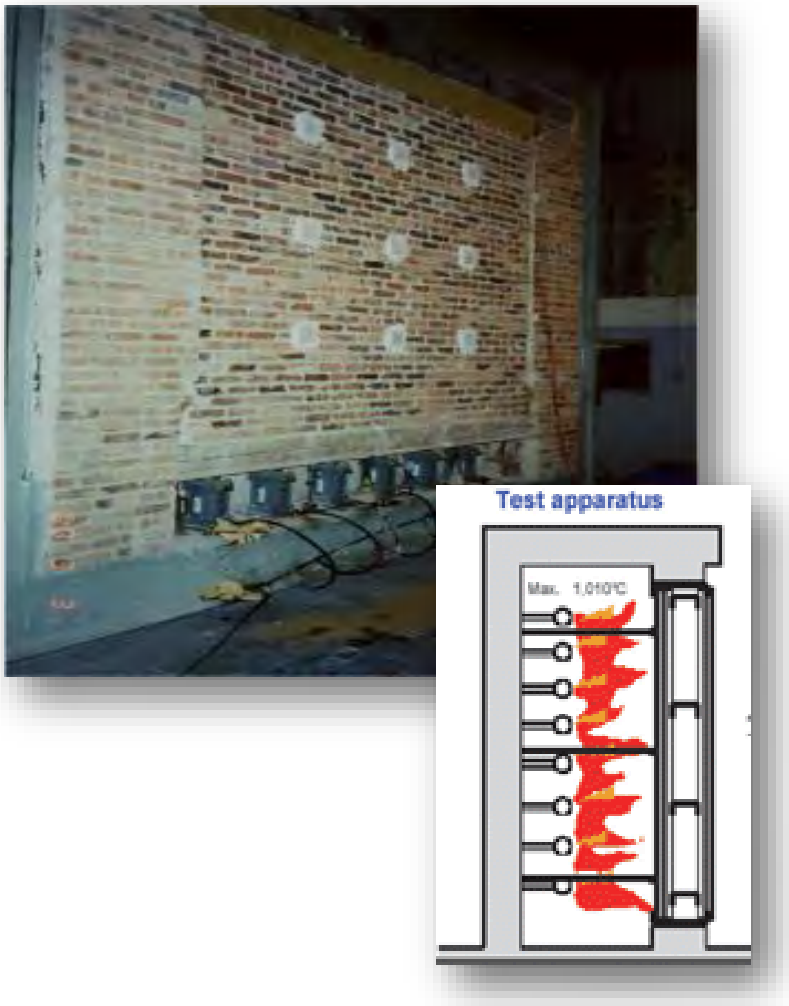
Jamb Horizontal Section
(Compressed Mineral Wool)



Jamb Horizontal Section
(Brick Return)

Look for wall system providers that provide this type of information for SYSTEMS

Fire Resistance: ASTM E119

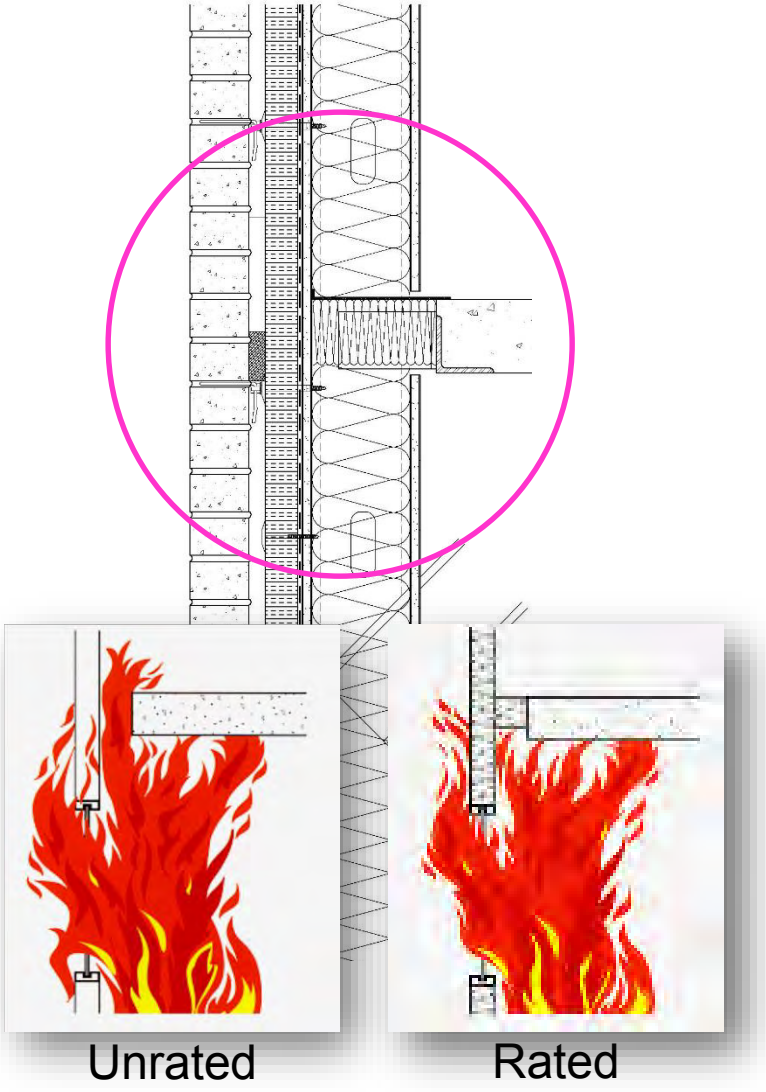


International Building Code (2015)
Fire Resistance of Exterior Walls, Section 602

- Required for some buildings depending on use & occupancy, height & area, fire separation distance, and other details
- Timed (hour) resistance to fire penetration
- Bearing or non-bearing
- Rated from inside and out
- Type of interior gypsum is key
    - Type X or Type C

Look for wall system providers that provide this type of information for SYSTEMS

Perimeter Fire Containment: ASTM E2307



International Building Code (2015)

Perimeter Fire Containment Joint, Section 715.4

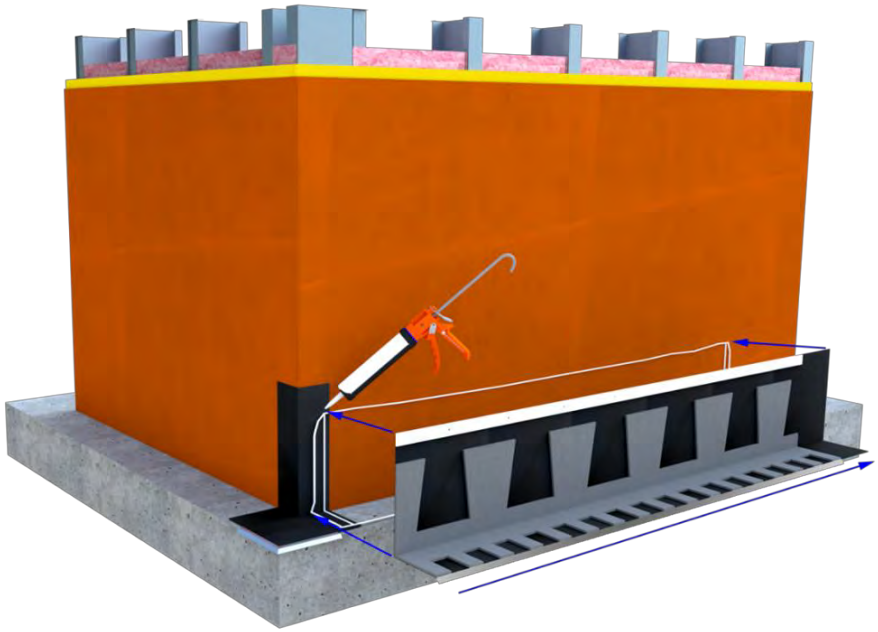
- Joint where the floor system intersects the exterior wall
- Required when the floor/ceiling system is required to be fire resistance rated
- 2 hour joint serves all construction types including the highest rated 2 hour types I-A and I-B.
- Unrated fire safing filled joint can be used when the floor/ceiling is unrated

Look for wall system providers that provide this type of information for SYSTEMS

Compatibility Requirements

American Architectural Manufacturers Association

- AAMA 713- 08 - Voluntary Test Method to Determine Chemical Compatibility of Sealants and Self-Adhered Flexible Flashings
- Evaluates chemical compatibility of layers in contact
- Samples in contact in oven heated at 122°F @ 7 days, & 149°F @ 14 days
- **Pass criteria: No liquification, slumping, degradation (crazing, cracking, softening)**



http://www.aamanet.org

Adhesion Requirements

American Society for Testing and Materials

- ASTM C794 – 10 Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants
- Evaluates adhesion of sealant to a variety of substrates
- Cures in ambient conditions for 14 days THEN pulled at 180^{o} angle
- **Pass if ≥5 pli (resistance) and ≥80% cohesive failure**

http://www.astm.org

Specification Requirements

Long Form (Component) Approach

Primarily defines component properties and component performance, as ”Basis of Design”

Div 04 00 00 - Masonry

- Section 04 21 13 Brick Veneer Masonry

Div 07 00 00 – Thermal & Moisture Protection

- Section 07 21 13 Foam Board Insulation
- Section 07 21 16 Blanket Insulation
- Section 07 25 00 Weather Barriers
- Section 07 27 26 Fluid-Applied Air Barriers
- Section 07 84 53 Building Perimeter Firestopping

Short Form (System) Approach

Primarily defines required system & system performance, as “Basis of Design”

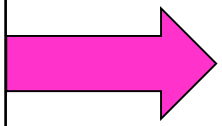
Div 01 00 00 – General Requirements

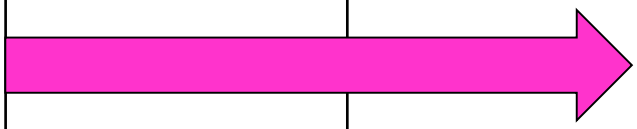
- Section 01 83 16 Exterior Enclosure Performance Requirements

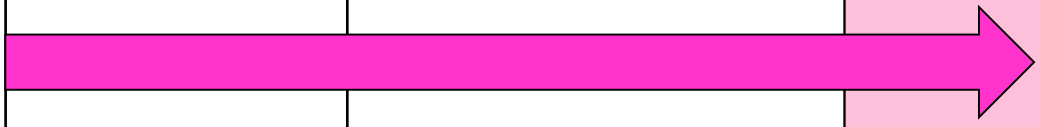
Or combination of both.

Warranty Trends

Warranties Available	Product Warranties (Typical)	Multiple Product Warranties (Common)	System Warranties (Emerging Trend)
•**For a single product, single mfgr** •Material defects only •Provides replacement material only			
•**For a few products, single mfgr** •Material defects only •Provides replacement material only			
• **For multiple system products, multiple mfgrs** • Material defects only • Provides replacement material • **Adds limited labor to remove/replace material**			







Summary: Complete Wall Solution

Diverse Portfolio of Products

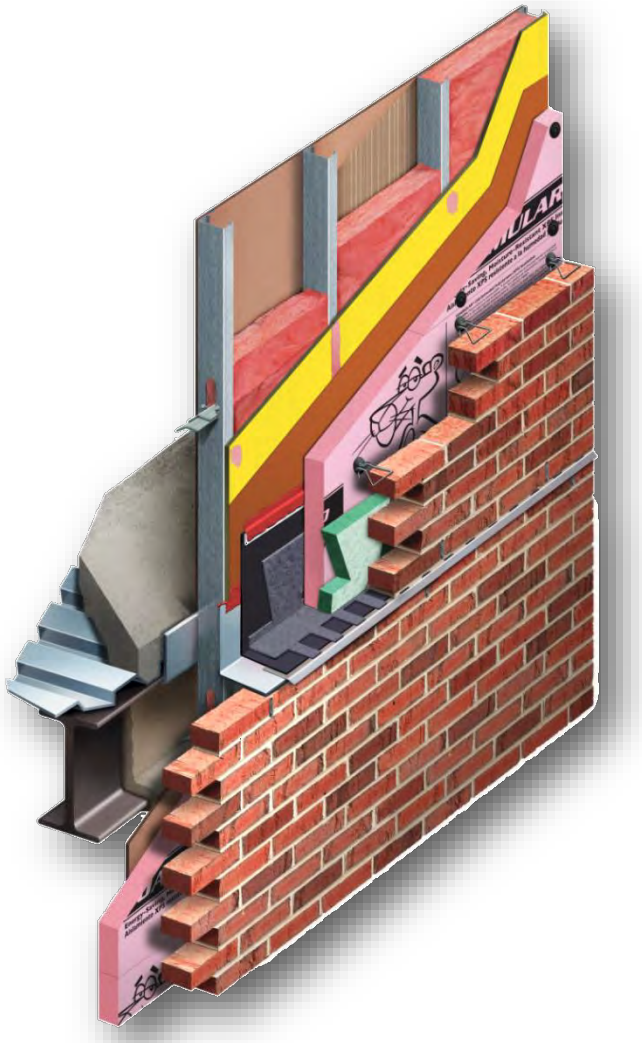
- Cavity/Continuous & fire resistant insulation
- Air/Water/Vapor Management
- Drainage Protection
- Structural Connections

Accessorized

- Sealants and flashing components
- Fasteners & air/water sealing washers

Systemized

- Fully documented, detailed and specified as a system
- Tested together to achieve high performance
- Verified compatibility
- Redundant water resistance
- Verified code compliant for fire resistance, air leakage, weather resistance, acoustics
- Sustainable
- Full system warranty



It ALL must be in the wall.

Questions?

This ends the AIA portion of the presentation. Thank you for attending:

Complete Masonry Veneer Wall Systems, Performance and Specification (Part 2)

- Did you remember to sign in for AIA/CES credit and/or certificates?
- Please be sure to complete the session evaluation.

  Your opinion matters. Share it! Your feedback will help us develop future education sessions

Presented by:

Owens Corning
Name: Susan A. Raneri
AEC Solutions Leader – Northeast Region
C 617.999.2737

Complete Building Solutions

AEC Solutions from Owens Corning

Presented by:

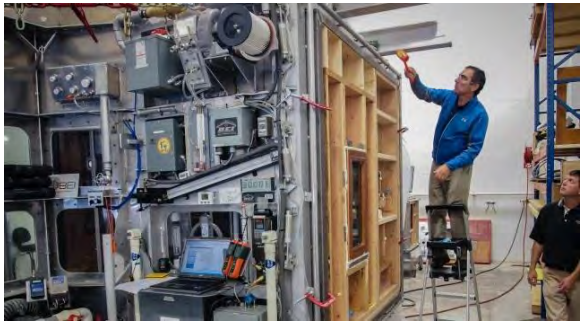
Owens Corning

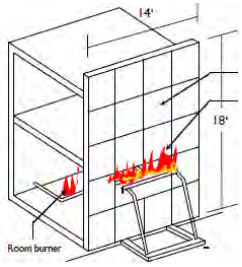
Presented by:

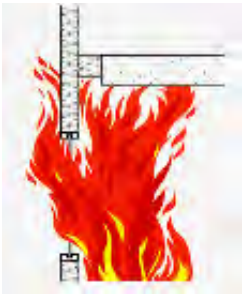
Owens Corning
Name: Susan A. Raneri
AEC Solutions Leader – Northeast Region
C 617.999.2737

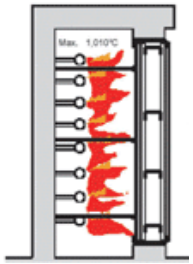
Exterior Wall System Challenges

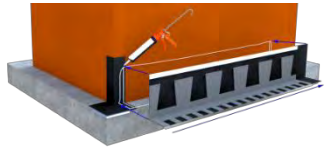
- **ASTM E2357** (full wall system air barrier)
  - Required by ASHRAE 90.1
- **ASTM E331** (full wall system weather barrier)
  - Required by ASHRAE 90.1
- **NFPA 285** (assembly test for spread of fire)
  - Required by IBC
- **ASTM E2307** (perimeter fire containment joint)
  - Required by IBC
- **ASTM E119** (structural fire resistance)
  - Required by IBC
- **ASTM C794** (adhesion)
- **AAMA 713** (compatibility)











Researching all the components & documenting system performance is **time consuming.**

… The CavityComplete® Wall Partnership has done it for you.

Systems with Documented Performance

CavityComplete® Wall Systems

Five
Manufacturers

HECKMANN Building Products, Inc.

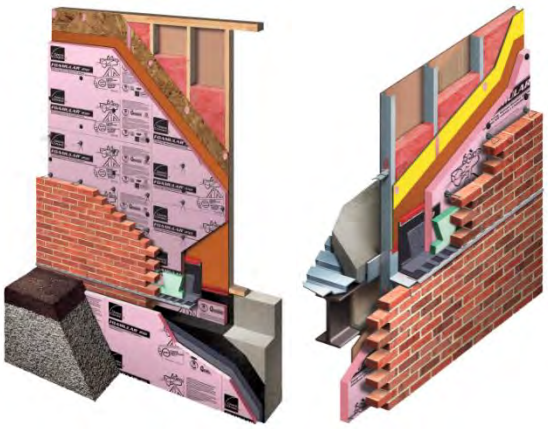
Mortar Net SOLUTIONS

OWENS CORNING

PROSOCO

RODENHOUSE Fastening Systems

Three
Wall Systems



Wood Stud Steel Stud

CMU

Complete
Performance

- Thermal Efficiency
- Moisture Management
- ASTM E2357 (Air Barrier)
- ASTM E331 (Water)
- NFPA 285 (Fire)
- ASTM E119 (Fire)
- ASTM E2307 (Fire)
- Masonry Anchorage
- Sustainability

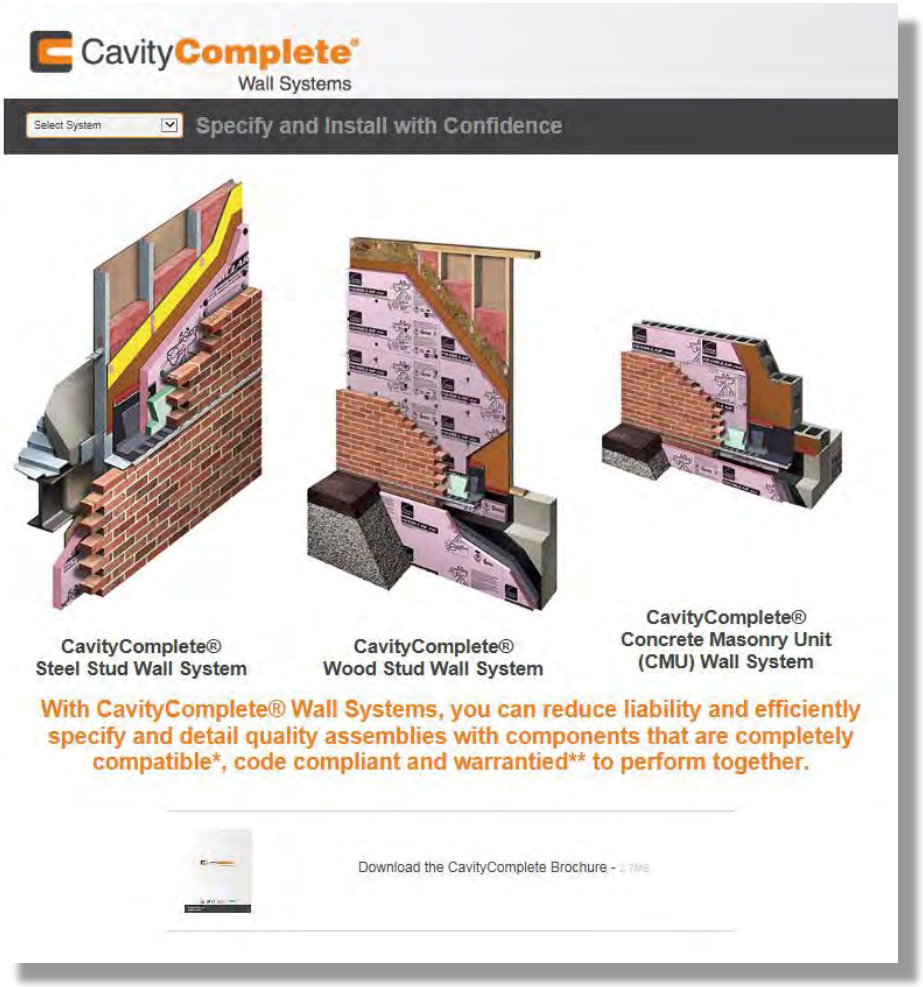
One Website: www.CavityComplete.com

Features all critical performance data & resources

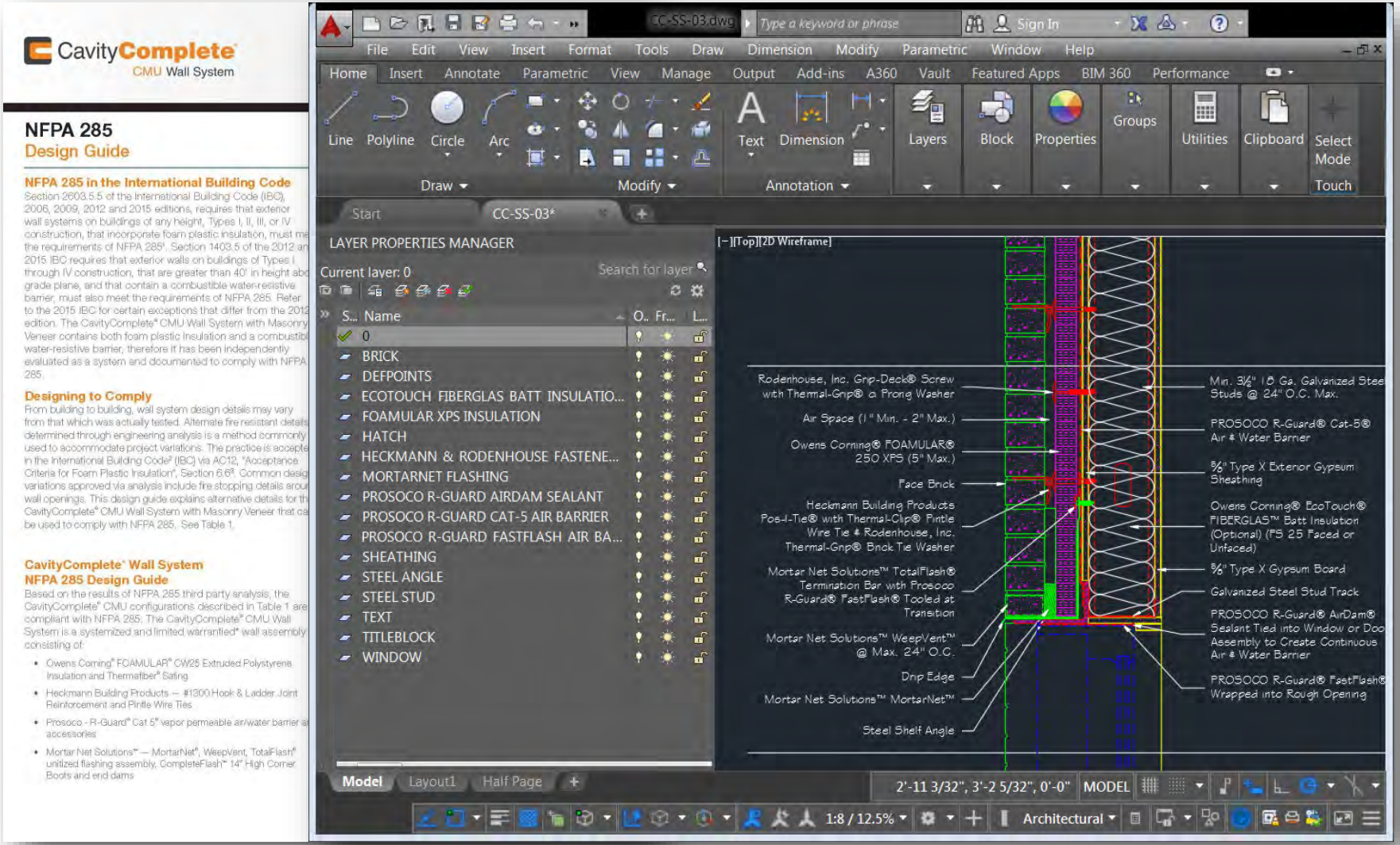
- Product data sheets
- Technical bulletins
- Guide specifications
- CAD Details / BIM Assemblies
- Regional flexibility
- System Warranty
- Multiple Insulation Options
- Multiple Cladding Options
- Multiple Structural Options

<u>Benefits:</u>

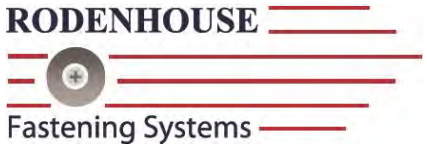
- Reduces risk
- Enhance Efficiency
- High performance



Testing/Documentation



CavityComplete® Wall Systems



Five of the most recognized and trusted companies in the industry have aligned to create a <u>complete masonry cavity wall system</u>.

Complete Performance*

- The CavityComplete™ Wall System features components that were tested together to produce systemized codes and standards compliance data.

Complete Compatibility*

- All CavityComplete™ Wall System components perform excellent on their own … and they are tested and proven to be compatible with each other.

Complete Confidence

- The ***only*** wall system that has been warrantied** to allow architects and specifiers to design and specify with confidence.

*System components were found to be fully compatible with each other in the system. Test results are available at www.cavitycomplete.com/testing.

**See actual limited warranty for complete details, requirements and limitations available at www.cavitycomplete.com.

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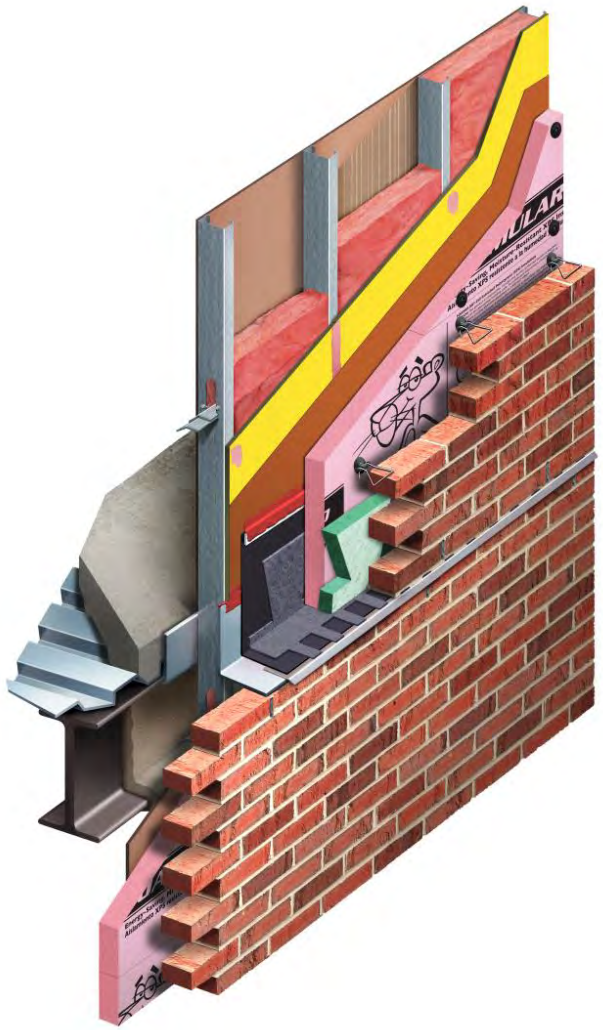
CavityComplete®
Wall Systems

www.cavitycomplete.com



Thermafiber®

- Acquired by Owens Corning in 2013, Thermafiber® is a leading manufacturer of mineral wool for commercial, residential and industrial industry
- Used in multiple applications including:
  - Interior and exterior walls
  - Pipes, ducts, cables
  - Furnaces and kilns
  - Sound enclosures
  - Acoustical ceiling tile
  - Asphalt mixes
  - Brake shoes
  - Office furniture
  - Cements and coatings

www.thermafiber.com

Thermafiber® InSolutions® Tech Service

Thermafiber InSolutions provides fire-containment systems matching your building's design, resulting in easier understanding and approval by local planning commissions. Precise CAD details also aid in installation, inspection and approval. All consultative services are free. We protect your building by customizing our five-step approach:

- **All-Phase Consultation** – Product recommendations, design consultation, detailed AutoCAD® and isometric drawings, testing reports and engineering judgments based on decades of testing.
- **High-Performance Products** – Mineral wool insulation that provides lifesaving fire protection, sound control and energy conservation.
- **Cost-Saving Insulation Hanger Systems** – The patented and UL® approved Impasse® curtain wall insulation hanger system provides superior mechanical support and installation labor savings.
- **Labor-Saving Customization and Packaging** – Custom sizes, shapes, facings, packaging and labeling are provided to save time and money in the shop or on the jobsite.
- **Safe and Sustainable Insulation** – High recycled content ranging from a minimum of 70% and available with up to 90%. Thermafiber mineral wool contributes to 33 LEED® credits across four categories and conserves energy in buildings. In addition to the sustainability of mineral wool, its non-combustible, fireproof nature make it a safer product to use in buildings.

Complete Building Solutions

AEC Solutions from Owens Corning

Presented by:

Owens Corning

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