

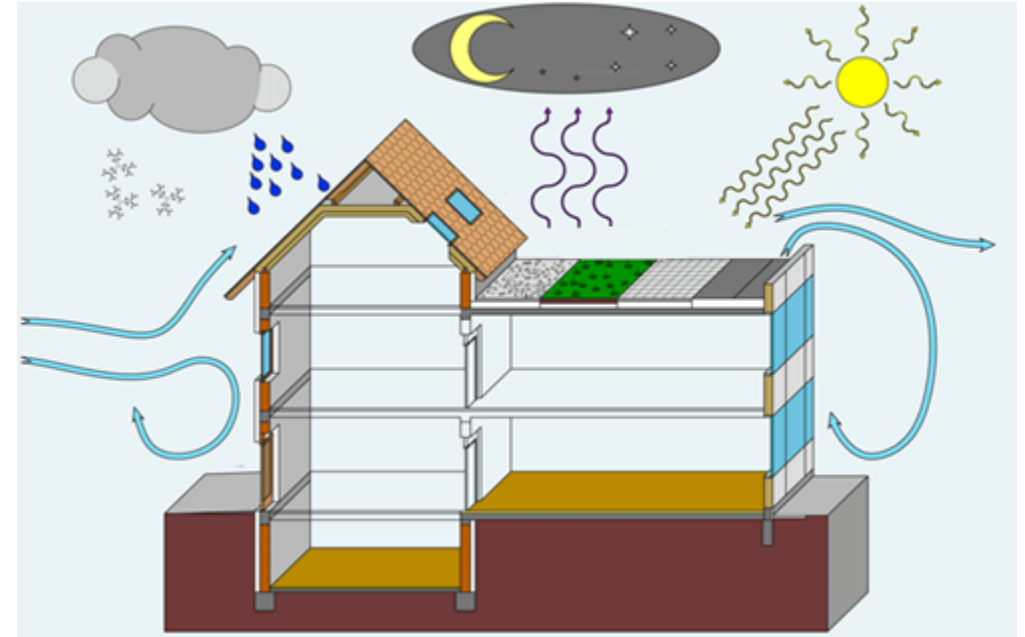


Building Envelope and Tie-In Discussion and Hands-On Demonstration

Carlisle Coatings and Waterproofing

Provider # K031

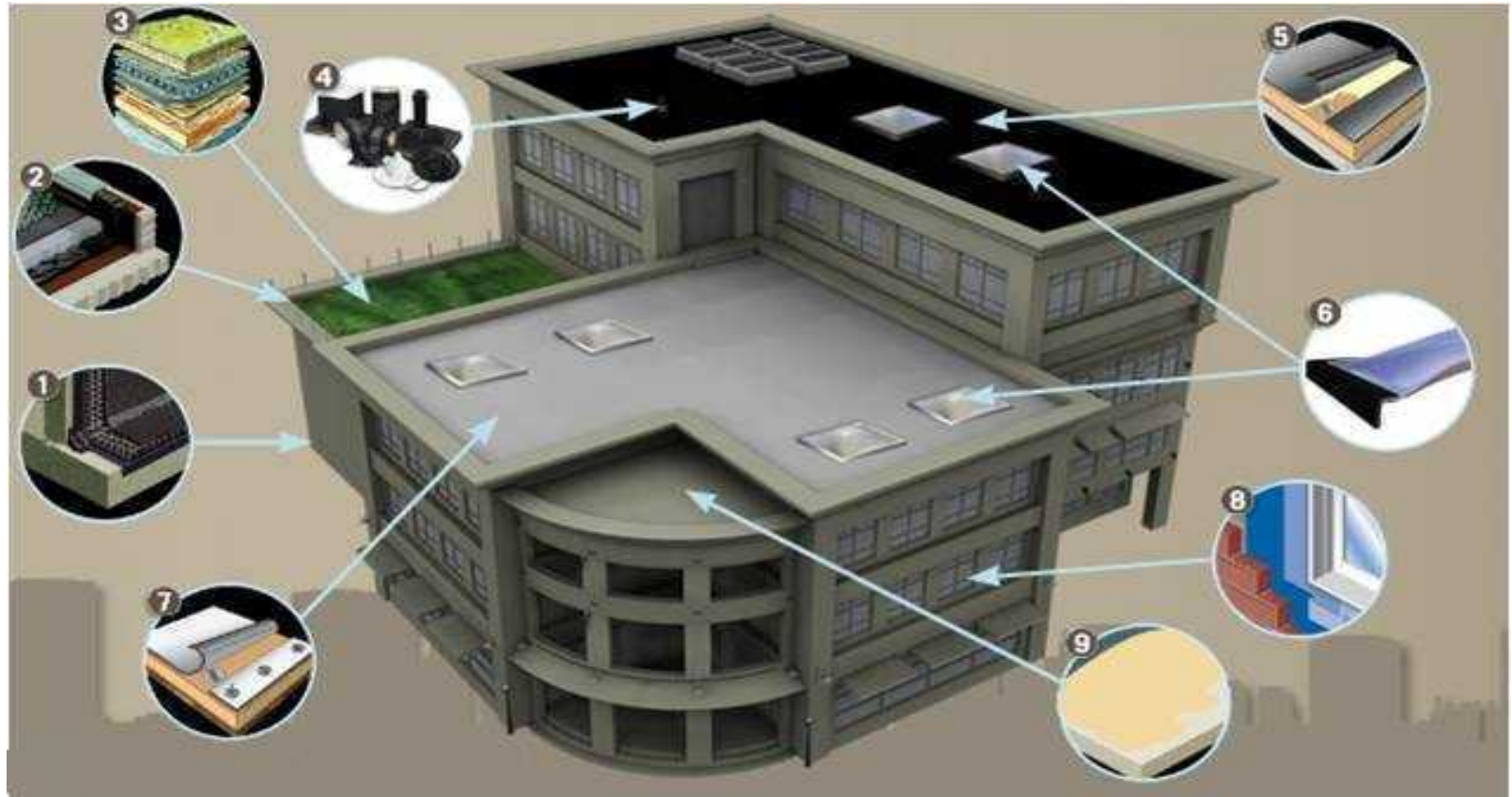
Course # CCM121



Carlisle Construction Materials

Major Manufacturer of Building Components

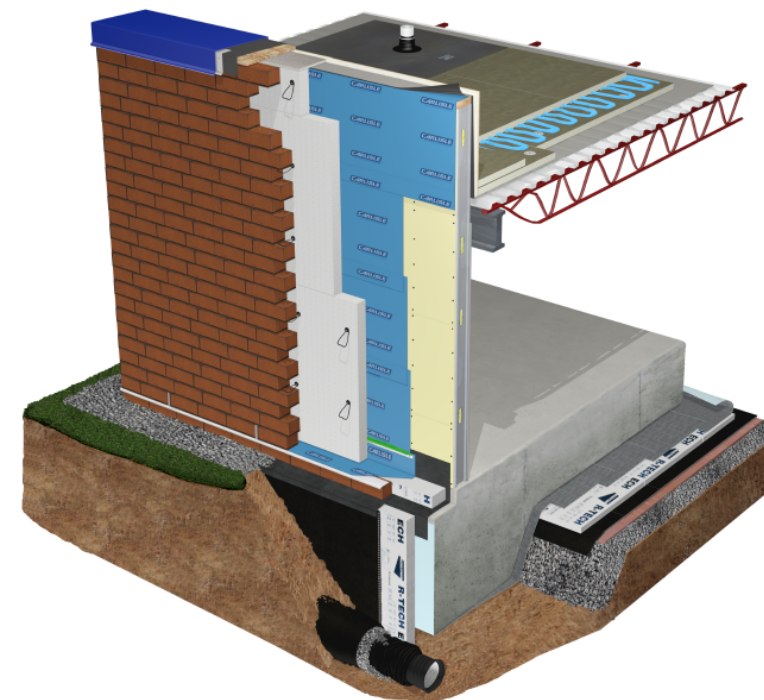
- 50+ years Mfg.
- Roofing Products (White and Black Membranes)
- Air Barriers
- Waterproofing
- Insulations
- Skylights
- Garden Roofing





Single-Source Warranty Protecting All Six Sides of your Building **Including Tie-Ins**

- **Proven Product Compatibility** at tie-ins
- Industry's Most Comprehensive Warranty
- Extensive Products & Details
- Technical Design Assistance
- Limits architect & contractor liability



www.carlislenvelop.com

Carlisle SynTec is a Registered Provider with The American Institute of Architects Continuing Education Systems. Credit earned on completion of this program will be reported to CES Records for AIA members. Certificates of Completion for both AIA & non-AIA members are available on request.

This program is registered with the AIA/CES for continuing professional education. As such, it does not include content that may be deemed or construed to be an approval or endorsement by the AIA of any material of construction or any method or manner of handling, using, distributing, or dealing in any material or product. Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.



This presentation is protected by US and International Copyright laws. Reproduction, distribution, display and use of the presentation without written permission of the speaker is prohibited.

© Carlisle Construction Materials 2014



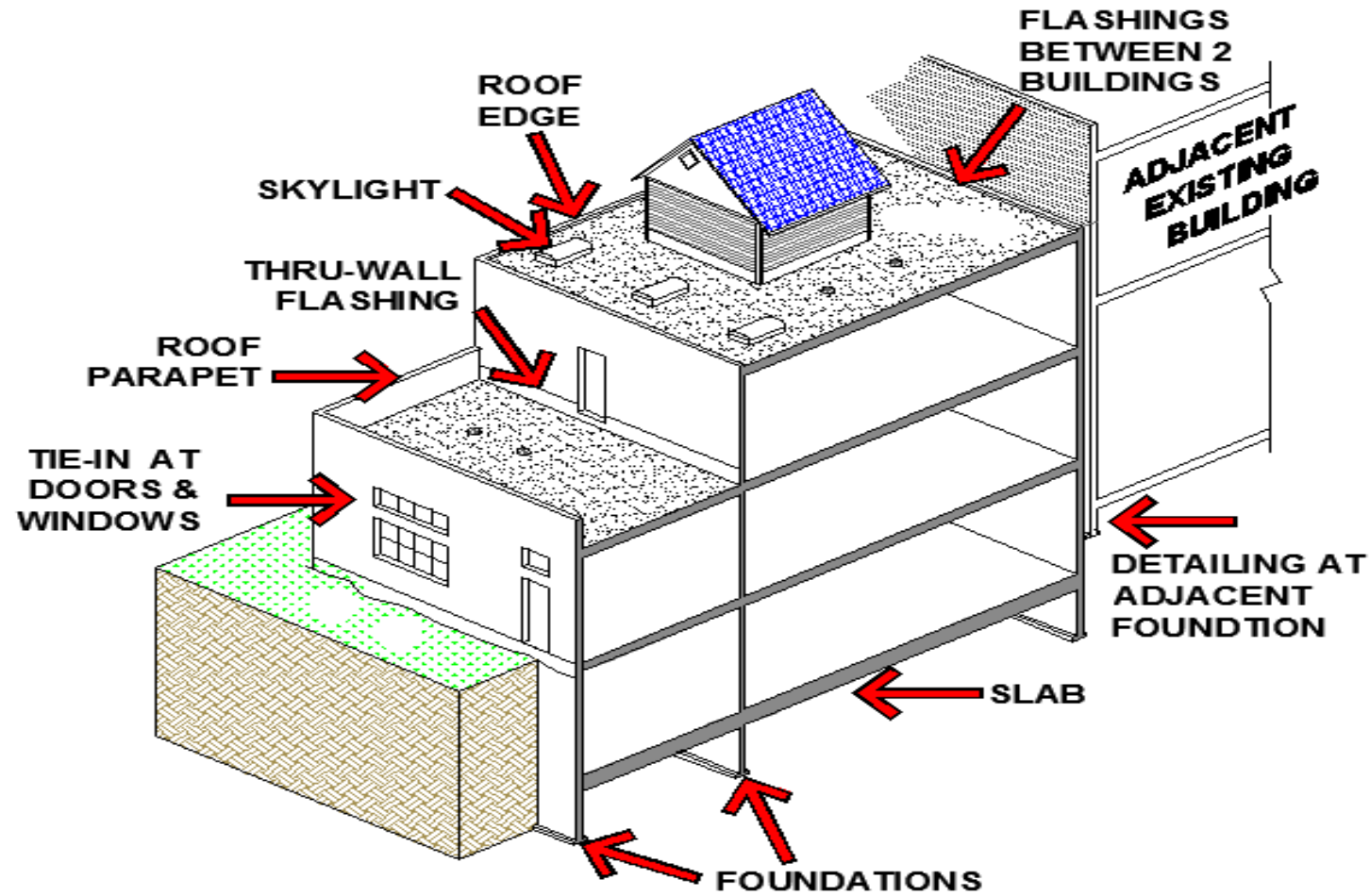
Defining the Building Envelope

The physical separator between the inside conditioned space and the outside unconditioned space.

- Rain Control Layer
- Air Control Layer
- Vapor Control Layer
- Thermal Control Layer



Challenging Building Envelope Areas



Why?

- **What is specified hasn't translated to what is installed.**
- **Coordination and communication between trades requires communication.**
- **Sequencing of installation is misunderstood.**
- **Single source manufacturing is not enforced.**

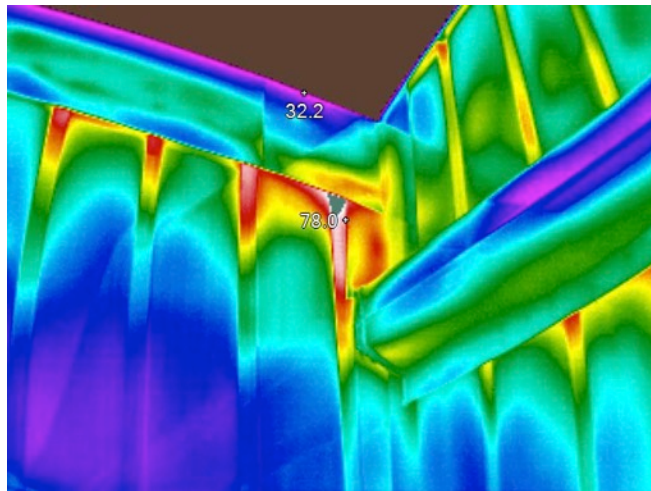
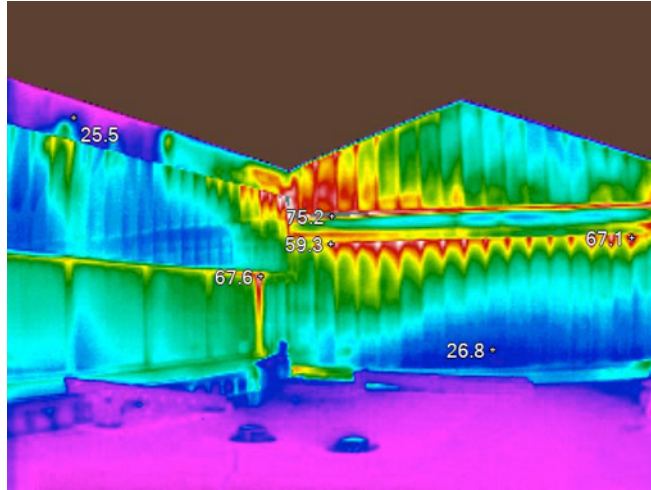
- Confirm compatibility of products and accessories with adjacent materials that are part of building's overall weatherproofing system...(Para. 1.3.A)
- (air barrier) Review connections to below grade waterproofing, through-wall flashing and other adjacent construction. (Para. 1.4.B)
- ...include junction with roofing membrane, building corner condition and foundation wall intersection. (Para. 1.7.B)

Building Envelope Tie-Ins: Current State

- Multiple material manufacturers and trades
- Tie-ins are overlooked
- Performance of tie ins?
- Liability for tie-ins?



Energy Loss due to Air Exfiltration



Humid Air Leakage at Roof to Wall Junction



Other Issues

- Occupant Health & Comfort
- Building Longevity
- Code Compliance



Extensive Repairs



Mold



Rot & Corrosion

Building Envelope Systems

There are 2 connecting systems up for discussion



Below Grade

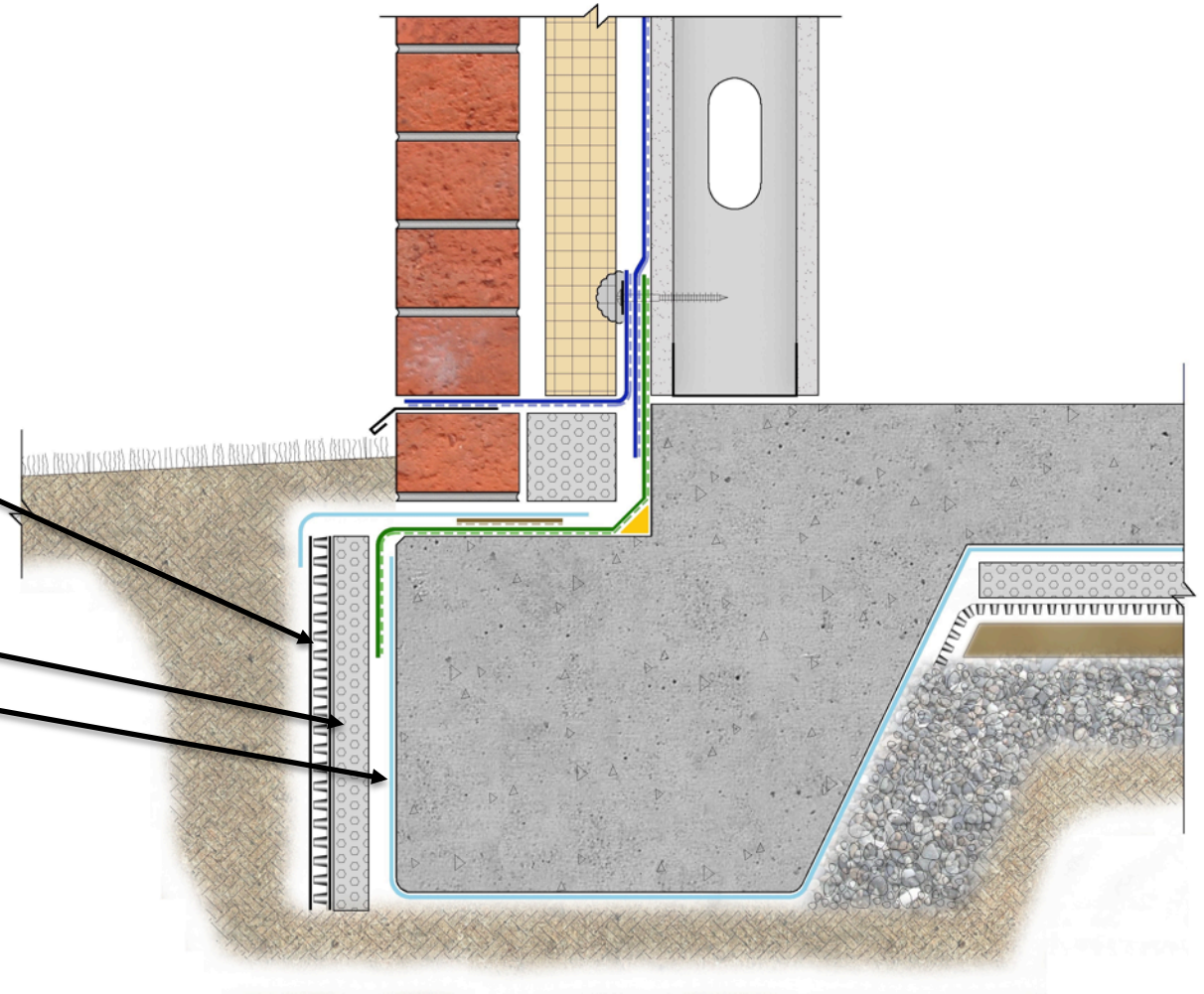


Walls

Below Grade

Below Grade Components:

1. Drainage Board with Filter Fabric
2. Insulation
3. Waterproof Membrane



Sheet-Applied Below Grade Waterproofing

- 60-mil membrane with rubberized asphalt adhesive coated HDPE film.
- Factory-controlled composition with simple peel & stick application
- Can be used in blind-side applications
- Factory controlled thickness



Liquid Applied Waterproofing

- Redundant system
- Monolithic
- Specialized equipment needed



Blindside Waterproofing – Bentonite Clay

- Installed before concrete is poured
- Sodium Bentonite sandwiched between fabrics
- Expands and seals cracks in concrete
- Difficult to fabric penetrations
- Is not air tight



Self-Adhering Blindside Waterproofing

Combines TPO membrane with butyl alloy adhesive

Features

- Continuous Air & Vapor Barrier
- Simple Detailing
- Self Seals Around Fasteners
- Effective Radon Barrier

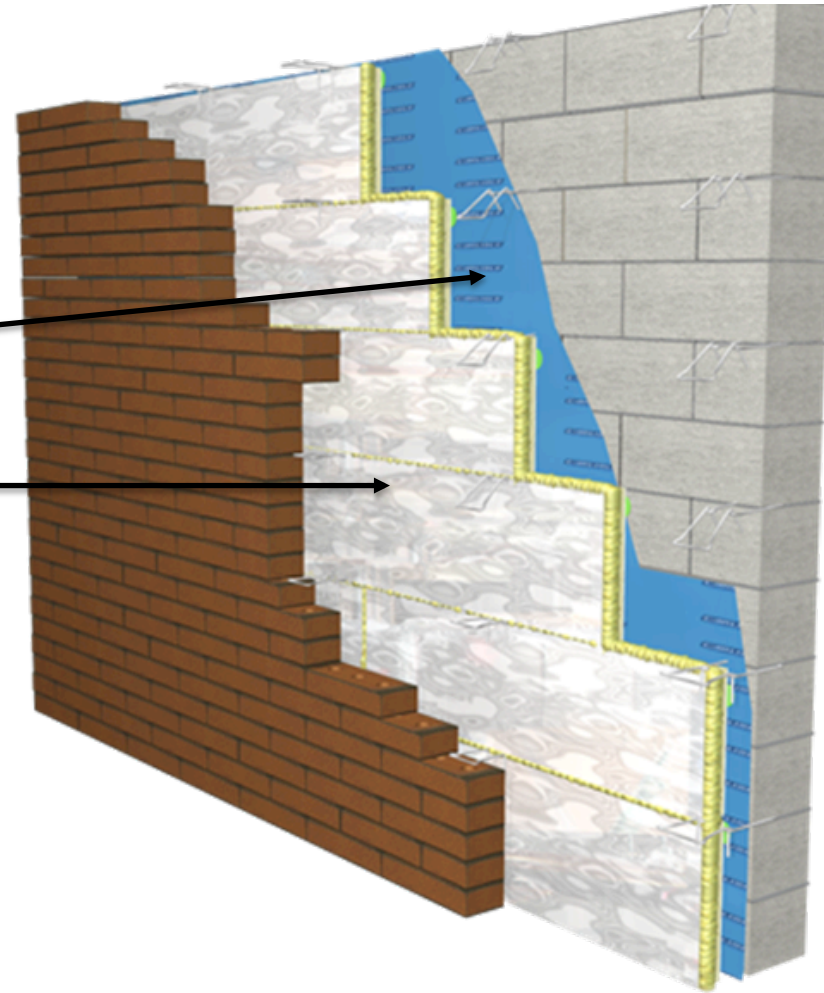


Wall

Wall Assembly Components:

1. Air & Vapor Barrier

2. Insulation



Air/Vapor Barriers

Air Barrier: Controls air leakage into and out of the building envelope.

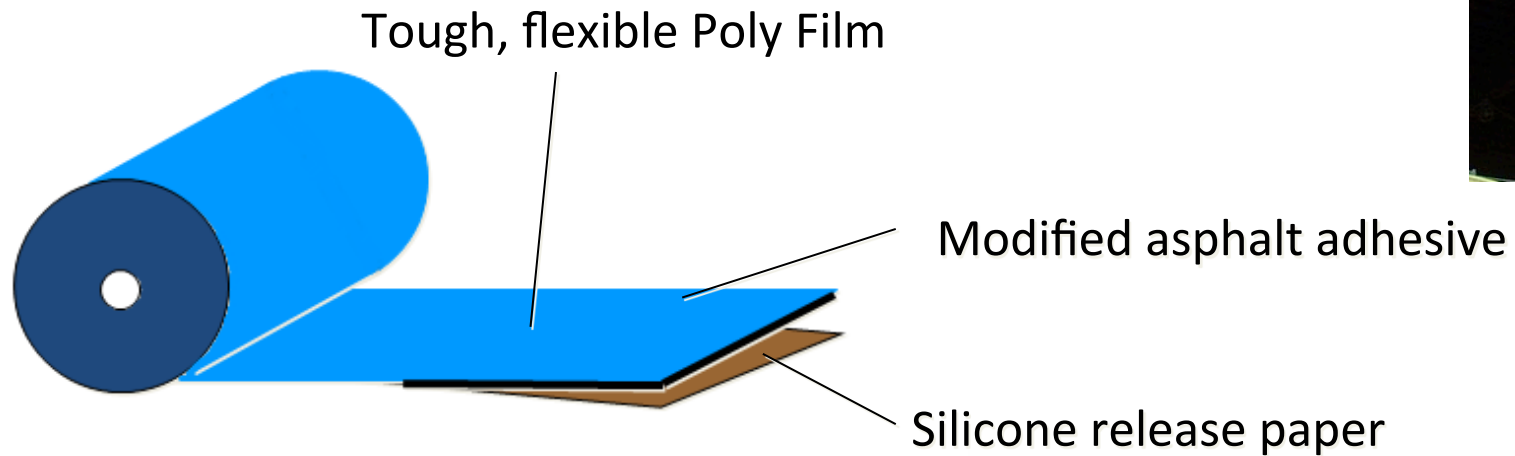
Vapor Barrier: Eliminates or retards the diffusion of vapor into and out of the building envelope



Air/Vapor Barriers

Self-Adhering Sheet

- Factory controlled thickness (40 mils)
- Provides coverage over dissimilar materials
- Self seals around mechanical fasteners
- No need for special spray rigs



Air/Vapor Barriers

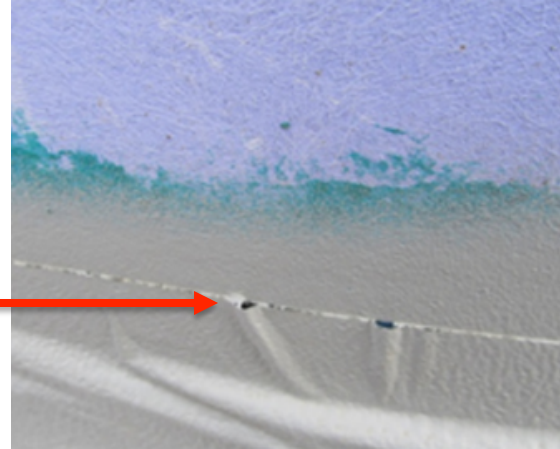
Spray/Roller Applied

- Approx. 40 to 125 mil thick
- Available in different chemistries
- Monolithic
- Quickly covers large areas
- Installed above freezing temperatures

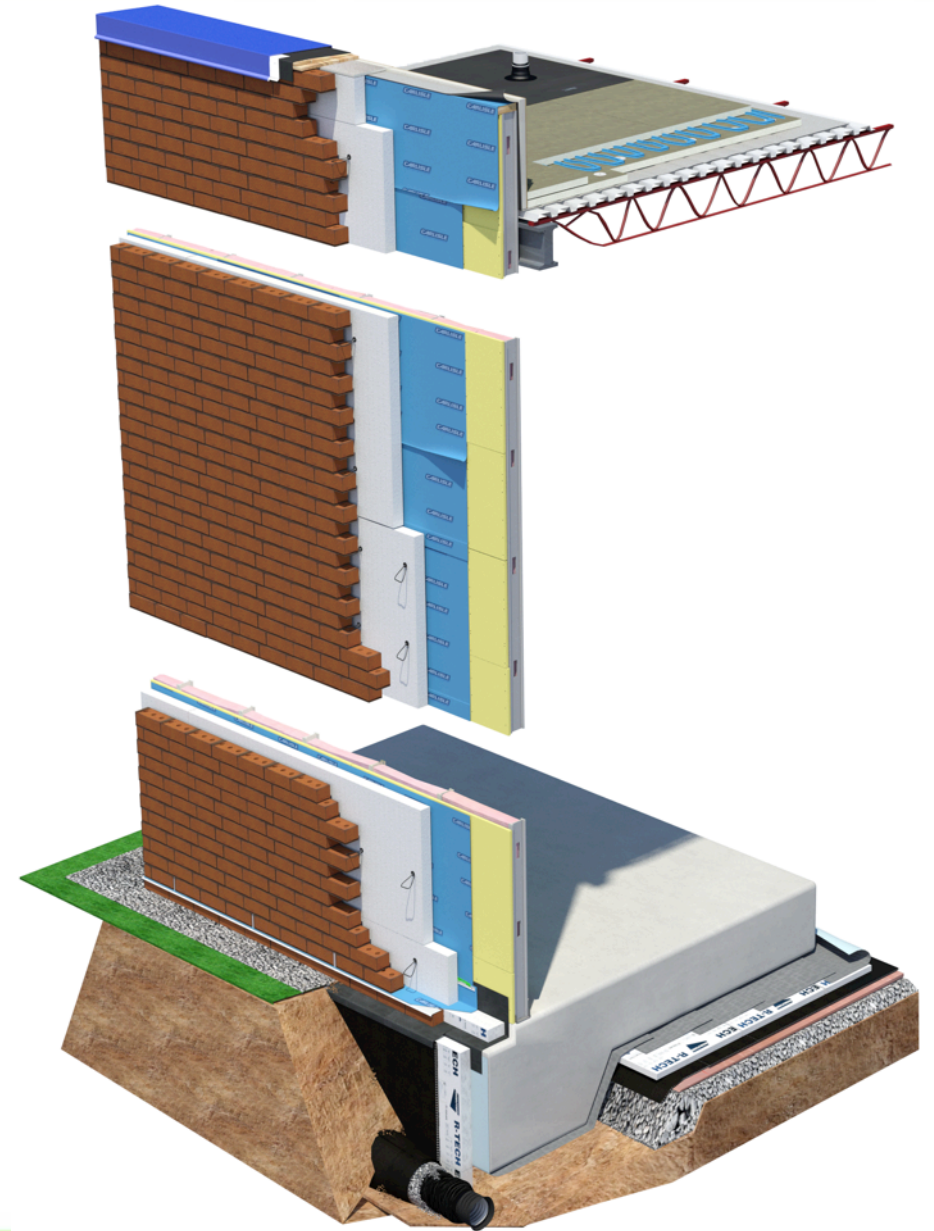


Installation Considerations

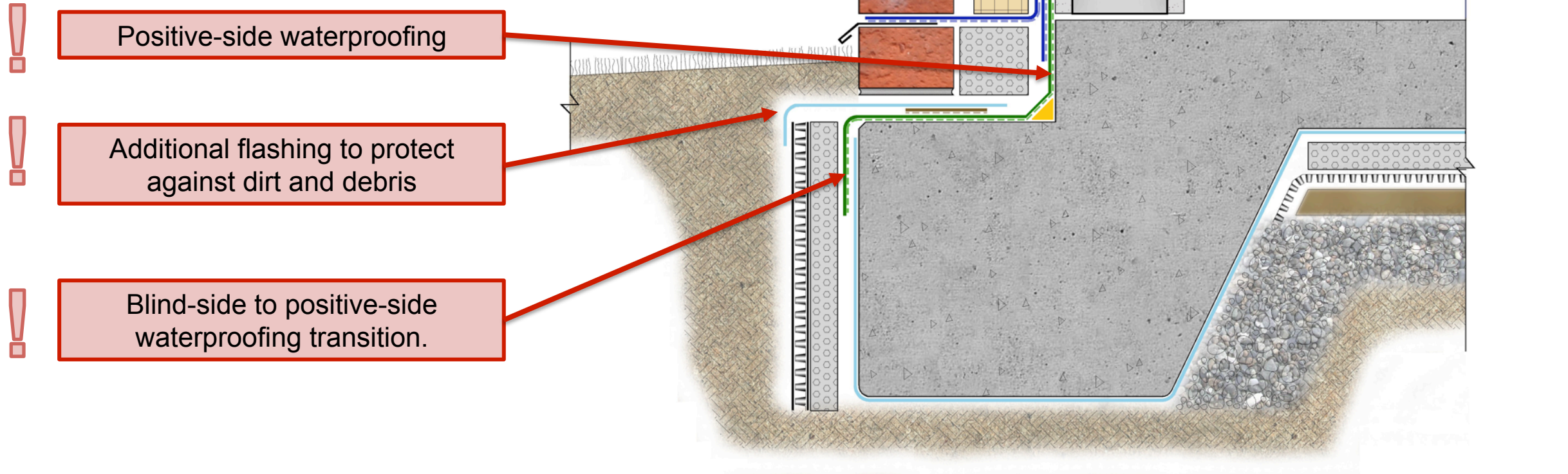
- Substrate prep is key
- Wrinkles and Fish-mouths
- Proper Thickness
- UV Exposure Times
- Temperature Limitations



Tying It All Together



Slab On-Grade Foundation Waterproofing



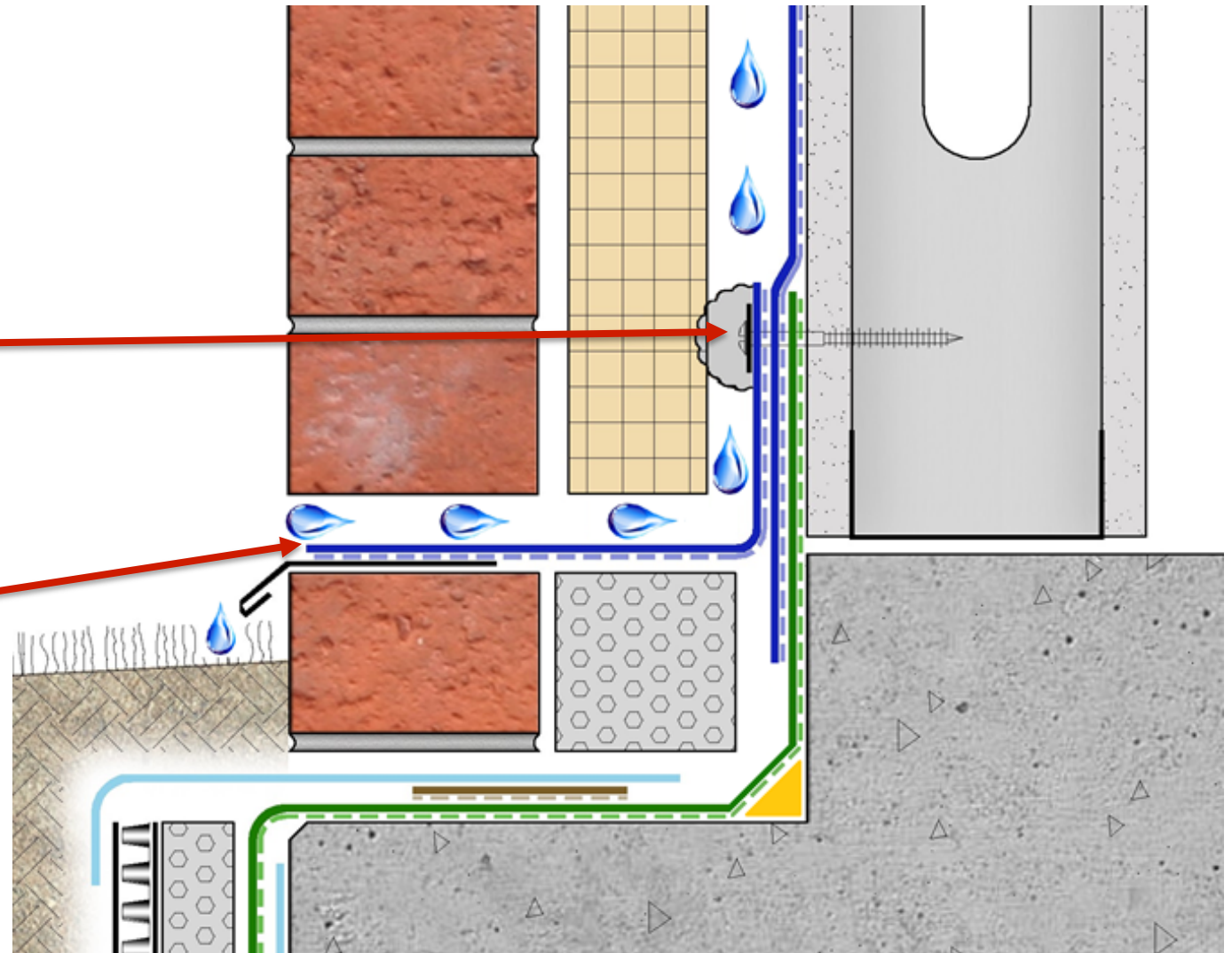
Below Grade Wall to Above Grade Wall Tie-In



Mechanically fastened through-wall flashing with sealant



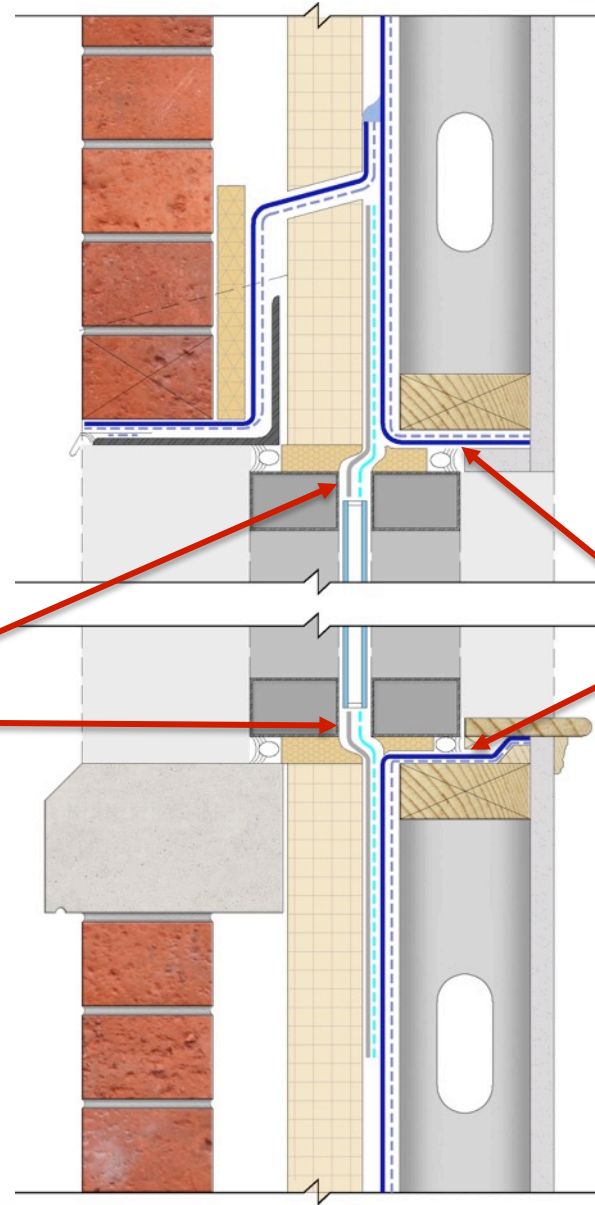
Through-wall flashing



Window Head and Sill Flashing



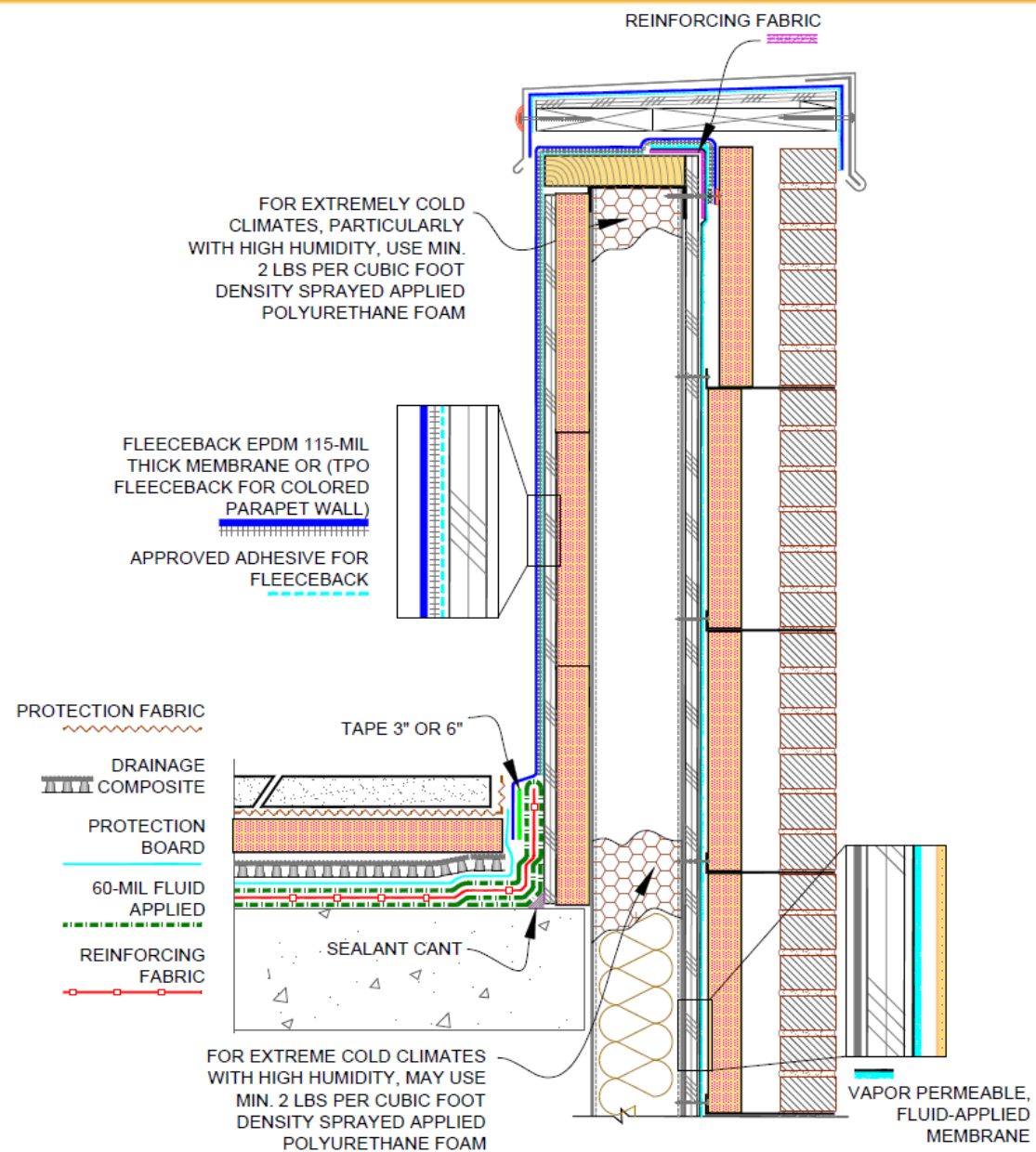
Insert flashing into window sill



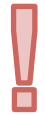
Wrap A&VB into
window opening and
seal window with caulk



Fluid Applied Plaza Deck to Wall Tie-In



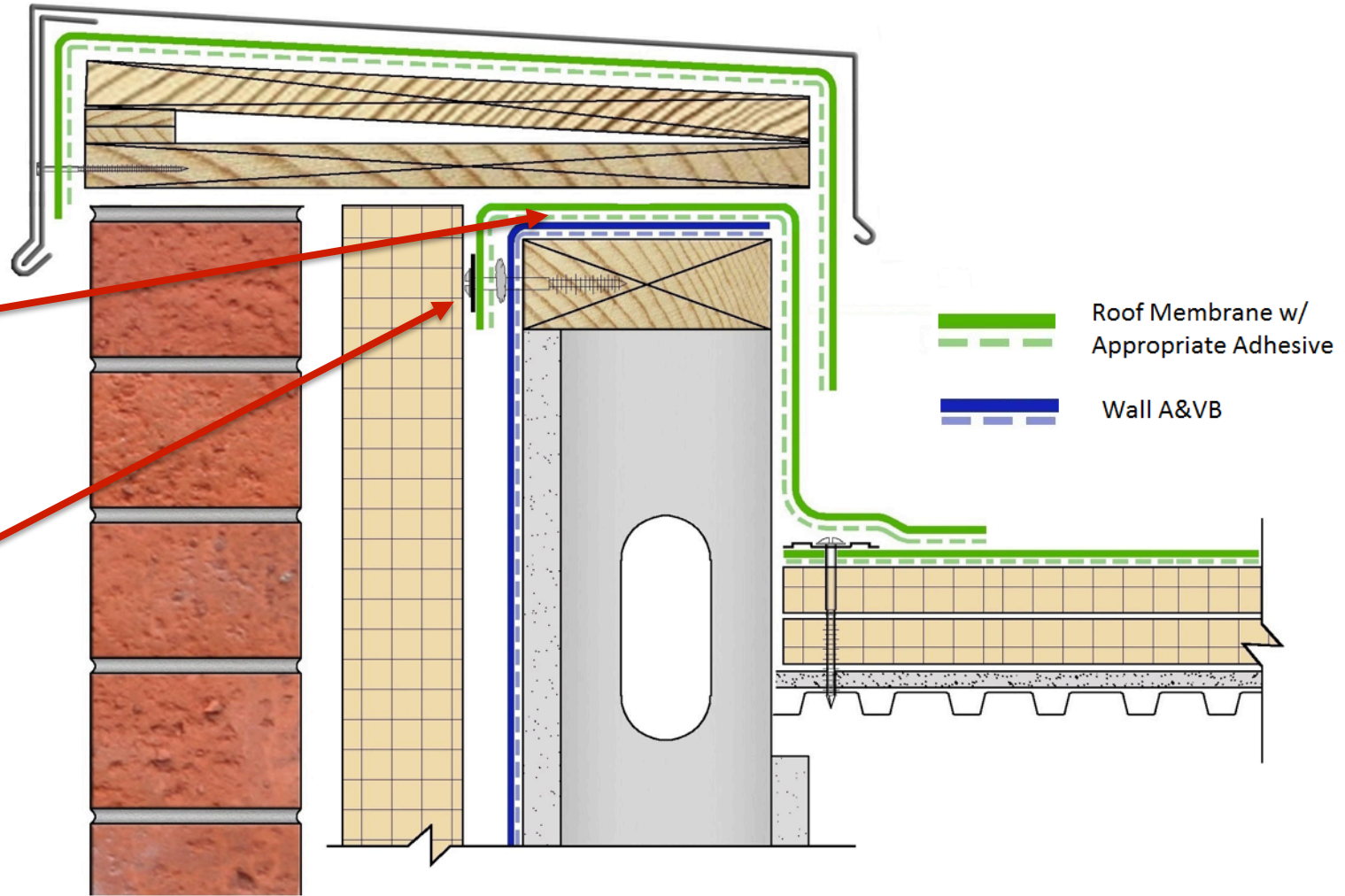
Above Grade Wall To Roof Tie-In



Overlap of wall A&VB and roof membrane Shall be 6" Min.



Use termination bar and mechanical fasteners and sealant



Above Grade Wall To Roof Tie-In

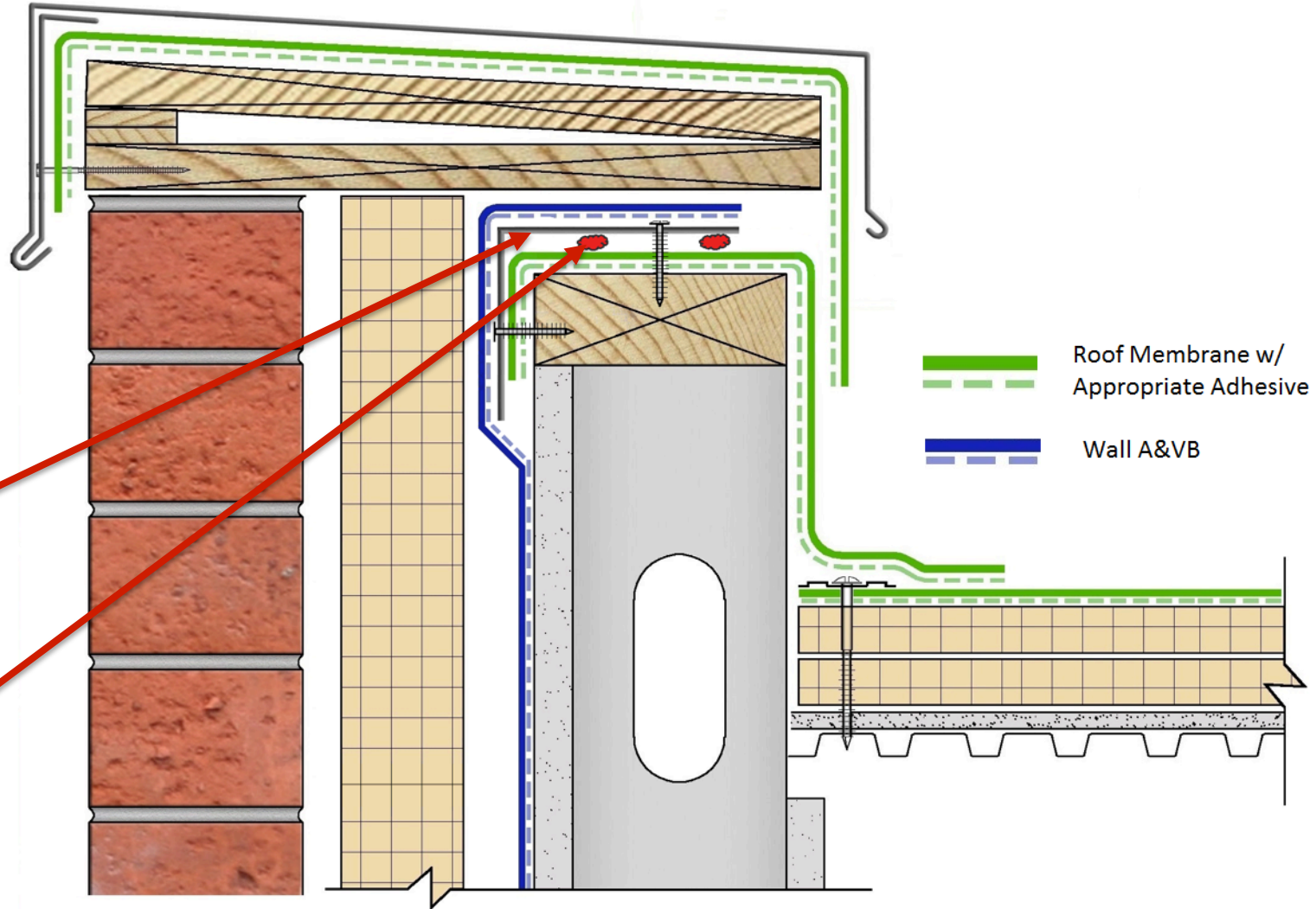
Considerations When Using PVC Membrane



Use a stainless steel separator
when adhering to PVC Membrane



Use two beads of continuous sealant
to protect against air leakage

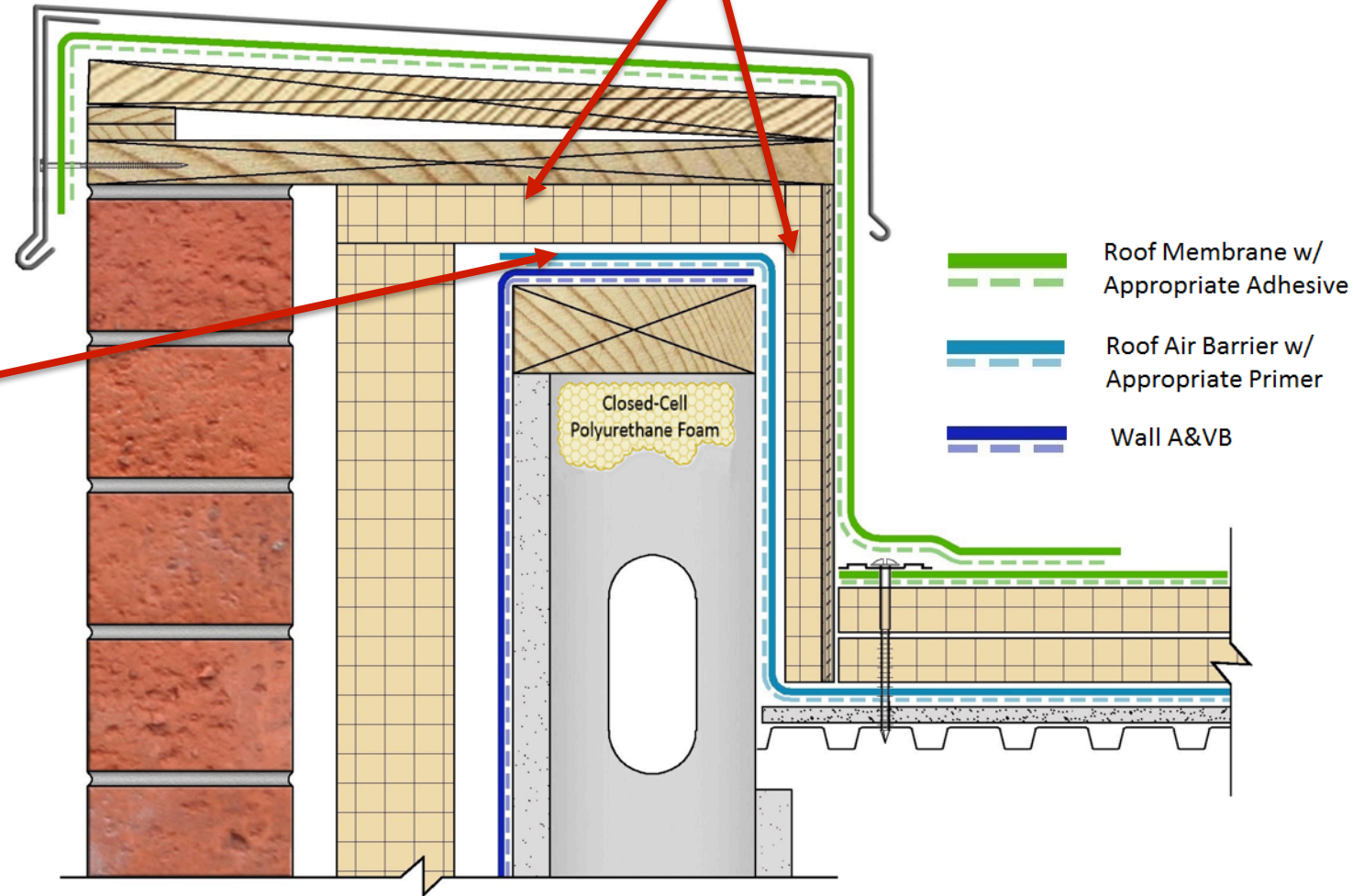


Above Grade Wall To Roof Tie-In

With Separate Roof Air & Vapor Barrier

! Overlap of Wall A&VB and
Roof A&VB Shall be 6" Min.

! Insulation Should Be Continuous,
Wrapping Entire Parapet Wall



Building Enclosure Commissioning (BECx)

A strict, quality-focused process wherein the performance of a facility, system or assembly is evaluated and verified against defined objectives and criteria.

- Predesign
- Design
- Preconstruction
- Construction
- Post Occupancy



Building Enclosure Commissioning

- Inspect all work before it is covered up
 - ASTM Testing
 - Quality Control



Thank You!