EIFS Rain Control

- Both Drained and Perfect Barrier can be used
- Joints and Element can be designed differently

Face Sealed Perfect Barrier

- The problem wall of the past
- Relies on sealant = dangerous
- Often used moisture sensitive OSB and exterior gypsum

Beware of EIFS:
They must be done correctly
They leak at joints
Avoid moist sensitive substrate
Substrate + moisture = problem

- Moisture sensitive substrates are a problem

Moisture sensitive substrates are a problem

Drained EIFS

Feels good, but ....
Additional complexity
May trap water in wall
May require fasteners

Drained EIFS

• Drained Joints!
• Protects substrate against incidental water
• Allows adhesive attachment
• Slow drying ... So?

Now required for OAA insurance
Dual Barrier?

BCC Ruling

- Wood frame hotel in GTA
- Face-sealed joints
- Over Tyvek
- Drained?

- Meet Code?
- Meet OAA?

Minimum Recommended EIFS Wall Rain Control Strategies

<table>
<thead>
<tr>
<th>Quality</th>
<th>Exposure A</th>
<th>Exposure B</th>
<th>Exposure C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>FS: D</td>
<td>DB: DJ</td>
<td>DB: DJ</td>
</tr>
<tr>
<td>2</td>
<td>DB: DJ</td>
<td>DB: DJ or D</td>
<td>D</td>
</tr>
<tr>
<td>3</td>
<td>DB: DJ</td>
<td>D</td>
<td>PM</td>
</tr>
</tbody>
</table>

Face-sealed EIFS are not recommended for any architecturally-designed applications, and will not be covered by the OAA Indemnity Plan.

Exposure Classes

- A: Two-stories or less, with good overhangs and suburban or urban exposure
- B: Low-rise without overhangs, mid-rise suburban or urban exposure.
  - Open or seaside exposure for A
- C: High-rise, all exposures. Open or seaside exposure for B

Note: different orientations and heights may have different exposures.

Quality Classes

1. Full-time third party inspection, experienced crew, detailed design and documents (e.g., 3-D isometrics for details)
2. Intermittent inspection, average crew, average design and documents
3. Little or no inspection, inexperienced or rushed crew, simple design and limited documents

Joints / Flashing

- Eavestrough
- Drainage Space
- Sloped Flashing
- Sub Sill Flashing
- Sloped Grade

5% min
Types of Flashing

- Base flashing
- Counter flashing
- Step flashing
- Valley flashing
- Cap Flashing
- Wall Flashing – drainage plane to exit

Physical Principles

- Water runs downhill (!)
- Flashing is the perfect barrier in drained walls
- Nothing is installed flat or butted tight
- Everything moves
- Exposed caulking eventually fails
- If it doesn’t get wet, it won’t leak (exposure!)

Requirements

- Slopes
  - drainage
- Continuity (Sealed Joints)
- End Dams, backstops, deflectors
- Drips
  - shedding
- Accommodate Movements
- Material choice Watertight

Drips

- project out from wall
  - Recommend 1” if you wish to drip free of wall
- control “run back” by grooves and edges
• Generous projection
• Clear drip groove
• Large side extensions
Its easy to slope parapet caps

Water can build up here -- we need a waterproof barrier

Note water standing
End-Dams & Backstops

- all low-slope flashings need end dams, e.g.
  - window-sills
  - masonry-veneer
- Backstop at rear typically minimum of 4"
- Typically specify 6" for high exposure
- Corners must be made watertight - vulnerable

Joints protected
- slope
- end dams

Low Roof to Wall

- Common source of problems
  - Asphalt saturated felt underlayment turned up vertical walls approx. 3' to 4'
  - Flashing placed just up slope from exposed edge of shingle - extends approx. 4" over underlying shingle and approx. 4" up vertical wall
  - Approx. 2" head lap
  - Siding/doubling - maintain 3" above the roof surface
  - Wall cladding/siding serves as counter flashing and should overlap step flashing a min. of 2"
  - Place nail high, so nails are overlapped
  - By the rear slope step flashing

www.apawood.org
**Diverter Flashing**

**Notes:**
1. Coordinate installation of Gold Guard system and EIFS with the roof installation. Typically, step and diverter flashings are installed as part of the roof assembly.
2. Refer to Sto detail 10.62a for integration of Gold Guard system with the step and diverter flashings.
3. Install the starter track 2” (50mm) above the finished roof and butting against the diverter flashing so water draining down the starter track will not flow over into the wall.
4. Install Sto Gold Fill™ over the upper edge of the starter track and coat with Sto Gold Coat.

**Substrate**
- Sto adhesive
- Sto insulation
- Sto base coat
- Sto finish
- Sto Gold Coat
- Sto Gold Fill with Sto Detail Mesh
- Starter track with weeps installed over step flashing and Sto Gold Fill
- Sto Gold Fill (see Sto detail 10.62a)

**Maintain 2” (50mm) clearance between finished roof and starter track.**

**Roofing materials**
- Door Sills
- Edge flashing
- Gutter termination
- 1/2” (13mm) away from finished EIFS™

**Sto Corp**

John Straube 2005
**Door sill**

![Diagram of door sill]

**Continuity: Seal joints**

- Remember -- Flashing acts as a waterproof layer
- Seal all joints, or overlap and drain
- Masonry, metal, and precast copings are not waterproof!

![Diagram of continuity and seal joints]

**Balcony**

- Note backstop curb
- Waterproof membrane
Parapets

- Coping leaks at joints
- Provide a sealed waterproof second layer
- Metal acts as finish and protection

Proper Materials

- Waterproof
- Durable
- Compatible
  - With adhesives, substrates, and fasteners
- Formable
  - at a range of temperatures
- Mechanical properties
  - Puncture resistance (Self-sealing)
  - tear resistant

Capillary Break

- Flashing may provide a break for capillary flow
- Important at grade
- Important for claddings like wood, stone, masonry
Rain Control Conclusions

- Choose rain control based on
  - exposure
  - climate
- Climate/exposure dictates care, strategy, effort
- Don’t expect perfection from materials and trades
- Drainage plane continuity is key!
  - Flashing!

Fire Resistance

<table>
<thead>
<tr>
<th>System Type</th>
<th>Insulation</th>
<th>Load Bearing</th>
<th>Code Reference</th>
<th>Acceptable Use With Respect to Fire Safety</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Non-Combustible</td>
<td>Non-Combustible</td>
<td>3.2.5.7</td>
<td>These systems can be used without exception to non-combustible construction.</td>
</tr>
<tr>
<td>B</td>
<td>Non-Combustible</td>
<td>Non-Combustible</td>
<td>3.2.5.7</td>
<td>These systems can be used in non-combustible construction on the basis of testing that demonstrates the base coat is non-combustible, and the finish coat is in place when tested according to UL 1014 for 15 minutes. Use of this system in areas where flammable liquids are not permitted.</td>
</tr>
<tr>
<td>C</td>
<td>Non-Combustible</td>
<td>Non-Combustible</td>
<td>3.1.5.5</td>
<td>These systems can be used when non-combustible construction is required on the basis of testing per UL 1014 for 20 minutes. Use of this system classification is limited to specific locations that vary by region and whether or not the application is permitted.</td>
</tr>
<tr>
<td>D</td>
<td>Non-Combustible</td>
<td>Non-Combustible</td>
<td>From 3 to 9</td>
<td>These systems are for use where impermeable construction is permitted, to satisfy Parts 3 to 9.</td>
</tr>
</tbody>
</table>

Enclosure Design Principles-1

- Design a complete load transfer path
  - structure, windows, ties, etc
  - All loads go to ground
- Respect the site and climate
  - rain, sun, wind, hill, valley, high rise or low-rise
- Continuous rain control plane
  - control with surface features and detailing
  - Drained, storage, or perfect barrier strategy
- Continuous plane of air barrier tightness
  - fastidious attention to detail 3-D

Enclosure Design Principles-2

- Provide a continuous plane of insulation
  - ideally separate structure from enclosure
  - Avoid thermal bridges
- Provide a moisture tolerant design
  - balance wetting, drying, and storage (mat'l, climate)
- Use appropriate levels of vapour control
  - vapour barriers are not “the” answer
- Accommodate movements and tolerances
The Enclosure: Adding the Layers

- Structure
- Air Barrier
- Insulation
- Rain Control
- Finish

Details demand the same approach as the enclosure.

Scaled drawings required at

Conclusions

- EIFS
  - Get the guides
  - Sell the comfort and efficiency
- Be clear of rain control strategy
  - consider exposure
  - Surface drainage
  - Windows
  - joints
- Provide a good air barrier system
  - don’t be confused by vapour barriers!