Building Science Fundamentals

Applications: Drained Claddings, Glazing, Balconies & Decks
Christy Cronin, Building Science Corporation
Out of the crooked timber of humanity no straight thing was ever made.

– Immanuel Kant
Basic Enclosure Functions*
Support: resist and transfer physical forces
Control: control mass and energy flows
Rain and soil moisture (drainage plane, capillary break, etc.)
Air (continuous air barrier)
Heat (continuous layer of insulation)
Vapor (balance of wetting & drying)
Finish: interior and exterior surfaces for people

* Text quoted from John Straube

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Drained Claddings
Most walls are not the Perfect Wall
# Drained Claddings and Drying Potential

<table>
<thead>
<tr>
<th>Cladding Ventilation/Sheathing Ventilation</th>
<th>Flow Rate</th>
<th>Gap</th>
<th>ACH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wood Siding</td>
<td>0.1 cfm/sf</td>
<td>3/16”</td>
<td>20</td>
</tr>
<tr>
<td>Vinyl Siding</td>
<td>0.5 cfm/sf</td>
<td>3/16”</td>
<td>200</td>
</tr>
<tr>
<td>Brick Veneer</td>
<td>0.15 cfm/sf</td>
<td>1”</td>
<td>10</td>
</tr>
<tr>
<td>Stucco (vented)</td>
<td>0.1 cfm/sf</td>
<td>3/8”</td>
<td>10</td>
</tr>
<tr>
<td>Stucco (direct applied)</td>
<td>none</td>
<td>none</td>
<td>0</td>
</tr>
<tr>
<td>Sheathing flanking flow</td>
<td>0.05 cfm/sf</td>
<td>3/16”</td>
<td>10</td>
</tr>
</tbody>
</table>
Minding the gap...
watch the mortar droppings
Minding the gap…
with stucco & adhered stone
not minding the gap...
not minding the gap...
not minding the gap…
not minding the gap...
not minding the gap…
not minding the gap...
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not minding the gap...
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not minding the gap...
not minding the gap...
(a quick aside...)
What’s going on here?
Stucco over CMU to minimize (eliminate?) control joints
Will it work?
install a drainage mat with stucco and adhered stone claddings on framed walls
install siding over furring / spacers