

High Performance Window Flashing

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Window Design

- Windows must resist:
 - High Wind
 - Wind-Driven Rain
 - Air Leakage
 - Heat Loss/Gain
 - Condensation
 - Movement of the rough opening
 - Impacts



Back When...

Back When...

An overhang
protects the wall



Back When...



Back When...



Shutters are closed during the rain

Back When...



Back When...



Vatican Museum

Window Performance Tests

- ASTM E 283 – Air Leakage (1965)
- ASTM E 331 – Uniform Static Water Leakage (1967)
- ASTM E 330 – Structural Wind Pressure (1967)
- ASTM E 547 – Cyclic Static Water Leakage (1975)
- AAMA 1503.1 – Condensation Resistance (1980)
- AAMA 501.1 – Dynamic Water Leakage (1983)
- AAMA 501.4 – Interstory Drift (1983)
- AAMA 501.5 – Thermal Expansion/Contraction (1983)
- ASTM E 1423 – Thermal Transmittance (1991)
- AAMA 1801 – Acoustical Performance (1995)

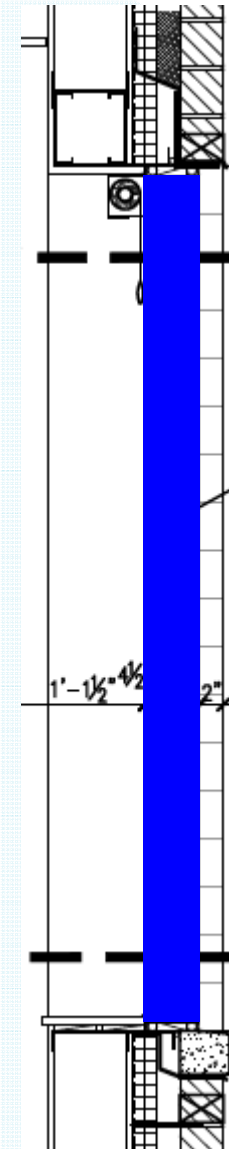
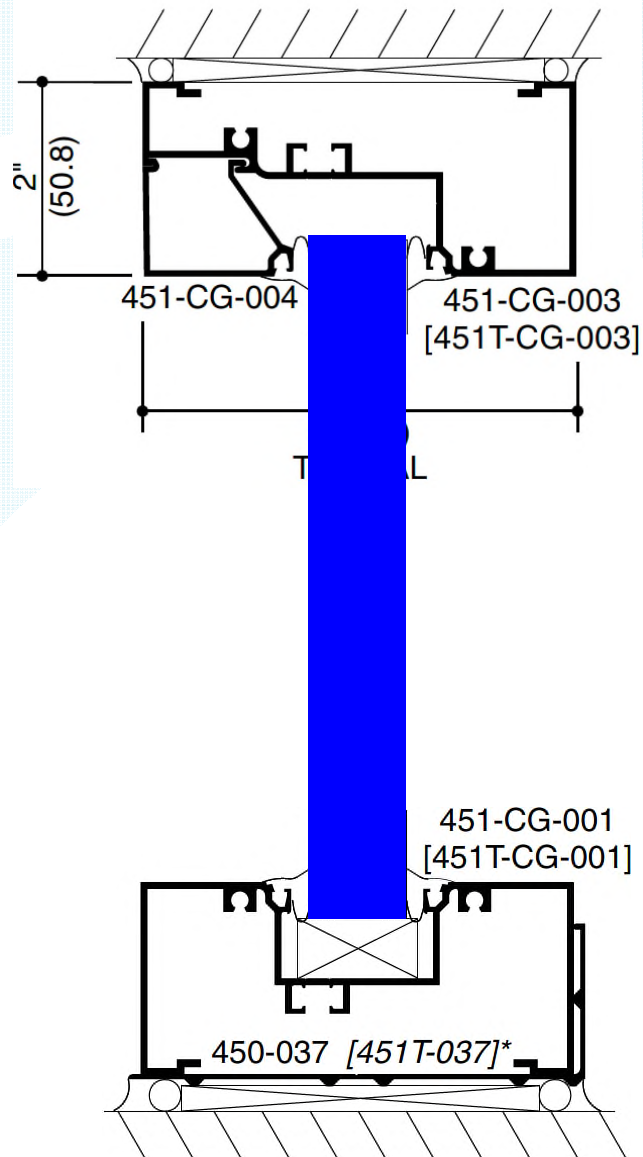
Through Trial and Error – Window Manufacturers Figured It Out



Window Design vs. Flashing Design

- Windows are flashed into walls just like glass is flashed into windows.

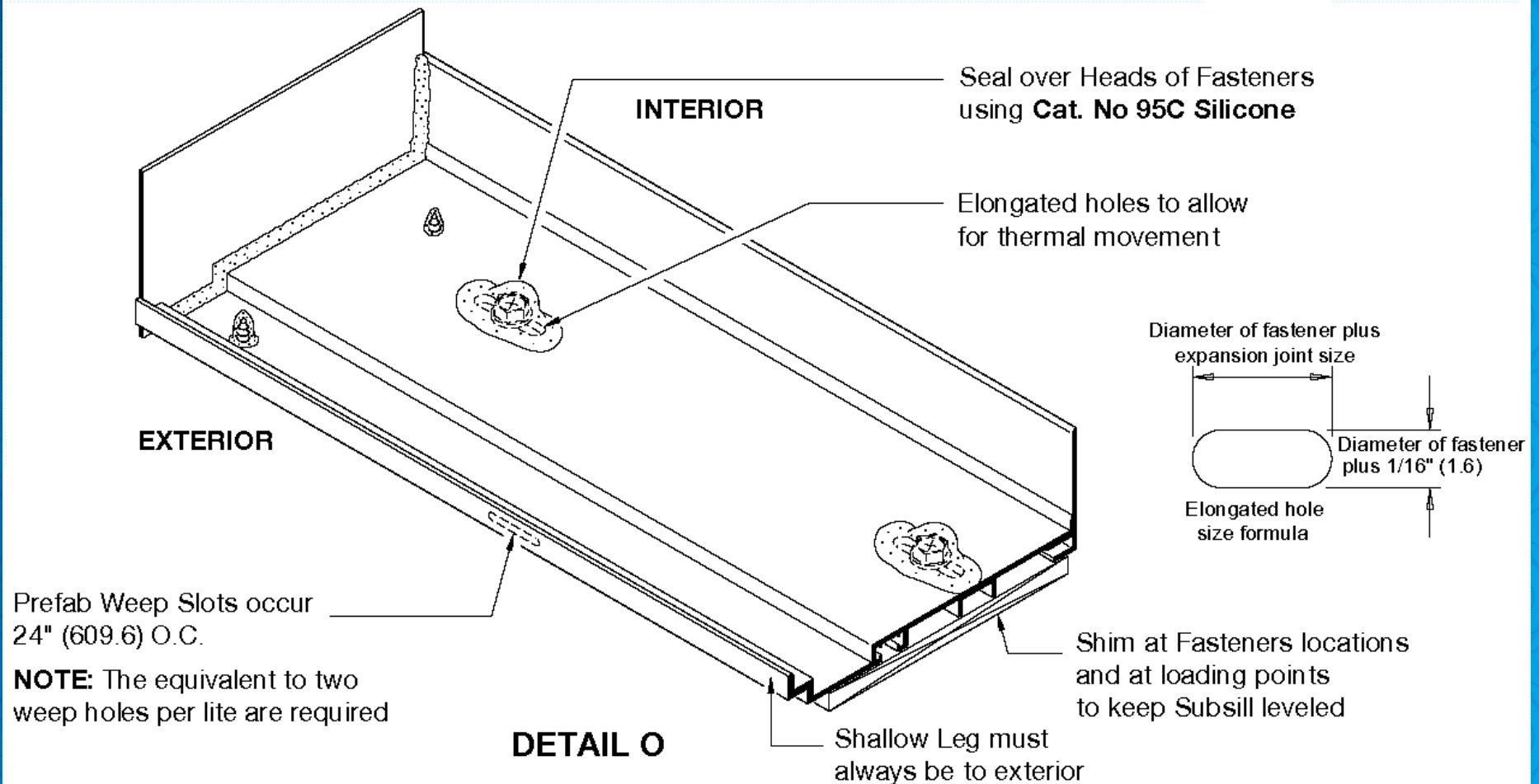
Window Design vs. Flashing Design



Flashing Design

- ASTM E 2112-07 (2001)
 - The requirements promulgated in this practice have...been identified as necessary to ensure that as-installed performance is roughly equivalent to performance in laboratory testing.
 - Window Flashings
 - The sill pan flashing should:
 - be used under all windows and doors
 - form a three-sided pan
 - collect and drain water toward the exterior
 - integrate with the surrounding flashings
 - be sloped to drain
 - not be punctured by window fasteners
 - Provide an air seal around windows that does not impede drainage.

1. Sill Pan Flashing Under All Windows



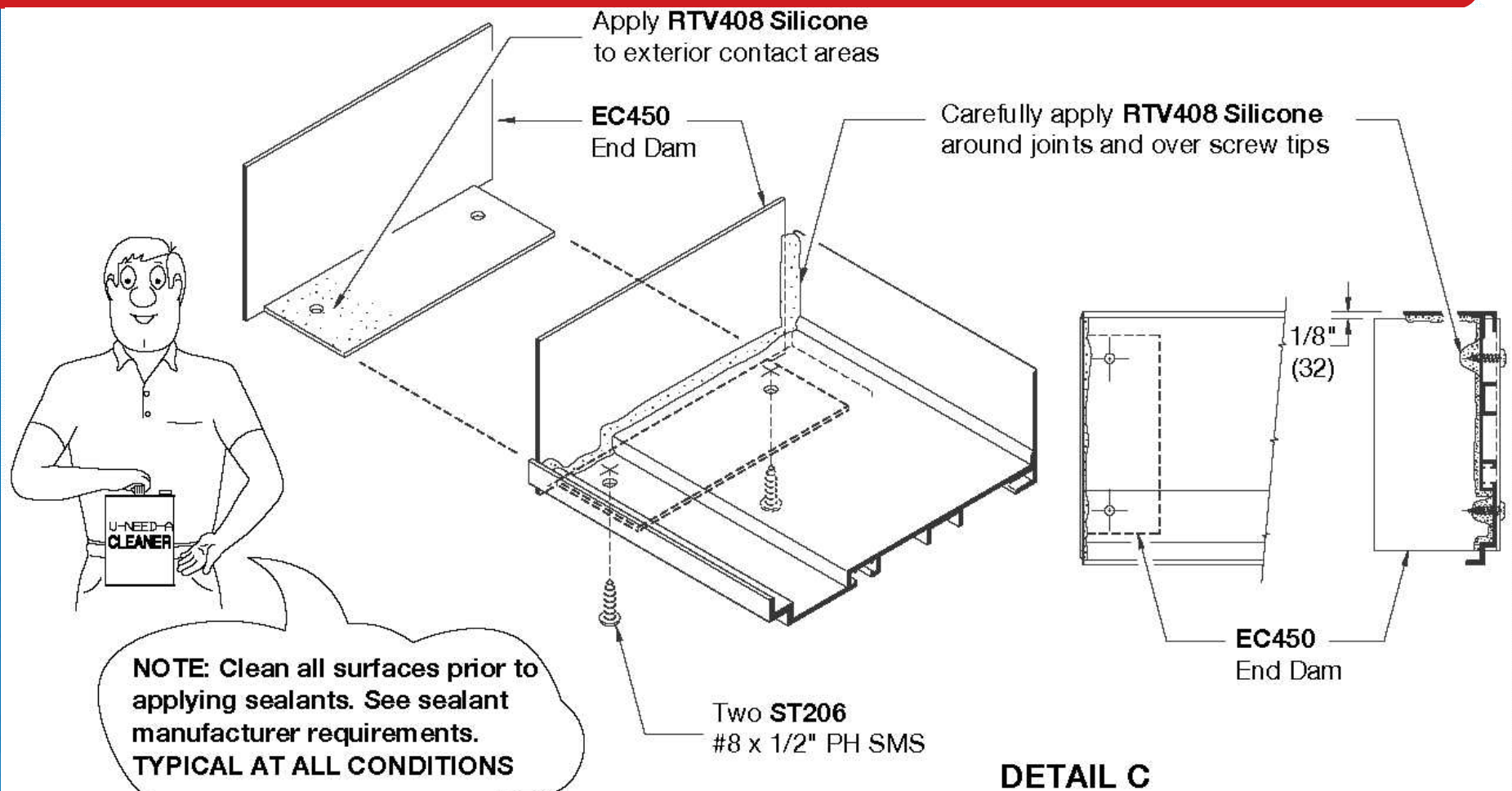
1. Sill Pan Flashing Under All Windows



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2. Three-Sided Sill Pan



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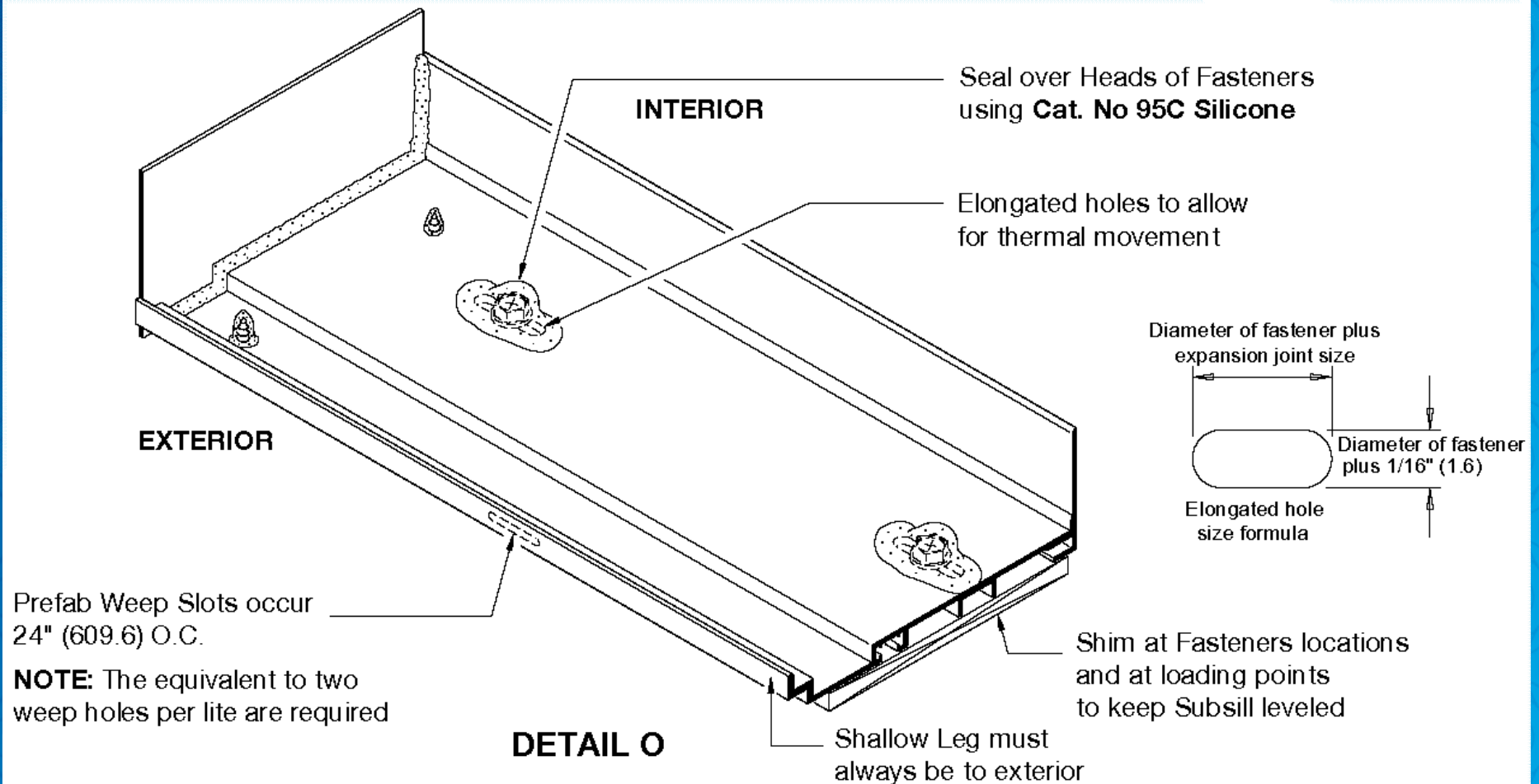
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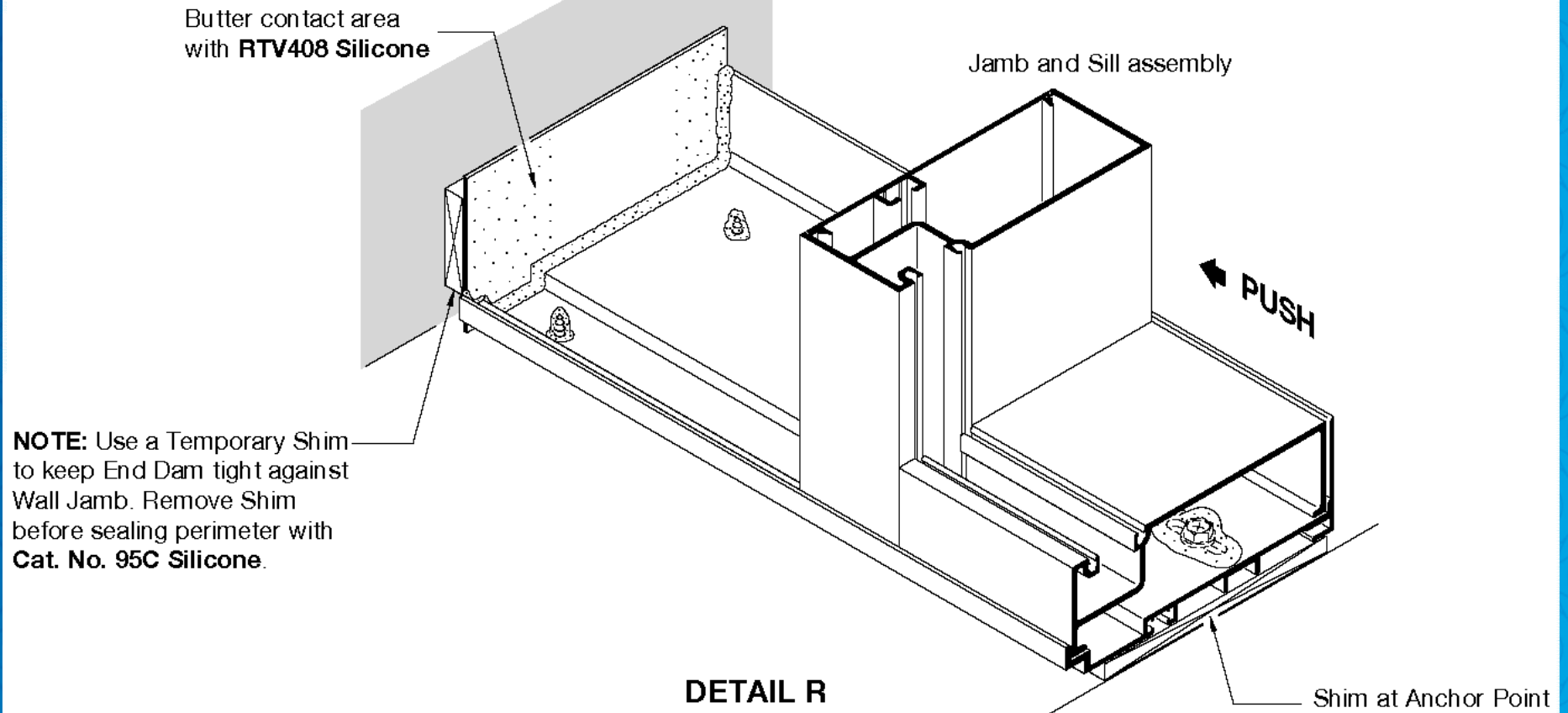
3. Sill Pan Collects and Drains Water



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4. Sill Pan to Integrates with the Surroundings



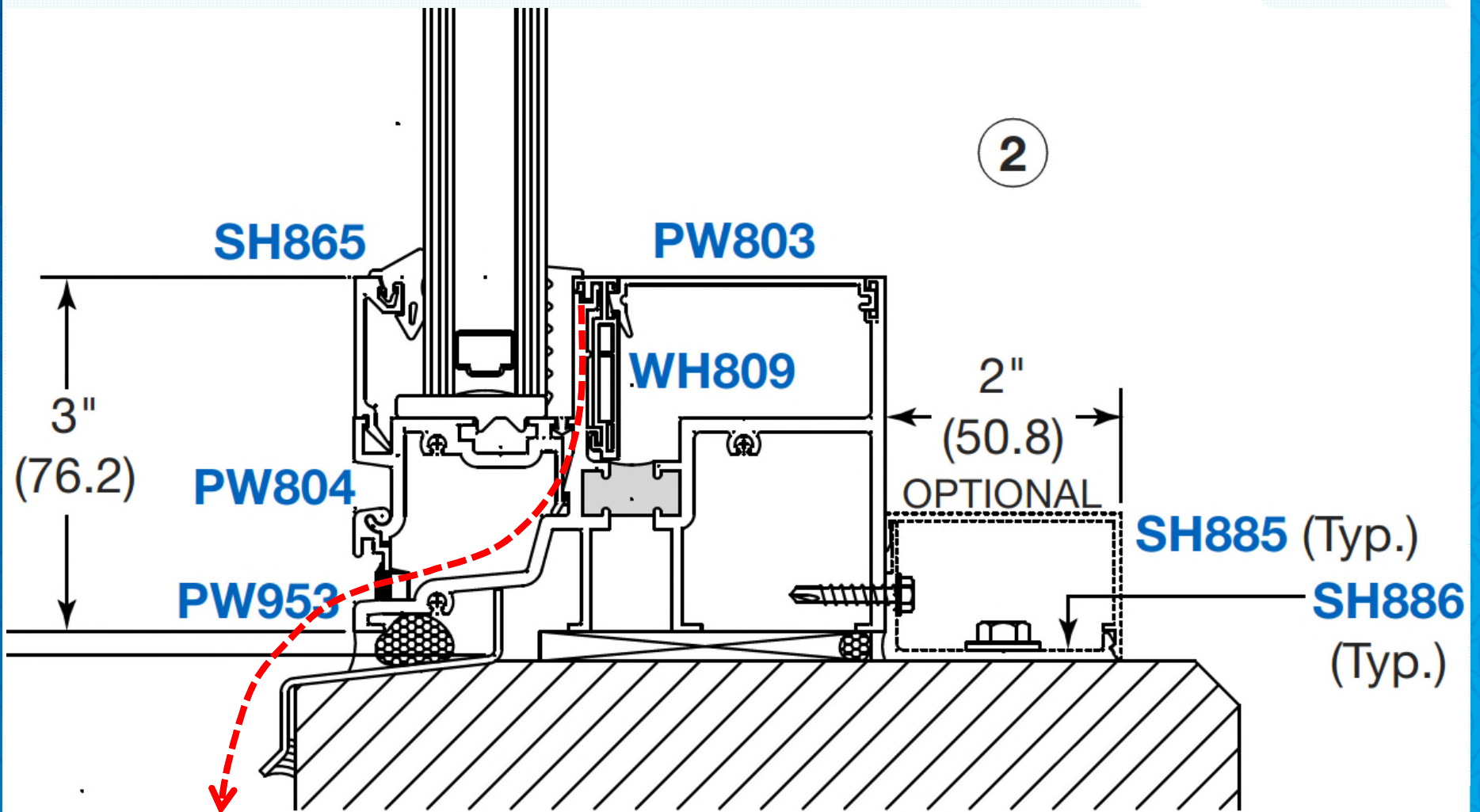
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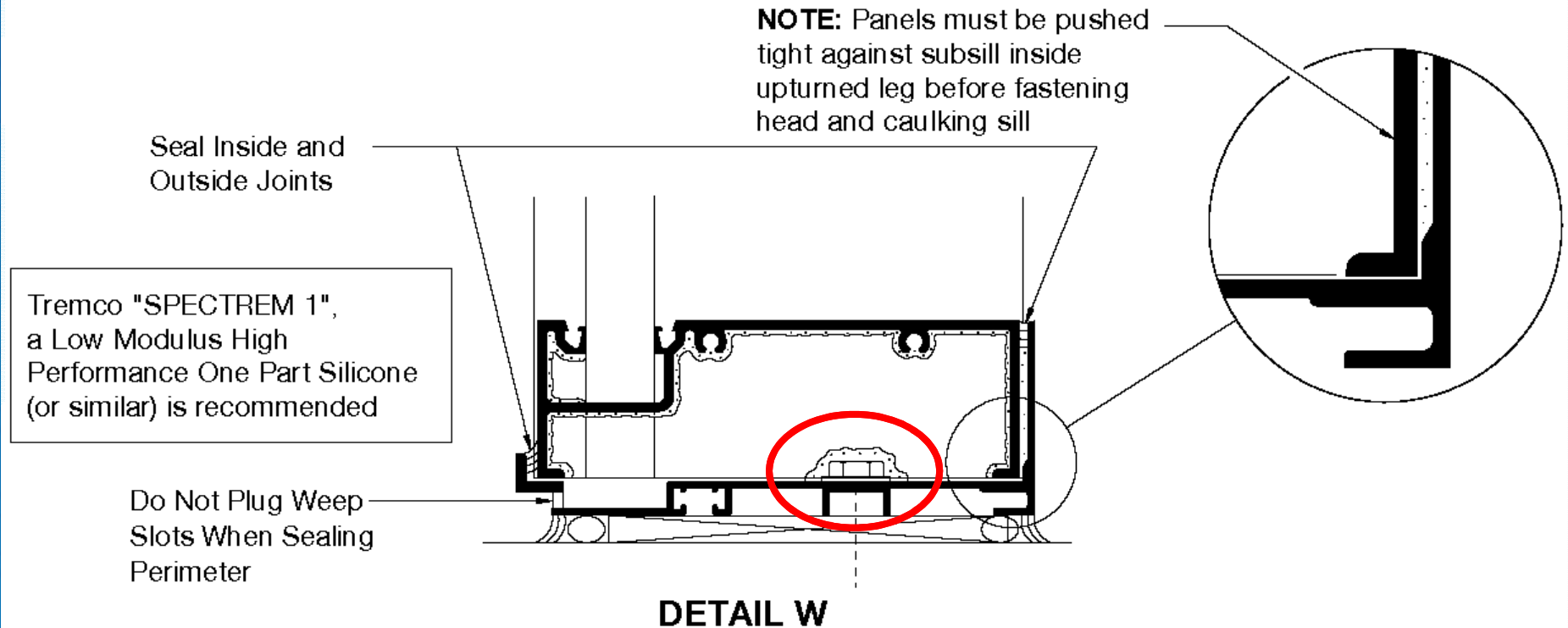
5. Sill Pan to be Sloped to Drain



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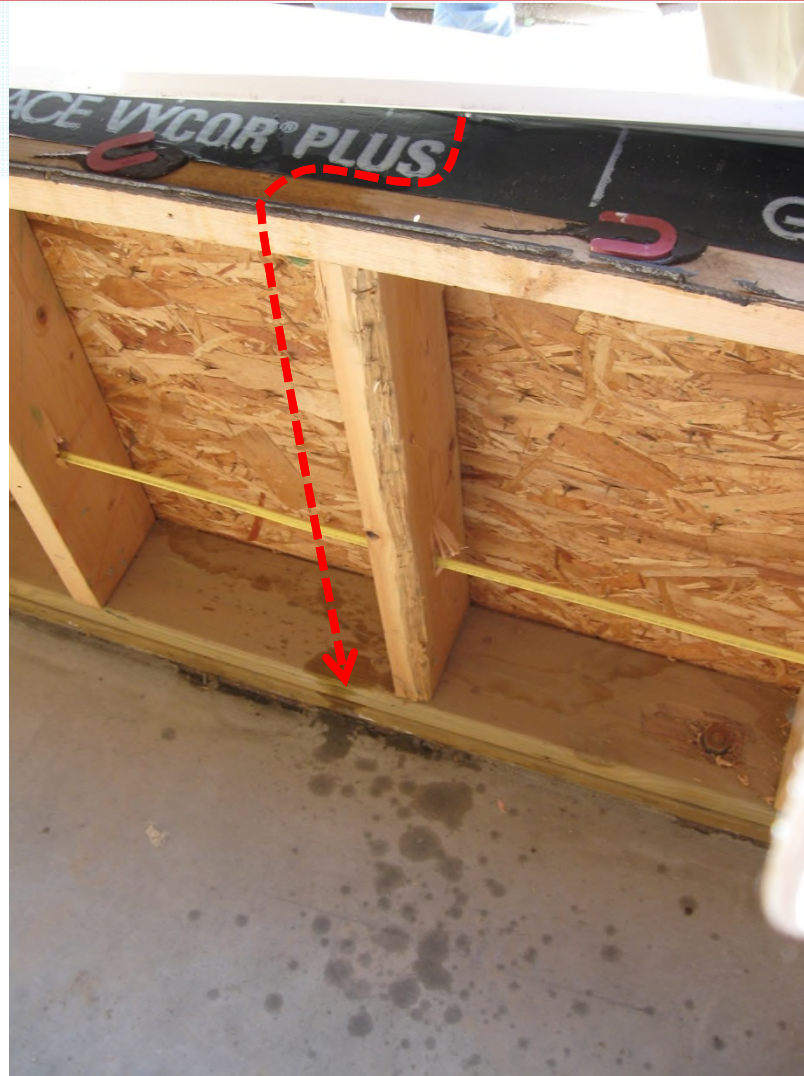
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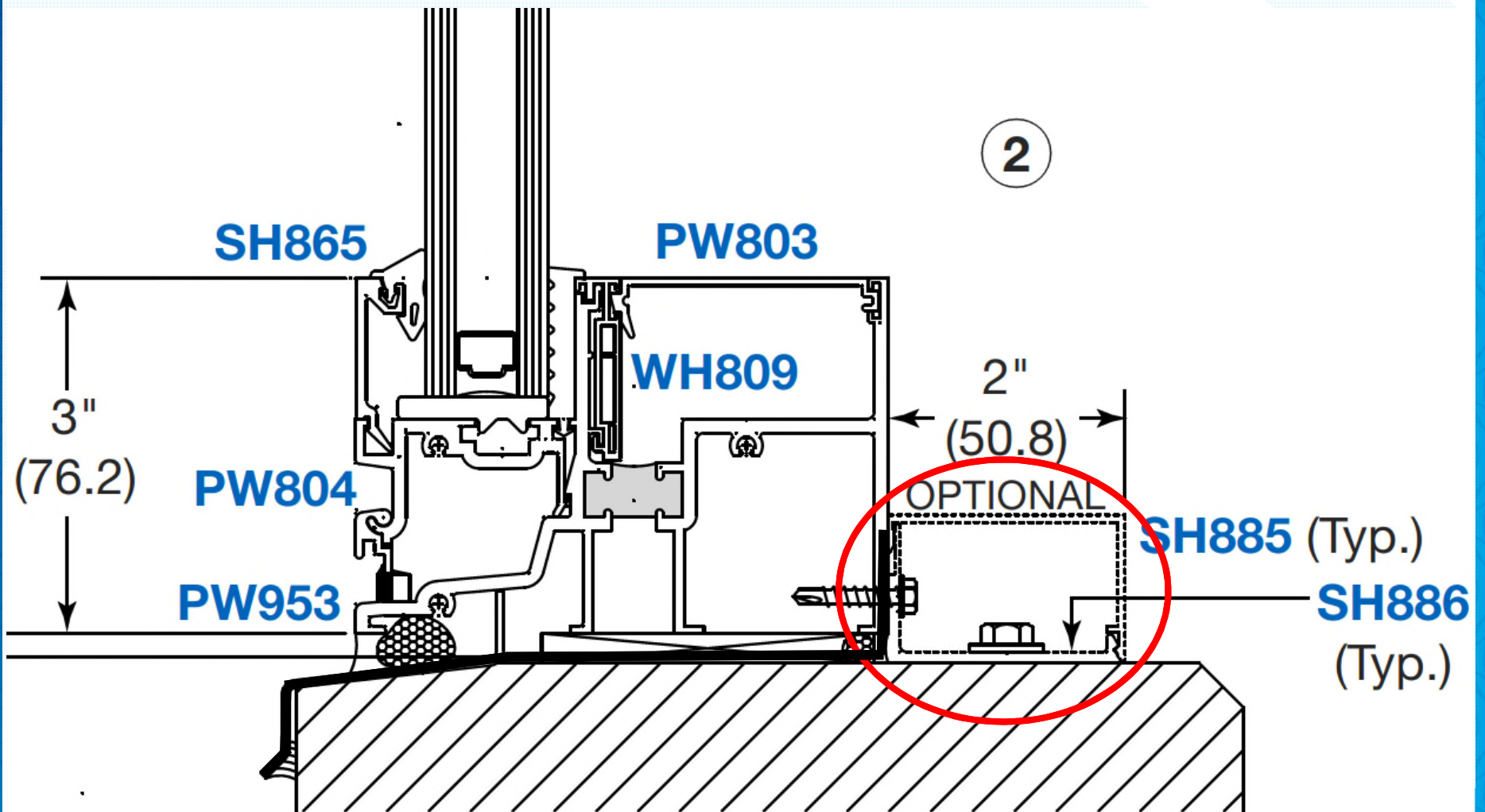
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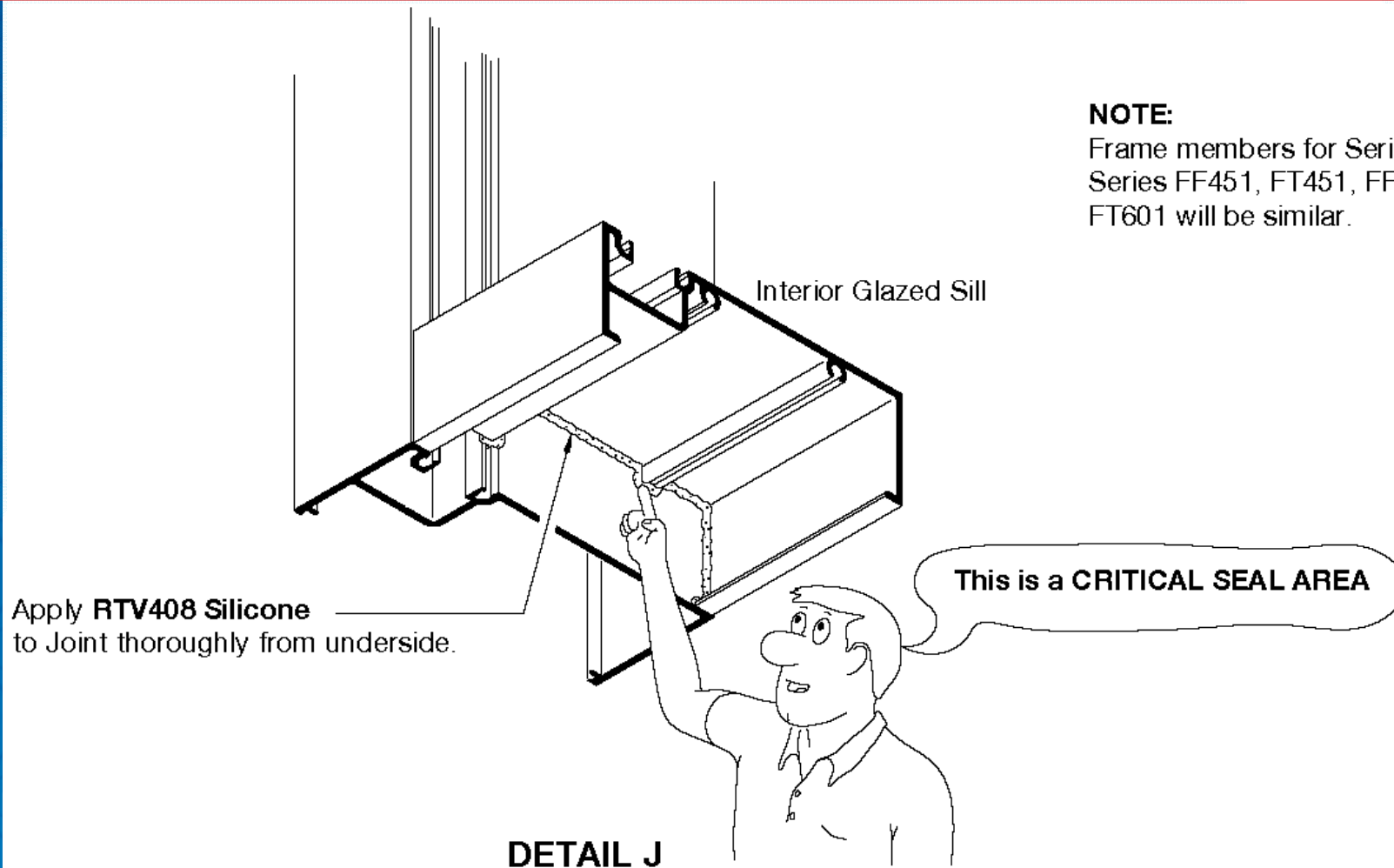
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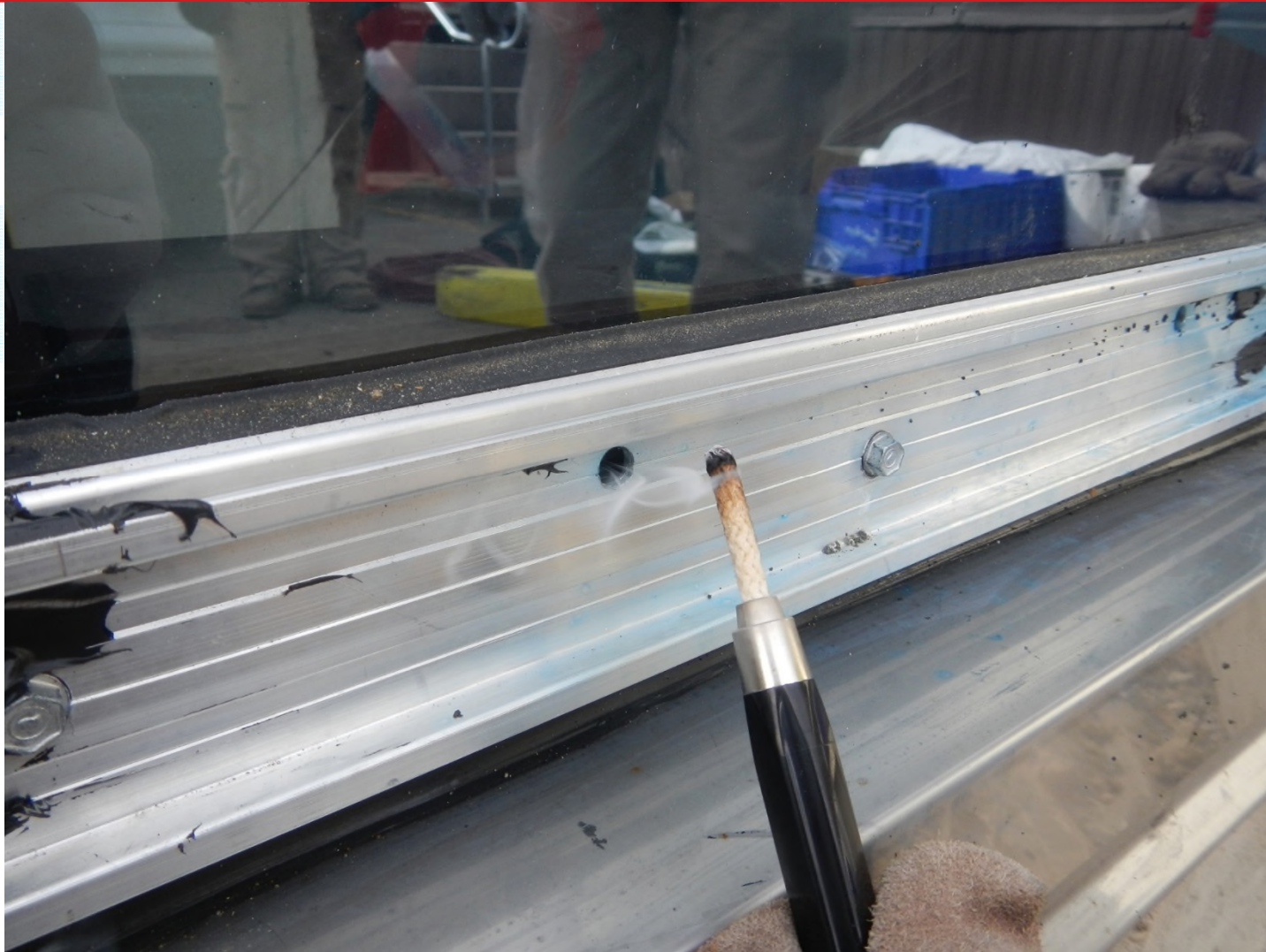
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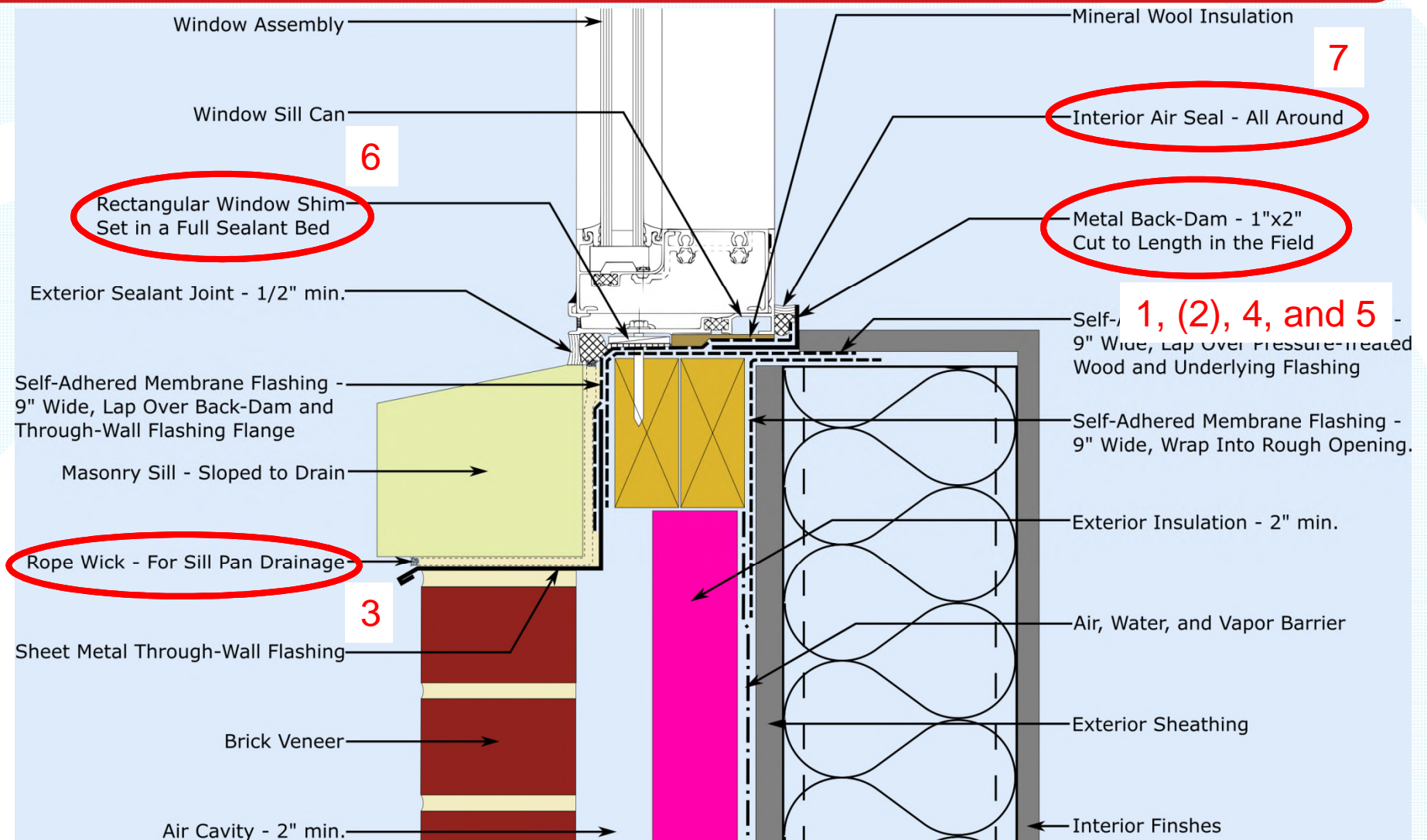
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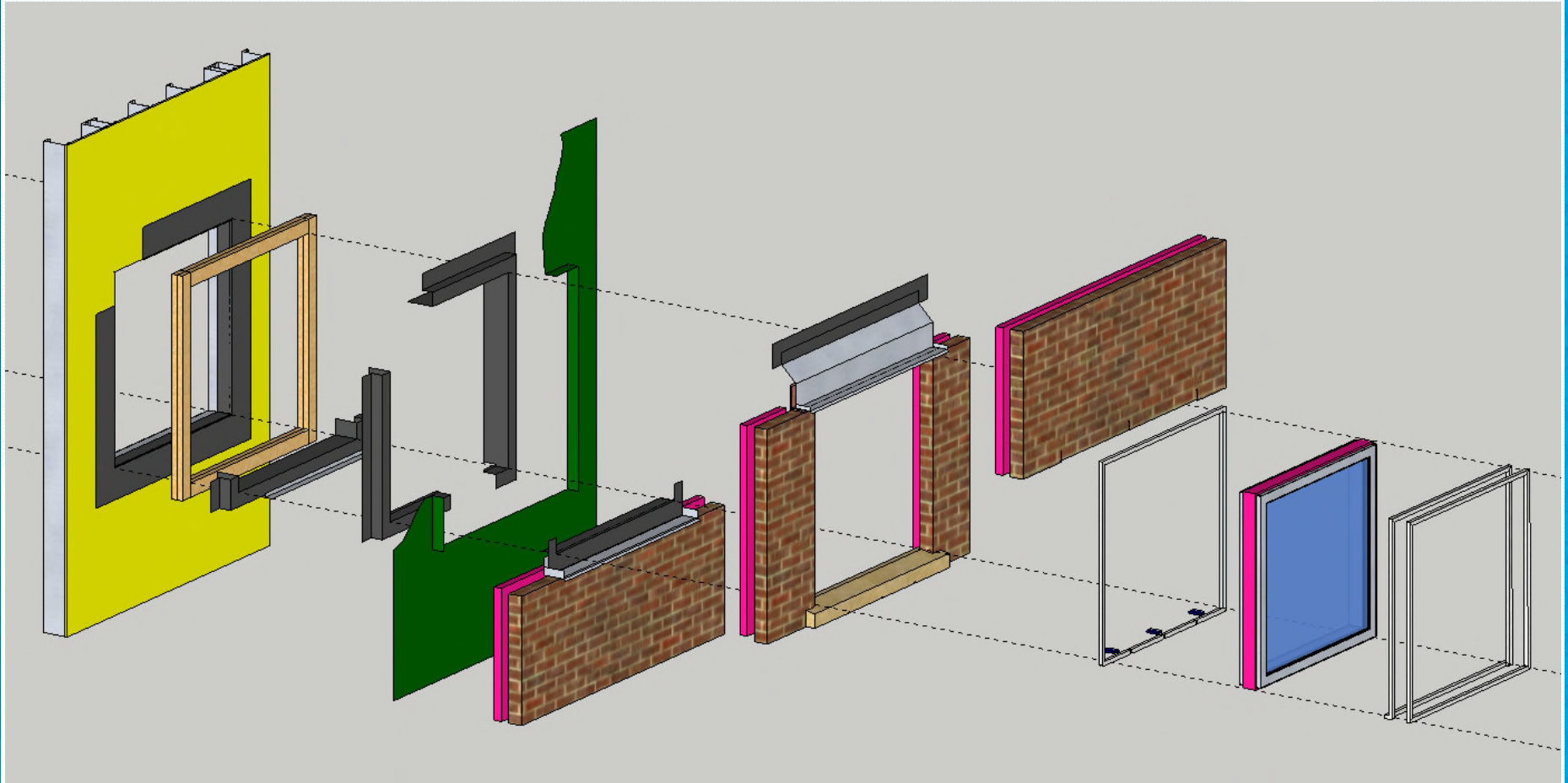
Windows – Example Flashing

- (For the Owner with little to NO tolerance for window leaks.)

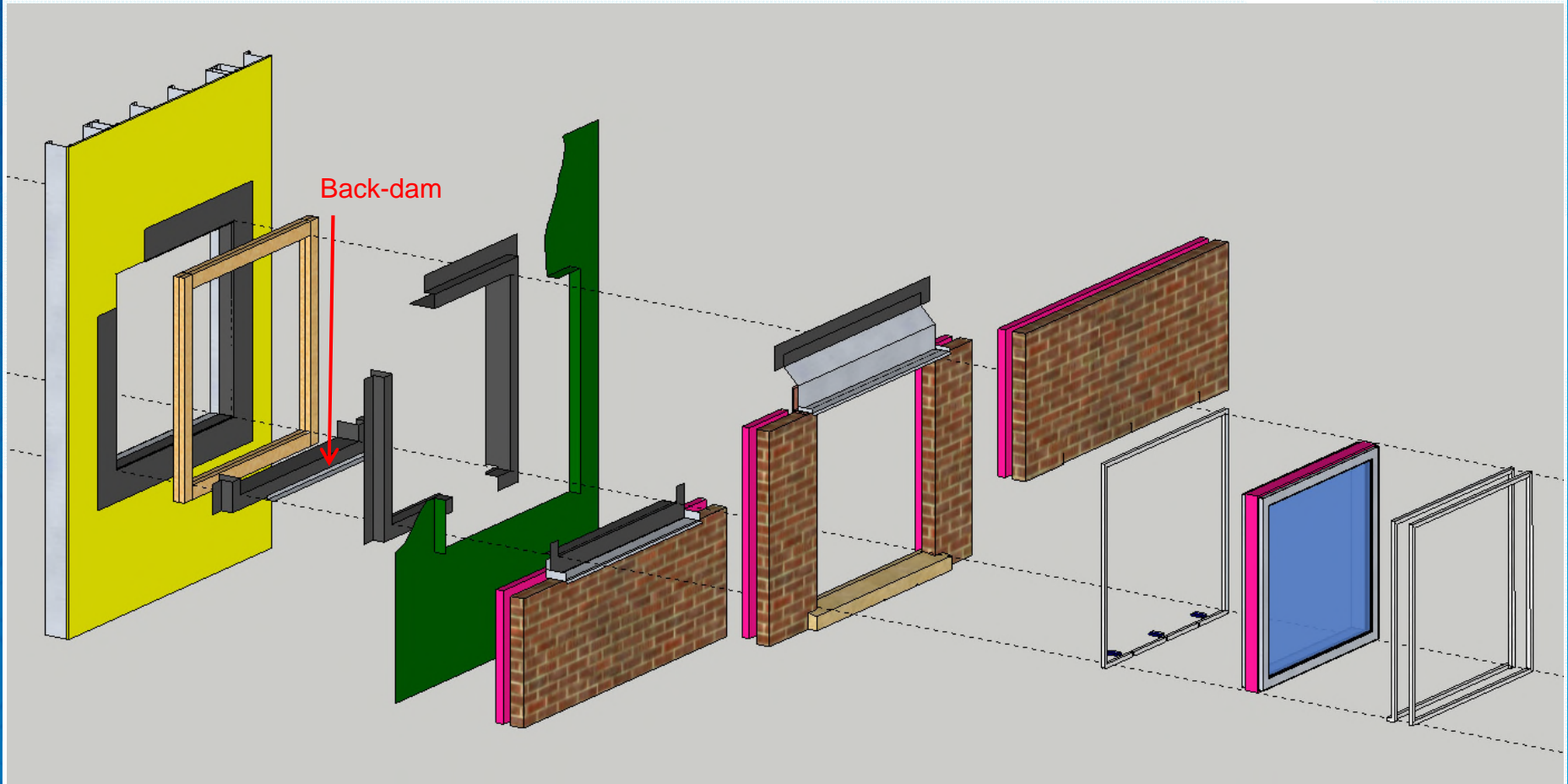
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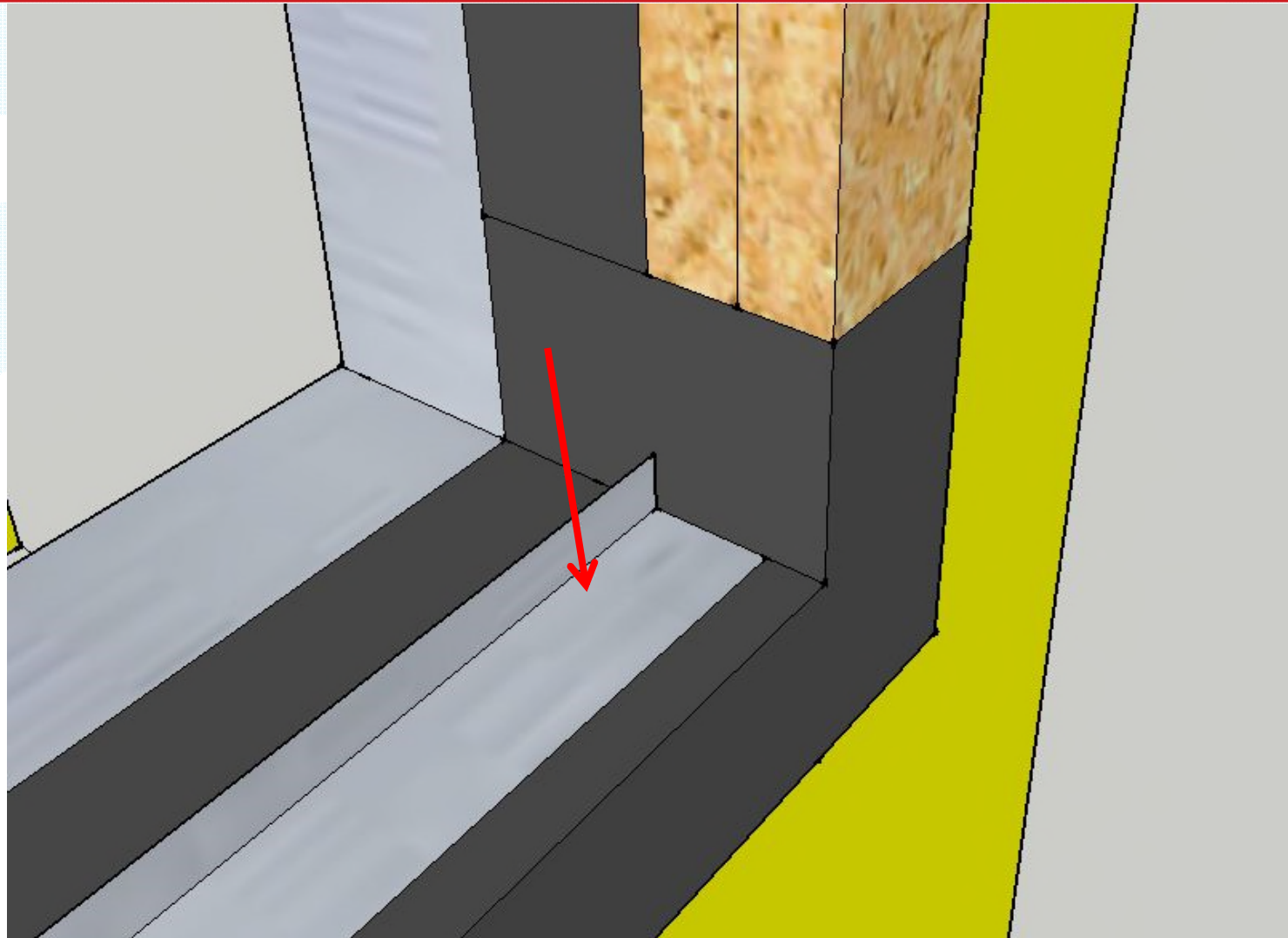
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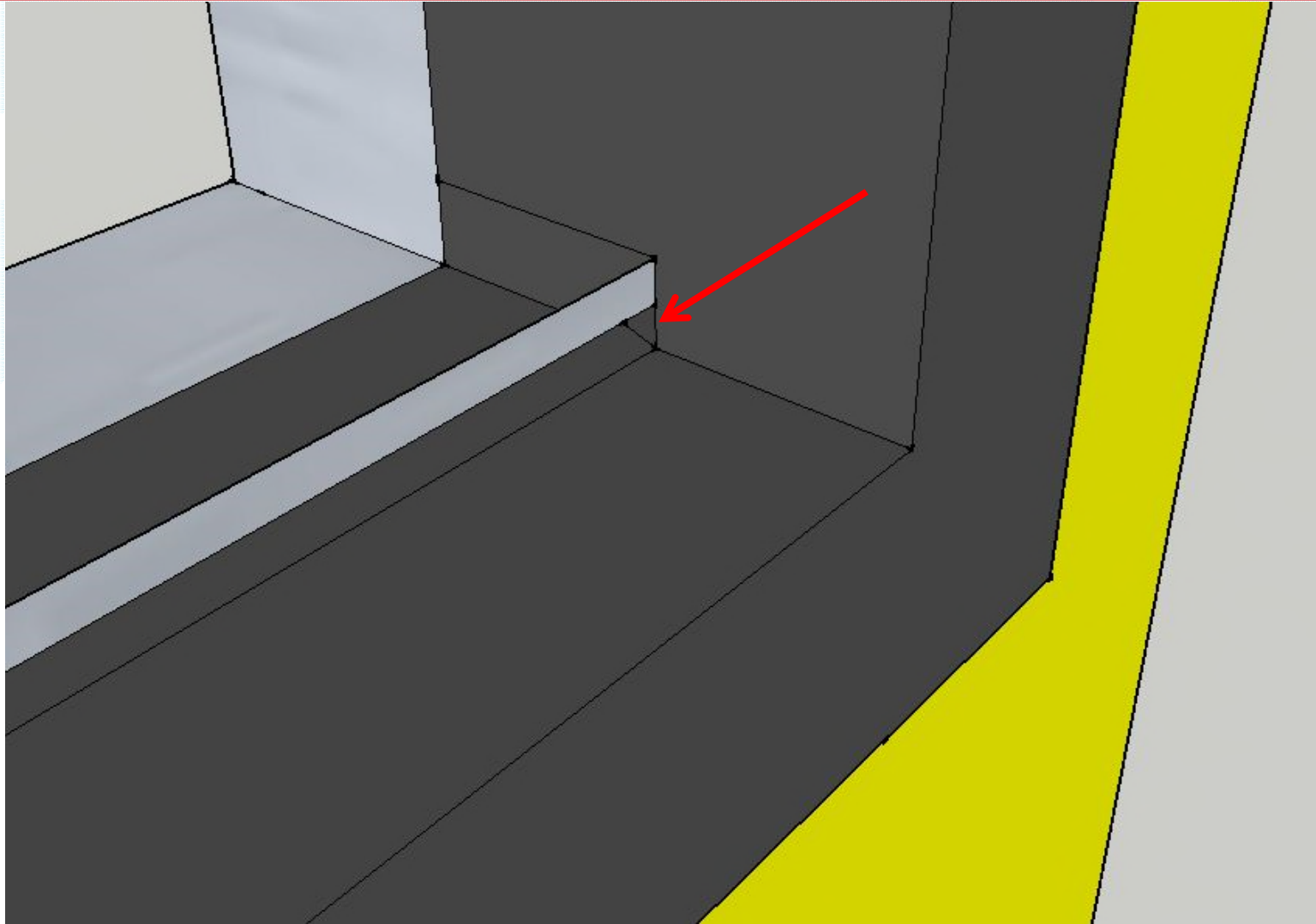
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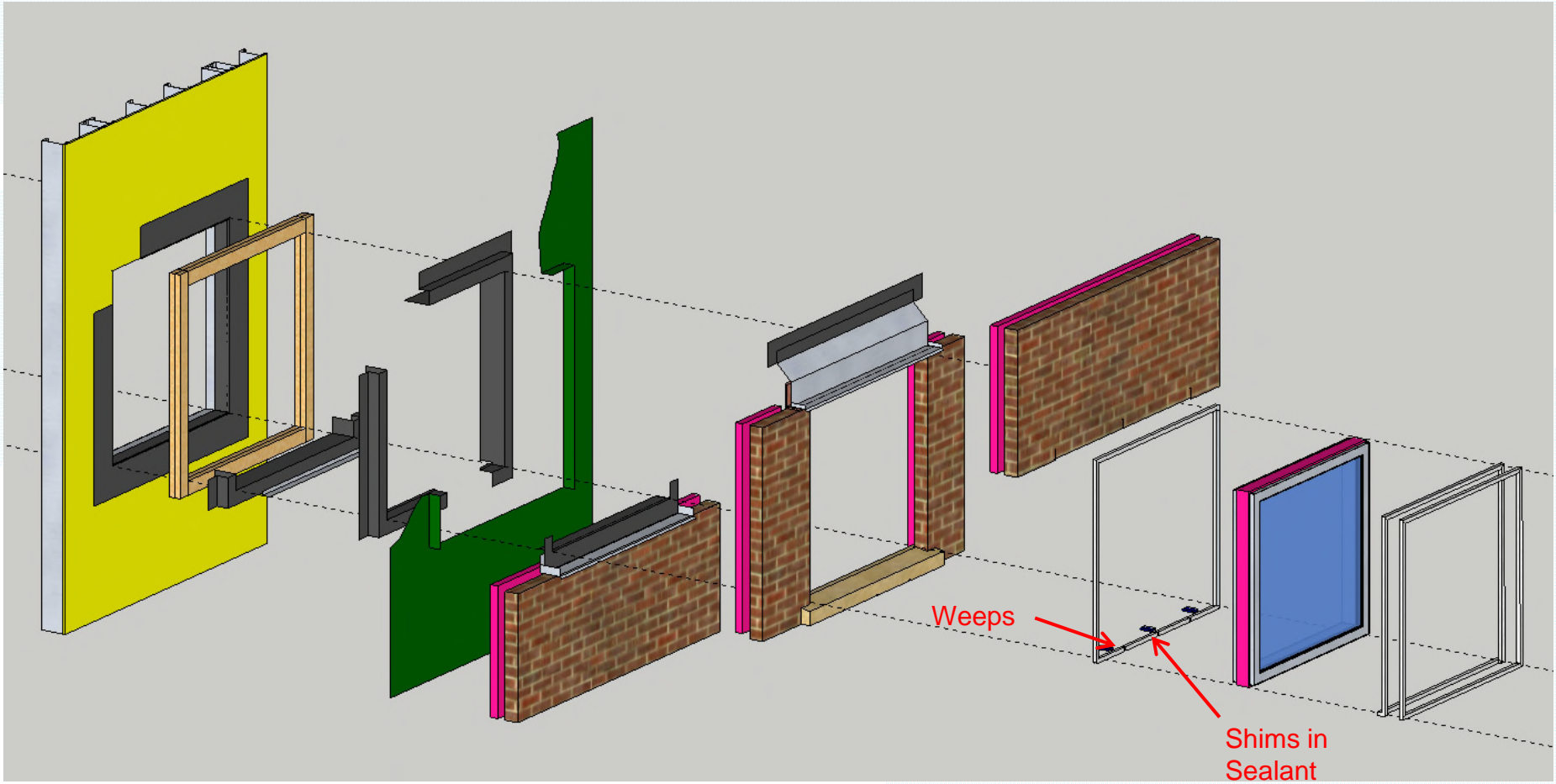
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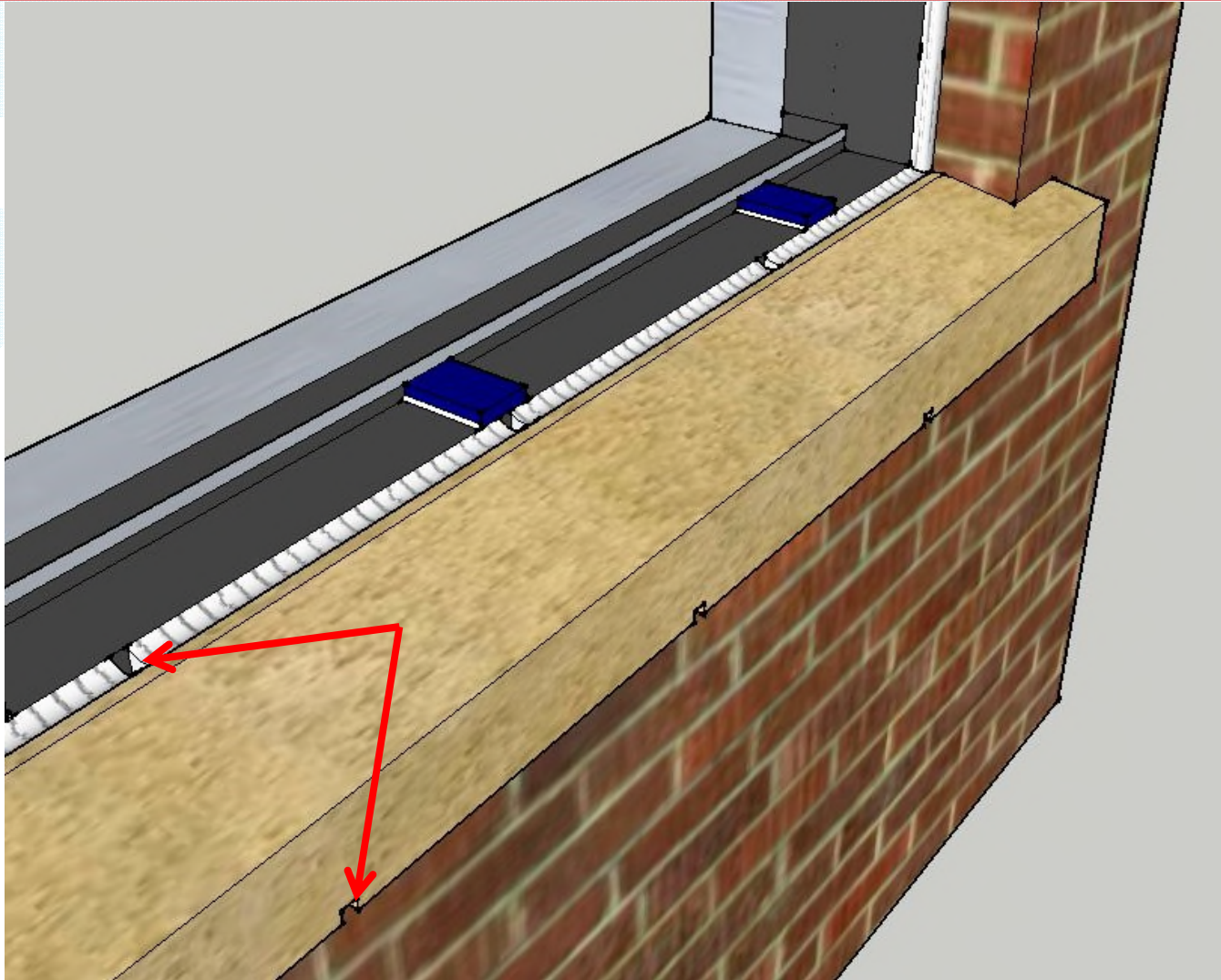
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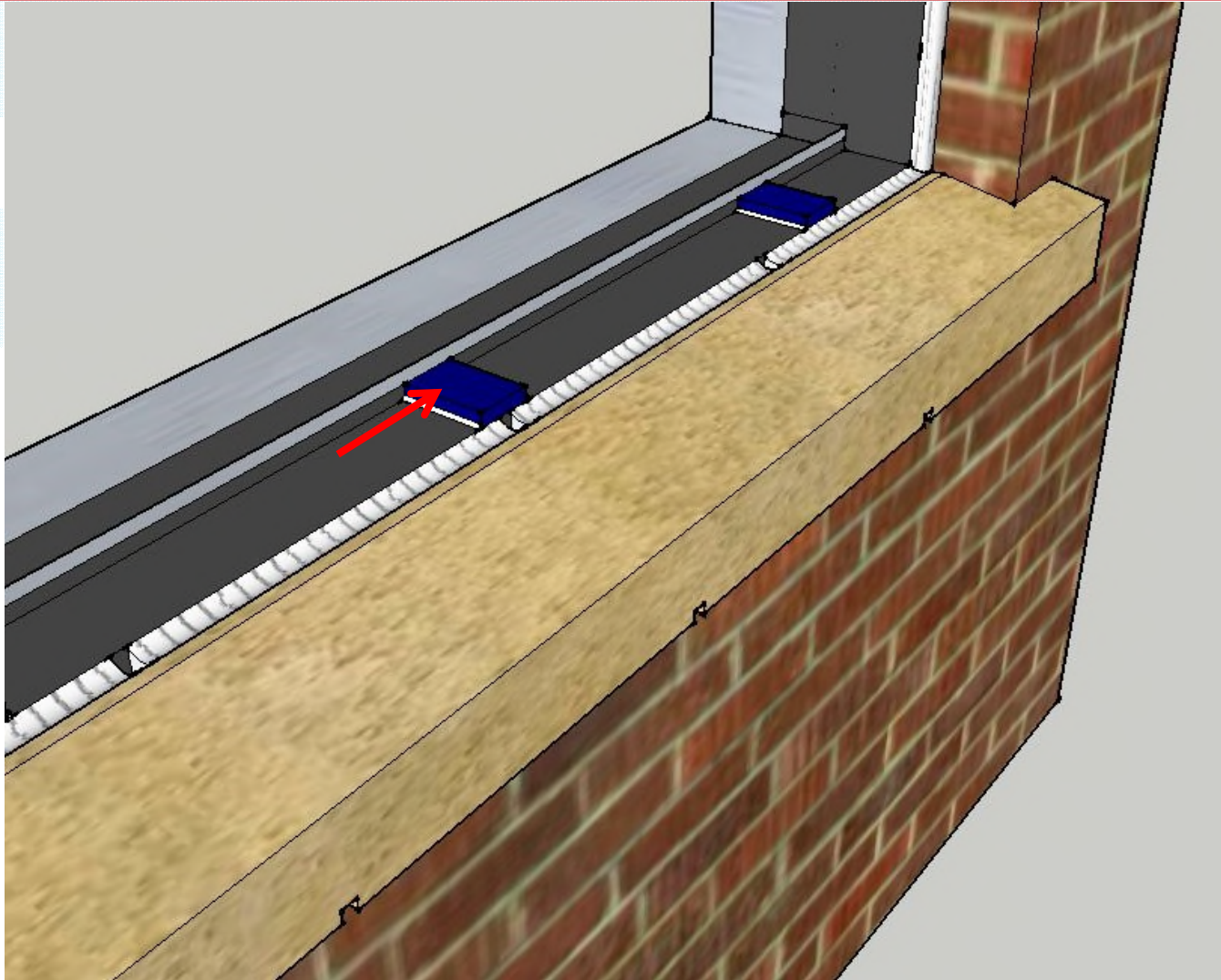
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Windows – Example Flashing



Take Aways

- Do you need high performance windows/flashings?
- Copy window manufacturers' designs
 - Provide a sill pan
 - Give it three sides
 - Drain it to the exterior
 - Integrate it with the wall flashings
 - Slope it to the exterior
 - Don't puncture it
 - Provide an interior air seal

Questions

