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Docket No. 15-BSTD-01
2016 Building Standards Update

Dear Mazi,

I have had a chance to review the 45-day language for the 2016 Title 24 energy standards, and on behalf of the Glass Association of North America (GANA) and Aluminum Extruders Council (AEC), we have found one area of concern and a potential technical flaw related to mandatory spandrel insulation requirements. I sincerely apologize for not noticing or bringing up this issue earlier or during the 2013 cycle – frankly, I just missed it.

Specifically, Section 120.7(b) sets a mandatory insulation requirement for spandrel:

> "6. Spandrel Panels and Glass Curtain Wall- The weighted average U-factor of the Glass spandrel panels and glass curtain wall assembly shall not exceed 0.280."

There is a technical flaw in that by applying this requirement to the entire curtain wall, including the vision area, it can create a conflict with the prescriptive requirements.

Curtain wall is not just used in "all-glass" buildings, but is also commonly used in smaller portions of building façades, such as a 2-3 story curtain wall on just the entrance of museums, offices, libraries, etc. These can be essentially 100% vision area for the curtain wall itself, although the total window-to-wall ratio of the overall building is significantly less. See examples in the photos below. These buildings have less than 40% WWR and would prescriptively require a U-0.41 for the curtain wall. However, the mandatory wall insulation requirement of 120.7(b)6 would illogically impose a mandatory requirement of U-0.28, even though the section is aimed at spandrel insulation, of which there is none. This is clearly a conflict, and I don't believe it was ever the intent.

Even for curtain walls that do have some spandrel area but are only used on certain portions of the building, the same situation can occur that once the calculation is applied including both the vision and spandrel area, section 120.7 can end up requiring either a lower U-factor for the vision area than the prescriptive requirement or an unrealistically low U-factor for the spandrel area.

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Moreover, we believe mandatory minimums (sometimes called “hard caps”) are problematic and unnecessary in general. Mandatory minimums do not save any energy, in that the building must still meet the main prescriptive or performance requirements, but they do place an artificial constraint on design. Mandatory minimums were debated – and overwhelmingly rejected – for the commercial portions of the 2015 IECC and 2015 IgCC, in part because of potential problems created by these artificial design constraints. As just one example, certain buildings will require fire-rated fenestration assemblies that are limited in what they can achieve for U-factor because of material and design limits in the framing. That’s okay – if the U-factor exceeds the prescriptive requirements, the intent is that appropriate trade-offs can be made in the performance path to show overall equivalent or better energy performance … except the mandatory minimum may still prevent the use of that assembly because of the way affects both spandrel and vision area. Clearly, life-safety and common sense will prevail in real

life, but this shows how mandatory minimums can create illogical conflicts, forbidding certain designs even if there are other trade-offs that make the overall building even more energy efficient than required.

As such, because of the technical flaw in the current requirement and concerns with mandatory minimums in general, we recommend section 120.7(b) simply be removed.

Again, my apologies for not noticing this problem earlier, but thank you for your consideration, and please contact me if you have questions or would like to discuss this further.

Best regards,

Thomas D. Culp, Ph.D.