



April 12, 2025

Mr. Peter Stuart
Outlier Realty Capital
7514 Wisconsin Avenue
Bethesda, MD 20814

Hi Peter,

We are happy to comment on the risks of two (2) potential challenges to achieving Passive House Institute's (PHI) certification criteria for the final design on the 2229 M Street project.

The Passive House (PH) standard requires in-depth modeling of whole-building performance and related connectivity details. PH modeling aims to create energy-efficient buildings with minimal reliance on active heating and cooling systems. To optimally reach the required heating and cooling demand, modeling is shared with design team members to facilitate collaboration and integration. Once the team created the winning design approach to achieving the targeted PH criteria, any changes made in one area may result in one or more performance impacts in other areas. The domino effect of changes can quickly render a project out of criteria. In the case of 2229 M Street, a change or two in the wrong direction will jeopardize PH criteria.

Implementing EIFS v. Stucco – From a building science perspective, the difference between EIFS and Stucco comes down to the clipping system. The EIFS system only requires thermally broken clips to support the additional weight of the system. The Stucco system requires a more extensive Z-girt system that needs to be fully thermally broken. For comparison, in general the EIFS system weighs around 2 lbs/sqft, while a traditional stucco system weighs around 10 lbs/sqft. The continuous insulation does not have to be derated as much with a clip system vs a z-girt system. Typically, a clip system derates continuous insulation around 6%, while a z-girt system derates continuous insulation around 13%. In the case of the 2229 M Street project, the differences in clipping systems could risk PH criteria. We do not recommend this change at this time.

Juliette Balconies – From a building science perspective, Juliette Balconies can create issues, some with consequential impacts on the PH criteria as they relate to whole-building energy consumption, thermal comfort control, and wall durability, as follows:

1. Thermal bridging is a result of the balcony railings penetrating the exterior building envelope.
2. Window performance exceeds the door performance. Substituting doors in lieu of windows results in far different component performances and must be analyzed.
 - a. Door threshold details are challenging to ensure they are thermal bridge free, which impacts energy performance and thermal comfort control.
3. Air barrier continuity to maintain air tightness around many exterior doors is difficult, since PH doors typically are not as airtight as windows.

We estimate a negative impact on whole building heating demand from the Juliette balconies between 6-10% which will risk PH criteria.

AUROS Group is very experienced in meeting these challenges. We possess the following Passive House Institute (PHI) credentials:

- PHI Accredited Certifying Organization
- PHI Certified Designer/Consultant (CPHC/CPHD)
- PHI Certified Passive House Tradesperson
- PHI / PHN Accredited Trainer

Best regards,

Beth

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