



ENERGY STAR Single-Family New Homes, Version 3 / 3.1

ENERGY STAR Multifamily New Construction, Version 1 / 1.1 / OR-WA 1.2

Slab Edge Insulation Exemption Details

Item 3.2 of the ENERGY STAR Single-Family New Homes National Rater Field Checklist and Item 3.4 of the ENERGY STAR Multifamily New Construction National Rater Field Checklist define minimum slab edge insulation requirements. For slabs on grade in CZ 4 and higher, 100% of the slab edge must be insulated to $\geq R-5$ at the depth specified by the 2009 IECC and aligned with the thermal boundary of the walls.

Consistent with the 2009 IECC, slab edge insulation is only required for slab-on-grade floors with a floor surface less than 12 inches below grade in the ENERGY STAR Single-Family New Homes program and 24 inches below grade in the ENERGY STAR Multifamily New Construction program. Slab insulation must extend to the top of the slab to provide a complete thermal break. If the top edge of the insulation is installed between the exterior wall and the edge of the interior slab, it is permitted to be cut at a 45-degree angle away from the exterior wall.

Where an insulated wall separates a garage, patio, porch, or other unconditioned space from the conditioned space of the house or building, slab insulation must also be installed at this interface to provide a thermal break between the conditioned and unconditioned slab.

Where specific details cannot meet this requirement, partners must provide the detail to EPA to request an exemption prior to certification. To date, partners have requested and received exemptions for the following details:

1. A continuous post-tensioned slab.
2. The horizontal brick ledge of a monolithic slab.
3. Where code requires an uninsulated termite view strip in lieu of a termite shield, which creates a gap in the slab edge insulation.
4. Slabs that separate occupiable spaces within the thermal enclosure from adjacent conditioned spaces.

For the ENERGY STAR Single-Family New Homes program, these exemptions are noted in Policy Record IDs 00031, 00626, and 00949. For the ENERGY STAR Multifamily New Construction program, the first three exemptions were included from the inception of the program and the fourth is addressed in Policy Record ID 00178. In addition, Figures 1 through 5 of this document illustrate these exemptions.

Please submit all requests for additional exemptions to energystarhomes@energystar.gov. EPA will continue to compile exempted details in this document and work with industry to develop feasible details for use in future revisions to the program. Note that these exemptions will impact the efficiency and comfort of the home; however, EPA is providing them because it has not yet identified a way that insulation can be effectively integrated into the design.

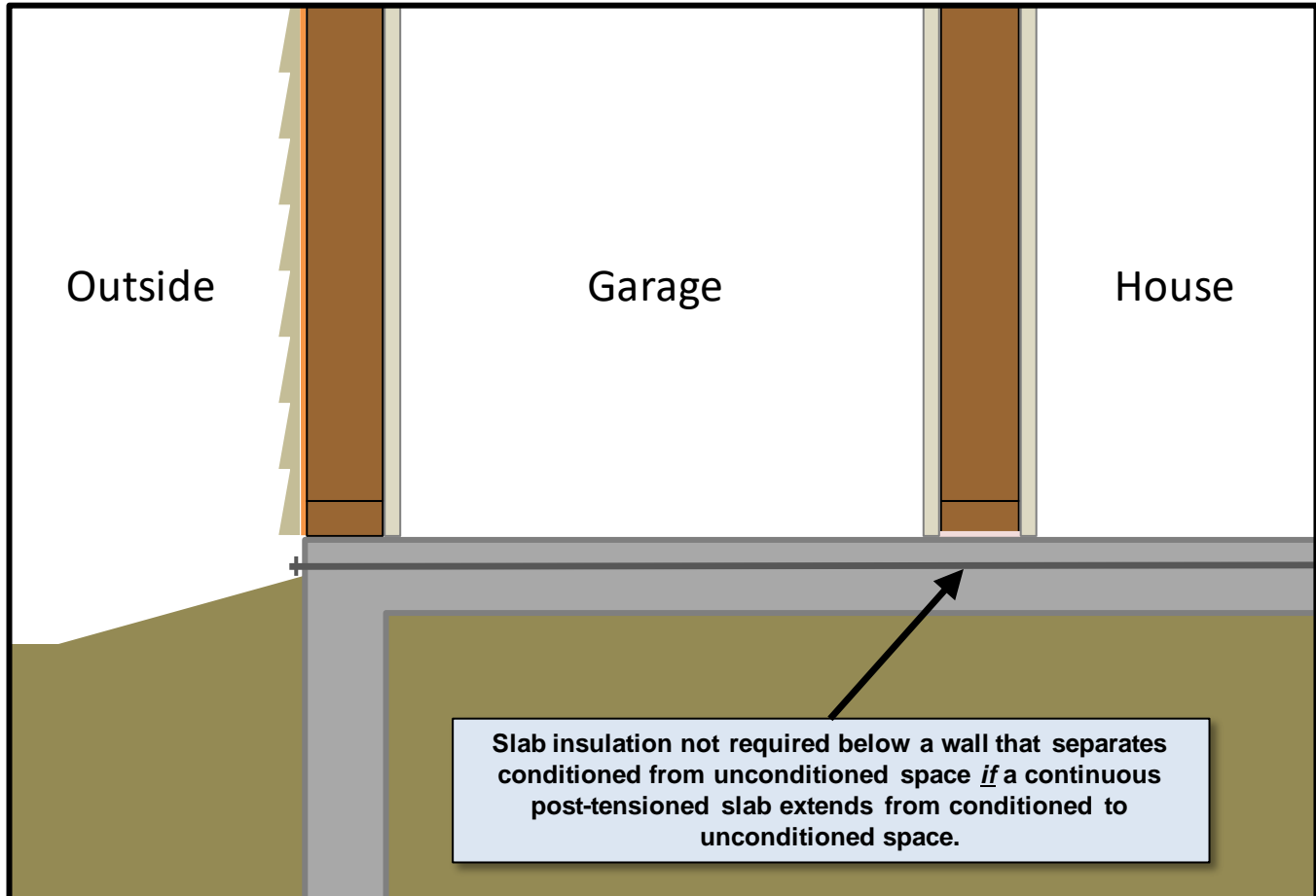


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Exempted Slab Edge Detail 1: Post-Tensioned Slabs

The edge of a post-tensioned slab is not required to be insulated. Furthermore, for the scenario illustrated in Figure 1, where a continuous post-tensioned slab extends from conditioned to unconditioned space (e.g., from conditioned space to an adjacent unconditioned garage, to a hallway, to a porch), insulation is not required to be provided at this boundary. These exemptions are provided because of the challenge of accessing the tensioning cable anchors behind insulation and due to the movement of the slab during the tensioning process.

Figure 1



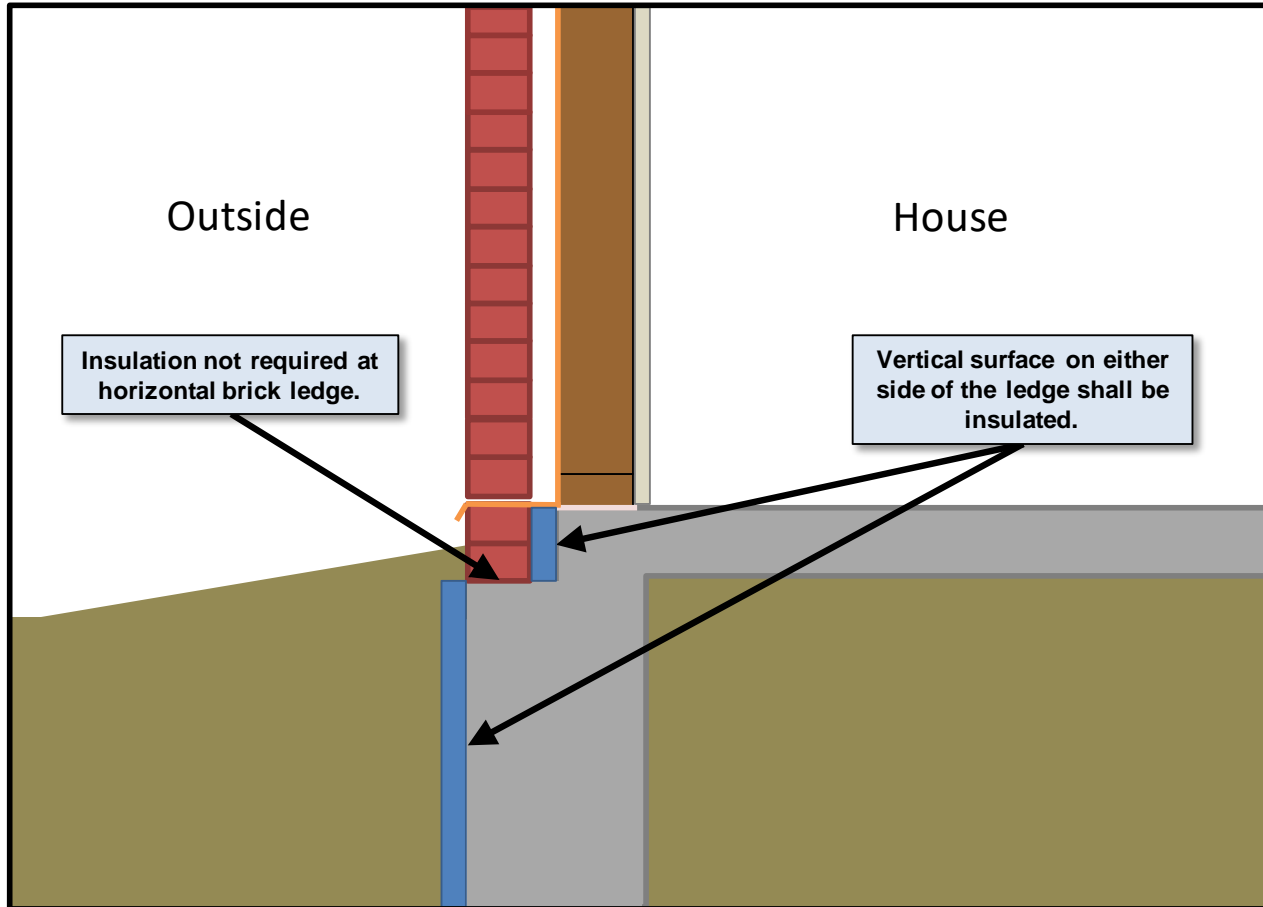


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Exempted Slab Edge Detail 2: Monolithic Slabs with Brick Ledges

Per Figure 2, insulation is not required at the horizontal brick ledge of a monolithic slab. However, the vertical surface on either side of the ledge shall be insulated. Furthermore, floating slabs with brick ledges are not exempted because the insulation layer can be moved to the interior vertical surface of the foundation.

Figure 2



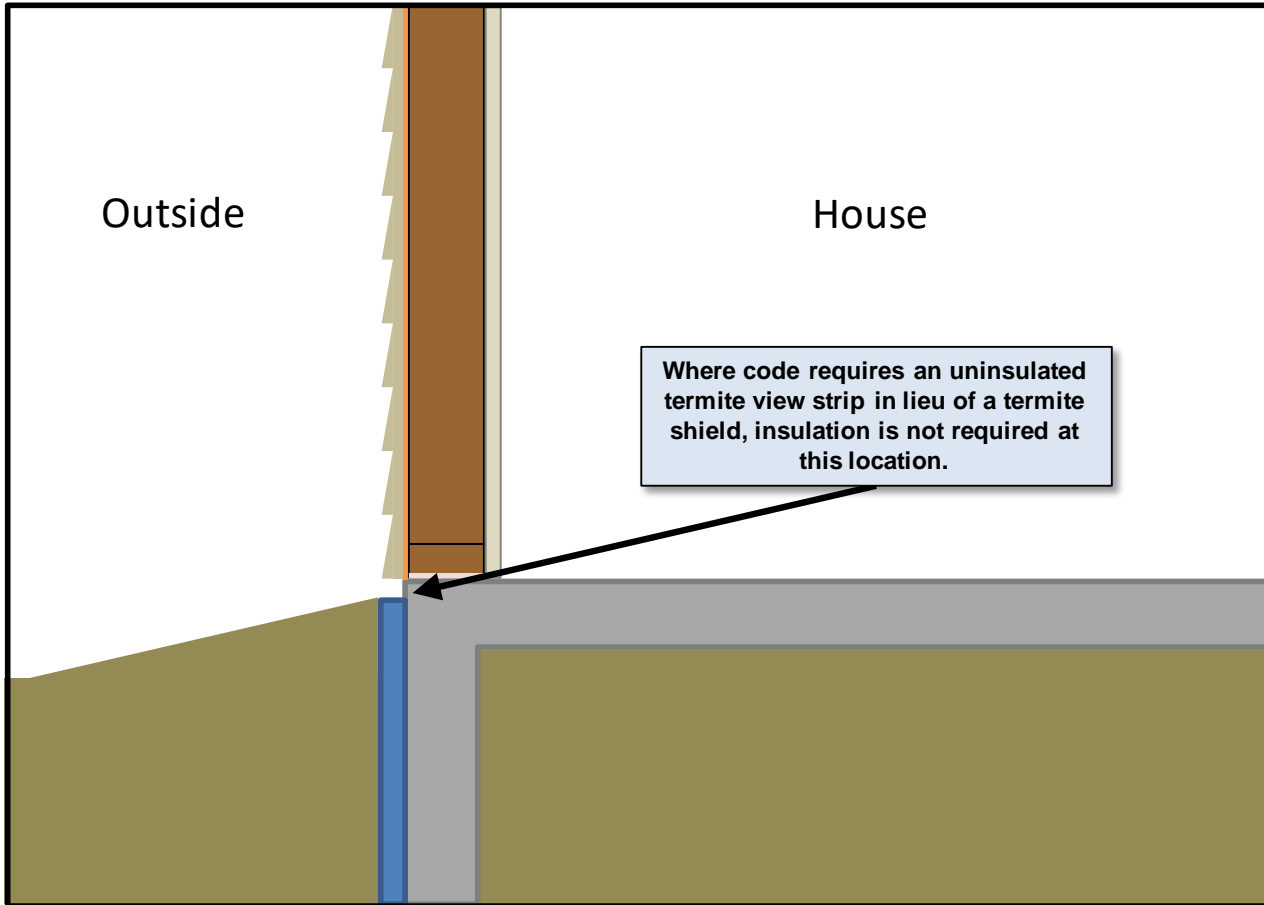


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Exempted Slab Edge Detail 3: Termite View Strips

Per Figure 3, where code requires an uninsulated termite view strip in lieu of a termite shield, insulation is not required at this location.

Figure 3





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Exempted Slab Edge Detail 4: Slabs that Separate Occupiable Spaces Within the Thermal Enclosure from Adjacent Conditioned Spaces

Per Figures 4 & 5, where a slab extends from conditioned space (e.g., a dwelling unit) to an adjacent occupiable space that is not conditioned space (e.g., an unconditioned corridor), insulation is not required to be provided at this boundary under the following conditions:

1. The adjacent occupiable space is entirely within the thermal enclosure of the building, and,
2. The assemblies separating the occupiable space from either the outdoors or not-occupiable space meet both of the following:
 - a. Except in California, the assemblies must meet the “Envelope, Windows, and Doors” requirements listed in the ENERGY STAR Reference Design Exhibit of the applicable national or regional program requirements (i.e., insulation levels; Grade I insulation; infiltration; windows; and doors). For the ENERGY STAR Multifamily New Construction program, the requirements are modified by bullets 2 and 3 in the Common Space Applicability Notes and must be followed, as well.

In California, for the ENERGY STAR Single-Family New Homes program, which does not have an ENERGY STAR Reference Design, these attributes must be equal or better than the predominant performance values of the dwelling units. For the ENERGY STAR Multifamily New Construction program, the assemblies must meet or exceed the “Envelope & Windows” requirements listed in Exhibit 1 of the California Program Requirements.
 - b. The assemblies must meet Sections 1-4 of the ENERGY STAR National Rater Field Checklist, focusing on high-performance fenestration & insulation, fully-aligned air barriers, reduced thermal bridging, and air sealing.

Per ASHRAE 62.2-2010, the term “occupiable space” is defined as any enclosed space inside the pressure boundary and intended for human activities, including, but not limited to, all habitable spaces, toilets, closets, halls, storage and utility areas, and laundry areas. Garages are generally not occupiable space, per this definition, and shall not be counted as such for the purpose of this exemption.

This exemption is provided because the occupiable space is within the building’s thermal enclosure. Therefore, a relatively small temperature gradient is expected between the occupiable and conditioned space, and a thermal break at this interface would provide limited benefit compared to the additional effort and cost.

Note that this policy does not apply to a slab that extends from conditioned space to an adjacent space that is not occupiable. For example, at the interface between a conditioned dwelling unit and a garage (which is not an occupiable space), both the assembly and the slab edge must be insulated.



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Figure 4

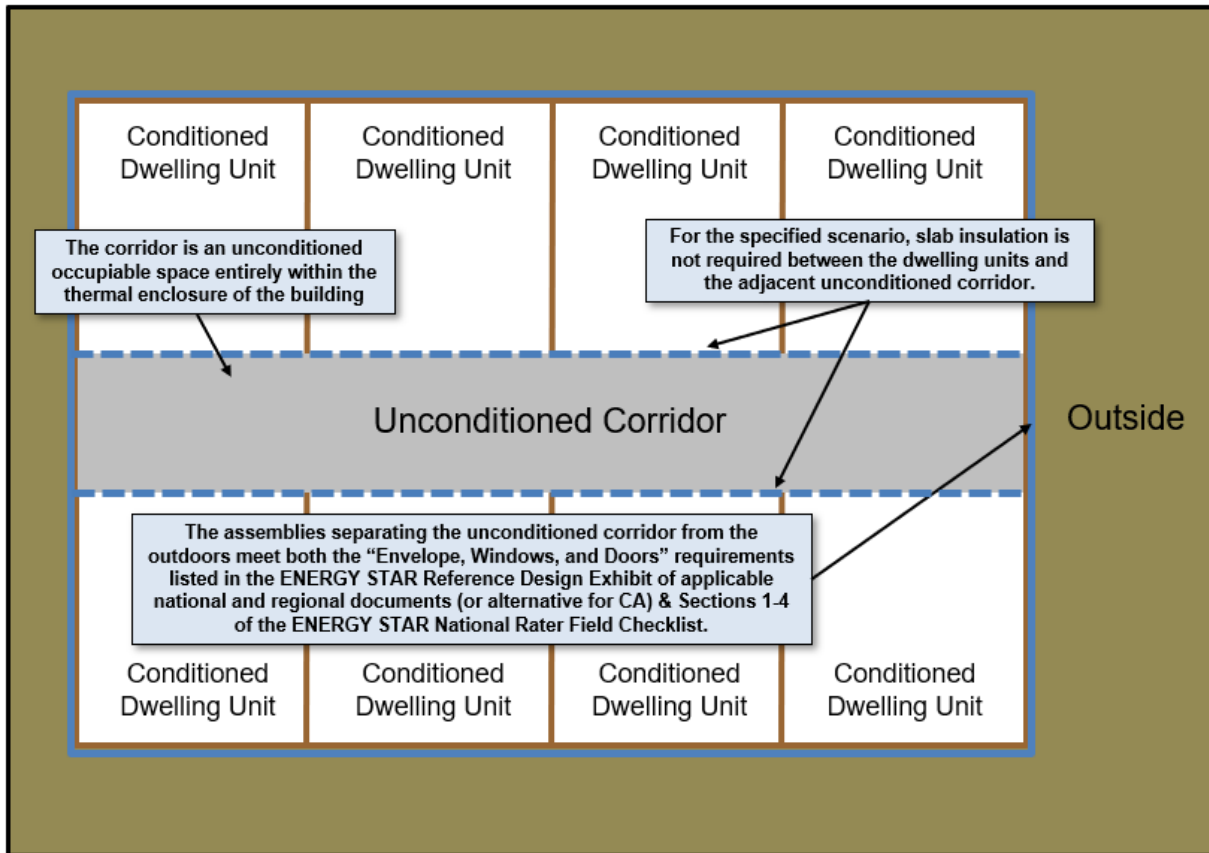


Figure 5

