

continuous insulation and thermal bridge mitigation

Many buildings in New York City have little to no insulation, or lack insulation in hard-to-reach places, such as parapets and slab edges. These uninsulated spots create thermal bridges—areas with high thermal conductivity that allow heat and moisture to penetrate the building envelope, causing occupant discomfort and degrading building components.

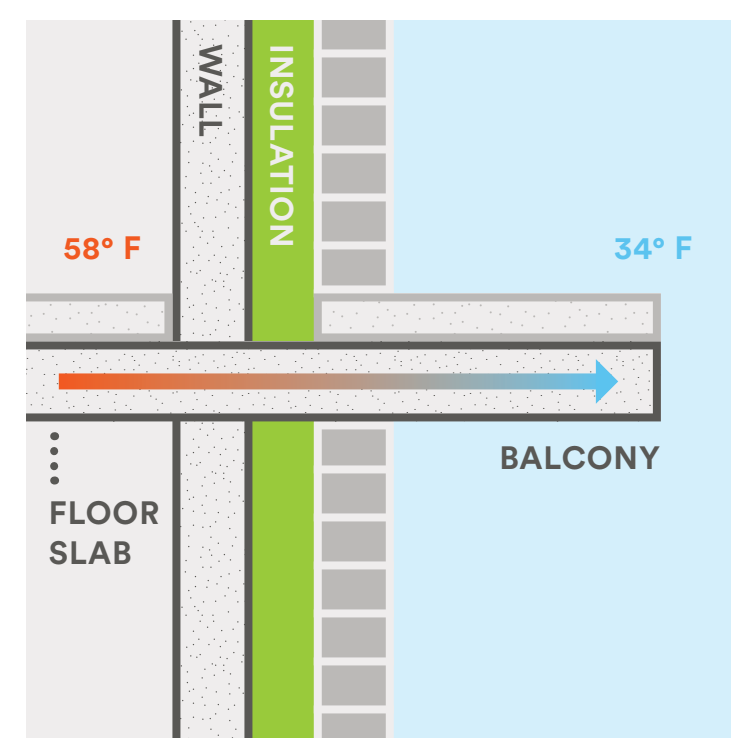
Key solutions to thermal bridging include applying insulation to uninsulated areas to ensure a continuous thermal barrier, as well as installing windows and other envelope components that include thermal breaks. Thermal breaks, also known as thermal barriers, are elements with low conductivity that prevent heat transfer and condensation across the building envelope.

solutions to common thermal bridges



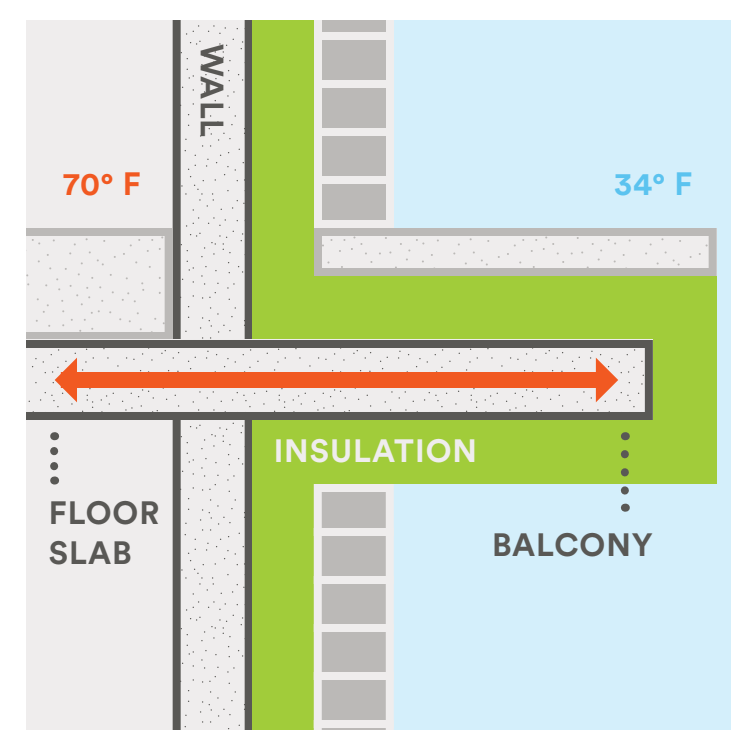
1 Balconies

Problem



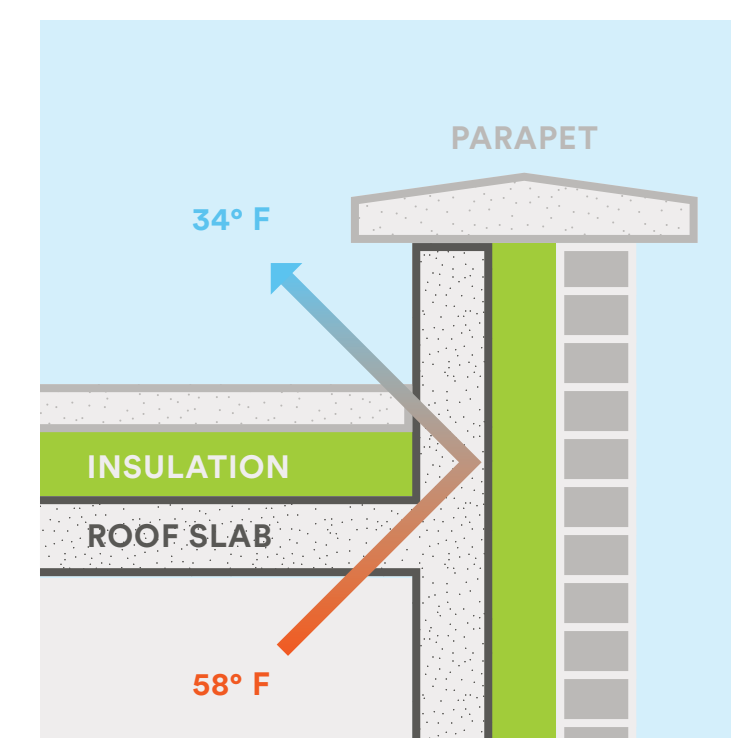
Many balconies in New York City buildings are simply extensions of the concrete slab that forms the interior floor. These typically uninsulated slabs create major thermal bridges, allowing heat to transfer through the concrete and undermine adjacent wall insulation.

Solution

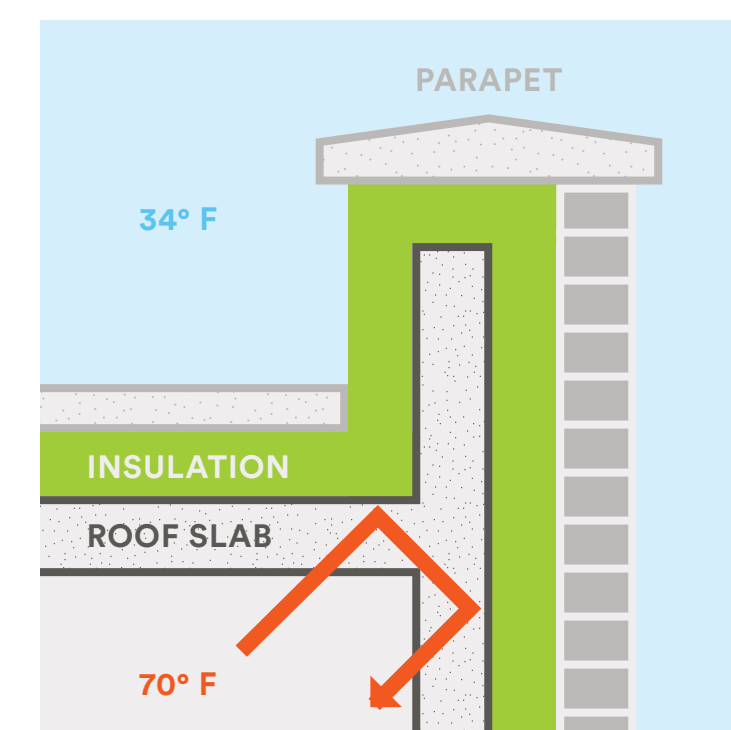


Completely or partially wrapping the balcony slab in insulation mitigates this source of thermal bridging.

2 Parapet Walls

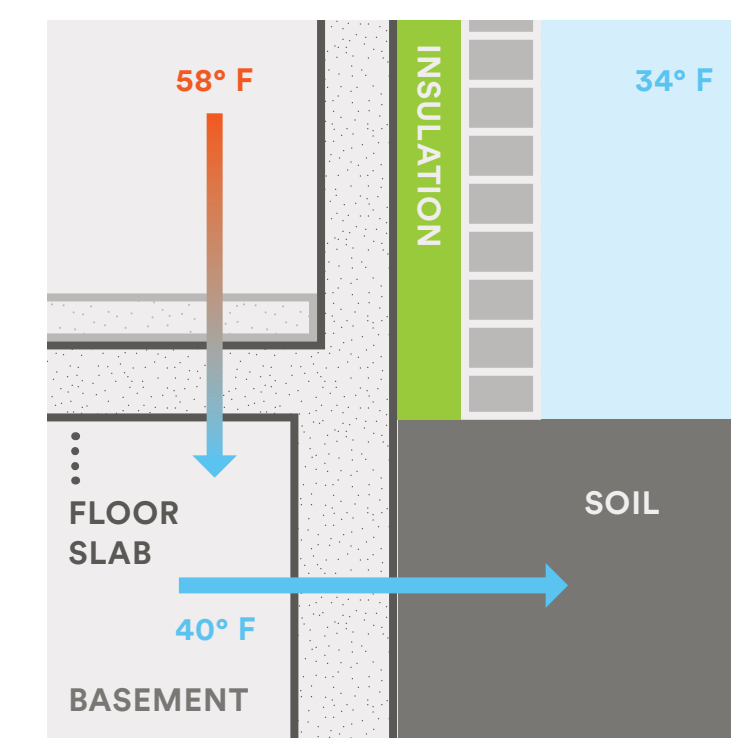


Parapet walls, a component of the facade extending above the roof, are often uninsulated and installed without a thermal break. This can result in unwanted heat transfer, especially in winter as heat rises through the building and escapes through the gap in insulation.

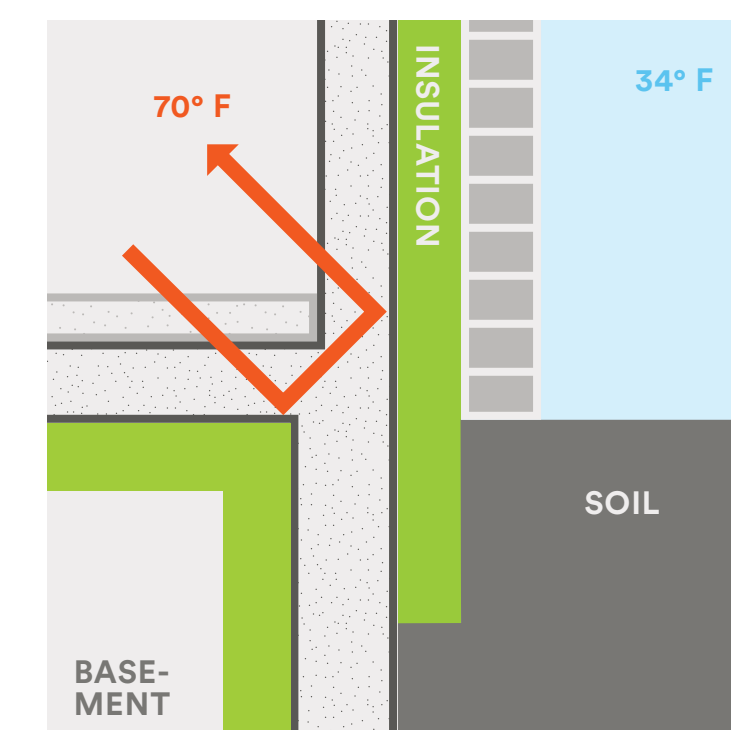


Resolving this source of thermal bridging generally involves wrapping the parapet in insulation.

3 Unconditioned Basements

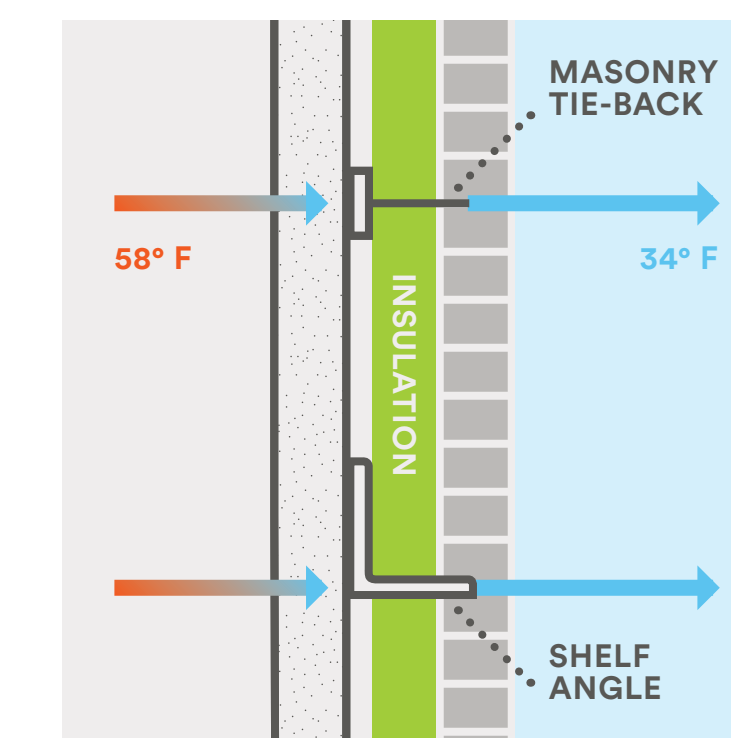


Many New York City basements are uninsulated, allowing heat to transfer between the basement and the ground floor.

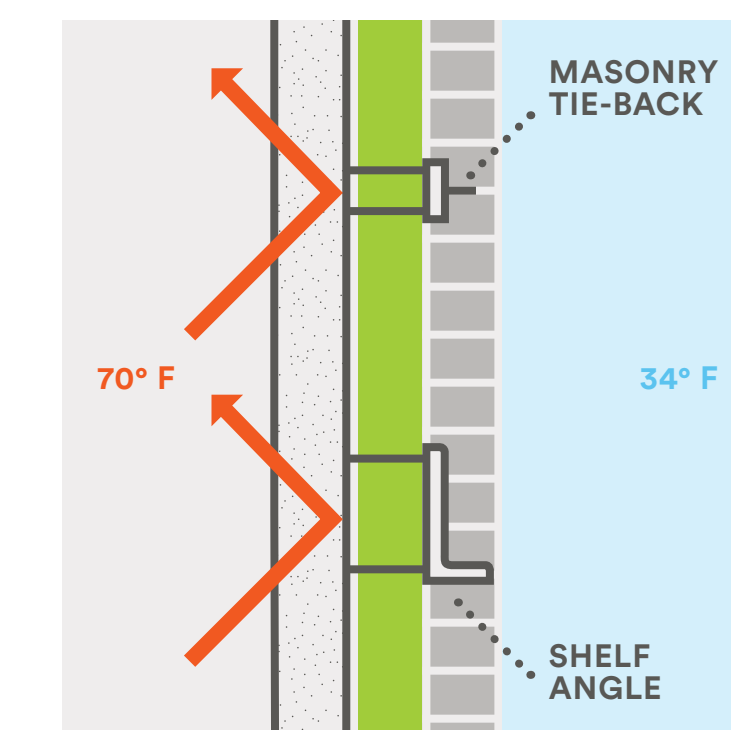


Applying sufficient insulation to the basement ceiling and walls can reduce thermal bridging.

4 Wall Construction

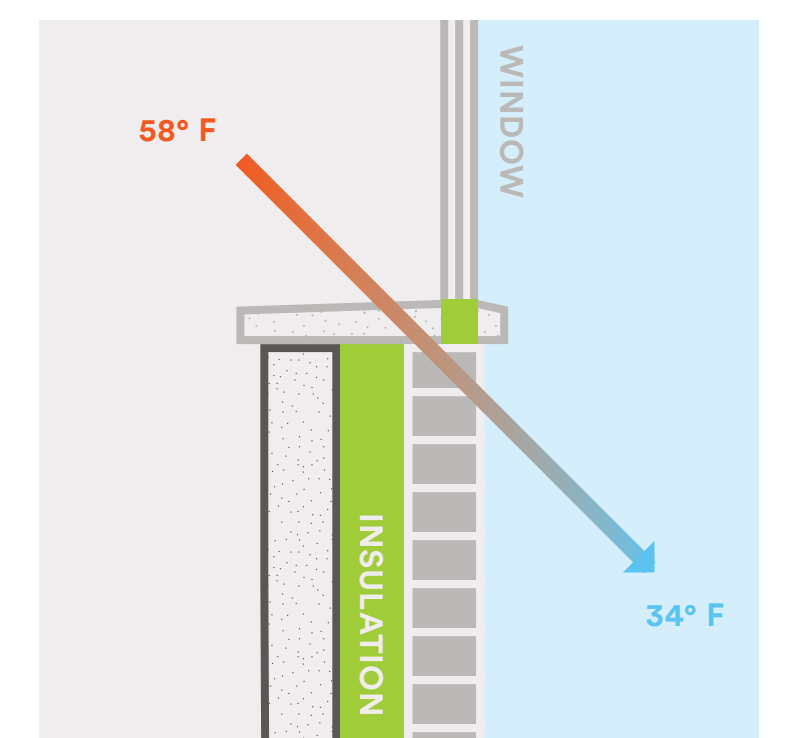


Masonry and other types of wall construction using metal attachments to connect to a building's structural elements, such as tie-backs or shelf angles, can form substantial thermal bridges.

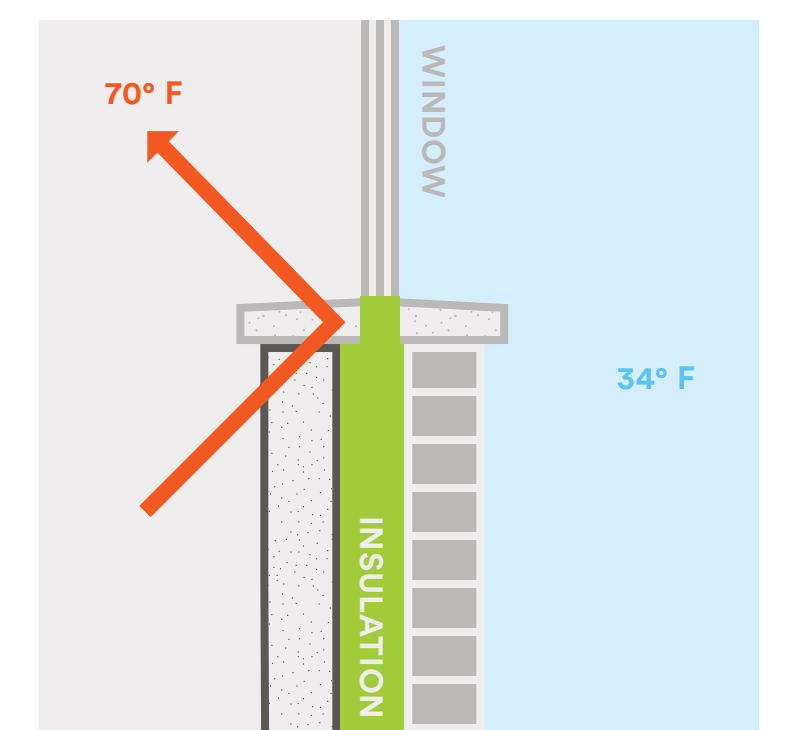


Structural thermal breaks are available to support cladding materials while ensuring that insulation remains uninterrupted.

5 Window Transitions



The transition between the various materials that create thermal, moisture, and air barriers at the window assembly can unintentionally result in thermal bridging, especially when a window is moved out of plane with the insulation.



Keeping the thermal break in a window frame aligned with the building's wall insulation is the most effective configuration to reduce thermal bridging.