



Concrete-to-Steel Structural Thermal Breaks.

Prevent condensation and mould, reduce heat loss.



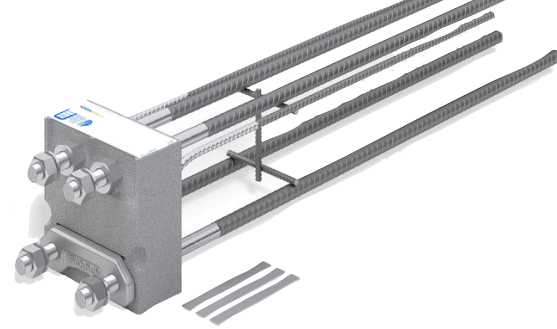
- ▶ Prevent condensation and mould, avoiding costly remediation and liability
- ▶ Significantly increase effective R-values of insulated assemblies at steel balconies and canopies
- ▶ Increase warmth of interior floor by up to 19°C (34°F)

Uninsulated connections from interior concrete slabs to exterior steel balconies and canopies create thermal bridges. As cold exterior extensions chill the warmer interior slab, condensation can quickly form on interior surfaces. This creates an ideal climate for mould growth that can lead to health problems and unsafe air quality, as well as substantial remediation and repair costs for property owners.

Isokorb® concrete-to-steel structural thermal breaks address these problems by insulating the interior floor slab from the exterior cantilevered balcony or canopy, while maintaining the structural integrity of the construction. These insulated connections can reduce heat loss by up to 94%, and eliminate condensation and mould related problems.

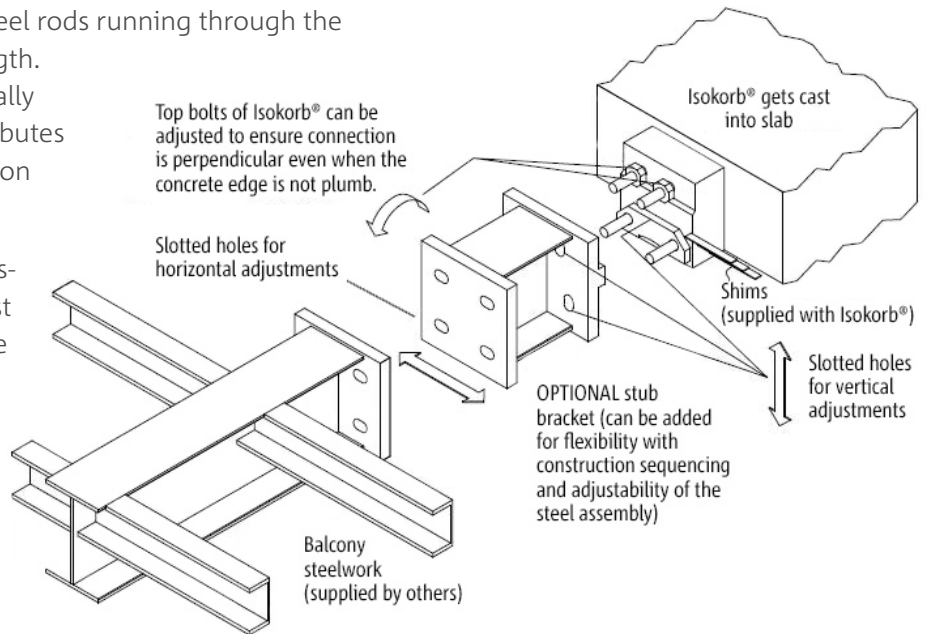
In the past decades, heat loss via air leakage and thermal conduction through the building envelope was accepted as inevitable. In today's more airtight buildings, many of these weaknesses have been addressed, making the effects of thermal bridging more pronounced.

Insulate concrete-to-steel connections with Isokorb® Structural Thermal Breaks.



Isokorb® structural thermal breaks for concrete-to-steel connections consist of a graphite-enhanced expanded polystyrene insulation module with load-bearing stainless steel rods running through the insulation for tension and shear strength. Since stainless steel is 70% less thermally conductive than carbon steel, it contributes to the R value of the module, in addition to resisting corrosion.

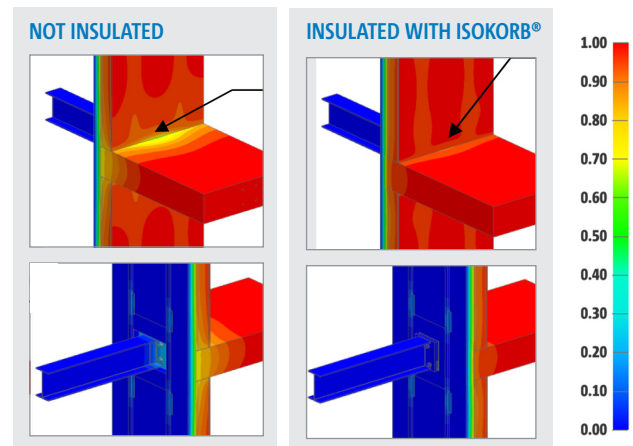
The interior/rebar side of the rod is fastened to the floor slab rebar. Once cast in concrete, the exterior/threaded side of the rod is simply bolted to the steel balcony or canopy support structures using backing plates and high strength nuts. The resulting assembly delivers the same structural strength as conventional cantilevers, while passively reducing heat loss.



Uninsulated vs. insulated connections >>

The images to the right show a thermal modeling analysis¹ of a wall detail with an interior concrete slab connected to an exterior steel balcony support. The comparison assesses the balcony support beam connected with standard uninsulated structural embeds (left) and a balcony support beam connected by the Isokorb concrete-to-steel thermal break (right). This analysis results in a 94% improvement in heat retention in the beam penetration with the thermal break compared to the beam connection with no thermal break.

¹ 2019 BC Hydro Power Smart, Building Envelope Thermal Bridging Guide (detail 5.7.7)



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