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SUMMARY

Thermal bridges within the thermally insulated layer of a building or at junctions in building envelopes occur in all forms of construction and should be minimised as they add to the overall heat loss. This publication provides information and guidance on how thermal bridging can be minimised in various forms of construction; including multi-storey steel-framed construction.

This publication provides an introduction to thermal bridging, an explanation of the consequences of thermal bridging and describes how these effects are considered and quantified in the UK Building Regulations. It presents examples of ways in which thermal bridges in steel construction are minimised which are based on the results of thermal modelling of typical interface details.

The focus of this publication is the thermal bridging associated with hot-rolled structural steel frames that use light steel infill walls and various types of cladding. Common thermal bridges include:

- Penetrations through the building envelope, such as by canopies and balconies.
- Brickwork supports attached to steel edge beams.
- Lightweight cladding support systems attached to steel frame infill walls.
- Columns located partially within external walls.

Results of thermal analyses for various details are presented in terms of the linear thermal bridging parameter (psi-value). A sample calculation is shown to demonstrate how the psi-values may be summed over the building envelope to determine an effective additional heat loss parameter (γ -value) for use in building energy models.

The final section provides guidance on the structural design of connections incorporating thermal break products.

Guidance on thermal bridges in light steel framing and modular construction is given in SCI publication P411.

