CHAPTER 1 - CONSERVATION AND EFFICIENCY: BUILDING ENVELOPE

501.02 THERMAL BRIDGING

Silver Sa'fa

INTENT

To reduce energy consumption and maintain adequate thermal comfort for building occupants by eliminating thermal bridges.

REQUIREMENT

1. For all new air conditioned buildings, thermal bridges must either be eliminated or efficiently insulated to reduce the amount of heat transfer. Thermal bridging may occur at connection points between concrete or steel beams, external walls and columns and around doors and windows.
2. For all villas, thermal bridges can be avoided by increasing the efficiency of building envelope. The average thermal transmittance (U-value) for the building envelope must not exceed 0.40 W/m²K.

SIGNIFICANCE

The area of a building that has a significantly higher heat transfer than the surrounding materials is called a thermal bridge. These areas may either have a break in insulation or less insulation or penetrated by an element with a higher thermal conductivity. This heat leak will increase the heat flow rates and surface temperatures compared to unbridged structure.

Thermal bridges may increase the risk of condensation on internal surfaces and even cause interstitial condensation within walls and other building elements. Reducing thermal bridging leads to improved performance of building's envelope. This results in reduced energy consumption, lowered air conditioning requirements, less load on air conditioning equipment and better indoor thermal comfort.

APPLICABILITY

This regulation is applicable to all building types. Refer to Table 101.07(1) in Section One - Administration for detailed applicability levels.

IMPLEMENTATION

Thermal bridging occurs when certain building elements enable the flow of heat from outside to inside of the building. Thermal bridges occur at the junctions between wall and floor, junctions between wall and roof, window and door reveals, holes in building envelope for pipes and cables, and connection points between concrete or steel beams. Thermal bridges may also occur where building