

## 14.0 Building Envelopes

A building envelope is the separation between the interior and the exterior environments of a building. It serves as the outer shell to protect the indoor environment as well as to facilitate its climate control. Building envelope design is a specialized area of architectural and engineering practice that draws from all areas of building science and indoor climate control.

Building envelope design includes four major performance objectives:

- Structural integrity
- Moisture control
- Temperature control
- Control of air pressure boundaries of sorts

### 14.1.1 Building Envelope Issues

Control of air includes air movement through the components of the building envelope (interstitial) itself, as well as into and out of the interior space, which affects building insulation greatly.

The physical components of the envelope include the foundation, roof, walls, doors and windows. The dimensions, performance and compatibility of materials, fabrication process and details, their connections and interactions are the main factors that determine the effectiveness and durability of the building enclosure system.

Common measures of the effectiveness of a building envelope include physical protection from weather and climate (comfort), indoor air quality (hygiene and public health), durability and energy efficiency. In order to achieve these objectives, all building enclosure systems must include a solid structure, a drainage plane, an air barrier, a thermal barrier, and may include a vapor barrier. Moisture control is essential in cold climates.

### 14.1.2 Contact a building envelope expert

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