

Product Information Bulletin

Guidelines for Roof Cladding Design

The **Insulspan[®] SIP (structural insulating panel) System** must be protected from exposure to rain, prior, during and after installation. Long-term performance of the **Insulspan SIP System** depends upon continuous protection from water penetration for the projected lifetime of the structure.

Oriented strand board (OSB) used in the **Insulspan SIP System** meets requirements DOC PS2, Exposure 1 (**Performance Standard for Wood-Based Structural-Use Panels**) in the US and CSA-O325, exterior grade sheathing (**Construction Sheathing**) in Canada. Exposure 1 or exterior grade sheathing classification means that the OSB panels are suitable for uses not permanently exposed to the weather. This classification means limited exposure to moisture due to short-term construction delays, or conditions of similar severity, will not affect OSB structural performance properties.

As with all materials, OSB has strengths and weaknesses. OSB has a tendency to swell when exposed to moisture. This swelling tends to be greatest at the edges of the OSB. A roof sheathing membrane can be installed over a SIP roof panel to temporarily protect the OSB from moisture penetration if the shingles are to be applied within a reasonable time afterward. However, if the sheathing membrane or shingles are applied while the roof deck is still damp, moisture transfer is slowed and OSB edge swell may occur. For this reason, if the OSB gets wet it must be allowed to dry thoroughly prior to sheathing membrane or shingle application. Any OSB edge swelling at SIP joints must be ground flat prior to sheathing membrane installation. Failure to do this will likely allow the OSB edge swelling to telegraph through the shingles and be noticeable in the form of a ridge or hump on the roof surface at SIP joints.

In conventional wood frame structures, when a failure of the roof cladding occurs, water will leak into the attic space. Occupants will typically be alerted by this leakage before structural damage occurs to the roof and repairs can be undertaken. In the case of closed panels, such as the **Insulspan SIP System**, occupants may not be alerted to any water penetration until the exterior OSB skins have absorbed excessive moisture.

For this reason, the roof cladding design must include a 'second line of defense' against water penetration from the exterior in addition to the asphalt shingles which act as the primary waterproofing system. In addition to the essential requirement of meeting occupant expectations for performance and maintenance, the roof cladding design must include a second line of defense based upon the anticipated wind-driven rain, snow and ice condition for the geographical location, building code and shingle manufacturer requirements. Examples of a second line of defense would include single or multiple layers of modified bituminous sheathing membranes.