

## Shrinkage: Tips for Durable Wood Building Envelopes

Key Point	Don't, for example:	Do:
<p>Shortening of wood frame occurs due to drying and loading, especially for new construction and especially due to cross grain shrinkage.</p> <p>Differential movement occurs between different parts of the construction when there are different amounts of cross grain wood elements.</p> <p>Differential movement also occurs between different parts of the construction when cross grain wood elements are used adjacent to other materials such as steel, concrete and masonry.</p>	Design slopes of balconies without considering differential movement.	<p>Design slopes of balconies supported by wood/steel/concrete columns allowing for differential movement, and potential back slope caused by loading on interior floor joists.</p> <p>Design and build independently supported balconies. Attention should be paid to accommodate the differential movement between the posts and the building frame at the building interfaces.</p>
	Design slopes of roof decks without considering differential movement.	Design slopes of roof decks taking into account the potential differential movement if decks are supported by different structures or materials.
	Design slopes of cross-cavity flashing without considering differential movement.	Design slopes of cross-cavity flashing at cladding interfaces and openings, etc., taking into account the differential movement between frame and cladding (greater slope or 2 piece flashing that allows for movement between frame and cladding).
	Design interfaces between mechanical services/plumbing and building envelopes without considering differential movement.	Design and install mechanical services/plumbing to allow for movement, particularly for horizontal connections at floor levels. Water lines can use flexible pipes, and hard drainage pipes should have enough horizontal run with adequate slopes.
	Rely entirely on caulking for water shedding surface.	Design so caulking is not the critical element of the water management system.
	Use horizontal wood components to support one end of a beam and vertical components to support the other end.	Use the same amount of horizontal and vertical wood components to support both ends of a horizontal beam.
	Use wood components to support one end of a beam and non-wood components at the other end.	Design to allow expansion and shrinkage of wood due to moisture, and expansion and shrinkage of other materials due to moisture and temperature change.
Differential movement may create gaps and allow air leakage.	Design air barriers without considering building movement.	Design so the continuity of the air barrier will not be compromised by building movement, especially at interfaces between wood-frame walls and steel/masonry/concrete walls.
Wood truss uplift may occur as a result of differential movement between lower cords and top cords	Design connections between ceilings and partition walls without considering potential truss uplift.	Design so that the connections between the ceiling and partition walls allow the truss to move upwards without causing dry wall cracks or air leakage.

For more detailed information see [www.durable-wood.com](http://www.durable-wood.com)  
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