

Whitepaper 5

Engineering with SIPs: Wall Ratios and Diaphragm Design Explained

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Executive Summary

SIPs are structurally reliable for wall and diaphragm applications, equivalent to wood-frame bracing systems.

The Challenge: Aspect Ratios and Lateral Loads

Codes restrict aspect ratios, raising design questions for SIP walls and diaphragms.

The Solution: SIPs as Shear Walls and Diaphragms

IRC treats SIPs as continuously sheathed wood walls. FPL and APA studies confirmed diaphragm shear performance.

Evidence

SIP diaphragms achieved up to 1180 plf shear strength, exceeding published values.

Relevant Standards (NEN/EN/ISO)

• NEN-EN 1995-1-1 – Timber structures • NEN-EN 14509 – Sandwich panels structural properties • NEN-EN 1991 – Actions on structures • NEN-EN 1993/1998 – Lateral load/seismic design

Conclusion

SIPs can safely serve as walls and diaphragms, matching wood-frame systems.

Call to Action

Contact Quacent B.V. for engineering support on SIP projects at www.quacent.eu or info@quacent.eu.