

PHRC Report #34: Progress Report on the Creep Performance of Structural Insulated Panels

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Author(s): S. B. Taylor and H. B. Manbeck.

BACKGROUND:

With lumber prices soaring as a result of large scale natural disasters and environmental concerns, the need for the identification and investigation of alternative engineered wood structural systems has never been greater. The tree year project authorized by the PHRC in May 1992 specified an investigation into the implementation of hardwoods and Structural Insulated Panels (SIPs). Report Number #31 entitled "A Review of Selected Alternative Wood Framing Systems for Residential and Light Commercial Construction" was completed in September 1993 to show designers, architects, and engineers that they can now apply allowable design values when specifying hardwood materials in solid sawn, glulam, LVL, diaphragm and mail-laminated structural framing systems. The objective of this research is to continue the investigation of SIP's as an alternative framing material.

SUMMARY OF RESULTS:

This progress report outlines the background of SIPs and summarizes the literature concerning long term deflection techniques with respect to wood based structural materials. An experimental plan has been defined which recommends the testing of 254 mm (10 in) by 3.05 m (10 ft) panel specimens at constant temperature and relative humidity. Specimens will be tested with a range of thicknesses, core types and facing stress levels to determine the influence of these parameters on long term flexural behavior of SIPs. The testing apparatus has been designated and constructed and four panel manufacturers have been contacted and all have agreed to provide specimens for testing. Specimens from the first manufacturer have been sampled and cut to size and are ready for testing.

WHAT IT MEANS TO YOU:

This report describes the progress of the testing protocol and defines the experimental plan to be followed in the theoretical research and physical testing.

WHAT'S NEXT?

The results of the theoretical and physical research will be used to develop models to predict the long term behavior of SIPs under sustained loads and "normal temperatures and relative humidities."