

Use of Structural Insulated Panels (SIPs) in Seismic Design Categories

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Building with structural insulated panels (SIPs) in seismic design categories D, E and F is permitted when building code compliance is demonstrated through a manufacturer evaluation report.

Section R613 of the 2009 International Residential Code (IRC), Structural Insulated Panel Wall Construction, has limits for the use of SIPs. Section R613.2 Applicability Limits states that SIPs shall be limited to sites subjected to seismic design categories A, B or C. Some building code jurisdictions have interpreted this to mean that SIPs cannot be used in Seismic Design Categories D, E, and F. In order to clarify this, the ICC staff was asked for an interpretation of this section. The response from Larry Franks of the ICC staff follows:

In response to your question, per your e-mail of March 28, 2011, we offer the following opinion of the meaning and intent of the code on this subject. It is my understanding that your e-mail poses the following question:

Q: Does the 2009 IRC permit structural insulated panel (SIP) wall construction beyond the applicability limits specified in Section R613.2?

A: Yes. Section R613 is a prescriptive design for SIP wall construction based on the limits established in Section R613.2. In accordance with Section R301.1.3, a building that contains structural elements not conforming to the prescriptive limits of the code is acceptable if designed in accordance with accepted engineering practice. Also, Section R104.11 permits the use of SIP wall construction beyond the applicable limits of Section R613.2.

This opinion is based on the information which you have provided. We have made no independent effort to verify the accuracy of this information nor have we conducted a review beyond the scope of your question. As this opinion is only advisory, the final decision is the responsibility of the designated authority charged with the administration and enforcement of this code.

In order to show compliance to IRC Section 104.11 as noted above, additional information must be supplied by the SIP manufacturer. Most commonly a research report (evaluation report) obtained from a recognized agency such as ICC-ES or NTA is supplied to demonstrate the use of SIPs in Seismic Design Categories D, E, and F.

ICC-ES publishes evaluation reports in compliance with the ICC ES AC04 Acceptance Criteria for Sandwich Panels. AC04 Appendix A Section 4.5.1 says that structural insulated panels evaluated in accordance with the requirements set forth in Appendix A are permitted to be used as shear walls in all Seismic Design Categories. The basis of Appendix A is IRC Section R104.11.

In a similar manner, NTA publishes evaluation reports following NTA IM14 SEP01 to demonstrate the use of SIPs in Seismic Design Categories D, E, and F.

Therefore, SIPs can be used in seismic design categories D, E and F if the manufacturer obtains a recognized code report from ICC-ES or NTA.