

EWP Literature Information vs. Software Output

Roseburg Forest Products (RFP) manufactures engineered wood products (EWP) including I-joists (RFPI®-Joist) and laminated veneer lumber (RigidLam®LVL). Oriented strand board (OSB) rimboard is also available through RFP marketed as RigidRim®Rimboard.

Various sources of information are available to the project specifier, design technician and end user that aid in the proper design, layout and installation of RFP engineered wood products. These sources include various code approvals (e.g. ICC-ES ESR-1251 and ESR-1210, and APA PR-L259 and PR-L289), comprehensive Residential and Commercial Design Guides, Installation Guides, and state-of-the-art software tools. These software tools, provided by Simpson Strong-Tie®, include a single-member sizing program as well as a robust layout program with member analysis.

The various charts and tables in the printed literature as well as calculations performed by software are generated using the allowable design properties listed in the current code reports. However, it is important to understand that there is a fundamental difference between printed literature (code reports, Design Guides and Installation Guides) and design software. Printed literature is meant to cover a wide variety of general construction conditions, whereas software is for specific conditions. For instance, the I-joist allowable span tables in the printed literature are based on a combination of specific loads, on-center spacing and deflection criteria from which the maximum attainable span for each given series and depth is calculated. Other charts, including the hole chart, duct chase chart and reinforced cantilever chart, are based on these same spans which have been maximized for the specific conditions. Therefore, the spans, hole locations and cantilever reinforcement requirements in the printed literature are based on a “worst case” scenario for the given loads and deflection criteria. The reason for using these “worst case” scenarios in printed literature is to enable the end user to identify and install properly sized RFP engineered wood products without the need for specific design or engineering calculations.

On the other hand, software analyzes and designs members for the actual spans and loading conditions for a specific application. These conditions may differ from the various assumptions that the literature charts and tables are based on. Therefore; the software design may or may not “max out” the capabilities of the particular I-joist. This means that the output from the software will often not agree with what is printed in the literature. The software will often allow a larger hole, or a hole closer to the bearing, or not require reinforcement on a cantilever due to the fact that the particular I-joist is not pushed to its limit, as is the case in the printed literature.

RFP partnered with Simpson Strong-Tie® at the startup of RFP’s engineered wood business because of Simpson’s years of successful development and implementation of structural layout and design software with many customers. RFP provides all of the necessary material properties for the various EWP products to Simpson for inclusion in the software. The database is reviewed and updated as required. Roseburg Forest Products believes the software provided by Simpson produces accurate and reliable output for the RFP products.

Other equally capable design software may have RFP products in their database but no ongoing relationship exists between RFP and software manufacturers other than Simpson Strong-Tie®.