



Design Guidance – Use of Significant Figures in the Design of EWP

This document provides guidance related to the use of significant figures in the design of Engineered Wood Products (EWP). Most computation devices provide far more digits or figures than justified by practical measurement limitations of the input values. Traditionally, the number of significant figures from computations are reported as equivalent to the least number of significant figures of any calculation input [1]. When designing with EWP:

- EWP design values qualified in accordance with ASTM Standards are typically reported to three significant figures [2,3].
- Design loads are typically reported to two significant figures (e.g. [4])

Based on the number of significant figures of the input values, design stress ratios (e.g. $\sigma_{\text{applied}}/\sigma_{\text{allowable}}$) should not be reported to more than two or three significant figures. Typical practice is to report design ratios to the nearest 1% which results in two significant figures for ratios below 1.00 and three significant figures for ratios of 1.00 and higher. Design stress ratios exceeding unity should be reviewed by an engineer [5].

References

¹Lindeburg, M.R. (2015). *Civil Engineering Reference Manual for the PE Exams*. 15th Edition. PPI

²ASTM International (2019). *Standard Specification for Establishing and Monitoring Structural Capacities of Prefabricated Wood I-joists, ASTM D5055*. ASTM International, West Conshohocken, Pennsylvania

³ASTM International (2022). *Standard Practice for Sampling and Data-Analysis for Structural Wood and Wood-Based Products, ASTM D2915*. ASTM International, West Conshohocken, Pennsylvania

⁴International Code Council (2021). Chapter 16: Structural Design. In 2021 International Building Code. Falls Church, VA. International Code Council

⁵Taly, N. (2003). *Loads and Load Paths in Buildings, Principles of Structural Design*. 1st Edition. International Conference of Building Officials