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Design Requirements and Engineering Properties for Mechanically-Laminated Wood (Mechlam) Assemblies



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Developed by the ASAE Mechanically Laminated Post Design Subcommittee of the Structures Group; approved by the Structures and Environment Division Standards Committee; adopted by ASAE December 1996; approved as an American National Standard February 1997; reaffirmed by ANSI February 2003; reaffirmed by ASAE February 2003; reaffirmed by ASABE and ANSI February 2008; revised and approved by ANSI August 2010; corrigenda 1 issued March 2011; reaffirmed by ASABE December 2014; reaffirmed by ANSI January 2015; reaffirmed by ASABE and ANSI November 2019; revised and approved by ASABE and ANSI February 2023.

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1 Purpose and Scope

1.1 Purpose. The purpose of this Engineering Practice (EP) is to establish guidelines for designing and calculating engineering properties of wood assemblies comprised of three or four wood layers fastened together with dowel-type fasteners no larger than 6 mm (0.25 in.) in diameter.

1.2 Scope. This Engineering Practice provides equations for calculating the adjusted design moment for bending about either assembly axis, and the adjusted design force for axial tension and axial compression for spliced and unspliced mechlam assemblies. This EP also contains methodology for establishing the flexural rigidity value (EI) for bending about either assembly axis and equations for calculating minimum flexural rigidity values (EI_{min}) for beam and column stability calculations.

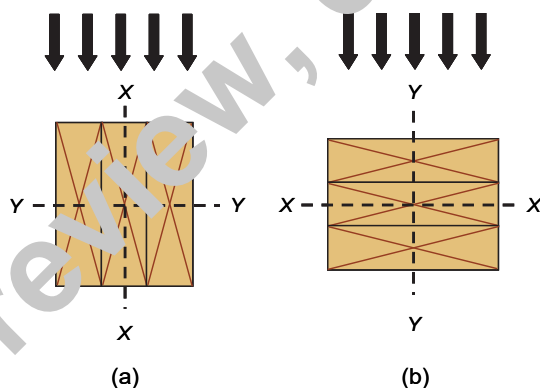


Figure 1A (a) Vertically laminated, (b) horizontally laminated assemblies

1.3 Design limitations. This Engineering Practice is limited to mechlams with three or four wood laminations that meet the following requirements:

- The actual thickness, b , of each lamination is between 0.038 and 0.051 m (1.5 and 2.0 in.).
- All laminations have the same face width, d .
- Faces of adjacent laminations are in contact.
- The centroid of each lamination is located on the Y-Y axis of the assembly (Figure 1A), that is, no laminations are offset.
- All laminations are of the same grade and species of lumber or structural composite lumber.
- There is no more than one common end joint per lamination within a splice region.