

Provisions Of NDS-2005

The National Design Specification For Wood Construction (NDS) provides detailed requirements for design of wood structures and components. For this evaluation, the 2005 version (NDS-2005) is used. Based on copies of NDS code pages attached to the 2007 calculations, Mr. Thom used NDS-2005.

Design of connections made with nails and screws is included in general requirements for "dowel" type fasteners (Chapter 11).

- ➔ Correct interpretation and use of code provisions for dowel type fasteners requires careful study of code provisions and reference to Commentary discussion. Some key code provisions are less than clear and can easily lead to incorrect calculations.
- ➔ For evaluation of connections subject to tension force, the NDS code does not clearly address the essential (and easy to overlook) requirement to verify that fastener strength is adequate on both sides of the connection.

Chapter 10 (Mechanical Connections) includes the following key provisions relevant to this evaluation;

10.1.4 Mixed Fastener Connections

Methods of analysis and test data for establishing reference design values for connections made with more than one type of fastener have not been developed. Reference design values and design value adjustments for mixed fastener connections shall be based on tests or other analysis (see 1.1.1.3).

Provision 10.1.4 certainly means that nails (or screws) and light-gage steel connectors should not be considered to act together without test data to substantiate behavior. This provision might reasonably be considered not to apply to shear capacity of nails and screws acting together. However, for withdrawal capacity, it is reasonable to assume that nails and screws should not be considered to act together, without test data.

10.1.5 Connection Fabrication

Reference lateral design values for connections in Chapters 11, 12 and 13 are based on:

(a) the assumption that the faces of the members are brought into contact when the fasteners are installed, and

- ➔ Although the very brief Commentary discussion of 10.1.5 focuses on bolted connections, this provision should be considered to mean that code provisions are not strictly valid for the valley truss connection, due to the gap under valley truss bottom chord.

