



# Seminar Outline

American Wood Council *Engineered and Traditional Wood Products*

A M E R I C A N F O R E S T & P A P E R A S S O C I A T I O N

## Two-Day Wood Design Workshop

The American Wood Council is the industry leader in development of standards for wood design. Participants in this seminar will be able to comprehend provisions of the 2001 NDS<sup>®</sup> and the *Wood Frame Construction Manual 2001* National Edition for wind, snow, and seismic applications. Attendees will also be able to apply building code and fire issues, connection design philosophies, detailing, and code provisions, and learn about engineered wood products.

In particular, this two-day course features the high wind, snow, and seismic provisions within the Wood Frame Construction Manual 2001 National Edition. The Manual layout and provisions are presented, along with a discussion of wood building behavior under gravity and lateral load. Background material is first presented on the first day. In the second day, the course steps through the detailed structural design of a 2-story house subjected to gravity (dead, live, and snow) and lateral (wind and seismic) loads, including the design of all components, diaphragms, shearwalls, and connections.

This seminar is primarily designed for structural engineers, and building officials; however, designers, including architects will benefit from the information, including AIA learning units in the area of health, safety and welfare. 1.5 CEUs will be awarded for this program (15.0 contact hours).

Two comprehensive workbooks will be provided to participants: background material for the first day, and on the second day, a comprehensive workbook with very useful blank worksheets, checklists, and related journal papers. Attendees are also encouraged to bring copies of the NDS 2001 and WFCM 2001 if they have them. Otherwise, attendees are asked to indicate their the desire to purchase *at advance registration* a WFCM 2001 at 25% discount off the published price of \$30 (\$22.50), and their order will waiting for them to pay for and pick up at the seminar.

The outline for this two-day course is as follows:

### Day 1

8:00 – 9:30 am  1.5 hr	<p><b>Building Codes and Wood Design</b></p> <ul style="list-style-type: none"> <li>Background information on the development and format of the International Building Code (IBC) is provided, including heights and area limitations, use and occupancy classifications, types of construction with a focus on the use of wood, fire resistance, fire retardant treated wood, flame spread rating, finger jointed lumber.</li> </ul>
9:30 – 9:45 am	Break
9:45 – 11:00am  1.25 hrs	<p><b>Wood Structural Design in the International Building Code 2000</b></p> <ul style="list-style-type: none"> <li>A layout of how structural wood provisions are presented in the IBC 2000; Chapter 23 in particular. This is a first stop for those new to the IBC 2000. Course also covers how AF&amp;PA documents are referenced.</li> </ul>
11:00 – 12:00 pm  1.0 hrs	<p><b>National Design Specification<sup>®</sup> 2001 for Wood Construction (NDS)</b></p> <ul style="list-style-type: none"> <li>Features of the 2001 NDS, including: reformat of connection provisions including block tear-out checks that is retroactive to all previous NDS editions, new notching provisions, pole design, exposed wood member fire design, shearwalls and diaphragms.</li> </ul>
12:00 – 1:00 pm	Lunch
1:00 – 1:45 pm  0.75 hrs	<p><b>LRFD Manual for Engineered Wood Construction</b></p> <ul style="list-style-type: none"> <li>The <i>Load and Resistance Factor Design (LRFD) Manual for Engineered Wood Construction</i>, published by AF&amp;PA, contains the nationally recognized alternate design procedure to allowable stress design (ASD) as incorporated in the NDS. Topics covered in this course include: similarities and differences with respect to ASD, design values, behavioral equations, example problems and case studies.</li> </ul>
1:45 – 2:45 pm	<p><b>Wood as Addressed by the IRC</b></p> <ul style="list-style-type: none"> <li>Background information on the development and format of the International Residential Code (IRC) 2000 and 2003 editions is provided, including changes that will be evident with the 2003 edition.</li> </ul>

1.0 hrs	This session provides a discussion forum for the use of the IRC and Wood Frame Construction Manual.
2:45 – 3:00 pm	Afternoon Break
3:00 – 4:00 pm 1.0 hrs	<p><b>Engineered Wood Products</b></p> <ul style="list-style-type: none"> <li>Introduction to the ever-growing family of engineered wood products (EWP). Products covered are lumber, glued-laminated timber (glulam), structural composite lumber, wood I-joists, plywood and oriented-strand board. The standards that form the basis for the manufacture and the development of design stresses for each product are discussed. Unique characteristics for each product are highlighted and extensive examples of the use of these products in a wide range of building applications are presented.</li> </ul>
4:00 – 5:00pm 1.0 hrs	<p><b>The Wood Connection Session</b></p> <ul style="list-style-type: none"> <li>This session presents current wood connection design philosophy, behavior, serviceability issues, and connection design techniques for small and large wood members, panel products, and wood assemblies, using dowel-type and specialized components. Glued connections will also be discussed along with a brief introduction to connection design software.</li> </ul>

## Day 2

8:00 – 9:30 am 1.5 hrs	<p><b>Lateral Load Resisting Systems for Wood Structures</b></p> <ul style="list-style-type: none"> <li>The seminar will explain different construction types and the behavior of small structures and structural elements under gravity, seismic and wind forces through projected graphics and lecture. Principles and typology of lateral load resistance systems will be discussed including prescriptive braced wall lines as addressed by the IBC/IRC. An introduction to engineered shear wall design, location, and inspection points will be offered. Throughout, the seminar will demonstrate how AF&amp;PA's new Wood Frame Construction Manual addresses these topics for one- and two-family dwellings.</li> <li>Participants will: <ul style="list-style-type: none"> <li>identify different construction types</li> <li>familiarize themselves with behavior of small structures and structural elements under gravity, lateral, and uplift loads</li> <li>understand the scope and application of prescriptive and engineering provisions contained in the WFCM</li> <li>understand principles of lateral load resistance systems and types including prescriptive braced wall lines as addressed by the IBC/IRC.</li> <li>familiarize with engineered shear wall design, location, and construction inspection checks.</li> <li>familiarize with the provisions for designing wood frame structures for high wind, seismic, and snow loads based on the Wood Frame Construction Manual (WFCM) for One- and Two-Family Dwellings.</li> </ul> </li> </ul>
9:30 – 9:45 am	<i>Morning Break</i>
9:45 – 11:00 am 1.25 hr	<p><b>Wood Frame Construction Manual 2001 Edition</b></p> <ul style="list-style-type: none"> <li>Apply provisions for designing wood frame structures for wind, snow, and seismic loads based on the <i>Wood Frame Construction Manual (WFCM) for One- and Two-Family Dwellings, 2001 National Edition</i>. This edition is a dramatic enhancement of the 1995 WFCM that is applicable nation-wide.</li> </ul>
11:00 – 12:00 pm 1.0 hrs	<p><b>Design of Wood Frame Buildings for High Wind, Snow, and Seismic Loadings – General Information and Getting Ready</b></p> <ul style="list-style-type: none"> <li>This hands-on segment features by example the complete design of two-storey dwelling for wind, snow, and seismic loadings using the provisions and tables of the Wood Frame Construction Manual 2001 National Edition. In this segment, general information is presented on the building description, loads on the building, WFCM applicability limitations, prescriptive design limitations, load paths, and design checklists.</li> </ul>
12:00 – 1:00 pm	<i>Lunch</i>
1:00 – 2:45 pm 1.75 hrs	<p><b>Roof and Top Story Design</b></p> <ul style="list-style-type: none"> <li>Students get to work beginning by designing the roof and top storey of the dwelling including: wall framing and sheathing, floor framing and sheathing, connections, and details, using referenced</li> </ul>

	worksheets and the WFCM 2001.
2:45 –3:00 pm	<i>Afternoon Break</i>
<b>3:00 – 5:00 pm</b>  2.0 hrs	<b><i>Bottom Story Design</i></b> <ul style="list-style-type: none"> <li>Students complete the hands-on experience with the detailed design of all bottom story wall framing and sheathing, floor framing and sheathing, connections, and details. Again, referenced worksheets and the WFCM 2001 are used. Supplemental worksheets, checklists and supporting documentation are described.</li> </ul>

Presenters:

**Robert J. Taylor, PhD, P.Eng., MASCE, Assoc.AIA**  
**Director, Technology Transfer**

Dr. Taylor joined the AF&PA as Director, Technology Transfer, coming from his former position as Professor of Structures at the School of Architecture, Montana State University, Bozeman. He holds degrees from Ryerson Polytechnical University, Queen's University, and the University of British Columbia, Canada, majoring in structural/civil engineering and architecture. A licensed professional engineer in his native Canada, he has accumulated over 25 years of experience in academia, industry, and government in highway and building design, consulting, forensics, research, teaching, and administrative capacities. He has produced many writings and designed many small/medium scale building projects in Canada, USA, Japan, and Korea. His passion for building design has always been in developing innovative ways to use wood towards a holistic design result both at the macro and micro scale. A family man, Robert enjoys playing blues guitar with his sons.

**Sam W Francis**  
**Northeast Senior Regional Manager**

Sam is a Senior Regional Manager with AF&PA (American Forest & Paper Association) covering the northeastern United States. He is a CABO certified building official, and has nearly 20 years of experience as a building code official. He also served on the Ohio Construction Industry Certification Board, and the National Construction Code Inspector Certification Program Test Preparation committee.

Sam has also been very active with model code organizations. He has served on various committees with BOCA, ICC and NFPA as well as several state committees in the Northeast

Internationally, he has been a member of the Technical Advisory Group representing the United States to the International Standards Organization (ISO), most recently in Kyoto, Japan. Sam was the U.S. representative to the Technical Committee 92, Subcommittee 4: Fire Safety Engineering.

Sam has taught extensively on subjects closely related to codes and code development throughout the United States and Canada. He is the author of numerous articles and publications on various building regulation subjects.