



# 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

## AWC 275 Option B: WFCM 1- Day Workshop Design of Wood Frame Buildings for High Wind, Snow, and Seismic Loadings

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 *2005 NDS*<sup>®</sup>, and the *Wood Frame Construction Manual 2001* National Edition for wind, snow, and seismic applications. Attendees will learn about lateral load behavior and structural response, and also be able to apply building code and issues, connection design philosophies, detailing, and code provisions.

This 1-day workshop (7.5 teaching contact hours) combines lectures, slide presentations and interactive participation of the participants with the instructor in the use of *ANSI/AF&PA Wood Frame Construction Manual (WFCM) for One- and Two-Family Dwellings*. The focus of the course is practical design using tables from the WFCM. By using an example two-story house, participants will analyze a typical wood-frame house from roof to foundation sited in Seismic Design Category D-1 and 120 mph wind speed. The participant's workbook, including design example, is the focal point of the course. After the course, this workbook will facilitate design of other buildings for high wind, seismic and snow loading. Learning how to efficiently use the WFCM will be valuable to participants as it offers a method of design for high wind with a minimum amount of time commitment by the designer.

The specific course objectives are to:

- Become familiar with provisions of the WFCM and the *Commentary* to the WFCM,
- Learn how to design a typical two-story house for seismic and wind loading by a design demonstration, and
- Through the use of the course notebook, be able to execute similar designs.

The course will be of benefit to three audiences: architects, engineers, and other designers of one- and two-family dwellings; building code enforcement officials; and building contractors. Designers of wood framed one- and two-family dwelling projects are the primary audience for this course since the participants learn how to design a typical two-story house for wind, seismic and snow loading by a design demonstration. In many instances, building contractors are also home designers, and thus builders should also consider attending. Building officials will also directly benefit by familiarizing themselves with the tables and specifications being used in the design of wood framed residences in high wind and seismic regions.

The American Forest & Paper Association / American Wood Council is a registered AIA-CES, AIBD and IACET (which includes most engineering associations and ICC) continuing education provider. Attendees will earn 7.5 contact teaching hours for this program (1.0 contact teaching hour (CEH) = 0.1 CEU's = 1 PDH units = 1 LU's (HSW)); and for AIA members, the learning units are HSW's.

The registration fee includes a complete seminar kit with CD of free design information and course notes, and CEU certificate. **Both the 2001 WFCM + Commentary, and WFCM Workbook, are required for this course – bring yours if you have them.** Both these publications will be available for purchase on the registration form at discounted pricing: 2001 WFCM + Commentary + Workbook (\$40.00), or WFCM Workbook alone (\$17.50). Please indicate the number of each publication you need on your registration form. Special discounts for purchasing other AWC publications are available to those attending the seminar.

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

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<p><b>8:00 – 9:30 am</b></p> <p>1.5 hrs</p>	<p><b><i>ASD and LRFD with the 2005 National Design Specification® for Wood Construction</i></b></p> <ul style="list-style-type: none"> <li>The NDS® for Wood Construction 2005 is a dual format ASD and LRFD document with some enhancements from the 2001 version. As an updating session, learn about the format of the new document and how to apply its ASD and LRFD design provisions to wood construction through worked examples.</li> </ul>
<p><b>9:30 – 10:00 am</b></p> <p>0.5 hrs</p>	<p><b><i>Wood Frame Construction Manual 2001 National Edition</i></b></p> <ul style="list-style-type: none"> <li>The WFCM is a referenced standard in the <i>International Building Code</i> and the <i>International Residential Code</i>, providing an alternative to the <i>IBC/IRC</i> provisions for structural design of residential structures in areas of high wind, snow, or seismic loads. However, the WFCM has applicability in <i>any</i> geographic region of the US since the 2001 edition encompasses "normal" loads as well as high loads. Learn about engineered and prescriptive provisions for the design of residential structures, including structural behavior overviews. Learn about the unique provisions of this code in that they are engineered, yet prescriptive; containing extensive tables and diagrams for use by builders and code officials as well as experienced designers. The session works through some brief design examples which use the manual.</li> </ul>
<p><b>10:00 – 10:15 am</b></p>	<p><b><i>Morning Break</i></b></p>
<p><b>10:15 – 11:15 pm</b></p> <p>1.0 hr</p>	<p><b><i>Wood Frame Construction Manual 2001 National Edition (continued)</i></b></p> <ul style="list-style-type: none"> <li>The session 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. An introduction to engineered shear wall design, location, and inspection points will be offered. Learn also about the Guide to Wood Construction in High Wind Areas for One- and Two- Family Dwellings, a publication designed to simplify 2001 WFCM provisions for the builder.</li> </ul> <p>On completion of this session, you will be knowledgeable about:</p> <ol style="list-style-type: none"> <li>The purpose of the 2001 WFCM and its development process.</li> <li>Code acceptance and references.</li> <li>2001 WFCM document layout.</li> <li>Design provisions, including: <ul style="list-style-type: none"> <li>shear walls and the "Standard" Shear Wall concept</li> <li>wind load resistance and behavior</li> <li>snow load resistance</li> <li>seismic load resistance and behavior.</li> </ul> </li> <li>Design examples for each load type as first familiarization with the Standard.</li> </ol>
<p><b>11:15 – 12:00 pm</b></p> <p>0.75 hrs</p>	<p><b><i>Design of Wood Frame Buildings for High Wind, Snow, and Seismic Loadings – General Information and Getting Ready</i></b></p> <ul style="list-style-type: none"> <li>This hands-on segment features, by example, the complete design of a real two-story 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>
<p><b>12:00 – 1:00 pm</b></p>	<p><b><i>Lunch</i></b></p>
<p><b>1:00 – 2:45 pm</b></p> <p>1.75 hrs</p>	<p><b><i>Roof and Top Story Design</i></b></p> <ul style="list-style-type: none"> <li>Students get to work beginning by designing the roof and top story of the dwelling including: roof rafters and sheathing, beams, ceiling joists and diaphragms, and all connections; wall framing and sheathing, shear walls as necessary, floor framing and sheathing, connections, and details, using referenced worksheets and the WFCM 2001.</li> </ul>
<p><b>2:45 – 3:00pm</b></p>	<p><b><i>Afternoon Break</i></b></p>
<p><b>3:00 – 5:00 pm</b></p> <p>2.0 hrs</p>	<p><b><i>Bottom Story Design</i></b></p> <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, single wall and combined wall shear walls, 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>