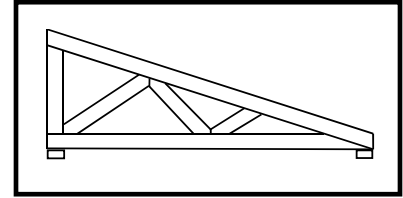


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### **PREVIOUS EXPERIENCE:**

July 1, 2003 - present. Professor Emeritus, Virginia Tech University, and Wood Construction and Engineering Consultant.

July 1, 1990 – June 30, 2003. Professor, Virginia Tech. (50% teaching and 50% research).

Research included the design, installation, and performance of metal-plate-connected wood trusses, lumber properties, deck and balcony design, floor vibration control, design to prevent ceramic tile and grout cracks, and wood building design.

July 1, 1982 - June 30, 1990. Associate Professor, Virginia Tech. (50% teaching and 50% research).

Research included the reliability of wood structures, proof loading of lumber, lumber properties, and post-frame construction.

August 1, 1977 - June 30, 1982. Assistant Professor, Virginia Tech. (50% teaching and 50% research).

Truss reliability, lumber properties and post-frame buildings. Safety analysis of light-frame floors, walls and heavy beams when exposed to fire.

July 1, 1975 - July 31, 1977. Visiting Assistant Professor, Wood Research Laboratory, Purdue University, West Lafayette, IN.  
Wood truss reliability.

### **REGISTRATION AND MEMBERSHIPS:**

#### Registration

Professional Engineer, State of Virginia No. 11226, 1979-present

#### Memberships

American Forest and Paper Association (AFPA)  
American Society for Testing and Materials (ASTM)  
Forest Products Society (FPS)  
International Code Council (ICC)  
National Frame Builders Association (NFBA)

#### Experience

Third-Party Quality Inspector for Wood Truss Manufacturing (1993-2000)

## **PARTICIPATION ON COMMITTEES:**

### Professional

ASTM, Committee D-7 on Wood, 1985-Present

ANSI A108 on Ceramic Tile Installation and Materials Specification, 2004-Present

ICC Education Committee, 2008-Present

National Tile Contractors Association Technical Committee, 2005-Present

National Grading Rule Committee of the American Lumber Standards Committee,  
Consumer Representative

## **BOOKS:**

Anderson, C. A., F. E. Woeste, and J. R. Loferski. 2003. ***Manual for the Inspection of Residential Wood Decks and Balconies***. Forest Products Society, 2801 Marshall Court, Madison, WI 53705 (Copies may be purchased from the FPS at 608-231-1361)

Walker, J. N. and F. E. Woeste, Editors. 1992. ***Post-frame building design***. ASAE Monograph No. 11, ASAE, St. Joseph, MI.

Hoyle, R. J. and F. E. Woeste. 1989. ***Wood technology in the design of structures***. Fifth edition. Iowa State University Press, Ames, IA, 394.

## **PUBLICATIONS:**

### **Related to Building Design and Lumber**

Carradine, D. M., D. A. Bender, J. R. Loferski, and F. E. Woeste. 2008. Lessons learned: Residential deck ledger connection testing and design. Structure Magazine, May 2008. [www.structuremag.org/Archives/2008-5/C-LessonsLearned-DeckLedger\\_Carradine-May08.pdf](http://www.structuremag.org/Archives/2008-5/C-LessonsLearned-DeckLedger_Carradine-May08.pdf)

Woeste, F. 2008. Safe and durable coastal decks. Coastal Contractor 5(2): 24-28, 30, and 32.

Woeste, F. E. And P. Nielsen. 2007. Wood Bits: Ceramic tile on wood floors. Building Safety Journal 5(6): 20-23. [www.iccsafe.org/news/bsj/1207\\_Wood%20Bits.pdf](http://www.iccsafe.org/news/bsj/1207_Wood%20Bits.pdf)

Woeste, F. E. and P. A. Nielsen. 2007. Position of underlayment to prevent cracked tile and grout. Wood Design Focus 17(3); 12-15. Reprinted from the TileLetter, June 2004.

Loferski, J. R., D. Albright, and F. E. Woeste. 2007. Tested guardrail post connections for residential decks. Lessons Learned, Structure Magazine, July, pp. 55-59. (Reprinted from Wood Design Focus)

Woeste, F. and D. Dolan. 2007. Is a "spring in your step" causing problems? Structural Engineer 8(5): 24-27.

Lewis, L. and F. E. Woeste. 2007. Wood Bits: Prescriptive requirements and inspection of residential decks. Building Safety Journal 5(2): 22-26, 28-29.

[www.nadra.org/industry\\_news/april07\\_woodbits.pdf](http://www.nadra.org/industry_news/april07_woodbits.pdf)

Carradine, D. M., D. A. Bender, F. E. Woeste, and J. R. Loferski. 2007. Development of design capacities for residential deck ledger connections. *Forest Products Journal* 57(3): 29-33.

Loferski, J. R., D. Albright, and F. E. Woeste. 2006. Tested guardrail post connections for residential decks. *Wood Design Focus* 16(2): 13-18.

Carradine, D. M., D. A. Bender, J. R. Loferski, and F. E. Woeste. 2006. Residential deck ledger connection testing and design. *Wood Design Focus* 16(2): 9-12.

Osterberger, T. J., D. M. Nelson, and F. E. Woeste. 2006. Wood Bits: Design of window and door headers to prevent twisting. *Building Safety Journal* (4): 4-6.

Carradine, D. M., D. A. Bender, J. R. Loferski, and F. E. Woeste. 2005. Wood Bits: Residential deck ledger design. *Building Safety Journal* (4): 4-7.

Martin, Z. and F. E. Woeste. 2005. Wood Bits: Designing residential walls with large openings. *Building Safety* 3(4): 6-9.

Woeste, F. E. and J. R. Loferski. 2005. Wood Bits: Minimum details and specifications for permitting residential decks. *Building Safety* 3(2): 4-7.

[www.eng.vt.edu/pdf/upload\\_files/Deck%20Specs.pdf](http://www.eng.vt.edu/pdf/upload_files/Deck%20Specs.pdf)

Loferski, J. R., F. E. Woeste, D. Albright, and R. Caudill. 2005. Load tested guardrail post connections. *Professional Deck Builder* 4(2): 48, 50, 52, 54, 56, and 58.

Loferski, J. R., F. E. Woeste, D. Albright, and R. Caudill. 2005. Strong rail-post connections for wooden decks. *Journal of Light Construction* 23(5): 65-71.

Shea, G., T. Osterberger, and F. E. Woeste. 2004. Evaluating tall residential walls for code conformance. *Building Safety* 2(6): 4-6.

Woeste, F. E. and P. A. Nielsen. 2004. Position of underlayment to prevent cracked tile and grout. *TileLetter*, June 2004, pp. 38, 40, 42, 44, 46, and 48.

[www.tile-assn.com/tileletter/pdfs/Underlayment-Nielsen-Woeste-0604.pdf](http://www.tile-assn.com/tileletter/pdfs/Underlayment-Nielsen-Woeste-0604.pdf)

Theilen, R. and F. E. Woeste. 2004. Recommended protocol for I-joist repairs. *Building Safety* 2(3): 20-21.

Loferski, J. R., F. E. Woeste, and M. A. Billings. 2004. Deck ledger connection design. *Professional Deck Builder* 3(3): 56, 58, 60, 62, 64, 66-67.

Loferski, J., F. Woeste, R. Caudill, T. Platt, and Q. Smith. 2004. Load-tested deck ledger connections. *Journal of Light Construction* 22(6): 71-78. (Can be purchased at [www.JLConline.com](http://www.JLConline.com))

Anderson, C. A., F. E. Woeste, and J. R. Loferski. 2003. Attaching deck ledgers. *Journal of Light Construction* 21(11): 81-87.

Tichy, R., Bender, D. A., and F. E. Woeste. 2003. Wood Bits: Wood-plastic composite decks. *Building Safety* 1(4): 38-40.

Smart, J. V., F. E. Woeste, and J. R. Loferski. 2003. Potential thermal degradation of attic framing and wood sheathing. *ASCE Practice Periodical on Structural Design and Construction* 8(4): 203-208.

Anderson, C. A., J. R. Loferski, and F. E. Woeste. 2002. Wood Bits: Detecting early wood decay. *Building Standards* 71(4): 6-7.

O'Regan, P. J. and F. E. Woeste. 2002. Withdrawal strength of punched metal tooth plates in Red Oak end grain. *Forest Products Journal* 52(10): 82-88. (Available at Amazon.com)

Woeste, F. E. and D. A. Bender. 2001. Wood Bits: Shrinkage of framing lumber. *Building Standards* 70(6): 10-13.

Bretzfeld, K. and F. E. Woeste. 2001. Wood Bits: Bolt design at an angle simplified. *Building Standards* 70(4): 12-15.

Carradine, D. M., F. E. Woeste and S. M. Kent. 2001. SIP's and SSP's are not the same. *Timber Framing*, Number 60 (June), pp.8-9.

Carradine, D. M., F. E. Woeste and J. R. Loferski. 2001. Wood Bits: Improving building durability. *Building Standards* 70(2): 6-8.

Woeste, F. E. 2000. Wood Bits: Preventing annoying floor vibration. *Building Standards* 69(6):9-10.

Woeste, F. E. 2000. Wood Bits: Preventing excessive beam deflection in critical applications. *Building Standards* 69(4):14-15.

Wilson, A. C., F. E. Woeste, and J. D. Dolan. 2000. Wood floor vibrational performance as affected by MSR vs. VSR lumber E-distribution. *Forest Products Journal* 50(4): 53-60.

Woeste, F. E. 2000. Wood Bits: Connection design for structural composite lumber. *Building Standards* 69(2): 21-22, 35, 38.

Johnson, E. and F. Woeste. 1999. Connection design methodology for structural composite lumber. *Wood Design Focus* 10(4): 15-20.

Durrans, S. R., M. H. Triche, S. E. Taylor, and F. E. Woeste. 1997. Parameter and quantile estimation for the distributions of failure strength of structural lumber. *Forest Products Society* 47(4):80-88.

Lenth, C. A., J. R. Loferski, F. E. Woeste, and L. M. Johnson. 1996. Comparing the bending stiffness of domestic and imported *pinus elliottii* radius edge decking. *Forest Products Society* 46(9):57-61.

Heatwole, E. L., F. E. Woeste, and D. W. Green. 1991. Allowable bending strength enhancement of 2 by 4 lumber by tension and compression proof loading. *Wood and Fiber Science* 23(1):1-14.

Zhao, W. and F. E. Woeste. 1991. Influence of correlation on tensile strength prediction of lumber. *Forest Products Journal* 41(2):45-48.

Terry, A. M., F. E. Woeste, B. A. Bendtsen, and J. W. Evans. 1991. Grippend end effect in tensile proof testing dimension lumber. FPL Research Paper 496, U.S. Forest Products Laboratory, Madison, Wisconsin. [www.fpl.fs.fed.us/documnts/fplrp/fplrp496.pdf](http://www.fpl.fs.fed.us/documnts/fplrp/fplrp496.pdf)

McLain, T. E. and F. E. Woeste. 1988. Proof test damage evaluation with southern pine lumber. Forest Products Journal 38(5):31-32.

Suddarth, S. K. and F. E. Woeste. 1988. Considerations in applying simplified reliability-based design to structural wood products. Forest Products Journal 38(9):53-56.

McLain, T. E. and F. E. Woeste. 1987. Proof test damage evaluation with southern pine. Forest Products Journal 38(5): 31-32.

Woeste, F. E., D. W. Green, K. A. Tarbell, and L. A. Marin. 1987. Proof loading to assure lumber strength. Wood and Fiber Science Journal 19(3):283-297.

Showalter, K. L., F. E. Woeste, and B. A. Bendtsen. 1987. Effect of length on tensile strength in structural lumber. FPL Research Paper 482, U. S. Forest Products Laboratory, Madison, Wisconsin. 9p.

McLain, T. E. and F. E. Woeste. 1986. Rate of loading adjustment for proof testing of lumber in tension. Forest Products Journal 36(9):51-54.

Kline, D. E., F. E. Woeste, and B. A. Bendtsen. 1986. Stochastic model for modulus of elasticity of lumber. Wood and Fiber Science 18(2):228-238.

Snodgrass, D. V. and F. E. Woeste. 1984. Machine stress rating (MSR) of green Douglas-fir. Wood and Fiber Science 16(4): 486-497.

Woeste, F. E., A. L. DeBonis, T. E. McLain, and J. V. Perumpral. 1984. Bending proof load as a quality control for compression parallel-to-grain in lumber. Transactions of ASAE 27(6): 1859-1861, 1870.

Hamon, D. C., F. E. Woeste, and K. B. Rojiani. 1983. Simulation of lognormal modulus of elasticity data. Transactions of ASAE 26(3): 867-871.

Marin, L. A. and F. E. Woeste. 1982. Reverse proof loading of lumber. Forest Products Journal 32(10):53-55.

Marin, L. A. and F. E. Woeste. 1981. Reverse proof loading as a means of quality control in lumber manufacturing. Transactions of ASAE 24 (5):1273-1277,1281.

DeBonis, A. L., F. E. Woeste, and T. E. McLain. 1980. Rate of loading influence on Southern Pine 2x4's in bending. Forest Products Journal 30(11): 34-37.

Woeste, F. E., S. K. Suddarth, W. L. Galligan. 1979. The simulation of correlated lumber properties data - a regression approach. Wood Science 12(2):73-79.

### **Related to Wood Truss Engineering**

Schwab, S. C., D. A. Bender, D. M. Carradine, and F. E. Woeste. 2007. Tensile strength of oriented strandboard as affected by specimen width. Forest Products Journal 57(6): 39-45.

Bretzfeld, K. T. and F. E. Woeste. 2003. Joist curvature verses sheathing curvature and the probable role of each on ceramic tile performance. TTMAC HARDSURFACE Magazine, TTMAC, 30 Capstan Gate, Unit 5, Concord, Ontario, Canada. [www.schluter.com/print/5140.aspx](http://www.schluter.com/print/5140.aspx)

Shrestha, D., D. A. Bender, and F. E. Woeste. 2003. T-Brace design for MPC wood truss webs. Forest Products Journal 53(1): 61-66.

Anderson, C.A., F.E. Woeste and D. Bender. 2002. Wood Bits: Checking T-brace capacity on wood truss webs. Building Standards 71(6): 5-10.

Carrier, A. and F. E. Woeste. 2002. Wood Bits: Drifts on lower roofs. Building Standards 71(2): 7-9.

Anderson, C., F. E. Woeste, and D. A Bender. 2002. Substituting T-braces for continuous lateral braces on wood truss webs. Frame Building News 14(3): 36-40.

Via, B. K., A. Zink-Sharp, F. E. Woeste and J. D. Dolan. 2001. Influence of specific gravity on embedment gaps in metal-plate-connected truss joints. Forest Products Journal 51(10):88-92 .

Underwood, C. R., F. E. Woeste, J. D. Dolan and S. M. Holzer. 2001. Permanent bracing design for MPC wood roof truss webs and chords. Forest Products Journal 51(7/8):73-81.

Woeste, F. E., C. R. Underwood and J. D. Dolan. 2001. Wood truss permanent web bracing design. Frame Building News 13(3): 38-42.

Underwood, C. R. and F. E. Woeste. 2000. Conceptual model for temporary bracing of MPC Wood trusses. ASCE Practice Periodical on Structural Design and Construction 5(1): 36-40.

Woeste, F. E. 1999. Wood truss bracing. Building Standards 68(6): 7, 60.

Woeste, F. E. 1999. Impact of permanent diagonal bracing on different MPC wood truss types. ASCE Practice Periodical on Structural Design and Construction 4(1): 21-23.

Via, B. V., A. Zink-Sharp, F. E. Woeste, J. D. Dolan. 1999. Relationship between tooth withdrawal strength and specific gravity. Forest Products Journal. 49(7/8):56-63.

Woeste, F. E. and J. D. Dolan. 1998. Beyond code: Preventing floor vibration. Journal of Light Construction 17(1):69-71.

Woeste, F. E. 1998. Strongbacks in floor trusses. Journal of Light Construction 16(9):22, 24.

Woeste, F. E. 1998. Permanent bracing for piggy-back trusses. Journal of Light Construction 16(6):79-83.

O' Regan, P. J., F. E. Woeste, and S. Lewis. 1998. Design procedure for the steel net-section of tension splice joints in MPC wood trusses. Forest Products Journal 48(5):35-42.

O' Regan, P. J., F. E. Woeste, and D. B. Brakemen. 1998. Design procedure for the lateral resistance of tension splice joints in MPC wood trusses. Forest Products Journal 48(6): 66-69.

Woeste, F. E. and J. D. Dolan. 1997. Sizing stiff floor girders. Journal of Light Construction 15(11):60-61.

- Woeste, F. E. 1997. Snow load considerations for widely spaced long-span wood trusses. *Automated Builder* 34(4): 30-31.
- Woeste, F. E. 1996. A proposed rule of thumb for controlling annoying vibrations in residential floors. *Wood Design Focus* 7(1): 21-23.
- Woeste, F. E. 1995. Commentary on WTCA 1-1995 as it pertains to building designers. *Wood Design Focus* 6(4): 25-27.
- Taylor, S. E., M. H. Triche, D. A. Bender, and F. E. Woeste. 1995. Monte Carlo simulation methods for engineered wood systems. *Forest Products Journal* 45(7/8): 43-50.
- Skaggs, T. D., F. E. Woeste, and S. L. Lewis. 1995. Steel properties used to manufacture wood truss metal connector plates. *Transaction of ASAE* 38(1): 187-195.
- Dolan, J. D., F. E. Woeste, and X. Li. 1995. Effect of imposed load on solid-sawn wood-joint floor vibrations. *Forest Products Journal* 45(1): 71-76.
- Skaggs, T. D., F. E. Woeste, J. D. Dolan, and J. R. Loferski. 1994. Safety factors for metal-plate-connected wood trusses: Theoretical design versus test specifications. *Forest Products Journal* 44(9): 11-18.
- Kalkert, R. E., J. D. Dolan, and F. E. Woeste. 1993. The current status of analysis and design for annoying wooden floor vibrations. *Wood and Fiber Science* 25(3): 305-314.
- Zhao, W., F. E. Woeste, and D. A. Bender. 1992. Effect of span-length on the reliability of truss bottom chords. *Transactions of ASAE* 35(1): 303-310.
- Kirk, L. S., T. E. McLain, and F. E. Woeste. 1989. Effect of gap size on performance of metal-plated joints in compression. *Wood and Fiber Science Journal* 21 (3): 274-288.
- Thurmond, M. B., F. E. Woeste, and D. W. Green. 1986. Floor loads for the reliability analysis of lumber properties data. *Wood and Fiber Science Journal* 18(1): 187-207.
- Hamon, D. C., F. E. Woeste, and D. W. Green. 1985. Influence of lumber property correlations on roof truss reliability. *Transactions of ASAE* 28(5):1618-1625.
- Galligan, W. L., P. W. McClellan, and F. E. Woeste. 1985. The influence of changes in allowable stresses on wood truss design. *Forest Products Journal* 35(5): 36-44.
- Thurmond, M. B., F. E. Woeste, and D. W. Green. 1984. Roof loads for reliability analysis of lumber properties data. *Wood and Fiber Science* 16(2): 278-297.
- Woeste, F. E. and K. B. Rojiani. 1980. Reliability of multiple 2x4's used as truss lower chords. *Transactions of ASAE* 23(2): 427-430.
- Woeste, F. E., H. A. Hughes, and S. K. Suddarth. 1980. Independent roof sections for long buildings to resist snow loads. *Transactions of ASAE* 23(4): 968-972.
- Suddarth, S. K. and F. E. Woeste, and W. L. Galligan. 1977. Differential reliability: Probabilistic engineering applied to wood members in bending/tension. FPL 302, U.S.D.A. Forest Service, U. S. Forest Products Laboratory, Madison, Wisconsin. 16p.

Suddarth, S. K. and F. E. Woeste. 1977. Influences of variability in load and modulus of elasticity on wood column strength. *Wood Science* 10(2): 62-67.

Suddarth, S. K., F. E. Woeste, and J. T. P. Yao. 1975. Effect of E-variability on the deflection behavior of a structure. *Forest Products Journal* 25(1): 17-20.

Woeste, F. E. 1975. Truss reliability as related to variability in modulus of elasticity of the constituent members. Ph.D. Dissertation, Purdue University, West Lafayette, Indiana.

### **Timber Frame and Post-Frame Construction**

McGuire, P. M. and F. E. Woeste. 2007. Non-structural plan review of post-frame buildings. *Frame Building News* 19(2): 10, 12.

McGuire, P. M. and F. E. Woeste. 2006. Wood Bits: Nonstructural plan review of post-frame buildings. *Building Safety Journal* 4(6): 6-8.

Carradine, D. M., F. E. Woeste, J. D. Dolan, and J. R. Loferski. 2004. Diaphragm behavior and design of laterally loaded timber frame and structural insulated panel buildings. *Wood Design Focus* 14(3): 18-22.

Carradine, D. M., F. E. Woeste, J. D. Dolan, and J. R. Loferski. 2004. Utilizing diaphragm action for wind load design of timber frame and structural insulated panel buildings. *Forest Products Journal* 54(5):73-80.

Gay, S. W. and F. E. Woeste. 2003. Selecting a post-frame contractor. *Frame Building News* 15(3):16-17.

Gay, S. W. and F. E. Woeste. 2002. Selecting a post-frame building contractor. Virginia Tech Cooperative Extension Publication Number 442-761, Blacksburg, VA.  
[www.ext.vt.edu/pubs/bse/442-761/442-761.html](http://www.ext.vt.edu/pubs/bse/442-761/442-761.html)

Carradine, D. M., F. E. Woeste, and J. D. Dolan. 2002. History of diaphragm design for post-frame structures. *Wood Design Focus* 12(3): 16-19.

Carradine, D. M., F. E. Woeste and S. M. Kent. 2001. SIPs and SSPs are not the same. *Timber Framing*. June, pp 4-5.

Carradine, D. M., F. E. Woeste, J. D. Dolan, and J. R. Loferski. 2000. Demonstration of wind load design for timber frame structures using diaphragm action. *Transactions of ASAE* 43(3): 729-734.

Woeste, F. E. 1994. Post-frame construction. *The Construction Specifier* 47(8): 40-42, 44-46.

Skaggs, T. D., F. E. Woeste, and D. A. Bender. 1993. A simple analysis procedure for calculating post forces. *Applied Engineering in Agriculture* 9(2): 253-259.

Wirt, D. L., F. E. Woeste, D. E. Kline, and T. E. McLain. 1992. Design procedures for post-frame end walls. *Applied Engineering in Agriculture* 8(1): 97-105.

Bender, D. A., T. D. Skaggs, and F. E. Woeste. 1991. Rigid roof design for post-frame buildings. *Applied Engineering in Agriculture* 7(6): 755-760.

Woeste, F. E. and M. Townsend. 1991. Simple-beam diaphragm test considerations. Applied Engineering in Agriculture 7(5): 613-616.

Wirt, D. L., F. E. Woeste, T. E. McLain, and G. E. Richardson. 1991. Nail-laminated wall columns using differential lumber grades. Applied Engineering in Agriculture 7(1): 113-116.

Woeste, F. E., T. E. McLain, and T. D. Mischen. 1988. A comparison of five laminated wall column designs. Applied Engineering in Agriculture 4(1): 72-75.

### **Related to Fire Safety of Wood Structures**

Schaffer, E. L., R. H. White, and F. E. Woeste. 1988. Fire endurance model validation by unprotected joist floor fire testing. USDA Forest Service Forest Products Laboratory, Madison, WI 53705-2398 [www.fpl.fs.fed.us/documnts/pdf1988/schaf88a.pdf](http://www.fpl.fs.fed.us/documnts/pdf1988/schaf88a.pdf)

Schaffer, E. L., C. Marx, D. A. Bender, and F. E. Woeste. 1986. Strength validation and fire endurance of glue-laminated beams. Research Paper 467, U.S. Forest Products Laboratory, Madison, Wisconsin. 16p.

<http://www.fpl.fs.fed.us/documnts/fplrp/fplrp467.pdf>

Bender, D. A., F. E. Woeste, E. L. Schaffer, and C. Marx. 1985. Reliability formulation for the strength and fire endurance of glue-laminated beams. FPL 460, U. S. Forest Products Laboratory, Madison, Wisconsin. 43p.

<http://www.fpl.fs.fed.us/documnts/fplrp/fplrp460.pdf>

White, R. H., E. L. Schaffer, and F. E. Woeste. 1984. Replicate fire endurance tests of an unprotected wood joists floor assembly. Wood and Fiber Science 16(3): 374-390.

<http://www.fpl.fs.fed.us/documnts/pdf1983/white83a.pdf>

Woeste, F. E. and E. L. Schaffer. 1981. Reliability analysis of fire-exposed light-frame wood floor assemblies. FPL 386, U.S.D.A. Forest Service, U.S. Forest Products Laboratory, Madison, Wisconsin. 15p.

<http://www.fpl.fs.fed.us/documnts/fplrp/fplrp386.pdf>

Schaffer, E. L., and F. E. Woeste. 1981. Reliability analysis of a fire-exposed unprotected floor truss. Metal Plate Wood Truss Conference, Forest Prod. Res. Soc., Madison, WI, pp. 131-137.

Woeste, F. E. and E. L. Schaffer. 1979. Second-moment reliability analysis of fire exposed wood joist floor assemblies. International Journal of Fire and Materials 3(3): 126-131.

### **AWARDS:**

Building Safety Community Partnership Award, 2006 by Fairfax County, VA Building Department.

Annual Award for Excellence in Wood Truss Research, 1993 by TPI

Henry Giese Structures and Environment Award, 1992 by ASAE

Rural Builder Hall of Fame, 1989 by Rural Builder Magazine

George G. Mara Award, 1987 by the Society of Wood Science and Technology

Bernon G. Perkins Award, 1987 by the National Frame Builders Association