

BIOGRAPHIES & ABSTRACTS

Green Building Materials '08: Definitions, Design, and Delivery

November 3-4, 2008
UMASS Campus Center Complex
Amherst, Massachusetts, USA

The conference is sponsored by the Forest Products Society.

BIOGRAPHIES

CONFERENCE CHAIR

David T. Damery

*Associate Professor and Director
Building Materials & Wood Technology Program
Department of Natural Resources Conservation
University of Massachusetts
Amherst, MA*

David T. Damery currently teaches classes covering: The Business of Building, Building Materials and Forest Products Marketing, and The Built Environment. He is also a member of the UMASS Architecture and Design faculty. His research interests include: Sustainable forest management, wildlife conservation economics, and forest products marketing and economics. His work experience includes: Engineering, business consulting and management. He serves as a Regional Board Member of the Forest Products Society and also as Vice-Chair of its Northeast Section. He received a B.S. in Naval Architecture & Marine Engineering, Massachusetts Institute of Technology; M.S. in Industrial Administration, Carnegie Mellon University; and Ph.D. Candidate, Natural Resource Economics, University of Massachusetts.

SPEAKERS

Philip A. Araman

*Research Team Leader and Scientist
Southern Research Station
USDA Forest Service
Blacksburg, VA*

Philip A. Araman is a Research Team Leader and Scientist with the USDA Forest Service's Southern Research Station and an Adjunct Professor and Senior Scientist in Wood Science & Forest Products at Virginia Tech. His team's research mission has been to develop advanced tree evaluation and processing technologies, automated hardwood processing technologies, new or improved products made from low-and medium-grade hardwood sawtimber and nonselect species, and to develop effective wood product recovery, reuse, and recycling (<http://www.srs4702.forprod.vt.edu>). They have extended their recycling R&D to home construction wood waste and certified housing. He received an AAS from Paul Smith's College; B.S. from North Carolina State University; and M.S. from Virginia Tech.

Richard D. Bergman

*Research Chemical Engineer
Forest Products Laboratory
USDA Forest Service
Madison, WI*

Richard (Rick) D. Bergman has been a Research Chemical Engineer at the USDA Forest Service, Forest Products Laboratory since 2004 in the field of wood energy and wood drying. His most recent field of research is life-cycle inventory and analysis. He received a B.S. in Chemical Engineering and M.S. in Forestry from the University of Wisconsin-Madison. He is currently a Ph.D. Candidate at the University of Wisconsin-Madison with a focus on life-cycle inventory of wood building materials. His current and previous positions at the Forest Products Laboratory involved the following research objectives: 1) Determine the effectiveness of new drying methods for controlling warp of both hardwood and softwood lumber, especially material obtained from over-stocked sites, plantations, and under-utilized species; 2) Explore methods to modify plantation-grown wood to improve various physical and mechanical properties, including heat treating and chemical modifications; 3) Develop heat sterilization methodologies and heat transfer models to aid in restricting the movement of invasive species via commercial trade in wood products; 4) Develop an understanding and a strategy for eliminating lumber stain, especially for white woods; and most recently, 5) Develop life-cycle analysis methodologies for wood product manufacturing systems that assess and illustrate their environmental footprint in comparison with products manufactured from non-renewable resources.

Michael A. Berk

*F.L. Crane Endowed Professor of Architecture
School of Architecture
Mississippi State University
Mississippi State, MS*

Michael A. Berk is a tenured (full) Professor and senior faculty member in the School of Architecture, Mississippi State University. He was recently awarded the F.L. Crane Endowed Professorship by the provost for his continued excellence in research, teaching, and outreach. He is a registered architect (California and Florida) with an extensive practice as a design partner and project architect prior to his return to the academy. Professor Berk teaches and researches in the areas of: Digital media + information design; factory-built housing (GreenMobile®), and 'sustainable' architecture and planning. He is considered by many to be a leading expert in the area of ecological design – and is often invited nationally to lecture on this topic. Recent invitations include: U.S. Oak Ridge National Laboratory at Oak Ridge, TN; Spring 2008 Hearst Lecture Series at CalPoly San Luis Obispo; and Auburn University's Spring 2008 Rural Studio Lecture Series. He received a B. Design Architecture and M. Arts Architecture from the University of Florida.

David G. Bueche

*Marketing Representative
Hoover Treated Wood Products, Inc.
Lakewood, CO*

David G. Bueche is an active educator, trainer, and frequent speaker with over 25 years of construction, wood product and steel industry experience. In addition to his hands on experience as a carpenter, construction project manager, and research scientist, he has taught college courses in construction technology and forest products. He is employed by Hoover Treated Wood Products and lives in Lakewood, Colorado with his wife and their five children. He has been a member of Forest Products Society since 2000 and has served as Secretary (2003-2004), Vice Chair (2004-2005) for the Rocky Mountain Section, and is currently a Regional Board Member for the Southwest Region.

A.L. (Tom) Hammett

*Professor, Forest Products Marketing
Department of Wood Science & Forest Products
Virginia Tech
Blacksburg, VA*

A.L. (Tom) Hammett serves on the staff of Virginia Tech's Center for Forest Products Marketing & Management. The Center provides education programs and market information for the forest products sector. On campus, he teaches courses in forest-based enterprise management, introductory natural resources, and world forestry. He heads Virginia Tech's program focused on non-timber forest products (NTFPs) and niche markets, and works on programs in forest-based enterprise development and forest products certification. He currently has projects focused on the utilization and marketing of NTFPs in the Appalachian region, as well as in Nepal, South East Asia, and Central America. He moved to Virginia Tech in 1995 from the position of Research Scientist and Senior Faculty Fellow at Yale University's School of Forestry where he served 3 years as the Team Leader for a project that supported the development of Nepal's only forestry college. While in Asia, his research activities focused on utilization and trade of non-timber forest products and the management of forest-based enterprises. He has authored a book on trade of forest products and numerous articles and publications based on his work in the U.S. and overseas. His international work has included developing a locally managed market information systems for non-timber forest products in the Philippines, identifying value-added opportunities for NTFPs in Asia, conducting a sustainable natural resources-based enterprises training in the Dominican Republic, organizing local forest industry centers in Thailand, and coordinating the first regional training program in marketing of NTFPs for Asia.

Daniel P. Hindman
Assistant Professor
Department of Wood Science & Forest Products
Virginia Tech
Blacksburg, VA

Daniel P. Hindman is an Assistant Professor in the Department of Wood Science & Forest Products, Virginia Tech, Blacksburg, VA. His responsibilities include a combination of teaching, research, and service. He teaches classes in wood mechanics, design of wood structures, and timber engineering. His research topics have focused on the innovative use of wood products in residential housing. Specific research topics include material properties of wood strands used for composite materials, mechanical behavior of wood composites compared to solid wood, and instability of wood joists during construction. He received a B.S. in Agricultural & Biological Engineering, M.S. in Forest Resources, and Ph.D. in Wood Composites Engineering from Pennsylvania State University.

Scot Horst
Chair, LEED Steering Committee
U.S. Green Building Council (USGBC)
Washington, DC

Scot Horst serves as Chair of the U.S. Green Building Council's LEED Steering Committee. In 1992, Mr. Horst started Horst, Inc., a sustainable materials consulting firm, where he develops innovative programs relating to materials and their environmental impacts. This work has ranged from environmental verification of bio-based technologies with the Civil Engineering Research Foundation to extensive work with the cement industry, including a blended cement carbon dioxide offset program with the Climate Trust in Oregon. He helps companies and institutions develop holistic approaches to decision making. He has trained assessors for the India Green Building Council and has served as a special advisor to Pennsylvania's Governor's Green Government Council, worked with Princeton University, the University of Pennsylvania, Penn State University, Grand Canyon National Park, and many others. Mr. Horst co-founded 7group, a multi-service green building consulting LLC, where he serves as President. As a LEED® Accredited Professional, he has worked on over 60 LEED projects. At the USGBC, Mr. Horst also sits on the Technical Scientific Advisory Committee where he chairs the PVC Task Group. He is a LEED faculty member and, as a partner in 7group, reviews certifications for the U.S. Green Building Council. He also serves as Vice President of Athena Institute International, the U.S. non-profit affiliate of the Canadian Athena Sustainable Materials Institute. In this capacity, he is involved with a broad range of work related to Life-Cycle Assessment (LCA), including the U.S. Life-Cycle Inventory Database Project of the National Renewable Energy Laboratory, regional database development and LCA education. Mr. Horst speaks and lectures widely. He has authored, coauthored, and presented over 100 papers and presentations nationally and internationally including Standards Frozen in Time, Cement and CO₂ Offsets, The Durability of Structural Materials, Integrating LCA into LEED, LEED Lessons Learned, LEED, Technique and Transformation and LEED, Standards and Movements.

Lloyd C. Irland
Lecturer and Senior Research Scientist,
Yale School of Forestry & Environmental Studies
President, The Irland Group
New Haven, CT

Lloyd C. Irland attended forestry school at Michigan State University. He received an M.S. from the University of Arizona and then went into the Army, serving in Vietnam. He did brief stints as a Research Analyst at the Chicago Board of Trade, working on plywood and lumber futures. This was the beginning of a long interest in the lumber and panel industries. In 1973, he completed a Ph.D. at the Yale School of Forestry & Environmental Studies and then went to work for the U.S. Forest Service in New Orleans. He returned to teach at Yale for 3 years and then was hired to serve as Forest Insect Manager in the Maine Forest Service, managing the spruce budworm control program. He then served 2 years as Director, Bureau of Public Lands, and then as State Economist. He then formed his own consulting firm, doing fiber supply, market research, and policy work for a range of clients. Over the years, this work has involved much of the Northeast and

Eastern Canada, with additional assignments for Washington, DC groups and as far away as Alaska. He has served on a number of advisory groups for state government and professional groups. These past 5 years, Dr. Irland has spent fall semesters teaching forest finance and professional ethics at the Yale School of Forestry & Environmental Studies while continuing to pursue consulting activities. In summer 2006, he spent 2 months as a Visiting Research Professor at the French Forestry School (ENGREF) in Nancy, France. This was an excellent opportunity to become familiar with forest practices and the wood industry in Central Europe, a region becoming more important of the U.S. as a source of softwood lumber imports. In recent years, his professional work has also taken him on lecturing and study tours to Germany, Indonesia, China, and India. He has traveled twice to the Ukraine for these purposes, the second time as a Fulbright Senior Scholar. He has written five books and more than 325 professional and technical articles. He is a frequent speaker at wood industry and logging trade meetings and at professional forestry and scientific meetings.

Michael J. Pepin
Technical Sales
Structural Systems, Inc.
Thurmont, MD

Michael J. Pepin is a consultant and sales rep for structural building materials, engineering services, and turnkey construction services to the residential and light commercial markets. His responsibilities at Structural Systems, Inc. (SSI) include reviewing drawings, creating structural plans, and recommending alternate framing methods or materials to improve efficiency and reduce costs. He has over 10 years of experience with SSI in design, network management, and sales. He specializes in roof trusses, wall panels, engineered floor systems, EWP, FSC certified lumber, structural engineering services, "Green" building materials, and serves MD, PA, DE, and VA. He received a B.S. in Building Materials & Wood Technology from the UMASS Amherst; and M.S. in Computer & Information Science from Hood College. He has participated in Dale Carnegie training, Trus-Joist University, and Mitek education.

Frank W. Sanford
Vice President
Sanford & Hawley, Inc.
Unionville, CT

Frank W. Sanford is Vice President of Sanford & Hawley, Inc., Unionville, CT. He oversees purchasing and marketing activities for the four location independent retailer of lumber and building materials, as well as part of the ownership/management team. Previously, he was Outside Sales, Sanford & Hawley, Inc.; Corporator, Farmington Savings Bank; Member of Building Materials Committee and Member of Nominating Committee, Lumbermens Merchandising Corporation. He received a B.S. in Business Administration from the University of Vermont.

ABSTRACTS

Keynote Address: Measurement and Leadership: LCA and LEED

Scot Horst, Chair, LEED Steering Committee, U.S. Green Building Council (USGBC), Washington, DC

LEED and Life-Cycle Assessment (LCA) as measurement tools help define sustainable design and construction practices. Together they allow one to evaluate the sustainability and performance of a building from the concept phase throughout building operations. Integrating LCA into LEED encompasses a holistic approach and recognizes the building as a complex web of natural and human systems. Integrating these natural and human systems requires a process of measurement and leadership. But the question arises, how do these tools and systems function as measurement tools and how do they function as leadership tools? This talk will focus on determining the value of both measurement and leadership in LEED and LCA so we can use these tools to assist in defining and practicing sustainable design and construction.

Value-Added Local Forests and Forest Products: Linking Processing, Harvesting, and Marketing Certified Building Products in Southwest Virginia

A.L. (Tom) Hammett, Professor, Forest Products Marketing, and *Richard Bonsi*, Graduate Research Assistant, Department of Wood Science & Forest Products, Virginia Tech, Blacksburg, VA; *Harry Groot*, CEO, Blue Ridge Forest Cooperative, Hiwassee, VA; *David Robertson*, Visiting Assistant Professor, Department of Forestry, Virginia Tech, Blacksburg, VA; *Proctor Harvey*, President, Harvey Design Land Architects, HDLA, Inc., Lynchburg, VA; *John Meggs*, President, Nature Neutral, LLC, Home Center & Building Supply, Charlottesville, VA

The Blue Ridge Forest Cooperative (BRFC) is a new member-owned business serving forest landowners in the watersheds of the New River, the upper James River, and the upper Roanoke River in Southwest Virginia. It is a new vertically integrated approach to meet members' management needs and costs. Striving for healthy, productive, high-quality forests in the long term, much of the initial harvesting and TSI produce low-quality products. Hence, adding value to these forest products is important – increasing the income generated from these harvests, recruiting (and retaining) new members for the BRFC, and developing sustainable systems that foster marketing of certified forest products for other small landowners in the region. The BRFC is collaborating with Virginia Tech's forestry and forest products programs, a local marketer of green certified building projects (Nature Neutral), and local landscape planning company (Harvey Design Land Architects) to develop both the supply of and demand for these products so that the BRFC may sustain its services to its members. Given the restorative nature of early harvests in this long-term management regime, there is a high amount of low-quality timber produced and, therefore, a lower than typical amount of lumber available to be processed into millwork or other conventional forest products. While the target products like flooring, trim, and custom millwork are primary, opportunities to market secondary niche and specialty products generates additional income from the low quality inputs to its processing and harvesting operations. This novel, collaborative approach seeks to find new landowners to help assure adequate supply, and locate local (within 300 miles) buyers that will sustain demand for BRFC's products. For instance, surveying members of the USGBC and private colleges to assess the potential to buy locally produced certified building products. Feasibility analyses and actual experience will provide a basis utilizing these low-quality harvests and subsequent processing. We seek your input and suggestions and look forward to collaborating with your program as we move ahead in this novel research and outreach program.

Wood Waste Characterization and Potential Recycling of Wood Materials from a Green Home Construction Development

Philip A. Araman, Research Team Leader and Scientist, Southern Research Station, USDA Forest Service, Blacksburg, VA, and Adjunct Professor and Senior Scientist, Department of Wood Science & Forest Products, Virginia Tech, Blacksburg, VA; *Daniel P. Hindman*, Assistant Professor, Department of Wood Science & Forest Products, Virginia Tech, Blacksburg, VA

Construction waste represents a significant portion of landfill waste, estimated as 17% of the total waste stream. Estimates on the amount

of waste generated by the construction of a typical 2000 square foot single-family home were 8000 lbs. of construction waste including 1600 lbs. of solid-sawn wood, 1400 lbs. of engineered wood products (EWP). Much of the solid-sawn lumber and EWP could be reused or recycled in different applications. Through a partnership with Green Valley Builders, an EarthCraft certified builder, the authors have studied the flow of construction waste generated at a new green housing development. The purpose of this study was to quantify the construction waste of wood products coming from a green building site and explore methods for the reuse or recycling of these wood products. The EarthCraft certification system rewards these activities. Wood products studied included solid-sawn lumber, oriented strand board, particleboard, LVL, and preservative treated wood. Wood products were collected during the construction process and stored for each housing site in the development. The materials were measured, weighed, and sorted according to material type and size. Some prospective uses of the recycled materials include finger-jointing to produce non-structural stud material or sill plates, use as web material in open web floor trusses, temporary stair treads and risers, shelving, pallet parts, and finger jointing panels for reuse as sheathing.

FSC-Certified Fire-Retardant-Treated Wood and Its Use

David G. Bueche, Marketing Representative, Hoover Treated Wood Products, Inc., Lakewood, CO

As the nation's largest manufacturer and supplier of fire-retardant-treated wood for commercial construction projects, Hoover is a multi-site SmartWood Chain of Custody Company, with each of its manufacturing facilities capable of processing and shipping FSC-certified wood. FSC-certified wood is wood that has been manufactured and distributed under a Chain of Custody (CoC) system acceptable to the standards of the Forest Stewardship Council (FSC). This availability is designed to meet the demands of the LEED® building rating system. Fire-Retardant-Treated Wood (FRTW) provides the option for using wood in lieu of noncombustible materials in noncombustible types of construction. The International Building Code recognizes FRTW for many applications where a noncombustible material is man-dated. A few applications allow FRTW in lieu of 1-hour ratings. Emphasis is placed on the testing and labeling required by the International Building Code, why it is allowed in noncombustible construction, what products are available, applications, and its recognition by insurance companies for reduced insurance premiums.

Environmental Impact of Manufacturing Softwood Lumber in the Northeast Determined by Life-Cycle Inventory

Richard D. Bergman, Research Chemical Engineer, Forest Products Laboratory, USDA Forest Service, Madison, WI; *Scott A. Bove*, Associate Professor and Wood Products Specialist, Department of Forest Ecology & Management, University of Wisconsin, Madison, WI

Every day, consumers make product choices based on a wide spectrum of product attributes. In recent years, the impact that a product and its associated manufacturing process pose to the physical environment have come under increased scrutiny by a growing segment of environmentally concerned stakeholders including members of the general public and builders. Life-cycle inventory (LCI), a major component of life-cycle analysis is emerging as an unbiased, scientifically rigorous method of understanding a products total impact from "gate to gate." This study examined softwood lumber manufacturing in the northeastern United States. The LCI result for this product will add to a growing list of inventoried wood products, which provide a means of comparing wood and non-wood materials such as plastic, steel, or cement on an energy, economic, and environmental basis. Methodology put forth by the Consortium for Research on Renewable Industrial Materials (CORRIM, www.corrim.org) that followed ISO 14040 protocol was used. Softwood sawmills manufacturers were surveyed in the U.S. Forest Service, Northeastern Region and the questions focused on annual production, energy use and generation, material inputs, product outputs, and other by-products. Primary mill data were modeled using SimaPro 7 to determine land, air, and water emissions. The results gathered will be added to the United States LCI Database as part of a larger initiative sponsored by CORRIM.

What is a Green 2x4?

Lloyd C. Irland, Lecturer and Senior Research Scientist, Yale School of Forestry & Environmental Studies, and President, The Irland Group, New Haven, CT

What is a Green 2x4? How can I ensure that the 2x4s in my house are as green as they can be? Does the same process work for other wood products? At present, answering this question is difficult – “Greenness” is a complex concept. Also, some building owners, designers, and consumers emphasize different elements of “greenness.” Concerns over land management are addressed by various certification schemes. Yet, every certification scheme is being criticized by someone, usually for not being tough enough on a particular issue. Many people place a high priority on social issues. They may choose to avoid doing business with a company because it has investments in South Africa or Myanmar or has interests in defense contracting. Or they may prefer the FSC certification system to others because of its emphasis on social issues. Others are concerned with a particular ingredient in the process, usually pesticides, but often adhesives, binders, preservatives, or finishes. There is growing interest in local purchasing for building materials. But there is no persuasive rule that can tell us how far a flatcar of lumber can travel before the CO₂ emissions are a larger concern than the quality of forest management. Finally, there is the question of “green certified” materials being used in gigantic and ostentatious 5,000 sq. ft. mini-palaces, often built in environmentally inappropriate locations. This paper explores these and other tensions encountered in specifying green 2x4s, panel products, and other wood products.

Green Building Education Efforts at Virginia Tech

Daniel P. Hindman, Assistant Professor, Department of Wood Science & Forest Products, and A.L. (Tom) Hammett, Professor, Forest Products Marketing, Department of Wood Science & Forest Products, and Sean McGinnis, Senior Research Scientist, Department of Materials Science & Engineering, Virginia Tech, Blacksburg, VA

As green building becomes a mechanism for adding value to residential home products in the current market, there is a need for higher education to produce students and information that can be useful to product manufacturers, architects and engineers, and the public. Many of the current green building systems require an extensive knowledge of building products, manufacturing methods, material use, and material deconstruction. As an educational institution producing building professionals, higher education has a need to produce capable and knowledgeable students able to use green building practices. Also, updated information on green buildings should be available to current practitioners. Various departments across the Virginia Tech campus including Architecture, Building Construction, Materials Science and Engineering as well as Wood Science and Forest Products have realized the need to educate students in the various areas of green building. This presentation provides an overview of the subjects and tools used. As a research-centered university, Virginia Tech also has begun conducting research related to green building methods. The intent is to develop tools and techniques related to green building rather than limit work to a single certification program or system. Research directions and projects include comparison of green building certification programs, recycling and reuse of construction waste as well as partnering with a local green building developer to develop a ‘living classroom’ or ‘living laboratory’ where students can gain a realistic view of the use of wood materials.

Teaching Green Building: Filling the Needs of Practitioners

David T. Damery (Conference Chair), Associate Professor and Director, Building Materials & Wood Technology Program, and Peggy Clouston, Assistant Professor, Department of Natural Resources Conservation, University of Massachusetts, Amherst, MA

The Building Materials and Wood Technology Program at UMASS Amherst has been educating students in the science of “Green Building” for over 15 years, beginning with a class entitled “Energy Efficient Housing”. The recent renewed interest in energy efficiency and sustainable design has sparked: 1) A new Professional M.S. Degree Option in Green Building; 2) A new faculty hire in Green Building; 3) Five new courses spanning sustainable design and construction in the broad Built Environment; and 4) A proposed future online Certificate Program in Green Building. Continuing and professional education, undergraduate and graduate students are taking advantage of these offerings in increasing numbers. Rapidly advancing technologies and the current level of support from Local, State, and Federal governments and institutions present a growing job market for professionals trained in aspects of Green Building. BMATWT gradu-

ates have found many different career paths including: Residential Energy Specialist, Energy Efficiency field technician, and LEED Accredited Professional for design and construction. The initial energy efficient housing course covers fundamentals of residential energy-use involving: energy-saving materials and products; energy-efficient technology and design; sustainable construction; alternative energy sources; affordable housing, political impact and regulatory developments. The Professional Masters degree in Green Building prepares students for careers in environmentally responsible building practices. Topics covered include: Energy efficient structures, engineering design with sustainable building materials, LEED-certified building requirements, solar energy conversion and public policy relating to green construction and infrastructure. A new hybrid online course offering in LEED and Sustainability prepares Continuing Education students for the New Construction Professional Accreditation exam.

Green Building Materials in the Residential and Light Commercial Markets: A Distributors Perspective

Michael J. Pepin, Technical Sales, Structural Systems, Inc., Thurmont, MD

A distributor can influence its market by offering services and education. In this presentation, I will cover the green building services offered as well as materials sold at my company, both manufactured and distributed. I’ll review our different customer demographics and how the buying and selling process differs for each. Finally, I’ll review the different green standards and how they have each affected our business.

Chain-of-Custody Certification Issues: The Retail Lumber Perspective

Frank W. Sanford, Vice President, Sanford & Hawley, Inc., Unionville, CT

This presentation will discuss the types of projects requiring certified lumber. I will also review the reasons for Chain-of-Custody Certification. I will talk about various steps involved in the Chain-of-Custody from forest to consumer. The issues for companies involved in the Chain-of-Custody including receiving and segregating inventory as well as the paper or electronic trail needed. There are added costs involved in maintaining the Chain-of-Custody. Lastly, I will talk about proposed changes for certified lumber in the future.

GreenMobile®: Systemic Ecological Strategies for Affordable Pre-Fabricated Housing

Michael A. Berk, F.L. Crane Endowed Professor of Architecture, School of Architecture, Mississippi State University, Mississippi State, MS

GreenMobile® is a new type of deployable factory-built, ultra-affordable, energy-efficient, mobile home unit (capable of operating ‘off-the-utility-grid’); it is being proposed as an alternative to the single-wide trailer marketplace. It is intended to: Replace current trailer housing (of the economically disenfranchised) dotting and rotting the rural landscape; and in limited cases, replace suburban and urban housing. It is designed and engineered to meet all applicable ‘stick-built’ housing codes such as the IRC (as well as resilience to meet wind zone requirements on the coast). It is also designed to meet (and mostly exceed) the new LEED Green Building Rating System™. This presentation will outline systemic (ecological) strategies for the design and making of affordable pre-fabricated housing by emphasizing the following rule sets used in the GreenMobile® project. The GreenMobile® unit is a hybridized mix of traditional single-wide delivery along w/ site installed ‘add-on’ modularity such as: Pods, porches, photo-voltaic systems, rain harvesting systems, and decks. This project also utilizes innovative concepts in: 1) Helical pier foundation systems; 2) Wood SIP envelope construction; 3) Open building systems; 4) Passive/orientations relative to sun and wind; 5) Site landscape kit; 6) Life-cycle materials analysis; and 7) On-demand EnergySmart appliances w/ ductless (and possibly solar) A/C systems.



2801 Marshall Court
Madison, WI 53705-2295 USA
Phone: 608-231-1361
Fax: 608-231-2152
conferences@forestprod.org
www.forestprod.org