

PHRC News



The Pennsylvania Housing Resource/Research Center (PHRC) serves the home building and remodeling industries and the citizens of Pennsylvania by improving the quality and affordability of housing. The PHRC conducts applied research, fosters the development and commercialization of innovative technologies, and transfers appropriate technologies to the housing community.

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A message from our new Director of Research



Dear PHRC members and supporters, this is the first time that I am able to address you via the PHRC newsletter. I have assumed the position of the Hankin Chair and Director of Research at the PHRC last summer and it is a great privilege to lead the residential construction program at Penn State. I hope to build on the legacy of my predecessors Jack Willenbrock and Eric Burnett who developed a viable and recognized program at Penn State. I intend to continue the focus of housing research at Penn State to enhance the competitiveness of the Pennsylvania building industry through development of new knowledge and passing this knowledge to the broad audience. Housing is vital not only to those who make their living by providing it, but to our entire society.

The residential construction program at Penn State is a unique program where young generations of engineers are trained to understand the housing industry and are given the tools that create a solid basis for their involvement in the housing. I intend to add to this program through the introduction of new courses, inviting scientific and industrial leaders to interact with the students, and to develop a junior professorship that will further strengthen the residential program at Penn State. This cannot be done without your continuing support.

It is my responsibility to maintain and build upon the research mission of the PHRC. While universities are mostly geared towards the fundamental research, the applied component is fundamental for the related industries to grow. It is the application of new knowledge that ultimately counts and creates employment and wealth of society.

I have had the opportunity to meet many of the leaders in the housing industries. I was truly impressed not only by the professionalism and level of dedication to housing, but by the level of support expressed for the PHRC. I am blessed with excellent staff. The PHRC provides meaningful and relevant service to the industry and society in general. Please, be assured that the PHRC values your support and we will do our best to deserve your trust.

Bo Kasal
Professor and Hankin Chair
Director of Research of PHRC

PENNSSTATE



Research Activities

The research activities of the PHRC are broad: ranging from applied to fundamental research. The line between the two is sometimes blurred, but the basic difference is that fundamental research must result in new knowledge, while applied research uses the existing knowledge base. Universities, in general, prefer fundamental research, while the industry is focused on the application and implementation of research results. We strive to strike the right balance between the two because both areas are interconnected and cannot exist independently.

Housing research at the federal and state levels must compete with transportation, environmental, water resources, and other civil engineering areas for funds. Although housing is estimated to be about a 400-500 billion dollar business in the US (far larger than any construction business, including transportation), it is low on the radar screen of those allocating scarce research funds. The research funds allocated nationwide to housing research through the NSF PATH program were about 2.2 million dollars in 2005, with no support planned for the year of 2006. In contrast, the Pennsylvania Department of Transportation alone will spend about \$12 million on research in 2005-2006 fiscal year (Source: Penn DOT Bureau of Planning and Research web site) out of about \$5.2 billion dollars of total operating budget. If the same ratio of research/budget expenditures was used for housing-related research and using the modest tax rate of 25% (basis of \$400 billion), then the federal research funds would be about \$210 million per year and not \$2.2 million or even zero. If we take the Pennsylvania residential construction and related industries' contribution to the PA economy as 1/50 of the total, the state budget should allocate about \$4 million to housing research! As a result of poor funding, the research community does not adequately address housing related issues. Very few universities in the US have a comprehensive housing-related research program and faculty that build their careers around residential construction. In fact, Penn State University seems to have the only engineering program in the US with a housing program - thanks to the vision of Bernie Hankin. Young faculty are not hired to perform anything related to housing because they will not be able to secure sufficient research funds to support their activities that should ultimately lead to their tenure (the institution of tenure is not meant as life-long employment, but is an important mechanism to protect freedom of speech on university campuses). All of us involved in housing have a lot to do to change this reality if the housing industry and

the citizens of our country are to prosper. I believe that we too ought to start a serious discussion on how to ensure adequate support for housing research, which is so vital to our society.

Now, let me be specific and comment on some of the research activities that are underway or planned. The Building Envelope Testing Laboratory is again operational after a fire last fall. A project addressing the issue of basements, understanding the insulation and condensation mechanisms is planned to start this summer. Wall bracing is becoming a sensitive issue and the PHRC plans to look into partition walls and their capacity and contribution to building lateral resistance. Experimental work will commence in the summer with the help of a student funded by French government. Several proposals that address the issues of structural performance of either components (roofs) or the entire buildings are pending. I am continuing to work with the fellow faculty to get them engaged in housing research. The modest PHRC research funds can help in providing seed grants resulting in larger projects that can address fundamental issues such as moisture problems, energy conservation, structural and non-structural performance of residential construction, land development and even social issues. I am in the process of recruiting and hiring graduate students and a Postdoctoral Fellow. I expect that the two new students and the fellow will start in the Summer/Fall of 2006. From my research startup funds, allocated by the University, I am building the nondestructive evaluation capabilities geared towards investigation of residential structures. None of this can be done without continuous support of our members and I would like to use this opportunity to thank you for your involvement.

by Bo Kasal

New Staff



Mike Turns joined the PHRC in August as Housing Program Development Specialist. He is predominantly working on the West Penn Power Sustainable Energy Fund project described above.

PA Green Building Program

The PHRC received a grant from the West Penn Power Sustainable Energy Fund (WPPSEF) to develop a statewide energy program for new homes in Pennsylvania. Based on the input from the Pennsylvania Builders Association and other industry partners the program will be morphed into a green building program based on the NAHB Green Building Guidelines. ENERGY STAR will be a part of the program, at least initially, as the baseline for the energy efficiency section of the program. The other sections of the program will likely include: site selection, resource efficiency, water efficiency, indoor environmental quality, homeowner education, and a separate track for developers.

The PHRC hopes that the proposed program will provide a uniform standard for green home building in Pennsylvania. This uniformity will reduce consumer confusion over the various “shades of green” that would result from multiple green building programs springing up across the state. There is also potential for coordination with The Green Building Initiative (GBI) which offers marketing support to local HBA’s for green building programs based on the NAHB Guidelines. Currently the PHRC is working on a policy report that will identify target housing markets and the potential energy savings, dollar savings and emissions reductions resulting from the implementation of the green building program.

The WPPSEF has also funded the Affordable Comfort, Inc. and MaGrann Associates to work in partnership with the PHRC on the project. For additional information contact Mike Turns (814) 863-0623

Foundation Systems for Relocated Manufactured Homes

The PHRC is partnering with the Pennsylvania Manufactured Housing Association (PMHA) to investigate the development of alternative foundation systems for the relocation of existing HUD code homes. The industry is facing challenges relocating houses that no longer have the manufactures installation instructions that include approved foundation systems. Lacking the manufacturers’ approved systems many local building code officials are requiring full perimeter foundations. This project will explore the development of prescriptive designs that would be acceptable within the framework of the PA Uniform Construction Code (UCC). The systems appropriate for use in both a park settings and for private lots.

The foundation systems that are developed must meet the following requirements:

1. Support loads imposed on the building (gravity, wind, frost heave, etc.);
2. Be easy to construct with commonly used materials methodologies;
3. Minimize site disturbance or excavation requirements;
4. Be economical to construct and maintain;
5. Provide a minimum twenty-five year service-life; and,
6. Be a prescriptive system that is developed using standard engineering practice that would be acceptable as an “approved structural system” for building code compliance.

For additional information on this initiative contact Mark Fortney.

Wall Bracing Clarification

Many builders and building code officials are wrestling with applying the new wall bracing requirements specified in the 2003 and 2006 International Residential Codes (IRC). The prescriptive requirements are always debatable in the view of ever increasing complexity of house geometries that result in complex distribution of lateral forces. To clarify these requirements and their proper application in Pennsylvania the PHRC is developing a short technical document. The brief will make an attempt to summarize the problems associated with wall bracing and give builders and code officials simplified guidance on proper bracing methods. For additional information contact Bo Kasal at (814) 863-9788.

Factory Built Housing

FBHC



The FBHC at Penn College is pleased to announce several new courses to include: *Benchmarking For Building Systems* with Dr. Jack Willenbrock, PhD., former Hankin Chair at PSU; *5 Levels of Project Management for Building Systems*; *Introduction to Kaizen Blitz for Building Systems*; *Leadership II: Daily Habits of Effective Leaders* with Dennis Gilbert; and, *Teamwork & Morale Building for the Building Systems Organization* with Tim Manello. These courses were developed to respond to a training initiative with the Central Pennsylvania Workforce Development Corporation and the Modular Building Systems Association. While initial courses were limited to participating manufacturers and their supply chain, several courses will be scheduled in the upcoming academic year for open enrollment. We are excited to be able to respond to the industry needs assessment that we conducted in 2004 with training courses of this caliber. For additional information, contact Rick Terry, Director of the Factory Built Housing Center (570) 32-4768.

MHTI



On March 29th & 30th, the MHTI held it's 58th "Introduction to Site management and Modular Construction" in conjunction with the Modular Building Systems Association's annual conference. A near record class of 33 participants attended from all over the country. The course that originated in Pennsylvania continues to gain national and even international support and interest as they continue to update the course material to reflect recent code changes and market issues. The impact of recent natural disasters in the Gulf Coast on the housing market has led to a surge of interest in building systems, specifically modular housing. There has been a corresponding increase of participation in the MHTI course by builders and industry personnel from the Southern markets. MHTI will hold a record number of courses this year totaling over 15 offerings. One of the keys to the success of MHTI has been its long time instructors Warren Gottshall and Clyde Kreider bringing a combined 75 years of industry experience to the course. This experience has recently been complimented by Tom Melley who recently joined the MHTI instructor pool. Tom is a retired modular builder with over 20 years of experience from the exclusive Hampton Beach area of Long Island. Tom has already received fantastic instructor evaluations by participants who enjoy his heart felt delivery and real world experience. MHTI also offers its courses on-site at the request of industry. For more information please visit the web site at <http://www.pct.edu/mhti>.

FBHC Upcoming Courses

Modular Housing Training Institute		
Date	Course #	Location
April 5 & 6	MHI 100-05	Penn College
May 10 & 11	MHI 100-07	Penn College
May 24 & 25	MHI 100-01	Harrisburg Area
June 1 – July 27	MHI 101-01	MHTI Online Course
June 7 & 8	MHI 100-02	Clarion, PA
June 28 & 29	MHI 100-03	Allentown Area
Project Management for Building Systems		
Date	Course #	Location
April 21	Level I – Project Fundamentals	Penn College
April 25 & 26	Level IIa – Setting Up Projects for Success with MS Project	Penn College
May 24 & 25	Level IIb – Project Tracking Using MS Project	Penn College
June 7 & 8	Level III – Combining Multiple Projects that Share Resources	Penn College
Benchmarking for Building Systems		
Date	Course #	Location
May 3 & 4	Introduction to Benchmarking for Building Systems	Penn College
May 10 & 11	Introduction to Benchmarking for Building Systems	Penn College
June 14 & 15	Introduction to Benchmarking for Building Systems	Penn College
Energy & Building Codes Conferences		
Date	Course #	Location
May 22	Building Code Issues for Building Systems**	Penn College
June 7	Energy Issues for Building Systems**	Penn College
September 18	Building Code Issues for Building Systems	Penn College
October 9	Energy Issues for Building Systems	Penn College

Training Programs

NEW

Commercial Energy Program

The PHRC with support from the U.S. Department of energy has developed a 2-day training program that focuses on the commercial building provisions of the 2003 International Energy Conservation Code. Topics include:

- UCC Administrative Requirements
- General Administration
- Building Planning
- Building Envelope
- Mechanical Systems
- Electrical Power and Lighting Systems
- Building Services Systems and Equipment

For additional information on this program contact Tracy DeSoto at (814) 865-2341.

Masonry IBC Program

The PHRC developed a one-day training program for the Pennsylvania Concrete Masonry Association (PCMA) with support from the Educational Fund of the National Concrete Masonry Association (NCMA). The objective of the program was to provide architects, engineers, and building code officials an overview of masonry related requirements of the 2003 IBC and IECC. This includes general design considerations, fire safety, structural, thermal enclosure and common code violations as well as some of the changes between BOCA and IBC. This program has been held in 9 locations across the Commonwealth to over 276 individuals.

This program was developed by a team of instructors which included Mark Fortney, Director of the PHRC, Walter Schneider, PE, and Ned Liggett.

Summary of training programs the PHRC has delivered since 2001.

Program Summary January 2001— March 2006		Programs Held	Attendees
General	Comprehensive International Residential Code	104	3,836
	BOCA/CABO Transition Program	16	612
	Overview of the IRC's Plumbing Requirements	10	270
	Overview of the IRC's Mechanical Requirements	23	709
	Pennsylvania's New Energy Code	20	672
	IRC Update Program	3	83
	Other (PCMA, Moisture Control, etc.)	38	1,363
	Stormwater Management	7	397
Code Officials	Comprehensive International Residential Code	28	655
	Overview of the IRC's Plumbing Requirements	16	329
	Overview of the IRC's Mechanical Requirements	18	344
	Pennsylvania's New Energy Code	19	448
	Administering & Enforcing PA's New Energy Code	2	27
	Commercial Energy Workshop for Code Officials	5	110
TOTAL		309	9,855

Over the last five years, the PHRC has developed and delivered a concerted program of training for the home building industry in Pennsylvania. At least 21 different one or two-day workshops have been developed. As shown in the figure below, some 300 programs have been delivered to over 9,850 individuals. This effort represents the largest and most ambitious effort ever conducted in PA to train builders, building officials, building inspectors, design professionals, educators and others involved in the home building business.

NEW

2006 IRC Update Program



The PHRC is in the process of developing a new program to help prepare builders, remodelers, design professionals and building code officials prepare for updating to the 2006 International Residential Code. By the end of 2006 the Pennsylvania Department of Labor and Industry anticipate to make the 2006 IRC the law in Pennsylvania.

This training program will provide an overview of major changes and what it may mean to house designers, builders or how a building code officials may need to change their plan review or inspection processes to capture these changes. The program will be available in July. For additional information contact Mark Fortney at (814) 863-2366.

Conference Reviews

14th Annual Pennsylvania Housing Conference

The PHRC held the annual Pennsylvania Housing Conference in two locations, Pittsburgh and Valley Forge, in February. The conference is the premier event for the housing industry in Pennsylvania and addresses emerging technical and policy issues.



This year's conference addressed such topics as:

- Changes in your liability under the UCC
- Concrete systems for housing
- Changes between the 2003 and 2006 IRC
- Avoiding building failures and loss mitigation
- Emerging energy issues for builders
- It begins with the site

Presentations are available to view at www.engr.psu.edu/phrc.

The programs were attended by 235 builders, remodelers, architects, engineers and building code officials. Some of the comments received included:

"Hit topics that were important to my business." (Builder)

"I loved the variety of topics presented and the knowledge of the presenters." (Builder)

"I was exposed to many new concepts, I was very impressed!" (Building Code Official)

"A lot of good information quickly." (Architect)

2nd Annual Pennsylvania Land Development Conference

The Pennsylvania Land Development Conference is an annual forum that address emerging planning, design, and regulatory issues affecting the residential development industry in Pennsylvania. The theme of this years conference was demographic, planning and technical trends driving Pennsylvania's residential development market. This year's topics included:

- A legal perspective on changing land use law and regulations
- Community growth patterns...past, present and future
- A report on land use and growth management in Pennsylvania
- PA's Stormwater Best Management Practices Manual, an update
- Residential infrastructure design for sustainable development
- Trends in on-lot community based sewage treatment systems
- Regulatory requirements for innovative on-lot community based sewage treatment systems

Presentations are available to view at www.engr.psu.edu/phrc.

This year's conference was attended by 110 developers, planners, landscape architects, engineers and regulators. Some of their comments include:

"The conference dealt with current and future issues that affect my profession."

"Great no nonsense approach."

"Great opportunity to communicate with others in the industry!"



PHRC Members

Leadership

BIA of Lancaster
 Blair County Builders Association
 Builders Association of Northwestern PA
 Cannon Custom Homes
 CertainTeed Corporation
 Department of Community and Economic Development
 Dow Chemical Company
 DuPont Building Innovations
 EHI Group
 Glunt Development Co., Inc.
 Governor's Office of Housing & Community Revitalization
 Hankin Group
 HBA Metropolitan Harrisburg
 HBA of Chester and Delaware Counties
 Indiana-Armstrong Builders Association
 Lebanon County Builders Association
 Lehigh Valley Builders Association
 Liberty Homes Custom Builders
 Mercer County Builders Association
 Modular Building Systems Association
 North Suburban Builders Association
 PA Department of Community & Economic Development
 PA Manufactured Housing Association
 Penn State University
 PennBOC
 Pennsylvania Association of Code Officials
 Pennsylvania Builders Association
 Pennsylvania College of Technology
 Pennsylvania State University
 Roy Newsome

Supporting

ACCA-WPA
 BA of Central PA
 Benjamin Obdyke Incorporated
 Cedar Knoll Builders
 Central Susquehanna Builders Assoc.
 Clarion County Career Center
 Comfort Home Corporation
 Independent Quality Alliance
 Irwin Contracting Custom Homes, LLC
 Lackawanna HBA
 Muncy Homes, Inc.
 PA Petroleum Marketers & Convenience Store Association
 Penn State University
 Pennsylvania Concrete Masonry Association
 Pennsylvania Housing Finance Agency
 Pulse Homes Corporation
 S&A Homes
 T.H. Properties
 Weyerhaeuser Company
 York Corrugating Co
 York County Builders Association

Patron

Adams Township
 Alan Hawman Architect
 Avignon Homes, Inc.
 Benchmark Civil Engineering
 Borough of Fox Chapel
 Bozzuto Development Co.
 Bursich Associates, Inc.
 Cocalico Properties Inc.
 Columbus Property Management & Dev., Inc.
 CZOP/Specter, Inc.
 DeLuca Homes
 Design Build by Robert P. Baney, LLC
 E&M Engineers and Surveyors, P.C.
 East Petersburg Borough
 ECI Corp.
 Engineering Projects Incorporated
 Fine Line Homes
 Frackville Borough
 Franklin County Builders Association
 GAI Consultants
 Gluszko Architects, P.C.
 Gutters Insulation & More
 HDR Engineering
 Jack Gaughen ERA
 James Wentling/Architect
 Jenkintown Associates
 JHW C/M Consultant
 Joy Beck Custom Builders, Inc.
 Kuhns Bros. Log Homes, Inc.
 Lobar Properties
 Lower Swatara Township
 LTS Builders, LLC
 MaGrann Associates
 Manheim Township
 Mesa Wood, Ltd.
 Morrissey Holdings, L.P.
 NHR Real Estate Services
 Nittany Homes
 Old Lycoming Township
 Paul Macht Architects, LLC
 Perry L. Cisney Inc.
 Peters Township
 Preferred Solutions, Inc.
 Pure Energy
 Queen Engineering
 Redevelopment Authority of Washington Co.
 Redevelopment Authority Uniontown
 Rettew Associates, Inc.
 Richmond Township
 River Rock Creative Group
 Riverview Homes, Inc.
 Sleighter Engineering, Inc.
 Somerset County Builders Association
 Sweetland Engineering & Assoc., Inc.
 T&T Realty Acquisition Associates
 Thomas Comitta Associates, Inc.
 Thomas J. Wasilowski A. LA. Architects
 Tim Myers Contracting
 Upper Darby Township
 UpStreet Architects, Inc.
 Wagner Construction
 Watkins Architect, Ltd.
 Wayne County Builders Association
 Weaver Precast, Inc.
 Whitehall Township
 Woodloch Builders, Inc.

**Not a member?
Join the PHRC today!**

Name _____

Address _____

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Method of Payment:

Check Visa

MasterCard

Credit Card # Exp. date Total: _____

Signature

Membership Levels:

Corporate or Trade Associations:

Leadership \$2,500

Supporting \$1,000

Patron \$500

Local Associations:

Leadership \$1,000

Supporting \$500

Patron \$250

Individuals:

Leadership \$500

Supporting \$250

Patron \$100



www.engr.psu.edu/phrc

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Director: Bill Van der Meer
Director of Factory Built Housing:
Rick Terry

Calendar of Events

May 2-3	Administering & Enforcing PA's New Energy Code	PCCA (PSATS & Luzerne County)
May 4	Land Development Consortium Meeting	Harrisburg
May 9-10	Stormwater Workshop	PennDOT (Hollidaysburg)
June 20-22	Stormwater Workshop	PennDOT (King of Prussia)
July 20	Land Development Consortium Meeting	State College
August 16-17	Overview of the IRC Mechanical Requirements	PPMCSA (Grantville)
August 24	Land Development Consortium Meeting	Harrisburg
October 3-5	Stormwater Workshop	PennDOT (Central PA)
October 12	PHRC Industry Advisory Council Meeting	Harrisburg
November 2	NAHB Student Chapter Awards Banquet	Nittany Lion Inn (State College)
December 14	Land Development Consortium Meeting	State College

For additional details on training programs, visit www.engr.psu.edu/ctc.

Eric Burnett Retires

Dr. Eric Burnett retired from Penn State University as Director of Research for the PHRC and as the Hankin Chair for Residential Construction in the Department of Civil and Environmental Engineering and Architectural Engineering. Eric's work and vision over the past nine years has move the PHRC from being academic center to being a full service agency for the residential construction industry. A retirement party was held in State College in July 2005 and was attended by over 150 industry representatives.

A pamphlet "The Hankin Legacy" has been prepared documenting the development of the PHRC and the contributions of the Hankin Professorship.