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
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 predominately 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 manufacturers 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.
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.

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.
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.

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.

<table>
<thead>
<tr>
<th>Program Summary</th>
<th>Programs Held</th>
<th>Attendees</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 2001— March 2006</td>
<td></td>
<td></td>
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<tr>
<td>General</td>
<td></td>
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<tr>
<td>Comprehensive International Residential Code</td>
<td>104</td>
<td>3,836</td>
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<tr>
<td>BOCA/CABO Transition Program</td>
<td>16</td>
<td>612</td>
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<tr>
<td>Overview of the IRC’s Plumbing Requirements</td>
<td>10</td>
<td>270</td>
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<tr>
<td>Overview of the IRC’s Mechanical Requirements</td>
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<td>709</td>
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<tr>
<td>Pennsylvania’s New Energy Code</td>
<td>20</td>
<td>672</td>
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<tr>
<td>IRC Update Program</td>
<td>3</td>
<td>83</td>
</tr>
<tr>
<td>Other (PCMA, Moisture Control, etc.)</td>
<td>38</td>
<td>1,363</td>
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<tr>
<td>Stormwater Management</td>
<td>7</td>
<td>397</td>
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<tr>
<td>Code Officials</td>
<td></td>
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<tr>
<td>Comprehensive International Residential Code</td>
<td>28</td>
<td>655</td>
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<td>Overview of the IRC’s Plumbing Requirements</td>
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<tr>
<td>Overview of the IRC’s Mechanical Requirements</td>
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<td>Pennsylvania’s New Energy Code</td>
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<td>Administering &amp; Enforcing PA’s New Energy Code</td>
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<tr>
<td>Commercial Energy Workshop for Code Officials</td>
<td>5</td>
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<td>TOTAL</td>
<td>309</td>
<td>9,855</td>
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</table>

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.

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.
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 year’s 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 Odbyeke 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
- Muney Homes, Inc.
- PA Petroleum Marketers & Convenience Store Association
- Penn State University
- Pennsylvania Concrete Masonry Association
- Pennsylvania Housing Finance Agency
- Pulte 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
- Bozutto 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&I Engineers and Surveyors, P.C.
- East Petersburgh Borough
- ECI Corp.
- Engineering Projects Incorporated
- Fine Line Homes
- Frackville Borough
- Franklin County Builders Association
- GAI Consultants
- Glusko 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
- MaGraff 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. Cinney Inc.
- Peters Township
- Preferred Solutions, Inc.
- Pure Energy
- Queen Engineering
- Redevelopment Authority of Washington Co.
- Redevelopment Authority Uniontown
- Retnew Associates, Inc.
- Richmond Township
- River Rock Creative Group
- Riverview Homes, Inc.
- Sleigher Engineering, Inc.
- Somerset County Builders Association
- Sweetland Engineering & Assoc., Inc.
- T&T Realty Acquisition Associates
- Thomas Cornetta 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.

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

**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

### Method of Payment:
- [ ] Check
- [ ] Visa
- [ ] MasterCard

**Signature**

**Credit Card #**

**Exp. date**

**Total:**
Calendar of Events

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

For additional details on training programs, visit [www.engr.psu.edu/ctc](http://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.