

# Pennsylvania Housing Research Center

Penn State University/  
Penn College of Technology

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## 1997 Annual Report

### Main Mission And Goals

To serve the housing industry and to become a valued resource for Pennsylvania as well as the building industry in Pennsylvania.

To focus on all technical aspects of single family housing but with emphasis on:

- site development
- the building enclosure; walls, roofs, windows, etc.
- structural systems
- building materials
- componentization and industrialization
- computer related developments

**Overview** The Pennsylvania Housing Research Center (PHRC) formerly the Housing Research Center (HRC) at Penn State, has been active since July 1988 in providing education, research, and technology transfer services to the residential building industry. Within the Commonwealth of Pennsylvania, many of the PHRC's activities have been carried out in conjunction with the Pennsylvania Builders Association (PBA). Additional joint programs have also been developed with the Pennsylvania Electric Association, the Pennsylvania Energy Office, the Mid-Atlantic Building Systems Council and private corporations. The PHRC was also an active member of the Pennsylvania Advanced Technology Housing Consortium (PATHC), which was funded by the PA Department of Commerce through the Ben Franklin Partnership Program between 1989 and 1991.

While the PHRC office is situated in the College of Engineering, faculty members from other colleges in the University also participate. During 1996 a partnership with Penn College in Williamsport was arranged. Penn College is the premier technical/vocational college in Pennsylvania and includes the Weatherization Training Center.

**Personnel** Dr. Eric F. P. Burnett - Director, Departments of Civil and Environmental Engineering and Architectural Engineering, PSU  
Mr. Bill VanderMeer - Associate Director, Pennsylvania College of Technology  
Ms. Michelle McMullen - Administrative Assistant, Department of Civil and Environmental Engineering

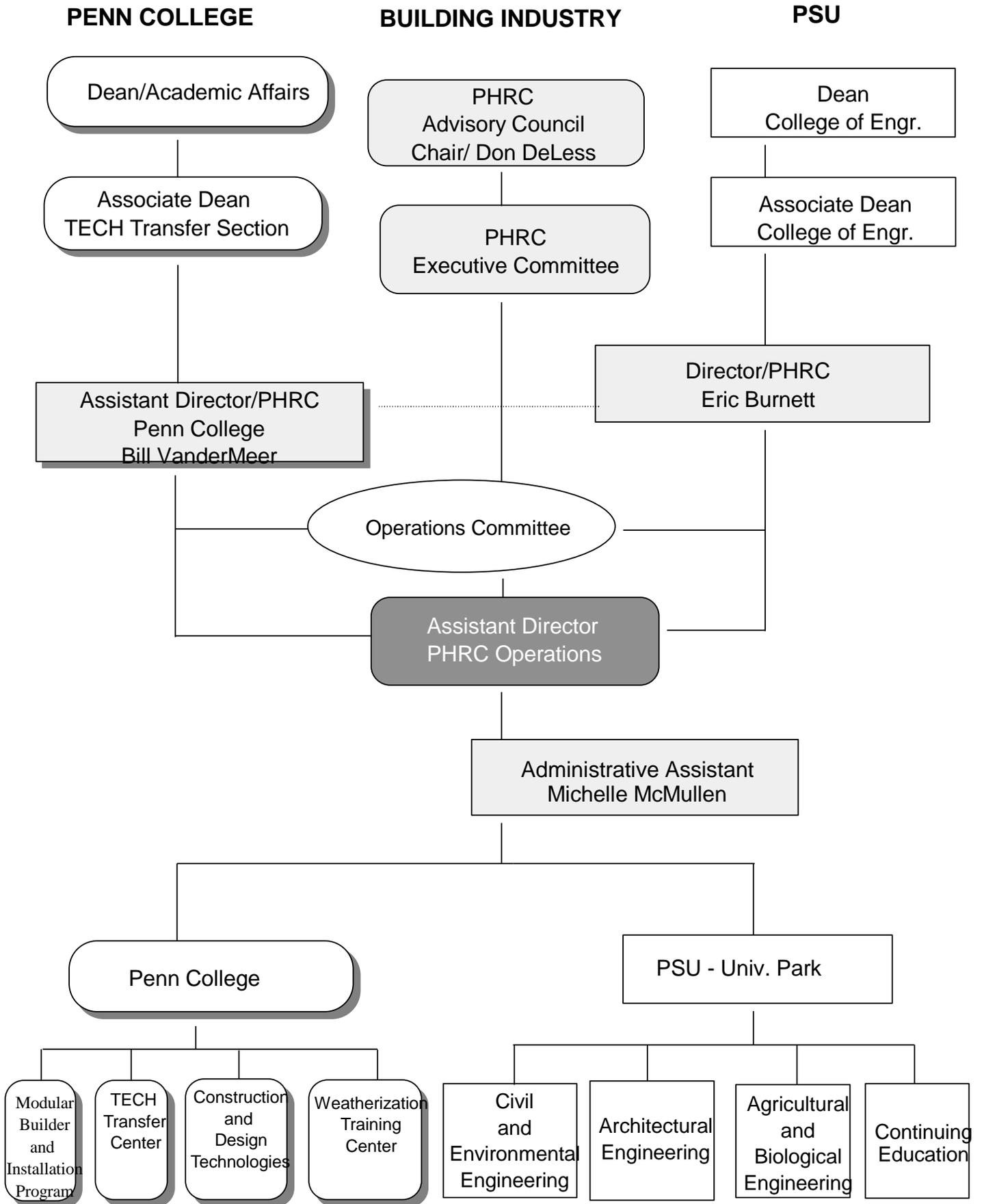
An organization chart is attached.

**Funding** In addition to considerable support from Penn State and the College of Engineering, in this fiscal year the PHRC will receive direct funding from the Pennsylvania Builders Association, the Home Building Industry, and the Commonwealth of Pennsylvania through the Department of Economic and Community Development. Contract funds are also received from sponsors of specific projects. The Hankin Endowment also contributes support.

**The Fifth Annual Pennsylvania Housing Conference** The Fifth Annual Pennsylvania Housing Conference was held on February 19-20, 1997, at the Scanticon Conference Center in State College. About 110 people attended the conference which was jointly sponsored by the Pennsylvania Builders Association, the Pennsylvania Electrical Association, and the Pennsylvania Housing Research Center.

The keynote session on the first day was directed at the state of housing and the business of housing both in Pennsylvania and nationally. On the second day, the keynote session focused on the regulatory situation within the state. The ten working sessions dealt with topics as diverse as business problems and solutions, trends in house design, a builder software review, alternative foundation systems, mechanical systems and their effect on the performance of the house, the Susquehanna House project, and the need for a competent workforce. Two sessions were of particular interest: one was directed at the consequences of electrical utility deregulation and the other at the adoption of a state-wide building code. Both possibilities have significant implications for home builders in Pennsylvania.

For a variety of reasons, instead of a Conference, a series of Workshops, one on Moisture and another on Hygrothermal Analysis are being organized for 1998. These will take place on February 20 and 21 and the second is co-sponsored by the Consortium of Housing Research Centers.



## **Recent And Building Materials and Systems Current Projects**

- Implications of Using Housewrap
- Remediation and Repair of Masonry
- Modeling and Optimization of Alternative Floor Systems (Phase I)
- Serviceability and Optimization of Wood I-Joist Floor Systems (Phase II)
- Building Science Considerations for Steel-Stud Framing

### **Below-grade/Basement Technology**

- Issues and needs (Eric Burnett, John DeGraauw -available Feb 1)
- Modeling of Basement Heat Transfer and Parametric Study of Basement Insulation for Low Energy Housing (William Bahnfleth, Cindy Cogil - available Feb 1)
- Foundation Wall Systems for Houses (E. Burnett, John DeGraauw - available)
- Flood Damage Basements: a Starting Point (Brennan Glantz - available)

### **Industrialized Housing**

- A Multimedia Education/Training and Marketing Software System (Hossam El-Bibany, Steve Snyder)
- The Importance of the Manufactured Housing Industry to PA
- The Importance of the Modular Housing Industry to PA
- Builder's Guide to Modular Housing (available)
- Evaluating the Costs of Modular and Stick-Built Construction Using A.C.E. (K. L. Balliet - available)

### **Training/ Education**

- House Building Industry Educational Needs Assessment
- Statewide BOCA/CABO & MEC Training

### **Energy Conservation**

- Energy Conservation Economics in Single Family Homes (Gren Yuill - report completed, but not released)
- A Field Study of Air Leakage Paths in Houses
- Development of Requirements for Evaluation and Certification of Third Party Model Energy Code Compliance Software

### **Facilities**

A test facility for enclosure systems namely the Building Enclosure Test Laboratory (BeTL) was recently commissioned. We are able to test wall/roofs elements up to 12'x12' under variable air pressures ( $\pm$  0-10kPa), temperatures (down to 0°F) and under driving rain. This facility complements a large field test facility (BEGHUT) in Canada to which we have access.