

PHRC

The Pennsylvania Housing Research Center

Projects for the 2000-2001 Fiscal Year



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July 18, 2000

Preface

Well before the start of each fiscal year, we at the Pennsylvania Housing Research Center (PHRC) develop a work plan and a program of projects to be conducted over the next calendar year. We attempt to identify and prioritize a series of projects that collectively satisfy the following criteria:

- meets the needs of house builders, the home building industry and the housing consumer in Pennsylvania;
- is consistent with the mission and goals of the PHRC;
- is affordable and feasible, given the resources available and the prevailing constraints on time, expertise and facilities; and
- comprises a balanced program of projects that address both the short-term and the longer-term needs of all sections of the industry in Pennsylvania.

This PHRC work plan is the result of input and assistance from numerous individuals and groups. The PHRC's Industry Advisory Council and the Operations Committee, in particular, have responsibility for the final choice of topics. These housing industry-based bodies consist of manufacturers and suppliers, builders, remodelers and industry associations (which includes the Pennsylvania Builders Association).

The list of projects that follows identifies only those 2000-2001 fiscal year projects that are to receive some degree of support from funds provided to the PHRC by the Commonwealth of Pennsylvania, Department of Community and Economic Development. The projects are planned to start as soon as the contractual details have been resolved; but no later than the beginning of January 2001. Unless otherwise indicated projects are to be completed on or before the end of December 2001.

We have tried to build flexibility into the program with regard to the number and nature of projects and their funding. We are required to plan projects and allocate funds at the start of each fiscal year. However, there is a real need for the PHRC to be able to take on special projects during the year. These projects typically fall into two categories: the first includes short term and limited scope projects that are time sensitive, while the second involves responding to a request for a proposal. Examples of some of these contingency projects that we are currently exploring are included as Attachment 1.

In most cases, we attempt to use state funding to leverage outside support; in other cases the work is considered important enough to warrant full support. A budget by project category is presented in Attachment 2. We plan to continue with our previous initiatives in the areas of training and education, modular housing, manufactured housing, and applied research.

Training & Education: The PHRC has a mandate to transfer knowledge by providing the necessary training and education to the wide variety of groups that make up the housing industry. Many of the projects that are described below are in response to the recommendations that flowed out of the recently completed the study entitled “House Building Industry Educational Needs Assessment”.

Workshops

Description: Part of the PHRC’s mission is to provide educational opportunities, and thereby transfer appropriate technologies to the housing industry. A series of workshops will be held in partnership with local and regional building related associations. Some of the technical areas that may be addressed are:

- Building Codes
- Engineered Lumber
- Homes for Life (Transgenerational Housing)
- Moisture and Building Science related issues
- Alternative Building Systems

Manager/PI: VanDerMeer, Fortney

Deliverable: The PHRC will develop and deliver at least five technical workshops to be held in various locations across the state.

Computer Based Distance Education

Description: This is a multi-year project the goal of which is to develop distance education opportunities for the home building and remodeling communities through computer based training and outreach. Subsequent to a needs assessment and market analysis, the PHRC will identify specific topics and develop or otherwise provide educational/training/interest modules that may be accessed by stand alone software applications or through internet download.

Manager/PI: Van der Meer, Fortney

Deliverables: A software package or CD. Topics may include building science, case studies, technology updates, code changes, etc. The PHRC will continue to develop its software and web authoring production capabilities during subsequent years.

Code Training Consortium (CTC)

Description: The PHRC has played a leadership role in the development of the CTC. The CTC seeks to serve as a facilitator between those who provide training and those who need training. This group is playing an especially important role during the implementation of a statewide building code in Pennsylvania.

Manager/PI: Fortney

Deliverable: Support for administration and quarterly meetings and updating the CTC web-site.

Storm Water Management

Description: This program is to focus on innovative concepts for storm water management design. Best practices and various case studies are to be documented.

Manager/PI: Fortney

Deliverable: The PHRC will develop and deliver at least one technical workshop.

Vo-Tech Instructor Summer Series

Description: Programs will be offered in conjunction with the three professional development centers (IUP, PSU, Temple) and will be held at Penn College of Technology (PCT) facilities over the summer months. The workshops will focus on recent innovations and emerging technologies relevant to residential and light commercial construction.

Manager/PI: VanDerMeer, Fortney

Deliverable: The PHRC will develop and deliver at least two technical workshops for Vo-Tech instructors of building-trade programs.

Technology Transfer & Outreach

Description: Continuation and expansion of activities to inform , liaise with and influence builders and remodelers.

Manager/PI: Fortney

Deliverable: The PHRC will work with the PBA and other industry and trade organizations on the following activities:

1. **Annual Pennsylvania Housing Conference/Workshop:** An annual event to address one or more technical issues. This event is intended for builders, developers, vocational technical instructors, utility personnel, state policymakers, product manufacturers, and others involved in the housing industry.
2. **Speaker Service** The PHRC will present or participate in talks or seminars directed at the housing industry. This may include PBA functions and regional meetings, local association dinner or breakfast meetings, NAHB meetings, or state or national conferences.
3. **Outreach Activities:** This includes activities to let builders know about the PHRC and the services and publications it provides. These activities includes but is not limited to the PHRC newsletters, mailings, promotional pamphlets, advertising in trade journals, phone calls, and the PHRC's World Wide Web (WWW) site.

Specific Builder Requested Projects: The PHRC has a long history of working with the Pennsylvania Builders Association (PBA) and individual builders to investigate and develop solutions to problems faced by the industry. The following projects have been identified by builders and approved by the PHRC Operations Committee to be high-priority, short-term projects for the home building industry in Pennsylvania.

Builder Briefs

Description: Continuation of series of short technical documents, two to four pages in length, that address specific issues of priority concern to builders or remodelers. The documents are intended to be builder friendly and collectible with as much information as possible presented in non-textual form..

The following are topics that are being considered:

- Blower Door Air Tightness Testing
- Damage From Candles/ Incense and the implications for Builders
- Getting the Most Out of Windows
- Ice Damming and its Avoidance
- Onsite completion of Modular Housing
- Proper Roof Details

Manager/PI: Fortney, Burnett, VanDerMeer

Deliverable: At least three Builder Briefs will be researched, written and printed by December 31, 2001.

Site Improvement Standards

Description: This project will expand on the Phase I activities that investigated site improvement standards in Pennsylvania and surrounding states. The scope of the project and funding level will be based on the outcome of the Phase II project.

Manager/PI: Fortney

Deliverable: The deliverable for this project can not be defined until Phase II is completed. However, it is anticipated that further action will be required.

Applied Research: A very important function of the PHRC is to undertake relevant research, development and demonstration work. These projects may have a longer-term and be of a more fundamental nature than other work. The projects that have been selected make use of the expertise and strengths of the individuals and the facilities and resources of the institutions involved: the Pennsylvania State University, the Pennsylvania College of Technology and other collaborating organizations..

Housewrap – Phase III

Description: The phase involves a collaborative effort with industry. The project concerns the long-term durability and in-place performance of the housewrap (e.g., as a water barrier, drainage plane, air barrier and as means for controlling water vapor diffusion). Methods of fastening and improvements to installation practices are to be investigated. The design and development of better membrane products is the goal of this project.

Manager/PI: Burnett

Deliverable: A technical report will be generated as well as, at least, one short technical document for builders.

PSU Wood Group

Description: This project is to pursue the development of an industry-supported group to provide training, education and research for the engineered wood industries. This project will attempt to bring together key industry leaders and researchers to develop interest and general support for the formation of such a group. The project will be based on the strategic plan developed by Manbeck in 2000.

Manager/PI: Manbeck

Deliverable: At least one meeting of the potential members and other interested parties.

Long-term Behavior of Engineered Wood Floors

Description: This project will continue to refine the modeling of creep behavior in engineered wood floor systems. This is a two-year project.

Manager/PI: Manbeck

Deliverable: A technical report for the wood industry and builders discussing the technical issues of creep behavior in floors.

Building Enclosures: Science and Design

Description: This project will enable a text on Building Science and building enclosures (performance, design and problem assessment) to be completed in final draft form. A general text on this important topic with particular reference to residential construction is badly needed.

Manager/PI: Burnett

Deliverable: A Textbook in final draft form for immediate use in a number of housing related courses and educational programs.

Residential Steel Framing

Description: Further to previous PHRC work on the in-service performance of steel-stud framing and on the new energy code for PA., design guidelines for the use of light-gage steel framing and floor systems are needed and this is to be developed.

Manager/PI: Burnett

Deliverable: A short technical report.

Homeowner Survey

Description: A survey of a selected group new homeowners to attempt to identify and prioritize IAQ, comfort, moisture and other issues. DEP has expressed interest in co-funding this study.

Manager/PI: Fortney

Deliverable: The outcome of this project will be a report that establishes a base line of consumer's (homeowner's) perceptions and experiences for state policy makers and the housing industry. It will also provide a guide for the PHRC in its future IAQ research.

Ventilation Drying within Residential Enclosure Wall Systems

Description: This is a multi-year R and D project to investigate and model the contribution of convective air movement within wall systems to the drying process. The project is largely funded by ASHRAE but some funding is needed to address those aspects of the issue that have particular relevance for PA.

Manager/PI: Burnett

Deliverable: A report and a series of technical publications.

Modular and Manufactured Housing: The PHRC has been working closely with the Modular Housing industry and the Manufactured Housing Industry, both at Penn State University and at Penn College of Technology. A number of projects have been completed or are currently underway. The following projects build on our past experience and add value to our current commitment.

Technical Concerns for the Modular and Manufactured Housing Industries

Description: This program is intended to provide resource to address specific technical issues identified by these industries and the MHTI and the Manufactured Housing Resource Center (MHRC). This project will review the problem and its potential impact to both the industry and homeowners then develop specific solutions or alternatives.

Manager/PI: Fortney

Deliverable: The deliverable for this will be brief technical documents addressing specific concerns. The documents will be written for the appropriate audiences with the potential for use by either MHTI or MHRC in their training.

Model Quality Assurance within Factory Built Housing

Description: This project will continue to build upon the work completed in 2000.

It will bring together modular and manufactured housing representatives, state agencies, third party inspectors and the Industrial Resource Centers (IRC) and the Pennsylvania Technical Assistance Program (PennTAP).

Manager/PI: Fortney

Deliverable: The deliverable may be a document or the support of a series of roundtable meetings to discuss quality assurance issues within the industry.

Foundation Systems for Manufactured Housing

Description: This project will investigate innovative foundation systems (both bearing to earth and hold-down) for manufactured housing. This investigation will include frost protected shallow foundations; the use of insulated skirting, and other systems. Future training to be carried out by PCT's Manufactured Housing Resource Center.

Manager/PI: Fortney, Burnett

Deliverable: A technical document, or a series of technical documents, which discusses the various systems available and advantages and disadvantages of each. The MHRC will be used as a delivery mechanism for future industry training on the systems (the training is not part of this years deliverable).

Attachment 1 Contingent Projects

Contingent Projects: There is a need for the PHRC to be able to take on special projects during the year. These projects typically fall into two categories: the first includes short term and limited scope projects that are time sensitive; the second requires the ability to respond to RFP and other opportunities to leverage outside funds during the contract year. Below are examples of projects in the second category for which the PHRC is developing industry partnerships and soliciting outside funding for (It should be noted that these projects may or may not be implemented, depending on the PHRC's success in obtaining out-side funds during this years activities):

Wind Driven Rain Study

Description: This study will look at the effects of rain, and wind driven rain on building wall enclosure systems.

Manager/PI: Burnett

Possible Funding: This project would be jointly project with private industry, ASHRAE, NAHB, HUD and others.

Service-Life and the Durability of Residential Buildings

Description: This project will investigate the service-life and durability of the materials and construction practices for residential buildings. This will also include the development of case histories and investigation into reserve fund guidelines.

Manager/PI: Burnett, Parfitt

Possible Funding: Possible NIST, HUD or PATH funding/ collaboration

Foundations/Basement and Modular Systems Integration Demonstration

Description: Demonstration and evaluation project in partnership with modular manufacturers and foundation system manufacturers. This project would be a multi-year project over a minimum of 2-years.

Manager/PI: Burnett

Possible Funding: Outside funding from modular manufacturers, material manufacturers and suppliers and others.