
HRC NEWS

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A Publication of the Housing Research Center at The Pennsylvania State University

ANNUAL ADVISORY COUNCIL MEETING

This issue focuses on the Housing Research Center Advisory Council Meeting scheduled for May 26 and 27. This two day business meeting and research symposium is designed to bring together approximately 60 industry representatives, state officials, University representatives, and special guests to discuss completed and new research projects, funding proposals and technology transfer programs for the upcoming year. This article outlines the agenda for this meeting and provides an overview of the progress and goals of the HRC.

HRC ANNUAL REPORT

Day one will begin with an introductory annual report presentation by Chairman Ken Zook and Director Jack Willenbrock. This will be an opportunity to welcome new members and review the HRC progress from the previous year. This year's annual report will focus on publicity efforts and the consolidation of HRC research areas (see page 3).

Last year the Advisory Council charged the HRC with the task of efficiently summarizing: 1) the overall accomplishments of the HRC, and 2) the important aspects of each research and technology transfer project. In response to this suggestion, the HRC brochure was revised and a "Housing Research Fact Sheets" report was published.

The new brochure highlights the background, major program components, organizational structure, and published documents of the HRC. It also describes the funding opportunities to support research and technology transfer projects at the HRC.

The first edition of the Housing Research Fact Sheets describes the project background, summarizes the results, and provides a short description of how each research project will impact the residential construction industry.

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THE FIRST NATIONAL ASSOCIATION OF HOME BUILDERS SCHOLAR-IN-RESIDENCE

The 1992-93 academic year has been busy for HRC Director Jack H. Willenbrock. Jack spent his sabbatical leave from the University as the first Scholar-in-Residence at NAHB and the NAHB Research Center. He has also contributed to activities of the Home Builders Institute (HBI), the Pennsylvania Builders Association (PBA), and the development of Total Quality Management (TQM) practices for a local builder in State College, PA.

Jack was recognized at NAHB's annual board meeting for his "outstanding contributions in assisting the American homebuilding industry in its efforts to achieve the highest standards of quality and excellence." His contributions included:

1. visiting university-based housing research centers and assessing their research capabilities.
2. visiting NAHB student chapters on these campuses on behalf of the HBI in an effort to strengthen these chapters and improve their programs.
3. providing advisory and review assistance in the NAHB Research Center's cycle time study.
4. serving as a jury member for the Professional Builder and Remodeler/NAHB Research Center National Housing Quality Awards.
5. providing the following assistance to the NAHB Research Center in launching the TQM program:
 - serving on a TQM Strategic Planning Team;
 - critiquing the TQM seminar;
 - directing the incorporation of a major participating building construction company into the TQM research project; and
 - providing valuable editorial support for the creation of the textbook entitled A Builder's Introduction to Total Quality Management.

As of June 1, Jack will return to his full-time research and teaching duties at Penn State and begin to implement a new research project in total quality

management for the residential construction industry. It will be good to have him back.
Advisory Council Meeting continued

1993-1994 BEN FRANKLIN PROPOSAL

The next agenda item will be the presentation of the 1993-94 Ben Franklin Proposal for the HRC as a Center of Excellence. A group discussion of the HRC fundraising efforts led by Robert Buddenbohn (PBA), Walter G. Freidhoff (Mid-West Region Home Builders Association), Ken Zook (Chairman), and Jack Willenbrock (Director) will follow.

The Ben Franklin proposal (submitted on April 16, 1993) defines the financial record of the HRC for the last fiscal year and outlines the operational and research plans for the upcoming cycle. At the heart of the proposal is the presentation of proposed vs. actual vs. future breakdown of the HRC budget. The proposal shows impressive improvement in the actual matching ratios for the 1992-93 cycle as described below:

Matching Ratios

Proposed Ratio for 1992-93
 $\$65,000/\$35,000 = \text{BF}/\text{HRC} = 1.86/1$
Actual Ratio for 1992-93
 $\$65,000/\$96,770 = \text{BF}/\text{HRC} = 0.67/1$
Proposed Ratio for 1993-94
 $\$90,000/\$75,000 = \text{BF}/\text{HRC} = 1.20/1$

As noted, last year's proposal requested \$65,000 in matching funds from the State assuming that the HRC would be able to raise \$35,000 in industry funds (BF/HRC=1.86/1). Industry and additional project funds to date total \$96,770, which is more than twice what was proposed (BF/HRC=0.67/1). A major factor for the increased level of actual funding was the strong financial support from the PBA membership at the August fundraiser. As a result of that fundraiser, we now have several new industry representatives who are anxious to participate in our annual Advisory Council meetings and research activities. Other factors include:

1. approval of a U.S. DOE project entitled "The Design and Life-Cycle Cost Optimization of Energy Efficient HVAC Systems for Modular Housing" (\$40,000 for 1992-93 and \$20,000 for 1993-94).
2. increased levels of support from the product manufacturing members of the Advisory Council.
3. the award of \$9,500 in industry funds to foster the development of the HRC CAD Lab.

In summary, the proposed 1993-94 HRC Center of Excellence budget totals \$165,000. This amount is the summation of a \$30,000 operational budget, four research projects (as listed later in this article) totalling \$125,000, and a new \$10,000 Technology Transfer Budget. This proposal will be considered by the Ben Franklin Partnership program this summer, with decisions to be made public in July or August.

TECHNOLOGY TRANSFER PROJECTS

Next on the agenda will be a presentation of progress reports on the 1992-93 technology transfer projects. The projects and coordinators include:

1. PBA Education Committee Focus Group Project and 5-Year Plan: Phyllis Barner/ Robert Buddenbohn
2. Computer-Based Cost Estimating: Steven Taylor/ Jack Willenbrock
3. Spray Irrigation Systems: Charlie McIntyre/ Carl D'Amico/ Jack Willenbrock

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Contributions and news items are
welcome. The deadline for summer
submissions is July 1, 1993.

Advisory Council Meeting continued

The remainder of the meeting will focus on HRC research projects. In the first session, progress reports for current research projects will be presented. This session will provide industry representatives with an opportunity to review the work completed to date and provide input that could enhance the deliverables of the respective projects. This year's projects and principal investigators include:

1. Development of Customized CAD Applications for the Residential Building Industry: Kevin Parfitt/Charlie McIntyre
2. Hardwood and Softwood Framing Systems for Residential Buildings: Harvey Manbeck/Steven Taylor

3. An Optimization Analysis of Residential Energy Systems: Gren Yuill/ Michael Suchar

4. The Design and Life-Cycle Cost Optimization of Energy Efficient HVAC Systems for Modular Housing: Gren Yuill/ Eric Wirling

As discussed earlier in this article, a major focus for the HRC this past year has been to balance the needs of the industry with the resources available within the various programs at Penn State. This effort has led to an evolution of the definitions of the major components of the HRC. An updated list of research areas follows:

1993-94 Research Areas of the HRC at Penn State

1. ENERGY ANALYSIS AND OPTIMIZATION

Dr. Gren Yuill, Department of Architectural Engineering

- A. Energy Efficient Design and Construction Practices
- B. Design and Optimization of Mechanical Systems
- C. Optimization of Residential Design and Building Materials
- D. Computer-Aided Design and Energy Analysis Linking

2. CHARACTERIZATION, TESTING, AND MODELING OF STRUCTURAL SYSTEMS

Dr. Harvey Manbeck, Department of Agricultural and Biological Engineering

- A. Investigation of Engineered Wood and Composite Stress-Skin Panel Systems
- B. Determination of Code Compliance Issues With Structural Systems
- C. Computer Modeling and Optimization of Materials and Structural Systems

3. COMPUTER-AIDED DESIGN

Mr. Kevin Parfitt, Department of Architectural Engineering

- A. CAD and Production Planning for Systems-Built Housing
- B. CAD Linking With Energy and Structural Analysis Software
- C. CAD Integration Techniques With Cost and Scheduling Software

4. CONSTRUCTION MANAGEMENT

Dr. Jack H. Willenbrock, Department of Civil and Environmental Engineering

- A. The Application of Total Quality Management Principles by Residential Builders
- B. Building Codes, Regulations, and Standards
- C. Management Growth Models for the Residential Construction Industry
- D. Computer Integration of Design, Cost Estimating, and Scheduling

5. SUBDIVISION INFRASTRUCTURE SYSTEMS

Dr. Chin Kuo, Department of Civil and Environmental Engineering

- A. Stormwater Management in Residential Subdivision Development
- B. Integrated Computer Applications to the Subdivision Design Process
- C. Design, Implementation, and Analysis of the Effects of Wetlands, Sewage Disposal, Zoning and Other Land Use Regulations

6. TECHNOLOGY TRANSFER

Dr. Phyllis Barner, Agricultural Extension and Education

- A. Indoor Environmental Issues (Radon, Lead Abatement, Air Quality, Accessibility)
- B. Graduate Builders Institute and Advanced Courses
- C. Transfer of HRC Research Through Publications and Industry Symposiums

Advisory Council Meeting continued

PROPOSED HRC RESEARCH PROJECTS

Day two will begin with presentations and discussions on the proposed research projects for the 1993-94 cycle, including:

1. Innovative Structural Framing Systems in Residential Construction
2. Optimization Analysis of Total Energy Utilization in Residential Construction
3. Development of Customized CAD Applications for the Residential Building Industry.
4. Construction Management/Quality/Building Code Issues.

THE HRC RESEARCH SYMPOSIUM

Day two will conclude with the HRC Research Symposium to include the following seminars:

1. An Optimization Analysis of Residential Energy Systems
2. Computer-Aided Design in Residential Construction.

IMPORTANT

National Builders Show
Las Vegas, Nevada

P.A. Barner Sabbatical
Harvard University

Ben Franklin Propo

Advisory Council Meeting
and Dinner

Advisory Council
Research Symposium

J.H. Willenbrock
Sabbatical at the NA
Research Center and

HRC Research Engineering
Mike Suchar, Graduate

Second Annual PBA
Fundraising Reception

NAHB Student Cha

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