

**Recent Research Results**

DECEMBER 2002



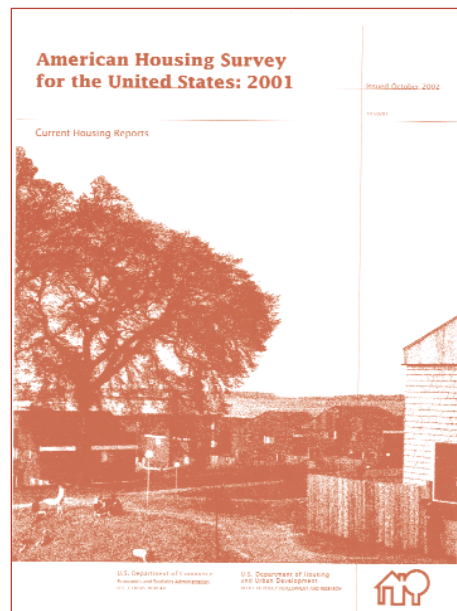
Newsletter From HUD USER

# Extensive Information on U.S. Housing Available in 2001 AHS National Report

Half of all owner occupied housing units were built after 1971, according to the 2001 National American Housing Survey (AHS) Report. Conducted biannually by the U.S. Census Bureau for HUD, the AHS can be used to answer many questions about housing units and households in the United States. It provides data on:

- Apartments,
- Single-family homes,
- Mobile homes,
- Vacant homes,
- Household composition,
- Income,
- Housing and neighborhood quality,
- Moving and commuting patterns,
- Housing costs, and
- Utilities.

“American Housing Survey for the United States: 2001” presents the results of the 2001 National Survey in table format. New items covered by the 2001 survey include, but are not limited to, questions about the citizenship of the householder, year householder immigrated to the United States, community quality, reverse mortgages, reason primary mortgage refinanced, secured communities, and senior citizen communities.



National data are collected every other year from a fixed core sample of about 53,600 homes, plus new construction. The survey started in 1973 and has had the same core sample since 1985. This provides a panel data series on homes and household changes over the years. The Census Bureau conducts the surveys in person and by telephone.

In addition to the data in this report, users may access a wealth of information based on the AHS through the Internet.

See AHS National Report page 3

# Case Studies Demonstrate Benefits of Panelized Wall Construction

Panelized wall construction – wall panels manufactured in a factory and delivered to construction sites for assembly – presents significant opportunities for improving housing quality, safety, and affordability. While this type of construction is a well-known building technology, its use has been limited and its benefits are largely untapped. Although panelized wall construction technology offers great potential, such as reduced construction cycle time and

See Panelized Construction page 2

## CONTENTS

2001 AHS National Report .....1

Case Studies Demonstrate Benefits of Panelized Wall Construction .....1

Path and HUD Develop Guidelines .....2

Electronic Permitting Systems .....3

## Panelized Construction

*Continued from page 1*

improved framing quality, the majority of new houses in the United States are still framed on-site using “stick-built” practices. Due to extensive practical experience, the “stick-built” approach is often viewed as the preferred, traditional, and historically proven method of construction. Yet, the approach is a limiting factor for introducing advanced management, construction, and engineering practices in the framing process.

Realizing the need for additional information on engineered panelized wall systems, HUD’s Office of Policy Development and Research and the Partnership for Advancing Technology in Housing (PATH) recently published “Design, Fabrication, and Installation of Engineered Panelized Walls: Two Case Studies” to provide in-depth examples of the process based on a variety of actual experiences.

The case studies offer a practical evaluation of the advantages and disadvantages of this type of construction and illustrate that panels can be used in a variety of types of houses being built in an equally wide range of environmental conditions. The first case study is of a custom home located in Beaufort, South Carolina, an area subject to hurricane force winds. The second case study examines a production-built home in the Seattle, Washington region, which is prone to severe earthquakes. At the Beaufort site, innovative engineering technology from previous HUD-sponsored research was used to demonstrate advanced methods using panelized wall systems. This novel approach to building design and construction holds promise of greater affordability and safety, particularly for homes built in the most hazardous areas of the United States.

The companion document “Model Guidelines for Design, Fabrication, and Installation of Engineered Panelized Walls” implements many of the findings and recommendations made in these case studies. In particular it addresses key technology and procedural barriers to the effective use of conventional and innovative panelized wall systems. An article about this report is also featured in this issue of *Recent Research Results*. ❖

# PATH and HUD Develop Guidelines to Advance the Use of Panelized Wall Construction Technology

Expanding the use of engineered panelized walls could provide an affordable alternative to current home construction methods. To begin the development of industry standards for the use of this technology, the Partnership for Advancing Technology in Housing (PATH) and HUD’s Office of Policy Development and Research recently published “Model Guidelines for Design, Fabrication, and Installation of Engineered Panelized Walls.”

The guide serves as a resource document for housing and building component industries and provides comprehensive guidelines for all aspects of panelized wall construction. It is based on a compilation of current building practices and research information relevant to panelized wall construction. State-of-the-art methods provide fabricators, designers, and builders with a set of tools for efficient design of residential structures and other buildings.

Organized into four sections, the guide covers general issues, responsibilities, quality guidelines, and structural evaluation. Appendices provide useful supplemental data and design examples. As shown in the sidebar, commentary runs alongside the text of each section, explaining definitions and the standards presented.

Although this guide focuses mainly on a manufactured assembly approach, the provisions also include specific guidance that is applicable to wall constructions built on-site. For individuals wanting technical information, the guide provides specifications for the design and construction of panelized light-frame walls produced and delivered as engineered, prefabricated structural assemblies. The provisions include model guidelines for:

- Quality,
- Weight loads,
- Structural evaluation, and
- Material specifications.

The guidelines do not address non-structural and other design considerations, such as thermal insulation, exterior and interior finishes, fire resistance ratings, or sound transmission ratings.

The publication provides useful information on improving existing methods of wall panelization and encourages innovation. Along with its companion, “Design, Fabrication, and Installation of Engineered Panelized Walls: Two Case Studies,” this guide encourages improvements upon existing and innovative methods of wall panelization. An article about the companion report is also featured in this issue of *Recent Research Results*. ❖

### An example of a definition included in the Guidebook:

**CHARACTERISTIC (REFERENCE) MATERIAL PROPERTY.** A strength property at the design limit (reference) state before application of adjustment and reduction factors.

### The accompanying commentary to this definition:

*Characteristic resistance is typically a mean or a percentile value of the assembly/component maximum strength measured by testing or estimated analytically.*

# Electronic Permitting Systems Improve Process and Information

Electronic construction permitting is changing the way communities across the nation do business. Computer-based tools and services automate and streamline the building permit process, expediting it for builders, inspectors, and plan reviewers. As a result, builders, homeowners, and municipal staff receive higher quality and more timely information.

To help America's communities with the process of selecting and implementing an electronic permitting system, HUD's Office of Policy Development and Research and the Partnership for Advancing Technology in Housing (PATH) recently published "Electronic Permitting Systems and How to Implement Them." The guide covers all aspects of implementing electronic systems from choosing a system that meets the needs of a community to justifying the cost and selecting a contractor to install the system. Case studies present details on the experiences of various jurisdictions in changing over to elec-

tronic permitting systems. The guide's appendices contain copies of process documents used by municipalities.

## Permitting Software Is Designed to Meet Many Needs

Initiated by a few pioneering jurisdictions in the early 1980s, electronic permitting is becoming mainstream. Private vendors offer a variety of excellent permitting software and systems that can be tailored to a jurisdiction's needs. Many can be integrated into larger, government-wide electronic management systems. Regardless of the software or system used, progressive local governments everywhere are adopting electronic permitting.

As more building departments move to electronic permitting, they add to a valuable pool of experienced advice, best practices, and lessons learned. The case studies featured in the guide examine different aspects of implementing electronic permitting in different kinds of jurisdictions.

- Three small jurisdictions demonstrate very different solutions to advancing the building permitting process from paper and file cards to computer networks.
- Three medium-sized jurisdictions show the need for close coordination among all participants in the building permitting process to implement effective integrated systems.
- Large jurisdictions contend with implementation issues on a greater scale, and solutions must be developed through regional cooperation and collaboration.
- Case studies on the network in Silicon Valley demonstrate the range of electronic permitting capabilities needed to satisfy various sizes and types of building departments.

By using "Electronic Permitting Systems and How to Implement Them," communities can benefit from the experience of others and implement systems with better results and at a lower cost. ❖

## AHS National Report

*Continued from page 1*

AHS websites on HUD USER and Census present data charts that are available for viewing the results from the 2001 and previous AHS National surveys. Microdata for different years are available so users can conduct their own analyses. The Websites also include links

to supporting documentation and other useful tools.

"American Housing Survey for the United States: 2001" is available from HUD USER for \$5. HUD USER's AHS Website is located at <http://www.huduser.org/datasets/ahs.html>. The U.S. Census Bureau's AHS. ❖



*Recent Research Results* (RRR) is a publication of HUD USER, the information service sponsored by HUD's Office of Policy Development and Research (PD&R), U.S. Department of Housing and Urban Development. HUD USER makes PD&R research available through its website at [www.huduser.org](http://www.huduser.org) and promotes new publications and HUD initiatives through its listserv, *HUDUSER NEWS*. HUD USER also provides easy publication ordering and referral services; maintains the HUD USER Bibliographic Database, devoted exclusively to housing and community development research; publishes *Urban Research Monitor*, a bimonthly publication citing housing and urban development reports, articles, and studies added to the Database; and publishes *FieldWorks*, a bimonthly publication with information on housing programs and resources.

**U.S. Department of Housing and Urban Development**

HUD USER  
PO Box 23268  
Washington, DC 20026-3268

PRESORTED  
First-Class Mail  
POSTAGE & FEES PAID  
HUD  
PERMIT NO. G-795

Official Business  
Penalty for Private Use \$300  
Return Service Requested

**HUD ORDER FORM December 2002**

Please use this form to order the documents listed below from HUD USER.

Indicate the requested number of copies in the column marked "Quantity," multiply by the per copy cost indicated under "Price," and enter the total cost for each item. Add these to determine the "Total due HUD USER."

**Documents**

	Price	Quantity	Total
"Electronic Permitting Systems and How to Implement Them" (ACCN PTH 11262)	\$5	_____	_____
"Design Fabrication and Installation of Engineered Panelized Walls: Two Case Studies" (ACCN PTH 11264)	\$5	_____	_____
"Model Guidelines for Design Fabrication and Installation of Engineered Panelized Walls" (ACCN PTH 11263)	\$5	_____	_____
"American Housing Survey for the United States in 2001" (ACCN HUD 11273)	\$5	_____	_____

**Periodicals**

FieldWorks subscription	Free	_____	_____
Recent Research Results subscription	Free	_____	_____
Urban Research Monitor subscription	Free	_____	_____
U.S. Housing Market Conditions subscription	Free	_____	_____

**Total due HUD USER \$ \_\_\_\_\_**

Order documents on HUD USER's secure online ordering system or view selected items free of charge at [www.huduser.org](http://www.huduser.org).

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Organization: \_\_\_\_\_

Street: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ ZIP: \_\_\_\_\_

Phone number:(\_\_\_\_\_) \_\_\_\_\_ E-mail: \_\_\_\_\_

Government Purchase Order only (enclosed) No.: \_\_\_\_\_

Check or money order (payable to HUD USER and enclosed)

Deduct amount from my HUD USER Deposit Account No.: \_\_\_\_\_

MasterCard  VISA No.: \_\_\_\_\_

Signature: \_\_\_\_\_ Exp. Date: \_\_\_\_\_

**ALL ORDERS MUST BE PREPAID**

To change your address, indicate the correct information directly on the mailing label. Please mail this form, COMPLETE WITH PAYMENT, to:

HUD USER  
PO Box 23268  
Washington, DC 20026-3268

Credit card orders may be placed online at [www.huduser.org/publications/pdrpubli.html](http://www.huduser.org/publications/pdrpubli.html) or by calling (800) 245-2691 (toll free), (800) 927-7589 (TDD), (202) 708-3178 (Washington, DC area), or (202) 708-9981 (fax).

Or obtain publications through one of HUD USER's electronic services:

**E-mail:** [Helpdesk@huduser.org](mailto:Helpdesk@huduser.org)  
**World Wide Web:** [www.huduser.org](http://www.huduser.org)