

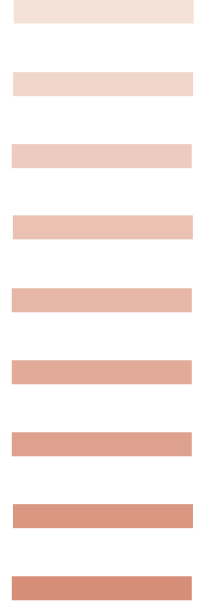
# technology *scanning*



**PD&R**

U.S. Department of  
Housing and Urban Development  
Office of Policy Development  
and Research

**PATH**  
PARTNERSHIP FOR ADVANCING TECHNOLOGY IN HOUSING



*Finding  
New  
Ideas For  
Housing*

*Cover photographs courtesy of: Conita Technologies, Symbol Technologies, and Lawrence Berkeley National Laboratory.*



**Issue 1**  
**November 2001**



## *Finding New Ideas For Housing*

***Prepared for:***

U.S. Department of Housing and Urban Development  
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Washington, D.C.

***Prepared by:***

NAHB Research Center, Inc.  
Upper Marlboro, MD

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One of PATH's major research support services is PATH Technology Scanning. *Technology Scanning* tells us about technology developments in other industries, from other nations, from federal laboratories, and from other building sectors. PATH looks for breakthroughs in other industries that could be transferred and applied to housing. *Technology Scanning*—published by the U.S. Department of Housing and Urban Development/PATH and prepared by the NAHB Research Center, Inc.—is updated as technology developments dictate. The Research Center works to unite technology developers from outside of residential construction with manufacturers in the residential housing sector.

These issues of *Technology Scanning* are one in a series. Each issue in the series falls into one of the following categories:

- *Design and Internet Tools*
- *Safety*
- *Surfaces and Interior Finishes*
- *Building Envelope Technologies*
- *Electrical*
- *Plumbing*
- *Heating, Ventilating and Air Conditioning*
- *Energy/Power Systems Generation*
- *Basic Materials*
- *Information Technology*
- *Sustainable Design Strategies*
- *Materials Recycling and Reuse*
- *Thermal and Moisture Protection*
- *Indoor Environmental Quality*

Call the ToolBase Hotline at 800-898-2842 for information about other available *Technology Scanning* issues. Or, log onto pathnet.org and www.toolbase.org.

## PATH Technology Scans

### Description

The Partnership for Advancing Technology in Housing (PATH) advances technology in the home building industry to improve the affordability and value of new and existing homes. Through public and private efforts, PATH adds value to seven of the nation's key housing attributes: affordability, energy efficiency, environmental impact, quality, durability and maintenance, hazard mitigation, and labor safety. PATH recognizes the importance of planning research and setting priorities for technology development that will enable the home building industry to work towards the PATH mission.

One major research support service that PATH provides is called PATH Technology Scanning. Technology Scanning tells us about technology developments in entirely different industries, from other nations, and from other building sectors that may have application in residential construction.

### History

To date, PATH has accomplished its first exploration for the "Other Industries" Technology Scan. This ongoing effort involved mining reports and publications on

new and existing technologies from private industry, research universities, and government laboratories. Through this effort, it is PATH's hope that manufacturers and builders will begin making contacts with other industries for new R&D efforts, and that those industries will begin to develop building-specific applications and technology transfer opportunities. In the long term, we hope that there will be a sustained investment and interest by the housing industry into technological developments in other areas.

### Update

The Technology Scanning project continues to develop as new and emerging technologies in areas from energy use to materials to information technology are uncovered. We suggest that all building product manufacturers review these lists for great new ideas, just like we hope that non-building innovators realize the great opportunities and markets available in housing. Get new report updates by visiting [www.pathnet.org](http://www.pathnet.org) or [www.toolbase.org](http://www.toolbase.org).

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### Notice

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### About the NAHB Research Center, Inc.

The NAHB Research Center is a not-for-profit subsidiary of the National Association of Home Builders (NAHB). The NAHB has 200,000 members, including 50,000 builders who build more than 80 percent of new American homes. The NAHB Research Center conducts research, analysis, and demonstration programs in all areas relating to home building and carries out extensive programs of information dissemination and interchange among members of the industry and between the industry and the public.

# technology scanning

## Safety

**Safety technology applications include ideas that reduce or eliminate hazards from specific construction tasks that are most associated with injury or accident (falls, back injury, trenching, or digging accidents).**

### Technology Scanning

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### PATH

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### Safer Digging Near Utilities

Soft trencher, a new technology in excavating equipment, uses supersonic air to break soil. Loosened dirt can then be vacuumed away. It is harmless to buried utilities and safer for the operator. It clears a one foot wide trench (wider with multiple passes) up to a depth of 10 feet @ 15cfm/min.

**Contact:**  
Steve Okonek  
Electric Power Research Institute  
3412 Hillview  
Palo Alto, CA 94304-1395  
Phone: 850-855-1068

### Safer Inspection

Climber Robot is a mobile robot that propels itself vertically for inspection to perform remote sensing of man-made structures. Applications today include shipbuilding, aircraft inspection, bridge inspection, and building inspection. It could be used in inspecting roofs, second story applications, foundation or trenches, where the person inspecting may be at risk for fall or injury.

**Contact:**  
Vanderbilt University  
Office of Technology Transfer  
Nashville, TN  
Phone: 615-343-2430

### Safety Equipment from Logging Industry

This firm from the logging industry provides some of the best safety devices for the logging industry and is now entering the construction industry. One of its construction safety products is a new state-of-the-art Ultra-Jack Scaffold system. Other products include fall-arresters, roof brackets, and wind anchors.

**Contact:**  
Qual Craft Industries, Inc.  
Stoughton, MI  
Phone: 781-344-1000  
[www.qualcraft.com](http://www.qualcraft.com)

### Safe Excavation

Safe Excavation is an electronic device that attaches to a backhoe, providing real time warning of a utility line immediately ahead of the digging tool. It can detect and provide depth, location, and size of buried cables, gas lines, or toxic waste lines. It attaches to trenchers, backhoes, and other digging machines. It is ready for commercialization with proper financing. They are working also on an enhanced version that detects plastic-coated lines and fiberoptic lines.

**Contact:**  
Leonhard Bernhold  
Associate Professor of Civil Engineering  
North Carolina State University  
Phone: 919-515-3677

### Research to Reduce Construction Back Injuries

North Carolina State Industrial Engineering Department, Ergonomics Lab, is doing motion analysis on jobsites. From that research they hope to develop prototype tools using lumbar motion monitors, as well as develop comparative tool and equipment testing and analysis.

**Contact:**  
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Issue 1  
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## Foreword

As a result of rising levels of homeownership in recent years, the homebuilding industry has expanded to meet the new demand for homes for America's families. Unfortunately, most homes being produced do not fully utilize available technologies that can result in greater affordability, durability and energy efficiency. Too often, the home building industry has lagged others in the pace of technological innovation and adoption. Several causes have been identified to account for this slow pace of technology adoption. They include high development costs, code acceptance, and the need for extensive experience with a product before builders will adopt it.

Because new technologies can play an increasingly critical role in the affordability, durability and energy efficiency of American homes, we must identify ways to speed their integration into the housing industry. While many promising technologies are currently in use, other industries have developed products or processes that can be used in housing. These technologies have demonstrated performance that can be evaluated.

Looking to other industries will reduce the time and costs associated with the introduction of new products in the housing industry. By selecting proven technologies, homebuilders will be able to provide more affordable, durable and energy efficient housing to America's families. In addition, many of the technologies will provide homes which are safer for both the residents and builders.

This process of ***Technology Scanning*** was sponsored by the Partnership for Advancing Technology in Housing (PATH), a public-private partnership administered by the U.S. Department of Housing and Urban Development. ***Technology Scanning*** examined technology developments in other industries, from other nations, from federal laboratories, and from other building sectors for potential breakthroughs that could be transferred and applied to the residential construction industry. This cross-industry information sharing has never been performed in such a comprehensive manner. ***Technology Scanning*** efforts will also include highlighting housing opportunities to industries that traditionally have not marketed to the housing industry.

This report presents the results of PATH's initial ***Technology Scanning*** efforts. Many of those technologies have the potential to make housing more affordable, durable and energy efficient. Future reports on PATH's ***Technology Scanning*** activities will be prepared as technology developments are identified.

A handwritten signature in black ink, reading "Lawrence L. Thompson". The signature is fluid and cursive, with a long horizontal stroke at the end.

Lawrence L. Thompson  
General Deputy Assistant Secretary for Policy Development and Research