



SOLAR DECATHLON

2005

Where Homebuilding is Heading

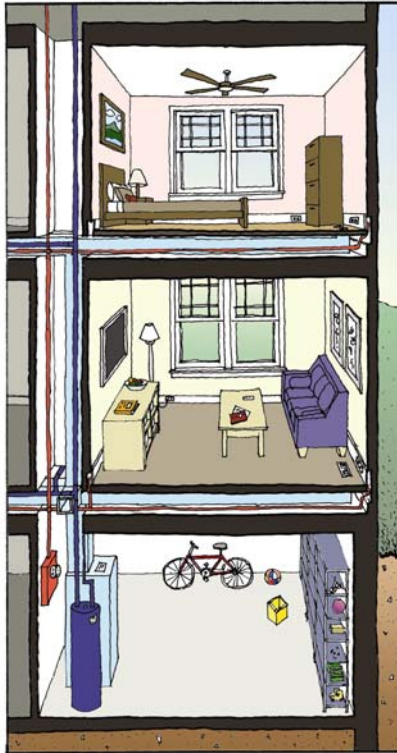
A Description of the PATH Concept Home

Presented by Christine Barbour for PATH
Friday, October 14, 2005, 3:30 p.m.





Where is homebuilding heading?



Homebuilding of the future will rely on:

- Flexibility
- Efficiency
- Sustainability



Flexibility

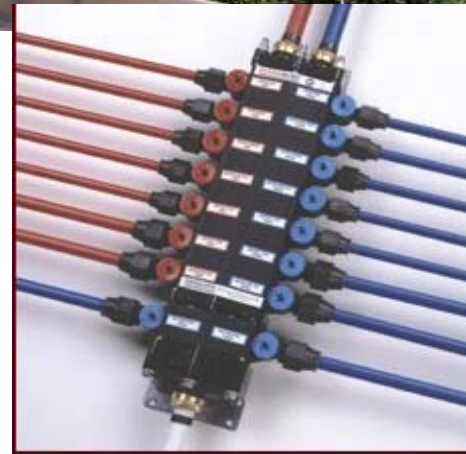
- To address changing demographics
- To incorporate new technologies
- To address new limitations on resources
- *To address long-term needs*





Efficiency

- More efficient to build to address labor issues
- More efficient to operate to address energy issues
- More efficient use of resources
- *More affordable homes*





Sustainability

Homebuilding of the future will consider long-term implications related to **economics** and the **environment**.

Definition of "to sustain":

- *to withstand*
- *to maintain*
- *to nourish*
- *to support from below*
- *moral support*



Homebuilding will have to meet today's housing **needs** while anticipating tomorrow's **solutions**.

Today's Needs

- Affordable to purchase
- **High quality**
- Resource efficient
- *Accommodates different lifestyles*
- Built efficiently
- Looks custom-built



Tomorrow's Solutions

- Affordable to operate and maintain
- **Durable, safe, healthy**
- Energy efficient
- *Accommodates changing lifestyles*
- Adapts to technological advances
- Easy to repair and remodel



How will homebuilding get there?

- New and imported products and technologies
- New production methods
- Better performance
- Sensitive and creative design

***Encompassed in Six
Concept Home Principles***



1. Flexible Floor Plans

Easy reconfiguration of Interior Spaces



Open Web Floor Trusses

Image Source: PATH Website
(www.pathnet.org)



Raised Floor Above Joists

Image Source: Bensonwood Homes Website (www.bensonwood.com)



Accessible Ceiling Panels

Image Source: Bensonwood Homes Website
(www.bensonwood.com)



2. Organized and Accessible Systems

- Disentangled mechanicals
- Efficient layouts
- Easy access for repairs, upgrades, and remodeling

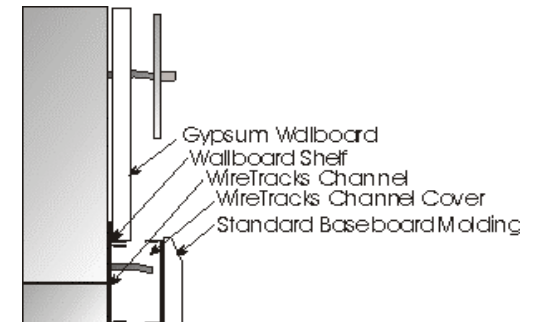


Flat wire product for conducting audio, video, or data
Image Source: PATH Website (www.pathnet.org)



Baseboard molding with recessed, accessible chase for electrical lines

(Bensonwood Homes)



Wire Tracks NC product schematic
Image Source: Wire Track Website
(www.wiretracks.com)



3. Improved Production Process

- Management systems
- Information and communications technology
- Manufacturing and Assembly Processes
- Improve building quality and efficiency
- Reduce production time
- Solve labor shortage



Prefabricated wall panel being set on a site
Source: Washington Post, Photo by James A. Parcell



NUCON's Series 700 Roll Former & Decoiler
Image Source: www.nuconsteel.com



4. Alternative Basic Materials

- Enable other Principles and spur innovation in design
- New advanced materials or those adapted from other industries



Light Transmitting Concrete
Image Source: www.optics.org



Electrochromic Windows in light & dark states
(National Renewable Energy Lab)



Electro-textile fabric with USB connectors
Image Source: PATH (www.pathnet.org)



5. Standardization of Measurements and Component Interfaces

- Standard measurements
- Interchangeable components
- Simplifies installation and replacement of products and materials

"It is counterintuitive, but eventually patently obvious, that real customization (nearly infinite variation) will arise from limiting dimensions, interfaces, and positions."

- Tedd Benson, Bensonwood Homes



Image Source: Spacebox (www.spacebox.info)



6. Integrated Functions

Combine systems to promote increased efficiency and performance



PV Roof Shingle Installation
Image Source: www.toolbase.org

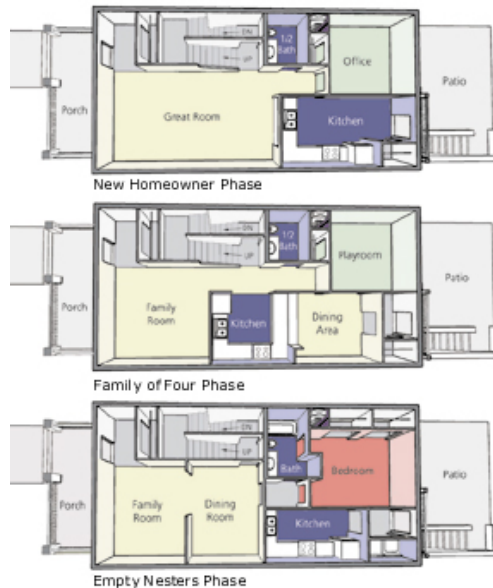


SmartWrap Pavilion on display at Cooper-Hewitt National Design Museum

Image Source: Kieran Timberlake Associates
(www.kierantimberlake.com/SmartWrap/)



Occupancy scenarios with plans and specifications for:



- Modern urban infill town home
 - Young couple
 - Empty-nesters
- Single-family detached home in a New Urbanist community
 - Before they were empty-nesters
 - When they get too big for the town home.



Visit

www.pathnet.org/concepthome

**Technology Reports
(Released Now through December)**

**January 2006 - Concept Home Plans
and Specifications**