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Knowledge to Go Places

Interior West Center for the Innovative Use of Small Diameter Wood

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Interior West Center for the Innovative Use of Small Diameter Wood

Based at Colorado State University, IWC is dedicated to helping establish a market-responsive commitment to the ecological health of the region's forests and economic vitality of impacted communities. Currently IWC is redoing both its brochure and web site to reflect its increasing involvement in **using small diameter wood (SDW) in the construction industry**. A brief summary of IWC activities follows.

Demonstration Projects

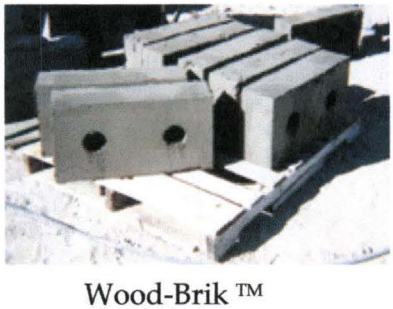
- Siting a small SDW classroom at CSU's Environmental Learning Center in Fall 2003 to demonstrate **three different construction technologies**. 1) Building with *roundwood*: piece-on-piece wall panels will create the shell for 16'x 18' cabin plus exposed roundwood trusses will enhance clerestory windows.

2) Using low-embodied-energy *composite of wood chips and light clay* as in-fill for walls of mudroom whose entrance will be 3) *timber framed*. Students in civil engineering and natural resource interpretation are contributing.

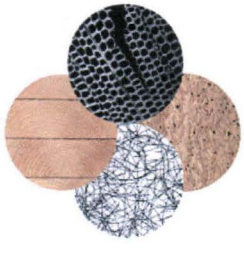
- Partnering with local non-profit, EDUCO, to illustrate how **forest thinnings from appropriate land treatments can be used in on-site construction.** EDUCO's mountain site will host a 5000 sq.ft. environmentally-sustainable center for their experiential outdoor education programs. IWC's goal is a building which will, in part, be constructed, heated and furnished with SDW from this site. Forestry and construction management students from CSU are involved in this project, as well as state and federal agencies, and several local environmental groups.

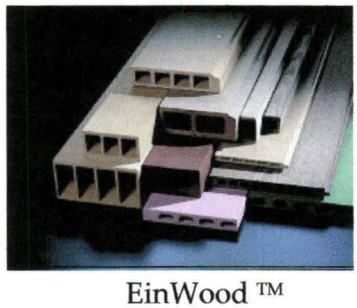
Product Research

- Exploring **high-volume wood composites**: 1) low-embodied energy type made with light clay and 2) injection and extrusion molding made with biopolymers.



Wood-Brik ™



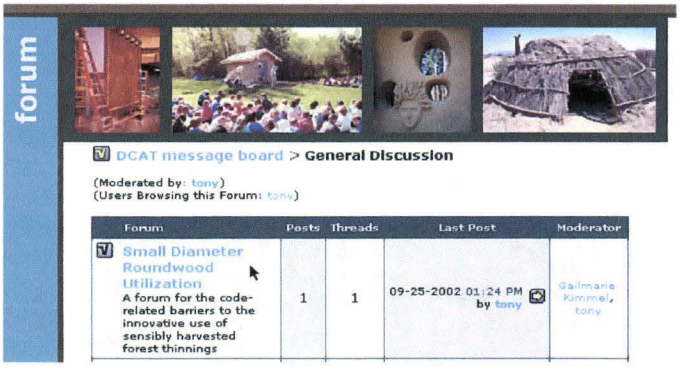


EinWood ™

- Hosted Timber Framers Design Charrette in September 2002.

REGULATORY AND INSTITUTIONAL BARRIERS

- Exploring the relationship between **grading, strength testing, and product marketing,** and investigating models for economically-viable grading at mills in the interior west.



- Contracting with Tucson-based Development Center for Appropriate Technology (DCAT) to tap David Eisenberg's expertise in **code approvals of sustainable building materials** in addition to further research into safety and approval issues with **dip-diffusion wood treatment.** WWW.DCAT.NET

FOREST HEALTH

- Co-sponsored Forest Sciences colleagues, Drs. Dave Betters and Phil Omi to produce a video, *Wildfire Mitigation in the Wildland/Urban Interface (WUI)* and a website on the *Sustainability of Thinning and Prescribed Fire Programs to Improve Forest Condition along the Front Range, Colorado.* More details can be found on the IWC homepage.

- Co-sponsored CSU/CSFS Wood Utilization and Marketing Group to host Forest Products Sales and Marketing Workshops in Colorado and New Mexico in Spring/Fall 2002.

- Sponsoring Dr. Tony Cheng in producing a framework for assessing and enhancing organizational and community capacity for collaboration to improve forest conditions in wildland/urban interface. Available Spring 2003.

STAFFING

- Provided support for Will McConnell, graduate student in construction management, to examine challenges to SDW product innovation and market acceptance by traditional homebuilding industry. His thesis results on IWC web site. Fellow student Katherine Pettit and Professor Brian Dunbar produced a cataloged, annotated bibliography on using roundwood in construction for IWC library.
- Providing support for Kathie Detmar, graduate student in forest policy, who is developing an operational plan for IWC-EDUCO project.
- Continue to lure Dr. Denny Lynch, Emeritus Faculty-Forest Sciences, from the leisure of retirement to serve in capacity of senior technical advisor to IWC.

FOREST (RE)BUILDING

Building for the Forest, with the Forest

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Chris Koziol, Director Gailmarie Kimmel, Program Manager

12/5/02

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May 31, 2002

The *Interior West Center for the Innovative Use of Small Diameter Wood* (IWC) is dedicated to helping establish a market-responsive commitment to the ecological health of the region's forests and the economic vitality of impacted communities. IWC focuses on developing applied research on the marketable uses of small diameter trees in support of efforts to re-establish ecological processes in western ecosystems and mitigate wildfire hazard.

One of our research projects focuses on using "smallwood" to make piece-on-piece wall panels. The next steps in this project are finding a permanent home for the 10-panel log shell and finishing the structure. The completed building could serve many functions: habitable cabin, as depicted on the enclosed sheet, or perhaps an information booth, classroom, or wilderness shelter.

We are interested in recovering some of our costs and using those funds to pursue further research activities. More importantly, however, we want to see this completed building serve as a demonstration structure educating design and construction professionals about the issues of small diameter utilization.

We appreciate your help in identifying possible locations and new owners.

Gailmarie Kimmel
IWC Program Services
970-491-3260

Using forest thinnings to introduce a different wall panelization system into log building construction

"Piece-en-piece" log construction is a traditional building technique found throughout Europe and North America. Our innovative adaptation of this historic technique features high quality, hand-peeled, small diameter (8"-11") logs from restoration and fire mitigation projects from the forests of the Interior West.

This technique assembles logs horizontally into 8 ft. tall modular panels and uses vertical posts as structural components between the panels along each wall and at the corners.

The logs are "scribe-fit," a method commonly used in quality log construction to provide an airtight fit between log surfaces. Long threaded rods hold the scribe-fit logs together and are adjustable to compensate for shrinkage as the green logs cure.

Upper left – front view of panels
Left - close-up of scribe-fit joinery
Center – end view of panels
Above – vertical posts awaiting assembly

The assembled building:

- Demonstrates a high value-added product from restoration thinnings
- Demonstrates cost savings compared to notched-style log construction
- Embodies the warmth and authentic character of handcrafted logs
- Utilizes green wood, thus eliminating the cost and time associated with drying
- Educates about a potential for high-end utilization of smallwood

During the spring of 2002, the Interior West Center (IWC) undertook this demonstration project to research the economic viability of piece-en-piece smallwood panels. A professional woodworker, a nationally recognized log builder, a structural engineer, a forestry professor, and a log peeler/assembly assistant served as our research team. Forest restoration thinnings from the Air Force Academy land in Colorado Springs were brought to a Fort Collins sawmill and the highest quality logs were used.

Taking advantage of expert craftsmanship, modular construction, and wise economic and efficient use of an underutilized material, piece-en-piece is proving to be one practical solution to *Forest (Re) Building: Building for the Forest, with the Forest,* the IWC research program.

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SMALL LOG BUILDING SEEKS PERMANENT HOME

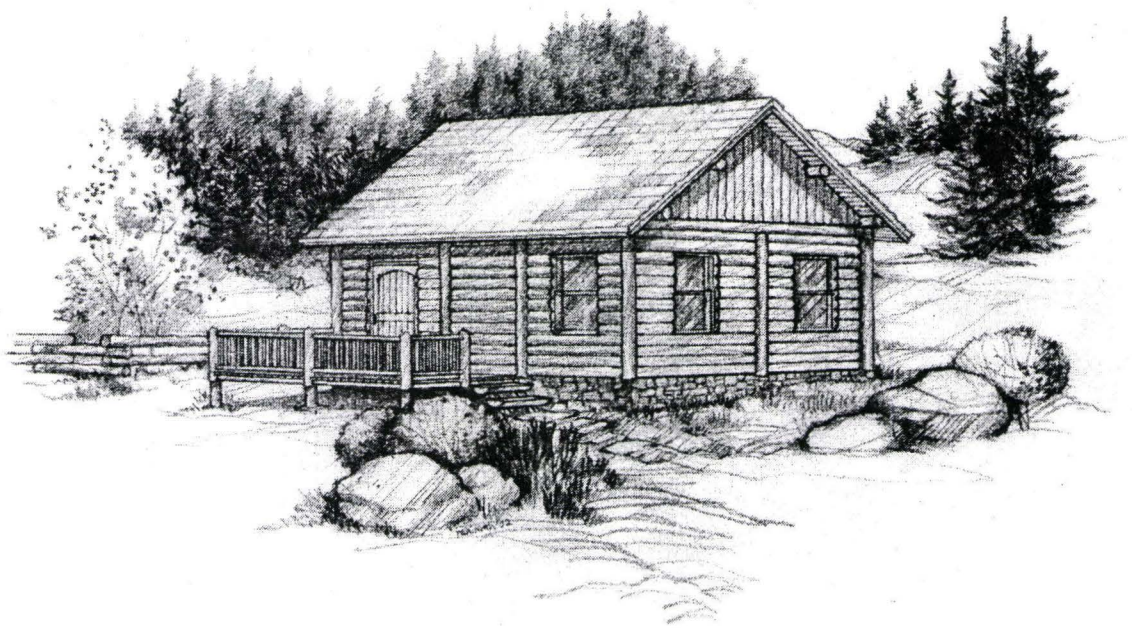
This 288 sq. ft., 16' x 18' log shell is now ready for a new owner. Ten hand-peeled, hand-scribed ponderosa pine wood panels (see reverse) stand ready for window and door openings of your choice.

$9000 price includes:

- Finished panels and posts *assembled* on buyer-provided foundation/subfloor;
- Engineering costs related to logwork, including designs for 1) securing logwork to foundation and roof and 2) both dimensional lumber and roundwood trusses;
- Special offer: Handcrafted "smallwood" pine door (manufactured by Rocky Mountain Youth Corps' Taos Timberline Woodshop, a nonprofit organization providing youth with the opportunity to learn life, job, and entrepreneurial skills through fine woodworking).

Not included: Permits and site work; transportation of panels to job site; crane time to assemble panels; foundation/subfloor; materials and labor for roof system; door and window openings (approx. $250 per opening); all finish carpentry and materials, including windows and second door; any desired mechanical, electrical and plumbing services.

Prefer high-traffic site, allowing interpretive signage to educate citizens of the West about the need for smallwood utilization to aid forest health and prevent forest fires.



For details, call Gailmarie Kimmel
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