The Natural Building School
Handbook

Culture's Edge
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The Natural Building School *Handbook*

The word "handbook" in italics describes most accurately the nature of our school. A project of the non-profit corporation Culture's Edge, The Natural Building School is a *learning experience* rather than a teaching institution. Having begun its work in 1995 as a venue for learning about the methods and materials best suitable for long-term, sustainable natural building, the School became an official project of Culture's Edge a decade after its inception.

Interns in 2007 build a cob wall at Leela House.

The underlying mission of The Natural Building School is to re-empower ordinary citizens with facility in constructing healthy sustainable dwellings and other buildings out of locally available affordable, time-tested and, where possible, recycled materials. Using both modern and innovative technologies, families and communities may thus regain the confidence of ownership of these essential life-supporting skills.

History of The School

The School's first project in September 1995 was a multi-materia earth-and-straw one-room cottage at Earthaven Ecovillage (the home base of Culture's Edge, which was just then being incorporated). Board members of Culture's Edge and affiliates at Earthaven, each with prior building experience, enrolled in natural building trainings across the United States, from Cob Cottage Company in Oregon to Slippery Rock University in Pennsylvania. Converging at Earthaven for one of Culture's Edge's first public workshops, they described and demonstrated the principles and practices of cob, clay-straw and wattle-and-daub techniques, and participants then set about roofing a small timber-framed rubble trench foundation before practicing the application of the various techniques on each wall.

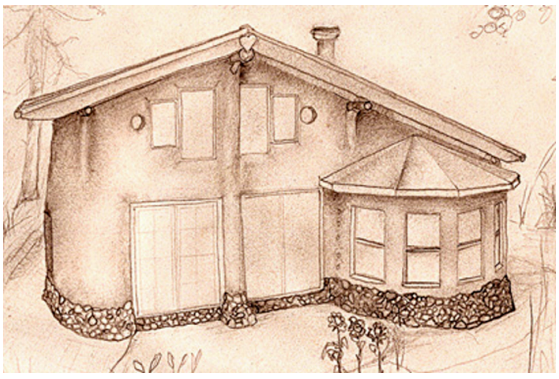
As it turned out, theis"Mud Hut" was the focus of several workshops over the next year. Soon after, resident natural builders were called upon to offer a public workshop on straw bale construction. This straw bale building (now known as the "Wonky Hut") took us into entirely new territory from the masonry with which we'd been familiarizing ourselves., and proved initially more formidable in its requirements, considering the rainforest in which we live. To be more specific, knowing how to properly secure bales in place and protect them from moisture came as early learning.

What we love about natural building is its resilience. People like to say it's "forgiving." (Can't get enough of that these days!) In the case of the wonky straw bale hut, one innovative resident took it upon himself to shore the bales up tightly, get the roof and gutters properly placed, and create a permanent, if wonky, cottage in which a series of individuals and families have since had a turn living out their off-the-electric grid, natural house dream.

Packing clay-straw at Leela House

After Culture's Edge became incorporated in 1996, regular natural building courses were held at Earthaven every year. We practiced straw bale construction on Earthaven's Council Hall and Hut Hamlet Kitchen, used clay-straw and cob on the sun-drenched sides of those buildings, continued our exploration of round, peeled-pole timber framing (including tree-felling and joinery trainings), and led workshops and projects while expanding our participant base, curriculum and faculty.

By the time 2007 rolled around and the decision was made to officially create The Natural Building School as a distinct project of Culture's Edge, the Leela House project had become the main focus of workshops and internships in natural building at Earthaven. Huts, accessory buildings and other construction projects had been used to run our learning programs, but Leela was our first model of a full-sized, small family house. Alongside other independent projects at Earthaven, including innovative methods in stud-frame houses using juvenile poplar and other local species, and the private construction of an "Earthship" (earth-packed automobile tires), School faculty focused in on design and innovation in natural building. Participants in an advanced straw bale wall construction workshop created the highly insulated north wall of Leela House.



Leela House

By 2009, with the Leela Project moving towards completion, the School's focus turned to the creation of the Village Arts Building studio co-op project at Earthaven, which occupied the center of School activities for the last several years. In 2010, the round cob tower connecting the wings of the Village Arts Building became the focus of our training. Interns dry-stacked a stone foundation for the 13' diameter cylinder that will house the spiral staircases accessing the upper floors, and began developing their cob construction technique.

Dry-stacking stone for cob tower foundation

In 2011 and 2012 interns applied timber framing and custom joinery skills to the first two floors of the studio co-op wing, gathering the tools and techniques they'll need to take the soaring project to its completion while empower themselves for their own future construction projects.

They also began building the cob-and-block tower wall, constructed a strawbale addition to an existing building, and continued the tree work and milling for the project's lumber inventory. Interns, through complementary use of Paul Caron's extensive woodshop, also created small timber product prototypes such as those pictured below.

Left: Interns Noam Bondy and Ryan O'Sullivan rest against the first bay of the Village Arts Building.

Ryan's Rhodo Clothes Rack

The Natural Building School at Earthaven Ecovillage

2013 Internships

Paul Caron (*second from left*), interns and neighbors at the Village Arts Building, adjacent to his woodworking studio at Earthaven Ecovillage.

Looking Forward

Other projects still on the drawing board include a compressed earth block bandstand gazebo with Mountain Laurel railings on the Earthaven Village Green. As the ecovillage designs and prepares to begin construction on a central "community building" to house offices, meeting spaces, a dining facility and storage bays, aspects of natural building are being integrated into the project so that the essence of this timeless way of building—accessibility, simplicity, creativity and community—might be infused in its walls.

Applications

Applications are solicited from energetic, self-motivated people of all ages and both genders who want to experience start-to-finish natural building. Past experience in construction or working with power tools and/or business management skills are of considerable value in the program. Prospective interns will apply formally to the School, receive both a phone and in-person interview and, if accepted, take responsibility for financing their personal needs, including room and board, while interning. School personnel will supply materials as needed, consult regularly on technical and general issues, and provide ongoing tutoring and hands-on mentoring in traditional and innovative natural building options. [*See* Appendix *for application form.*] The program opened in April of 2010. New interns will continue to be accepted whenever Phase 1 activities are in process.

Schedule
The three-day internship week begins on Tuesday mornings at 9:00 am on-site at the Village Arts Building. A one- to two-hour meeting with Paul and other faculty accomplishes review of recent activities and an agenda for the current week. The school day ends at about 6:00 pm, with an hour free for lunch and several refreshment breaks. Some days interns will travel to building sites in the area to participate in unique learning opportunities, such as making compressed earth blocks mechanically at a brickyard in Asheville. Additional weekend workshops and workdays will be added to the schedule as the projects progress.

Goal
Interns receive focused supervision in a variety of building and woodworking methods and relevant adjunct technologies. Within two years interns will become proficient in a variety of safe, sustainable construction practices including natural foundations, timber framing, woodworking, and various earth-and-straw media (cob, adobe, compressed earth block, clay-straw, straw bale, cordwood and earthen plasters and paints). In addition, interns will share in the teaching of specific techniques during public workshops, thus developing their presentation expertise. A third-year option will include participation in a significant natural building project from start to finish.

Evaluation
Intern performance will be evaluated individually and as a working team on a daily, weekly and quarterly basis. Reports will be made on three levels: self-evaluation (oral); team evaluation by respective trainers (oral); individual evaluation by respective trainers, quarterly only (oral and written). Evaluations will cover levels of mastery in conceptual integration, equipment use, performance in each building methodology, collaborative skills and business acumen. References will be provided for additional training and employment on request.

Curriculum

Over the course of a two-year or longer internship, the following essentials and advanced areas of application will be considered:

Design concepts in natural
Directional tree felling (selection, strategies, safety, equipment use and maintenance)
Working with a portable saw mill
Machine and hand joinery techniques
Natural foundations (rubble trench, French drain, stone work)
Timber frame assembly

Natural building and permaculture
Earthen building materials (cob, adobe, compressed earth block, clay-straw, wattle and daub)
Good “boots” and “hats,” “linings” and “skins” (climate control)
Cordwood techniques
Straw bale construction
Windows and doors
Earthen plasters and paints

Woodworking (trim, cabinets, and other detailing)
Sustainable and renewable energy technologies
Water and waste systems
Doing Business (business plans, marketing, collaboration, client relations)
Team projects (building with wood, stone, earth and straw)

Resources

Our program and application process are designed specifically for self-motivated students. Interns are exposed to the kinds of hands-on examples, demonstration and "action labs" that help them fully integrate their learning experience. Training focuses on integrated knowledge that includes essential reference materials available in our Natural Building Library as well as regional libraries and bookstores, from which trainees gather much of the theoretical and historical information they need. The program gives the majority of its time to actual building and hands-on learning.

Natural Building Library

The library contains recent and classic texts and photographic volumes in print, as well as DVDs that demonstrate and teach aspects of natural building from around the world. Interns have access to the library's resources throughout their tenure.

Faculty

Paul Caron, Master Woodworker, Designer and Natural Builder, Director of the Village Arts Building project, Board member of Culture's Edge. Paul trains interns in species identification and directional tree-felling, earthworks, stone work, timber framing, wood-working and cabinet making.

Steven J. Brodmerkel, Master Builder, Designer/Builder of Leela House. Steve teaches all phases of natural building, from foundations to finishing, including cob, adobe, clay-straw and compressed earth block wall systems, earthen flooring methods, bas-relief design and application, and the use and maintenance of natural building systems.

Mollie Curry, partner in Mud Straw Love, LLC, teaches earthen wall systems and natural paint and plaster recipes and applications.

Steve Kemble, partner in Mud Straw Love, LLC, teaches straw bale building techniques, earthen wall systems, and natural paint and plaster work.

Consultants

BUILDING:
Janell Kapoor, founder and director, Kleiwerks International, Asheville, NC
Clark Snell, builder; author of *The Good House Book*, Asheville, NC
Build It Naturally (support and supplies), Asheville, NC
Ashevillage Institute staff, Asheville, NC

TECHNOLOGY:
At and near Earthaven
Chris Farmer, builder, alternative technology systems designer, Gateway Farm
Greg Geis, alternative technology systems designer; director, Alternative Systems Research Fund
Brandon Greenstein, alternative technology systems designer/landscape consultant
Tom Mincarelli, Renaissance Works (solar, hydro and complementary technologies), Black Mountain

Earthaven Ecovillage

Earthaven Ecovillage, the primary setting for our programs, contains a wide variety of methods and materials as well as experienced owners and builders of natural and green homes and buildings.