

Outside the Box, Not Out-of-the-Box

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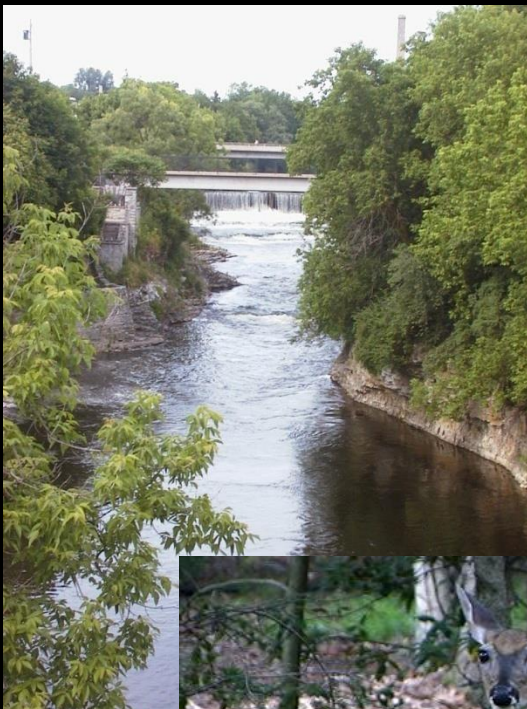
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Natural Building & Sustainable Living

Since 1992

Motivating Influences



Green Habitat Learning Project

1993 - Faswall, Cotton batt insulation, stained concrete floors, Right-sized house

Casa Verde Builders

Wood-chip ICF, Wood SIPs, Straw SIPs, Metal SIPs, AAC, Strawbale, Stud framing using OVE, Steel Framing

Cob Cottage Company Workshop

1996 - Hooked on natural building

What is Natural Building?

Any construction utilizing primarily natural materials and systems rather than high embodied energy, processed commercial materials and resource-intensive systems

Natural, minimally processed, nontoxic materials and natural systems used appropriately for the climate, site and intended use

Natural Building Materials

Clay

Sand & Gravel

Straw, bamboo and other grasses & fibers

Water

Stone

Wood

Lime, gypsum

Natural waxes, oils, resins

Smithsonian 40TH ANNIVERSARY

40 THINGS YOU NEED TO KNOW ABOUT THE NEXT 40 YEARS



ARTS &
CULTURE



THE
ENVIRONMENT



MEDICINE &
SCIENCE



POPULATION



TECHNOLOGY

1. Sophisticated Buildings Will Be Made Of Mud
2. Coral Reefs Will Be Devastated
3. The Catch of the Day? Jellyfish
4. New Cars Will Be Given Away, Free
5. Industry Will Generate Energy In Space
6. Oysters Will Save Wolves From Climate Change
7. 2,000 New Mammal Species Will Be Discovered
8. It's Curtains For The World's Rarest Dolphin
9. Farmers Will Plant Spinach In Tall Buildings
10. The Nation Will Meet The Tests Of The Century Ahead
11. The Heartland Will Rise Again
12. The Top U.S. Social Problem? Upward Mobility
13. By 2050, One Out Of Three U.S. Kids Will Be Latino
14. World War III Will Begin. In Space
15. Most Americans Fear For The Planet's Health
16. Unless We Conserve, More People Will Go Hungry

FEATURED ARTICLES



President Barack Obama: Why I'm Optimistic

Looking ahead to the next 40 years, President Obama writes about our nature as Americans to dream big and solve problems
By Barack Obama

Americans Look to 2050



Yemen: “Manhattan of the Desert” - World’s oldest surviving skyscrapers (500 years+) -
Made of mud bricks



Large, complex earthen building

Small and simple



Cob Cottage at Rainbow Ranch - Buda, Texas

The Circular Economy

Wikipedia:

*A **circular economy** is a regenerative system in which resource input and waste, emission, and energy leakage are minimised by slowing, closing, and narrowing material and energy loops. ... This is contrast to a **linear economy** which is a 'take, make, dispose' model of production.*

<http://www.wrap.org.uk>:

*A **circular economy** is an alternative to a traditional linear economy (make, use, dispose) in which we keep resources in use for as long as possible, extract the maximum value from them whilst in use, then recover and regenerate products and materials at the end of each service life.*



Natural Materials Support the Circular Economy through...

Longevity

Low embodied energy

Minimal waste - Earth to Earth

Energy-conserving performance

Reuse/Repurposing/Recycling

Load-bearing capabilities (dual function of enclosure and structure)


Pollution minimization throughout cycle

Unprocessed, Nontoxic, Abundant, Locally available

Quick Survey of Natural Building Materials

Cob	Round wood (zero to minimal milling)
Compressed Earth Blocks (CEB)	Earthen plaster
Light straw-clay (light clay)	Lime plaster
Adobe blocks	Stone
Rammed Earth	Reclaimed materials
Earthbags	Natural plasters
Straw bales	Natural paints

Compressed Earth Block (CEB)

The background of the slide is a photograph of a wall constructed from compressed earth blocks (CEB). The blocks are reddish-brown and arranged in a regular pattern. At the top of the wall, there is a horizontal wooden beam, likely made of light-colored wood, which is secured with several metal bolts. The sky above the wall is a clear, bright blue.

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Earth, compressed  
Blocks

Load bearing (or infill)

No formwork

Manual or Automated



40 blocks / hour



300-400+ blocks / hour



Safe, non-toxic, low-energy construction





CEB Residence - Austin, Texas



Earthen plaster on CEB walls; Reclaimed wood floor; Local juniper lintels and trim





# Cob

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Clay, sand, straw

Monolithic

Load bearing

No formwork

Manual or semi-automated





No fossil fuels expended in manufacture



Minimal fossil fuels expended in manufacture

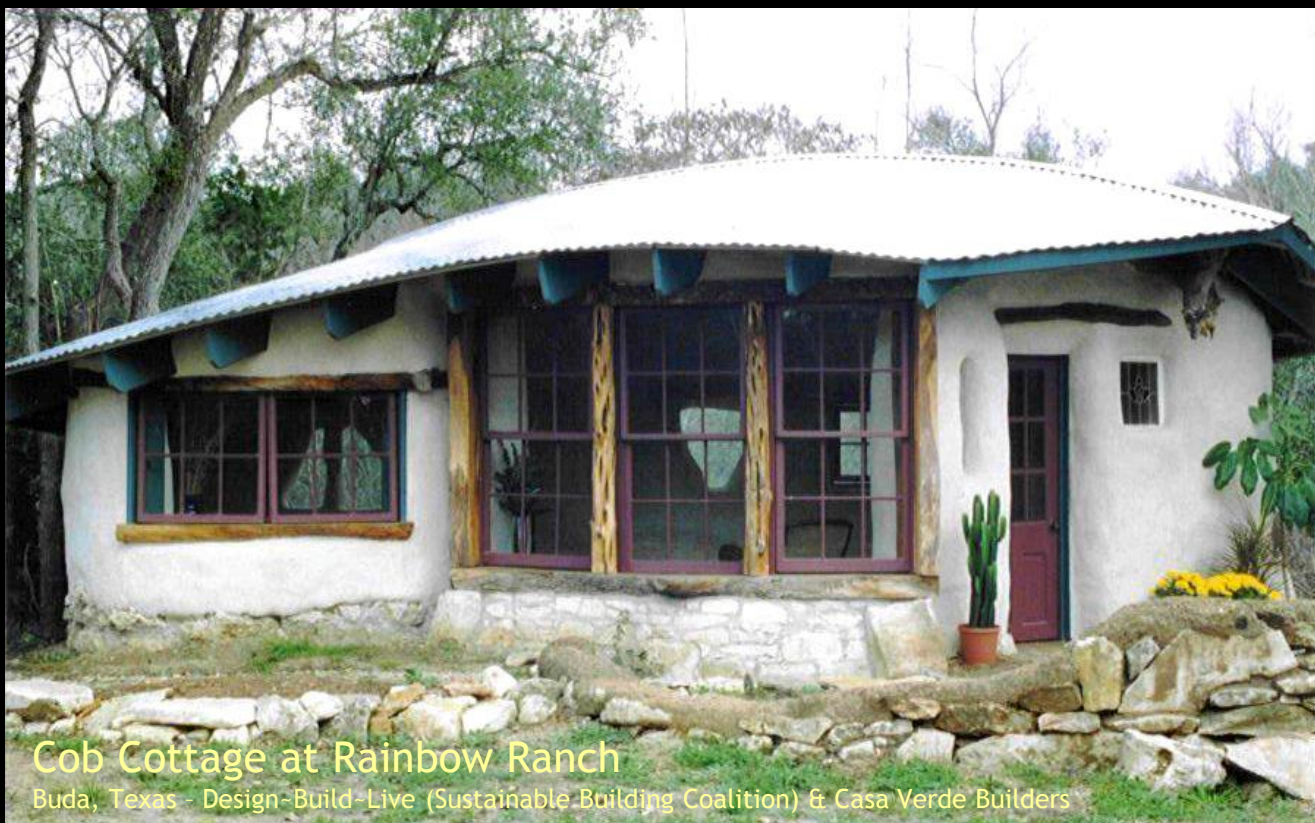


Safe for workers





Low energy input during construction; Local materials; Low water use/waste



## Cob Cottage at Rainbow Ranch

Buda, Texas - Design-Build-Live (Sustainable Building Coalition) & Casa Verde Builders





Cob Home - Georgetown, Texas



Cob Residence - Hunt, Texas





Cob walls, Earthen Floor, Natural ventilation, Daylight



# Rammed Earth

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Earth, compacted

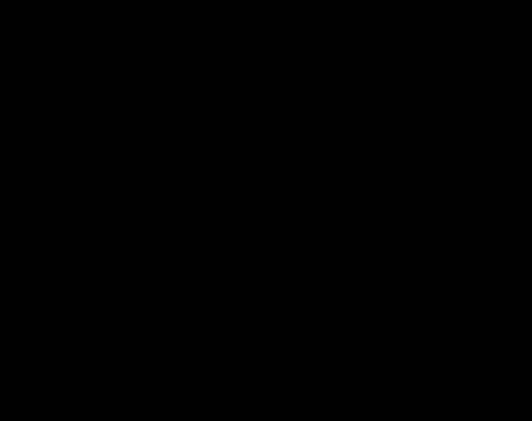
Monolithic

Load bearing

Formwork



Unrendered rammed earth walls





Rammed earth and CEB Residence - Round Mountain, Texas





Exposed rammed earth walls

# Light Straw-Clay

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Straw & Clay slip

Monolithic

Infill

Formwork

Manual or semi-automated





Light clay interior walls



Light-Clay Straw with Lime Plaster - Dripping Springs, Texas





Light-Clay Straw with Earthen Plaster - Dripping Springs, Texas



Lime Plaster on light-clay walls; Local juniper lintels & trim



# Straw Bale

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Baled straw

Stacked & Pinned

Load bearing or Infill

No formwork

Manual



Low energy, non-toxic construction. Highly insulative





Very resource-efficient load-bearing straw bale walls



Sunset Canyon Pottery Studio - Dripping Springs, TX



Straw Bale Residence in Wimberley, Texas





Straw Bale Residence, Austin, Texas





Earth-plastered straw bale walls



Lime-plastered straw bale walls - Hye, Texas





Interior plaster on straw bale walls - Lime and local pink sand with casein/borate/mica sealer

# Stone

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Natural uncut or cut

Dry stacked or mortared

Load bearing (or veneer)

Building or Landscape



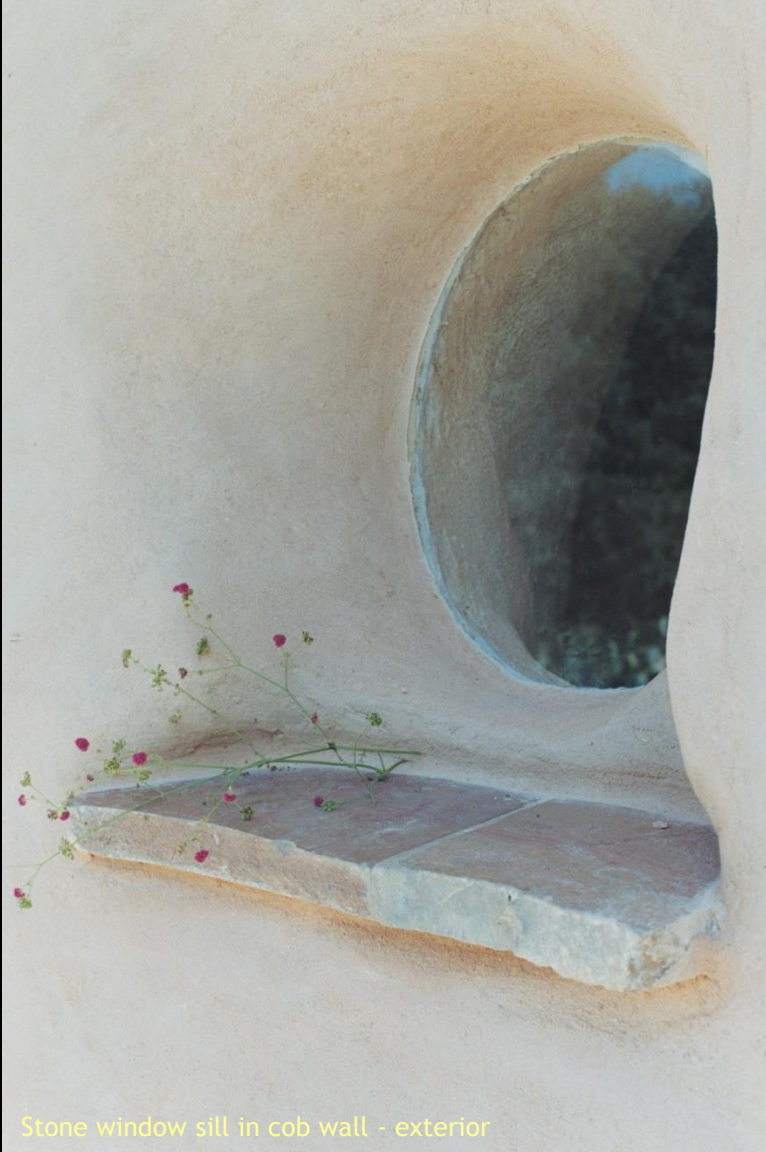


Stone foundation for cob house



Natural stone post base





Stone window sill in cob wall - exterior



Native, uncut limestone gathered from site - Westlake, Texas





Dry-stacked stone wall

# Native Wood & Roundwood

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Roundwood

Minimally milled

Fastened or lashed

Structural, Finish, Art





Local juniper columns, beams and shade structure rafters





Local juniper gate



Local roundwood pavilion - Kerrville, TX









Boggy Creek Farm "Dogtrot" featuring local and reclaimed wood



Reclaimed longleaf pine flooring





Low Impact Woodland Cottage in Wales. Photo credit: [www.SimonDale.net](http://www.SimonDale.net)



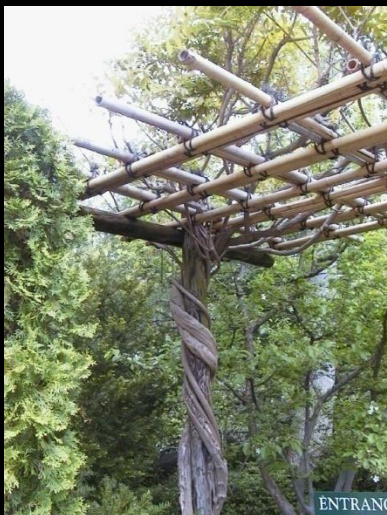


Backyard cob cottage - Austin, Texas



Backyard cob cottage - Austin, Texas





Japanese lashed bamboo - Rockford, IL



# Reclaimed Materials

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Keeps materials in use

Minimizes use of new

Adds character & history



Reclaimed longleaf pine - Hye, Texas



Reclaimed Beadboard Ceiling; Faswall House - Buda, Texas





Stair treads made from old boxcar flooring - Cypress Mill, Texas



Reclaimed furniture as vanity, built into straw bale wall



Reclaimed windows and doors...but be careful







Reclaimed antique window in rustic cob wall

# Natural Plasters, Floors, Features and Inspiration







Earthen plaster on straw bale wall  
interior - New Mexico





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Bas relief on earth-plastered wall



Earthen Plaster on Wall Board - Residential Renovation



Sculpted cob oven - Oregon





Earthen floor construction process



Earthen floor sealed with linseed oil





Juniper branch niche



Natural building goes beyond the walls...

