CLAY AND STRAW AS A KEY:
Traditional techniques applied to contemporary construction

Description of construction techniques

Erasmus + Training Course "2025-1-ES02-KA153-YOU-000302286"

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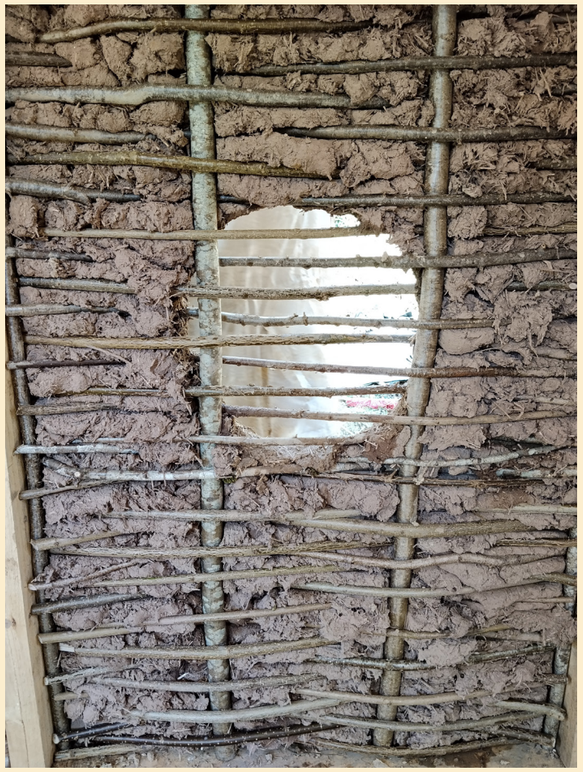
01. “Cebatu” (Woven branches and plaster)

Materials: clay, sand, long straw, flexible hazel branches
Tools: pruning shears, nails, handsaw
Process:

- Vertical posts are placed approximately 30cm apart
- The branches are cut and branches and leaves are removed
- The branches are placed in the structure
- The mix of clay, sand and straw is prepared. Mix: 1/1/1 ratio.
- The mix is placed in the structure, first one side and then the other

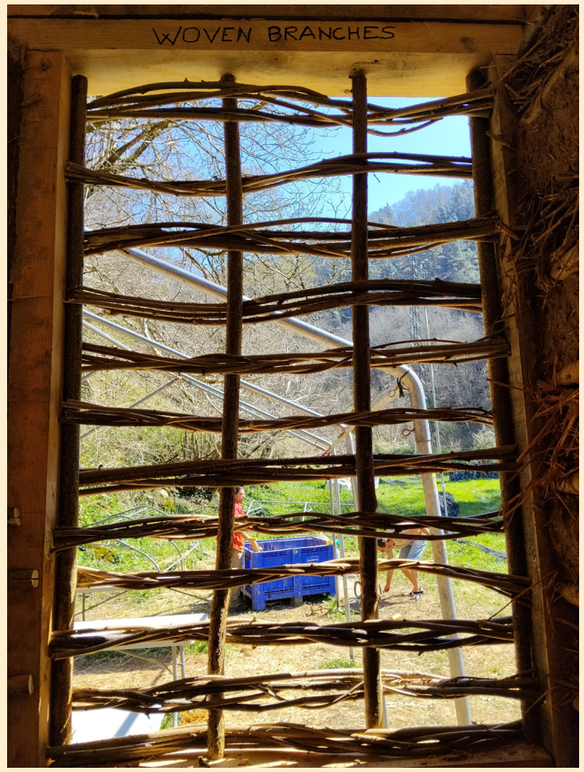
Characteristics: interior partition (10cm thick) with high inertia and humidity regulation.
Examples:



Cebatu with horizontal branches placed with spacing

Cebatu with vertical branches

Cebatu with horizontal branches that are placed on top of each other



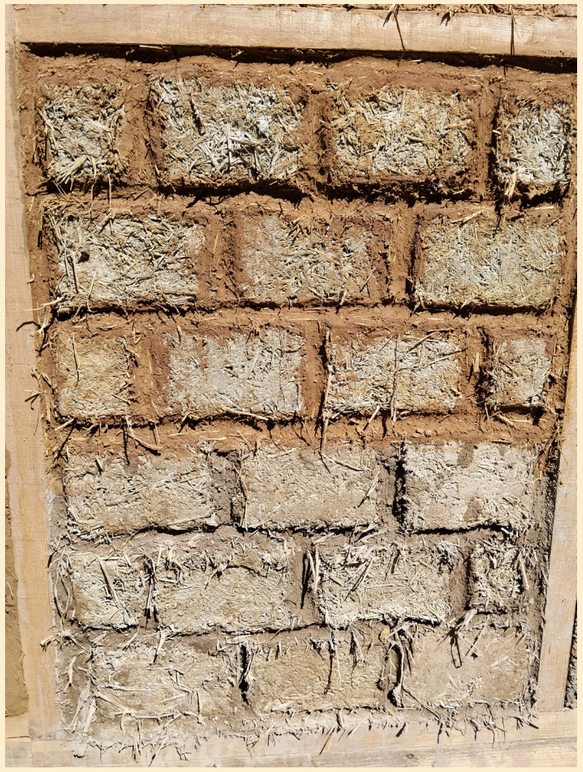
Cebatu with woven branches

02. Lightweight Adobe Bricks

Materials: lime, sand, long straw, short straw, wood chips
Tools: adobe molds, screwdriver, screws
Process:

- Prepare the mix with lime and straw. Proportions by volume: lime 15%, sand 15%, straw 70%
- Place the work board, protected with plastic, on a table.
- Place the mix in the molds and remove the molds.
- Let the adobe bricks dry, turning them after a few days.
- Place the adobe bricks in a staggered pattern on the frame, filling the joints with mix.
- Insert a screw at each horizontal joint to attach it to the structure

Characteristics: interior partition (10cm thick) with insulating capacity, non-structural.
Examples:



Finished wall from Adobe bricks

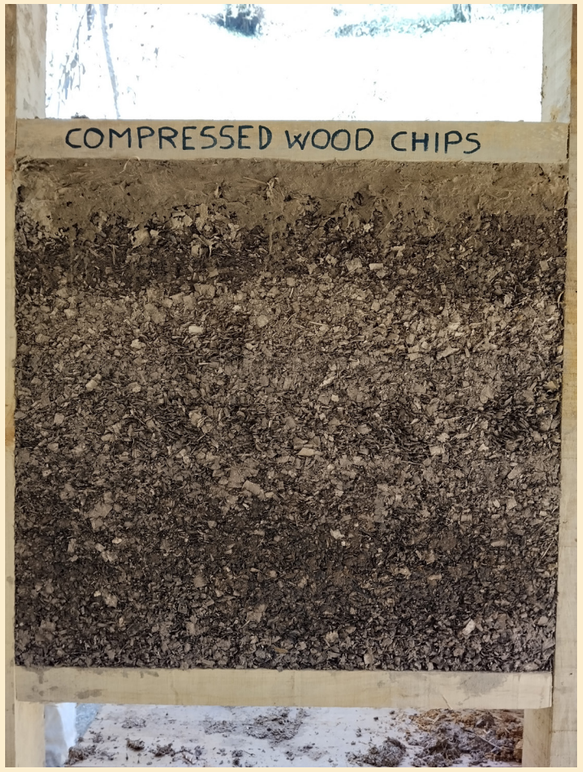
Detail on Adobe bricks during construction

03. Light clay

Materials: long straw, wood chips, clay
Tools: mixer, formwork boards, formwork planks, screwdriver, screws Mallets, work table, plastic sheeting, baskets, cups
Process:

- Prepare « barbotina » (clay liquid) in baskets
- Vertical posts are placed approximately 30cm apart
- Spread the straw/wood shavings on the table, pour in the barbotina, and mix manually
- Screw the formwork to the structure (10cm spacing) and compact the mix inside the mold
- Remove the boards, always leaving 50cm of board to support the mix
- Apply the plaster directly with a tool

Characteristics: thermal insulation enclosure; can be an exterior wall (15cm) or an interior partition (10cm).
Examples:



Light clay with wood chips

Light clay with long straw

Light clay with layers of wood chips, long straw and fern

04. Light clay with slats

Materials: Long straw, clay, 2x2 pine slats
Tools: Mixer, hammer, nails, workbench, plastic sheeting, baskets, cups
Process:

- Prepare "barbotina" (clay liquid) in baskets
- Spread the straw/wood chips on the workbench, pour in the « barbotina », and mix manually
- Nail the slats horizontally every 15cm, on both sides of the structure
- Place the mix inside the lost formwork
- Apply the plaster by hand to cover the wooden slats

Characteristics: Thermal insulating enclosure; can be an exterior wall (15cm) or an interior partition (10cm).
Examples:

Light clay with slats and long straw

Light clay with slats and long straw

Light clay with slats and long straw

5. Horizontal Wooden Frame (Torchis)

Materials: clay, sand, long straw, short straw, 2x2 slats
Tools: nails, hammer
Process:

- The horizontal slats are nailed in place, spaced 10cm apart.
- The mix of clay, sand and straw is prepared. Mix: 1/1/1 ratio.
- Pieces of mix shaped like loaves of bread, approximately 25x5cm, are prepared.
- The "loaves" are hung in a loop on the horizontal battens.

Characteristics: interior partition (10cm thick) with high inertia and humidity regulation.
Examples:

Loaves that are hung in a loop on the horizontal battens

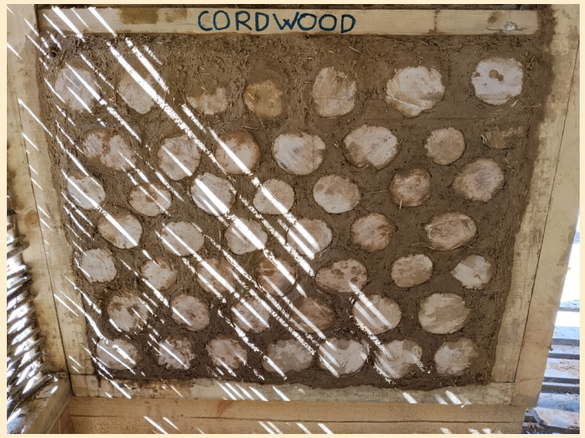
Trochis with the plaster

6. Cordwood Wall

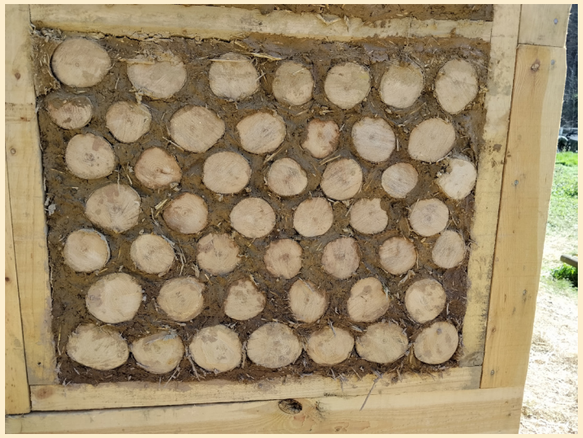
Materials: clay, sand, short straw, chestnut log (approximately 12cm thick)
Tools: saw
Process:

- The "blocks" are cut to a length of 10cm.
- The mix of clay, sand and straw is prepared. Mix: 1/1/1 ratio.
- Placing the blocks in the structure: the mix is placed between the blocks with a 1-2cm separation

Characteristics: Exterior enclosure with some insulating capacity (30cm thick)
Examples:



Cordwood wall from inside



Cordwood wall from outside

7. Cob

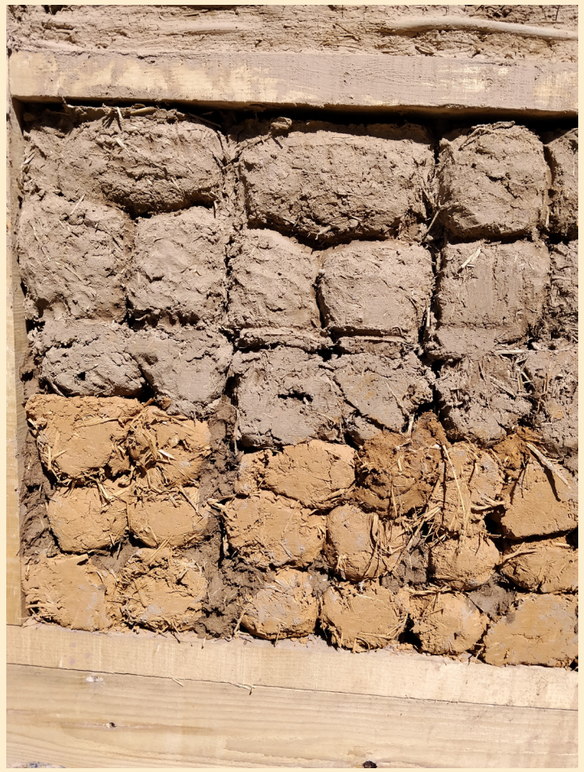
Materials: clay, sand, long straw
Tools: formwork boards, screws
Process:

- Prepare a fairly dry mixture of clay, sand, and straw. Mix: 1/1/1 ratio.
  This can be done by mixing with your feet on a plastic sheet.
- Shape the prepared mixture into balls of a size similar to the thickness of the wall. In this case, 10 cm.
- Screw the formwork to the structure (10 cm spacing).
- Place the mixture inside the formwork, compacting it lightly.
- Remove the boards once finished.

Characteristics: Exterior cladding with high thermal mass and humidity regulation. These are usually walls of about 30-40 cm, and can be structural walls.
Examples:

Elongated cob

Cob in form of balls placed on each other



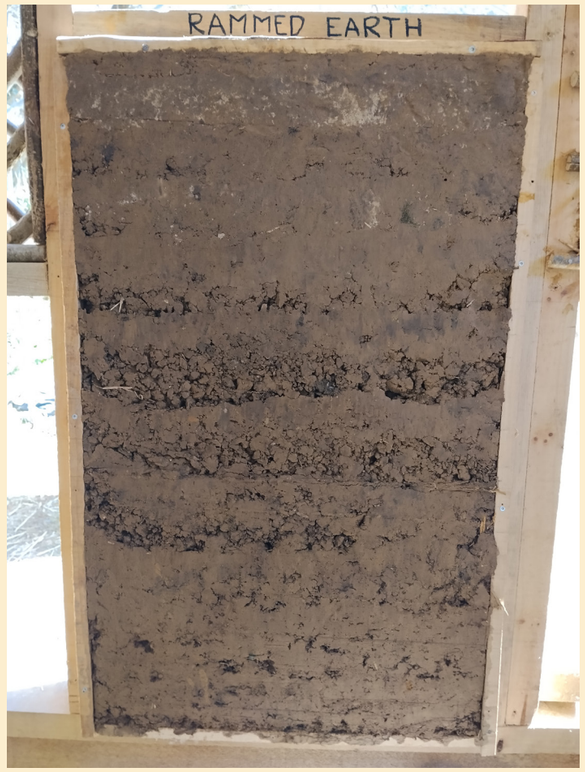
Cob in form of balls placed on each other

8. Rammed Earth

Materials: clay that is not too pure. Tools: Formwork panels, screws, tamping hammers
Process:

- The formwork panels are screwed to the structure (10cm spacing)
- The clay is placed directly inside the formwork and compacted in layers with wooden tampers
- If the clay is too dry, it is first spread on plastic and lightly moistened with a brush
- The panels are removed once finished

Characteristics: Exterior cladding with high thermal mass and humidity control. These are typically 50-60cm thick walls. They are structural walls.
Examples:



Rammed earth with darker clay

Rammed earth with clay that has lighter color