



Diagram A

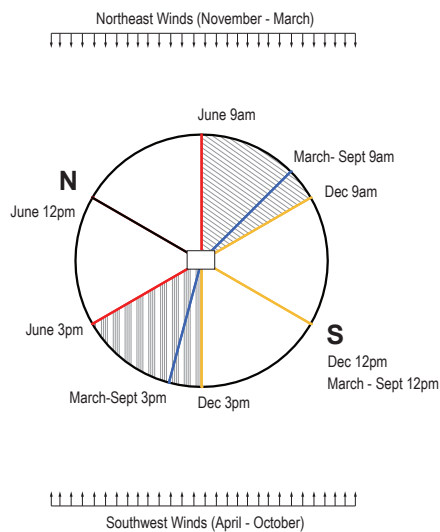


Diagram B

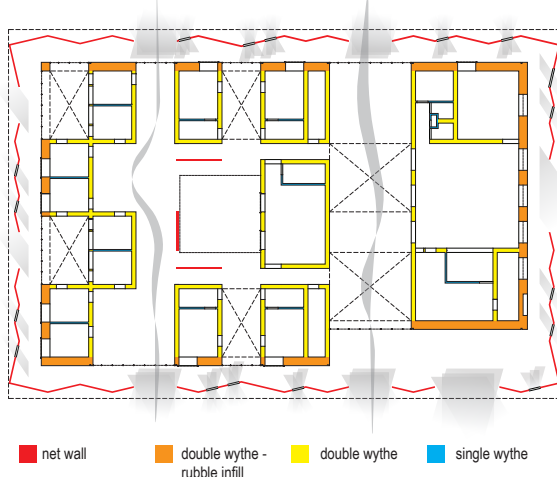
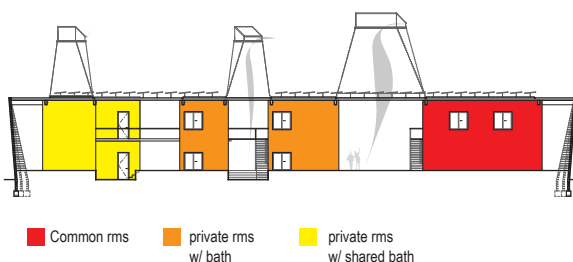


Diagram C



Agribusiness Research Facility, Afram Plains, Ghana

2014-2016. The Research Facility is part of a larger social vision and master plan for a 10,000 hectare (24,710 acres) site in the Afram Plains near Lake Volta, Ghana. The Knowledge Center is the pilot research and development facility designed to house: 24 residents (researchers, scientists, and guests), and Common areas: assembly rooms, offices, kitchen and dining, and recreational facilities (gardens, patio, soccer field, swimming pool).

The building is organized into zones with varying spatial and climate sensitive gradations: individual/ communal, small/ large, open/ closed, light/ dark. Every space and room is nested within a still larger space or room with each transition between the layers serving a spatial and climatic purpose (*Diagram B*).

The outer skin, built from a “net” of concrete blocks is the first demarcation and separation from the landscape, and acts as a screen from direct light and rain. The outer skin also increases air pressure to pull breezes through the facility. The angular, hyperbolic façade and openings are carefully calibrated to the changing solar paths, balancing the need for shade and view.

Equatorial sun shines on the north and south elevations for one half of each year. The solar strategy prevents low angle sun (6 - 9am & 3-6pm) from heating the thermal mass behind; while the angled roof overhang ensures that high angle sun (12pm) hits the ground before reaching the next layer (*Diagrams A & B*). Direct light rarely touches the 80cm. thick load-bearing concrete block and rubble infill wall. Its thickness maintains air cooled at night comfortable during the day.

An insect net spans between breaches in the 80cm layer making all outdoor “gardens”, “porches” and “breezeways” livable day and night. All individual interior spaces open onto one of these shared and protected outdoor areas, many of which are capped by a pyramidal cone. The cones encourage the prevailing winds to funnel through the shared outdoor areas as well as allow diffuse light to enter deep into the building footprint (*Diagram C*). The interiors are most removed from the climate, with each given a fan, a point of use air conditioner, and a window for cross ventilation and a view looking out toward the landscape.

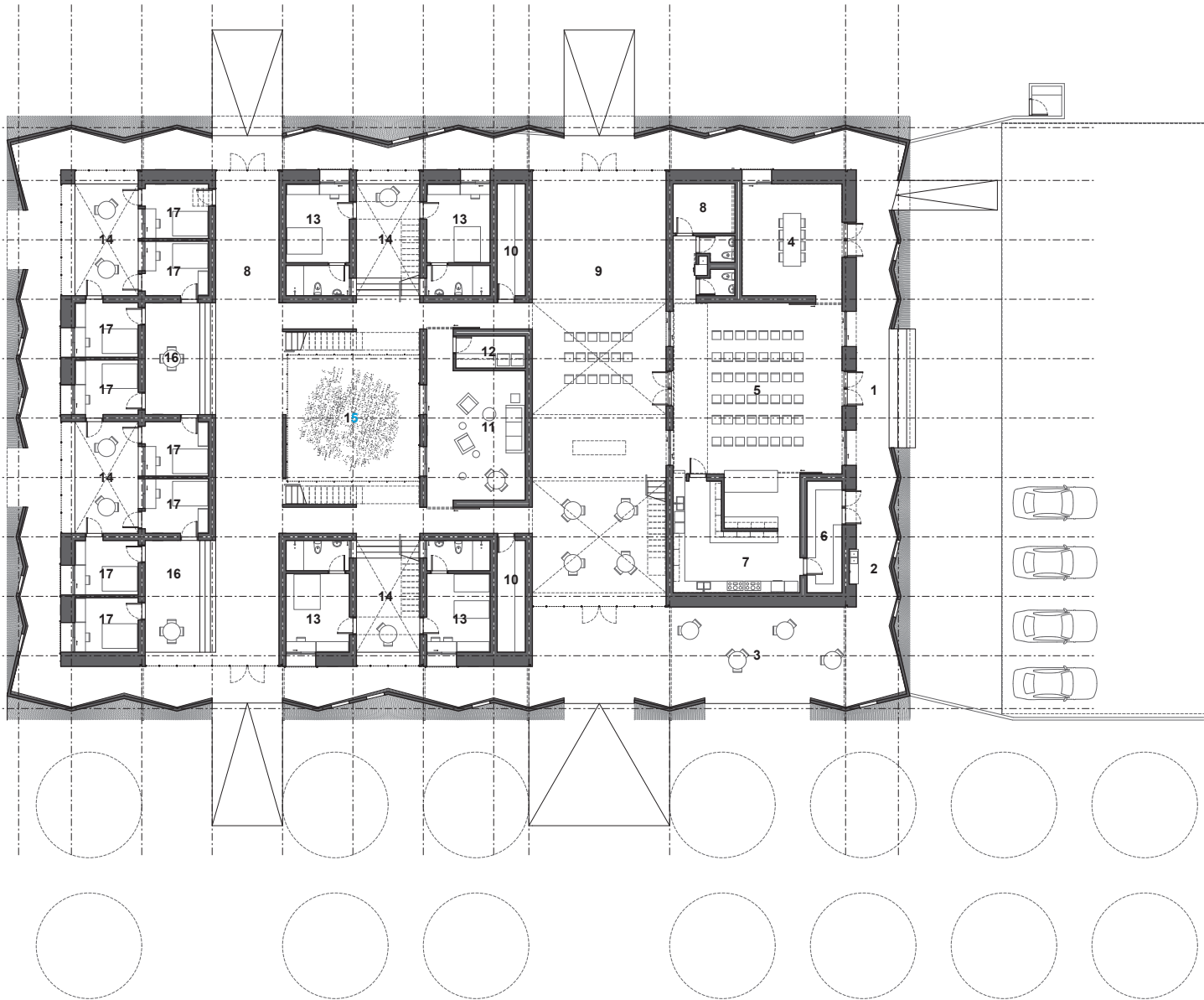
Project Architect, Schematic Design - Building permit

ORG Permanent Modernity w/ Alan Berger
26,000 SF (2,415 SQM)

***2016 Boston Society of Architecture Un-built Award

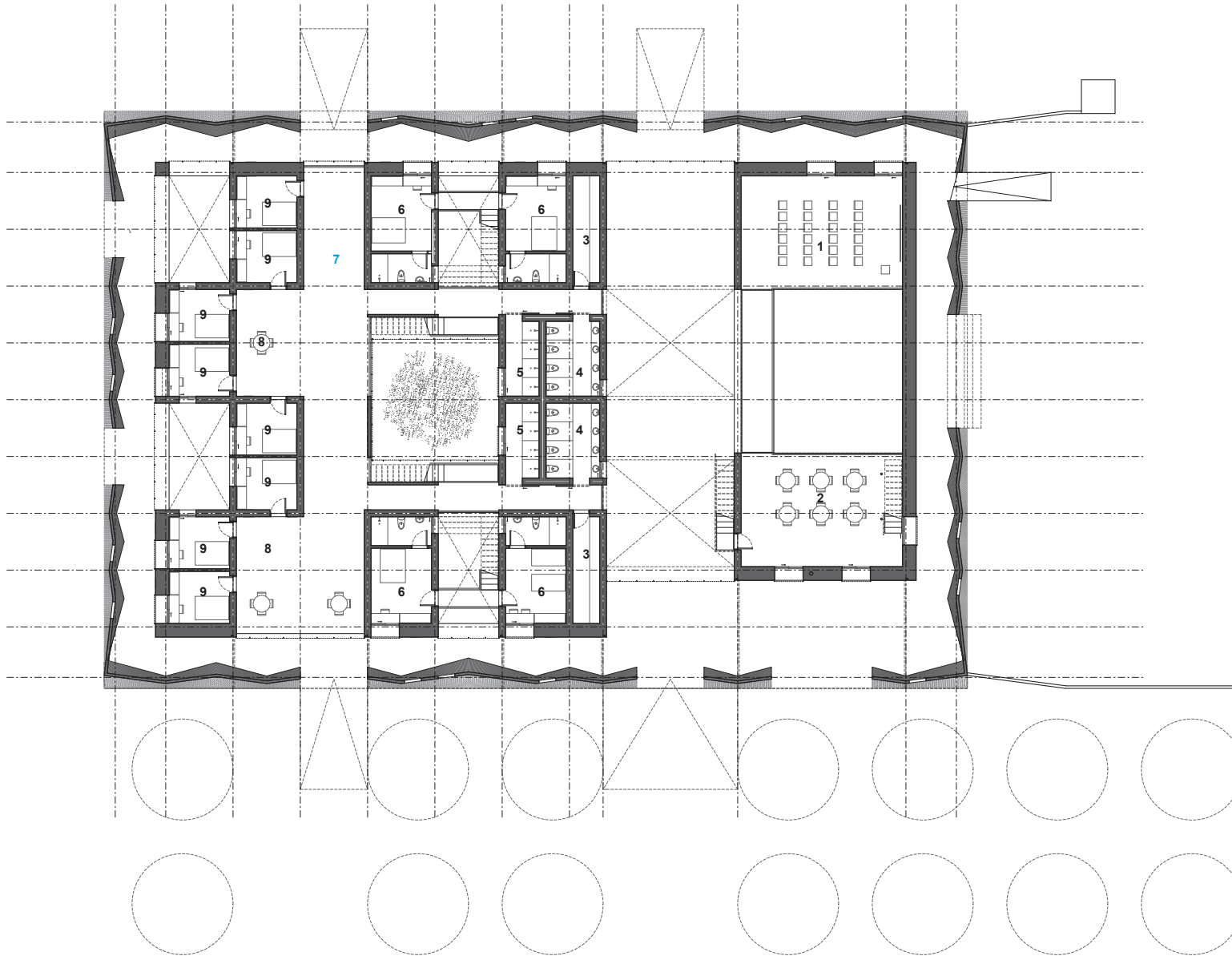






- | | |
|-----------------------|-----------------|
| 1. Entry Portico | 10. Storage |
| 2. Service / Bootwash | 11. Lounge |
| 3. Patio | 12. Laundry |
| 4. Entry/ Office | 13. Room Type A |
| 5. Assembly | 14. Garden |
| 6. Cold storage | 15. Courtyard |
| 7. Kitchen | 16. Porch |
| 8. Mechanical | 17. Room Type B |
| 9. Breezeway | |

Ground Level Plan

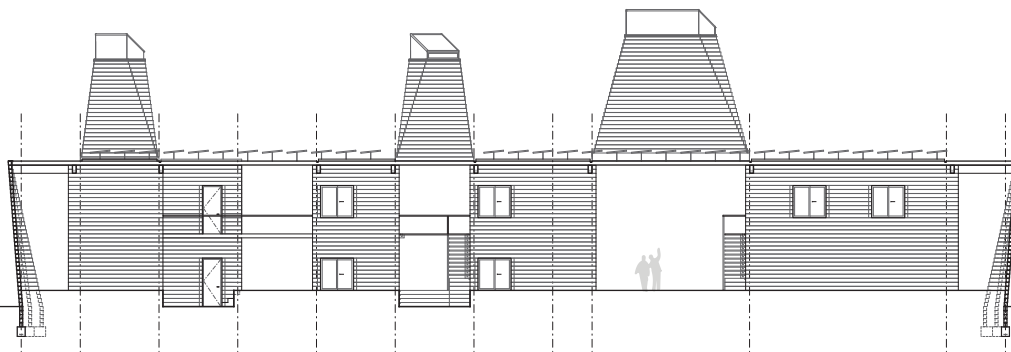


- 1. Mezzanine 1
- 2. Mezzanine 2
- 3. Storage
- 4. Toilets
- 5. Showers
- 6. Room Type A
- 7. Breezeway
- 8. Porch
- 9. Room Type B

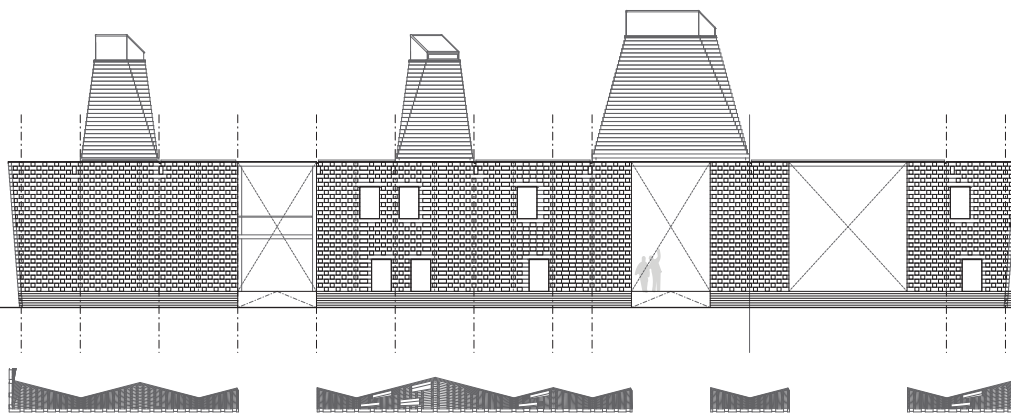
Level 2 Plan



0 5 25 50ft.

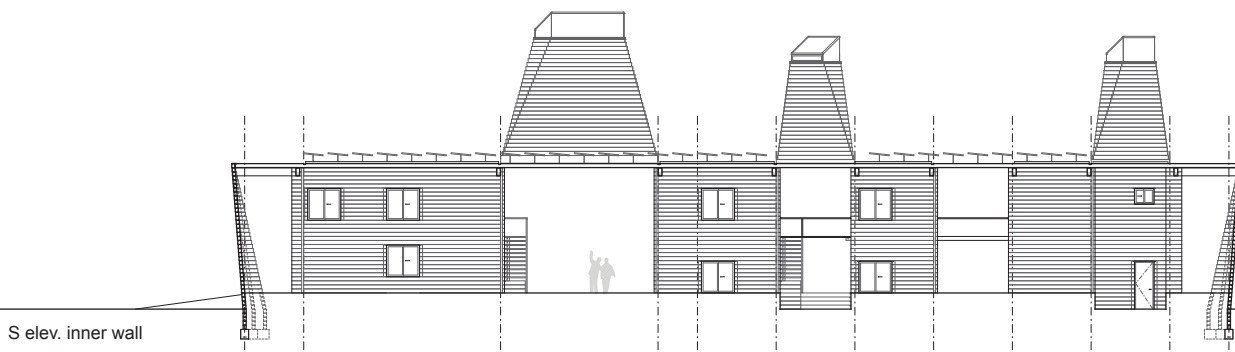


N elev. inner wall (thermal mass)

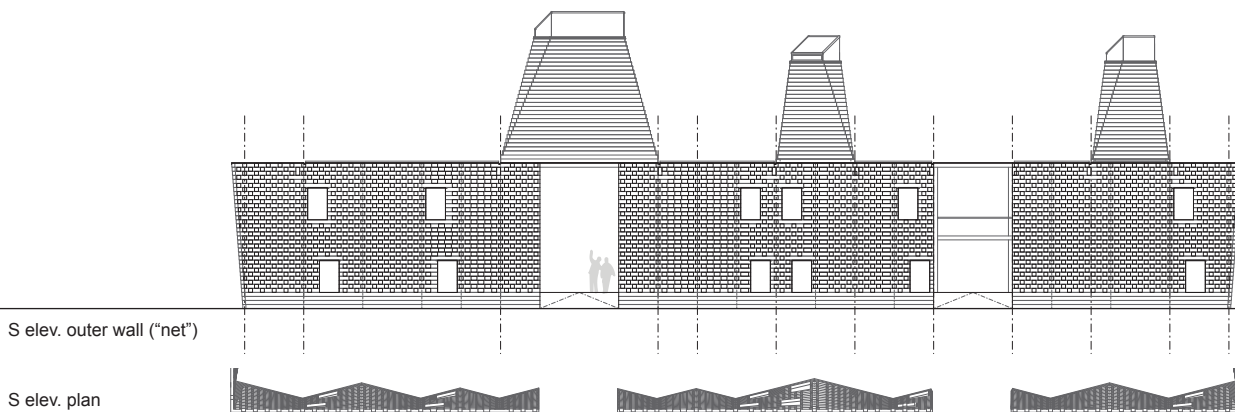


N elev. outer wall ("net")

N elev. plan

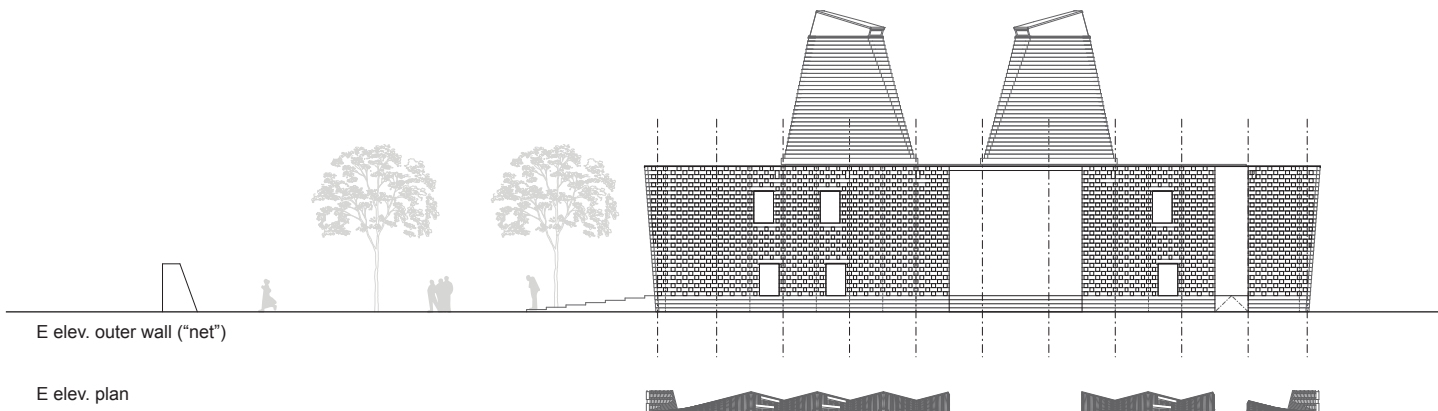
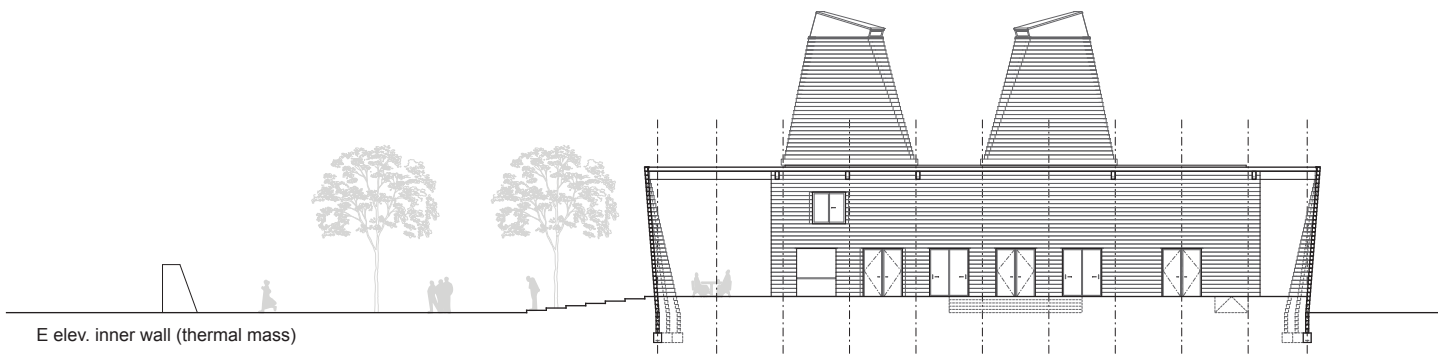
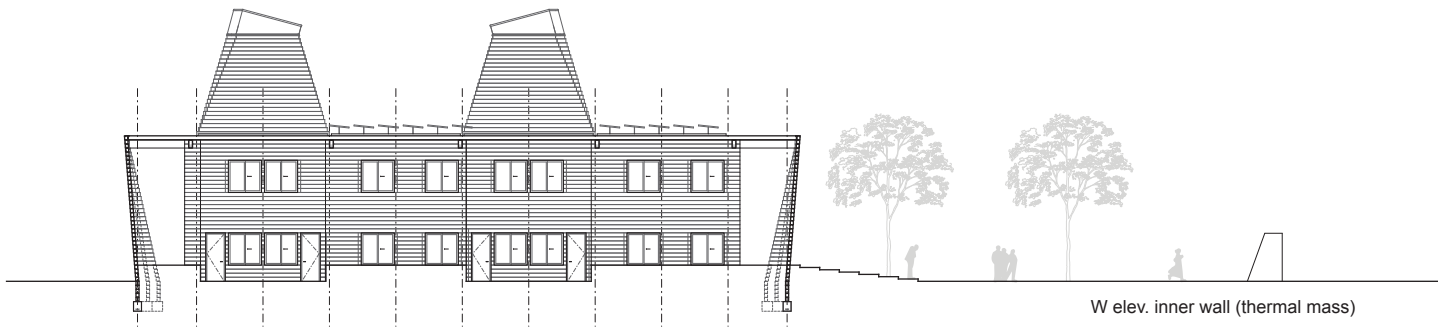


S elev. inner wall

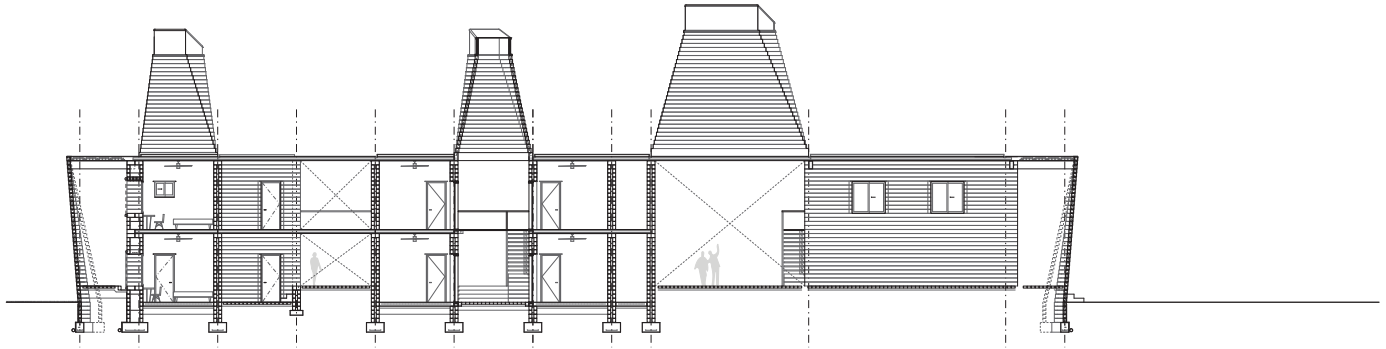


S elev. outer wall ("net")

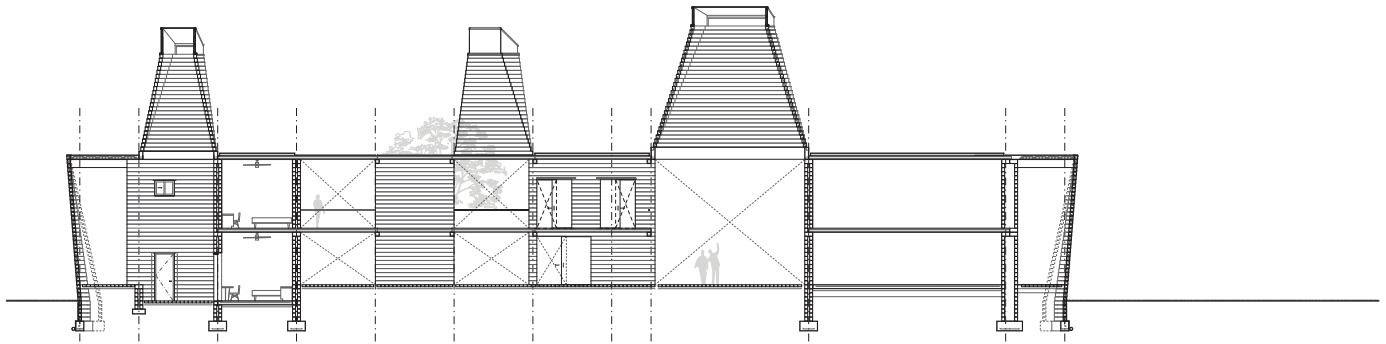
S elev. plan



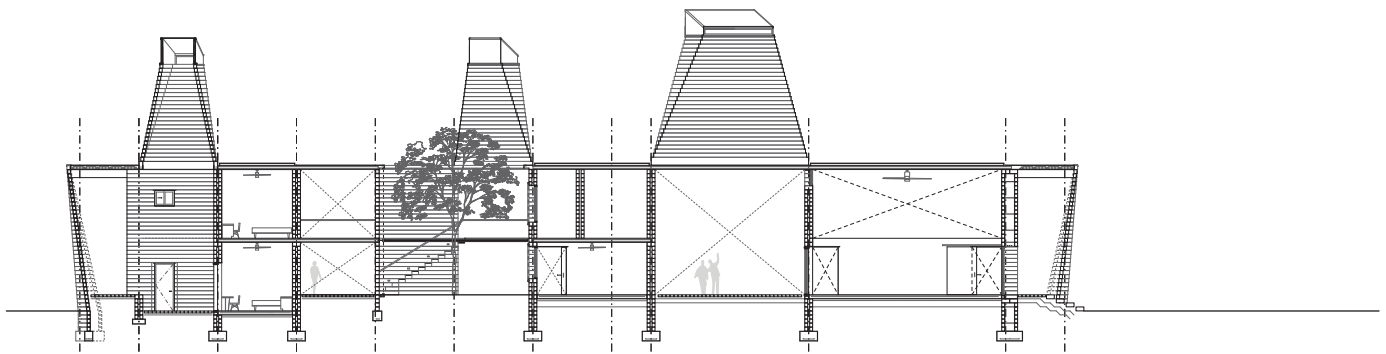
0 5 25 50ft.



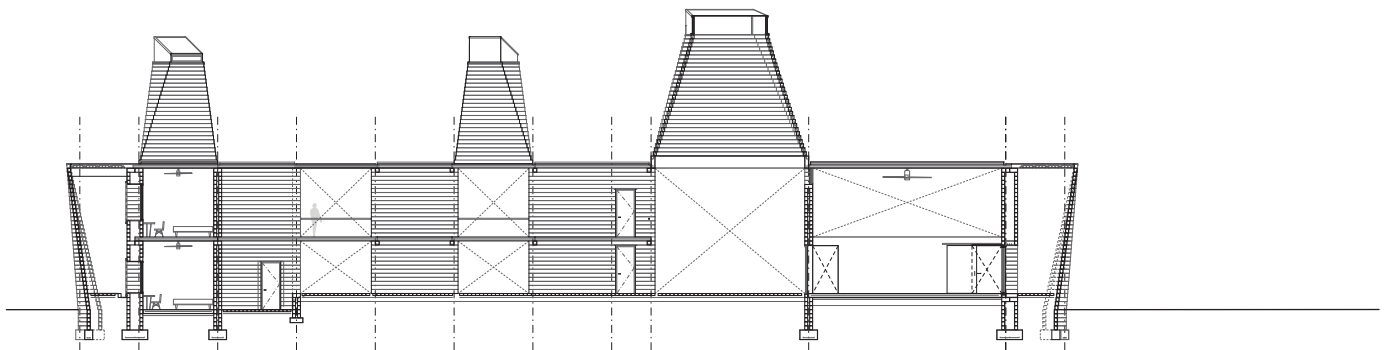
Section at bedrooms



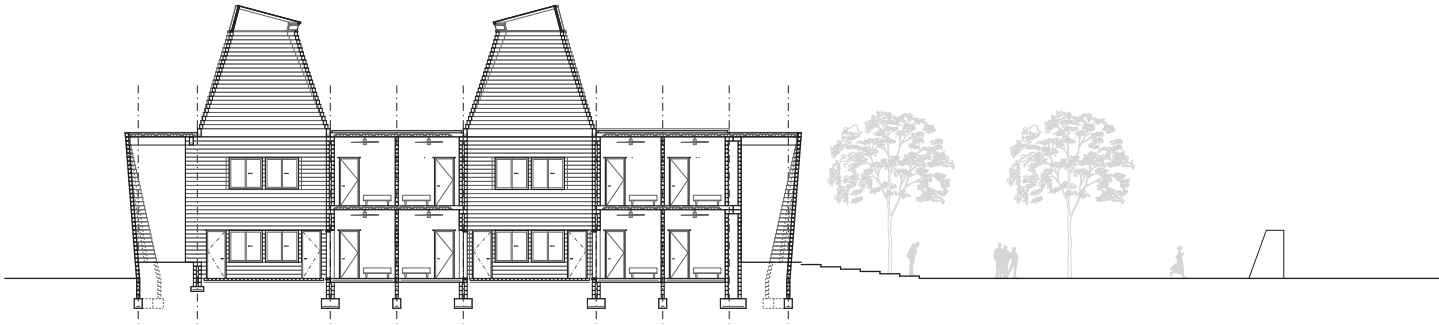
Section at breezeway



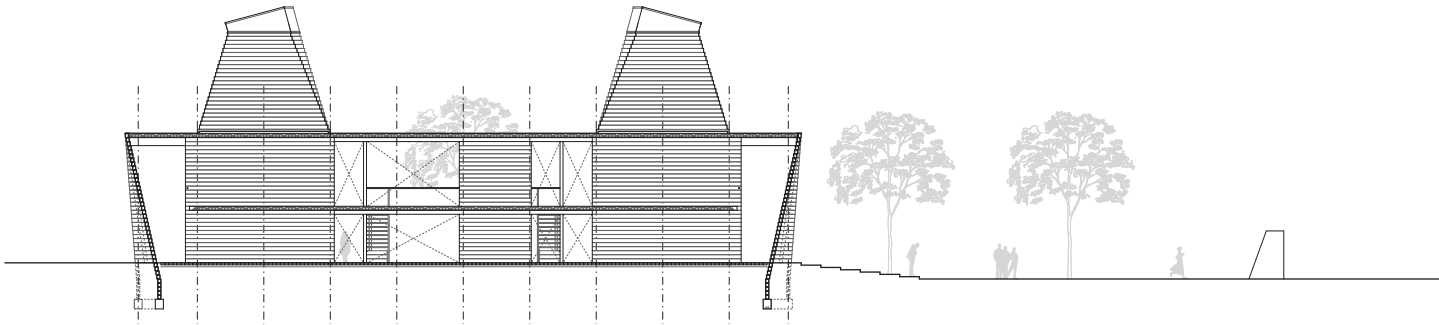
Section at courtyard



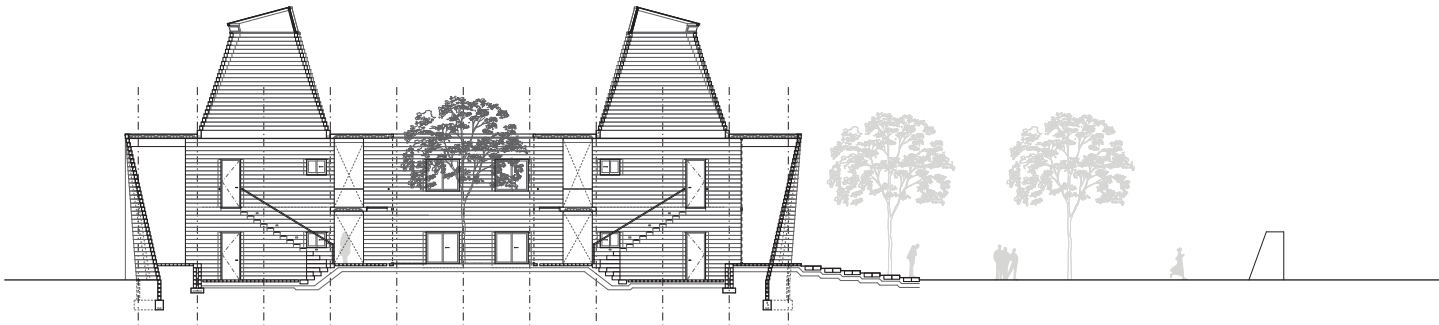
Section at corridor



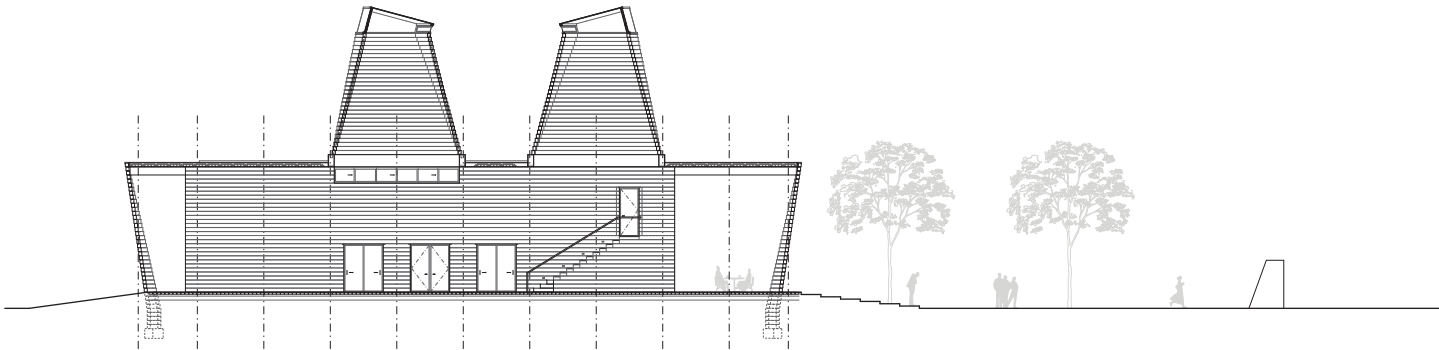
Section at bedroom gardens



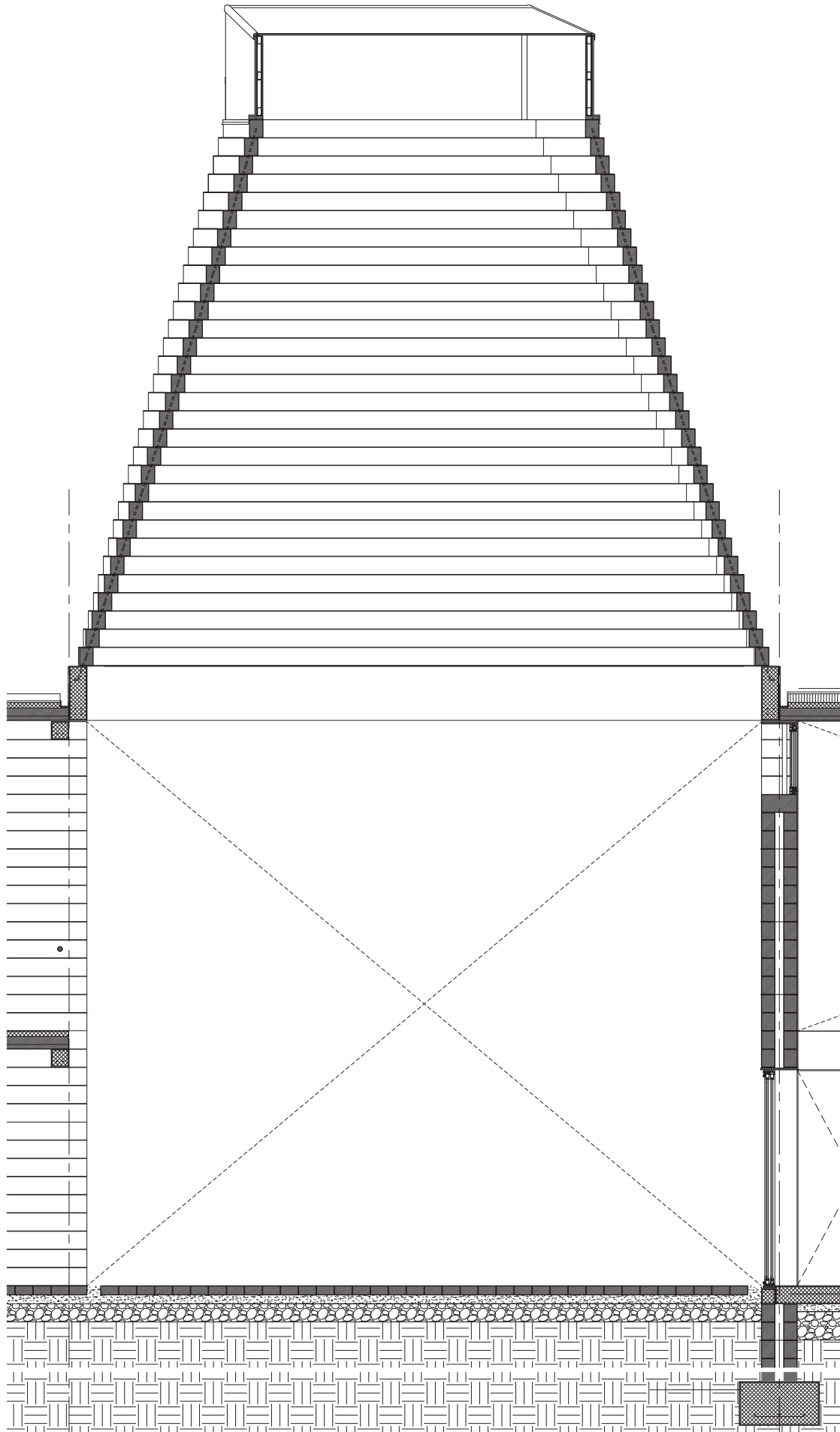
Section at corridor



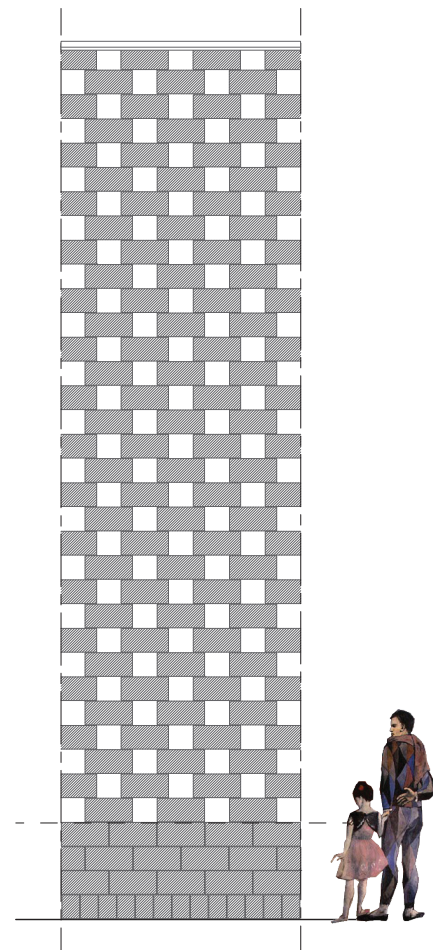
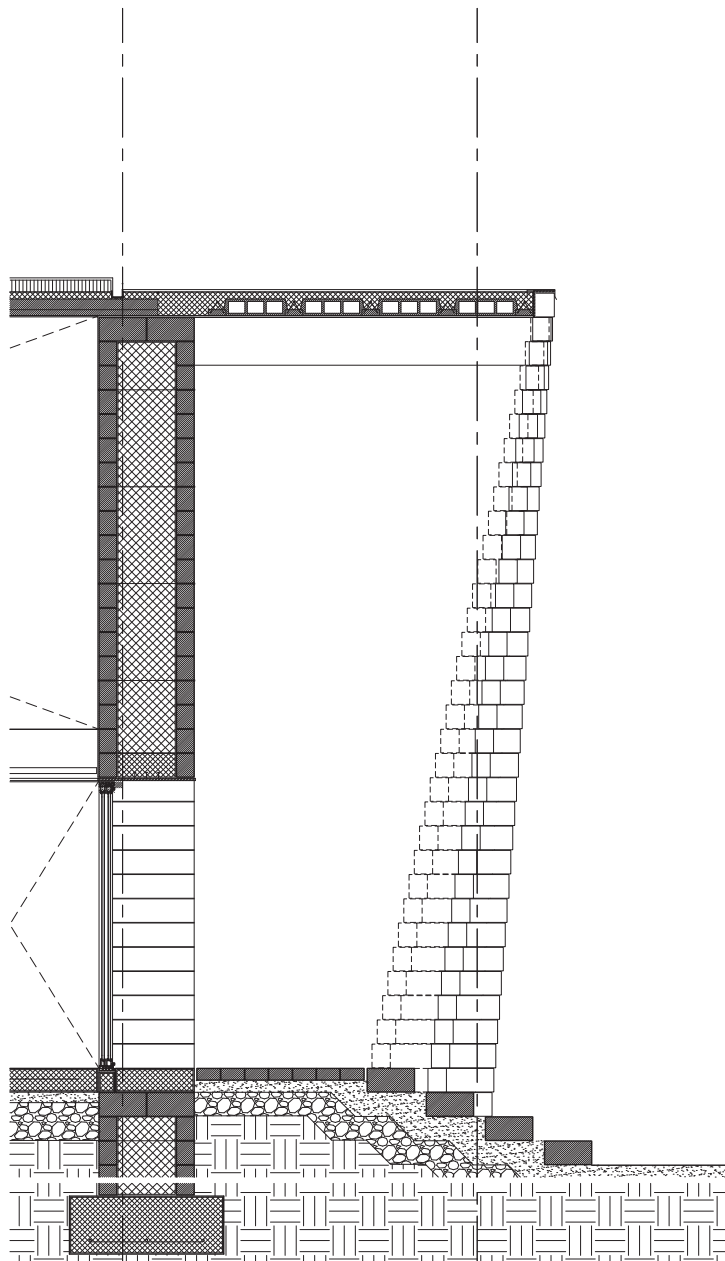
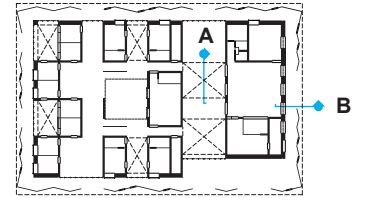
Section at courtyard



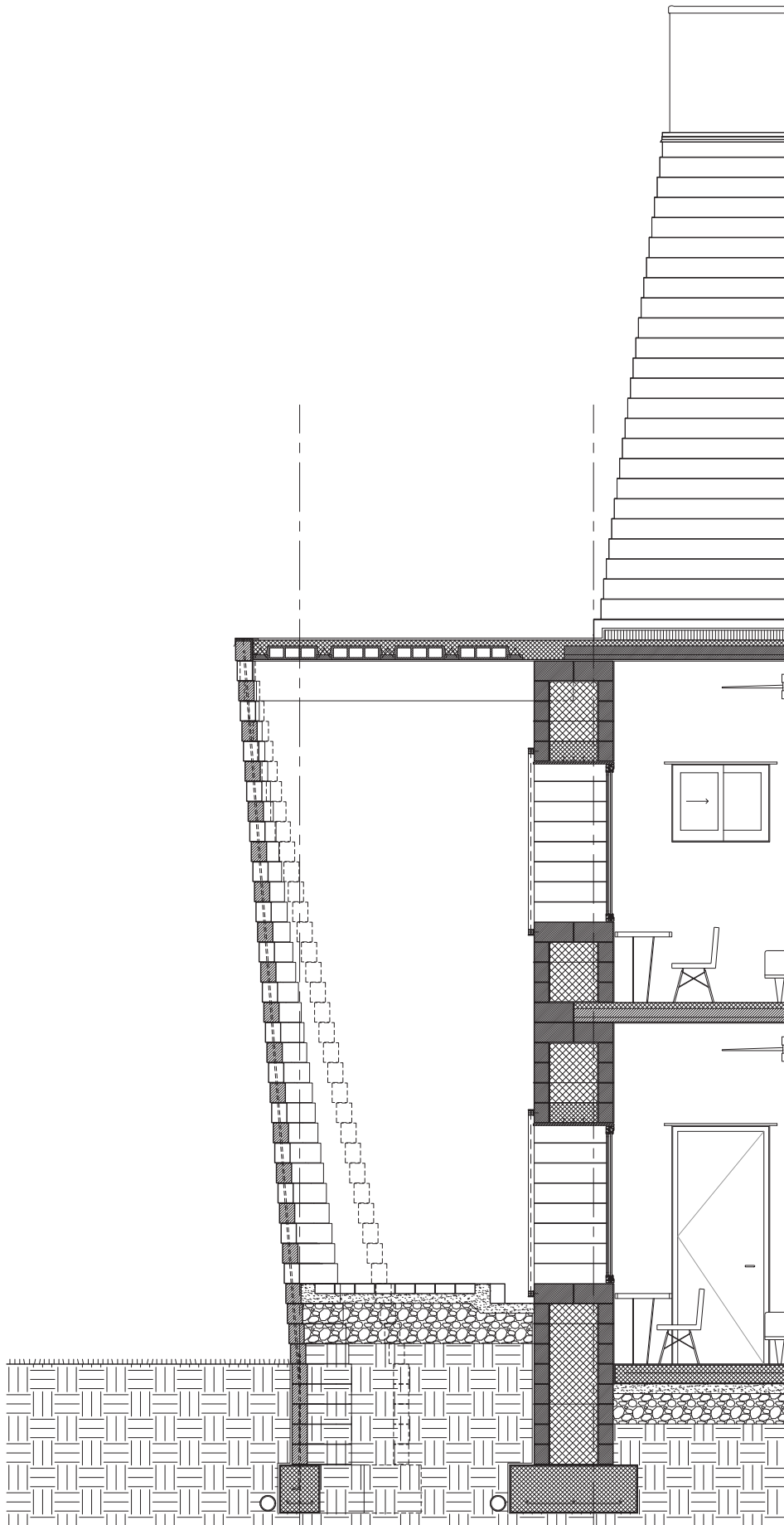
Section at breezeway



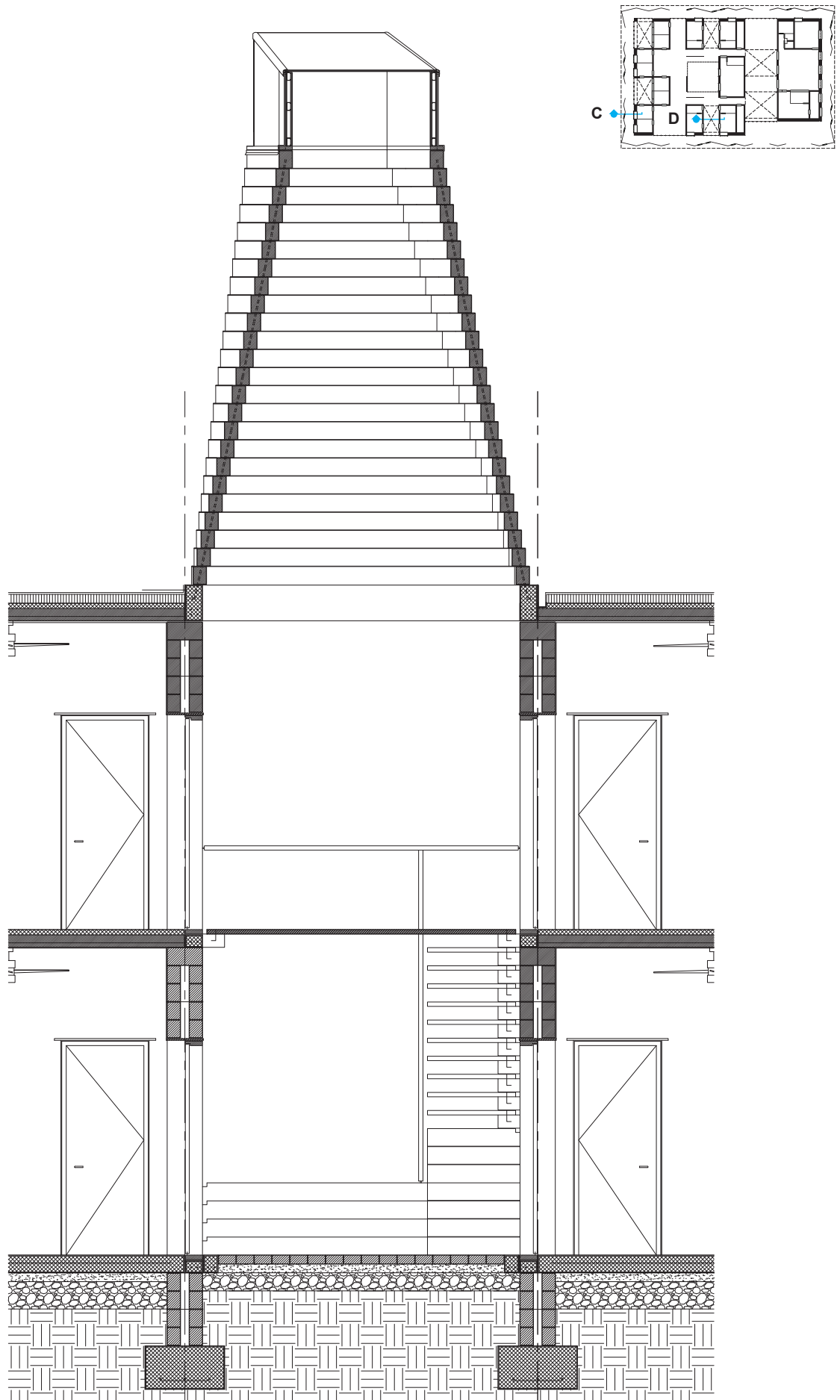
Wall Section A at Breezeway



Wall Section B at exterior wall



Wall Section C at bedrooms



Wall Section D at garden



