Crafting the disused

Drawings Part I

Local waste material transformation potential and integrated waste management on a decentralised scale

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As part of:
The Architectural Engineering
Graduation Studio 17

Master of Architecture, Urbanism and Building Sciences:
Faculty of Architecture
Julianalaan 134
2628 BL Delft

Date:
May 19th, 2017

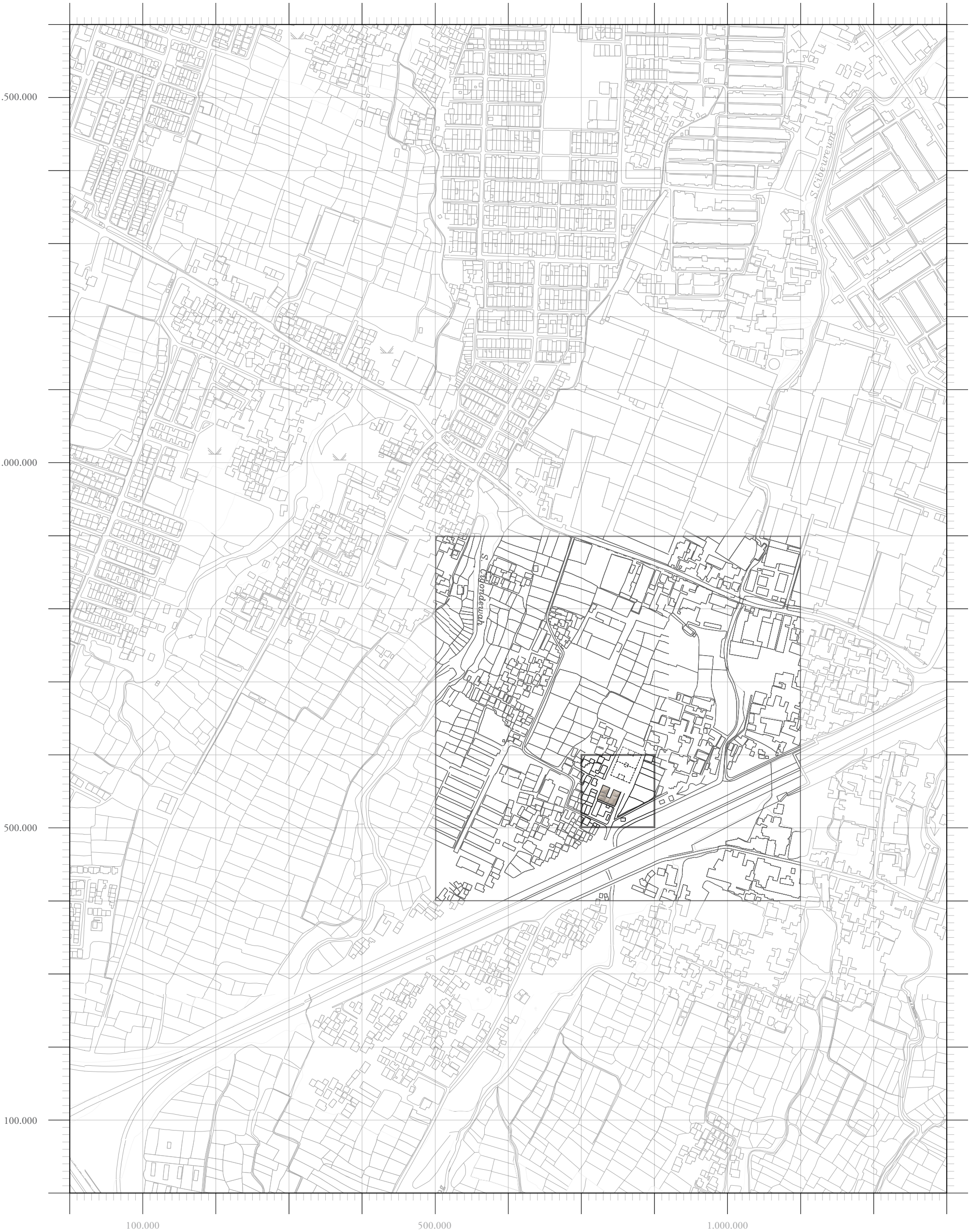
Cigondewah Kaler - Rice Fields

access to football field & site location

Cigondewah Kaler - Football Field

site location

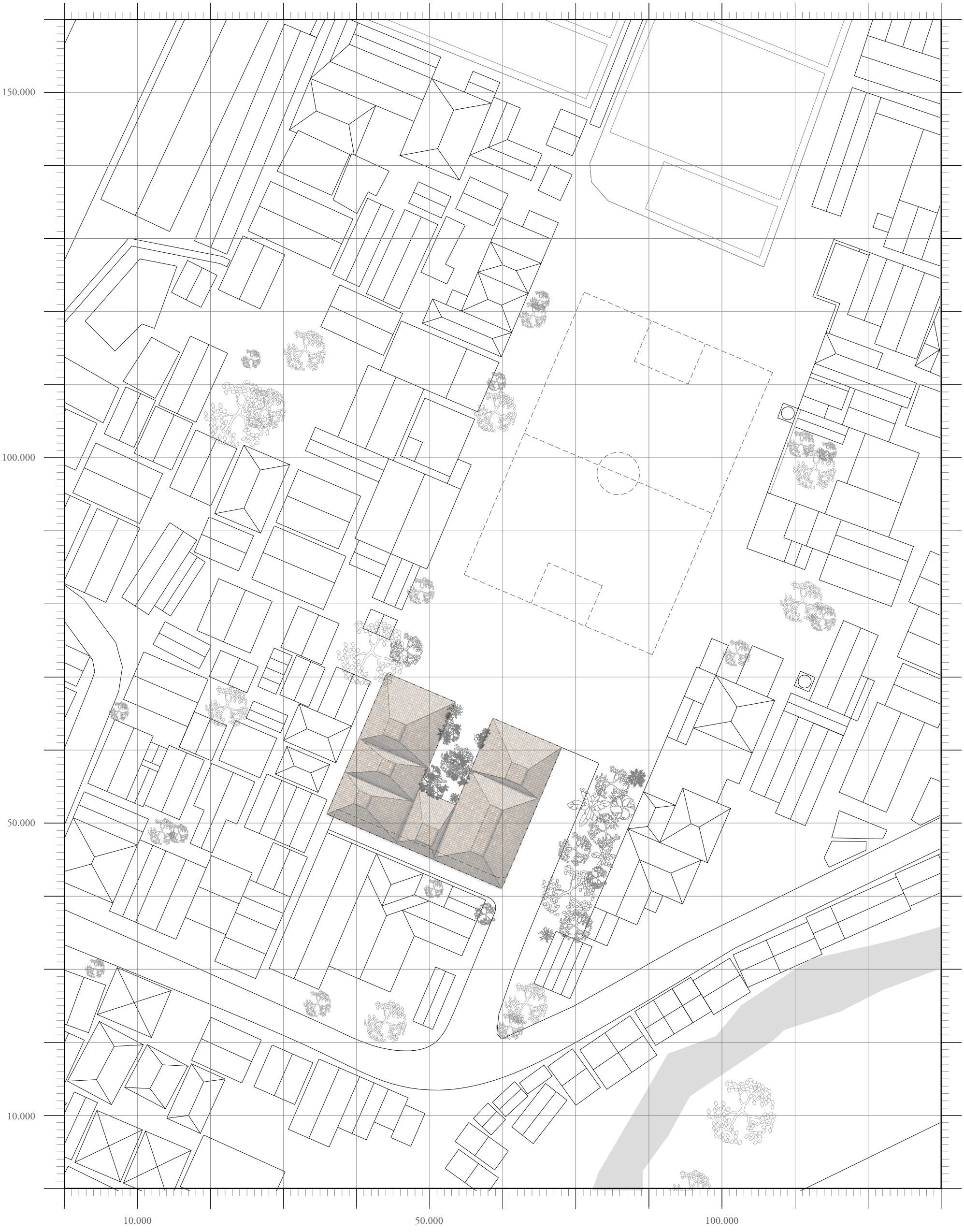
Site Location



Cigondewah Kaler

1:5000

N



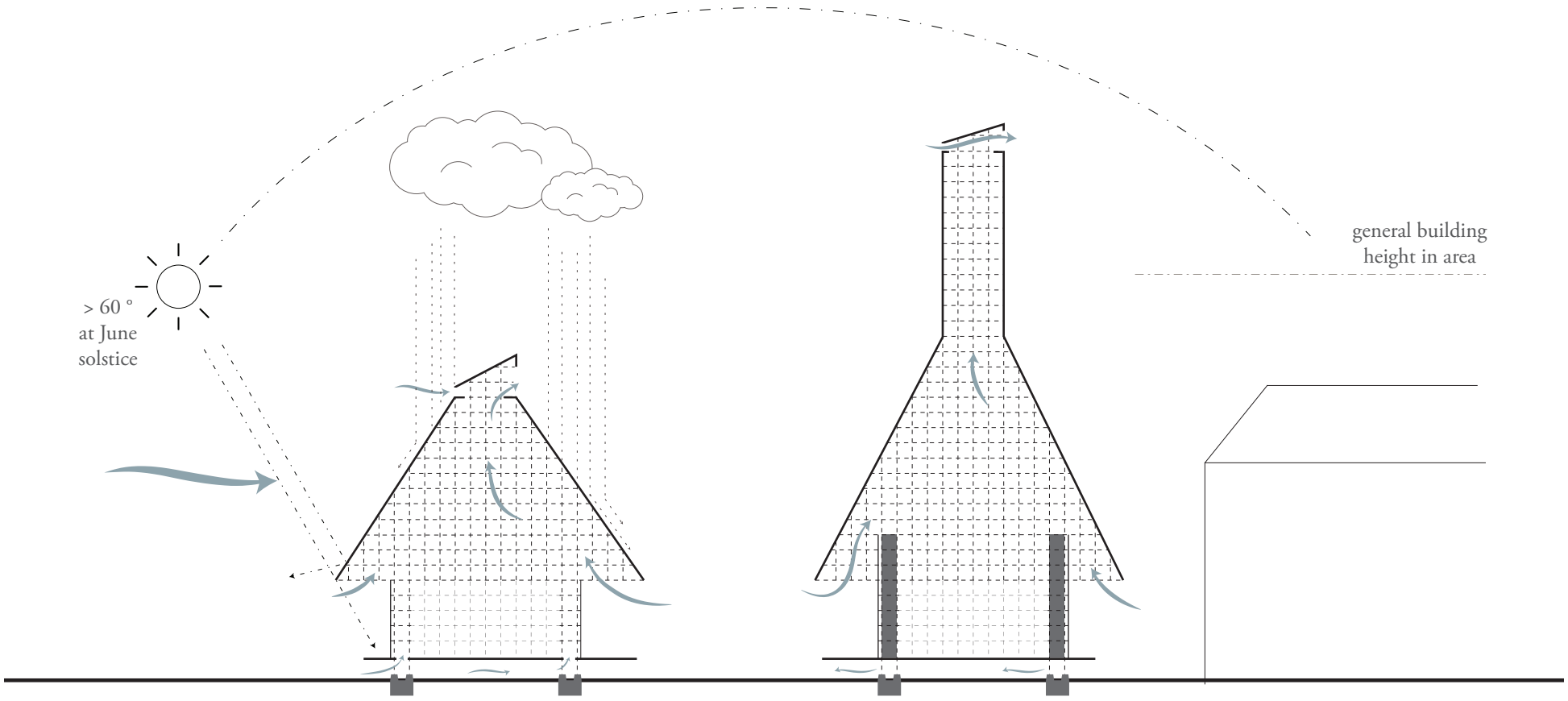
Cigondewah Kaler - Rukun Warga 02

1:500

N

Climate & Details

A-A



ROOF HOOD

[roofs are designed to overhang sufficiently to protect all walls from direct sun when at it's highest point on any given day]

ROOF DIRECTION

[chimneys are directed towards the north west in favour of prevailing winds from the south east; chimneys are pulled towards the outer platform edge where possible, to increase the amount of rain water falling into the garden and water tank]

GARDEN

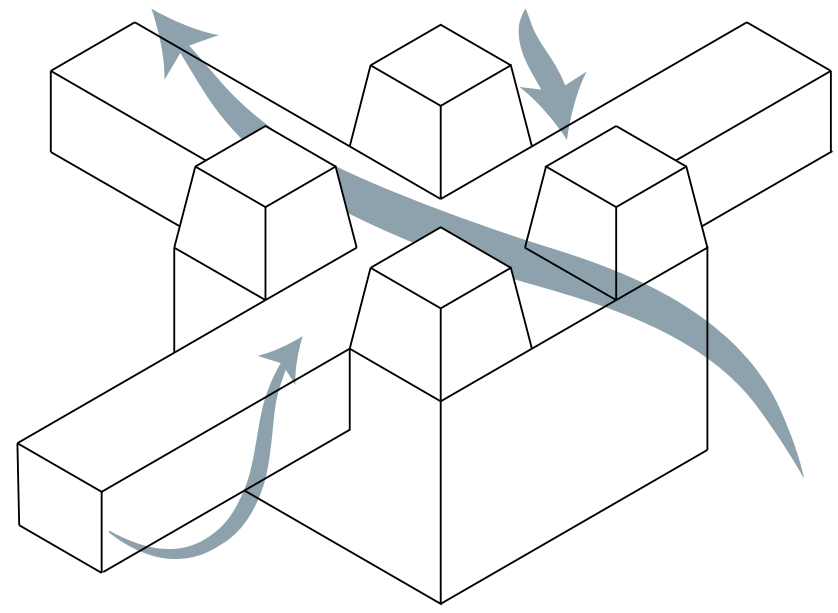
[a garden in between the two volumes functions as a natural cooler - creating shade and pressure difference to encourage wind velocity in relation to the buildings]

PLATFORM

[a raised platform prevents exposure to occurring floods, as well as animals gaining access and simultaneously creates shaded space below for air to pre-cool before it enters the building from below the floor and within the walls

STACK EFFECT

[to support increased air velocity and to direct fumes from waste and/or heating of plastic upwards out of the building and in the case of the machine room to bring the fumes into an air layer above residential dwelling lines]



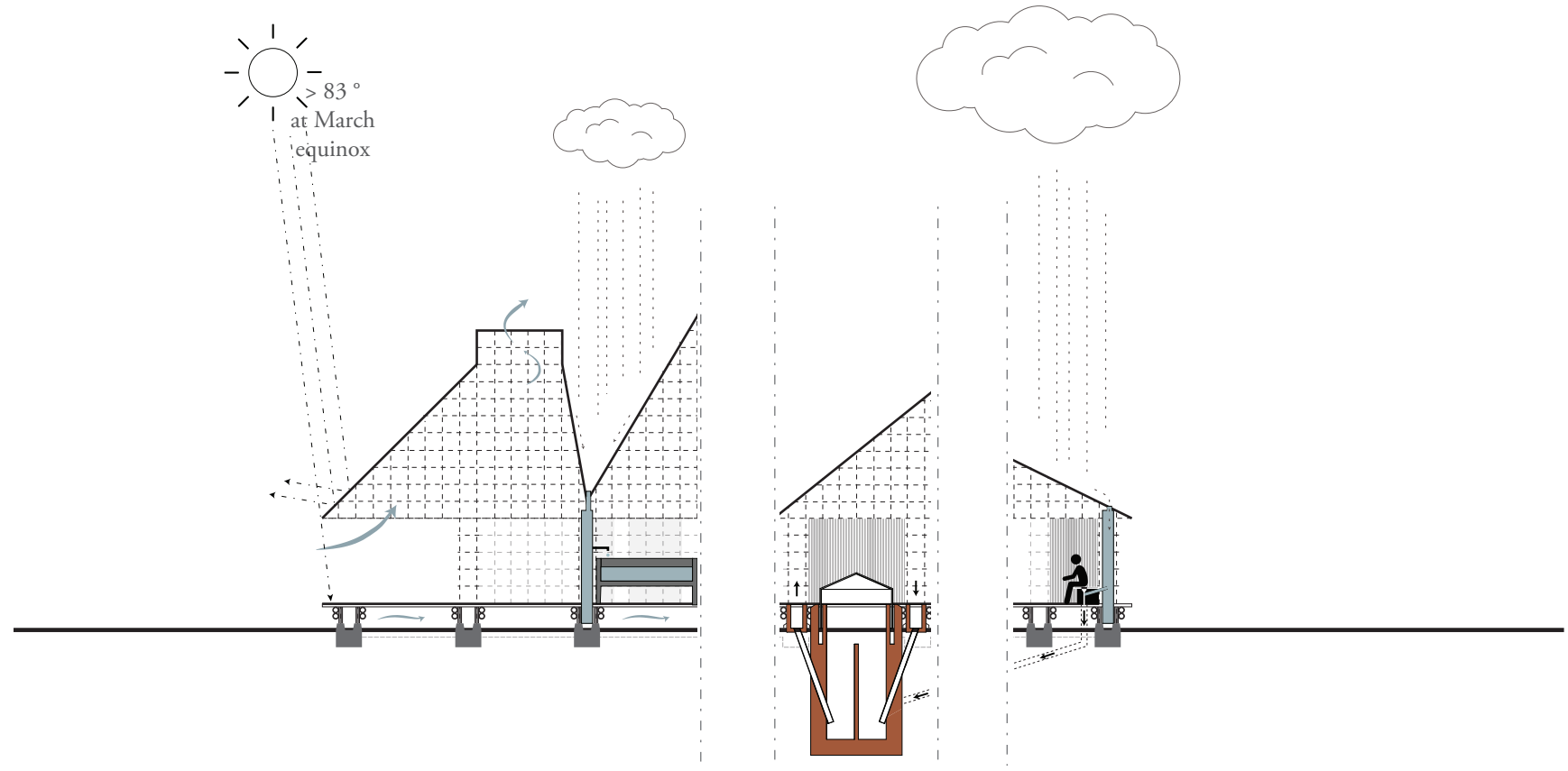
ANTI-FLOOD BLOCKAGE FOUNDATION

[the foundations are designed to allow water to flow freely underneath the platform in the event of flooding, which is a common occurrence within the area. To protect the bamboo structure from water little 'foundation hoods' are raised up, while the primary foundation structure is just below ground (to allow for the water to run freely between the built volumes, the garden and surrounding ground. The foundation pads are connected all around to cater for seismic events and velocity in relation to the buildings]

CLIMATIC STRATEGY

1:200

B-B C-C D-D



RAIN WATER HARVESTING

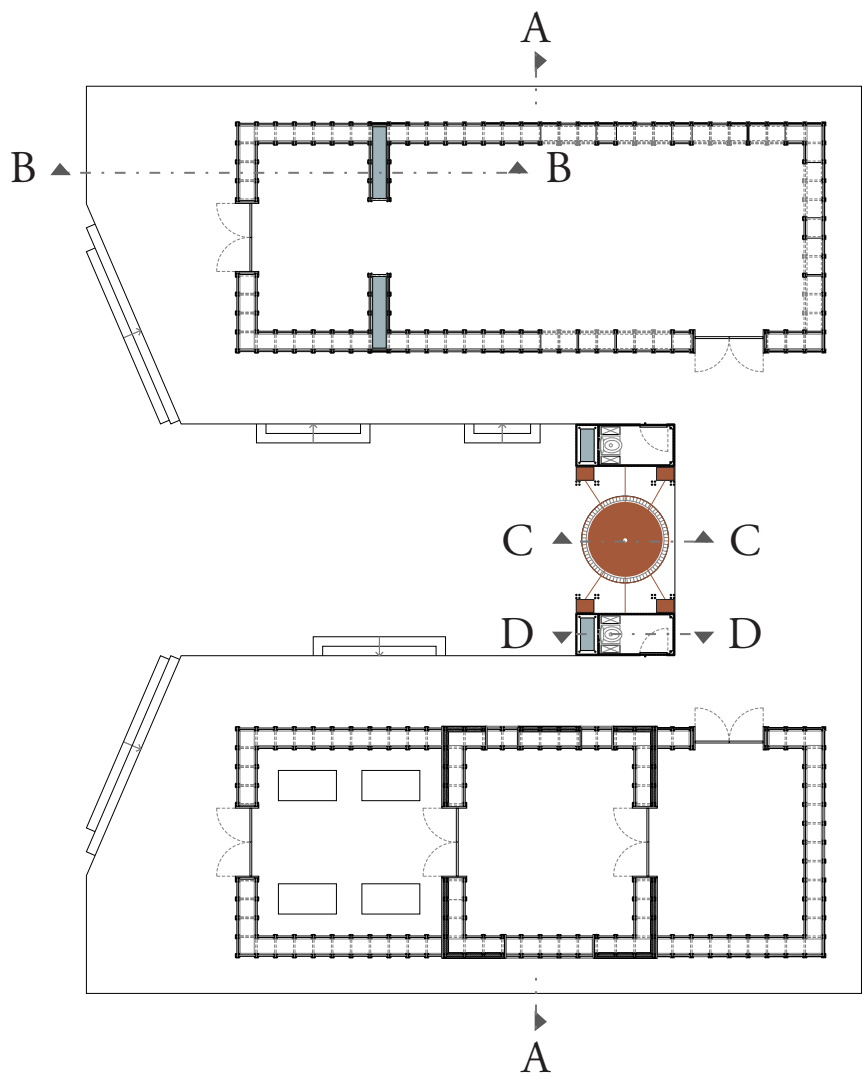
[the roof shape is designed to primarily aid in increasing air velocity but secondarily in directing rain water either to a garden or directly into rain water storage tanks in the wall next to the cleaning section as well as the washroom walls. Thus making direct direct use possible]

BIOGAS-DIGESTER

[a floating drum biogas-digester is positioned in the back of the garden. Weekly organic waste accumulations of the kampung suffice to generate 2.5 times the energy needed by the sampah bank and plastic processing facility. The outlet of the biogas-digester is used directly for the garden and surrounding farming activities.]

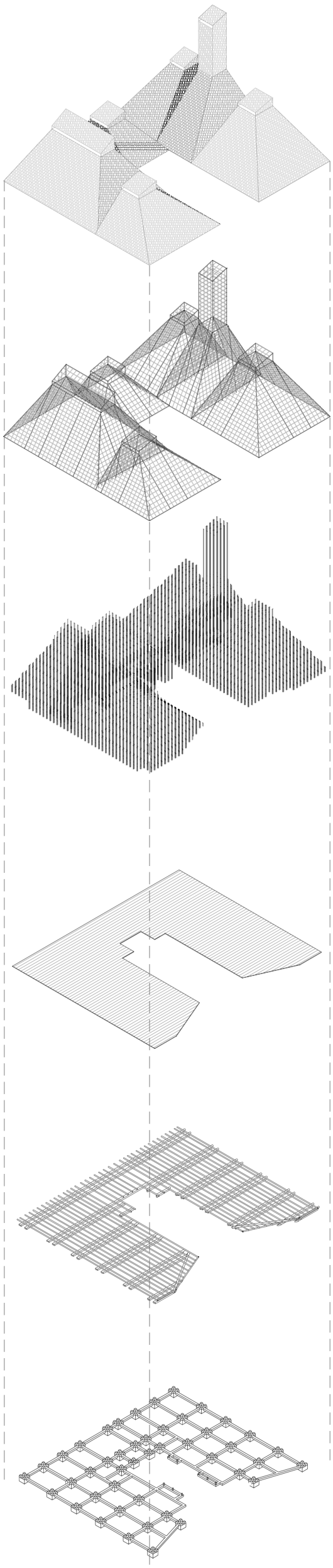
PUBLIC COMPOST TOILET

[the public toilet is directly connected to watertanks located in the bathroom walls and the toilet outlet itself is connected with the biogas digester.



Energy & Water Strategy

1:200



Roof cladding

recycled plastic (HDPE, LDPE, PE)
roof shingles; [200mmx100mmx8mm]

Roof Structure

primary roof structure:
bamboo poles [ø 40mm];

secondary roof structure:
vertical glue laminated bamboo batten
[60mmx20mm];
horizontal glue laminated bamboo batten
[20mmx20mm]

Wall Structure

primary wall structure:
2x2 bamboo pole columns, columns
centred at 500mm [ø 40mm];

secondary wall structure:
horizontal bamboo poles in x and y
direction, spaced at 500mm [ø 40mm]

FLOORING

cut & flattened bamboo flooring
with 5mm spacing
[120mmx30mm]

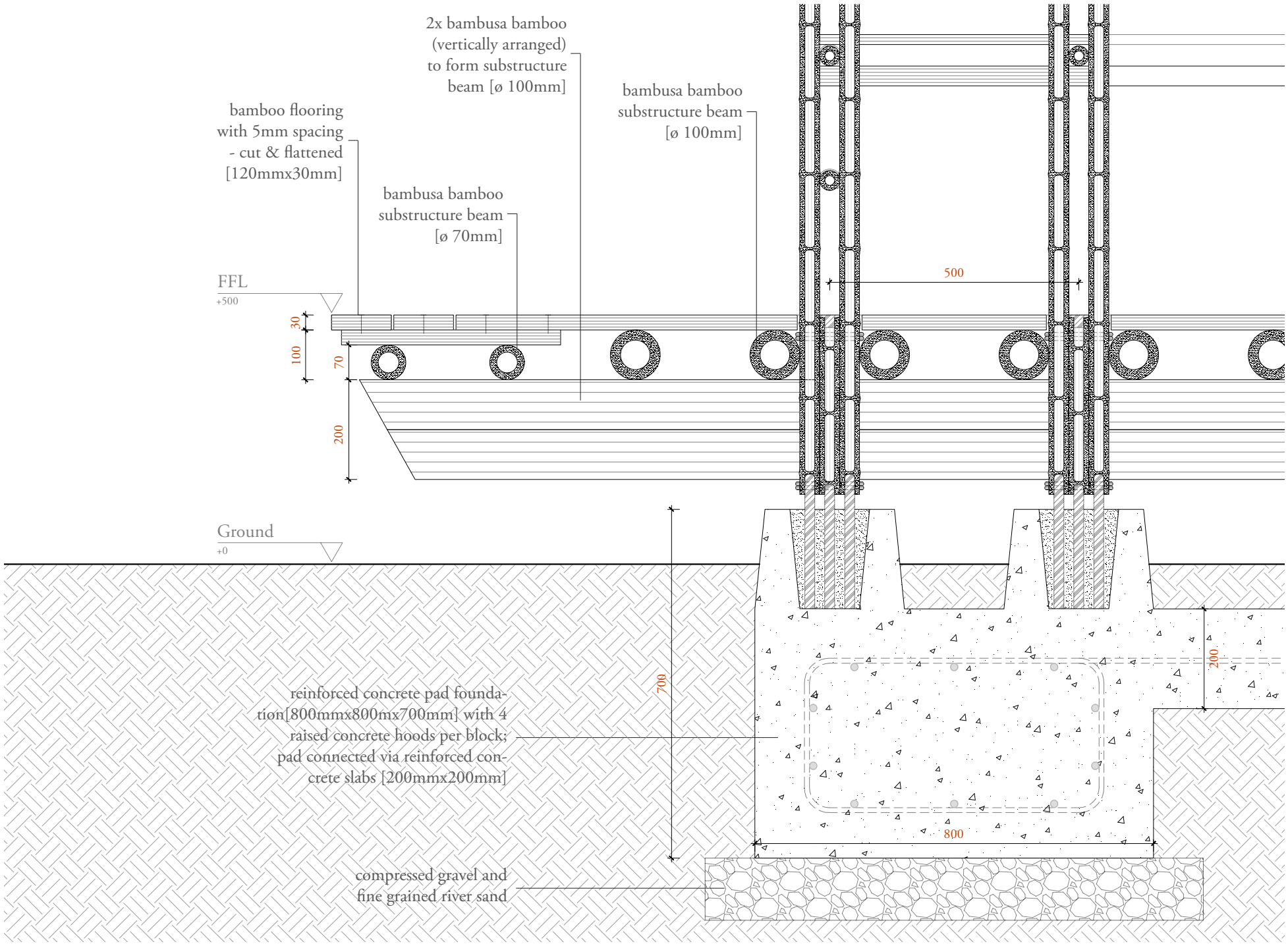
SUBSTRUCTURE

horizontal bamboo pole [ø 100] above
2x horizontal bamboo poles (vertically
attached) [ø 100mm]

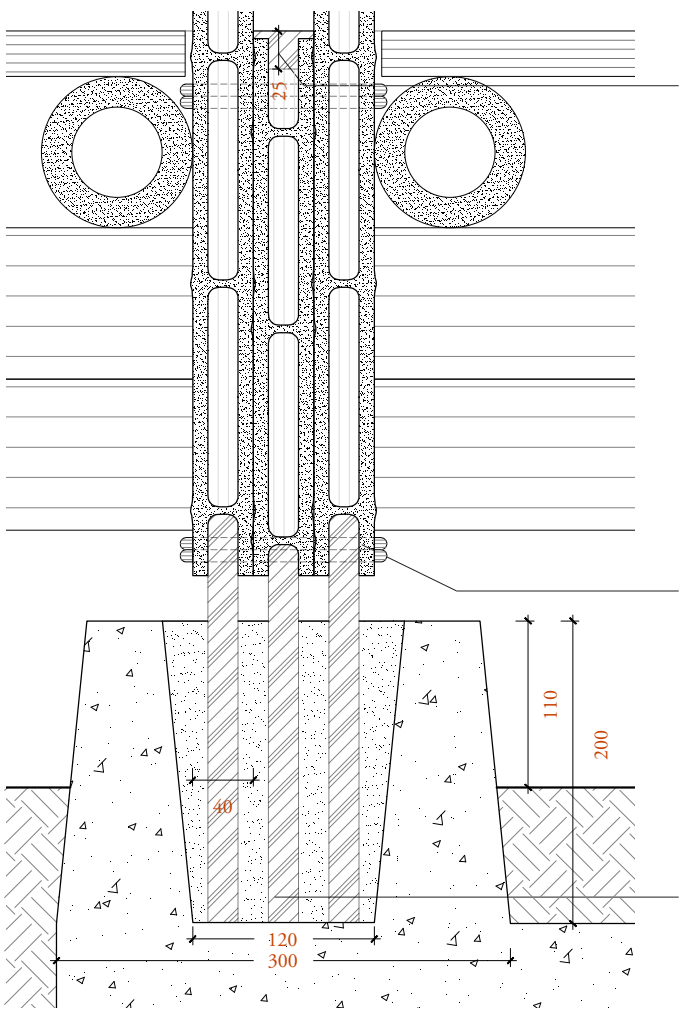
FOUNDATION

bespoke reinforced concrete pole
foundations [800mmx800mm] with 4
raised hoods per block for bamboo
columns, connected via reinforced concrete
slabs [200mmx200mm]

Structural Exploded Axonometric



SECTION AT 1:10



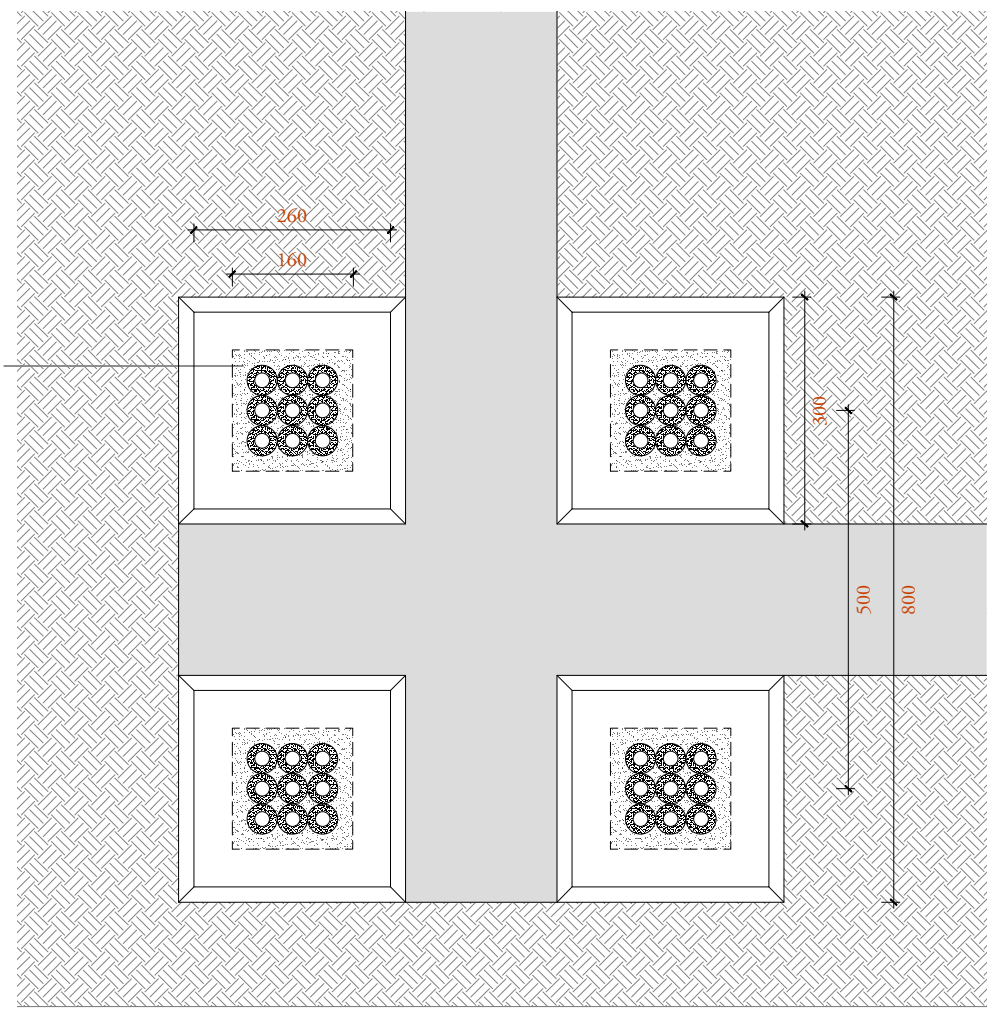
recycled plastic cap (HDPE/ LDPE/PE) footings for bamboo columns [<ø 40mm]

mortar, poured into concrete footing once bamboo column has been fitted

3x3 bambusa bamboo column [ø 40mm], up to a height of +500 above ground (in line with platform floor), with bamboo fibre lashing

recycled plastic (HDPE/ LDPE/PE) footings for bamboo columns [<ø 40mm]

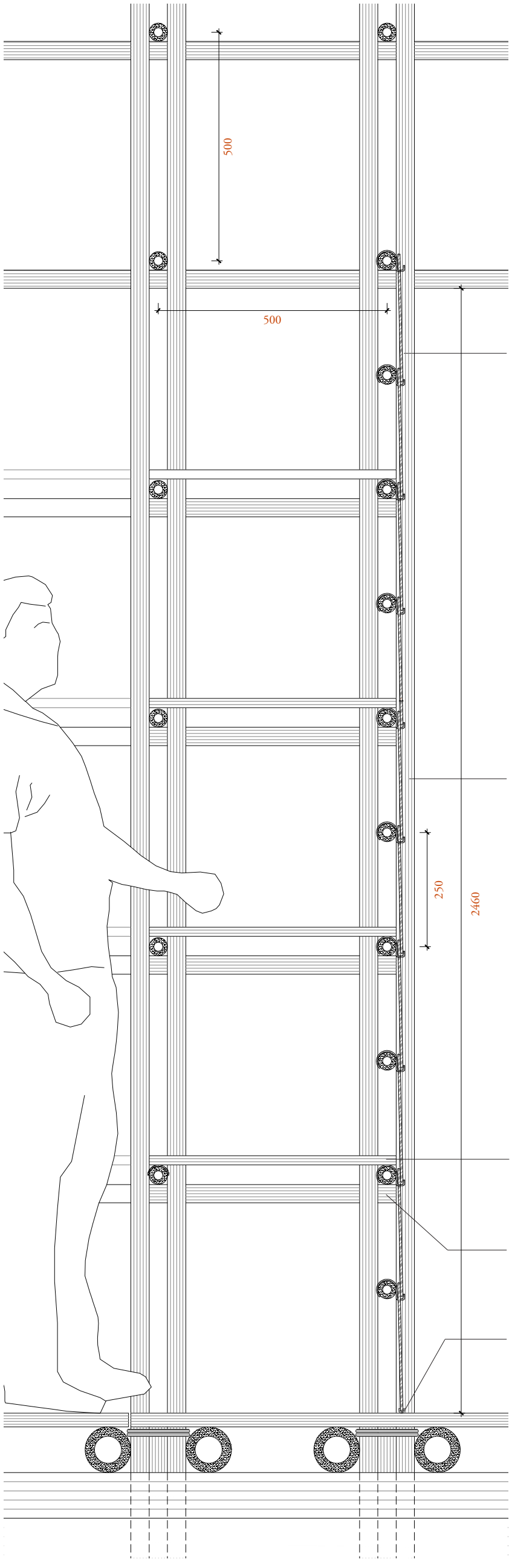
DETAIL AT 1:5



PLAN AT 1:10

Detail II: Foundation and Bamboo Footing

1:10 & 1:5



cladding tiles;
recycled plastic
(HDPE/ LDPE/ PE)
[5 mm x 250mm
x 186mm (or 92mm in
width)]

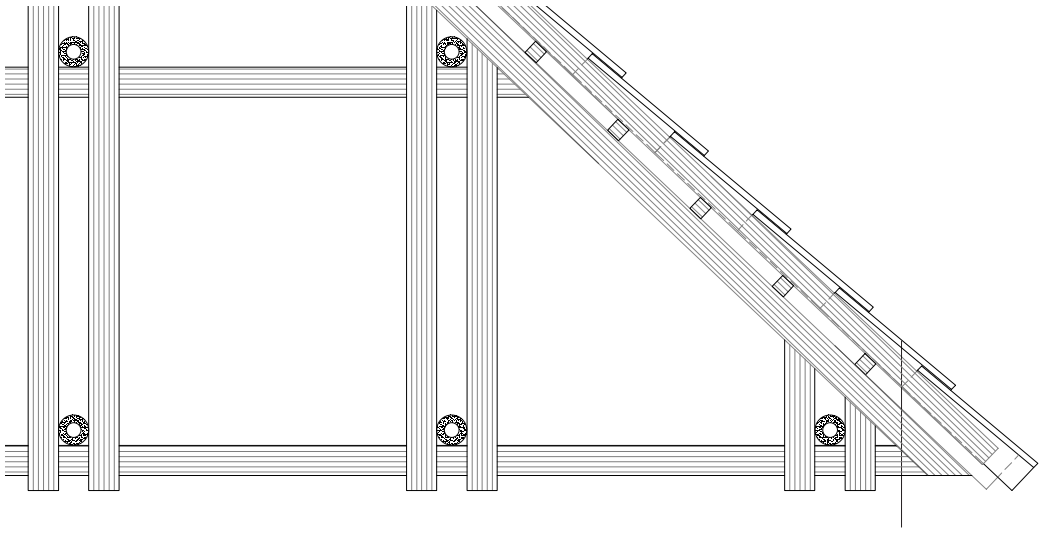
2x2 bambusa bamboo
column [ø 40mm] contin-
uation of 3x3 column with
reduced bamboo poles, but
extra pole on external side
with rattan lashing

bamboo shelve board
[20mm x 380mm]

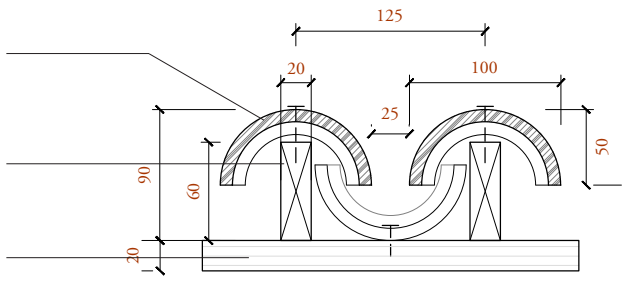
bambusa bamboo
beam [ø 40mm]

floor connection of
cladding tile (match-
ing
position of hooks in
relaition to tiles
above

SECTION AT 1:10



recycled plastic (HDPE,
LDPE, PE) roof shingle;
[200mm x 100mm x
8mm]

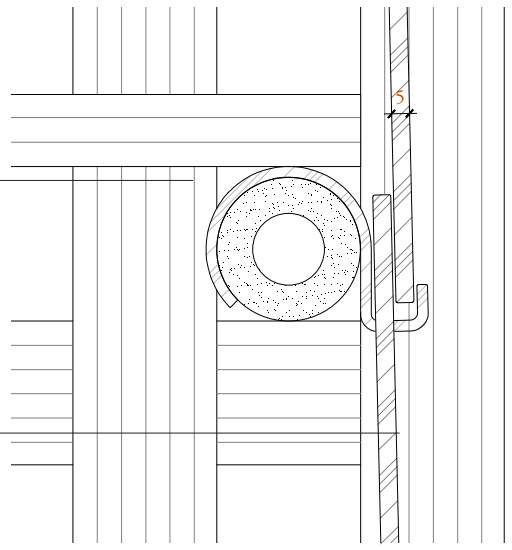


recycled plastic (HDPE,
LDPE, PE) roof shingle;
[200mmx100mmx8mm]

vertical timber batten;
[60mmx20mm]

horizontal timber
batten; [20mmx20mm]

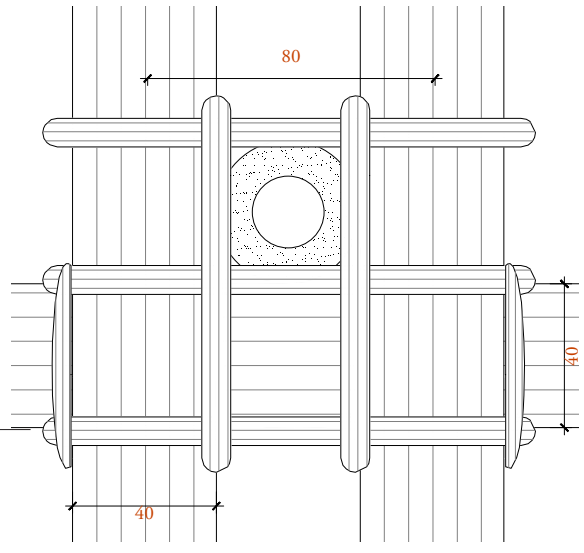
ROOF SHINGLE
CONNECTION AT 1:5



hook connection;
recycled plastic
(HDPE/ LDPE/ PE)
[4mm x 8mm,
approx. ø 40mm

cladding tiles;
recycled plastic
(HDPE/ LDPE/ PE)
[5mm x 250mm
x 186mm (or 92mm
in width)]

CLADDING CONNECTION
DETAIL AT 1:2

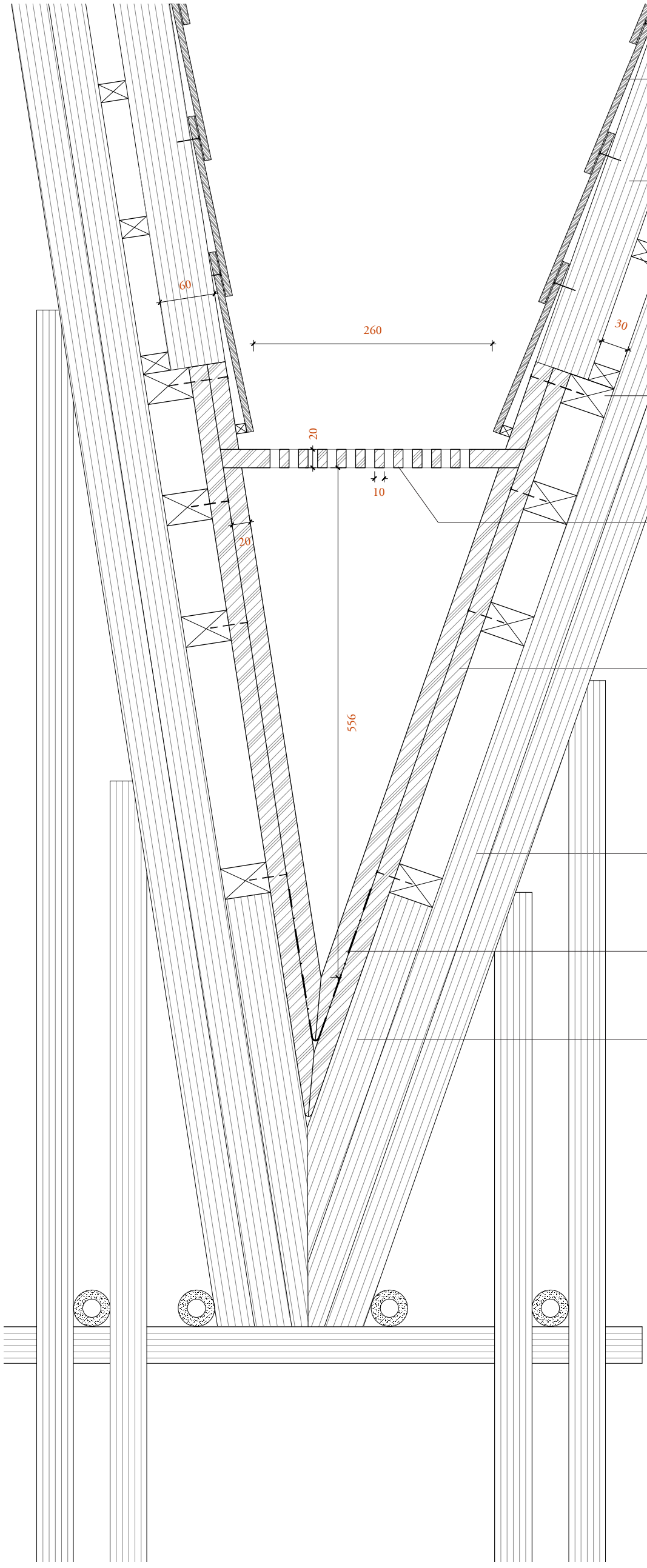


textile yarn
gained from
local textile
waste

DETAIL SCHEMATIC
BAMBOO CONNECTION AT
1:2

DETAIL IV: WALL, CLADDING & ROOF CONNECTION

1:10 & 1:2



recycled plastic (HDPE, LDPE, PE) roof shingle; [200mmx100mmx8mm]

glue laminated bambusa bamboo batten [60mmx40mm]

glue laminated bambusa bamboo batten [30mmx20mm]

glue laminated bambusa bamboo batten [50mmx30mm]

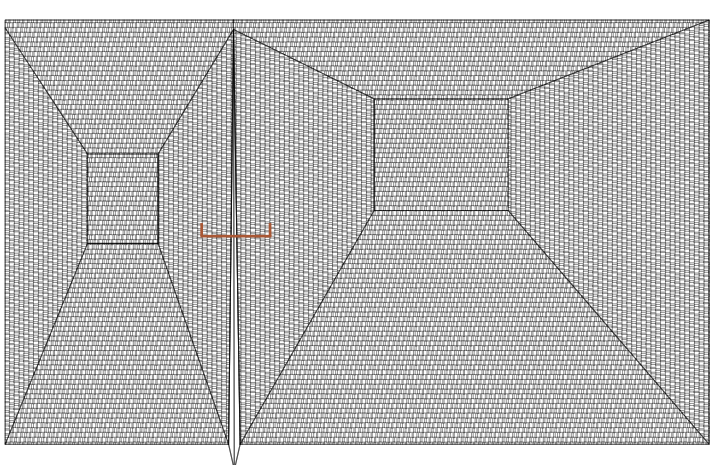
bespoke plastic grate (HDPE); with holes along the ridge to direct rainwater towards the funnel underneath [20mm thickness]

lowered, doubled rain catcher funnel (with enclosed and lifted sides to prevent rain water from entering the building) directing rain water to a garden via a 500mm overhang out of the roof [HDPE20mm thickness

double layered bambusa bamboo truss [2x ø 40mm]

water proofing membrane

bambusa bamboo truss [ø 50mm, 400mm in length]

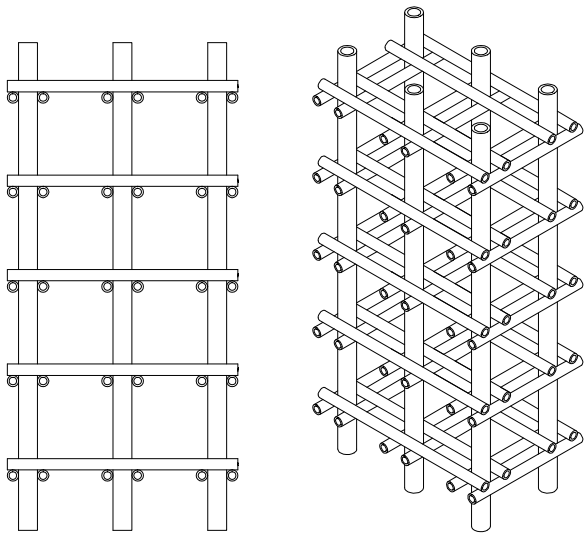


SECTION AT 1:5

DIAGRAMMATIC PLAN; SCALE LESS

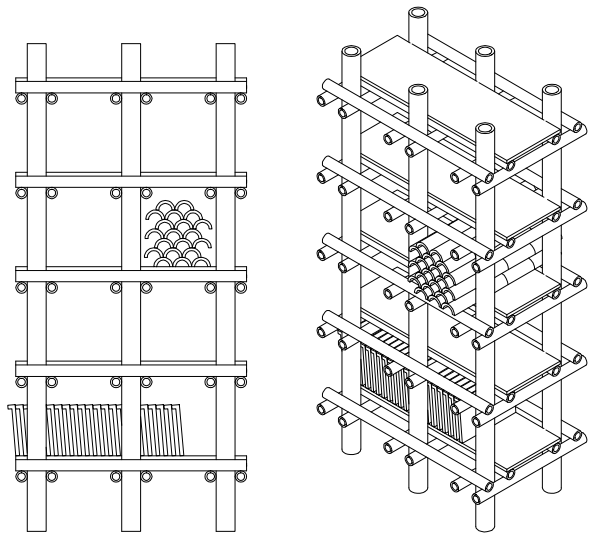
Detail III: Roof to Roof Ridge Detail

1:5



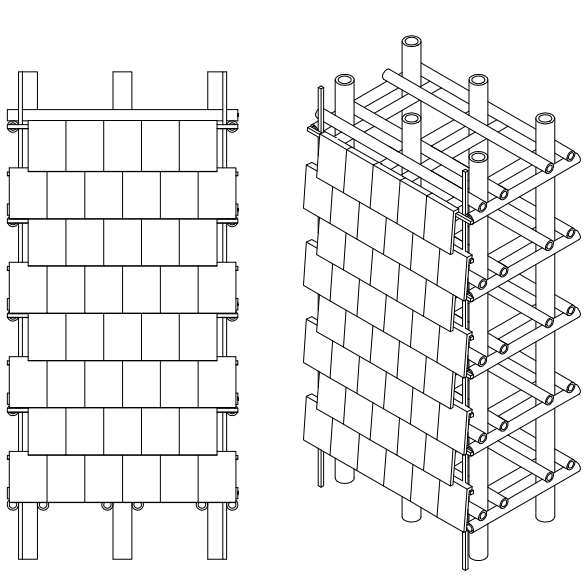
Type 1:

open structure



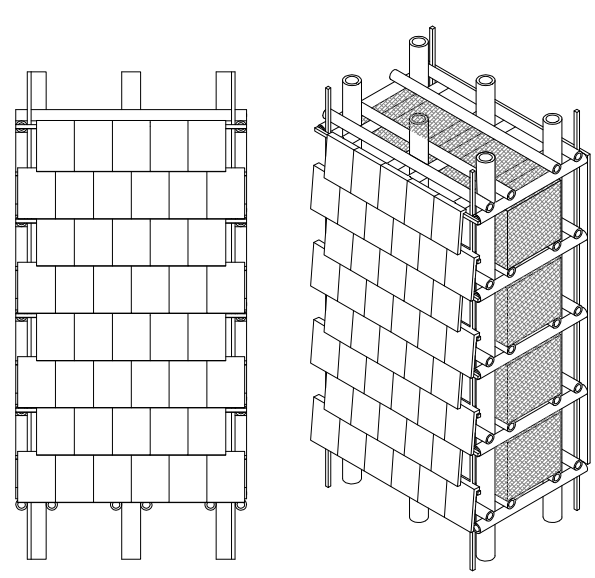
Type 2:

open structure defining space and acting as storage unit



Type 3:

clad but with open, usable storage from the inside



Type 4:

clad & fully insulated

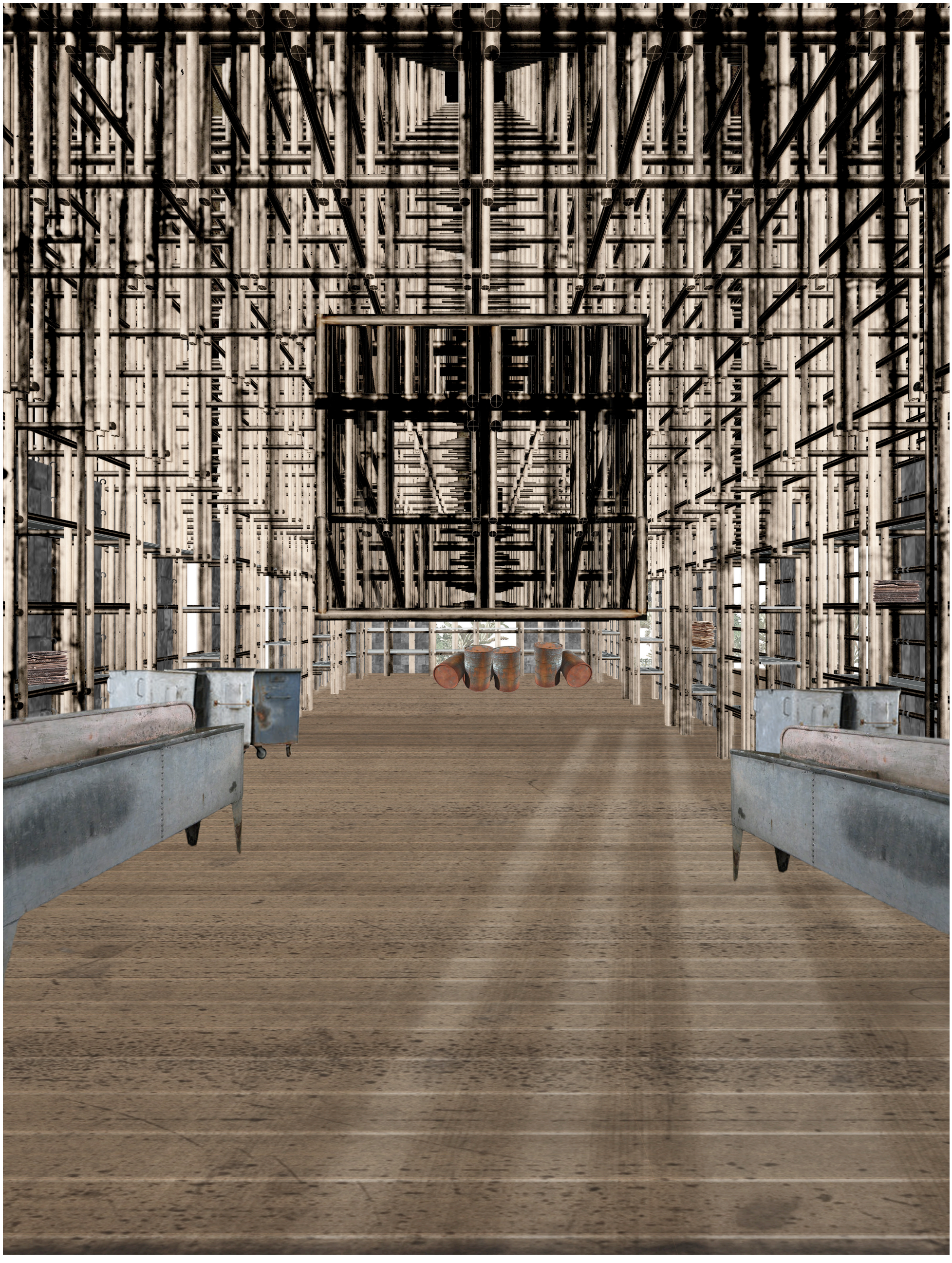
Detail VI: Wall Set Up's

1:40

Visualisations

Reception

drop off and recording of waste



Storage Room

sortimg, cleaning, drying, storing

Machinery Workshop

shredding, injecting, melting, compressing

Workshop

designing, pre and post processing