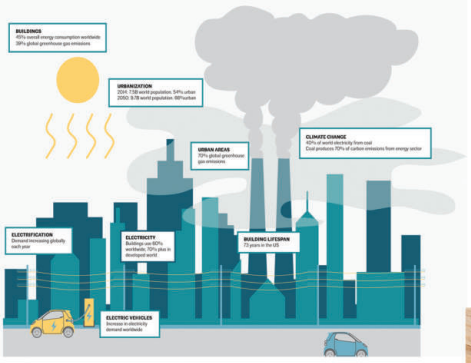
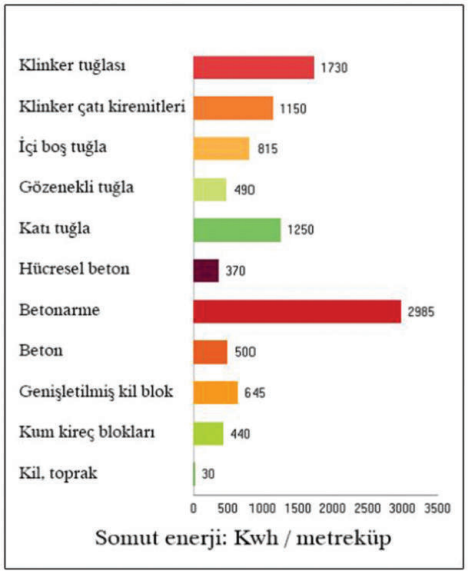


[from the last report of IPCC]
intergovernmental panel on climate change

'The urban **built environment** is responsible for **75%** of annual **global GHG** [green house gases] emissions: **Buildings** alone account for **39%**.'

'Considering that **39%** of global energy is allocated to **buildings** and **8%** of **global emissions** are due to **cement alone**, it is seen that the architectural community has an important role in tackling the biggest crisis of our time.'

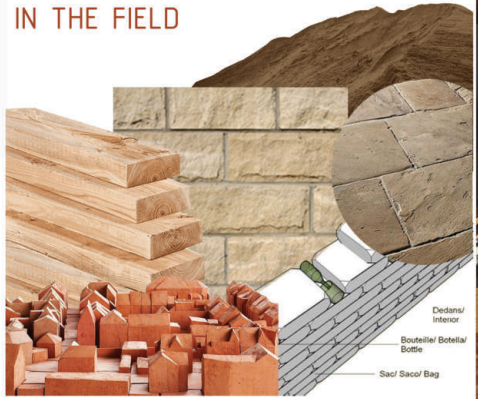


the amount of energy consumed during the production of building materials

THE AIM IS TO DECARBONIZE THE BUILT ENVIRONMENT

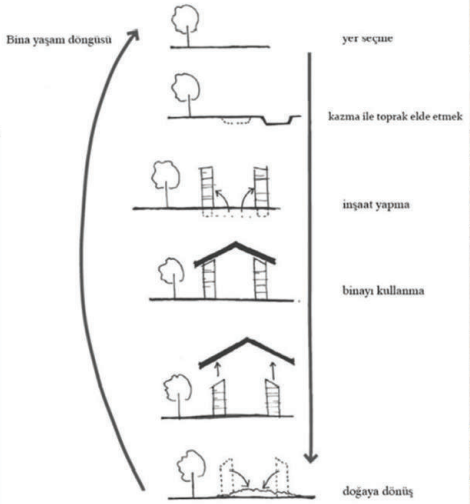
what we can do?

1. USE THE MATERIALS AVAILABLE IN THE FIELD



soil-stone-wood-clay-adobe-mud-fibrous plants-earth bag

if we use this materials-in site-what happens?



Şekil 2.22. Kil binaların yaşam döngüsü [5].

life cycle of clay buildings

‘ at the end of its life, they will **disintegrate** and become **reabsorbed** into the ground ’

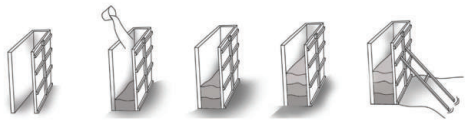
RAMMED EARTH

CONSTRUCTION PHASE

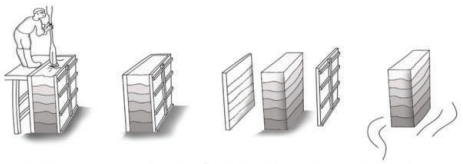
Resim 4. Toprağın Alt Katmanlardan Alınması, Elenmesi ve Kurumaya Bırakılması Süreci

Resim 7. Kalıplama tekniği

Resim 8. Karışıma Katkıların Eklenmesi ve Kalıba Alınma Süreci

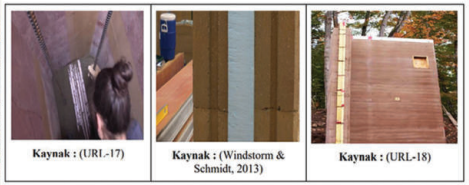


Resim 9. Karışımın Kalıba Katmanlar Halinde Dökülmesi Süreci



Resim 11. Karışımın Sıkıştırılması, Kalıp İçerisinde Beklemeye Alınması ve Kalıbın Alınması

Resim 21. BKM Köyceğiz Plato
Kaynak : Erkan Alışan Arşivi



Resim 12. Yalıtım Kullanımı

Consisting of two parallel plywood panels, the frame is then filled in with a layer of **damp earth**, which typically includes **sand**, **gravel**, **clay**, and a **stabilizer**. After this small layer is added, it is compressed into around half its original volume using a **pneumatic tamper**. This process is repeated iteratively until the frame is filled with compacted earth, allowing the wood to be removed and a free-standing **rammed earth** wall to remain.

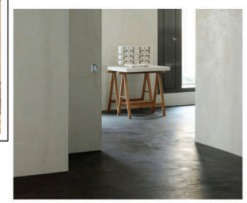
POTENTIALS & LIMITS

sustainable+
low co2 emission+
0 energy consumption for+ trasnportation
low cost+
easy to build+
no need for qualified ppl+
aesthetic appearance+
good thermal insulation+
good sound insulation+
fire resistance+
cheap+

-thich n heavy walls
-water sensitivity
-needs additional elements to resist lateral loads

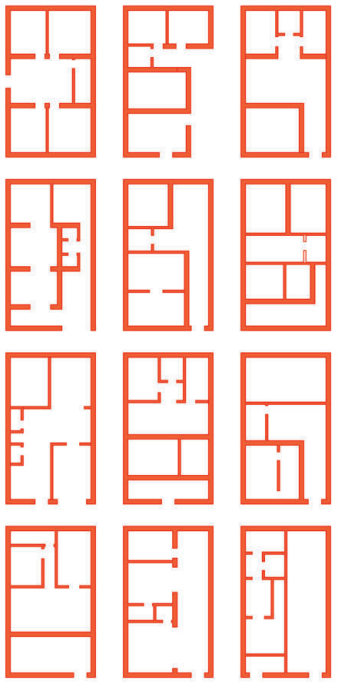
SOLUTIONS

?To avoid from the ground water, it should rise on the concrete or stone foundation
? The walls can be protected from the rain by an overhanging roof
?Layers of fibreglass mesh can be added between the layers of compacted earth to help providing structural support
? Natural waterproof lime plaster can be applied in wet areas



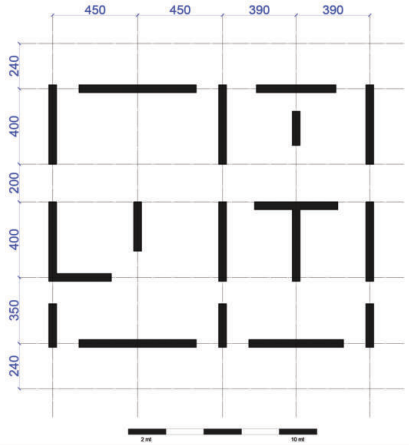
?Gypsum and lime can be added to the mix to increase the water resistance of the compacted soil

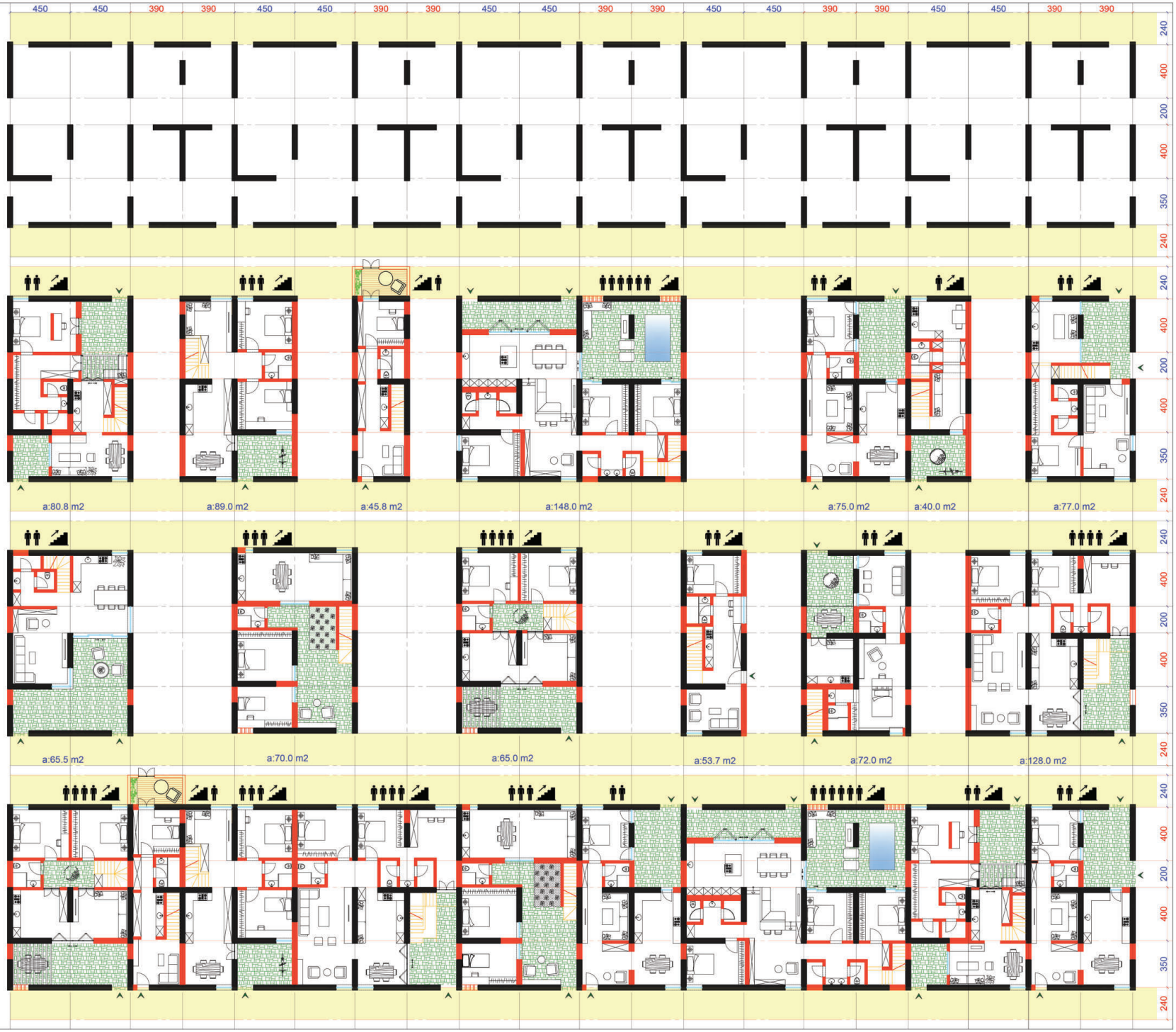
THE PROCESS OF FINDING SUPPORT SYSTEM

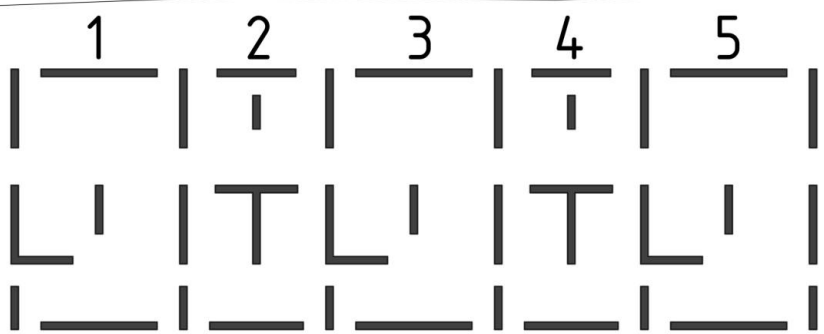


OVERLAPPING ALL THE WALLS

FINAL SUPPORT SYSTEM







support system for five house

FUTURE EXTENSIONS
MARGINS&UPPER FLOORS

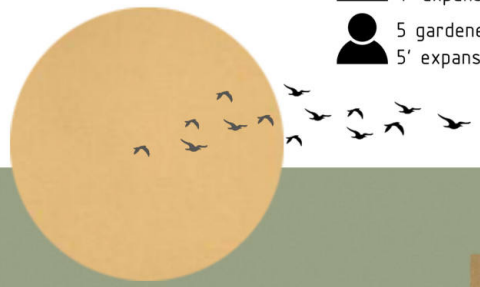
1 small fam.
1' expansion: upper floor/terrace

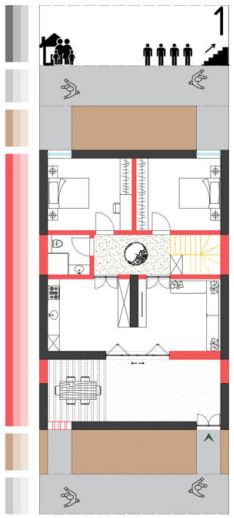
2 photographer couple
2' expansion: upper floor/ photo studio

3 teacher/single
3' expansion: upper floor/married couple

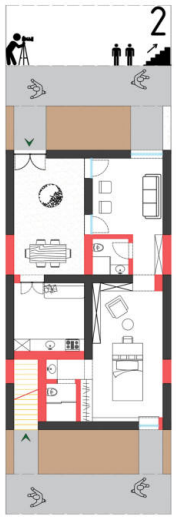
4 big fam.
4' expansion: buying land from neighbor

5 gardener/uses 2nd floor as roof garden
5' expansion: turn into a commercial/ cafe

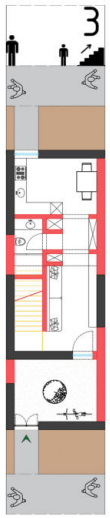




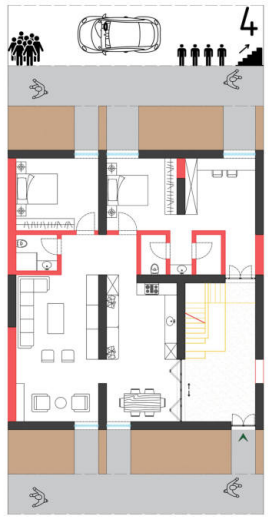
a:65.0 m2
ground floor



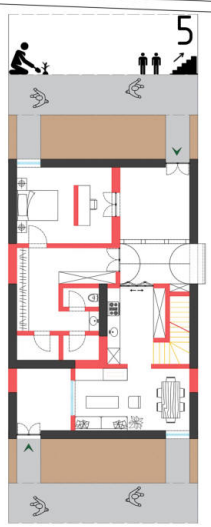
a:72.0 m2
ground floor



a:40.0 m2
ground floor

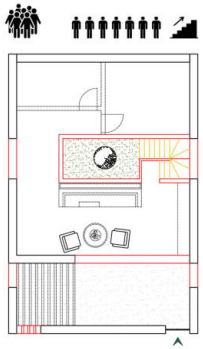


a:128.0 m2
ground floor

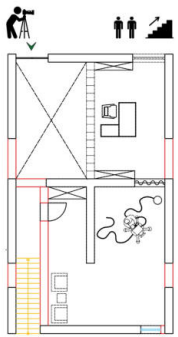


a:80.8 m2
ground floor

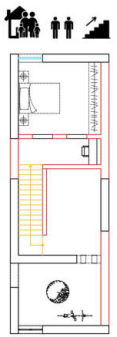
road pavement margins houses



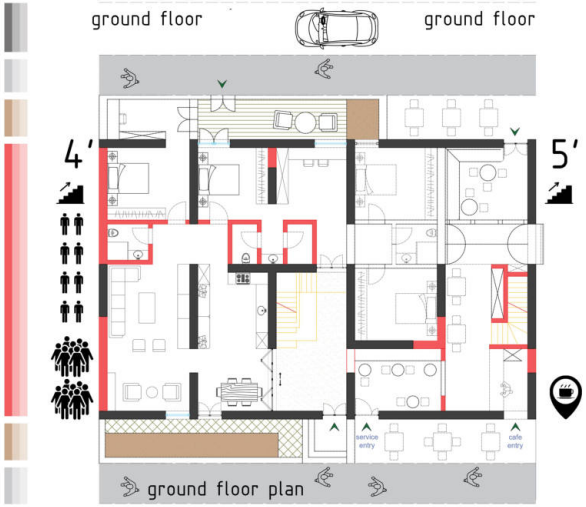
1'
upper floor plan

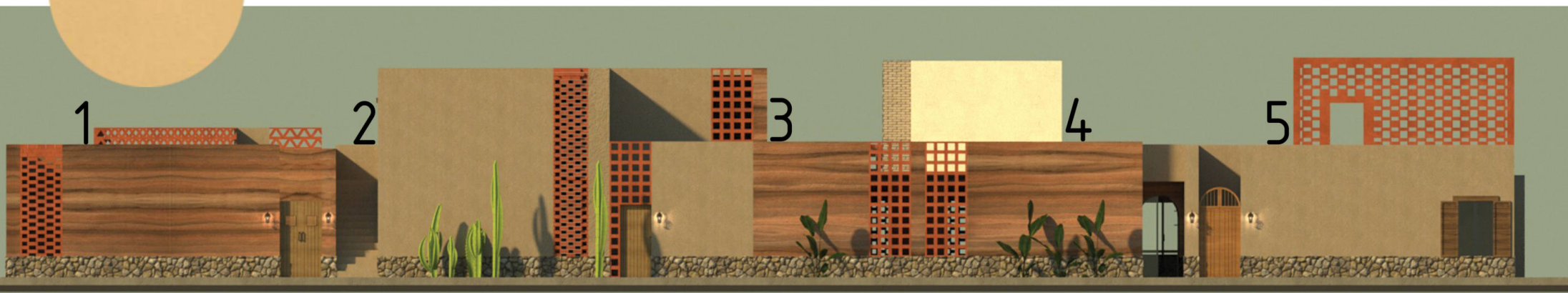


2'
upper floor plan



3'
upper floor plan





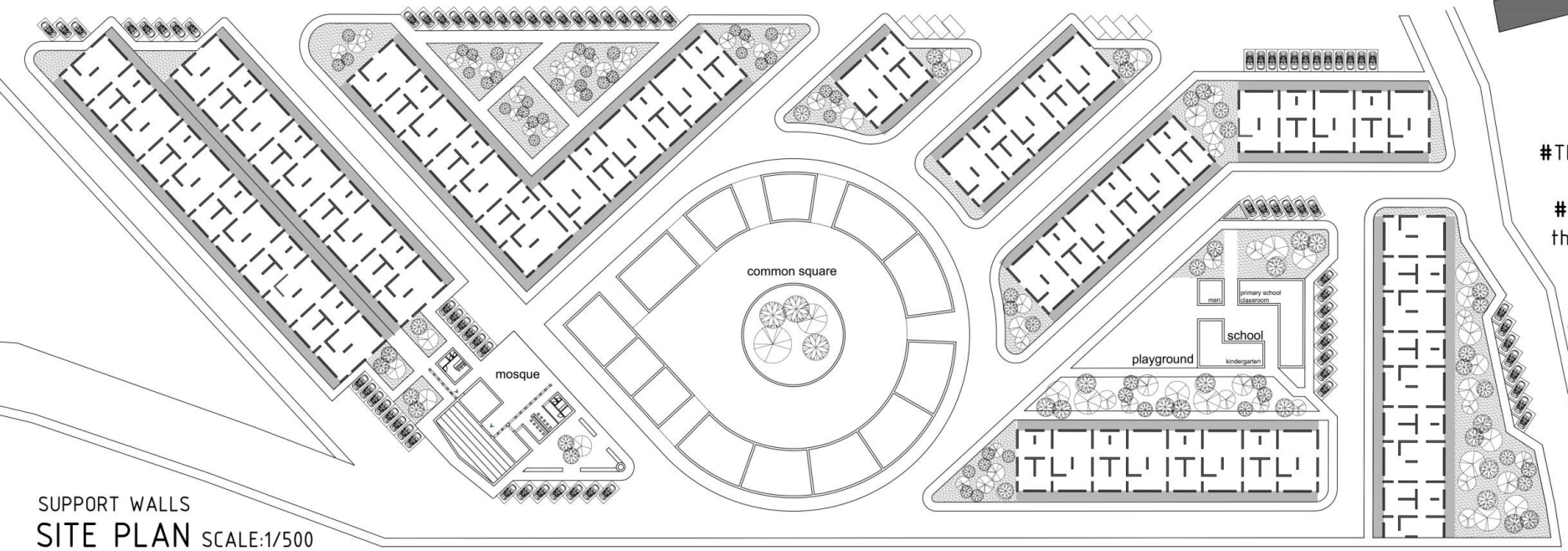
TÜRKİYE SYRIA PROJECT AREA AIN DIWAR BRIDGE/ARCHEOLOGICAL SITE





SUPPORT WALLS ON SITE

MARGINS LANDSCAPE HISTORICAL BRIDGE REMAINS

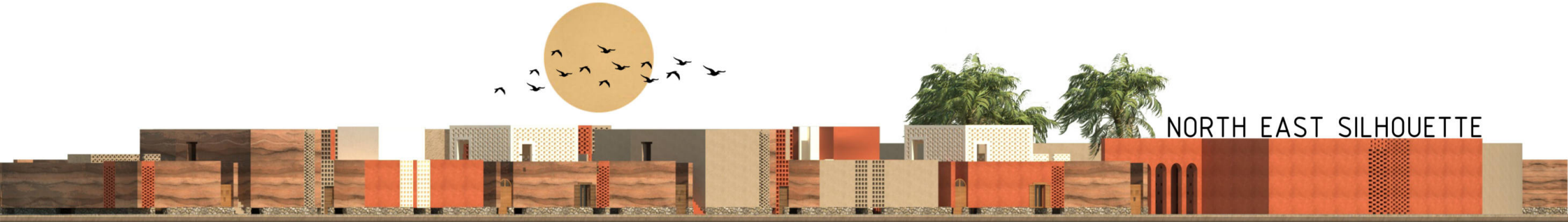


SUPPORT WALLS
SITE PLAN SCALE:1/500

AİN DİWAR BRIDGE

archeological site

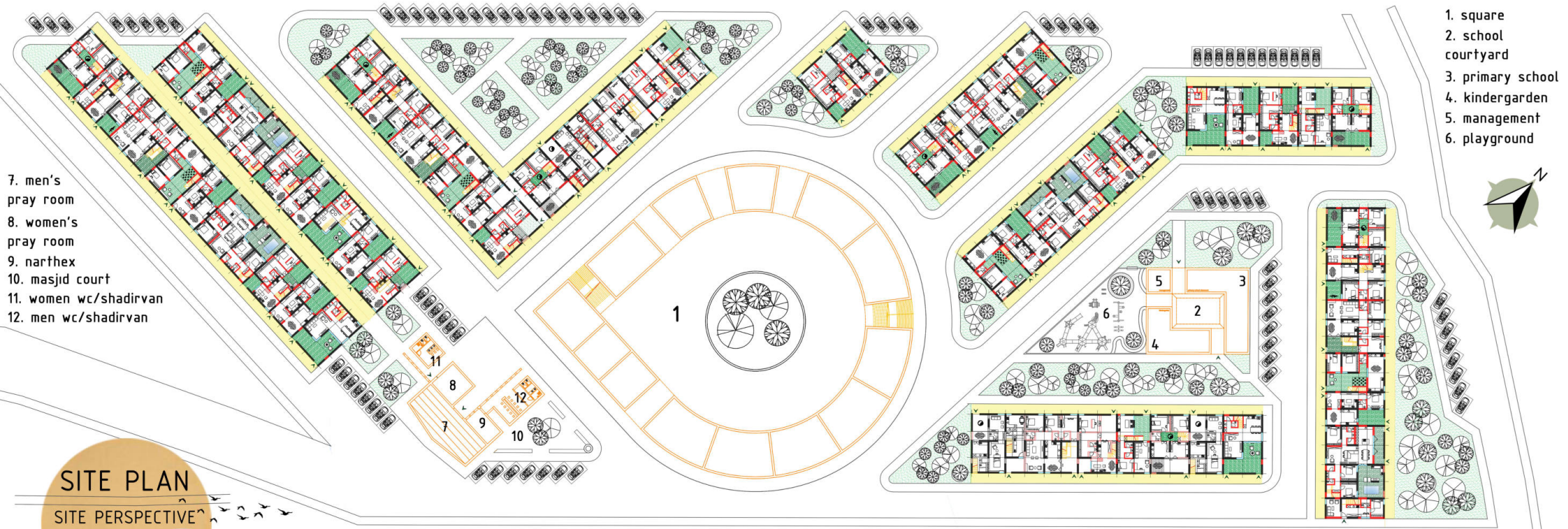
#The **Tigris** flows in the distance
#Ruined masonry **arch bridge**
#Built in the 2nd century AD by the **Romans** to give them access to Upper Mesopotamia
#Refurbished by the **Seljuks** and **Arabs** in 12-13th centuries
#Stone carvings on the bridge depicts astrological figures, zodiac signs and cavalryman



NORTH WEST SILHOUETTE

margins | green areas | support walls | infill walls | inner courts/patios | other buildings (commercial/educational/religious)

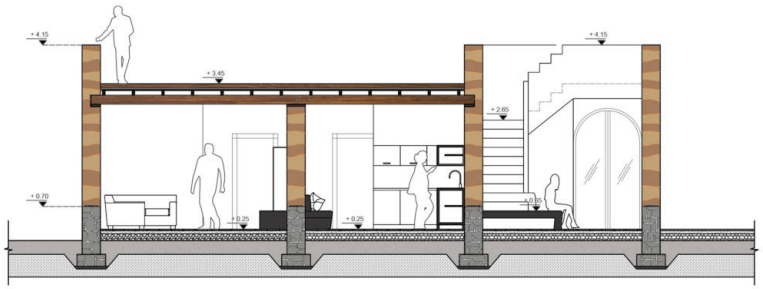
1. square
2. school courtyard
3. primary school
4. kindergarden
5. management
6. playground
7. men's pray room
8. women's pray room
9. narthex
10. masjid court
11. women wc/shadirvan
12. men wc/shadirvan



SITE PLAN

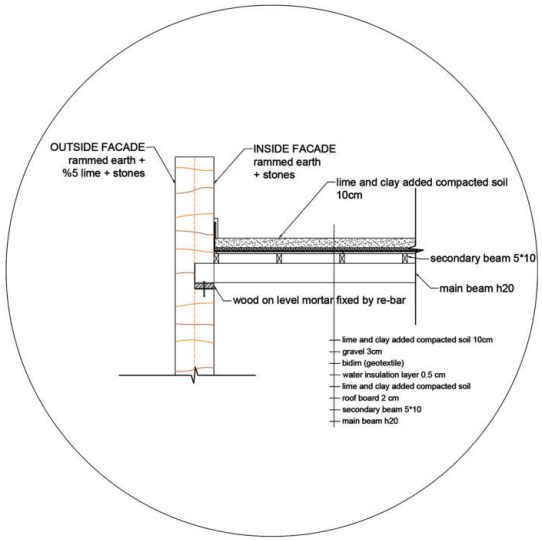
SITE PERSPECTIVE

GROUND FLOOR PLAN

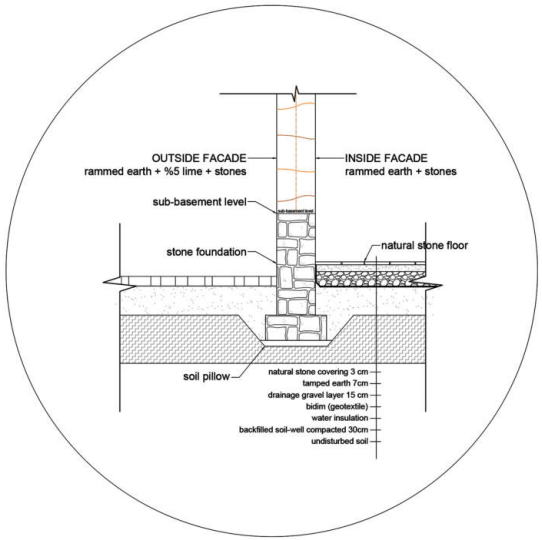


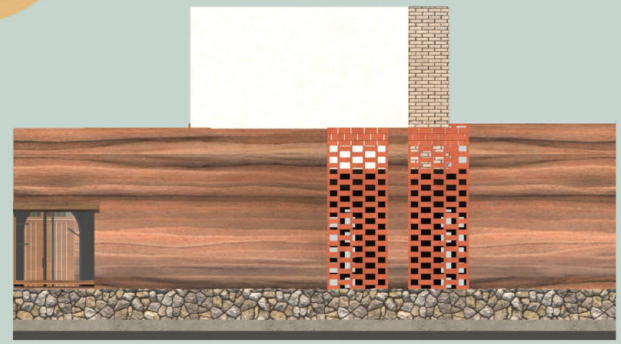
SECTION

DETAIL 1

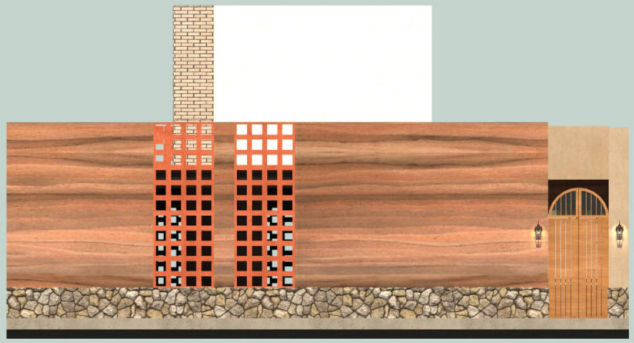


DETAIL 2





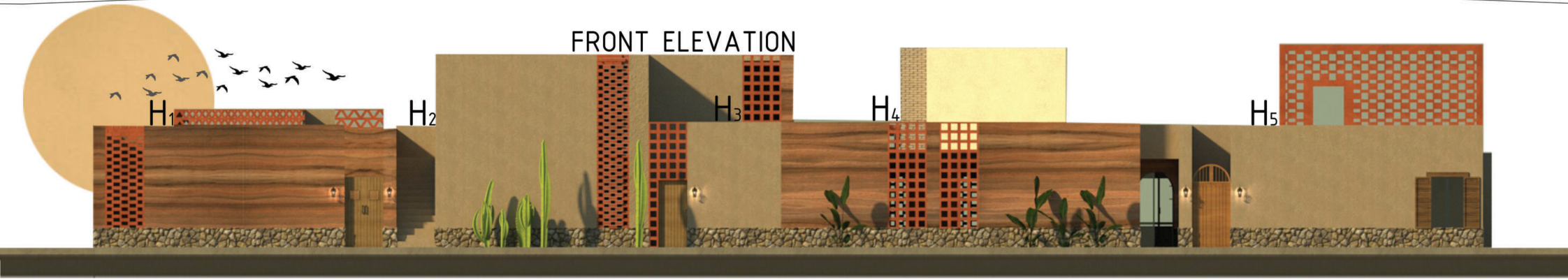
BACK ELEVATION



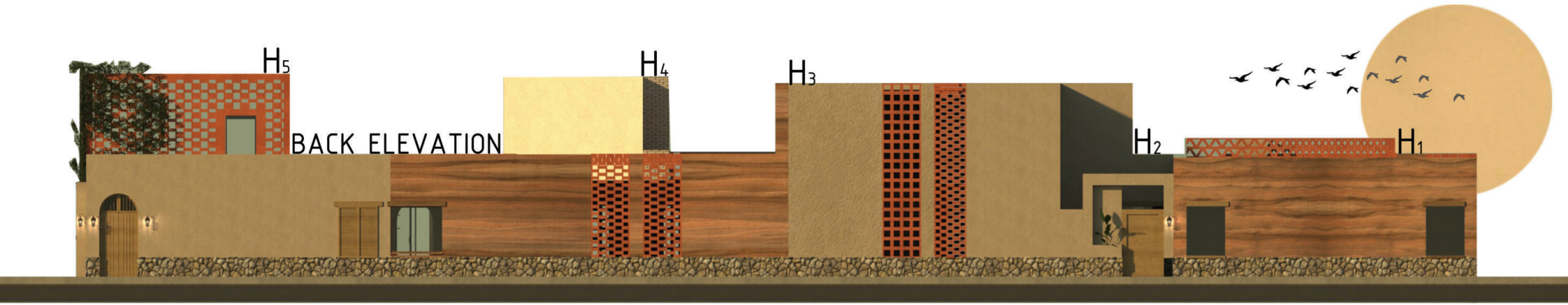
FRONT ELEVATION

INNER COURT

FRONT ELEVATION



BACK ELEVATION



MASJID

1. MASJID
2. COMMON SQUARE /COMMERCIAL BUILD.
3. SCHOOL AREA & PLAYGROUND
4. FINISHED BUILDINGS
5. UNFINISHED PART /SUPPORT WALLS
6. FARMS