



M.V.P. SAMAJ's
COLLEGE OF ARCHITECTURE AND
CENTRE FOR DESIGN NASHIK

STUDY TOUR

Chanderi

2017-18



Preface

Students of Architecture need interdisciplinary methods of learning, wherein they learn through different methods- lectures, workshops, studios and tours. Integration of these methods are addressed in the curriculum at various years.

Settlement study forms a major part of the life of Second Year Architecture students. Taking architectural design beyond the classroom, settlement tours form the ideal method for learning of an undergrad student. The all-encompassing nature of architecture is explored in these tours. Settlement tours in the initial year's aim at appreciation of the construction type, context and materials. The later years of the settlement study address the complex issues of formation of urban fabric. The overlays about the chosen semi urban settlement are studied and analyzed by students.

The study of settlement prescribed by curriculum, states the documentation of settlement with respect to lifestyle of occupants, climatic and topographical responses, semipublic / public and associated architectural character.

This documentation is a compilation of one of the study tours carried by MVP College of Architecture Second year B. Arch students (2017-18) as a part of Architectural Design studio. The culmination of study tour is the analysis and presentation by students. A relevant design problem is identified in the same context so as the students can apply their findings of tour in the design.

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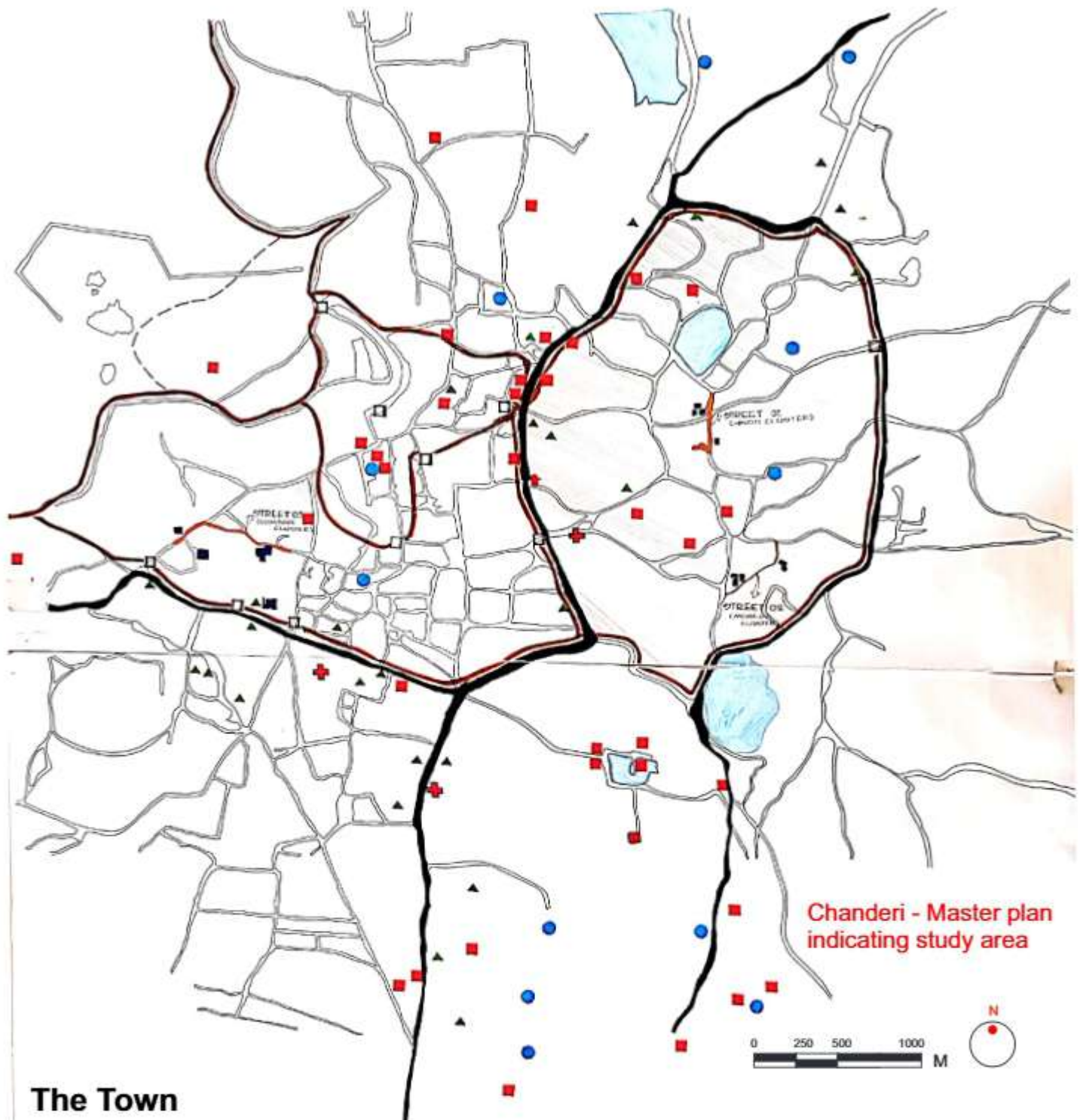
Introduction

Nestled in the Vindhya range and situated in the Bundelkhand region of Madhya Pradesh, the town of Chanderi is composed of a labyrinth of lanes full of archaeological remains that bear testimony to its long and eventful past.

Its history is inextricably linked to myth and folklore. One legend claims that the town of Chanderi was established by Lord Krishna's cousin, King Shishupal, in the early Vedic period. Another attributes its foundation to King Ched, who is said to have ruled over this region around 600 BC. The most illustrious of all legends, however, is 'The Miracle of Water', witnessed by King Kirtipal of the Gurjara-Pratihara dynasty, spurring him on to shift his capital from old Chanderi (Boodhi Chanderi), around 1100 AD, to the present town of Chanderi. It is believed that Kirtipal had been cured of leprosy by the waters of a spring he had chanced upon during a hunting expedition. This led the king to move his capital to the place which he now considered sacred. The same spring is

said to be the source of the Parmeshwar pond.

In the 8th century AD, the Gurjara-Pratihara dynasty established its sovereignty over Boodhi Chanderi, making it a sizeable township complete with all the regalia befitting a town. Not much is known about the Gurjara-Pratihara kings of Chanderi, other than the information yielded by an inscription found at Chanderi. It mentions the names of 13 Gurjara-Pratihara kings who ruled over Chanderi, but only describes the life of King Kirtipal, the seventh king, in detail. According to this inscription, King Kirtipal constructed three entities bearing his name — Kirti Durg, Kirti Narayana and Kirti Sagar. Kirti Narayana referred to a Vaishnav temple built either inside the precincts of the fort or near the fort, which, unfortunately, no longer exists. Kirti Sagar alludes to the tank near the fort.



Chanderi - Master plan indicating study area

The Town

Chanderi is a town of historical importance in Ashoknagar district of the state of Madhya Pradesh in India. Chanderi is famous for several Monuments of the Bundela Rajputs and Malwa sultans.

The town of Chanderi is home to Hindus, Muslims and Adivasis; the culture of each being distinct from the other and yet very similar in certain respects. Their constant intermingling has fostered the creation of a composite culture solemnized by communal harmony. Spread over an area of 18 square kilometres, the town of Chanderi is divided into two broad sections – Andar Shaher and Bahar Shaher, each consisting of a labyrinth of settlements interspersed with architectural masterpieces in the form of palaces, mosques, temples and havelis. Andar Shaher used to be enclosed within one of the seven fortification walls of Chanderi. It is the oldest inhabited area and the inner sanctum of the city as it houses most of the city's temples.

Location & Landscape

Situated in northern Madhya Pradesh, India, Chanderi lies on the 24°42' North latitude and 78°8' East longitude. The town itself lies on the edge of the Malwa plateau at 360 metres above sea level. It is located in a trough surrounded by hills of the Vindhya Range that divides the Gangetic Plains of north India from central India. The Betwa River flows close to Chanderi, as does its tributary, The Urr. The Chevli, a further tributary of The Urr, flows through the town.



Geography

Chanderi is elevated at 450 m.

Most of the hills surrounding Chanderi stand 500m High.

The hills cause Orographic rainfall.

North – Lakshar plain, Shivpuri plateau

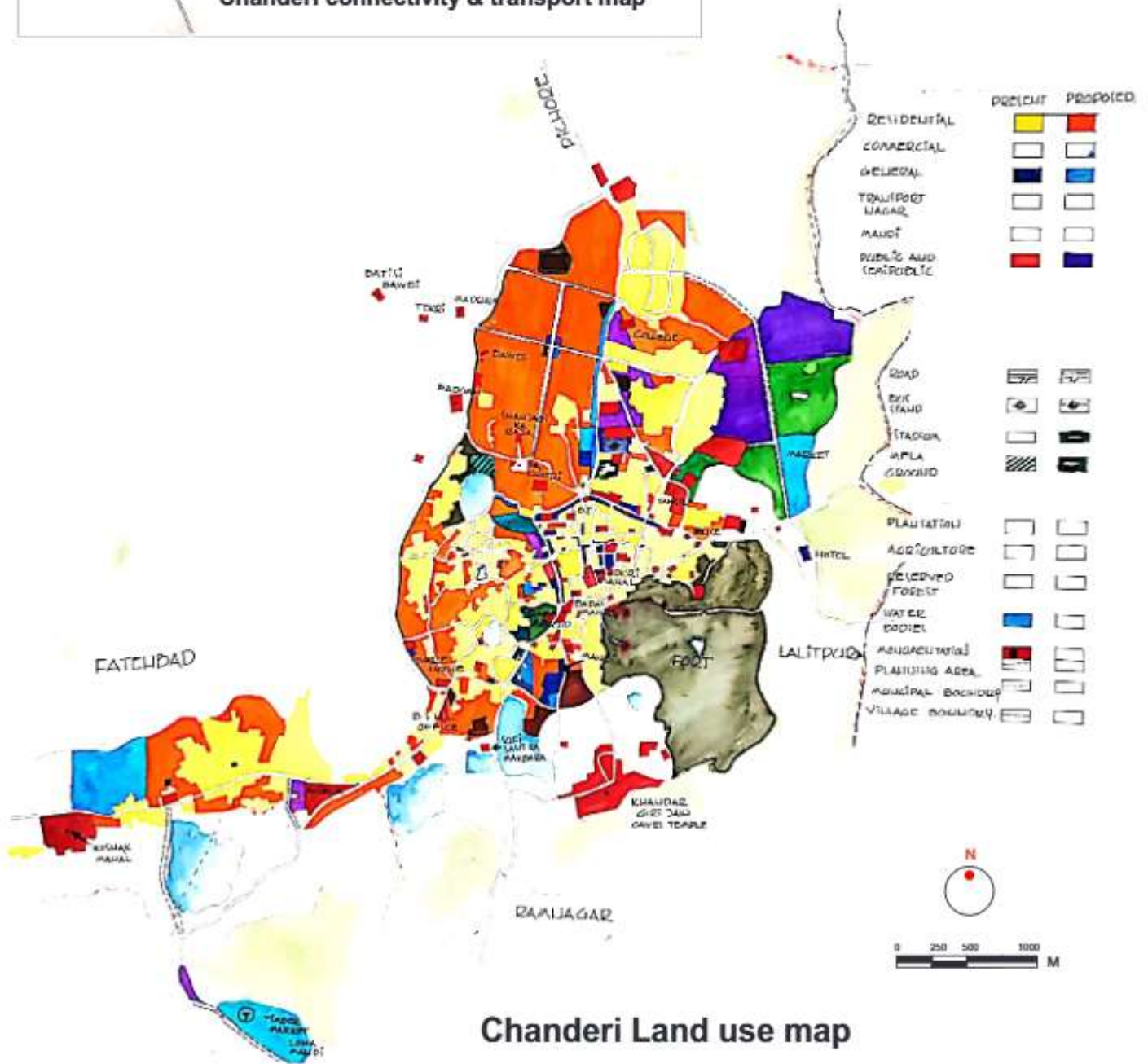
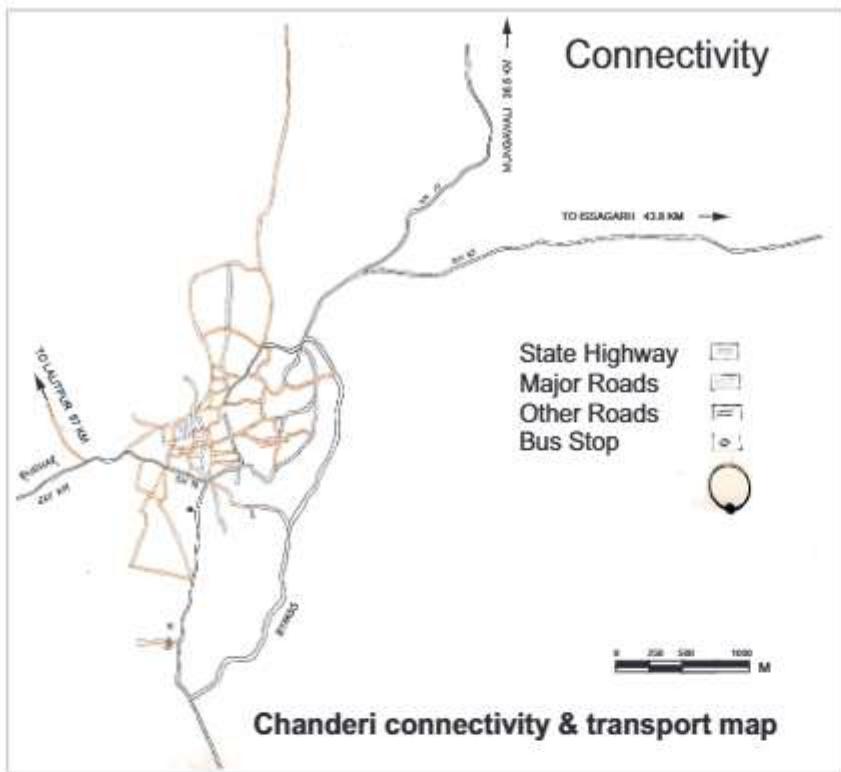
South – Narmada Valley, Betwa river, Sagar Plateau

East – Rewa Plateau

West – Parbati river.

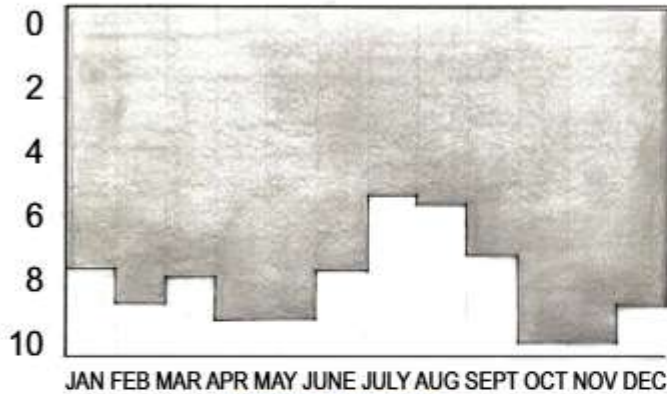
- Kurwasa chanderi road
- Chanderi city bypass road



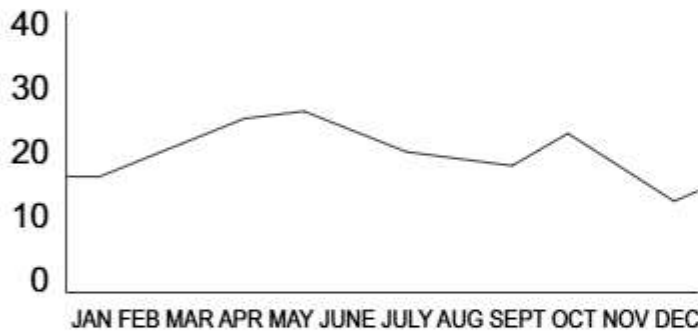


Climate

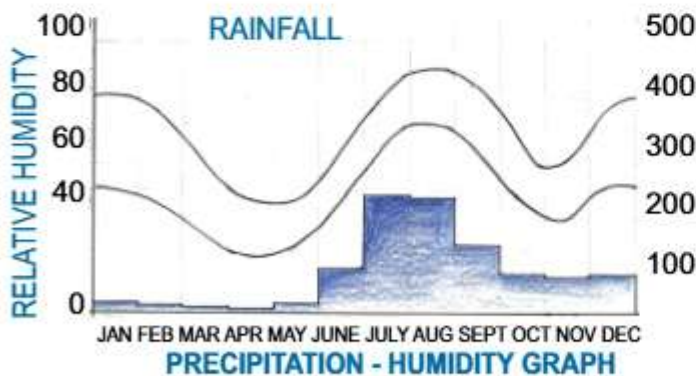
The winters in Chanderi are pleasant with the temperatures ranging from 18°C – 5°C and light occasional rainfall. They last from November till February .The summers, starting in March, are very hot and dry and the temperature during the day can go as far up as 49°C. The monsoon rains begin in June which not only bring welcome respite from the heat but are also crucial for agriculture. The temperature during the rainy months is also pleasant, with relatively low humidity levels and cool breeze.



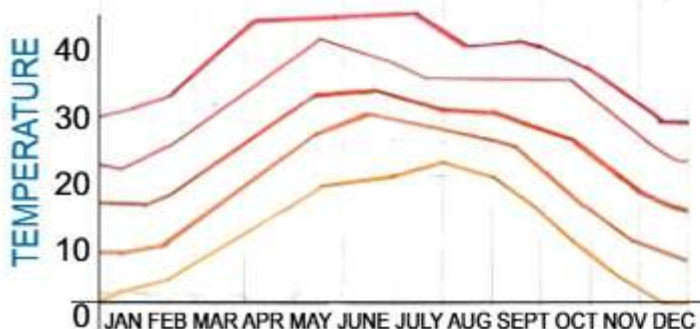
SUNSHINE GRAPH



RADIATION GRAPH



PRECIPITATION - HUMIDITY GRAPH



Sunshine

Sky conditions markedly vary with the seasons. During monsoons the sky is heavily overcast and dull. Dry seasons, the sky is clear with dark blue colour and during hot and dry spell sky is brighter with frequent dust haze.

Radiation

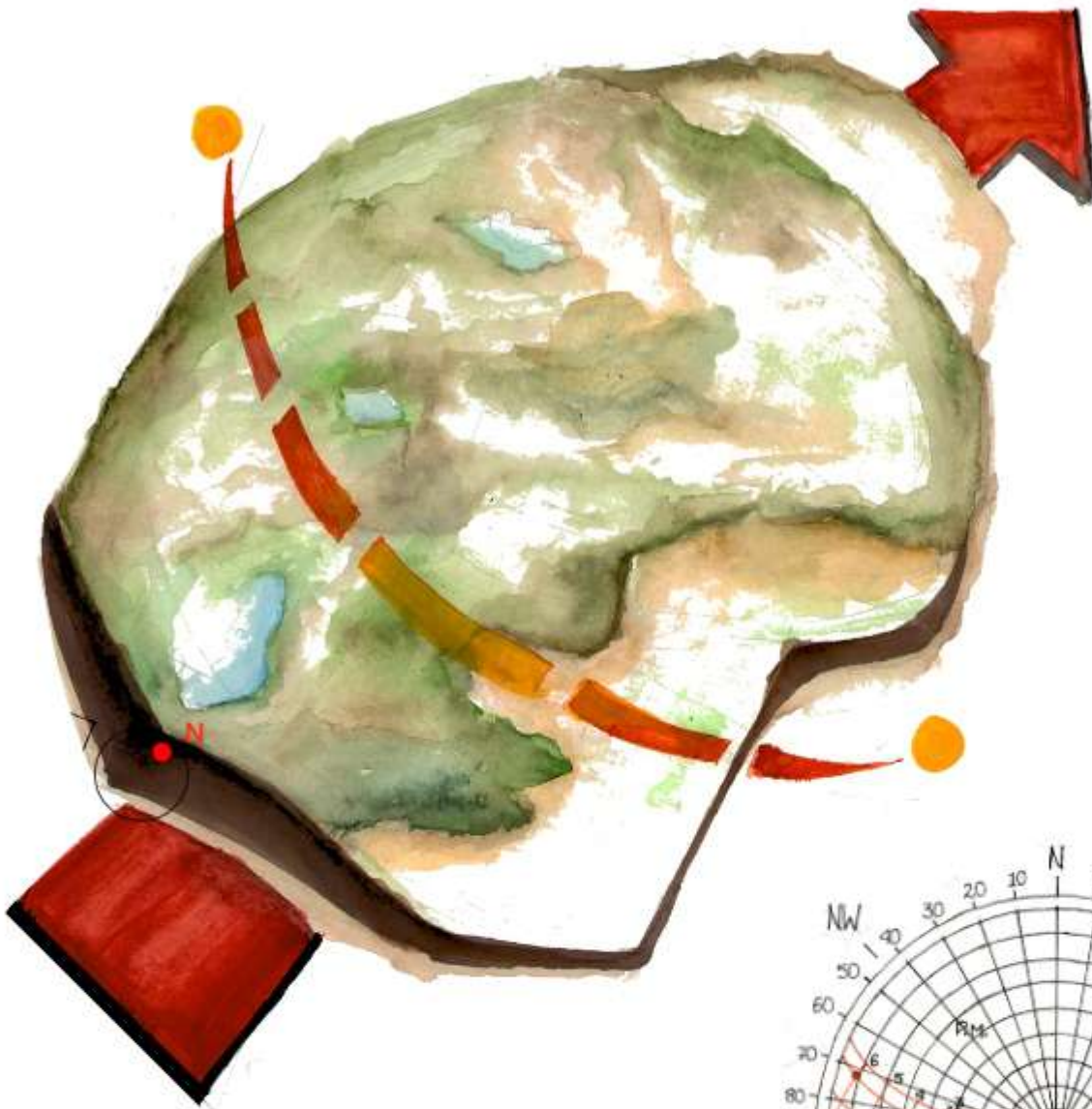
Solar radiation alternates between conditions found in the warm-humid and hot-dry desert climates.

Humidity

During dry periods the relative humidity is low at 20-55 % with vapour pressure of 1300 – 1600 n/m². During wet periods the relative humidity rises to 55-90 % with the vapour pressure of 2000 – 2500 n/m².

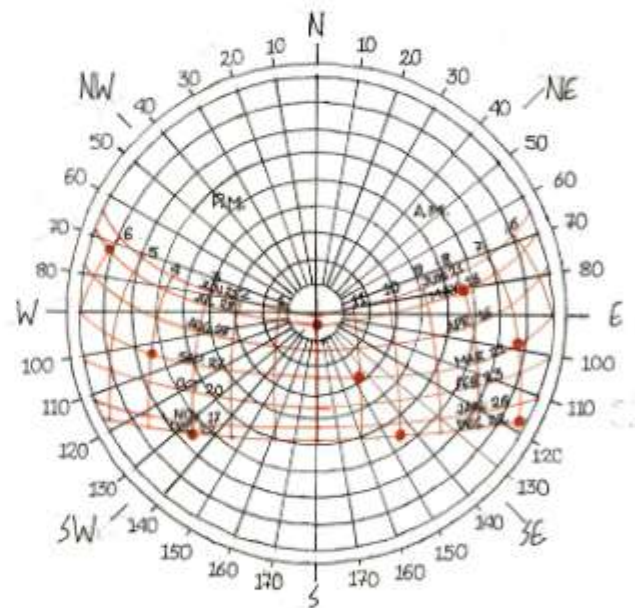
Temperature

Diurnal mean range Hot and dry – 11 – 22 Degree C. Warm and humid – 3 -6 Degree C. All the months partially lie in comfort zone expect August.

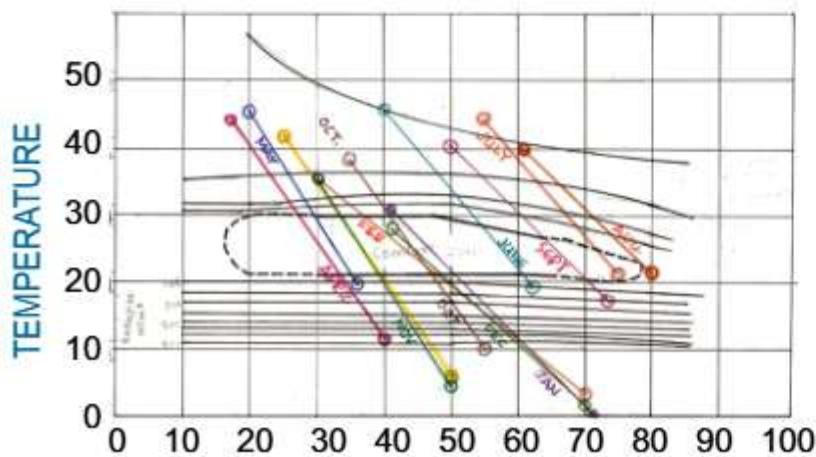


Topographical Analysis of Chanderi

Relative humidity
 All the months are
 Partially lies in comfort
 Zone expect august.



Sunpath diagram



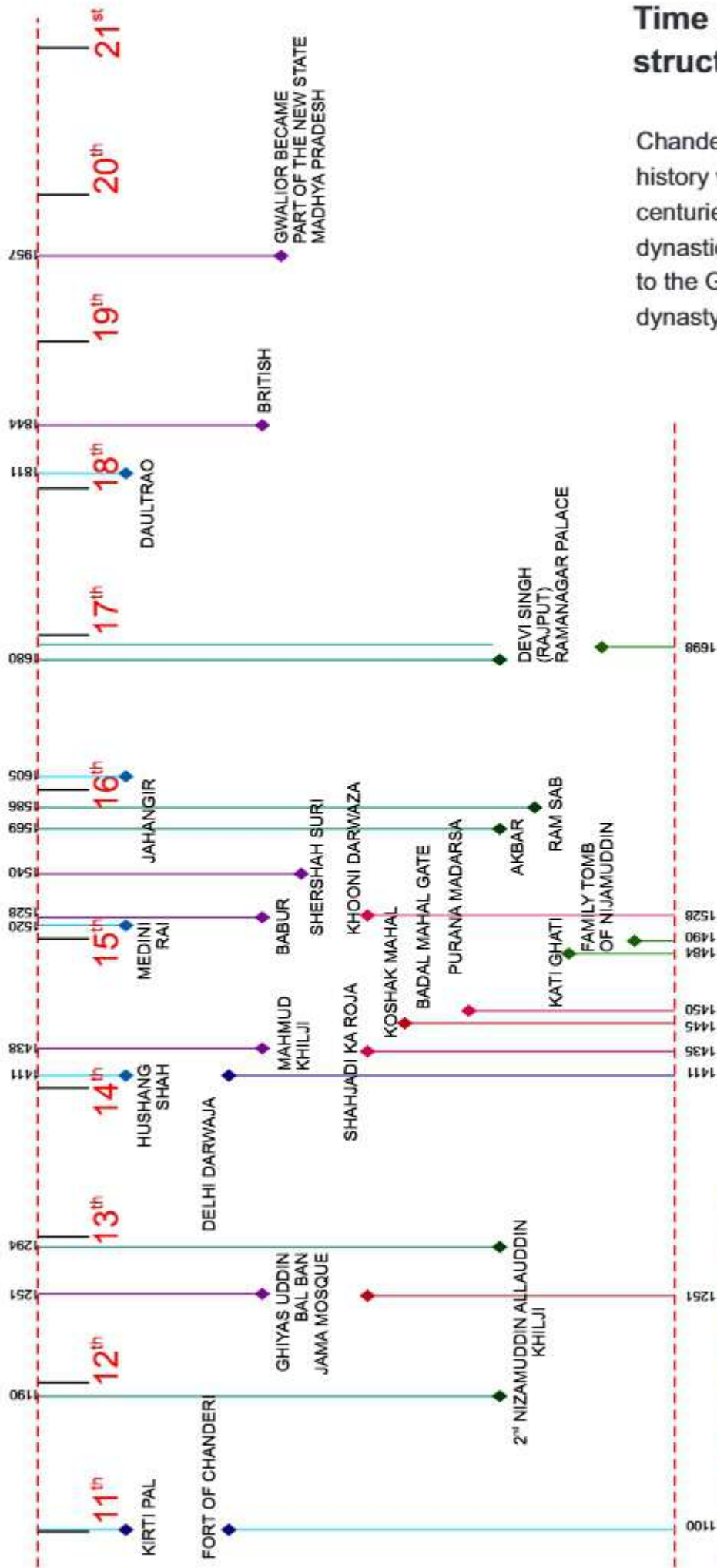
Bio-climatic chart

INDEX	
● JAN	● JULY
● FEB	● AUG
● MAR	● SEPT
● APR	● OCT
● MAY	● NOV
● JUNE	● DEC

Time line of Chanderi - Ruler's Dynasty



DYNASTY TIME LINE

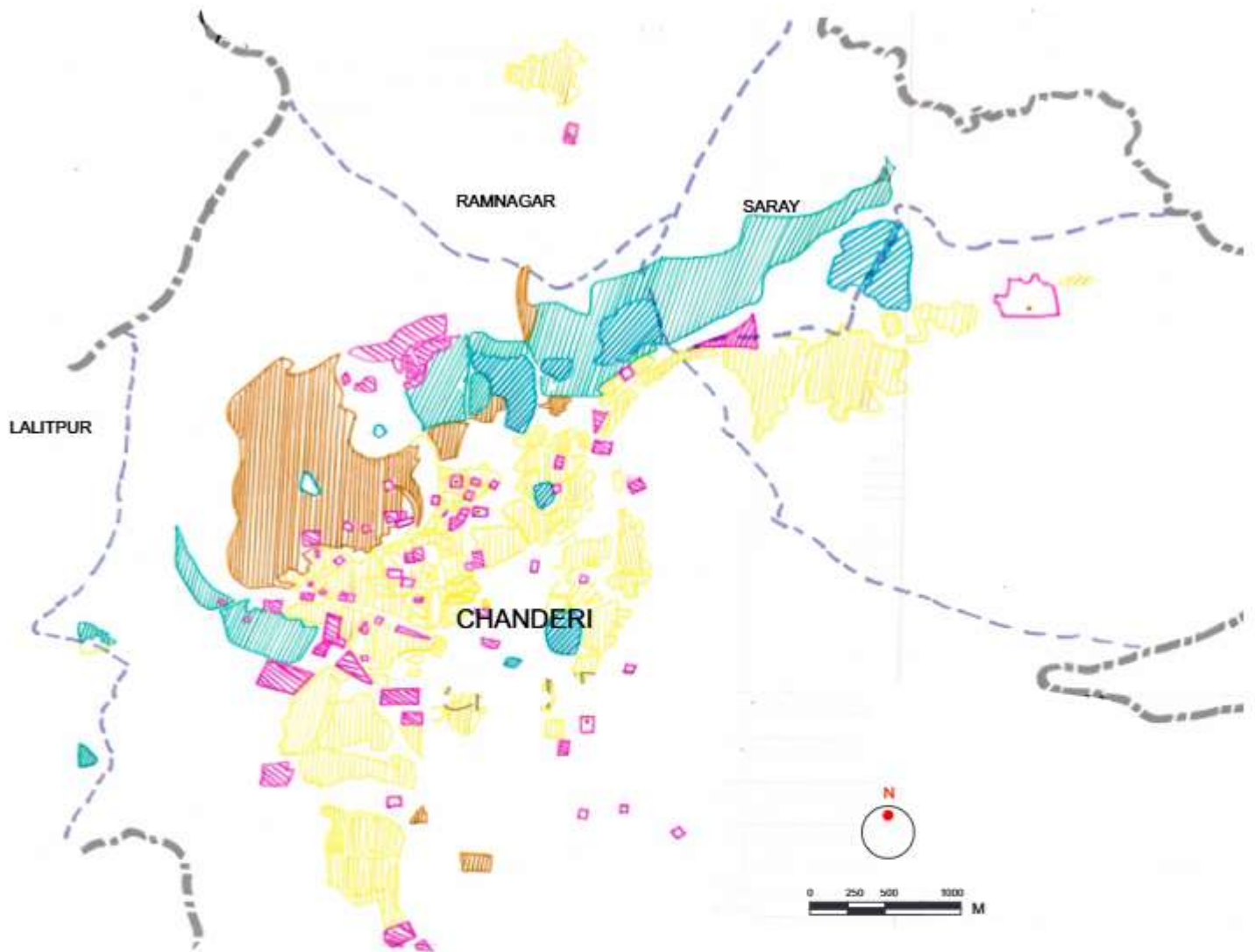


STRUCTURE TIME LINE

Time line of structures

Chanderi boasts of a rich history which has spanned centuries with numerous dynasties , from 40,000BC to the Gwalior Scindia dynasty.

Land use

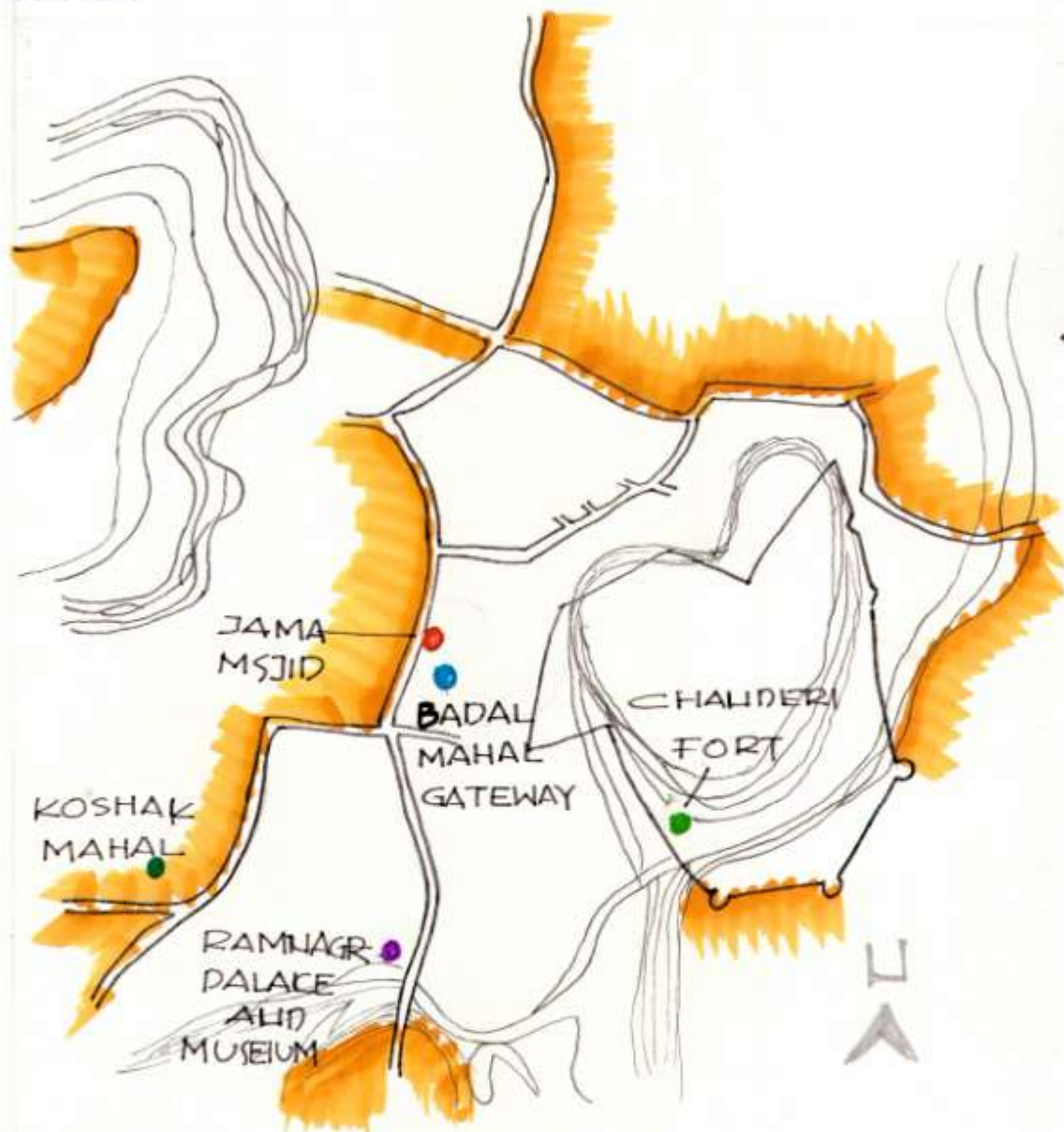


Land use map of
Chanderi : Andar Shaher & Bahar Shaher

- Residential
- Public & semipublic
- Public facilities & utilities
- Water bodies
- Agriculture

Building material & construction Techniques

Chanderi fort-



- Built by delhi sultanate — rebuilt by mughals and bundelas to suit their
- Architectural style
- Built in 11th century — 5km long, 1km broad
3 storied place with a fountain and tank in its
- Courtyard, bastions and watchtowers in the corners
- Masjid situated at the entrance exhibits intricately carved mihrabs and verses from quran used of recycled temple columns
- Trabeated style, domed kiosks — early example of rajput style
- Fortification wall built by mughals
material : sandstone (red)

Building Material & Construction Techniques

Koshak mahal -

- Malwa style
- 7 storey structure - only 3 1/2 story survives
- Square in plan- at centre of each of 4 side of 1st story are tall, arched doorways erected on 4 pillars - central square from which 4 paths emanate, Flanked by pillared corridors on each side.
- Each story has 6 doors and 1 window. Symmetrical arches. Strong well
- Width of the wall - 0.305 m. Material - red sandstone
- Styles - Malwa , Islamic, Afghani, Indian vedic.
- After completion of 1st story - problem faced
Of raising heavy stone block to 2nd level - resolved by burring
- 1st story under dirt to create slop on which blocks could be Carried uphill - dirt was cleared to uncover the entire Structure



Jama masjid -

- Local malwa tradition
- Conventional, intricate pillars, geometric shapes
- Convoluted eaves bracket taken from local temple architecture have and square hall are roofed by elongated massive domes
- Quibla wall has been ornamentally divided into series of beautiful mihrab with prominent ogee curves
- Bears 3 white marble domes
- Material - red sandstone, white marble
- 80 m length, 27 m width, 41 m in its highest point



JAMA MASJID

Ramnagar place and museum -

- Stone blocks used in construction.
- Stone are not of consistent
Size, shape or decorative carving
- Blocks were sourced from older monuments and ruined structures



Building Material & Construction Techniques

Climate responsive construction Techniques used in chanderi

As, temperature of Chanderi is high, they used passive cooling building construction techniques

Passive cooling techniques - to cope with extreme climate conditions

Structure consume natural energy by- maintaining internal environment
controlling microclimate procuring material for construction

Microclimate controls-

Gardens- enhance cooling by evaporation

Fountains - improve air quality

Integrated indoor - outdoor living

Verandah -

Thermal mass-

Walls- thick stone wall for thermal insulation

Courtyard - enhance humidity cool air by evaporation

Natural ventilation -

Window- small windows to allow wind to move inside the structure
with greater force

Shading device - mutual shading by deep carving

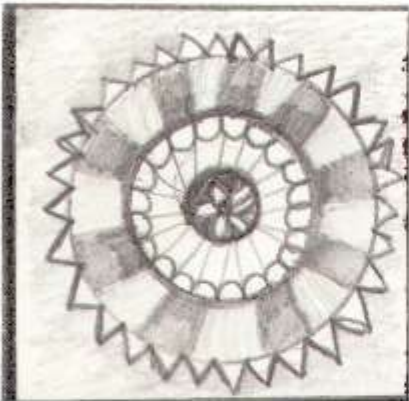
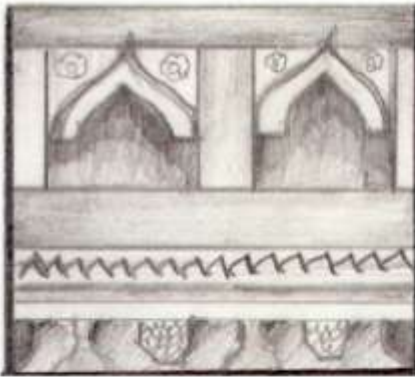
Extended surface area increase convective heat transfer to air

Thermal mass-

Vaulted and domed roofs- prevent absorption of heat

Latices jali - makes internal space cool

Traditional material of Chanderi -



Red sandstone

- Malwa plateau
 - Rich in sandstone
 - Locally available Material
- Suitable for carving screen

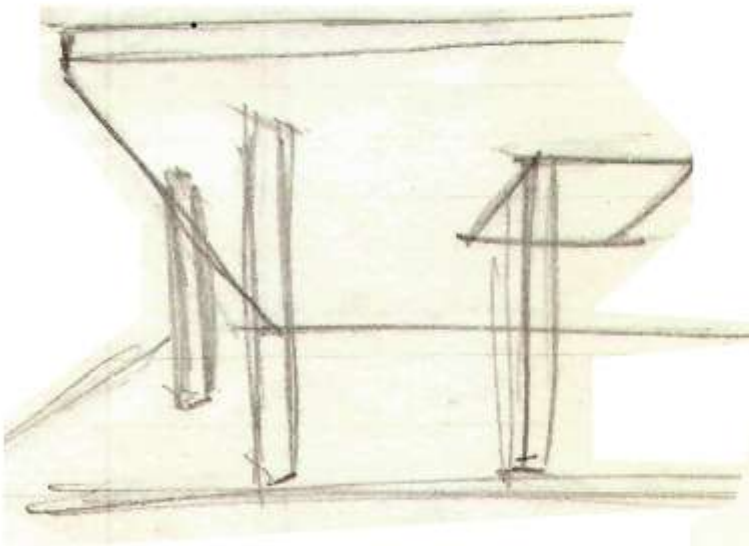
Badal Mahal Gate -

- Welcome gate for dignitaries visiting the palace
- 15m high, 7.5 m wide
- Constructed with 2 towers— joined together with Arches and window to give gate like form
- 2 massive tapering turrets encompassing 2 arches Between them and they have jali pattern section
- Upper portion of gate — 4 beautifully carved windows With different design motif
- Style used — rajputana, delhi, malwa, gujrat
- Material — red sandstone

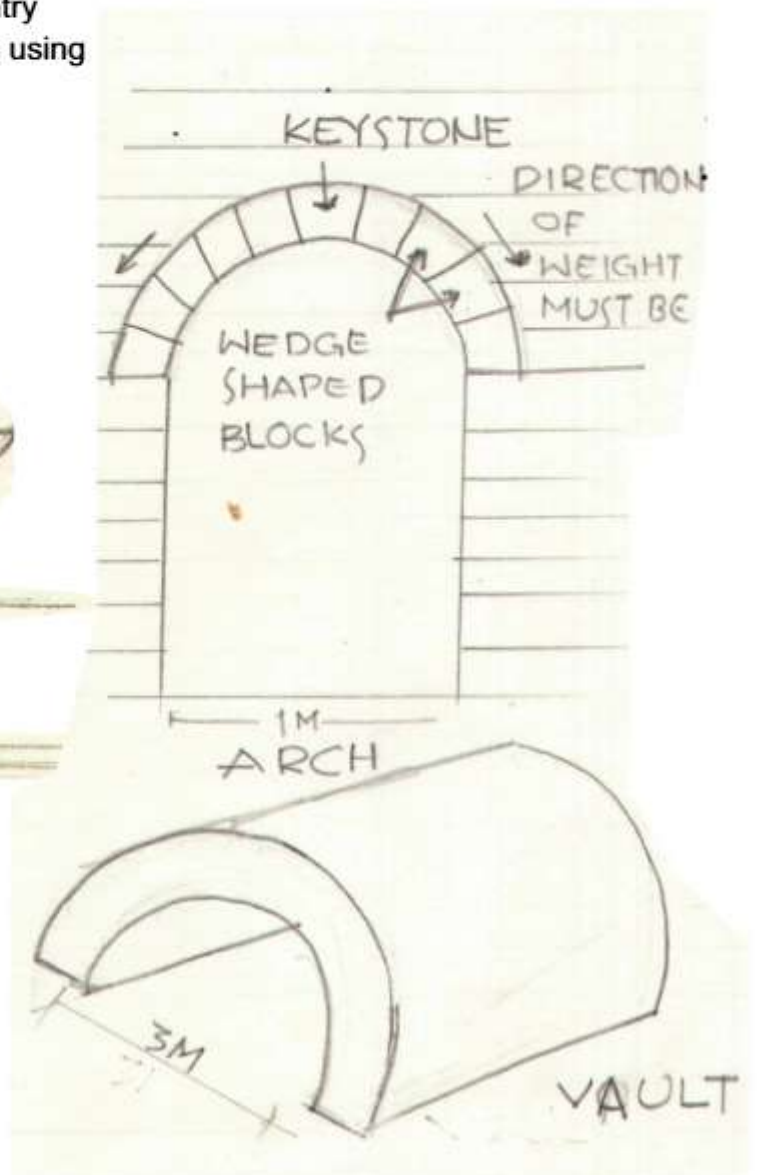
General construction techniques used in Chanderi

- Stone and brick used due to abundance of natural stone and clay
- Foundation is made of random rubble which is locally available
- Bricks are used where soil is less rocky and clay is available
- For roofing — country tiles and sand stone on steel girders are used
- Burnt bricks and tiles place overlapping on' wooden under structure is used to construct houses in low cost and a high energy
- Structures mostly built in load bearing constricting techniques using brick, mud or stone masonry
- Arches are frequently used as spanning element for main entrance
- Older bricks replaced by kiln bricks country tiles are giving way to flat roof structures using cement based roofing such as RCC

Kioska style of construction-



Open circular papillon consist
Of roof supported by pillars
Seen in koshak mahal
Islamic architectur



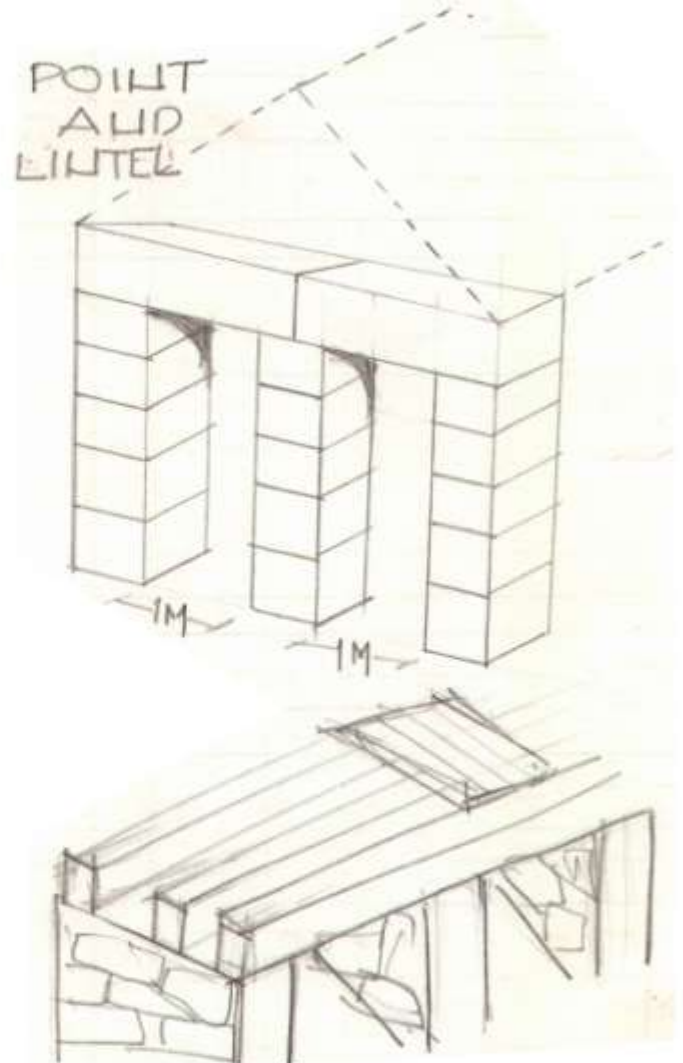
General construction techniques used in Chanderi

Trabeate style of construction

In architecture, post and lintel (also called prop and lintel or a trabeated System) is a building system where strong horizontal elements are held by strong vertical elements with large space between them.

Trabeate architecture in Chanderi-

- Corbelled flat and lantern ceilings
- indigenus surface mounding including vegetal and foliage motifs along side islamic
- geometrical designs and patterns
- Serpentine struts - derived from ornamental arches of indian temple gateways



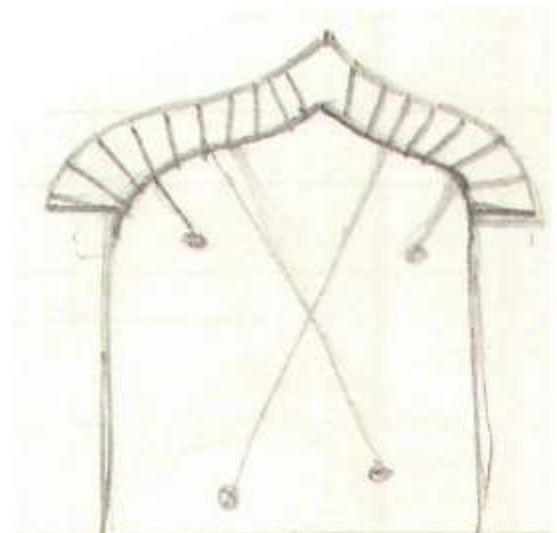
Arcuate style of construction

The main elements in the islamic architecture is the introduction of arches and beam and it is the arcuate style of construction

Arcuate architecture in Chanderi

- Comprise tombs, mosques, palaces, free standing gateways and step walls
- Used in construction of arches and domes
- Arches — have ogee curve and lotus rosette spandrels

Combination of Arcuate and Trabeated system in construction of arch opening. Usage of pier also multiple pillar of and pier arcade



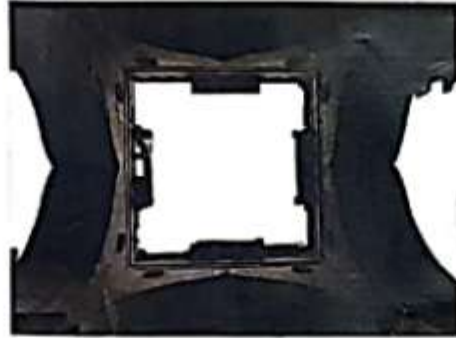
Four centered arch along with to centered arch

Examples of construction techniques

Koshak style -

- Unique ceiling design
- Malwa style
- Natural cross ventilation
- White local sand stone
- Four arches meet at apex to form a cross vault

KOSHAK MAHAL



Arcuate style -

- Roof is supported by pillars with screened or totally open walls
- Carving of lotus flower
And design by pitchers - influence
Of Malwa style on Islamic style
- Stone flooring
- Stone ribs used in barrel vault
- Serpentine brackets-
- Support chajja
- Arched cloisters

JAMA MASJID



Trabeate style -

Weight of the super structure above the door, window was carried by arches.

Serpentine strut-

Use of columns or posts and beam

Weight of the superstructure above

The door and windows was carried by

Pillars, beams and posts.



JAMA MASJID



Culture and Traditions

Famous for arts and crafts Singing and dancing is a community activity performed to relax and enjoy. Chanderi is a home to Hindus, Muslims, Adivasis and Jains.

हिंदी अरु बुन्देली

Languages

Languages spoken in Chanderi

Muslims – mixture of Hindi and Urdu

Hindus – Bundeli.

Attire –

Attire in Chanderi is conservative.

Women Hindu – Saris, Salwar suits.

Women Muslim – Burkhas, Naqabs (Hindustani), Ghagra-Kameez.

Men Hindu – Dhoti – Saluka, Pant- Shirt.

Men Muslim – Sherwanis, Pathanis, suits, pant –shirt.

Adivasi – Saris tied in rudimentary fashion.

Women Banjara – Lehenga-cholis.

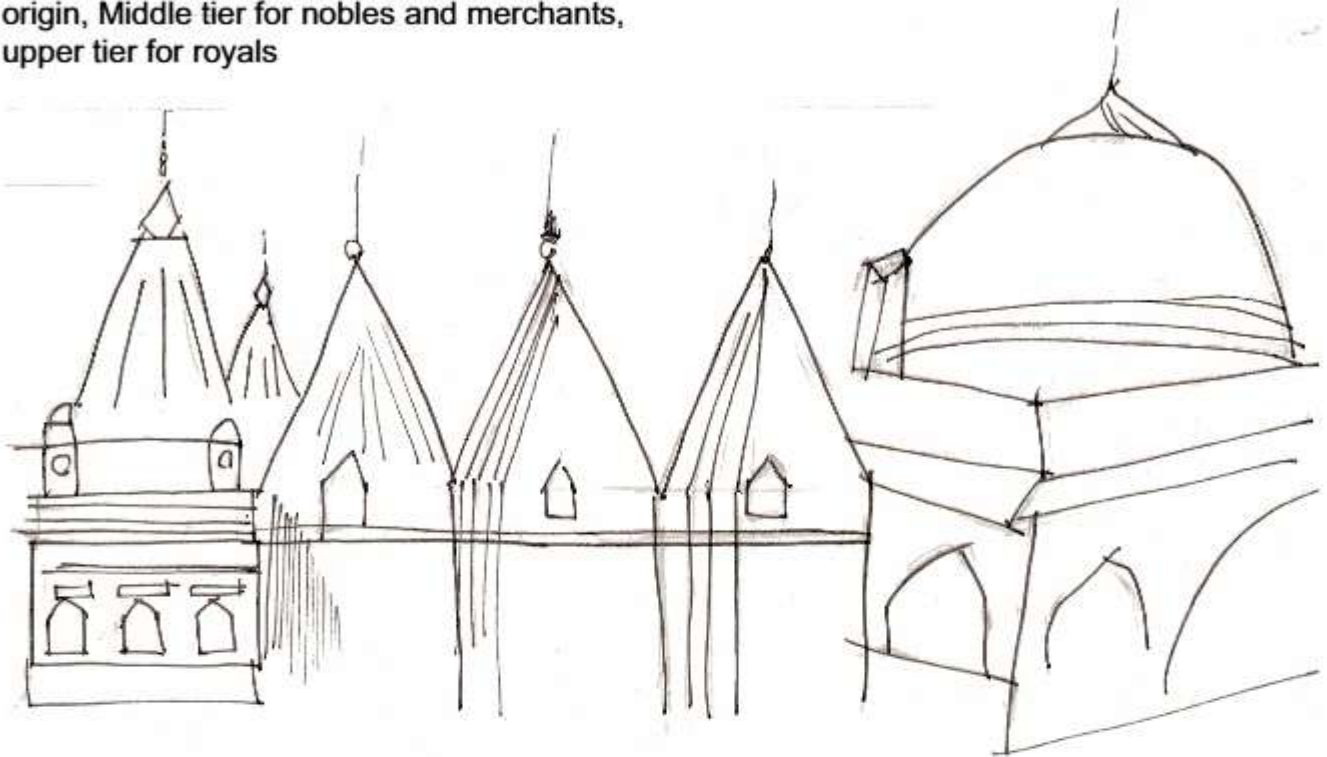
Men Banjara – Dhoti-Kurta, T-shirts with turbans

Adivasi – Vests, T-shirts, Dhoti and shorts.



Andar Sheher

Oldest inhabited area. Consists of temples – Jageshwari temple, Chaubisi Jain temple.
Havelis – three tiered market place.
Lower tier was meant for people of humble origin, Middle tier for nobles and merchants, upper tier for royals



Bahar Sheher

Inhabited by kolis, Ansaris, Rajput, Banias, Basors, Khatiks, Dhimars, Ahirs, Ghosis, and Adivasis.
Weaving is a passion as well as sole means of livelihood for the kolis and ansaris. Kolis are also engaged in making biris. Bamboo weaving is carried out by the basor caste. Dhimars flock many lakes throwing in their nets and sauntering away and later with their catch they go to market. Adivasis belong to Gond tribe.



Weaving culture

The fortunes of Chanderi have always been entwined with the fortunes of its weaves. Hence, the history of the town will remain incomplete without a look at this artistic tradition. There is no written record as to when and how weaving began in Chanderi. But considering particular events in history it is possible to suggest that the inception of weaving began soon after the great Sufi reverend, Hazrat Wajihuddin, migrated to Chanderi.

In the reign of Allauddin Khilji, he was ordered by Hazrat Nizamuddin to go and settle in Chanderi and work for the people here. He reached Chanderi in 1305, established his khanqah and soon gained thousands of followers. These devotees came not only from Chanderi and the surrounding areas but places as far flung as Bengal. It was most probably this group of people that began the practice of weaving in Chanderi as Dhaka was a major weaving centre even in those times.

The Ain-e-Akbari, written by Abul Fazl during the Mughal emperor Akbar's reign, talks about the fine weaves of Chanderi. Aurangzeb's reign, informs us of the existence of an imperial workshop in Chanderi which produced an extremely fine cloth, with gold and silver worked into it.

The 1907 Gazetteer of the Princely state of Gwalior confirms the continuation of the old tradition of weaving in Chanderi. The antiquity of the handloom industry in Chanderi goes at least as far back as the 14th century and in the beginning this exceptional fabric could only be afforded by the royalty and the very rich.



Patronage

The fabric has always had patronage of the ruling class of the country because of its unique sheet texture and embroidery with gold and silver. The handicrafts of Madhya Pradesh are a reflection of rich culture and tradition of the state. The weaving tradition is in practice from thirteenth century. In the beginning, weaving was mostly patronised by Muslims. In 1350, Koshti weavers migrated from Jhansi to Chanderi and patronised weaving. During Mughal period, the cloth business of Chanderi was at its peak. According to Jesuit Priest, who visited Marwar region between 1740 and 1761, Chanderi fabric enjoyed royal patronage and was also exported overseas.

History

Since ancient times, Chanderi fabric was woven using handspun cotton wraps and wefts. The evolution of fabric began in the 1890s when weavers in the town of Chanderi replaced hand spun yarns with mill made yarns. Chanderi fabric is known to have its origin way back in Vedic period and was founded by Lord Krishna's cousin Shishupal. Chanderi fabrics are known for their sheet texture, light weight and a glossy transparency.

Process

1. Firstly, threads are pulled from cotton / silk to make the desired saree.
2. The threads are then separated and sorted into bundles.
3. The threads are then dipped in hot colour water for dying.
4. Coloured thread bundles are kept for drying.
5. The threads are again sorted, weighed and packaged for final weaving.
6. The prepared thread bundles are sent to master weaver as a raw material, Jari is also provided.
7. Master Weaver develops the design to hand it over to local weavers.
8. Graph paper or maps are used for designs.
9. To differentiate tana and bana two alternate colours are used.
10. Saree making process starts at the home of local weavers.
11. Weaving is completed in 4 -8 days depending upon the intricacy of design.
12. The ready saree is given back to master weaver, who decides costs.
13. He finally sends it to market for selling.

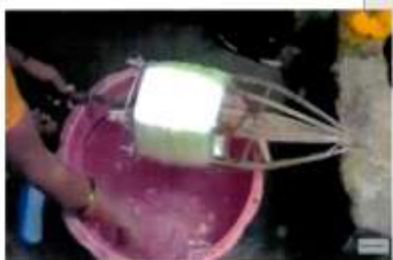
Tana – longer length of Saree, usually in silk thread

Bana – Wider side of the saree, both cotton and silk can be used.

Weaving process



Firstly thread by cotton is made used for a saree



Then the thread is separated and sorted from bundle



Hence is kept for drying after dipped in hot water which is colourful





Prepared thread is Send to master weaver as a raw material. Even jari is provided.

Therefore saree making process is started by local Weavers at home. Graph page or maps are used for the Designs. To differentiate Tana & Bana two alternate Colours are used.



Weaving at least done in 4 to 5 days

Ones a saree is completed It is given back to weaver

Master weavers hence adds Cost and send to market sell.



Again it is sorted and Weighed on machine



Motifs

Inspired by the famous Banarasi sarees.

Some of the motifs used are – Ashrafi, Gold Coin, Churi, Bundi, Keri, Patti, Eent, Suraj Butti, Meena buti, Kalgi and Ghongra. Some motifs exclusive to Chanderi are weaves comprise Halferma, Dandidar, Chatai, Jangla, Mehndi wale haath. When these motifs are bigger in size they are referred as butas.

Motifs in design

In 11th century, it became one of the most important trade routes in India because of its proximity to the arterial routes. Chnaderi is a traditional ethnic fabric characterised by light weight, sheer texture and fine luxurious feel.

The fabric can be classified into three types:

- Silk cotton
- Pure silk
- Chanderi cotton

Traditionally, Chanderi fabric was primarily used in weaving sarees and Salwar kameez.

These delicate hand woven motifs are what makes Chnaderi an absolute favourite of the elite.

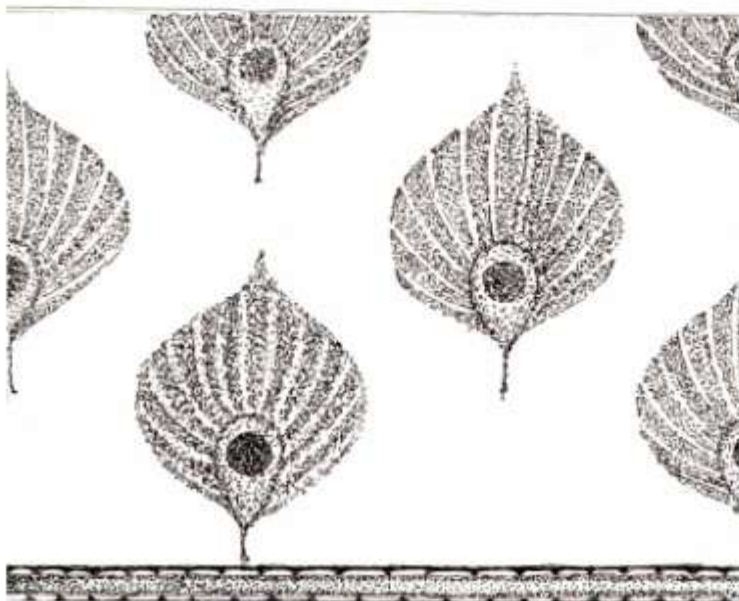
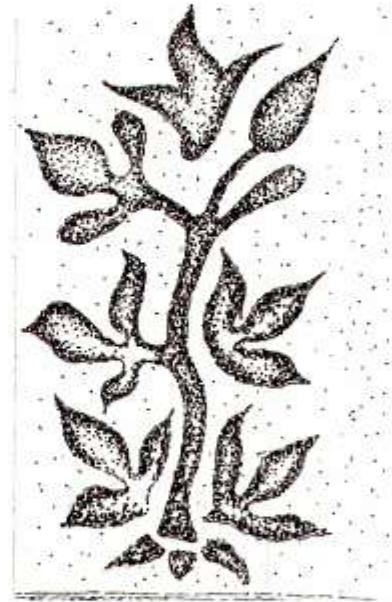
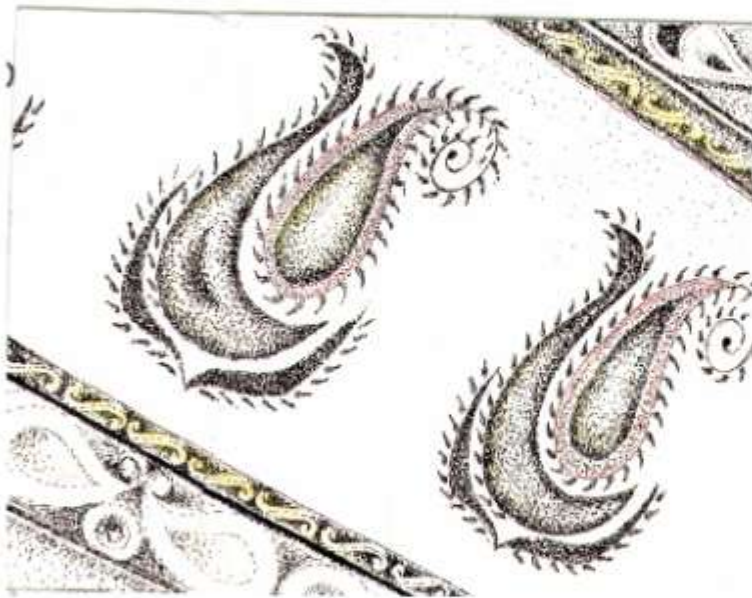
Pipin border has one colour interspersed with strips of another colour.

Chanderi sarees are among the finest in India and are known for their gold and silver brocade work and fine zari silk.

Iconography

Carving is very common in all historic monuments in Chanderi inspired by Irani kala. Nizamuddin's kabar is the best example of carving in Chanderi.





Development and Technique

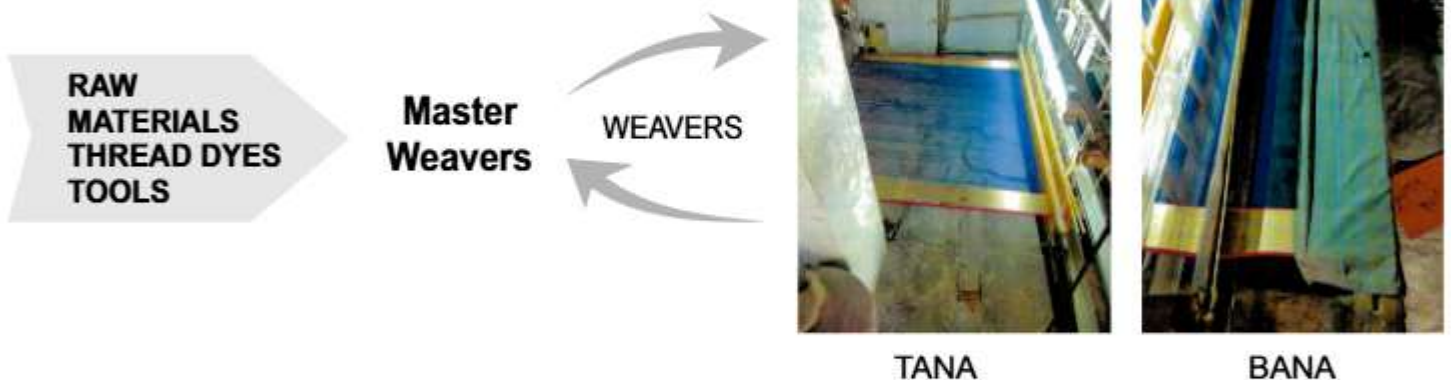
The 1970s saw a revolution of sorts in the designs of chanderi saris. Innovative borders such as the ganga jamani, mehndi range haath, sada saubhagyawati bhava became extremely popular and began to be demanded by women from all across the country.

The borders popular today include the adda border which consists of a highly intricate design, the Nakshi is similar except for the outline of the border pattern which is done with a different coloured thread and the plain zari patela border. Piping border has one colour interspersed with thin strips of another colour.

The yarn for weaving was earlier coloured with only natural dyes, but today both natural and chemical dyes are in use. Many of the names of the colours used are derived from natural things like fruits, vegetables, flowers, birds etc. Totai is parrot green while mor gardani is the blue-green of a peacock's neck. Tamatari refers to a bright Tomato red, Pyazi to onion pink, Neembo Turanji to lemon yellow and Gajari to carrot red. Angoori or grape-like is pale green while naarangi is a shade of orange. Kesari is saffron, Badami is almond-coloured, chutney is sap green and Surmayi, a shade of grey.

A trip to Chanderi will remain incomplete without a purchase of the town's enchanting weaves.

Chanderi sarees process



Raw material

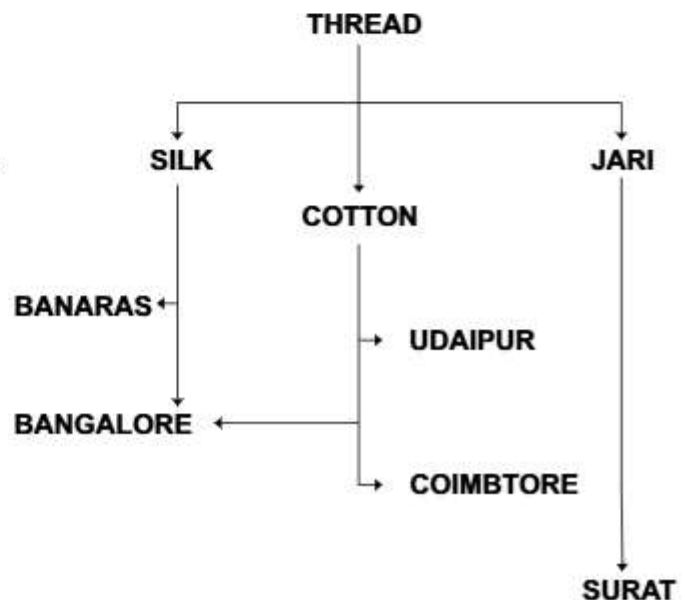
1.Thread

- Silk is sourced from Benares and Bangalore
- Cotton is sourced from Bangalore, Coimbatore and Udaipur.
- Jari is sourced from Surat.

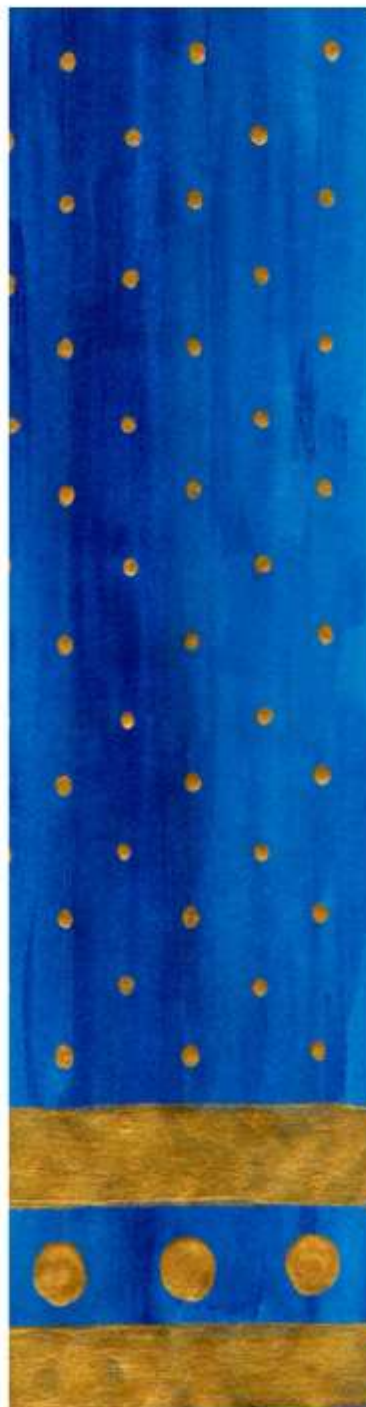
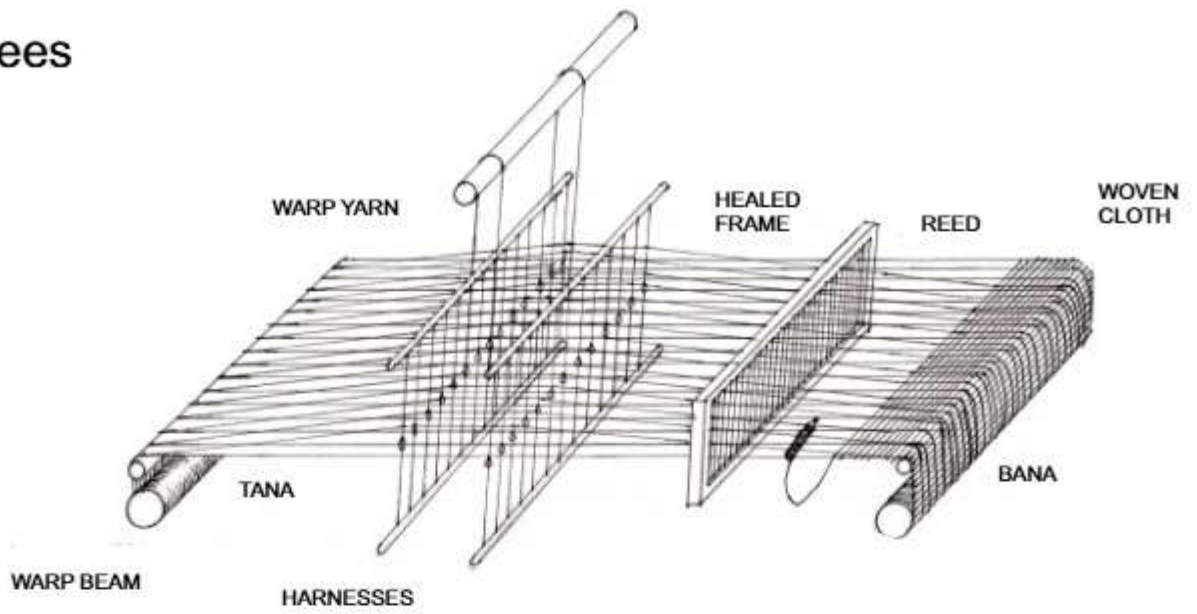
2.Dyes

3.Tools

- Handloom technology with tana roll
- Rucch
- Charkha
- Dying apparatus
- Jacquard dobby mechanism
- Older Tana Mechanism



Chanderi sarees



Motifs



Water Sources at Chanderi



Betwa river



Rajghat Dam

- Its about 14 km away From Chanderi. Its construction began In 1975 and opened in 2006.
- Rajghat dam project serve as mother storage for irrigation in Madhya Pradesh and Uttar Pradesh.
- Height = 44 m sea level
- Length = 1120 m



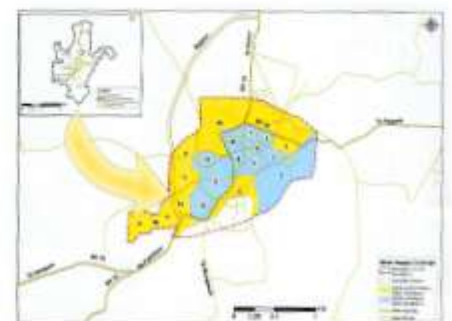
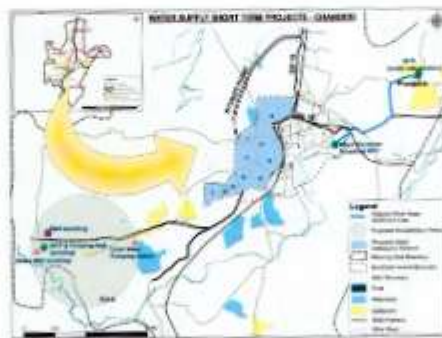
Parmeshwar talab



Kirat Sagar



Hauz khas



Water network system

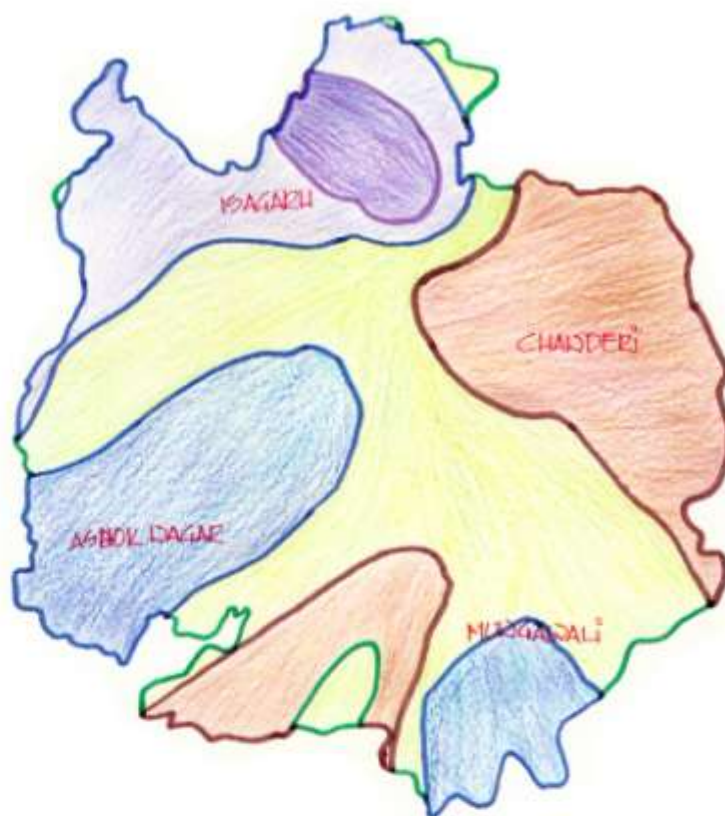
Water table

Pre-monsoon depth To water levels

The pre monsoon depth to water levels map is presented as figure. The DTW ranges from 2.34 to 17.40 Mbgl. However, in major part the DTW ranges between 4 and 16 Mbgl. Deeper water levels of more than 16 Mbgl is observed in Northern part.

INDEX

- | | |
|----------------|--------------|
| ■ 12 - 16 MBGL | ■ 8 - MBGL |
| ■ 16 - MBGL | ■ 4 - 8 MBGL |

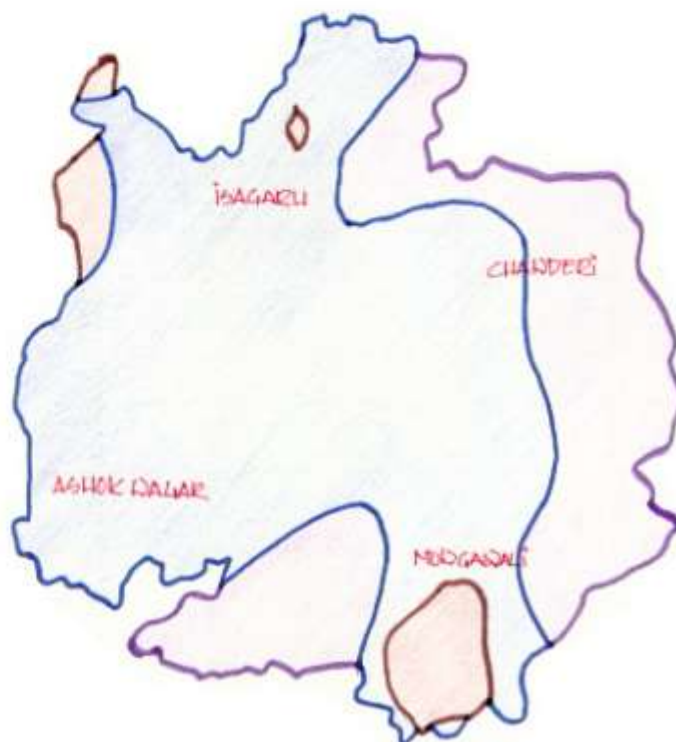


Post-monsoon water levels

The post monsoon depth to water Levels map is presented as figure. The DTW ranges from 2.95 to 20.68 Mbgl. In general shallow water levels of less than 5 Mbgl are observed in Eastern part and deeper water levels are observed in western. In major part the DTW ranges between 5 and 10 Mbgl. Deeper water levels of more than 15 Mbgl is observed in isolated patches in Southern and Western part.

INDEX

- | |
|----------------|
| ■ 5 - 0 MBGL |
| ■ 5 - 10 MBGL |
| ■ 10 - 15 MBGL |



Water Supply Systems

Betwa river

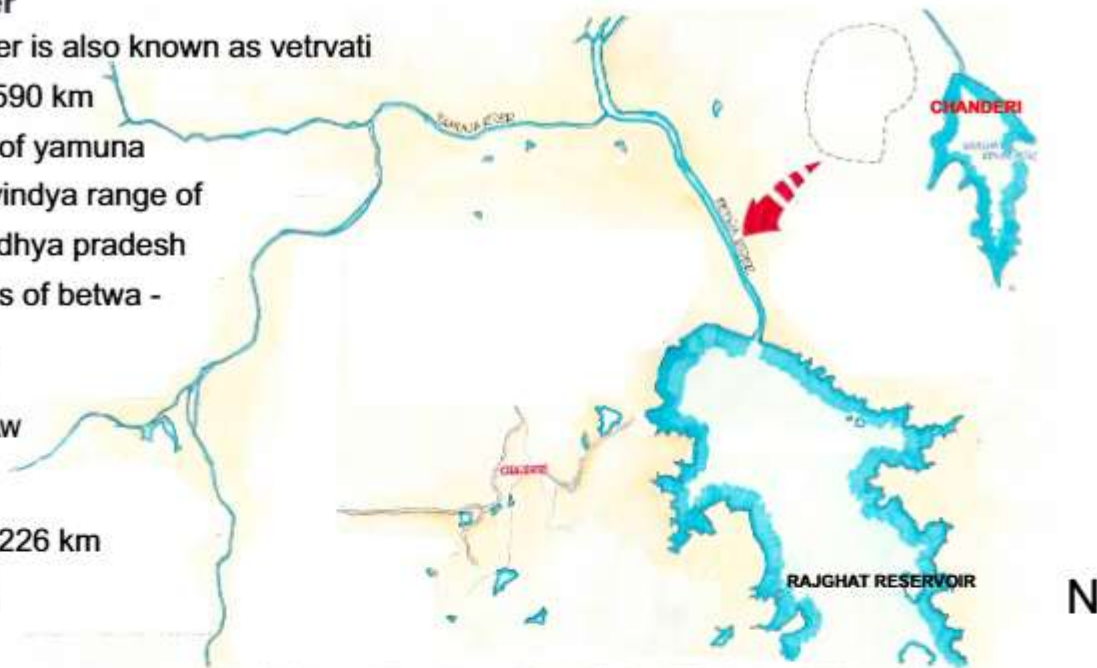
- Betwa river is also known as vetrvati

- Length - 590 km
- Tributary of Yamuna
- Rises in Vindya range of
- North Madhya Pradesh
- Tributaries of Betwa -

- SINDHY
- BEENA
- DHASAAW

Distance - 226 km

North east



- Water supplied to Chanderi from Rajghat
- Dam is 14 km from Chanderi
- Rajghat dam is situated on Betwa river
- Water distribution system constructed is named as Rajghat canal project

Effect of river

Due to hot & arid climate tube wells were used as source of water before construction of dam. Main effect on irrigation increasing crop growth increase in water table.

Projects

- Betwa river is linked to Ken river as part linkage Project.
- Another note worthy Project is Matatila dam Rajghat dam Rajghat canal project

Rajghat dam

Provide irrigation to 1380 sq. km. of land in UP & 1210 sq. km. in MP.

Cost & benefit share equally to both state.

Rajghat canal project

It is part of interstate Rajghat Project of MP & UP. Consist of three main canals along with their distribution system. Main purpose is for irrigation

Canals - Rajghat left bank canal.
Datia irrigation canal

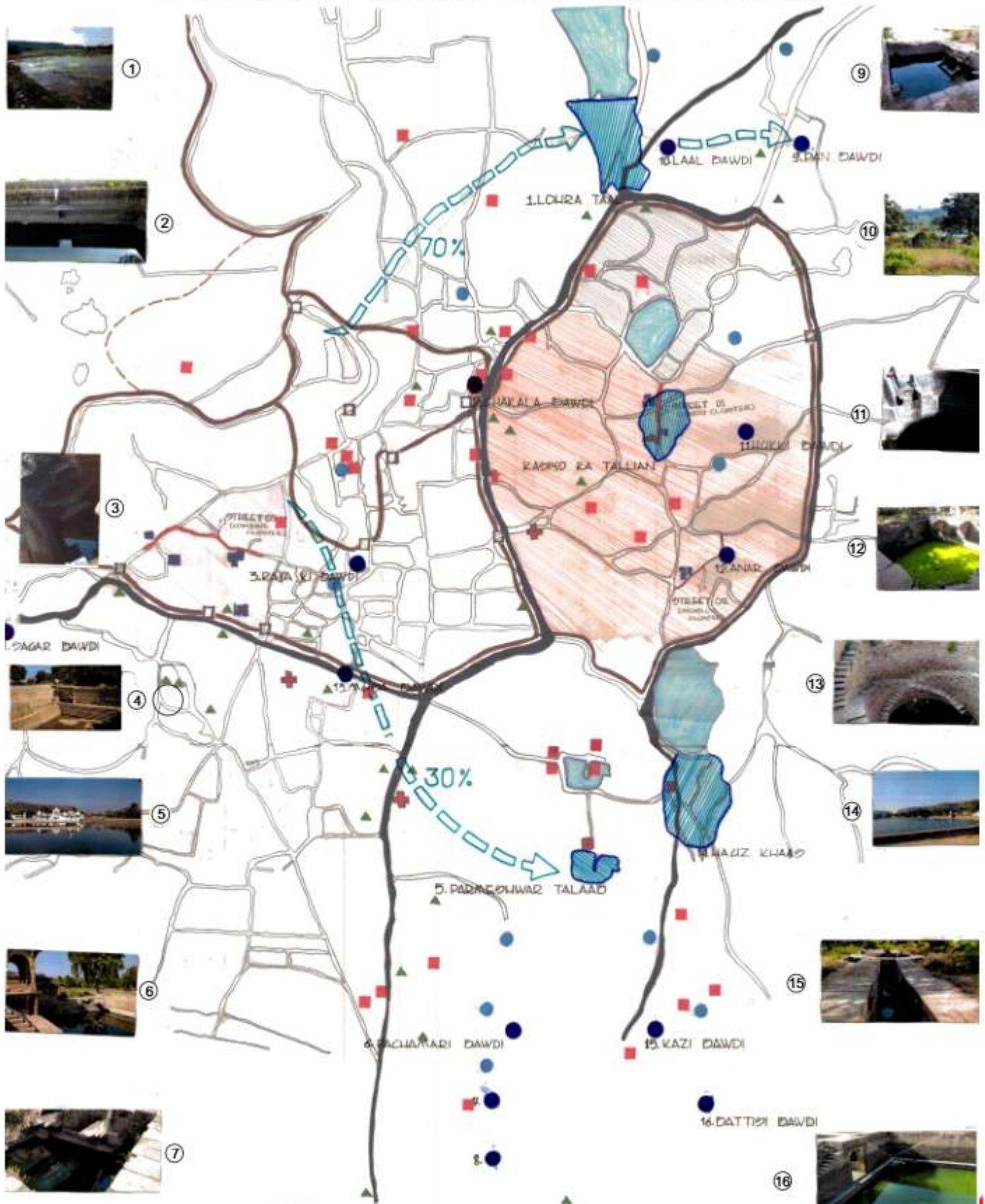
Cost - 645.66 rs. In cr.



Effect of river

Due to hot & arid climate tube wells were used as source of water before construction of dam. Main effect on irrigation increasing crop growth increase in water table.

Master plan of Chanderi Town - Lakes & Bawadi



- | | |
|---|---|
| ■ Historical monuments | Fortification wall |
| ▲ Amenities | Cluster |
| Lakes | Major roads |
| ● Baodi | ● Bawdi |
| Darwaja | Lake |
| | Drainage line |



Master plan of Chanderi Town - Lakes & Bawadi



Gol bawdi

This bawdi is located some distance away to South of town at base of Khandgiri hill it was constructed in 1502-1504

Chakala bawadi

Located in south of town on way to Khandgiri. It was only for ladies of royal household and not common people

Ramjnai bawdi

Located in Madhad nagar Area of Bahar Shaheer. Built in 16th century

Battisi bawadi

Construction was completed in year 1484. This is located to North -West of city. This is largest step well. 4 story deep

Musa quadin's bawdi

Located within Andar Shaheer. This bawdi was built in 1454 by Sain Hazrat Musa Quadin.

Quadin ki bawdi

Built in 1845 by Qazi-Ibn-Maidan, situated near Purana Madarsa

Aalia bawdi

This bawdi is located in Fatehabad, near Koshak mahal. It was constructed in during Gyasuddin Khilji's reign.

Chandai

Located in northern part of town. Near Rajghat colony built by one Chand Bakkal and his brother in memory of their mother.

Ek Pathar ki bawdi

Located in Chandragiri hill this bawdi has been carved out of single rock and collections water from various stream.



1 Gol bawdi

2 Chakala bawadi

3 Ramjnai bawdi

4 Battisi bawadi

5 Musa Quadin's bawdi

6 Quadin ki bawdi

7 Aalia bawdi

8 Chandai

9 Ek pathar ki bawdi

Chakla Stepwell

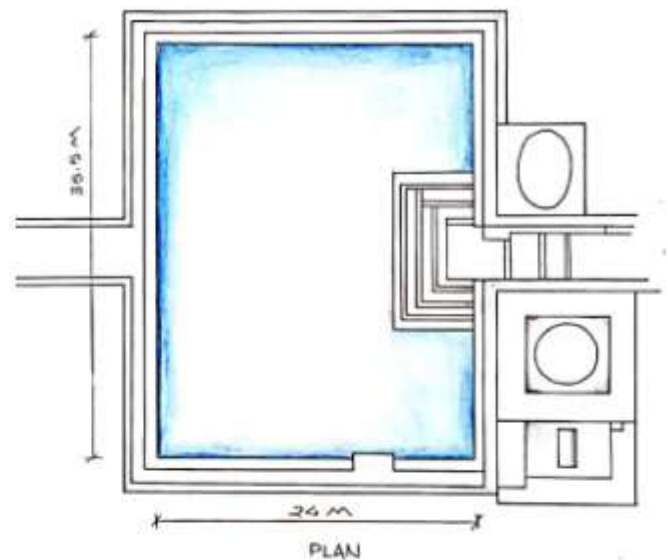
- It is located to the south of town, on the way to Khandargiri.
- It is built during the khilji rule
- Depth = 12m
- It is 35.5m x 24m in size

Circulation

Narrow edge surrounding inner edge of Chakla stepped pond descends towards water body from two accesses of opposite sides.

Form

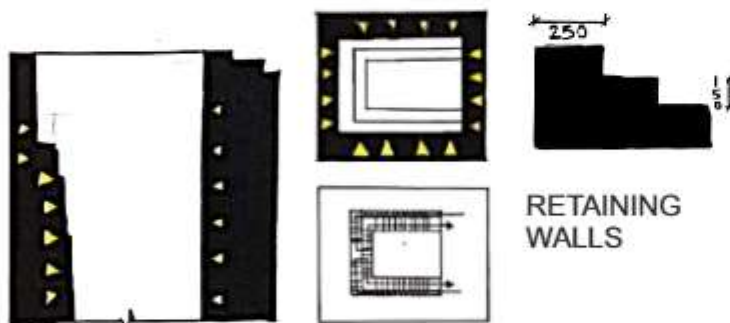
Rectangular well measuring 35.5 x 24 m is approached from two opposite ends East and West by crisis - crossing words.



A space of installing water lifting device such as Persian wheel was located in the centre of North -face.

Phool baugh Step well

It has been flight of Steps on all three sides to descend down

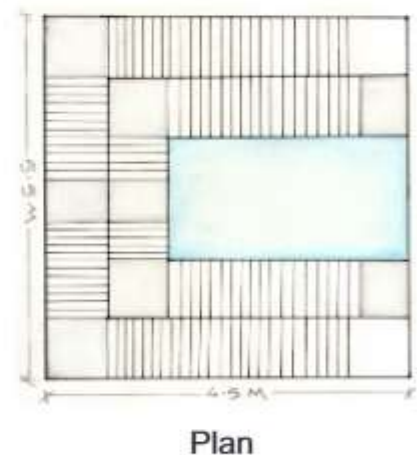
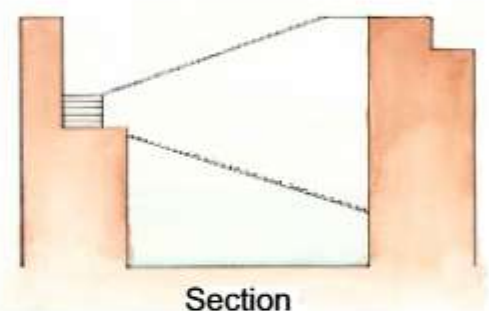


Form

Small simple square admeasure of 4.5 x 5.5 m has flight of steps on all three sides to descend down. a kioiks is present on north east side.

Circulation

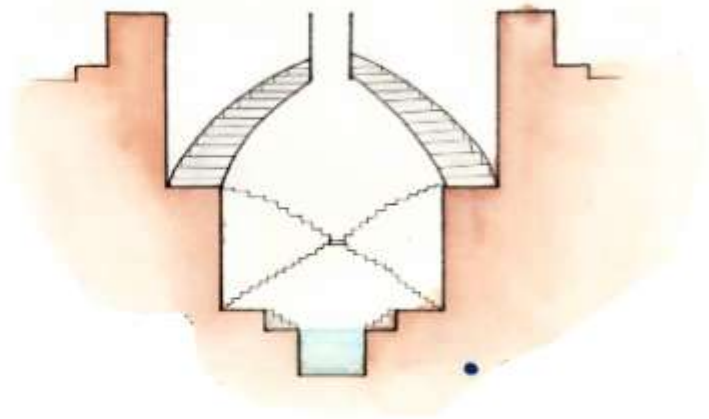
Phool baug step well has flight of steps on all three sides to descend down to fetch water as well as to retain walls of step well.



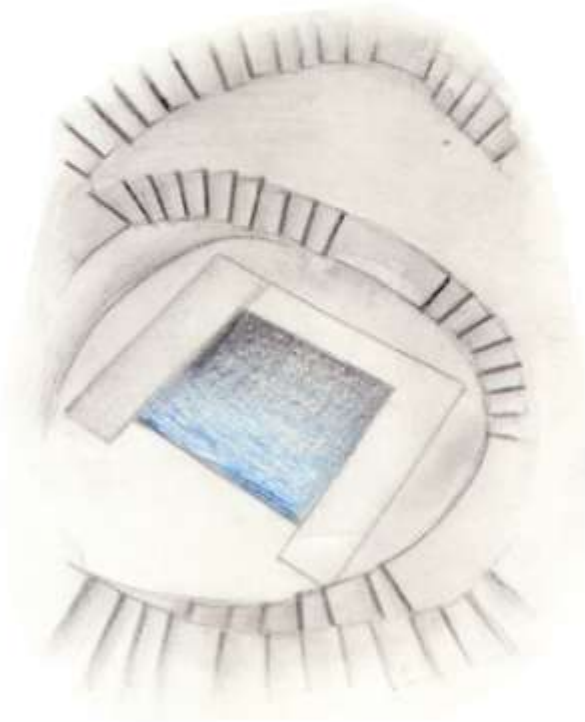
Steps wells are wells or ponds in which water can be reached by a descending series of steps. There are many stepped wells in Chanderi, given the harsh hot and dry climatic conditions. They can be characterised by distinguished architectural plan and structure. The form of the well, circulation, access pattern and volumetric analysis are few important features that differentiate these well.

Musa Step well

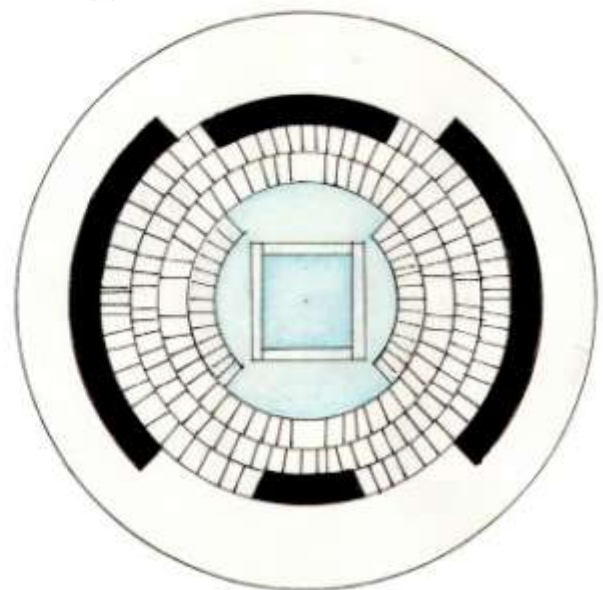
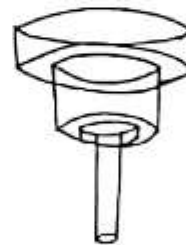
- Built in 1454 by saint hazart Musa Quadin
- Spiral stairway is attached to the wall of the well and descend downward
- Created in 1899
- Its water is cleanest among all.
- Its 9.55 m in the diameter
- It has been location for many public meetings and political rallies



Section



Circulation



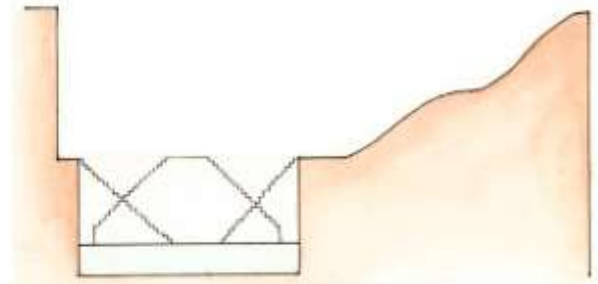
Plan

- Four intermediate accesses of Musa step well descending towards water source.

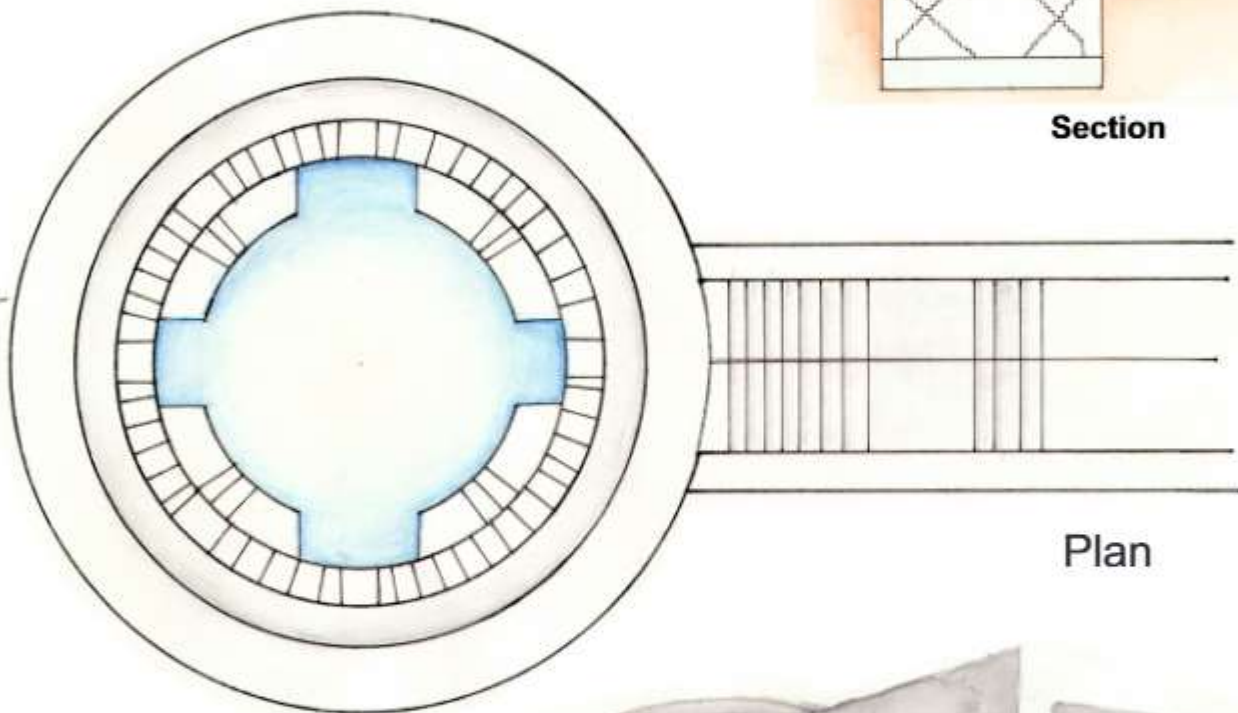
Gol Step well

Located some distance away to the south of the town at the base of Khandargiri hill.

- Work started in 1502 and it was completed in 1504.
- The step well is constructed by Savi Khair.
- It is 12.5 m in the diameter



Section



Plan



Circulation

The addition of lateral and be lateral steps in goal step-well serves as a device to reach more quickly a lower level.

Architectural ground plan of simple admeasuring 12.5 m in diameter. It consists mainly of the shaft of well and a short entrance staircase which leads into a spiral stairway.

Quaziyon Stepwell

Plan

- 7m in diameter and is separate from the staircase by arched entrances on opposite sides.
- Its local name is Ghadi
- Built in 1845 by Quaziyon meuran
- The well is circular in shape

Form

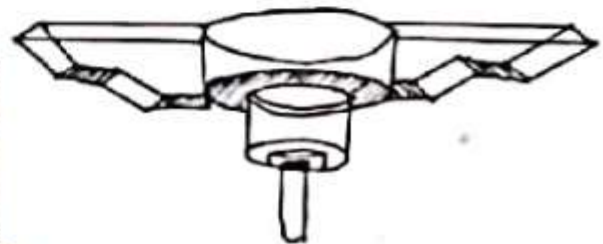
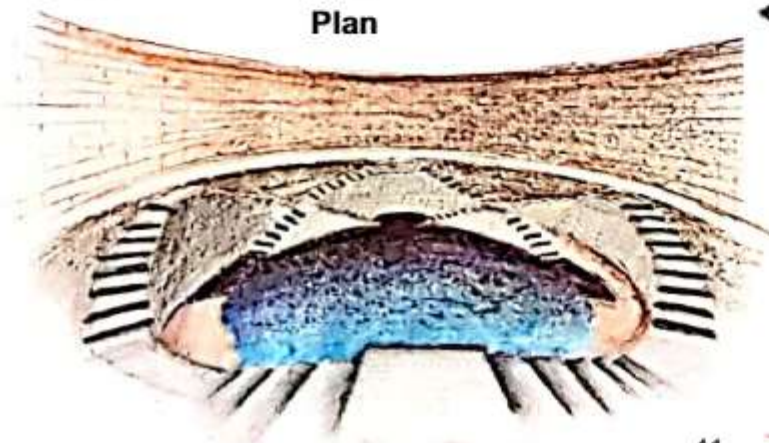
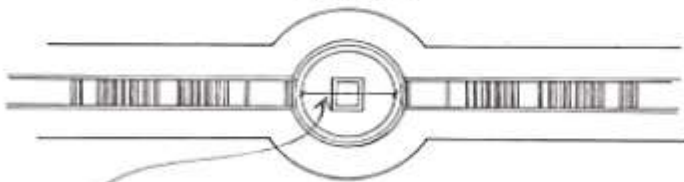
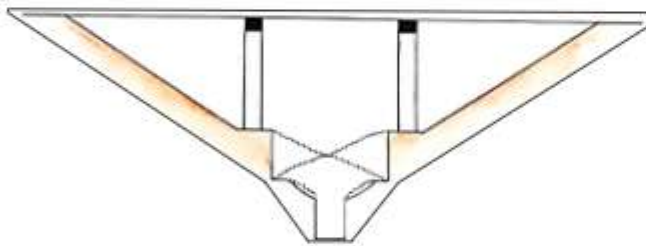
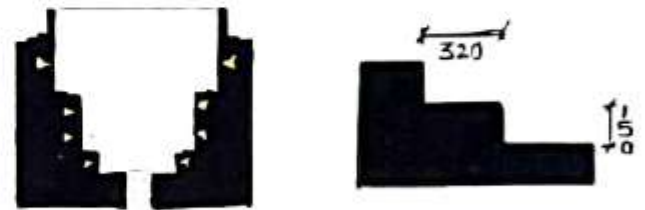
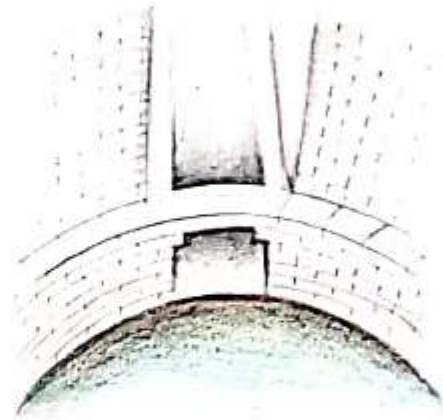
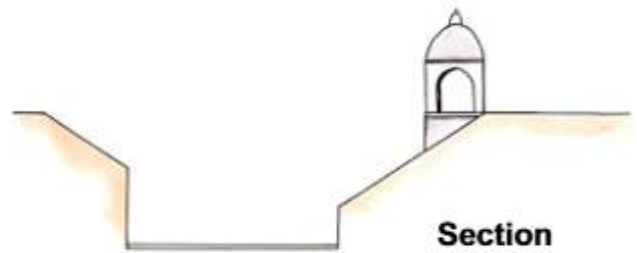
Well shaft of Qaziyon step well admeasuring, 7 m in diameter is separated from staircase by arched entrances on opposite sides.

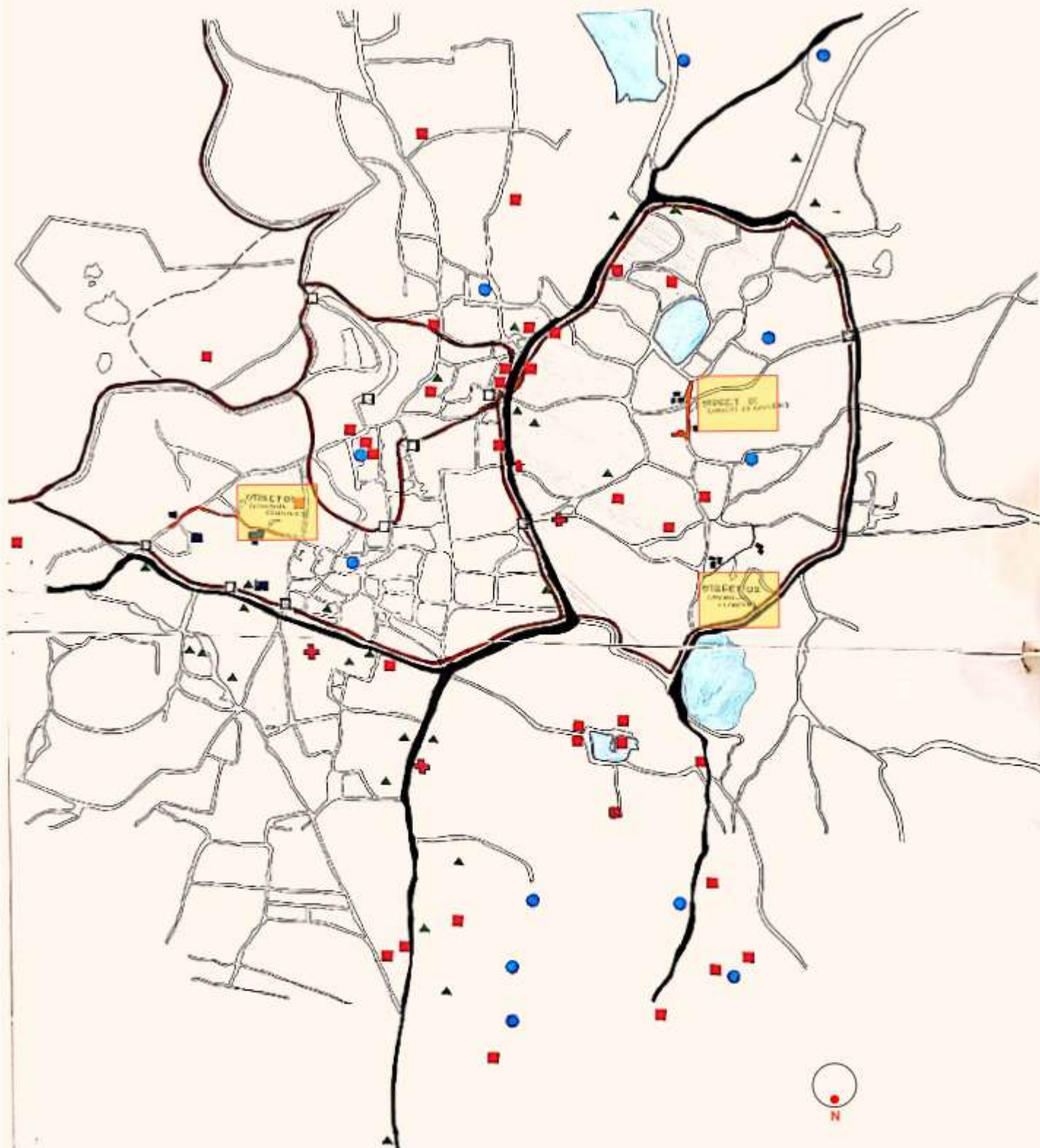
This well looks like watch in plan hence its local name is Ghadi.

Circulation

In Qaziyon step well, two main flights of steps on opposite side of well shaft descend down volumetric analysis ward.

- It is used by locals, by women to wash their clothes and by boys for diving.

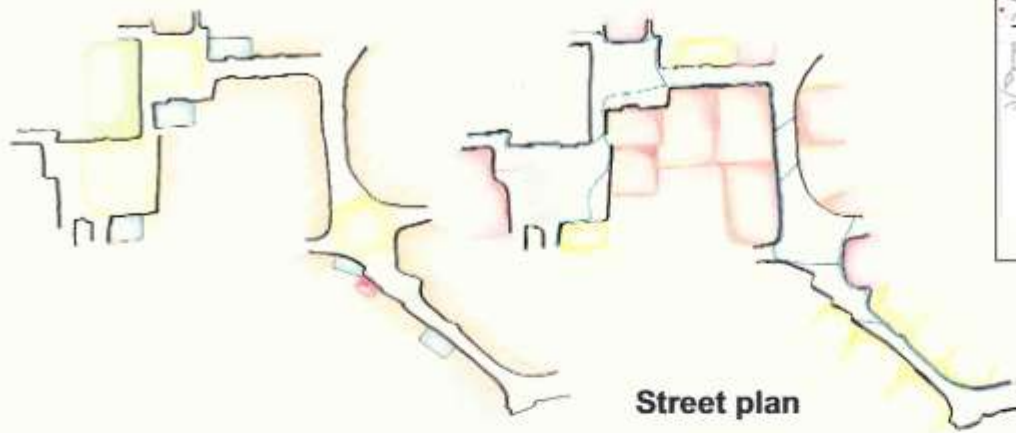
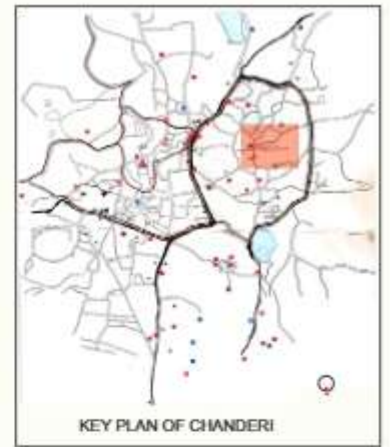




**Key Plan of Chanderi
showing various
clusters**

- Weaving Cluster
- Weaving Cluster
- Weaving Cluster
- Historical Monuments
- ▲ Amenities
- Lakes
- Baodi
- Darwaja
- Fortification Wall
- Clusters
- Major Roads

Cluster1



Street plan



Zoning

- PUBLIC
- RESIDENTIAL
- SHOPS
- MOSQUE
- TEMPLE

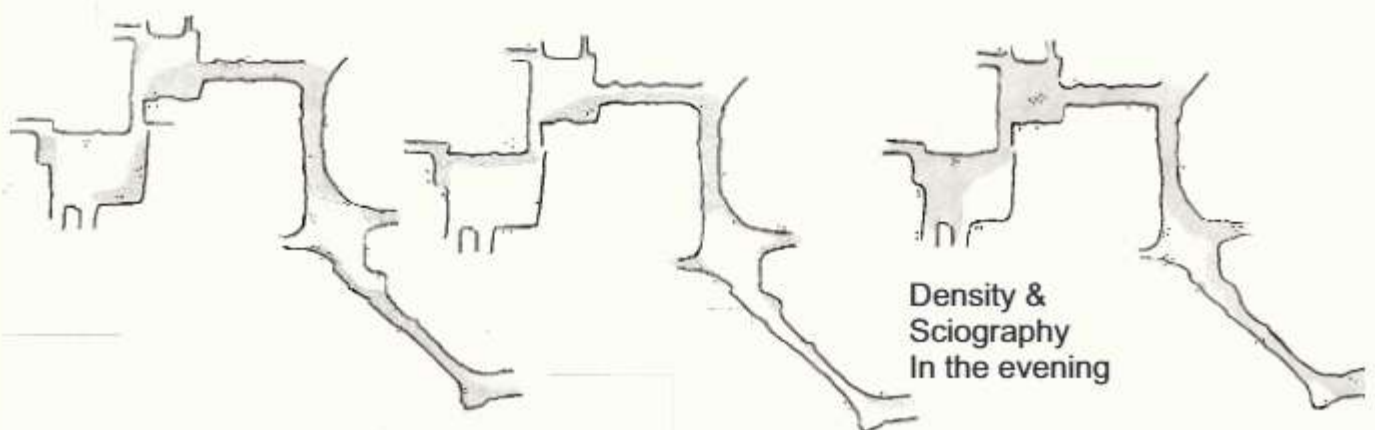
Structures

- G
- G + 1
- GUTTER LINE



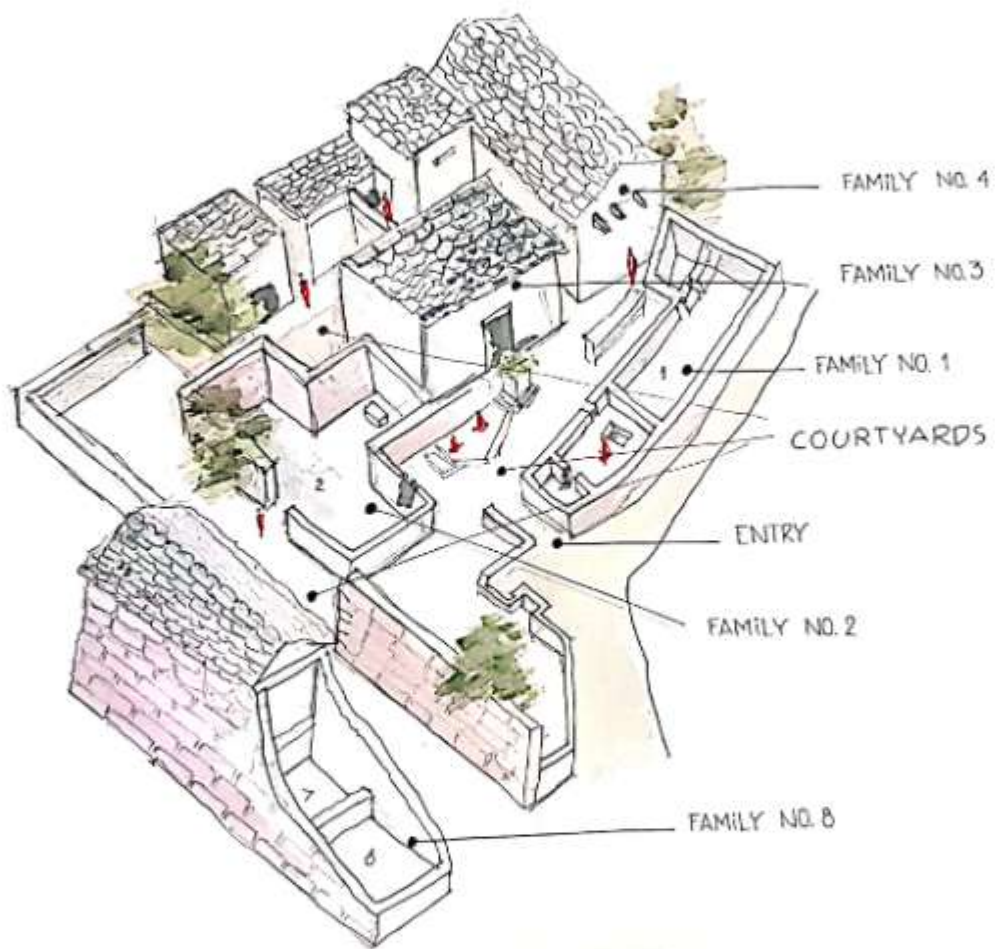
Density & Sciography
In the morning

Density & Sciography
In the afternoon

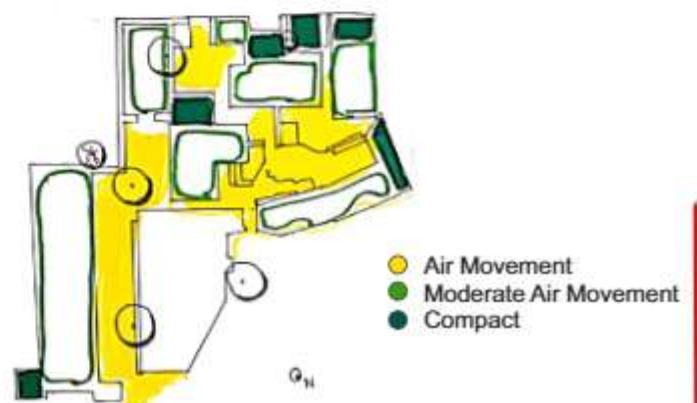


Density & Sciography
In the evening

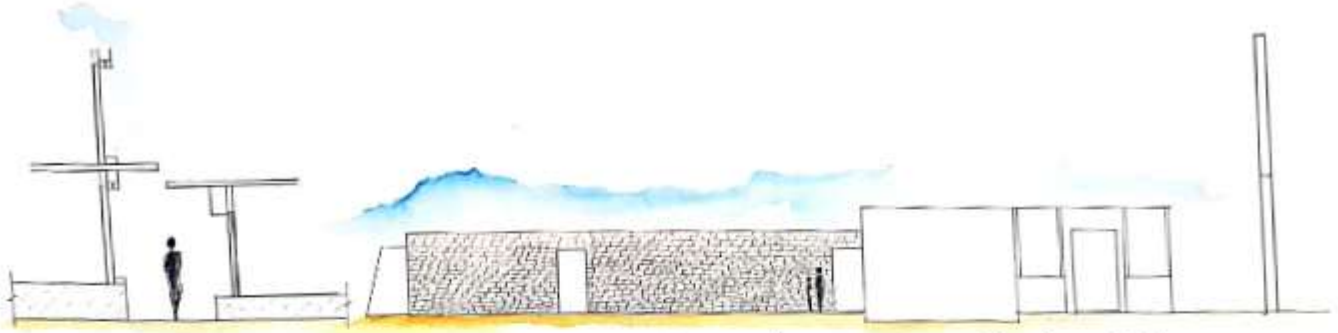
Cluster 2



Air Movement



Cluster 2



Section CC'
SCALE = 1:50



Section DD'
SCALE = 1:100

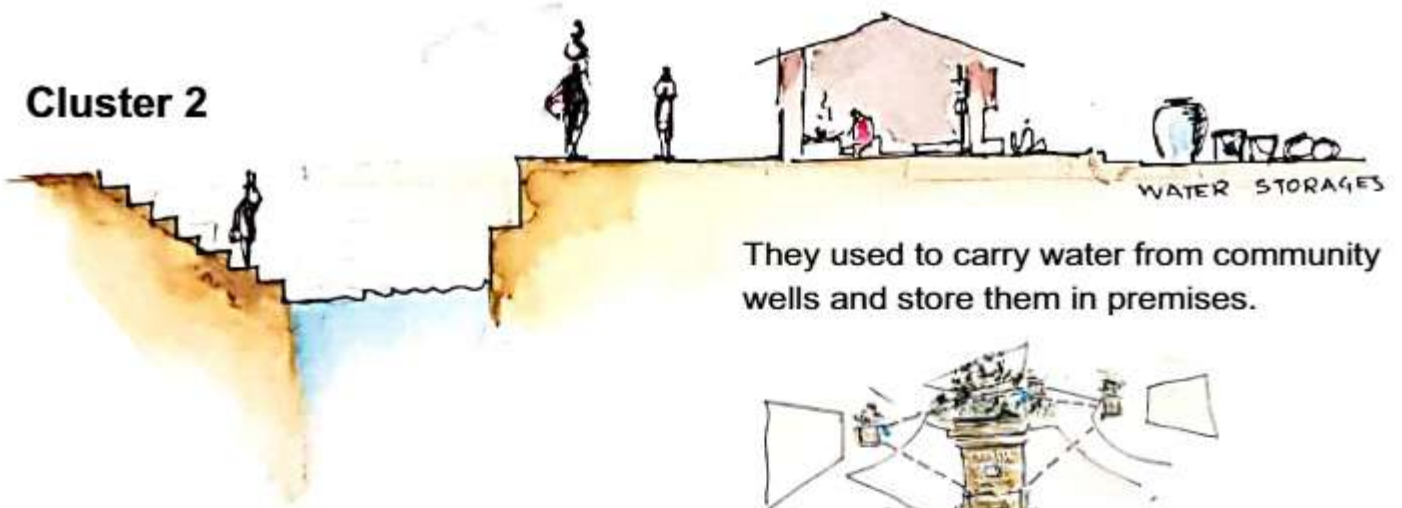


Roof plan
Scale 1:100

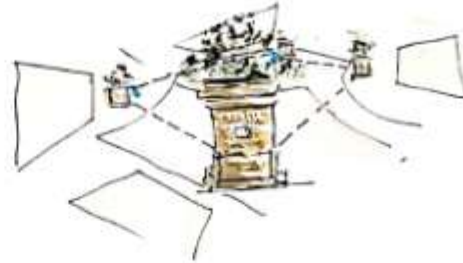


Ground floor plan
Scale 1:100

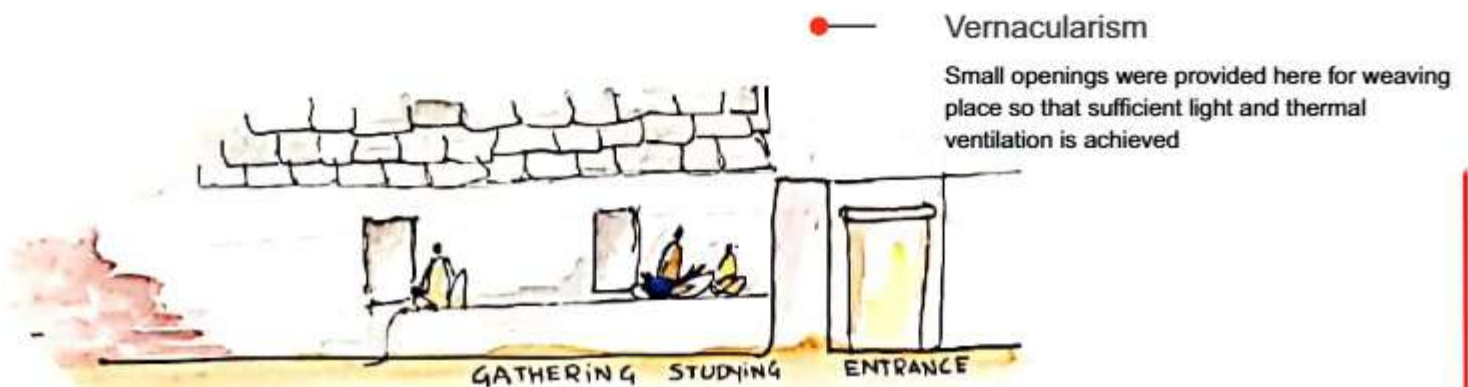
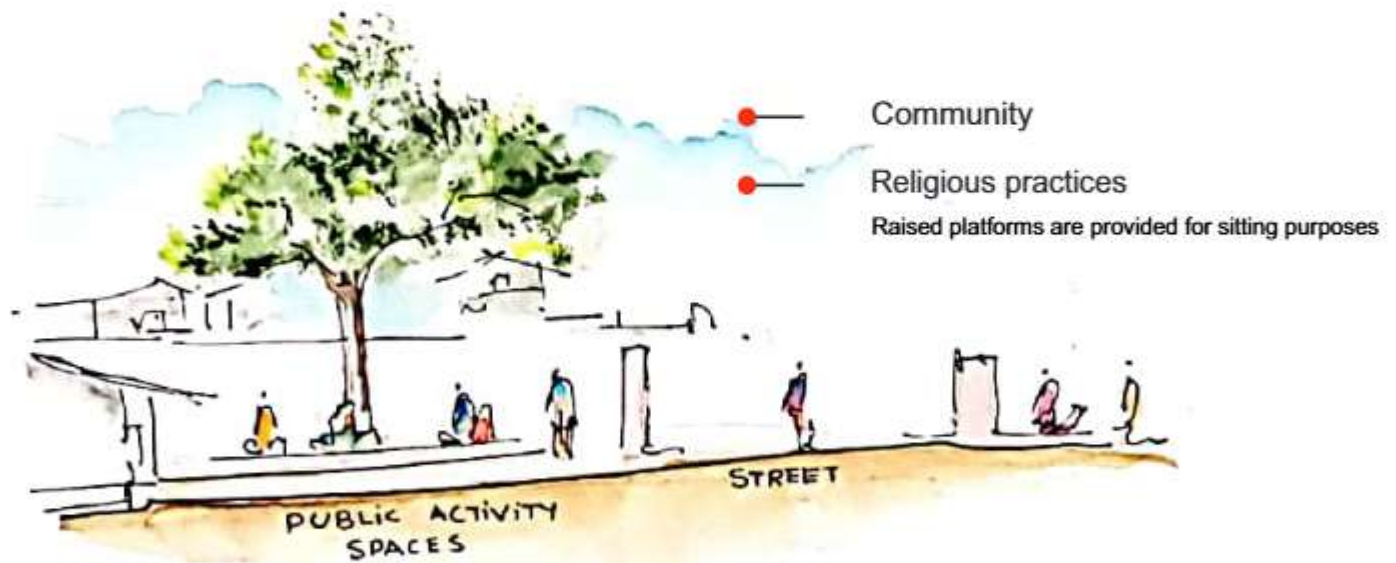
Cluster 2



They used to carry water from community wells and store them in premises.



Religious practice includes individual Tulsi trees in yard Which defines Invisible boundaries



Cluster 2

Cluster 2



VERNACULAR
HAND LOOM

Occupation

Weaving modern handloom has paddles leading to deeper dispersion on a floor i.e. 0.8



THREADING

They used to make treads on Charkha

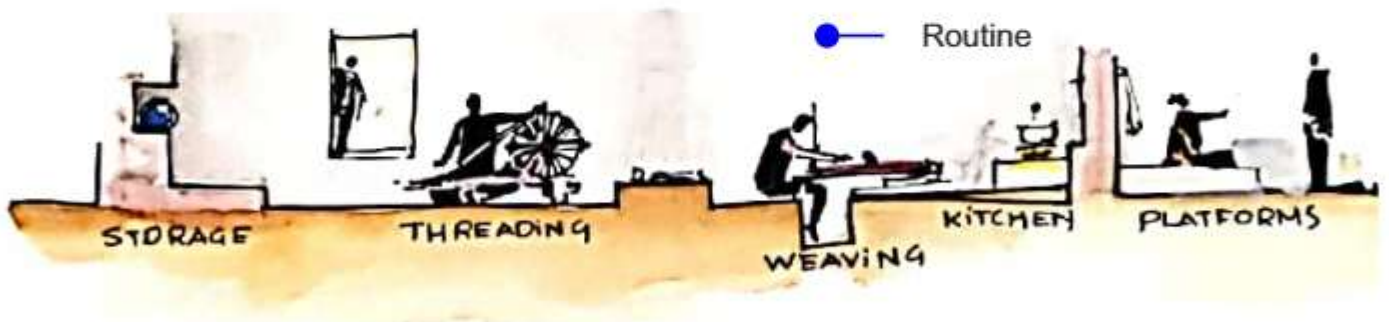


Dying and drying process of treading is done in their Houses only



DOOR
ENTRANCES

High plinth and thick walls created sitting places.



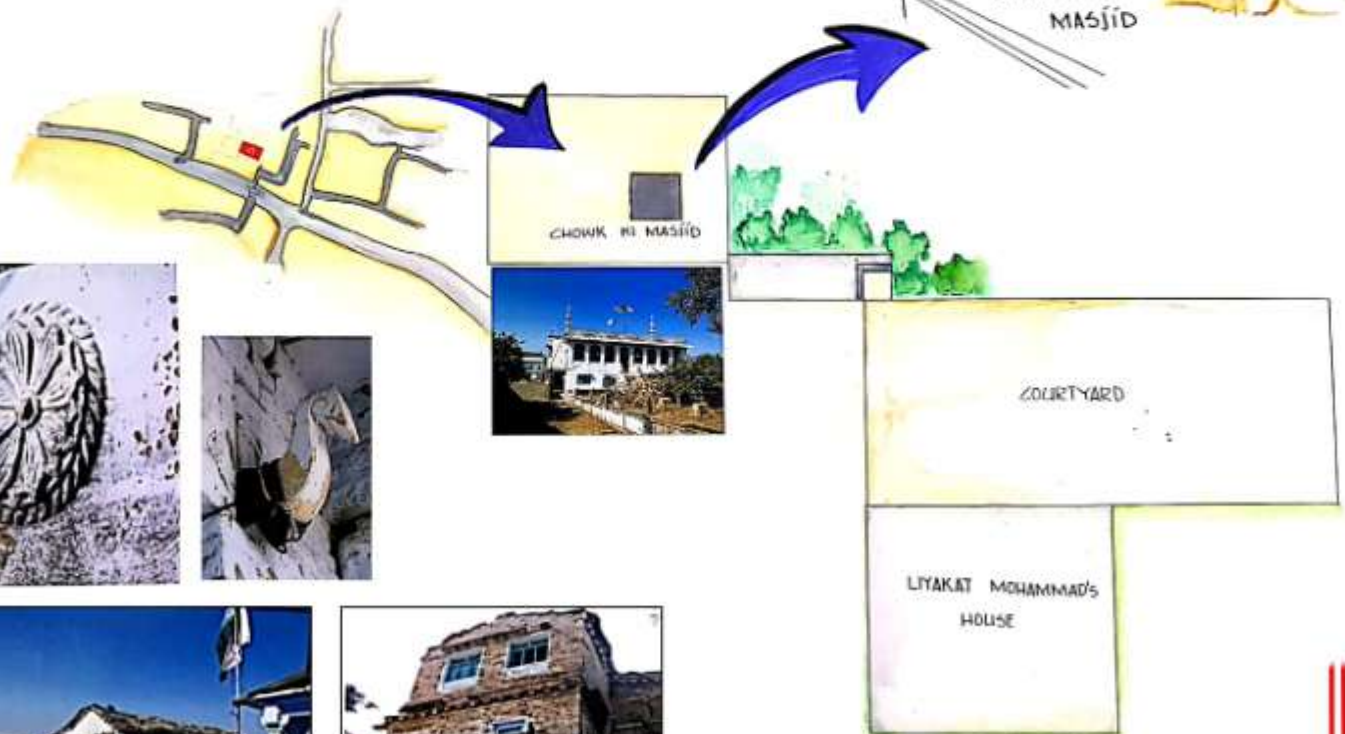
Cluster 2

Cluster3

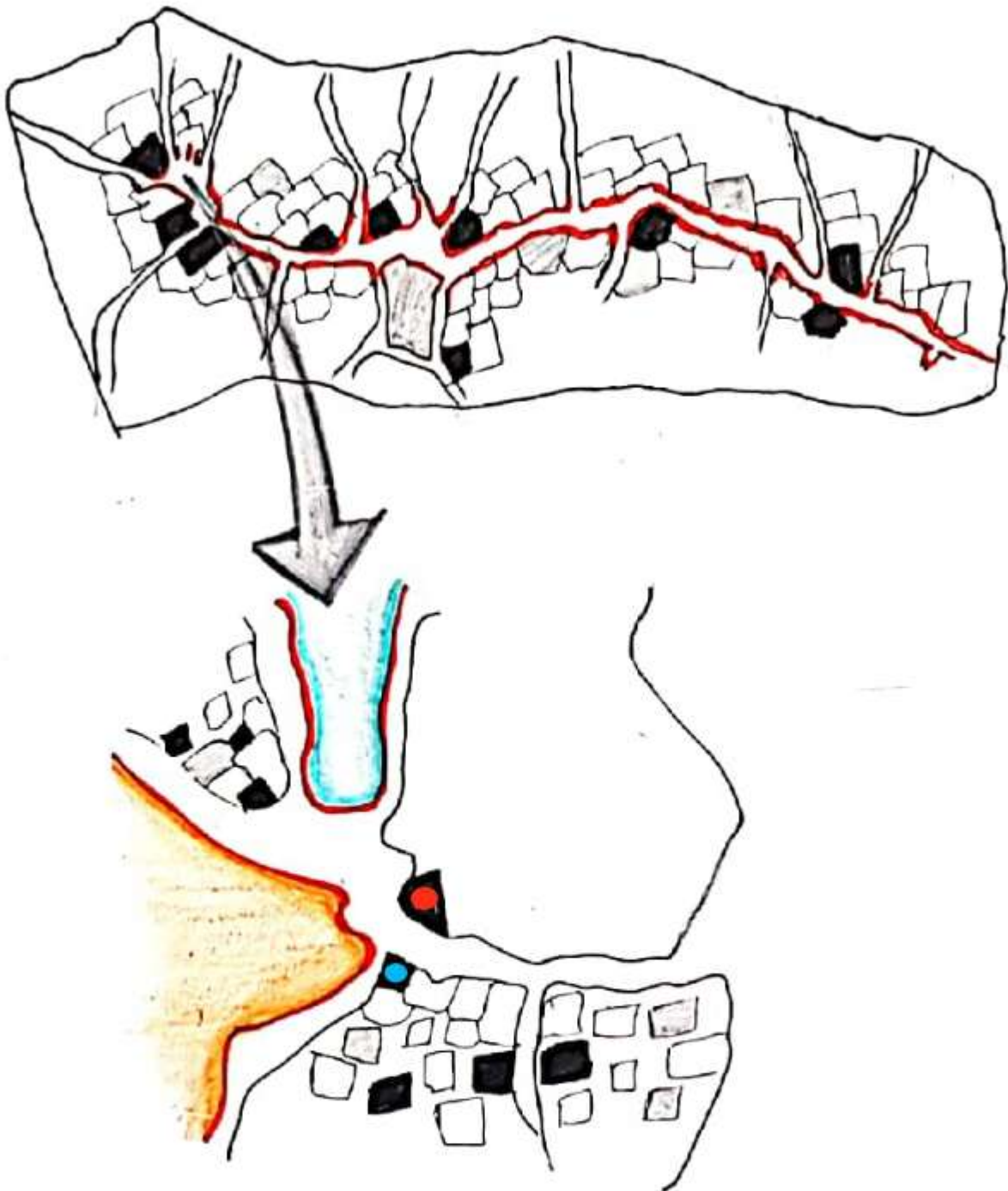
Liyakat Mohammad's house

Four families occupy the house

- 1st Family
 - 7 members
 - Occupy ground floor
- 2nd Family
 - 5 members
 - Occupy first & second floor
- 3rd Family
 - 4 members
 - Occupy second floor
- 4th Family
 - 5 members
 - Occupy second floor



Location map of Havelis



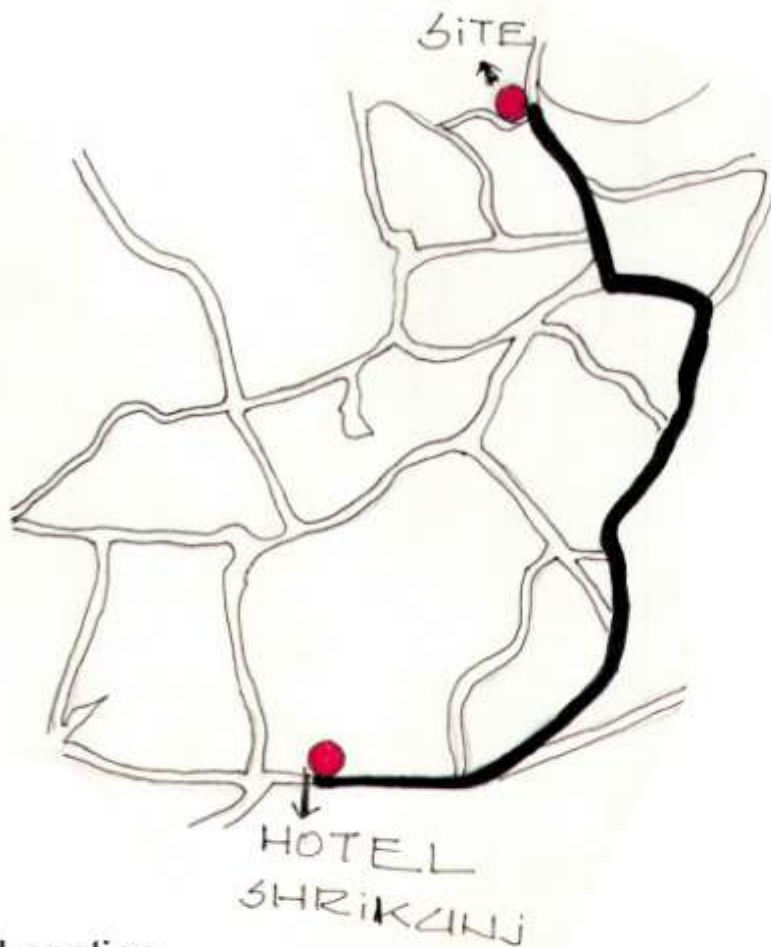
Analysis

- Built spaces
- Unbuilt spaces
- Semi open spaces
- Khadiyajy haveli
- Lalmaniji haveli
- Private
- Semi public
- Public

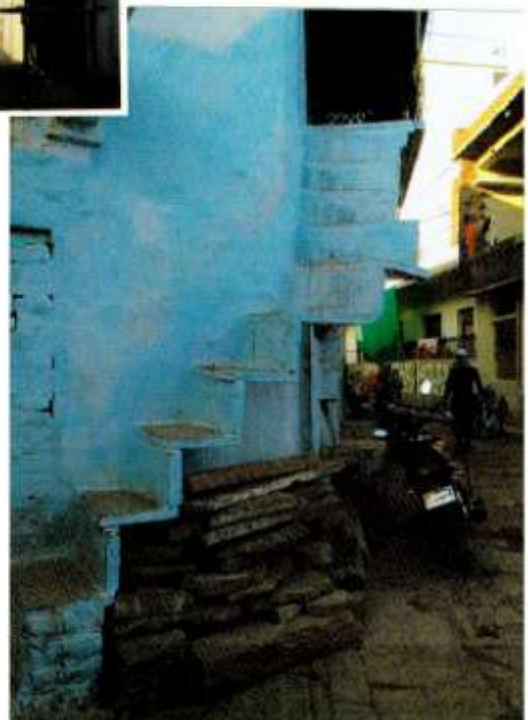
Circulation pattern

- 1) Linear pattern of Circulation
- 2) Radial pattern of Circulation

Haveli



Location



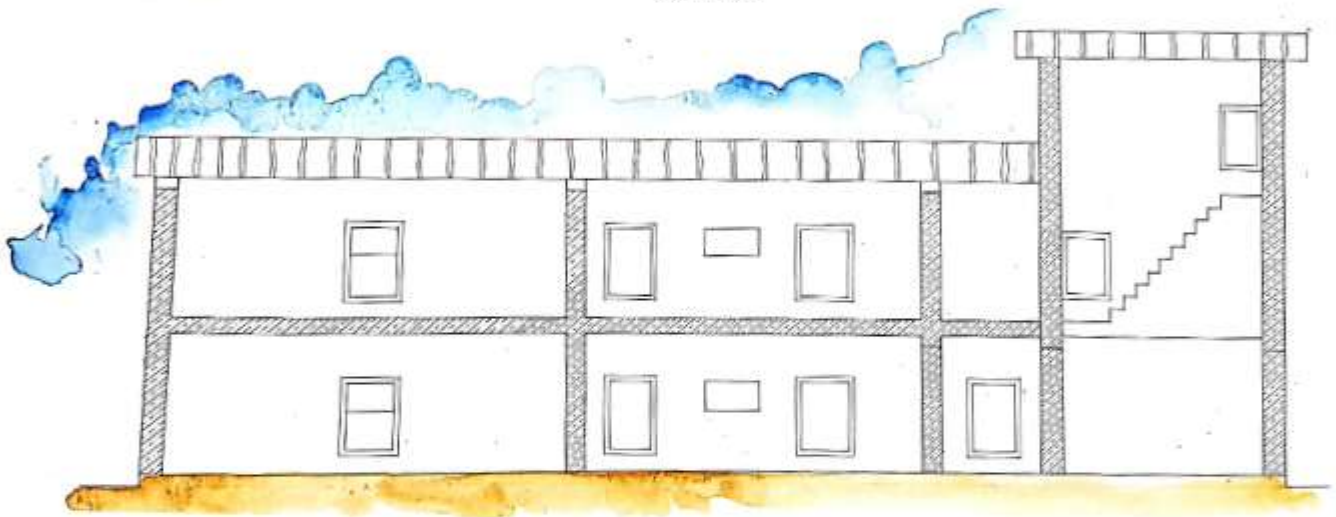
Facts

- Owner of haveli :- Naim Aehmad
- No. Of families live - 7
- No. Of members live - 50
- Occupation of family members - weaving
- Haveli is made for upper class muslims
- Like the Sheikhs, Mughals, Sayyids and Pathons - they are landowners
- Havelis of Andar Shaner - famous for Heraldic department and beckoning Jharokas
- Havelis are 600 years old

Sadoki Haveli



Section AA'
scale 1:50



Section BB'
scale 1:50

Structural analysis
Structure is approximately
500 years old

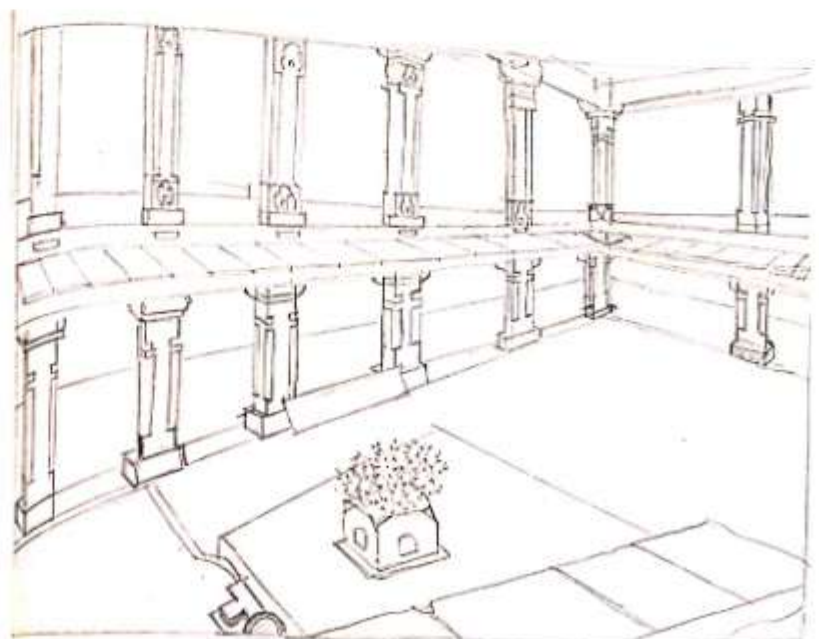
Large entrance

Weaving work is done around the
Courtyards in semi- open area

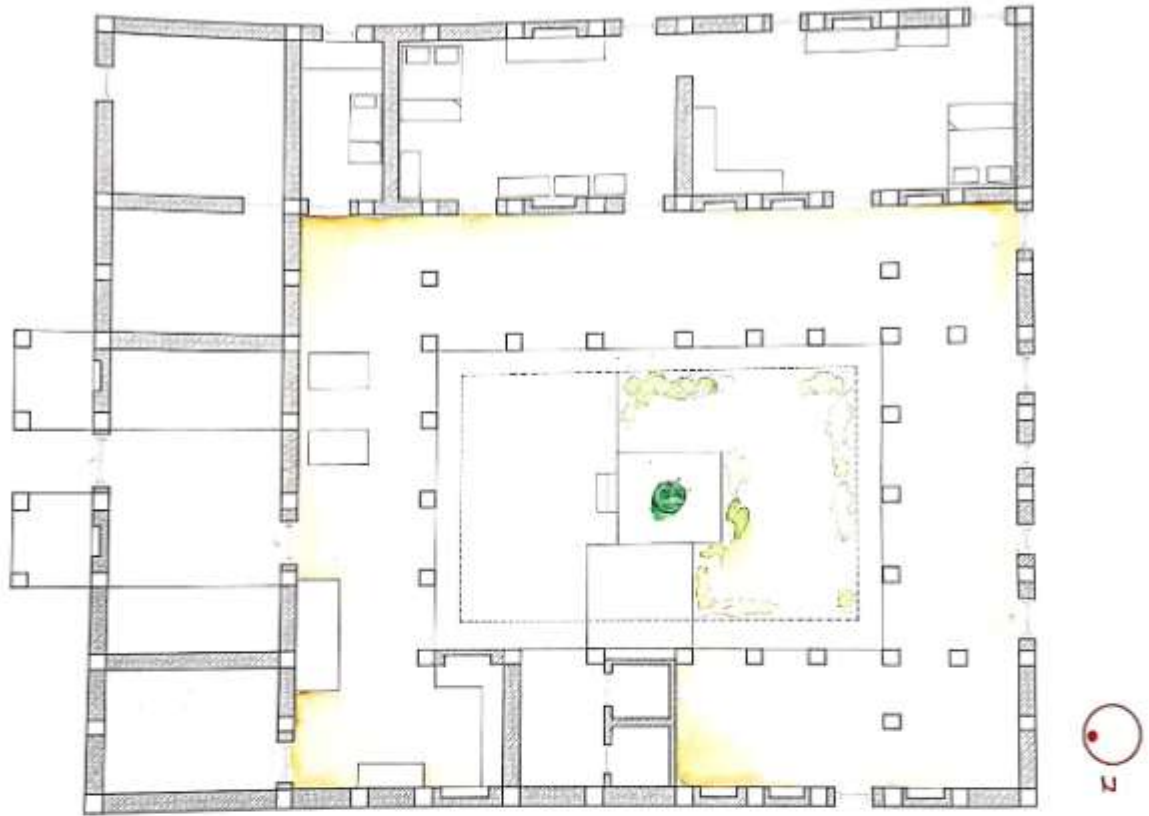
Provides ventilation during
summer & Sun space during
winters

Symmetrical planning

Niches for strong things

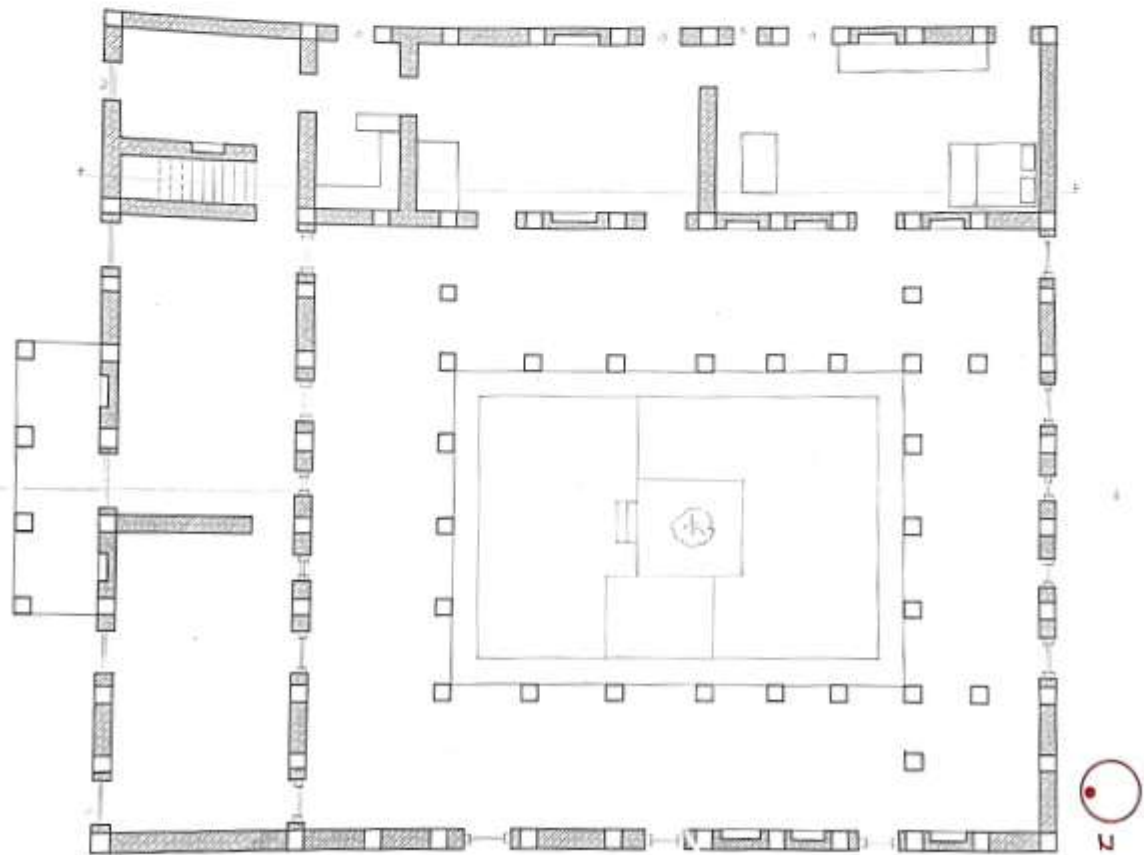


Sadoki Haveli



Ground floor plan

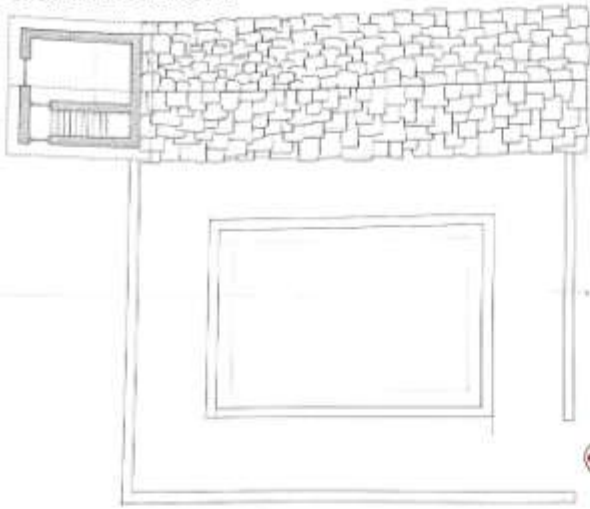
Scale 1:50



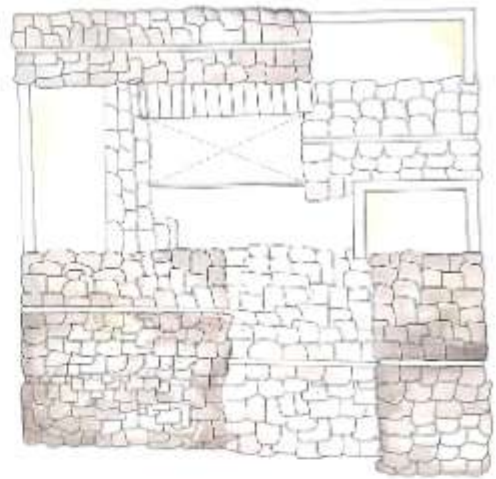
First floor plan

Scale 1:50

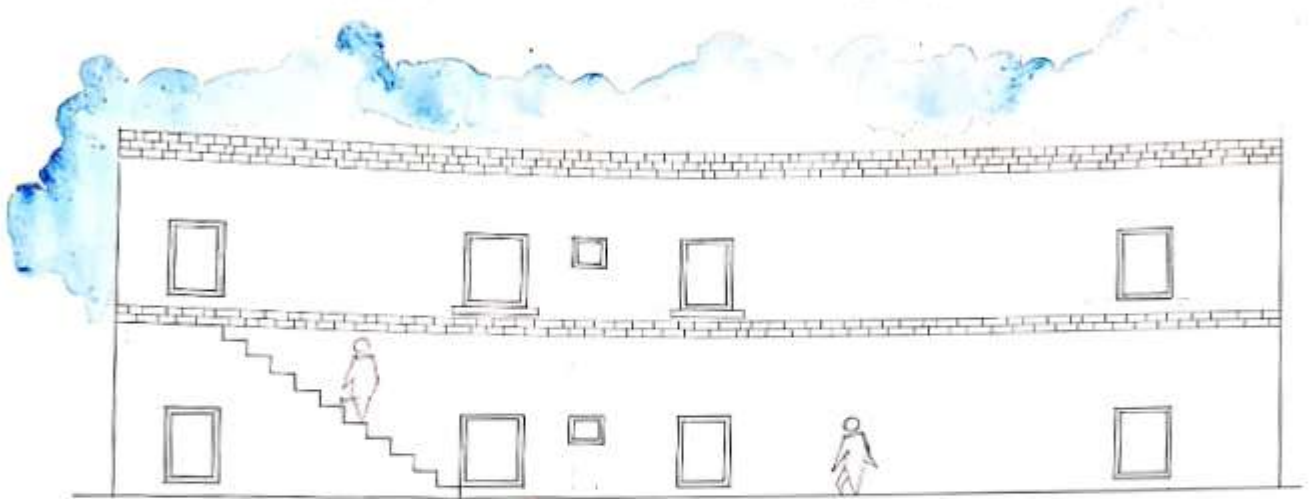
Sadoki Haveli



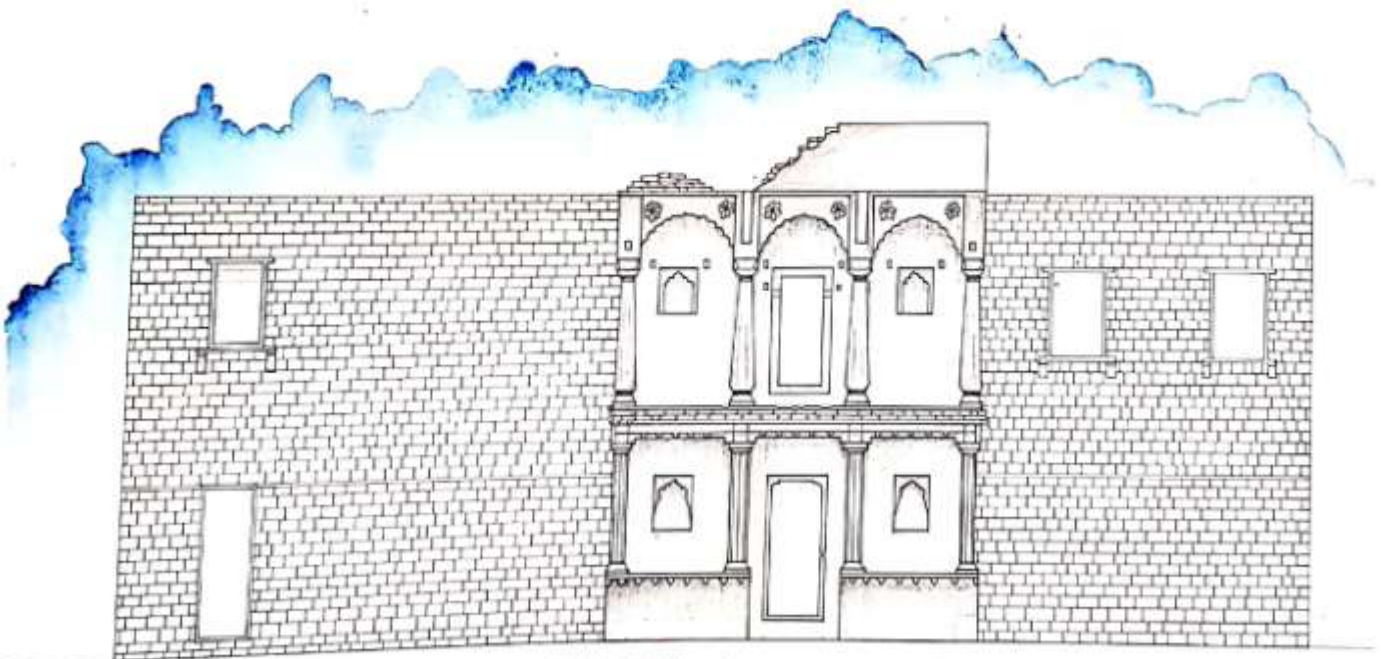
Second floor plan
Scale 1:50



Roof plan
Scale 1:50



South side elevation
Scale 1:50

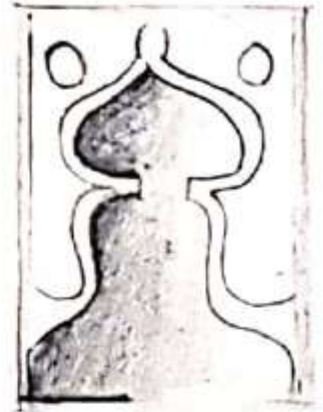
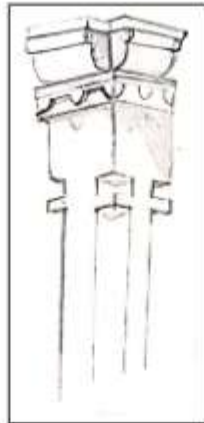


North side elevation
Scale 1:50

Sadoki Haveli

Columns were constructed using stone

Material analysis Flooring :
Mud coated with
cow dung Columns,
Beam : sandstone
Wall : mud, sandstone



The symbol was repeated at every lintel level which symbolized unity.



Single stones were used as beams red sandstones were laid on the beams as slab and mud was laid on it as flooring. Lobbies were used as working space as well as living area.



The climate here demands the movement of air as well as shaded spaces which is fulfilled by the courtyard

- Cross ventilation
- Gathering space

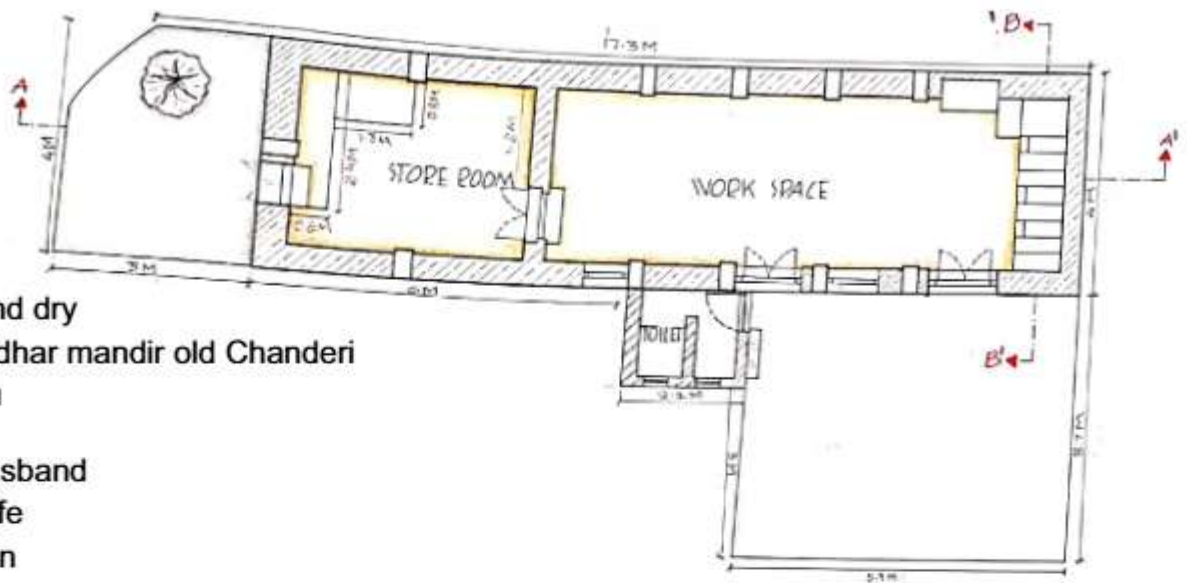


Large openings facilitates the play of light & shadow lobbies were used as living area and kitchen



Single room acted as a multi purpose room niches & pockets for strong things.

Khadiyaji ki haveli



Ground floor plan
Scale 1:50

Climate - Hot and dry

Location - Murlidhar mandir old Chanderi

Religion - Hindu

Members- 3

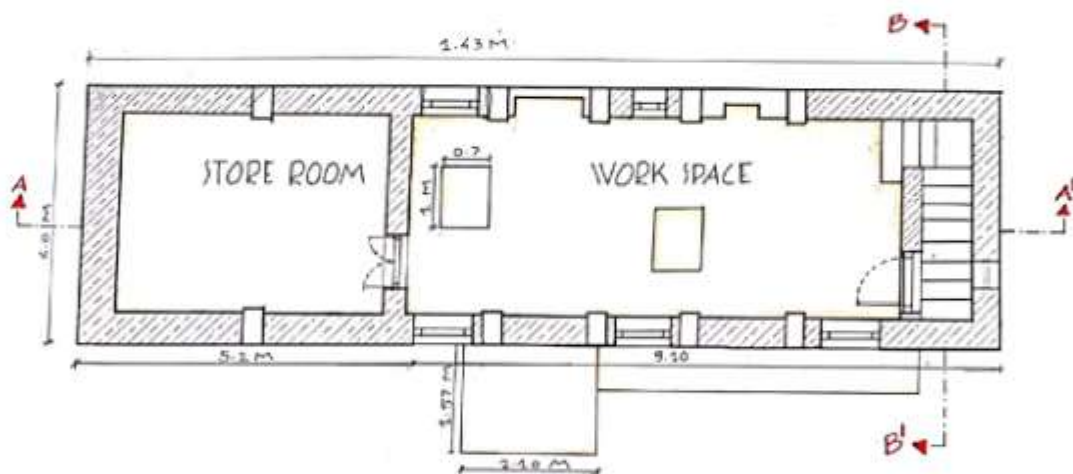
- (1) Husband
- (2) Wife
- (3) Son

Material - Stone, wood, plaster of mud

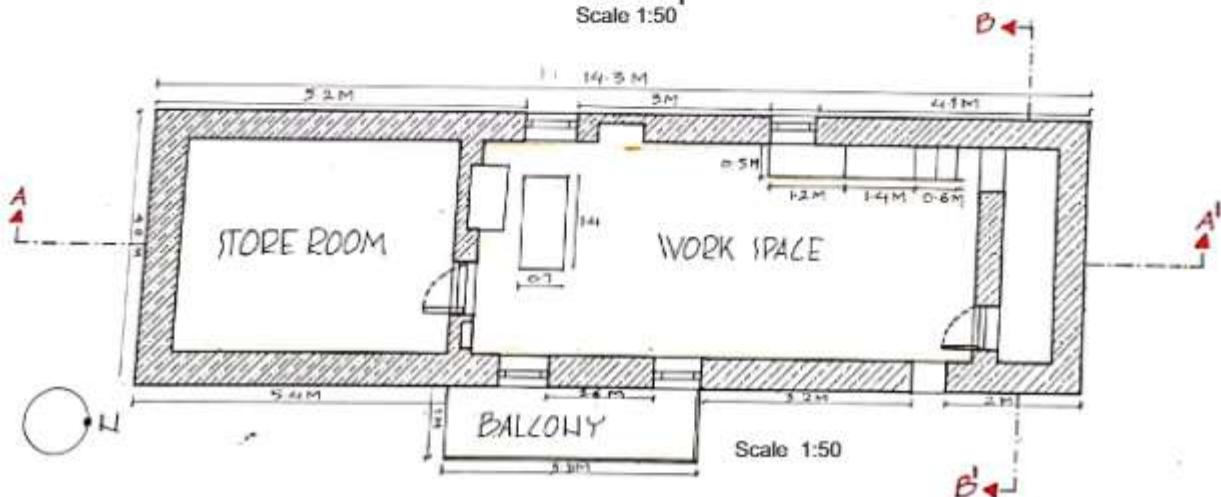
Economy- 100 rs. Per day

Furniture Bed sand weaving machine

Niches provided for storage
Instead of cuboards



First floor plan
Scale 1:50

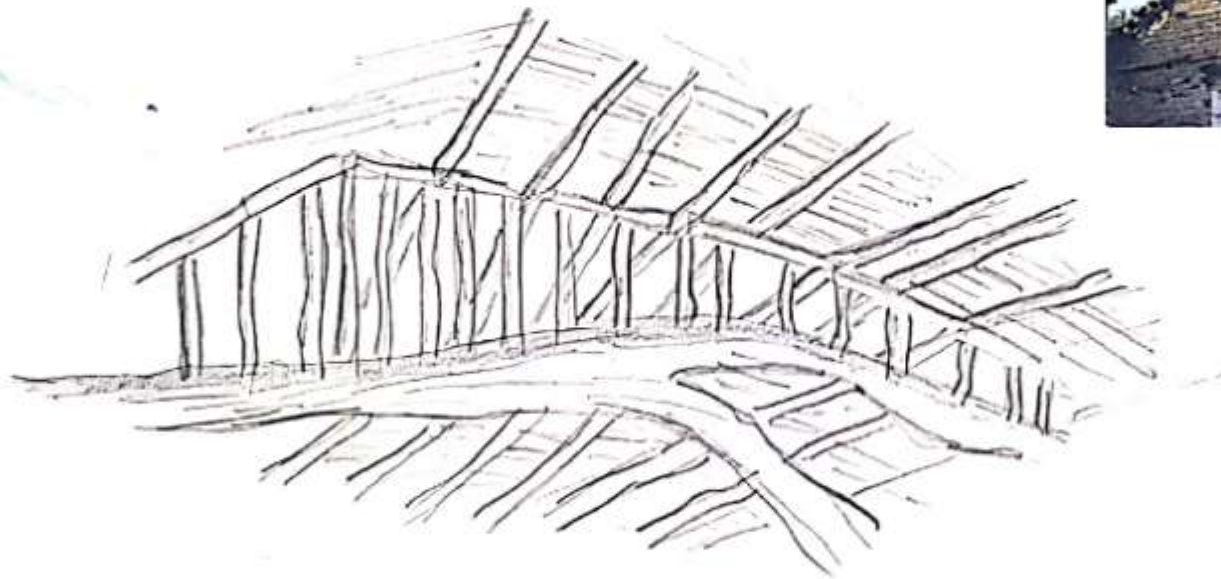


Second floor plan
Scale 1:50

Khadiyaji ki haveli



Section AA'
Scale 1:50

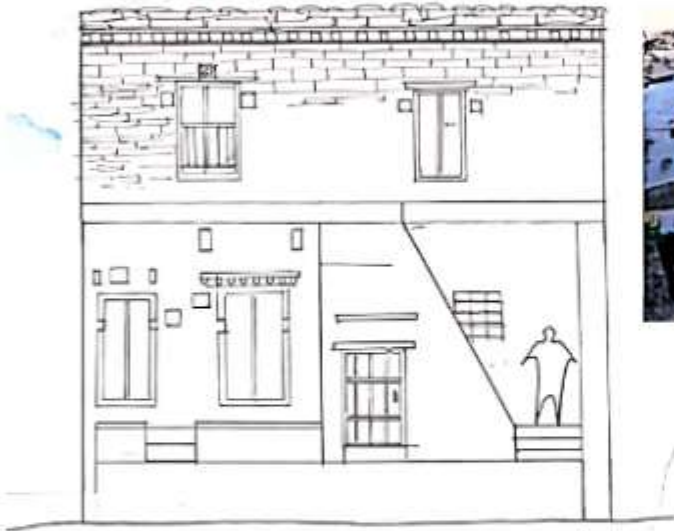


Section BB'
Scale 1:50

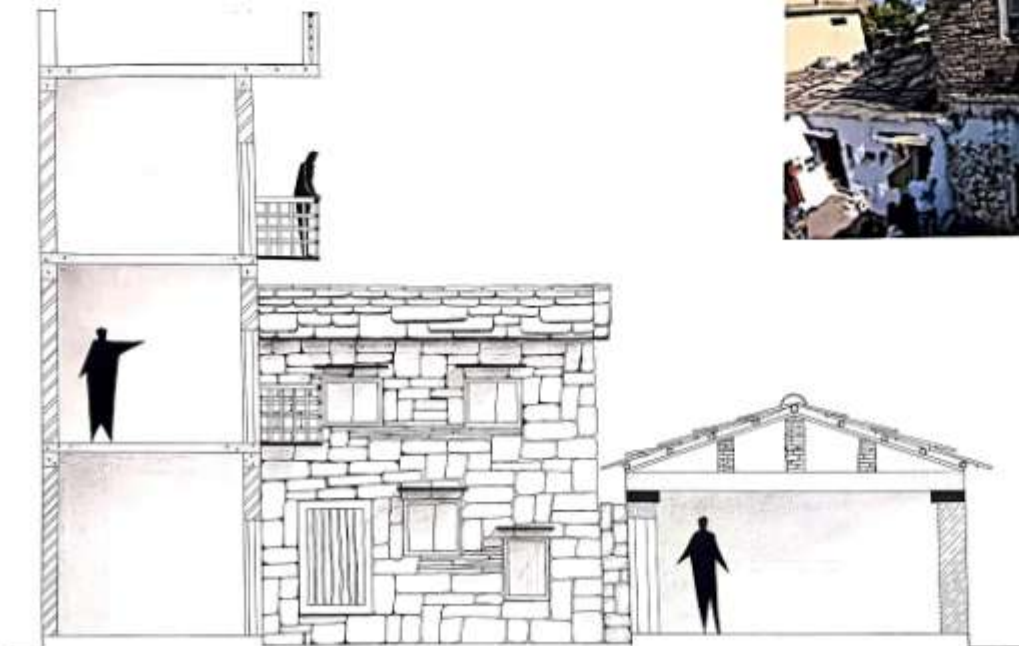
Khadiyaji ki haveli



East side elevation
scale 1:50



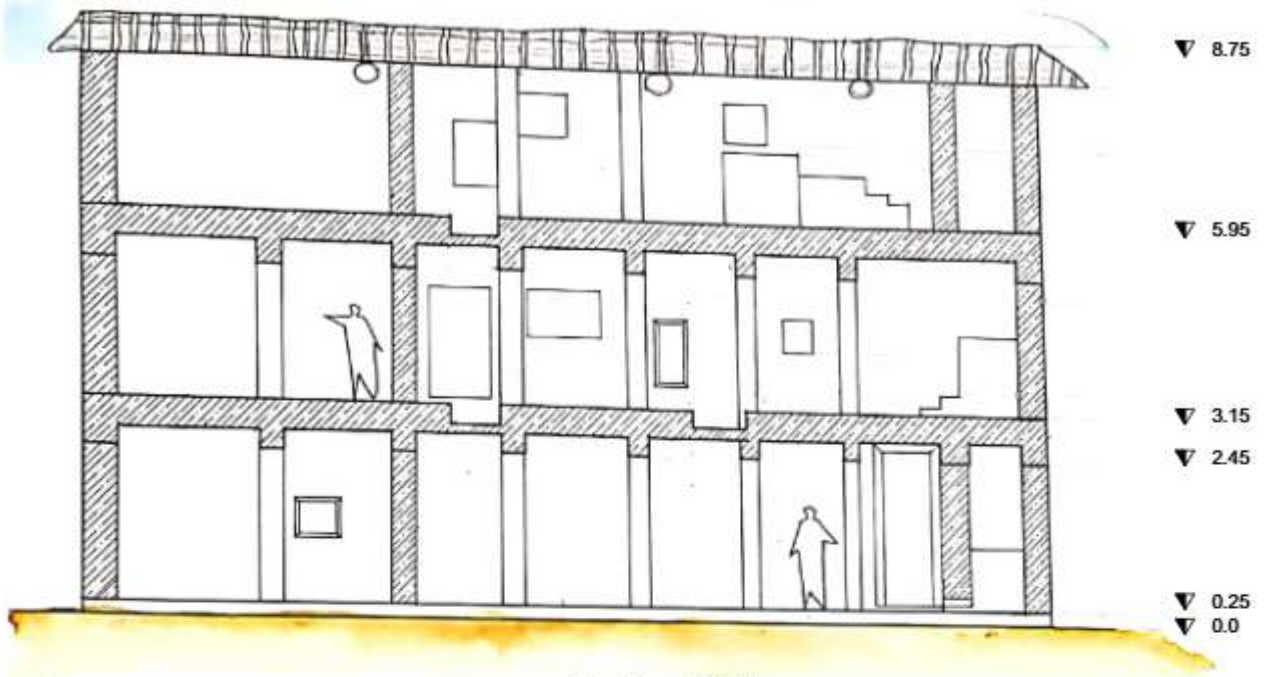
West side elevation
scale 1:50



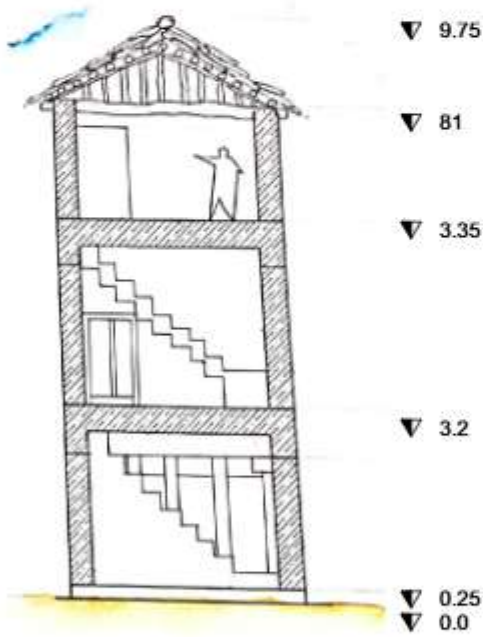
Section AA'
Scale 1:50



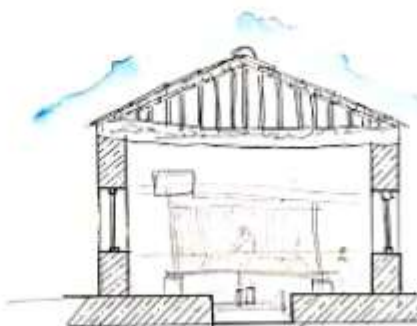
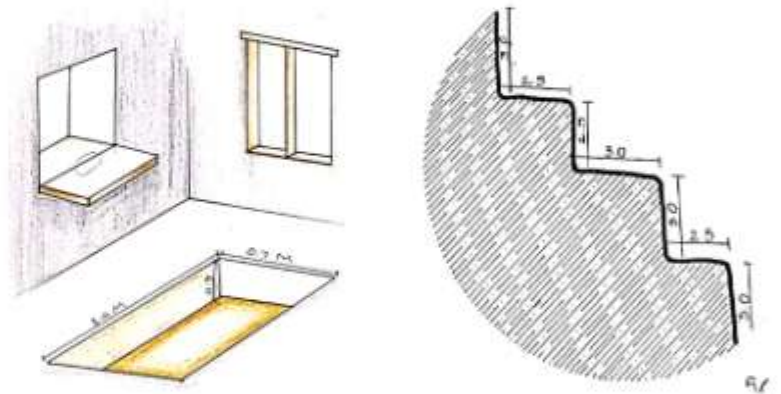
Khadiyaji ki haveli



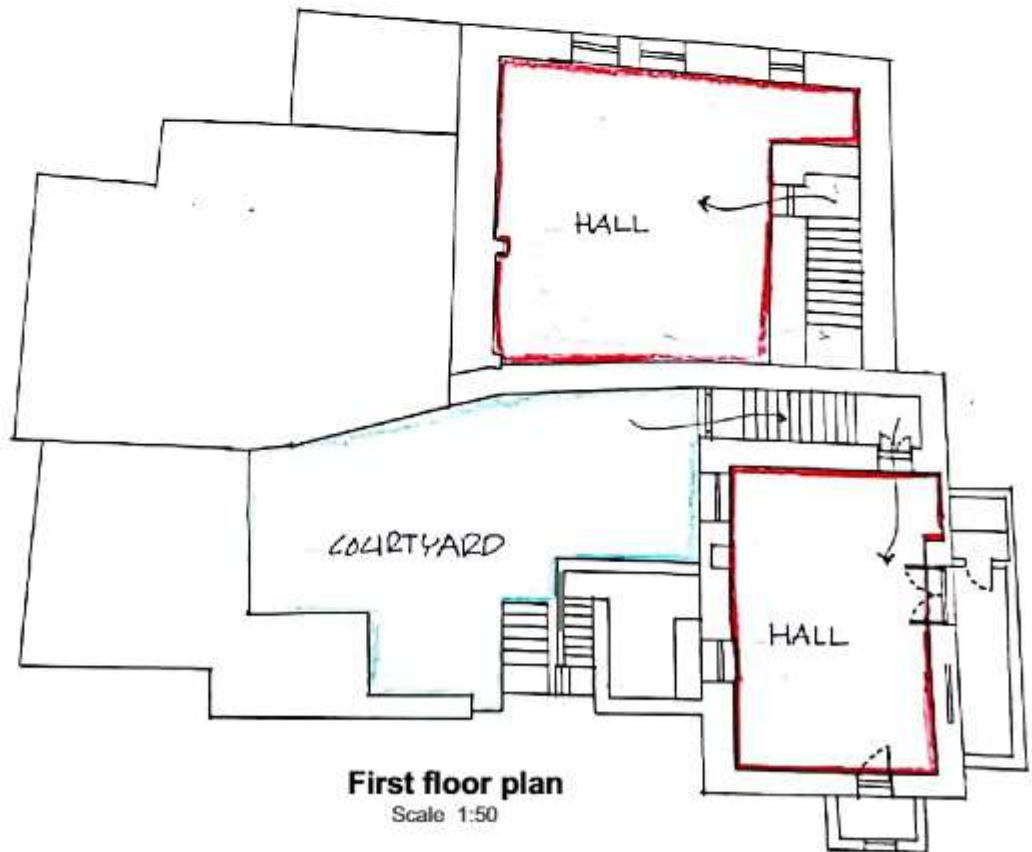
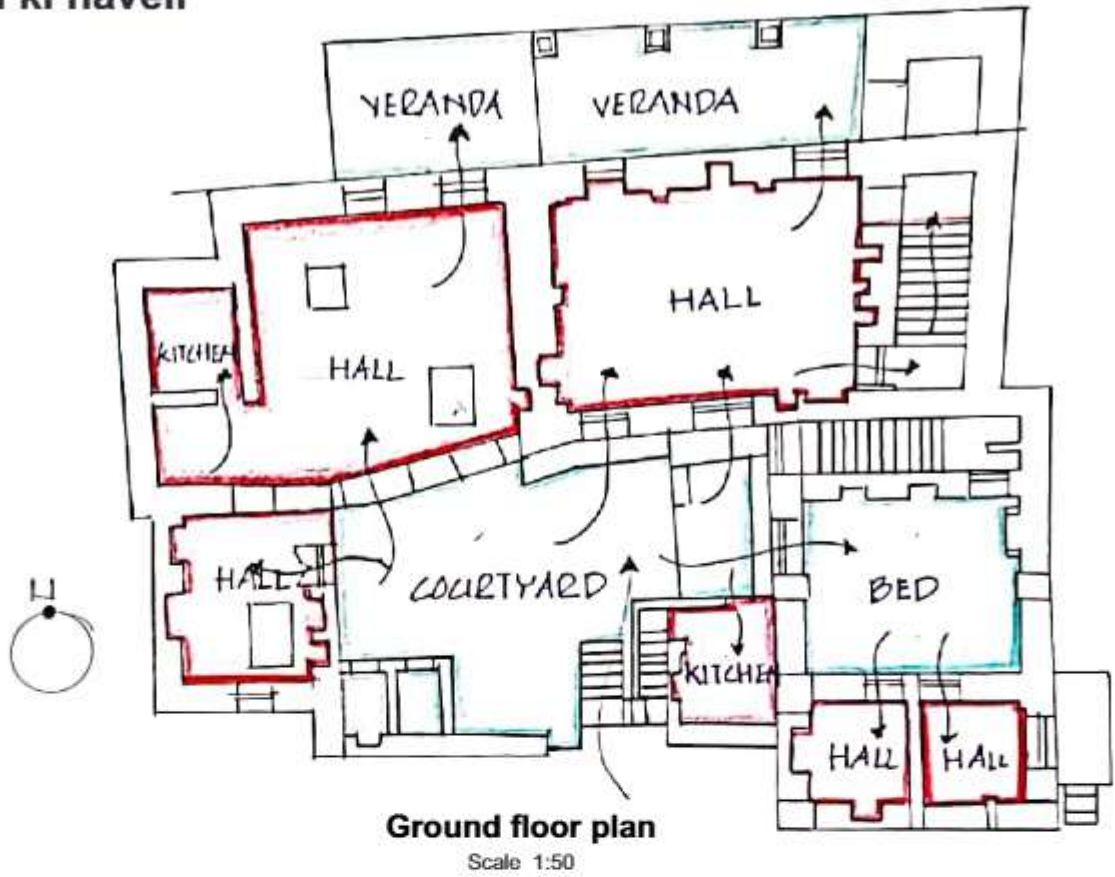
Section CC'
Scale 1:50



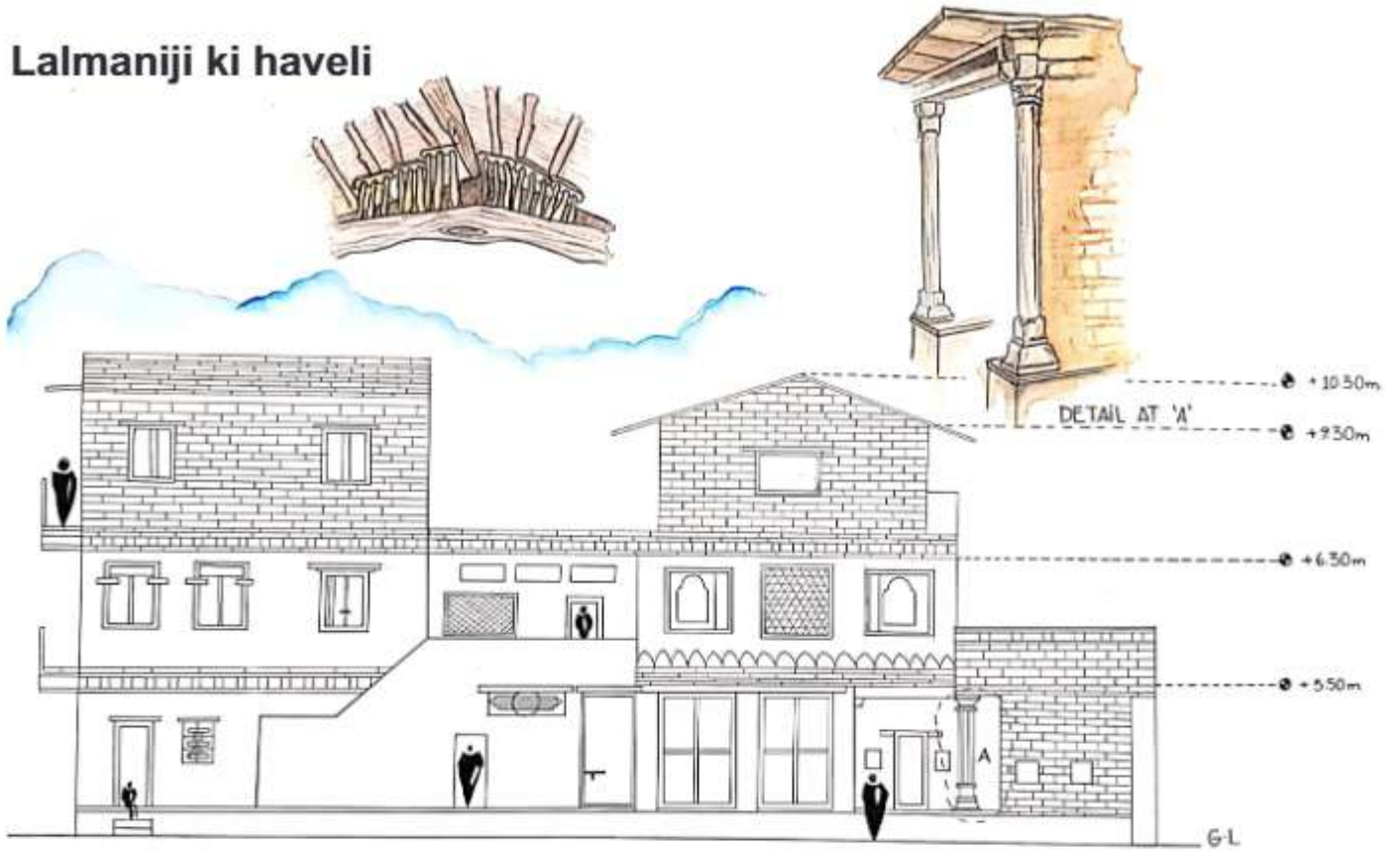
Section BB'
Scale 1:50



Lalmaniji ki haveli

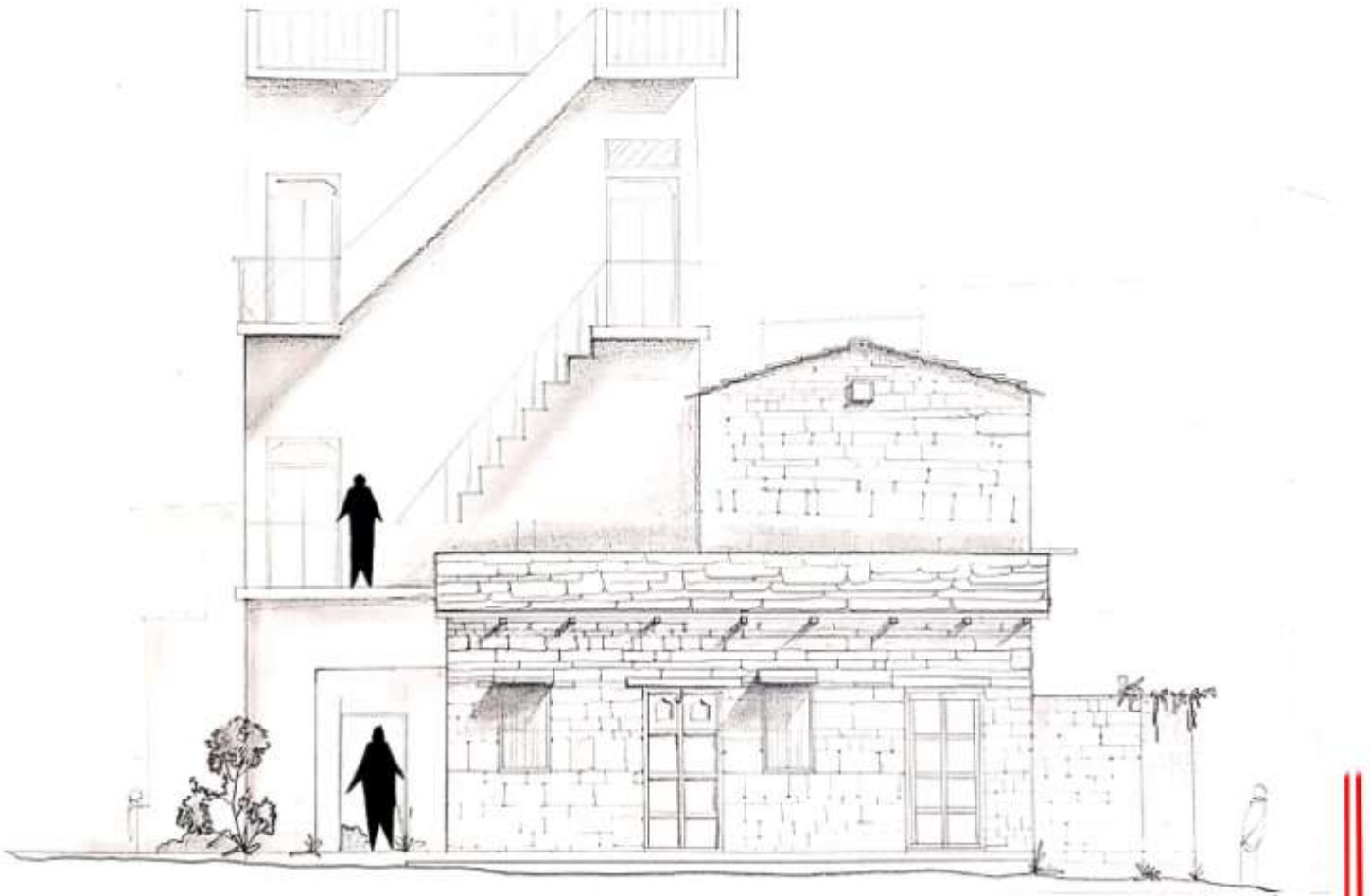


Lalmaniji ki haveli



South side elevation

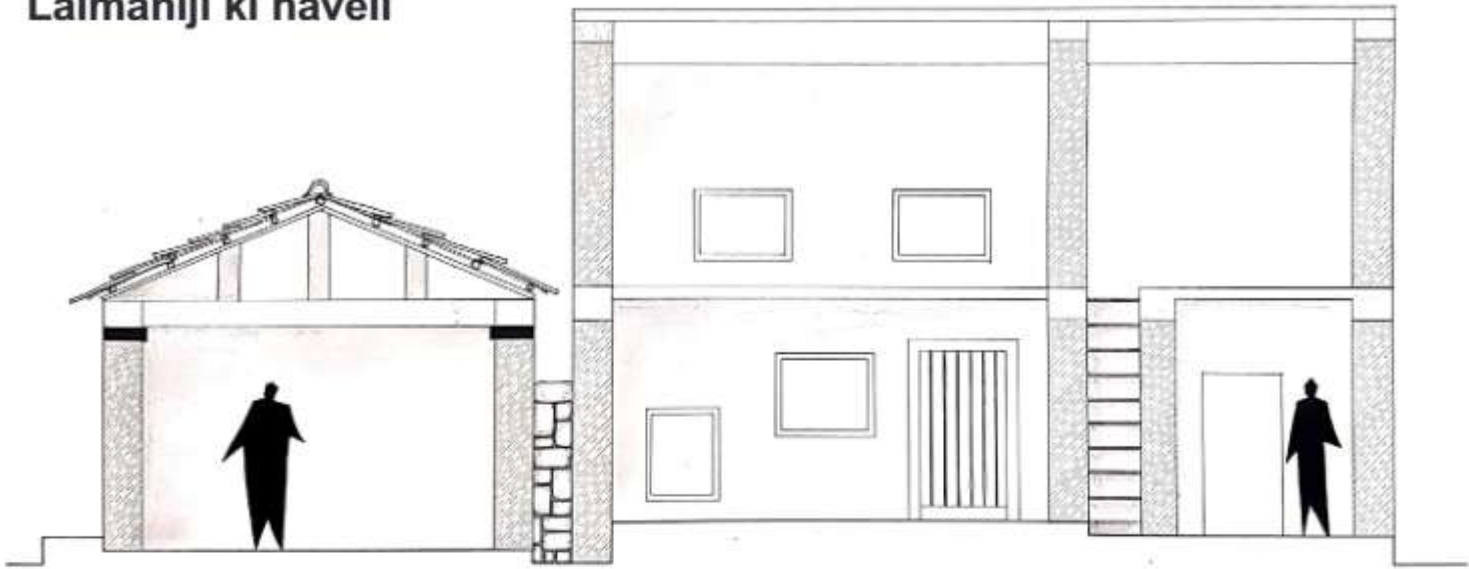
scale 1:50



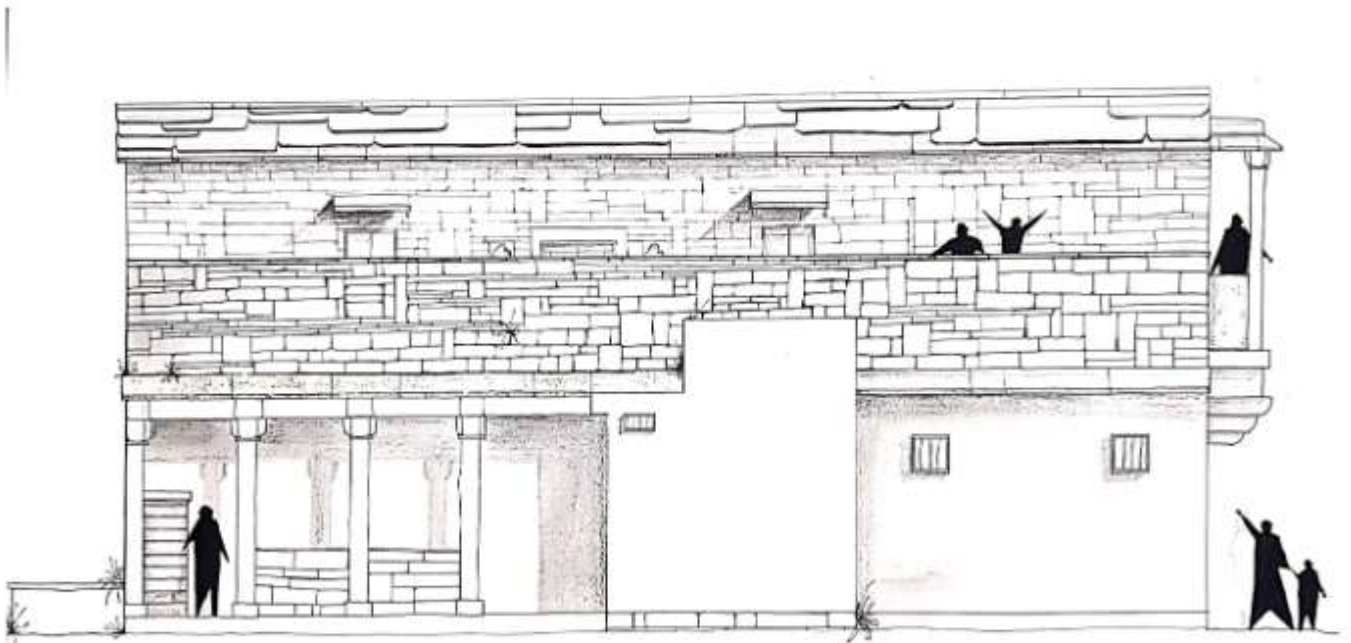
East side elevation

scale 1:25

Lalmaniji ki haveli



Section BB'
Scale 1:25



West side elevation
Scale 1:25

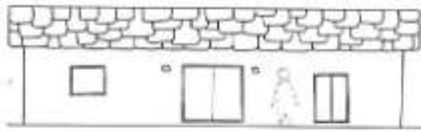
House 1



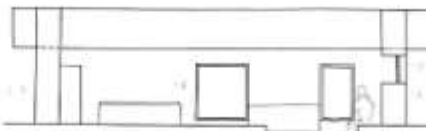
North Elevation



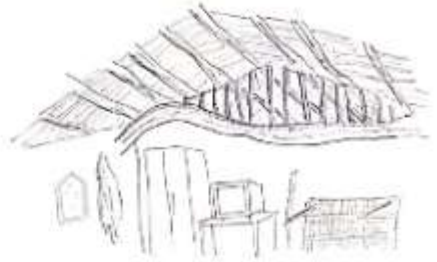
Section AA'



East side elevation



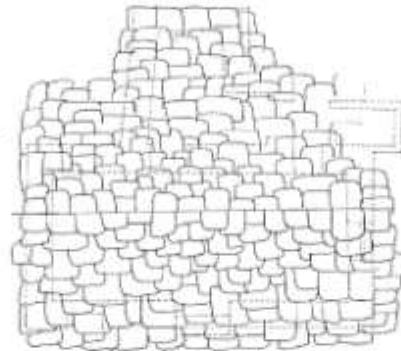
Section BB'



3D view



Ground floor plan



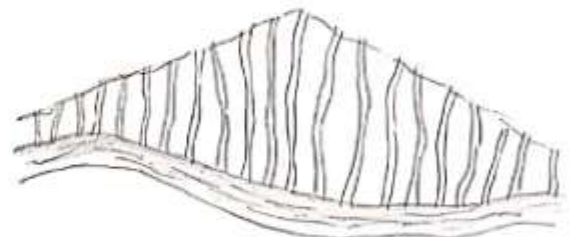
Roof plan

Traditional house

Location



Niches and pockets made in wall for strong



Material

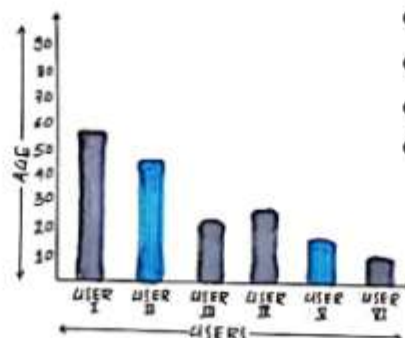
- Brick walls
- Mud walls
- Red sandstone
- Iron wood for beams
- Mud flooring coated
- With cowdung

User Analysis

Number of users : 06

Occupation : weaving

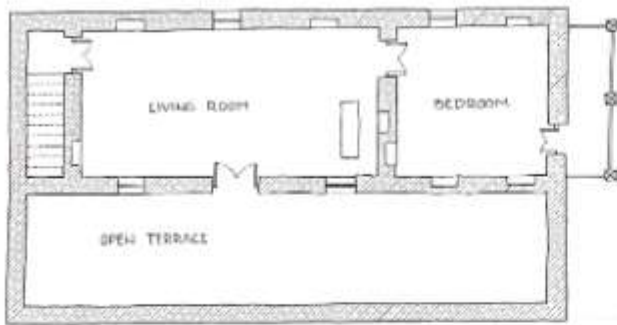
Type of users



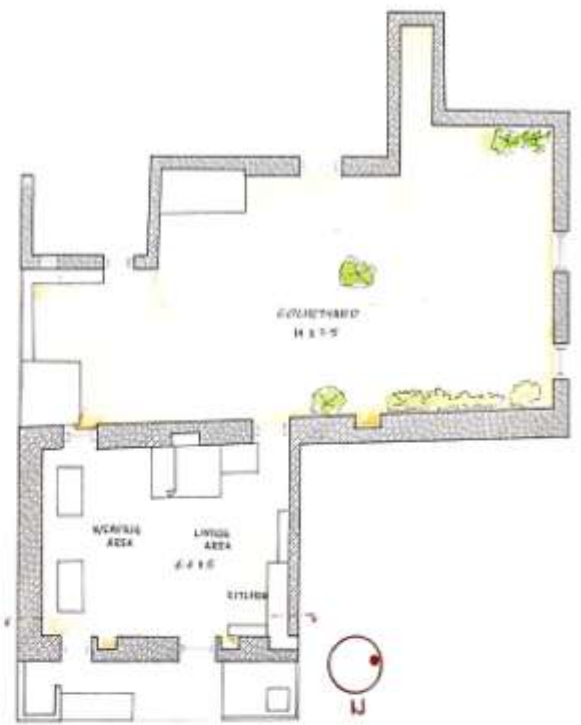
Walls were made thick to Create pocket and Niches

- FEMALE
- MALE

House 2



First floor plan



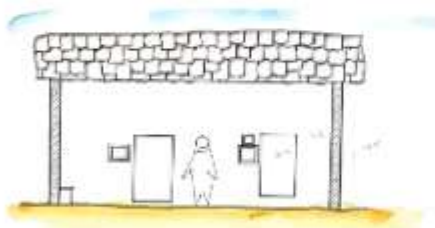
Ground floor Plan



Section AA'



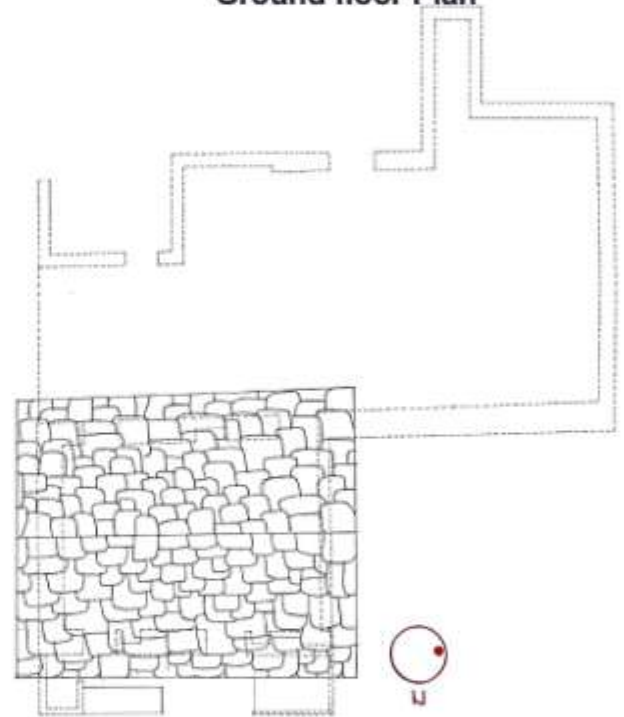
Section BB'



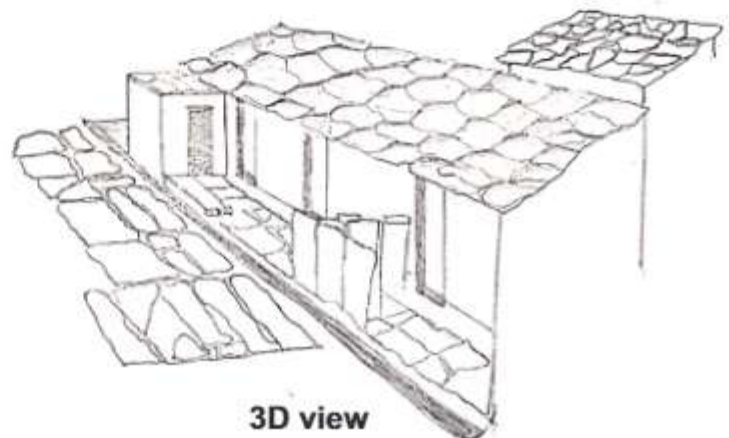
Section CC'



Front elevation



Roof plan



3D view

House 2



Roof



Temple Community Space



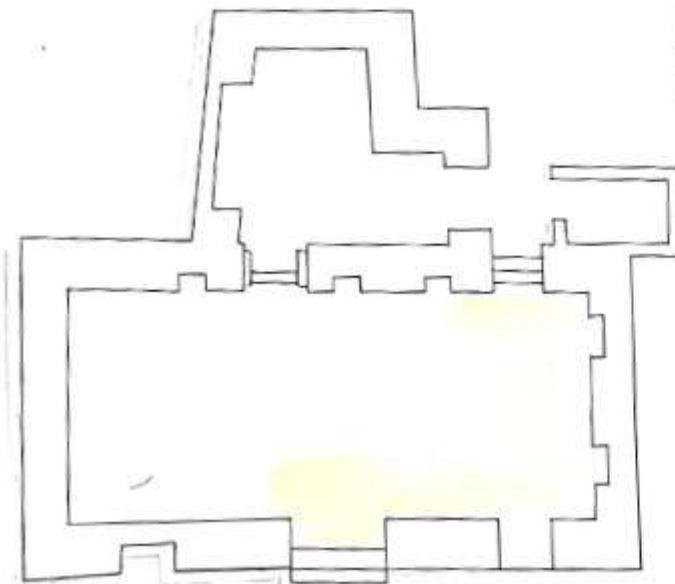
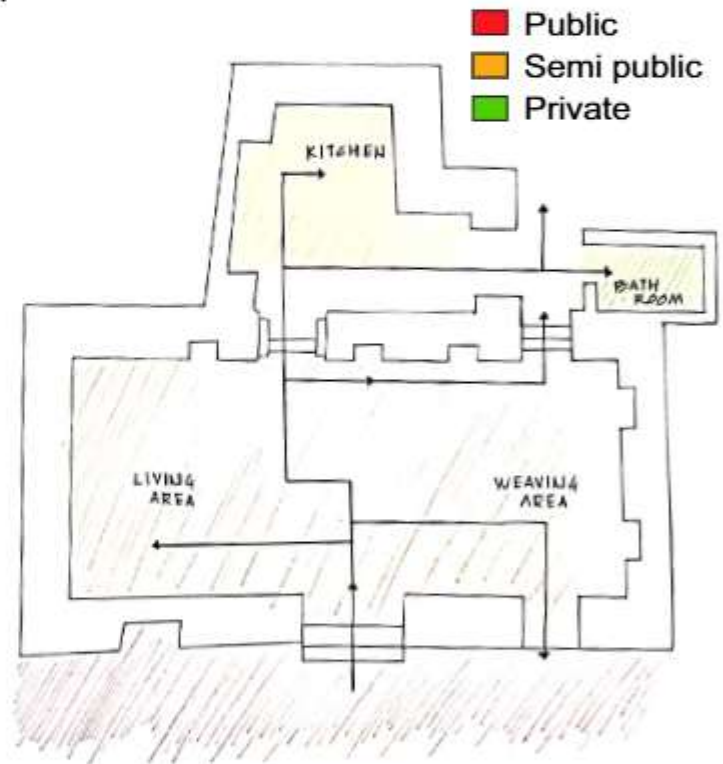
Door - Height of doors is small (1.2-1.5) to get + diffused light

- Large openings for maximum Light during working hours.
- Walls of the house painted White for reflection of light.
- Thickness of the wall reduce Effect of hot climate.
- Windows create space for Sitting and storage
- Common toilet provided
- Outside the house

Courtyard

- Gathering space
- Household purposes
- Celebrating festivals

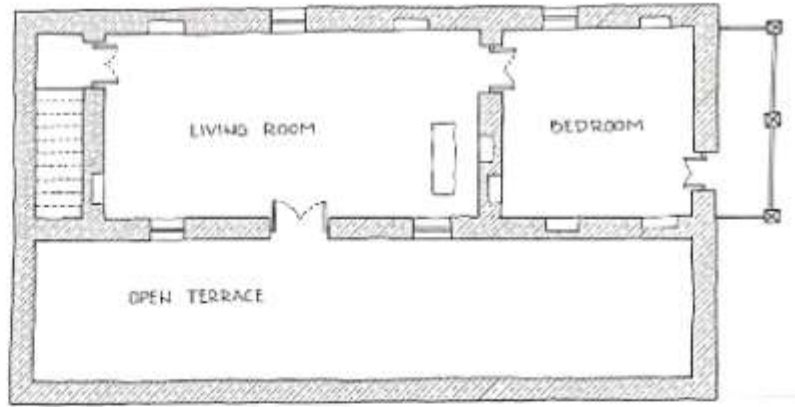
There is lesser amount of light in kitchen & living area due to less openings



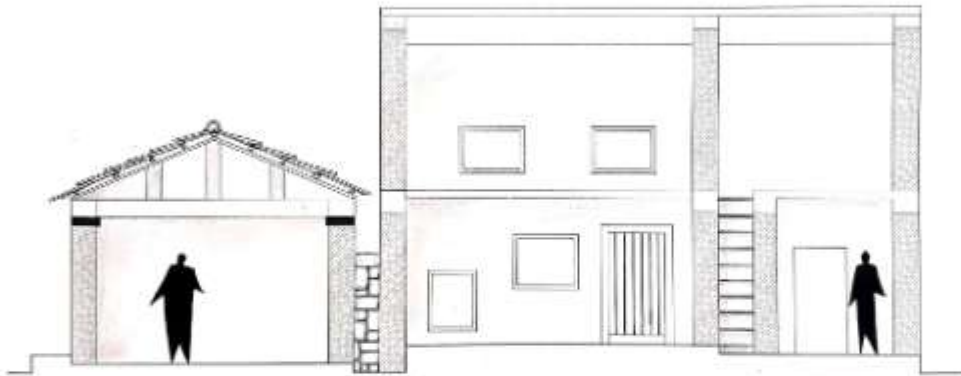
More openings near weaving space for maximum light

More light medium light less light

House 3



First floor plan



Section AA'

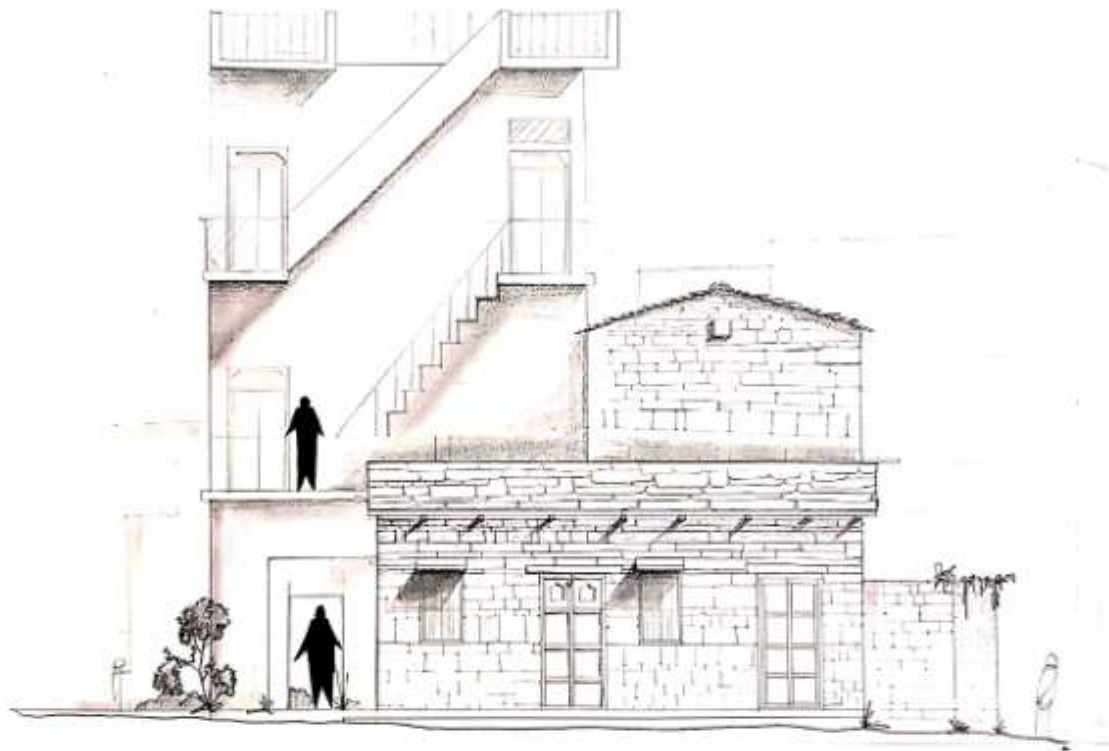


DETAIL AT 'A'

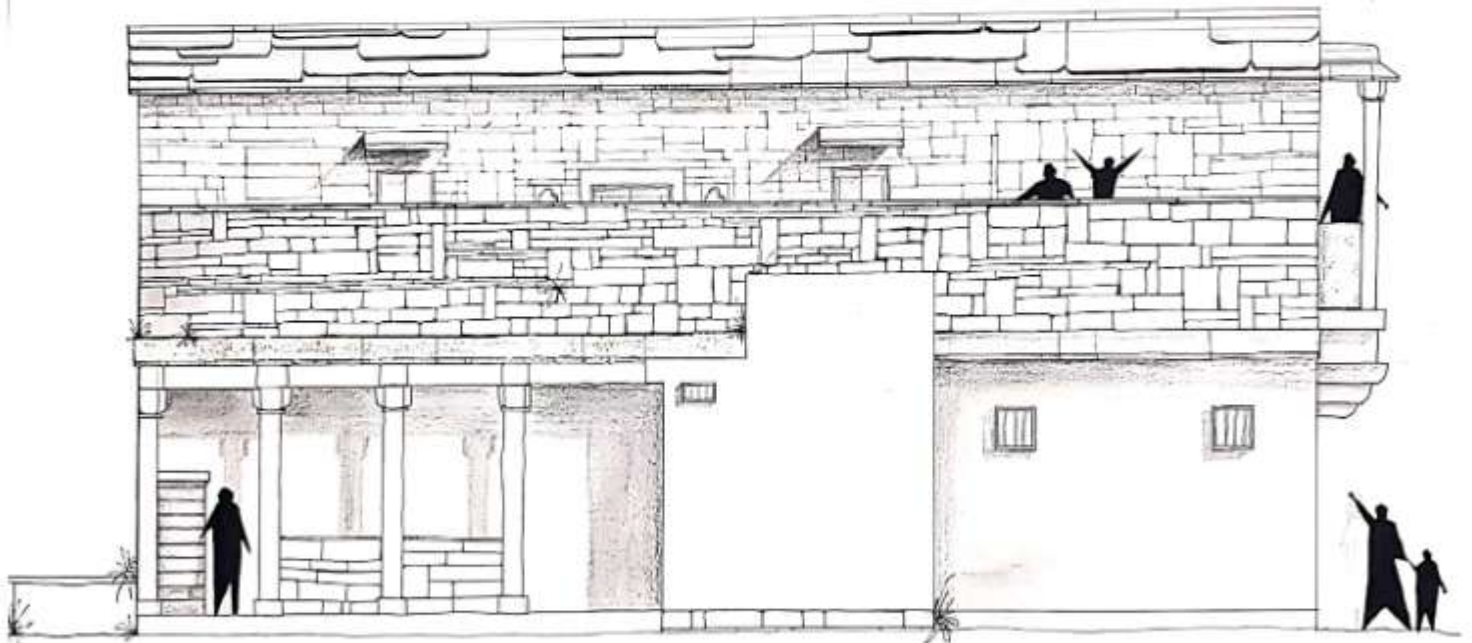


South side elevation

House 3

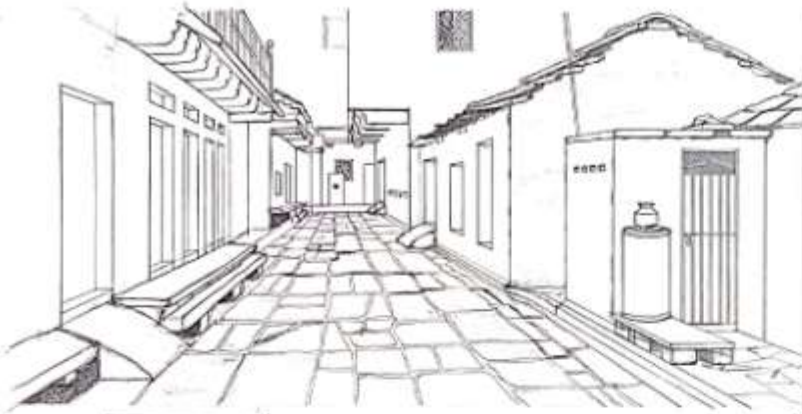


East side elevation



West side elevation

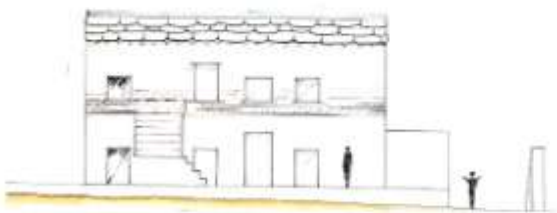
House 4



Views



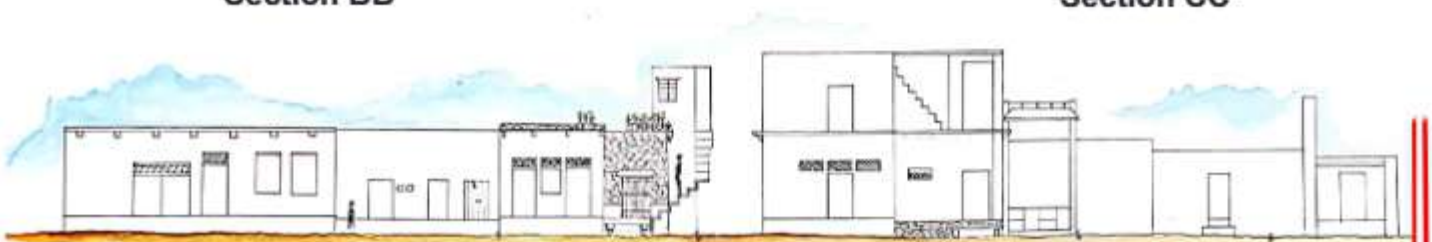
Section AA'



Section BB'

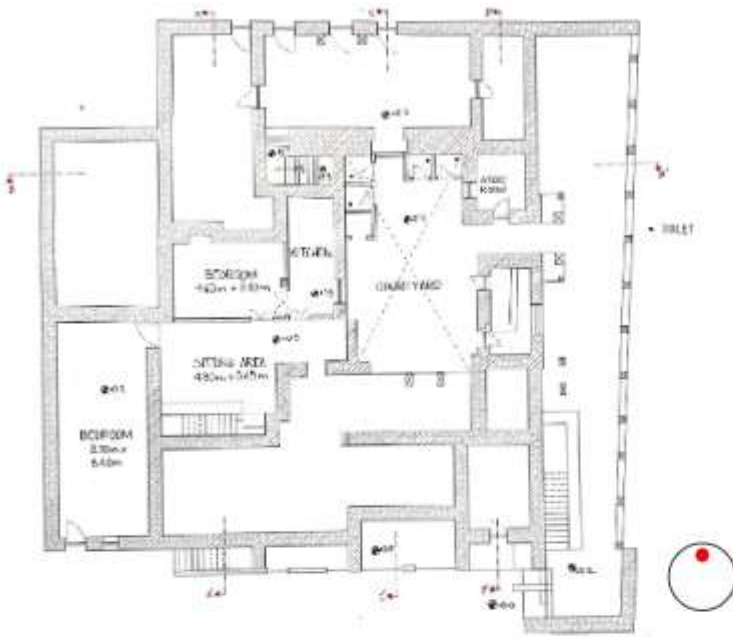


Section CC'

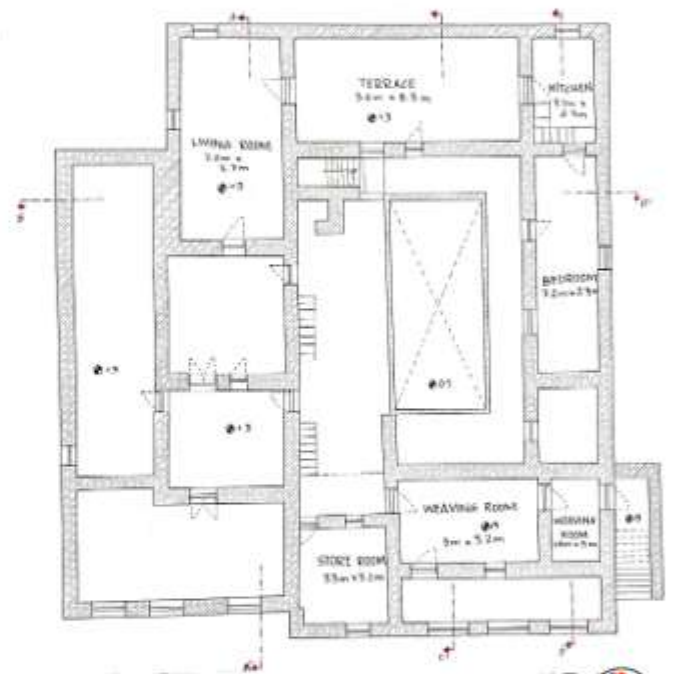


Section DD'

House 5



Ground floor plan



First floor plan

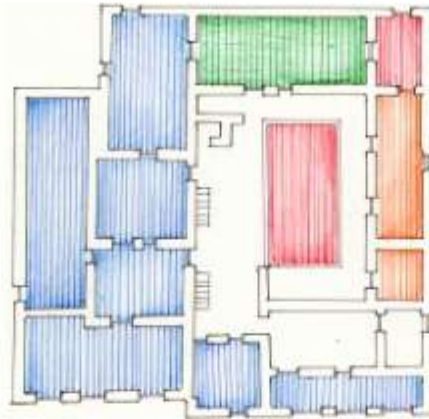


Second floor plan

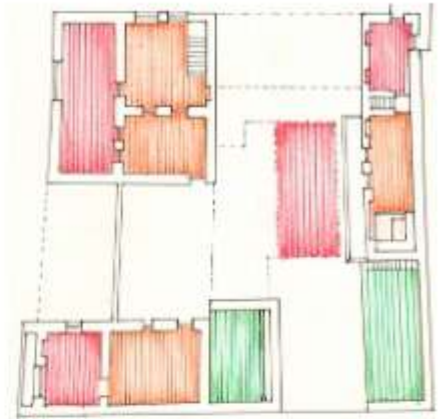
House 5 - Analysis



Group floor plan



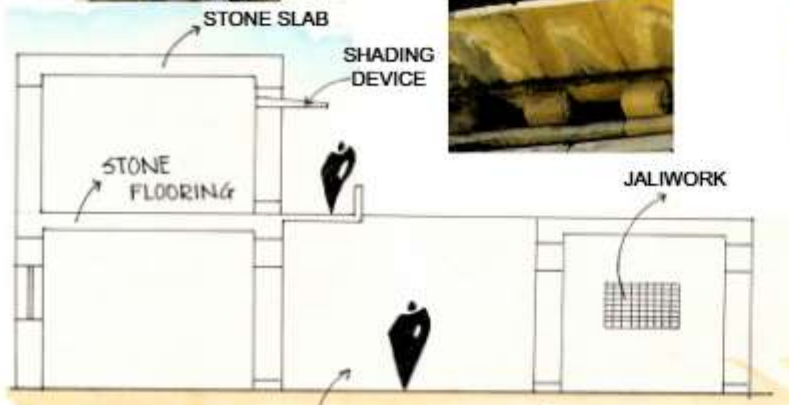
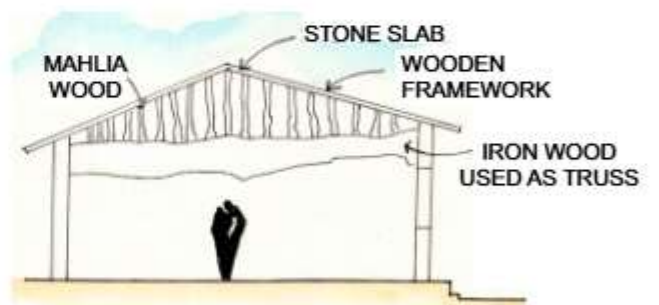
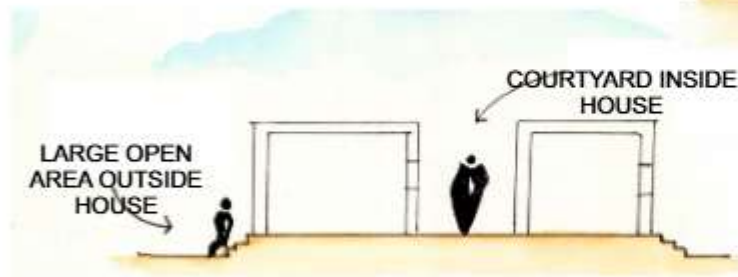
First floor plan



Second floor plan

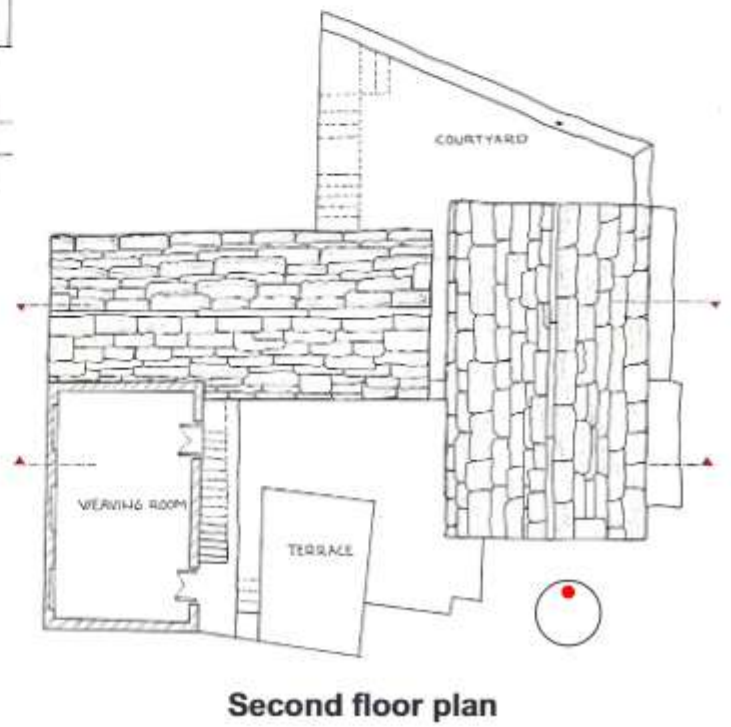
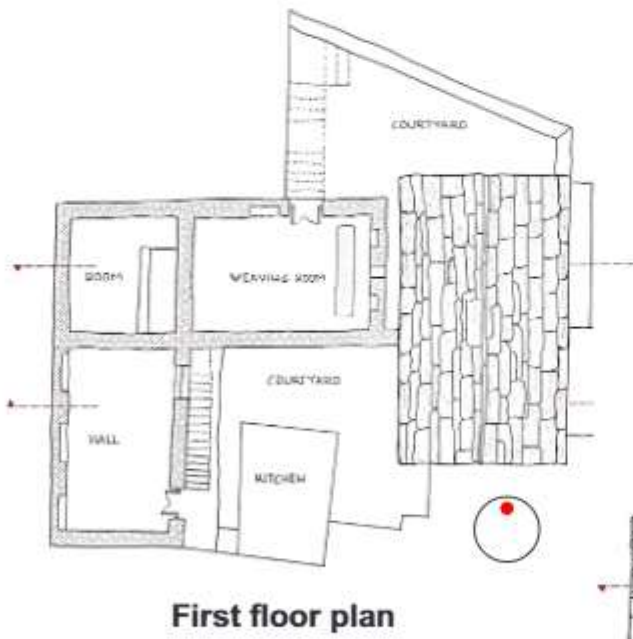
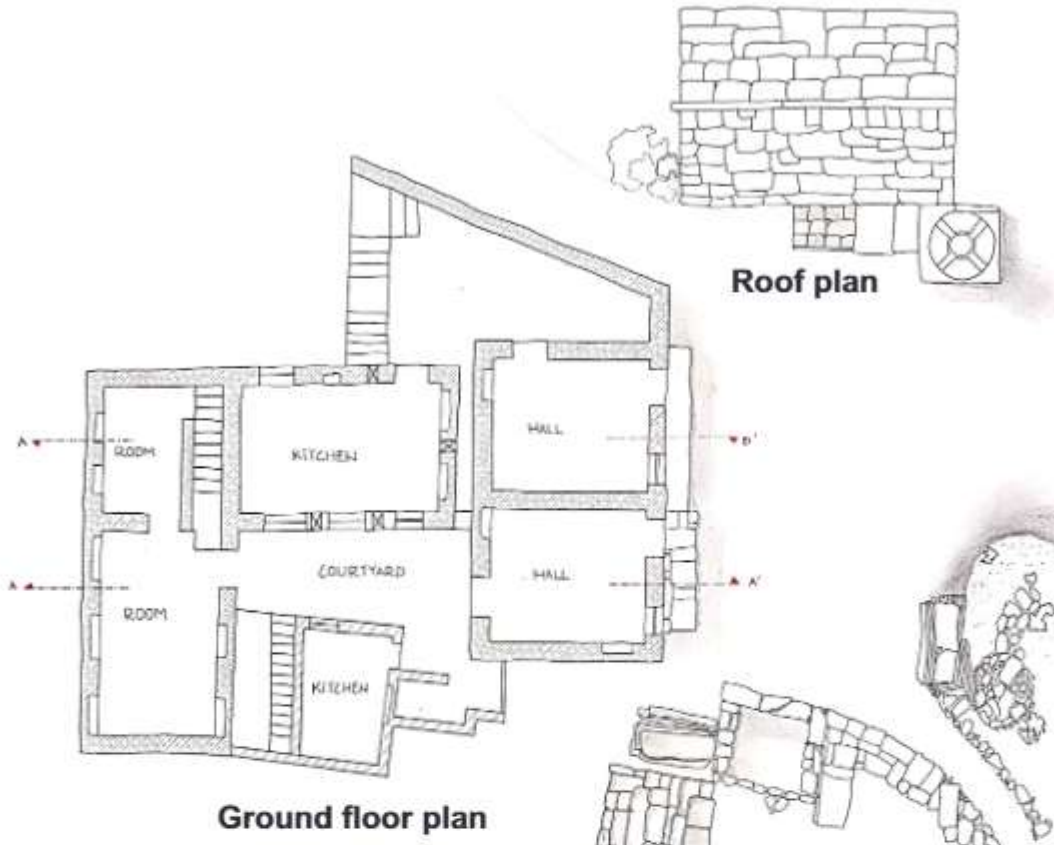


-  Public space
-  Inaccessible space
-  Private space
-  Semi-Public space

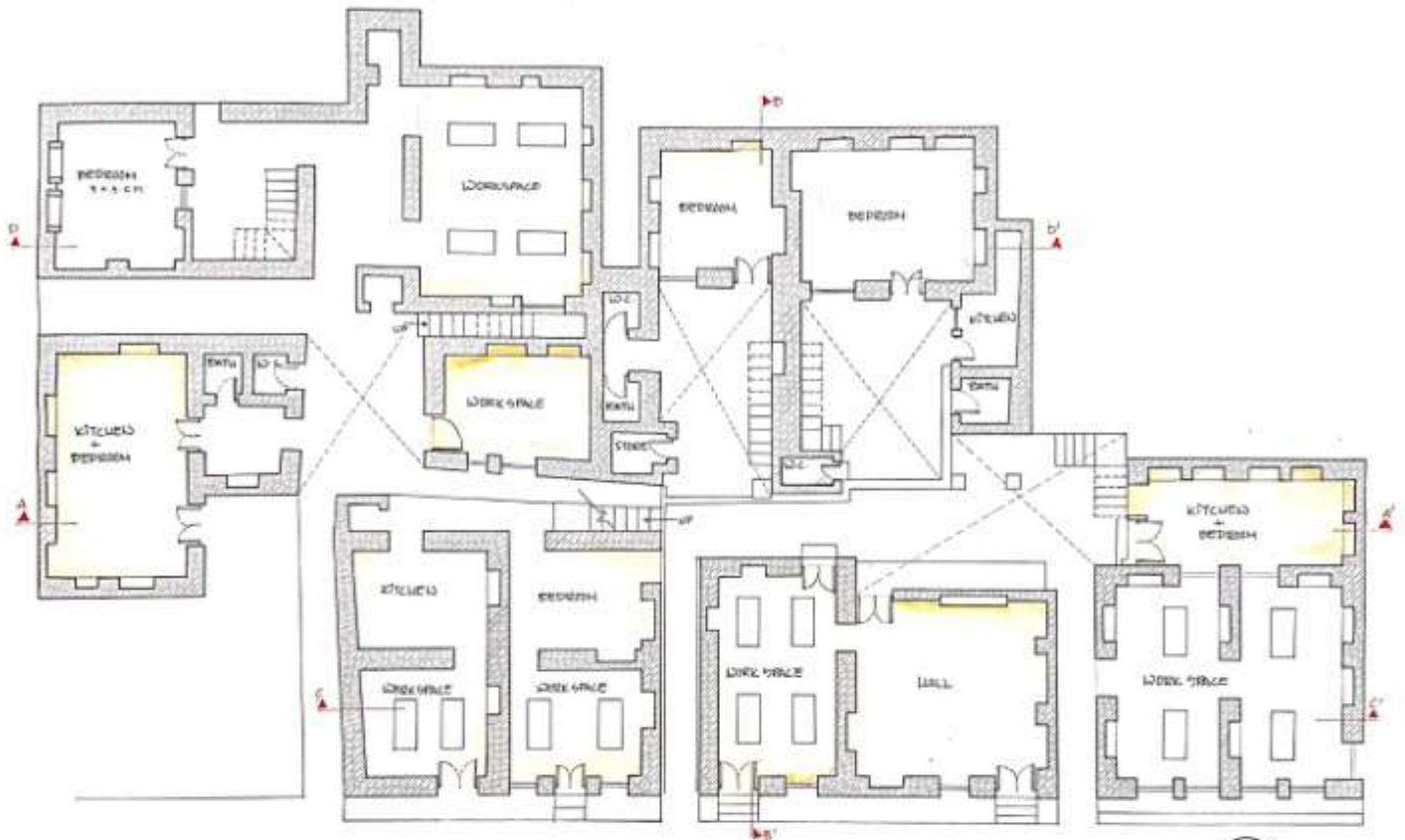


COURTYARD PLANING FOR LIGHT AND VENTILATION

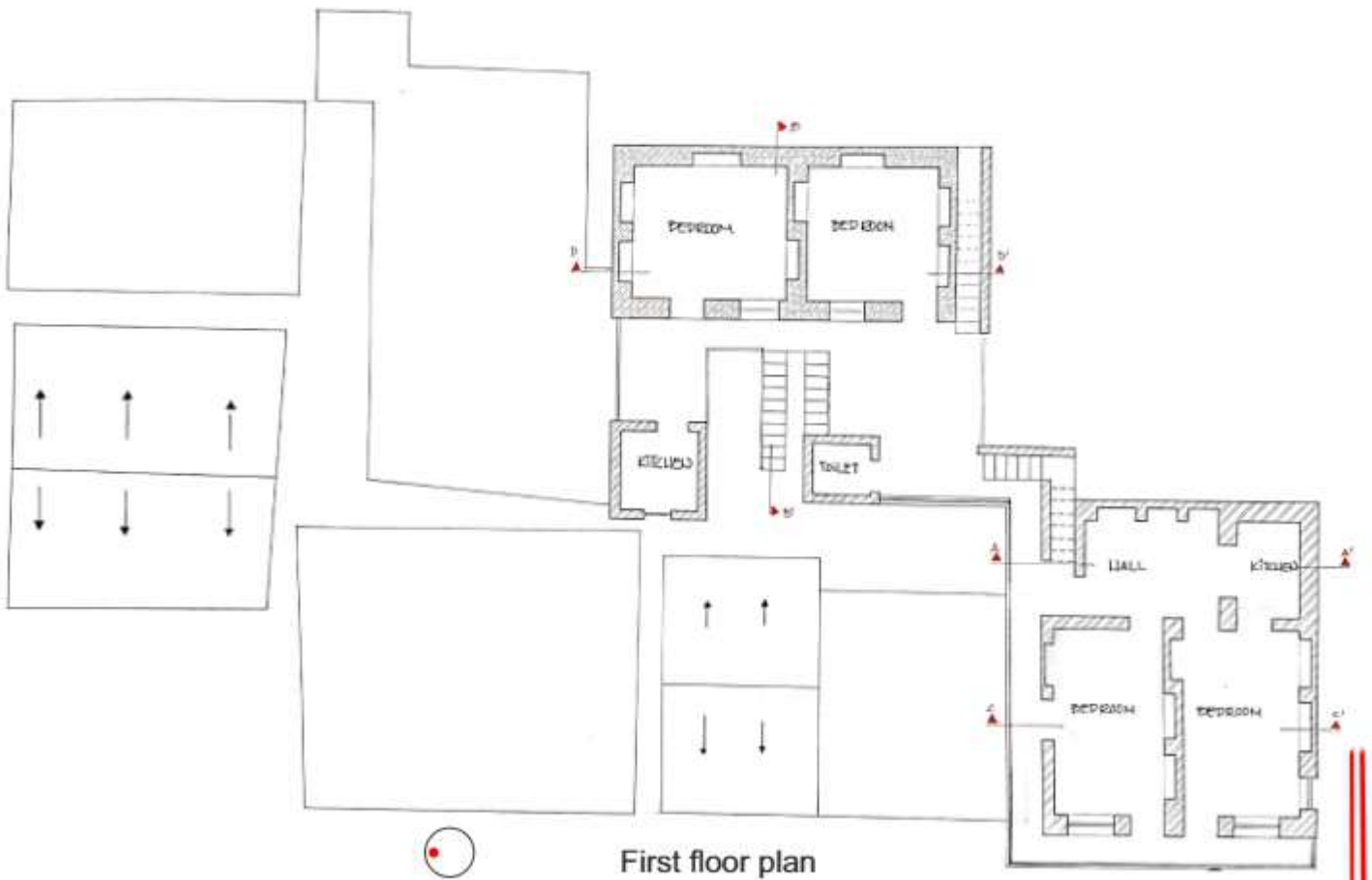
House 6



House 7



Ground floor plan

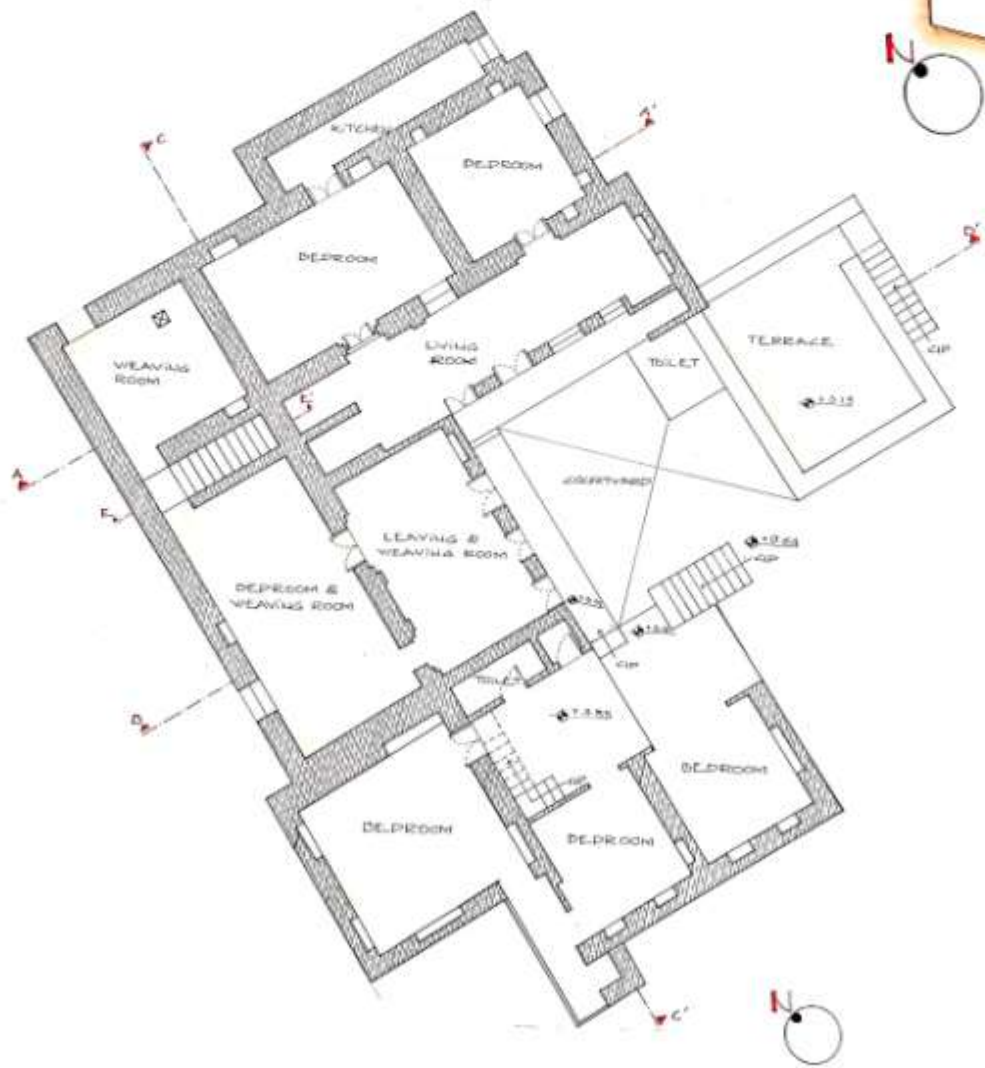


First floor plan

House 8

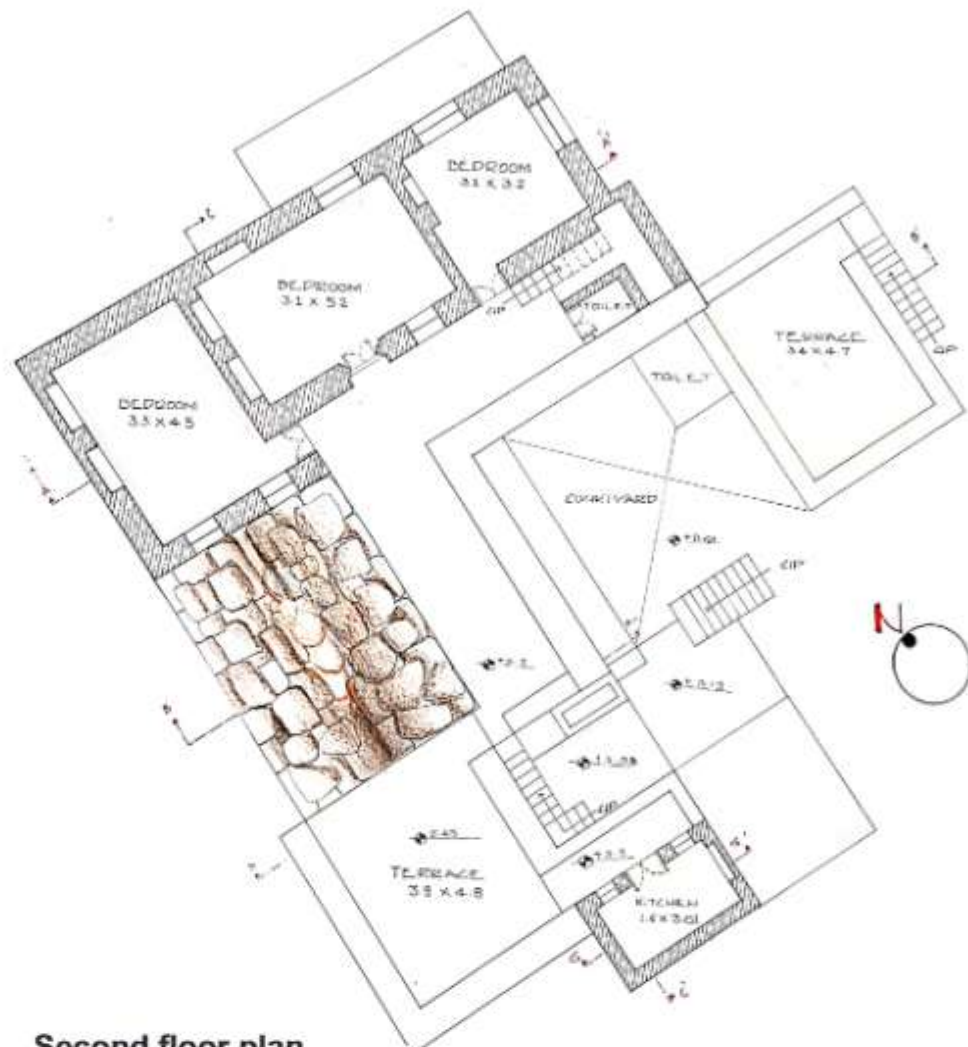


Ground floor plan

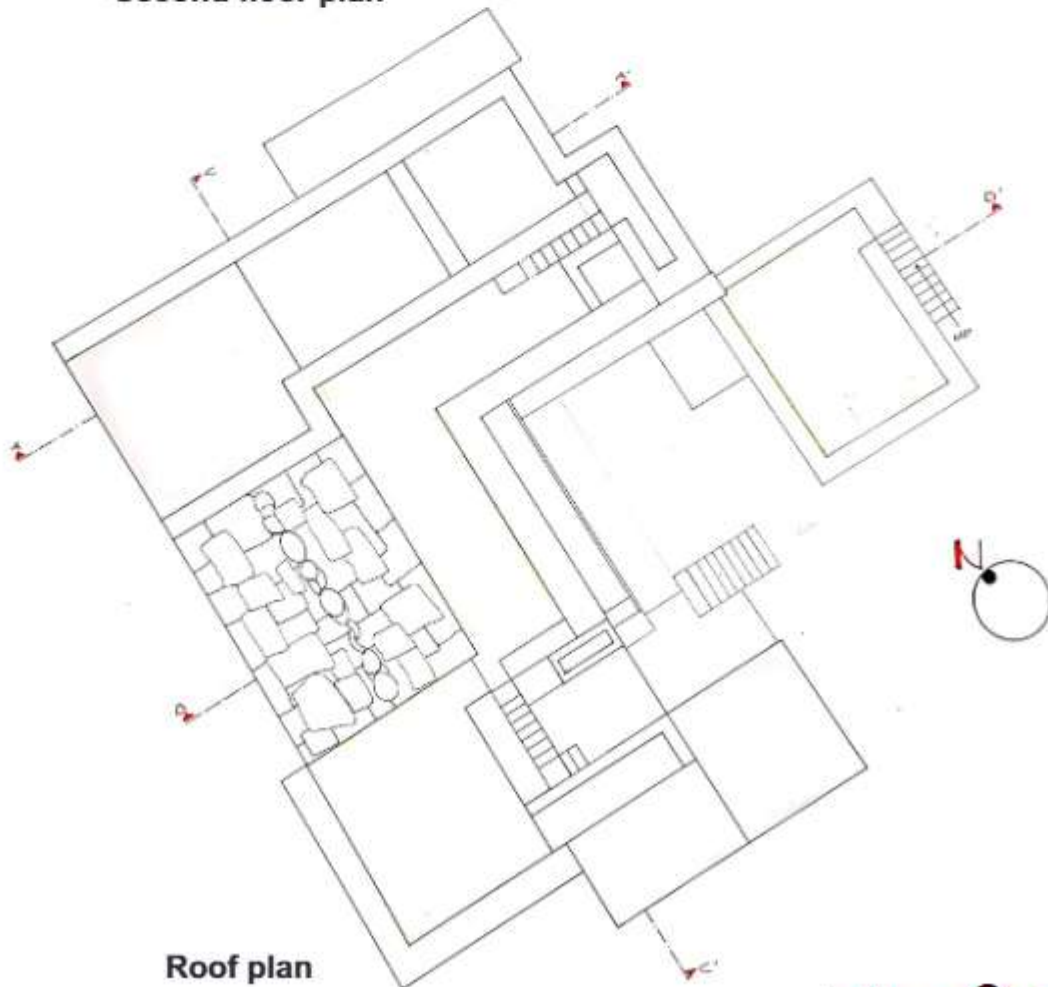


First floor plan

House 8

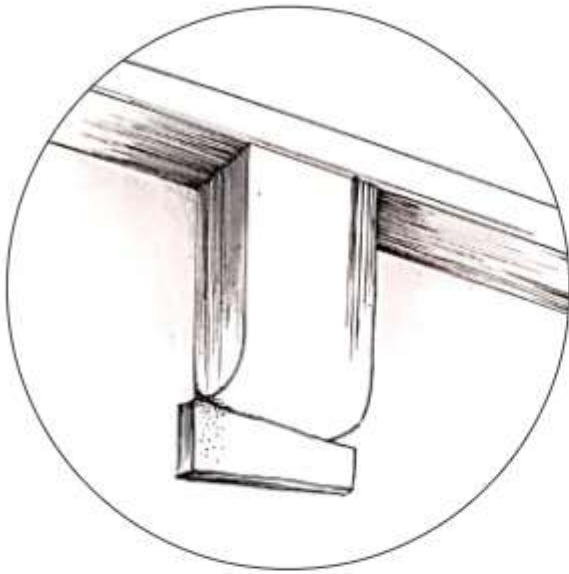


Second floor plan



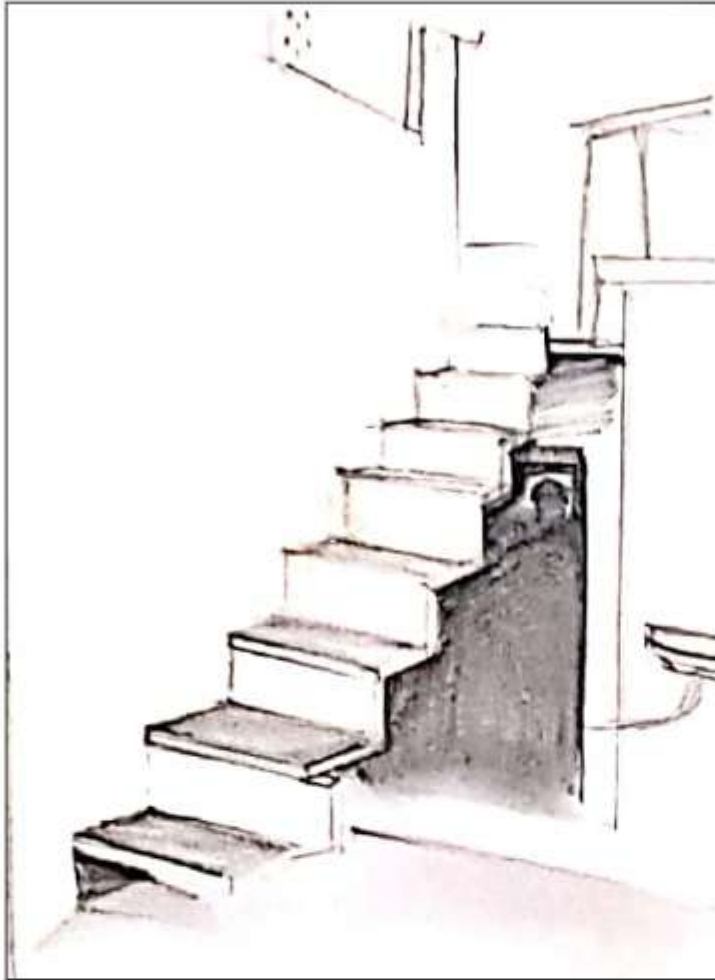
Roof plan

House 8



Section AA'

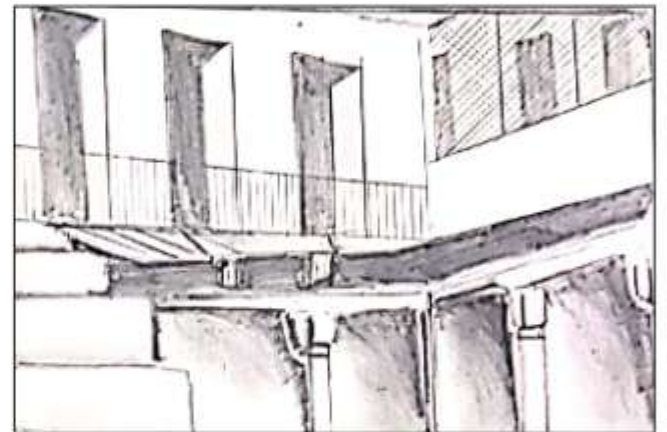
House 8



View of staircase



WEST SIDE VIEW OF COURTYARD

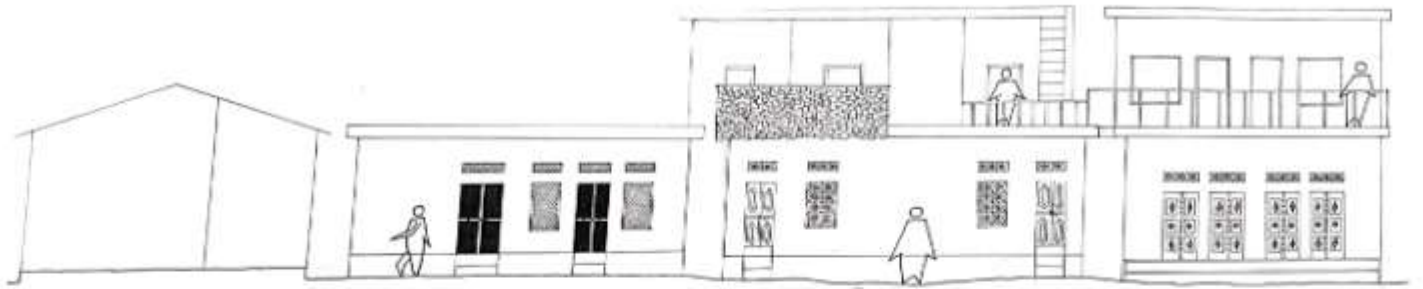


View of 2nd floor deck

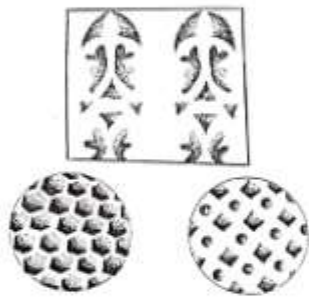


Section BB'

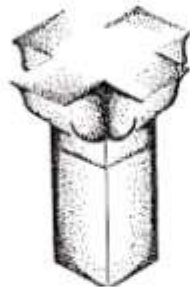
House 8



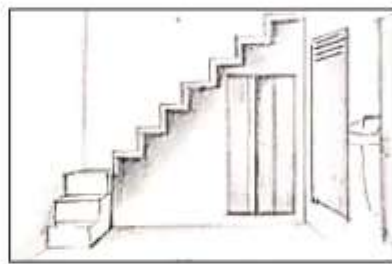
Elevation



Jali details at parapet



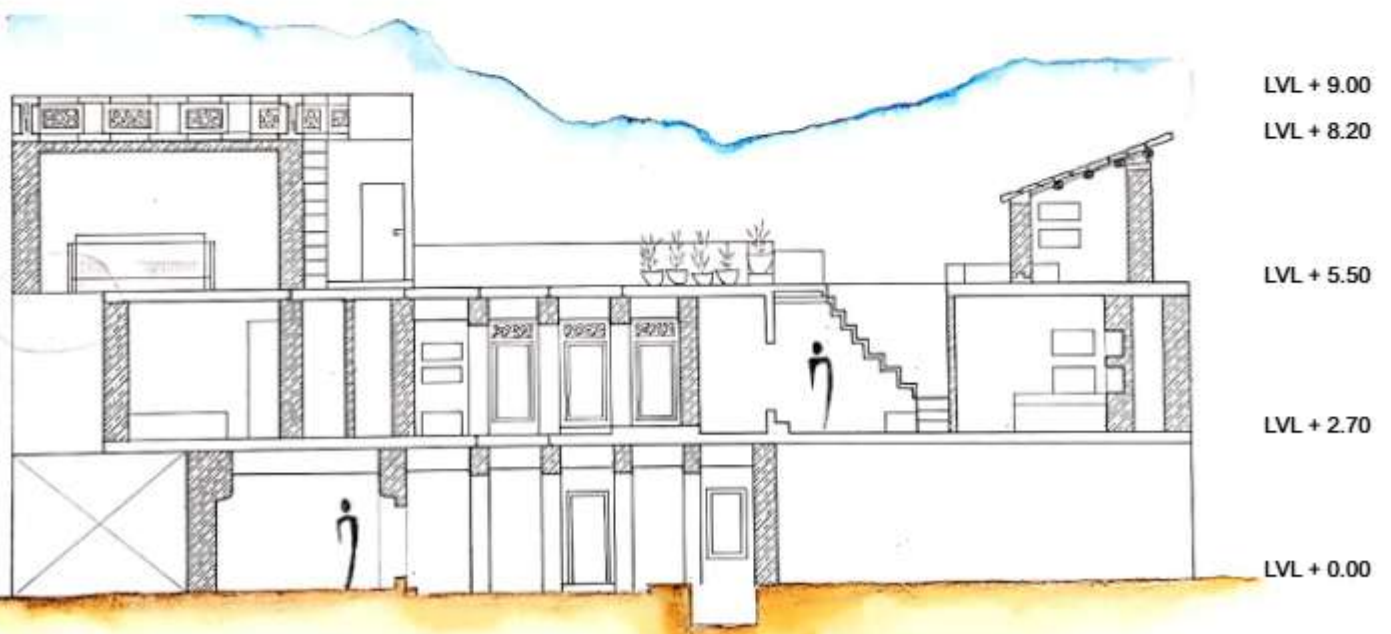
Details at column



View of staircase



Roofing details

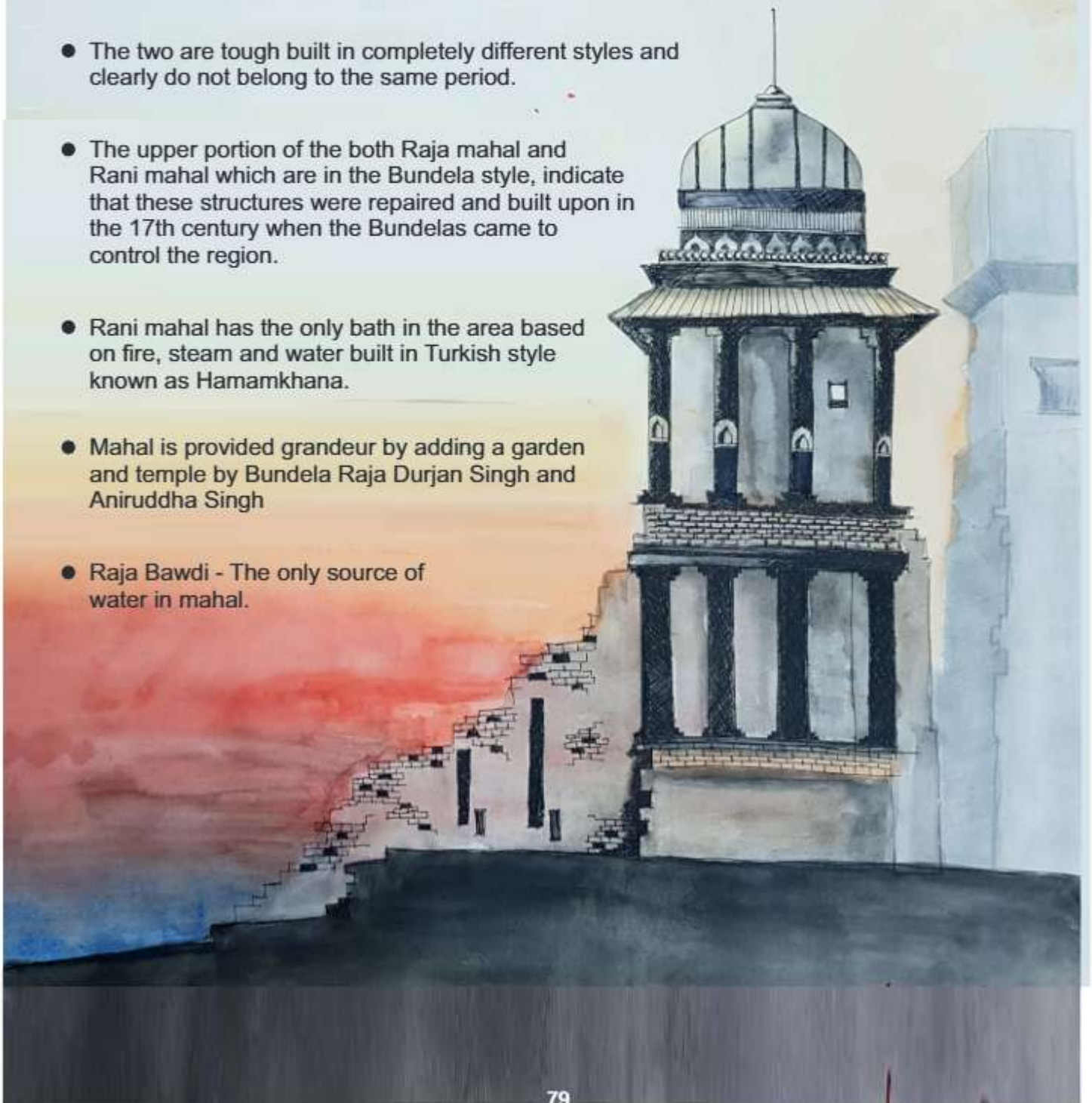


Section CC'

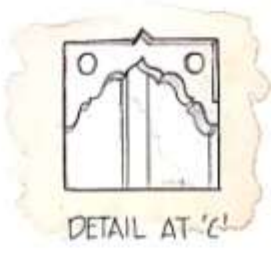
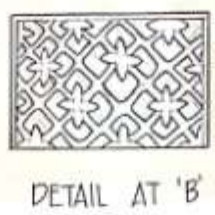
Raja Rani Mahal



- Mahal is completely built by Khilji rulers in 15th century. Built in 1000 AD in the form of fortification. Rajarani mahal where Raja mahal is seven storied and Rani mahal is 2 storied
- The two are tough built in completely different styles and clearly do not belong to the same period.
- The upper portion of the both Raja mahal and Rani mahal which are in the Bundela style, indicate that these structures were repaired and built upon in the 17th century when the Bundelas came to control the region.
- Rani mahal has the only bath in the area based on fire, steam and water built in Turkish style known as Hamamkhana.
- Mahal is provided grandeur by adding a garden and temple by Bundela Raja Durjan Singh and Aniruddha Singh
- Raja Bawdi - The only source of water in mahal.



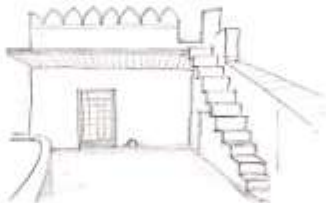
Raja Rani Mahal



East side elevation



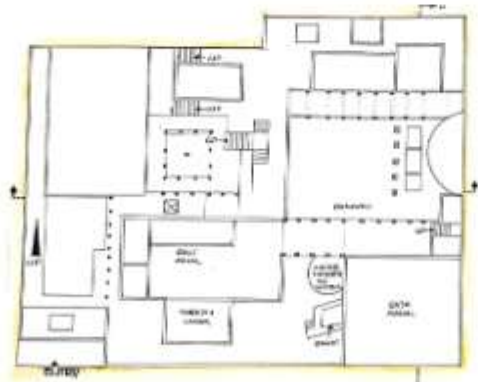
View of pathway from external and internal side



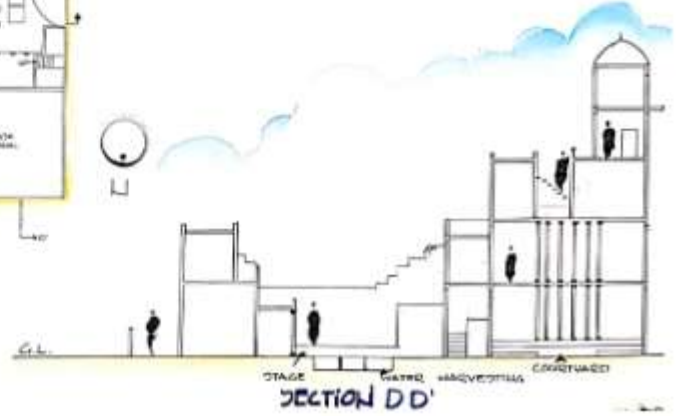
View of cantilever staircase which is made from red and Stone



View of Mahal from internal side

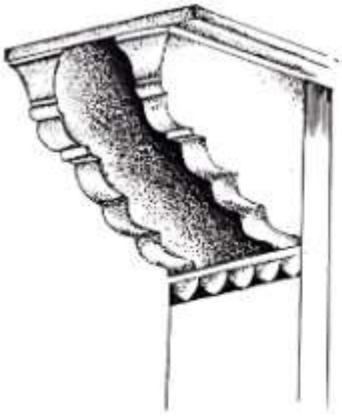


FIRST FLOOR PLAN

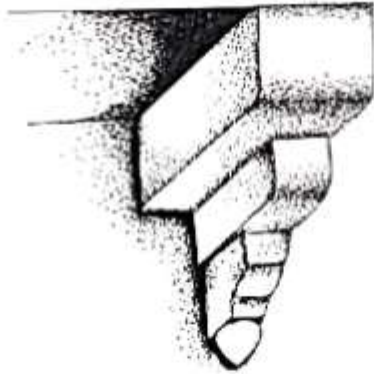


When we see Raja Rani Mahal from external side it's look separated due to Bawdi, when we see from internal side it looks a single building due to pathway.

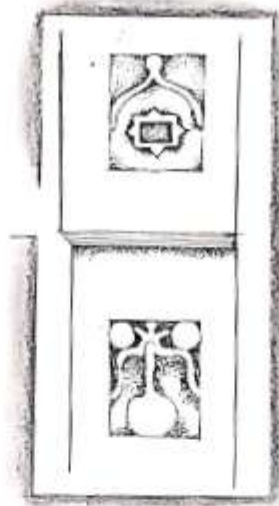
Raja Rani Mahal



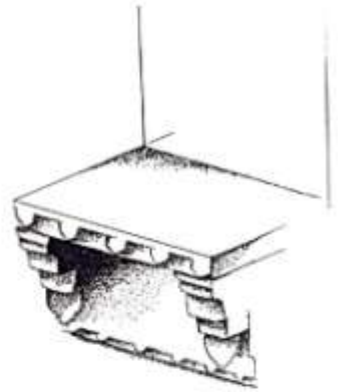
Detail at 'A'



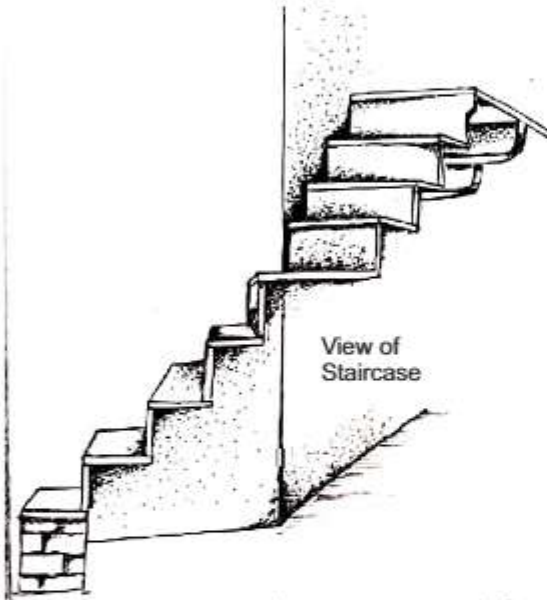
Detail at 'B'



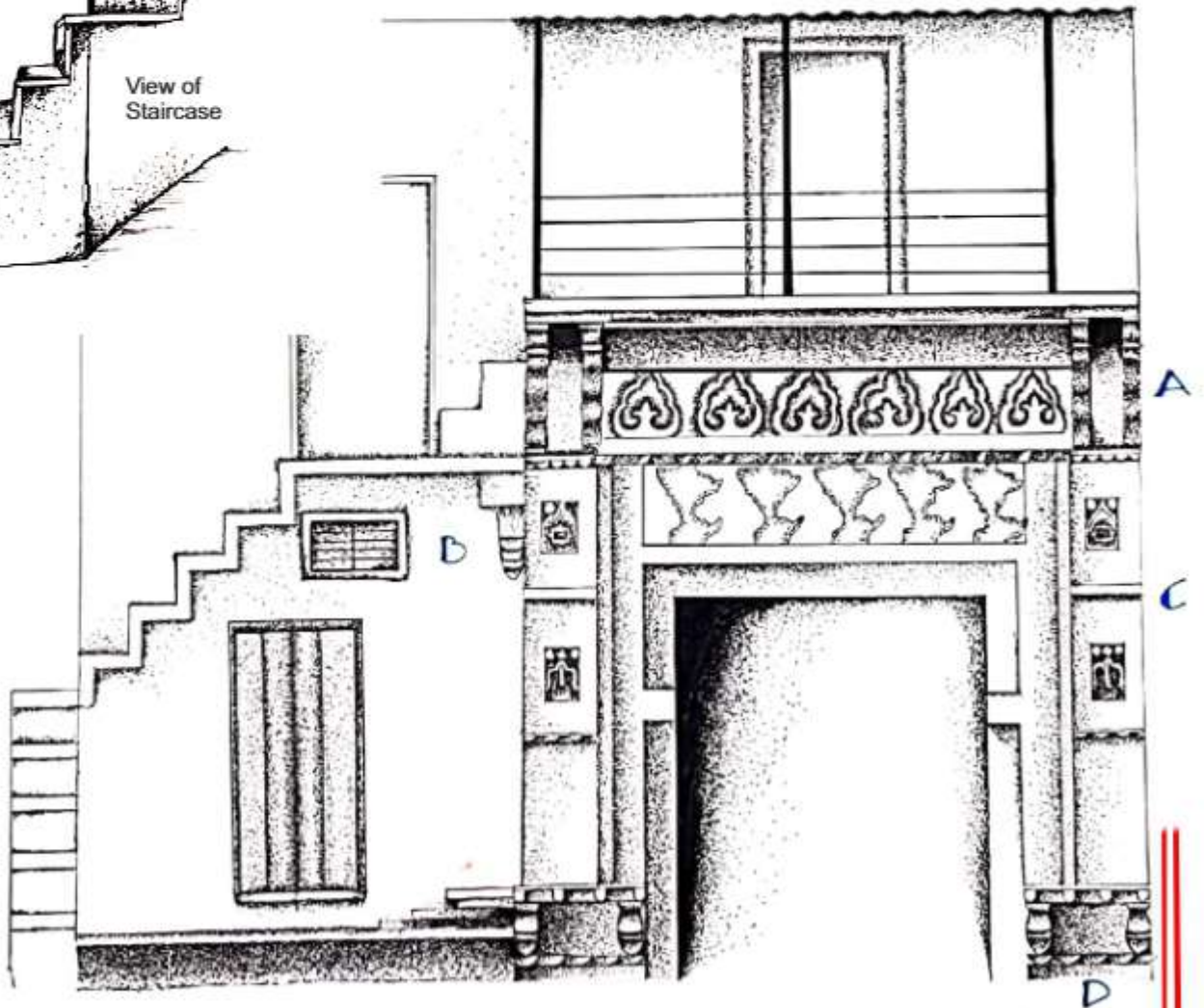
Detail at 'C'



Detail at 'D'



View of Staircase

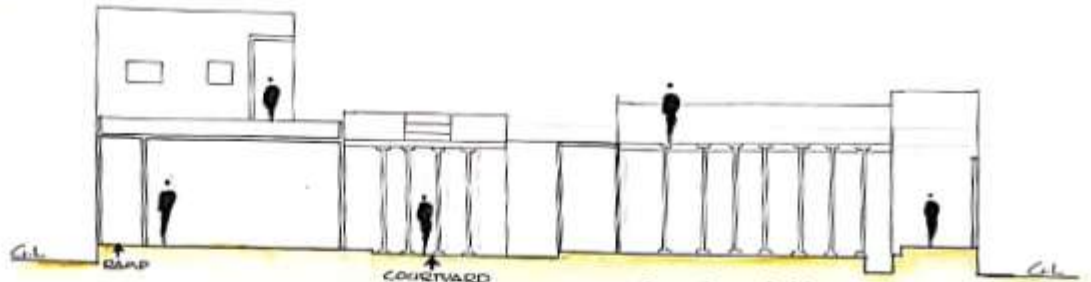


South-East side elevation

Raja Rani Mahal



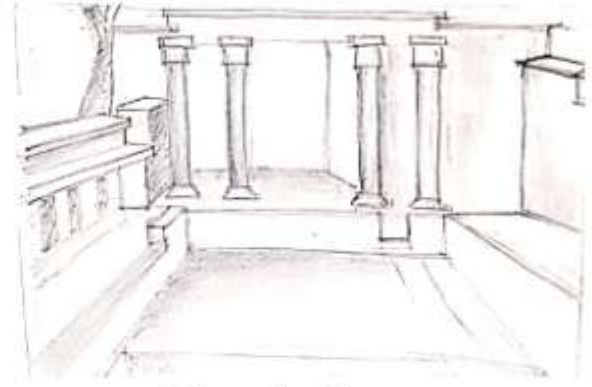
Detail at jali



Section AA'



Raja mahal is based on Massive pillars



View of entrance



After the renovation. The Raja Rani mahal was given on Rental basis to the Chanderi Qan Ngo by cham\nderi Grampanchayal. This Ngo works for Chanderi saree

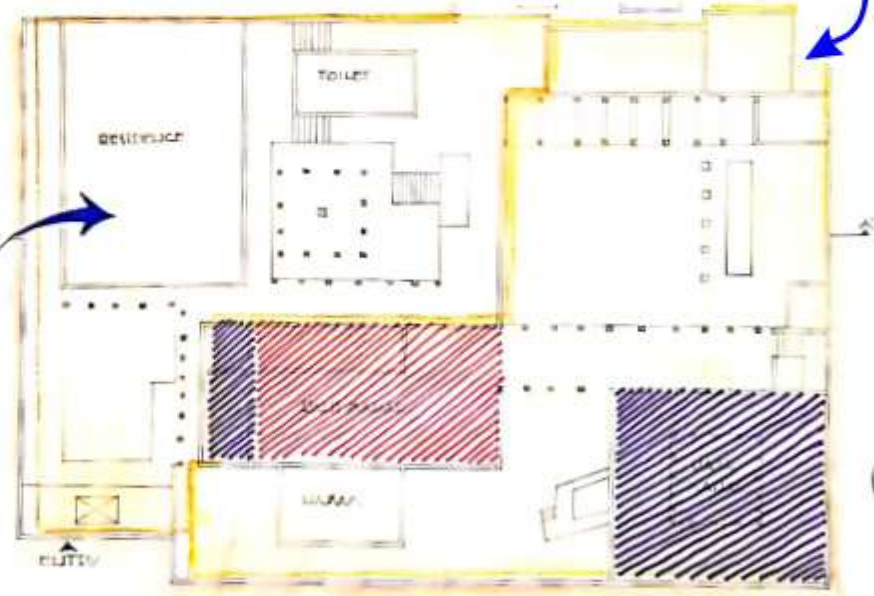
OLD PART OF RAJA RANI MAHAL IS CONSTRUCTED OF RED STONE LIME MORTOR AND NEW PART ALSO CONSTRUCTED OF THIS MATERIAL



Detail at column



Detail at windows

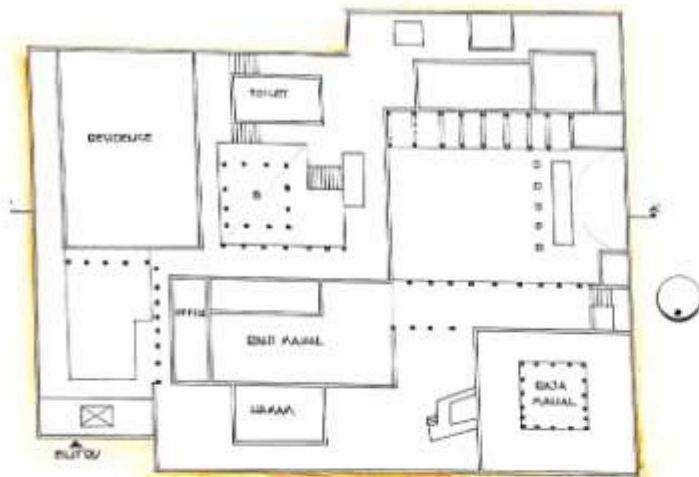


GROUND FLOOR PLAN

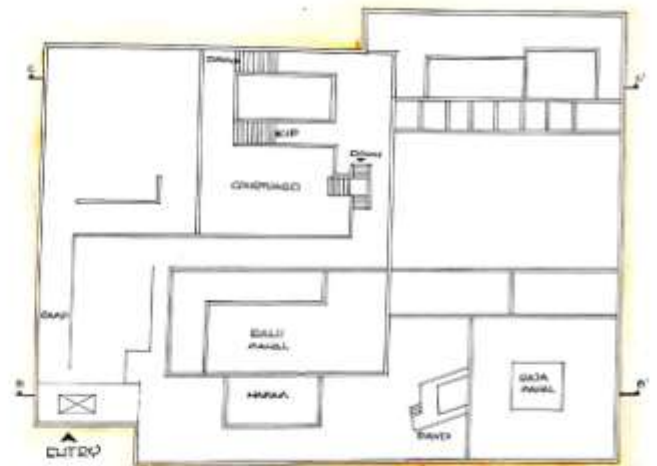
INDEX	
	NEW RENOVATION
	OLD STRUCTURE
	COMMERCIAL ZONE
	RESIDENTIAL ZONE

In 2007, most of the part Of Raja Rani mahal was excavated Which was underground after The excavation the, renovation Was carried out by intact (Indian national trust for Art and culture heritage) Organisation

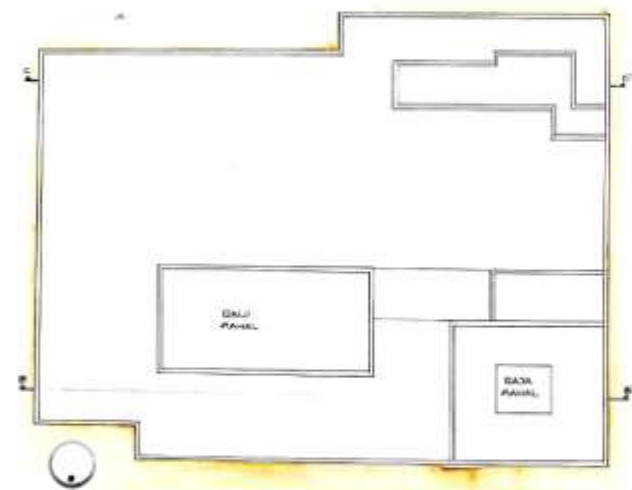
Raja Rani Mahal



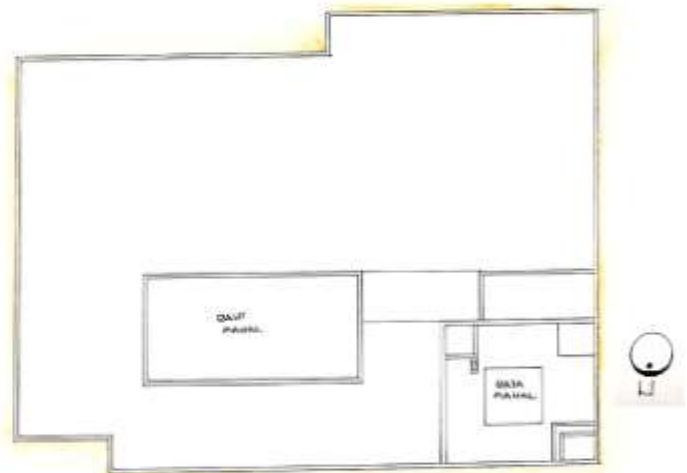
First floor plan



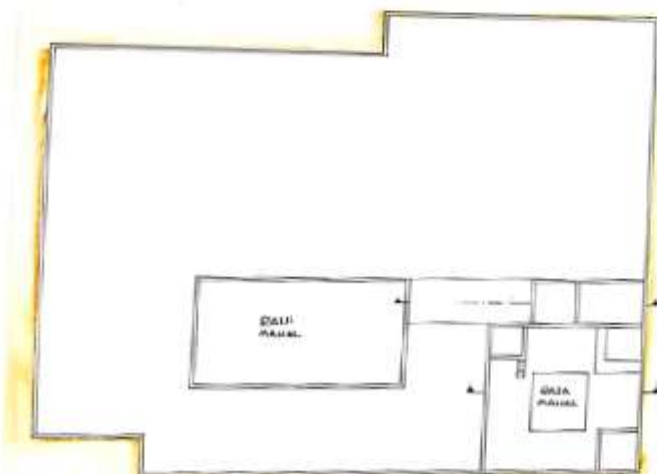
Second floor plan



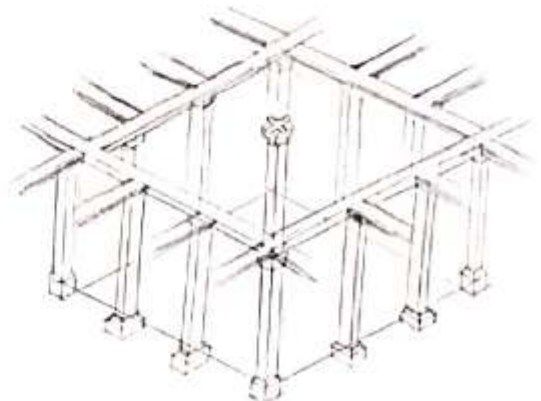
Third floor plan



Fifth floor plan

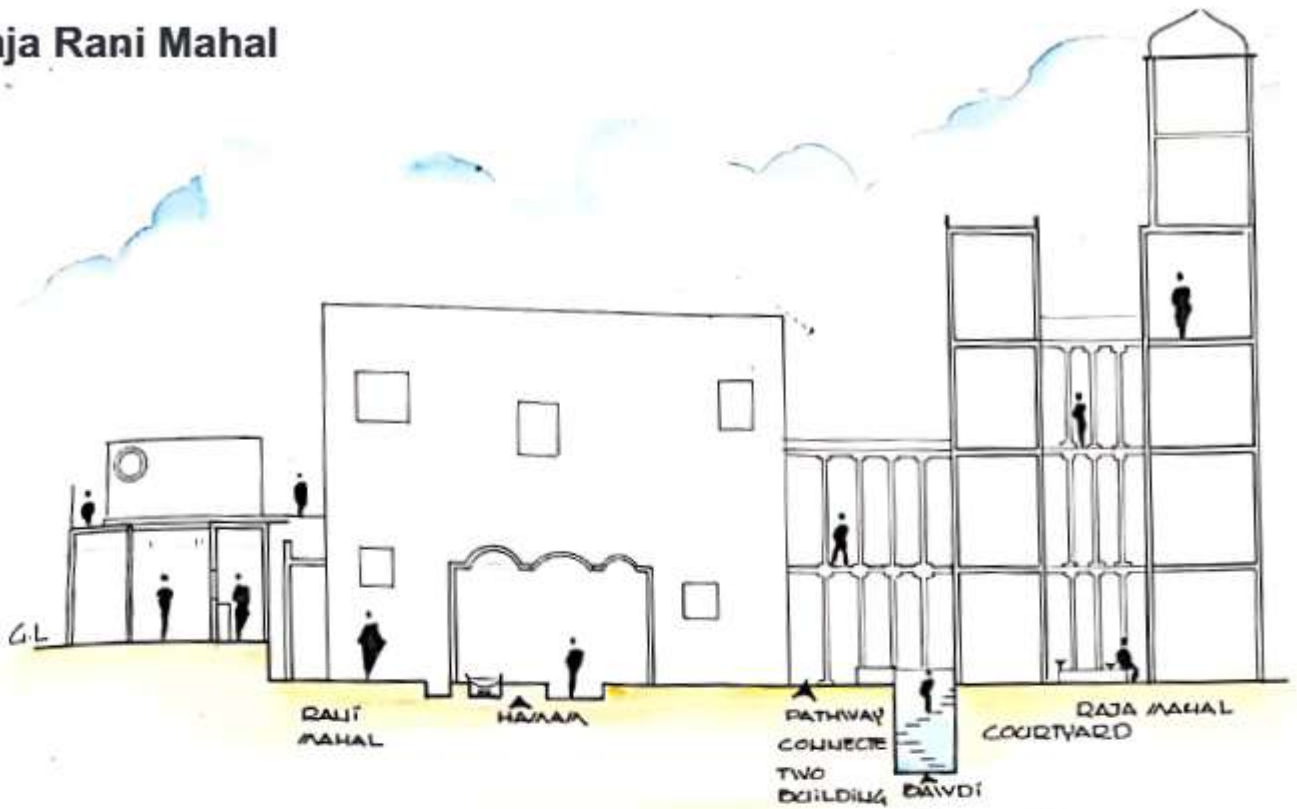


Fourth floor plan

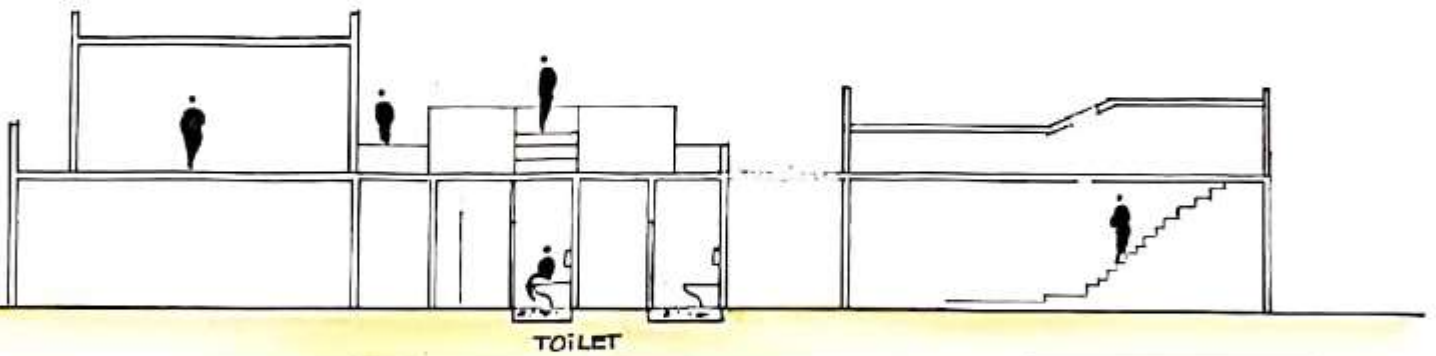


Courtyard view

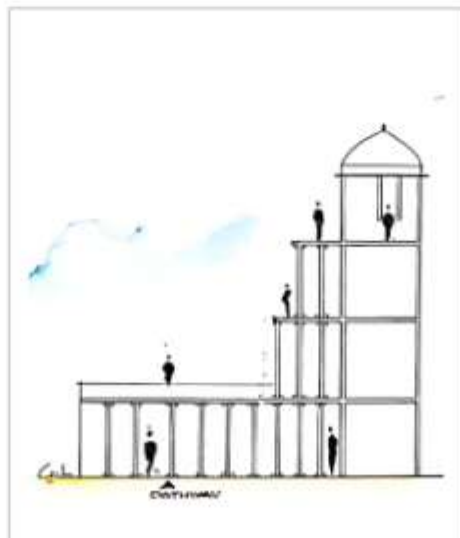
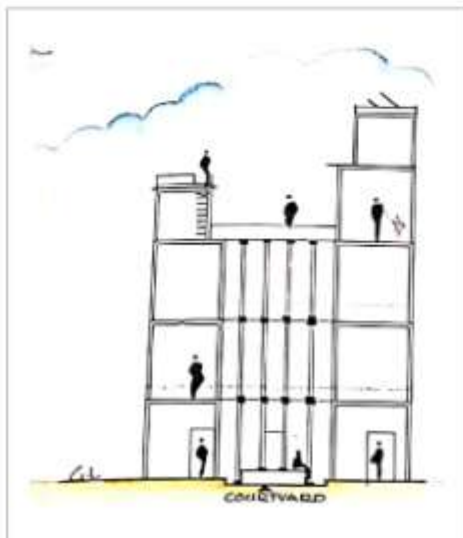
Raja Rani Mahal



Section BB'



Section CC'



Courtyard Section



Bawdi view



View of stepwell

Raja Rani Mahal

Ramp
Going
Upwards



Raja Rani mahal

Ramp going downwards

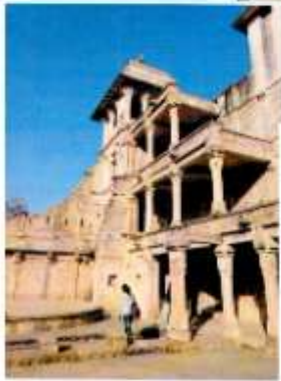
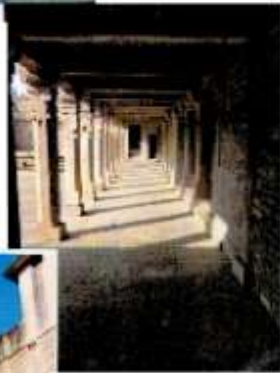


Entry is celebrated because first floor and ground floor are connected with two ramp at the main entry

Raja Rani Mahal



Carving on door



Path way



Raja Rani Mahal



Column Design

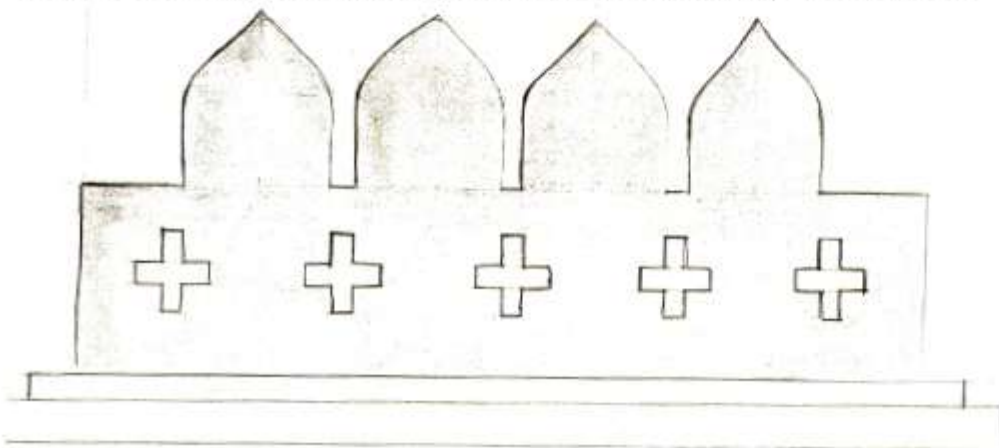


Cross shaped brick was placed everywhere in Mahal



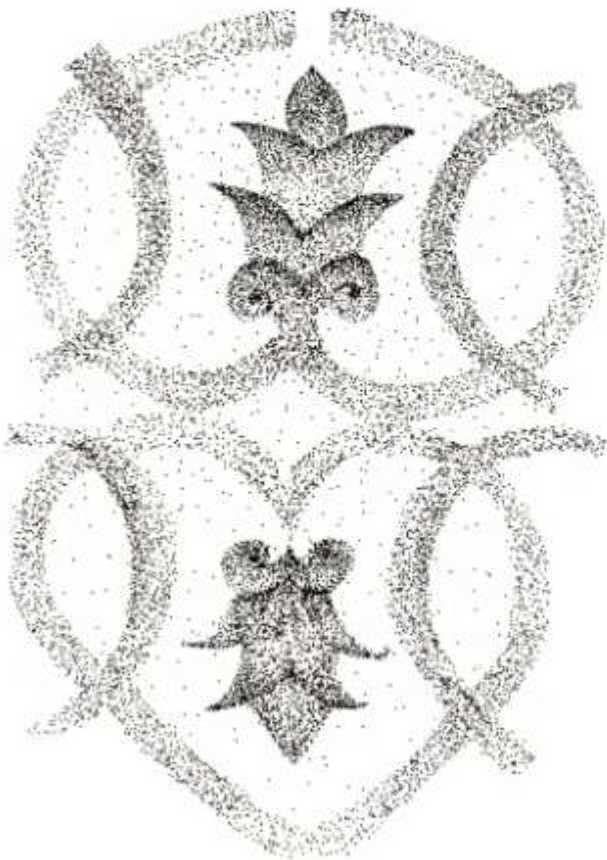
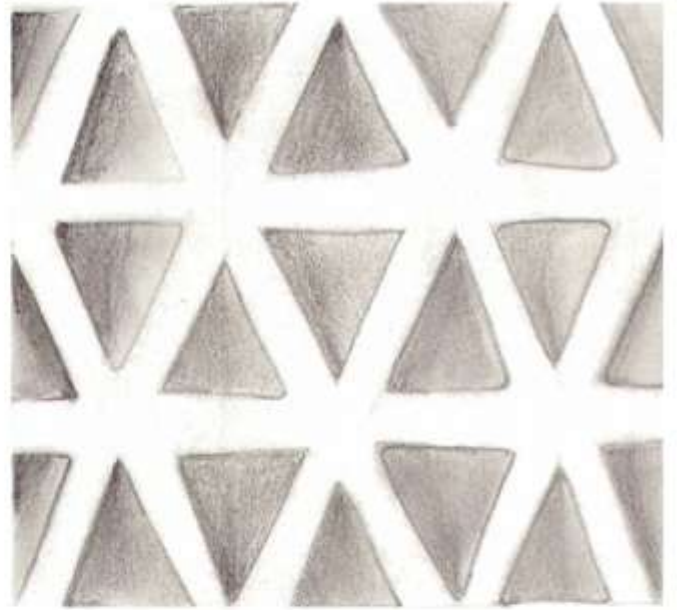
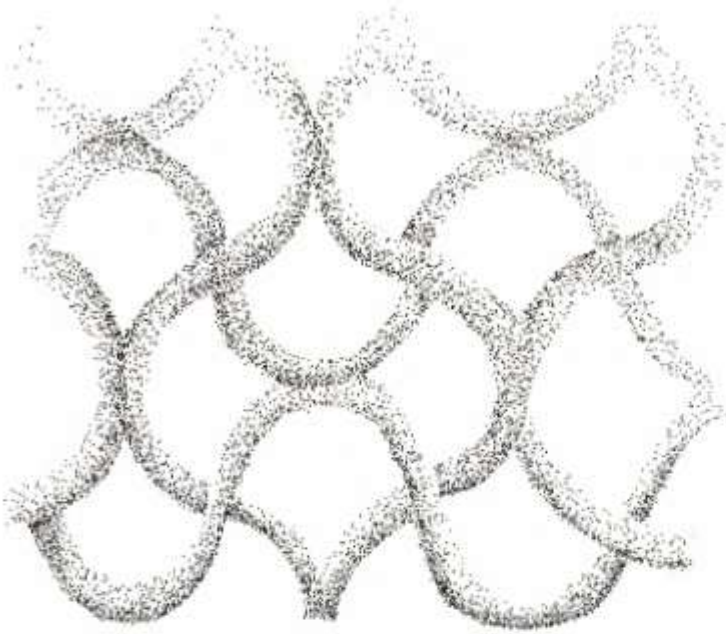
Pattern repeated on step wells

Carving is very common in all historical monuments in Chanderi inspired by Irani Kala Nijamuddin's Kabar is the best example of carving in Chanderi



Cross shape is mostly repeated on columns walls etc.

Raja Rani Mahal

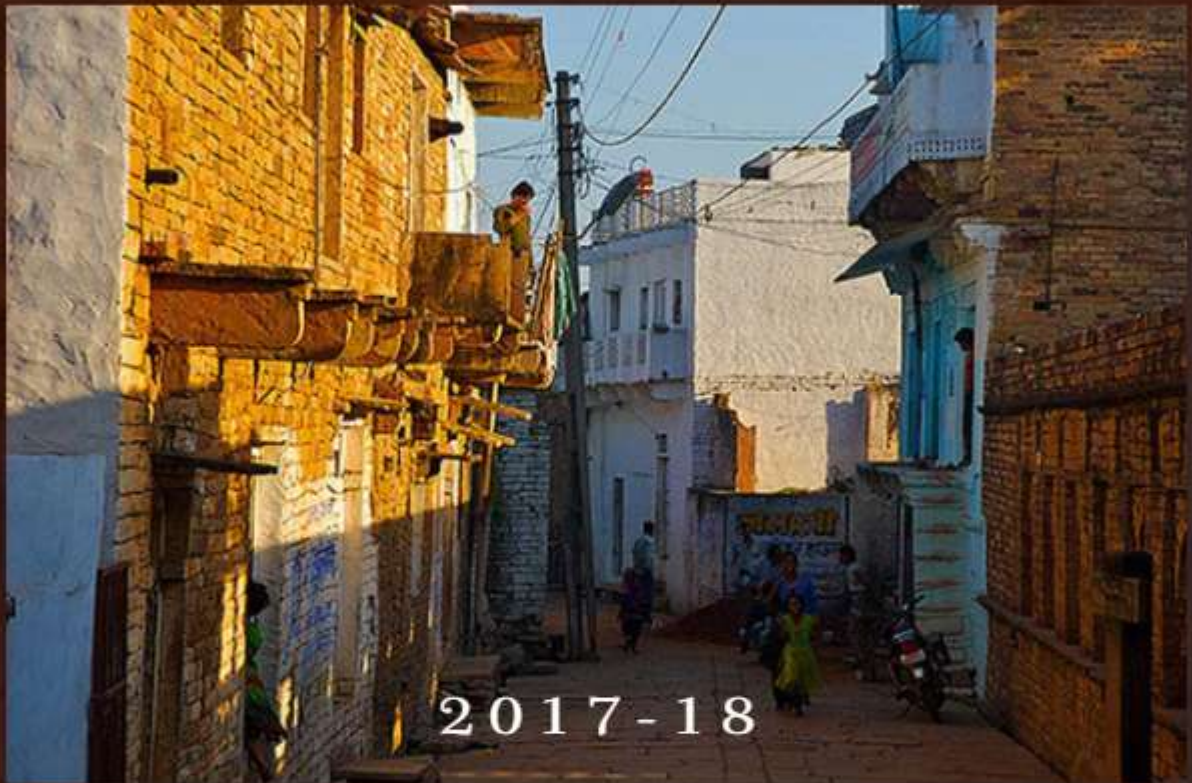


Jaliwork on windows



Carving on walls

CHANDERI



2017-18



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