



THESIS 2024

JOSHIMATH UPTOPIA

VAMSI CHANGAVALLI
1AA20AT010

JOSHIMATH UTOPIA

UTTARAKHAND

JOSHIMATH

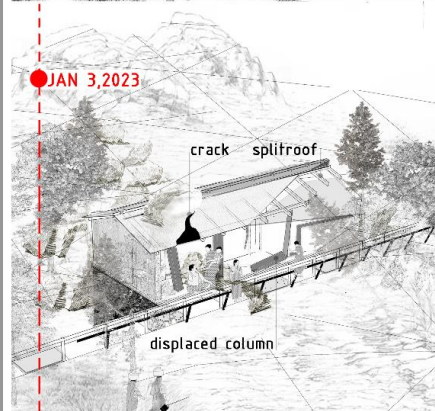
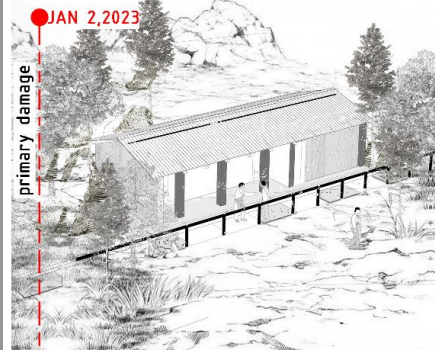
INCIDENT

FROM THE PERSPECTIVE OF MR. RAJENDRA BANDARI

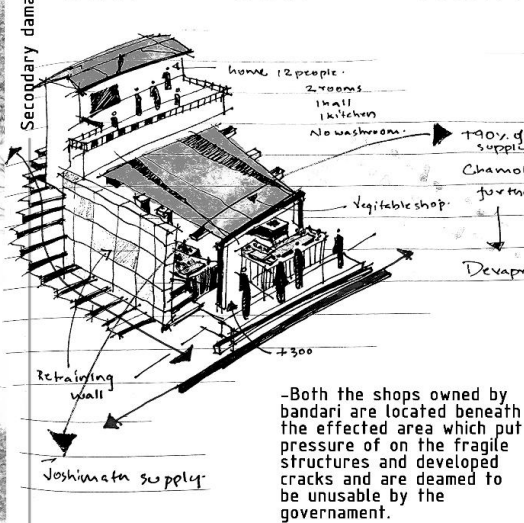
HIS LIFE

Occupation: Mr. Bandari is an vegetable vendor. he owns 2 of 3 vegetable stores in upper bazar

His family was effected directly from the land sliding of joshimath on 2nd jan 2023, the family wokeup to the cracking sound of their house in the middle of the night

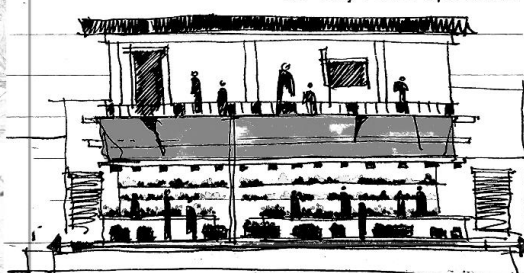


HOME WORK SOCIETY



-Both the shops owned by bandari are located beneath the effected area which put pressure of on the fragile structures and developed cracks and are deemed to be unusable by the government.

Yet they remain operational



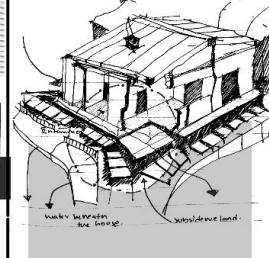
ARE THERE NO PROBLEMS BEFORE?

land sliding seals off access to joshimath few times a year and extreme winter cuts the access to the town for 4 months (conservative estimate). so access to fresh food is often difficult and is expensive

Use of cold storage is common in the city to have a study supply of food to 70,000 population

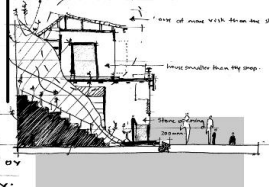
farming is limited in the town and clearing of land for farms is restricted

HOUSING

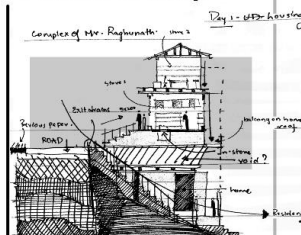


Estimated 25000 people are face the same fate in joshimath (6250 families)
-housing reguvination can solve initial layer of incident
-housing associated to market are 5000

MARKET

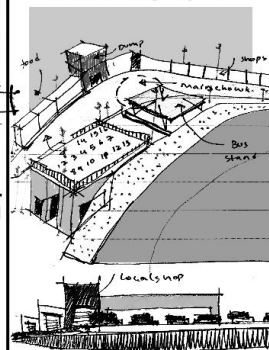


Market is the major revenue factor of joshimath and is the main zone eligible to relocation and redesign



MOVEMENT

Transportion corridor is responsible for
- human
- food
- transportation
recreating these factors is an essential design objective

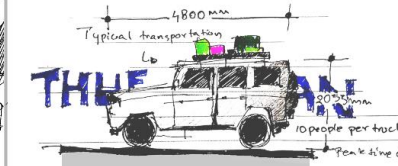


PERCEPTION OF INCIDENT

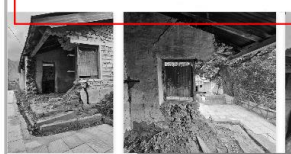
INFERENCE OF PEOPLE PERCEPTION

Source: crowd survey

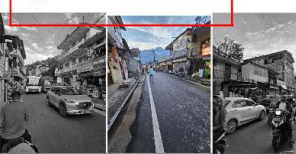
- Model of tourism highly depend on transportation because of challenging terrain and limited facilities.
-Zones get created highly based on the parking area of thufans and tourist cars.
-Factor that exagurates this factor is how the movement between residential and main street works
-Due to all the hotspots existing in red zone replication will channel all the revenue



MR. RAJENDRA BANDARI's house



upper bazar



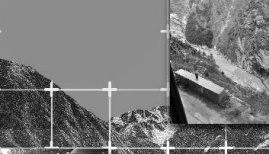
temple



site



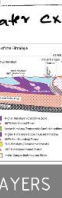
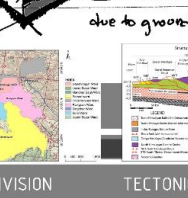
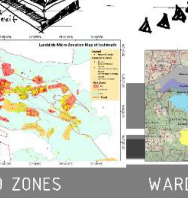
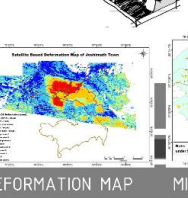
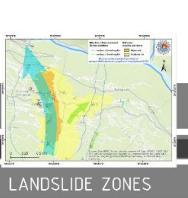
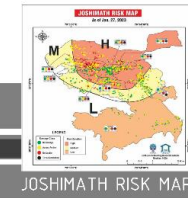
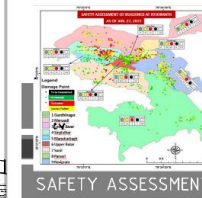
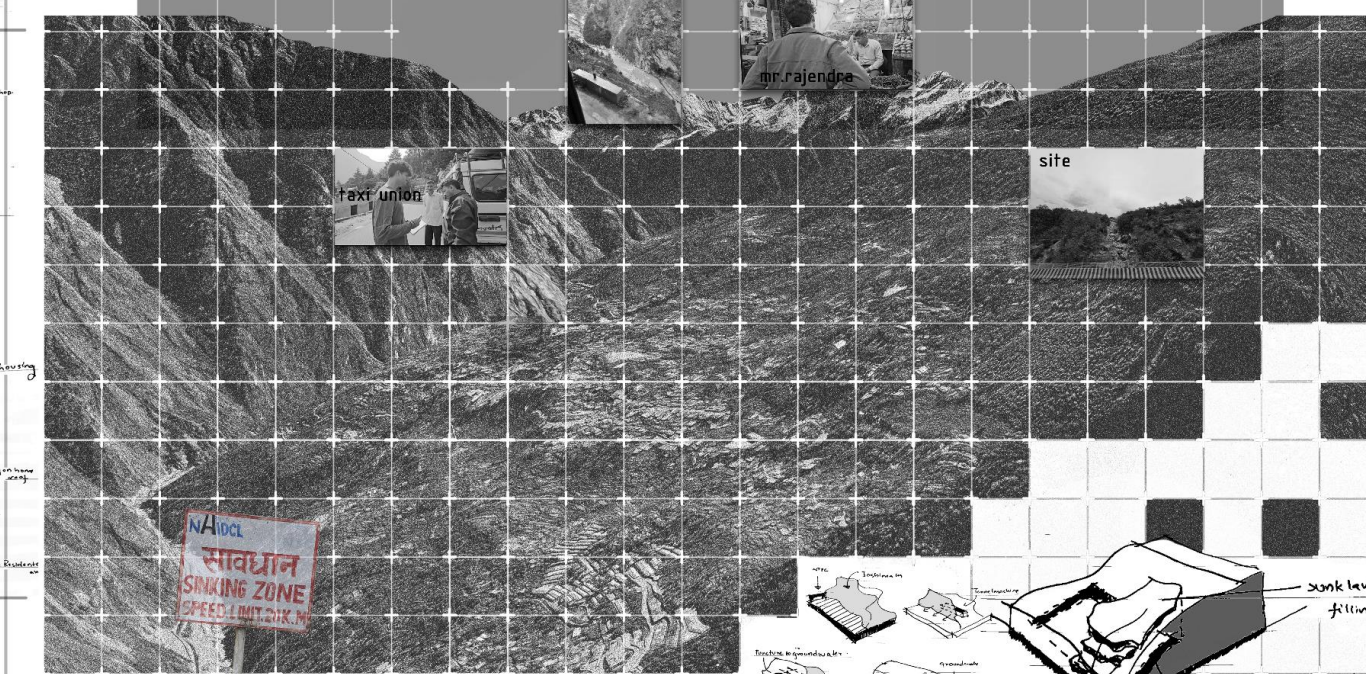
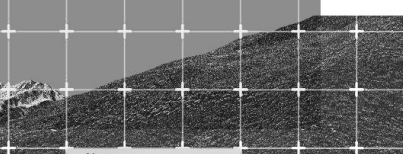
alakananda



mr. rajendra



site



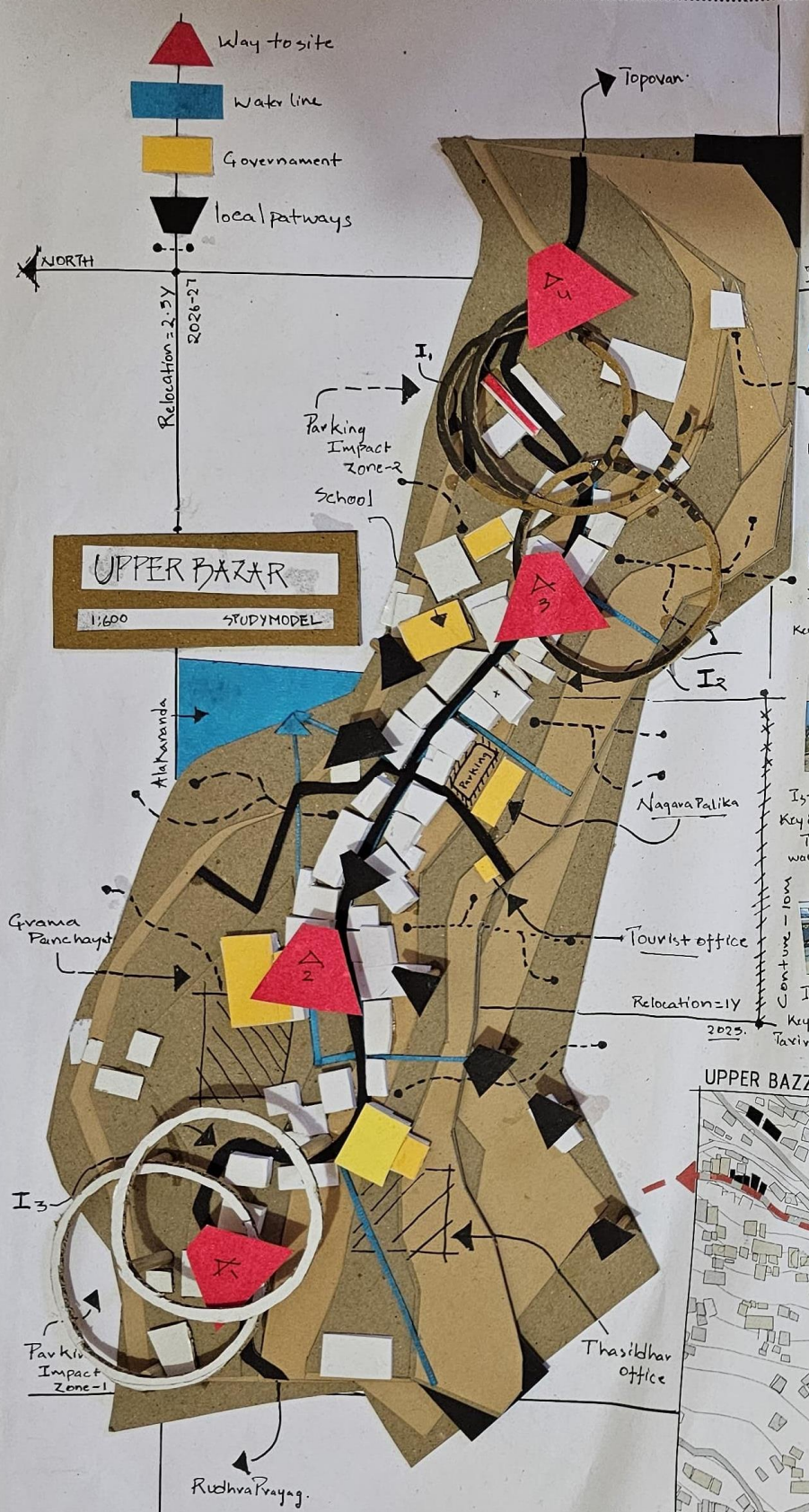
Objective: By analysing all the solutions proposed by the government and considering peoples aggitation a singular solution of providing a relief center or re-construction of housing is not enough to solve the problem
If not the proposed solutions the objective turns into creation of an utopia with market housing and horticulture zones to create a circle of life that all utopias aim to create.

JOSHIMATHS UTOPIA will aim to create an urban scale mix use resilient structure which will be a seed for germination of a new city with the structure as the central unit.

JOSHIMATH'S UTOPIA
VAMSI CHANGAVALLI-1AA20AT010



KEY MAP-JOSHIMATH TO DEVAPRAYAG



Interview:

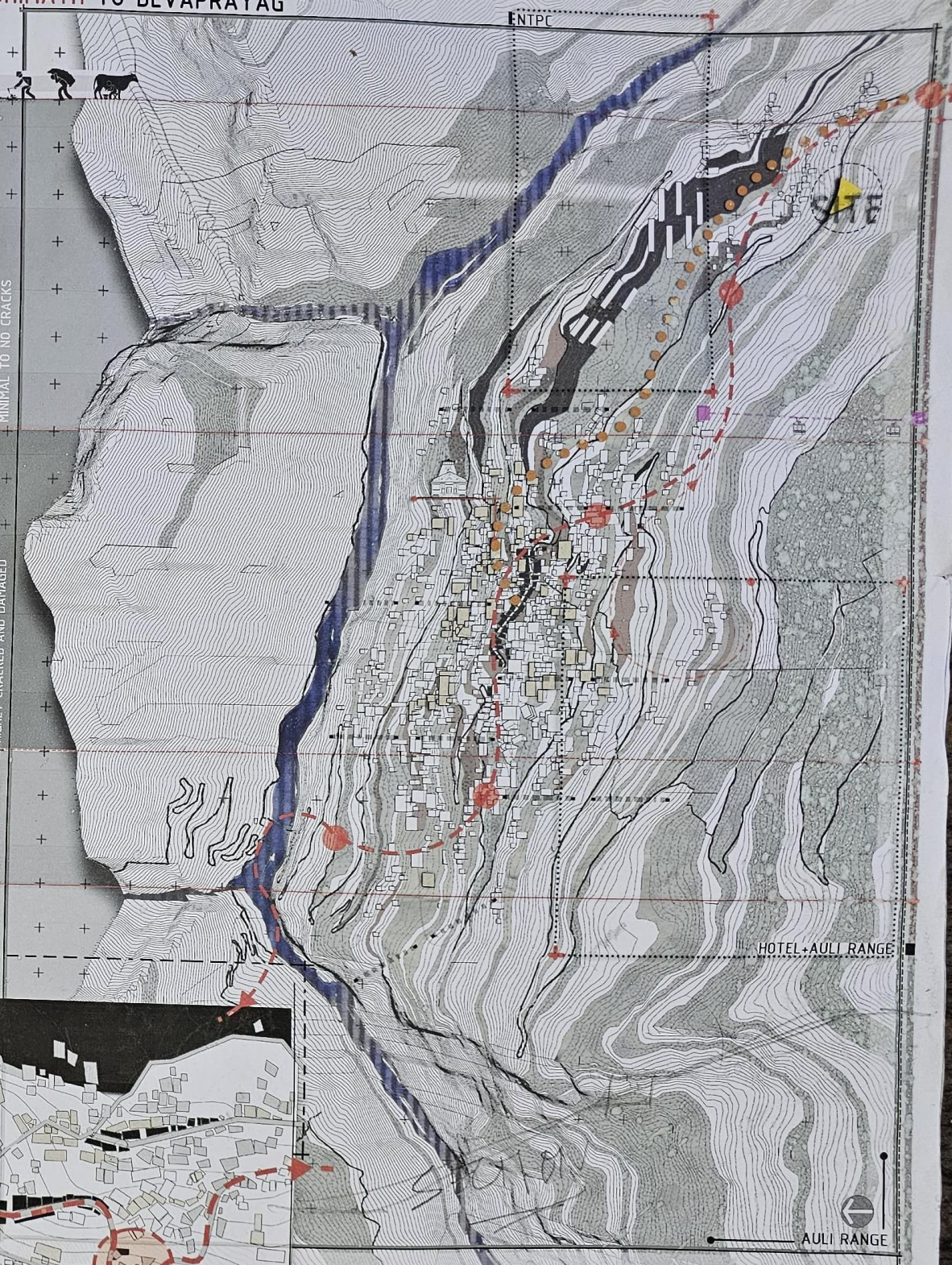
I1- Interview with a local shop
Key Inference: Ranged Impact

I2- Mr. Rajendra Bandari
Key Inference: scaled incidence + live stock management

I3- Taxi 1
Key Inference: Time Limitation and way Limitation

I4- Taxi 2
Key Inference: Taxirouted circulation

Contour - 10m



LEGEND :

WATER	DISPLACED PROPERTIES	RESIDENTIAL	WATER	SUB-FARMING	RELIGIOUS PROCESSING
HIGH	LOW	LOW	MOVEMENT PATTERN	LOCAL PATH	
SCALE OF DAMAGE					

JOSHIMATH'S UTOPIA
VAMSI CHANGAVALLI - 1AA20AT010

SHEET TWO

Progressive failure of buildings under landslide impact

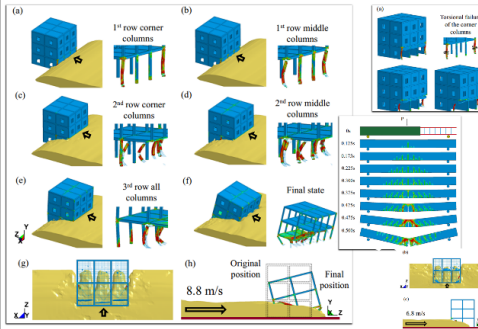
H. Y. Luo · L. L. Zhang · L. M. Zhang

INFERENCE:

Collapse of the building. The ability of this cantilever system to prevent subsequent collapse depends on the bending capacity of the beam.

Bending failure is the most common column failure mode, which usually occurs near the time of the peak impact pressure. The side walls behind the columns provide a lateral constrain and enhance the flexural capacity of the column due to the higher in-plane rigidity of walls

The frontal walls in the ground floor are the first damaged component due to their low out-of-plane flexural capacity. The landslide material, then, flows into the building and destroys the remaining components.



CONCLUSION

Structural failure in columns occurs before structural failure in columns. Isolation techniques in beams should be given preference

Landslide quantitative risk analysis of buildings at the municipal scale based on a rainfall triggering scenario

Susana Pereira, Ricardo A. C. Garcia, José Luis Zúñiga, Sérgio Cruz Oliveira & Márcio Silva

INFERENCE:

This methodology demands a very detailed field survey of the building characteristics at municipal level, which is very time consuming

The estimation of landslide thickness as the simple ratio between landslide volume and landslide area

Percentage of uses for each type of building.

B1 – fragile buildings made with metal or wood;

B2 – buildings made with

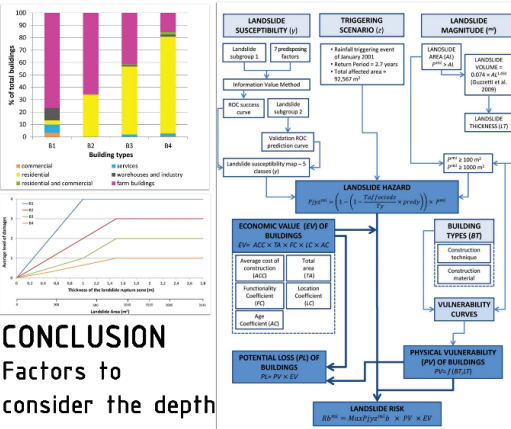
adobe or irregular loose stone walls;

B3 – buildings made with bricks or blocks united with cement;

B4 – buildings made with

reinforced concrete or resistant metal structures.

Vulnerability curves according to the building types of the study area



CONCLUSION

Factors to consider the depth of effect of land sliding can be used as filter to determine who need the most help

Physical vulnerability assessment of buildings exposed to landslides in India

Aditi Singh¹ · D. P. Kanungo² · Shilpa Pal³

INFERENCE:

Preparation of documentation form

(a) General information Name, Address and Geographical location (coordinates) of building

(b) Building Function Residential, institutional (schools, college, hospital, old age homes, training centre etc.), commercial (offices, guest house, hotels, shops and industrial building, fire station etc.) and mixed (buildings used for multiple purposes such as residential and commercial both)

(c) Vulnerability Indicators

- Architectural Features:

Shape of the building, dimension of building

- Material Characteristics: Material of wall, floor and roof

- Structural Features:

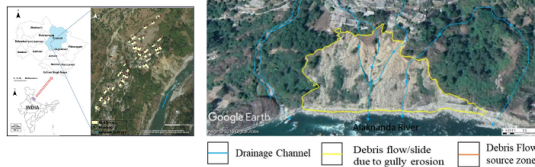
Irregularity in building configuration (horizontal & vertical), bulging of walls and columns, number of floors, presence of cracks, cracks width and their shape, water seepage etc.

- Geographical features:

distance of built-up area from steep slope

- Workmanship:

quality of construction & state of maintenance.

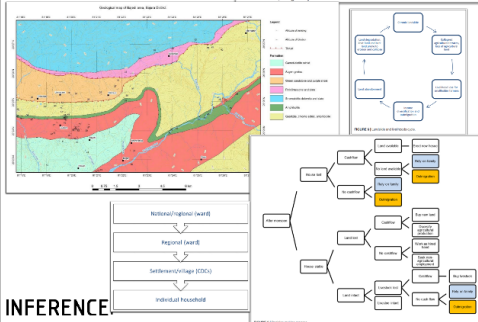


CONCLUSION

Parameters set by government to assess if all the factors are fulfilled to make a construction possible in a landslide zone

Building Resilience to Chronic Landslide Hazard Through Citizen Science

Katarzyna Ciechan, Piyu Shah, Madhav Upadhyay, Art Dawatz, Caroline Russell, Julian Clark, Mohit Raj Dattar and Anant Dattar



INFERENCE:

Finding a balance between persistence and flexibility is key to achieving relatively resilient living

Sustainable and responsible planning should include hazard mapping, in particular, slope susceptibility data and settlement exclusion zones. Also, land accessibility should be carefully reviewed and analyzed

why people continue to settle in hazard-prone areas. At the same time, for such research to be of value, it should take into account the unique epistemological viewpoints of the concerned stakeholders: the members of the affected communities as well as the lower governance structures

local knowledge can be used to both anticipate and mitigate hazards, and to support better planning.

CONCLUSION

Using citizen science to create coherent social situation in a relocated society

Architecture of Uttarakhand and Construction Techniques for Affordable Housing

S. K. Nigam, H. K. Jain, Vandana Nigam

	System 1	System 2	System 3	System 4
Walling	Vegetal	Mud	Mud	Brick
Roofing	Thatch	Thatch, CGL, AC	Thatch, Mud on wood	Reinf. Brick or RC slab, CGI

	System 1	System 2	System 3	System 4
Walling	Random Rubble	Random Rubble	Random Rubble	Brick Masonry
Roofing	Mud on wood	Pathal	RC slab	CGL/RC slab

INFERENCE:

The combination of the architecture of Uttarakhand and innovative construction techniques for affordable housing are taken as the basis for the development of the prototype to provide a low cost, energy efficient, disaster resistant environment friendly and durable housing to the people of the state

factors which guide the local architecture of this zone are:

- availability of good quality top soil,
- warm temperatures and moderate level of precipitation
- agricultural residue,
- easy availability of non- local materials

The better level of construction technology used in this region for making houses is through the use of hand-made sun dried bricks called 'Cob'. The cob walls are load bearing and are made with bricks similar in size to that of the burnt bricks.

CONCLUSION

Affordable housing in Uttarakhand for co-relation study

Traditional practices of the people of Uttarakhand Himalaya in India and relevance of these in disaster risk reduction in present times

Piyoo Rautela

INFERENCE:

Agriculture is the major economic activity in the hills. In the lower reaches of the valley irrigation is resorted to by a network of unlined canals called gool in local parlance that are fed by the water of the small streams draining the watershed. Water of the main streams is generally not used for irrigation purposes as these traverse through geomorphic low of the watershed and have gentle gradient

Landslide mitigation

Terrace farming

Unbundled far flung fields

Habitation on higher ground

Jungle gool

Seasonal migration

Avoiding terraces and old slide zones for settlement

Provision of wooden beams is observed in most of the traditional structures together with through stones and corner stones. Both housing and nailing techniques were resorted to in these for joining the wooden components. This allows for minimal angular displacement and has advantages of both pin and rigid joints

The art of raising walls of traditional multistoried structures was particularly elaborated. These were raised by placing double wooden logs horizontally on the edge of two parallel sides of the platform. The thickness of the walls was determined by the width of the logs.

Foundation trench was generally dug until firm ground or in situ rocks were reached. There was also tradition of leaving the foundation trench open for some rainy seasons

At places where in situ rocks were exposed the platform was raised directly over it. The height of such platforms constructed using dry stone masonry is observed to vary between 6 and 12 feet

CONCLUSION

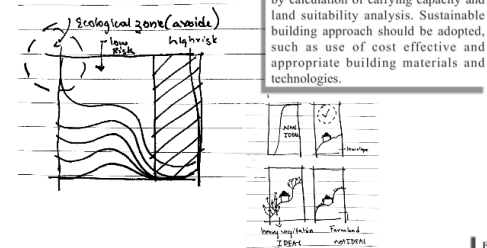
Techniques used in natural construction in Himalayan region of India

F-1.2 Strategies for Development in Hilly Areas

Environment inventory/impact assessment—For planning of the new settlements or working out the strategies for the growth of the existing settlements, it is necessary to conduct detailed environmental inventory/impact assessment. The inventory would involve geological investigations, slope analysis, soil, flora and fauna analysis, climatic inventories, vulnerability to natural disasters (such as earthquakes, landslides, floods, etc.). In addition to this the aesthetic factors, cultural, architectural and historical heritage, scenic/landscape value shall also be taken into consideration.

Identification of developable area—Identification and quantification of developable area is done by deducting the natural ecological area from the entire township jurisdiction area. Jurisdiction may be large to control the surrounding areas. The classification of land uses should be given only for developable area, while the rest of the ecological area shall be for conservation or restoration. Hill Town Developable Area = (Hill town jurisdiction area – Natural Ecological Area)

Land use optimization—Keeping in view the scarcity of good buildable land and also the high cost of the construction, it is necessary to optimize the use of land by calculation of carrying capacity and land suitability analysis. Sustainable building approach should be adopted, such as use of cost effective and appropriate building materials and technologies.

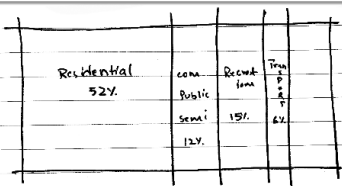


F-2,3,4 DIVISIONS

F-2 LAND USE PLANNING

The following land use structure shall be adopted in Development Planning in Hilly areas:

Sl No.	Land Use	Percentage of Developed Area		
		Small Towns	Medium Towns	Large Cities
(1)	(2)	(3)	(4)	(5)
i)	Residential	50-55	48-52	45-48
ii)	Commercial	2-3	2-3	4-5
iii)	Industrial	3-4	4-5	4-6
iv)	Public and semi-public	8-10	8-10	12-14
v)	Recreational	15-18	15-18	16-18
vi)	Transport and commerce	5-6	5-6	6-8
vii)	Ecological	Balance	Balance	Balance



ADDITIONAL GUIDELINES

F-6.1 Following aspects should also be considered while planning for land building development in hilly areas:

- The hillside with less than 30° slope are in general stable. Therefore, building sites (temporary or permanent) should in general be located on hillside with not more than 30°-45° slope. In areas where most of the land is above 30° slope, spatial regulations should be necessary to protect the houses by building retaining walls/breast walls to avoid landslides occurring at time of earthquakes or heavy rains (see F-7.4).
- Flat land is normally not available in hilly regions. The houses are required to be constructed on partially sloping land made available by cut and fill. It shall be therefore necessary to protect the houses by building retaining walls/breast walls to avoid landslides occurring at time of earthquakes or heavy rains (see F-7.4).
- Cut slopes with height less than 5 m or two to three storey heights of residential buildings are in general stable. For higher cut slopes, special investigation should be carried out and details of protection works should be worked out and implemented.
- Site development in hilly regions consumes about 30 to 40 per cent of total cost of building complex, therefore the following investigations shall be done to obtain the following geotechnical parameters depending upon the size and complexity of the building project:
 - Type of soil rock, weathered or intact, dip of bedding planes, drainage conditions, shear planes, material between the joints, tension cracks, type of plantation, verticality of trunks of the trees, etc.
 - Cliff sides and spur faces need to be protected with appropriate technology including wire netting and/or blowing of RCC along the walls.
 - Thickness of overburden, nature of soil strata, details of soil matrix, etc.
 - Estimation of shear parameters of the in situ soil mass, which will govern the failure.
 - Drainage pattern of the area and permeability tests to observe the drainage conditions.
 - Specific slip zones in the area, if any.
 - Provisions for landslide hazard mitigation, seismic micro zonation and mitigation of liquefaction hazard should be integrated.

F-7 GENERAL BUILDING REQUIREMENTS

The provisions contained in this Part shall apply excepting for the specific provisions given hereunder.

F-7.1 Siting

F-7.2.1 No house shall preferably be located closer than 1 m to another house.

F-7.2.2 No house shall be located closer than 10 m to a steep slope.

F-7.2.3 No house shall be built on a landfill or on the edge of a slope known to have been levelled.

F-7.2.4 Buildings in hills shall be clustered together to minimize the exposure to cold winds. Open spaces provided shall allow for maximum south sun.

F-7.2.5 Buildings shall be located on the south slope of a hill or mountain for better exposure to solar radiation. At the same time, exposure to cold winds may be minimized by locating the building on the leeward side.

F-7.2.6 A minimum clearance of 1.5 m should be provided between top of boundary wall and building wall.

F-7.3 Passive Systems for Climatic Control

F-7.3.1 Appropriate solar passive methods, such as orientation, double-glazing, trombe walls and solar collectors, shall be adopted to achieve climatic comfort with little use of conventional energy.

F-7.3.2 Care shall be taken in siting and design of buildings to provide passive controls to modify the effect of cold/strong winds.

F-7.3.4 The houses constructed on sloping land shall be protected by building retaining walls/breast walls (see good practice 3/11) to avoid landslides occurring at time of earthquakes or heavy rains.

F-7.3.5 Maximum height of plinth level shall be 2.00 m.

F-7.4 On the uphill side of the building on a sloping site, the natural flow of the water shall be diverted away from the foundations.

The slope of ground all around building should be not less than 1:50, built in such a way that rain water does not find way to percolate in ground excessively and moves away quickly to surface drains or away on adjoining hill surface towards natural streams.

A minimum of 0.75 m wide apron should be provided all around the building to prevent entry of water into foundation.

Strategy 2: Sustainable Development based on Watershed Management

A watershed, also called a drainage basin or catchment area, is defined as an area in which all water flowing into, goes to a common outlet. People and livestock are the integral part of watershed and their activities affect the productive status of watersheds and vice-versa. From the hydrological point of view, the different phases of hydrological cycle in a watershed are dependent on the various natural features and human activities. In hilly areas or where intensive agriculture development is planned, the size of watershed preferred is relatively small. Watershed management, that is, river basin management also is important in the context of regional planning both in terms of, as a source of water and sources of disaster risk like flood, etc. Efforts shall be made to achieve a balance between beneficiary oriented and infrastructural development programmes, keeping in view the vital importance of ecological restoration and conservation. This may be achieved through,

- better water and land use and control of soil erosion through watershed management;
- afforestation, silviculture development and replacement of annual crops with perennial shrubs and trees and plantation crops in steep slopes and development of other high value low volume crops linked with processing and marketing; and
- rural and small industries and electronic

F-4 ROADS AND PATHS

F-4.1 Street orientation shall preferably be east-west to allow for maximum south sun to enter the buildings. The street shall be wide enough to ensure that the

buildings on one side do not shade those on the other side.

F-4.2 The following road widths shall be adopted for urban roads in hilly areas:

Sl No.	Road Type	Width (m)		
		Open Areas	Built-up Areas	Plains
(1)	(2)	(3)	(4)	(5)
i)	Arterial road	18-24	15-18	30-60
ii)	Sub-arterial road	15-18	12-15	30-40
iii)	Collector road	9-12	7.5-9	20-30
iv)	Local street	4.5-6	3-6	10-20
v)	Loop street (maximum length = 500 m)	4.5	4.5	9
vi)	Cul-de-sac (maximum length = 500 m)	4.5	4.5	7.5
vii)	Pedestrian path	1.5-2.5	1-1.5	1.5-4.5

F-3 OPEN SPACES

The following norms shall be adopted in development planning in hilly areas:

Sl No.	Type	Area Range ha	Area per 1 000 Population	Remarks
(1)	(2)	(3)	(4)	(5)
i)	Tot lot	0.03-0.05		Minimum width 15 m
ii)	Playground	0.50-1.00	0.12 to 0.20	One for every 5 000 may be combined with schools
iii)	Parks	1.20-2.00	0.12 to 0.20	One for every 10 000 population
iv)	City parks/playgrounds/ Maidan/exhibition grounds/ cultural gathering grounds		0.12 to 0.20	For the entire town at one or more sites, depending upon design and space availability
v)	Botanical garden	10-20		One for every town
vi)	Recreational complex including zoo	10-12		One for every settlement with tourist potential

F-7.8 Disaster Resistance

All necessary steps shall be taken in designing and building in hilly regions to achieve disaster resistance as per the relevant codes and Part 6 'Structural Design' of the Code. All natural disasters likely to affect the locality shall be taken into consideration namely earthquakes, cyclones, avalanches, flash floods, landslides, etc. For guidelines for selection of various landslide control methods for effective correction measures to avoid landslides in hilly areas, reference shall be made to good practice 3/12).

F-7.9 Drainage Facilities

Buildings to be provided with good drainage facilities to prevent excessive saturation of sub-surface formations. Construction should not obstruct existing surface drainage courses.

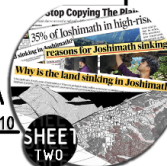
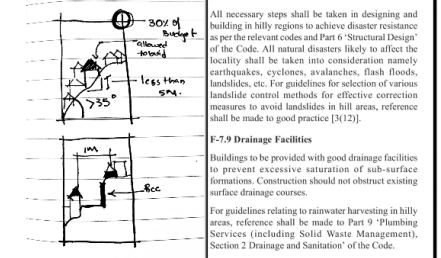
For guidelines relating to rainwater harvesting in hilly areas, reference shall be made to Part 9 'Plumbing Services (including Solid Waste Management), Section 2 Drainage and Sanitation' of the Code.

F-7.10 The shear walls shall be constructed on all the three sides of parking floor so that it is not a soft storey.

F-7.11 Reference shall also be made to good practice 3/13) for guidelines relating to siting, design and selection of materials for construction of residential buildings in hilly areas.

F-8 SOLID WASTE MANAGEMENT FOR HILLY AREAS

Cities and towns located on hills shall have location specific methods evolved for final disposal of solid wastes by the concerned Authority. The municipal authority shall set up processing facilities for utilization of biodegradable organic wastes. The inert and non biodegradable waste shall be used for building roads or filling up of appropriate areas on hills. Because of constraints in finding adequate land in hilly areas, wastes not suitable for road laying or filling up shall be disposed of in specially designed landfills.



JOSHIMATH'S UTOPIA

VAMS! CHANGAVALLI —1AA20AT010

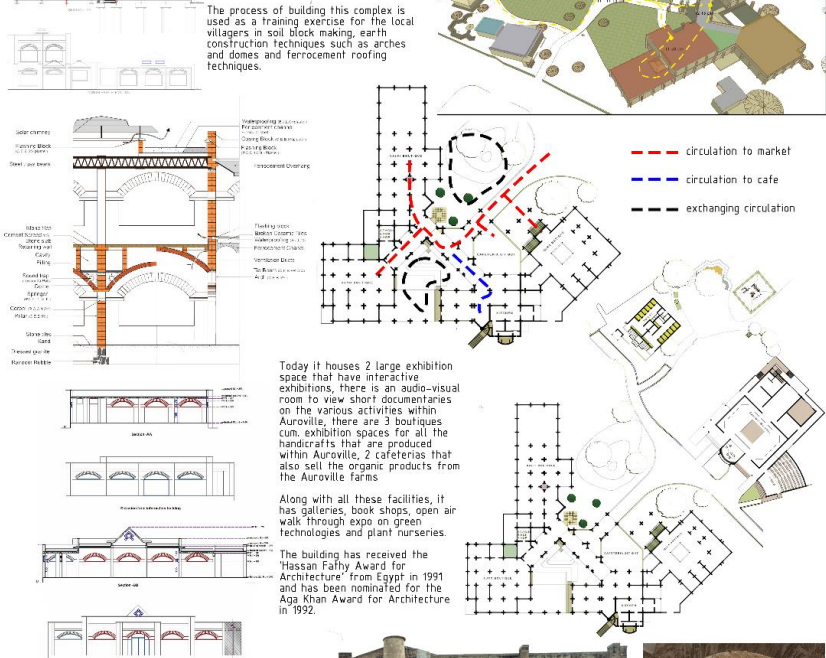
SHEET TWO

MARKET CASE STUDIES

AUROVILLE VISITOR CENTER (organised)

AUROVILLE
Drawing source: ArchDaily,Auroville DC

Centre for sustainable technologies such as appropriate building material and technologies, watershed management and landscaping with indigenous plants, renewable energies, wastewater recycling techniques



Today it houses 2 large exhibition space that have interactive exhibitions, there is an audio-visual room to view short documentaries on the various activities within Auroville, there are 3 boutiques cum. exhibition spaces for all the handicrafts that are produced within Auroville, 2 cafeterias that also sell the organic products from the Auroville farms

Along with all these facilities, it has galleries, book shops, open air walk through expo on green technologies and plant nurseries.

The building has received the "Hassan Fathy Award for Architecture" from Egypt in 1991 and has been nominated for the Aga Khan Award for Architecture in 1992.



ANALYSIS

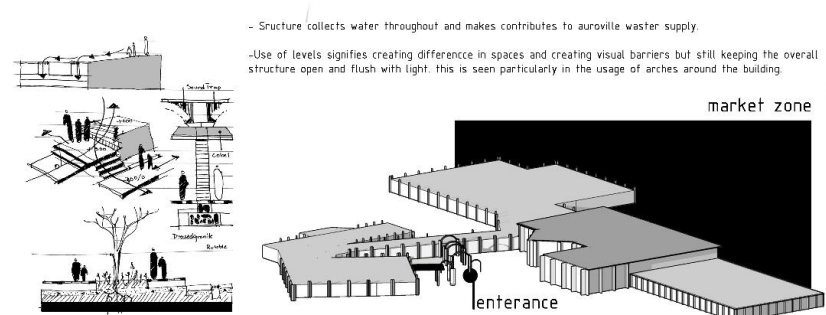
INFERENCE

Organised market in the visitor center helps boost the overall economy generated in the complex by using all the different aspects of auroville

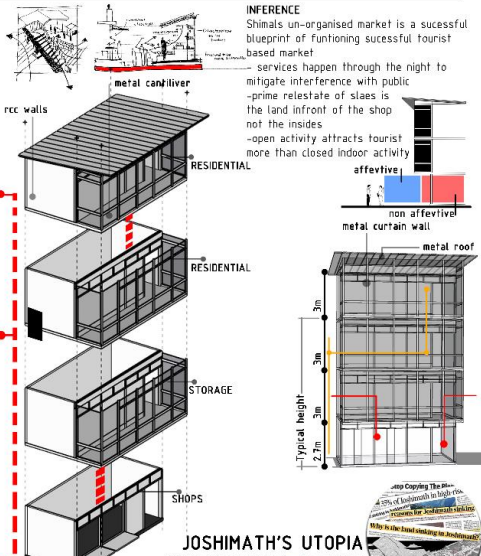
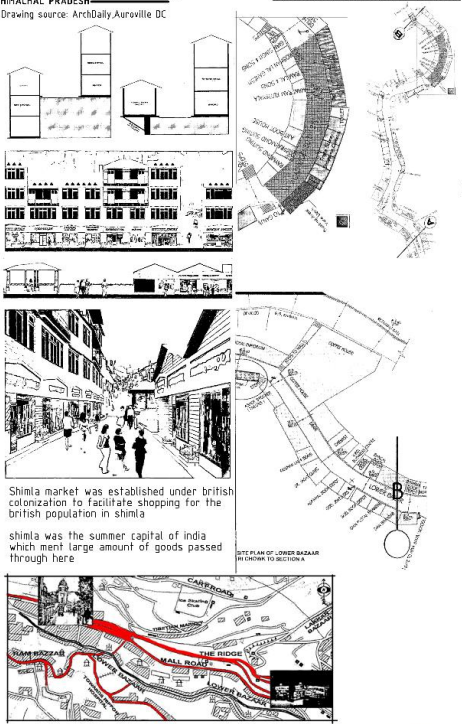
-Since this is the first building visited by tourists it helps as an overview of what is to come in auroville

-Triggers such as cafe and amphitheater are used to bring in customers and increase footfall

-Retaining aesthetic value of auroville throughout creates a nostalgic effect which helps selling of goods easier

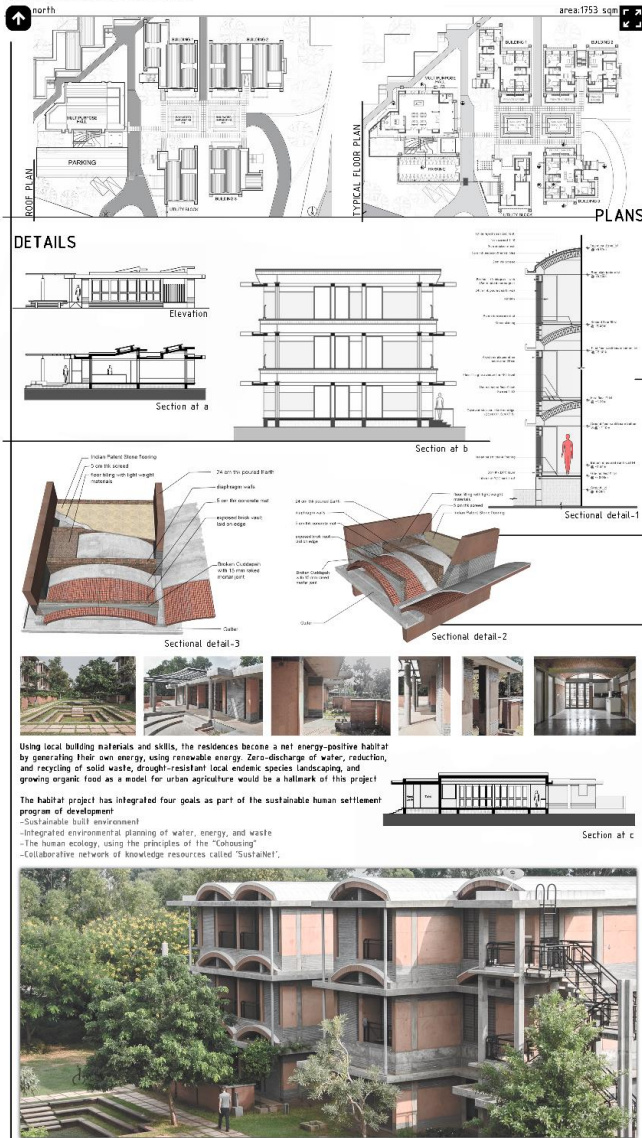


SHIMLA MARKET (unorganised)

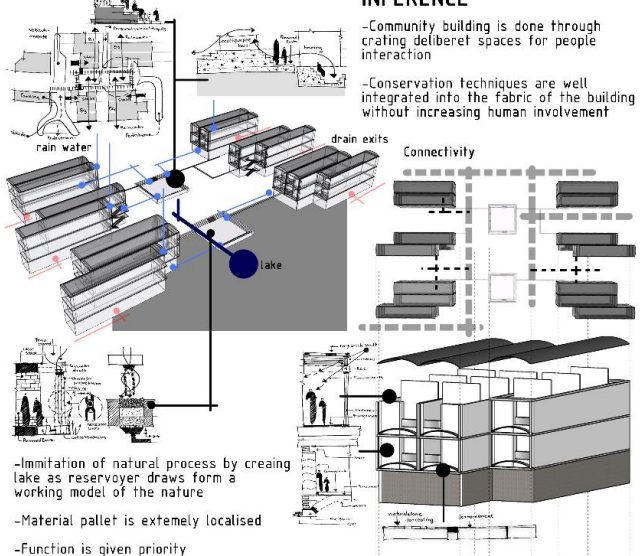


HOUSING CASE STUDIES

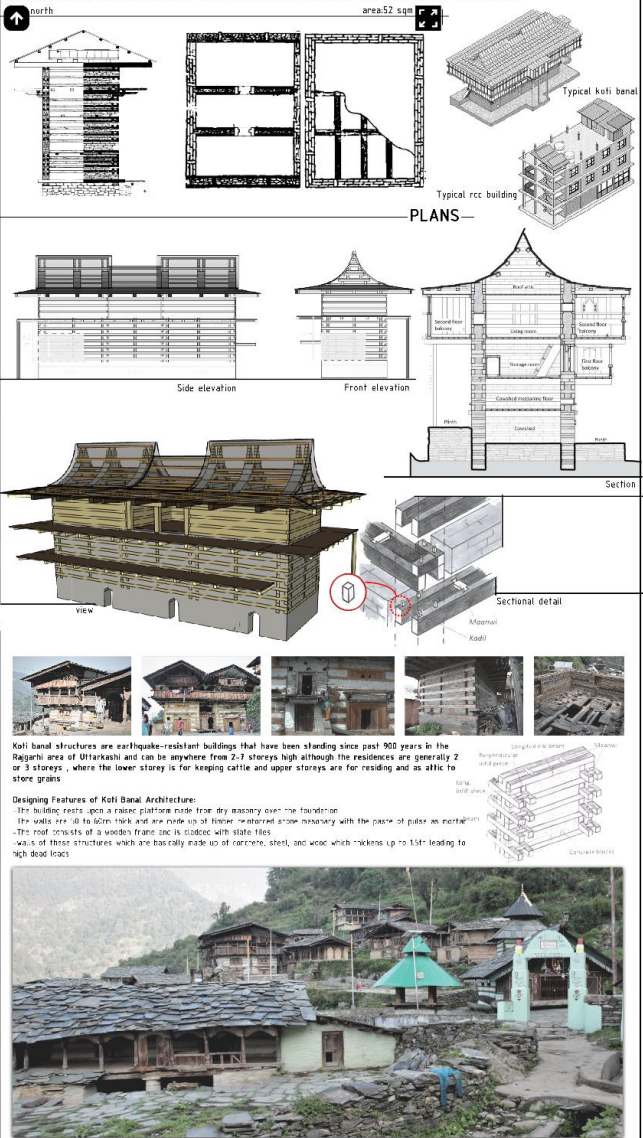
HUMANSCAPES



ANALYSIS



KOTIBANAL



INFERENCE

-Koti banal fails in creating a sustaining social fabric and promotes isolation that is one of the reason why it didnot spread more

- Style of buildings give an basic understanding of landslide resilience

-Use of local materials from walls to roofs to foundation helped it to be constructed on site without a material source

-Adaptations such as thicker roofs and walls to trap heat can be replicated to cut down the heating cost in the area

-Interlocking walls create enough room to move around without being subjected to point loads that most of the modern architecture faces. they act similar to expansion joints

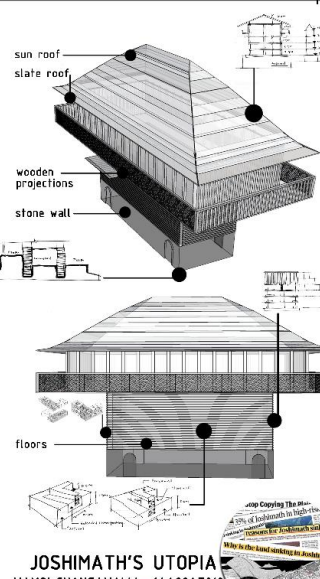
-Foundation is specific to the building based on number of floors and solid micro condition

-Local techniques such as exposing bed rock to rain cycles to put it through a test of determining the capacity is done for kotibanal architecture

COMPARISON:

human scapes is sucessfull in creating a community which has enough social coherence to create humanbonds

koti banals exteme adaptability helps in determining human resilience in extreme situations



30.5561° N, 79.5617° E



NORTH



VIEW FROM MARKET



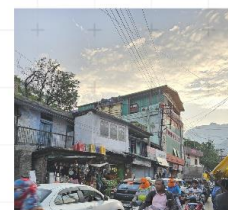
BIRDS EYE



VIEW FROM SITE



BIRDS EYE



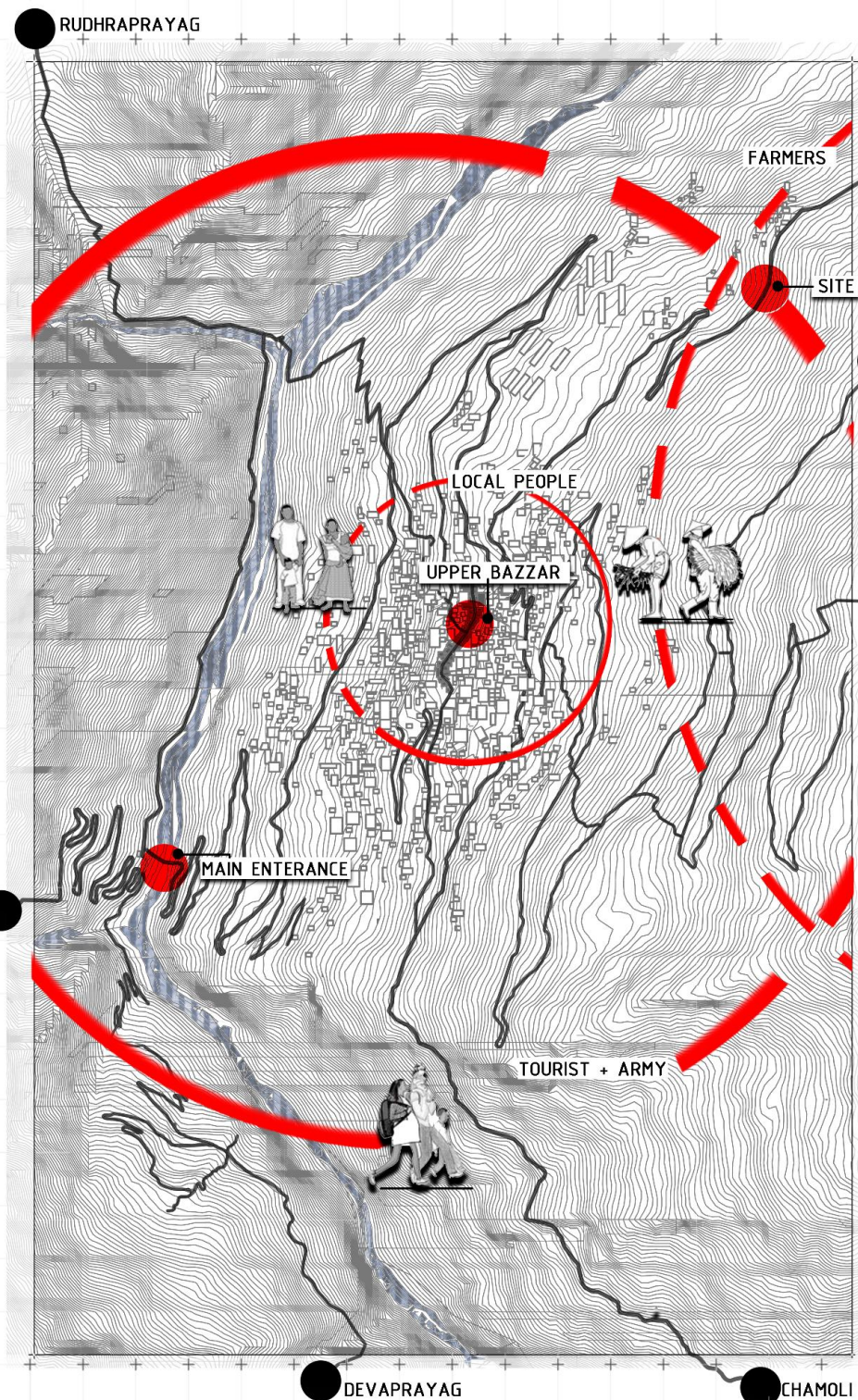
UPPER BAZZAR



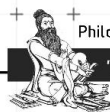
ALAKANANDA



VIEW FROM SITE



ZONING OF JOSHIMATH



Philosophical factor

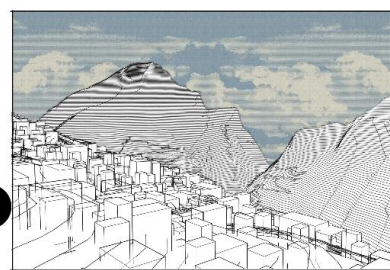
"FIND WATER" WAS SUGGESTED BY SADHUS OF KEDARNATH WHEN ASKED FOR SITE SUGGESTIONS AFTER EXPLAINING THE AIM OF THE PROJECT

KEDARNATH

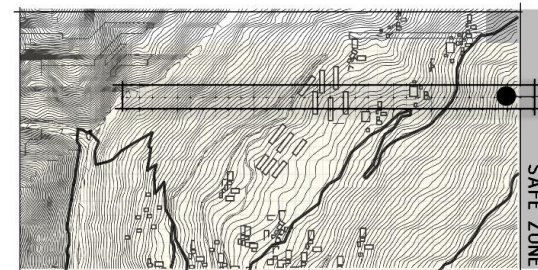
AULI

DEVAPRAYAG

CHAMOLI



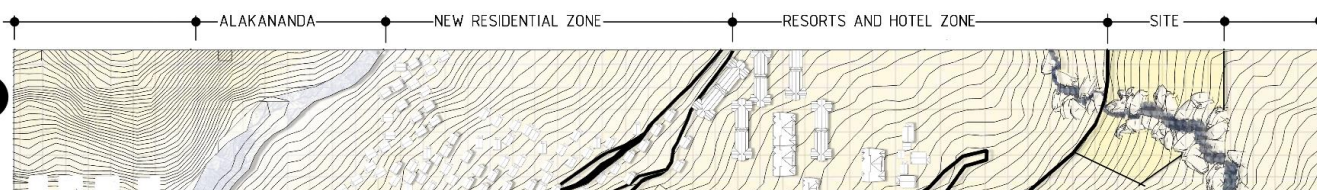
VIEW FROM MARKET



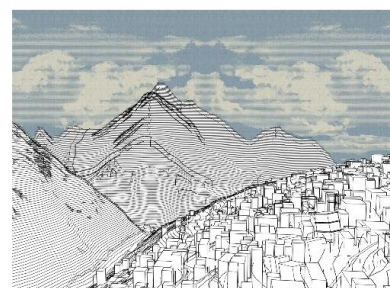
SAFE ZONE

NATURA SPRING

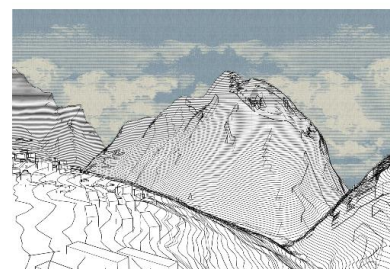
SAFE ZONE



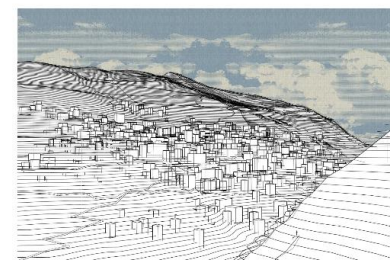
CONTEXT AROUND NATURAL SPRING



VIEW FROM MARKET

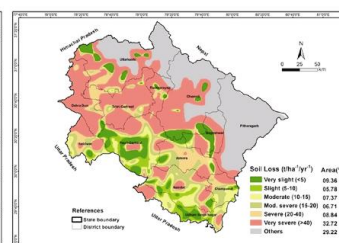
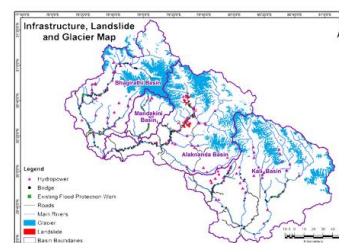
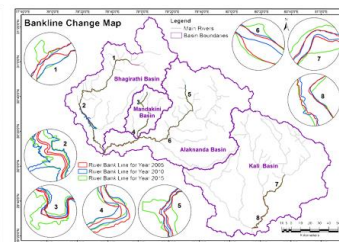
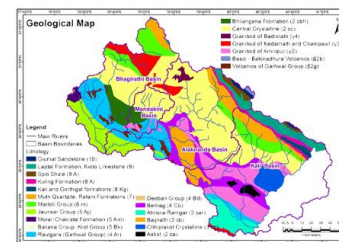


VIEW FROM SITE TOWARDS MARKET



VIEW INTO SITE FROM CONTEXT

SITE UTTARAKHAND



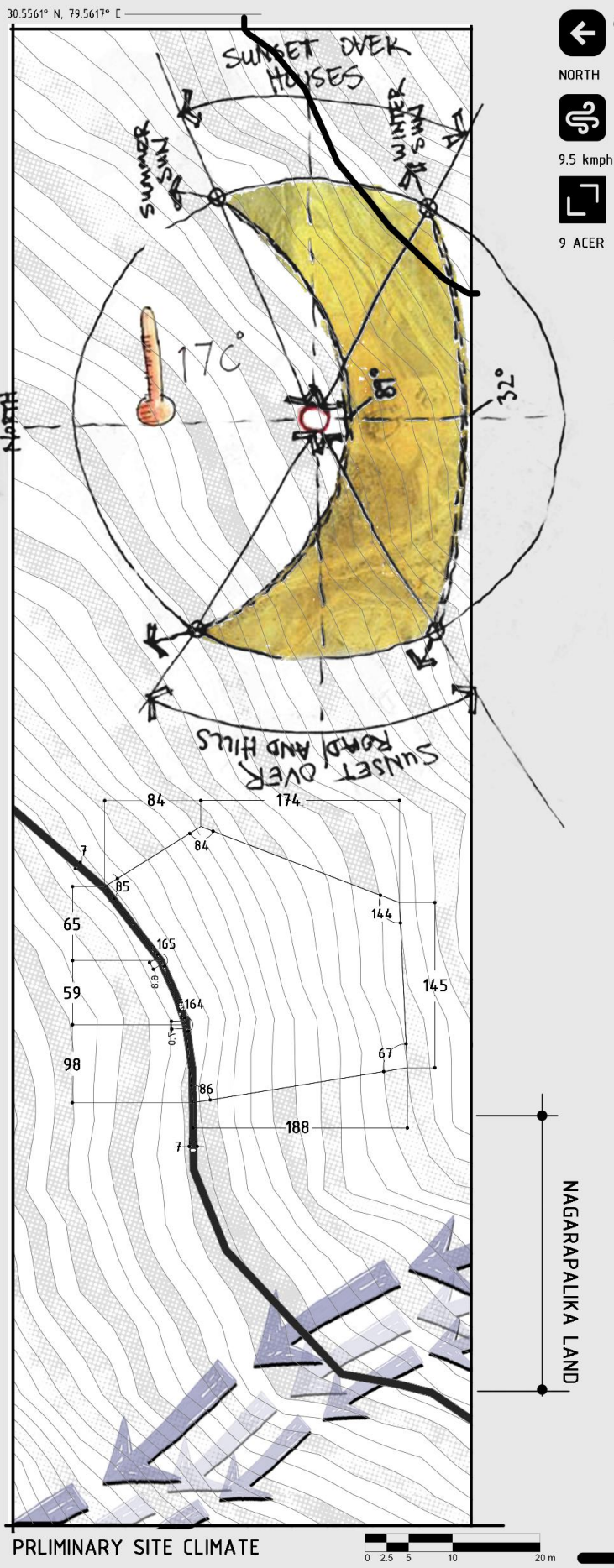
SITE ANALYSIS

VAMSI CHANGAVALLI-1AA20AT010

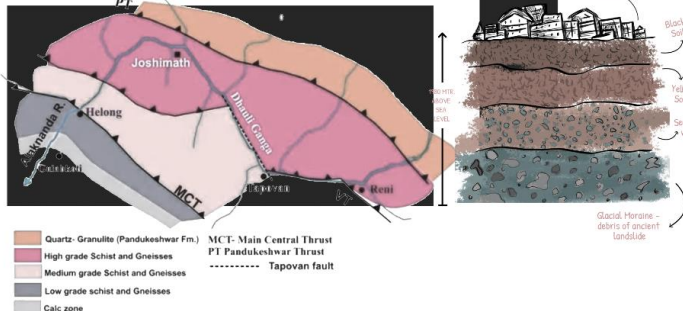
JOSHIMATH'S UTOPIA



SHEET ONE

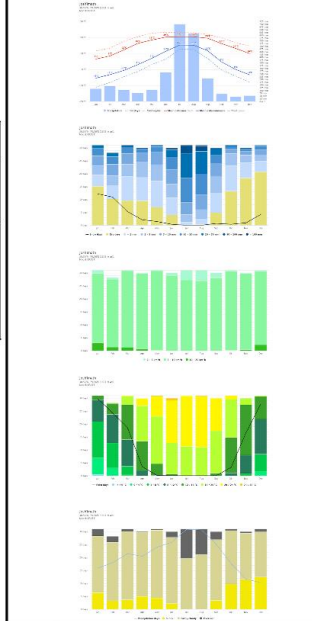
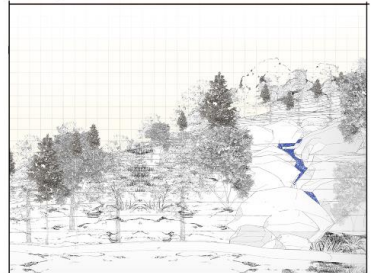


SOIL DATA

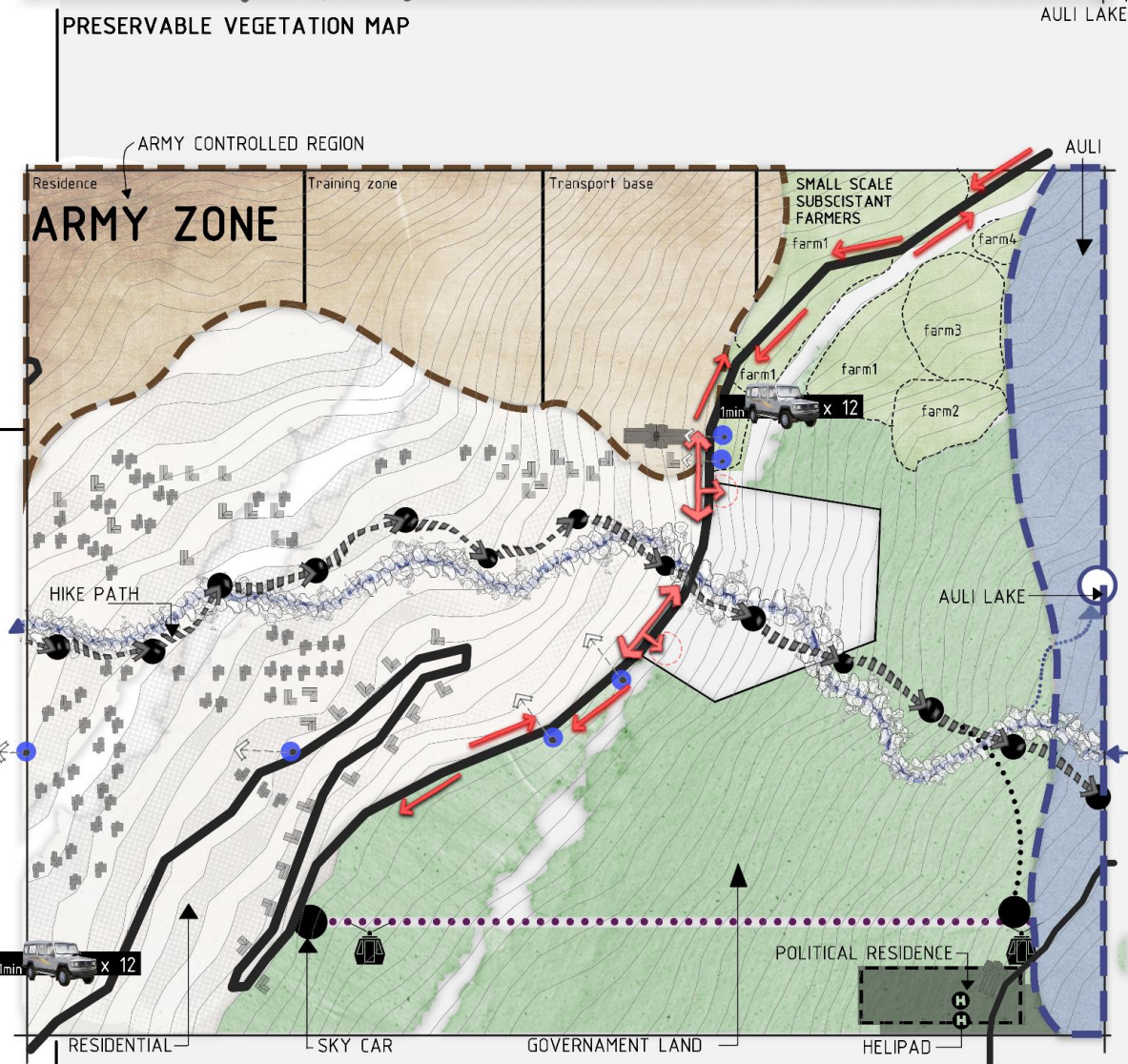
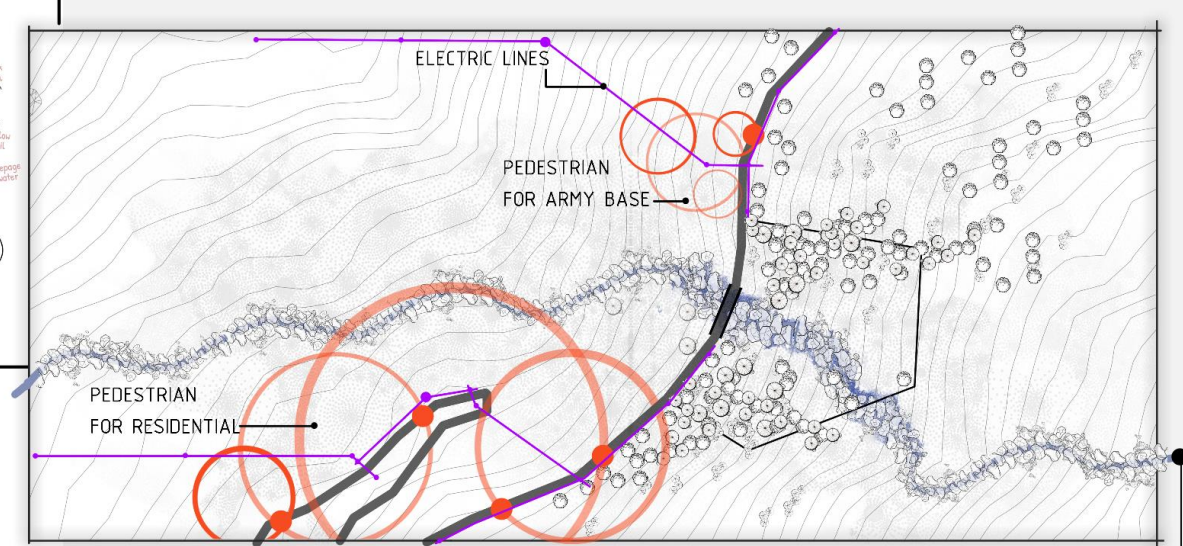
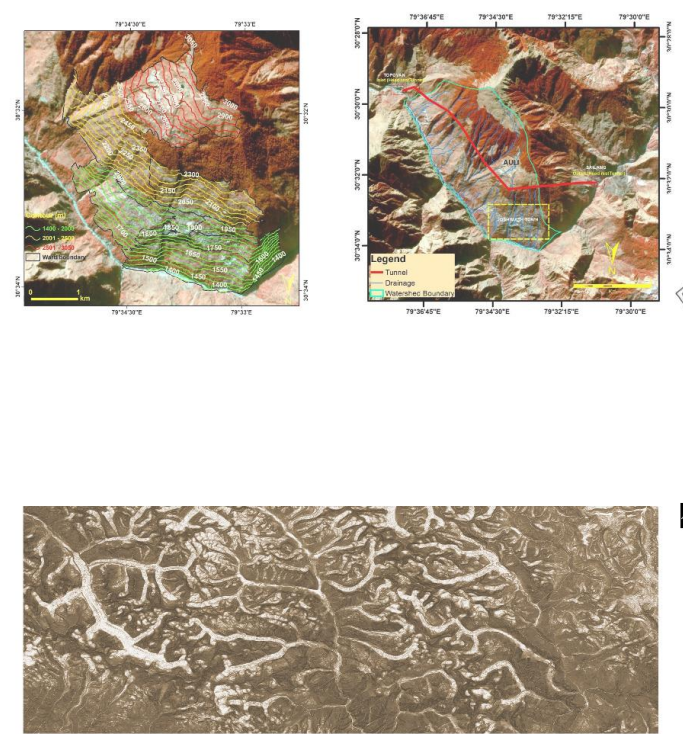


VEGETATION DATA

DEEP ROOTED	N.O	SHALLOW ROOTED	N.O
DEODAR CEDAR		RHODODENDRON	
HIMALAYAN OAK		BANJ OAK	
INDIAN OAK		HIMALAYAN BRICH	
CHIR PINE		NEPAL ALDER	



SLOPE ANALYSIS



S

W

O

T

-INCLINATION OF SITE ALLOWS TO HAVE LARGER CONTROL OVER THE NATURAL FEATURES

-MULTITUDES OF WASTES GENERATED BY THE STRUCTURE CAN BE UTILISED AS BIO GAS UNITS

-TOLLARABLE WEATHER CONDITION ALLOWS HORTICULTURE TO FUNCTION THROUGHOUT THE YEAR

-EVEN THOUGH SITE EXISTS IN A SAFE ZONE THE PROXIMITY TO UNSAFE ZONE CAN HAVE RESIPROCAL EVENTS EFFECT THE STRUCTURE

-SNOW FALL COULD HALT THE THE SPECIFIC TOURISTS NEEDED FOR THE BUILDING

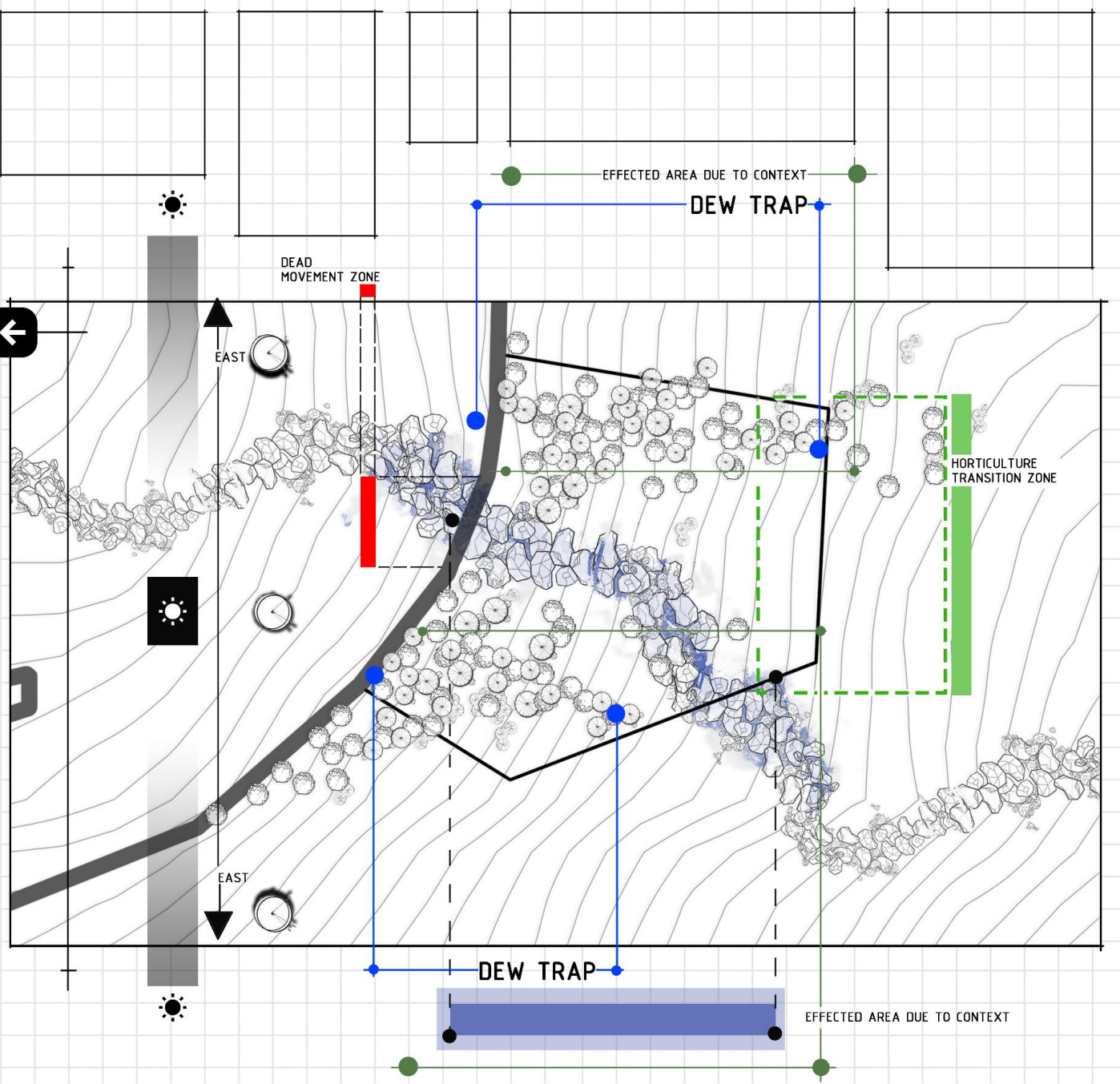
-MAINTENECE OF SITE TO ENSURE SAFETY IS HARD

-INTEGRATING THE ENVIRONMENT INTO THE SITE WILL ENSURE LONGTERM ADAPTION

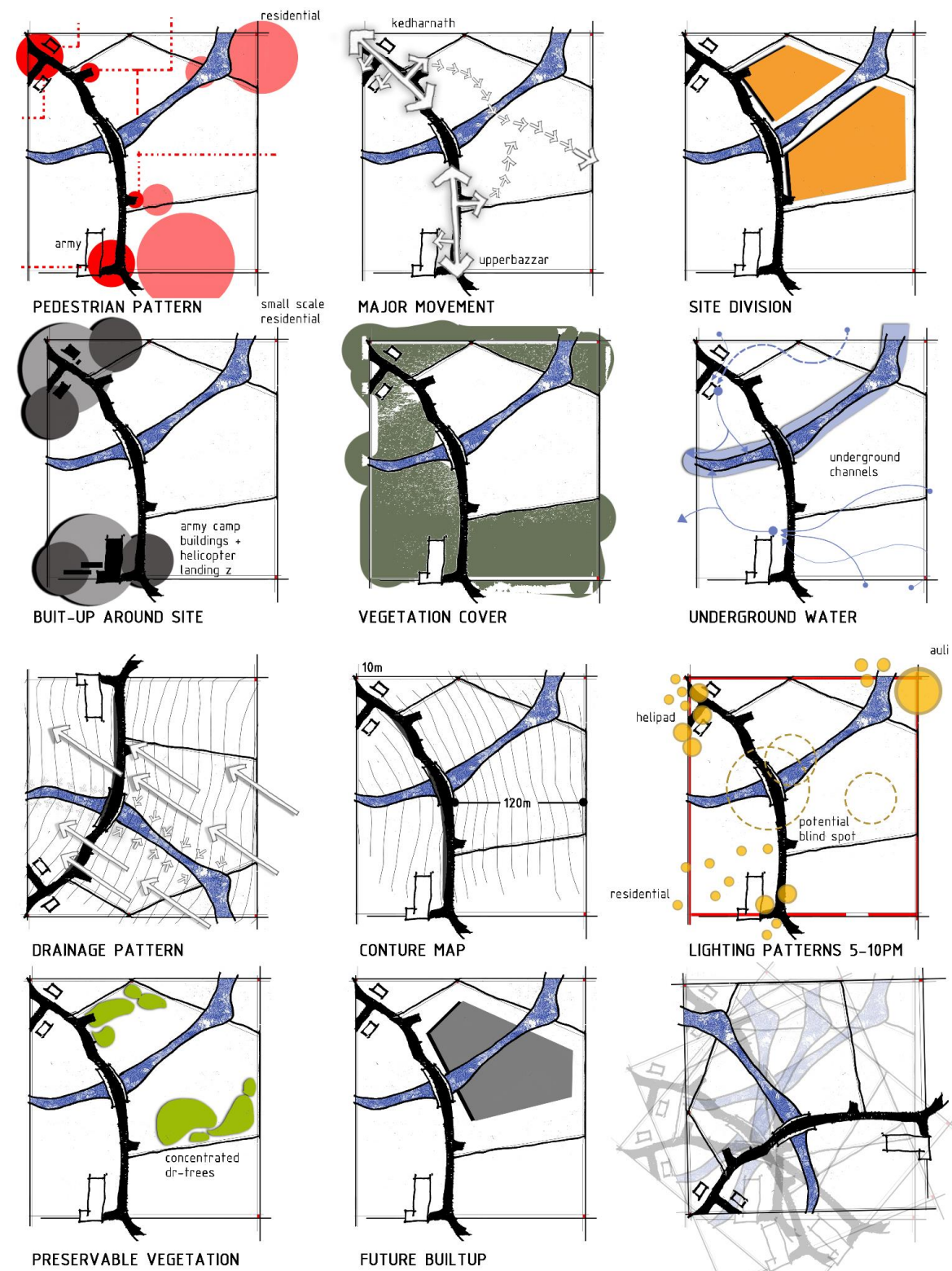
-IN DUE TIME THE SITE CAN BE A PROVIDER OF RESOURCES TO THE OUTSIDE THAN A CONSUMER OF GOODS TO INSIDE

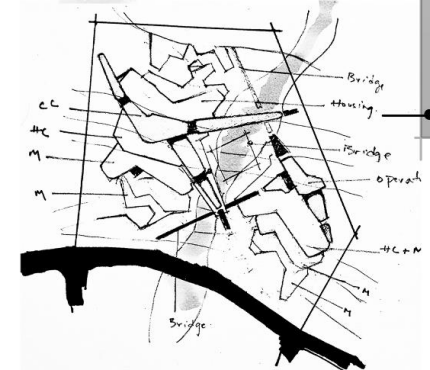
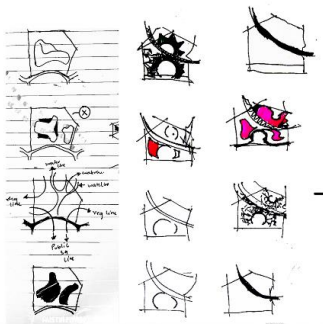
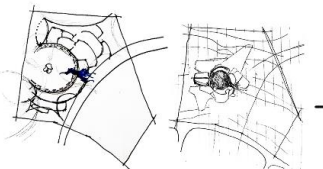
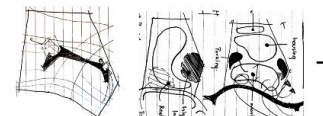
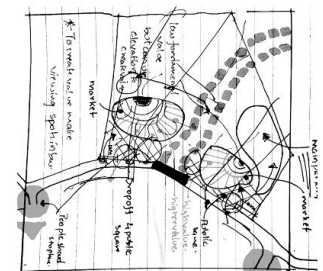
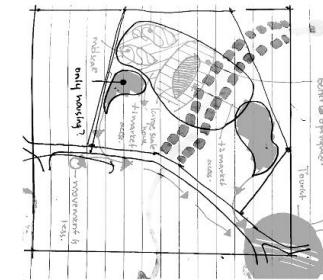
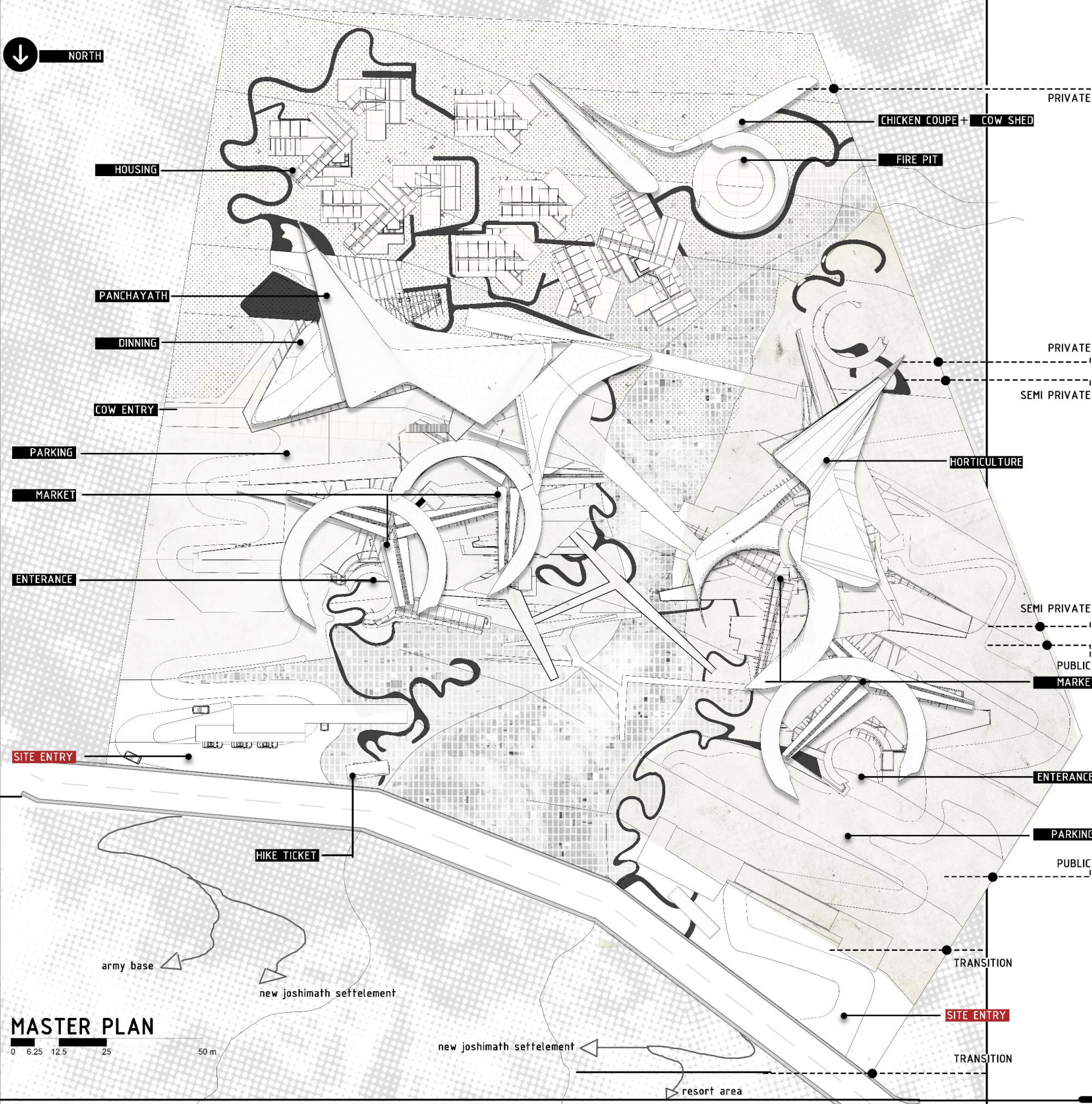
-DUE TO STRUCTURE BEING SAFE IF A INCIDENT HAPPENS AROUND IT IT MIGHT SEE A INFLUX OF REFUGEES

-DEPENDENCE ON NATURAL FEATURES LIKE TREES FOR HOLDING THE LAND WILL HAVE AN UNCERTAINTY IN STRUCTURAL INTEGRETY



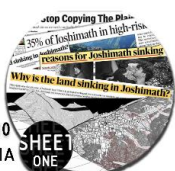
NORTH ← SITE DATA ANALYSIS



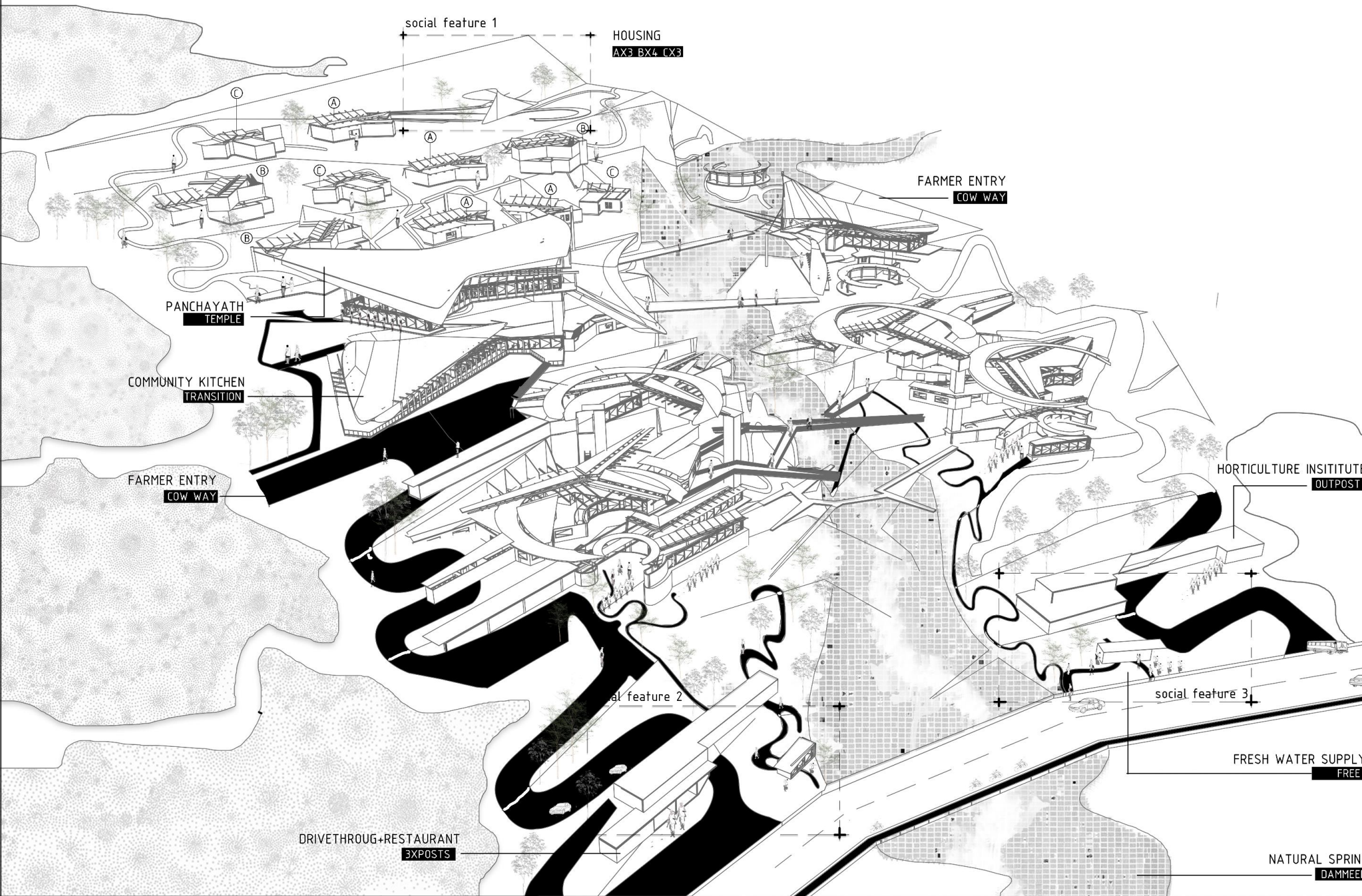


MASTER PLAN

VAMSI CHANGAVALLI - 1AA20AT010
JOSHIMATH'S UTOPIA



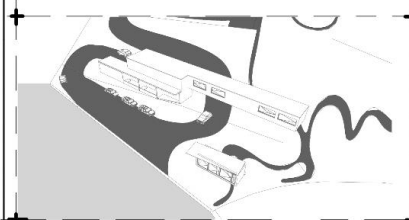
NORTH



SOCIAL FEATURE 1

DRIVE THROUGH:

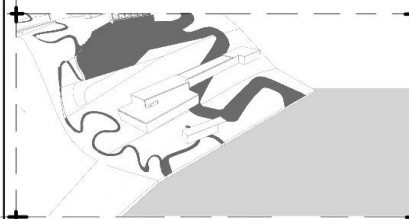
PROVIDES A PIT STOP FOR PILLIGRAMS THAT USE JOSHIMATH AS A PIT STOP IN ON THE WAY TO KEDARNATH OR AULI. IT MAKES USE OF SMALLER INSTALLEMENTS TO MAKE THE STRUCTURE FAMILIAR TO NEW TOURISTS



SOCIAL FEATURE 2

WATER SUPPLY:

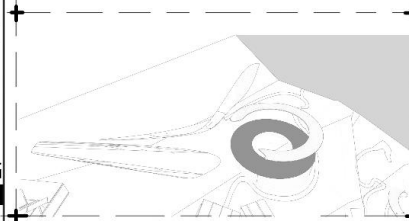
SINCE THE SITE PRODUCES EXCESS WATER THROUGH VARIOUS MEANS A FREE WATER SUPPLY FOR PEOPLE OF JOSHIMATH CAN BE CREATED AS AN OUTPOST TO GIVE BACK TO THE COMMUNITY



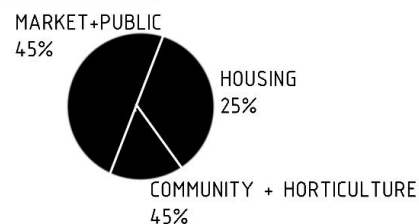
SOCIAL FEATURE 3

FIRE PIT AND COW SHED:

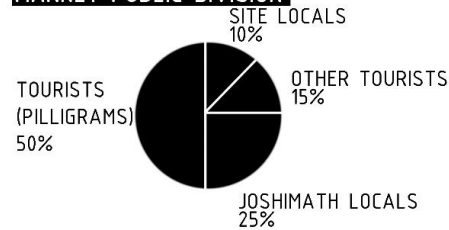
FAMILIAR SOCIAL PATTERNS SUCH AS REARING COWS AND BON FIRE ARE CREATED TO STENGTHEN HUMAN BOND TO THE LAND



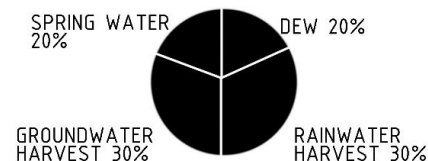
SITE DIVISION



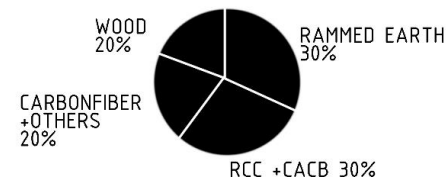
MARKET PUBLIC DIVISION



WATER SUPPLY DIVISION



MATERIAL



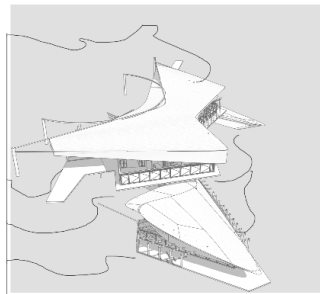
SITE VIEW

VAMSI CHANGAVALLI - 1AA20AT010
JOSHIMATH'S UTOPIA



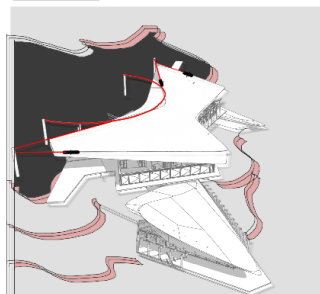
SHEET ONE

LEVEL 1



level one land sliding can be restrained by the retaining walls and foundations without affecting the structure

LEVEL 2



level two land sliding tensions the wires but the load of the structure will still remain majorly on columns through trusses

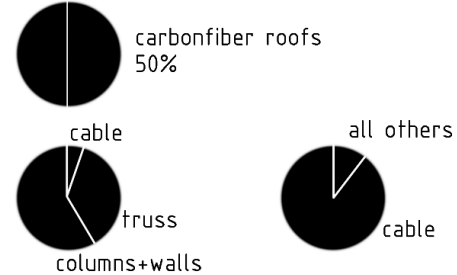
LEVEL 3



when more the 8cm land is displaced the cables take over the total load of the roof detaching it from the walls and trusses so that evacuation will be given ample time and save human lives.

with this method since the roofs are secure rebuildin can be executed faster

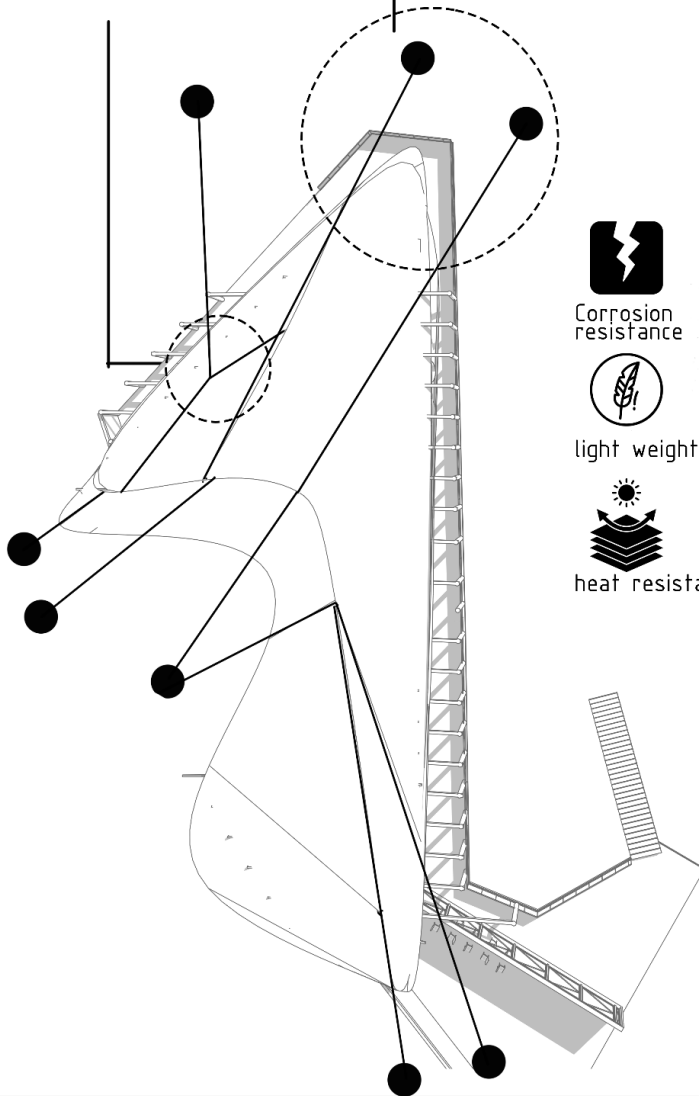
TYPES OF MATERIAL ROOFS



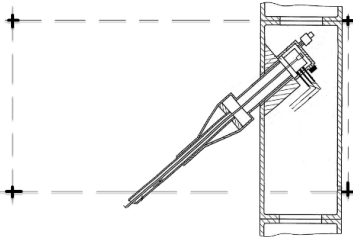
LOAD DISTRIBUTION CHANGE IN CASE OF SLIDING

load decreases as the structure trims down

creases used as anchor lines

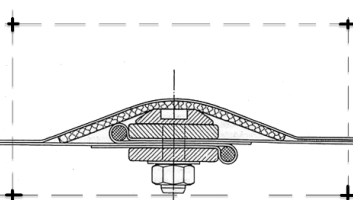


DETAIL A



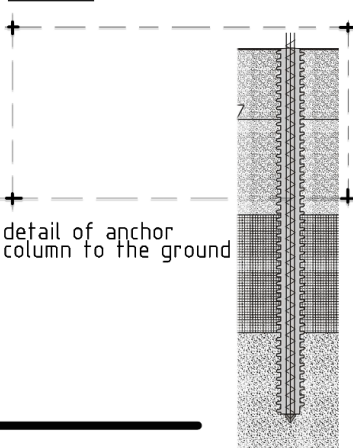
detail of cable end to the anchor beam on the post

DETAIL B

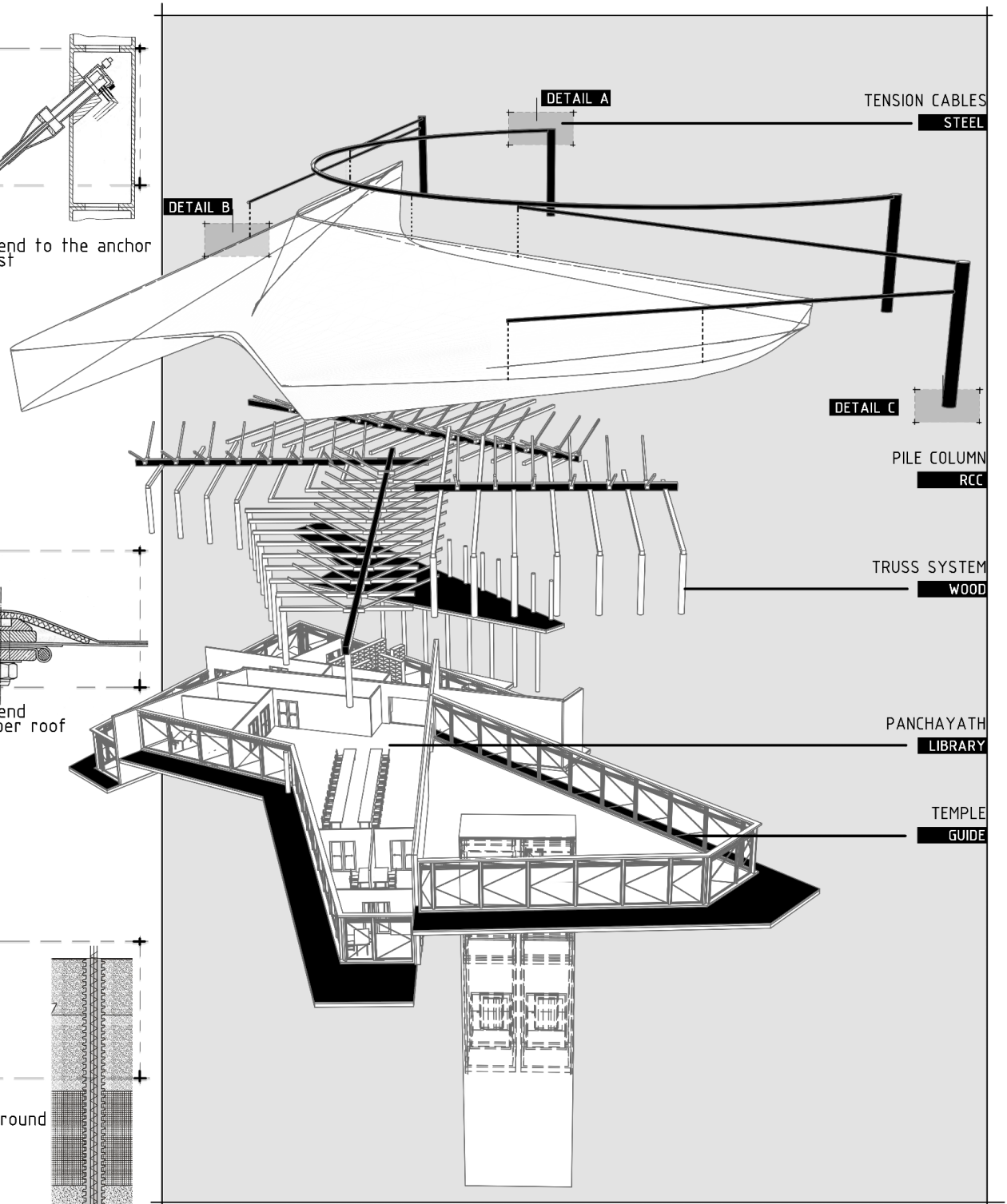


detail of cable end to the carbonfiber roof

DETAIL C



detail of anchor column to the ground

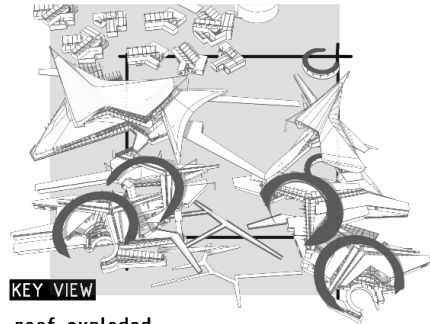


ROOFING DETAILS

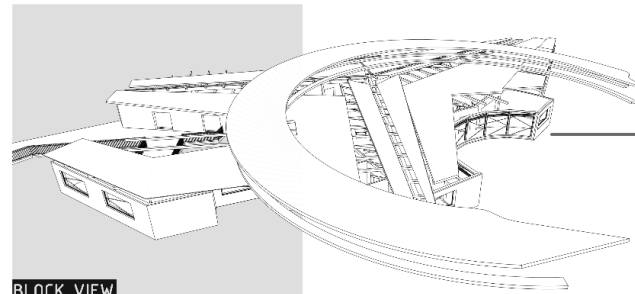
VAMSI CHANGAVALLI - 1AA20AT010
JOSHIMATH'S UTOPIA



key view



KEY VIEW



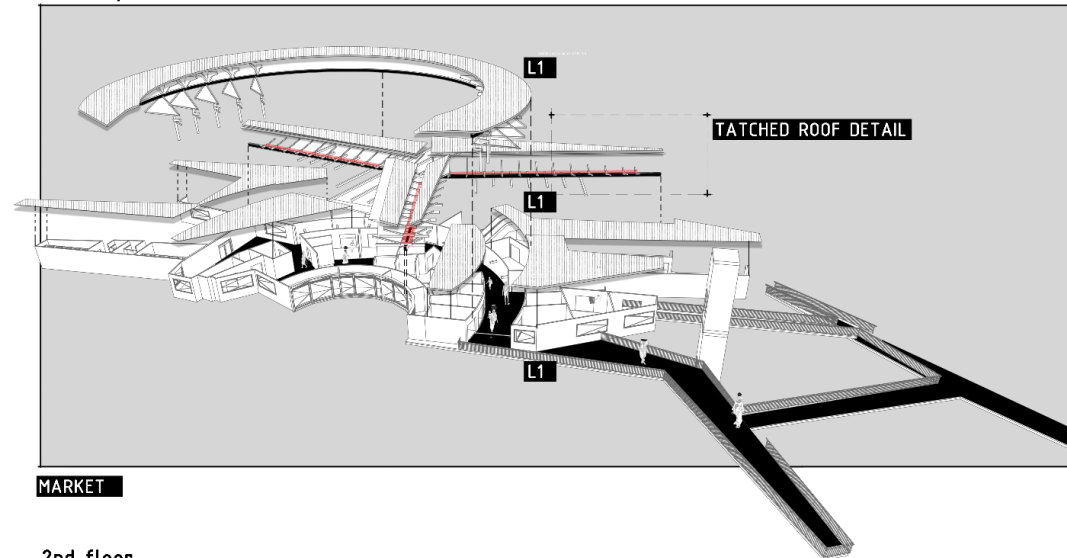
BLOCK VIEW

DRINKING

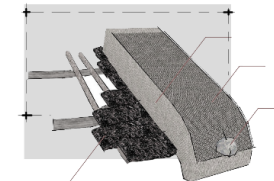
UTILITY



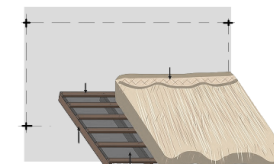
roof exploded



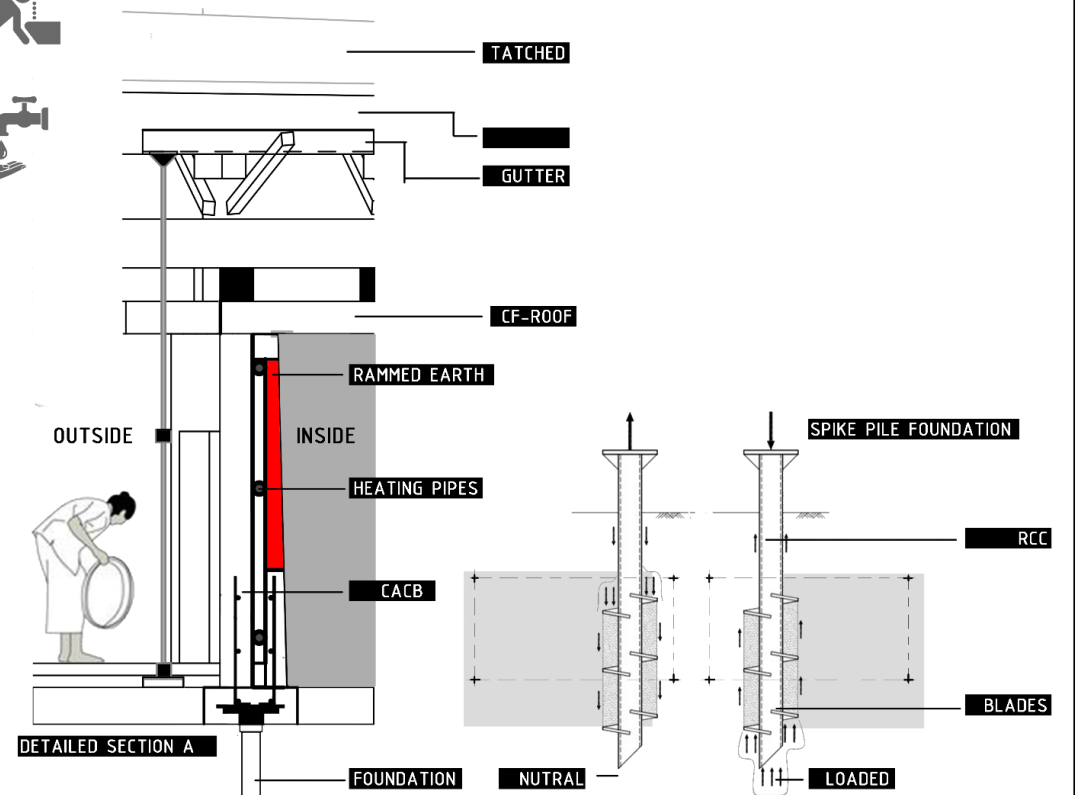
MARKET



TATCHED ROOF DETAIL

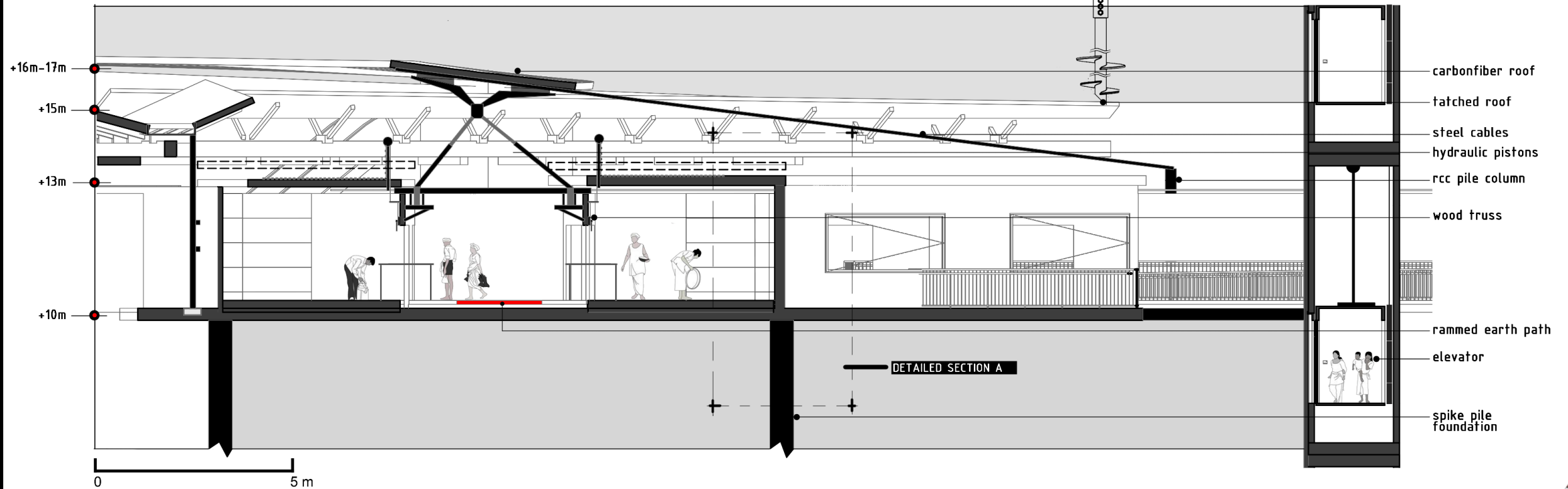


TATCHED ROOF DETAIL



DETAILED SECTION A

2nd floor



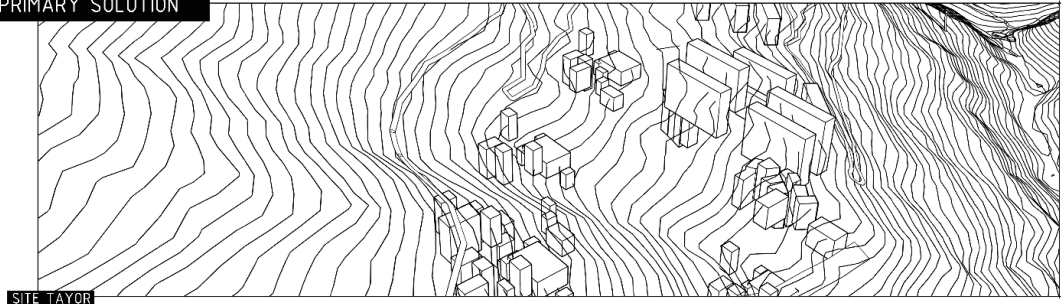
SECTION

VAMSI CHANGAVALLI-1AA20AT010
JOSHIMATH'S UTOPIA

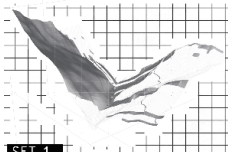




PRIMARY SOLUTION



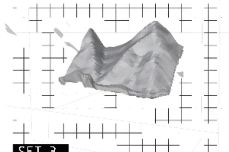
SITE TAYOR



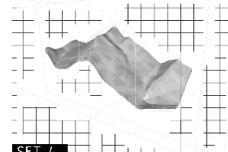
SET 1



SET 2



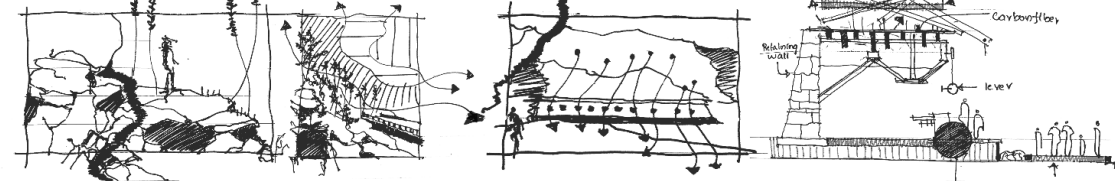
SET 3



SET 4



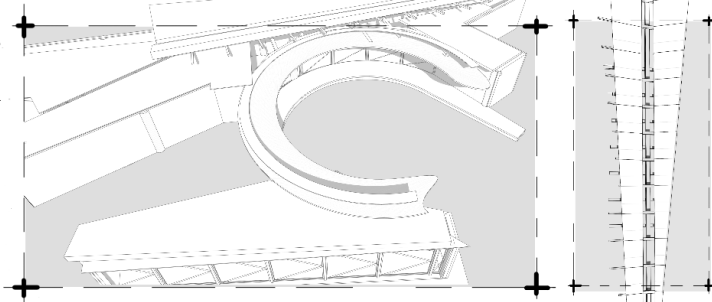
SECONDARY SOLUTION



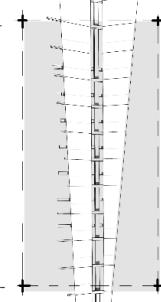
FEEDER

DEW

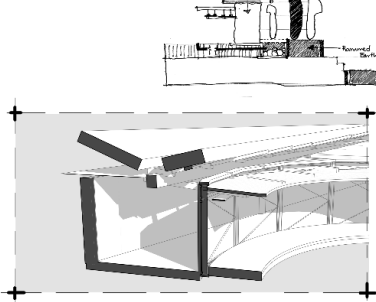
CHANNELS



ROOF SYSTEM



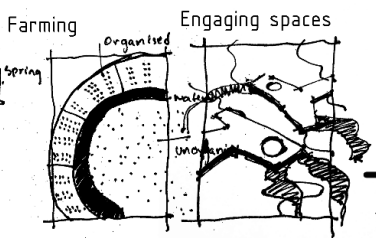
ROOF SYSTEM



WORKING



ON MOUNTAIN



Farming

Engaging spaces

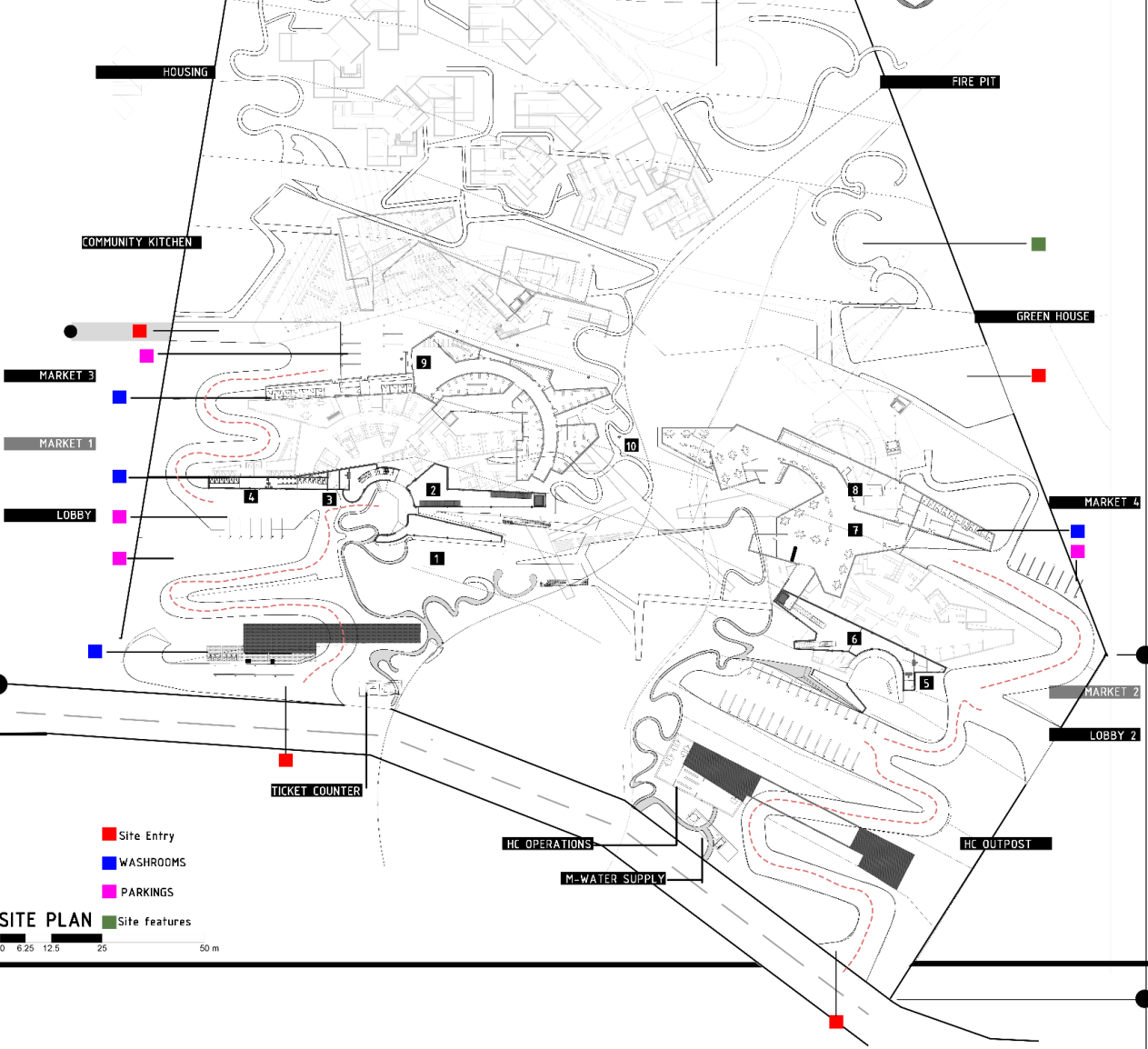
CONCEPT

VAMSI CHANGAVALLI-1AA20AT010
JOSHIMATH'S UTOPIA



SHEET ONE

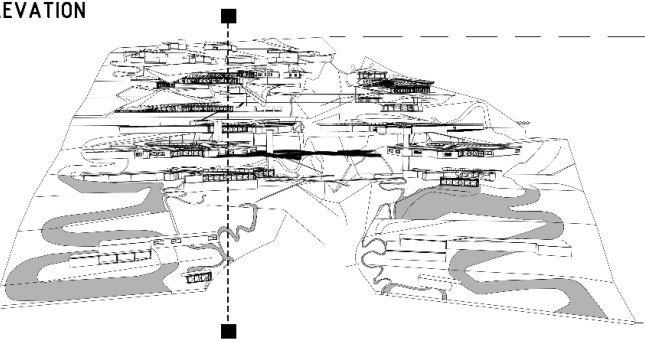
total shops : 80 (100 expanded)
total public washrooms : 5
hike trail ticket cost:50
horticulture insitute population: 10
free water months: march-september



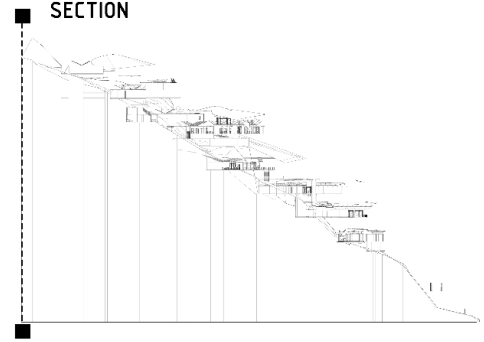
Site Entry
WASHROOMS
PARKINGS
Site features

SITE PLAN
0 6.25 12.5 25 50 m

ELEVATION



SECTION



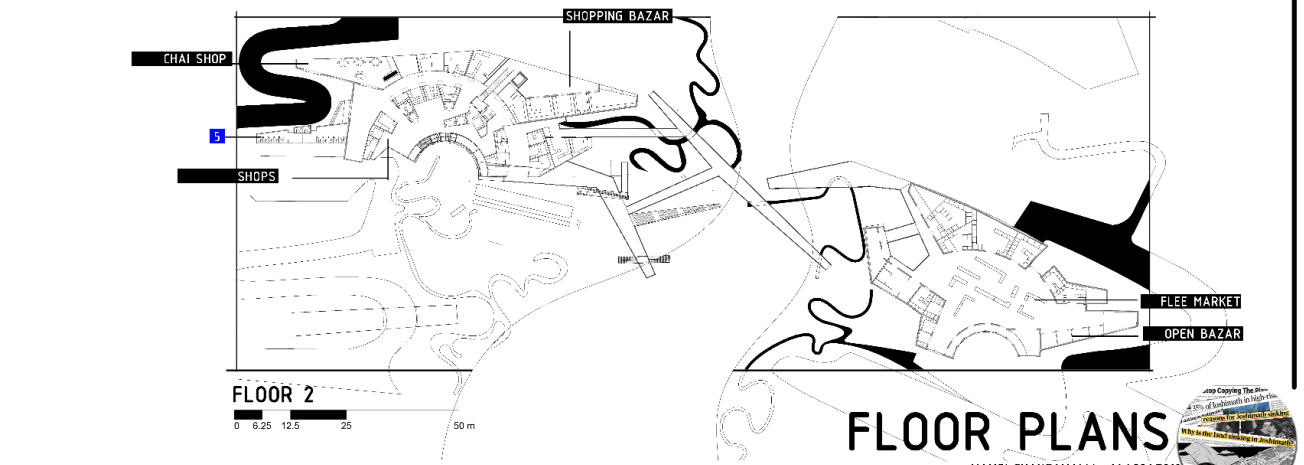
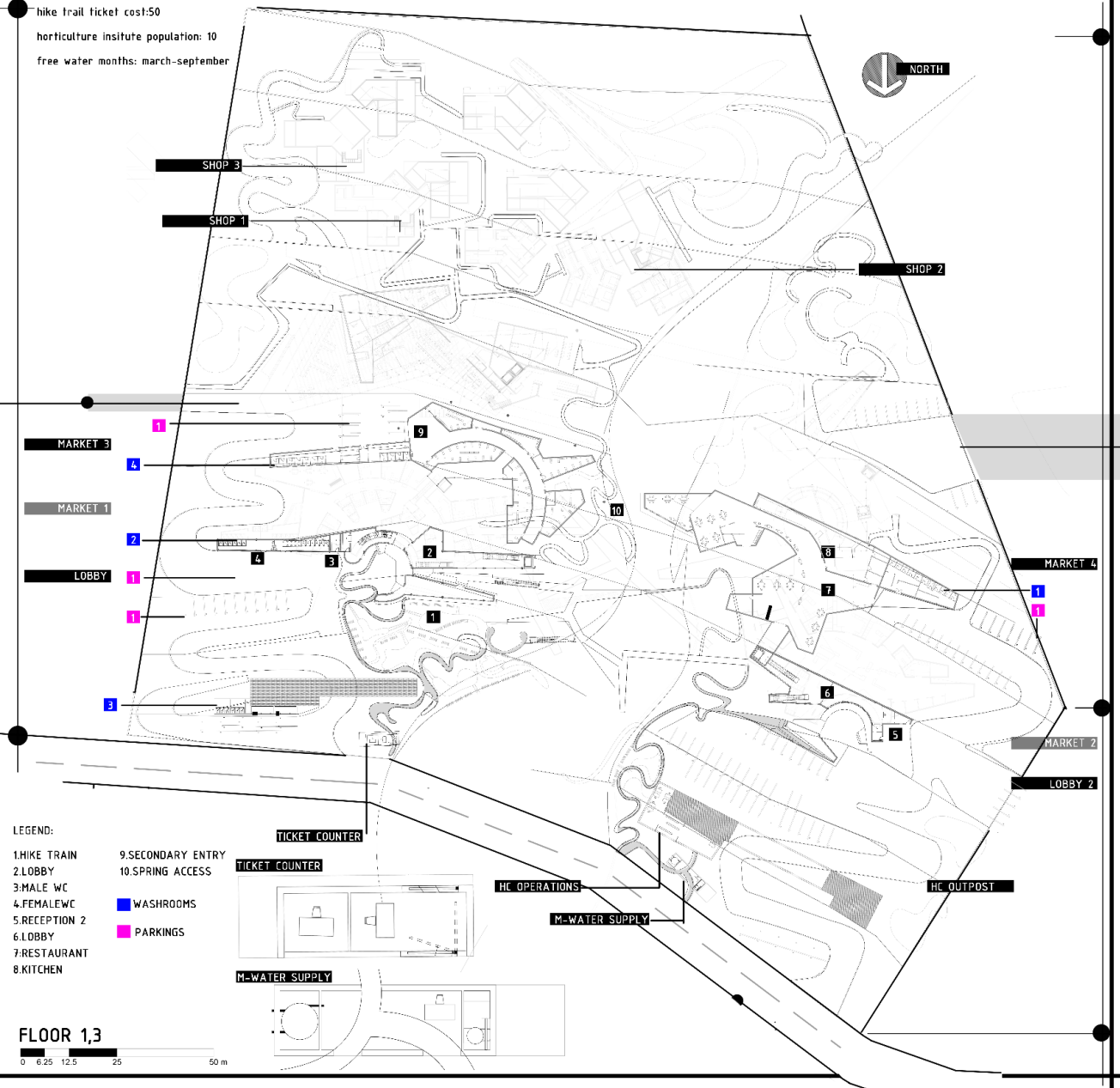
SITE PLAN

VAMSI CHANGAVALLI-1AA20AT010
JOSHIMATH'S UTOPIA

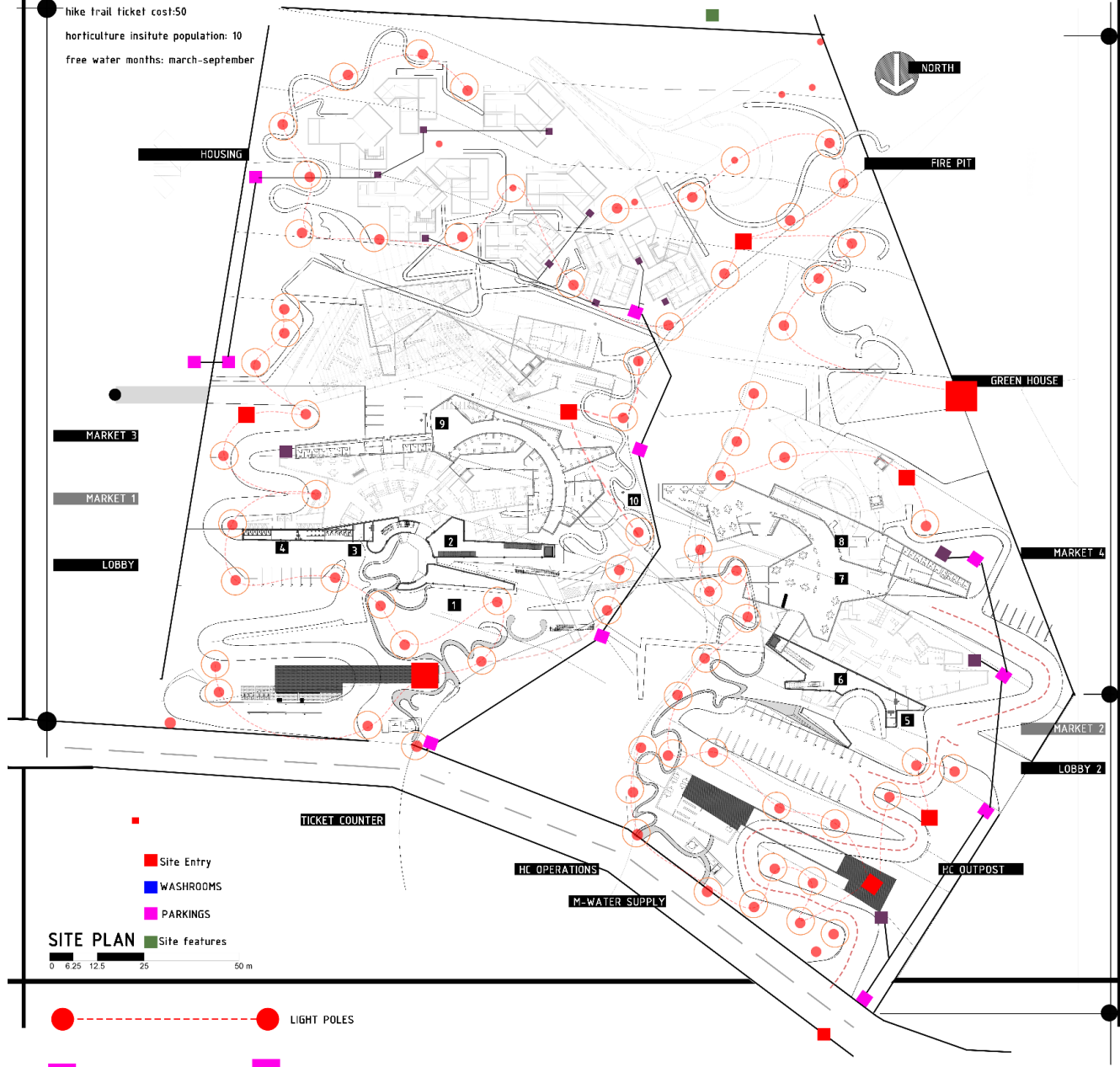


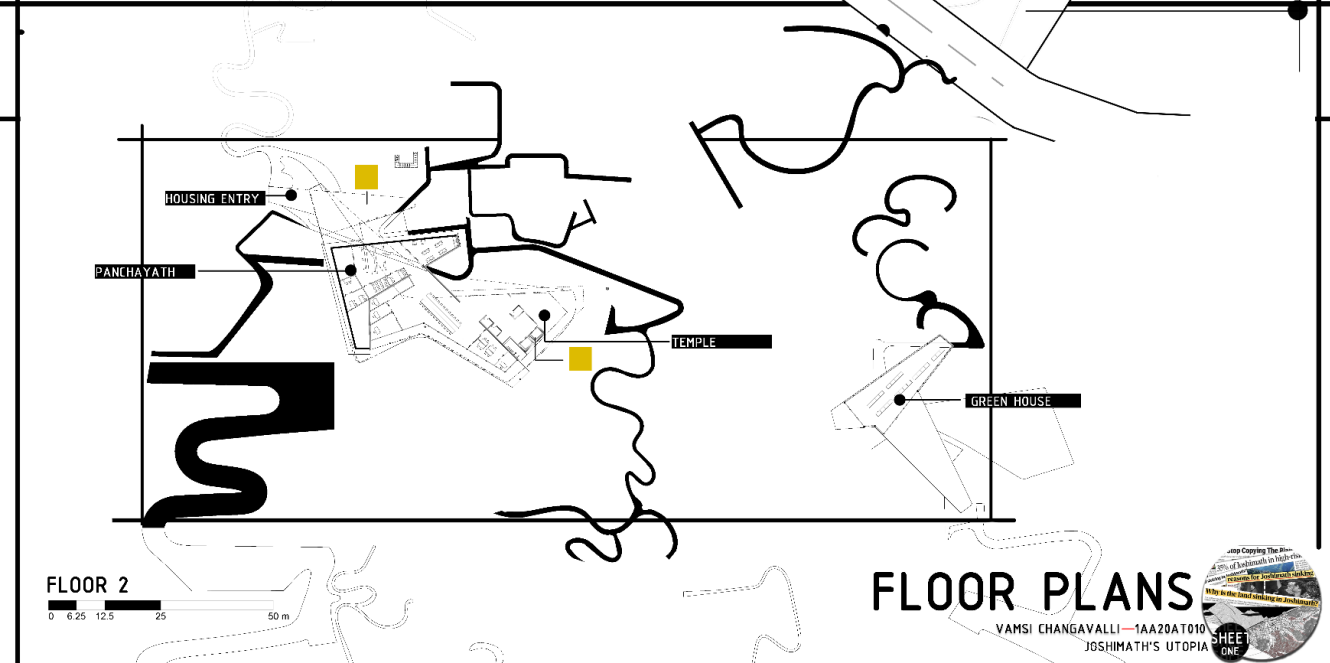
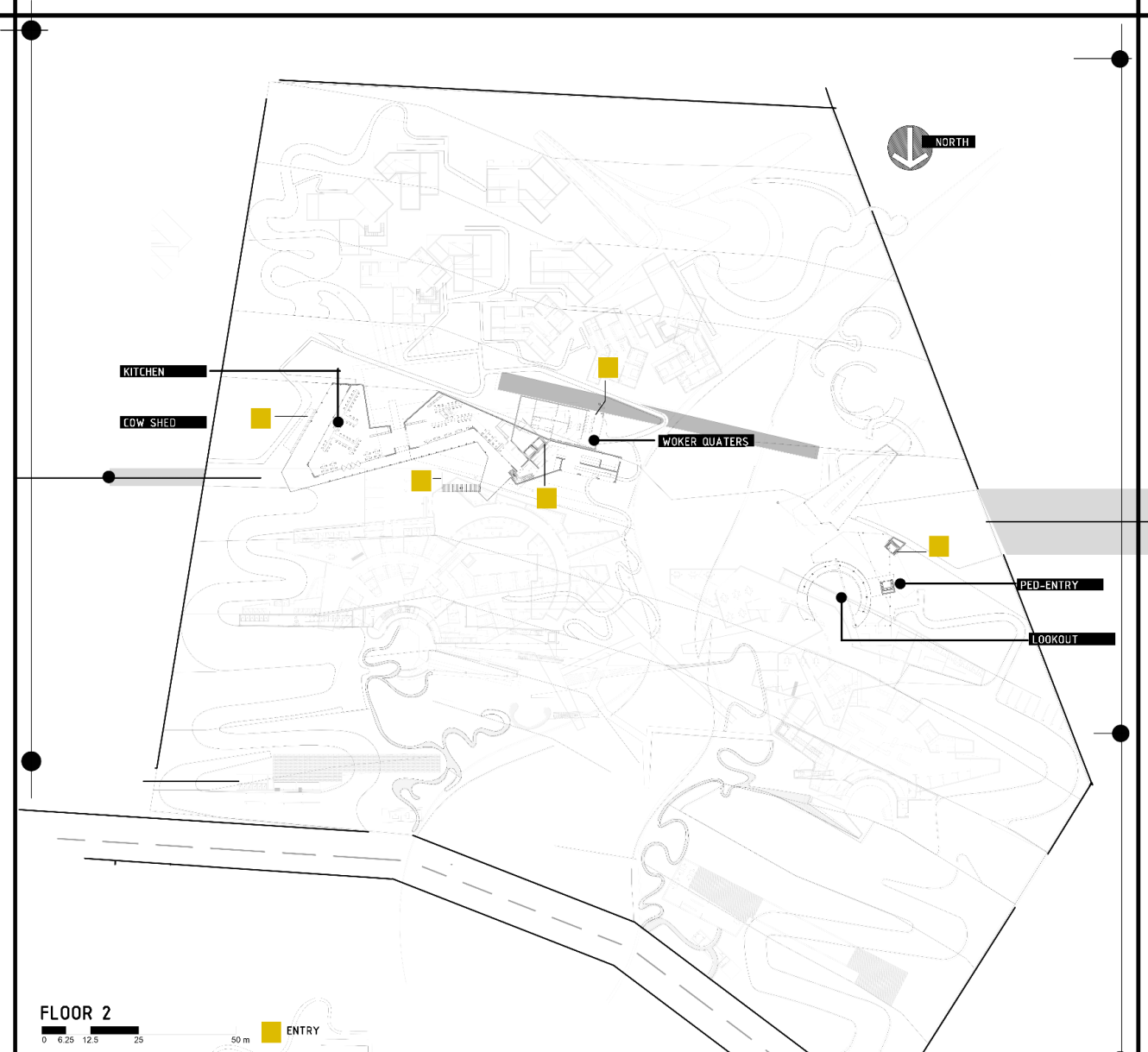
SHEET ONE

total shops : 80 (100 expanded)
total public washrooms :5
hike trail ticket cost:50
horticulture insitute population: 10
free water months: march-september



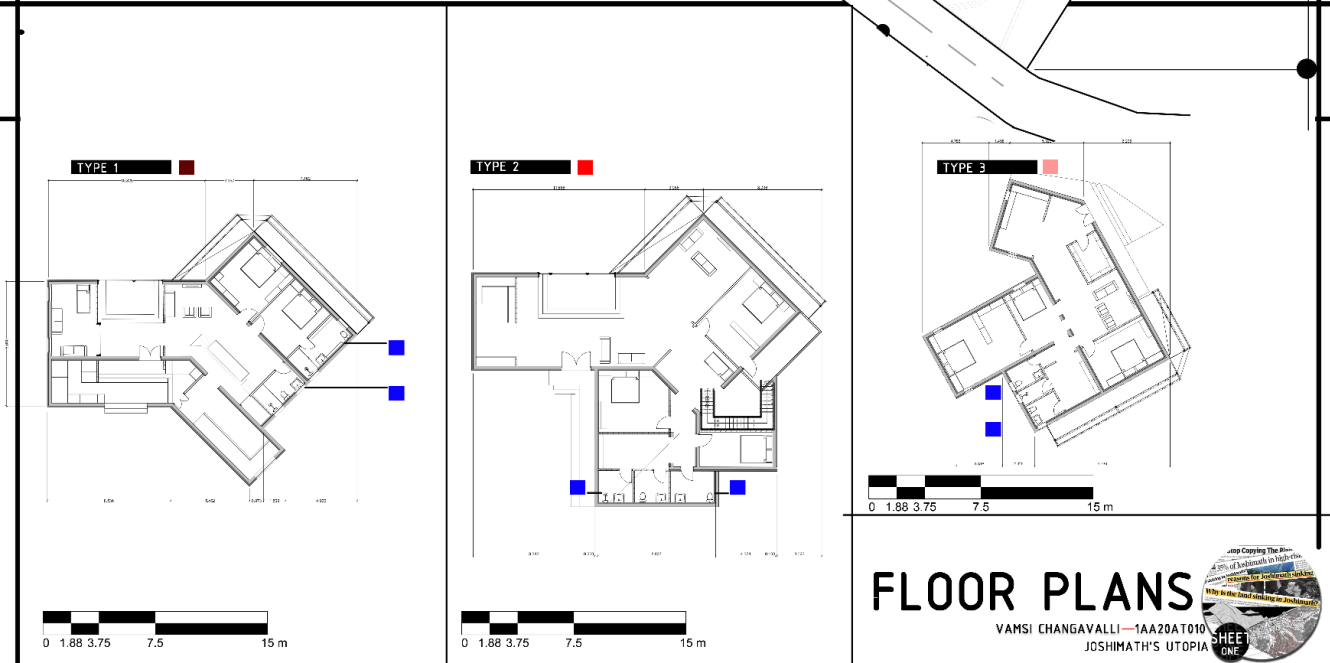
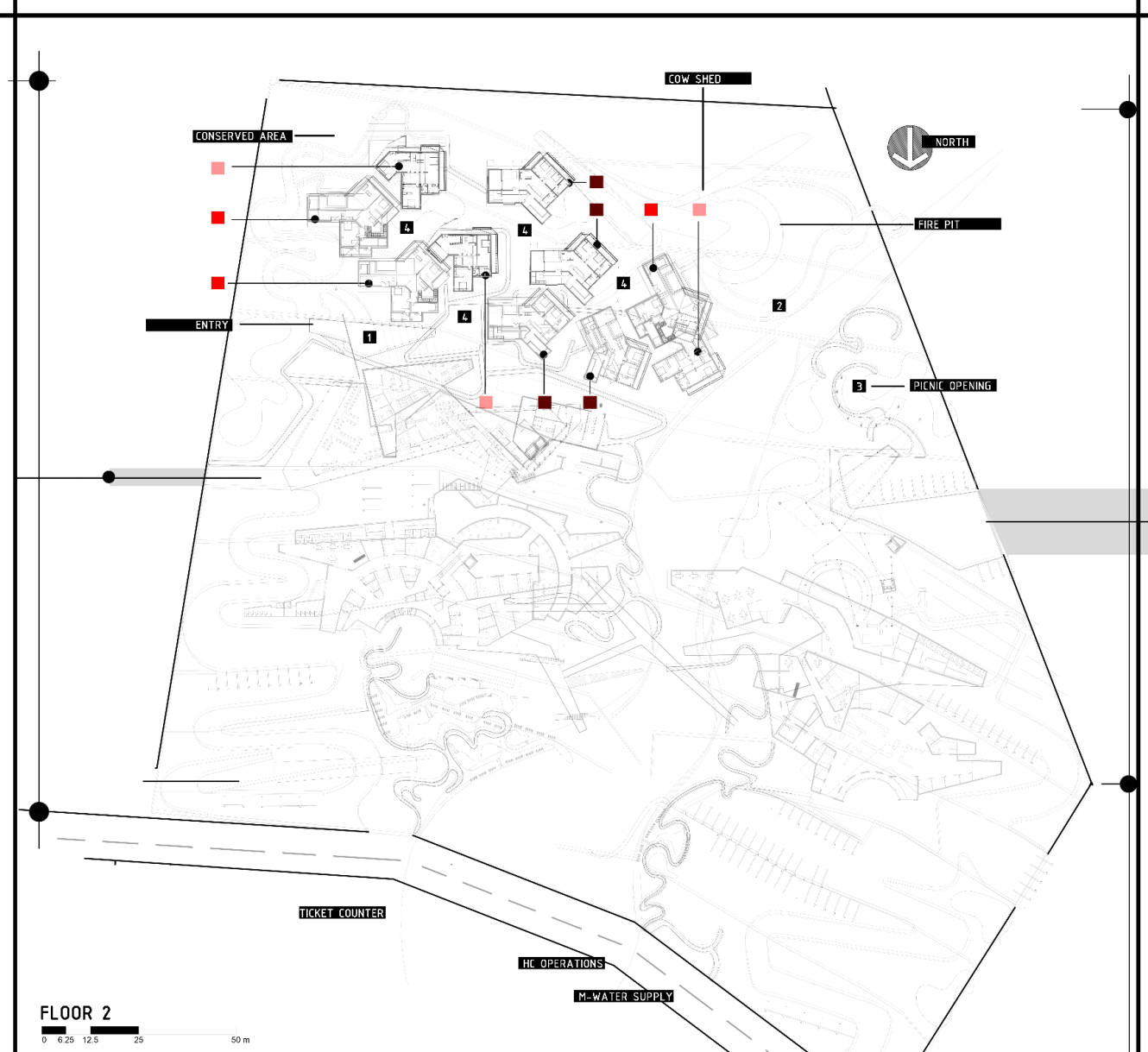
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FLOOR PLANS

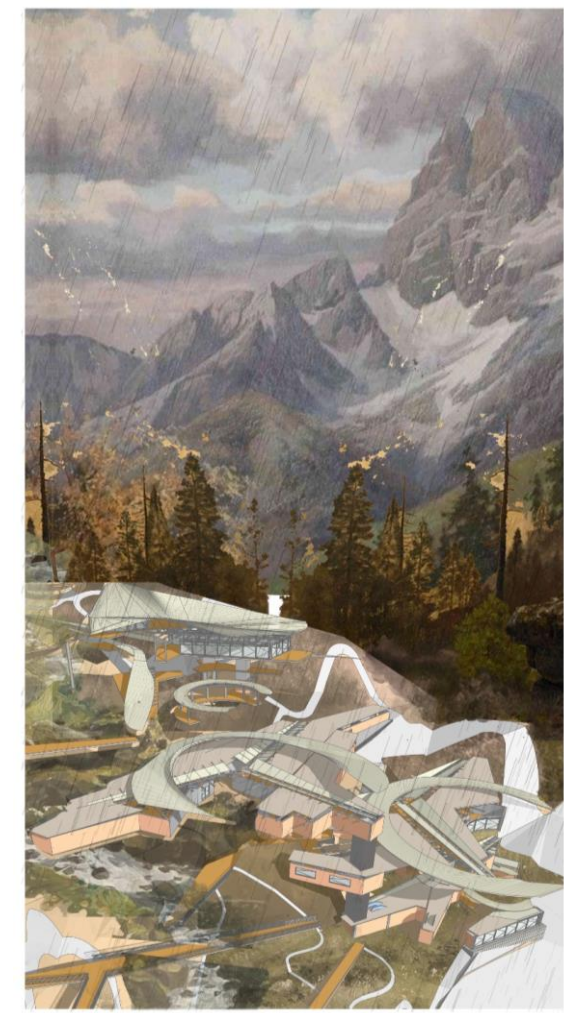
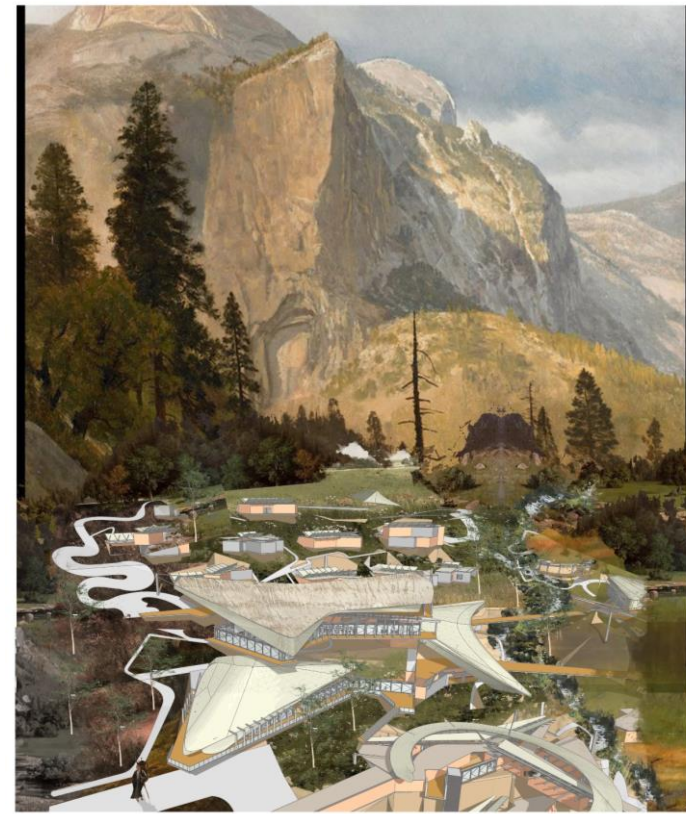
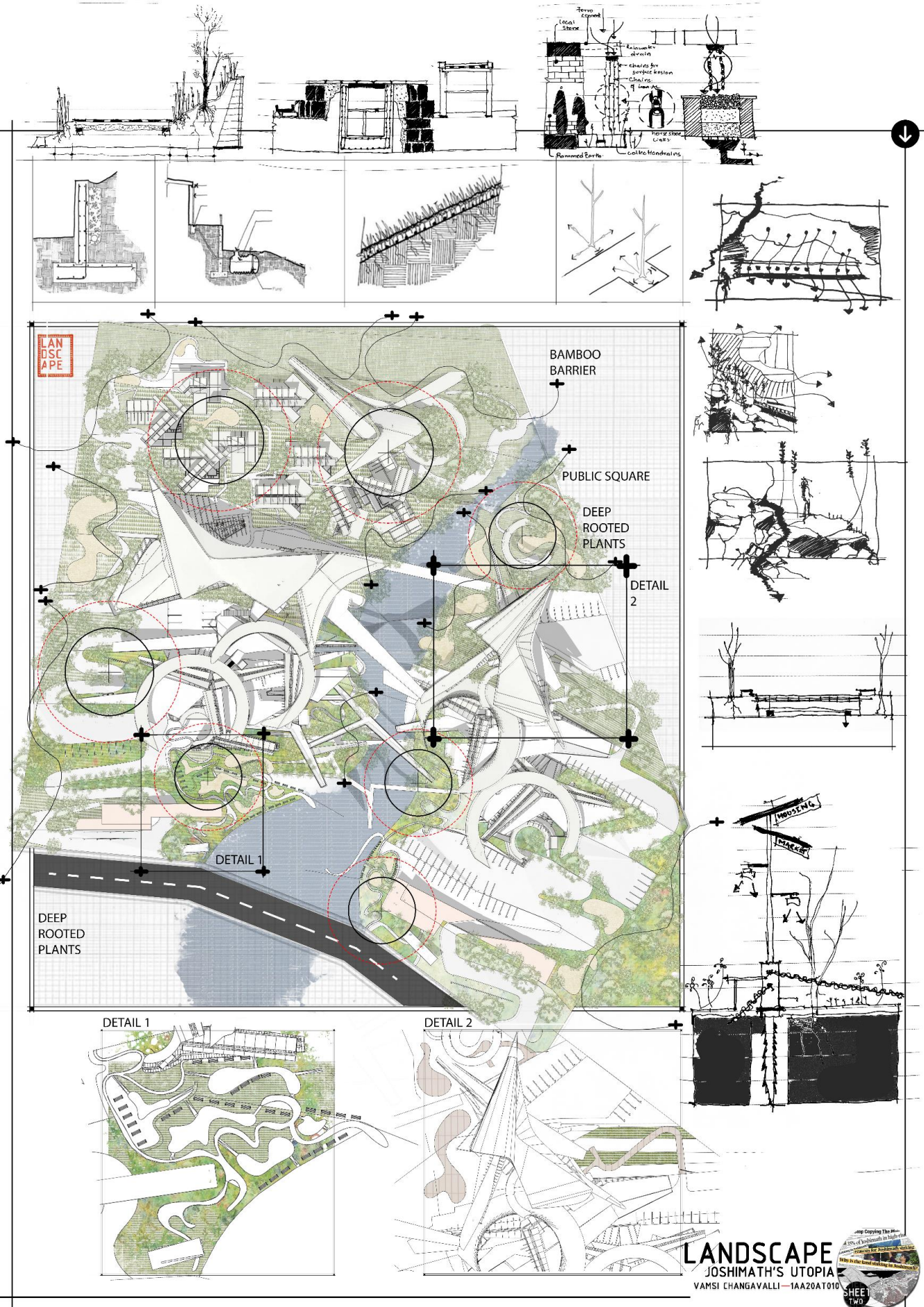
VAMSI CHANGAVALLI-1AA20AT010
JOSHIMATH'S UTOPIA



FLOOR PLANS

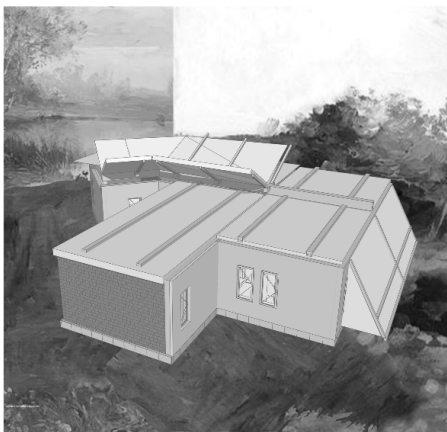
VAMSI CHANGAVALLI-1AA20AT010
JOSHIMATH'S UTOPIA



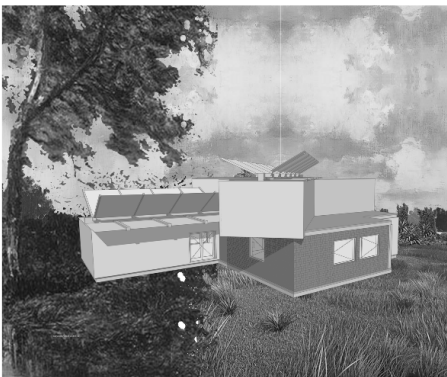




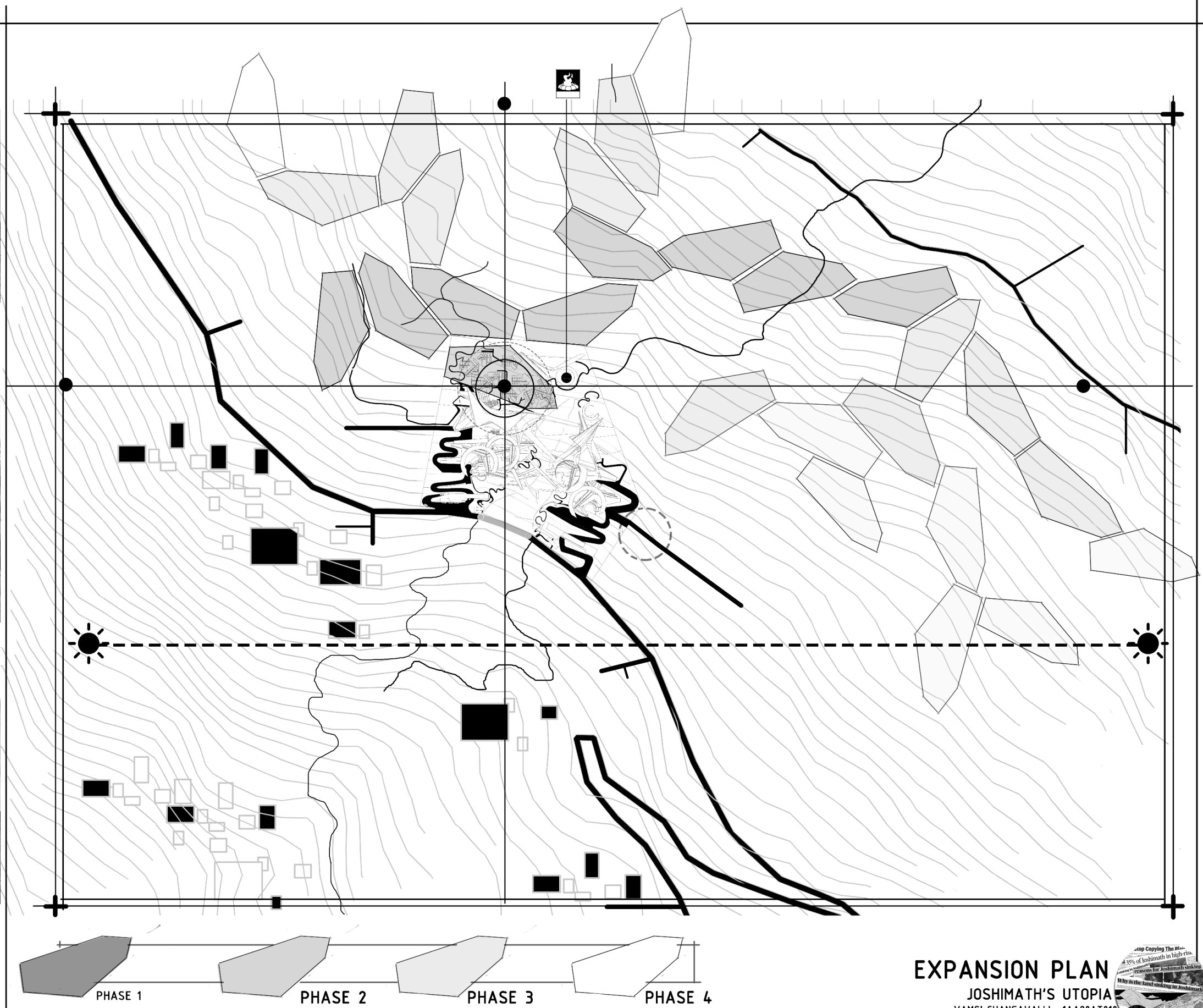
TYPE1



TYPE2



TYPE3



EXPANSION PLAN

JOSHIMATH'S UTOPIA

VAMSI CHANGAVALLI—1AA20AT010



SHEET TWO

Description	event-1	event-2	event-3	event-4	event-5	event-6	event-7
days	day 1	day 8	day 16	day 24	day 32	day 40	day 47
rainfall (mm)	340	638	339	361	410	578	578
roof top (m2)	6000	6000	6000	6000	6000	6000	6000
run off coefficient	0.99	0.99	0.99	0.99	0.99	0.99	0.99
volume (litres)	2019.6	3789	2013	2144	2435	3433	3433
600 people		210	210	210	210	210	210
consumption							
pattern (litres)		3579	5382	7316	9541	12764	15987

RAINWATER HARVESTING CALCULATIONS

$$\frac{(\text{roof top area} * \text{rainfall} * \text{runoff})}{1000}$$

$$\frac{(135 \text{ lpcd} * 5 * \text{days diff in events})}{1000}$$

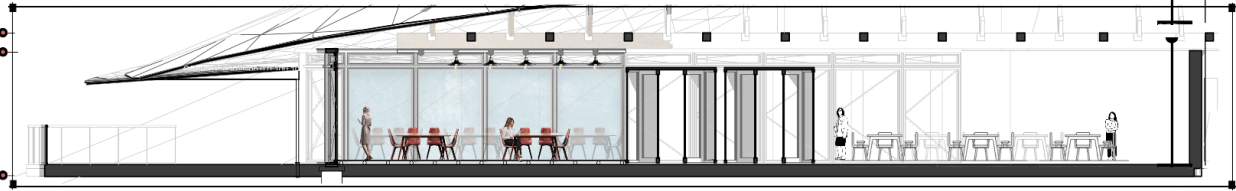
$$\text{volu}(\text{event-2}) + \text{previous day consumption}(\text{event-1}) - \text{consumption pattern}(\text{event-3})$$

RAINWATER HARVESTING FORMULA

PAPER ON DEW TO WATER

Water Extraction from Air: A Proposal for a New Indicator to Compare Air Water Generators Efficiency
by Lucia Cattani 1, Anna Magrini 2 and Paolo Cattani 1

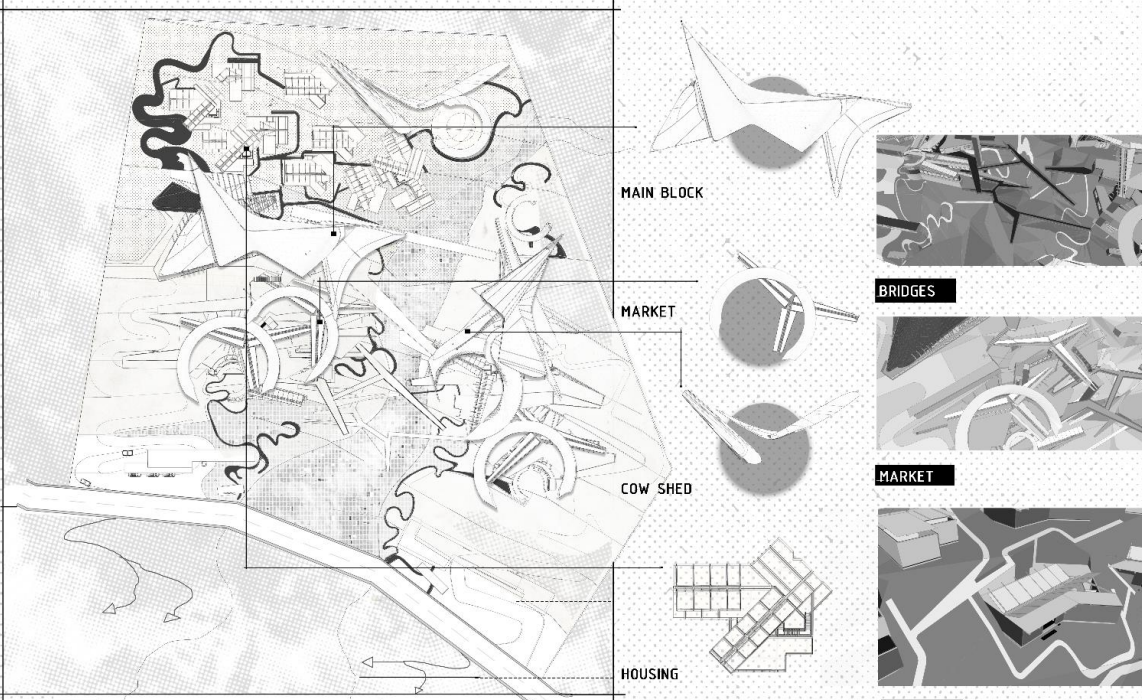
6. Conclusions
In the current study, an energy efficiency indicator for AWG machines has been proposed. Such a parameter, which is a novelty both in the literature and in technical practice, is indicated as WET (Water Energy Transformation), has been formulated with the same approach of EER and COP, and has been designed in order to be applied for AWG machines comparison. Moreover, its concept was developed expressly to overcome issues that affect the only existing evaluation parameter, a sort of specific energy consumption (SEC). Such a parameter is used in technical praxis but has never been formalized, and it is affected by a lack of any standardisation for its calculation and inhomogeneity in measurement units.
On the basis of research among more than one hundred existing AWG machines, the proposal of a set of unified nominal and extreme conditions is presented for WET calculation to obtain comparable results. The indicator was applied to an existing outdoor AWG machine, and results were arranged in a Performance Summary. Moreover monthly WET results for two different climates, were presented.
Finally, WET formulation, expressly designed to be compatible with COP and EER, is the first part of a wider research aimed to propose a global index studied for integrated machine energy efficiency evaluation, that combines all the energy efficiency indicators involved in such a type of machine.



INTERIOR SECTION

Total balance = 15987/0.675 = 30 days
remaining vol - daily used water = 15987-210 = 15777
No. of months = 15987 (210 x 30) = 4.7 months + 2.35 = 7.05 months

RAIN WATER HARVESTING
JOSHIMATH'S UTOPIA
VAMSI CHANGAVALLI -1AA20AT010



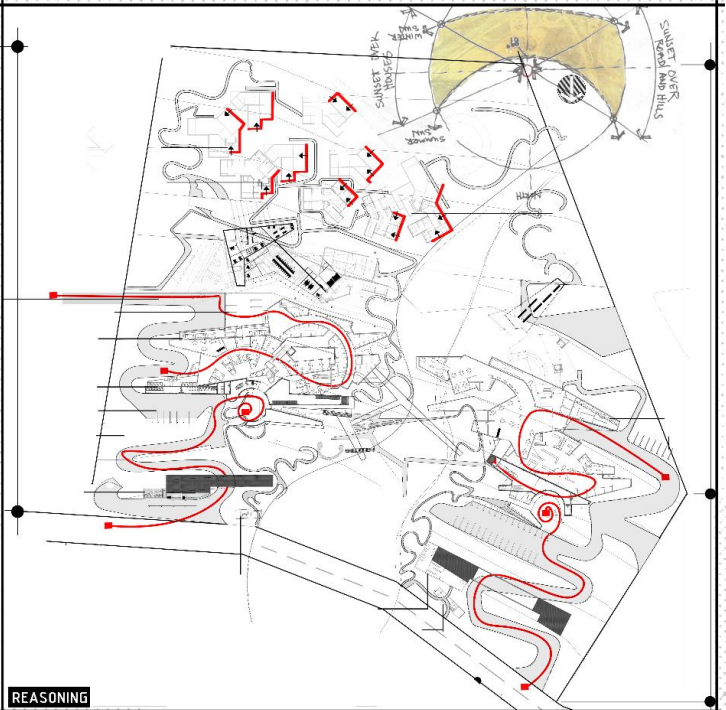
MASTERPLAN



IMPACT OF PRESERVED VEGETATION

MAIN BUILT LAND

VEGETATION ON LAND



REASONING

INFERENCE:

- The design aims to maximize the outcome for reintroducing people into safer joshimath.
- It acts as true seed for the new civilization of joshimath giving a cleaner template of future expansion of the town
- Designs focus of reparability ensures that people cannot be displaced for days limiting the repair time to hours instead of years
- Joshimaths utopia will be an utopia when there is a disaster like 2023 and can function as a micro city when there is not.
- To the people of joshimath the building doesnot interfere with any religious sensitivity of the space and helps them promote the town in a safer direction

SITE APPRAISAL
JOSHIMATH'S UTOPIA
VAMSI CHANGAVALLI -1AA20AT010

