

**"KHOKANA HERITAGE CENTER: PRESERVING
TRADITION THROUGH OIL, FOOD AND WELLNESS"**

Khokana, 21 Lalitpur

BY:

ROSHANA TWATI

760136

A thesis submitted in
partial fulfillment of the
requirements for the
Degree of Bachelor of Architecture



Purbanchal University
KHWOPA ENGINEERING COLLEGE
DEPARTMENT OF ARCHITECTURE
LIBALI, BHAKTAPUR, NEPAL



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(Affiliated to Purbanchal University)

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CERTIFICATE

This is to certify that the thesis entitled **KHOKANA HERITAGE CENTER: "PRESERVING TRADITION THROUGH OIL, FOOD AND WELLNESS"** at **Khokana - 21, Lalitpur**, submitted to the Department of Architecture of Khwopa Engineering College by **Ms. Roshana Twati** of Class Roll No. 36/ B.Arch./076 has been declared successful for the partial fulfillment of the academic requirement towards the completion of the degree of Bachelor of Architecture of Purbanchal University.

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DECLARATION

I hereby declare that this thesis titled, “Khokana Heritage Center: Preserving Tradition through Oil, Food and Wellness” has not been previously accepted in substance for any degree and is not being concurrently submitted in candidature for any degree. I have carried out the research under the guidance and supervision of Ar. Sushma Bajracharya Thesis Supervisor.

I state that this thesis is the result of my own independent work/investigation except where otherwise stated. I hereby give consent for my project, to if accepted to be available for photocopying and understand that any reference to or quotation from my thesis will receive acknowledgement.

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ABSTRACT

Khokana, a traditional Newar settlement in the Kathmandu Valley, embodies a profound intersection of cultural heritage, community cohesion, and resilience. Renowned for its distinctive architecture, communal lifestyle, and rich cultural practices to Newar identity. At the heart of this community lies a network of social institutions, rituals, and shared spaces that reinforce unity, collective memory, and local empowerment. These community practices are deeply interwoven with the socio-economic fabric and spiritual life of the people. However, in recent decades, Khokana has faced numerous challenges due to urbanization pressures, inadequate infrastructure, economic stagnation, and the marginalization of traditional livelihoods. As generations migrate or shift away from local traditions, the transmission of cultural knowledge and collective identity is at risk.

This thesis, titled “Khokana Heritage Center: Preserving Tradition through Oil, Food and Wellness” explores strategies to revitalize Khokana through inclusive, community-based development. The proposed design focuses on creating a multi-functional community hub that fosters cultural preservation, social cohesion, and economic empowerment. The hub is envisioned as a center for traditional crafts, agricultural innovation, heritage education, and community-led tourism. It includes workshop spaces for local artisans and farmers, a cultural archive, exhibition areas, meeting halls, and marketplaces for local produce and products. The design emphasizes participatory planning and is tailored to support the people of Khokana in sustaining their intangible heritage while adapting to contemporary needs. By integrating learning spaces, cultural exchange programs, and income-generating activities, the center aims to empower local residents—particularly youth and women through skill development, entrepreneurship, and leadership training.

The project is for Khokana’s self-reliance by aligning heritage conservation with socioeconomic advancement. It demonstrates how ground roots initiatives and localized planning can serve as resilient models for sustainable rural development in Nepal and beyond. By integrating these objectives, the project supports both the retention of cultural heritage and socio-economic development of the community.

Keywords: community empowerment, heritage preservation, participatory planning, indigenous knowledge and rural revitalization.

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760136

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CHAPTER 1

INTRODUCTION

It is nestled in the southern outskirts of the Kathmandu Valley, the village of Khokana is more than a geographic location, it is a living archive of heritage, skill, and community memory. Renowned for its distinctive mustard oil production, which carries its layers of cultural meaning, traditional knowledge, and the rhythms of everyday village life.

This thesis explores Khokana's mustard oil not simply as a commodity, but as a vessel of intangible cultural heritage, a symbol of resilience, and a reflection of the community's identity. Through generations, the traditional process of oil pressing using centuries-old tools and cooperative labor has remained largely intact, resisting mechanization and modernization in favor of continuity and cultural preservation.

Today, with rapid urban development and modernization threatening rural traditions across Nepal, this study seeks to honor, understand, and protect what makes Khokana so special. It's a chance to show how something as simple as making oil can reflect a whole way of life.

In exploring "KHOKANA HERITAGE CENTER," this thesis positions Khokana not merely as a site of cultural recollection, but as a vibrant example of how local knowledge, labor, and identity are actively maintained and redefined in the face of change.



Figure 1.1 Mustard field

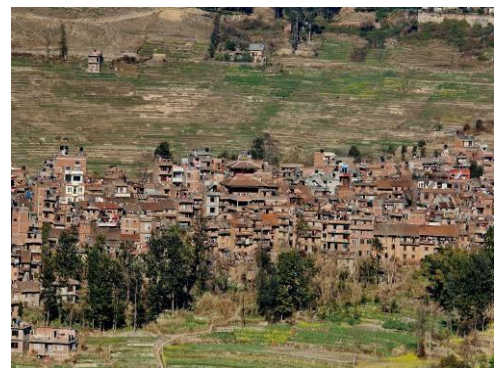


Figure 1.2 Old settlement of khokana

1.1 PROJECT JUSTIFICATION

Khokana is a culturally rich, traditional Newar settlement and renowned for its traditional mustard oil production, vernacular architecture, ritual practices, and strong community bonds. The spatial configuration of the village from its narrow alleys and communal courtyards to the temple centered layout reflects a deep-rooted connection between built form and intangible cultural values.

Despite its heritage significance, Khokana today is facing a lot of problems:

1. Loss of Traditional Architecture:
 - Modern construction methods and materials are replacing vernacular structures, leading to a loss of architectural identity and craftsmanship.
2. Threats to Intangible Cultural Heritage:
 - Traditional practices like mustard oil production, festivals, and rituals are declining due to changing lifestyles and lack of documentation.
3. Insensitive Urban Development:
 - Infrastructure projects and urban expansion around Khokana are disrupting the traditional settlement pattern and threatening community cohesion.
4. Lack of Community-Centric Planning:
 - Development initiatives frequently exclude local voices, weakening community participation and ownership in preserving heritage.
5. Generational Disconnection:
 - Younger generations are increasingly detached from traditional knowledge systems and spatial practices, risking the discontinuity of cultural transmission.

1.2 PROJECT OBJECTIVES

- 1.To design an architectural space that revives and sustains traditional mustard oil production techniques.
- 2.To create experiential spaces for showcasing Newari food.
- 3.To enhance the socio-economic wellbeing of Khokana's residents through heritage-based livelihoods.
- 4.To promote community-based tourism and local entrepreneurship.

1.3 SCOPE AND LIMITATION

The thesis will explore the intersection of intangible cultural heritage (ICH) and vernacular architecture in Khokana, with a special focus on mustard oil production, community rituals, and spatial practices. The study will include architectural documentation and analysis of traditional houses, oil mills (*ghani* houses), public courtyards (*bahals*), religious spaces, and community infrastructure. It will examine how traditional practices influence spatial layout, circulation, material choices, and communal spaces within Khokana. The scope will be limited to the central settlement of Khokana where traditional practices are most actively observed.

The evolving aspirations of the younger population and external development pressures may not fully align with preservation goals.

1.4 TARGET GROUP

- Woman
- New generation (Youth)
- Local oil producer

1.5 METHODOLOGY

The methodology applied for the proposed project includes the literature review, case study, interviews and site visits. The study methodologies include:

- Primary Source: The primary data and information are collected through case studies, questionnaire, and interview of local people to get firsthand information and also understand the process, techniques, working environments and past to present condition of people and workshops.
- Secondary source: The secondary data was collected through various related articles, books, websites and libraries.

The methodology can be broadly classified into following processes:

- Literature Review: To build a theoretical foundation on cultural heritage, vernacular architecture, and community-based design.
- Case studies: To understand to space used, people interaction and movement of people.
- Site Analysis: To observe and document the physical and socio-cultural fabric of Khokana.

- Analysis and design interpretation: To synthesize collected data and derive architectural implications.

CHAPTER 2

LITERATURE REVIEW

2.1 MUSTARD/TORI



Kingdom: Plantae (Plants)

Genus: Brassica

Scientific Name: Brassica nigra (Black),

: Brassica Juncea (Brown) and

: Brassica alba (White)

Life Span: 60-90 days (seed to mature plant)

Color: Dusky shade of yellow

Figure 2.2 Varieties of mustard seed.

Seed Color: Black, Brown and Yellow/White

Special Feature: Mustard oil, Mustard sauce, Mustard powder, Mustard oil cake



Figure 2.1 Mustard seed

MUSTARD is one of the important oilseed crops of Nepal which belongs to family Cruciferae and is popularly known as tori in Nepal. It occupied 214,835 ha of land area, with the production of 179,145 and productivity of 0.83 t/ha. Its seeds contain 40-50% oil and 20-25% protein. Similarly, 4.8% nitrogen, 2% phosphorus and 1.3% potash can be obtained from mustard oil cake (Dhakal et al., 2015). Mustard is an entomophilia plant that is cross pollinated. For optimal pollination and seed production, a large number of pollinating agents is required.

MUSTARD is one of the most significant oilseed crops, cultivated for both its seeds and oil. The process of transforming mustard seeds into bottled mustard oil involves multiple stages, including cultivation, harvesting, processing, and packaging. This literature review explores scholarly works on each phase, focusing on sustainable practices, technological advancements, and socio-

economic impacts, particularly in the context of local empowerment in regions like Khokana.

2.2 MUSTARD OIL IN KHOKANA

Khokana, a small traditional village in Nepal, has a long-standing history of mustard oil production. The village is known for its indigenous cold-press extraction method, which preserves the oil's natural flavor and medicinal properties. Mustard oil production in Khokana is not only a vital economic activity but also a cultural heritage, deeply intertwined with the community's way of life. However, modernization and urbanization pose challenges to the continuity of this tradition. Recent studies emphasize the need to integrate sustainable practices with modern technology to enhance productivity while preserving the authenticity of Khokana's mustard oil industry.

2.2.1 MUSTARD OIL RUNNING FACTORY

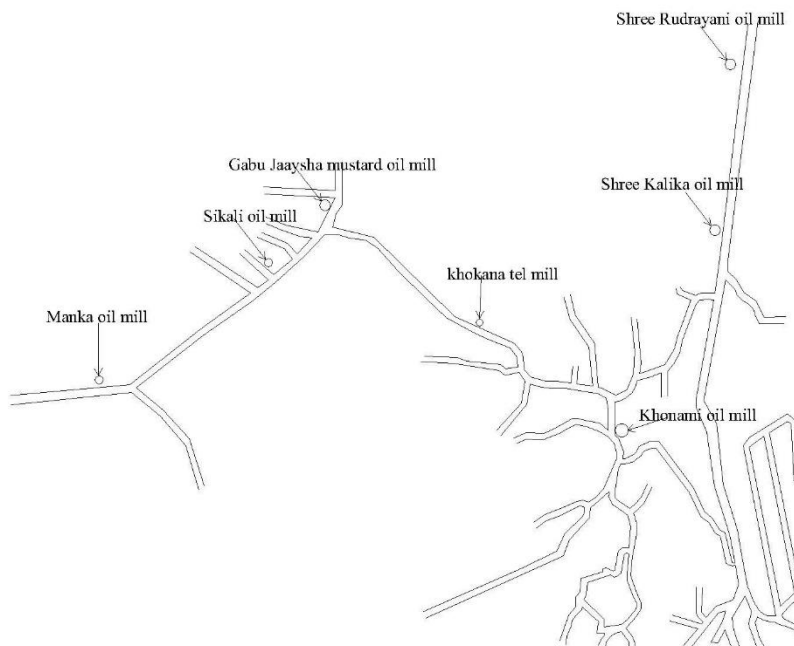


Figure 2.2 Mustard oil factory in khokana(2025)

2.2.2 MUSTARD OIL RUNNING FACTORY IN 2015

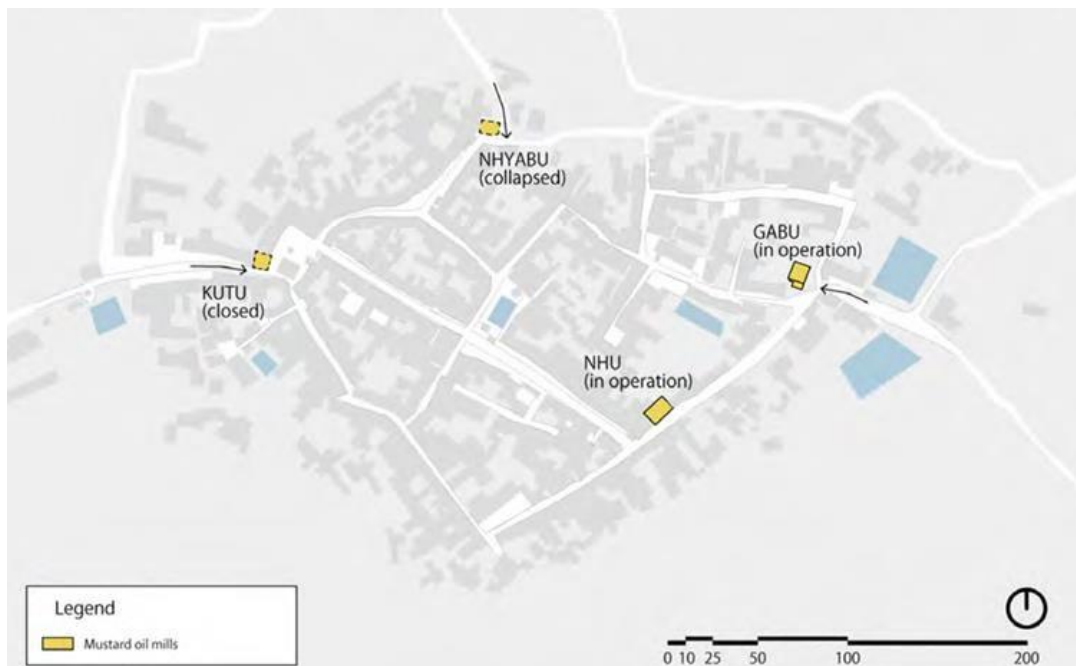


Figure 2.3 Mustard oil factory in khokana (2015)

The map illustrates the distribution and current operational status of traditional mustard oil mills in Khokana, serving as a significant reference for my thesis. A total of four mustard oil mills are identified, marked with yellow symbols. Among them, two—GABU and NHU—are still in operation, indicating active continuation of Khokana’s oil-pressing heritage. The KUTU mill is marked as closed, while NHYABU has collapsed, signaling the structural and economic challenges these traditional industries face. The spread of these mills across different parts of the village shows how embedded oil milling once was in the community's layout and daily life. And the collapsed oil factory are the used by local people as communal open spaces.

2.1.2 MUSTARD OIL CURRENT MARKET ANALYSIS

In India

On the record, production of mustard seeds, a winter crop is cultivated in the northern States was very high as compared to last three year. Rajasthan is the

major producer up to 47 percent of the domestic production, followed by Madhya Pradesh 11.44 percent, Haryana 12 percent and Uttar Pradesh 10.41 percent. Consumption of mustard oil has grown about 5 percent per year for the past 40 years and currently stands at approximately 2.3 million metric tons annually. Although consumption of mustard oil is typically more prevalent in rural areas, total consumption is usually higher in urban areas. Most mustard oil (around 90 percent) is used for cooking, and the rest is used for pickling and consumption as raw oil (“oil of mustard”) directly on foods.

In Nepal

On the record, mustard seed production in Nepal is a vital component of its agricultural sector, particularly in the Terai and hilly regions. Major producing districts includes Rupandehi, Banke, Dang, Kapilvastu, and parts of Makwanpur and Nawalparasi. Among traditional settlements, Khokana, holds a distinct position in mustard oil processing. Though its scale is smaller compared to Terai production, an in India but its authenticity is very good than other oils. Khokana is culturally renowned for its age-old mustard oil extraction techniques, using traditional wooden or metal ghanis (oil mills), sustaining a legacy of over 800 years. The oil produced here is considered purer and more aromatic, holding ritual and medicinal importance beyond just culinary use.

Across Nepal, mustard oil remains a primary cooking medium, with its consumption rooted deeply in rural households, while in urban areas it is valued for its authenticity and health benefits. About 85–90 percent of mustard oil in Nepal is used in food preparation, while the rest is preserved for pickling, body massage (especially for infants and postpartum women), and religious practices. The growing appreciation for organic and traditional products has gradually brought Khokana’s mustard oil into focus as a cultural and heritage product with tourism and economic potential.

2.1.3 MUSTARD OIL AND ITS UTILIZATION

MUSTARD OIL is a traditional edible and medicinal oil deeply rooted in Khokana, Nepal, where it holds historical, economic, and cultural significance. Extracted from mustard seeds through a process involving cleaning, flaking, cooking, pressing, and filtering, mustard oil is known for its strong aroma, pungent flavor, and natural preservative qualities. It is rich in omega-3 fatty acids and natural antioxidants, it is widely used in cooking, especially for frying

and pickling, and in traditional medicine for its therapeutic properties. In Khokana, mustard oil is not just a household staple but it also represents a centuries old legacy of craftsmanship, community livelihood, and sustainable living. Its applications extend from food preparation and preservation to body massage and healing rituals, making it an integral part of the community’s lifestyle. As such, mustard oil serves as a powerful cultural symbol in my thesis, and preserve the essence of Khokana’s living heritage.

Mustard oil massage: Mustard oil is known for its warming, detoxifying, and painrelieving properties. In Newar culture, it is used for postnatal massage, winter body care, new born baby and arthritis relief.

Traditional Newari culinary restaurant: The restaurant complements the factory by highlighting mustard oil as a culinary medium. In Newar cuisine, mustard oil is essential for cooking dishes such as chatamari, bara, fried snacks, yomari and meat preparations.

Seasonal Pickle: Mustard oil’s preservative quality makes it a key ingredient in seasonal pickles (achar), which are deeply embedded in local diets and food traditions. The use of mustard seeds and oil as a base preserve vegetables like radish, chili, mango, and Nepali hog plums for months, supporting both households and local trade.

2.1.4 DIFFERENT BETWEEN KHOKANA’S MUSTARD OIL AND OTHER MUSTARD OIL

Production method	Traditional cold pressing using Ghani	Industrial mechanical pressing
Processing	Unrefined, chemical free, naturally filtered	Refined, often chemically treated
Aroma	Strong, pungent and natural	Mild, neutralized

Flavor	Deep, authentic taste suited to traditional cuisine	Less distinct flavor
Color	Dark brown	Light brown
Economic impact	Supports local community and small- scale economy	Supports large-scale commercial economy

2.1.5 MUSTARD OIL MANUFACTURING PROCESS (TRADITIONALLY)

Take the raw material (Mustard Seeds) & put it into the Ghani machine hopper.

- After that start the machine & process of crushing the mustard seeds will start. It requires manual manpower to operate the machine as well as for the crushing process.
- It takes time to manually crush the material and the generation of oil from it. After that put the Mustard oil cake into the expeller for generating the more oil from the machine.
- Next step is to collect the Mustard oil from the expeller and put it into tank for the sedimentation process known as filtration.
- After filtering of oil, product is ready for packaging.

2.1.6 PHOTOS OF MUSTARD SEED TO MUSTARD OIL



Figure 2.4 Mustard seed identifying



Figure 2.5 Mustard seed cleaning



Figure 2.6 Mustard seed pouring to crush



Figure 2.7 Mustard seed crushing



Figure 2.8 Crushed seed collected



Figure 2.9 Seed roasting in traditional way



Figure 2.10 Seed roasted ready to press



Figure 2.11 Roasted



Figure 2.12 Workers putting pau in middle of stone and moving chakra to press pau at the same time



Figure 2.13 Fresh oil collected



Figure 2.14 Hammering oil cake for 2nd press



Figure 2.15 2nd press by mechanical process



Figure 2.16 Oil cake collected by 2nd press by mechanical process



Figure 2.17 Ready to oil cake



Figure 2.18 Ready to sell mustard oil of 1liter



Figure 2.19 People worshiping their working place

2.1.6.1 PROCESS OF MUSTARD SEED TO MUSTARD OIL

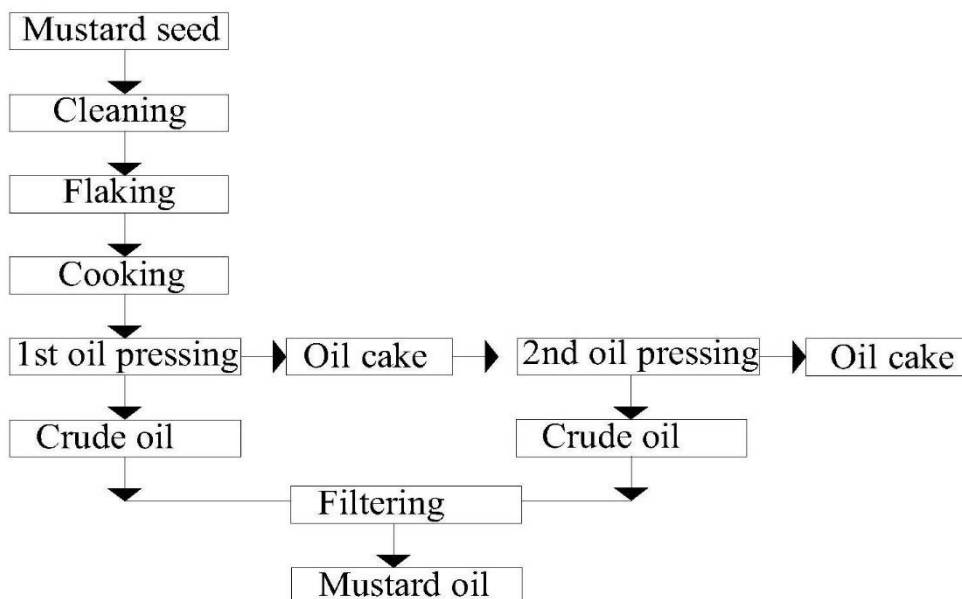


Figure 2.20 Process of mustard seed to mustard oil

The flowchart illustrates the traditional mustard oil production process, which involves a series of methodical steps starting from the raw mustard seed to filtered mustard oil. The process begins with the cleaning of mustard seeds to remove dust, stones, and impurities. Once cleaned, the seeds undergo flaking, where they are broken into smaller pieces to facilitate better oil extraction. The flaked seeds are then cooked, a step that enhances oil yield and improves the quality of the final product by breaking down oil cell structures and reducing moisture.

Following cooking, the mixture goes through the first oil pressing, which separates the initial portion of crude oil from the solid residue known as oil cake. This oil cake still contains some oil, so it is subjected to a second oil pressing, producing additional crude oil and a secondary batch of oil cake, which is usually used as cattle feed or fertilizer.

The combined crude oil obtained from both pressing stages is then passed through a filtering process. This step removes suspended solids and impurities, resulting in the final product: pure mustard oil, known for its distinct aroma,

flavor, and cultural importance in communities like Khokana. This process not only supports local economies but also sustains a heritage craft.

2.1.6.2 CONSTRUCTION

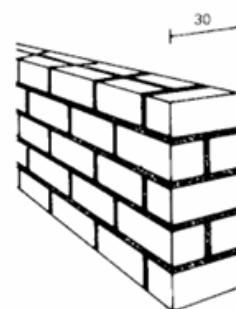
1. Structural Form & Layout

Generally, it is a rectangular or square-shaped building with a compact footprint and typically a single-story (ground floor only), although some have partial upper floors used for seed storage or worker rest areas.

2. Walls

It is thick load-bearing brick or stone masonry walls with mud or lime mortar. It varies between 18–24 inches, especially in areas supporting the Ghani or presses.

Figure 2.20 Single Bay wall



3. Roofing System

It is sloped gable or hipped roof with large overhangs. Traditionally Jhingati clay tiles (locally made), now sometimes replaced with corrugated sheets. Timber trusses or purlins, often using sal wood or sissoo wood, with diagonal bracing for seismic resistance.

Figure 2.21 Load bearing wall

4. Openings (Windows and Doors) Doors:

It has large double-leaf wooden doors to allow sacks of mustard seeds and oil barrels to move in and out.

Windows:

It is small to medium-sized with wooden lattice or shutters. It is positioned for cross ventilation essential to remove fumes and excess heat from oil production.

5. Ventilation and lighting

The mills are designed with cross ventilation, where windows and doorways are positioned opposite each other to allow fresh air to circulate freely. High-level openings near the roofline, often in the form of small ventilators or, allow hot air and oil fumes to escape, maintaining a cooler indoor environment. Traditional louvered wooden windows carved lattice windows are commonly used to enable airflow while preserving privacy and protecting the interior from harsh weather. In some cases, large wooden doors remain open during working

hours, further enhancing ventilation. Mills that are part of a compound or courtyard layout benefit from shared open spaces that help disperse fumes and improve air quality.

Lighting in the mills relies heavily on natural daylight, as artificial lighting was historically limited due to fire hazards from oil vapors and cost constraints. Mid-level to high-level windows is strategically placed to admit diffused sunlight, illuminating the workspace without causing glare. Some larger mills incorporate clerestory windows or small skylights in the sloped roofs, enhancing natural light penetration. Although traditional mills used oil lamps sparingly, modern reconstructions may include low wattage electric bulbs or sealed LED lights, carefully installed away from oil tanks to minimize fire risk.

6. Chimney

In traditional mustard oil mills, especially in Khokana, a chimney is an important architectural and functional feature used during the roasting process of mustard seeds. Roasting is a preliminary step carried out in some oil mills to enhance the flavor, aroma, and oil yield. This process involves heating mustard seeds in a large iron or clay pan, usually over a wood-fired or biomass stove, which generates a significant amount of smoke, heat, and oily vapors. To safely remove this smoke and maintain air quality inside the building, a chimney is essential.

The chimney is typically constructed as a vertical shaft made of brick, extending from just above the roasting hearth or stove to well above the roof level. Its primary role is to channel smoke and fumes out of the interior, preventing the buildup of harmful gases like carbon monoxide and maintaining breathable air for workers. The chimney works on the principle of natural draft ventilation, where hot air rises and creates a suction effect that pulls smoke upward and out. In traditional mills, the chimney is often located near a corner of the room or adjacent to the outer wall to minimize interference with other work areas.

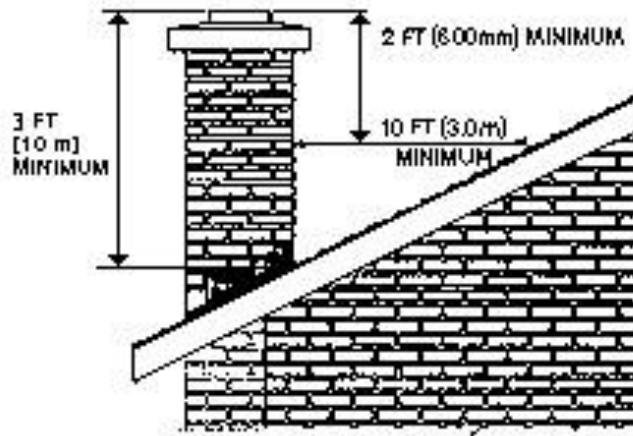


Figure 2.22. Chimney

2.1.7 MUSTARD OIL MANUFACTURING PROCESS (MECHANICALLY)

- A mechanized hopper automatically feeds cleaned mustard seeds into a seed crusher or expeller.
- Uses filter presses, centrifugal separators, or vacuum filters.
- Uses a screw press rotating inside a horizontal barrel.
- Seeds are continuously crushed and pressed as they move through the chamber.
- Mechanical pressure and friction extract oil more efficiently and faster than a Ghani.
- Generates heat this is hot-pressing, which yields more oil but can degrade flavor/nutrients.

2.1.7.1 CONSTRUCTION

1. Structural Form & Layout

Modern oil factories are typically located on large industrial plots with separate zones for:

- Raw material storage
- Seed cleaning and preparation
- Crushing and expelling
- Oil filtration and refining
- Packaging and distribution

So, the structural form will be different from traditional layout.

2. Structural Design and Materials

The factory building is constructed with reinforced concrete (RCC) frames and steel structural systems for durability, heavy load-bearing, and machine vibration resistance. The walls are made from brick masonry with cement plaster or steel cladding panels, depending on budget and regional construction practices. Steel trusses with sheet metal roofing are common in international factories for faster construction and open interior spans.

3. Flooring

Flooring must support heavy machinery like seed crushers, screw presses, and filter presses. Typically constructed using reinforced concrete slabs with non-slip coatings for:

- Chemical resistance
- Easy cleaning
- Load-bearing capacity

4. Machinery Foundation and Vibration Control

Each major machine (e.g., screw press, centrifugal separator) is placed on a separate concrete plinth or RCC platform, often with anti-vibration pads to reduce noise and structural stress. The heavy-duty anchor bolts are used to fix machines securely in place.

5. Oil Storage and Safety Features

Mechanized mills include steel or stainless-steel tanks for raw oil and refined oil. The storage rooms are built with fire-rated walls, automatic fire suppression systems (sprinklers), and oil spillage containment trenches. The emergency exits, fireresistant doors, and alarm systems are mandatory under international building codes.

6. Ventilation Mechanized oil production generates significant heat and fumes, especially during hot-pressing. The factories are equipped with:

- Industrial exhaust fans
- Air handling units (AHUs) and ventilation ducts
- Ventilated ridge roofs and louvered wall panels.

So, they use alternatives to control heat.

2.2.1 CULINARY RESTAURANT

A culinary restaurant in Khokana is not just a place to eat it can serve as a community-driven platform to preserve cultural identity, create local employment, and promote sustainable tourism.

Roles in every aspect:

Aspect	Role in Empowering khokana
Cultural	Revives Newari food and tradition
Economic	Generates jobs, creates local supply chain
Architectural	Preserves and reuses traditional style buildings
Social	Encourage cooperation and community pride
Environmental	Promotes sustainable agriculture and local sourcing

2.2.1.1 PLANNING

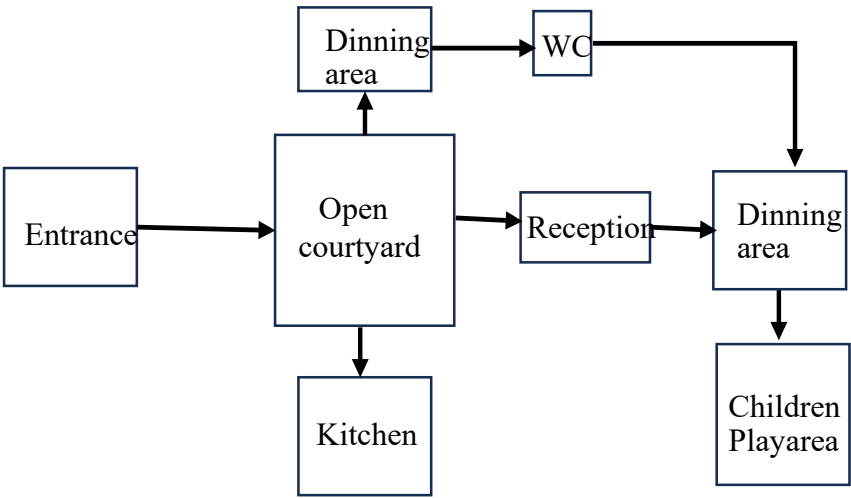


Figure 2.23. Planning of restaurant

At the core of the design is an open courtyard, which acts as the central organizing space reflecting the traditional Newar spatial planning style where communal life revolves around the courtyard. Upon entering through the main entrance, visitors are naturally directed into this open courtyard, allowing for a gradual transition into the heart of the culinary and cultural experience. From the courtyard, access is provided to the kitchen, supporting direct interaction between food preparation and the community.

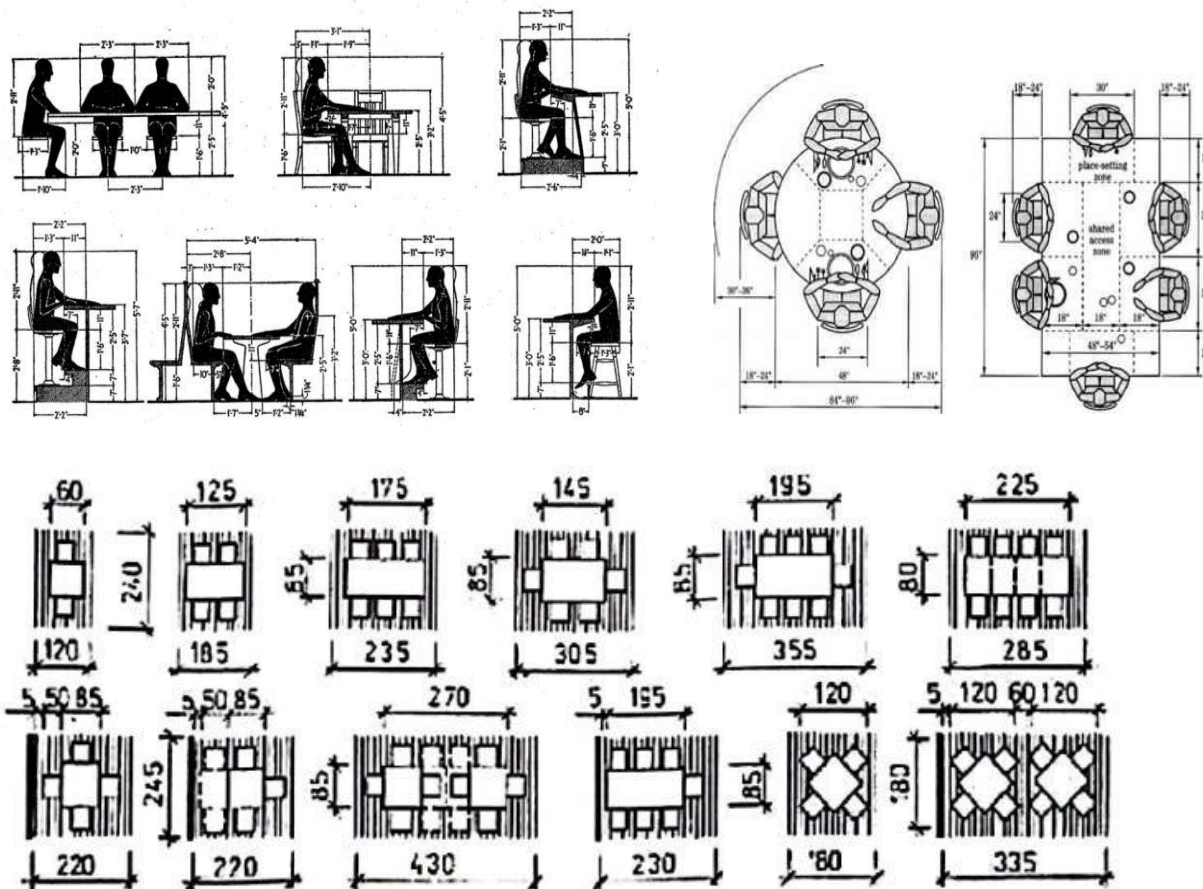


Figure 2.24. Dimension of dining table

S. N	SPACES	SIZE
1.	Entrance	5-10 m ²
2.	Courtyard/outdoor space	30-50 m ²
3.	Dinning Area	40-60 m ²
4.	Table size	For 2: 600X600 For 4: 600X11000
5.	Distance between table and chair	2m
6.	Waiter section	1 per 10-15 seats
7.	Dining area floor height	2.8 m ²
8.	Dining area per seat	1.5-2 m ² (60% of total area)
9.	Minimum width of service aisle	1.3 m

2.2.1.1 Kitchen and Storage

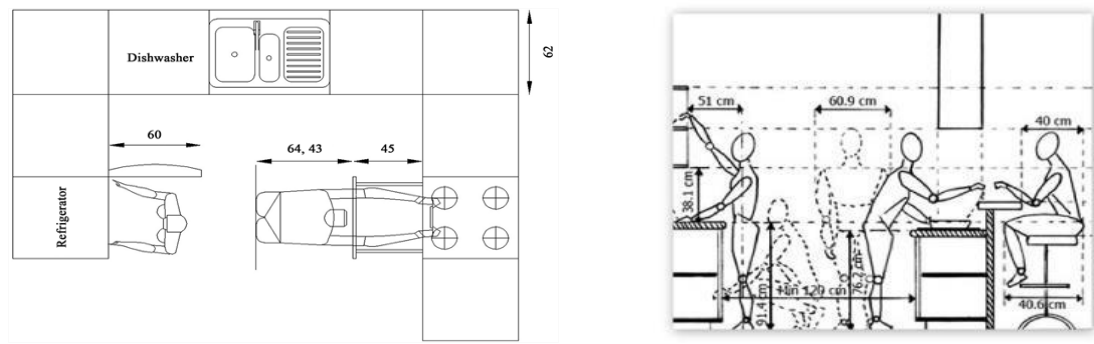


Figure 2.24. Dimension of kitchen

S. N	SPACE	SIZE
1.	Storage/pantry	8-12 m
2.	Dry food storage	30%
3.	Refrigerated food storage	25%
4.	Traditional kitchen	20-25 m ²
5.	Washing area	10-15 m ²

2.2.1.2 SEASONAL PICKLE

The concept of seasonal pickle (also known as *achar*) production offers a powerful, culturally rooted strategy for community empowerment, food preservation, and income generation.

Roles in every aspect:

Aspect	Contribution
Cultural	Preserves Newar food heritage and traditional practices
Economic	Low-cost ownership especially for woman and elderly
Architectural	Inspires adaptive use of traditional ties and community networks
Social	Strengthens intergenerational ties and community networks
Ecological	Seasonal, zero-waste and sustainable food processing

2.2.1.3 MASSAGE CENTER

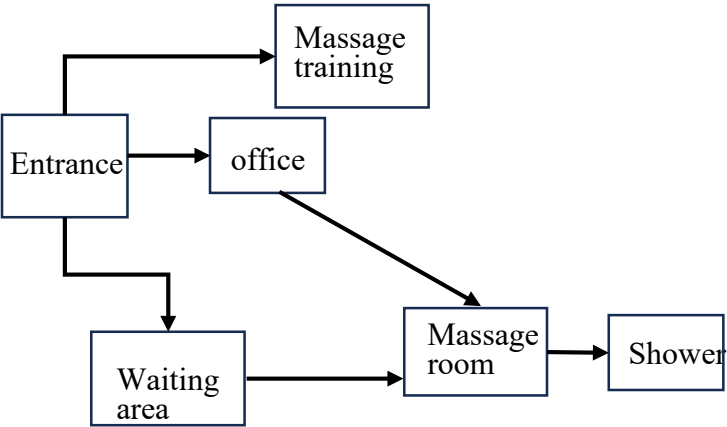
A community-operated massage center empowers residents, particularly:

- Women and youth, by training them in massage therapy.
- Elderly healers, by validating and monetizing their knowledge
- Skills training can be part of local empowerment programs, creating:
- Long-term employment

Roles in every aspect:

Aspect	Contribution
Cultural	Revives traditional Newar and massage practices
Economic	Creates jobs, development skills and connects with the local oil economy
Architectural	Utilizes traditional courtyards for healing spaces
Health	Promotes holistic care and community well being
Tourism	Attracts conscious tourists seeking local healing experiences

2.2.1.3.1 PLANNING



2.1.1.4 SHOP

Shops in my project can be used to display and sell:

- Locally made mustard oil from traditional mills
- Seasonal pickles (*achar*) made by local women
- Traditional snacks (like *baji*, *bara*, *yomari*)
- Handicrafts, handwoven textiles, wooden carvings, earthenware

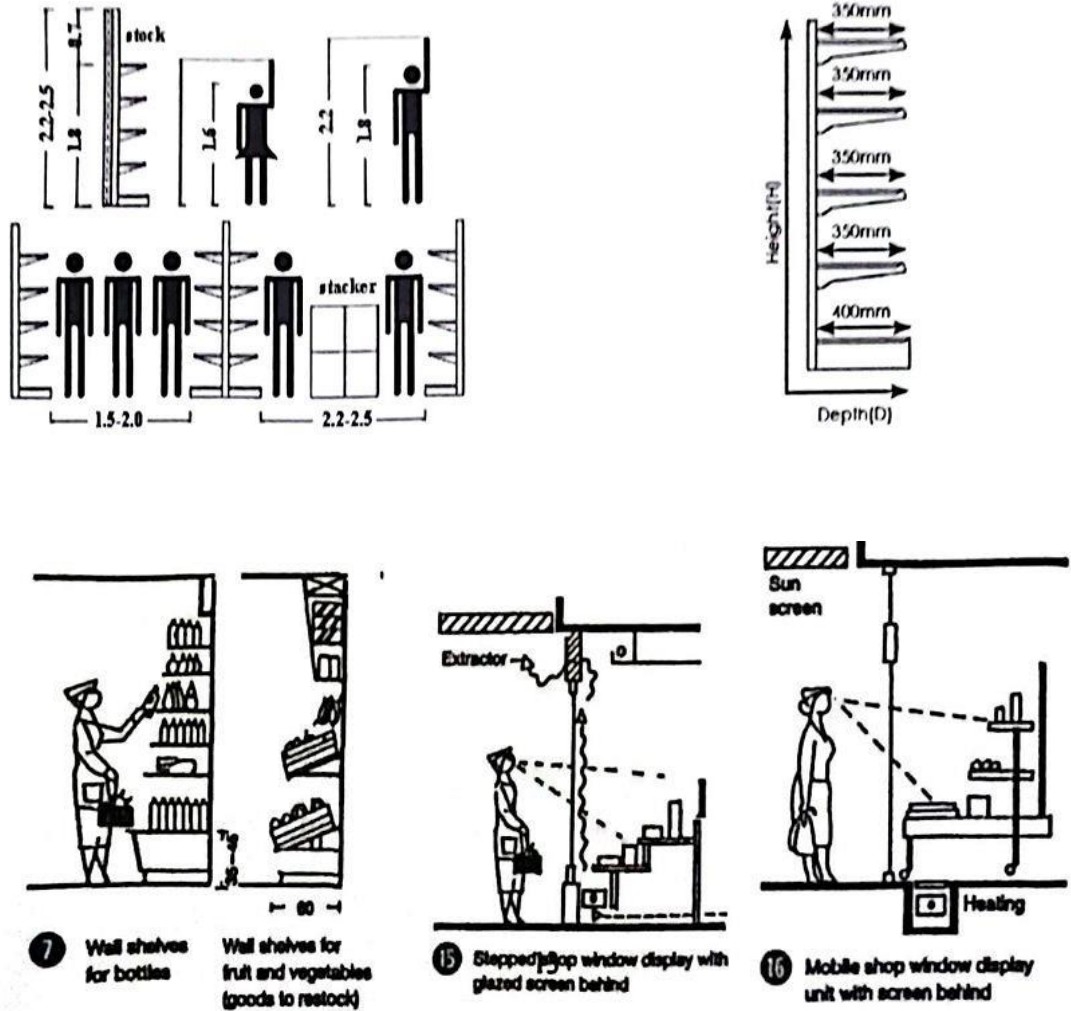


Figure 2.25. Dimension of shop

2.1.1.5 TOILET

Public restroom should be accessed from the lobby,

- For up to 100 people (male/female):8 wcs/urinal
- For up to 20staff members (men/woman):4wcs/urinal
- 3 basins for every: 6wcs/urinal

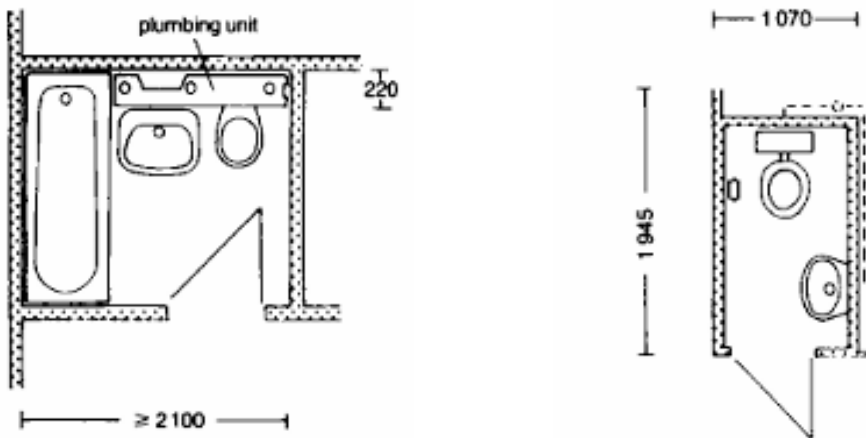


Figure 2.26. Dimension of toilet

2.1.1.6 STAIR AND CORRIDOR

- Staircase should not be less than (6'-0") wide
- There shall be maximum 10 steps in one flight.
- Differences in level should be minimized as much as possible for the comfort.
- Circular stairs and stepped landings should be avoided.
- Open risers are highly recommended.

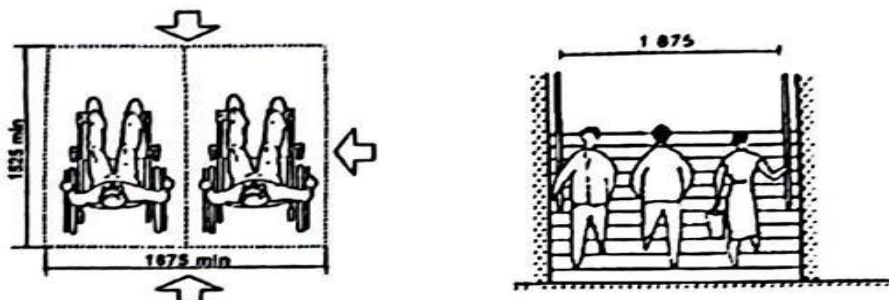


Figure 2.27. Dimension of stair

2.7 PARKING

- Parking spaces for car: 2.5X 6m
- 90 parking:20-22 m per car
- 45 parking: 23-26 m per car
- Large open plan parking area often needs to be broken down

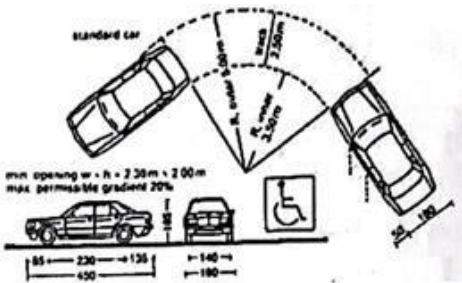


Figure 2.28. Dimension of turning radius

Type of vehicle	Length(m)	Breadth (m)	Height (m)	Turning circle radius (m)
Motorcycle	2.20	0.70	1.80	1.00
Car: Standard	4.70	1.75	1.50	5.75
Small	3.60	1.60	1.50	5.00
Large	5.00	1.90	1.50	6.00
Bicycle	1.70-1.90	0.6	1.00-1.25	0.70
Pick up van	4.37	1.64	1.90	5.00

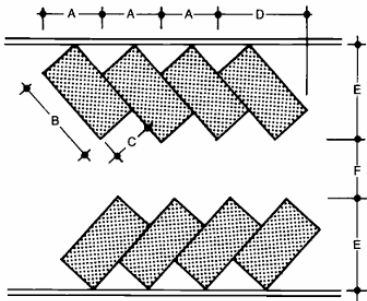


Figure 2.29. 45° parking

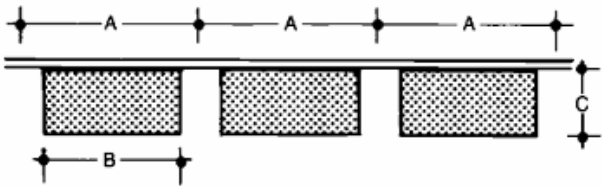


Figure 2.30. Parallel parking

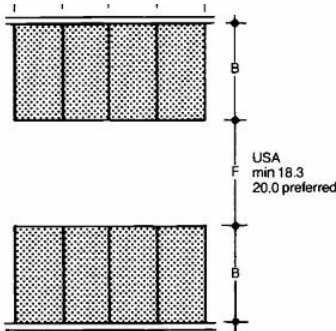


Figure 2.31. 90° parking

2.8 RECEPTION

It serves not only as a space for functional interaction such as greeting guests, providing information, and managing bookings but also as a symbolic introduction to Khokana’s cultural identity and values. A reception designed in traditional Newar architectural style, using materials like carved wood, brick masonry, and locally woven textiles, creates an immediate sense of authenticity and hospitality.

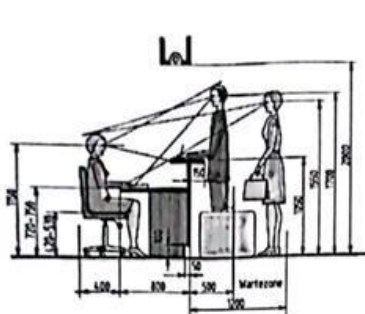


Fig 2. 54 Ticket booth

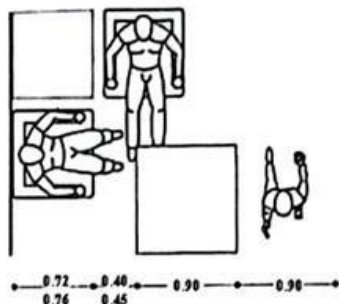


Fig 2. 55 Waiting area

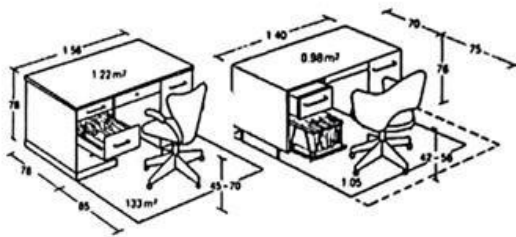


Figure 2.32. Dimension of reception

S. N	ROOM	SIZE
1.	Space per person	
8.	WC	min. 14m2 per person
9.	Lighting	
	Reception area	100 lux
	Rooms for public use	200 lux
	Circulation areas	100 lux
	Washroom	100 lux
	Stairs	100 lux

2.9 LOBBY

Interconnecting all the rooms with a central courtyard enables visitors to orient themselves and choose the rooms they wish to visit.

2.10 OFFICE PLANNING

Proper planning, design and management of work place is the key for employees working environment as it directly affects the level of comfort and performance output. An office is required for the administration to control and organize everything related.

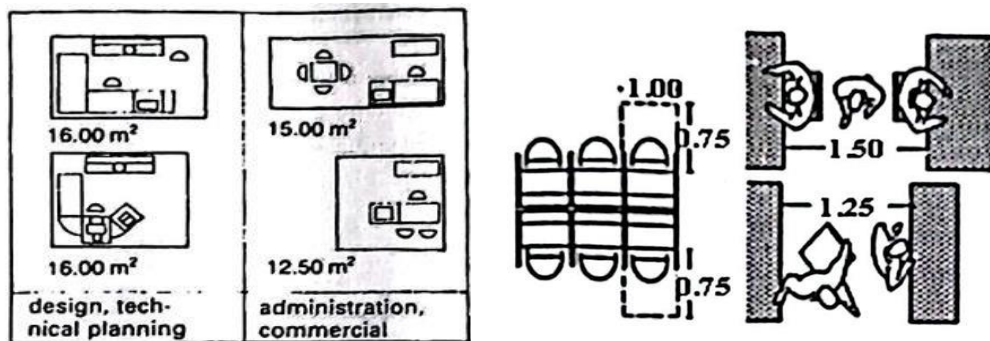


Figure 2.33. Dimension of office

2.11 MATERIAL

1. Brick (Handmade / Fired Clay Bricks)

- Commonly used in traditional Newar architecture
- Locally sourced and produced in nearby brick kilns
- Used for walls, facades, and courtyard paving
- Gives a warm, rustic texture and supports earthquake-resilient design when reinforced
- Often arranged in decorative bond patterns that reflect heritage craftsmanship

2. Timber (Sal, Sissoo, or Local Hardwood)

- Used for doors, windows, beams, columns, struts, and roof rafters
- Features intricate Newar wood carvings on doors and windows
- Provides warmth, flexibility, and natural aesthetics

- Timber from sustainable sources supports eco-friendly construction

3. Mud Plaster / Lime Plaster

- Used as wall finishing, particularly in interior walls and heritage homes
- Breathable, natural, and ideal for insulation
- Traditional mix includes lime, clay, straw, and cow dung
- Offers humidity regulation and a soft, organic look

➤ Stone (Slate / Fieldstone)

- Used in foundations, retaining walls, paving, and steps
- Locally quarried and processed
- Adds durability and strength to the base structure
- Often seen in courtyards, temples, and footpaths of Khokana

5. Terracotta Tiles

- Used for roofing and courtyard paving
- Traditional Mangal-style curved clay tiles dominate Khokana's skyline
- Offer ventilation, thermal comfort, and rain resistance
- Handmade by local artisans, supporting local crafts

CHAPTER 3

3 CASE STUDIES

National case studies

- **Jabu Jaaysha oil mill, Khokana Lalitpur**
- **Patan community pickle cooperate, Patan Lalitpur**
- **Sasa: Twa, Kritipur**
- **The tranquil times spa and wellness, Thimi, Bhaktapur**

International case studies

- **P mark mustard oil, Haryana India**
- **Priya Pickle, South India**
- **Kalakal Tibetan Cuisine and cultural center, China**

Location: Khokana, Lalitpur

Typology: Oil production mill

Area: 2500 sq ft

Employee: 6 Nos

Capacity: 250L per day

Style: Load bearing

3.1.1.4 HISTORY

The Jabu Jyasha Oil Mill has been in operation for several generations, dating back to the early days of mustard oil production in Khokana. The name "Jabu Jyasha" originates from the local Newar language, reflecting the mill's deep cultural roots. Historically, Khokana was known as a major mustard oil-producing village, and mills like Jabu Jyasha played a vital role in sustaining the livelihood of local farmers and traders. Over time, technological advancements and the import of foreign mustard oil impacted the production scale, but the mill remains a living example of Khokana's traditional oilmaking process.

3.1.1.5 ARCHITECTURAL DETAILS

The architectural detail of Jabu Jaaysha Oil Mill follows the traditional Newari style, characterized by:

- **Wooden & Brick Structures:** The mill is housed in an old brick and timber framed building, reflecting traditional Newari architecture.
- **Large Wooden Oil Presses:** The core of the mill consists of manually operated wooden oil presses, where mustard seeds are crushed to extract oil.
- **Stone Grinding Mechanism:** Large stone grinders are used to crush mustard seeds, a practice that has been followed for centuries.
- **Open Processing Space:** The mill's layout is designed for efficient workflow, with designated areas for grinding, pressing, and oil collection.
- **Ventilation & Storage:** Natural ventilation helps in the drying of mustard seeds, and large clay storage pots are used to store the extracted oil before packaging.

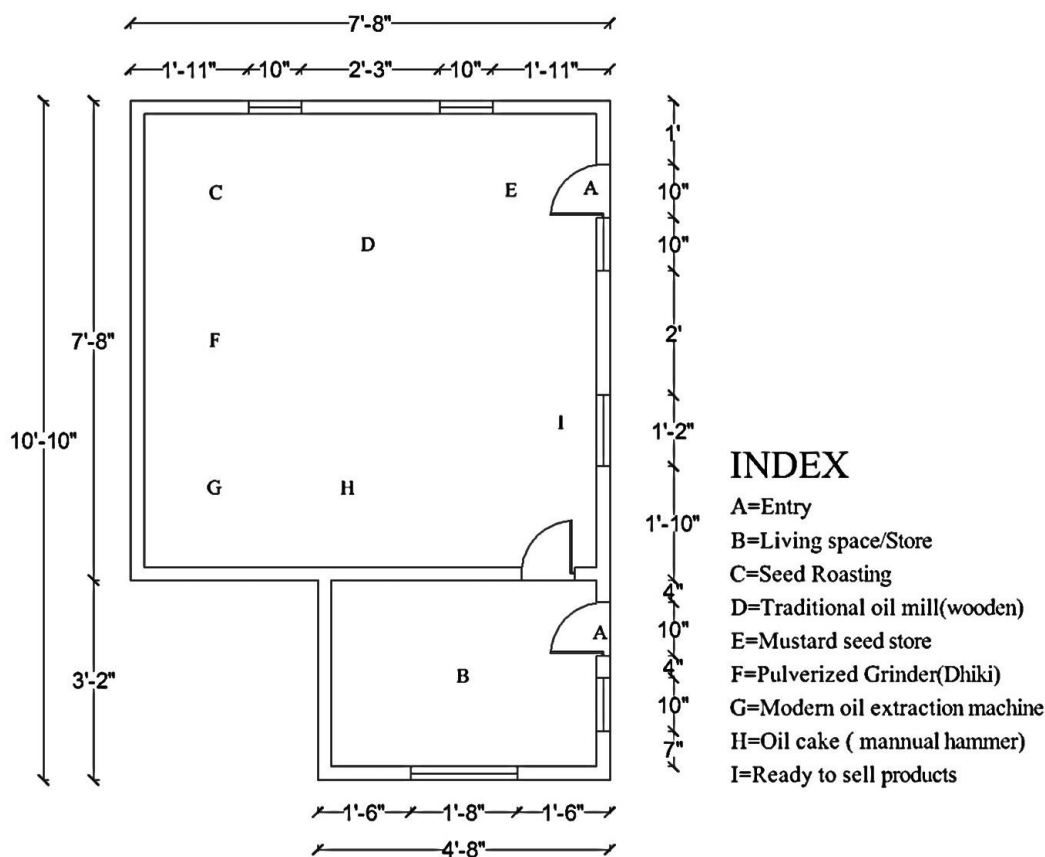


Figure 3.2. Plan of mill

3.1.1.6 CHALLENGES

Today, the Jabu Jaaysha Oil Mill still operates using traditional methods, producing a limited quantity of high-quality mustard oil daily. However, it faces several challenges:

- **Decline in Local Mustard Production:** Due to urbanization and changing agricultural practices, local mustard farming has decreased, forcing mill owners to rely on imported mustard seeds.
- **Competition from Commercial Brands:** The rise of industrially processed mustard oil has impacted traditional mills like Jabu Jaaysha.
- **Preservation & Sustainability Concerns:** Efforts are being made to maintain and restore the mill as a cultural heritage site while ensuring its economic viability.

- **Tourism & Awareness Initiatives:** The mill has attracted cultural tourism, with visitors coming to witness the traditional oil extraction process and learn about Khokana's history.

3.1.1.7 PHOTOS



Figure 3.3. Photos of mill

3.1.1.8 INFERENCE

- Loss of open space traditionally used for drying oil cakes or storage.
- Inability to compete with faster and cheaper industrial oil mills.
- Younger generations are less involved in traditional practices.
- Low production volumes make it financially unavailable.

3.1.2 PATAN COMMUNITY PICKLE COOPERATIVE, PATAN LALITPUR

3.1.2.1 OBJECTIVES OF STUDY

- To document the spatial and functional layout of the cooperative's pickle production unit within an urban traditional setting.
- To analyze how traditional architecture (e.g., courtyards, kitchens, storage areas) is adapted for community-based food processing.
- To understand the role of the cooperative in promoting local food culture and supporting women's economic empowerment.
- To assess the integration of hygienic practices and food safety standards within a vernacular building typology.
- To identify architectural challenges and opportunities in scaling or replicating such models in similar urban contexts.

3.1.2.2 INTRODUCTION

The Patan Community Pickle Cooperative is grassroots, women-led initiative based in the historic urban fabric of Patan, Lalitpur. It is established to empower local women through small-scale food entrepreneurship, the cooperative focuses on the traditional craft of pickle-making using locally sourced ingredients and time-tested recipes passed down through generations. It not only serves as a livelihood opportunity but also as a means to preserve and celebrate Nepal's culinary heritage.

It is located within or adjacent to traditional Newar courtyard houses, the cooperative uses vernacular spaces such as open courtyards for sun-drying, inner rooms for preparation, and shared kitchens for processing adapting them for hygienic and organized pickle production. The cooperative promotes community participation, economic independence for women, and sustainable urban practices, while also supporting local agriculture by sourcing seasonal vegetables and fruits.



Figure 3.4 Patan community pickle cooperative

Location: Patan, Lalitpur

Typology: Pickle home

Area: 1200 sq ft

Employee: 5 No

Variety: 6+ items

Style: RCC

3.1.2.3 ARCHITECTURAL DETAILS

The architectural setting of the Patan Community Pickle Cooperative is deeply rooted in the traditional Newar residential courtyard typology, known locally as a “ *b a h a l c h o w k* . ”

These buildings are typically constructed using locally fired bricks, timber frames, and mud mortar, forming a cluster of multi-storey residential units arranged around a central open courtyard. This courtyard plays a crucial role in the pickle-making process, offering ample natural light and ventilation required for sun-drying vegetables and fermenting pickles a key step in traditional preservation methods.

The ground floor rooms are adapted into functional zones such as ingredient storage, preparation and mixing rooms, and packing areas. The flooring is stone-paved, which is durable and easy to clean, maintaining hygienic conditions for food preparation. The cooperative shares a community kitchen space that has been upgraded with basic water, drainage, and sanitary facilities while preserving the authenticity of the building. These spatial characteristics allow the pickle production unit to function efficiently while also serving as a living example of adaptive reuse, blending traditional architectural wisdom with modern community needs.

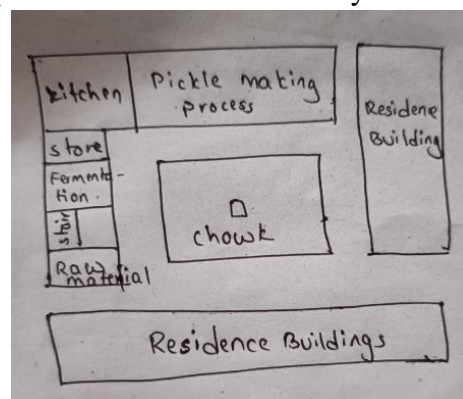


Figure 3.5 One-line diagram of community pickle

3.1.2.4 PICKLE MAKING STEPS



Figure 3.6 Steps of pickle making

3.1.2.5 INFERENCES

It demonstrates how Newar courtyard houses can support hygienic and efficient pickle production through natural light, ventilation, and spatial organization. It provides a platform for local women to earn income, gain skills, and collaborate, strengthening social and economic bonds within the community.

3.1.3 SASA: TWA, KRITIPUR

3.1.2.1 OBJECTIVES OF STUDY

- To experience the classic ambiance of a restaurant.
- To understand the necessary circulation and spatial requirements for a Newari restaurant.
- To gain knowledge of Newari cuisine and traditional cooking practices.
- To study the different spaces required in a restaurant serving traditional cuisine in a traditional manner.
- To investigate how the planning and zoning of different spaces are executed in a traditional setting.

3.1.2.2 INTRODUCTION

Sasa: Twa Restaurant, located in the outskirts of Kathmandu in Kirtipur, is a haven for Newa cuisine enthusiasts. Its embracing traditional Newa architecture, it offers an authentic cultural experience, attracting around 250 to 300 guests on regular days and up to 500 to 600 on weekends. The restaurant goes beyond food, hosting events like classical music and dance performances, including the rare Lakhe Naach of Kirtipur, serving as a platform to preserve and promote traditional art forms while generating funds to support them. With its vibrant ambiance and meticulous attention to cultural details, Sasa: Twa embodies the essence of Newa heritage. From its architectural design to its menu offerings, every aspect reflects the richness of Newari traditions. The courteous and efficient staff further enhances the dining experience, making Sasa: Twa a must-visit destination for those seeking an authentic taste of Newa culture.



Figure 3.7 Sasa: Twa

Location: Sagal Tole-5, Kirtipur

Typology: Restaurant

Area: 3.6 Ropani

Capacity: Up to 1000 people at a time

3.1.2.3 Architectural details

The restaurant complex is a beautiful embodiment of traditional Newa architecture, featuring sloped roofs and wooden structures. Upon entering through a meticulously designed gate, guests are greeted by a charming street-like space adorned with a small Dhungedhara on the left and inviting patis (courtyards) on both sides. These patis serve as spaces for traditional music performances, displays of cultural items, and even house a traditional kitchen on one side.

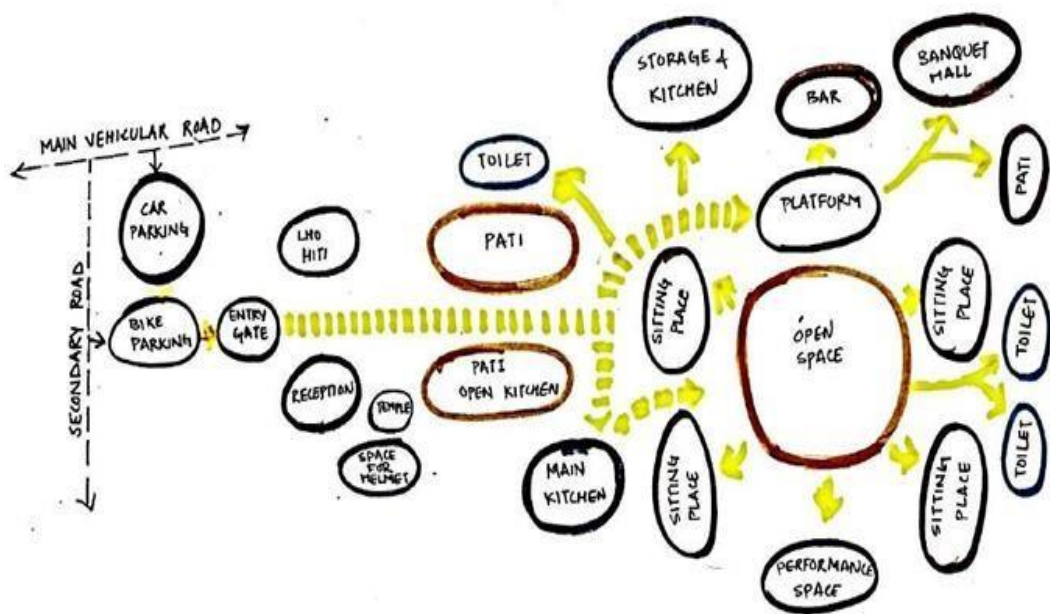


Figure 3.8 Bubble Diagram showing different zones of Sasa: Twa

Moving forward, guests enter a T-junction, where the right path leads to a modern kitchen housed within a traditional building, inaccessible to guests. The left path guides visitors to the main restaurant area, accessed by descending a few steps into the main open space, akin to a Dabali. Here, cultural dances and performances entertain guests, surrounded by two-story buildings with seating facilities on either side. Guests immerse themselves in Newa culture by dining on the floor, in accordance with tradition. Additionally, a double-height building at the front hosts traditional dance and music performances, while toilets are conveniently located at the back of the complex.

The building Infront of platform is made of Traditional Newari style, with a ground floor bar, a restaurant on the two floors above with chairs for seating, and an attic floor serving as a mezzanine level. Alongside the traditional four-story building, the ground floor houses a banquet hall capable of accommodating 300 people, providing a space not only for restaurant services but also for hosting events and feasts.

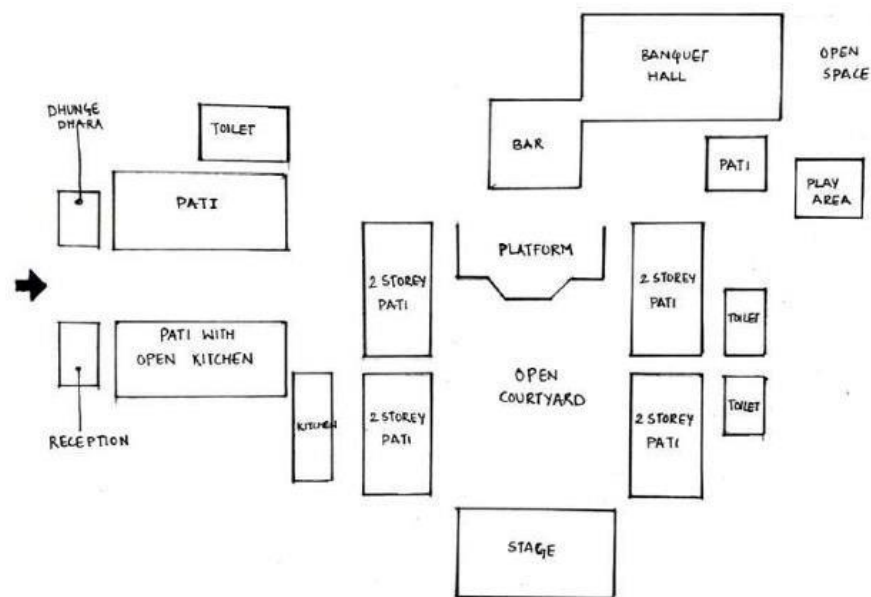


Figure 3.9 One-line diagram showing different zones of Sasa: Twa

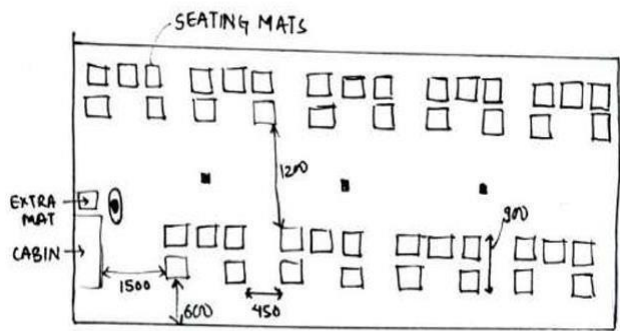
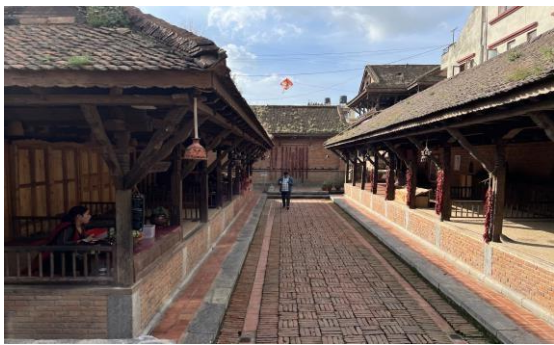


Figure 3.10 Dinning layout of sasa twa



3.1.2.4 PHOTOS





3.1.2.5 CONSTRUCTION TECHNOLOGY AND MATERIAL USED

The restaurant seamlessly combines traditional and modern construction techniques, blending load-bearing systems with wooden post and beams for structural integrity. Traditional construction methods such as brick, mud, and wooden joinery are prominently featured in visible areas, preserving the authentic Newa aesthetic. Meanwhile, modern technologies like cement mortar and metal trusses are discreetly integrated into interior spaces not visible from outside, ensuring structural stability and durability. Most materials used are traditional, with wooden members repurposed from buildings damaged in the 2015 earthquake. The restaurant boasts brick and mud walls, intricately carved wooden posts, beams, and lintels, square tiles for flooring, and large roof tiles, all contributing to its timeless charm and cultural significance.

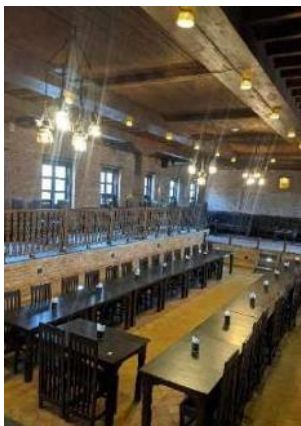
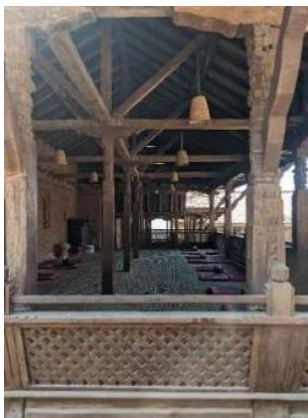


Figure 3.11 Construction technology of sasa twa

3.1.2.6 INFERENCE

- The restaurant is designed to host traditional Newari dining experiences and banquets, with a capacity of up to 1000 people.
- Featuring an expansive open dining area, courtyard, and performance stage, the space offers a vibrant setting for cultural events and gatherings.
- Patrons can indulge in a diverse selection of authentic Newari cuisine, catering to both local and international tastes.
- Careful attention to scale, proportion, and visual connections between spaces enhances the overall ambiance and guest experience.

3.1.4 THE TRANQUIL TIMES SPA AND WELLNESS, THIMI, BHAKTAPUR

3.1.4.1 OBJECTIVES OF STUDY

- To study the spatial planning and zoning of spa and wellness facilities within a traditional or semi-urban Newar context.
- To analyze how architectural design supports relaxation and therapeutic experiences, incorporating natural light, ventilation, water elements, and material selection.
- To understand the integration of local materials and craftsmanship (e.g., brickwork, wood, and stone) in creating a serene and culturally contextual wellness environment.
- To examine user experience and flow, including transitions between reception, therapy rooms, waiting areas, and natural zones like gardens or courtyards.
- To identify how traditional aesthetics are blended with modern wellness functions, creating a balance between cultural identity and contemporary expectations.
- To evaluate sustainability practices such as water usage, energy efficiency, and the use of natural landscaping in spa architecture.

3.1.4.2 INTRODUCTION

The Tranquil Times Spa and Wellness in Thimi, Bhaktapur, is a thoughtfully designed facility that blends modern wellness practices with the cultural and architectural heritage, situated in a semi-urban area known for its Newar traditions and craftsmanship, the spa offers a peaceful escape that prioritizes mental, physical, and emotional well-being. It incorporates natural elements such as indoor plants, water features, natural lighting, and ventilation, creating a calming atmosphere conducive to therapeutic treatments and holistic healing.



Figure 3.12 The tranquil times spa and wellness

Location: Thimi, Bhaktapur

Typology: Massage center

Area: 2000 sq ft

Capacity: Up to 4 people at a time

Style: RCC

3.1.4.3 ARCHITECTURAL DETAILS

Architecturally, the spa integrates traditional Newar materials like exposed brick, timber beams, and carved wooden details with contemporary spatial planning to deliver a serene and functional experience. The layout is typically organized to maintain privacy, comfort, and sensory relaxation, with clear zoning for reception, treatment rooms, herbal therapy spaces, and resting lounges.

The wellness emphasizes local healing traditions and sustainable practices, showcasing how well architecture can honor both cultural identity and modern functionality.

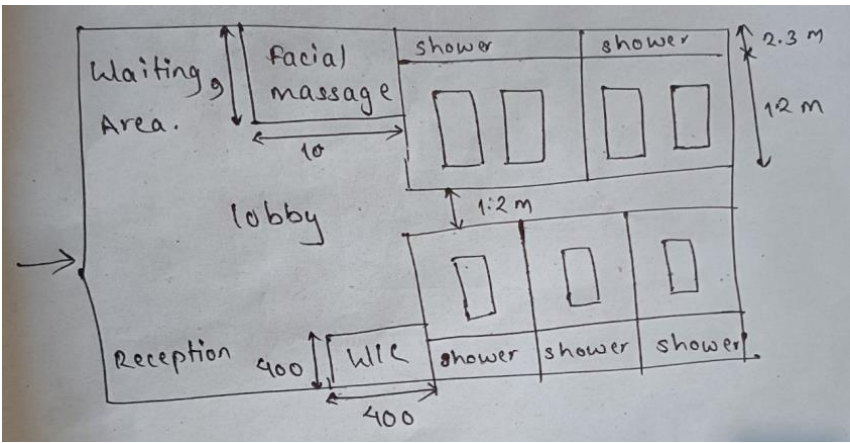


Figure 3.13 One-line diagram of tranquil times

The architecture of The Tranquil Times Spa and Wellness is a refined blend of vernacular Newar elements and contemporary spatial needs, crafted to provide a calming, sensory experience for its users. These materials are not only visually harmonious with the traditional surroundings of Thimi but also serve

functional purposes, such as regulating indoor temperatures and enhancing durability.

The spatial layout follows a zoned configuration, ensuring separation between active and quiet areas such as reception, therapy rooms, herbal baths, and meditation spaces. Natural lighting is maximized through skylights, clerestory windows, and open courtyards, creating a soft, soothing environment while reducing energy dependency. Cross ventilation is facilitated through operable windows and interior breezeways, enhancing thermal comfort and air quality.

3.1.4.4 PHOTOS



3.1.4.5 INFERENCE

- Demonstrate show traditional Newar architecture can be harmoniously integrated with modern wellness design needs.
- Reflects careful zoning of spaces to enhance privacy, relaxation, and efficient user movement throughout the facility.
- Soundproofing and soft interior materials enhance user comfort and deepen the meditative experience.

3.2 INTERNATIONAL CASE STUDIES

3.2.1 P MARK MUSTARD OIL, HARYANA, INDIA

3.2.1.2 OBJECTIVES OF STUDY

- To study the architectural layout and spatial organization of a modern, mechanized mustard oil production facility in an Indian context.
- To analyze the use of industrial machinery and its integration within the building design to ensure efficient production flow.
- To understand the structural and material choices (such as steel framing, RCC, industrial cladding) that support hygiene, durability, and process safety.
- To examine waste management and oil residue handling systems within a large-scale oil production plant.
- To compare traditional vs. mechanized oil production spaces, highlighting how architecture adapts to evolving technologies.

3.2.1.3 INTRODUCTION

P Mark Mustard Oil is a flagship brand of Puri Oil Mills Limited, a company established in 1933 by the visionary Late Shree Devi Das Puri Ji in Moga, Punjab. Initially starting with an oil and flour mill, the company quickly gained a reputation for producing pure and high-quality products, earning the trust of consumers across various regions, including Jammu and Kashmir, Sialkot, and Lahore.

Location: Haryana, India

Typology: Oil production mill

Area: 6500 sq ft

Employee: 15 Nos

Capacity: 2000L per day



Figure 3.14 P mark mustard oil

3.2.1.4 HISTORY

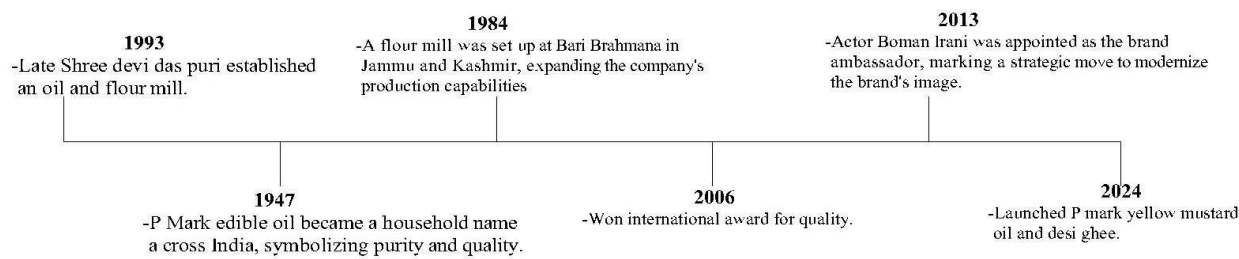


Figure 3.15 Showing its history of P mark mustard oil

3.2.1.5 ARCHITECTURAL DETAIL

The P Mark Mustard Oil Mill in Haryana represents a modern, mechanized industrial facility designed for high-volume oil extraction and packaging. Architecturally, the facility follows the principles of functional zoning, structural efficiency, and hygiene control, typical of Argo-based industrial buildings in India.

The building is primarily constructed using reinforced concrete (RCC) frames, steel columns, and pre-engineered metal roofing systems to allow wide spans and unobstructed interiors. These materials are chosen for their durability, load-bearing capacity, and ease of maintenance, especially under continuous mechanical operation and exposure to oil residues.

The layout of the mill is divided into distinct process zones raw seed storage, cleaning, crushing/expelling, filtration, oil storage, and packaging organized in a linear or flow-efficient layout that minimizes manual handling and maximizes mechanical throughput. Large mechanical equipment, such as screw presses, conveyors, and centrifuge filters, are placed on reinforced foundations with adequate clearances for maintenance and ventilation.

The facility ensures adequate ventilation through louvered wall panels, ridge ventilators, and in some cases, exhaust fans to dissipate heat and fumes generated during hot-pressing. Natural lighting is often supplemented with high-bay LED lighting, and clerestory windows are used to reduce energy costs during the day.

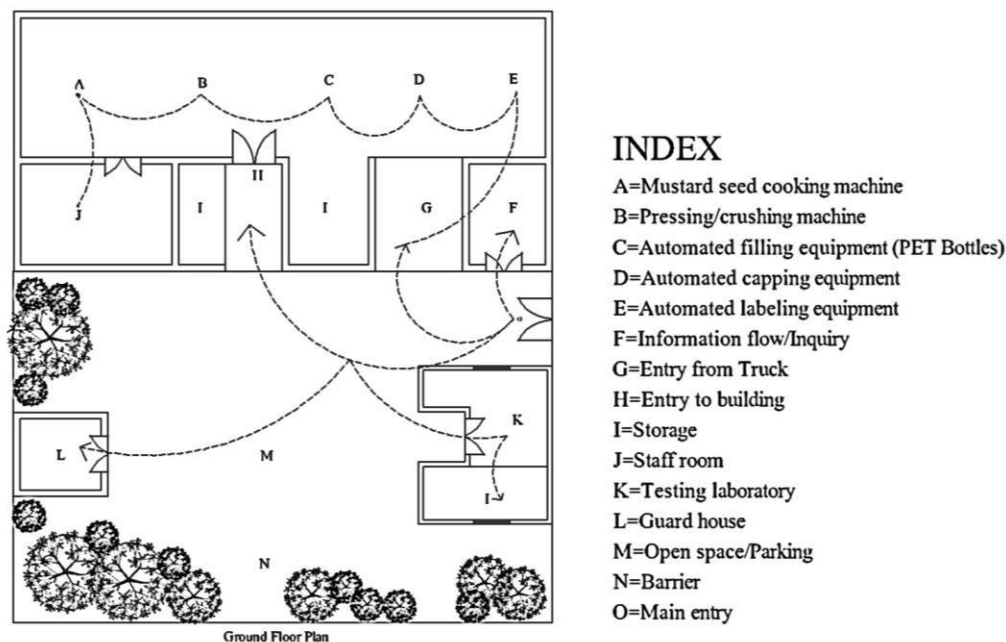


Figure 3.16 Plan of P mark mustard oil

Flooring is typically made of polished concrete or acid-resistant tiles, designed to withstand oil spills and heavy traffic. The facility also includes dedicated drainage channels with oil separators, ensuring environmental safety and cleanliness. Supporting spaces such as quality control labs, administrative offices, worker changing rooms, and canteens are often housed in separate blocks but connected through covered walkways.

3.2.1.6 PHOTOS





3.2.1.7 INFERENCE

- The mill demonstrates a well-planned linear workflow that minimizes manual labor and maximizes mechanical efficiency, ideal for large-scale production.
- The features like waste oil separation, controlled effluents, and energy-saving lighting highlight growing environmental consciousness in agro-industry architecture.
- The mill incorporates smart planning for water, waste, power, and lighting systems, showing the importance of infrastructural coordination in industrial design.

3.2.2 PRIYA PICKLE, SOUTH INDIA

3.2.2.2 OBJECTIVES OF STUDY

- To analyze the architectural layout of a large-scale food processing unit, particularly tailored for pickle production in a humid South Indian climate.
- To study the spatial segregation of processes such as cleaning, chopping, mixing, fermenting, bottling, and packaging to ensure hygiene and efficiency.
- To understand how traditional culinary knowledge is industrialized, while retaining authenticity, flavor profiles, and food safety.
- To explore the integration of food-grade materials (e.g., stainless steel surfaces, tiled walls, proper drainage) into architectural design for compliance with food standards.
- To examine storage and logistics systems, including raw material storage, cold rooms for preservation, and dispatch areas for large-scale distribution.

3.2.2.3 INTRODUCTION

Priya Pickles, based in South India, is one of the most prominent and well-established names in the Indian food processing industry, particularly known for its wide range of traditional pickles. Founded under the Ushodaya Enterprises, the brand represents the industrial-scale transformation of traditional South Indian culinary heritage into a globally distributed commercial product. With decades of expertise, Priya has successfully scaled up age-old pickle-making practices using modern food processing technology, while retaining the authenticity of taste and regional flavors.

Location: South India

Typology: Pickle Factory

Area: 1 Ropani

Employee: 300 Nos

Year: 1980



Figure 3.17 Priya Pickle

3.2.2.4 ARCHITECTURAL DETAILS

The architecture of Priya Pickles manufacturing facility is purpose-built to support large-scale food-grade processing with an emphasis on hygiene, functional zoning, and environmental control. As a modern industrial complex, it prioritizes both efficiency and safety, while enabling the production of diverse pickle varieties under stringent quality standards.

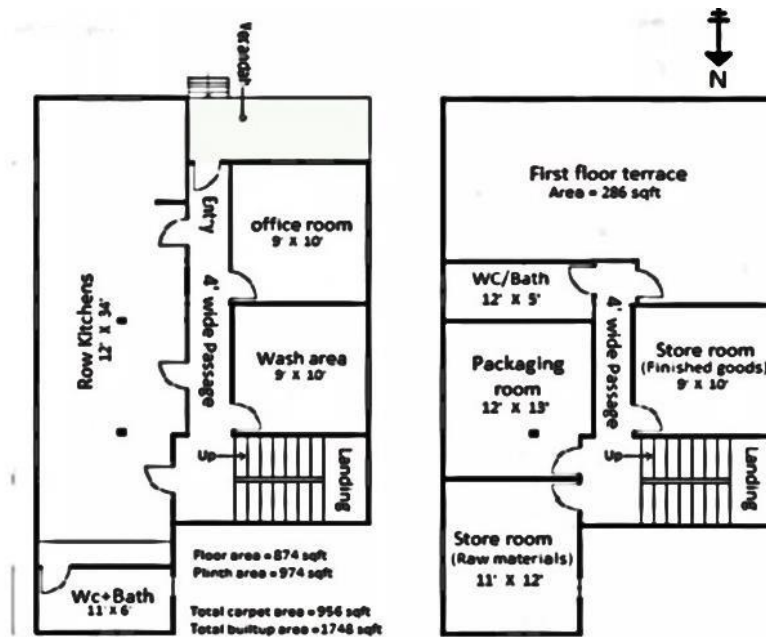


Figure 3.18 Plan of priya pickle

Functional Zoning

The plant is carefully divided into zones such as:

- Raw material intake & washing area
- Sorting and chopping section
- Blending and fermentation tanks room
- Oil mixing and seasoning area
- Bottling and vacuum sealing section
- Packaging and labeling unit
- Cold storage and finished goods warehouse

3.2.2.6 PROCESS OF MAKING PICKLE

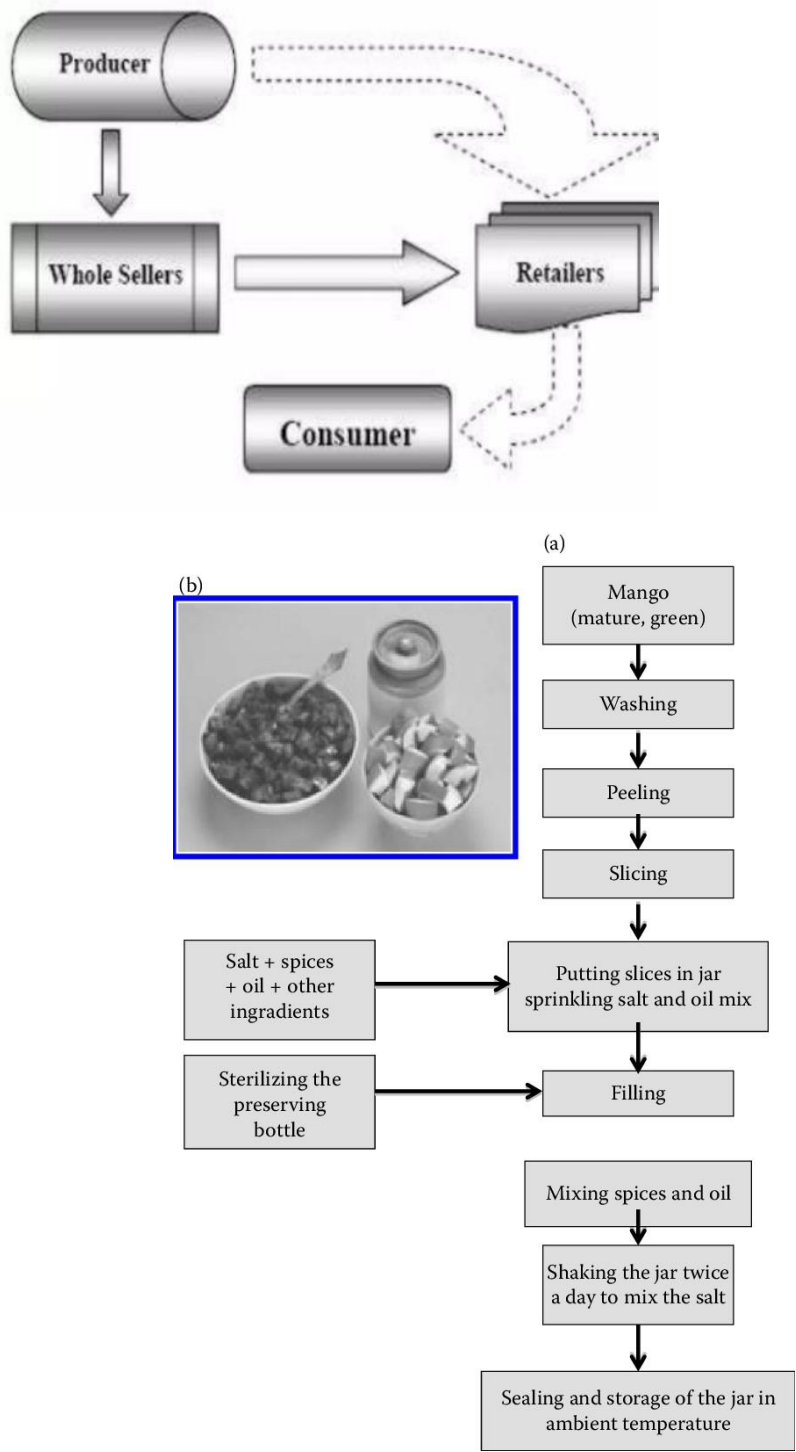


Figure 3.19 Steps of priya pickle

3.2.2.7 INTERFERENCE

- It provides a platform for local people to earn income, gain skills, and collaborate, strengthening social and economic bonds within the community.
- It provides homely environment to workers.

3.2.3 KALAKAL TIBETIAN CUISINE AND CULTURAL CENTER, CHINA

3.2.3.2 OBJECTIVES OF STUDY

- To investigate global food hub concepts and models.
- To explore the design and functionality of food hub spaces.
- To assess impacts and propose solutions for challenges in food hub development.

3.2.2.3 INTRODUCTION

Twenty years ago, a Tibetan family named Pema introduced "Kalakal," the local Tibetan restaurant in the outer urban area of Dukezong, Shangri-La. Kalakal prides itself on preserving authenticity, maintaining moderate business practices, and sourcing natural food ingredients. The upholding concept of creating a welcoming space in the heart of warm Shangri-La, Kalakal has become a beloved establishment for locals and tourists alike. After two decades later, a new composite space is being designed and transformed, building upon the foundation laid by Pema Kalakar and displaying the essence of authentic Tibetan cuisine to highlight the regional cultural characteristics of Shangri-La. This space is envisioned as a hub for locals from all walks of life to gather, communicate, and engage in various cultural activities.



Figure 3.19 Kalakal Cuisine

3.2.2.4 DESIGN STRATEGIES

In reimagining the site existing structures within the context of Shangri-La's strong regional architectural culture, the design strategy prioritizes a harmonious fusion of modern techniques with Tibetan cultural influences. Addressing the mismatched facade of the original building and the low space utilization, the renovation project focuses on enhancing visual appeal and thermal efficiency while optimizing interior layouts. The drawing inspiration from traditional Tibetan architecture and successful local projects, such as the

MSunyata Hotel and Arro Khampa Hotel, the design approach strikes a balance between contemporary materials and cultural aesthetics. Emphasizing simplicity, restraint, and user experience, the renovated spaces aim to embody the essence of Tibetan culture while meeting contemporary standards of functionality and comfort.

3.2.2.5 FACADE TREATMENT

The facade transformation of the building embraces traditional Tibetan architectural elements, such as lattice windows and wooden window heads, to evoke the rhythm and charm of Tibetan building aesthetics. To combat the challenging plateau climate, double layer hollow glass and thicker glass frames are employed for optimal thermal insulation. Rusty steel plates are utilized for window trim, offering durability in outdoor environments where wood may deteriorate.

The exterior walls are coated in pale rammed earth yellow real stone paint to mimic the rough texture of traditional rammed earth walls. Through this modern interpretation of traditional elements and strategic material choices, the design honors the local community's collective memory of regional buildings. Facade lighting is carefully designed to accentuate the texture of materials and highlight the external facades, utilizing bottom and groove lighting techniques.



Figure 3.20 Overall view

3.2.2.6 INTERIOR RENOVATION

Interior renovation aims to expand usable space and enhance functionality. The first-floor hosts new catering formats, while the second floor maintains its original layout. The third floor is transformed into private dining rooms to reflect traditional Tibetan dining habits. Original street-facing shops on the first floor are opened up to create an open space. Structural reinforcement is used

where partition walls cannot be removed. A secondary entrance is established, and toilets are added for independent functionality. Inspired by traditional Tibetan fire ponds, a modern interpretation is made in the first-floor space, evoking scenes of family gatherings. Metal curtains hide chaotic ceiling beam arrangements, blending visually with the smoke hood.



Figure 3.21 Interior of Tibetan cuisine

The second floor retains its original layout, with traditional low tables and sitting couches fostering a sense of closeness. Metal mesh curtains echo the layout and shape of square Tibetan tables. The third floor is reconfigured into private rooms with improved privacy. New door holes are opened in load-bearing walls, and lightweight partitions divide the space into separate compartments with amenities. Tibetan ornaments, such as Thangka paintings, adorn the interior.

3.2.2.7 Plan

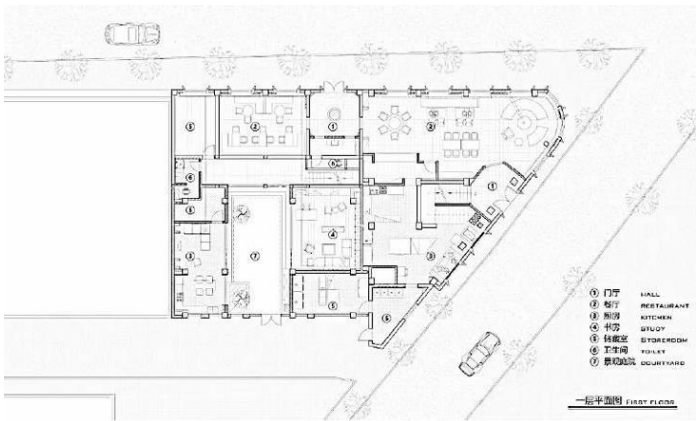


Figure 3.22 Ground Floor plan

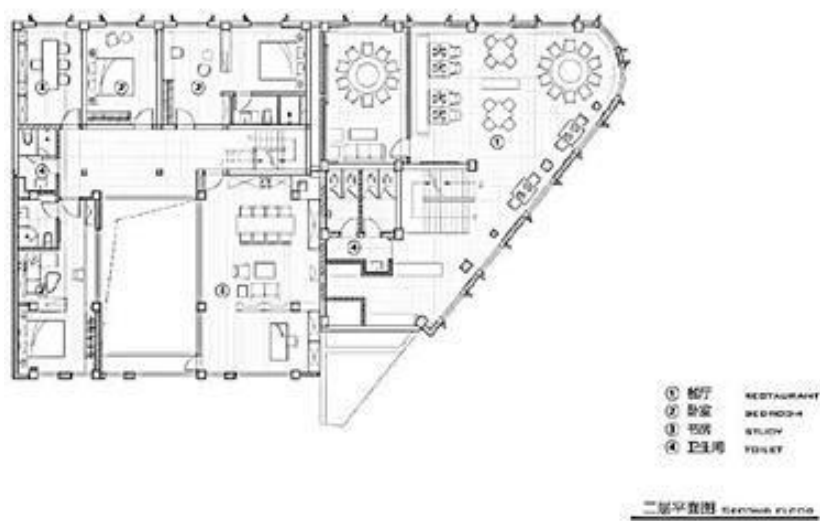


Figure 3.23 First Floor plan

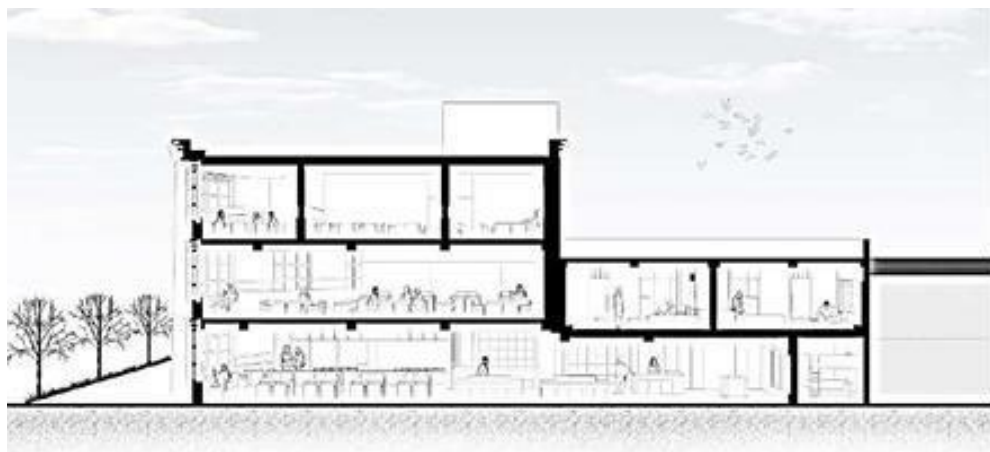


Figure 3.24 Section

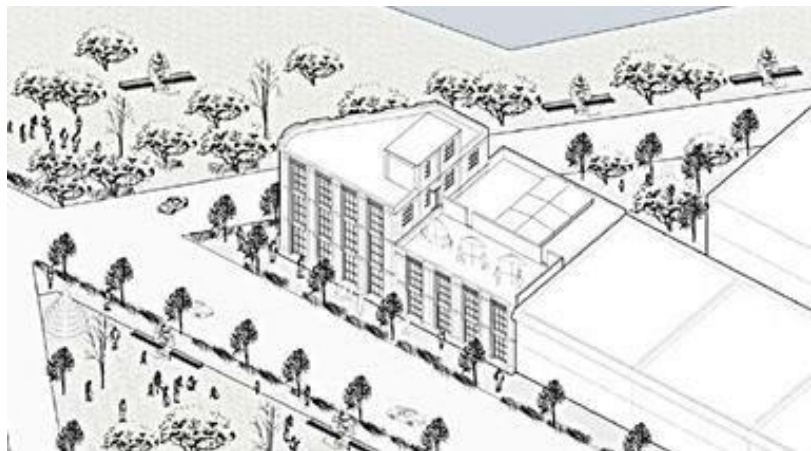


Figure 3.25 Overall view

3.2.2.8 INTERFERENCE

- Renovations at Kalakal Tibetan Cuisine prioritized functionality and cultural authenticity.
- Increased space was achieved while preserving the original layout.
- Introduction of new catering formats on the first floor accommodated diverse clientele.
- Traditional Tibetan elements like Thangka paintings were integrated into the interior design.
- Exterior facade transformation balanced modern techniques with Tibetan aesthetics.

CHAPTER 4

SITE ANALYSIS:

4.1 INTRODUCTION

Khokana, a historic Newar village in the Kathmandu Valley, is renowned for its cultural heritage, traditional mustard oil production, and unique vernacular architecture. It represents a significant example of Nepalese rural settlement patterns, deeply rooted in traditional practices and social structures.

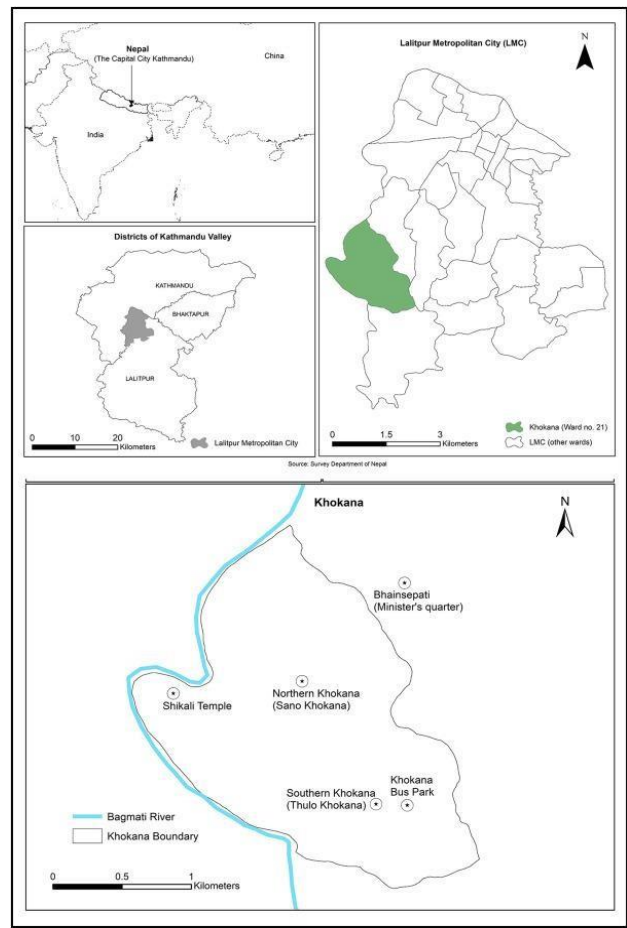


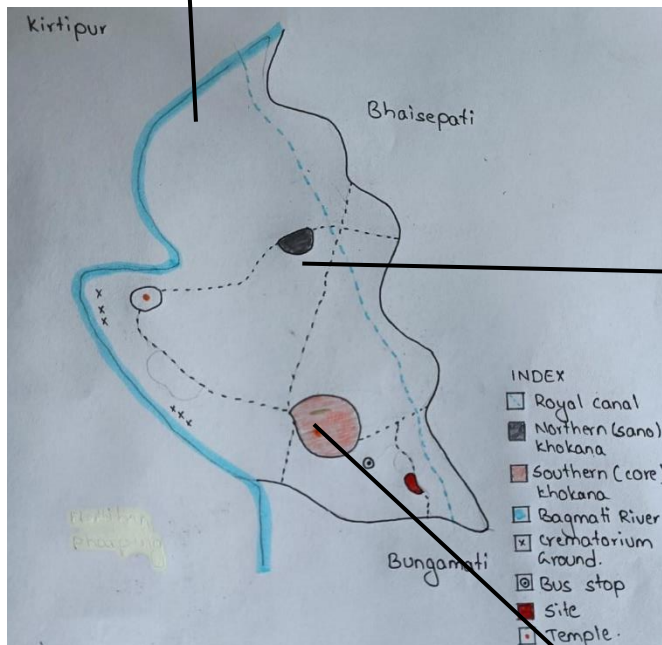
Figure 4.1 Showing map of Nepal, Lalitpur and Khokana

4.2 SETTLEMENT PATTERN OF KHOKANA



3. Northern Khokana (Near Bagmati River)

- The northern settlement acts as a transition between the dense, compact urban core and the more open rural landscape.
- With urbanizations some agricultural fields are being converted into residential areas, leading to mixed land use.



2. Northern Khokana (Near Bagmati River)

- The Northern settlement acts as a transition between the dense, compact urban core and the more open spaces.
- Buildings are not as tightly packed as in the core area

1. Southern Khokana (Core)

- **Traditional Newar Houses** – Made of brick, mud, and wood, with intricately carved windows and doors. These are multi-storied buildings designed for both residential and economic purposes.
- **Narrow Lanes and Brick-Paved Streets** – Streets are paved with bricks and are often lined with traditional houses.
- **Community Courtyards (Chowks)** – Open courtyards serve as spaces for social gatherings, festivals, and public meetings.
- **Clustered Pattern** – Houses are built close together with shared walls, forming a dense urban fabric.



4.3 SETTLEMENT PATTERNS

The map covers three main locations:

- Kirtipur (Northwest)
- Bungamati (South)
- Bhaisepati (Northeast)

The map highlights Khokana and its surrounding areas, showing water bodies, settlements, and cultural landmarks. Bagmati River and the Royal Canal play a vital role in the geography. Crematoriums, temples, and a bus stop indicate the region's cultural and infrastructural importance. Potential development or heritage sites are marked, indicating possible urban expansion or conservation efforts.

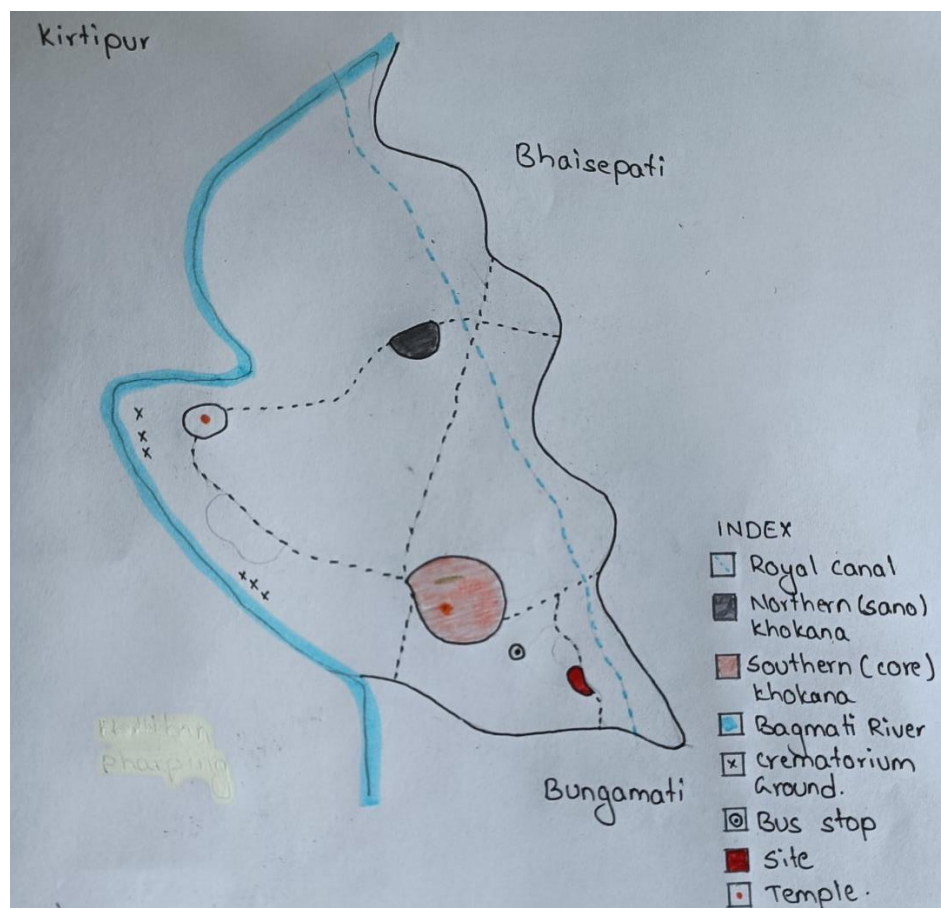


Figure 4.2 Showing highlights of Khokana

4.4.1 URBAN ELEMENTS

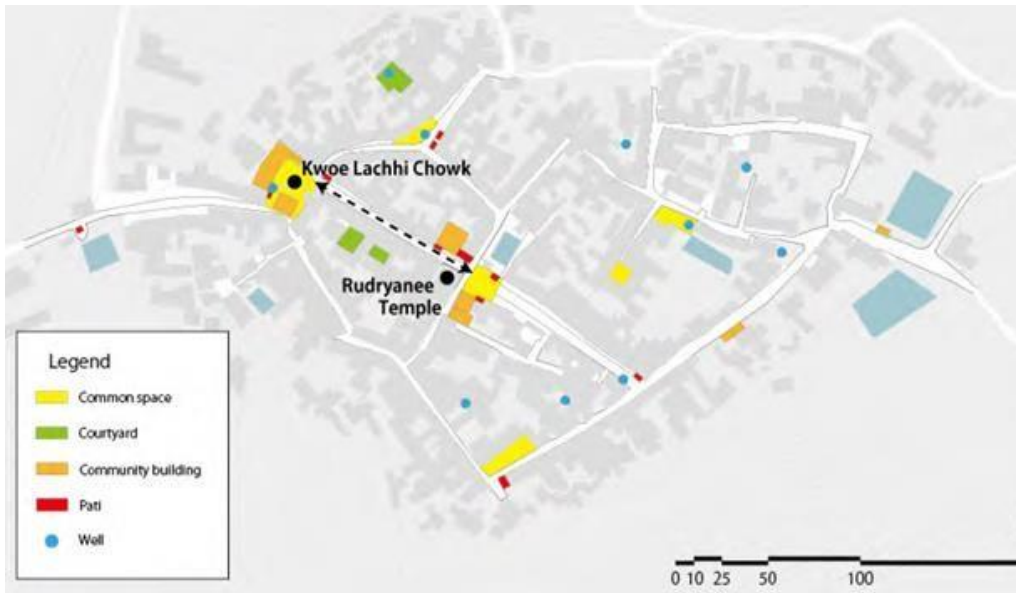


Figure 4.3 Showing urban elements of Khokana

1. Rudryanee Temple as the Heart

- The **Rudryanee Temple** is like the soul of the community people gather here for prayers, festivals, and rituals. It's not just a religious site; it's a space where stories are shared, traditions are passed down, and identity is reinforced.

2. Kwoe Lachhi Chowk as the Living Room

- The **Kwoe Lachhi Chowk** as a giant living room for the neighborhood. This is where elders sit and chat, kids run around, and family cross paths every day. It's an open space that breathes life into the community.

3. Patis as the Resting Spots

- The **red dots (Pati)** on the map represent traditional resting places. These are like neighborhood benches, but with history. People stop here to rest, exchange news, or simply observe life as it happens.

4. Courtyards as Hidden Worlds

- The **green courtyards** are tucked inside the settlement. These are often private but still social places where family's dry crops, children play, and neighbors gather for casual conversations.

5. Narrow Paths, Strong Bonds

- The winding streets and close-knit layout force interaction. Unlike modern cities where people live in isolation, here, everyone knows each other. A simple walk from one end of the village to another means greeting familiar faces, exchanging smiles, and feeling a deep sense of belonging.

4.4.2 OPEN SPACES

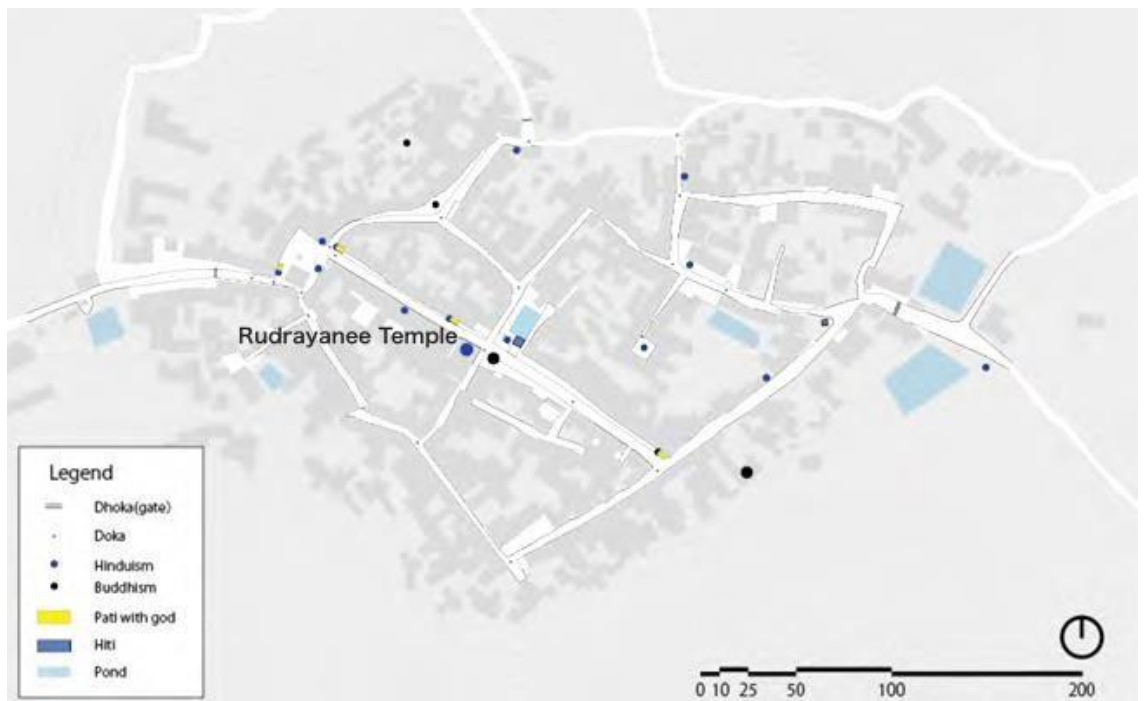


Figure 4.4 Showing open spaces of Khokana

1. Hinduism & Buddhism (Black & Blue Dots)

- The black dots represent Hindu religious sites, while the blue dots indicate Buddhist sites. This means Khokana is spiritually diverse, where different faiths coexist and interact.

2. Pati with God (Yellow Blocks)

- These **patis** (resting places) serve a dual-purpose people stop here for shade, socializing, or just a moment of peace. But because these particular patis have religious idols or shrines, they also become places

of prayer and reflection. Imagine sitting at one, lighting an incense stick, and feeling connected to something greater than yourself.

3. Dhoka (Gates) (Gray Lines)

- The gates mark key entrances to the settlement, signifying that Khokana was historically a **protected space**. These would have served as **defensive structures** but also as **symbolic thresholds** once you enter, you're in a community that values tradition and heritage.

4. Hiti (Dark Blue Blocks)

- These are **traditional stone spouts** where people collect water for daily use.

5. Ponds (Light Blue Blocks)

- These are essential water reserves, playing a role in **agriculture, rituals, and community bonding**. Imagine children playing near a pond while elders discuss village matters nearby.

4.4.5 CONCLUSION

- **Strong Social Ties:** Because people naturally meet every day, relationships are deep and supportive.
- **Community-Centered Living:** Open spaces and shared facilities encourage collective well-being rather than individual isolation.
- **Sustainability:** The layout naturally promotes walking, reducing reliance on vehicles.
- **Cultural Continuity:** Traditional spaces help preserve the heritage and unique identity of Khokana.
- **Deep Cultural Identity** – The presence of religious sites and patis shows that faith and community are deeply woven into daily life.
- **Sustainable Water Management** – The existence of hitis and ponds suggests that traditional water systems still play a role in daily living, highlighting the need for their preservation and improvement.

4.6 SOCIAL ASPECTS

4.6.1 POPULATION

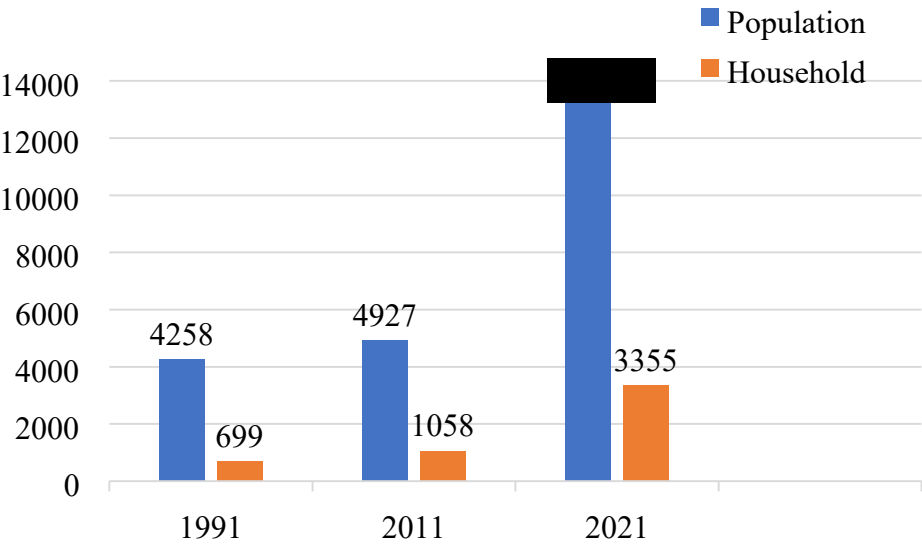


Figure 4.5 Population of Khokana

4.6.2 HOUSEHOLD

S.N	Household distribution reflecting caste composition	Household numbers (2020)
1	Jyapu (Maharjan and Dangol)	874
2	Shahi/Khadgi/Kasai	31
3	Shrestha	9
4	Thakuri (Malla and Shahi)	9
5	Kapali /Kusle	4
6	Tuladhar	5
7	Shakya	1
8	Napit	5
9	Others (non-Newars)	9

Figure 4.6Household of Khokana

With 874 households, the Jyapu (Newar farmers) make up the vast majority of Khokana’s population. This confirms that Khokana is historically an agrarian (farming-based) community, where the Maharjan and Dangol subgroups have lived and thrived for centuries. Since Jyapus traditionally manage communal farming and cultural rituals, their dominance suggests that agriculture and cultural heritage are deeply intertwined in Khokana.

4.6.3 POPULATION

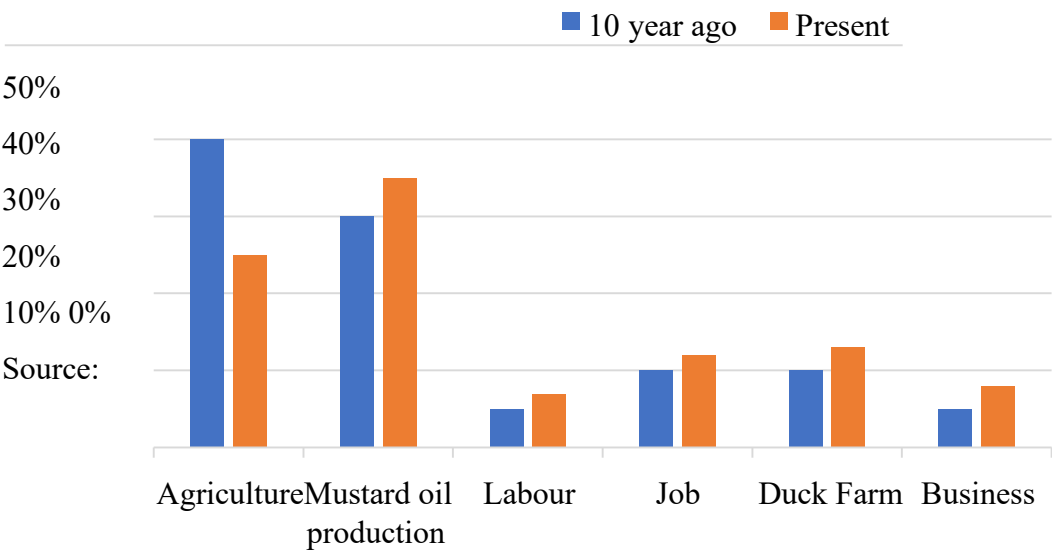


Figure 4.7 Population of Khokana

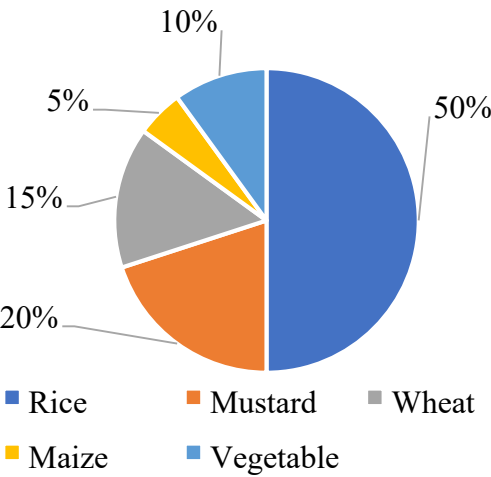
The above diagram says that, more people were engaged in agriculture with 40% before 10 years. With the help of this diagram, we can conclude that now people are more engaged in other works rather than agriculture.



Figure 4.8 Woman engaging in small scale business

4.6.4 CROP PRODUCTION

They produced sample food like paddy, mustard, wheat, maize and other seasonal vegetables. However, the crops are not enough for people to upgrade their economy. So, most of the house making woman runs small business to support their family economically.



Source: LMC ward 21

Figure 4.8 Crop production of Khokana

4.6.5 MUSTARD OIL PRODUCTION PER YEAR

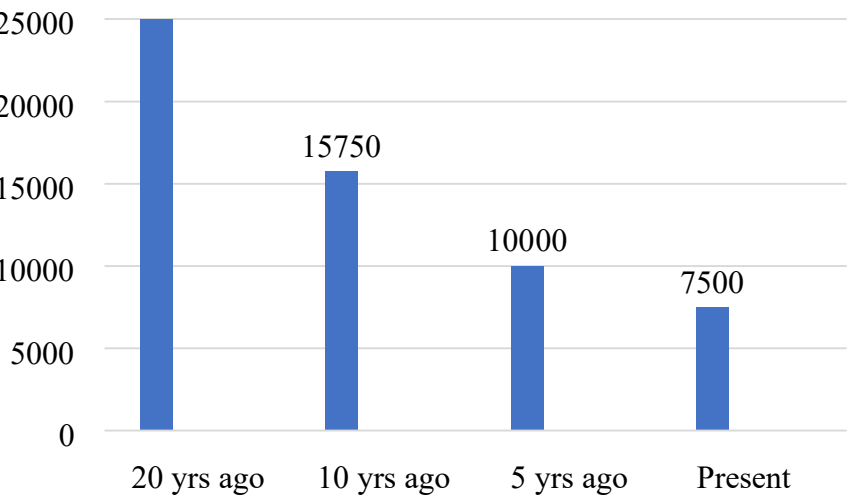


Figure 4.9 Mustard oil production per year in Khokana

This bar chart shows a decreasing trend in values over four time periods: 20 years ago, 10 years ago, 5 years ago, and the present. The values are as follows:

- **20 years ago:** 25,000
- **10 years ago:** 15,750
- **years ago:** 10,000
- **Present:** 7,500

This indicates a decline in the measured quantity over time. Notably, the highest drop occurred between 20 and 10 years ago, while the decline has slowed in recent years.

4.6.6 OIL MILL

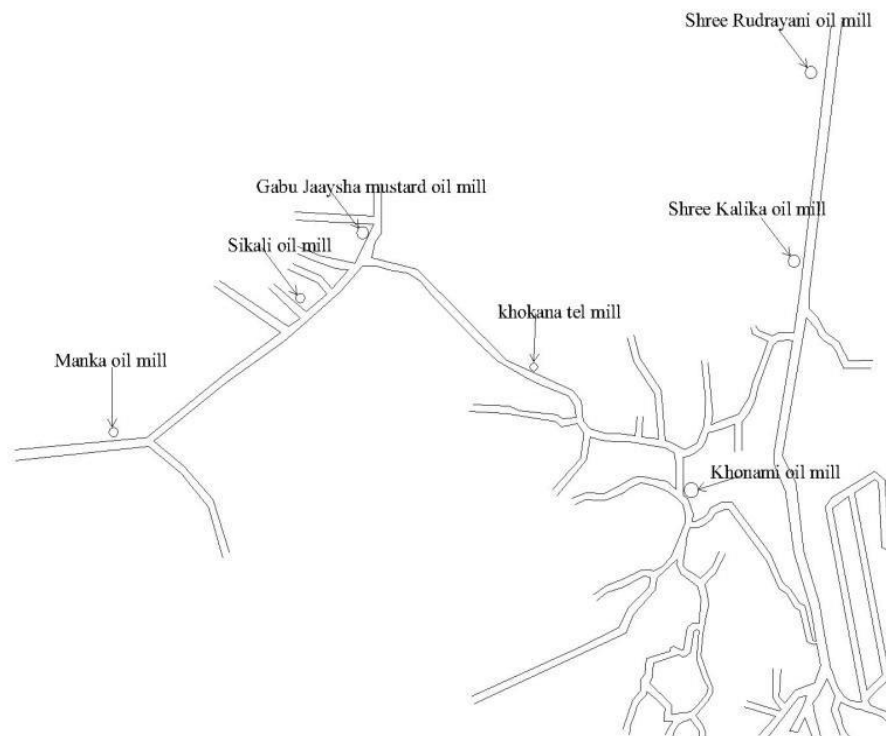


Figure 4.10 Mustard oil mill in Khokana

This image appears to be a map highlighting the locations of traditional oil mills in and around Khokana. The labeled points indicate the names of these oil mills, which include:

- Manka oil mill
- Sikali oil mill
- Gabu Jaaysha mustard oil mill
- Khokana tel mill
- Khokana oil mill
- Shree Kalika oil mill
- Shree Rudrayani oil mill

The map likely represents the historical or current distribution of mills, which are significant to Khokana's traditional mustard oil production

4.7 CULTURAL ASPECTS

4.7.1 FOOD



1. Chatamari (Newari Pizza)

- A rice flour crepe topped with eggs, minced meat, and vegetables.
- A popular snack or light meal.

2. Yomari (Sweet Dumpling)

- A steamed rice flour dumpling filled with molasses (chaku) and sesame seeds.
- Traditionally prepared during the Yomari Punhi festival.

3. Bara (Lentil Pancakes)

- Deep-fried or pan-fried black lentil pancakes.
- Often served with eggs or minced meat.

4. Samay Baji (Newari Feast Platter)

- A ceremonial dish featuring beaten rice (chiura), buffalo meat (choila), boiled eggs, black soybeans (bhatmas), and fermented greens (gundruk).
- Served during special occasions and festivals.

4.7.2 FESTIVALS



4.7.2.1. Rudrayani Jatra (Devi Dance Festival)

- **Dedicated to:** Goddess Rudrayani (the main deity of Khokana).
- **When:** During Dashain (September–October).

Highlights:

- This festival is unique because, unlike other parts of Nepal where Goddess Durga is worshipped in Dashain, Khokana worships **Rudrayani** as their main deity.
- A grand procession is held where the idol of Rudrayani is carried through the streets in a palanquin.
- Sacred dance performances and traditional music accompany the jatra.

4.7.2.2. Sikali Jatra

- **Dedicated to:** Goddess Sikali (believed to be an alternative to Goddess Taleju).
- **When:** During Dashain (as an alternative to animal sacrifices in mainstream Dashain).

Highlights:

- Celebrated by the Newars of Khokana who do not worship Goddess Durga during Dashain.
- Instead of animal sacrifices, symbolic offerings are made to Goddess Sikali.
- Priests perform masked dances representing deities, narrating mythological stories.
- The festival is held at the **Sikali Temple**, a sacred site located on a hill near Khokana.

4.7.2.3. Gaijatra (Cow Festival)

- **When:** During the month of Bhadra (August–September).
- **Purpose:** To honor the deceased family members of the past year.

Highlights:

- Families of the deceased participate by leading a decorated cow (or a child dressed as a cow) through the streets.
- In Khokana, this festival also features traditional performances and humor, celebrating the cycle of life and death.

4.7.2.4. Yomari Punhi (Harvest Festival)

- **When:** During the full moon in the month of Mangsir (November–December).
- **Dedicated to:** The **Yomari**, a sweet steamed dumpling made of rice flour and filled with molasses and sesame seeds.

Highlights:

- Farmers celebrate the end of the rice harvest.
- Families prepare and share **Yomari**, which symbolizes prosperity and good health.
- Special prayers are offered for a good harvest in the coming year.

4.7.2.5. Khokana Oil Festival (Traditional Mustard Oil Festival)

- **When:** Not an annual festival but a periodic celebration of Khokana's famous mustard oil tradition.

Highlights:

- Showcases the traditional process of mustard oil production.
- Features cultural performances, food stalls, and local craftsmanship.
- Promotes Khokana's heritage and economic sustainability.

4.7.2.6. Indra Jatra

- **When:** September.
- **Dedicated to:** Lord Indra (God of Rain).

Highlights:

- Celebrated with masked dances, traditional music, and processions.
- The Kumari (living goddess) of Kathmandu is worshipped.
- Farmers and locals thank Lord Indra for the rains and a successful harvest.

4.8 Unique Aspects of Khokana's Festivals

- Unlike many Newar communities, Khokana does not sacrifice buffaloes during Dashain, as they worship Rudrayani instead of Durga.
- The Sikali Jatra is an alternative to Dashain, celebrated without animal sacrifice.
- Many festivals emphasize agriculture, mustard oil production, and the local deity Rudrayani, showing the town's close relationship with nature and tradition.

4.9 ARCHITECTURE OF KHOKANA

The settlement pattern of **Khokana**, a traditional Newari village in the **Lalitpur District of Nepal**, exhibits distinct **linear and clustered** characteristics. This village, famous for its mustard oil production and rich Newari culture, reflects the typical **medieval urban planning** of the Kathmandu Valley. Here are the key features of its settlement pattern:

4.9.1. Linear and Clustered Settlement

- The village is **mostly linear**, with houses aligned along a central street.
- The **main road** serves as the **spine** of the settlement, connecting major communal spaces.
- Buildings are **closely packed**, forming a compact settlement.



Figure 4.11 Showing linear street pattern



Figure 4.12 Showing building using mud and sundry bricks

4.9.2. Courtyard and Community Spaces

- Traditional **bahal and baha** (courtyards) are common, serving as communal spaces.
- These courtyards help in social bonding and cultural activities.



Figure 4.13 Showing open baha courtyard as communal space



Figure 4.14 Showing open space courtyard



Figure 4.15 Showing open parks as social gatherings

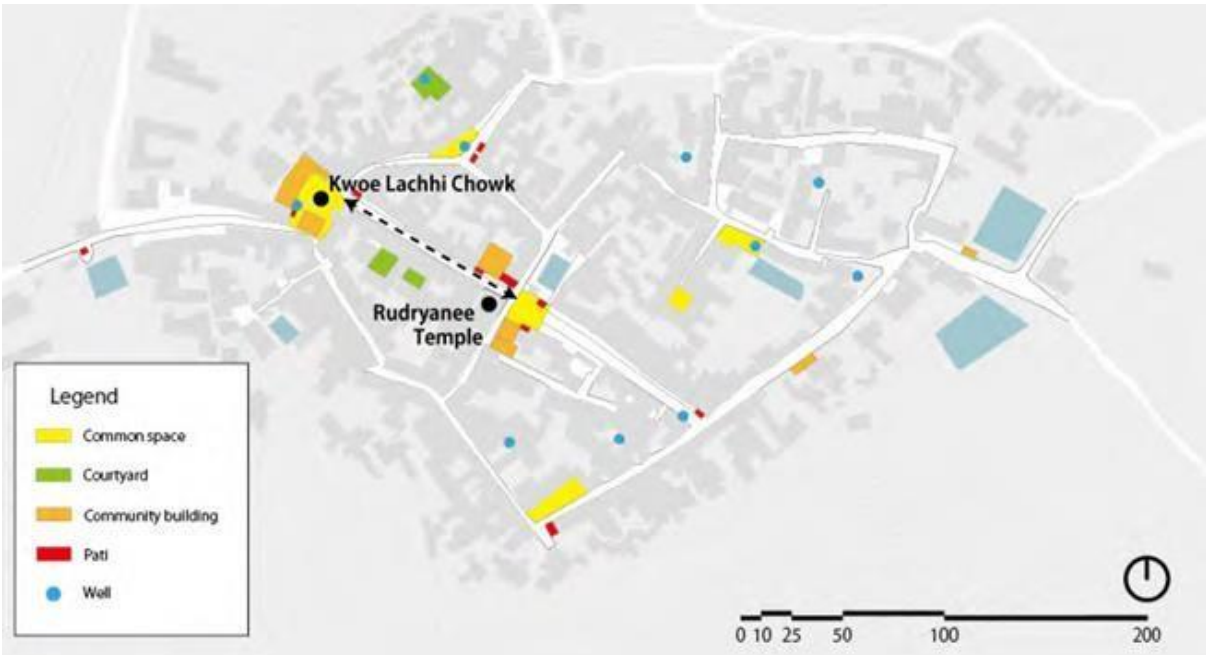


Figure 4.16 Showing open spaces to create social bonding in core area

4.9.3. Hierarchical Spatial Organization

- The village is centered around the **main square**, which houses temples and communal buildings.
- The **Rudrayani Temple**, dedicated to the goddess Rudrayani, is at the heart of the settlement.
- Houses of **higher-status families** are typically near the temple, while others extend outward.

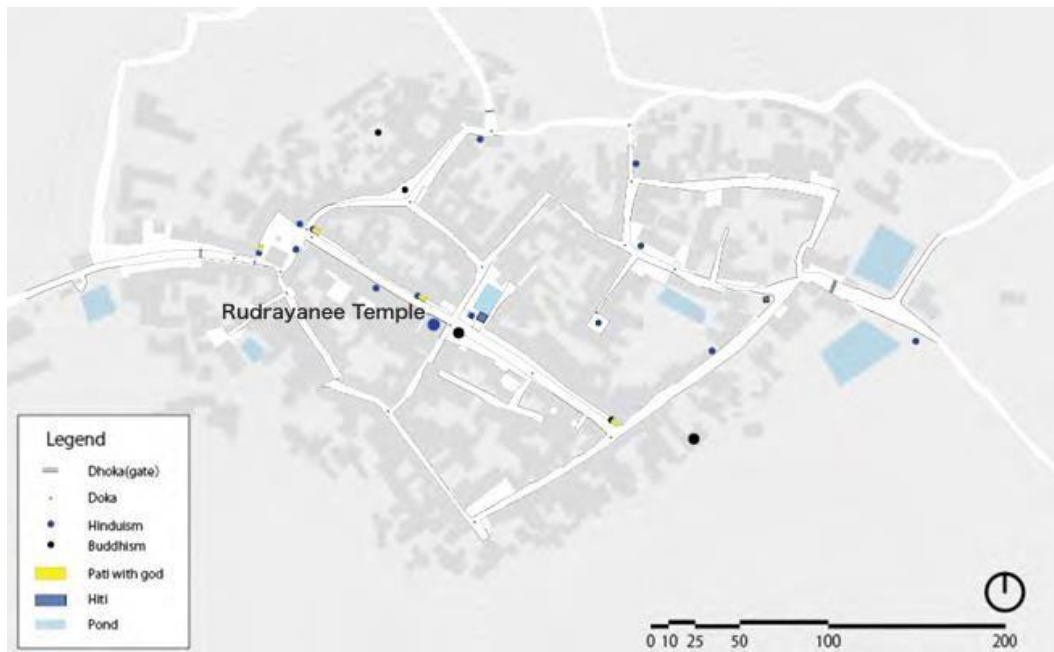


Figure 4.17 Showing hierarchical spatial organization



Figure 4.18 Showing temples of khokana

4.10.4. Traditional Newari Architecture



Figure 4.19 Timber kolapu

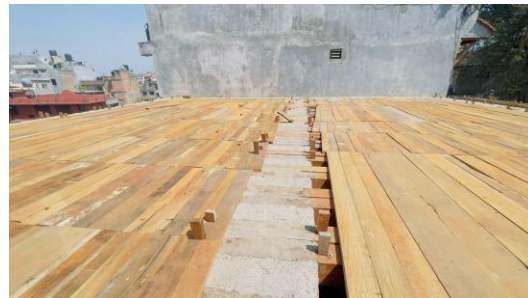


Figure 4.20 Mud Flooring



Figure 4.21 Double post



Figure 4.22 Dalin with joists

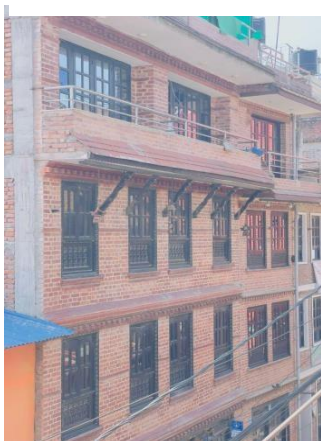


Figure 4.23 Front façade of traditional buildings



Figure 4.24 Wooden window

4.10.5. GRARIAN LANDSCAPE

- The settlement is surrounded by **agricultural fields**, primarily for **mustard and rice farming**.
- Livelihoods revolve around farming, oil production, and traditional crafts.



Figure 4.25 Showing oldest oil mill



Figure 4.26 Showing agriculture field



Figure 4.27 Showing traditional crafts

4.10.6. WATER MANAGEMENT SYSTEM

- Traditional **hiti (stonespouts)** and **pond** supply water to the community.
- The settlement is located near the **Bagmati River**, aiding in irrigation.
- Now traditional old well is being reconstructed.



Figure 4.28 Depukhu

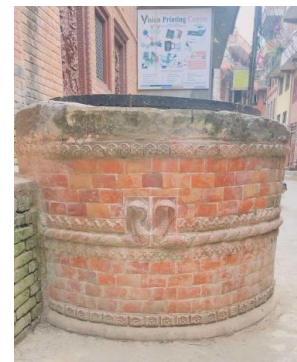


Figure 4.29 Well



Figure 4.30 Water spout

4.11 SITE ACCESSIBILITY



Figure 4.31 Khokana bus park

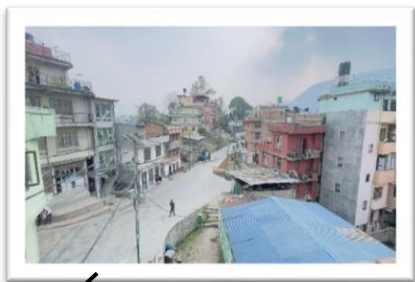


Figure 4.32 Khokana dobato

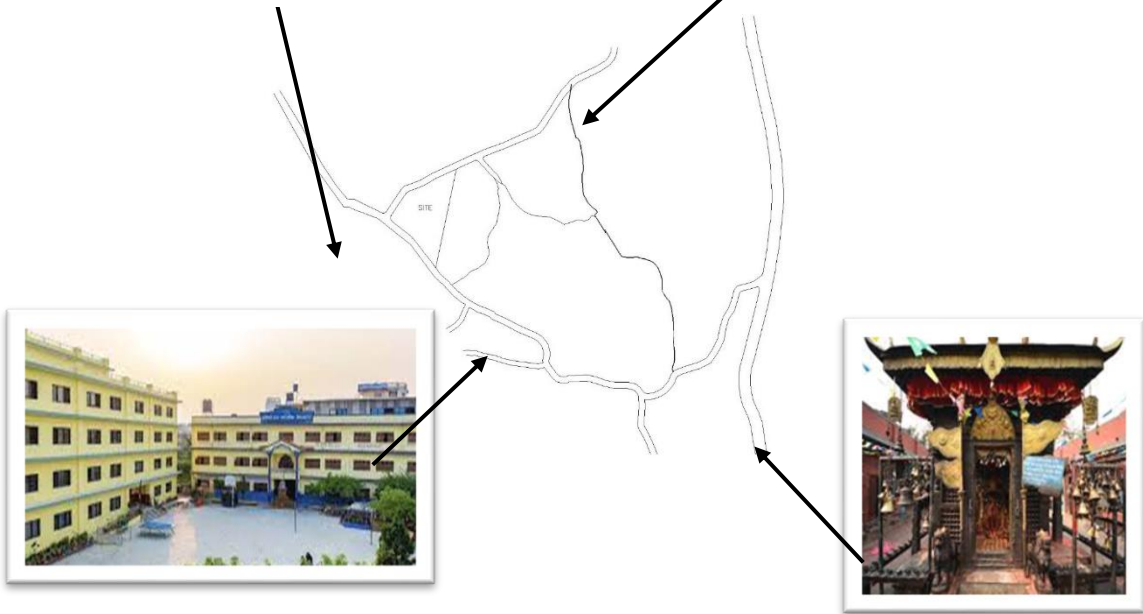


Figure 4.33 Gyanodaya school



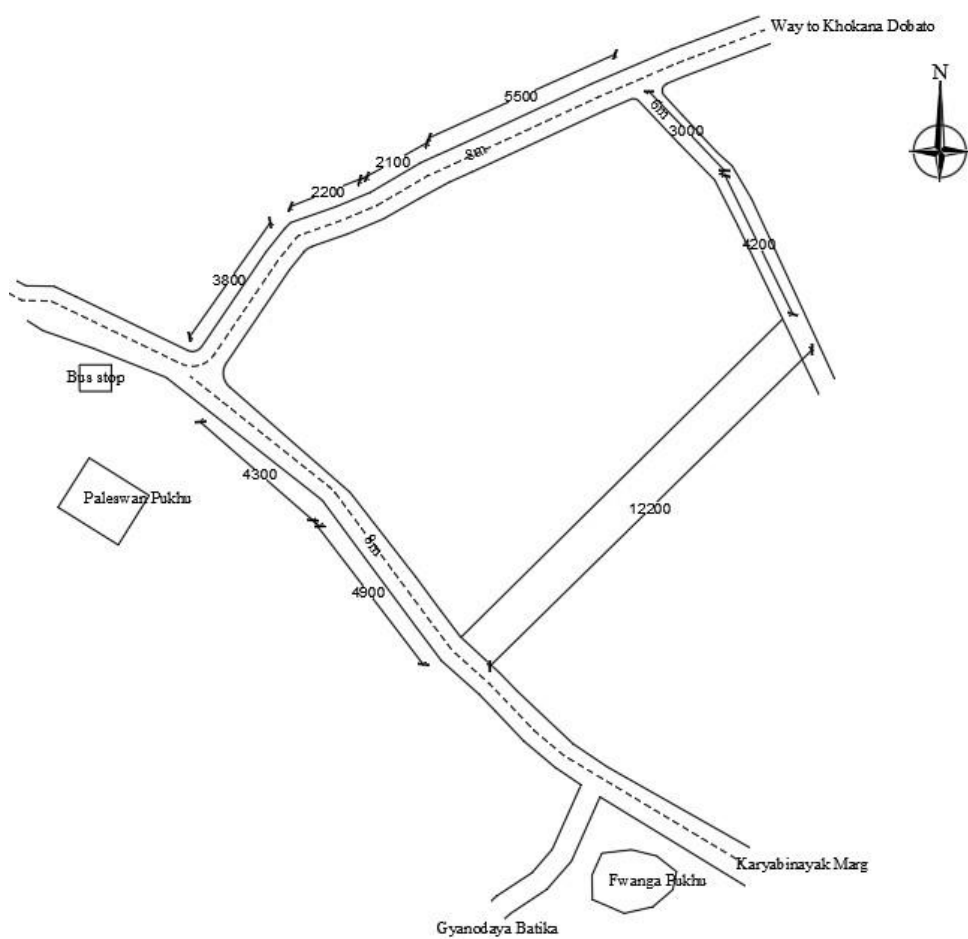
Figure 4.34 Karyabinayak temple

4.12 SITE

Location: Khokana, Lalitpur

Ward: 21

Area: 23 Ropani 1 Anna 3 Paisa 0.9 Daam



4.13 CLIMATE

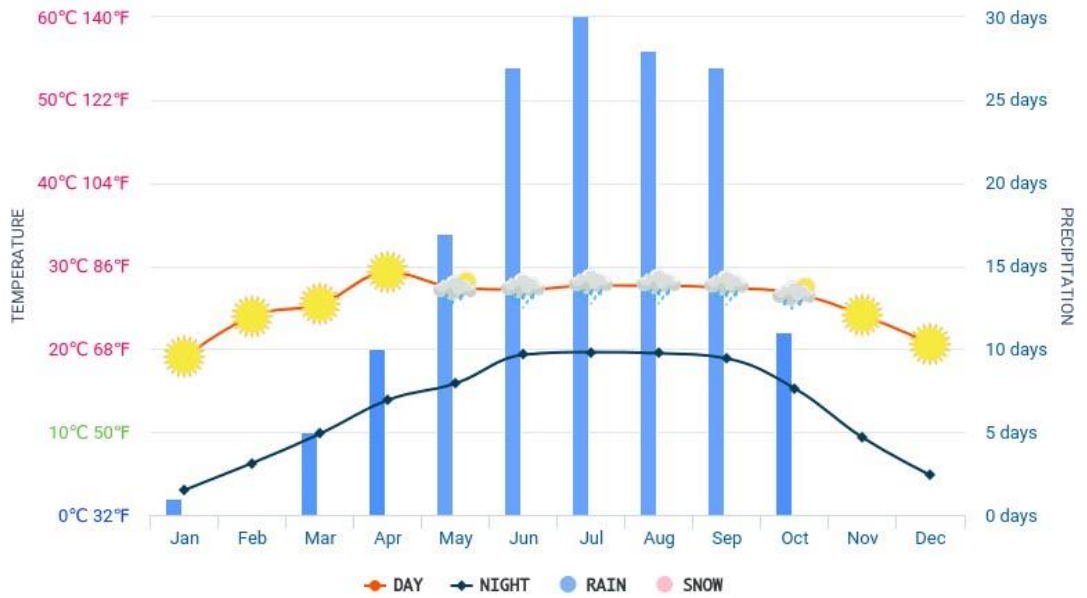


Figure 4.35 Climate

Maximum temperature=April

Minimum temperature=January

Maximum precipitation=July Minimum precipitation=December

4.14 BY LAWS

- Ground coverage=40%
- Setback=3m from road
- ROW=5m

4.15 SWOT ANALYSIS

- S**
- Traditional Newar architecture, temples, and mustard oil mills.
 - Walkable distance from core khokana.
 - Roadways
 - Bus stop is 5 min walking distance from site.

W ➤ Modern buildings replacing traditional structures.

O ➤ Transportation
➤ Surrounding views.
➤ Accessibility

T ➤ Fast-Track Highway Project.
➤ Uncontrolled Commercialization.

CHAPTER 5

5.1 PROGRAM FORMULATION

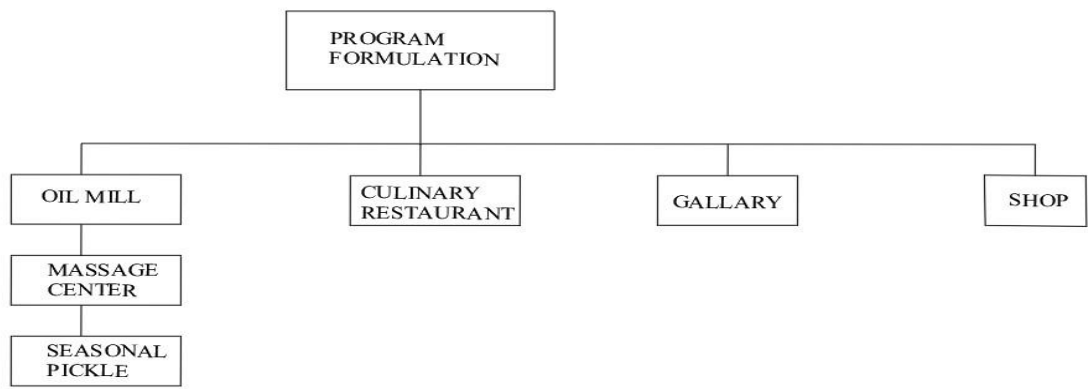


Figure 5.1 Program formulation

5.1.1 Mustard oil production (2000 l per day)

Oil yield from mustard seed= 30-35%Mustard required per day= 2000/0.33
=6060 kg/day (6.6 Tons/day)

S.N	PROCESS	MACHINE REQUIRED	TOTAL MACHINE REQUIRED	TOTAL MACHINE REQUIRED	POWER (KW)
1.	Seed Cleaning	Seed Cleaner with Blower	500kg/hour	2	2-5
2.	Seed Drying	Mechanical Dryer(if needed)	500kg/hour	1	8-10
3.	Cold Press(Mechanical Extraction)	Mustard oil expeller	100kg/hour	3	10-15
4.	Oil Filtration	Filter press	300kg/hour	3	2-5
5.	Packaging and Labelling	Filling and capping machine	600kg/hour	2	5-6
6.	Oil collection	Storage Tanks	5000liter/tank	5	-
	TOTAL			16	27-41

S.N	DESCRIPTION	NO. OF USER	AREA PER PERSON (SQ M)	AREA (SQ M)
1.	Seed Cleaning	2	6	40
2.	Seed Drying	1	7	55
3.	Cold Press(Mechanical Extraction)	3	10	100
4.	Oil Filtration	1	18	50
5.	Packaging and Labelling	1	18	80
6.	Storage	1	15	150
7.	Office/oil testing	2	2	50
8.	Toilet	Male:7 Female:5	Male:2.5 Female:3	23
9.	TOTAL			548

5.1.2 Oil massage

Training for 20 people at a time
Massage for 3 people at a time

S.N	DESCRIPTION	NO. OF USER	AREA PER PERSON (SQ M)	AREA (SQ M)
1.	Waiting Area	10	8	80
2.	Massage therapy rooms	6	12	72
3.	Hydrotherapy	6	15	90
4.	Changing room	3	10	30
5.	Toilet and shower	Male:3 Female:5	Male:2.5 Female:3	18
6.	Massage training rooms	15	12	20
7.	Office and admin room	1	15	15
	TOTAL			397

5.1.3 Seasonal pickle

S.N	DESCRIPTION	AREA PER PERSON (SQ M)	AREA (SQ M)
1.	Raw Material storage	10	20
2.	Washing and preparation	5	15
3.	Mixing and Processing	7	20
4.	Fermentation Area	12	25
5.	Packaging and labeling	7	15
6.	Finished Item Storage	12	15
7.	Office	7	8
8.	Pickle Shop	5	15
	TOTAL		133

5.1.4 Traditional culinary restaurant

S.N	DESCRIPTION	NO. OF USER	AREA PER PERSON (SQ M)	AREA (SQ M)
1.	Reception	1	6	6
2.	Dinning Room(Indoor)	50	2.5	135
3.	Dinning Room(Outer)	10	2.5	25
4.	Bar	20	3	60
5.	W/C	Male:5 Female:5	1.5	15
6.	Store	1	2	25
7.	Kitchen	1	2	80
	Total			346

5.1.5 Historical gallery

S.N	DESCRIPTION	NO. OF USER	AREA PER PERSON (SQ M)	AREA (SQ M)
1.	Reception	1	6	6
2.	Mustard oil history (From past to present)	20	5	100
3.	Traditional Utensils display	20	4	80
4.	Traditional Wooden Mill	10	2.8	35
	TOTAL			221

5.1.6 Storage room

S.N	DESCRIPTION	AREA(SQ M)
1.	Bottle for oil	50
2.	Plastic Rapper for byproducts	15
3.	Bottle for pickle	20
	Total	85

5.1.7 Administrative

S.N	DESCRIPTION	AREA PER PERSON (SQ M)	AREA (SQ M)
1.	Entry Gate	8	30
2.	Reception	2	20
3.	Office	4.5	9
4.	Staff Toilet	1.5	15
5.	Loading and unloading	20	50
	Total		124

5.1.8 Parking

S.N	DESCRIPTION	NO. OF USER	AREA PER UNIT (SQ M)	AREA (SQ M)
1.	Bike	15	2X0.7	30
2.	Car	5	4.9X2.6	140
	Total			170

Circulation area: 30% of Total area = Total built up area:3527.4 sq m

Total site area: 11758(23-1-3-0.9)

Ground coverage: 40% of total site area

Parking: 15%

CHAPTER 6

6.1 CONCEPT AND FORM DEVELOPMENT

CONCEPT: OPEN SPACE

In Khokana, **open space** is not just a physical gap between buildings but a vital cultural and social concept. Traditionally, the settlement pattern of Khokana has been shaped around clustered houses with courtyards, chowks, and communal squares that serve as shared breathing spaces for the community. These open spaces allow sunlight, ventilation, and movement in a tightly knit settlement, making them essential for health and daily living. They also provide safe areas for children to play, women to gather, and elders to rest, thereby supporting intergenerational interaction within the village.

Beyond their functional role, open spaces in Khokana hold deep **cultural and ritual significance**. They are sites for festivals, jatras (processions), oil-processing activities, and other communal gatherings that reinforce the identity of Khokana as a living heritage community. For example, mustard drying and oil preparation often take place in these open areas, connecting them to the village's economic life. Temples, rest houses (patis), and water sources are often located near these spaces, making them hubs of both spiritual and social life. Thus, open spaces in Khokana embody a blend of utility, culture, and memory, acting as anchors of communal harmony and heritage preservation.

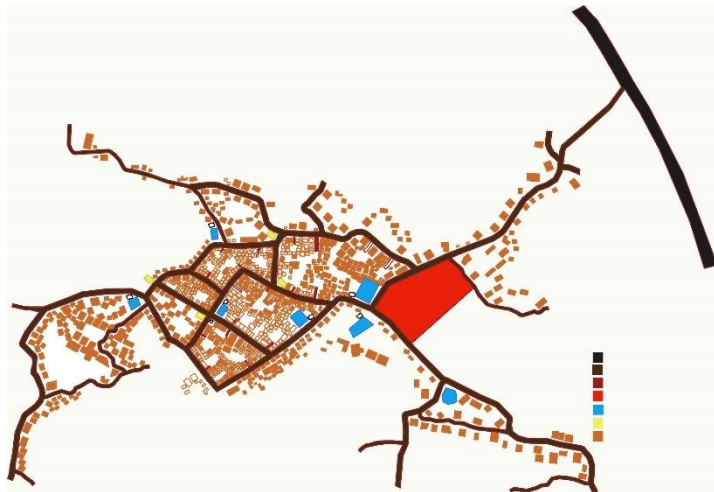


Figure 6.1 Core area of khokana

Basically, my concept is derived from core settlement of Khokana.



Figure 6.2 Open space in khokana

6.2 WHY OPEN SPACE?

- **Spatial Organization:** Creates depth and dimensionality within a structure or landscape.
- **Natural light and ventilation:** Effectively captures light and facilitates airflow, enhancing comfort and energy efficiency.
- **Privacy and Enclosure:** Offers within surrounding environment providing sense of privacy.
- **Connection with nature:** Integrates elements of nature, such as landscaping or water features, fostering a connection with outdoors.
- **Aesthetic Appeal:** Enhances visual interest and serves as a focal point with design elements like paving patterns.
- **Make place vibrant:** That enhances people to enjoy that place and hold people for certain time period.
- **Boost surrounding business:** Offers people to be more economically sustainable.

6.3 ZONING

The zoning of site is guided by site surroundings, activities and road network. The commercial actives space is places in junction of road so that people can have fun and enjoy. But the western road is commercially active spaces, so the position of culinary restaurant is perfect. The minimum noise and disturbance from the road side is in eastern direction, ensuring a peaceful environment for the production area, so it is kept away from noise surroundings.



6.4 FORM DEVELOPMENT

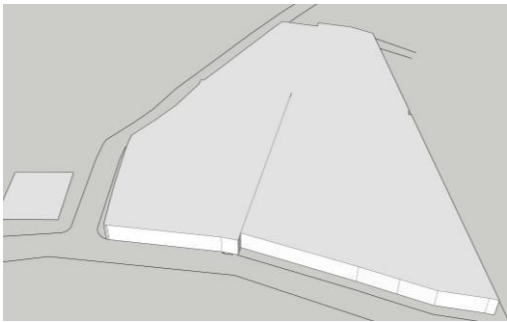


Figure 6.3 Showing built up area after setback

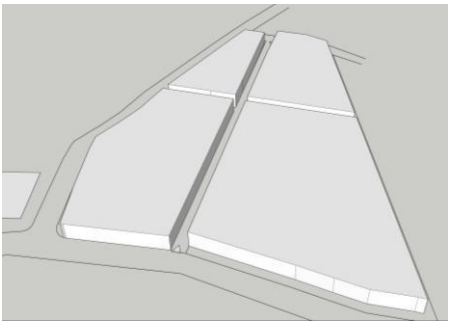


Figure 6.4 Creating pathway for the axis

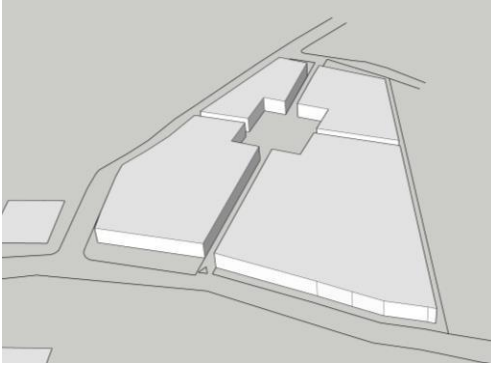


Figure 6.5 Showing central open space

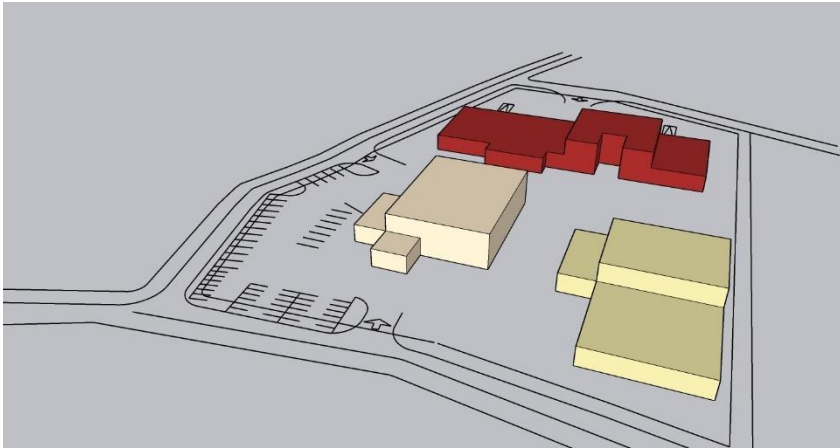


Figure 6.6 Showing form of buildings

CHAPTER 7

7.1 CONCLUSION

The courtyard, as a timeless architectural element, continues to play a crucial role in shaping spatial experiences, fostering social interaction, and enhancing environmental sustainability. Through this thesis, the courtyard has been explored not merely as a design feature, but as a cultural and climatic response that bridges traditional wisdom and modern needs. By integrating courtyards into contemporary architectural practices, we can create spaces that are not only functional and aesthetically pleasing but also deeply connected to nature and community. This study reaffirms the courtyard's potential to enrich built environments offering thermal comfort, natural light, ventilation, and a sense of serenity making it a vital component of sustainable and human-centric design.

CHAPTER 8

8.1 REFERENCES

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6 Km - Distance from Khokana to Lalitpur

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Committee 8^[2] International Symposium, Kathmandu, Patan, Bhaktapur. Nepal 23 – 25 November 1992, Tapir Forlag, Trondheim 1994: 85 – 124

Exploring Khokana: A Traditional Newari Village of Nepal - khokana.com

Khokana - Routes and Map /Komoot

Khokana - Traditional, Small Newari Village

Khokana strives to revive its famed mustard oil heritage

Khokana, Nepal | HoneyGuide

Khokana, the vernacular village and its mustard-oil seed industrial heritage -

Khokana: A serene time capsule away from Kathmandu bustle

Khokana-Visioning-Booklet.pdf

Making Mustard Oil: Khokana, Nepal » Ursula's Weekly Wanders

Natural pickles | PPT

Patan CBR Organization – Patan Community Based Rehabilitation Organization

Samusik = Samusik Jerzy, W cieniu Czomolungmy. Rzecz o Nepalu, Wydawnictwo Miniatura, Kraków 1993.

*Theophile Ranjitkar = Theophile En
conservation problems of the Nepal
International Wood*

UNESCO World Heritage Centre

“KHOKANA HERITAGE CENTER: PRESERVING TRADITION THROUGH OIL, FOOD AND WELLNESS”

PROJECT INTRODUCTION

It is nestled in the southern outskirts of the Kathmandu Valley, the village of Khokana is more than a geographic location, it is a living archive of heritage, skill, and community memory. Renowned for its distinctive mustard oil production, Khokana holds a legacy that surpass the economic value of the oil itself. Each drop carries within it layers of cultural meaning, traditional knowledge, and the rhythms of everyday village life.

PROJECT OBJECTIVES

- To document and analyze traditional practices.
- To understand the relationship between architecture and tradition.
- To give employment opportunity to local people.
- To explore community centric and heritage sensitive design approaches.
- To incorporate landscape within the design that changes the perception of people and provide space for public activities as well as training center.

PROBLEM STATEMENT

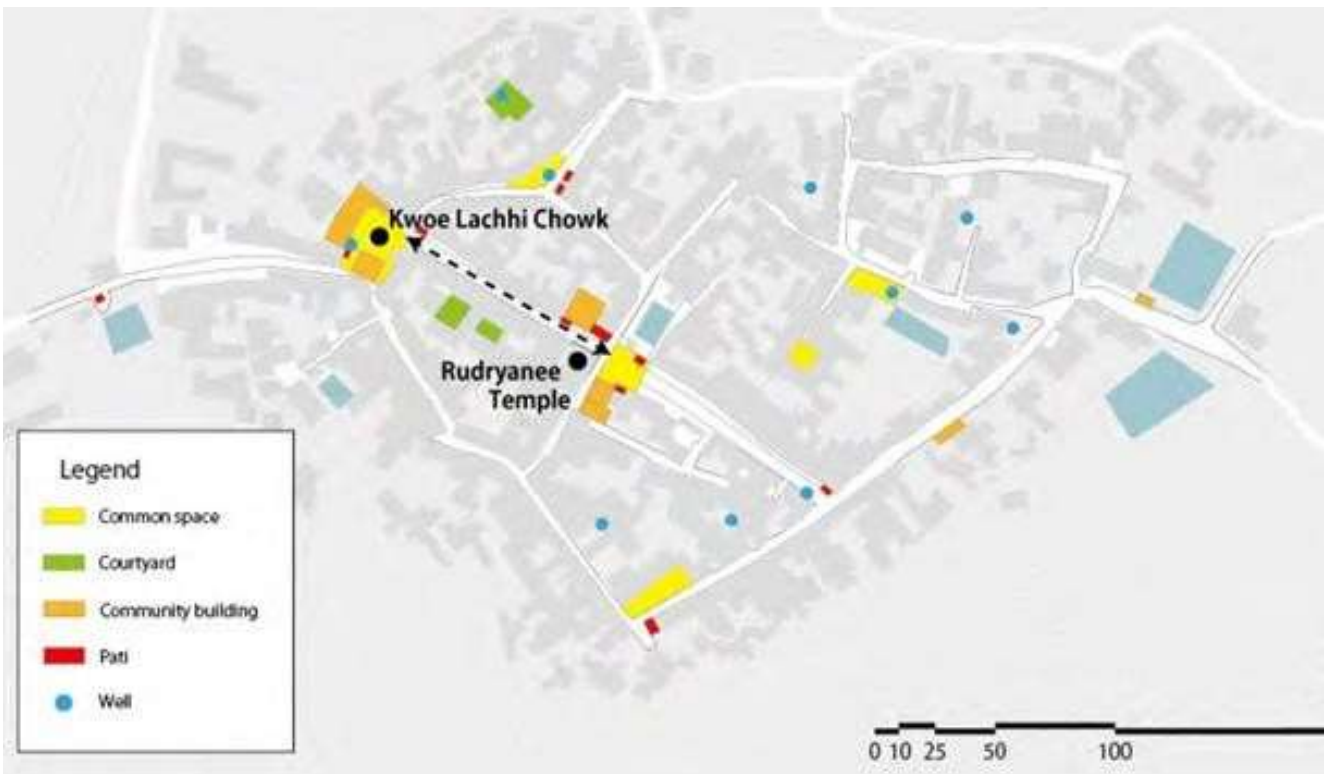
Khokana’s traditional character is rapidly deteriorating due to external interventions, migration, and shifting lifestyles. Despite its recognition as a potential UNESCO heritage site, there is insufficient community-based planning to ensure that development does not erase its identity.

PROJECT JUSTIFICATION

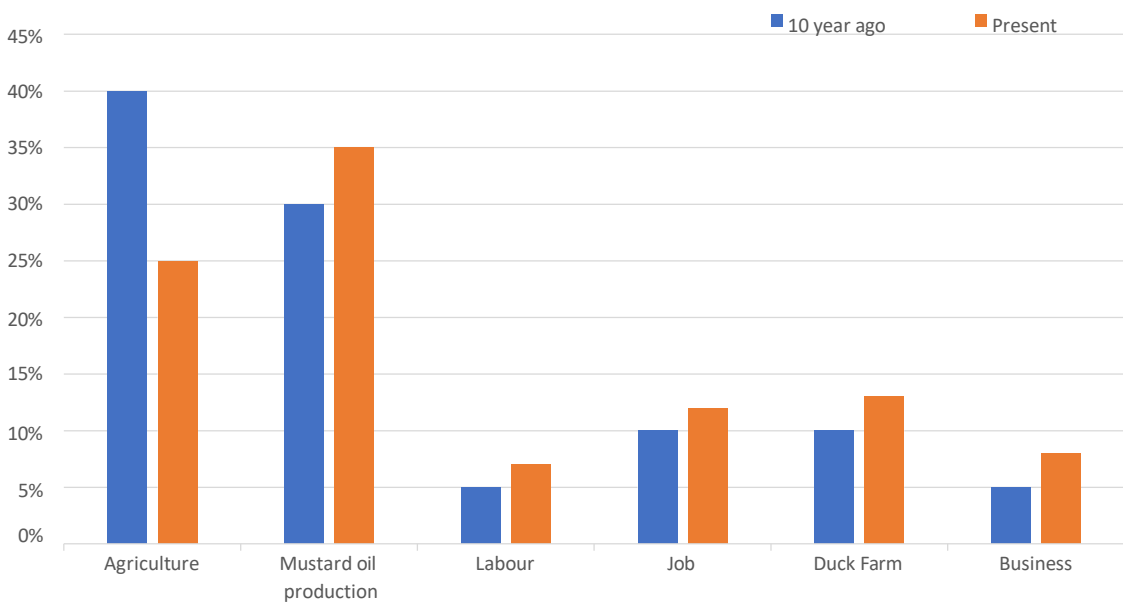
- 1. Loss of Traditional Architecture:**
 - Modern construction methods and materials are replacing vernacular structures, leading to a loss of architectural identity and craftsmanship.
- 2. Threats to Intangible Cultural Heritage:**
 - Traditional practices like mustard oil production, festivals, and rituals are declining due to changing lifestyles and lack of documentation.
- 3. Insensitive Urban Development:**
 - Infrastructure projects and urban expansion around Khokana are disrupting the traditional settlement pattern and threatening community cohesion.
- 4. Lack of Community-Centric Planning:**
 - Development initiatives frequently exclude local voices, weakening community participation and ownership in preserving heritage.
- 5. Generational Disconnection:**
 - Younger generations are increasingly detached from traditional knowledge systems and spatial practices, risking the discontinuity of cultural transmission.

SCOPE

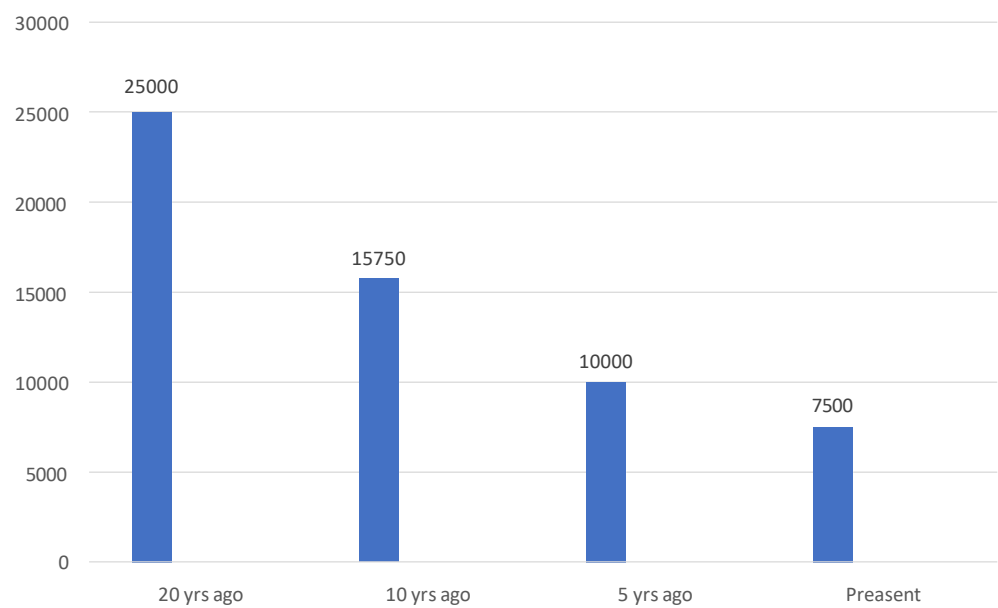
- The research will focus on specific elements such as public squares, traditional courtyards (bahals and bahis), oil mills, temples, and community gathering spaces.
- The thesis will emphasize community interactions, traditional occupations (like oil pressing and weaving), and festival practices that define the spirit of place.
- The project will examine how existing governmental plans (e.g., infrastructure projects) align or conflict with heritage preservation in Khokana.



OCCUPATION



MUSTARD OIL PRODUCTION PER YEAR

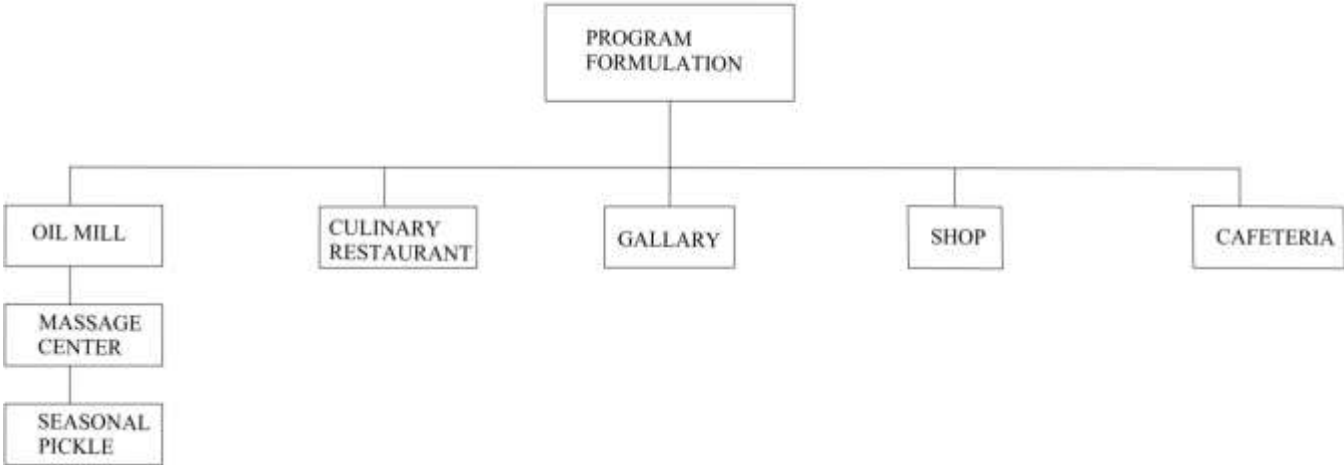


CASTE DISTRIBUTION

S.N	Household distribution reflecting caste composition	Household numbers (2020)
1	Jyapu (Maharjan and Dangol)	874
2	Shahi/Khadgi/Kasai	31
3	Shrestha	9
4	Thakuri (Malla and Shahi)	9
5	Kapali /Kusle	4
6	Tuladhar	5
7	Shakya	1
8	Napit	5
9	Others (non-Newars)	9

“KHOKANA HERITAGE CENTER: PRESERVING TRADITION THROUGH OIL, FOOD AND WELLNESS”

PROGRAM FORMULATION



CASE STUDIES

NATIONAL

1. Jabu Jaaysha oil mill, Khokana Lalitpur

Location: Khokana, Lalitpur
Typology: Oil production mill
Area: 2500 sq ft
Employee: 6 Nos
Capacity: 250L per day
Style: Load bearing



- Objectives of study:**
- To understand the traditional mustard oil extraction process.
 - To analyze the architectural features and spatial layout of the oil mill, including ventilation, material use, workflow.
 - To assess the role of the oil mill in the local economy and identity of Khokana, particularly.

- Lesson Learn:**
- Local knowledge systems can be effective, sustainable, and culturally significant. Preserving them offers alternatives to industrialized production and supports cultural identity.

2. Patan community pickle cooperative, Patan Lalitpur

Location: Patan, Lalitpur
Typology: Pickle home
Area: 1200 sq ft
Employee: 5 Nos
Variety: 6+ items
Style: RCC



- Objectives of study:**
- To document the spatial and functional layout of the cooperative's pickle production unit within an urban traditional setting.
 - To analyze how traditional architecture (e.g., courtyards, kitchens, storage areas) is adapted for community-based food processing.
 - To understand the role of the cooperative in promoting local food culture and supporting women's economic empowerment.

3. Sasa: Twa, kritipur

Location : Sagal Tole-5, Kirtipur
Typology : Restaurant
Area : 3.6 Ropani
Capacity : Up to 1000 people at a time
Style : Traditional Newari architecture



- Objectives of study:**
- To experience the classic ambiance of a restaurant.
 - To understand the necessary circulation and spatial requirements for a Newari restaurant.
 - To gain knowledge of Newari cuisine and traditional cooking practices.
 - To study the different spaces required in a restaurant serving traditional cuisine in a traditional manner.
 - To investigate how the planning and zoning of different spaces are executed in a traditional setting.

- Lesson Learn:**
- Reviving Traditional Knowledge Builds Identity.
 - Community Ownership Drives Sustainability.
 - Culture-based livelihoods are a viable path to economic resilience.

4. The tranquil times spa and wellness, Thimi, Bhaktapur

Location : Thimi, Bhaktapur
Typology : Massage center
Area : 2000 sq ft
Capacity : Up to 4 people at a time
Style : RCC



- Objectives of study:**
- To study the spatial planning and zoning of spa and wellness facilities within a traditional or semi-urban Newar context.
 - To analyze how architectural design supports relaxation and therapeutic experiences, incorporating natural light, ventilation, water elements, and material selection.
 - To examine user experience and flow, including transitions between reception, therapy rooms, waiting areas, and natural zones like gardens or courtyards.

- Lesson Learn:**
- A well-rounded service package enhances the overall client experience, promoting relaxation and well-being.
 - Effective use of digital marketing tools is vital for reaching a broader audience and building brand recognition.

INTERNATIONAL

1. P Mark Mustard oil, Haryana, India

Location: Haryana, India
Typology: Oil production mill
Area: 6500 sq ft
Employee: 15 Nos
Capacity: 2000L per day



- Objectives of study:**
- To study the architectural layout and spatial organization of a modern, mechanized mustard oil production facility in an Indian context.
 - To analyze the use of industrial machinery and its integration within the building design to ensure efficient production flow.
 - To understand the structural and material choices (such as steel framing, RCC, industrial cladding) that support hygiene, durability, and process safety.
 - To examine waste management and oil residue handling systems within a large-scale oil production plant..

- Lesson Learn:**
- Proximity to raw material sources enhances supply chain efficiency and product quality.
 - Innovative marketing approaches can significantly enhance brand visibility and appeal to a broader consumer base.

2. Priya pickle, South India

Location: South India
Typology: Pickle Factory
Area: 1 Ropani
Employee: 300 Nos
Year: 1980



- Objectives of study:**
- To analyze the architectural layout of a large-scale food processing unit, particularly tailored for pickle production in a humid South Indian climate.
 - To study the spatial segregation of processes such as cleaning, chopping, mixing, fermenting, bottling, and packaging to ensure hygiene and efficiency.
 - To understand how traditional culinary knowledge is industrialized, while retaining authenticity, flavor profiles, and food safety.

- Lesson Learn:**
- Staying true to cultural origins can create a strong brand identity and resonate deeply with target audiences.
 - Identifying and targeting international markets with a demand for traditional products can drive growth.

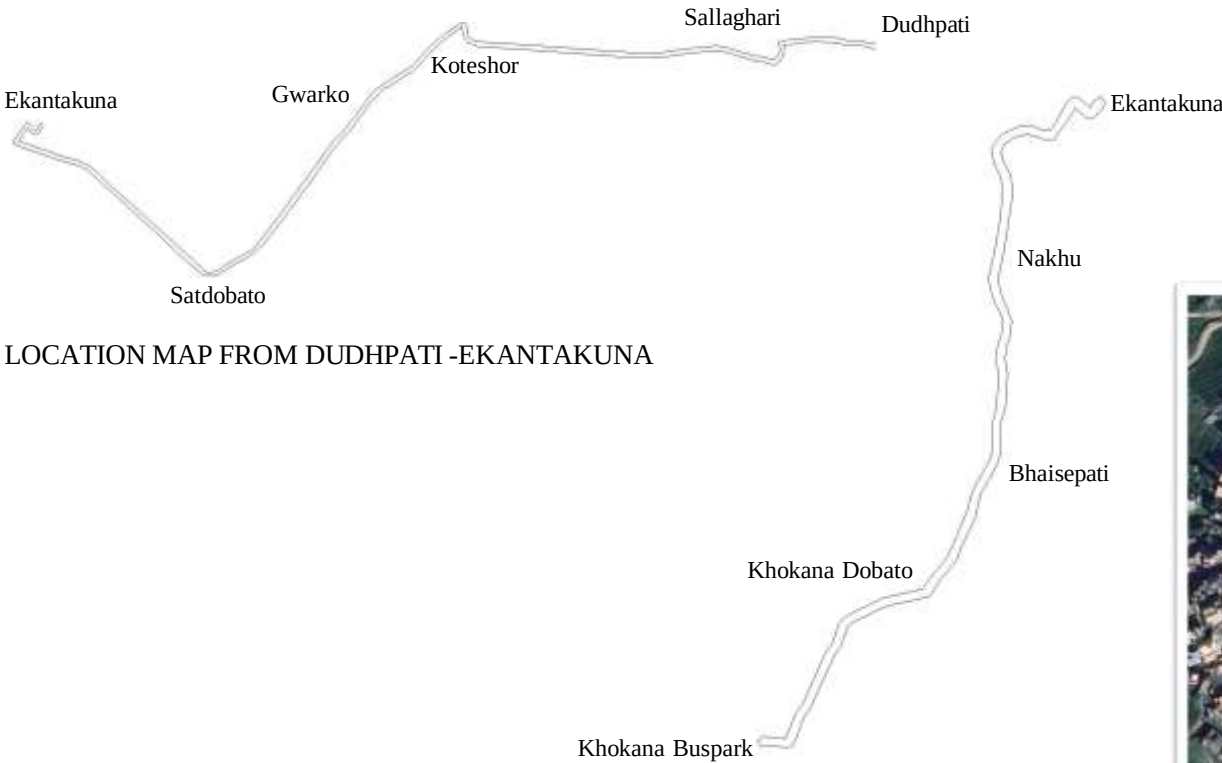
3. Kalakal Tibetan Cuisine and Cultural Center, China

Firm: Parallel Design
Type: Cultural Center
Size : 3000 Sq ft



- Objectives of study:**
- To investigate global food hub concepts and models.
 - To explore the design and functionality of food hub spaces.
 - To assess impacts and propose solutions for challenges in food hub development.

“KHOKANA HERITAGE CENTER: PRESERVING TRADITION THROUGH OIL, FOOD AND WELLNESS”



LOCATION MAP FROM DUDHPATI -EKANTAKUNA

LOCATION MAP FROM EKANTAKUNA TO KHOKANA



1. SOUTHERN KHOKANA(CORE)

- **Traditional Newar Houses** – Made of brick, mud, and wood, with intricately carved windows and doors. These are multi-storied buildings designed for both residential and economic purposes.
- **Public Spaces** – Open courtyards (Bahals) and communal spaces serve as gathering places.
- **Narrow Lanes and Brick-Paved Streets** – Streets are paved with bricks and are often lined with traditional houses.
- **Community Courtyards (Chowks)** – Open courtyards serve as spaces for social gatherings, festivals, and public meetings.
- **Clustered Pattern** – Houses are built close together with shared walls, forming a dense urban fabric.

URBAN ELEMENT

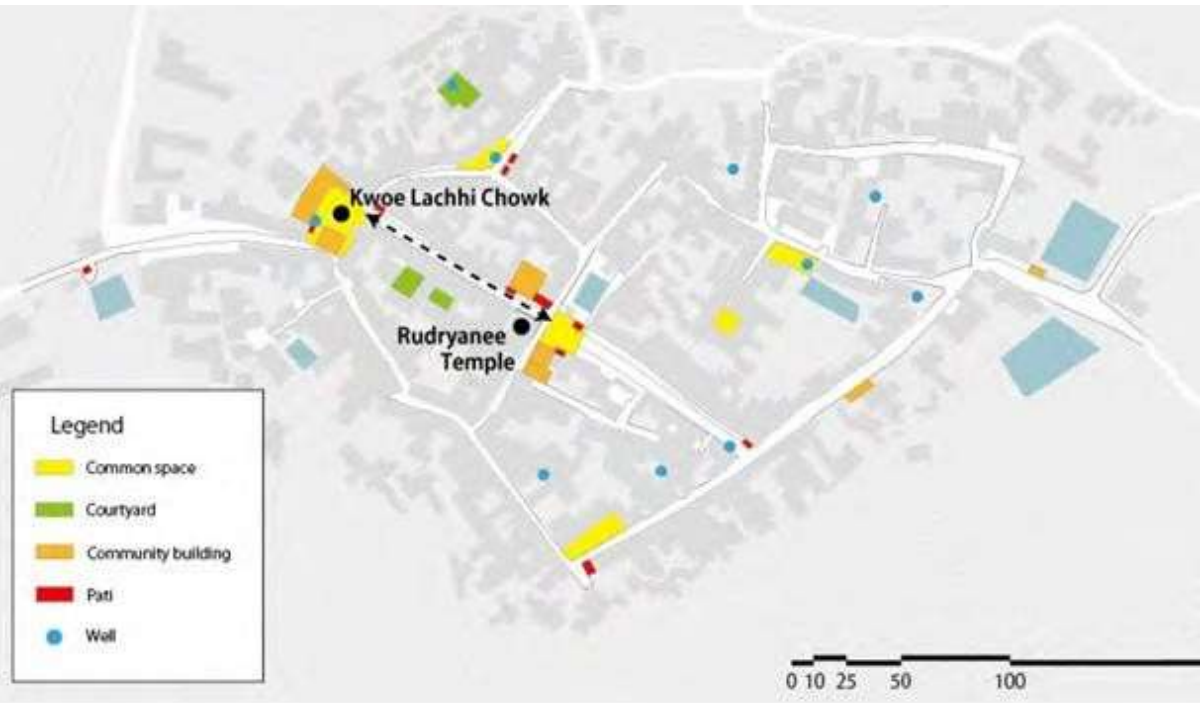
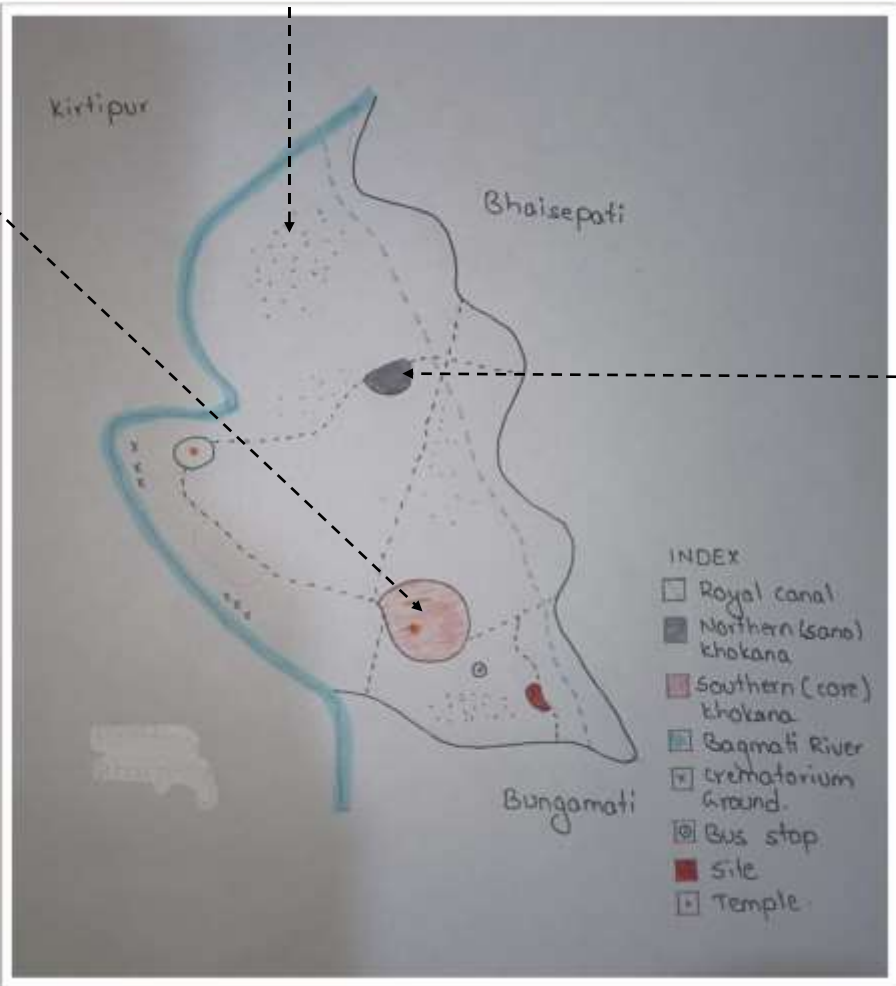


FIGURE SHOWING URBAL ELEMENT



3. NORTHERN KHOKANA (NEAR BAGMATI RIVER)

- The **northern settlement** acts as a **transition** between the dense, compact urban core and the more open rural landscape.
- Buildings are **not as tightly packed** as in the core, allowing for some open spaces between structures.
- With urbanization, some agricultural fields are being converted into residential areas, leading to **mixed land use**.
- The northern settlement is connected by **broader roads** compared to the narrow alleys in the core area.

2. NORTHERN KHOKANA

- The **northern settlement of Khokana** represents a transitional zone between the historic core and the surrounding agricultural fields.
- Buildings are **not as tightly packed** as in the core, allowing for some open spaces between structures.
- As modernization takes place, new buildings are **aligned along roads**, following a linear growth pattern.
- Some areas remain **agricultural**, while others are gradually being urbanized.

PUBLIC SPACES

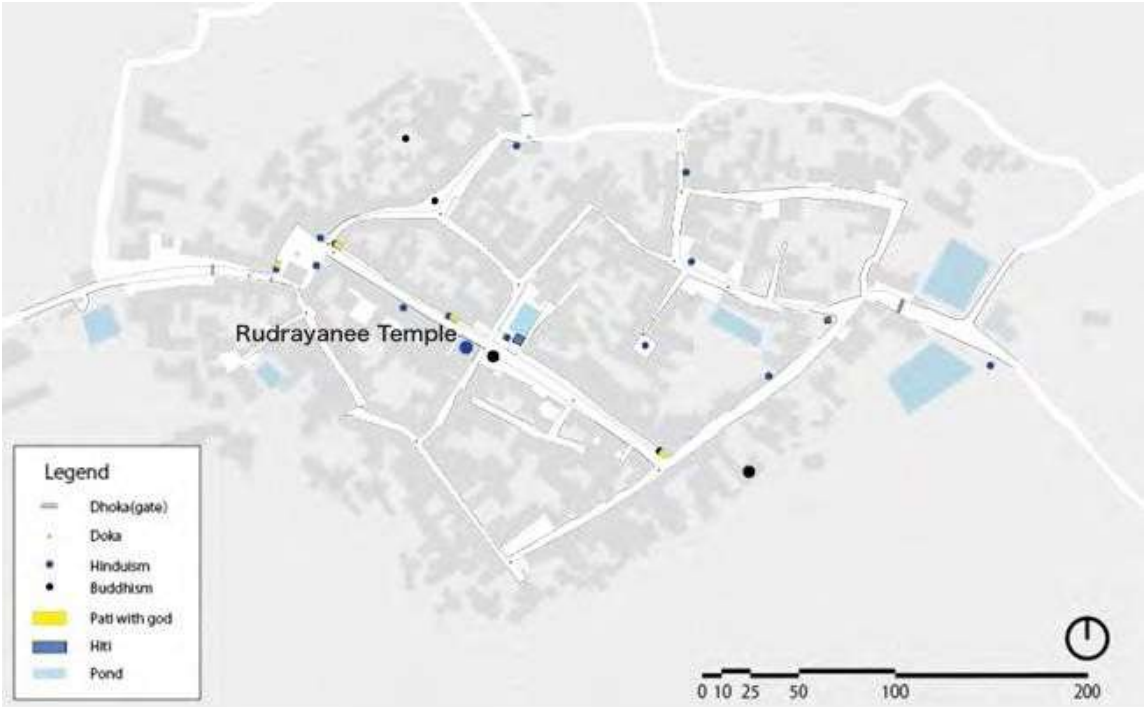
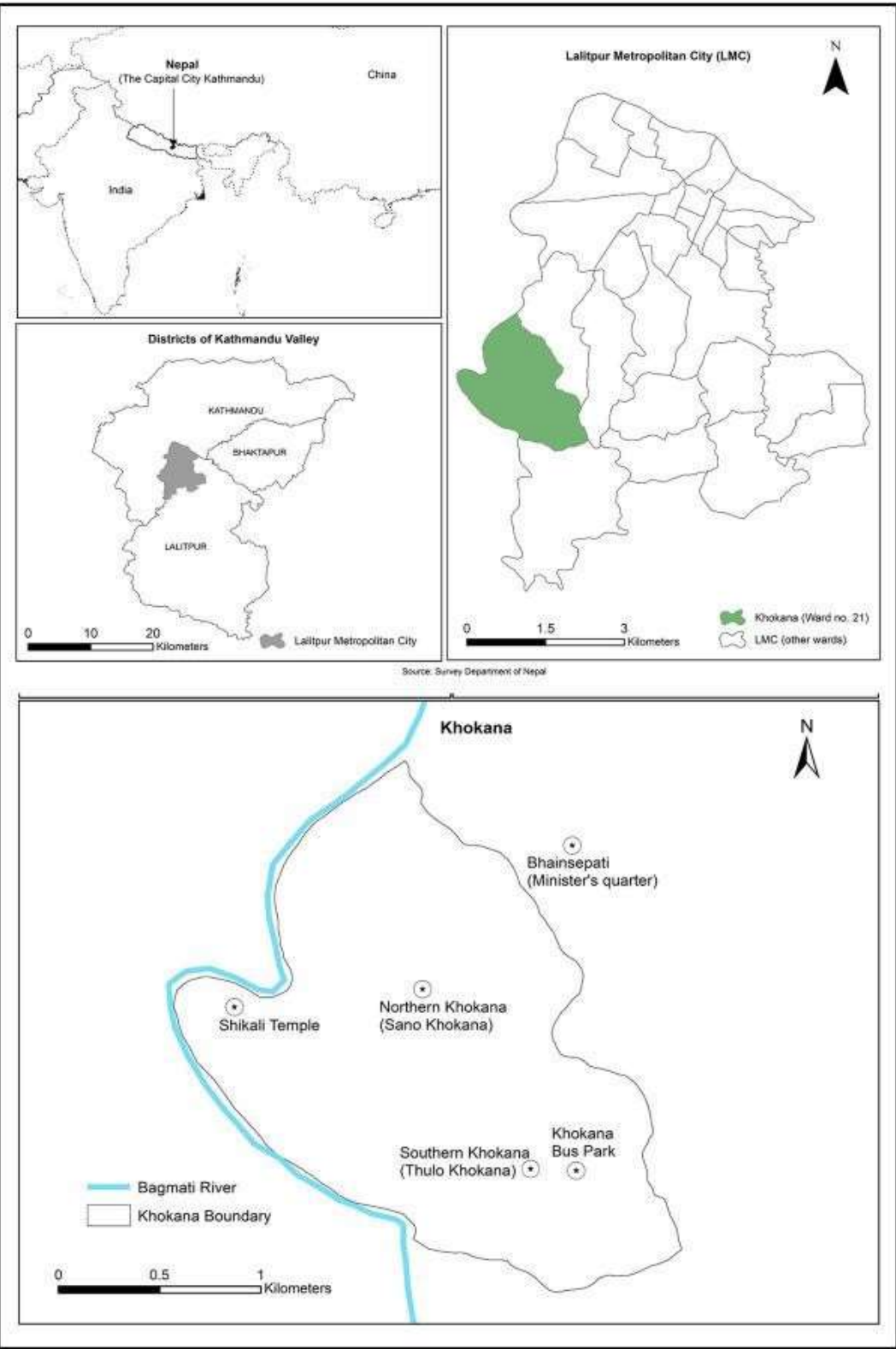


FIGURE SHOWING PUBLIC SPACES



MAP OF KHOKANA

“KHOKANA HERITAGE CENTER: PRESERVING TRADITION THROUGH OIL, FOOD AND WELLNESS”

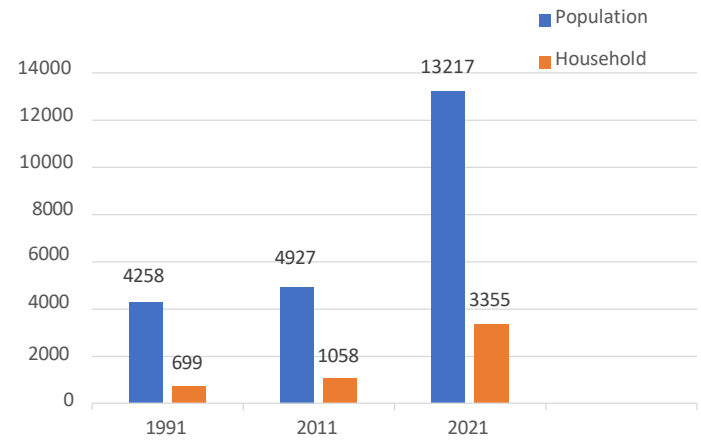
SOCIAL ASPECT

HOUSEHOLD DISTRIBUTION

S.N	Household distribution reflecting caste composition	Household numbers (2020)
1	Jyapu (Maharjan and Dangol)	874
2	Shahi/Khadgi/Kasai	31
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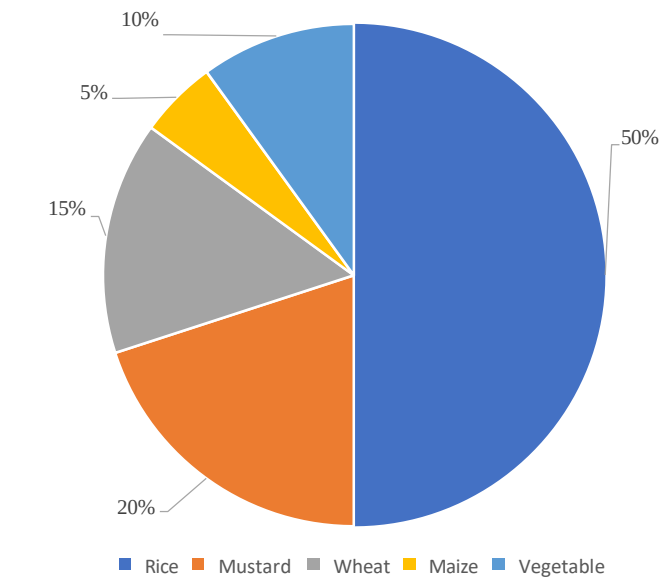
SOURCE: LALITPUR METROPOLITAN CITY,WARD 21

POPULATION

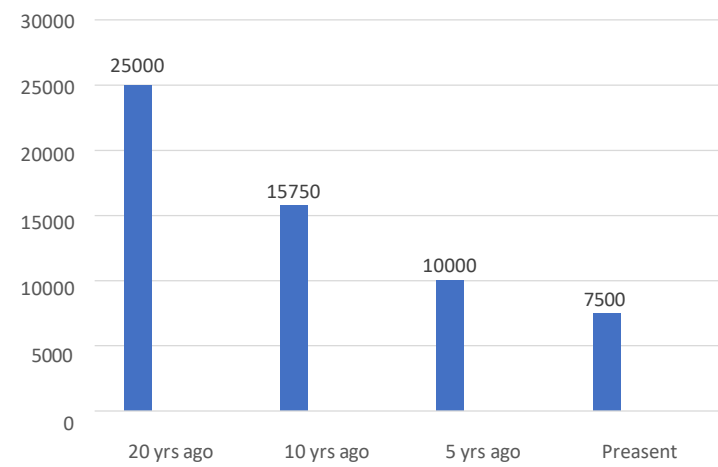


SOURCE: CENSUS,WARD 21

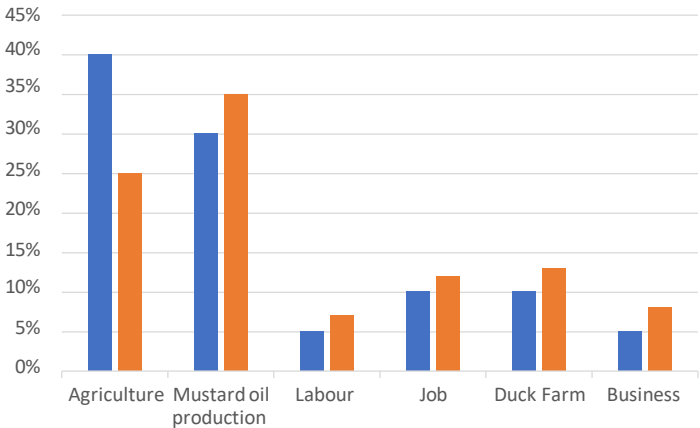
CROP PRODUCTION



MUSTARD OIL PRODUCTION(L/YEAR)



LIVELIHOOD



SOURCE: LALITPUR METROPOLITAN CITY,WARD 21



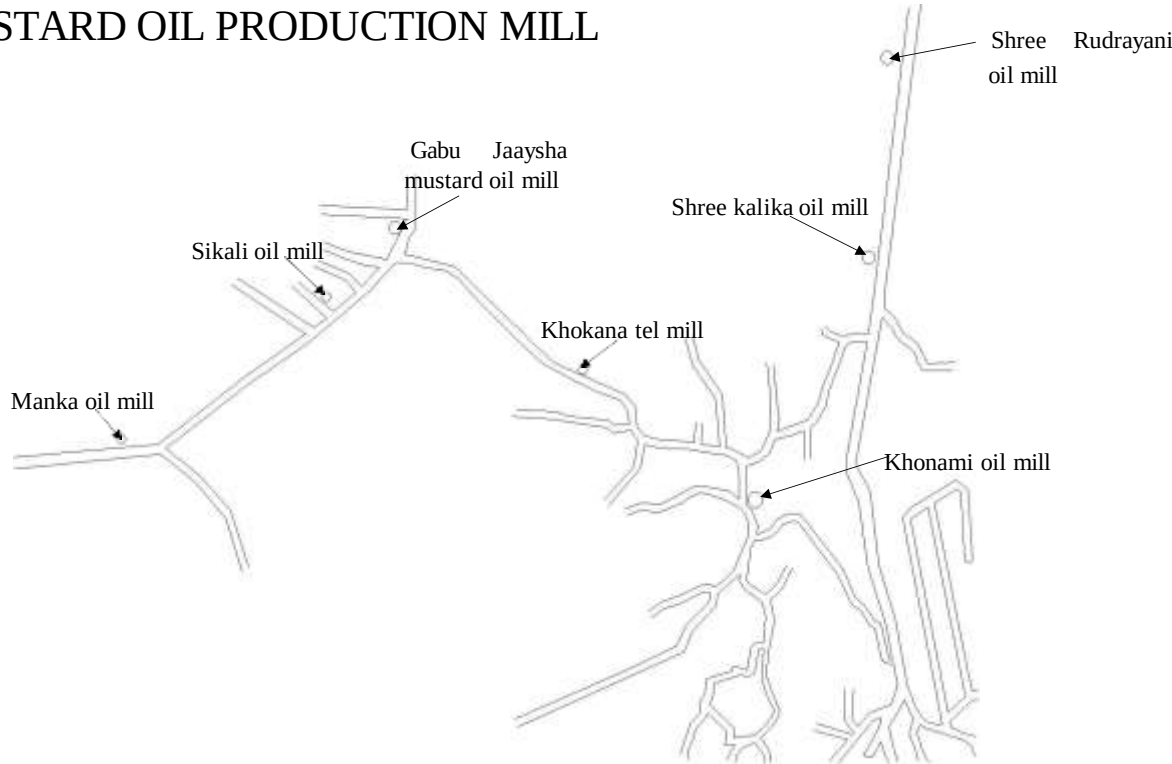
- Woman runs small scale business to support economy.



- Growing seasonal crops like mustard, paddy, vegetables.

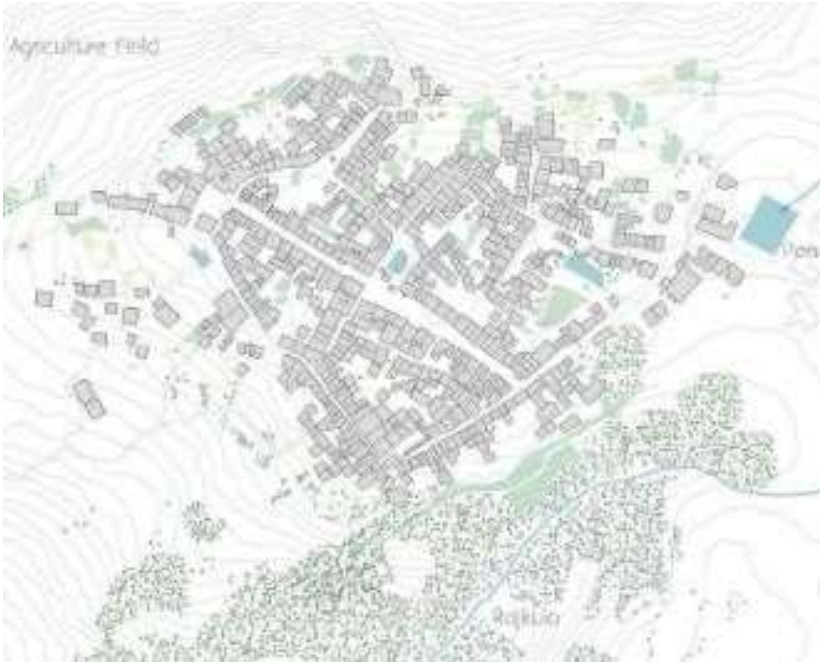


MUSTARD OIL PRODUCTION MILL

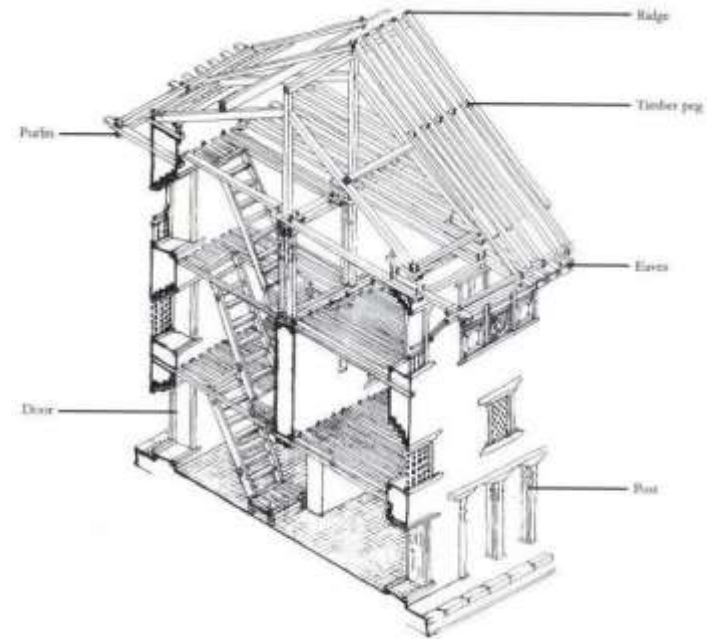


KEY ELEMENTS OF BUILT ENVIRONMENT

- 1.Traditional Newar Architecture.
- 2.Public Spaces & Courtyards
- 3.Temples & Religious Structures.
- 4.Street Layout & Pathways .
- 5.Water Management & Ponds
- 6.Impact of Urbanization



SETTLEMENT PATTERNS



TYPICAL 3D SECTION SHOWING ITS DETAIL



BEFORE



AFTER

CULTURAL ASPECT

FOOD

- The oil is used to prepare various Newari dishes, including alu, wah, yomari, choela, and kachhila.



SAME BAJI SET



SAME BAJI SET



YOMORI

FESTIVAL

- Sikali Jatra is a traditional festival celebrated by the Newar community in Khokana, dedicated to Goddess Sikali (Ajima), where tantric rituals, masked dances, and cultural performances take place instead of the Dashain festival.

Gaijatra is a Newar festival of remembrance, where families honor deceased loved ones with processions, cow parades, and satirical performances to celebrate life and overcome grief.

SIKHALI JATRA

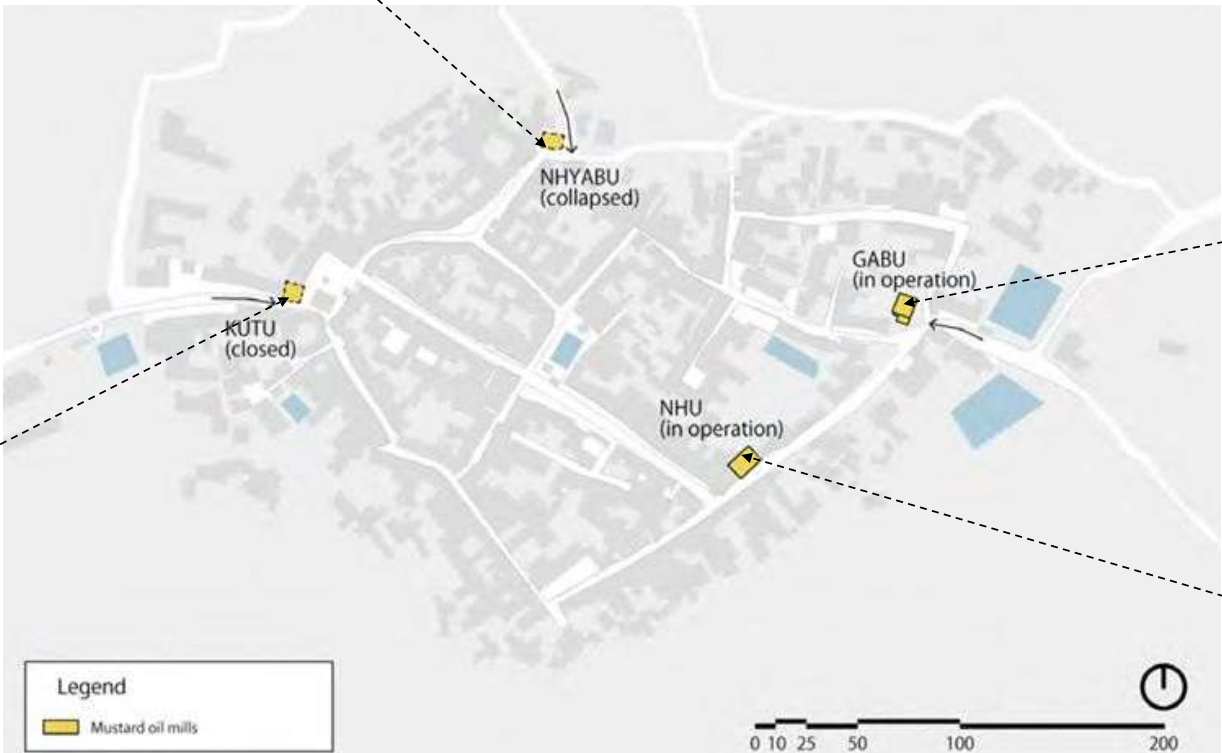


DYO PUKHU

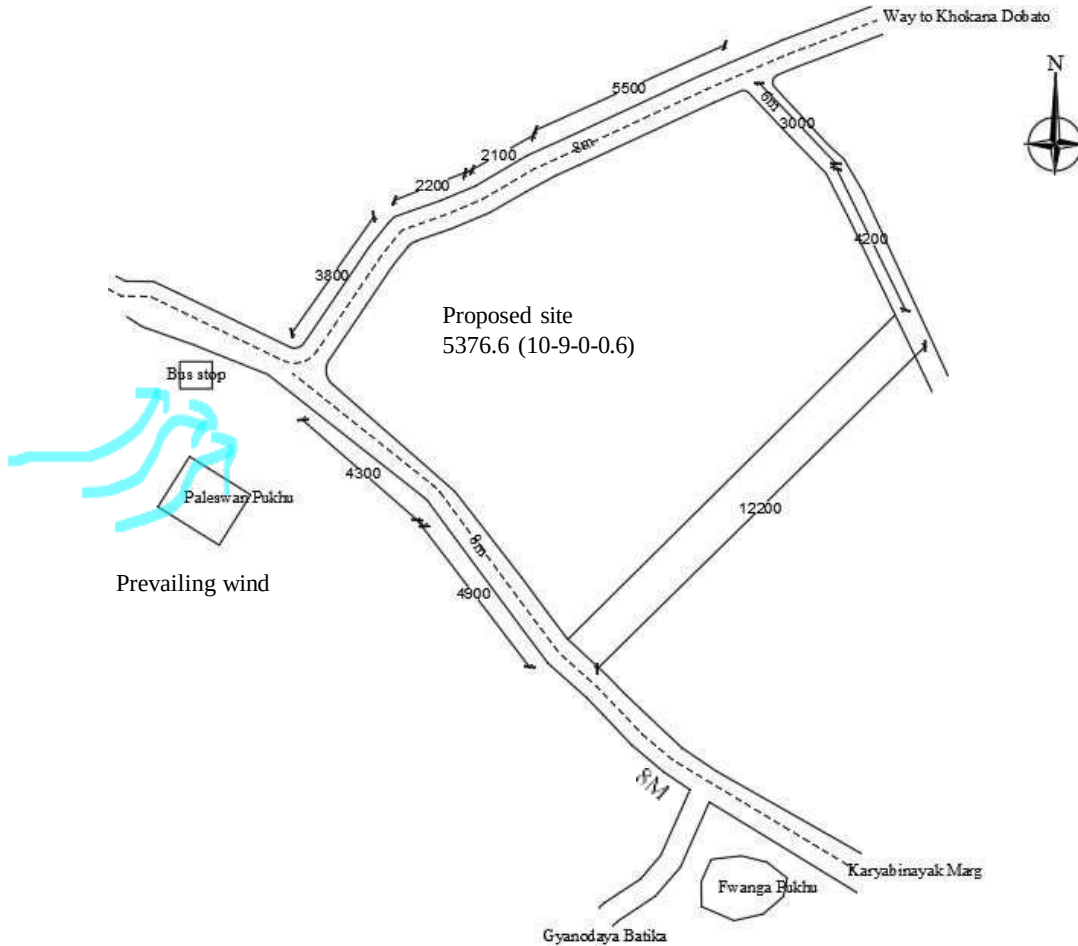


“KHOKANA HERITAGE CENTER: PRESERVING TRADITION THROUGH OIL, FOOD AND WELLNESS”

OIL MILL TILL 2015



LOCATION: Khokana, Lalitpur, Nepal
MUNICIPALITY: Lalitpur Metropolitan City
WARD: 21
LALITUDE: 27°18'07"N
LONGITUDE: 85°18'08"E
AREA: 23-1-3-0.9



SITE ACCESSIBILITY



BUS STOP



KHOKANA DOBATO

SURROUNDINGS VIEWS



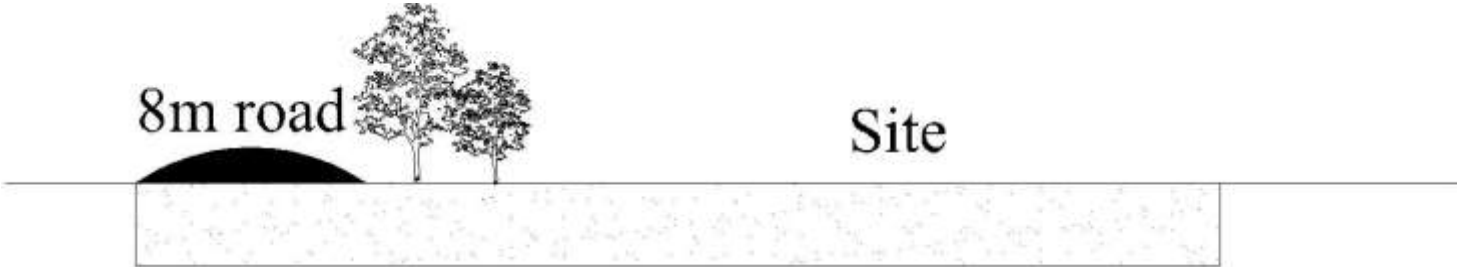
GYANODAYA BATIKA SCHOOL



KARYABINAYAK

SITE

SECTION AT XX'



SECTION AT YY'



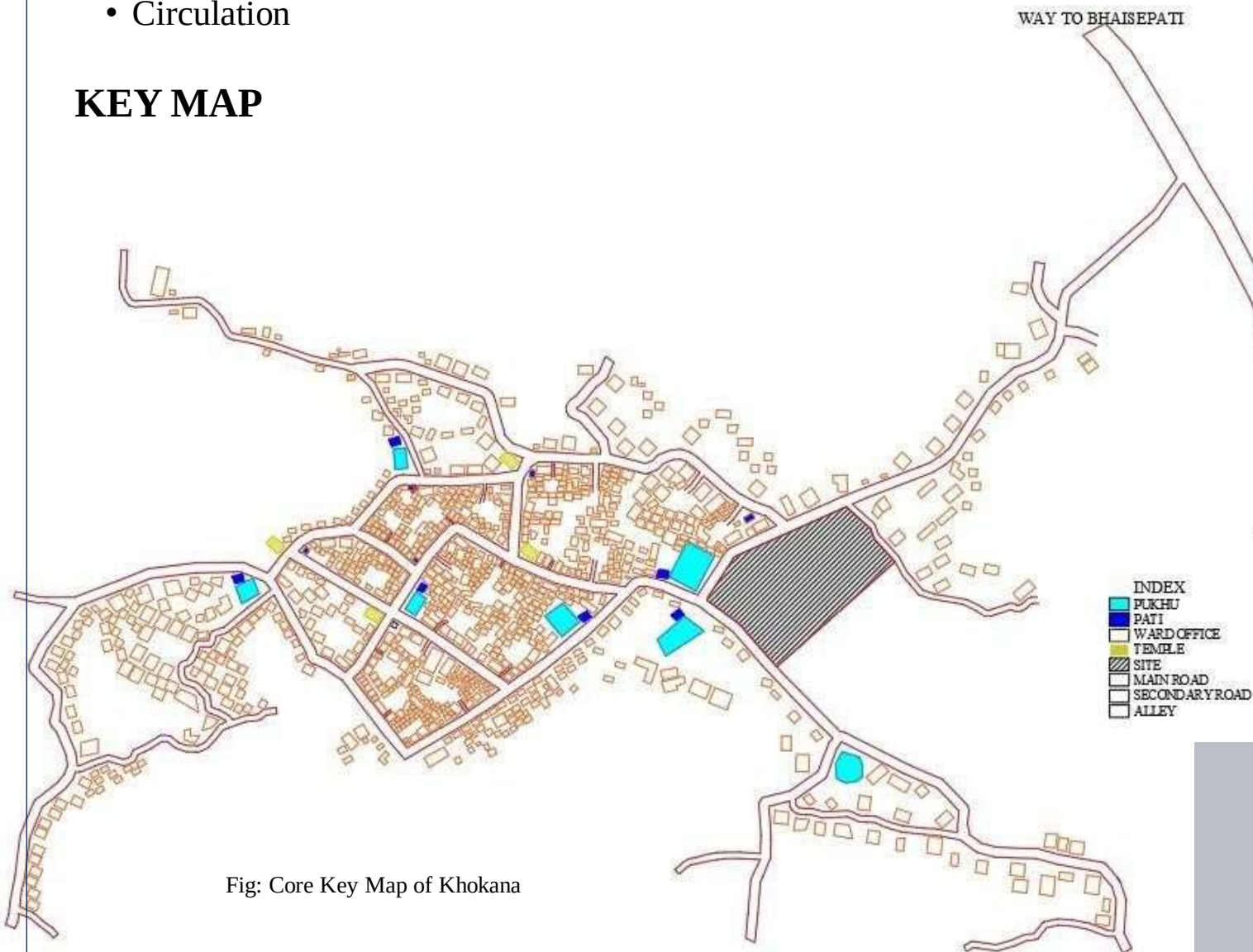
“KHOKANA HERITAGE CENTER: PRESERVING TRADITION THROUGH OIL, FOOD AND WELLNESS”

CONCEPT

COMMUNITY OPEN SPACE is a physical space typically an open area enclosed by walls or buildings that serves variousfunctional, social, and symbolic purposes in architecture and community life.

- Purpose:
- Ventilation and natural lighting.
 - Thermal regulation providing coolness in hot climates.
 - Circulation

KEY MAP



1. Traditional Urban Fabric

Khokana is organized around a network of courtyards, locally known as “*bahas*” and “*chowks*”. These courtyards are integral to the Newar vernacular settlement pattern, where dense housing clusters are arranged around semi-private open spaces. They form a hierarchical spatial system from private inner courtyards to public squares like *Tulsi Chowk* or *De Pukhu*.

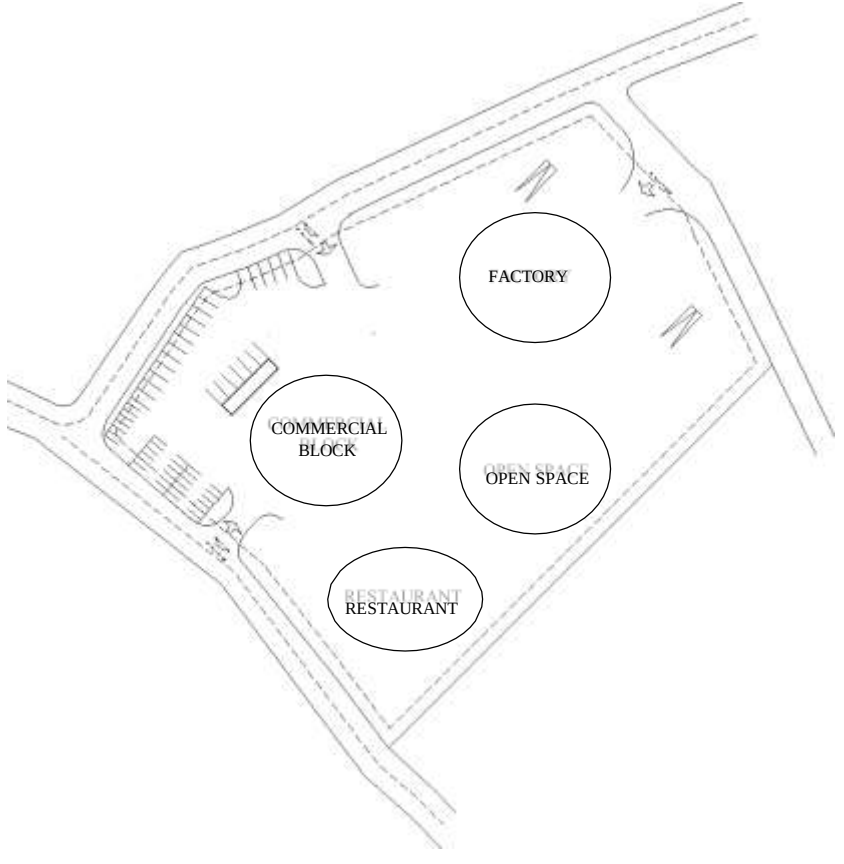
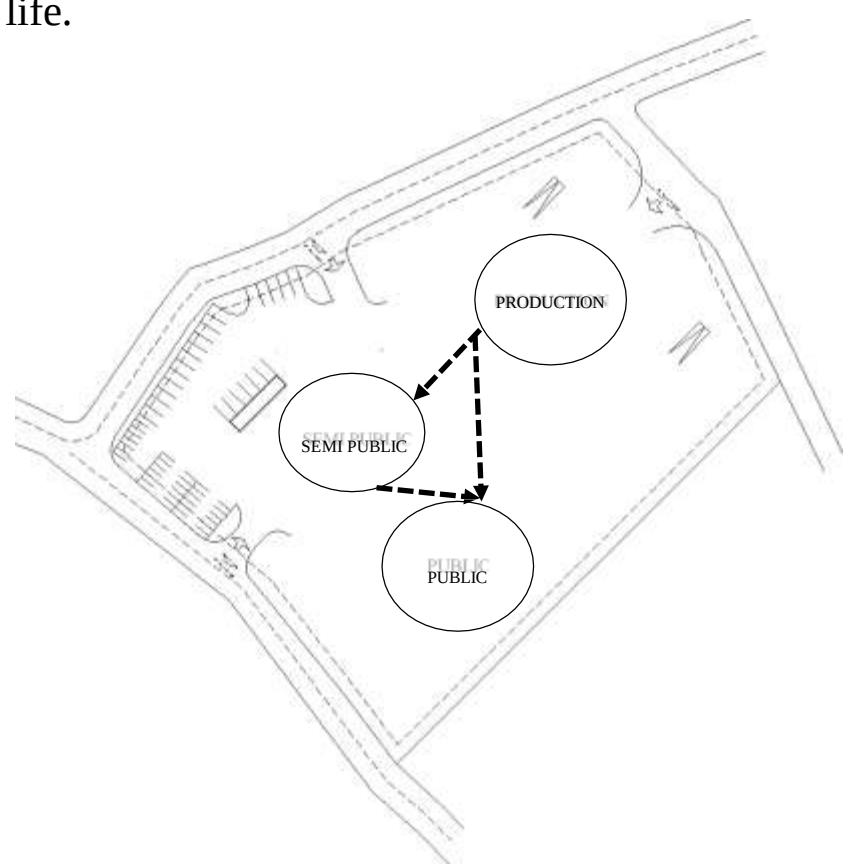
2. Social Cohesion and Community Life

Courtyards in Khokana are centers of daily life: people gather here for conversation, children play, women do household chores, and elders sit together. Courtyards are vibrant communal spaces where cultural traditions are enacted and sustained.

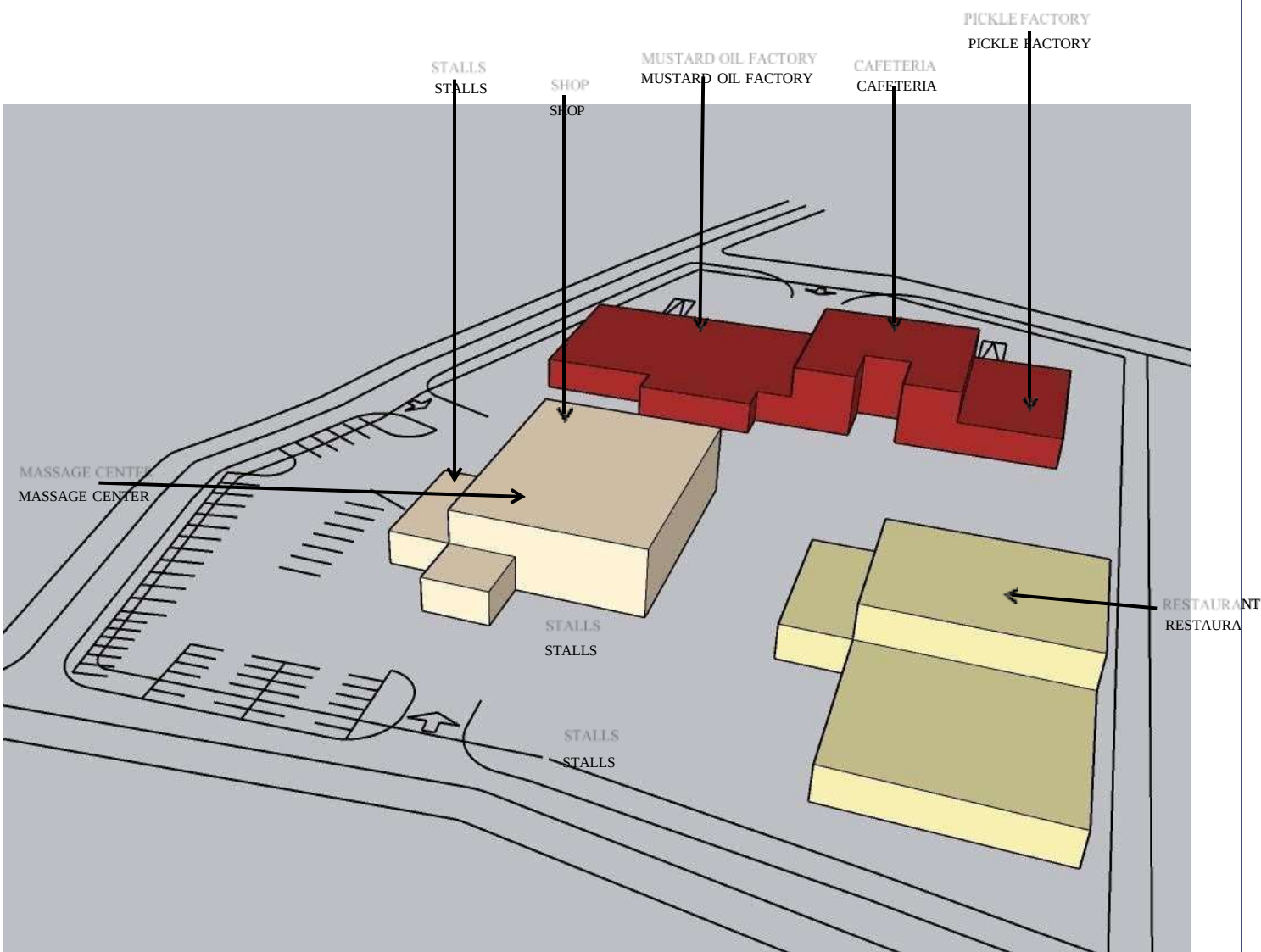
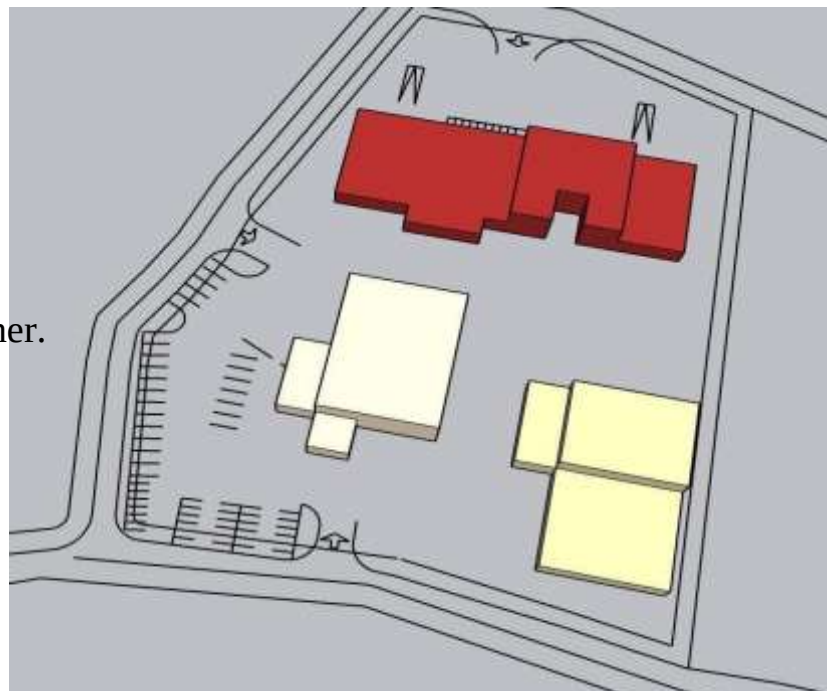
3. Climate-Responsive and Sustainable Design

In Khokana’s temperate climate, open spaces provide natural light, ventilation, and temperature regulation in the dense built environment. The layout allows seasonal activities like sun-drying crops, communal cooking, or storing goods.

ZONING



FORM DEVELOPMENT





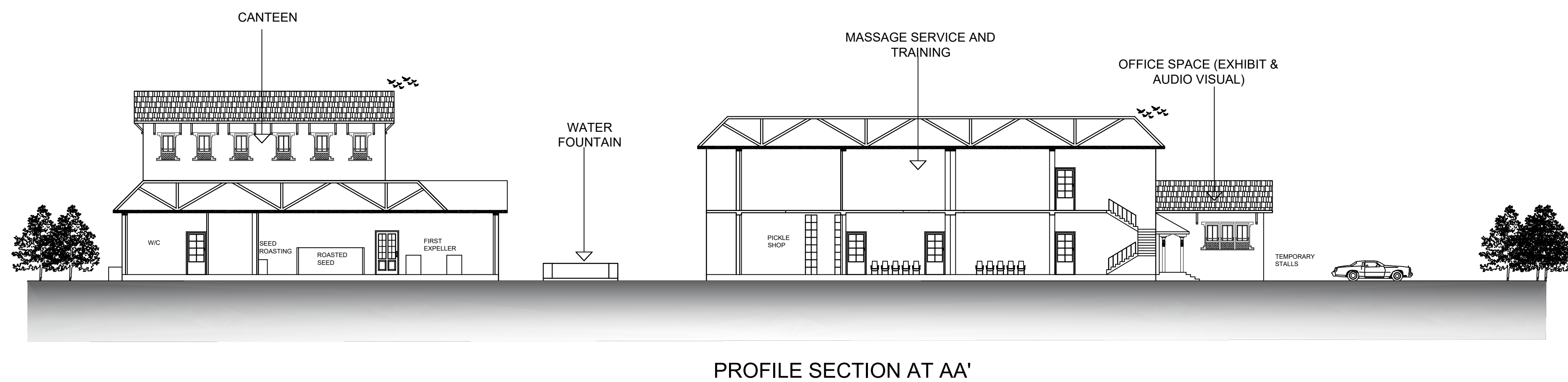
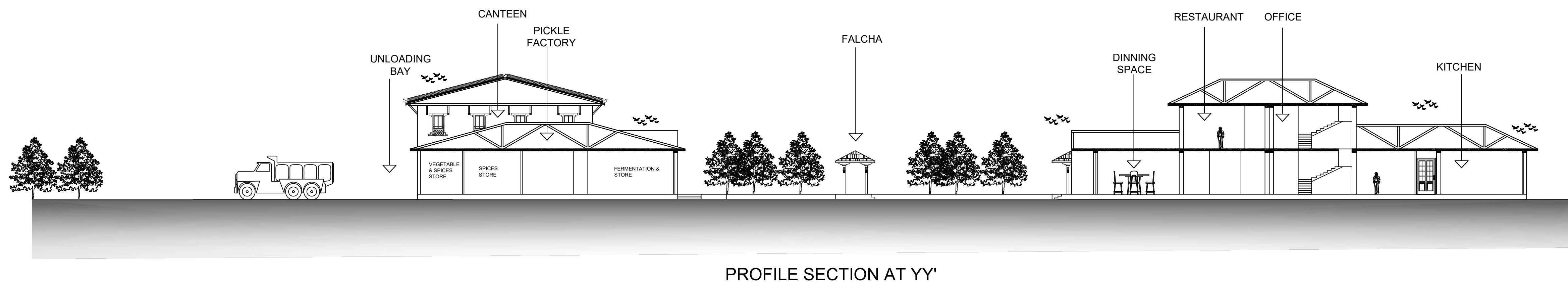
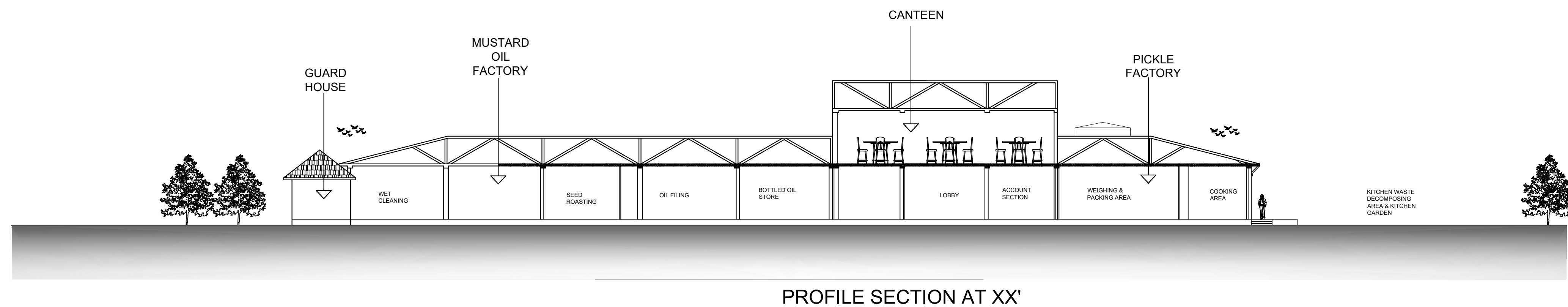
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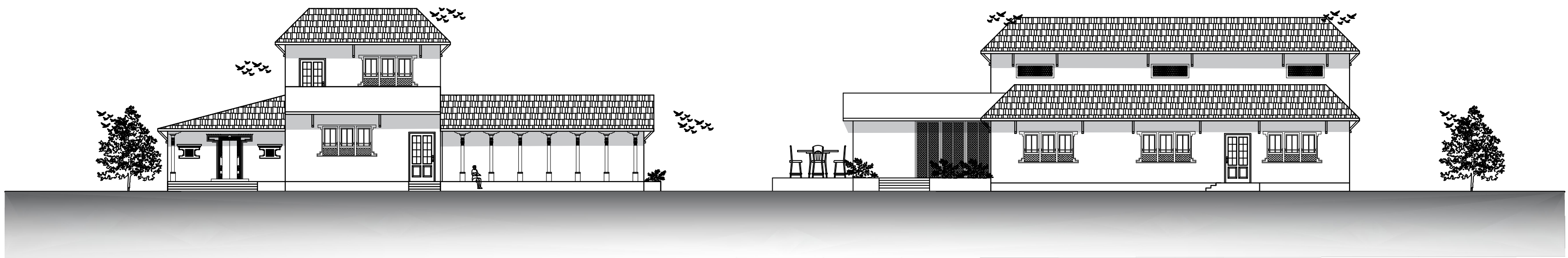
A=PARKING
B=MUSTARD OIL FACTORY
C=PICKLE FACTORY
D=KITCHEN GARDEN
E=PHALCHA
F=SHOP
G=RESTAURANT
H=WATER FOUNTION
I=TEMPORARY STALLS
J=COURTYARD
K=SITTING OUTDOOR
L=GUARD HOUSE



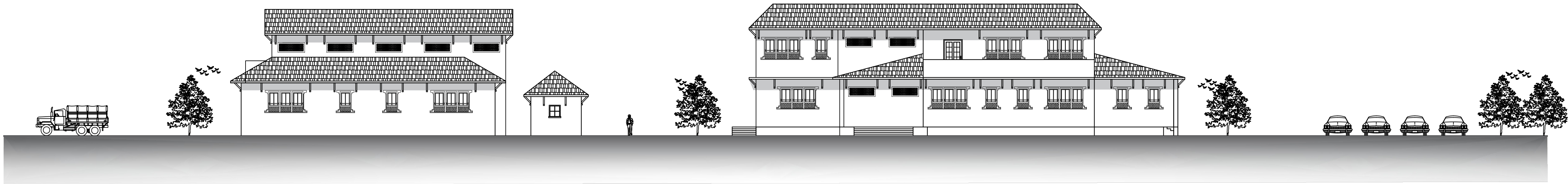


PURBANCHAL UNIVERSITY KHWOPA ENGINEERING COLLEGE DEPARTMENT OF ARCHITECTURE LIBALI, BHAKTAPUR	FINAL PRESENTATION B. ARCH THESIS	SUBJECT:THESIS TITLE: ROOF PLAN	NAME:ROSHANA TWATI ROLL NO: 760136 DATE:2082/04/27 SCALE :1:300	
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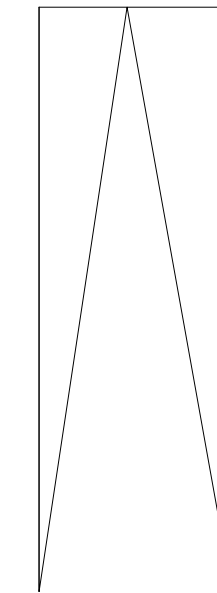
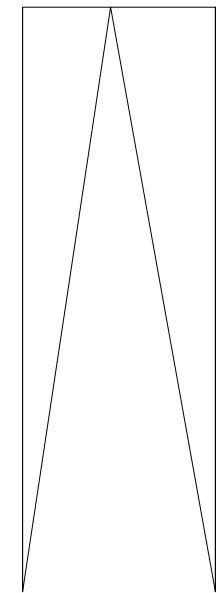
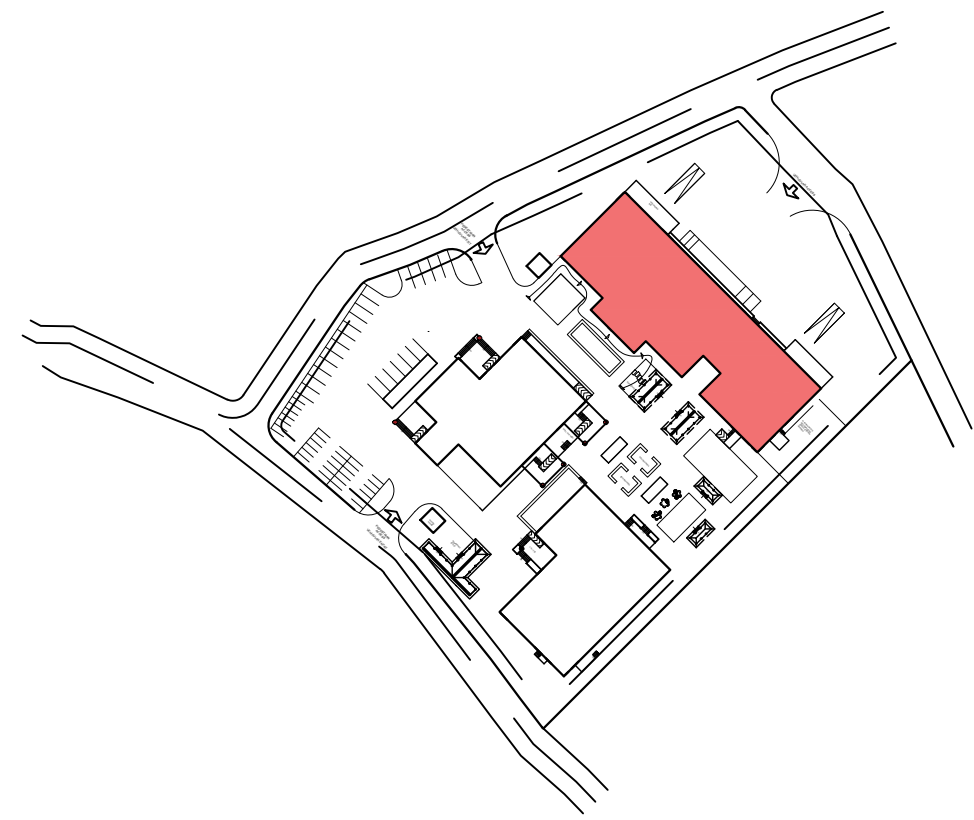




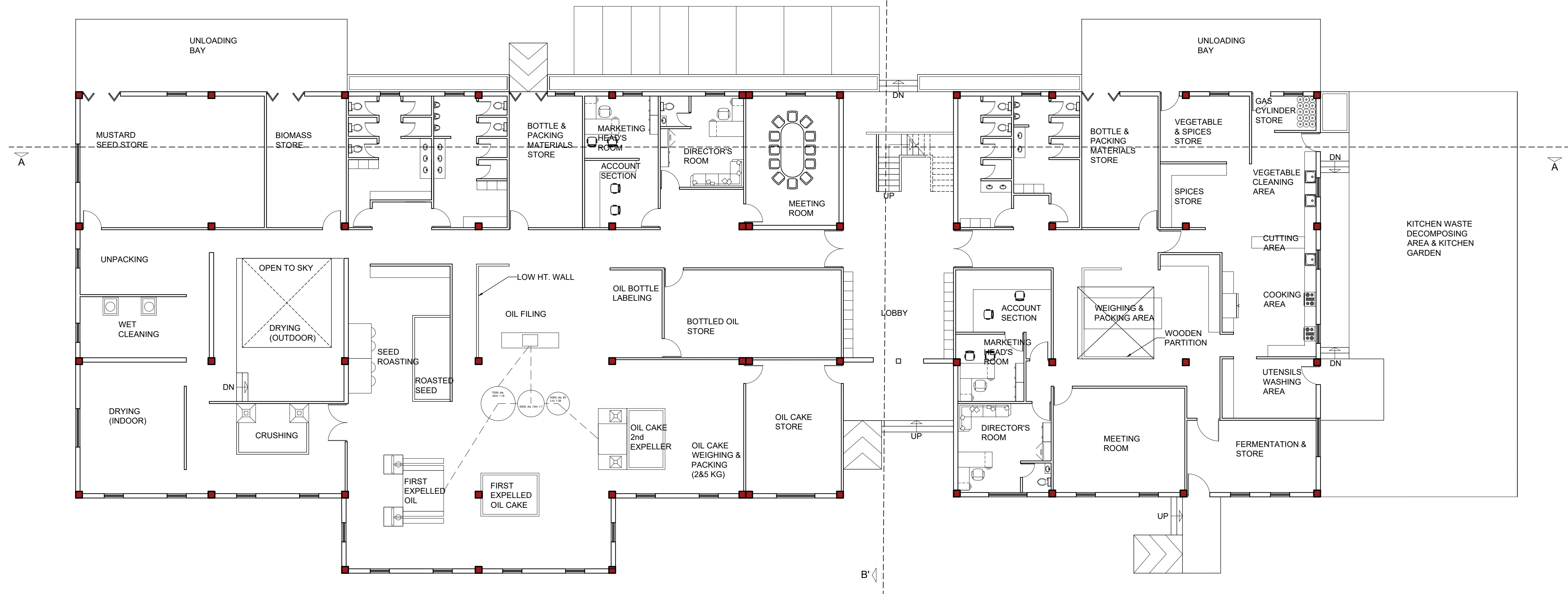
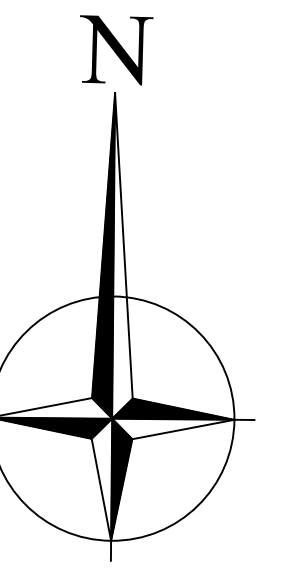
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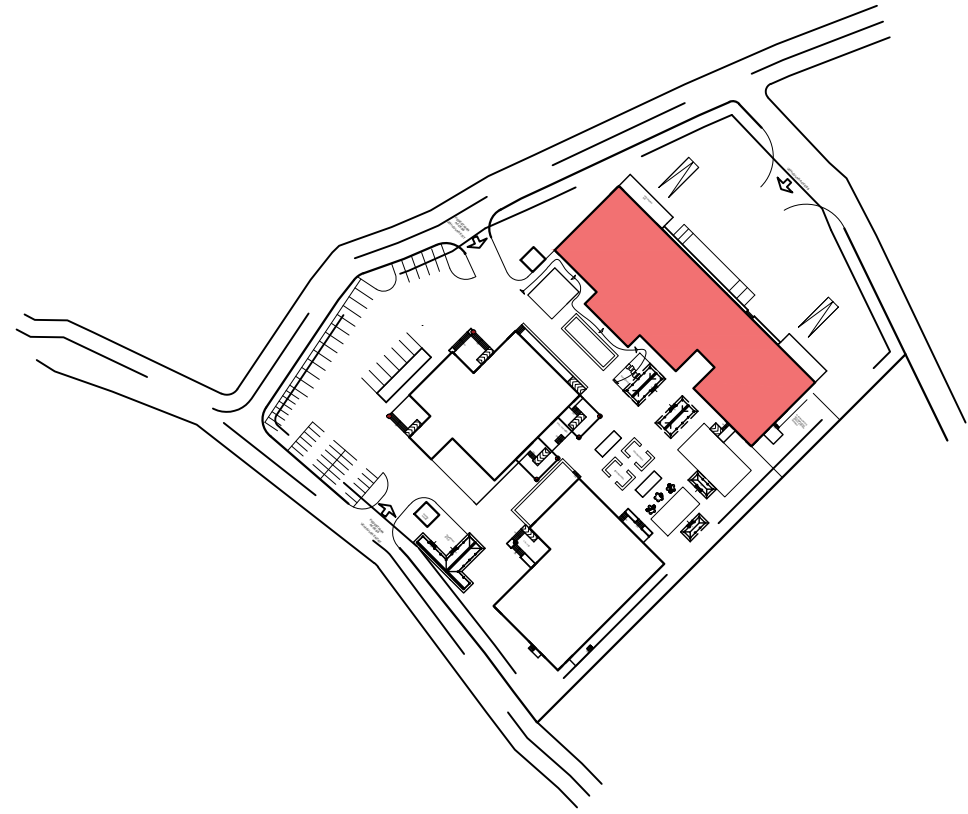
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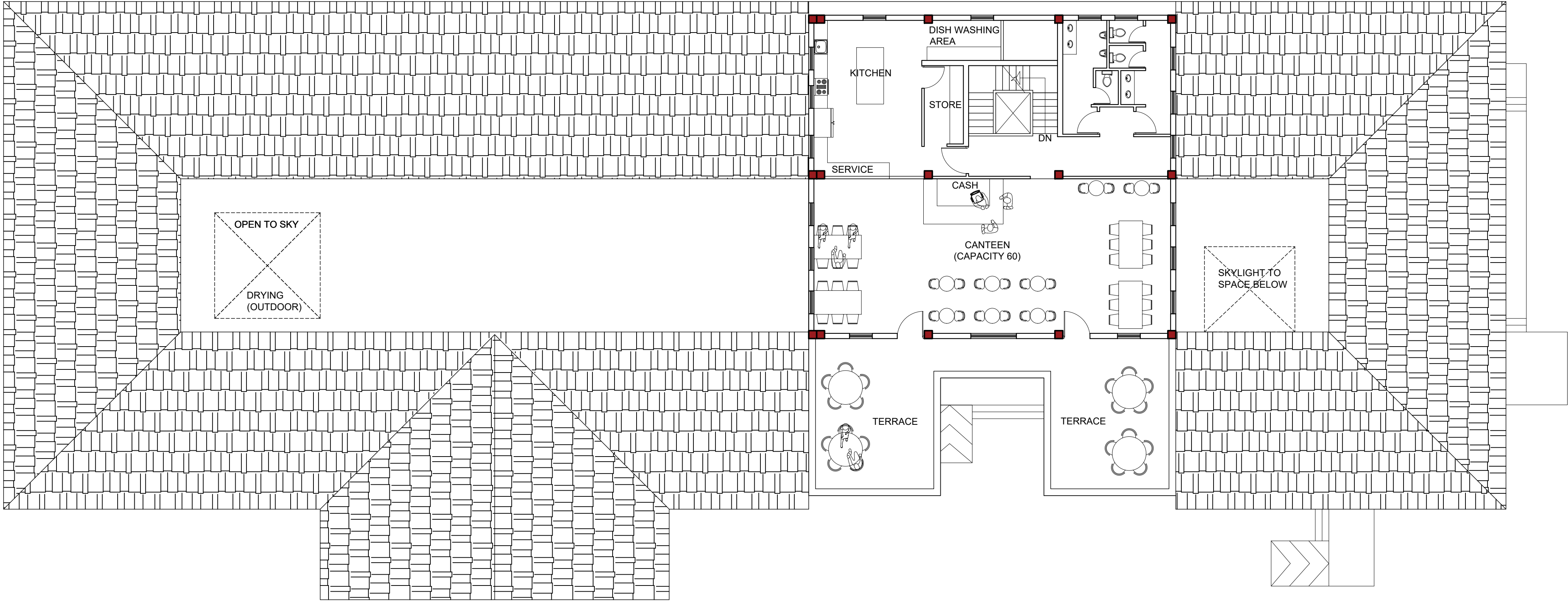
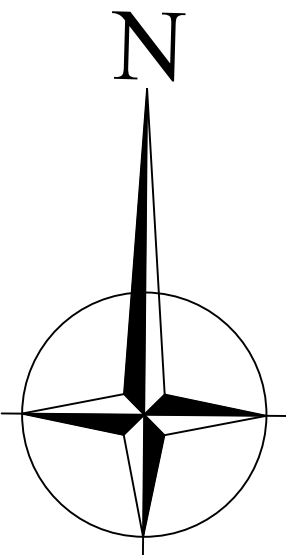
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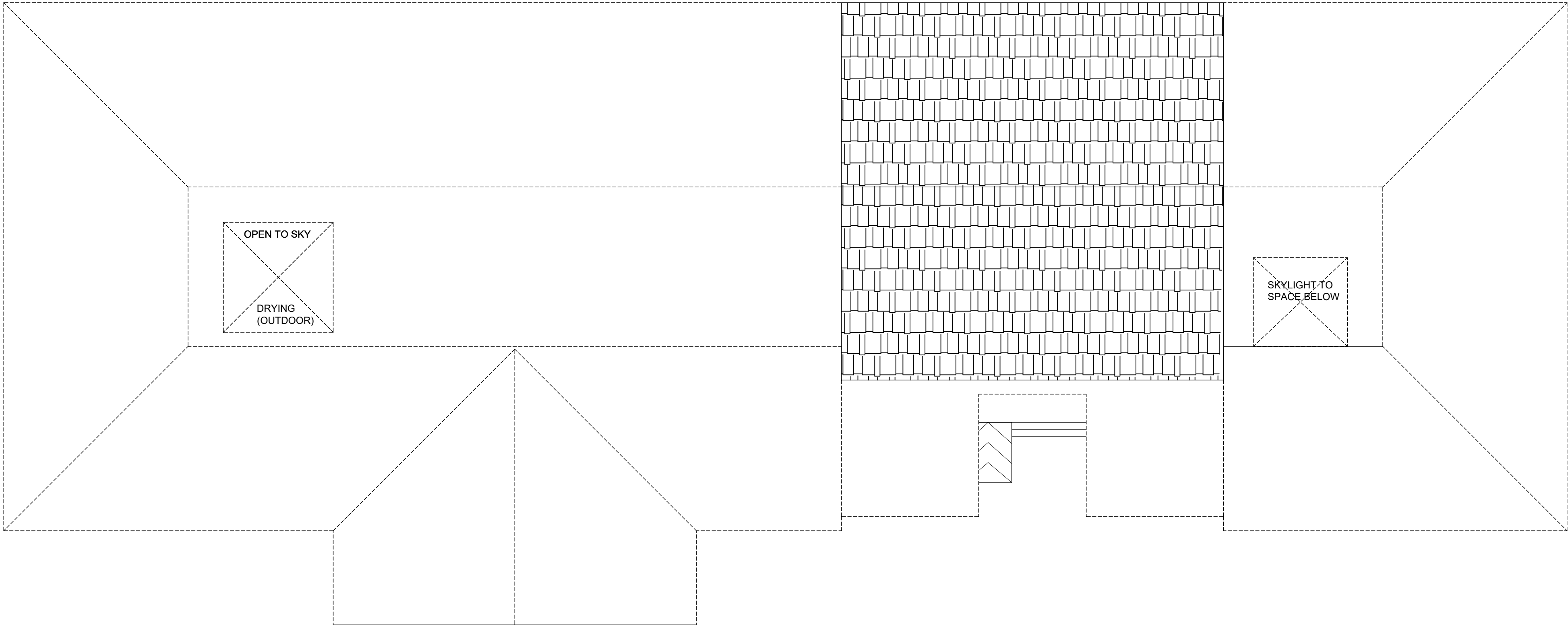
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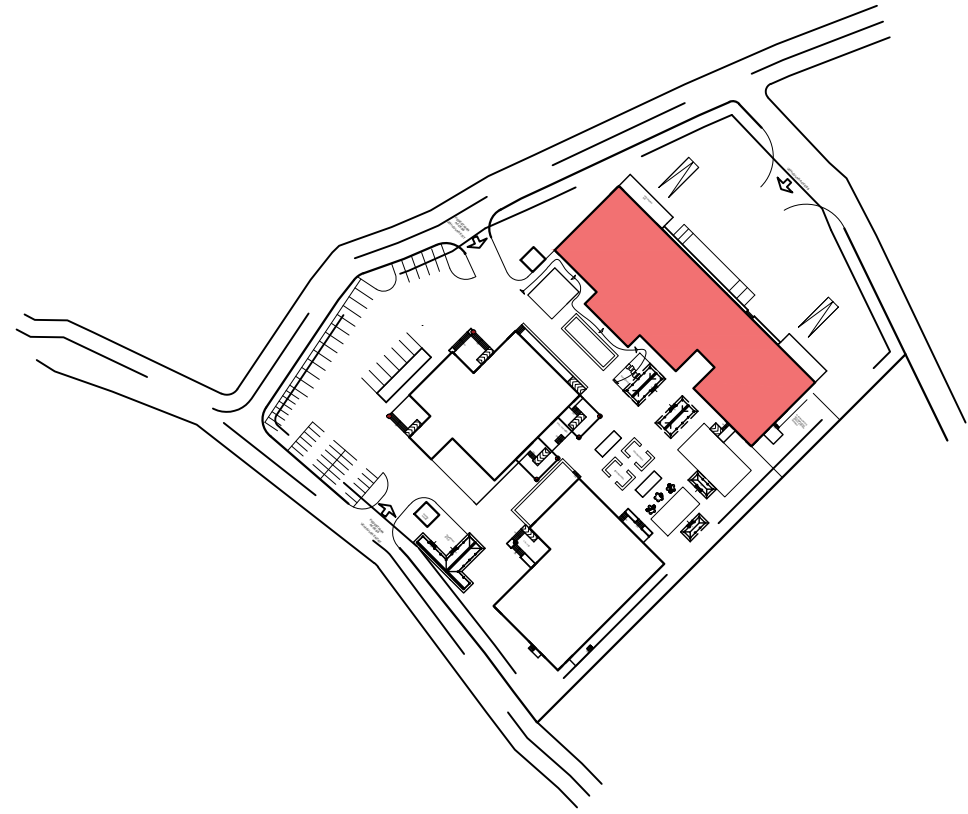
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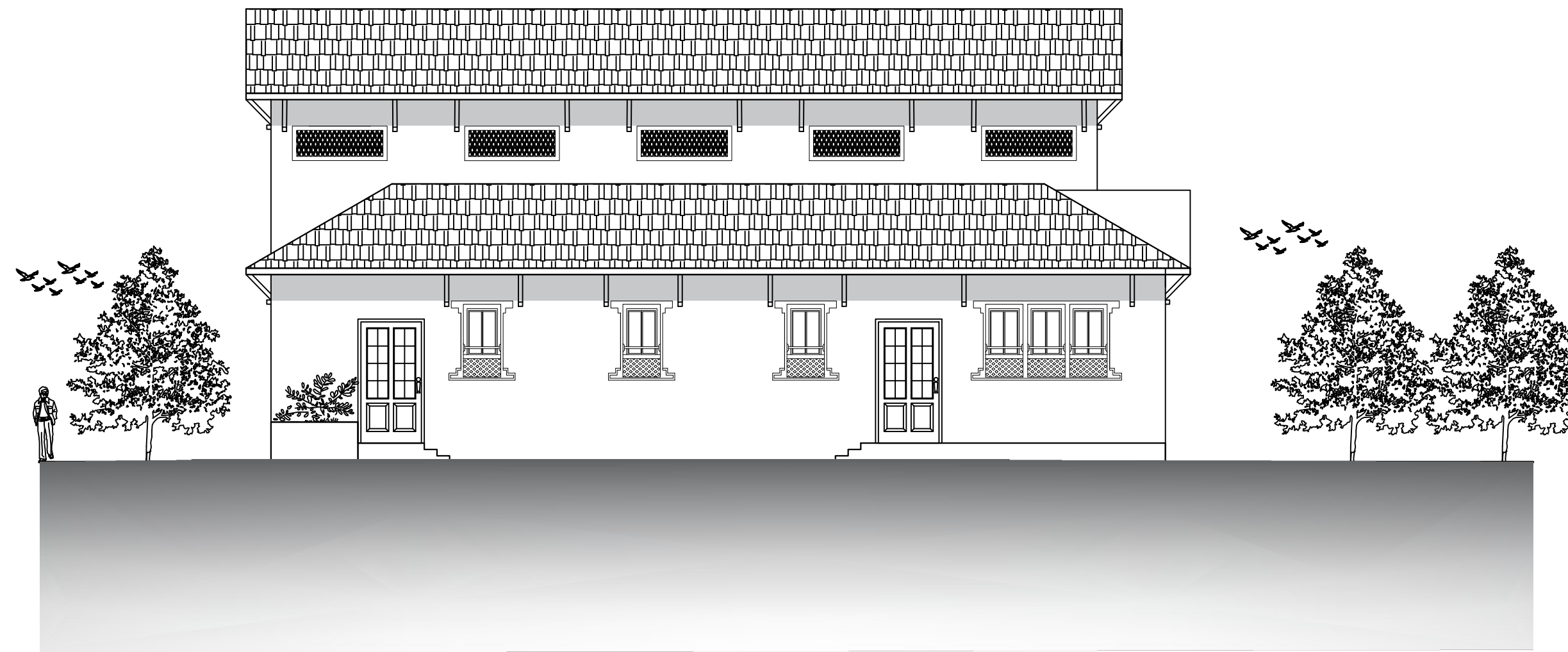
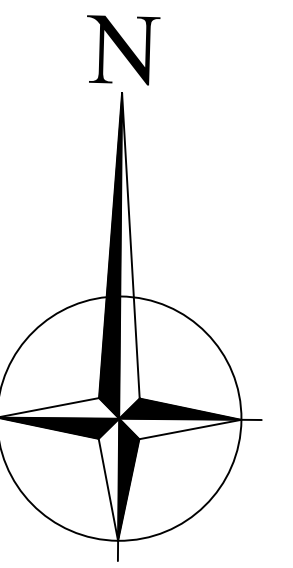
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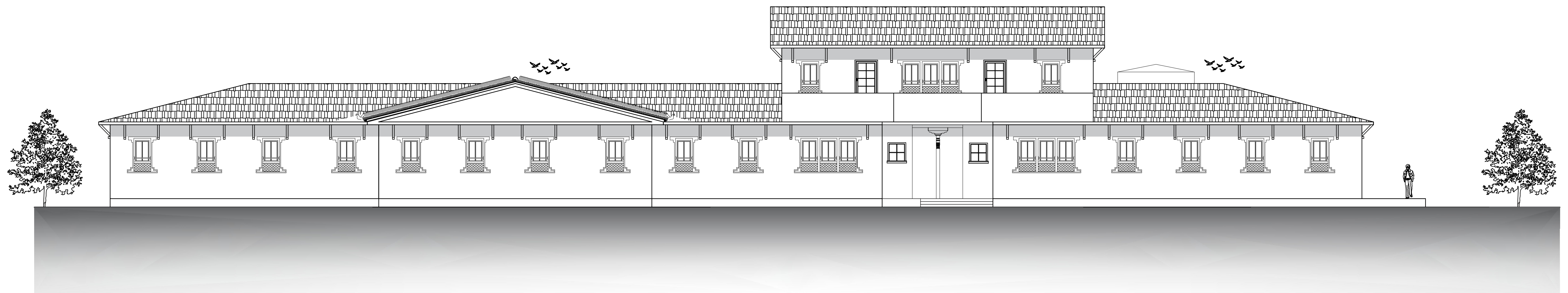
TOP FLOOR PLAN



FACTORY



EAST ELEVATION



SOUTH ELEVATION

PURBANCHAL UNIVERSITY
KHWOPA ENGINEERING COLLEGE
DEPARTMENT OF ARCHITECTURE
LIBALI, BHAKTAPUR

FINAL PRESENTATION

B. ARCH THESIS

SUBJECT:THESIS

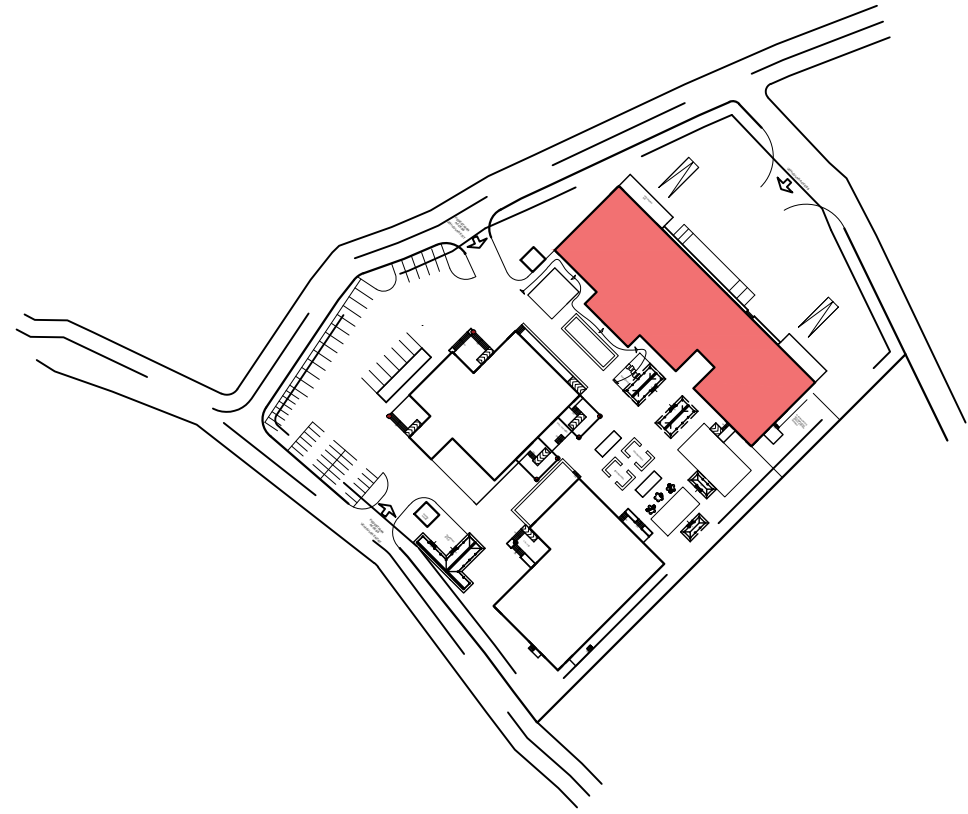
TITLE: PLAN

NAME:ROSHANA TWATI

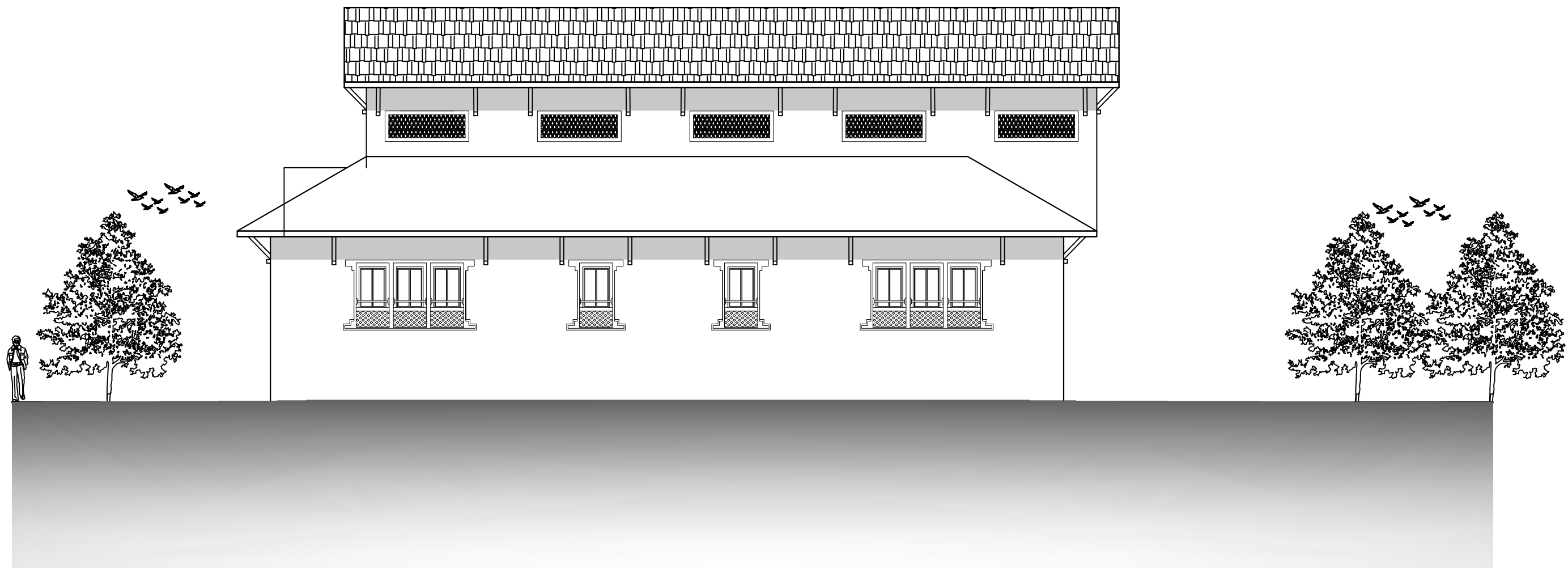
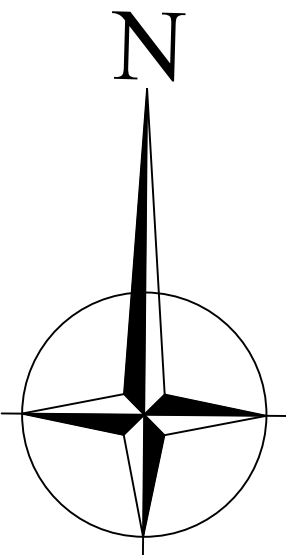
ROLL NO: 760136

DATE:2082/04/27

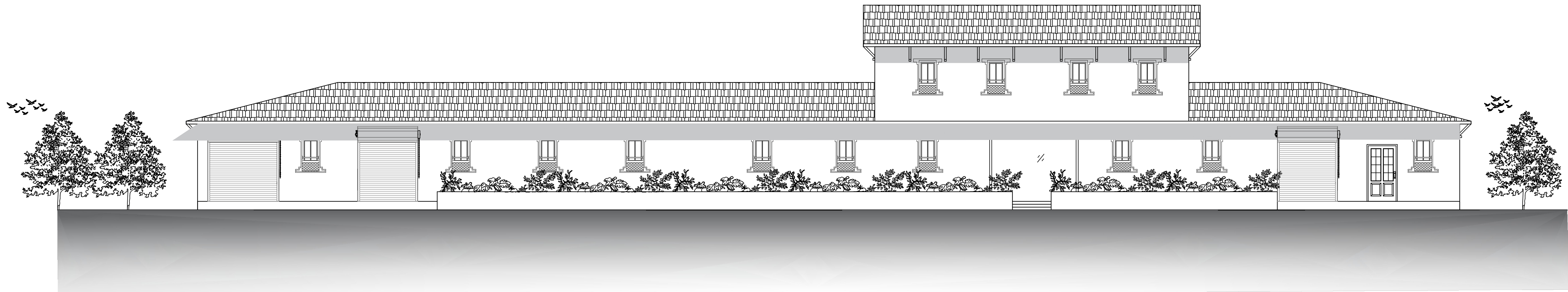
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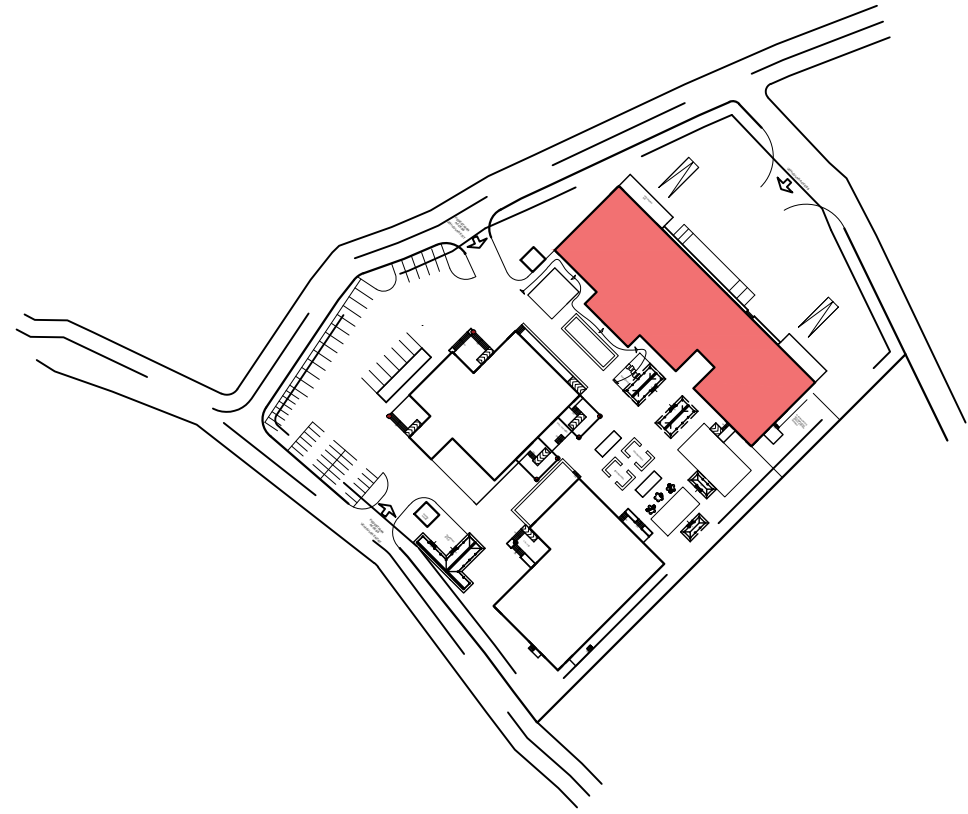
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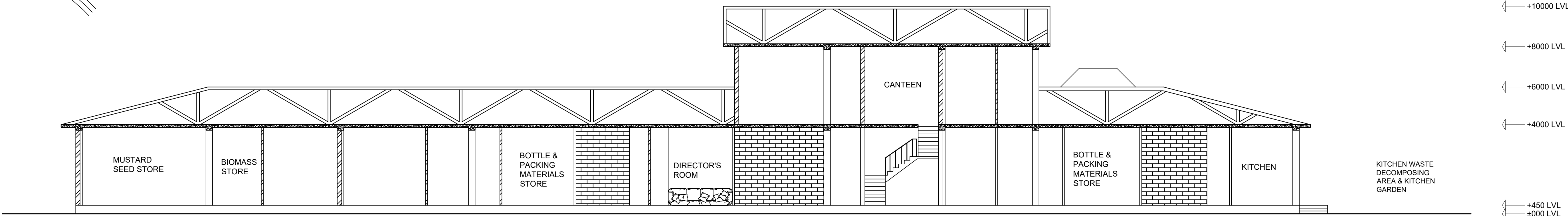
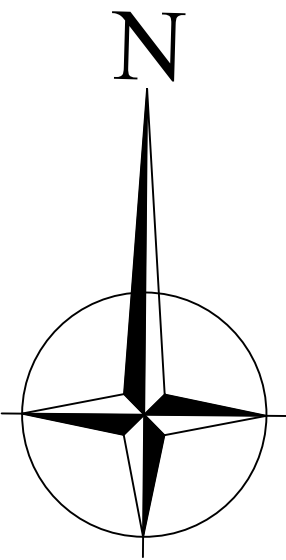
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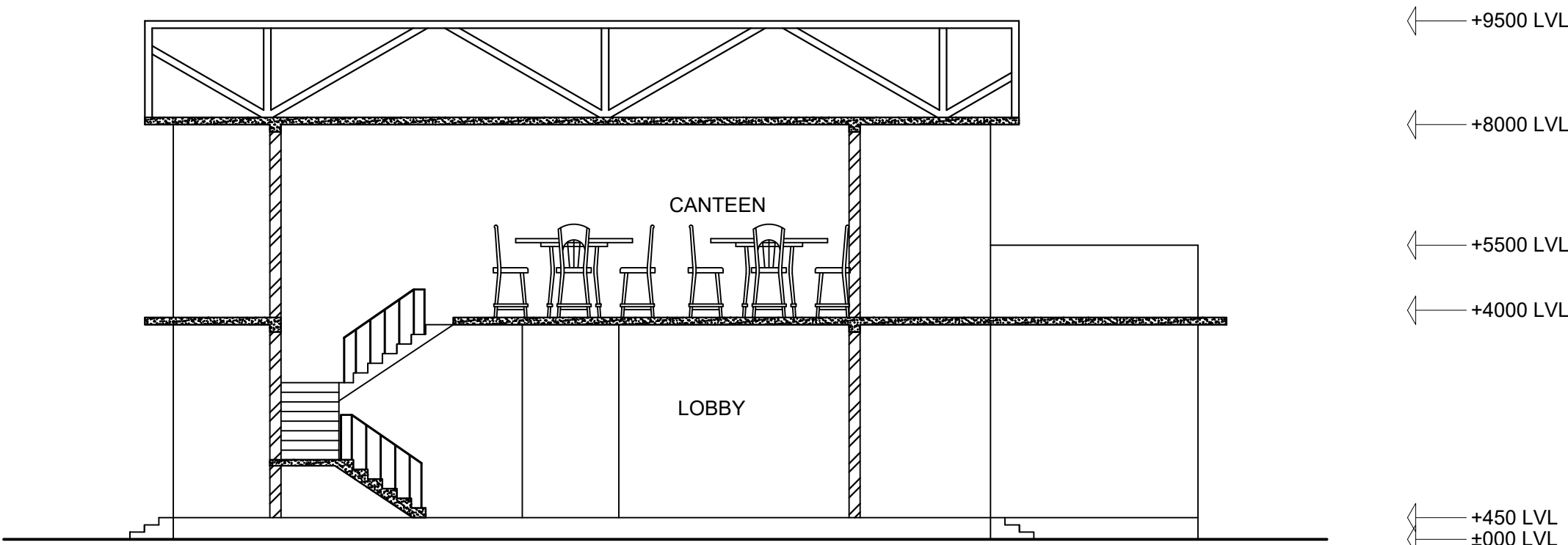
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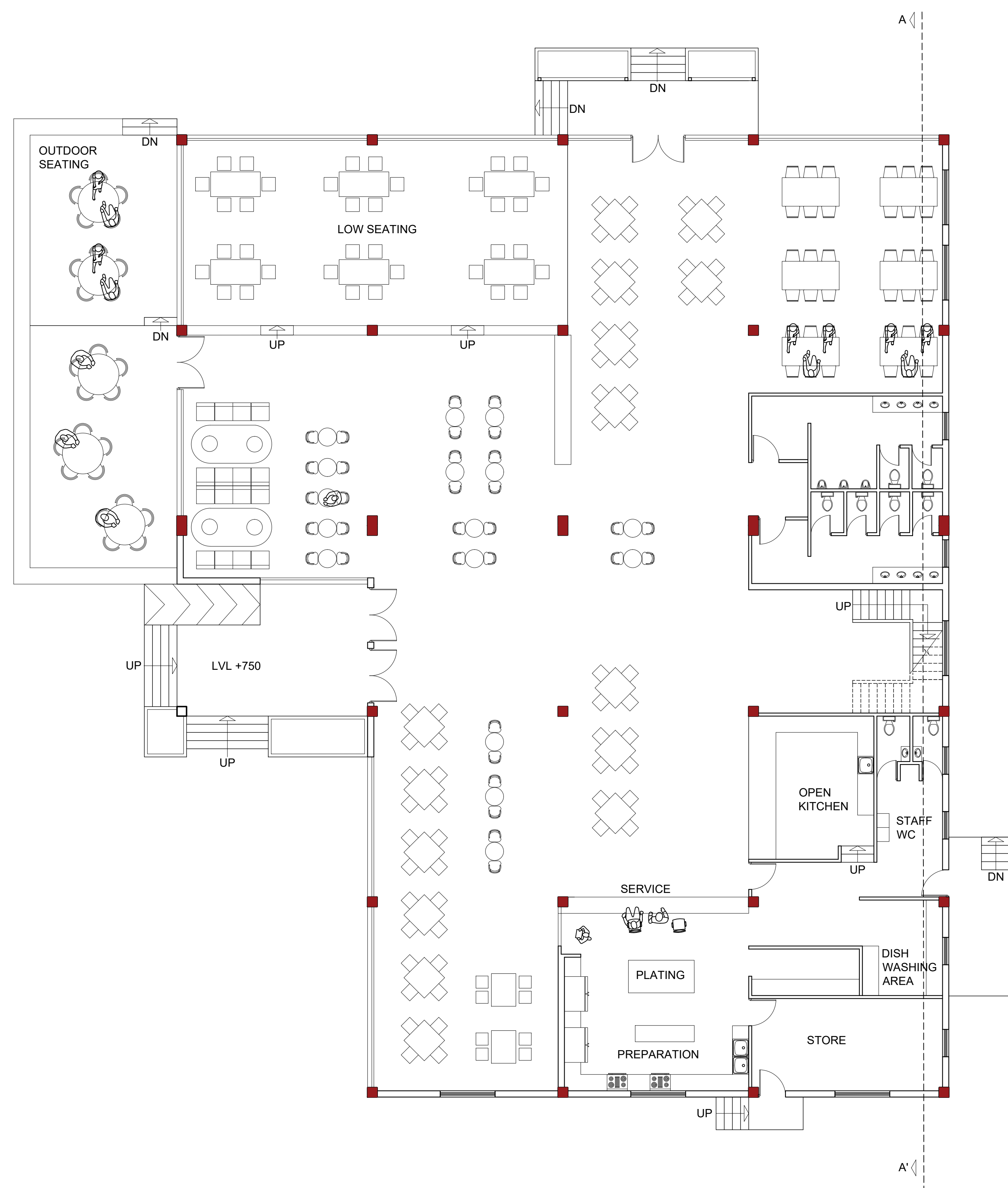
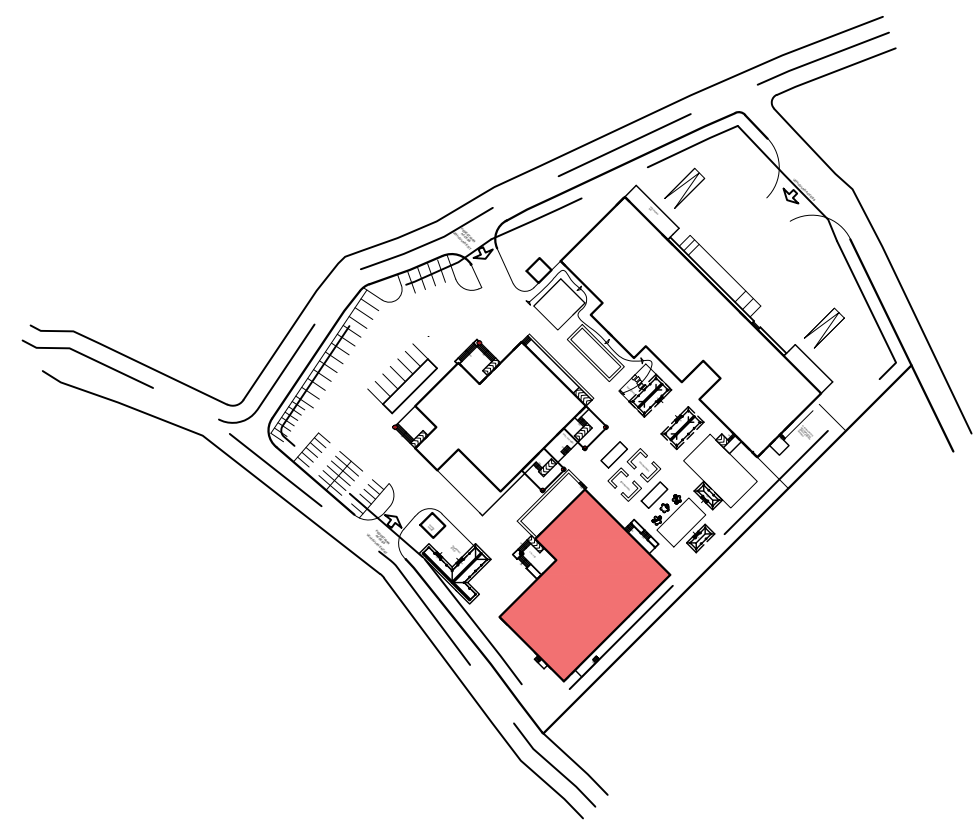
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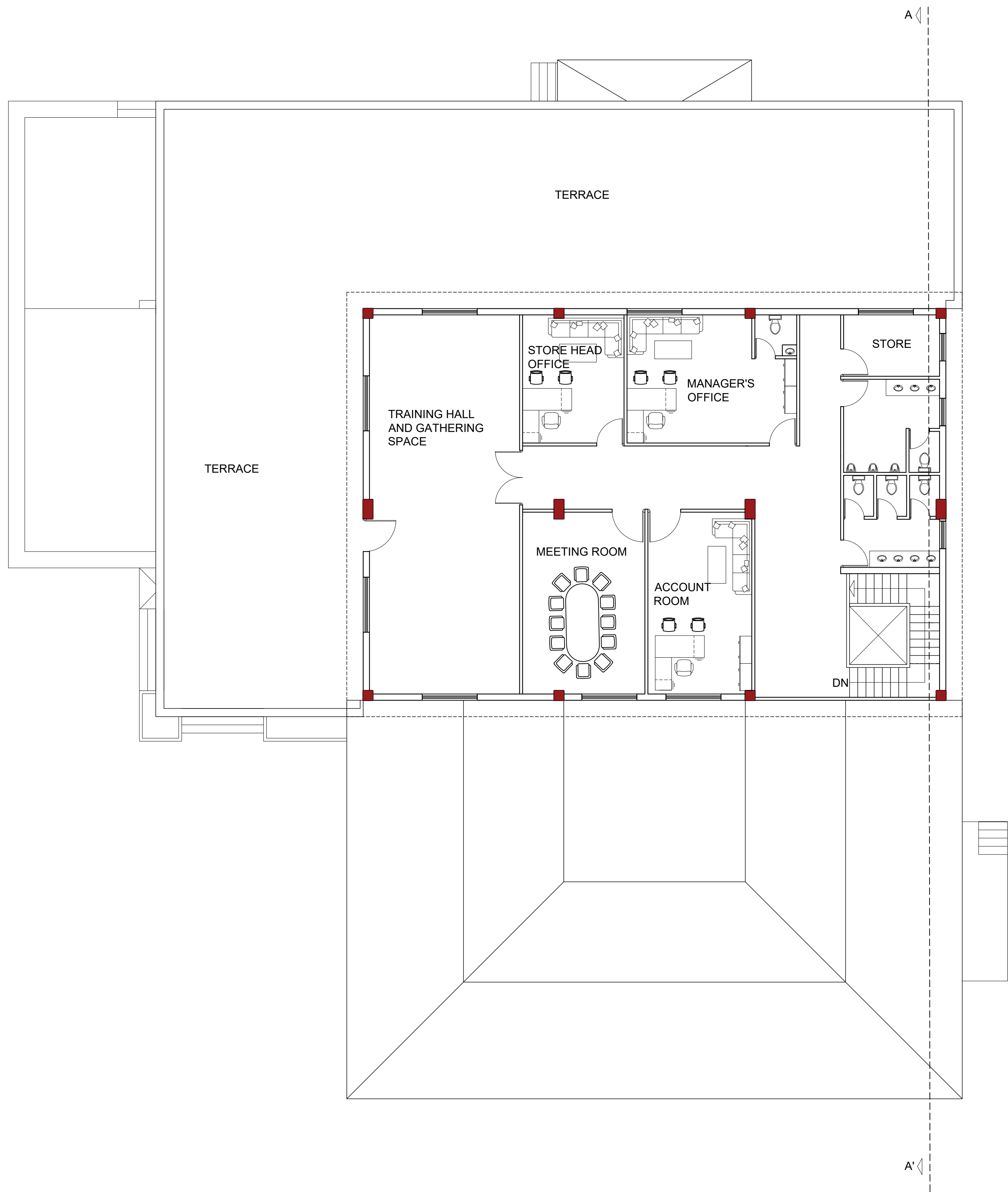
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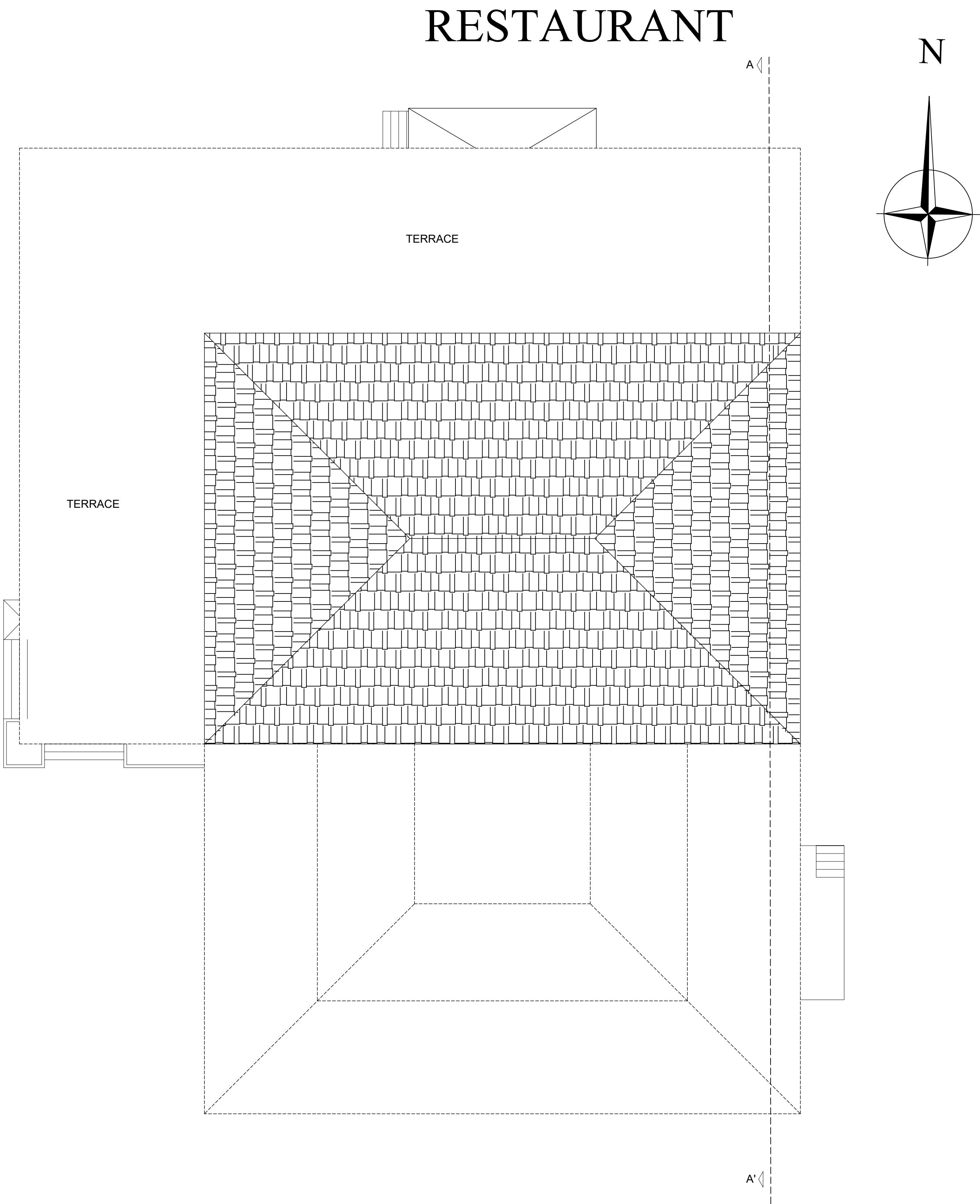
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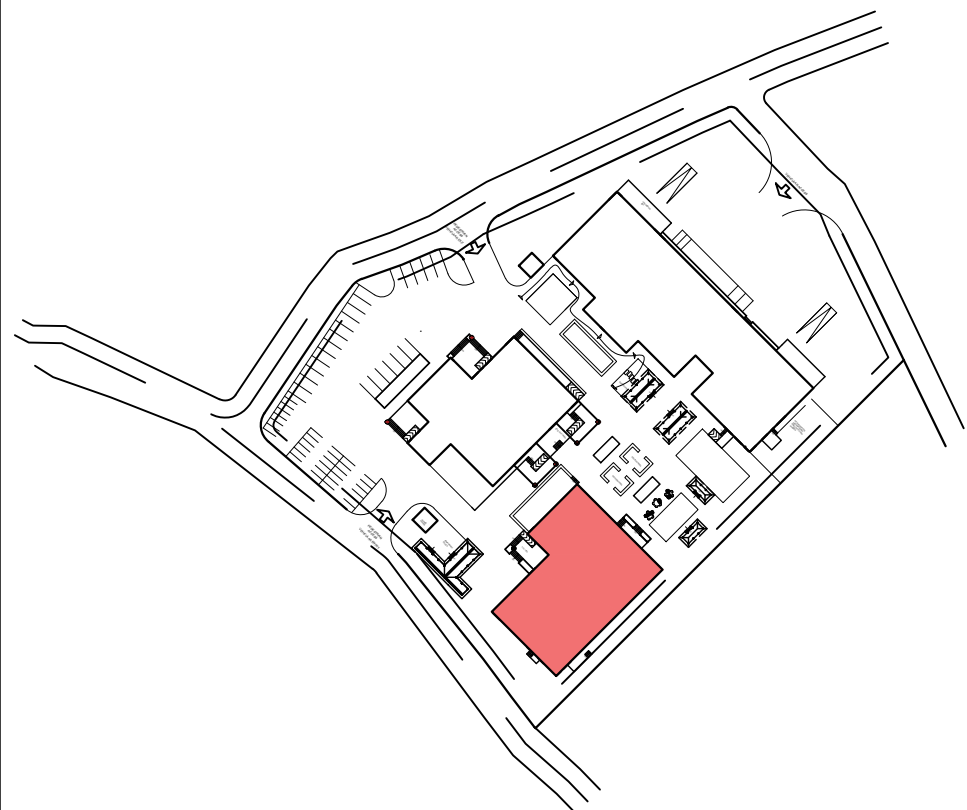
GROUND FLOOR PLAN



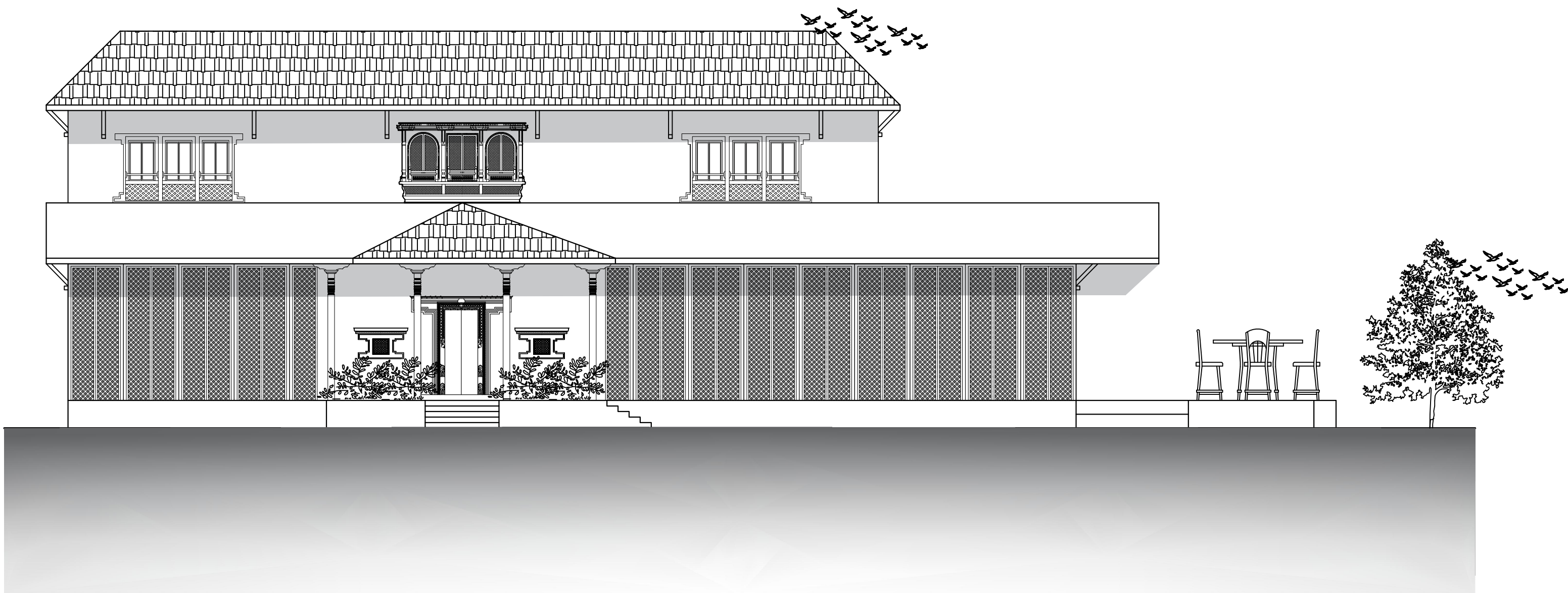
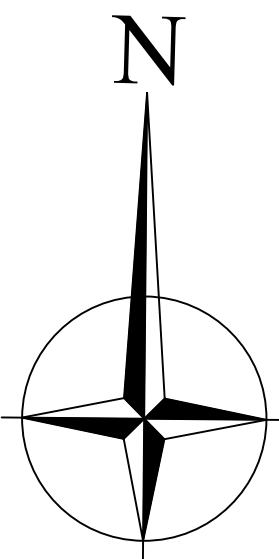
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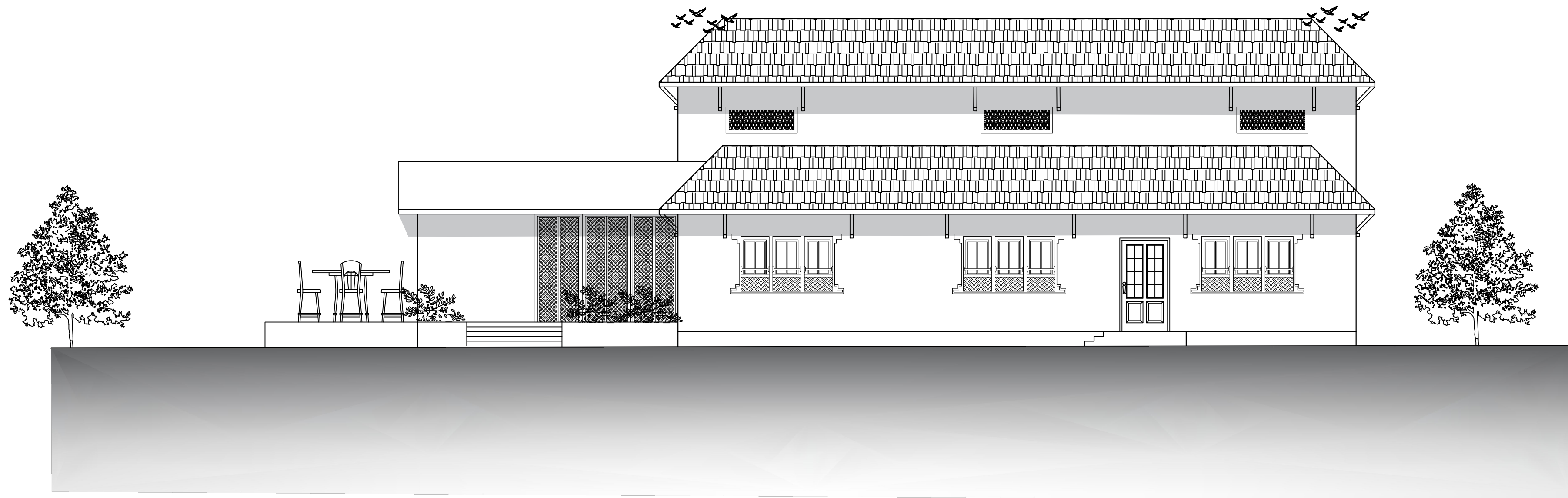
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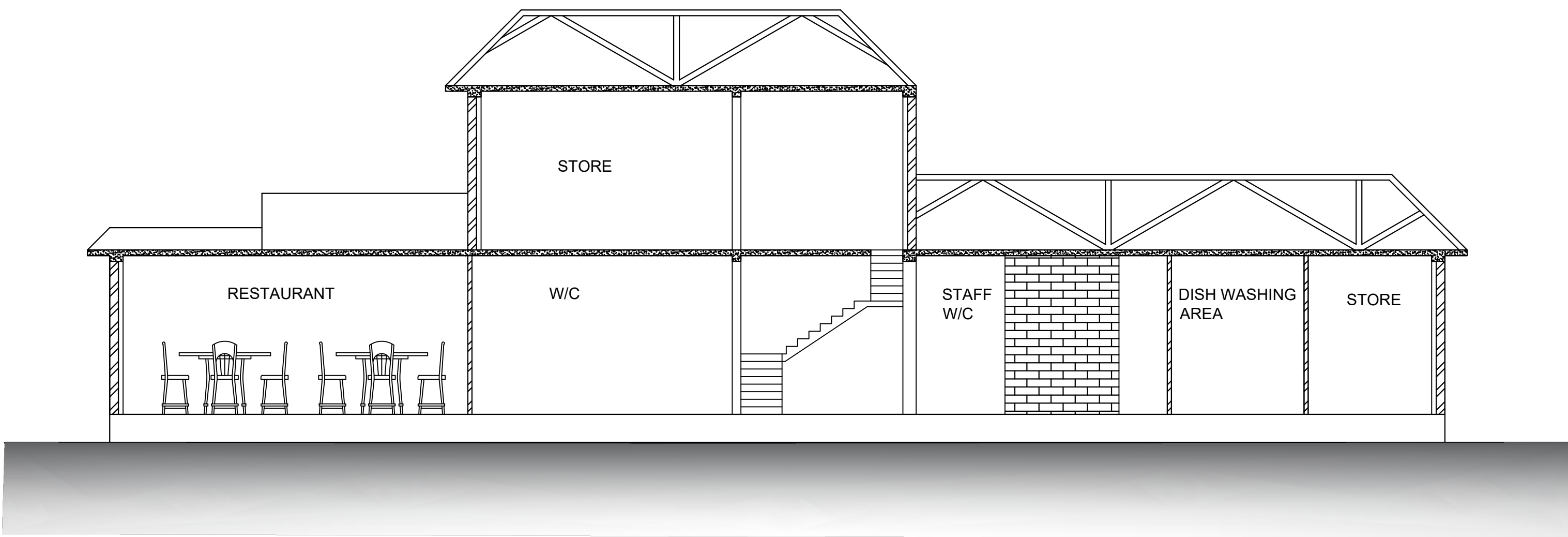
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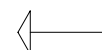
NORTH ELEVATION



SOUTH ELEVATION



+10000 LVL



+8000 LVL



+6000 LVL



+4000 LVL

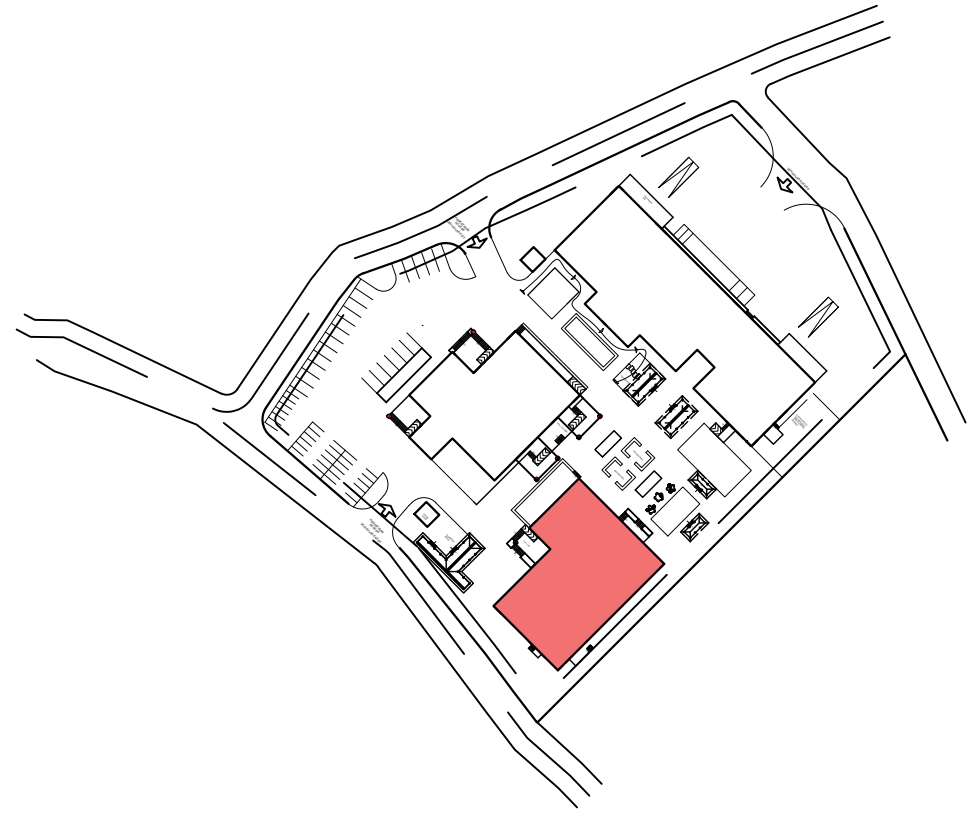


+750 LVL

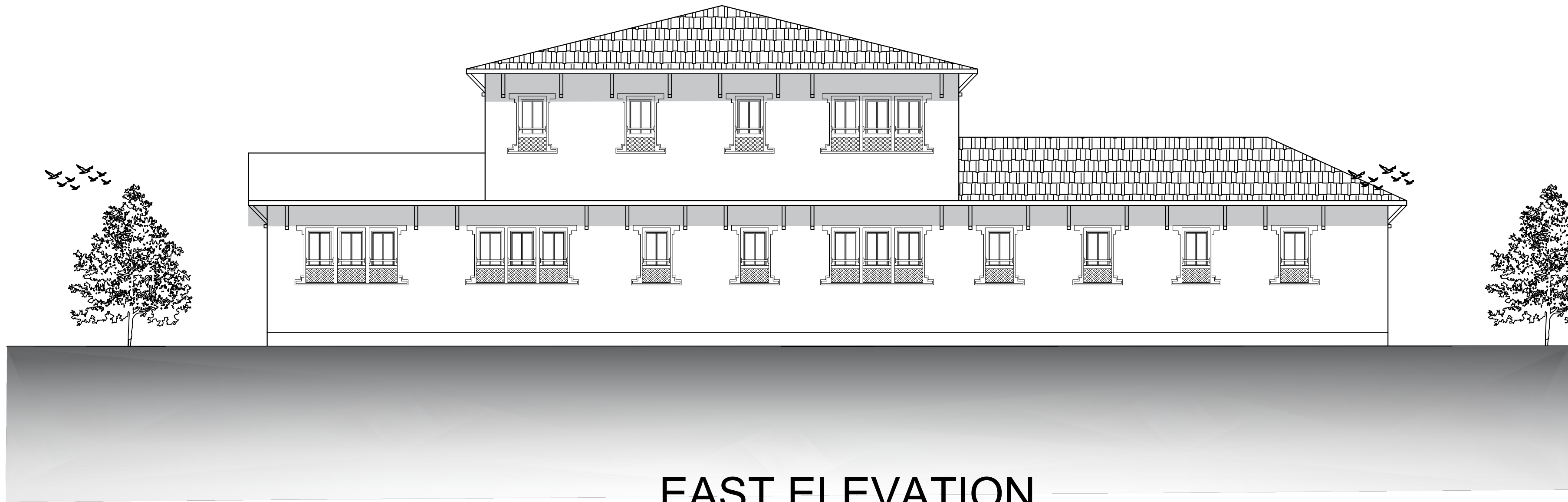
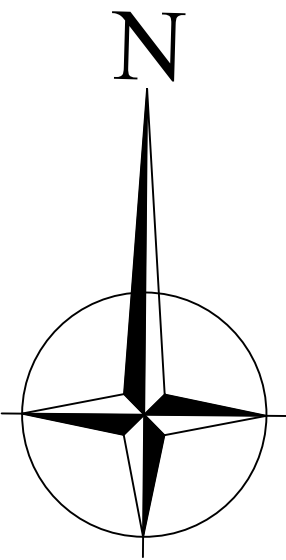


±000 LVL

SECTION AT AA'



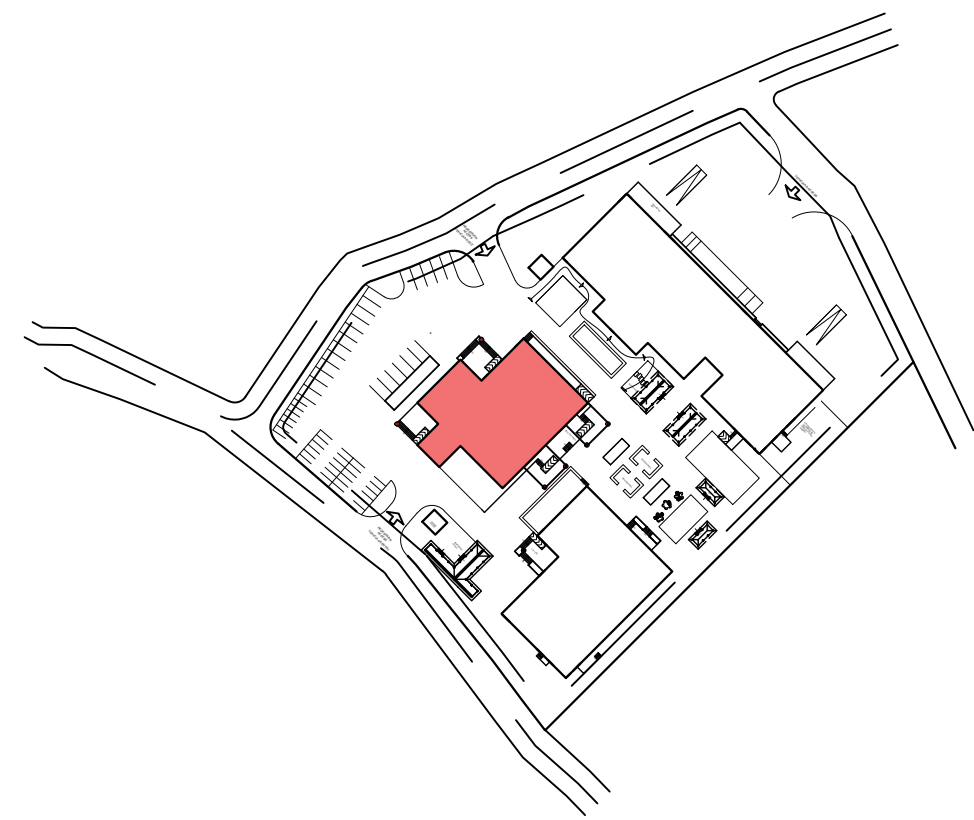
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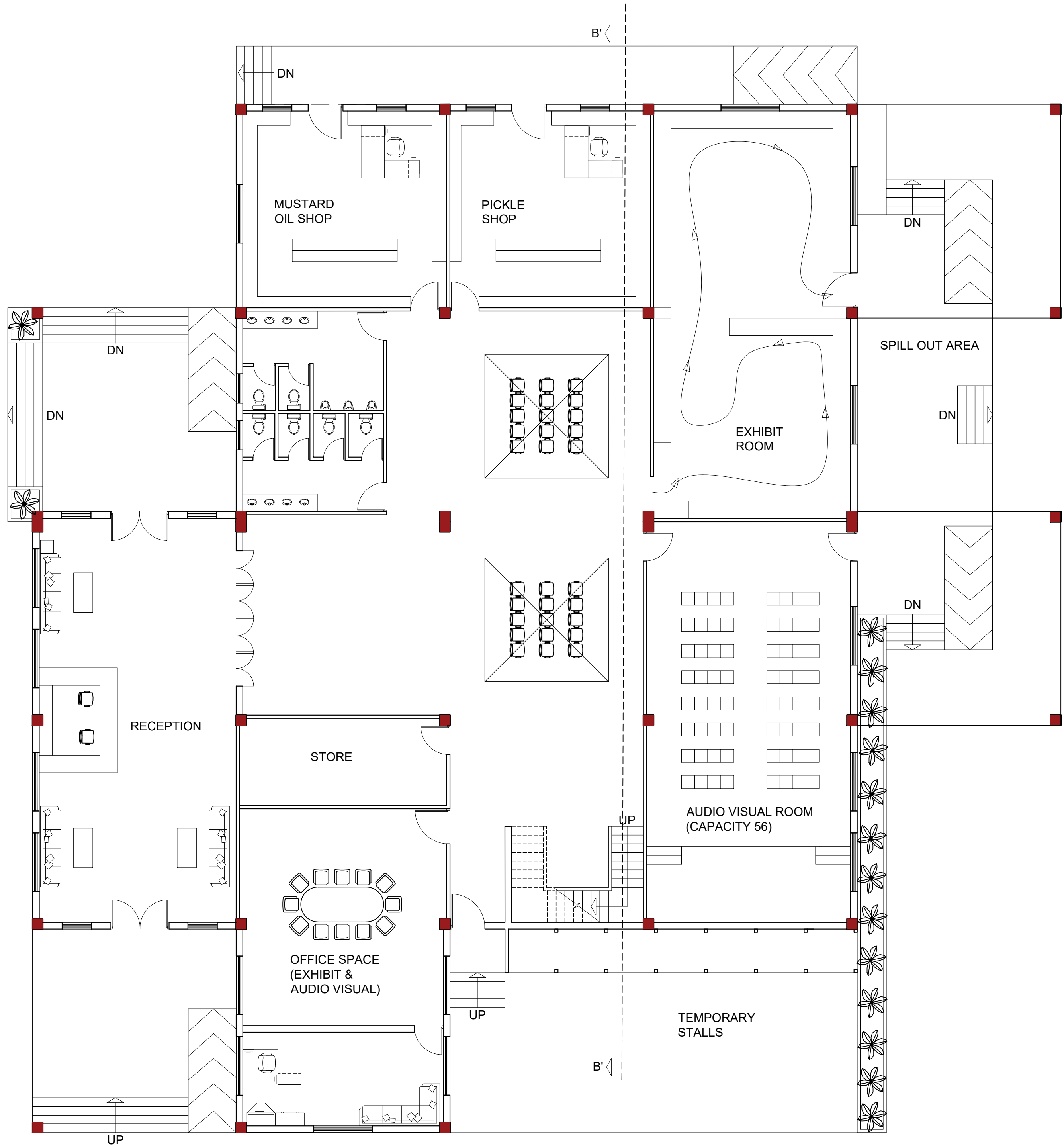
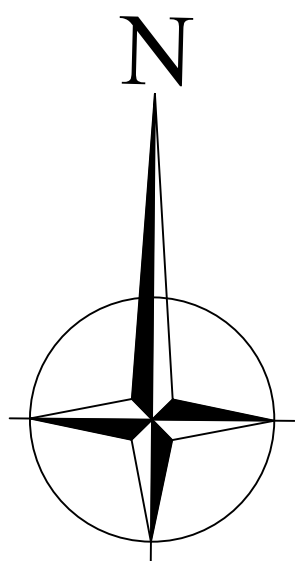
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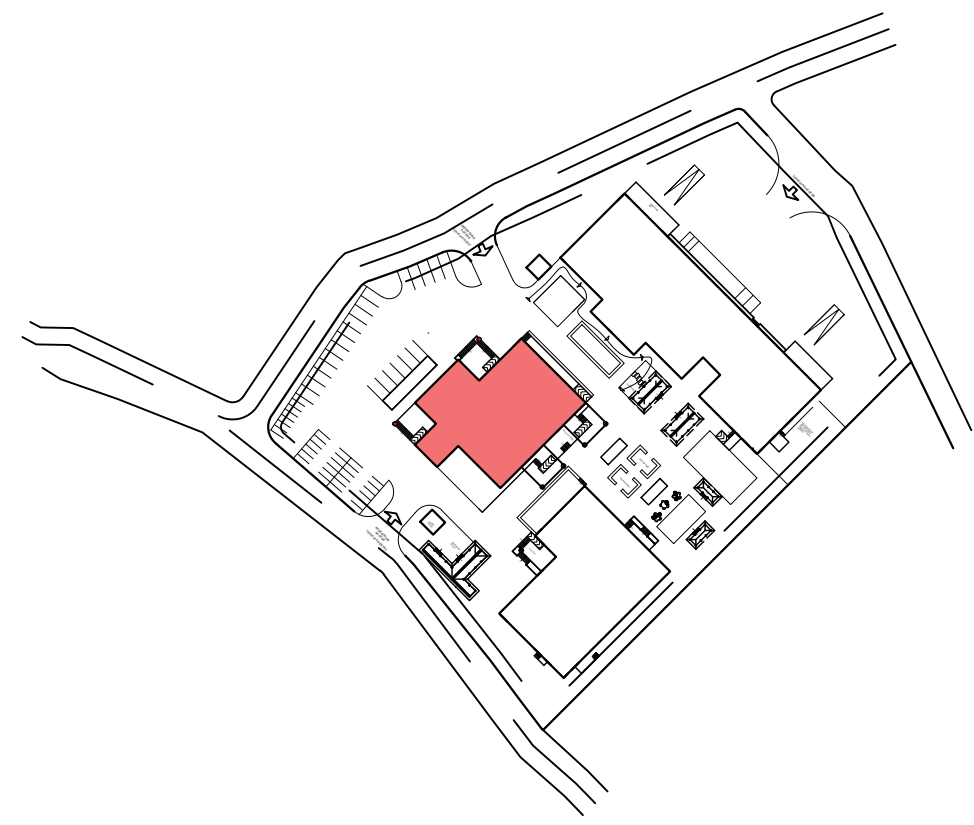
WEST ELEVATION



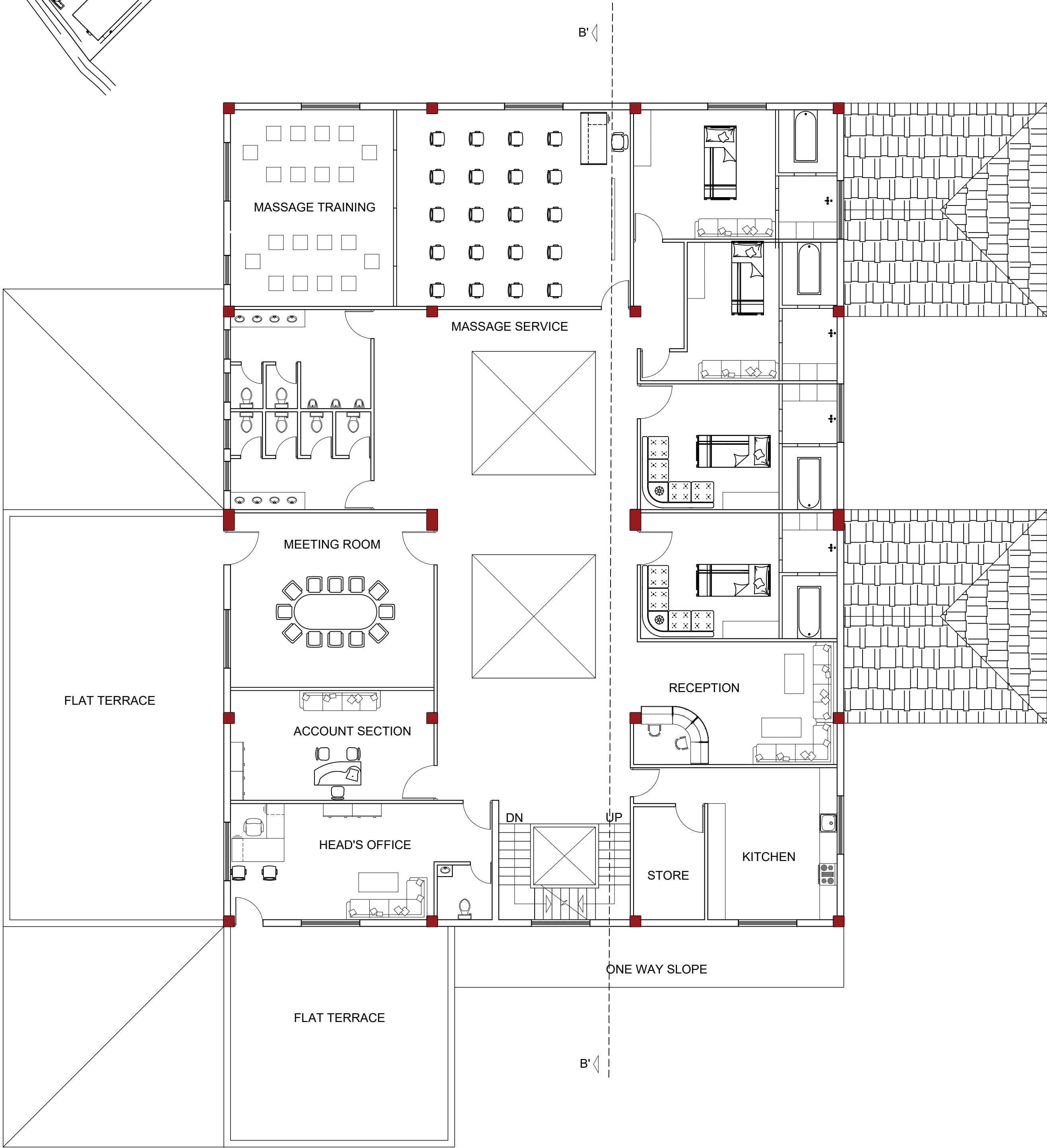
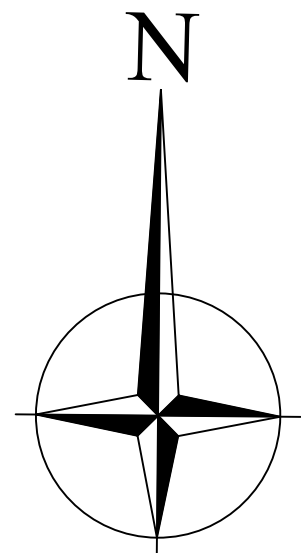
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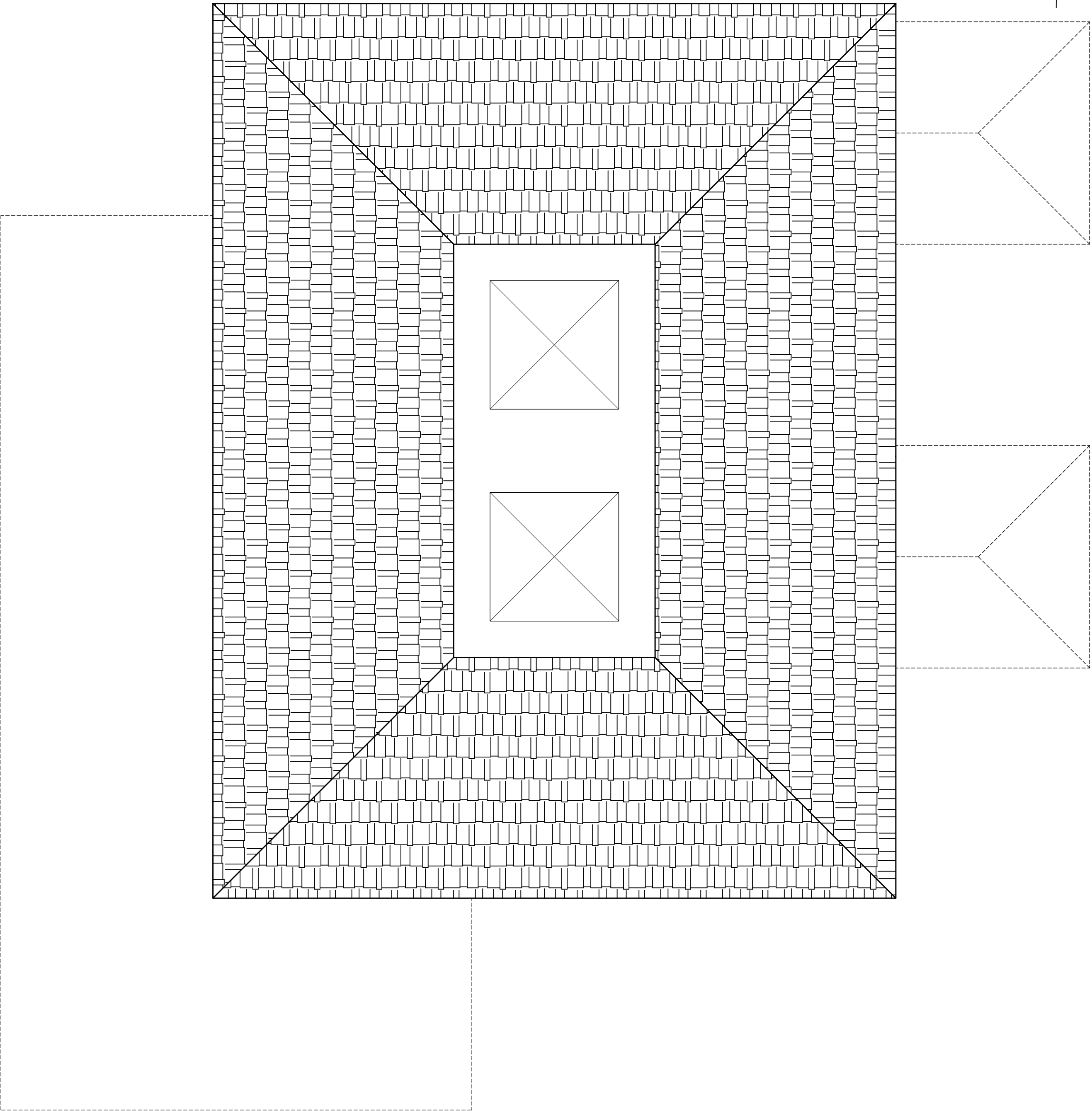
GROUND FLOOR PLAN



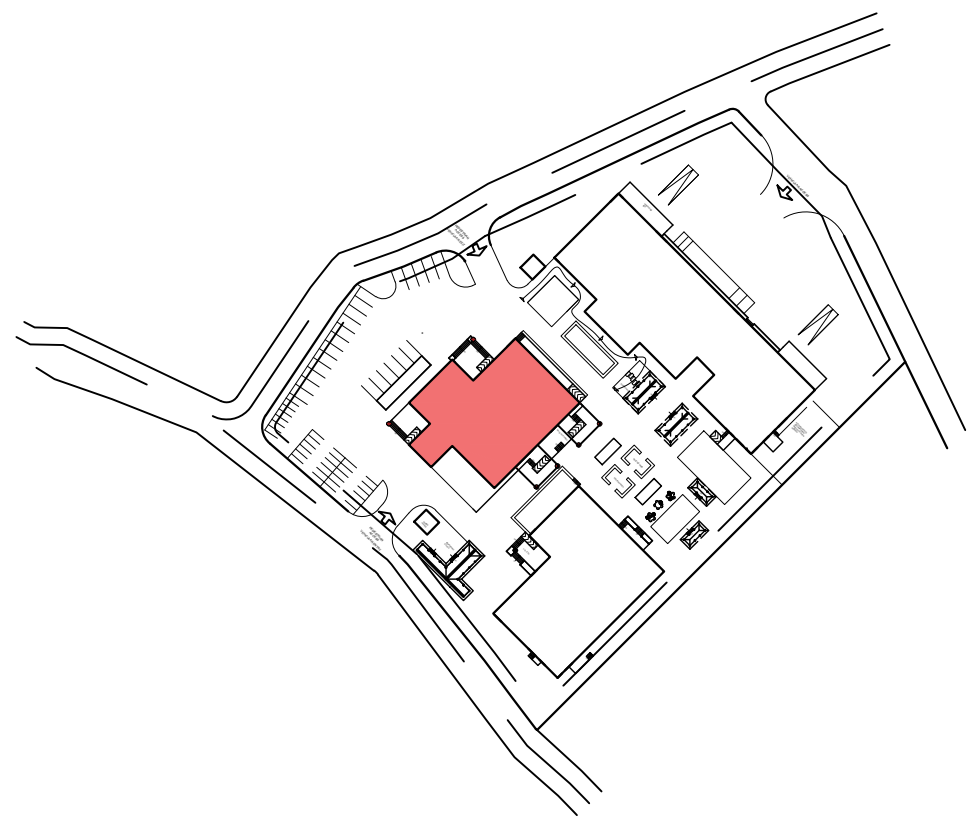
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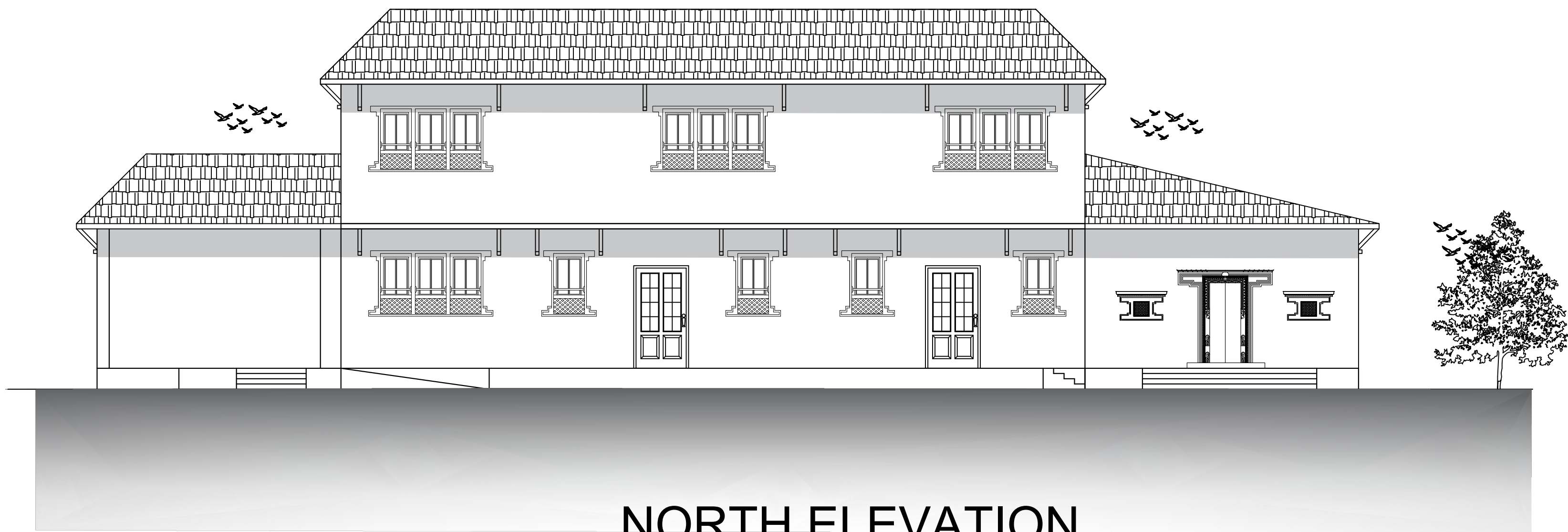
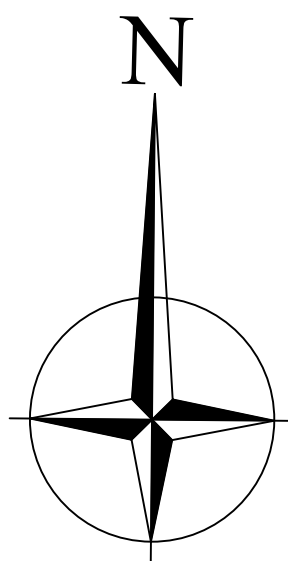
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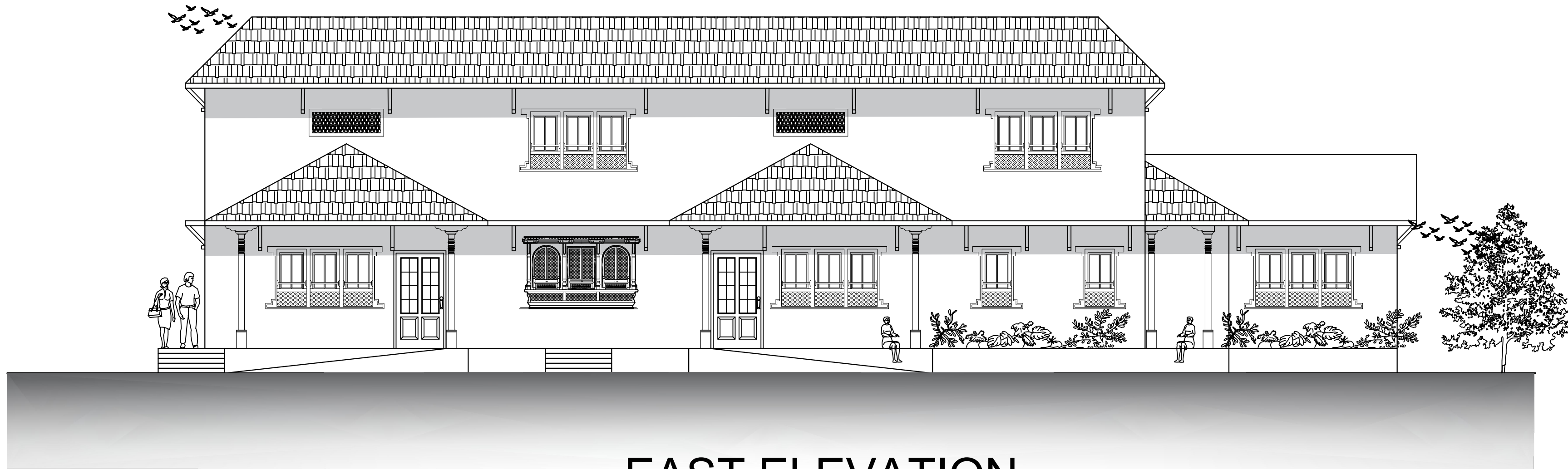
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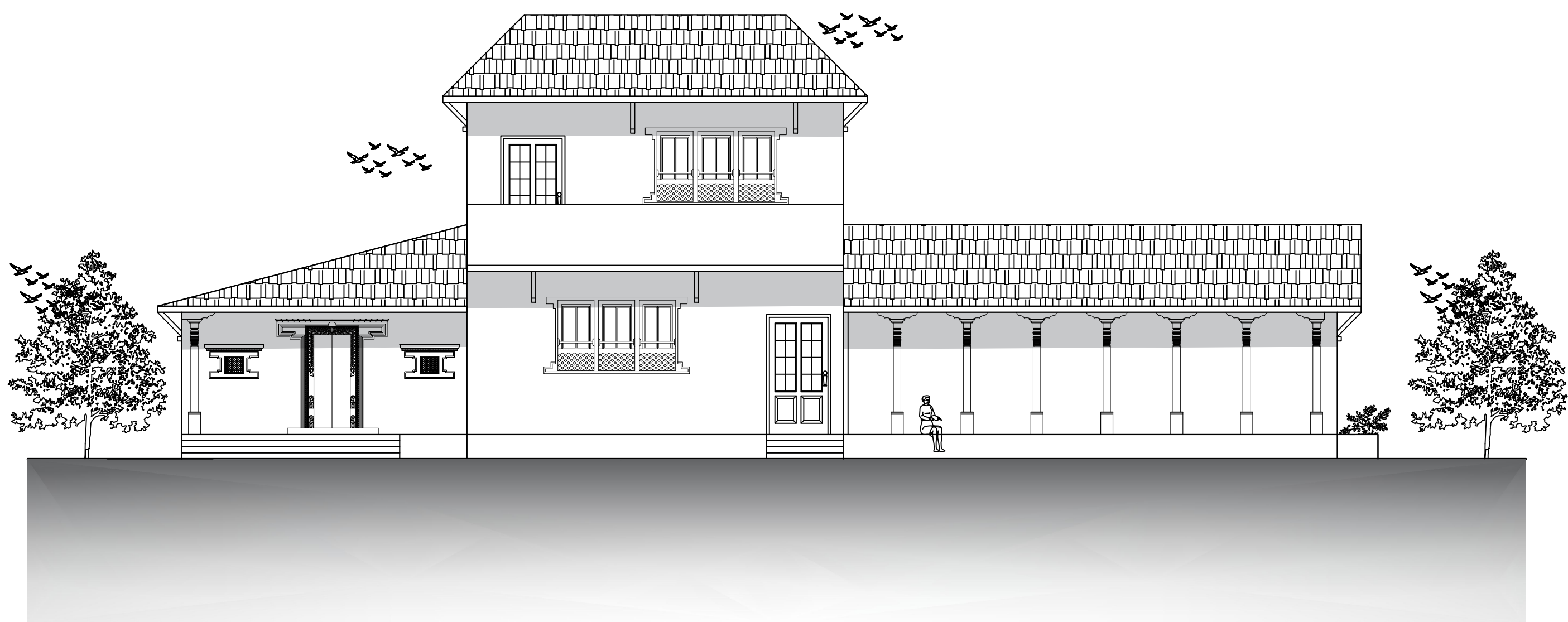
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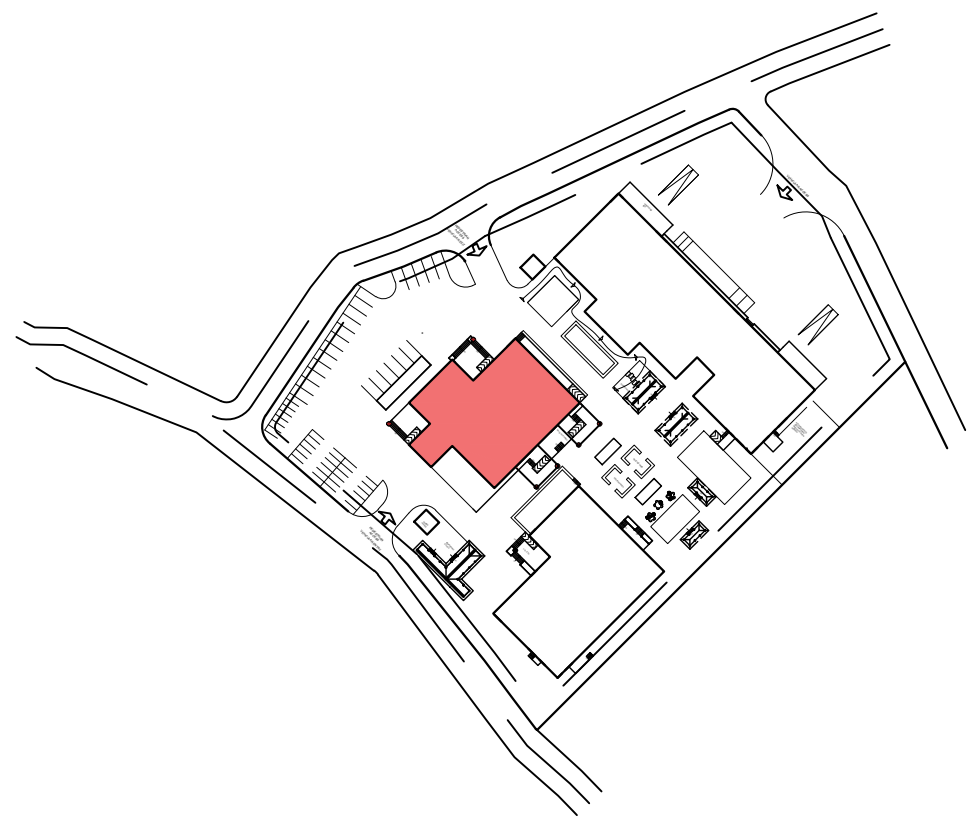
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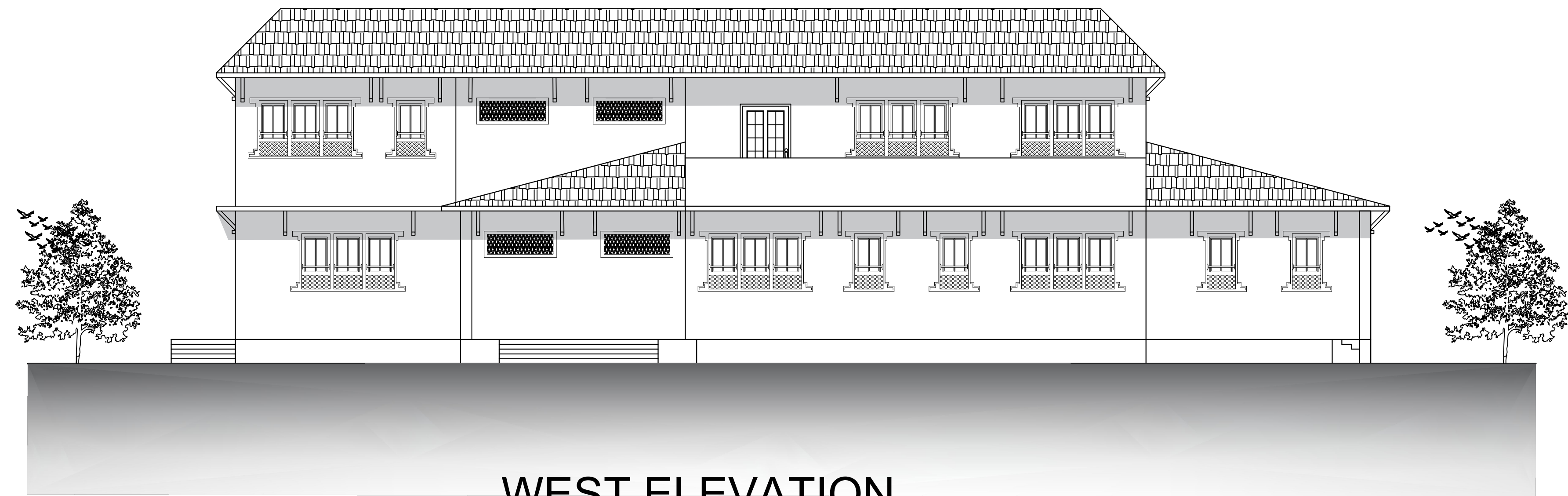
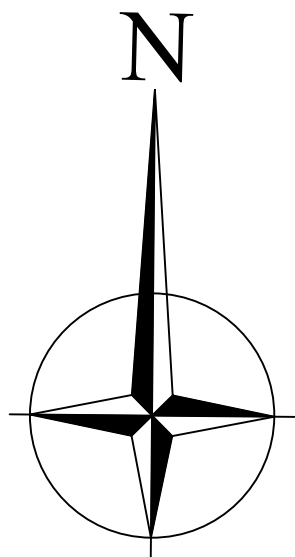
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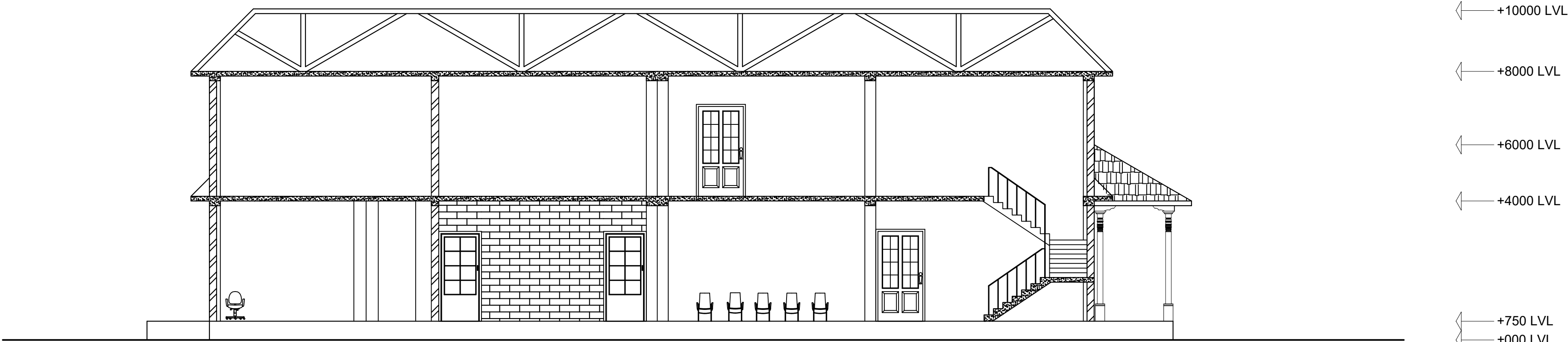
SOUTH ELEVATION



COMMERCIAL BLOCK



WEST ELEVATION



SECTION AT BB'



PEOPLE ARE ENJOYING AT RESTING PLACE PHALCHA

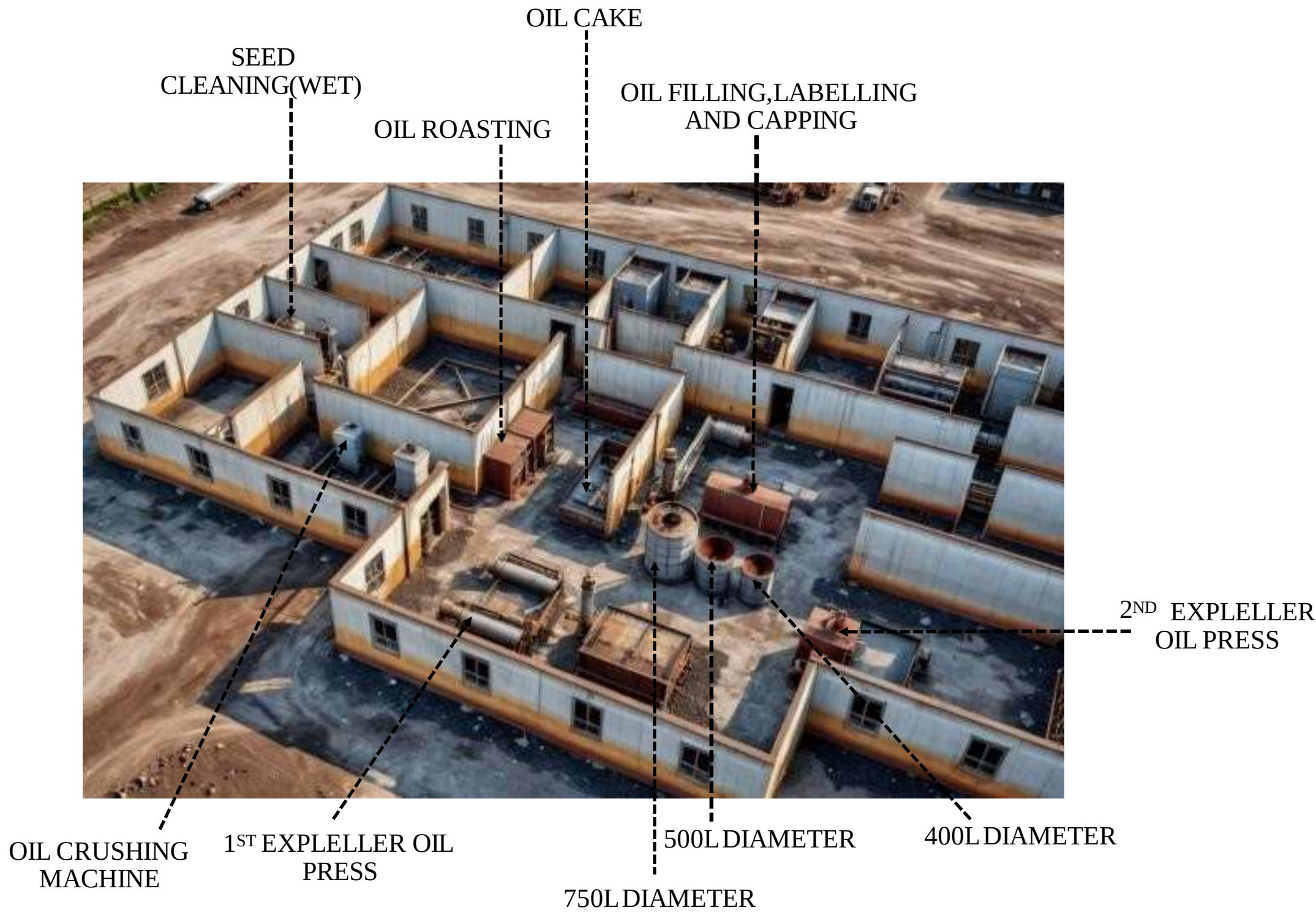


PEOPLE ARE ENJOYING OPEN SEATING AREA



PEOPLE ARE ENJOYING AT RESTING PLACE PHALCHA DURING EVENING

OIL FACTORY



FALCHA USED AS TEMPORARY STALLS ONCE A WEEK



PHYSICAL MODEL

