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A
THESIS REPORT
ON

URBAN COMMUNITY CENTER

SUBMITTED BY:

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074-BAE-206

A THESIS SUBMITTED TO
DEPARTMENT OF ARCHITECTURE
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DEGREE OF BACHELOR IN ARCHITECTURE

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Sincerely,

Anish Shrestha

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Abstract

This report focuses upon the need of a facility to integrate with the surrounding that allows the users to gain a sense of social relationship among each other. Due to the ever-growing population of the cities, there has been an excessive loss of spaces for the community uses. Community centers generally used for rehabilitation fosters community bonding the supports the local residents by providing the resources to improve upon their quality of life. A research-based approach helps to understand the types of spaces required for the community in an urban scenario. Similarly, the research also focuses on understanding the various aspects of community centers as well. The precedent studies, literatures all help to know more about the spaces, the quality of the community centers, the purpose and the outcome of the project. Also, the site chosen for the project is analyzed ensure the project can have a positive impact upon the area. Based upon the literatures, precedent studies, and the site context the program formulated reflect the need based on the site they will then contribute to the growth and development of the community within the surrounding area of the site.

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1. Introduction

“Man is a social animal.” -Aristotle.

“Human beings are social animals. We were social before we were born.” – Peter Singer.

Humans, by nature are social, which entails the need of social interactions and social relationships. Since early times, the people have grouped together to live and survive. Even in the current urban age, such activities are of utmost importance in the social development of a person. Everyone, irrespective of age, status, background or gender, engage and cooperate with one another because they are social. A well-designed space that promotes such interactions among the individual can act as an asset that contributes to the health and harmony of the community.

Cities in Nepal suffer from various problems – rapid population growth leading to haphazard development, and unmanaged urban sprawl. These problems have led to the loss of community space for recreational activities that are of critical in human character development. This research focuses on the various spaces required for the community as well as how architecture responds in creating such spaces that promote interaction.

Community center provide the facilities that are used by the communities which stimulates the various aspects of the community. Such center can bring about culture, leisure, educational and other social happenings to a single point. But first it is necessary to start from the basics of understanding what a community and a community center is and how they came to be. This research will start from the basic and also the need of such spaces especially in an urban context, where ‘community’ is starting to disappear.

1.1. What is a community?

According to the Merriam Webster Dictionary- “Community refers to a group of people with a common characteristic or interest living together within a larger society.” (*Definition of COMMUNITY, 2023*)

Throughout history, groups of people have formed communities to increase their chances of survival. They may have shared an interest in providing food for their families so they joined with others to hunt or farm. Or they may have formed a community to protect themselves from other groups that wanted their resources. Often people shared a common interest, such as a religion, which gave them a sense of community. Members of a community typically feel a sense of responsibility to one another. (*Lesson: What Is Community? | Facing History, 2009*).

In urban areas, a community may be a small group of a few homesteads of people from a common origin. That community in turn, may be part of a neighborhood community or a barrio or other local urban division. These dimensions of community include: - Technological, Economic, Political, Institutional (social), Aesthetic-value, and Belief-conceptual. (*Bartle, 2011*)



Figure 1 An illustrative representation of Community

1.2. What is a Community Center?

Community centers are public locations where members of the community tend to gather for group activities, social support, public information and other purposes. It is a focal point for all age groups in a locality which promotes social relationships and mutual support; develops a sense of self-reliance, social responsibility and cohesion within the community; and empowers individuals and families in solving community problems and improving the quality of community life. The aim of community center is to promote mutual care and responsibility, concern and participation in solving identified communal problems and crisis by encouraging and supporting the establishment of community (*Community Centre, 2022*).



Figure 2 An illustrative Representation of Community Interaction.

Community center in an urban context can serve as a facility that embodies the spirit of community activities and involvement. The earliest forms of community centers – schools that provided services for communities after hours – were recorded in the United States. In 1911 the Bureau sponsored a nationwide conference on using social centers. Although politicians and officials were skeptical about the possible alternative uses of these social centers, the idea was successful. By 1916, the National Community Center Association was founded and the community center was born. (*Locality | The History behind the Community Centre, 2015*). In Nepal, there are no community centers per se, but there are initiatives for community development through organization like Rural Community Development Center Lamjung (since September 29, 2005), and also various Community Learning Centers aiming to enhance the quality of life of local people.

2. Problem Statement

Rapid urbanization, though having its plus points, brings also negative aspects that affects the resident's happiness especially due to the loss of urban recreation environment. Facilities that serve as an urban recreational space are lacking in cities of Nepal like the Kathmandu Valley – the focus of the project. The recreation activities play a major role in promoting community growth, interaction and integration. There exists no well-balanced system of urban recreational opportunities for the residents of the city. This proposes a major problem in the happiness and development of the community – the heart of the city.

3. Justification

Community centers are typically used for the rehabilitation of certain user groups. This is ill-equipped tradition to foster the kind of community bonding that is lacking now in modern day cities. Urban spaces in the Kathmandu Valley lack facilities for recreation. This further isolates communities, and thereby it justifies the necessity for a project aimed at integrating recreational activities into the general community centers with the following objectives-

1. Supporting and promoting involvement in community-led initiatives that enhance local ecosystems.
2. Providing local residents with the knowledge, motivation, and resources they need to improve their quality of life via leisure and recreation.

4. Objective

The project will mainly aim to answer the question –

“How do we approach architecture aimed towards community integration?”

The project's goal will be to produce a research-based design solution with the following specific goals –

- **Building Use**

To encourage community bonding and develop social responsibility by creating a center with market, plaza, library, and halls.

- **User oriented activities**

To understand the relation between the different user groups and the urban activities associated with them.

- **Design aim**

To engage in site responsive design and develop a recreational communal space for an overcrowded settlement.

5. Outcome

The project envisions spaces that promote recreation for the community that take part in human character development. These spaces are designed to encourage human interactions that is continually being lost in this modern era. The project imagines daily regular usage from all age groups to increase community bonding in the modern urban context. The different components of the project as per function mentioned can include the following:

1. Express

- Spaces that allow the user to show their creativeness and seek approval from peers and community.

Design component: Exhibition Hall, Auditoriums

2. Learn

- Spaces the allow users to gain knowledge and educate themselves.

Design component: Library

3. Engage

- Spaces that allow the user to relax, pursue their hobbies, challenge themselves and better oneself.

Design component: Sports Facilities

4. Discuss

- Spaces that allow the user to communicate with the community on different issues.

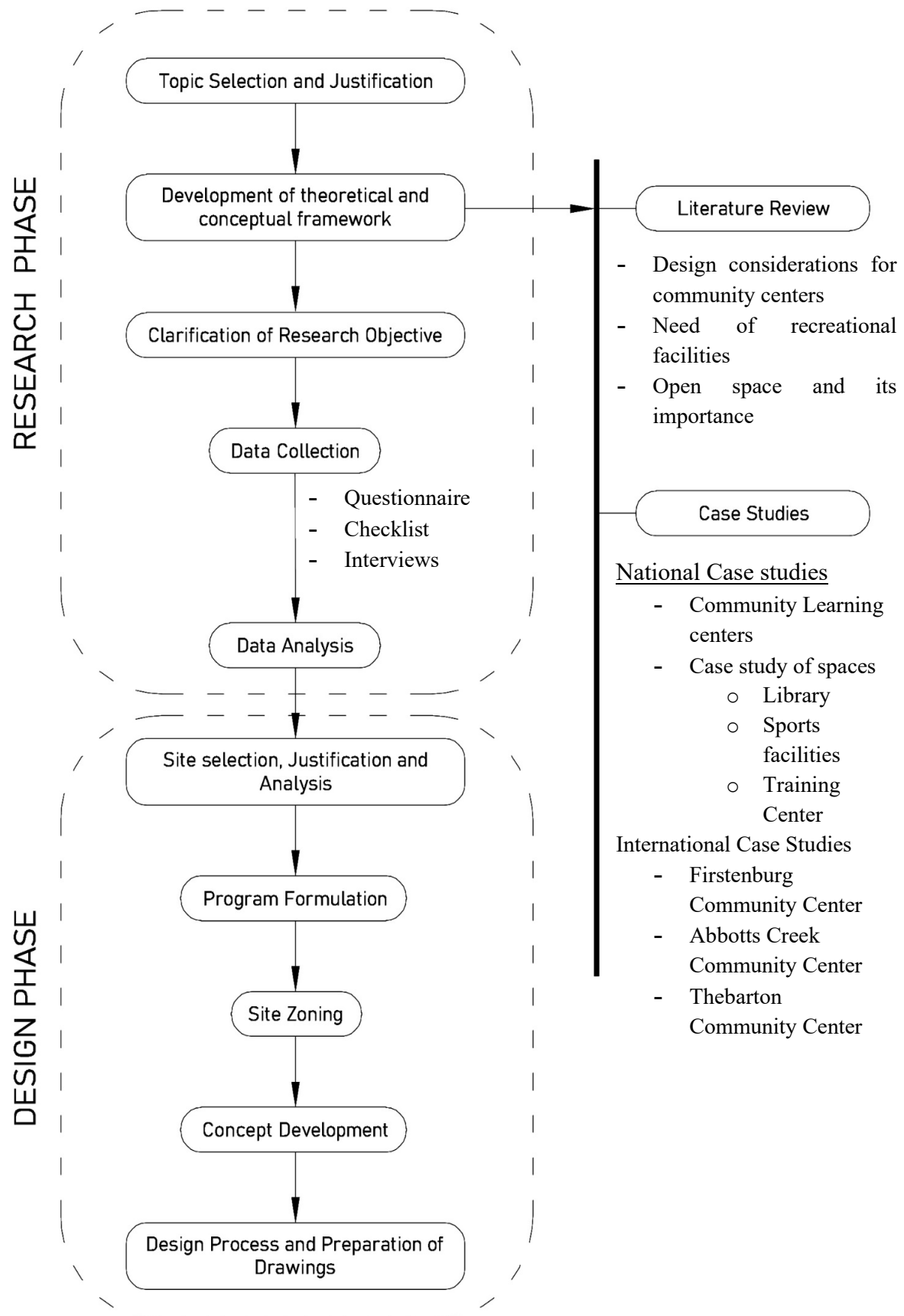
Design component: Community Hall

5. Nature

- Spaces that conserve the urban open space while allowing the community to interact and relax.

Design component: Plaza, Market

6. Methodology



7. Literature Review

Research is incomplete without reviewing multiple literature related with the topic. Such literatures provide a background for the research by exploring the issues, questions, contexts in regards with the research field to show the significance of the problem for research.

Framing the literature

The literatures have been framed under the following titles:

- a) Background Research
- b) Function Research
- c) Design Guidelines
- d) Space research
- e) Technological Research
- f) Byelaws and policies

7.1. Background Research

7.1.1. Kathmandu Valley and Urban Life

The demography of Nepal has been growing in a rapid pace, especially in major cities, along highways and borders with India. While overall population growth has slowed since 2001, urban population growth has kept its pace at 3.4% per year from 2001 to 2011, compared with 3.6% per year from 1991 to 2001 (reclassification—that is, the conversion of rural areas to urban areas—excluded). Kathmandu Metropolitan City—the only urban center in Nepal with a population above 1 million—is growing at 4.0% per year, medium cities (100,000– 300,000) at 3.5%, and small cities (50,000– 100,000) at 3.6%. (*Timsina et al., 2020*)

Kathmandu Valley comprises of three districts: Kathmandu, Lalitpur, and Bhaktapur with an area of 665 Km². Kathmandu Valley has 29 per cent of the country's total urban population, with Kathmandu Metropolitan City alone accounting for 22.2 percent. (*Bakrania, 2015*). The Valley characterized by high population growth in the urban core and fast urban sprawl towards the periphery. (*Timsina et al., 2020*)

The 2011 census recorded the population of Kathmandu Valley to be 2,517,023 and the 2021 census records 2,996,341 with about 19% growth in the population of the Valley. Such population growth has also caused the change in the land use as shown by *Figure 4*, from agricultural land to build up areas leading to the decrease in percentage of open spaces that can act as community spaces.

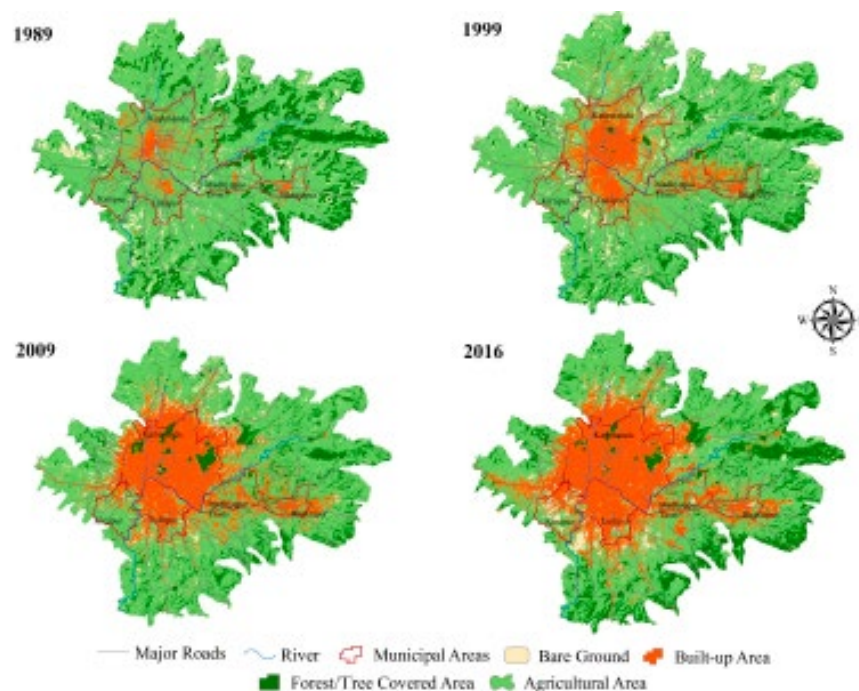


Figure 3 Land use land cover map of Kathmandu Valley

Source: (Ishtiaque et al., 2017)

The results of land use/land cover analysis of Landsat image 2020 showed that the study area was composed of grassland (1.73%), barren area (1.76%), riverine forest (1.93%), water body (1.97%), developed area (4.13%), Sal dominated forest (15.4%), cropland (28.13%) and mixed forest (44.95%). (Ishtiaque et al., 2017)

Table 1 : Population of Kathmandu Valley (Census 2021)

District	Population (Census 2021)
Kathmandu	2,017,532
Bhaktapur	430,408
Lalitpur	548,401
Kathmandu Valley	2,996,341

Table 2: Land Use Land Cover change in 1989 and 2016

LULC Class	1989		2016	
	Area	%	Area	%
Built-Up Area	2153.79	5.10	11020.44	26.06
Agriculture	34057.40	80.53	23387.06	55.30
Forest	4138.56	9.79	6227.37	14.73
BG	1854.54	4.39	1576.43	3.73
River	80.00	0.19	73.00	0.18
Total	42284.30	100.00	42284.30	100.00

Source: *(Ishtiaque et al., 2017)*

7.1.2. Community center for community development *(Yasmin & Parvin, 2008)*

The journal article – “Community centers for community development: A case study of Dhaka City Corporation” studies on how the community center can be a hub of community development. This research focuses on empirical studies of three community centers under the maintenance of Dhaka City Corporation (DCC). The study depicts the comprehensive picture of community centers of DCC and also defines the existing condition, the problems, features and the potential of the community centers.

The study starts with addressing the problem of urban growth in the city of Dhaka. The aspect of urban expansion in the city has led to the new demand of community facilities for the people of the city, for which DCC is responsible for. Though community is an integral part of the city, the facilities of the community is not the basic need for the community. The author of the article denotes the community centers as one of the prime civic facilities that aims to facilitate interaction among the people of the communities within the city. The scope for the research has been limited to 3 centers among the 39 that are provided by the DCC. They are:

- a) Bakshi Bazaar
- b) Vuter Gali Community center
- c) Paltan Community center

After the introduction of the three Community Centers (CCs), the study focuses and compares on the percentage use of each of the CCs with 47% for Bakshi Bazaar, 60% for Paltan CC and 0% for Vuter Gali because of its un-usability. The study also talks about the purpose of the CC, mainly being used for marriage and birthday events.

The research then compares the reasons for not using the three CCs based on the following aspects by examining the expectation and satisfaction of the people.

1. Location - Refers to the surrounding of the CC.
2. Accessibility – Refers to the condition of the access road
3. Structural condition –
 Refers to the construction method, the maintenance and management of the building used as CC.
4. Floor Space – Refers to the adequacy of space for the function within the CC.
5. Utility Service – Refers to the state of infrastructure such as Waste management, Electricity, Toilets, Water etc.
6. Parking – Refers to the availability of Parking facilities within the CC.

Table 3 Satisfaction level measured on different aspects of CC.

Aspects	Category	Bakshi Bazar		Vuter Gali		Paltan	
		Frequency	%	Frequency	%	Frequency	%
Location	Satisfactory	45	100	18	40	45	100
	Dissatisfactory	0	0	27	60	0	0
Accessibility	Satisfactory	45	100	17	37.78	45	100
	Dissatisfactory	0	0	28	62.22	0	0
Structural Condition	Satisfactory	27	60	0	0	45	100
	Dissatisfactory	18	40	45	100	0	0
Floor Space	Satisfactory	16	35.56	15	33.33	42	93.33
	Dissatisfactory	29	64.44	30	66.67	3	6.67
Utility Services	Satisfactory	33	73.33	0	0	45	100
	Dissatisfactory	12	26.67	45	100	0	0

The study visualizes that the CCs of DCC are not optimally utilized for community development. It also proposes to convert the CC as a hub of community development through proper management plan such that the authorities are more focused on community development rather than the physical management of the building. The CC should be self-dependent, and develop public participation through religious, educational, motivational and awareness functions. Thus, Community centers can be optimized for community development.

7.1.3. How can a community center contribute to social Cohesion? (Urk, 2015)

This report focuses on the aspect of social cohesion and the role of Community center to attain social cohesion. Within the report the author defines the concept of the social cohesion based on one of its five dimensions. With the concept of the social cohesion, the terms related are defined to make the research more relatable. Also, the community center is split into layers: management, volunteer and participant to compare the terms of social cohesion in each layer. The research shows the concept of social cohesion linked with the dimensions:

Table 4 Dimensions of Social cohesion

Domain	Description
Common values and a civic culture	Common aims and objectives; common moral principles and codes of behavior ; support for political institutions and participation in politics
Social order and social control	Absence of general conflict and threats to the existing order; absence of in civility ; effective informal social control; tolerance; respect for difference; intergroup co-operation
Social solidarity and reductions in wealth disparities	Harmonious economic and social development and common standards; redistribution of public finances and of opportunities; equal access to services and welfare benefits; ready acknowledgement of social obligations and willingness to assist others
Social networks and social capital	High degree of social interaction within communities and families; civic engagement and associational activity; easy resolution of collective action problems
Place attachment and identity	Strong attachment to place; intertwining of personal and place identity

For the research the author has chosen the 4th dimension -Social Network and Social Capital (Due to limitation of time, resources and feasibility). In this dimension, the society with social cohesion contains high Social Interaction, Civic engagement and Co-operational problem solving.

The research defines the following terms as:

Social Interaction - The process in which two or more people interact with each other.

Civic Engagement - The process in which associational activities are created as a result of volunteerism or group involvement.

Co-operational Problem solving - Overcoming community problems through collective action.

Based on these characteristics, the following terms are defined:

Social Network – Networks of like-minded people that contains a high degree of social Interaction, socialization and civic engagement.

Social Capital – The combined features of social organization such as networks, norms and trust that facilitate co-ordination and co-operation for mutual benefit.

Het Huis van de Wijk, a community center in the city of Deventer was selected for the research, which provided the conclusion that community centers contribute to the social cohesion by facilitating the creation of social network and social capital through the activities it provides. Community center, provides a place for the management, participant and the volunteer to create activities- such activities indirectly contribute to social cohesion in a positive way.

7.1.4. Urban Recreation (*Andrus & Herbst, n.d.*)

The report documents the importance of recreation in the cities by looking at the success, problems and needs of the residents. The study primarily focuses on close-to-home recreation – concentrating on neighborhood, community and regional opportunities that are important in the daily life of urban residents. Also, this research provides a basis for formulating national recreation policies and suggest possible actions.

Recreation is widely accepted as a key contributor to good physical and mental health. The role of parks and recreation programs in the economic and social life of communities is also becoming well-recognized. The study talks about the case of USA, over 70% of the population live in urban area. For these urban dwellers the access to recreation opportunities is very limited, in a number of cities, such opportunities have become less in recent years due to the old facilities and lack of funds. The study discusses the federal role that could be the first step in defining and addressing the recreation and open space issues. The of the quality of urban recreation affect the urban area function such as- housing, transportation, education, employment and many others.

Scope of Recreation

Meaning

Recreation is the refreshment of people's minds and bodies through non-compulsory free-time activities, usually in contrast to or in addition to a diversion from day-to-day routines. Recreation activities may be pursued for many purposes, including physical and mental fulfillment, personal recognition, stimulation, learning, and socializing.

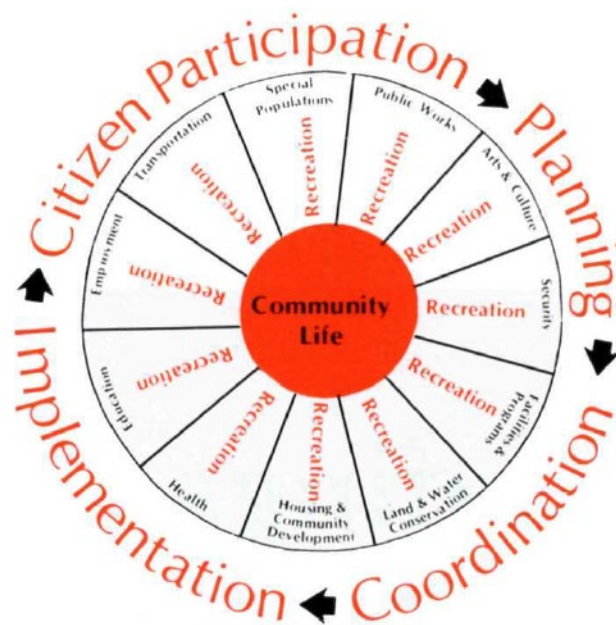


Figure 4 Scope of Recreation

Setting of recreation

Recreation takes place in many physical settings ranging from buildings (homes, museums, recreation centers, movie houses) to completely natural environments (mountains, rivers, seashores). The recreation settings discussed in the study, however, are in or near urban residential areas, usually within one hour's travel time.

Findings

The study had the following findings on based on People's expectations

I. Open space and Recreational Land

People expect balanced, well distributed system of recreation land available close-to-home. Open space areas with unique ecological, cultural, or resource production values should be protected wherever found, but not necessarily through public acquisition.

II. Physical facilities

People expect convenient and well-maintained recreation facilities which accommodate a wide range of indoor and outdoor recreation activities and programs.

III. Program and services

People expect urban recreation programs to serve all segments of the urban population. People also want programs to be sensitive to the special needs of many who are senior citizens, handicapped, or disadvantaged; to recognize the cultural diversity of our communities; and to provide a broad range of year-round opportunities for educational, social, cultural, and recreational activities.

The study also talks about Federal policies and state actions for open space and recreational land and discusses on different objectives for functioning of urban recreation facilities for the resident of the communities and neighborhood.

7.1.5. Need of Recreational Facilities in Development of Any Urban Area (Tambe, 2018)

The research focuses on the need of recreational facilities in the development of any urban or developing areas. The urban developing area is characterized by the hectic schedule for the people, this study research on the aspect of recreational facilities being an escape for the people to enjoy their free time.

Recreational facilities encourage the people to localities around these recreational facilities to settle and work around. These facilities help as a stress buster and to create some jobs for the locals adding to the per capita income of the people. Such facilities provide green places for people to come together promoting communal bonding among city residents and infuses the social content of life.

Planning and design for recreational facilities

A well designed and managed recreational centers and open spaces within urban area can offer play areas for children, which contribute to the quality of life and wellbeing of the residents. Planning is not complete without the proper distribution of recreational spaces. It is also necessary to understand the recreational habits of residents in respective urban areas. The facilities must be designed according to the demand of the area with utilities for public convenience.

Recreational Facilities and development of Area

The study mentions the urbanization leading to increasing population, absence of tangible and intangible resources, increasing costs and so on. On a survey by the author to find the impact of recreational facility on choice of residence selection, about **63%** of the respondents agree and about **32%** strongly agreed.

Table 5 Opinion: Need for Supportive Factors - Recreational Facilities

	Recreational facilities
Strongly Disagree	0
Disagree	0
Neutral	5%
Agree	63%
Strongly Agree	32%

7.2. Function Research

7.2.1. What makes a space – INTERACTIVE?

This section dives into the interactive function of a community center responsible for promoting interactions among the users. Here different aspects, to take into considerations, that can make a space ‘interactive’ are discussed.

I. Urban Placemaking

Placemaking refers to a collaborative process by which we can shape our public space in order to maximize shared benefit. Placemaking encourage creative patterns of use in an effort to deepen the relationship between people and the places they share, giving special attention to the physical, cultural, and social identities that characterize a place and its ongoing evolution. (Proctor, 2021)

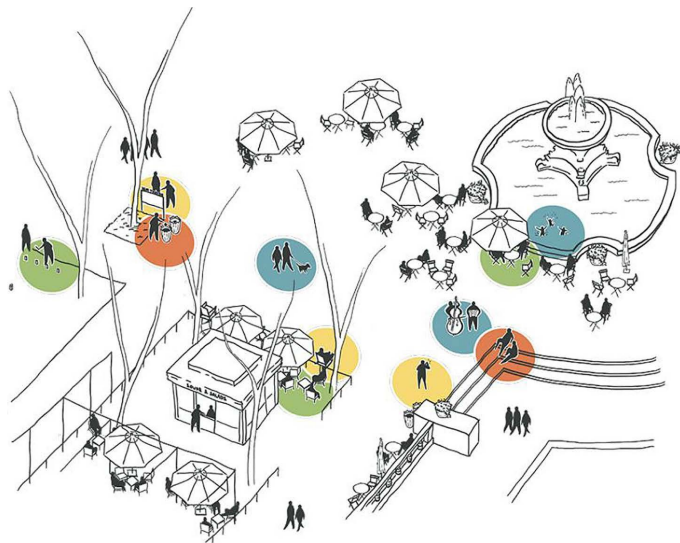


Figure 5 Urban Placemaking

Placemaking inspires people to collectively reimagine and reinvent public spaces as the heart of every community. Placemaking is: -

- Community-driven
- Visionary
- Function before form Adaptable
- Inclusive
- Focused on creating destinations Context-specific
- Dynamic
- Trans-disciplinary Transformative
- Flexible
- Collaborative & Sociable



Figure 6 Benefits of Urban Placemaking

II. Walkability

Walkability is a planning concept understood by the mixed-use of amenities in high density neighborhoods where people can access the amenities by foot. It is based on the idea that urban spaces should be more than just transport corridors designed for maximum vehicle throughput. Instead, it should be relatively complete livable spaces that serve a variety of uses, users, and transportation modes and reduce the need for cars for travel. (*“Walkability,” 2022*)

Guidelines for Walkable space

- Create fine-grained pedestrian circulation
- Orient buildings to streets and open spaces
- Organize use of spaces to support social activity
- Provide clear and continuous pedestrian access
- Build complete streets (*Aggarwal, 2016*)

III. Quality of interactive space

There are four qualities which plays a great role in transforming a space into a great interactive place. They are:

- **Sociability**

One of the qualities that focuses on opportunities of social interactions creating stronger relation among the society and place. (*Soltanian & Mohammadi, 2015*)

- **Users and activities**

This quality includes different activities and usage inside the space that attract individuals and different groups to conduct their activity. (*Soltanian & Mohammadi, 2015*)

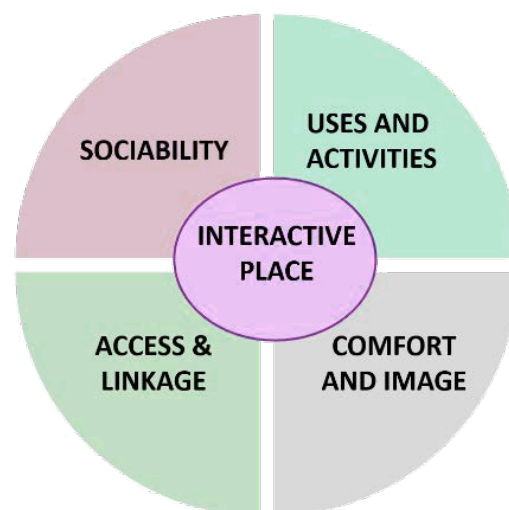


Figure 7 Qualities of interactive space

- **Access and Linkage**

This quality focuses on the relation between spaces, quality and access along with the visibility and accessibility to the space. *(Soltanian & Mohammadi, 2015)*

- **Comfort and image**

This quality is related to the impression of the space and the comfort that it provides. Safety, distinctiveness and visual pleasure are effective in attracting people and assuring their mental comfort. *(Soltanian & Mohammadi, 2015)*

IV. Triangulation

Triangulation is the phenomena by an external catalyst provides a link between people and prompts strangers to talk to one another as if they knew each other. A view of something outside the public space (e.g., sunset or landscape), a water feature or a sculpture, other people or an event, or even a street performer can serve as a catalyst. Features in public spaces are more than just features, they serve as moments for socialization and interaction.

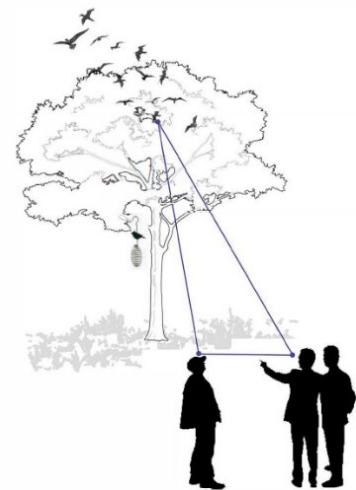


Figure 8 Triangulation

V. Human behavior

When designing public space, it is important to study the user to create a space that aims to serve its community. Through studying human behavior, it is possible to gain further insight into what people are attracted to in public space and what common elements are found in public spaces that are considered successful.

Roger Barker's creation of 'ecological psychology' breaks from traditional psychological research and focuses on describing the patterns of behavior in relationship to their physical setting. This research is a crucial aspect in environmental and urban design and supports the theory that the physical architecture of a space directly effects the user's sense of comfort and belonging which in term effects the frequency of use and overall success of a public space.

Ecological psychology provides the concept of "behavior setting" which similar to "activity space" (discrete units of behavior environment relationship for architectural design) is a stable combination of activity and place.

The behavior setting consist of:

- a recurrent activity- a standing pattern of behavior
- a particular layout of the environment- the milieu
- a congruent relationship between the two - a synomorphy ¹
- a specific time period (*Proctor, 2021*)

VI. Human interaction scale

Access and Scale give more opportunity for social interaction. They provide a more familiar space that allows for more intimate social interactions and opportunity for the community to connect and build trust and positive relationships with one another. (*Proctor, 2021*)

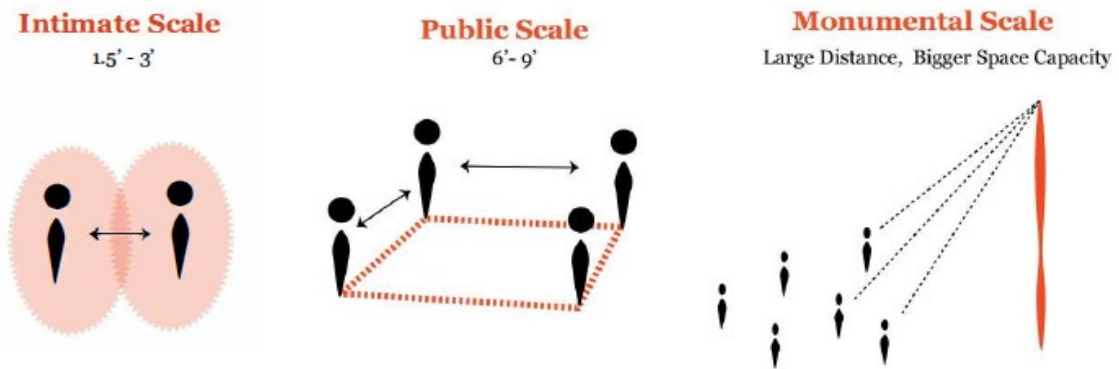


Figure 9 Human interactive scale

VII. Human activity

Human activities are an essential factor for interactions, various activities can influence the users to interact among themselves. In Gehl's *Life between buildings* he defines three types of outdoor activity. (*Proctor, 2021*)







- **Necessary activities** - include those that are more or less compulsory. Activities in which those involved are to a greater or lesser degree required to participate.
- **Optional activities** - that is, those pursuits that are participated in if there is a wish to do so and if time and place make it possible.

¹ Synomorphy refers to the similarity of structure or shape between the behavioral aspects of a school activity program and the physical aspects of the environment.

- **Social activities** - are all activities that depend on the presence of others in public spaces. Social activities include children at play, greetings and conversations, communal activities of various kinds, and finally - as the most widespread social activity - passive contacts, that is, simply seeing and hearing other people. (Proctor, 2021)

Through understanding the basic types of public human activity Gehl finds that the more people outside relate to more social interaction. (Proctor, 2021)

Table 6 Graphic representation of the relationship between the quality of outdoor spaces and the rate of occurrence of outdoor activities.

	Quality of the physical environment	
	Poor	Good
Necessary activities		
Optional activities		
Social activities		

7.2.2. What are the factors for a proper functional recreational facility?

For a proper recreational facility some factor regarding its design must be considered, they are discussed below: -

I. Size

The bigger space doesn't automatically equate to better design for users, but adequate size is necessary to create a breathable environment that utilizes every inch of the facility. Proper size should allow you to fit in all the necessary equipment without leading to overcrowding. Modern users, after all, demand to spend their recreational activity in a space that feels safe and comfortable. (*3 Factors to Consider When Designing a Recreational Facility,* 2020)

II. Zoning

The best recreational facility can provide a multifunctional space that allows for high-octane to leisure activities. Zoning your facility means you are creating distinct sections in the space dedicated to specific recreational uses – be it relaxation, eating, training, and more. Not only does this maximize your facility, but it opens its doors to a wider range of patrons – from the youth to the elderly alike. (*3 Factors to Consider When Designing a Recreational Facility,* 2020)

III. Stimulate

A proper recreational facility should stimulate the user to involve in the activities that have been dedicated within the space. The facility can do so by the interconnection among the user and the outdoor environment as well.

IV. Flexibility

The space should provide flexibility to the users without having to limit themselves, for this an open plan is necessary so that they are not forced into the activity.

7.3. Design Guidelines

There are several design guidelines to be considered that can make a community center successful. Some guidelines are necessary are listed below: -

7.3.1. Mixed use

Mixed use refers to used or suitable for different functions. The benefit of mixed-use includes preservation of undeveloped or environmentally sensitive land elsewhere in the community, opportunities for more or different housing, bicycle and pedestrian-friendly destinations, and an enhanced sense of place or sense of community.

Design Input: Mixed use function- Residential, work, recreational and Commute needs to be combined.

7.3.2. Inclusive design

Inclusive design refers to the environment designed to be usable for as many as possible, especially groups who are generally excluded from being able to move around the environment. An inclusive approach to design offers new insights into the way the user can interact with the built environment.

Design Input: Different infrastructural options such as in seating, step, ramp.

7.3.3. Form and design

Form and design of the community center is an important factor to consider as they affect the perception of the space by the user group.

Design Input: Careful consideration of the form and design factor such as the landscape, facade, interior etc.

7.3.4. Functional Diversity

Functional diversity refers to the range of functions in the space and environment. This also refers to multi usage of the community center.

Design Input: Multi-functional options.

7.3.5. Visibility

A community center is meant to engage therefore visual accessibility is necessary to open and permeate the space.

7.3.6. Gathering center

Important in bringing large groups of people together to celebrate with or without purpose.

Design Input: Both open-air and closed spaces.

7.3.7. Aesthetics

Attractive frontages, lighting, material palette is necessary to attract people to stay and participate and utilize the space.

7.3.8. Sustainability

The economic-environmental-social performance indexes of a community are interdependent on each other therefore effort needs to be undertaken to create spaces that promote all of the together.

Design Input: Development of typology program and material palette.

7.3.9. Security

A community bonds a group of people together. When a sense of community is lost, the individuals become vulnerable to feelings of insecurity and danger.

Design input: Spaces need to stress on interaction.

7.3.10. Rest Areas/ Convex Spaces

Points of leisure in the middle of busy activity spaces for passive engagement.

Design Input: Careful attention to site detail.

7.4. Space Research

The community center must provide spaces for various functions. The spaces must also be inclusive and be designed with the end function in mind. For such the spaces has been researched based on the function that is sought for.

7.4.1. Spaces for Expression.

These spaces allow the user to bring and show their creativity and also present their work to receive approval from the community.

A. Exhibition / Gallery space

A.1. Design guidelines

o Space layout

- Open Plan : Large items on display, free circulation
- Satellite Rooms : main room for autonomous displays
- Linear chaining : Linear sequence of rooms, controlled circulation, separate entry and exit.
- Labyrinth : Free circulation, guided route, variable directions
- Complex : combined rooms with complex organization
- Round tour (Loop): controlled circulation leading back to the entrance.

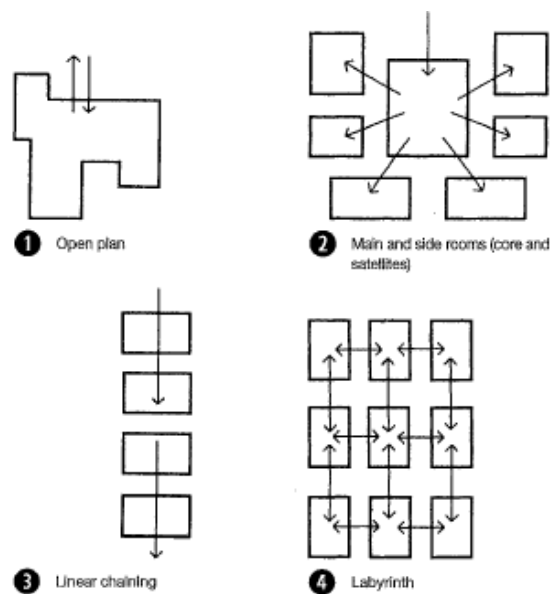


Figure 10 Layout options

- The size and height of the display and store rooms depend on the dimensions of the works and the extent of the collection, but the minimum height is 4 m clear.
- Viewing and traffic

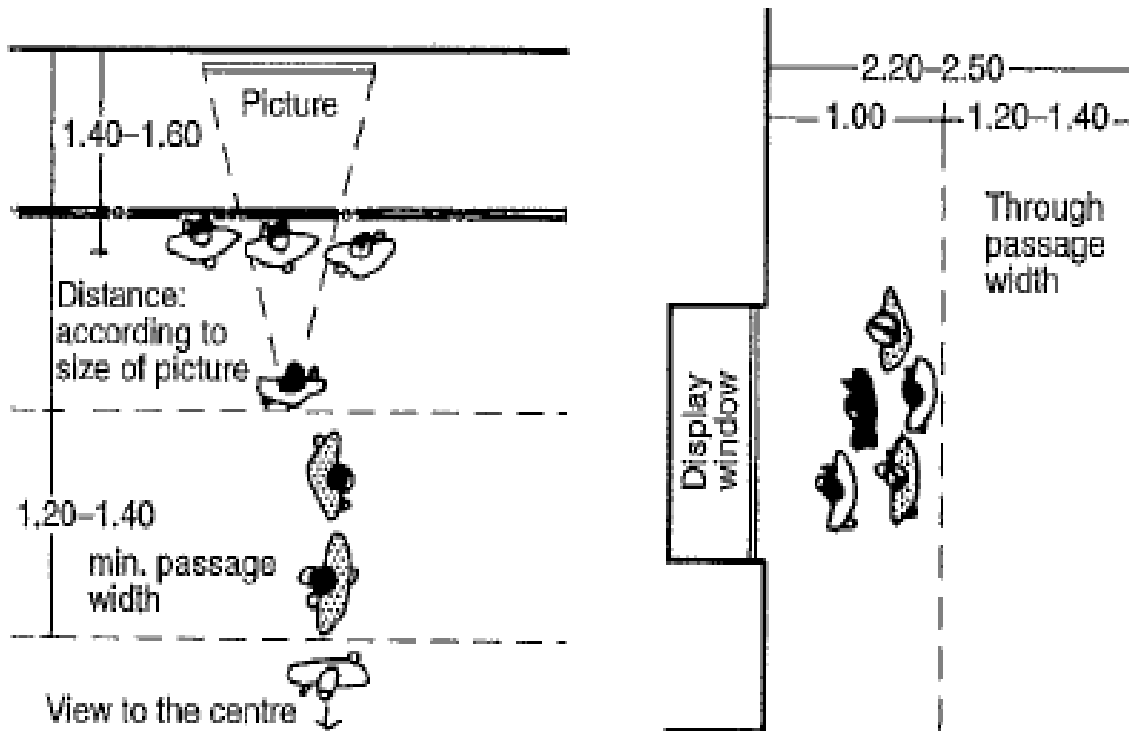


Figure 11 Viewing and Traffic standards

- Field of View

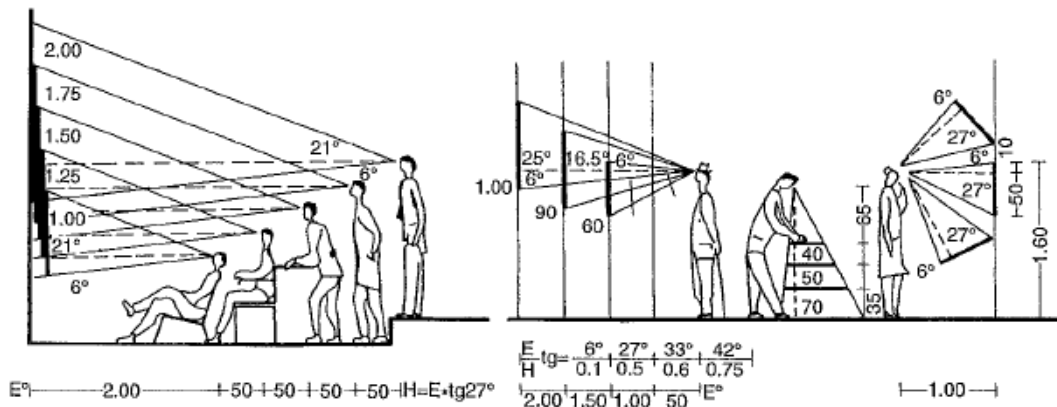


Figure 12 Field of view: Height, Size and Distance

7.4.2. Spaces for Learning

These spaces provide the opportunity for the user to strengthen their knowledge as well as broaden their horizons. Such spaces include library and classroom.

A. Library

Three areas in every library: user and reading area, store and administration. The space requirement for these areas differs according to the type of library.

A.1. Space standard

- Library Area: 0.35 -0.55 m² / pupil
- Reading place : 1.8-2.5 m²/ person
- Clear distance between shelves : min. 1.3 m – 1.4 m
- Staff space : 9 m² per staff member
- Seating spacings and area calculation

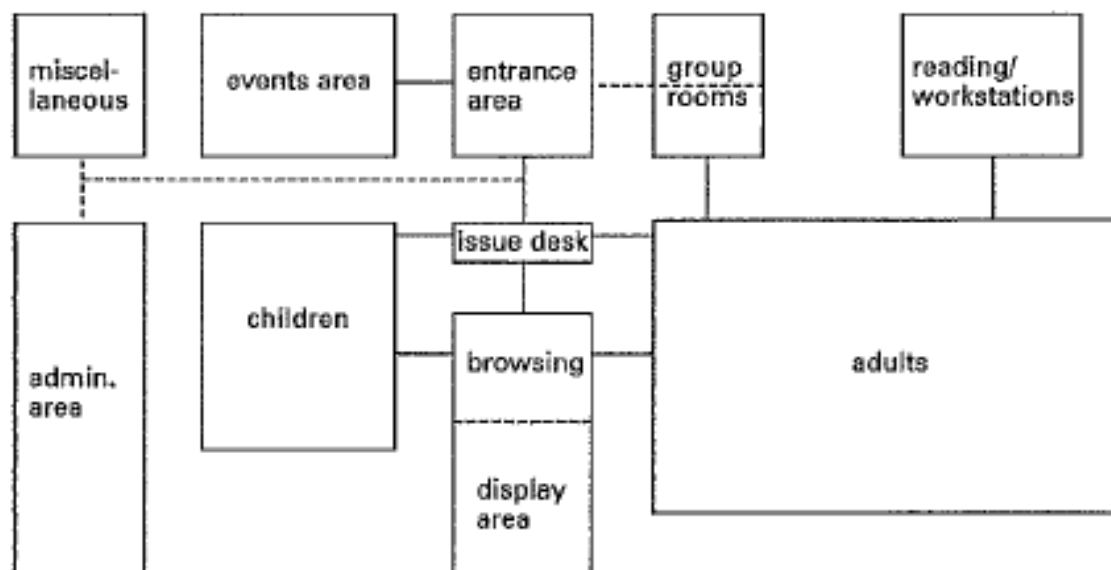


Figure 13 Functional scheme of a library.

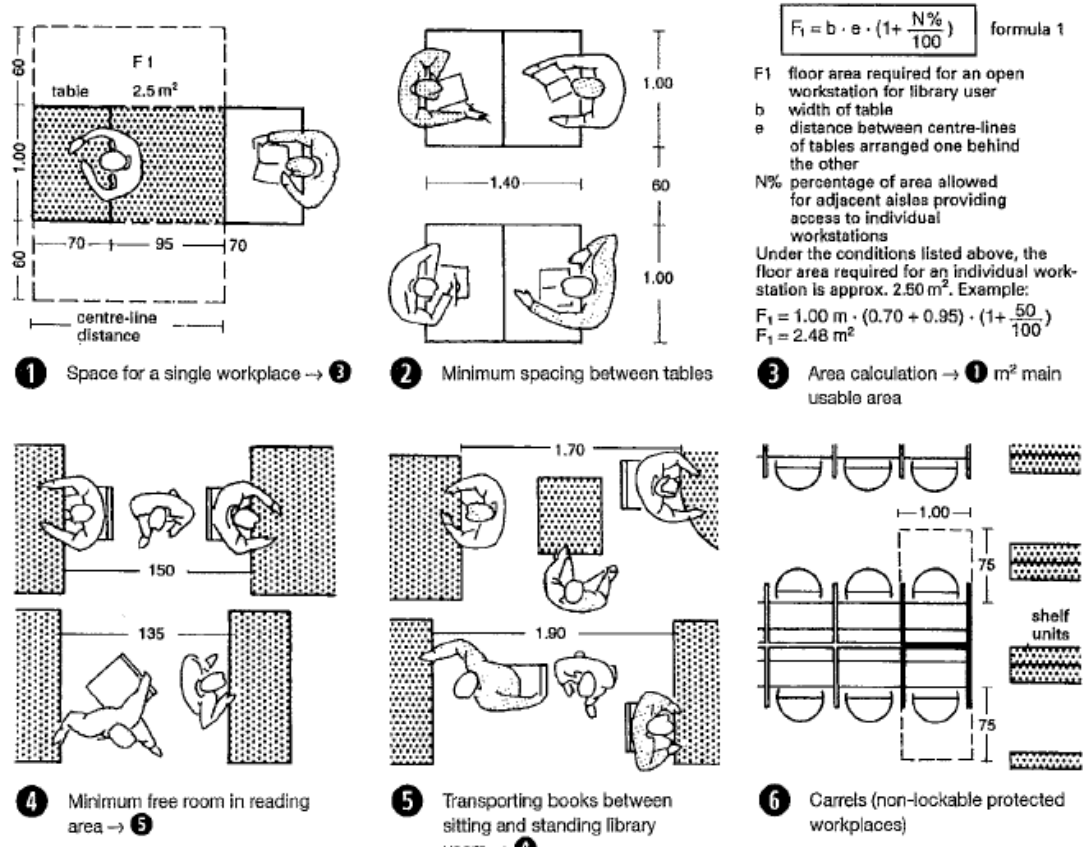


Figure 14 Library: Spacings and area calculation

A.2. Design Guidelines

- There should be a single public entrance within short distance of the circulation desk.
- Every public service area should be supported by book storage, office, and work areas.
- Reading rooms should be grouped so that they may be served by common book storage, office, and work area.

B. Class room

B.1. Design Guidelines

- Sufficient space is needed near the front of the room for setting up audiovisual equipment, such as projection screens and charts.
- Ceilings should be a maximum of 9' ft high.
- Light from windows should, if possible, come over a pupil's left shoulder.
- No teacher should be required to face the windows when addressing the class from the normal teaching position.
- Ceilings and/or walls should be acoustically treated.
- Floors should have a cushioning material.

7.4.3. Spaces for Discussion

These spaces are important in a community to discuss on the issues and events related to the community. Such spaces are an important addition which includes conference hall, community hall and meeting room.

A. Conference Hall

- Should be directly accessible from the entrance area
- Provision of sliding partitions, tables, seating, presentation media, store and pantry.
- Area requirement: 2.5 m² per seat
- Space requirement: 0.3-1.0 m² per workstation

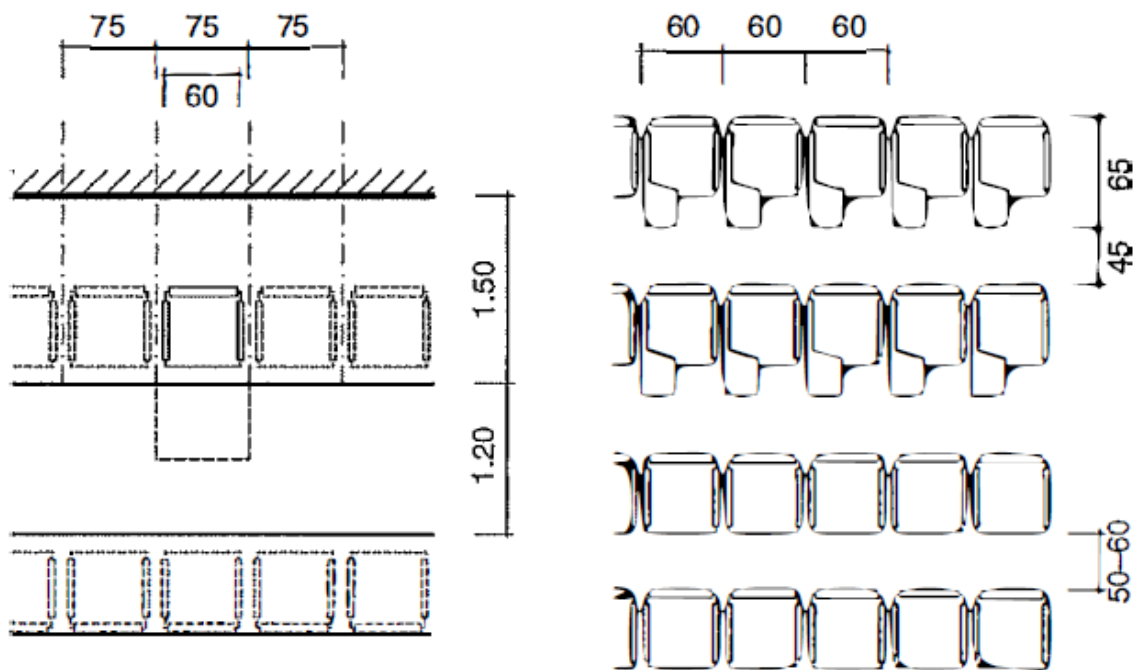


Figure 15 Space requirement for seating in conference.

7.4.4. Spaces for engagement

Such spaces are responsible for creating an environment for the users to mingle with one another. These mainly includes spaces for sports such as

- Swimming pool,
- Outdoor Courts,
- Indoor games, etc.

A. Swimming Pool

A.1. Standards

Table 7 Indoor Swimming Pool Standards

No.	Spaces	Area
1	Area in front of entrance	0.2 m ² /m ² of water area
2	Entrance hall	0.15 -0.25 m ² /m ² of water area
3	No. of changing places	0.08-0.1 m ² water area
4	Changing places to locker	1:4
5	Changing cubicle	1m x 1.25m x2m (WxDxH)
6	Clothes locker	(0.25-0.33) m x 0.5m x 1.8m
7	Water area up to 500 m ²	Min. 10 showers
8	Lifeguard's room	6m ²
9	Sanitary room	8m ²
10	Equipment room	Over 450m ² water area, min 20m ²
		Up to 450 m ² min 15m ²
11	Services area	1m ² / m ² of water area
12	Min depth in shallow area	1-1.2 m

A.2. Design Guidelines

- The finish texture must be non-slip and such that there won't be discomfort to bare feet.
- An overflow gutter shall be installed continuous around the perimeter
- *Size and shape:* A rectangular pool with vertical side walls is recommended with deep water at one end and shallow water at the other.
 - Recommended sizes are 60' X 25', 75' X 25', 75' x 30', 75' x 35', 75' x 42', 82.5' x 42'.
- *Depth:* For water depth < 5', bottom slope shall not exceed 1:12, while for water depth > 5', bottom sloe shall not exceed 1:8

- Sanitary facilities:
 - For male:
 - 1 W/C, 1 laboratory, 1 urinal for first bathers
 - 1 W/C extra per 150 additional bathers
 - Min 3 shower head for first 150 bathers
 - 1 extra per 50 additional bathers.
 - For female:
 - 2 W/C for first 100 bathers
 - 1 W/C extra per 75 additional bathers
 - 2 Shower heads for first 100 bathers
 - 1 extra per 50 additional bathers

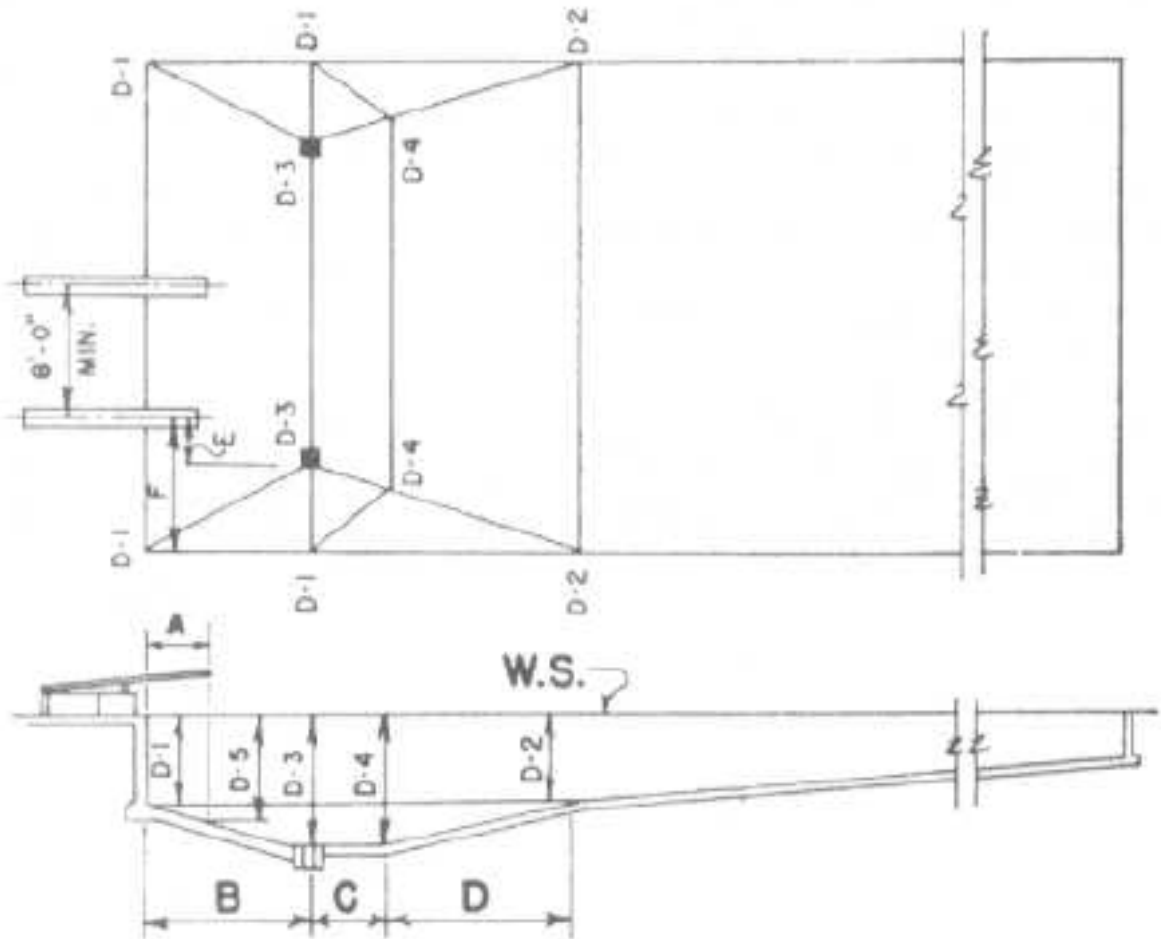


Figure 16 Swimming pool basic dimensions.

B. Outdoor Courts and Indoor Games

B.1. Standards

- *Basketball*
 - Size: 24-28 x 13-15
 - Additional zones
 - Sides : 1 m
 - Ends : 1 m
- *Badminton*
 - Size: 13.4m x 6.1 m
 - Additional zones
 - Sides : 1.5 m
 - Ends : 2 m
- *Football*
 - Size: 30-50m x 15-25 m
 - Additional zones
 - Sides : 0.5 m
 - Ends : 2 m
- *Volley ball*
 - Size: 18m x 9m
 - Additional zones
 - Sides : 5 m
 - Ends : 8 m
- *Table Tennis*
 - Size: 2.74 m x 1.525m
 - Additional zones
 - Sides : 5.63 m
 - Ends : 2.74 m

B.2. Design Guidelines

- Showers must be immediately accessible from changing rooms, with a drying area between the wet area of the shower room and the changing room.

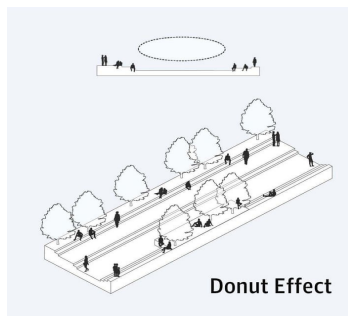
7.4.5. Spaces for Nature

These spaces are necessary for providing the area with green spaces as well as open spaces to the user as a sense of relief. These spaces include market and urban plazas.

A. Urban plaza

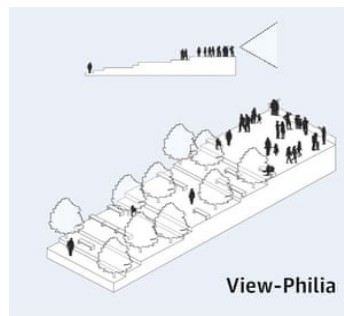
A.1. Human Behavior

Such urban plazas are responsible for creating different effect and instances of behavior for the visitors. These spaces can also be able to promote more interactions as well. SWA Group published The Field Guide to Urban Plazas studying the public behavior of human beings in New York City here are some of their findings. (*Proctor, 2021*)



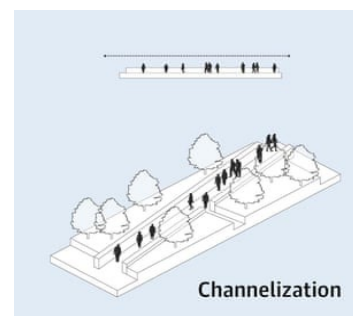
Donut Effect

People tend to occupy the edges of a plaza before filling in the middle.



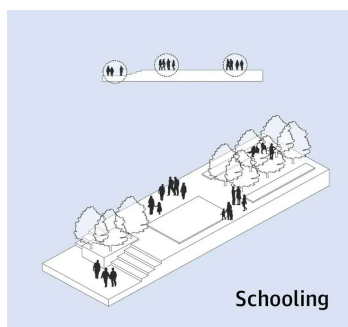
View-Philia

People tend to go straight towards the best view first even if comfort is compromised.



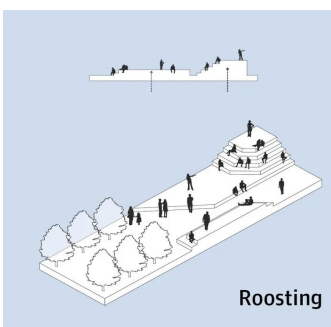
Channelization

People tend to walk faster and stop less frequently in straight pathways through plazas.



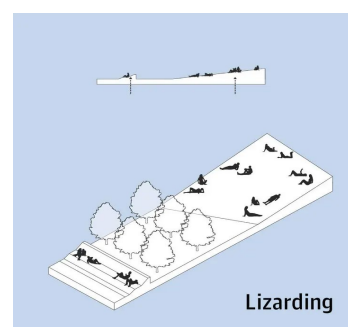
Schooling

People seem to be attracted to spaces with a medium-to-high density of people



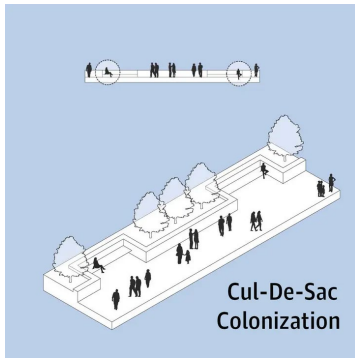
Roosting

People tend to go to elevated areas that overlooked the plaza space.

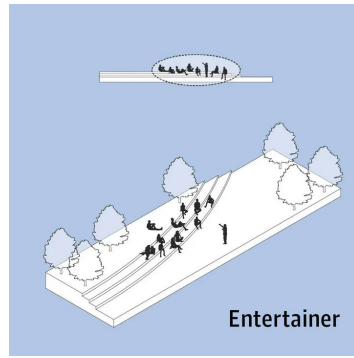


Lizarding

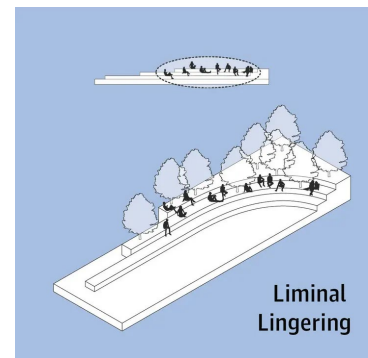
Young plaza users tend to bask in the sun if offered a soft surface such as wood or turf.



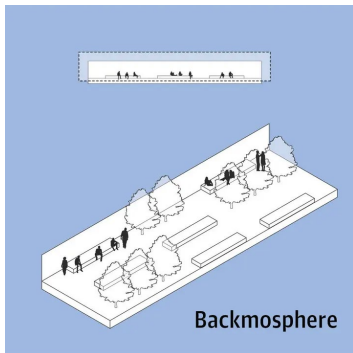
People seeking privacy choose spurs with good visibility.



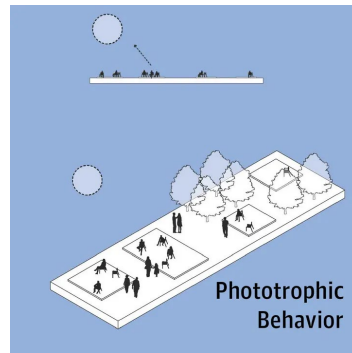
People tend to occupy bi-directional areas to be part-audience, part-performer.



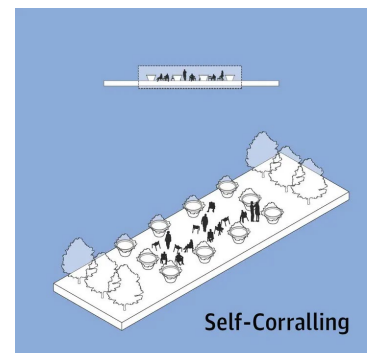
People tend to occupy protected, in-between spaces.



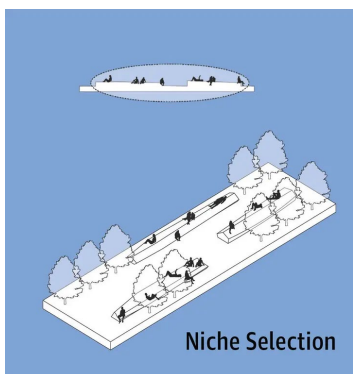
Spaces with a sense of backing, where there was less activity behind them, attracted people.



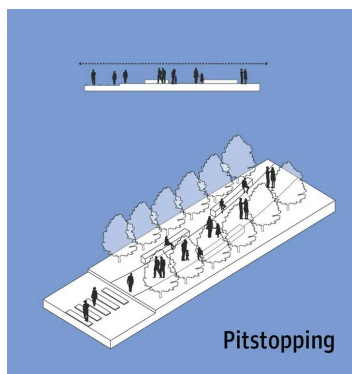
People often moved to face the sun.



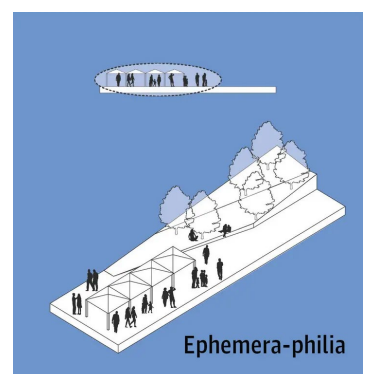
A low element at the edge of an outdoor room attracted people.



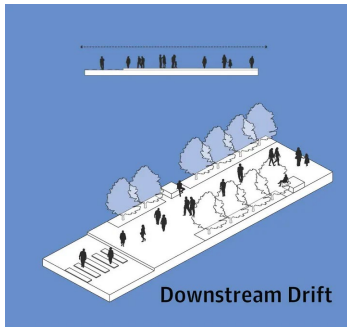
People tended to occupy spaces that had a range of furniture to choose from.



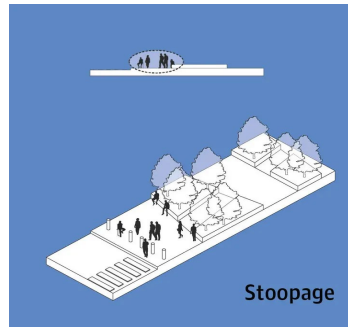
Extending adjacent paths through a plaza resulted in increased dwell time and overall



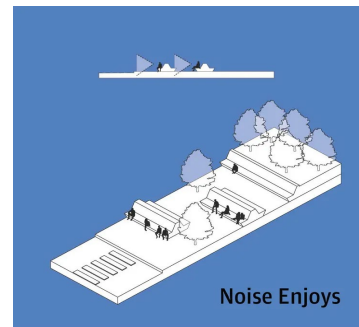
Interventions that had a limited lifespan tended to increase usage of the plaza.



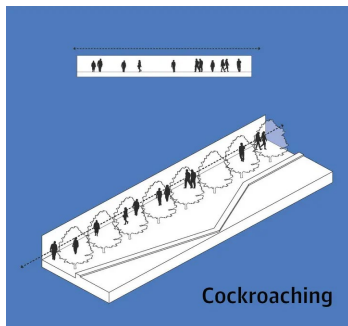
People tend to pass into plazas from adjacent public spaces if the edge is unobstructed.



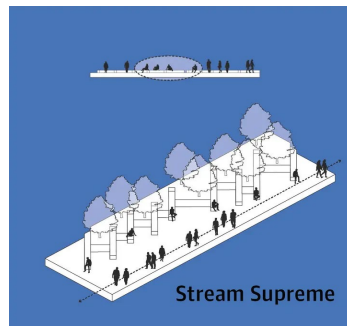
People use accessible elements at the edges of plazas to take short breaks.



People sat facing the street but were not often watching traffic.



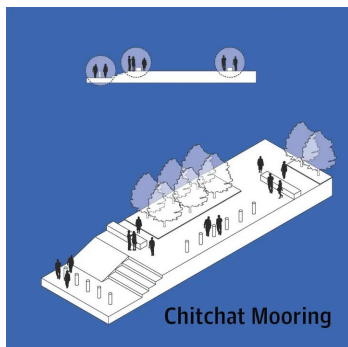
Paths between plazas and adjacent buildings are well-used, especially as cut-throughs.



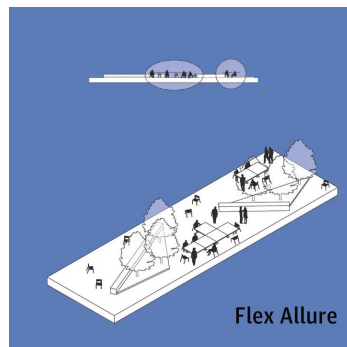
People tend to want to watch others, especially in active areas with high pedestrian turn-over.



Reflective surfaces were major plaza attractors and are destinations for those visiting the plazas.



People tend to congregate around objects, even if they were not using them.



Large groups of people gravitated towards moveable furniture.



People got creative when it came to seating and tables.

7.4.6. Supportive spaces

These spaces are required to support the various function in place within the building.

These spaces include administration offices W/Cs, parking etc.

A. Administration offices

A.1. Standards

Table 8 Administration Standard spaces

S. No.	Spaces	Area
1	Top executive	35 m ²
2	Junior executive	10-20 m ²
3	Supervisors	8-10 m ²
4	Operator	3.5-5 m ²
5	Reception	35 m ²
6	Waiting Room	20 m ²

A.2. Design Guidelines

- There must be convenient routes from the main entrance to the administration section.
- There must be public as well as private areas for the visitor and workers.

B. W/Cs

B.1. Considerations

- Adequate no. of w/cs, lavatories and wash basin must be provided based on the functions and design guidelines.
- Proper size of the cubicles has to be maintained.
- Materials, ventilation, and services must be taken into proper consideration.

C. Parking

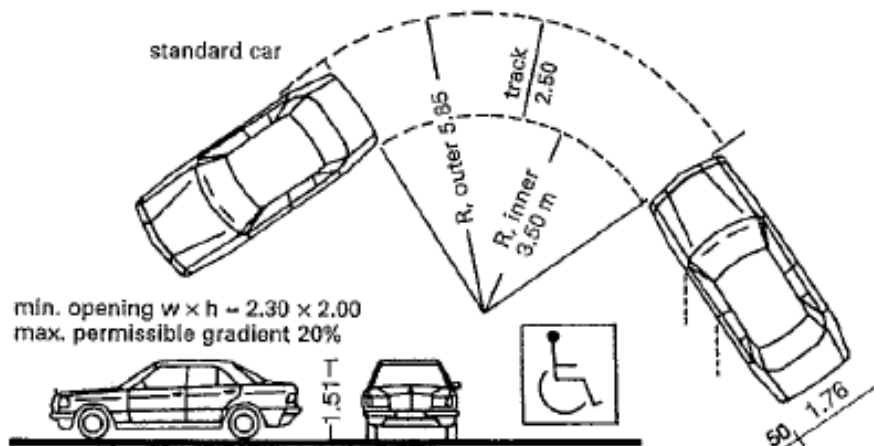


Figure 17 standard car and turning dimensions.

C.1. Standards

- Standard sizes
- Bicycle : 1.9m x 0.6m x 1m
- Motorcycle : 2.2m x 0.7m x 1m
- Car : 4.74m x 1.76m x 1.5m
- Van : 6.89m x 2.17m x 2.7m
- Parking arrangement

Table 9 Parking arrangement values

Parking arrangement	Space requirement	No. of places in 100 m ² area	No. of places on 100 m of road (One side)
1) Parallel to road	22.5	4.4	17
2) 30° to road	30.8	3.2	20
3) 45° to road	24	4.2	29
4) 60° to road	22.5	4.4	34
5) 90° to road	20	5	40

- Space requirement

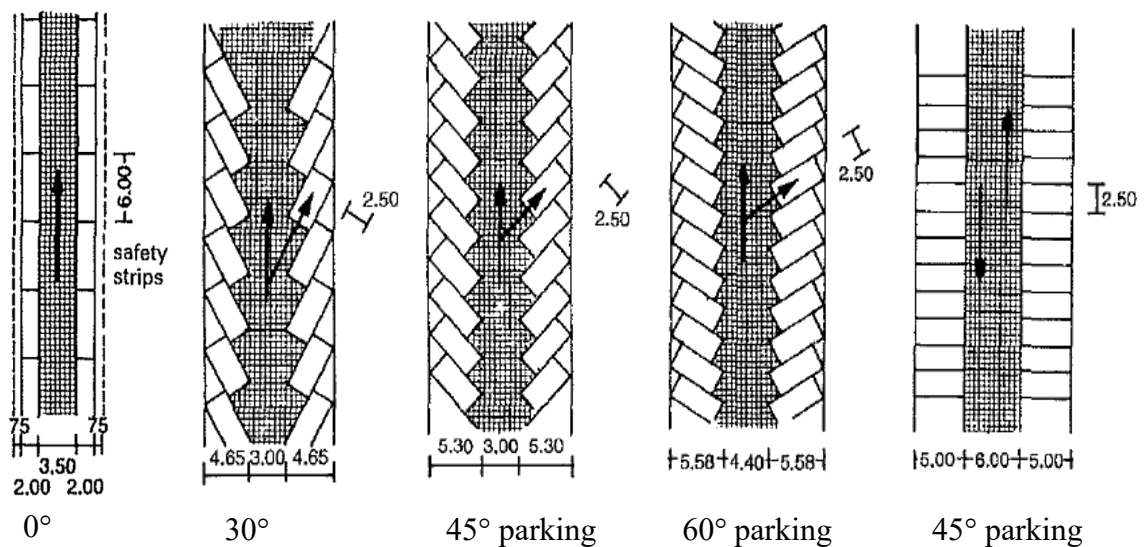


Figure 18 Parking space arrangement with dimensions

C.2. Design Guidelines

- The gradient of ramps should not exceed 15%, for small car parks 20%.

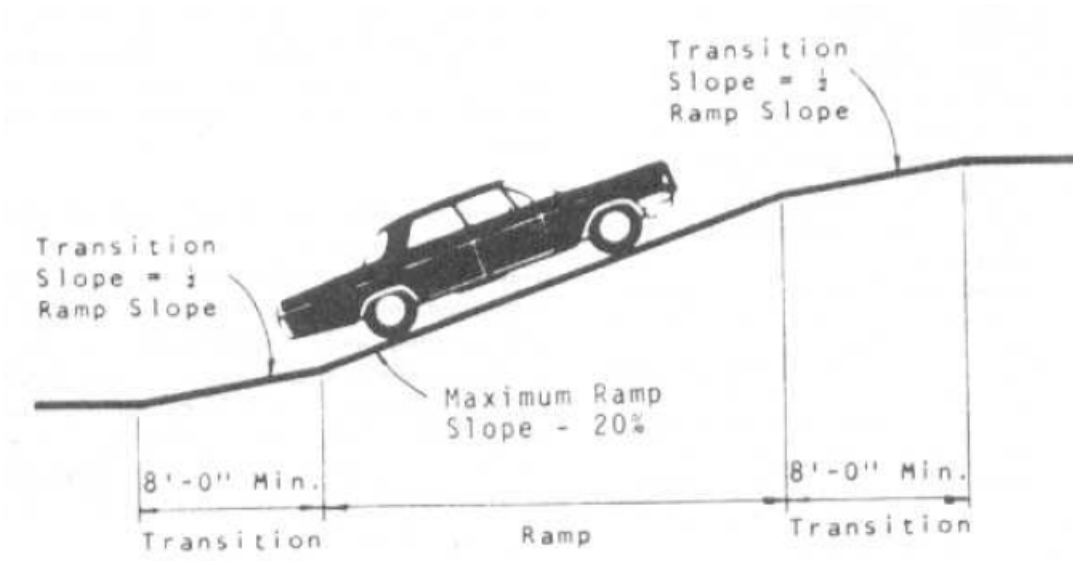


Figure 19 Ramp gradient for parking

7.4.7. Special Need Considerations

- Maximum use of ramps with maximum slope of 6% (1:12)
- Use of different textures and materials to guide the people with special needs.
- Wheelchair dimensions

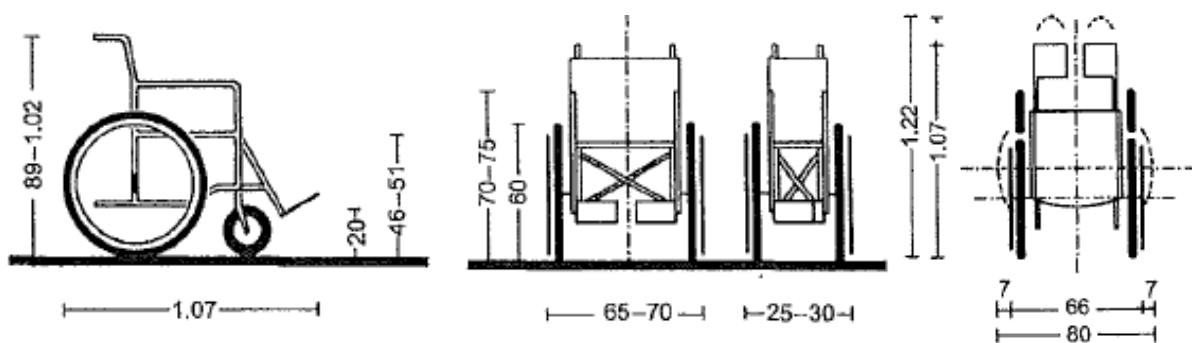


Figure 20 Plan and elevation of Wheelchair.

- Movement area of min 1.5m width and 1.5m depth.
- Cars of lifts must have a min. clear width of 1.10 m and a clear depth of 1.40 m.
- If ramps are longer than 6 m, an intermediate landing of min. 1.50 m length is required.
- Clear passage width of doors ~0.90 m.

- Corridors and routes longer than 15 m must have a passing place for two wheelchair users of at least 1.80 m width and depth.
- A wheelchair parking place for each wheelchair user is to be included in the design, preferably in the entrance area.
- Ramp shall be finished with non-slip material to enter the building.
- Minimum width of ramp shall be 1800 mm, length of ramp shall not exceed 9 m having double handrail at a height of 800 and 900 mm on both sides extending 300 mm beyond top and bottom of the ramp.
- A special W/C of 1.5m x 1.75m should be provided.
- Parking
 - Surface parking for two care spaces shall be provided near entrance for the physically handicapped persons with maximum travel distance of 30 m from building entrance.
 - The width of parking bay shall be minimum 3.60m.

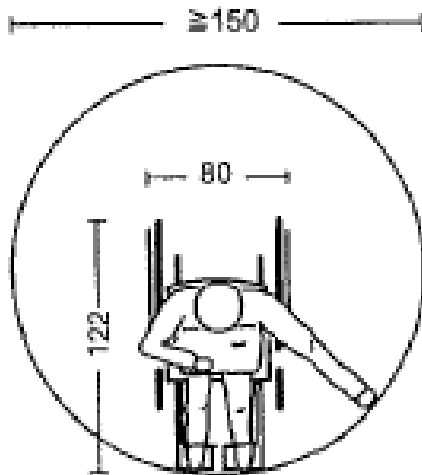


Figure 22 Min. Turning space.

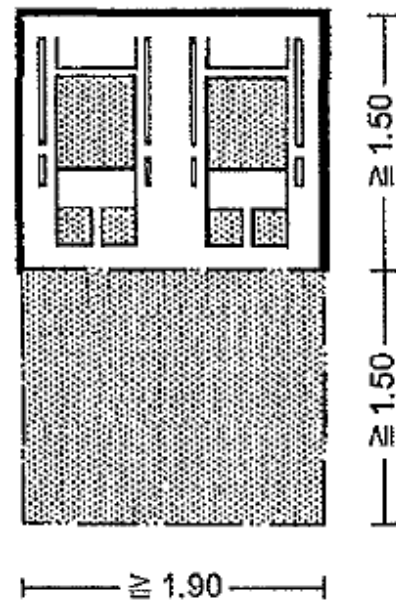


Figure 21 Wheelchair parking

7.5. Technology research

Under the current scenario of energy crisis, it is necessary for the buildings to be self-efficient as much as possible. This section of the research focuses on passive design technique for energy efficiency.

Passive design strategies are based on four basic principles;

- 1) Passive heating
- 2) Passive cooling
- 3) Climate analysis and comfort
- 4) Daylighting

Some principles of passive solar design that can be taken into considerations are:

- I. **Site location** – It is necessary to be aware of the relative amount of solar radiation available for heating and how to use it. The site must be protected from the afternoon sun with good solar access and is open to cool breezes while remaining sheltered from cold winds during winter.
- II. **Orientation** – to maximize the amount of solar gain the long axis of the building must be oriented towards the solar south.
- III. **Room layout** – Rooms in need of more heating, or used more frequently must be placed towards the south side for maximum inlet of solar radiation.
- IV. **Shading** – Shading can help to reduce summer temperatures, reduce unwanted heat gain to improve comfort and save energy.
- V. **Window** - Windows let the sunshine in, and the glass traps the heat energy inside the building, so having windows exposed to sunlight on the south side of the building will also help in direct solar gain.
- VI. **Construction materials** – The materials of the building that have high heat capacity can warm during the day and then re-radiate that heat at night after the sun goes down. Concrete and brick have the capacity to absorb heat and re-radiate slowly back into the interior space.

- VII. **Insulation** – Proper insulation during the construction can immensely help in conserving the energy by limiting the loss of heat in winter and heat gain in summer.
- VIII. **Air-sealing** – Sealing the building against air leaks can minimize heat loss during the winter and increase the comfort.
- IX. **Landscaping** - The planting of trees strategically placed on the land surrounding the building can help shade the building. This can decrease the solar radiation through shading.

Passive design techniques

1. Passive Heating and Cooling

Cooling the building is about:

- Reducing heat gain
- Increasing access to cooling sources

While heating refers to

- Increasing the heat gain
- Increasing heat gain surfaces.

Passive heating and cooling are achieved by using the principles listed above such as shading, insulation etc.,

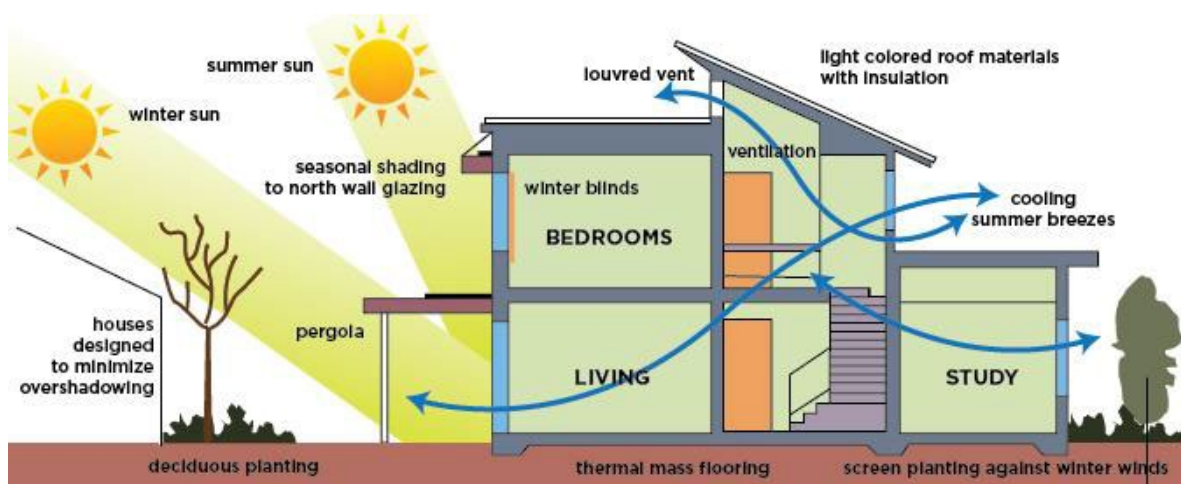


Figure 23 Passive cooling Technique

2. Passive Ventilation

Passive ventilation is the process of supplying air to and removing air from an indoor space without using mechanical systems. Two types of natural ventilation

2.1. Wind driven Ventilation

When natural wind blows across a building, the wind hits the windward wall causing a direct positive pressure, then moves around a building. If there are any openings on the walls of the building, fresh air will rush through the windows of one side and come out from the other side to balance their air pressure. The building shape, placement of windows and types play crucial roles in system.

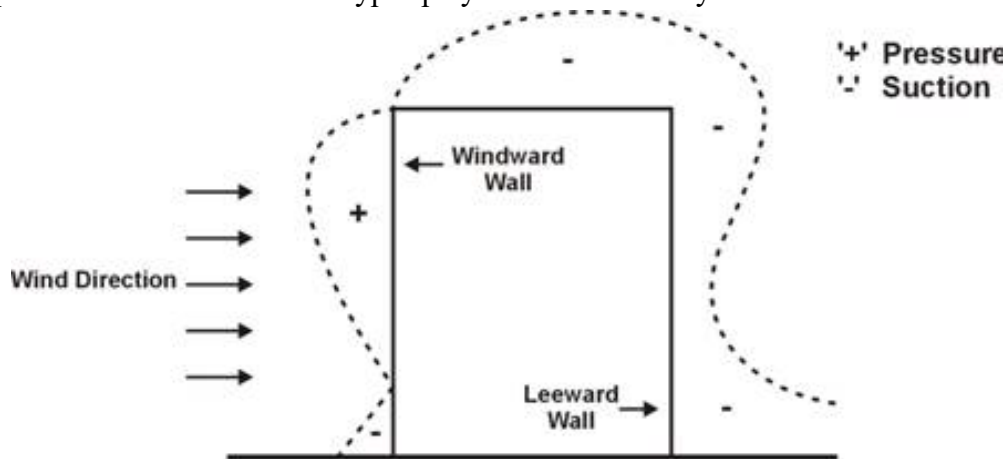


Figure 24 Wind driven Ventilation

2.2. Buoyancy-driven ventilation

Buoyancy driven ventilation arise due to differences in density of interior and exterior air, which in large part arises from differences in temperature. When there is a temperature difference between two adjoining volumes of air the warmer air will have lower density and be more buoyant thus will rise above the cold air creating an upward air stream.

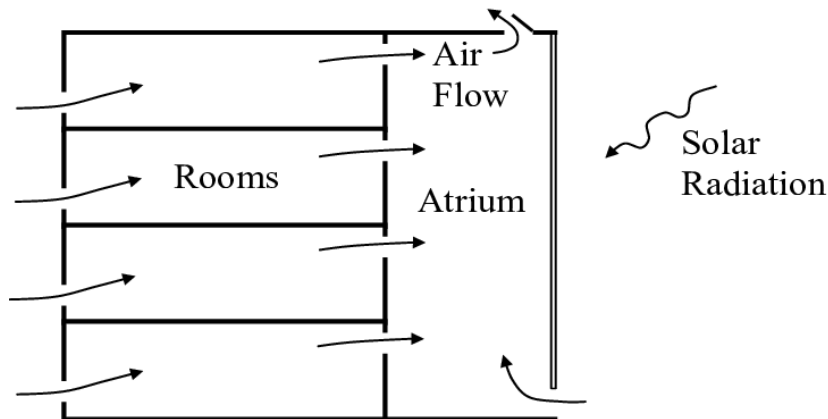


Figure 25 Buoyancy-driven Ventilation

3. Daylighting

Daylighting is the controlled admission of natural light, direct sunlight, and diffused-skylight into a building to reduce electric lighting and saving energy. The combination of Light Shelves and window blinds allow the space to be used for a variety of purposes. This arrangement will have a significant amount of impact on the energy consumption of the building with the inclusion of natural light. *(Pandav, 2018)*

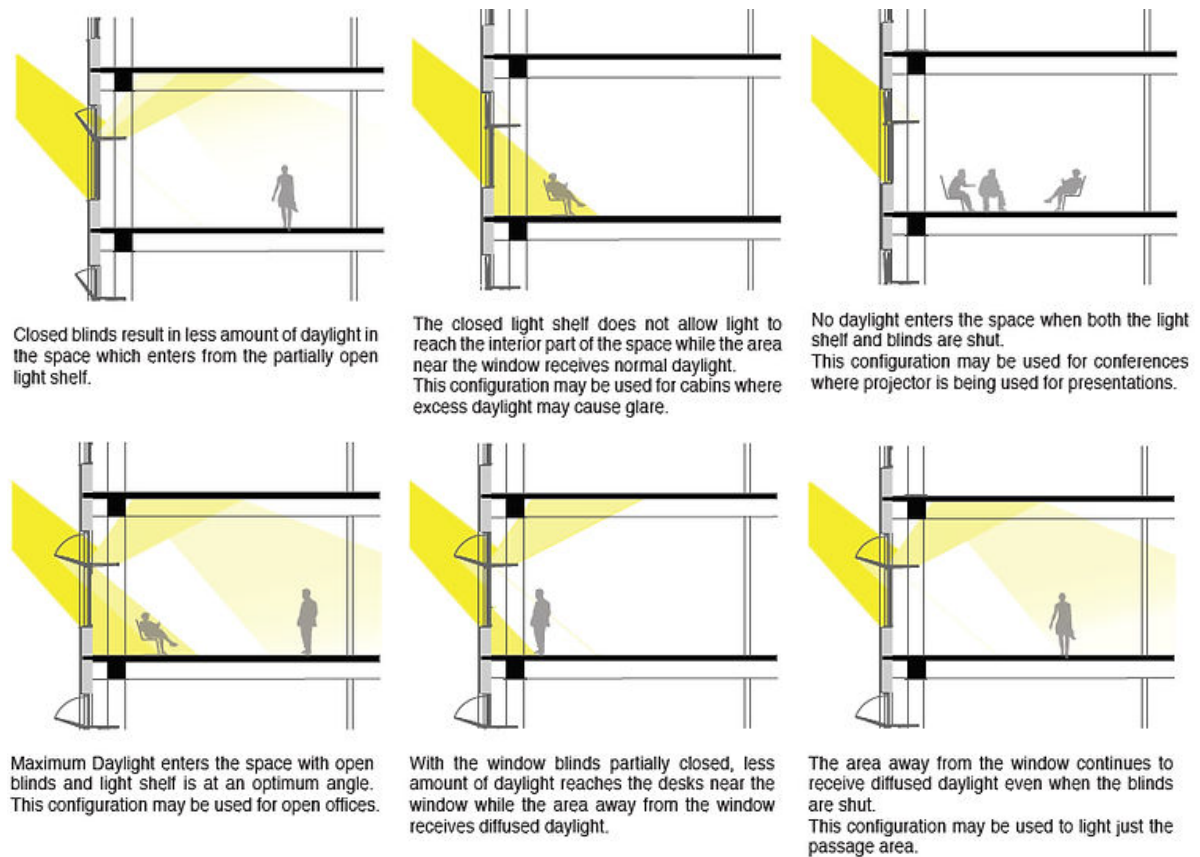


Figure 26 combination of light shelf and blinds for daylighting.

8. Framing the case study

The case studies have been framed under the following headings for consistency and ease of study.

8.1. Overview

The general overview of the project, including the general information and the objective of choosing the project.

8.2. Context

The surrounding of the project is studied including the accessibility, the character of the area and the required information about the context.

8.3. Planning and design

The concept, structure, space arrangement and its impact on the social interaction observed or studied.

8.4. Inference

The interpretation of the overall project and the lessons learned from the project to understand what can be applied for the chosen project.

9. Case study

Based on the framework, case studies were conducted on different spaces to understand the spaces and the arrangement which can immensely help in the future from site selection, zoning to the design phase. The case studies have been listed as follows: **NATIONAL CASE STUDIES**

9.1. Russian Cultural Center



Figure 27 Russian culture center

9.1.1. Overview

- General Information

- *History* : Established in 1979 as a library, 1991- shift to current location
- *Location* : Kamal Pokhari, Kathmandu
- *Site context* : Mixed use, residential and commercial
- *Ownership* : Russian Embassy Objective: Cultural exchange between Nepal and Russia
- *Activities* : Diplomatic meetings, exhibitions, cultural programs, film festivals, workshops, language classes etc.
- *Facilities* : Membership to Library, Workshops, Language classes

- Objective of study
 - To study the arrangement and spatial relationship between the various components within the multifunctional building.
 - To study the spaces within, auditorium, conference hall, library, exhibition space and office spaces.

- Project Components
 - Foyer (Used for exhibition)
 - Auditorium (939 sq. m. 198 seats)
 - Conference hall (84 sq. m., 50 seats)
 - Library (151 sq. m.)
 - Language classrooms
 - Office spaces

9.1.2. Context

Russian Culture Centre was established through the USSR Embassy Nepal about a decade ago. The center is located in the Kamal Pokhari junction in front of the Kumari deity in Kathmandu. It has Kumari Cinema Hall in South and Kumari temple in North-East front.



Figure 28 Map showing the context of Russian Cultural center

For the context of the project, the area near and surrounding can be classified as residential and commercial zone, with majority of residence area. There also exists commercial centers, City Centre, and private business areas near as well. The high-density zone has major roads as well as minor roads which contributes to the ease of access for the center.

9.1.3. Planning and Design

Russian Culture Centre is a representation of modern kind of architecture that executes the relationship between different functional elements. The Russian Centre is a multifunctional building with different functions being integrated into the single entity. It was built with the purpose of exchanging cultural amenities between Nepal and Russia. This building consists of a variety of functional spaces such as office spaces, an auditorium, conference hall, exhibition space etc.



Figure 29 Planning - Russian Culture Center

Functions

- Various functions like auditorium, offices, library, and conference hall distributed around central entrance foyer cum exhibition space
- Different entrance to different functional areas, maintaining privacy and control, though no visual restriction sometimes.
- Corridor around foyer (levelled below) for accessing office spaces
- Wide corridor in first floor used for display and circulation
- Interplay in level of different spaces

Spatial arrangement

Entrance Foyer

The foyer is a double height skylit hall serving as the foyer, exhibition space as well as spill out area for the auditorium. The central circular skylight and the other source of natural lighting punctures in the roof create an interesting and vibrating interior environment. All the functional spaces are arranged around this central foyer space.

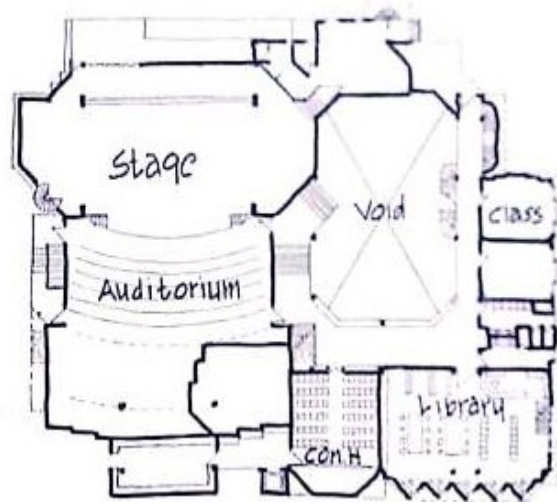


Figure 30 First Floor Plan

Auditorium

The auditorium has been designed for nearly 200 spectators, for performing cultural programs, documentaries but not theatrical performance. The auditorium is fan shaped and the seats are arranged in a slightly curvilinear pattern.

- The auditorium is a small one with 198 seating capacity.
- There is a good provision of fire escape and fire safety.
- AC system is used for the mechanical ventilation.
- There are ten rows of seats.
- The width of each seating step is 3'-6" and height being 1'-2".
- The distance from the stage to the front row is 7'-10".
- Width of the gangway is 3'-6".
- Provision of wide wings and backstage alley with green rooms and store.
- There is an efficient circulation pattern with multiple entry and exits.
- There is common entrance foyer i.e., no separate foyer for the auditorium.
- Depth of auditorium = 16.2 m
- Stage area = 17.75 m x 14.4 m

Conference Hall

- The conference hall is a 50 seated audio-visual hall.
- The area has the capacity of 1.68 m²/person.
- The conference hall is double height with proper acoustical treatment on wall, floor and ceiling.
- There are good provisions of fire exits and AC system.

Library

- Despite being small, the double height room seems spacious.
- Windows towards east provides natural lighting to the room.
- Different sections accommodated in a single room of area 115 m².
- Back stacks provided along the periphery so no obstruction to the reading spaces.
- Effective library layout with pockets for individual reading area provided by offsets in plan and also there is space for group reading.

Circulation

- Efficient circulation pattern was observed with multiple entry and exits.
- Main entry leading to entrance foyer, side entry to classrooms and also back entry to office spaces.
- There is a common entrance foyer i.e., no separate foyer for the auditorium.
- Interesting use of levels for incorporating various functions.

9.1.4. Inferences

- The use of levels to create interesting and unique spaces.
- Use of natural daylighting within the interiors.
- Accessibility controlled based on the nature of functions.
- Central foyer used as exhibition increased the effectiveness of the space.
- Segregated spaces for the visitors and administrative staff.
- Interconnected circulation corridors for different spaces.
- Less considerations for outdoor spaces.
- Mainly formal activities and function, not much for the general public.

Background study: Community Learning centers (CLC)

(*Community Learning Centers, Nepal | UIL, 2017*)

Overview

- *Program title* : Community Learning Centers (CLCs) Program
- *Implementing organization* : Ministry of Education and sports.
- *Program partners* : National Resource Centre for Non-formal Education (NRC-NFE); UNESCO; National Federation of UNESCO Associations of Japan (NFUAJ) and Rotary Matching Grant Fund
- *Date of inception* : early 1990s

Context and Background

The high illiteracy rates in the country among minority groups, women, lower castes have caused the practice of discrimination and the lack of development of the communities as well. The access to good quality formal education was further impeded due to poor infrastructure and shortage of qualified teachers. In response to these challenges, the Ministry of Education and Sports (through NFEC) with support from UNESCO, instituted the Community Learning Centers Program in the 1990s in an effort to make education more accessible to all, as well as to promote development, social empowerment and transformation. All the CLCs in Nepal are managed by the local people targeting children, youths and adults from rural and urban communities. The CLC program in Nepal provides participants with skills in: Literacy, Communication and social interaction skill, Health, Civic education, Environment management etc.

The program endeavors to

- Promote gender equality
- Empower the communities to solve their local problems.
- Promote local socioeconomic development and improvements in communities' quality of life
- Create opportunities for communities to discuss local problems and development needs.

Impact

- contributions towards community development, employment creation, poverty alleviation and social empowerment and transformation.
- improved community members' awareness of their civic rights and responsibilities and increased their participation in local developmental projects.

Challenges

- lack of resources (human, material and financial) necessary for the effective implementation of the program.
- dependency on external funding due to inability to independently sustain them,
- weak links of CLCs and other developmental agencies engaged at the local level.

Inference

- Involvement of members in decision making regarding the activities in the center,
- Ways to economically sustain the centers are lacking.

9.2. Swoyambhu Community Learning Center



Figure 31 Swoyambhu Community center

9.2.1. Overview

- *General Information*
 - History : Established as community developing center, later changed to Community learning center in 2067/2068 B.S.
 - Location : Dallu awash – 15, Kathmandu
 - Site context : Residential
 - Ownership : Community Based committee
 - Activities : Non-formal education classes, Out-of-school Children education
 - Facilities : Classrooms, Meeting Hall, Offices

- *Objective of study*
 - To understand the activities that are conducted by CLCs.
 - To find out the spaces provided by such CLCs for different activities
- *Program*
 - Classrooms
 - Meeting Hall (Capacity max. 50)
 - Offices

9.2.2. Context

The community Learning center has been formed from the direct and indirect support of World Vision, Non-Formal Education Centre, UNICEF, UNESCO and also the members of the local community. This center has been conducting income generating programs such as beauty parlor, sewing center, plumbing, motorcycle repair training and so on.

The center is located within the residential Zone of Ward no. 15. The area also consists of open parks and sports park used for the events and activities of the community.



Figure 32 Site Context

9.2.3. Planning and Design

The building used for the center has been rehabilitated with the spaces or rooms within the building being used for various purpose. The main committee of the center also has subcommittee under them for elders, women, children and youths. Based upon the age group, they are involved in different program for their development. Also, a hall has been created on the top floor for the use of meetings, community discussion and other gatherings. The open spaces are available near the center and also used for cultural activities of the community.

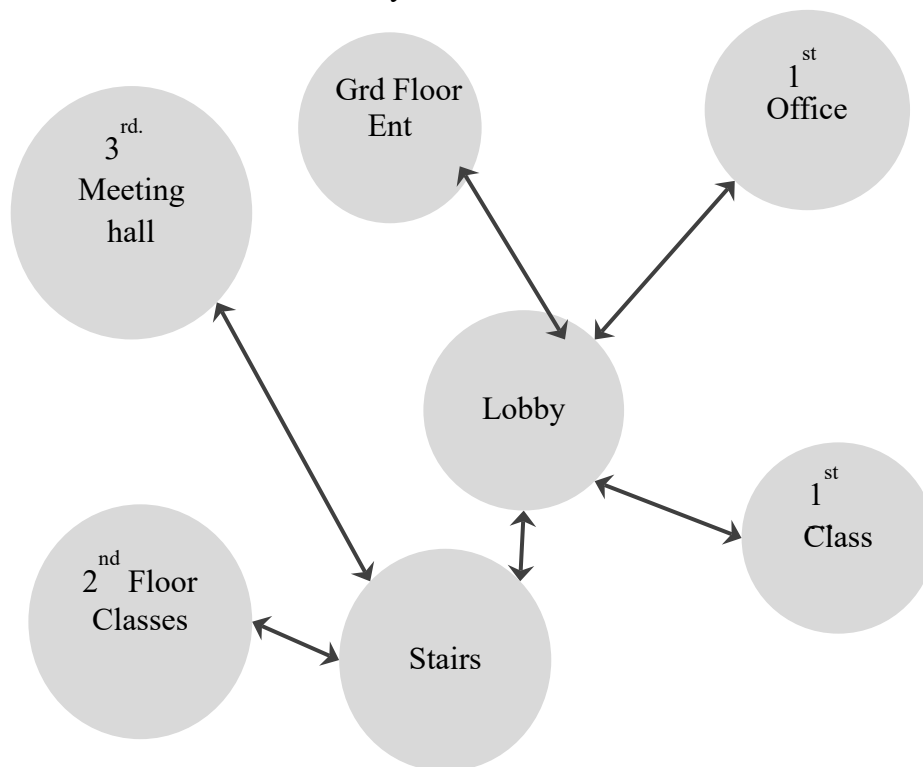


Figure 33 Spatial Planning- Syoyambhu CLC

9.2.4. Inference

- Activities aimed towards community development.
- Spaces utilized for activities that are conducted within the center.
- Use of community open space for events.
- Rehabilitative use of various spaces.
- Issue of proper spaces and planning.
- No consideration of passive techniques for sustainability.
- No spaces for public engagement.

9.3. Firstenburg Community center



Figure 34 Firstenburg Community Center

9.3.1. Overview

- General Information
 - *History* : Completed in 2007
 - *Location* : Vancouver, Washington
 - *Architect* : Opsis Architecture
 - *Activities* : Library, Swimming, Fitness, Gym, Rock climbing
 - *Area* : 64000 Sq. Ft.

- Objective of study
 - To understand the planning concept of the community center.
 - To study the features taken into considerations for participation and interaction of visitors.
 - To understand the components included within the community center.

- Project components
 - Community room
 - Game room
 - Juice bar
 - Pool
 - Locker room
 - Rock Climbing
 - Gym
 - Administration
 - Running track
 - Fitness
 - Multi-purpose hall



Figure 35 Planning

9.3.2. Context

The Firstenberg Community Center is a multi-use facility that combines recreational and community spaces with other public services. It embodies the character of the community, provides convenient access to services and brings together a diverse mix of users.

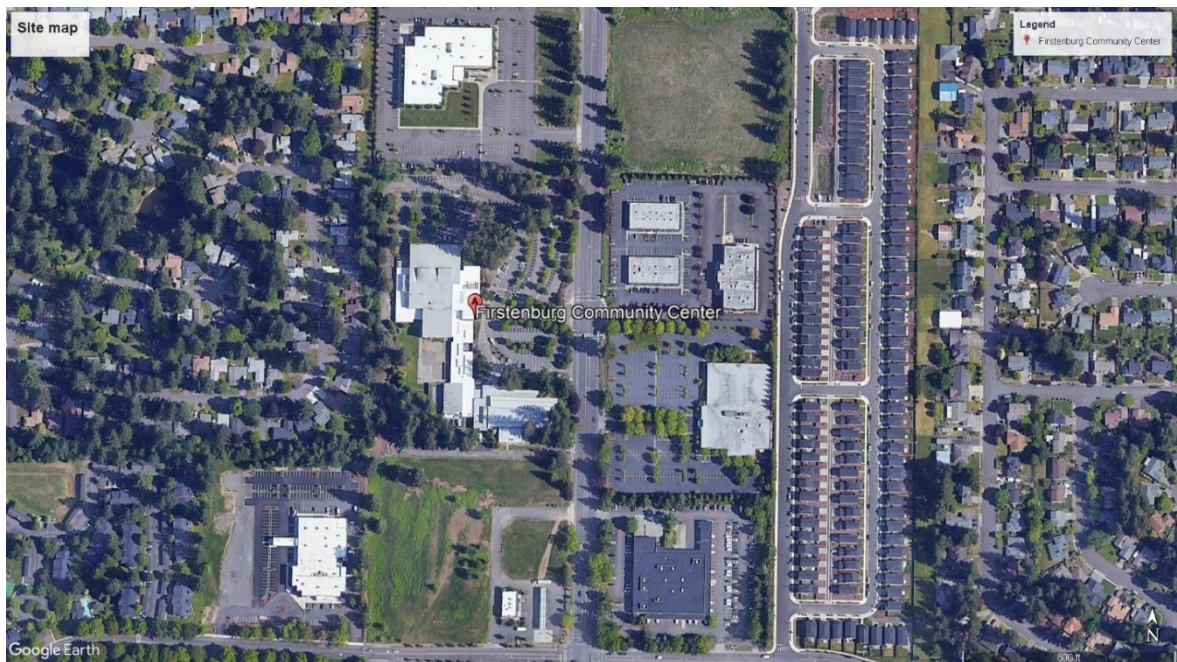


Figure 36 Site context of Firstenberg community center

The community center lies near the suburban areas. Families from these suburban homes have the opportunity to visit the site together, using library and community center resources to enjoy a wide range of recreation and learning activities.

9.3.3. Planning and design

Spatial site planning

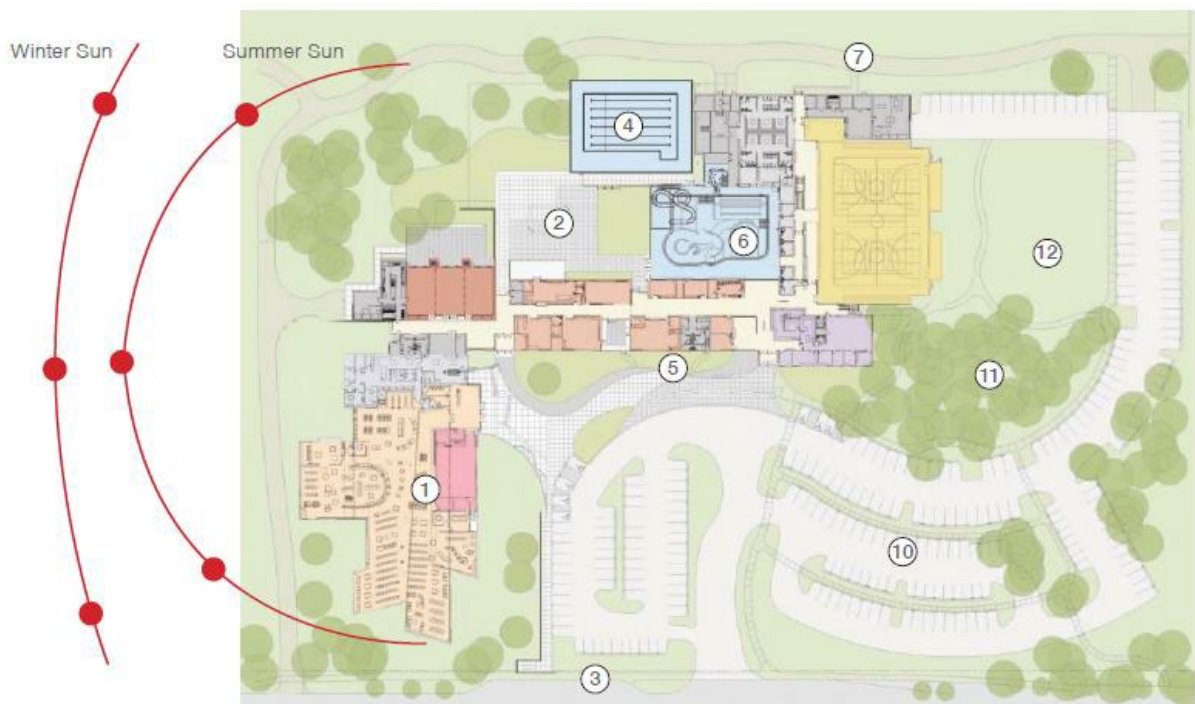


Figure 37 Site Planning

Site ecology and Land use

- Two level building massed to reduce the footprint and preserve the trees to enliven the facility by concentrating on social spaces.
- The footprint and position of the building are a result of careful analysis of the areas of healthy and significant trees, solar orientation, prevailing wind direction, noise from the adjacent street, and program requirements.

- 1 Library, Completed 2010
- 2 Courtyard with Spray Ground
- 3 Bus Stop
- 4 Future Lap|Pool
- 5 Bike Parking
- 6 Firstenberg Community Center
- 7 Walking Trail / Service Lane
- 8 Porous Concrete Paving
- 9 Established Coniferous Forest
- 10 Future Parking

- The building takes advantage of the park-like setting with large windows for daylighting and courtyards to allow interior functions to participate with the natural landscape.
- Use of alternative transportation is encouraged by building a bus stop and shelter, providing ample bike parking and designated carpool parking and creating pedestrian links to an adjacent park.
- The parking lot's organic shape maximizes the number of significant existing trees retained.

Sustainability Approach

- Maximized use of daylight throughout the building also highlighted transparency between the spaces.
- Opportunities for passive cooling, creating strong connections to the site, and providing welcoming open display resulted in a long thin footprint allowing for exceptional daylight and cross ventilation.
- Radiant concrete slab floors are heated or chilled to maintain comfortable temperatures.
- Use of Increased thermal mass that stores heat or coolness to decrease the effect of exterior temperature swings.
- Other passive techniques such as automated natural ventilation and solar shading devices to block heat gain.
- A central heat pump recovers waste heat in the summer and uses it to heat the pool and domestic water.
- Daylight sensors integrated with dimmable energy efficient lighting fixtures eliminate the use of artificial lighting whenever possible.

Materials and Construction

- Materials have been selected for their durability, beauty, and sustainability.
- Recycled materials such as the glass wall tiles used in the locker rooms and natatorium.
- Use of unnecessary materials was eliminated with the use of exposed steel structure, ground face concrete masonry block walls, and concrete floors.

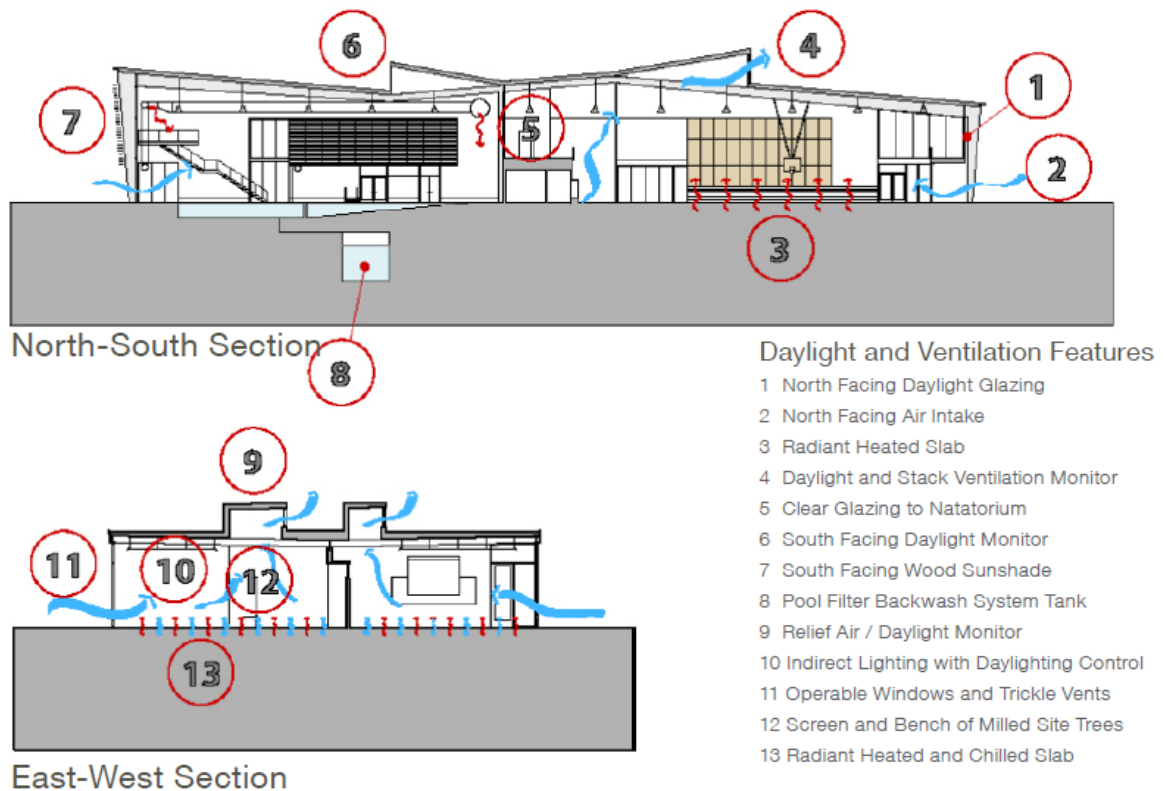


Figure 38 Daylighting and Ventilation

9.3.4. Inferences

- Careful consideration to the site context to preserve the existing features as much as possible.
- Focused on reducing the footprint of the building with considerations to the orientation, daylighting, wind direction and noise.
- Use of various sustainable passive design techniques for energy efficiency.
- Convenient access to the user with emphasis on social spaces to promote social interactions.
- Various recreational facilities for engagement.
- Natural daylighting and ventilation throughout the building.
- Multi-use community rooms address the lack of meeting and gathering spaces.

9.4. Abbotts Creek Community Center



Figure 39 Abbotts Creek Community Center

9.4.1. Overview

- General Information

- *History* : Completed in the year 2015
- *Location* : Raleigh, United States
- *Architect* : Clark Nexsen
- *Activities* : Classrooms, Fitness spaces, gymnasium
- *Area* : 26500 Sq. Ft.

- Objective of study

- To understand the planning concept of the community center.
- To understand the connection between the components included within the community center.

- Project components

- Multi-purpose Room : 56' x 23'
 - Maximum Capacity : 136 (90 with tables/chairs)
- Classroom : 26' x 35'
 - Maximum Capacity : 42
- Fitness Studio : 26' x 29'

9.4.2. Context and surrounding

Located on a former landfill site and beside an elementary school, Abbotts Creek Community Center transforms an abandoned piece of land into a thriving community park for healthy living and learning.



Figure 40 Site context of Abbotts Creek Community center

The community center lies in a suburban Zone with schools nearby. Also, the North and the east is open land. The south and the west consist of suburban homes that generally use the center for the activities offered.

9.4.3. Planning and Design

The center's composition interlocks with the school and creates a series of indoor and outdoor gathering spaces that transform the forgotten site. The center's upper volume slides past the base providing a welcoming public entry as it connects visitors to the school and landscape. A delicate screen encompasses the upper volume and creates a veil that illuminates the public spaces and defines the entrance to the new community campus.

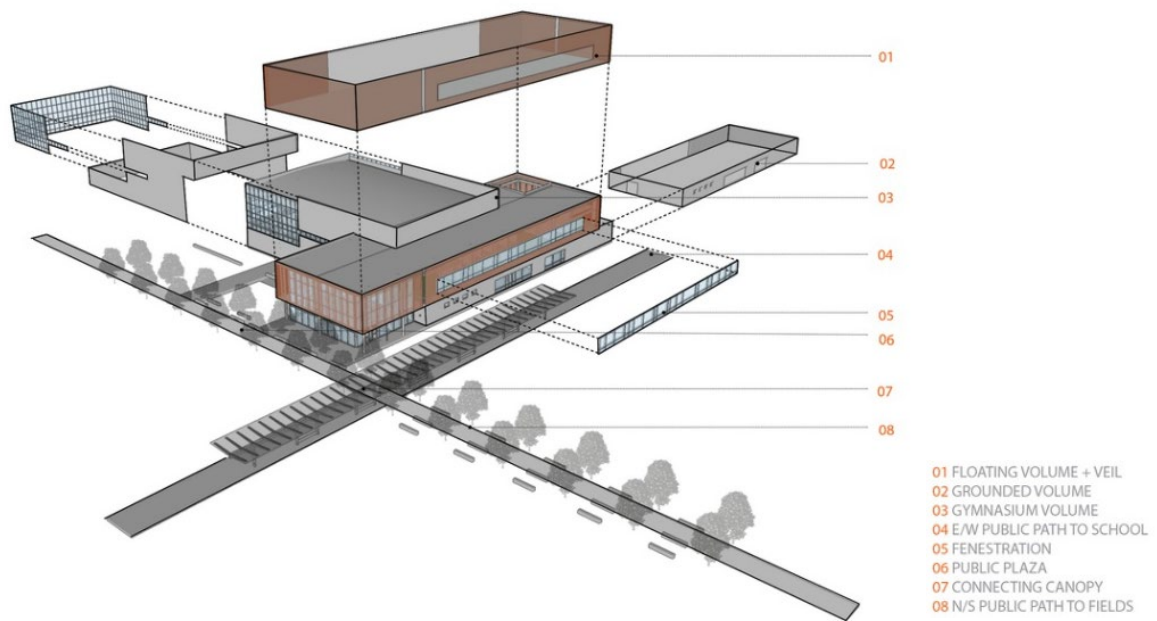
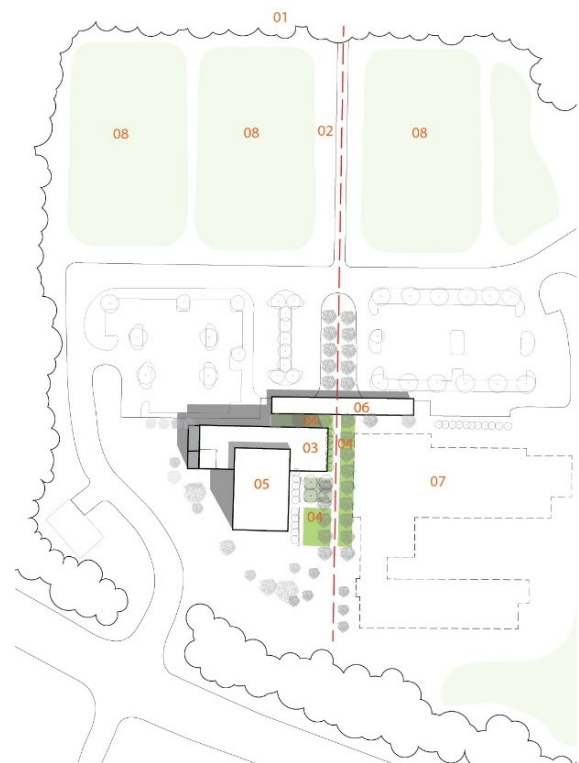


Figure 41 Axonometric composition

Site Planning

To serve a rapidly growing area of the city, the Raleigh Parks and Recreation Department partnered with Clark Nexsen design the new, health-focused Abbotts Creek Community Center. The healthy living themed facility houses a high bay gymnasium space with supporting classrooms, fitness spaces, and staff space. Complimentary outdoor athletic and fitness spaces are also included.



SITE PLAN

- 01 LANDFILL PARK
- 02 PUBLIC PATH
- 03 LOBBY / PUBLIC SPACE BAR
- 04 EXTERIOR PLAZA
- 05 GYMNASIUM BAR
- 06 CANOPY CONNECTOR
- 07 SCHOOL
- 08 PLAYFIELDS



Figure 42 Site Plan

Space Planning

The planning of the community center is interesting one, with consideration for the public path as well as the pathway leading to the adjacent school. The interlocking design mimicking the interlocked pathways creates a sense of familiarity to the users with incorporated function. Special consideration has been done for the circulation and pathways with health being the primary focus of the center. The indoor facilities are well connected with the outdoor spaces through large glass windows to connect the spaces with the greeneries to bring a calm and serene nature within the environment.

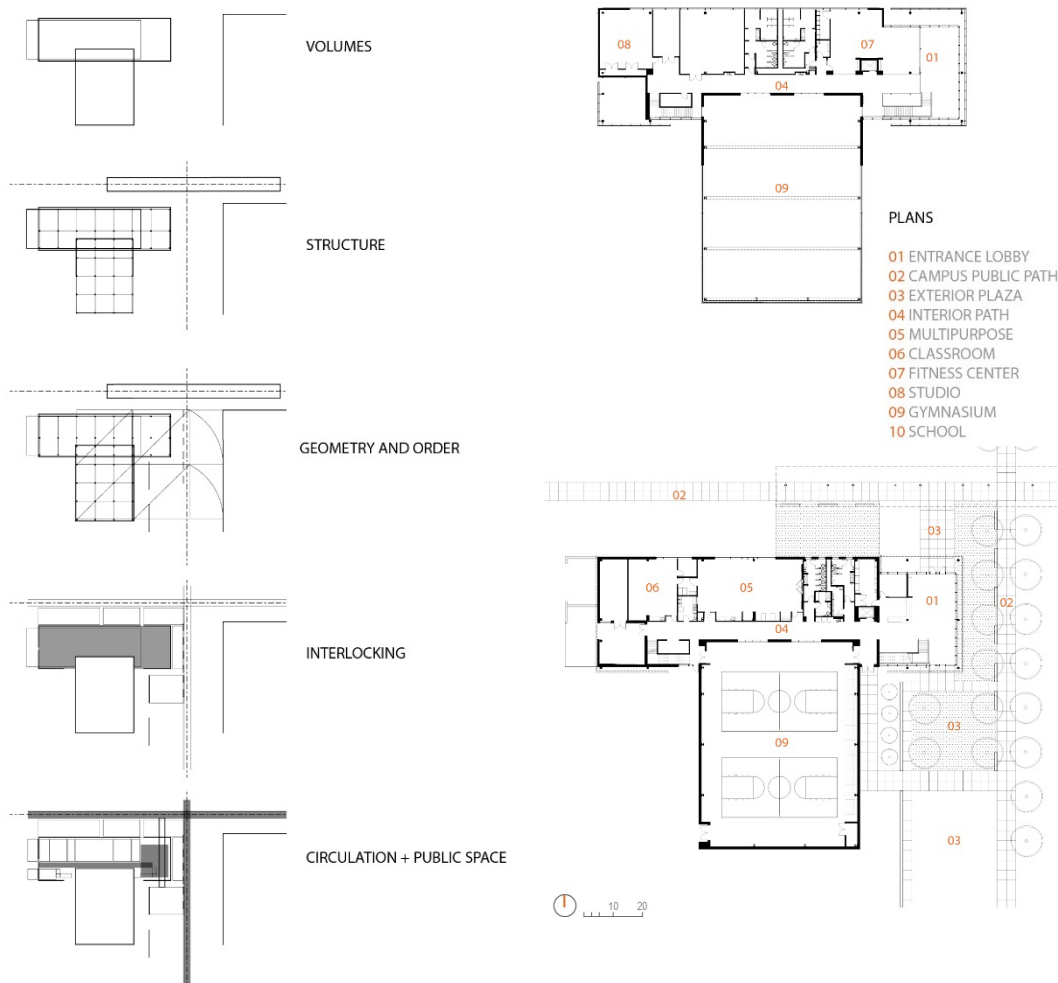


Figure 43 Planning of Community Center

Support spaces consist of a multi-purpose room, associated kitchen, storage, office, and classroom to serve tracked-out students who are enrolled in year-round programs in nearby Wake County schools. A studio and fitness center, as well as spaces for staff offices and a lobby, round out the main program elements. The facility also includes shower and locker facilities

Construction

The construction of the building is a structural steel frame with envelope construction consisting of a ground-face CMU veneer and metal panels. The upper level of the gymnasium has insulated fiberglass sandwich panels with a clear insulated vision glass system. The lobby contains curtain wall construction with perforated metal screening. The building orientation maximizes daylighting on the northern and southern façades. The bow-trussed gym supports full-size basketball and volleyball courts and offers cross-courts for basketball.

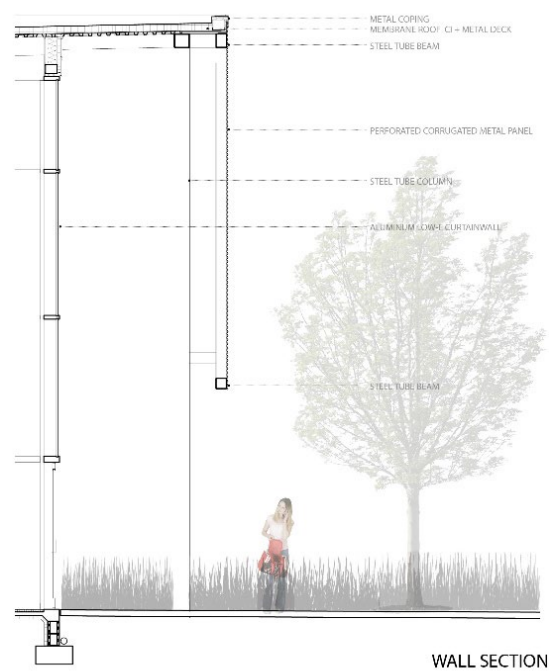


Figure 44 Wall section

9.4.4. Inference

- Incorporated design with facilities supporting the community's health.
- Use of large spaces in the lobby to create a welcoming and grand entrance.
- Visual connection of health inducing spaces with the outdoor greenery.
- Change of unused landfill site to a thriving building for the community.
- Maximum use of daylighting
- Consideration for the adjacent structures
- Parking has not been considered.

9.5. Thebarton Community Center



Figure 45 Thebarton Community Center

9.5.1. Overview

- General Information
 - History : Completed on 2013
 - Location : Adelaide, Australia
 - Architect : MPH Architects
 - Activities : Community events, meetings, gatherings, trainings, celebrations
 - Area : 2898 m²

- Objective of study
 - To understand the spatial arrangement.
 - To study the roof profile and the form of the center.

- Program
 - Hall A : 350 Sq. M. (22m x 16m)
 - 3.6m x 7.2m Stage
 - 180 Round table / 280 theatre style
 - Hall B : 185 Sq. m. (11.5m x 16m)
 - 70 round tables / 100 theatre style
 - Kitchen/bar : 92 Sq. m. (14m x 6m)
 - Room 2 : 40 Sq. m. (5m x 8m)

- 24 round tables / 30 theatre style
- Room 3 : 70 Sq. m. (9m x 8m)
- 48 round tables / 60 theater style
- Room 4 : 40 Sq. m. (7m x 5.5m)
- 16 round tables / 30 theater style
- Tea Area : 8 Sq. m.

9.5.2. Context

The building is arranged with public spaces orientated to the park and support areas providing a buffer to the traffic noise along the South Road boundary. The center lies near to residential area and recreational areas such as cricket ground, open park, market place etc.



Figure 46 Site Context

9.5.3. Planning and Design

The Thebarton Community Centre in Kings Reserve was designed as an iconic “pavilion in the park” in response to the City of West Torren’s objectives that it be a focus for the community, and a landmark as the northern gateway to the council area. The dominant built form with folded roof planes references movement, flight and the City of West Torrens as a transport hub.

Geometry of the built form has been generated by the irregular site constrained by a major transport corridor to the east and reclaimed pug hole to the west. The parallelogram grid generates a dynamic “tension” with the regular shaped public spaces and contributes to the sense of movement. The transparent façade provides the building with an animated character exhibiting the ever-changing internal activities.



Figure 47 Thebarton Community center facade

Glazing and shading elements were designed based on thermal and solar modelling to achieve a balance between views to the park and minimizing thermal transmission. The recycled brick façades reference the old brickworks site, provides an acoustic barrier to South Road and screens services areas. *(Thebarton Community Centre / MPH Architects, 2013)*

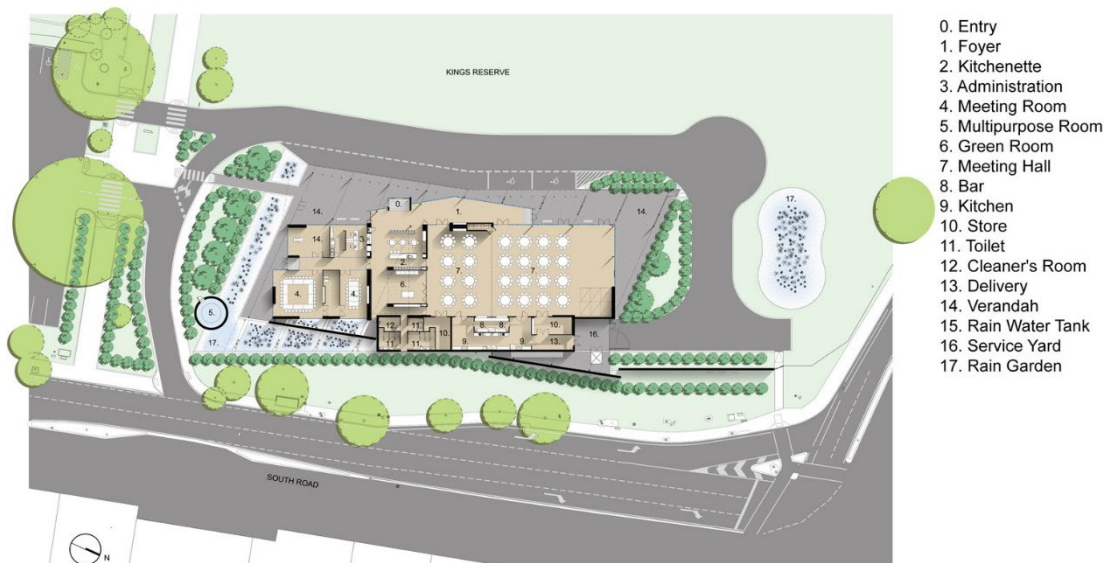


Figure 48 Site Plan

Planning - Activity of Spaces

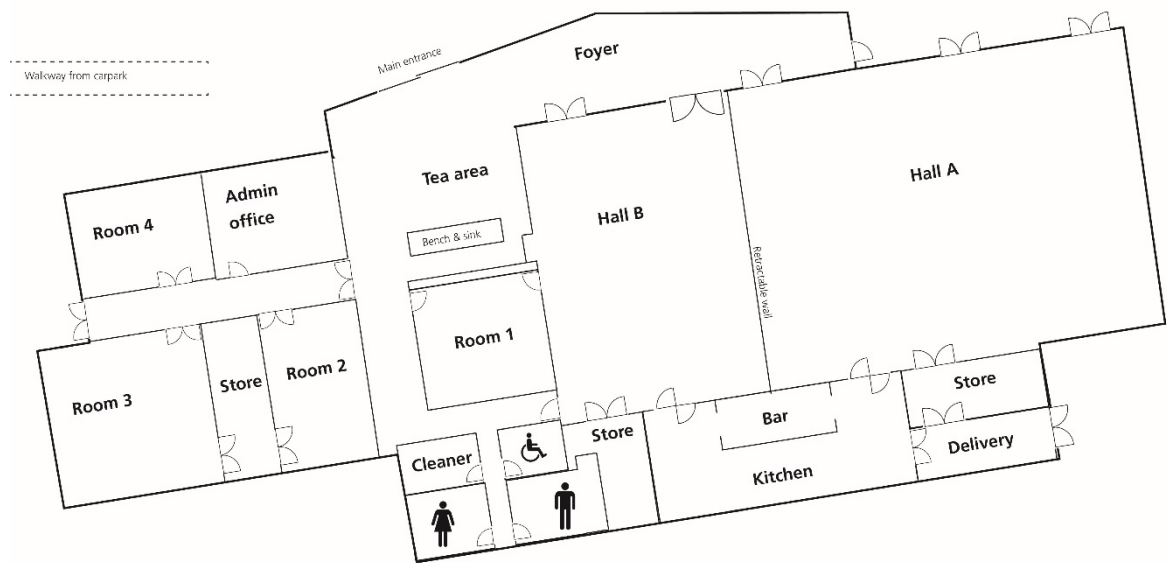


Figure 49 Spatial arrangement

- Room 1: Used as green room for Hall A and B
- Room 2: Suitable for meeting room with projector, audio system, carpet tile flooring
- Room 3: Suitable for meeting and seminars, similar to Room 2
- Room 4: Suitable for fitness program, art classes, playgroups with non-slip vinyl floor.
- Tea Area: For preparation of light refreshments for meeting room users with exposed polished concrete floor.
- Hall A and B: Suitable for various functions as well as recreational events with sprung timber floor.
- Kitchen/bar: to prepare meals and drinks to hall A and B with non-slip vinyl flooring.

Flexibility of spaces

Hall seating set-up options

- Hall B with theatre style seating for 80 people
- 8 rows with 10 chairs

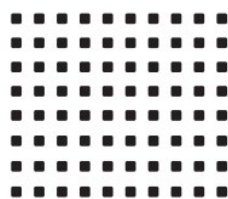


Figure 50 Seating set-up option 1

- Hall B with banquet style tables for 90 People
- 9 tables with 10 chairs but no additional buffet space or dance floor.

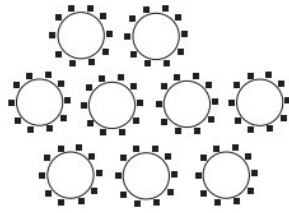


Figure 51 Seating set-up option 2

- Hall A with theater style seating for 160 People
- 10 rows of 16 chairs with center aisle.

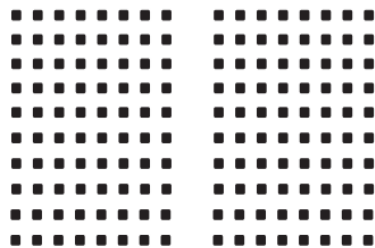


Figure 52 Seating set-up option 3

- Hall A with banquet style tables and seating for 140 people.
- 14 tables of 10 chairs

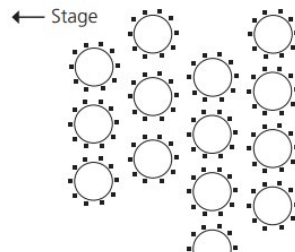


Figure 53 Seating set-up option 4

- Hall A and B with banquet style tables with seating for 250 People.
- 25 tables of 10 chairs

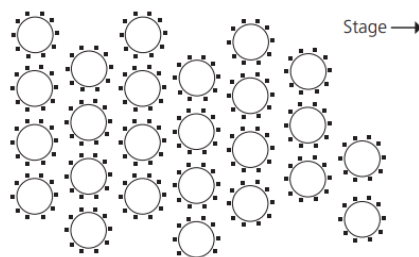
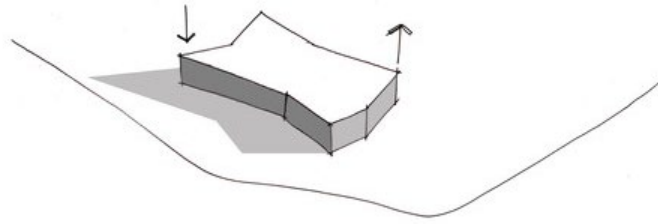
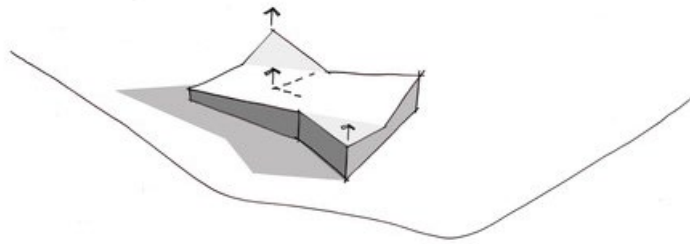


Figure 54 Seating set-up option 5

Roof study



The building turns its back to the traffic lifting the roof to the parkland to engage with its surrounding.



Lifting the roof winglets maximizes the daylight entering the building.



Figure 55 Roof study

Folded roof planes and wide overhangs reference movement, flight and the city of West Torrens as a transport hub in Adelaide.

9.5.4. Inference

- Visual connection the adjacent park through large transparent windows.
- Open access to the people of the community with no boundary walls.
- Site responsive design with character of the city.
- No specific function associated with the rooms to allow for flexibility of use based on the users.
- Outdoor spaces connected to the park but no association for comfort within the site of the center.
- No specific function can lead to confusion for the use of spaces

9.6. Comparison Sheet

Table 10 Comparison table between case studies

Project	Russian Culture Center		Swoyambhu Community Learning Center		Firstenburg Community center		Abbotts Creek Community Center		Thebarton Community Center		Meadowvale community Center	
Character	Kamal Pokhari		Dallu awash, Kathmandu		Vancouver, Washington		Raleigh, United States		Adelaide, Australia		Mississauga, Ontario	
Location	~ 5000				~6000		~2500		~3000		~8000	
Spatial Components	i	Foyer	i	Classrooms	i	Community Room	i	Multi-purpose Room	i	Hall A	i	Fitness center
	ii	Auditorium	ii	Meeting Hall	ii	Game Room	ii	Classroom	ii	Hall B	ii	Gymnasium
	iii	Back Stage	iii	Offices	iii	Pool	iii	Fitness Studio	iii	Kitchen/ Bar	iii	Indoor Pool
	iv	Green Room			iv	Rock Climbing	iv	Gymnasium	iv	Room 2	iv	Library
	v	Conference Hall			v	Gym	v	Studio Room	v	Room 3	v	Squash Courts
	vi	Library			vi	Administration			vi	Room 4	vi	Auditorium
	vii	Language Classrooms			vii	Running Track			vii	Tea Area	vii	Youth/Senior Room
					vii	Fitness						
					ix	Multi-purpose Hall						
Design Factor	Culture Promotion		Vocational Learning		Sustainability		Visibility and Linkage		Flexibility		Architecture as Expression	
Construction	i	RCC Frame	i	RCC Frame	i	Concrete Slab	i	Steel Frame	i	Steel Frame	i	Steel Frame
					ii	Steel structure	ii	Veneer and metal Panels	ii	Brick Facades		
Inferences	i	Use of levels to create interesting spaces.	i	Activities aimed towards community	i	Engagement throughspaces offered by center.	i	Incorporated design approach	i	Visual connection with open access to the community	i	Landscaping connection
	ii	Maximum use of natural daylighting	ii	Spaces utilized for activities that are conducted within the center.	ii	Spaces linked with open spaces to interact with the nature	ii	Large Foyer space to create visual connection with the outdoor	ii	Flexibility of use based on the users.	ii	Shading for large connective windows
	iii	Controlled Accessibility	iii	Rehabilitative use of various spaces.			iii	Change of unused landfill site to a thriving building for the community.	iii	No signage creating confusion for the use of spaces.	iii	Accessibility and inclusivity
	iv	Multi function foyer space	iv	Issue of proper spaces.							iv	Natural daylighting
	v	Interconnected circulation	v	No spaces for public engagement.								
	vi	Less considerations for outdoor spaces.										

10. Site selection

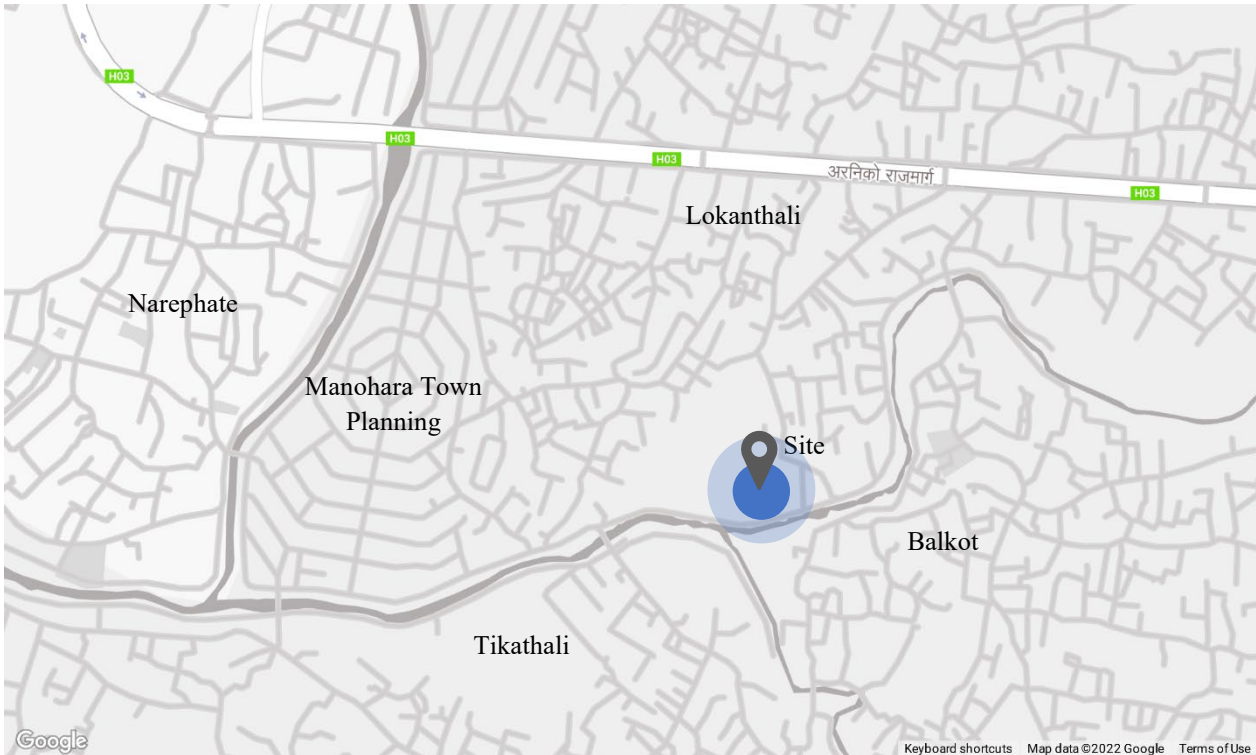


Figure 56 Location of Proposed Site

10.1. Site Information

The selected site is located at the edge of Madhyapur Thimi Municipality, Ward-3. The ward-3 is in close proximity with wards of other municipalities as well which are: Suryabinayak Municipality Ward-2 and Mahalaxmi Municipality Ward-5.

Existing Use: The site is currently being used for agricultural purpose as well as temporary poultry farms by the informal temporary settlers of the area near to the site.

Site Area: The total area of the site is 20,000 Sq. m. (Approx. 40 Ropanies)

Environment: The environment surrounding the site is a serene and peaceful one that creates calming view to the surrounding residents.

Surrounding: The surroundings of the site consist of access road and Manohara River to the South, Local Road to the North and mixed (residential and agricultural) to the West of the site.

Physical Features: Geographically,

Latitude: 27°40'11.37"N

Longitude: 85°21'40.03"E

The site is almost triangular in shape with the longest axis being along the E-W direction. The terrain of the site is almost flat.

10.2. Urban Site Plan (Chronological Order)

These images show the growing trend of urban residence from the year 2003 to 2022. This shows the character of a growing urban center, and an increasing choice of residency around the area.

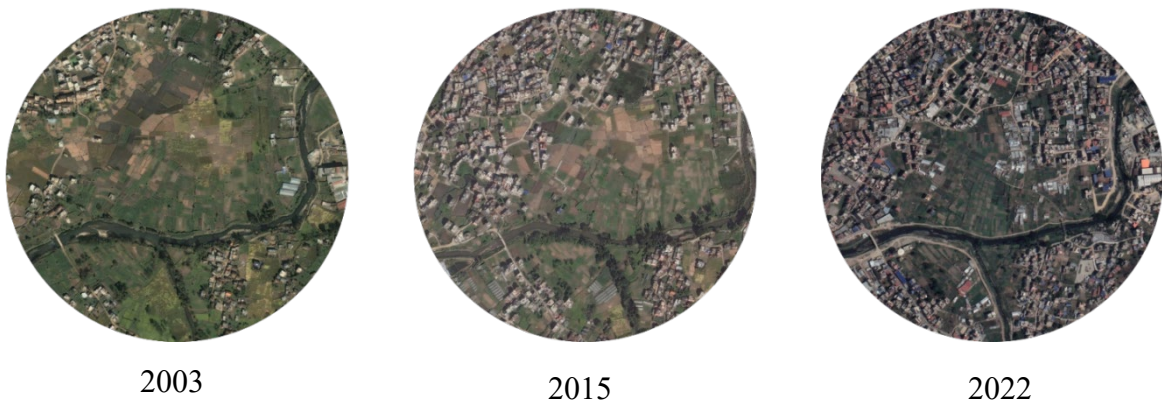


Figure 57 Maps showing Urban Growth

In the earliest images, we may see the area as a small town, with majority of the area being agricultural land and a relatively small population. As time goes on, we may see the settlement grow in size and complexity from the year 2003 to 2022, with more advanced structures and a greater number of people.

In 2003, the area was largely undeveloped, with open fields and some small buildings with few and underdeveloped facilities. By 2015, the area had started to develop rapidly, with new housing projects being constructed. The road network had been developed to accommodate the increasing public transportation options. By 2022, The population had continued to increase, and the area had become more diverse and multicultural.

10.3. Usage

The usage map shows that the immediate surrounding has been used for the purpose of agriculture. The urban zone exists near and surrounding the agricultural zone connected through local roads.



LEGEND

- Urban Area
- Agricultural Area
- River
- Local Road

Figure 58 Usage map of proposed site area

10.4. Surrounding Context

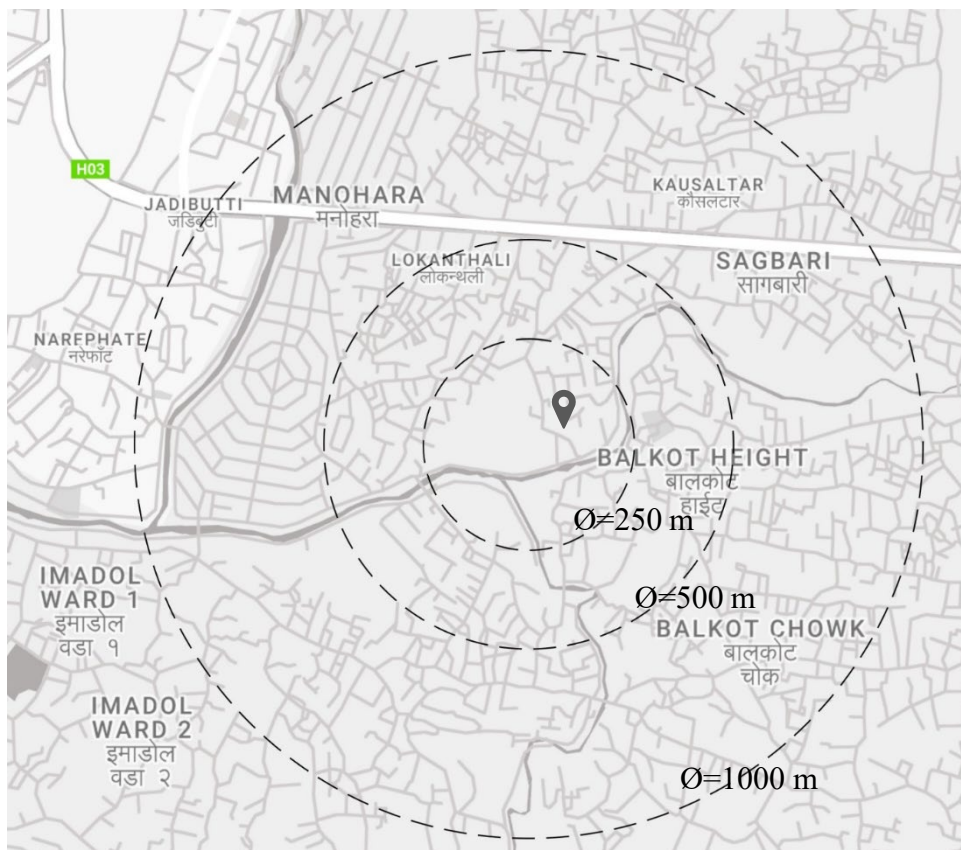


Figure 59 Surrounding Context

- Within the zone of radius 250m, abundance agriculture land.
- Within the zone between radius of 250m to 500m, the beginning urban residences.
- Within the zone between radius of 500m to 1000m, abundance of urban features.

Surrounding Facilities

- Kaushaltar English Boarding school- 1 KM
- Fitness and Gym- 500 m
- Manohara Planning - 500 m
- Lokanthali Manohara Park- 800m
- Summit Hospital- 1Km
- Kathmandu College of Technology – 900 m
- Koteswor Police Station – 2.5 Km
- Bhatbhateni Koteswor- 3 Km
- NCC Bank – 850 m

11. Site Analysis

11.1. Selection Criteria



Accessibility

The site consists of multiple points of access from the riverside road, the internal local roads as well as the pedestrian bridge. Such accessibility helps to bring various communities together to use the facilities.



Proximity to Urban Zones

The immediate surrounding is agricultural but there are residents in close proximity (within 500m). Such proximity makes it easier for the people to visit regularly encouraging community bonding.

11.2. SWOT Analysis

S

- Multiple access points
 - Maximum south orientation that helps in achieving energy efficiency
 - Close proximity to Urban residences
 - Relatively Flat Land
-

W

- Absence of well-developed Infrastructure
 - Narrow Access roads (Under developed)
 - Presence of Temporary structures
-

O

- Proper planning could help in controlled urban development in surrounding area.
 - Creating views from the multiple access roads
 - Potential to connect multiple residential areas
-

T

- Destruction of Agricultural land
- Absence of proper planning could cause pollution of the river
- May interrupt the views of the surrounding residence.

11.3. Byelaws

Table 11 Byelaws- Madhyapur Thimi

BYELAWS	1	Ground Coverage (GCR)	40%
	2	Parking	20%
	3	Maximum No. of Floor	5
	4	Setback From River	20m
	5	Setback from adjoining Plot	3 m

11.4. Climate analysis

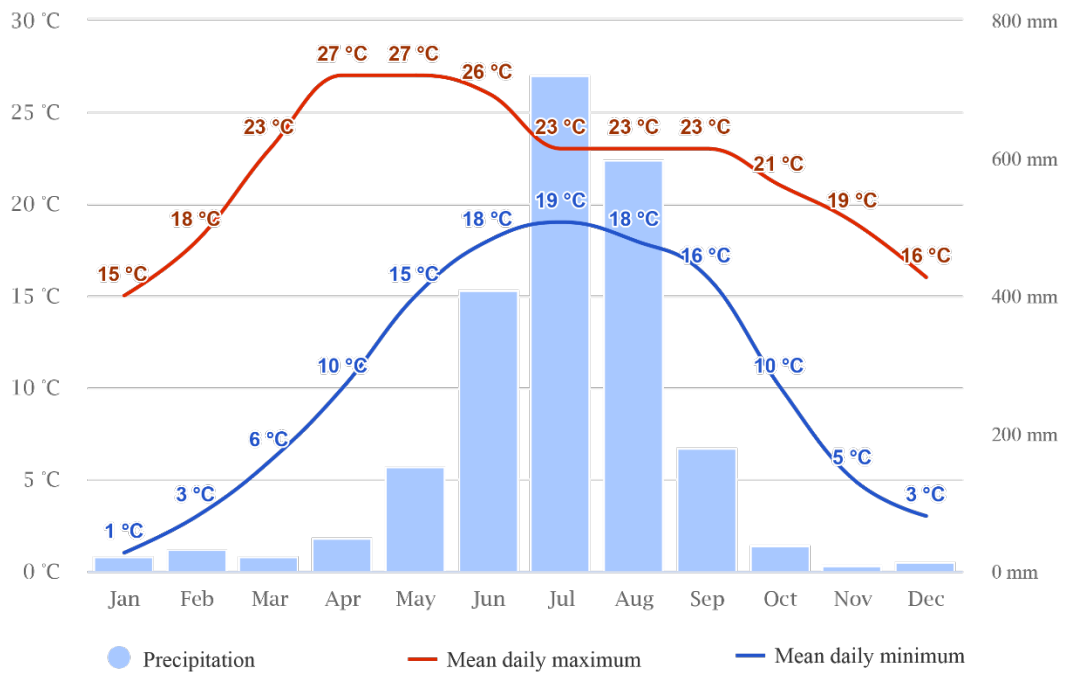


Figure 60 Precipitation and Temperature – Bhaktapur

Source: (Simulated Historical Climate & Weather Data for Bhaktapur, 2022)

The driest month is November, with 25 mm of rain. Most of the precipitation here falls in July, averaging 714 mm.

March and April is the warmest month of the year. The temperature in June averages 20.4 °C | 68.7 °F. January is the coldest month, with temperatures averaging 9.1 °C | 48.3 °F.

11.5. Wind Analysis

The predominant avg. hourly wind direction in Bhaktapur varies throughout the year.

The wind is most often from the *west* for 4.0 weeks, from March 25 to April 22, with a peak percentage of 37% on March 26. The wind is most often from the *south* for 5.7 months, from April 22 to October 12, with a peak percentage of 72% on July 20. The wind is most often from the *north* for 5.4 months, from October 12 to March 25, with a peak percentage of 50% on January 1.

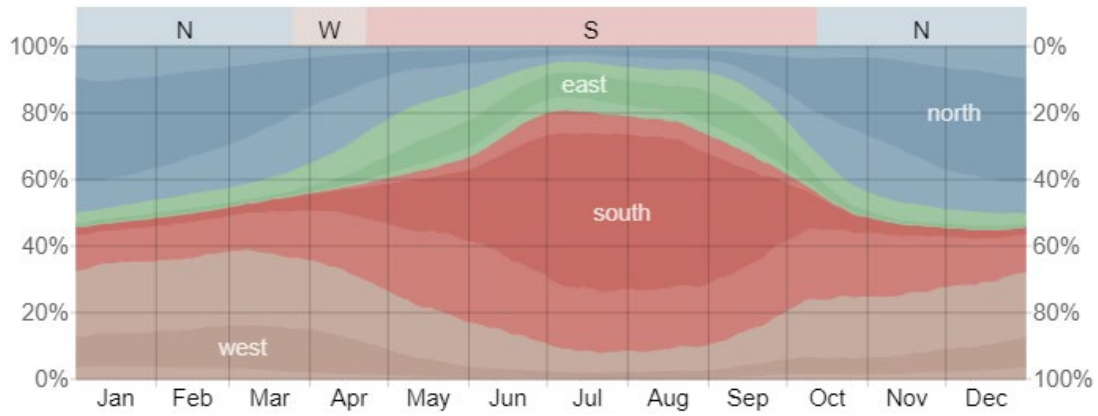


Figure 61 Wind Direction throughout the year

Source: (Bhaktapur Climate, Weather By Month, Average Temperature (Nepal) - Weather Spark, 2022)

11.6. Site Analysis

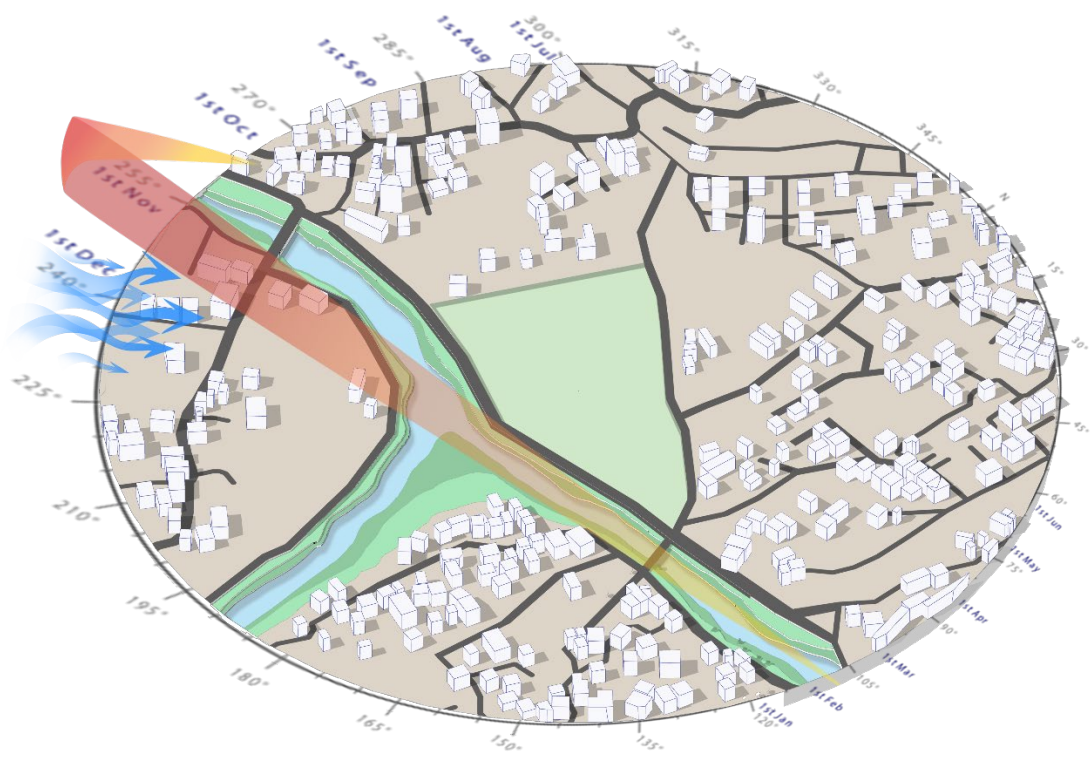


Figure 62 Site Analysis

11.7. Existing Condition

The image of the site shows the current condition of the site that is being used for the purpose agriculture.



Figure 63 Proposed site used for agriculture purpose

The following image shows the current accessible roads towards the North and the south. The road map shows the network of roads within the vicinity of the site.



Figure 64 Access roads

The following images shows the some of the existing features like pedestrian bridges and temporary structures within the site constraints.



Figure 65 Pedestrian Bridge



Figure 66 Temporary structures

11.8. Population Study

The population of each of the connected municipalities were studied to understand the target group, the population by age and gender, and population of differently abled.

1. Madhyapur Thimi Municipality (11.47 Km²)

Table 12 Population Study (Madhyapur Municipality)

Madhyapur Thimi		
Gender Based Population		
Gender	Population	
	In number	%
Male	42,723	51.45%
Female	40,313	45.55%
Total	83,036	100%
Age Group Population		
Age Group	Population	
	In number	%
Independent (15-64)	59,057	71.12%
Children (0-14) Years	20,250	24.39%
-Children (Below 5)	5,670	
Elders (65+)	3,729	4.49%
Total	88,706	100%
Population with Disability		
Disability	Population	
	Male	Female
Physically Disabled	157	65
Blind Only	50	65
Deaf only	62	80
Deaf and Blind	10	21
Speech Problems	45	41
Mental	23	14
Intellectual	23	14
Multiple disabilities	17	28
Total	715	

Source: <https://www.nepalarchives.com/content/madhyapur-thimi-municipality-bhaktapur-profile/>

2. Suryabinayak Municipality (42.45 Km²)

Table 13 Population Study (Suryabinayak Municipality)

Suryabinayak Municipality		
Gender Based Population		
Gender	Population	
	In number	%
Male	38,899	49.56%
Female	39,591	50.44%
Total	78,490	100%
Age Group Population		
Age Group	Population	
	In number	%
Independent (15-64)	55,099	70.20%
Children (0-14) Years	19,523	24.87%
-Children (Below 5)	5,294	
Elders (65+)	3,868	4.93%
Total	78,490	100%
Population with Disability		
Disability	Population	
	Male	Female
Physically Disabled	133	121
Blind Only	36	43
Deaf only	54	62
Deaf and Blind	9	12
Speech Problems	48	30
Mental	55	28
Intellectual	22	17
Multiple disabilities	50	26

Source: <https://www.nepalarchives.com/content/suryabinayak-municipality-bhaktapur-profile/>

3. Mahalaxmi Municipality (26.51 Km²)

Table 14 Population Study (Mahalaxmi Municipality)

Mahalaxmi Municipality		
Gender Based Population		
Gender	Population	
	In number	%
Male	31,071	49.98%
Female	31,101	50.02%
Total	62,172	100%
Age Group Population		
Age Group	Population	
	In number	%
Independent (15-64)	44,223	71.13%
Children (0-14) Years	14,697	23.64%
-Children (Below 5)	4,150	
Elders (65+)	3,252	5.23%
Total	62,172	100%
Population with Disability		
Disability	Population	
	Male	Female
Physically Disabled	112	82
Blind Only	80	79
Deaf only	41	65
Deaf and Blind	1	7
Speech Problems	71	30
Mental	25	19
Intellectual	11	16
Multiple disabilities	32	20
Total	691	

Source: <https://www.nepalarchives.com/content/mahalaxmi-municipality-lalitpur-profile/>

Population density Calculation

Total Population : 2,23,698

Total male : 1,12,693

Total Female :1,11,005

Total Age Group Population

- i. Independent (15-64) : 1,58,379
- ii. Children (0-14) Years : 54,470
 - a. Children (Below 5) :15,114
- iii. Elders (65+) :10,849

Total population with disability :2164

- a. Physically Disabled : 656
- b. Blind Only : 353
- c. Deaf only : 364
- d. Deaf and Blind : 50

The study of the population of the area gives an idea of the population that will probably take part in the active use of the facilities of the Community center.

Within a radius of 1000m

- Density of Population = 2781.28 person per km²
- Within radius = 1Km
- Area = 3.14 Km²
- Population= 2781.28 x 3.14 = 8737.65

The Population density within 1Km radius helps to determine the potential visitors and develop program for.

12. Program Formulation and Area Calculation

Requirements

Based upon the observation made during the site visit several problems or facilities lacking were noticed:

- Spaces for recreation of children
- Lack of Spaces for the elderly to gather and talk
- Lack of spaces for community discussion

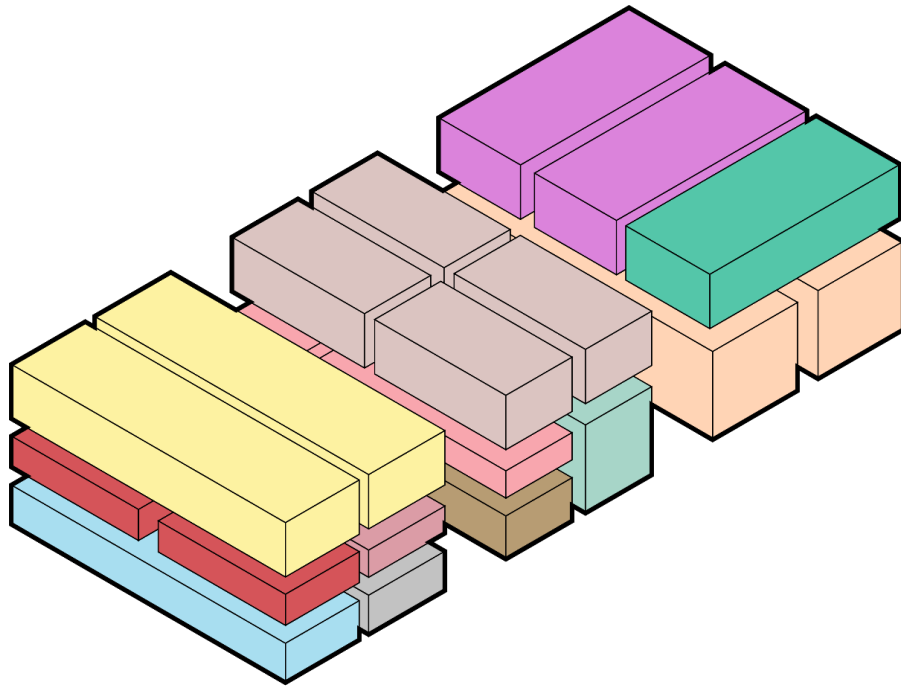
The program for the project has been developed based upon these problems.

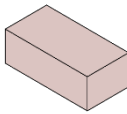
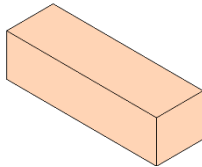

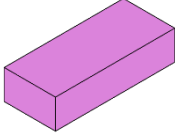
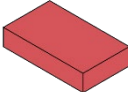
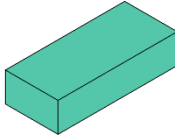
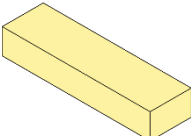
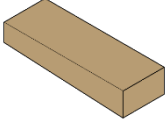
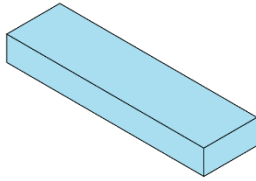
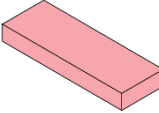
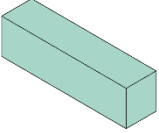
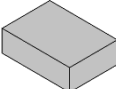
Table 15 Program Formulation

S. No.	Program		Capacity	Area		Remarks
1	Multipurpose Area					
	i	Foyer Area	250	175	m ²	0.7 m ² / Person
	ii	Seating		200	m ²	.8 m ² / Person
	iii	Waiting		75	m ²	0.6 m ² / Person
	iv	Stage		192	m ²	8m x 4m
	v	Rehearsal		192	m ²	Same area as stage
	vi	Storage		60	m ²	
	vii	General services		40	m ²	
	viii	Circulation +structure		60	m ²	Assume = 30%
	Total Area			~1000	m ²	
2	Exhibition					
	i	Display Area	150	300	m ²	
	ii	Store		200	m ²	
	iii	Circulation +structure		150	m ²	Assume = 30%
	Total Area			650	m ²	
3	Library					
	i	Seating area	100	50	m ²	0.5 m ² / Person
	ii	Reading Area		100*2.5	m ²	2.5 m ² / Person
	iii	Staff Workspace		75	m ²	
	iv	Lending Section		50	m ²	
	v	Children Section		50	m ²	
	vi	Services		60	m ²	
	vii	Circulation Desk		25	m ²	
	viii	Circulation +structure		93	m ²	
	Total Area			~400	m ²	

S. No.	Program	Capacity	Area	Remarks
4	Classroom			
i	Class Area	4 no.	70	m ²
Total Area			280	m ²
5	Workshop			
i	Hall Area	2 no.	100	m ²
ii	Storage	2 no.	75	m ²
Total Area			350	m ²
6	Community Recreation hall			
i	Hall		150	m ²
ii	Services & Circulati		45	m ²
Total Area			195	m ²
7	Swimming Pool			
i	Pool		240	m ² 12 m x 20 m
ii	Entrance		80	m ²
iii	Changing		175	m ²
iv	Services		96	m ²
v	Facilities		50	m ²
Total Area			~650	m ²
8	Fitness Center			
i	Gym Hall		160	m ²
ii	Storage		48	m ²
Total Area			208	m ²
9	Administration			
Total Area			250	m ²
10	Restaurant			
i	Dining Area		225	m ² 1.5 m ² / Person
ii	Café		150	m ² 1 m ² / Person
iii	Kitchen	150	50	m ²
iv	Storage		75	m ²
v	Services		50	m ²
vi	Circulation +structur		165	m ²
Total Area			715	m ²
11	Departmental Store			
i	Store		180	m ²
ii	Storage		72	m ²
Total Area			252	m ²
Overall Total Area			4945	m ²
Ground Coverage			25%	

Volumetric Program



	Exhibition		Sports Hall
	Classroom		Multipurpose Hall
	Workshop		Fitness
	Library		Departmental Store
	Swimming Pool		Café
	Restaurant		Administration

13. Concept

“EXPLORING THE CONNECTION”

People are the fundamental element of a community. But without any connection it is just a group of strangers, not fit to be called a true community.

1. IN URBAN SCALE

CONTEXTUAL CONNECTION

In an overall urban context, the surrounding municipalities are connected through the addition of bridges that creates more accessibility opportunity.

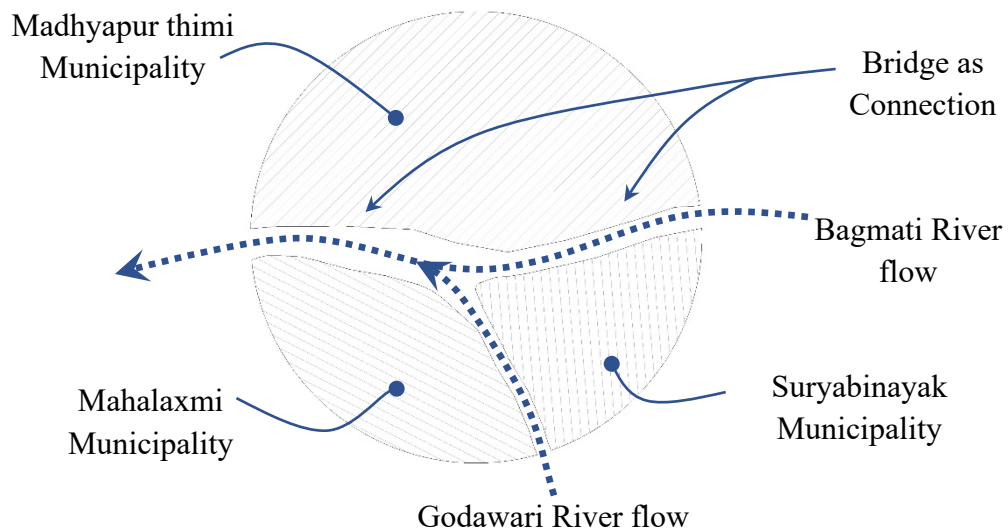


Figure 67 Contextual Connection Between different Wards

2. IN CONTEXTUAL SCALE

JUXTAPOSED CONNECTION

In the immediate context, the concept of juxtaposition to create an identity of the community through playful use of regular form to bring contrast with the surrounding.

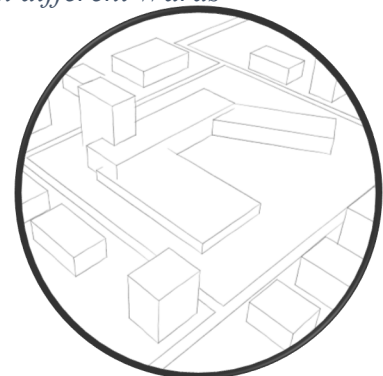


Figure 69 Juxtaposed Connection Through Form

3. IN BUILDING SCALE

COMMON CONNECTION

In the building context, the concept of interconnection to emphasize the connection among the functions of a community center.

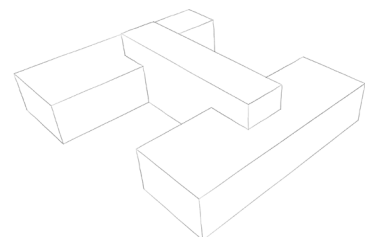


Figure 69 Common Building Connection

4. IN SOCIAL SCALE

INTERPERSONAL CONNECTION

In an intimate (Human) context, concept of “Social node-A place for connection” to create nodes and internodes as a place for opportunities of interaction with flexible options.

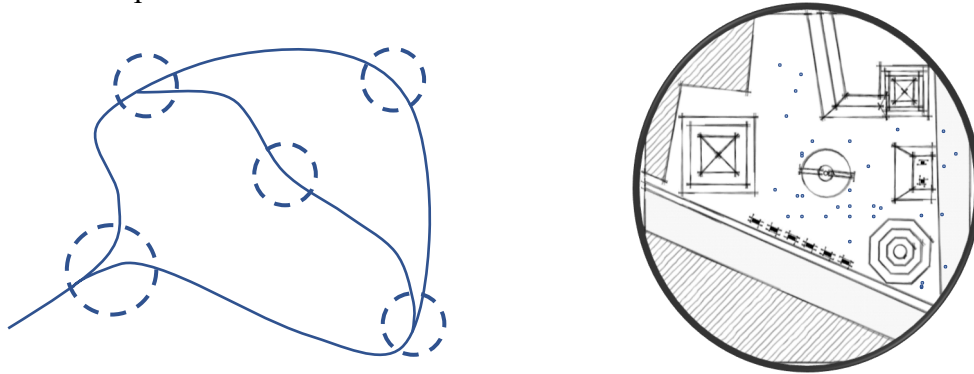
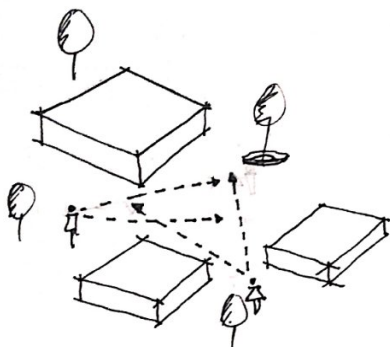


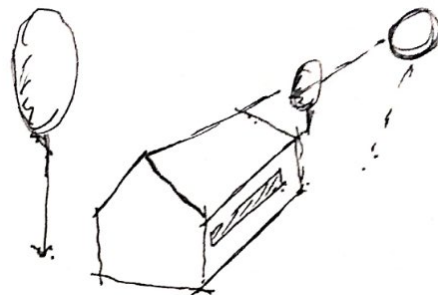
Figure 70 Social Nodes and its connections

DESIGN GUIDELINES



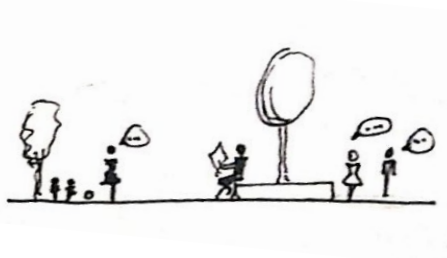
VISIBILITY

The center should be open and each area should be visible.



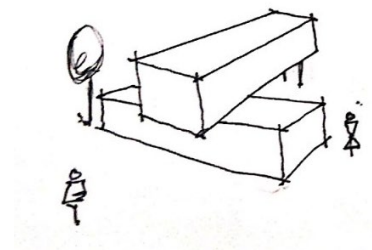
PASSIVE DESIGN

Use of passive design will help in sustaining the center.



DIVERSITY

The center should serve a diverse group of people.

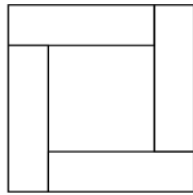


FLEXIBILITY

The spaces should be flexible in use and be able to be used different purpose.

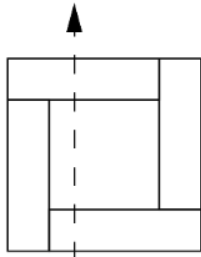
“INTERCONNECTION”

13.1. 2D CONCEPT DEVELOPMENT



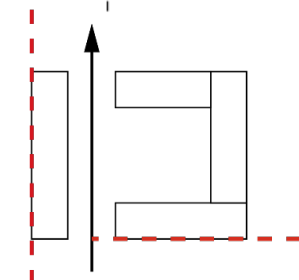
1. Interconnecting Blocks

Interconnected Blocks representing the connection between formal, informal spaces, people and the site



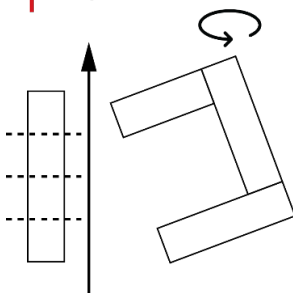
2. Street as Axis

Introducing an Axial Street as an axis to separate the formal and informal spaces.



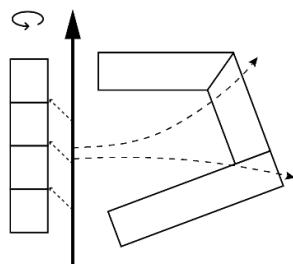
3. Alignment

Aligning the blocks based on the site constraints along the red lines



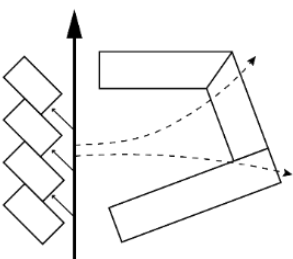
4. Inside-Out

Opening up the central Node by tilting the block for a large environment. Division of the block based on requirement



5. Opening Up

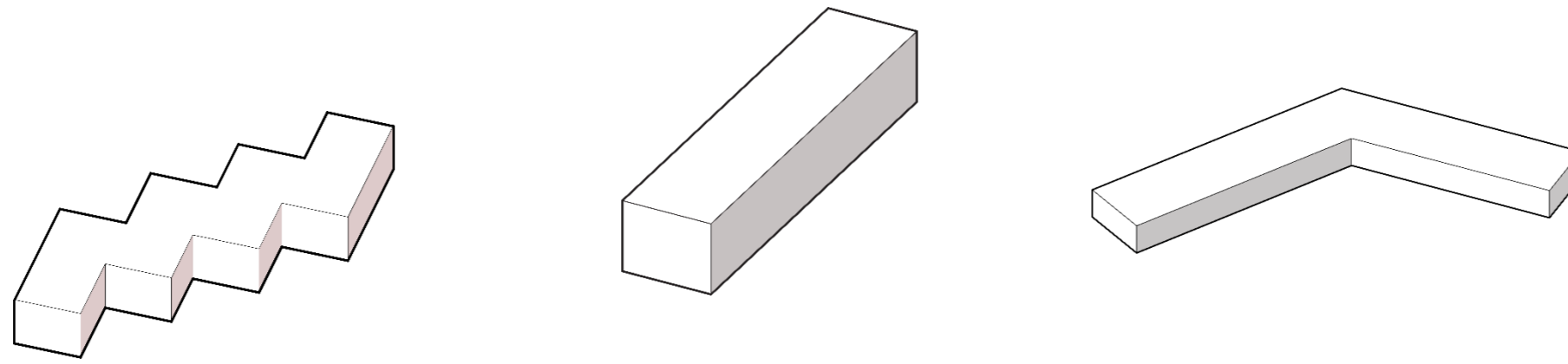
Opening up the volume to connect with the outer community park node via the main axis.



6. Pocket Spaces

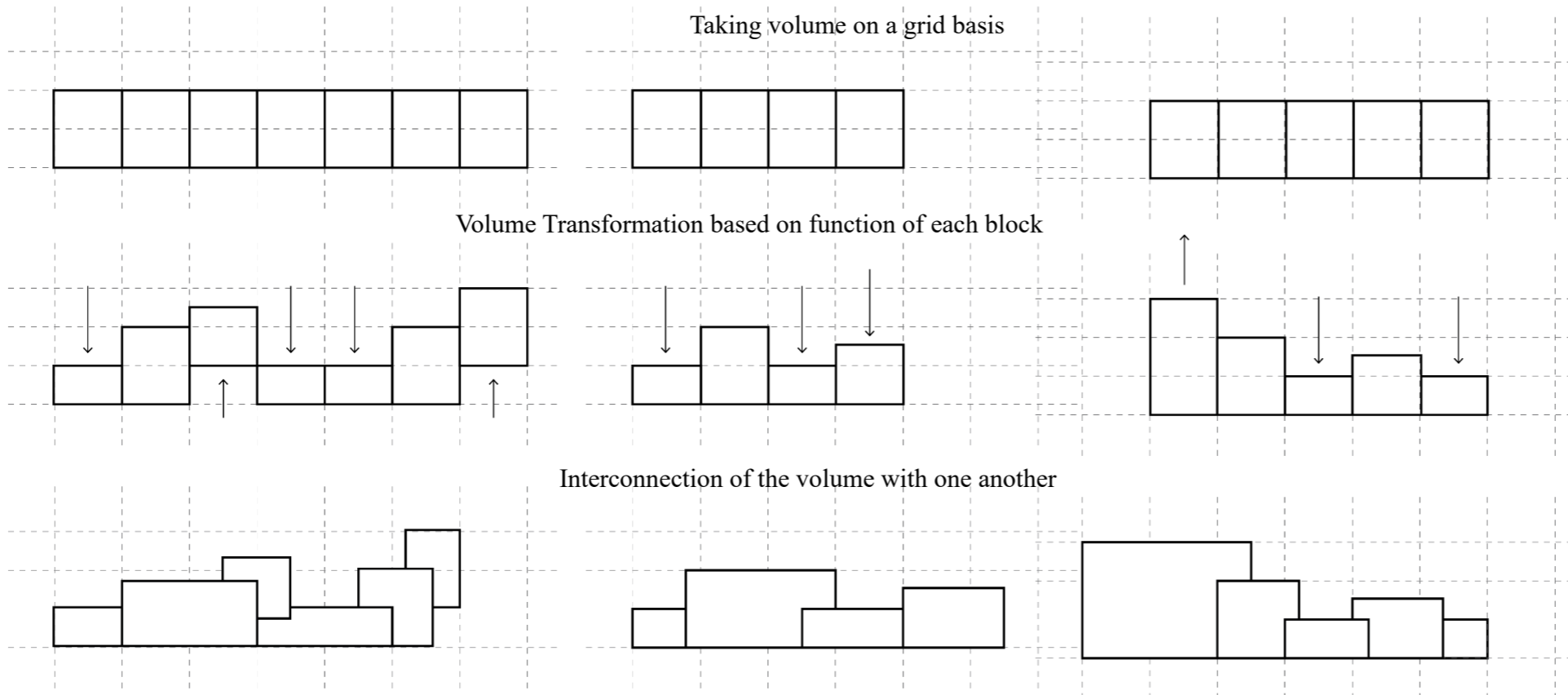
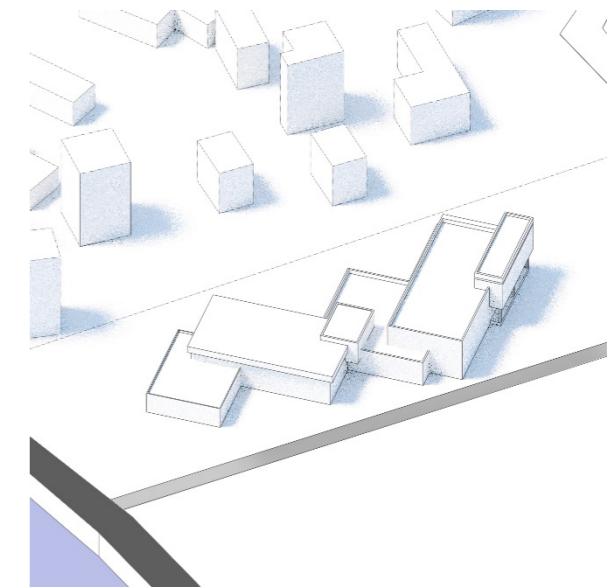
Tilting the different blocks to bring pocket spaces along the main street.

13.2. FORM DEVELOPMENT



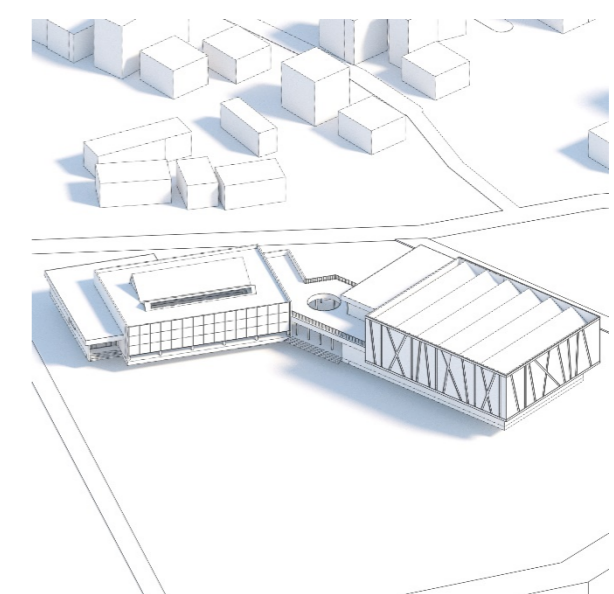
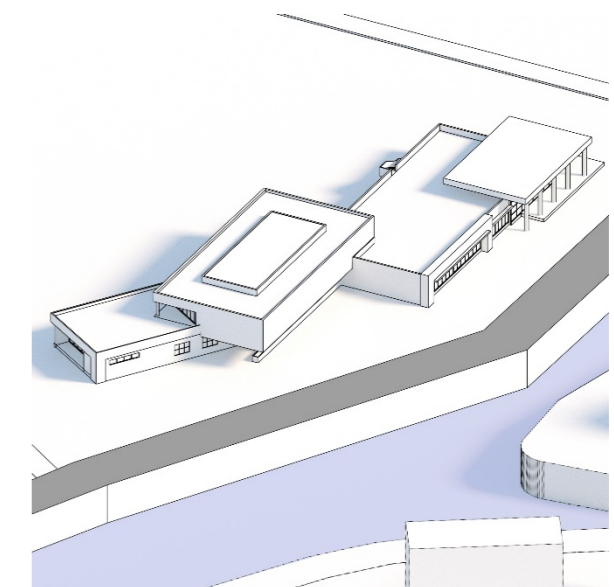
Volume Extrusion

Extrusion of Volume from the 2D concept development, subject to further volume composition



Volume Composition

Grid Based Composition of Volume with regards to the functions with each block.



14. Planning Development

The master plan is the outcome of numerous inferences from case studies, literature and site studies. The planning process begins with the concept of zoning blocks based on the function and user requirements intended for the community. Along with the specified zoning, the masterplan envisions functional blocks and open spaces in the center of the site.

Planning:

Since the project is an urban community center, no physical barrier has been provided on the boundary of site with the objective of promoting inclusiveness and sense of belongingness. The concept of no physical barrier stems from the planning of durbar squares.

However, careful planning ensures that there is no haphazard entry points. Thus, by providing natural features as a buffer, a sense of specified entrance is provided from the southern side.

Again, taking the concept from the durbar square, as one enters the site, a linear pathway leads him or her to an interactive central open and social space, which serves as a datum for the building blocks because it is the central plaza that connects people from all of the building blocks.

The building blocks are zoned as:

1. Educational block
2. Recreational block
3. Supporting block:

14.1. Educational block:

The educational building is located to the west of the site. The educational block in the community center houses a variety of educational facilities ranging from vocational classes to trainings and conferences. It consists of spaces such as

- Multipurpose hall,
- Classrooms,
- Library.
- Training Center

Multipurpose hall:

A flexible multipurpose hall accommodates a wide range of events or activities. With the capacity of about 250 people, it can be used for various purposes such as meetings, social gatherings, conferences, instructional activities. The multipurpose hall is well designed, and it includes all of the necessary supporting amenities such as foyer, changing rooms, storage, and a pantry.

Classrooms:

The primary purpose of the classrooms is to provide vocational training and education to unemployed and unskilled people, as well as formal education to out-of-school children. It also intends to provide trainings such as tailoring, handicraft making, weaving, and make-up classes for women. Thus, four classrooms with a capacity of 32 students each are provided, along with supporting infrastructure for effective learning.

Library

Library is situated at the northern part of the block to ensure maximum glare free light that is ideal for reading. The library block is placed adjacent to classrooms to facilitate smooth flow of learning. The upper floor is a continuation of the library that leads to a green roof that provides a natural environment, a green space for reading and learning.

Training center

Located adjacent to the classroom, there are two workshops that can be used for various purpose, to give vocational training to the people of the community. With abundant storage facility the workshop hall can also be used for development of community hobbies with classes like Music, Dance, Art and so on to elevate of the quality of life of the community.

Cafe

A small café at the first floor to serve the visitors of the block with open seating spaces. In connection to the library and the classroom through a staircase, the café provides refreshments for the visitors.

14.2. Recreational block:

Recreational block is one of the major attraction of people in community center and is located at the northern side of the site. It consists of indoor swimming hall and indoor games section along with fitness center.

Indoor swimming hall

The indoor swimming hall houses a 20m x 12m community swimming pool that is open all year. It can even be used for small local competitions. The main feature of the indoor swimming hall design is that it receives the most north day light. The indoor swimming pool is well-designed, with all of the necessary supporting amenities such as changing rooms, storage, an instructor's room, and a first-aid room.

Indoor community recreational block

Indoor community recreational block includes facilities for indoor games such as chess, carom, pool, and table tennis, where people can come and play on a regular basis. The recreational block is connected to outdoor sports area whereby the hall serves as the storage for the equipment to be used for outdoor areas.

Fitness center

Also, the upper floor consists of fitness center- a place that houses exercise equipment for the purpose of physical exercise where one can work out while enjoying the natural view of the surrounding.

14.3. Support Block:

Support block situated on southern side of site consist of all supporting facilities such as Administration, exhibition hall, departmental store and restaurants:

Administration:

The first block of support has the main administrative function, with an open office, private offices, and meeting rooms for supervising all the tasks of the community center's other blocks.

Exhibition hall

The exhibition hall is one of the major aspects for the community center. With an open hall exhibition area on the ground floor, a ramp leads to the upper floor. The main purpose of providing a ramp in the exhibition space is to gradually slow people's movement while viewing the exhibited arts. Furthermore, the screening used on the façade of the exhibition provides a mesmerizing view inside the exhibition hall as careful play of light and shadows can be witnessed.

Department store

A department store is provided on the southern side so that residents can easily access it from the main road. Only the department store can be accessed without interfering with the other functions of the community center. The department store also has its own parking facility and other amenities.

Restaurant

The restaurant is located on the southern east side of the support block, with the main goal of catering to both visitors to the community center and community residents in general. As a result, it is accessible from both the main road and the central plaza. A restaurant can cater about 150 people, with inner dining and an outer dining deck. The restaurant is also directly connected to the children's play area, allowing parents to have visual connections to the playground and keep an eye on their children while dining.

15. Landscape

One of the major objectives of project design is to provide a green open space for public interaction and social gatherings. As stated by the concept -interconnection, the idea of landscape design emerges with idea of providing spaces that is more inclusive, interactive recreational and relaxing.

The central public plaza is the main recreational attraction designed to encourage people to visit the facility. Also, public plaza is the central space that connects all other function of the community center. There are multiple functions and activities and spaces designed in landscape to cater wide range of people.

The spaces designed in the public plaza are as explained below:

15.1. Event space:

In the center of the public plaza, there is an event space where various events can be held. The space can be used for informal meetings, instructional activities, and other community-oriented programs. It is placed in the central space so that it is visually connected to the majority of the community center's spaces.

15.2. Commercial plaza:

A plaza space is provided in the central space for commercial use. It consists of kiosks, food stalls, mini book stores, vegetable markets that connects public spaces and it a place where people gets to interact with one another on several basis.

15.3. Water plaza:

Water plaza is a fascinating element of the central public space. It is the distinguishing feature that draws the public for recreation. Since water is an essential component of landscape design, it is incorporated through water plazas which improves the visual environment while also providing a sense of relaxation to the public.

15.4. Sloped seating:

The sloped seating is the natural green land, gently sloped hill designed to cater to people looking to sit and enjoy the plaza while relaxing alone or while chatting with their friends and family.

15.5. Mini OAT:

In the central plaza, a small mini open-air theatre is designed to provide seating and a relaxing space. It is also oriented toward event space, which will serve as audience seating during the programs.

15.6. Outdoor Courts:

The outdoor sports area is a major component of the community center that promotes public interaction and gatherings through recreation. There is an outdoor sports area provided on the eastern side of the site, linked to indoor recreational hall where people can play sports like basketball, badminton to get people involved in healthy and enjoyable activities. The playground area is surrounded by seating platforms from which people can view and enjoy the play area.

15.7. Children's play area:

The children's play area is located near the restaurant (southwest part of the site) and is intended to engage children in fun activities. The children's play area is located in a section of the site where parents can have visual connections and keep an eye on their children. In addition, the children's play area is directly accessible to all community residents

16. Structure

In general, two types of structural systems are used in projects: RCC frame systems and Truss systems. The type of function and the spatial requirements demanded by function determine the structural system. For efficiency, the main requirement of a multipurpose hall and an indoor swimming pool is an uninterrupted open space. As a result, two different structural systems are used as desired.

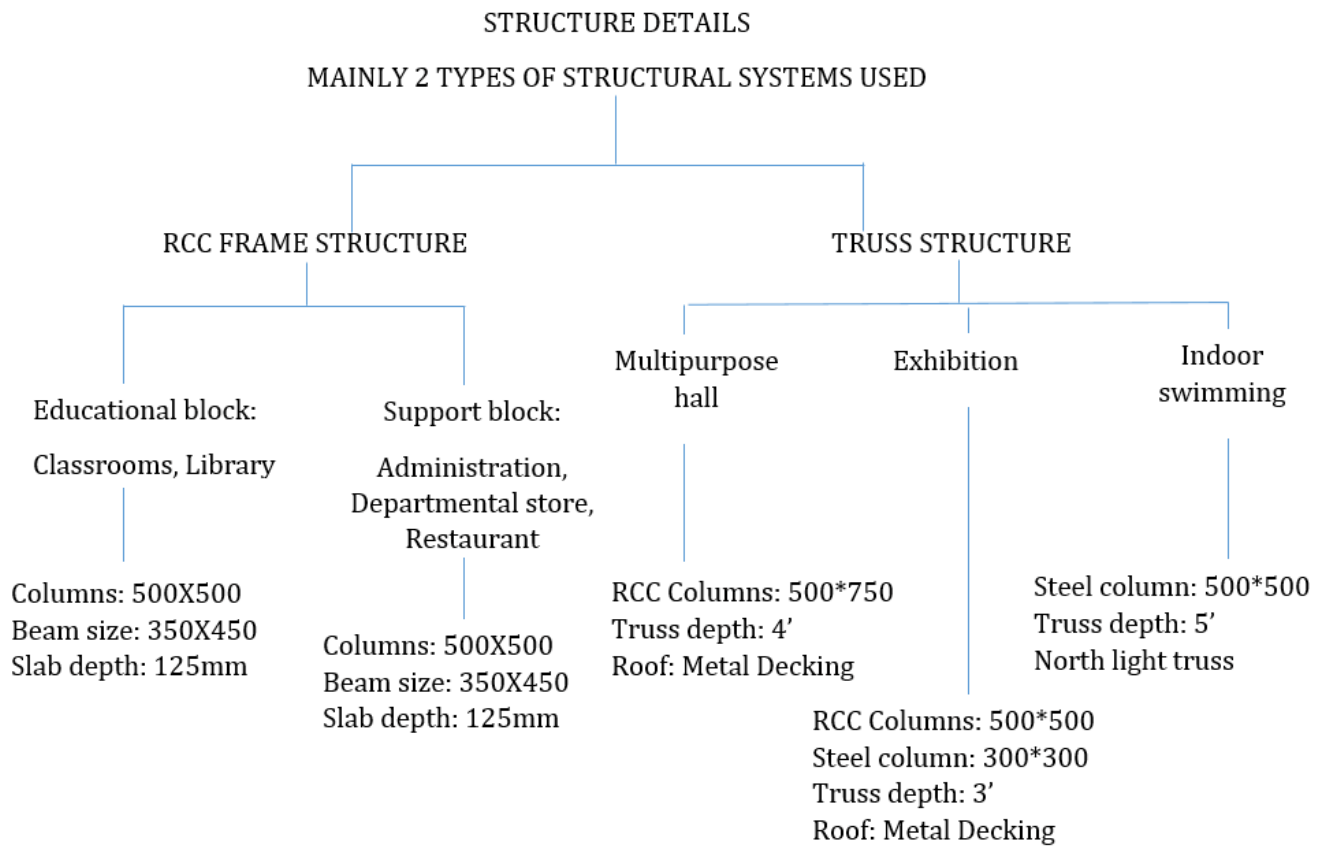


Figure 71 Types of structure used in the project

17. Service and Utilities

17.1. Water Supply

Table 16 Water requirement Calculation

	No. of users	Quantity per day	Total lpcd
Office	25	45 lpcd	1125
Multipurpose	150	15 lpcd	2250
Classrooms	100	15 lpcd	1500
Swimming pool	50	160 lpcd	8000
Indoor sports	25	50lpcd	1250
Restaurant	100	50 lpcd	5000
Park		500 lpcd	500
Others		500 lpcd	500
		TOTAL	20125 Lpcd
			21 m ³

Total Consumption of water per year= $21*365=7665$ m

Size of underground tank = $3*$ volume (safety factor= 3)

$$=3*21=63 \text{ m}^3 =6.5*3.5*3(L*B*H)$$

Firefighting tank requirement (NBC) = $50 \text{ m}^3=5*3.5*3(L*B*H)$

17.2. Rain water Harvesting

Total catchment area: 730 m^2

Runoff coefficient: 0.8

Average Annual rainfall of Bhaktapur: 1620mm

Annual rainwater harvesting potential: $=730*0.8*1.62$

$$=946 \text{ m}^3/\text{year}$$

$$=946000\text{litres}/\text{year}$$

The BS 8515 2009 states that the capacity of the rainwater harvesting storage tank must be the least of 5% of the annual rainwater yield.

Calculation of tank size for rain water harvesting =5% of Annual potential

(Size of rainwater tank must at least be 5% of annual rainwater yield)

$$=5/100*946=47.3 \text{ m}^3$$

$$=5*3.5*3\text{m}$$

17.3. Sewerage

Calculation of septic tank and soak pit capacity:

- Total peak no. of user: 450
- Expected user: 50%=225

Based on IS 2470, for up to 200 users, the size of septic tank is as follows:

L=12m; B=3.3m; H=1.8 m

Similarly, the size for soak pit is:

Diameter (D) =5m; depth (H) =2.75m

(Refer to Annex SR-01 for sanitary plans (water supply, rainwater harvesting and sewerage))

18. Conclusion

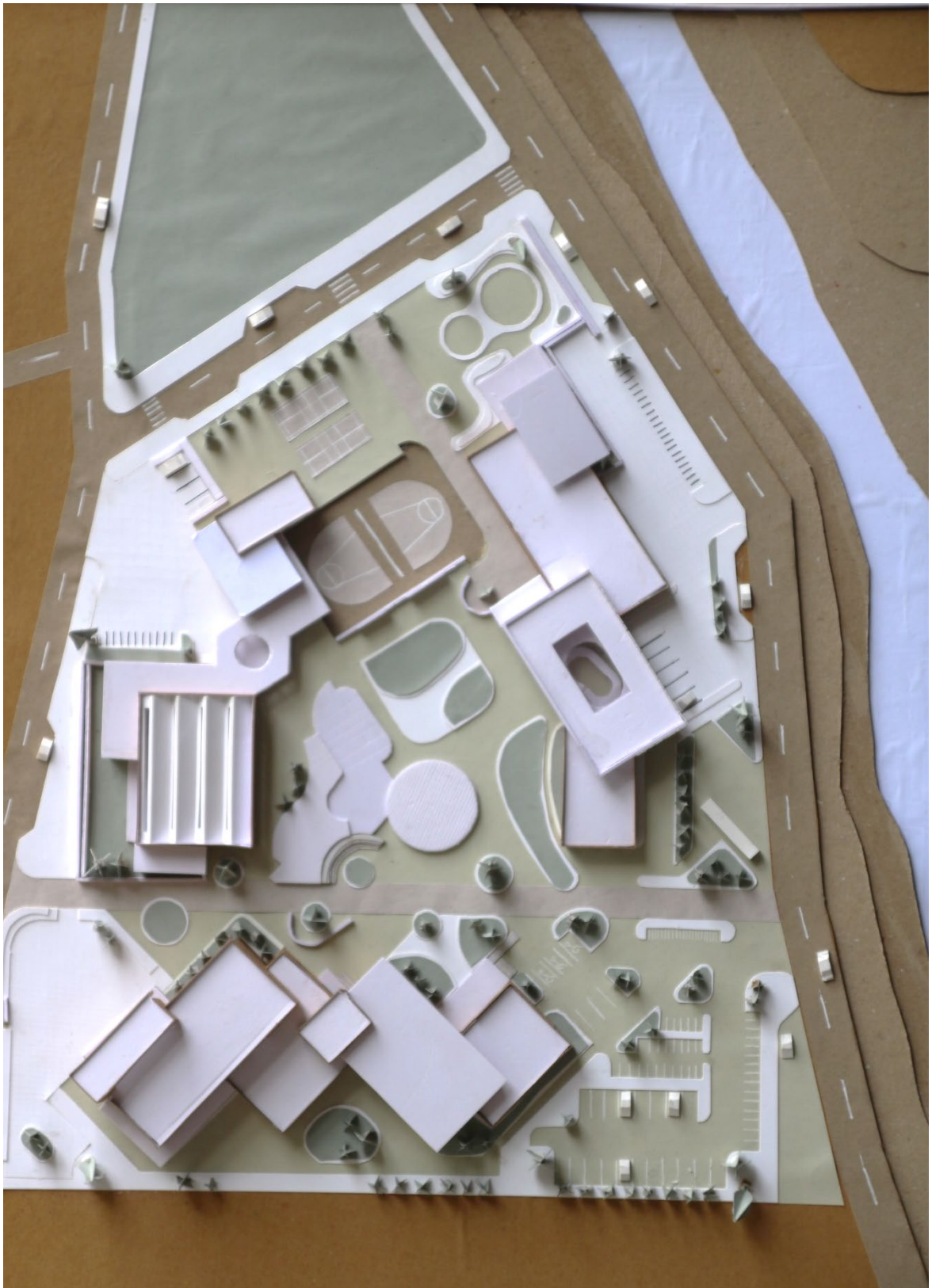
In conclusion, the community center's effective use of available spaces, combined with its sustainability feature, ensures its success and positive impact on the community. By optimizing spaces like the library, conference hall, swimming pool, and fitness center, the center caters to diverse community needs while promoting learning, collaboration, recreation, and well-being.

Furthermore, the community center's sustainable practices, such as energy efficiency, renewable energy sources, and water conservation, contribute to a greener future. By reducing its environmental footprint, the center sets an example for other cities to follow in their own sustainability efforts.

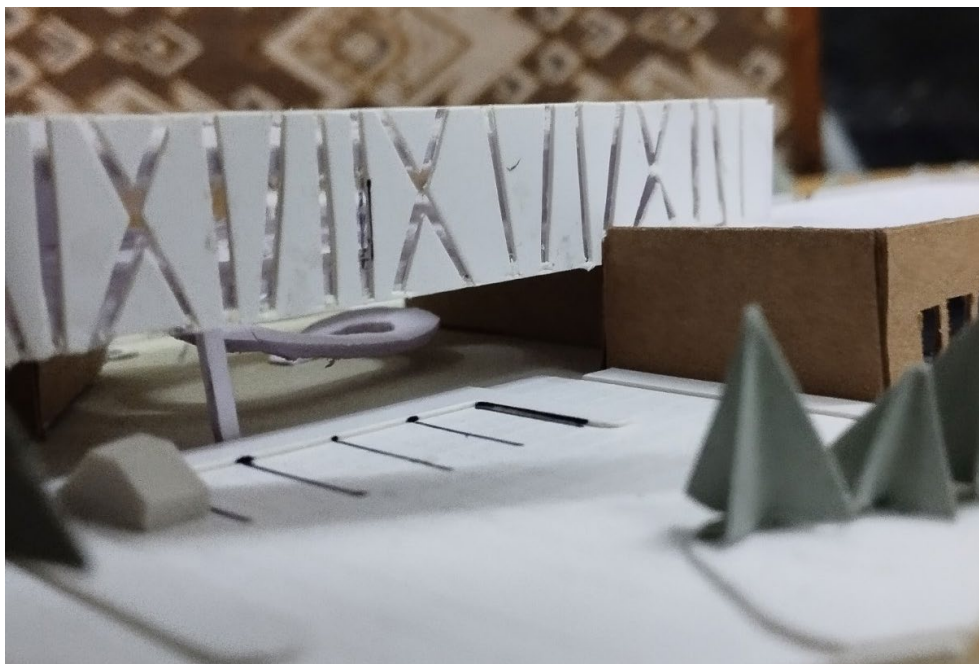
In addition to its environmental benefits, the community center also stimulates the local economy. Through hosting events and workshops, it attracts visitors, supporting local businesses and creating job opportunities. The provision of space for small businesses further enhances economic growth at the community level.

By leveraging the power of its spaces and embracing sustainability and economic development, the community center becomes a thriving hub that enriches the lives of community members while fostering a sustainable future for all.

19. Final Outcome







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ANNEX

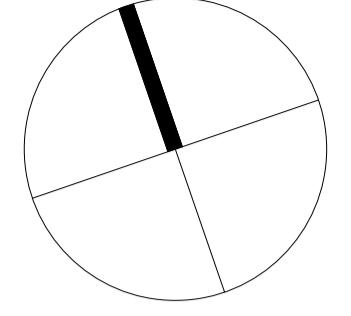
TO JADIBUTI

TO NAREPHAT

HANUMANTE RIVER

HANUMANTE RIVER

GODAWARI KHOLA



LEGEND

- 1. Multipurpose Hall
- 2. Cafe
- 3. Library
- 4. Administration
- 5. Exhibition
- 6. Departmental Store
- 7. Restaurant
- 8. Indoor Swimming Pool
- 9. Fitness center
- 10. Outdoor Basketball Court
- 11. Urban Plaza
- 12. Kids Play Area
- 13. Outdoor Badminton courts
- 14. Open Field
- 15. Bus Parking
- 16. Parking



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DEPARTMENT OF ARCHITECTURE
PULCHOWK

THESIS BY :

ANISH SHRESTHA
074BAE206

THESIS SUPERVISOR

Asst. Prof. Ram Laxmi
Tamrakar

SHEET TITLE

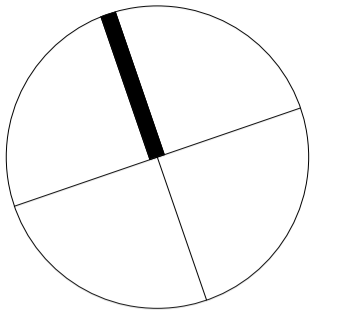
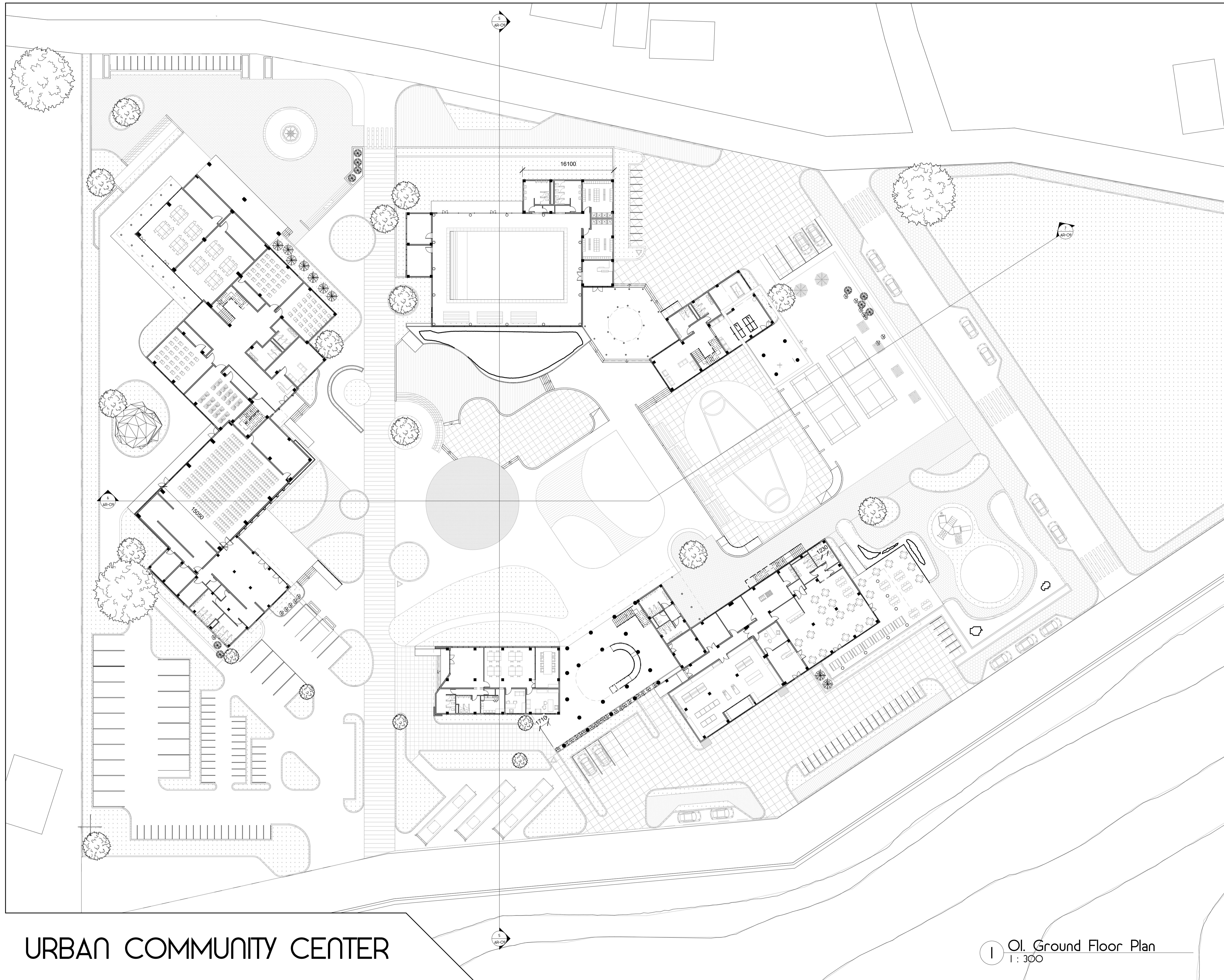
SITE PLAN WITH ROOF
PLAN

SCALE : 1 : 400

AR-07
03/10/23

1 Site
1 : 400

URBAN COMMUNITY CENTER



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DEPARTMENT OF ARCHITECTURE
PULCHOWK

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ANISH SHRESTHA
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THESIS SUPERVISOR

Asst. Prof. Ram Laxmi
Tamrakar

SHEET TITLE

Master Plan with
Ground Floor Plan

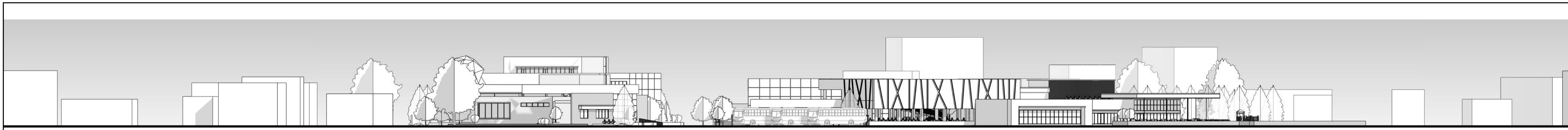
SCALE : 1 : 300

AR-O8

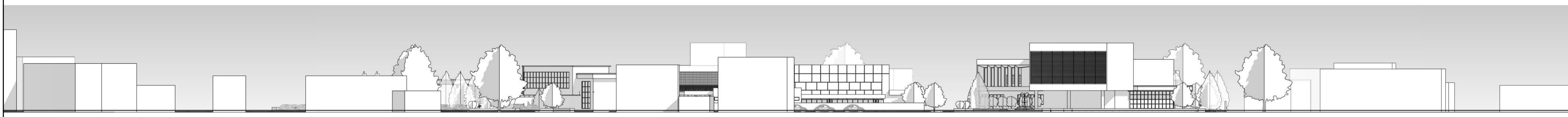
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URBAN COMMUNITY CENTER

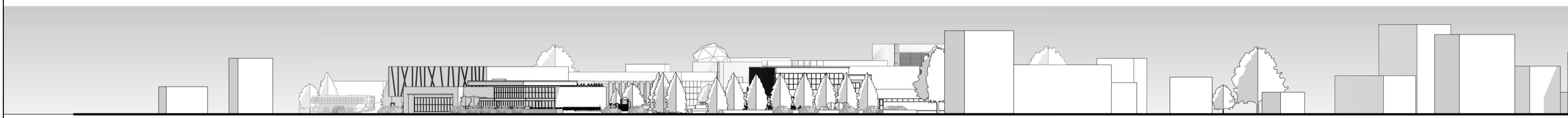
1 Ol. Ground Floor Plan
1 : 300



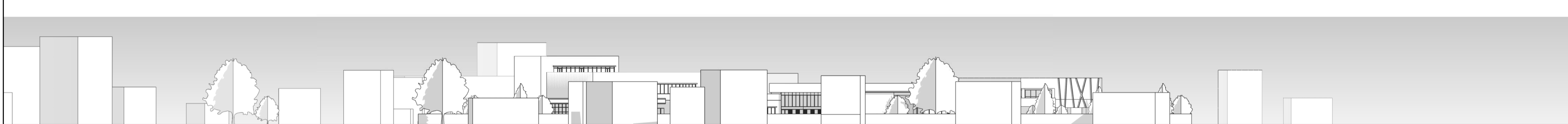
1 South
1 : 400



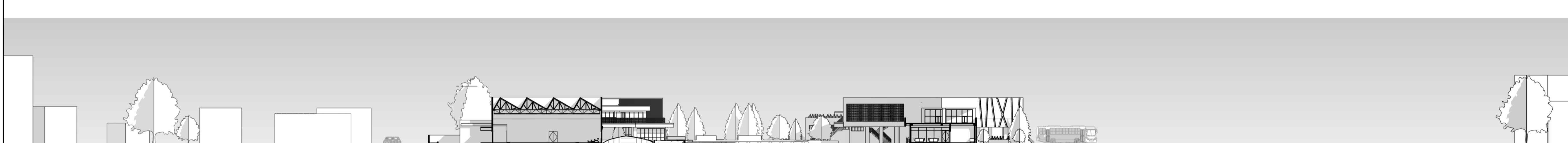
2 North
1 : 400



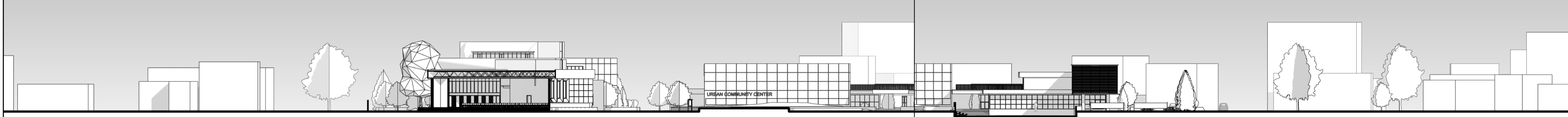
3 East
1 : 400



4 West
1 : 400



5 Section along X-X
1 : 400



6 Section along Y-Y
1 : 400



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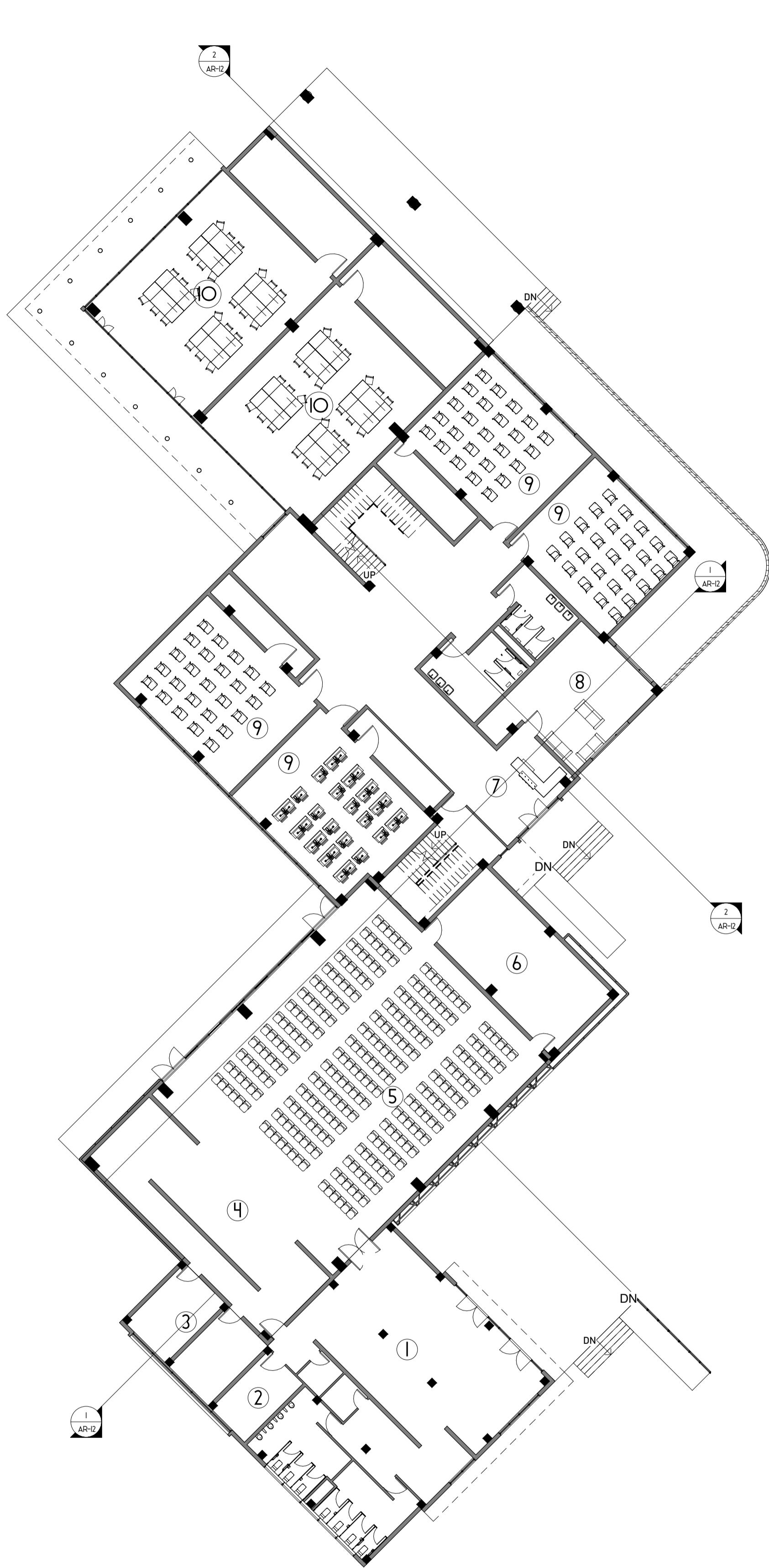
SHEET TITLE

Site Sections and
Elevations

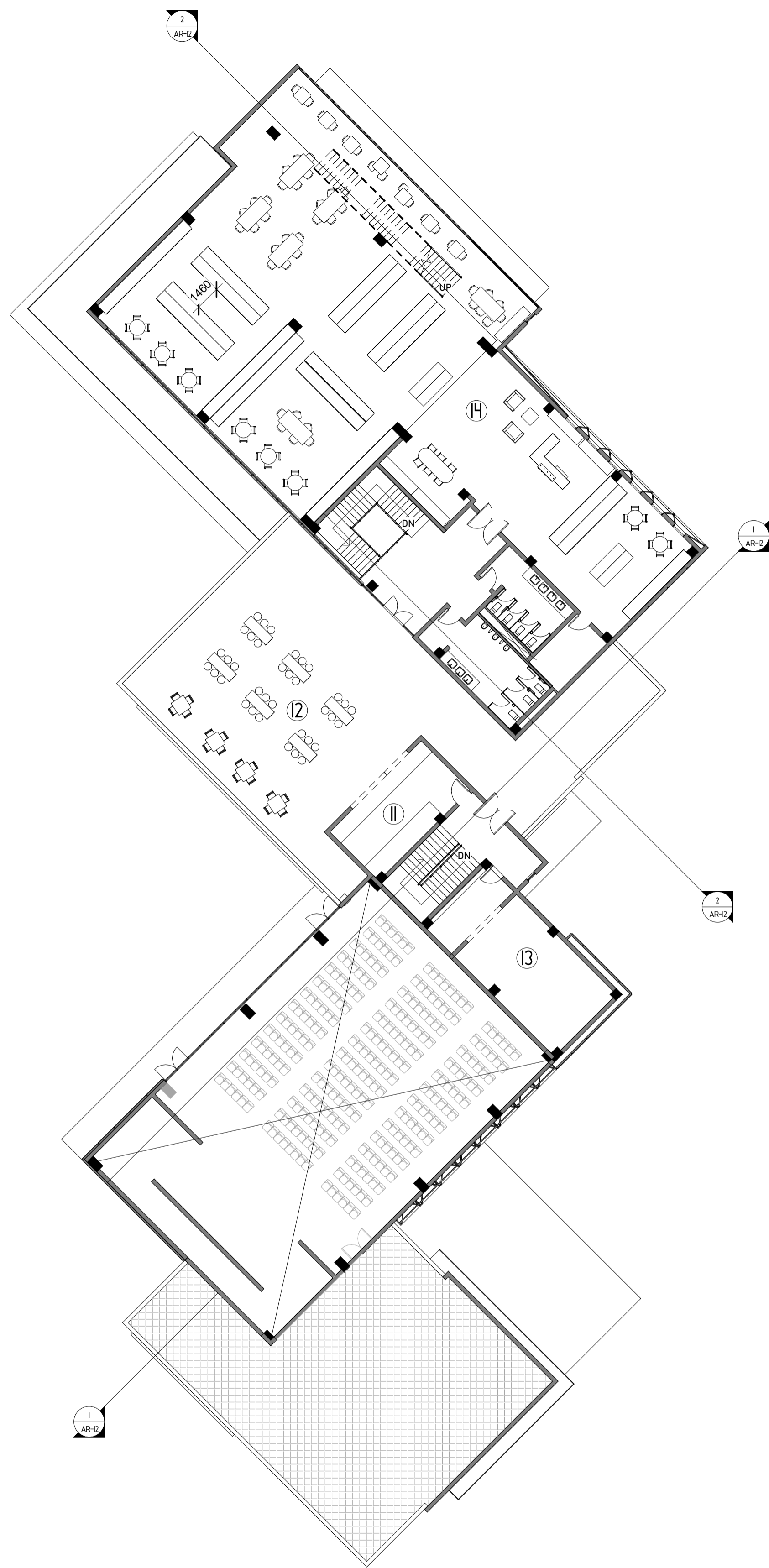
SCALE : 1 : 400

AR-O9
03/14/23

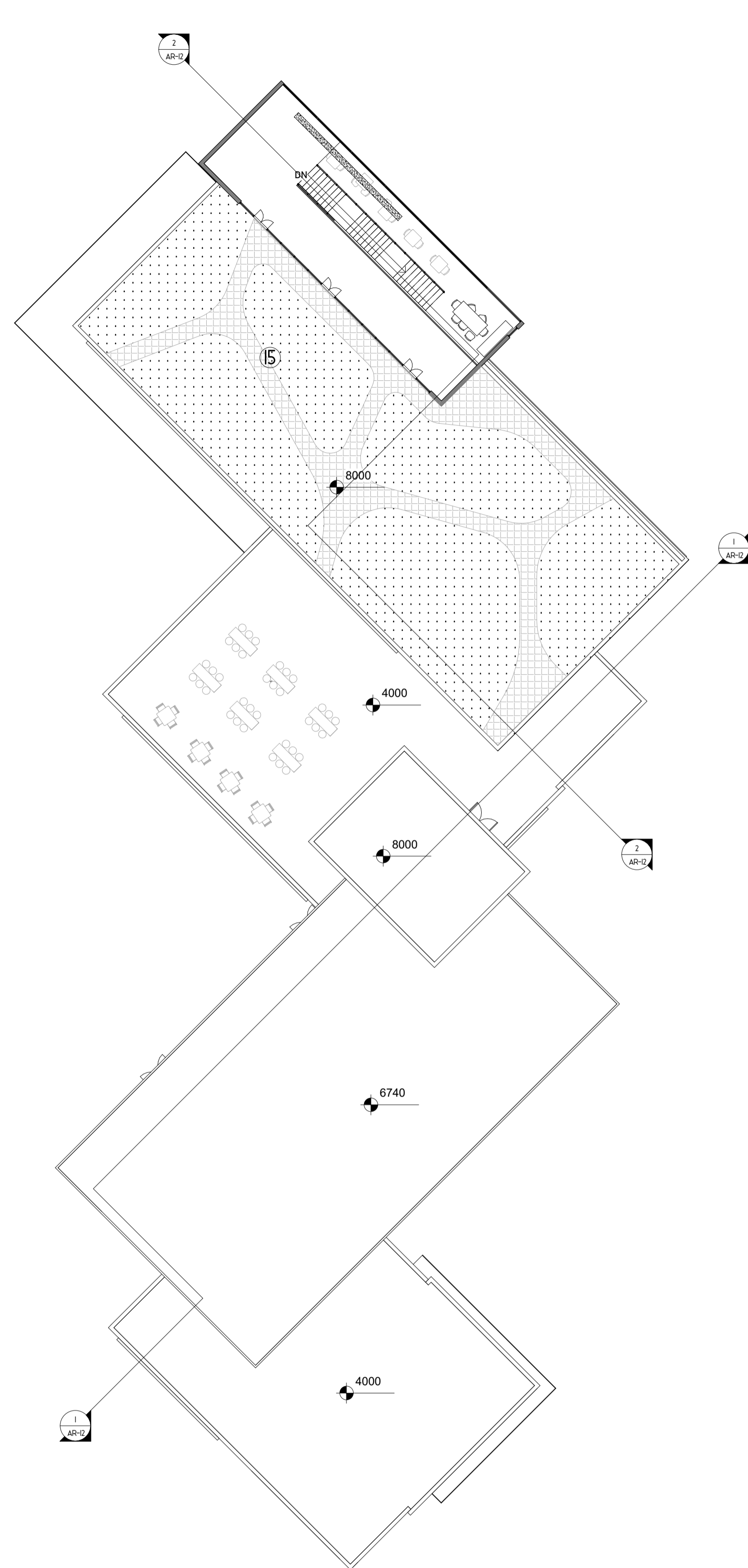
URBAN COMMUNITY CENTER



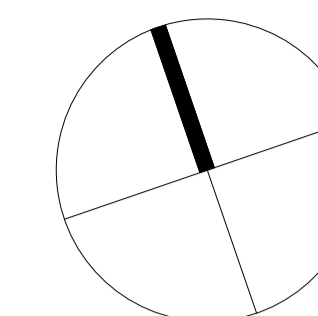
1 Ground Floor Plan- Education Block
1 : 200



2 First Floor Plan- Education Block
1 : 200



3 Second Floor - Education Block
1 : 200



LEGEND 2

- 1. Foyer
- 2. Storage
- 3. Changing Room
- 4. Stage Area
- 5. Multipurpose Hall
- 6. Storage Room
- 7. Reception
- 8. Staff room
- 9. Classroom
- 10. Workshop
- 11. Cafe
- 12. Cafe Seating
- 13. Storage Room
- 14. Library
- 15. Library Outdoor Reading space



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PULCHOWK CAMPUS
DEPARTMENT OF ARCHITECTURE
PULCHOWK

THESIS BY :

ANISH SHRESTHA
074BAE206

THESIS SUPERVISOR

Asst. Prof. Ram Laxmi
Tamrakar

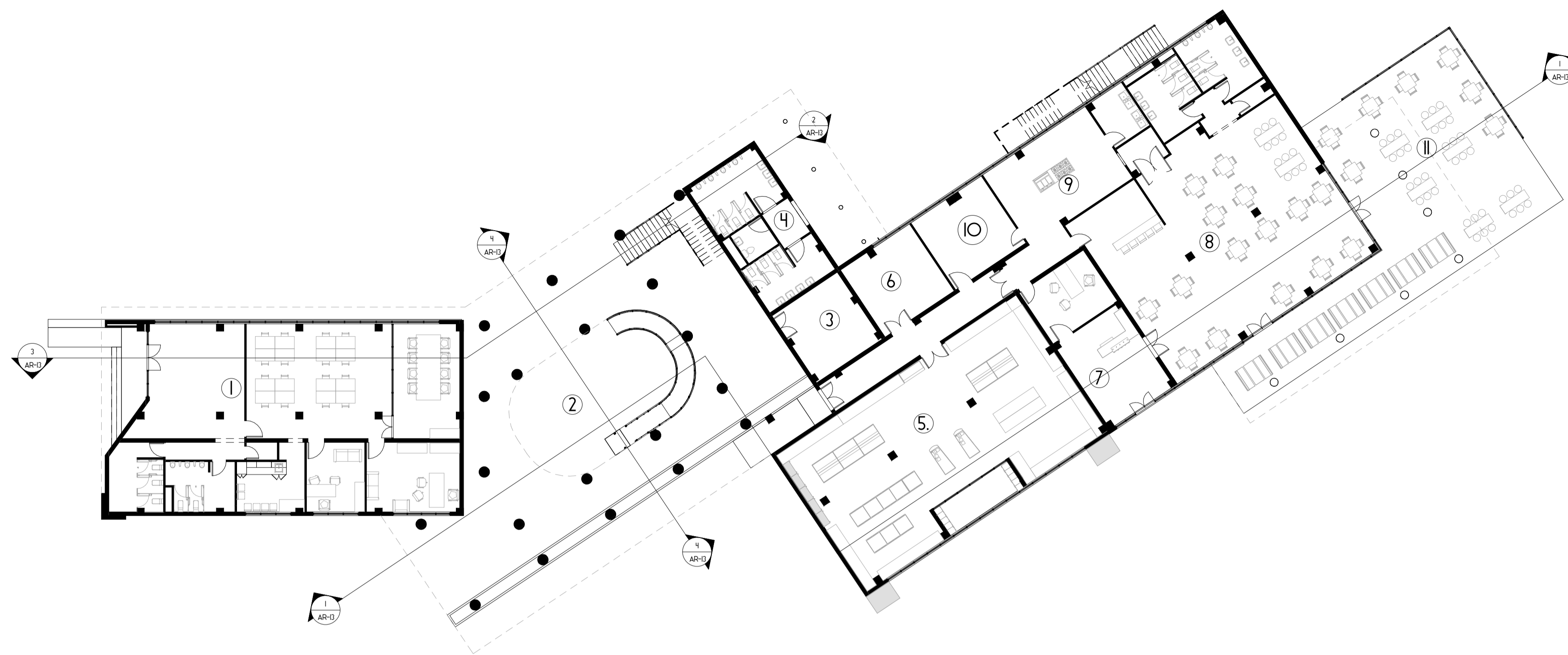
SHEET TITLE

Education Block (Ground
Floor Plan)

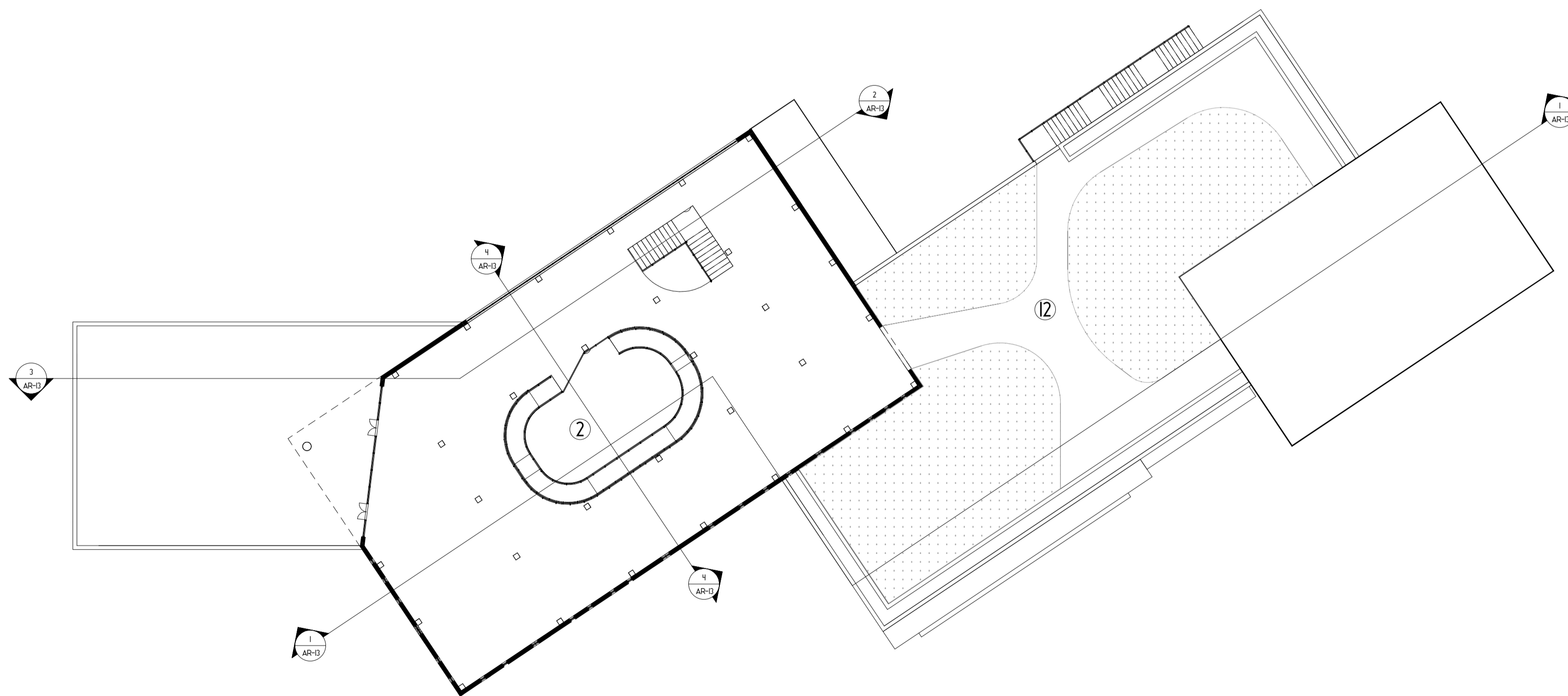
SCALE : 1 : 200

AR-10 (a)

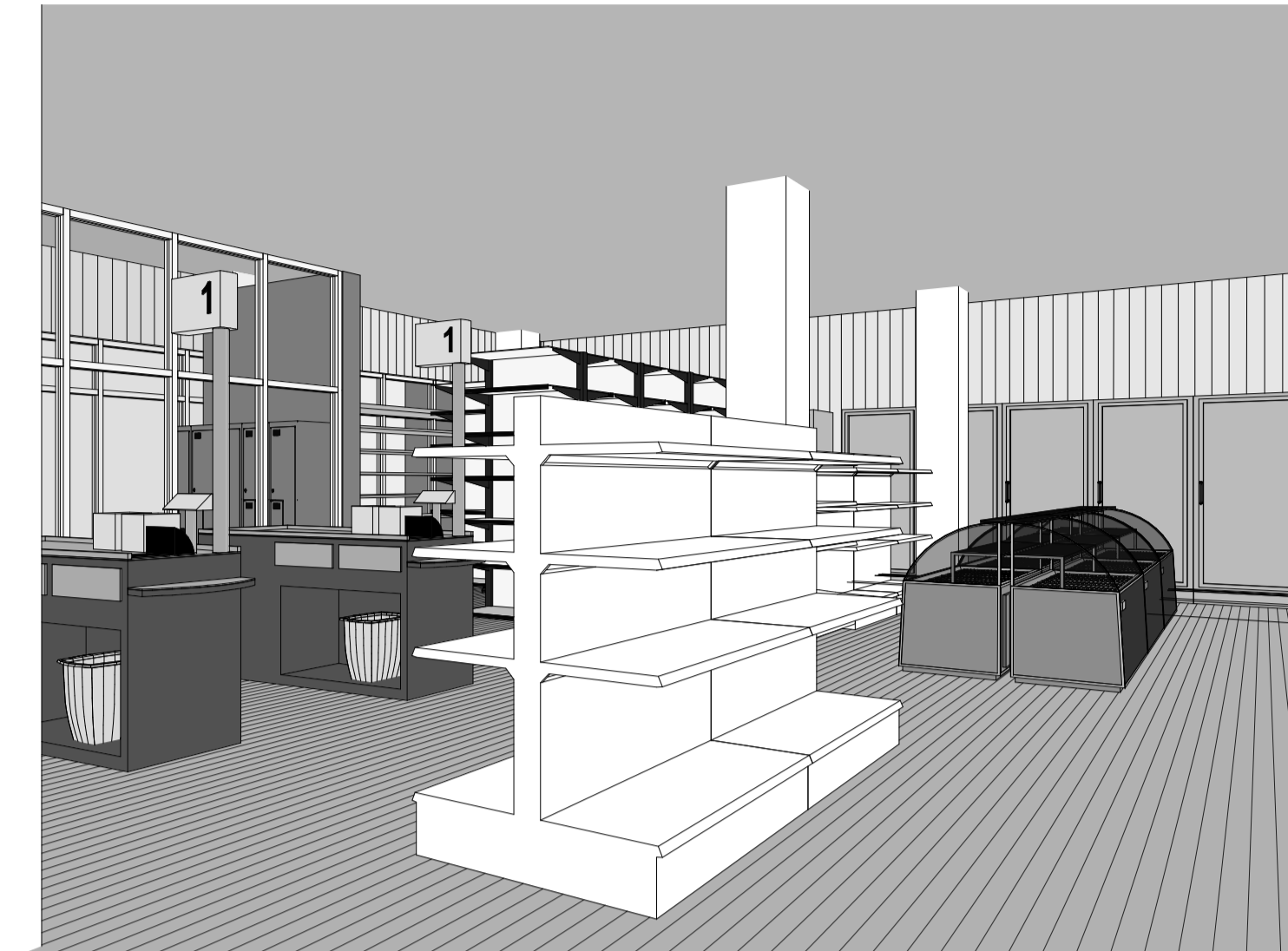
03/10/23



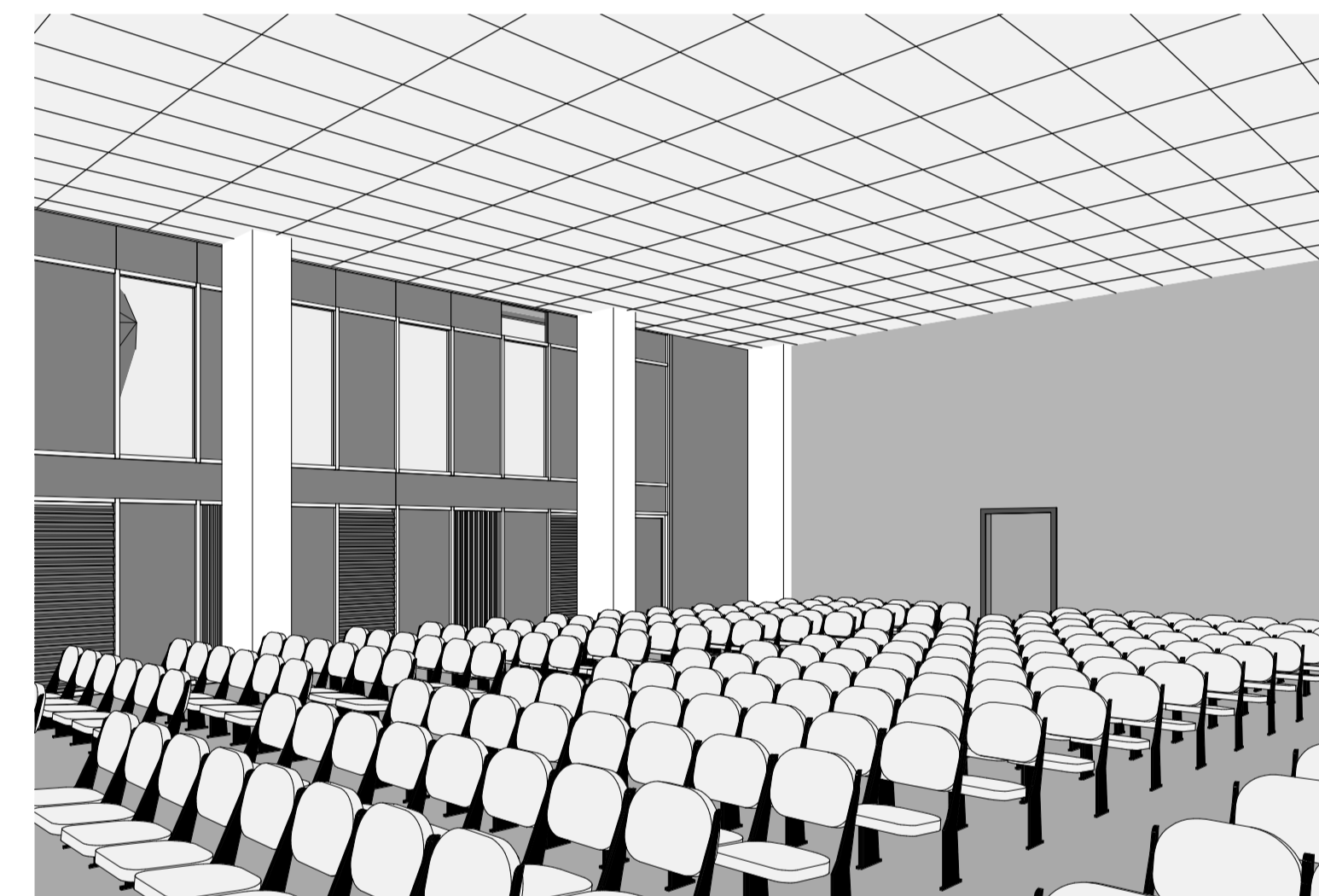
1 Ground Floor Plan - Support Block
1: 200



2 First Floor Plan support
1: 200



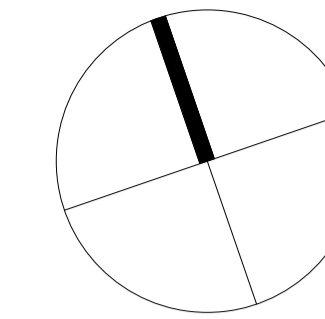
3 Departmental Store



4 Conference Hall



5 Restaurant



LEGEND 3

- 1. Administration
- 2. Exhibition
- 3. Storage Room
- 4. Public Toilet
- 5.. Departmental Store
- 6. Storage
- 7. Reception
- 8. Indoor Dining
- 9. Kitchen
- 10. Storage
- 11. Outdoor Dining
- 12. Outdoor Garden Terrace



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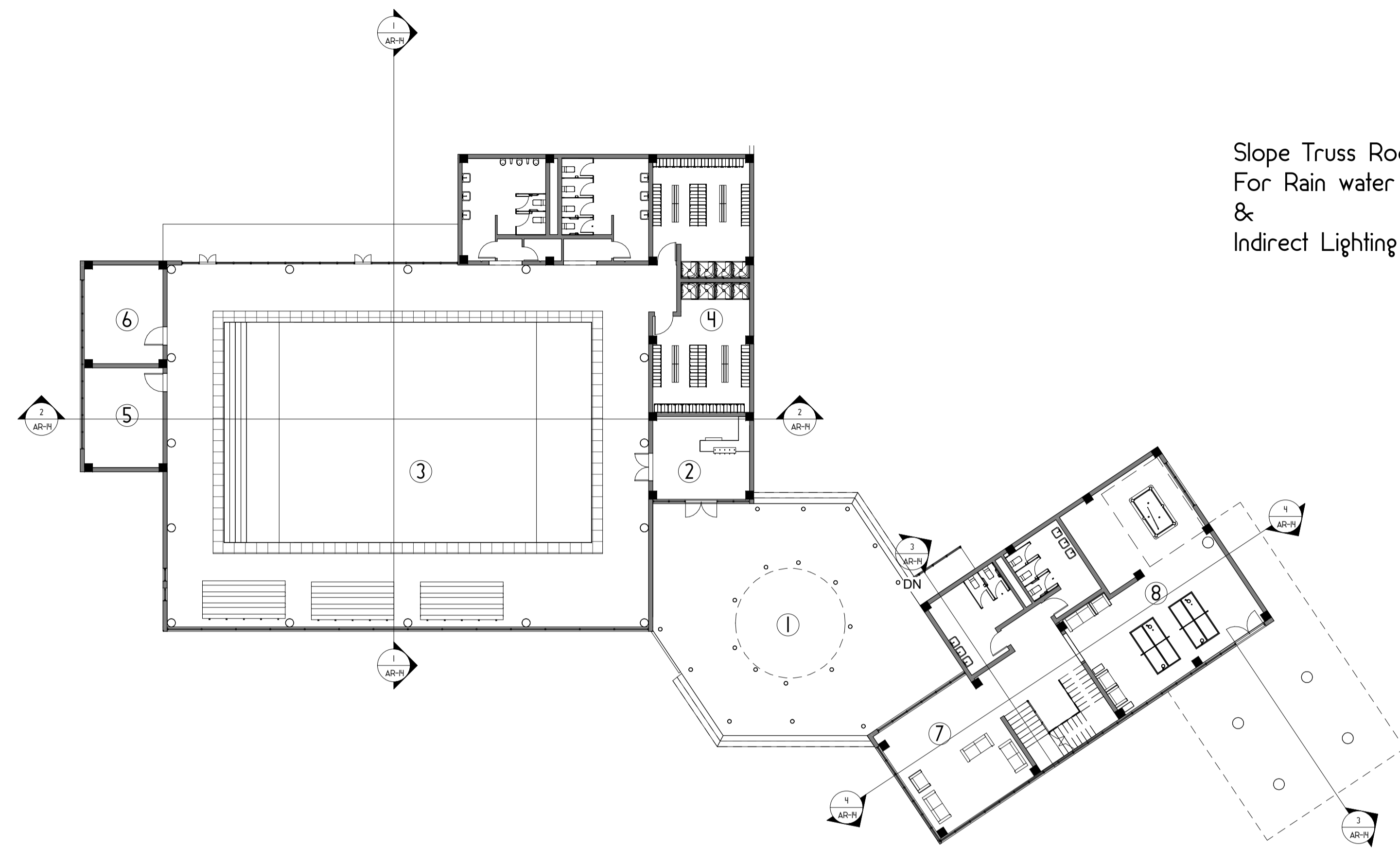
Asst. Prof. Ram Laxmi
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SHEET TITLE

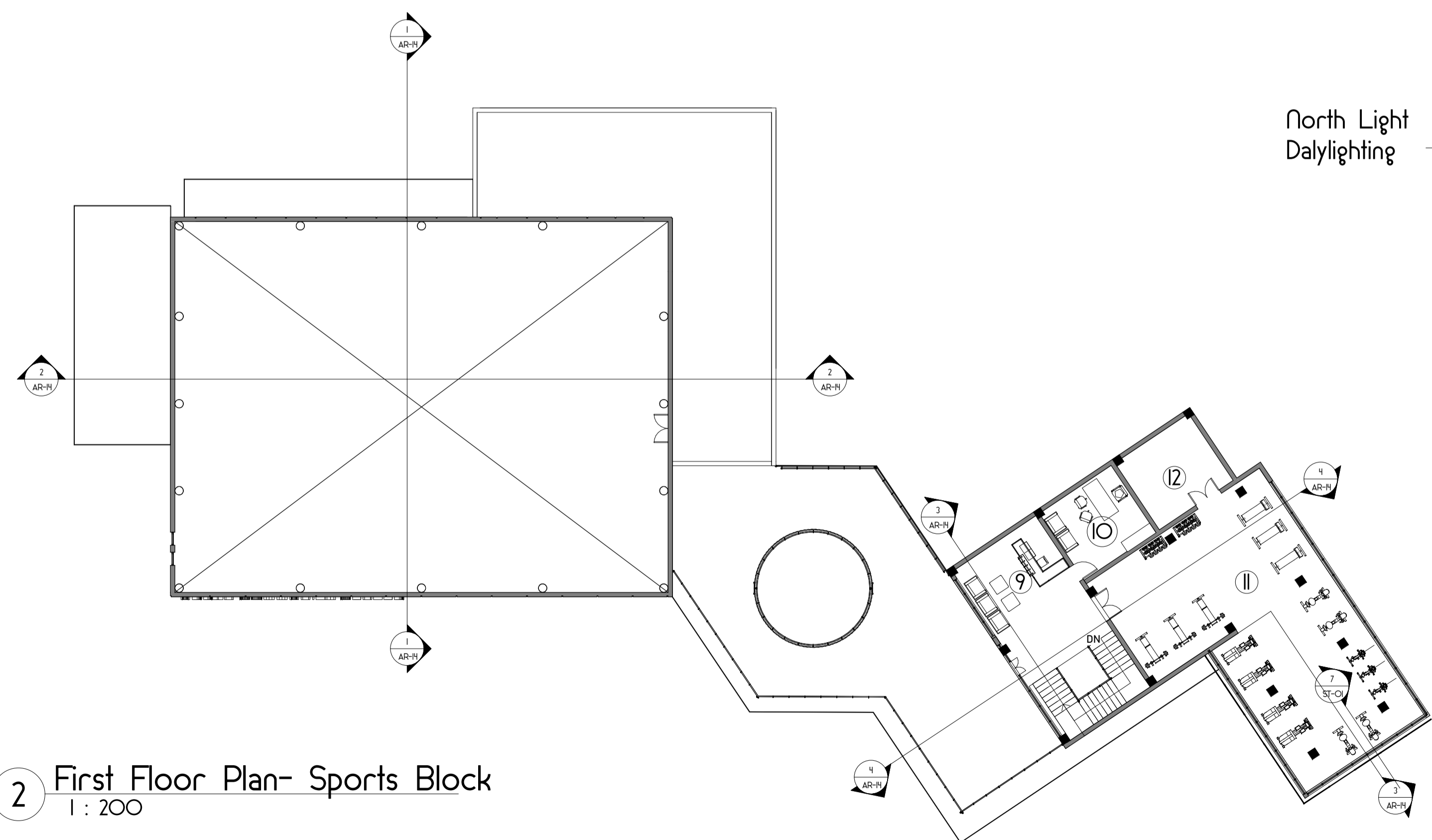
Support Block (Plans)

SCALE : 1 : 200

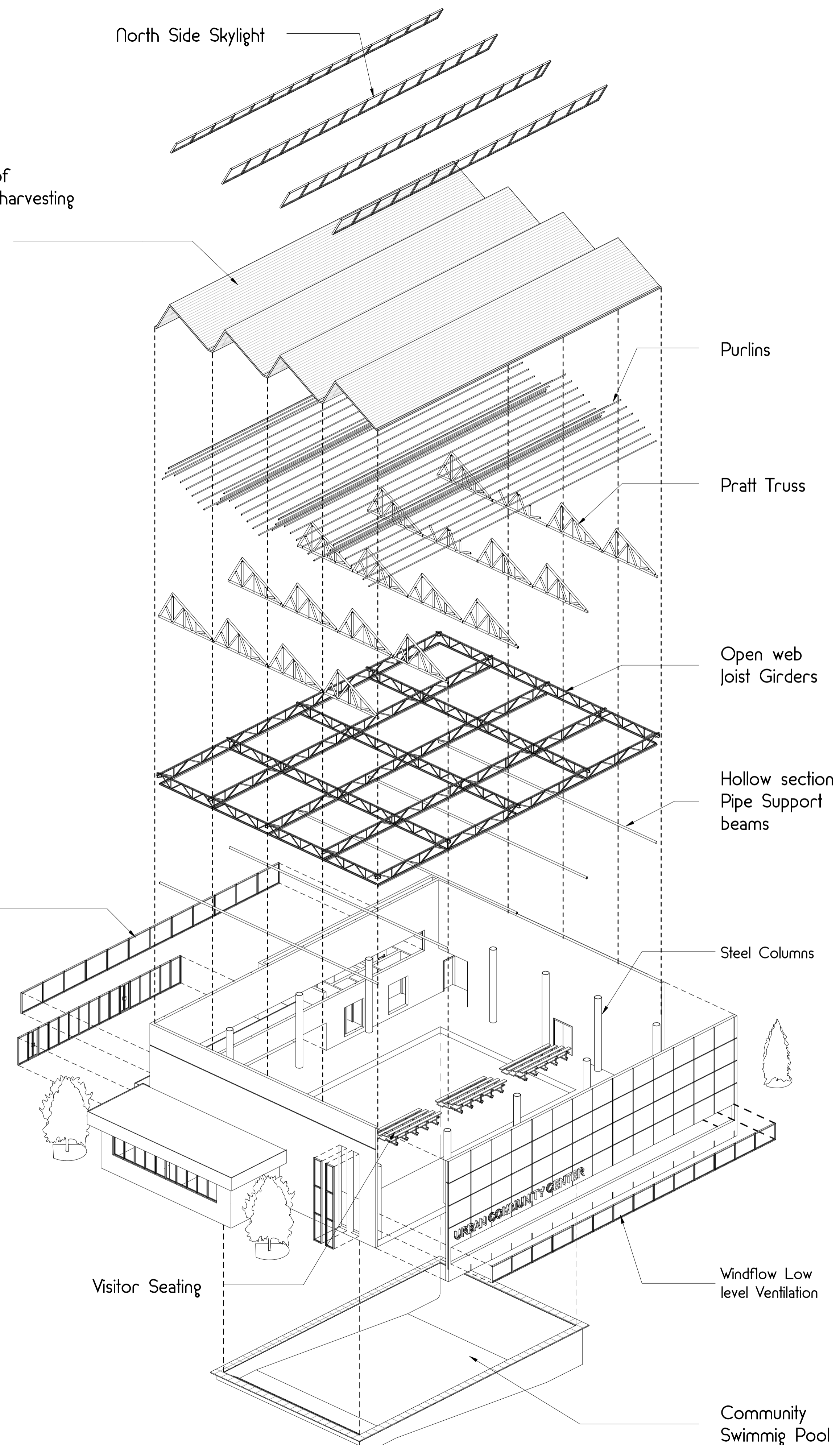
AR-10(b)
03/10/23



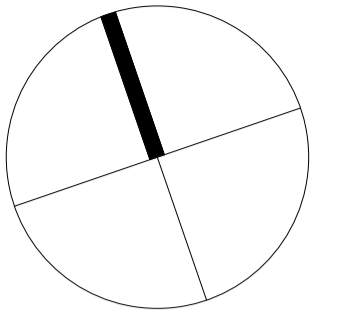
1 Ground Floor Plan -Sports Block
1 : 200



2 First Floor Plan- Sports Block
1 : 200



3 Axonometric Exploded Diagram



LEGEND 4

- 1. Entrance Plaza
- 2. Reception
- 3. Community Swimming Pool
- 4. Changing Room
- 5. First Aid Room
- 6. Instructor/ Lifeguard Room
- 7. Lobby
- 8. Indoor Recreational Hall
- 9. Reception Fitness
- 10. Office
- 11. Fitness Center/ Gym
- 12. Storage



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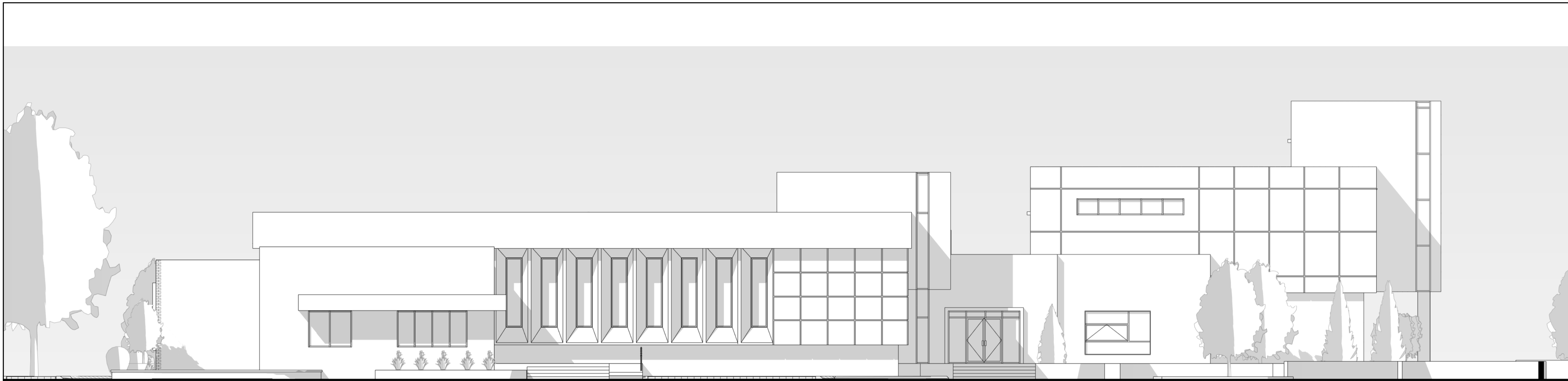
SHEET TITLE

Sports Block (Plans)

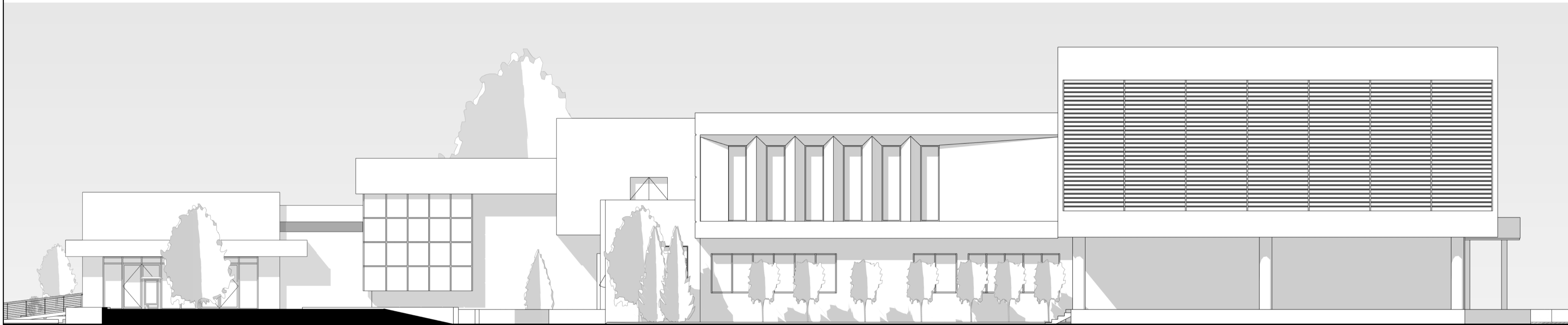
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AR-IO(c)

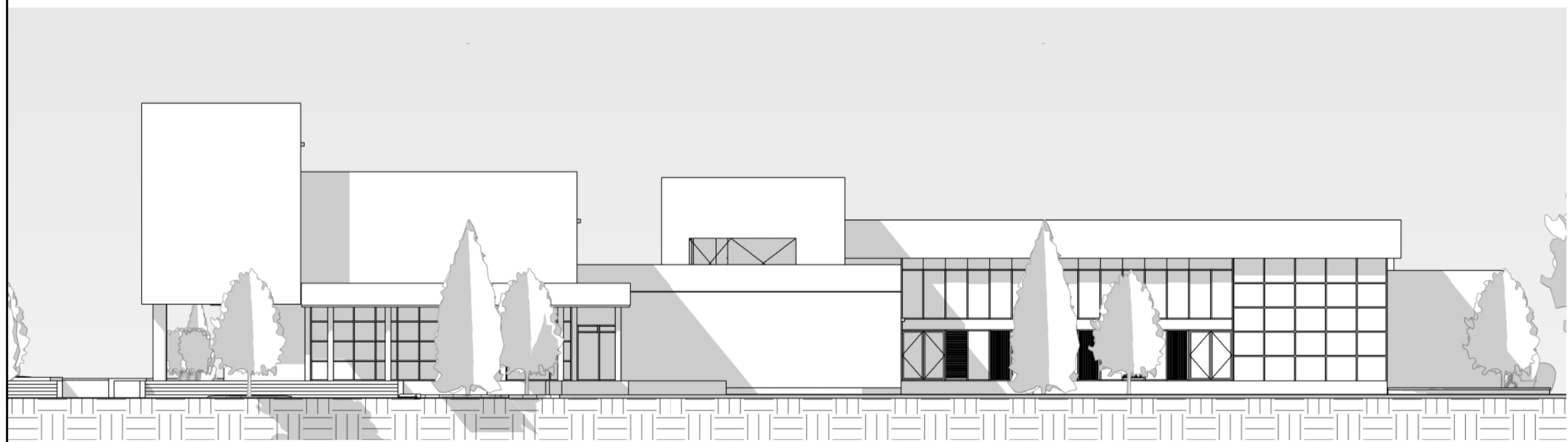
03/10/23



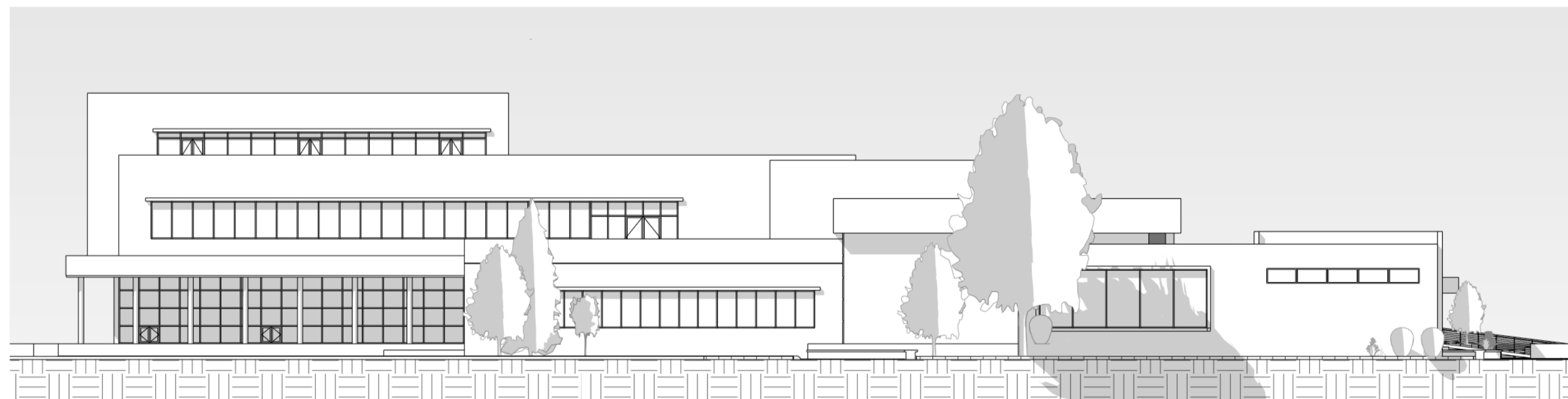
1 Education 1
1 : 100



2 Education 2
1 : 100



3 Education 3
1 : 200



4 Education 4
1 : 200



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THESIS BY :

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SHEET TITLE

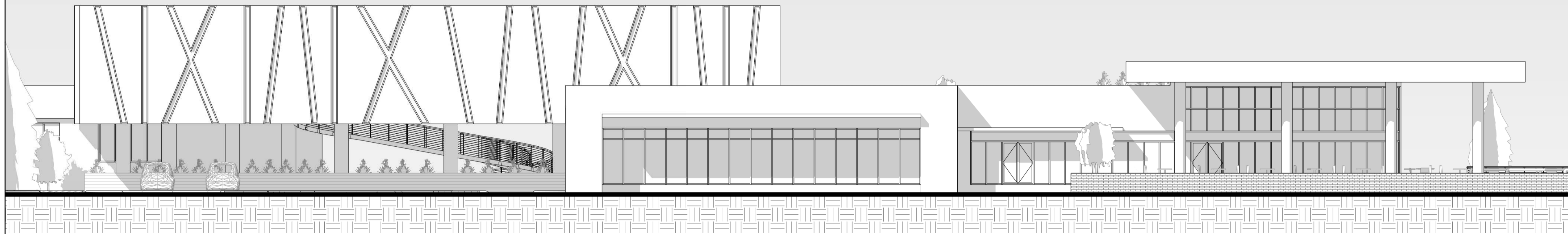
Education Block-
Elevations

SCALE : As indicated

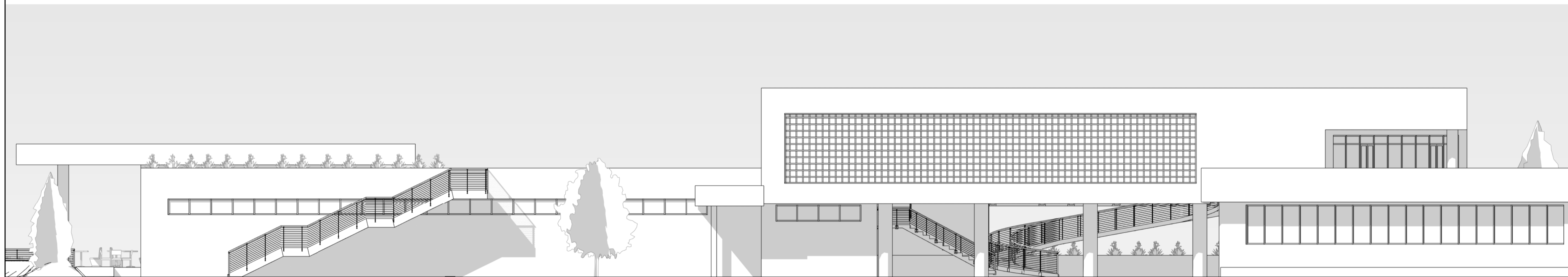
AR-II(a)

03/10/23

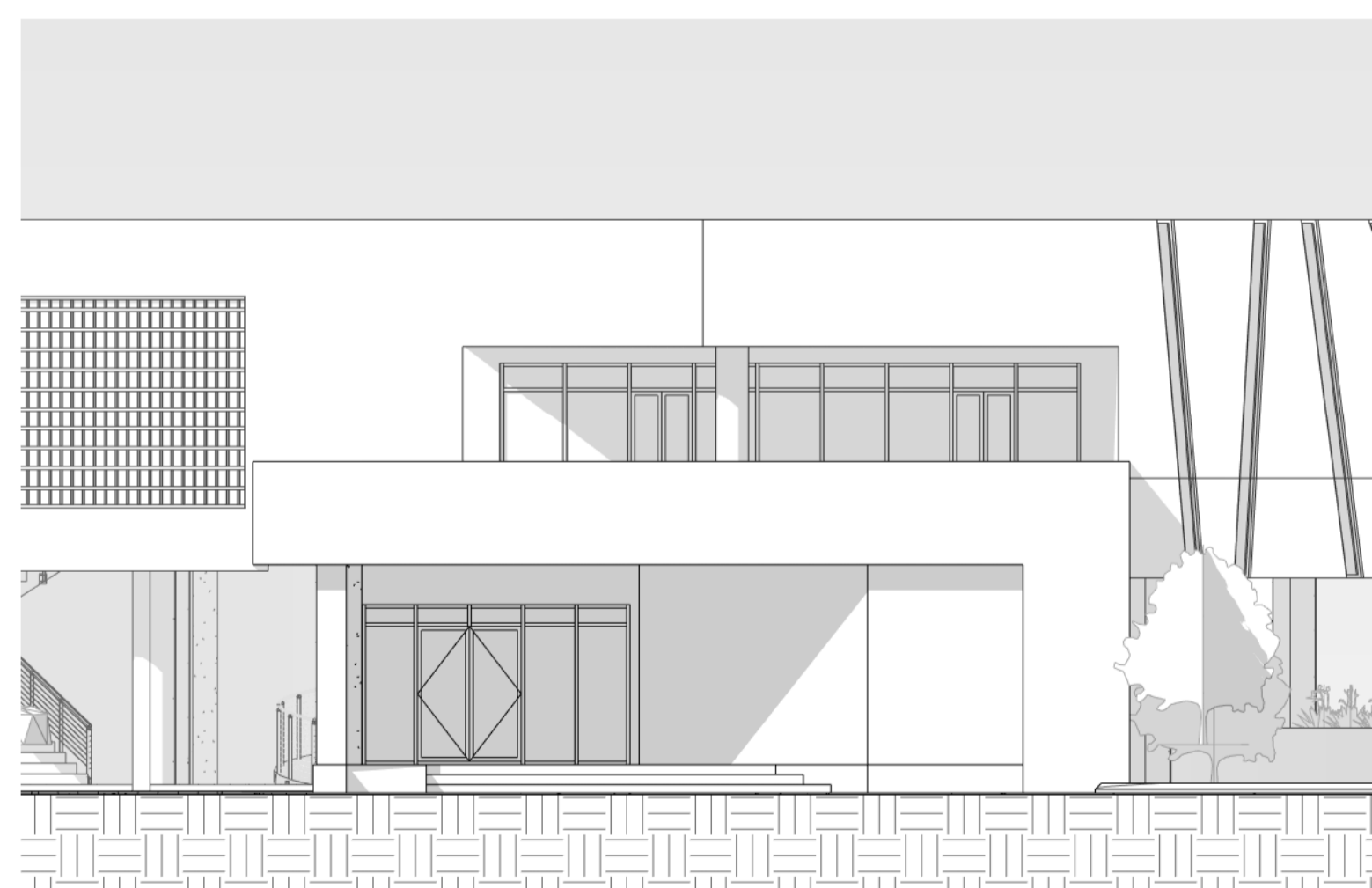
URBAN COMMUNITY CENTER



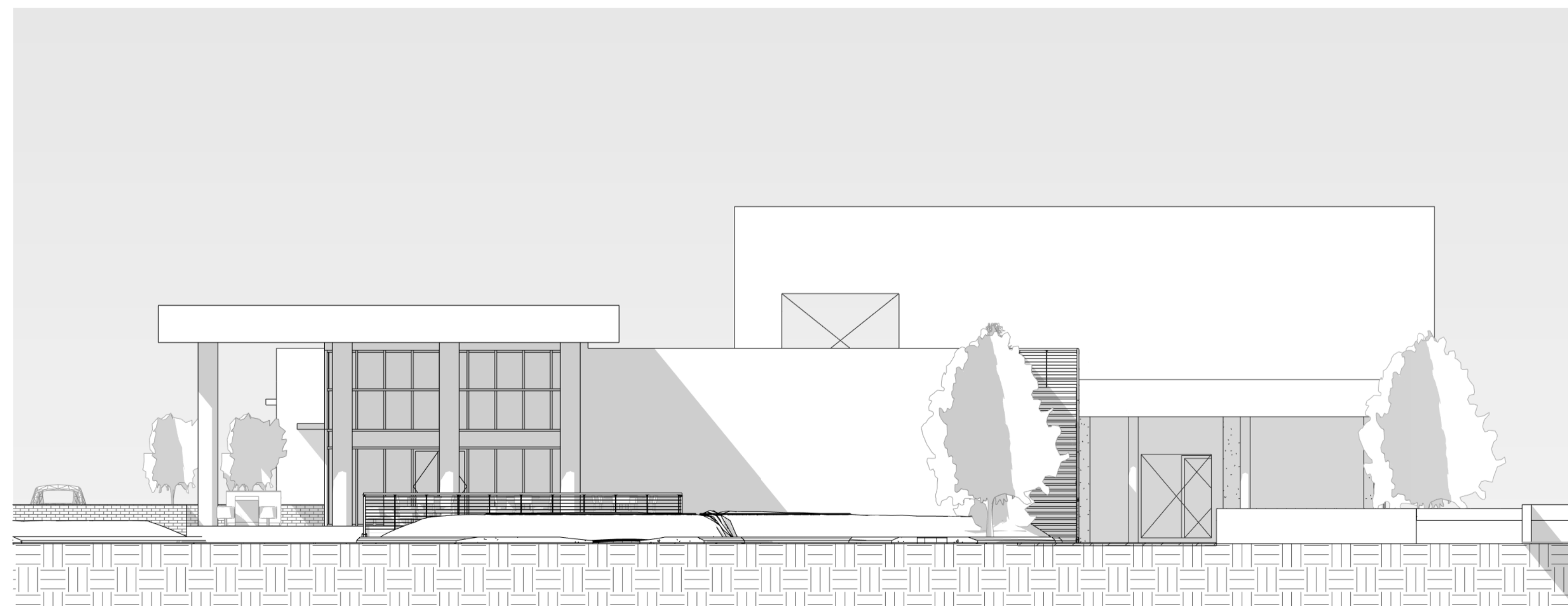
1 Support Block - South Elevation
1 : 100



2 Support Block - North Elevation
1 : 100



3 Support Block - West Elevation
1 : 100



4 Support Block - East Elevation
1 : 100

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THESIS SUPERVISOR

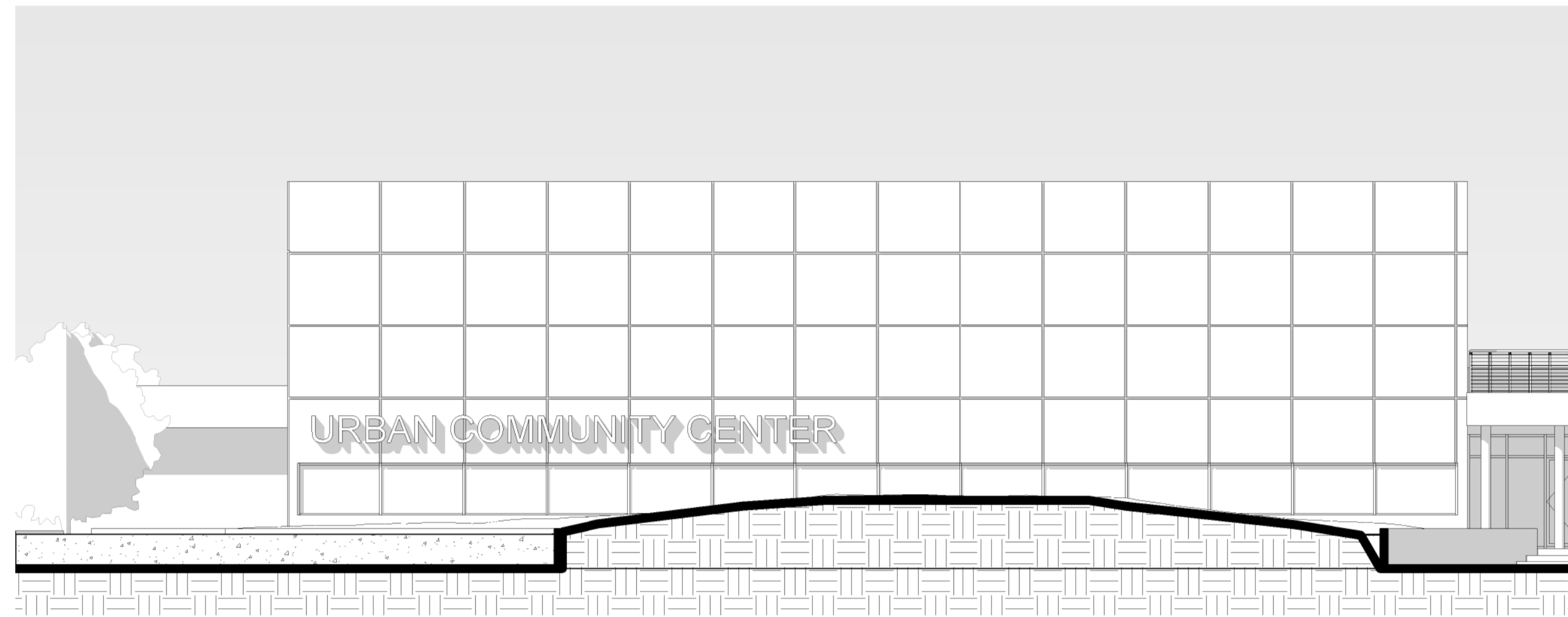
Asst. Prof. Ram Laxmi
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SHEET TITLE

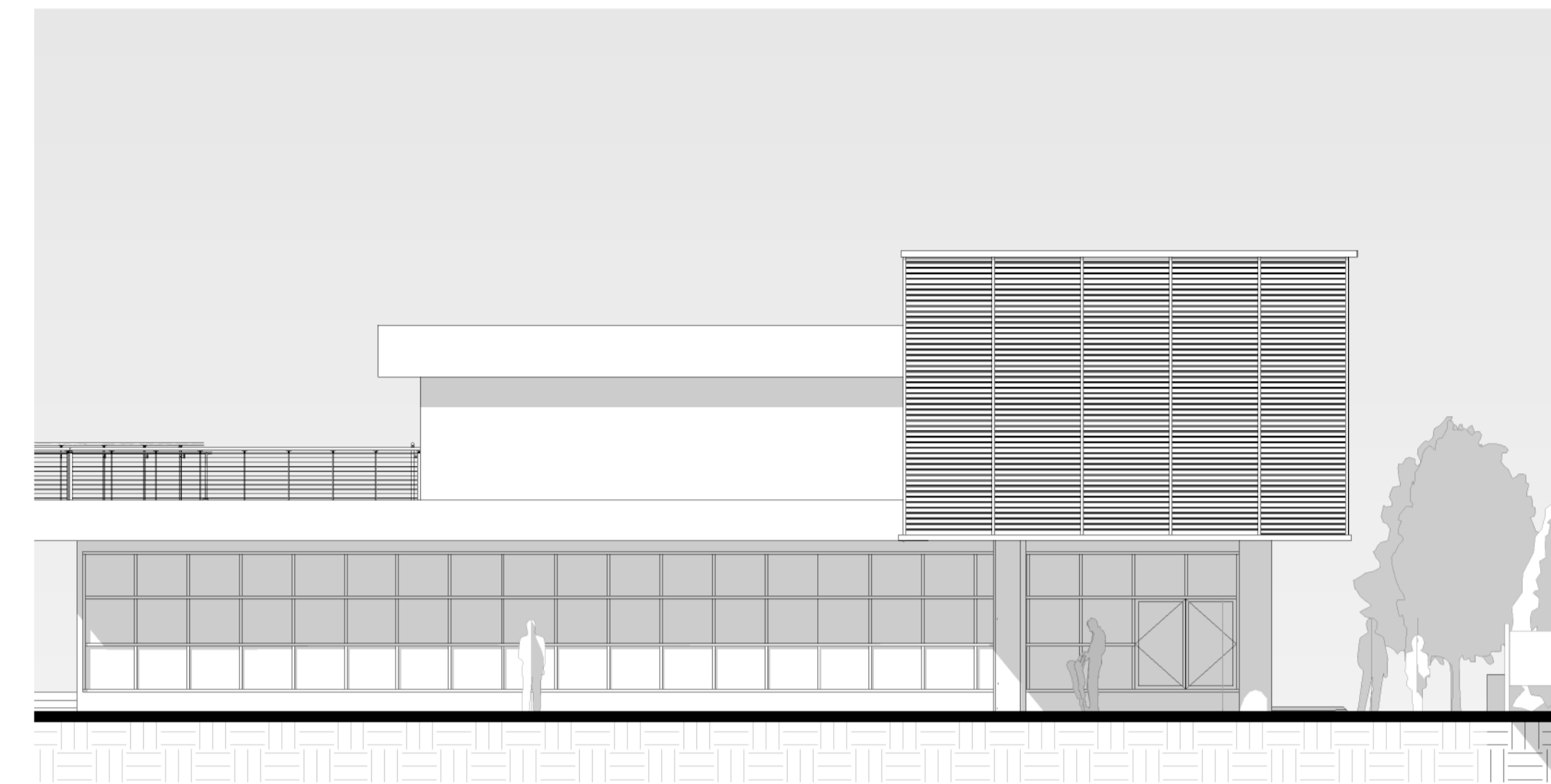
Support Block-
Elevations

SCALE : 1 : 100

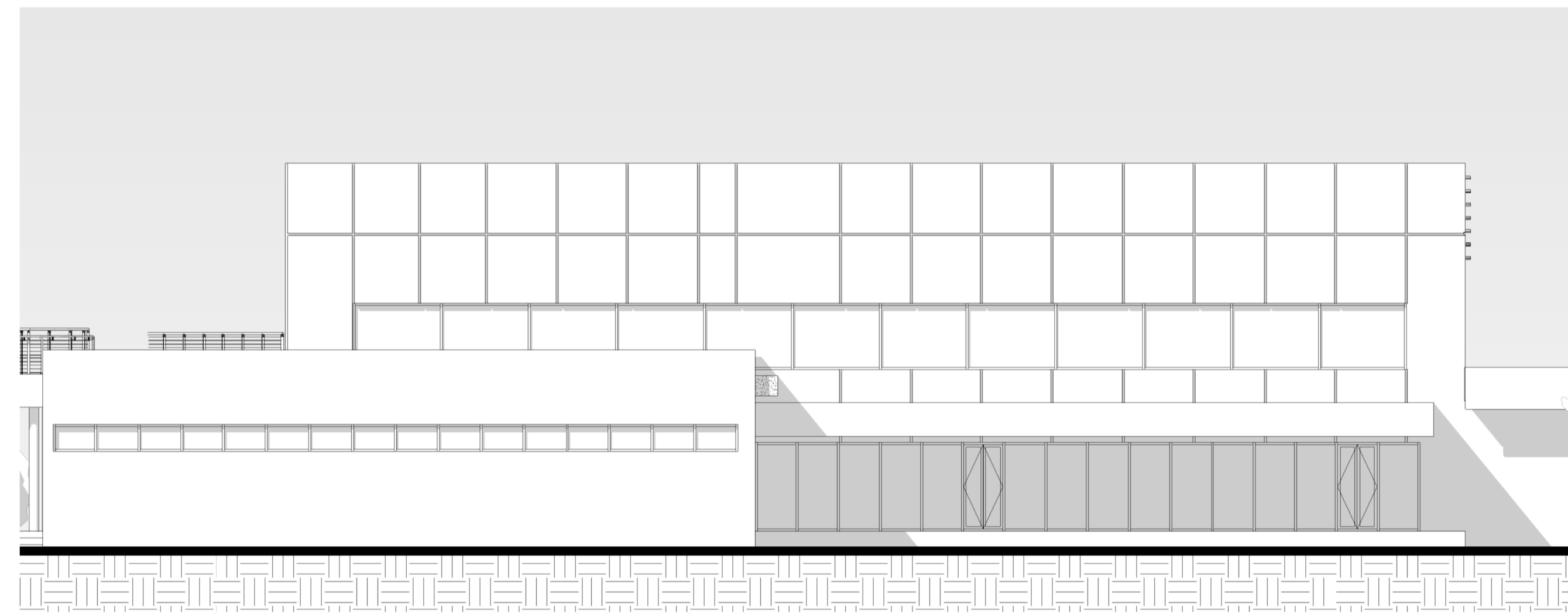
AR-II(b)
03/11/23



1 Swimming Block- South Elevation
1 : 100



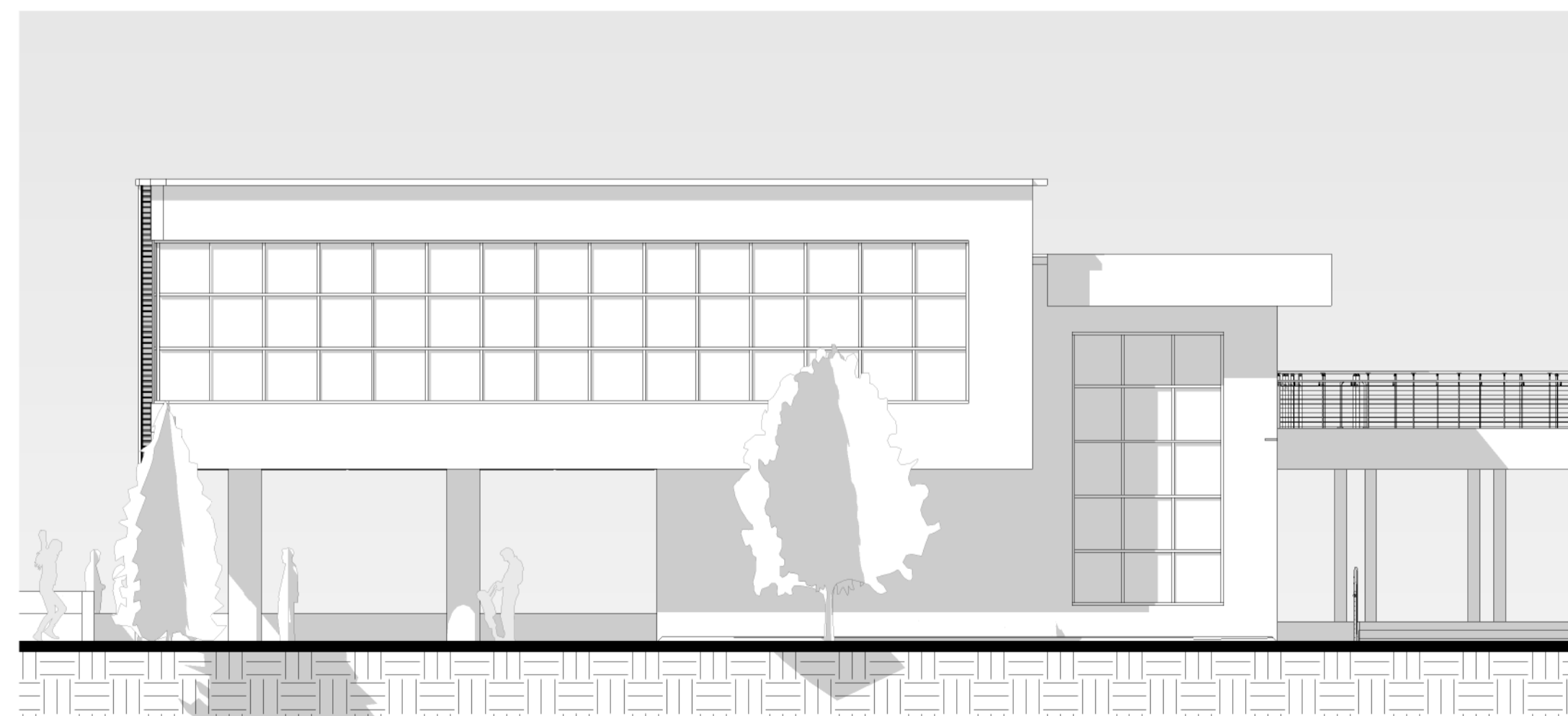
2 Recreation Block- South Elevation
1 : 100



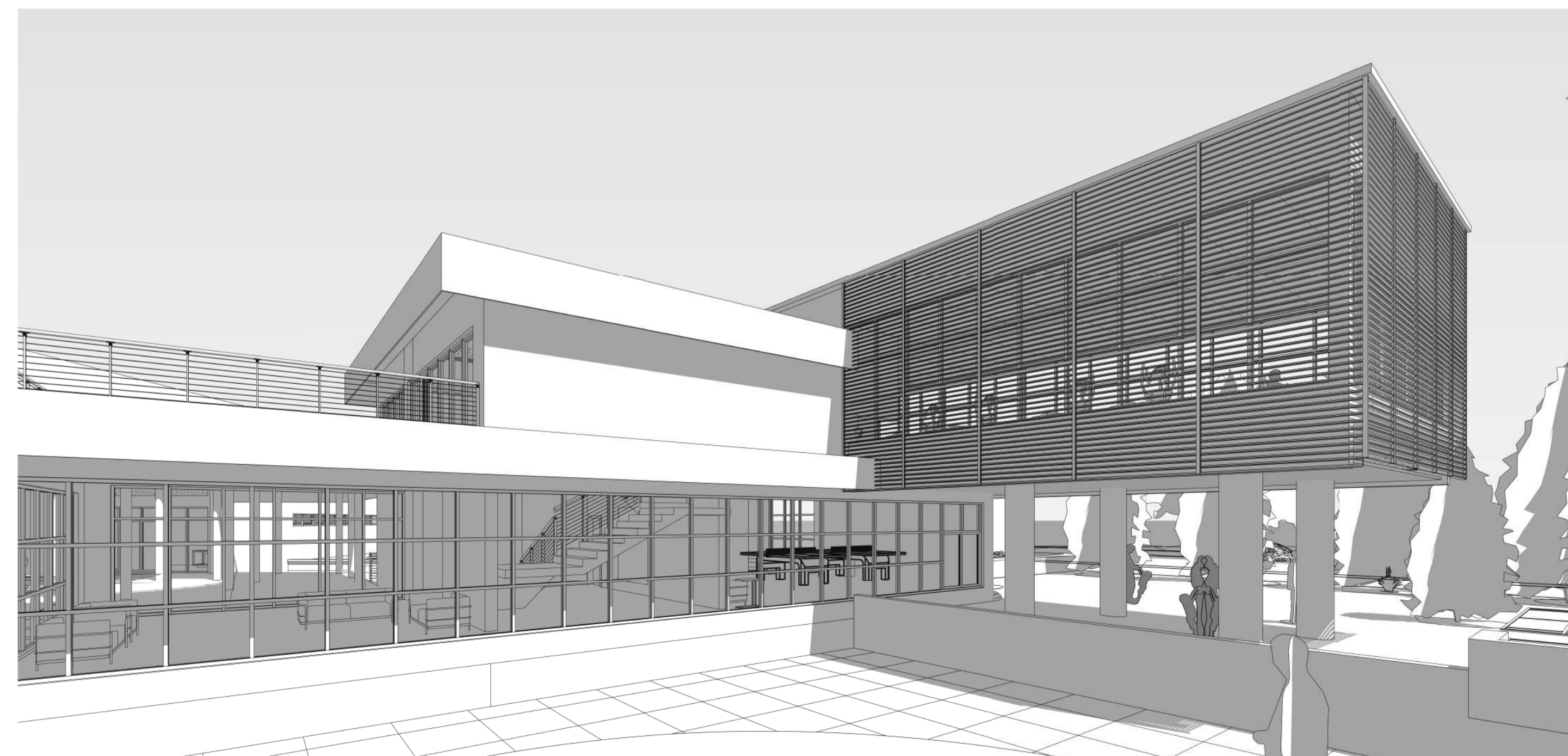
3 Swimming Block- North Elevation
1 : 100



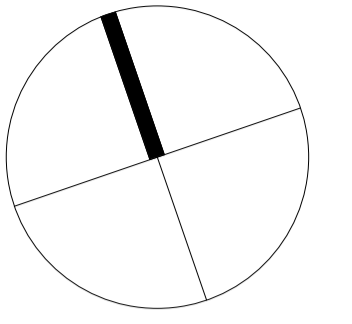
4 Recreation Block- West Elevation
1 : 100



5 Recreation Block - East Elevation
1 : 100



6 Recreational Block - 3D View



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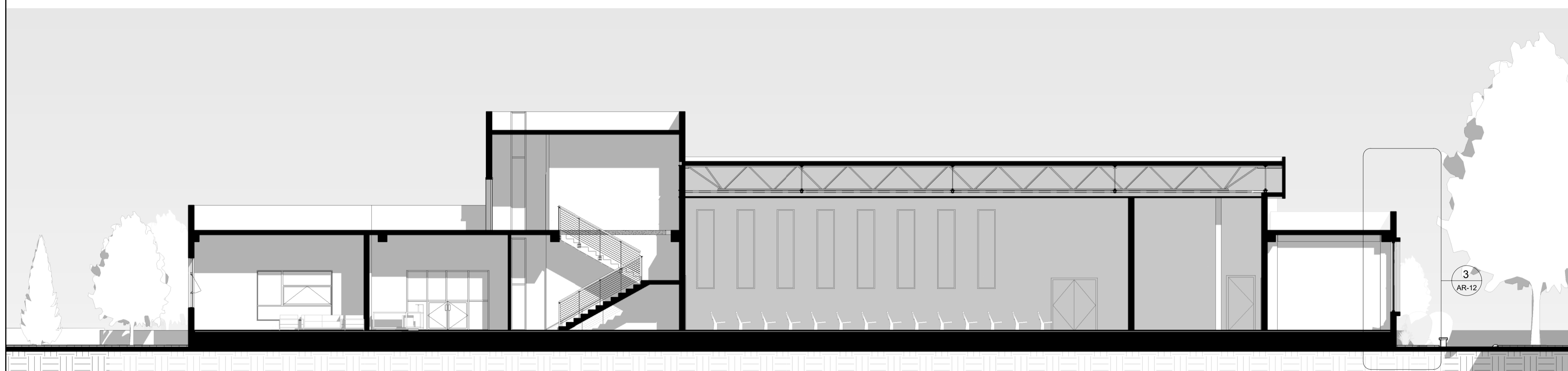
SHEET TITLE

Sports Block- Elevation
and sections

SCALE : 1 : 100

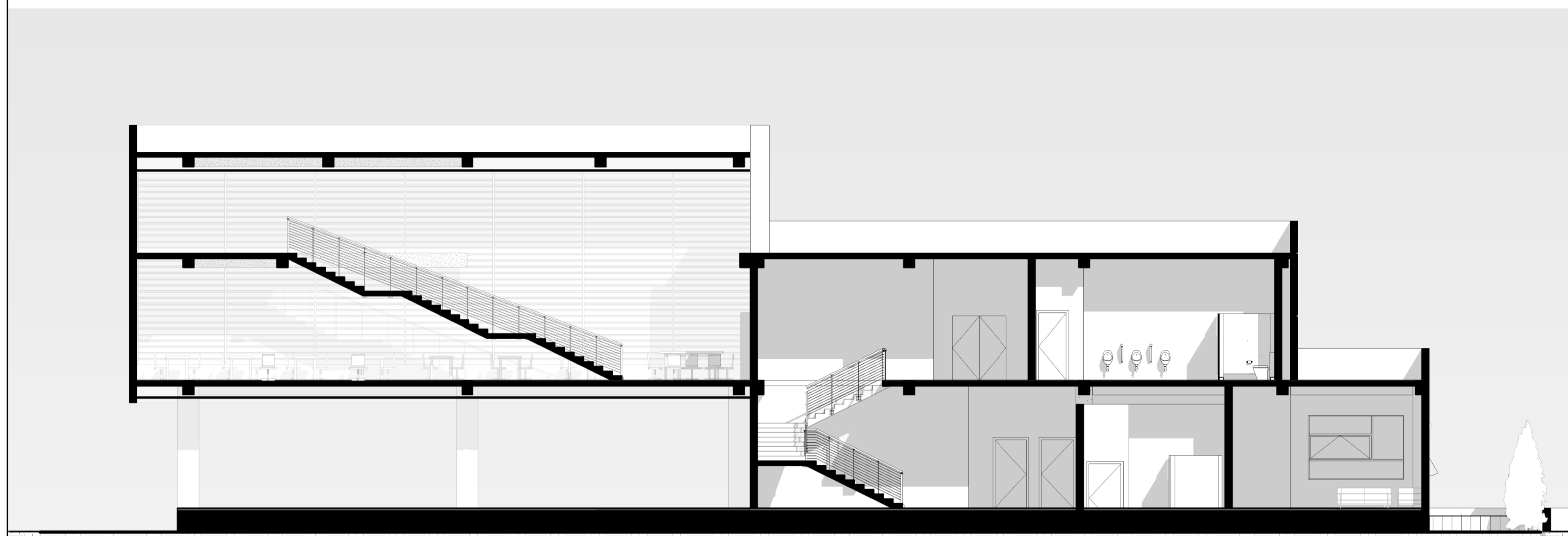
AR-II(c)
03/11/23

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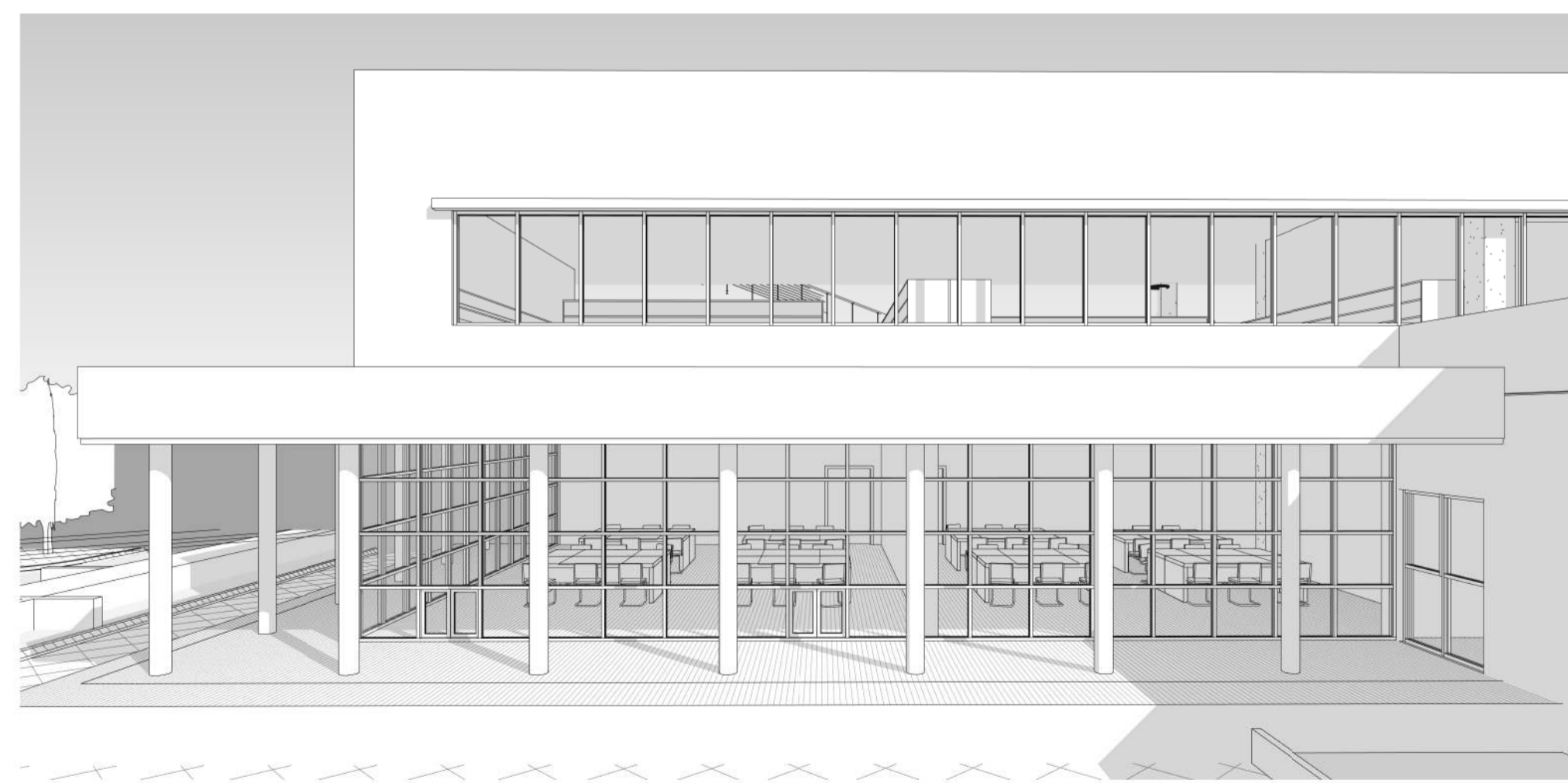
03. Second Floor Plan 8000
 02. First Floor Plan 4000
 01. Ground Floor Plan
 00. Ground Level -750

1 Multipurpose section
 1 : 100

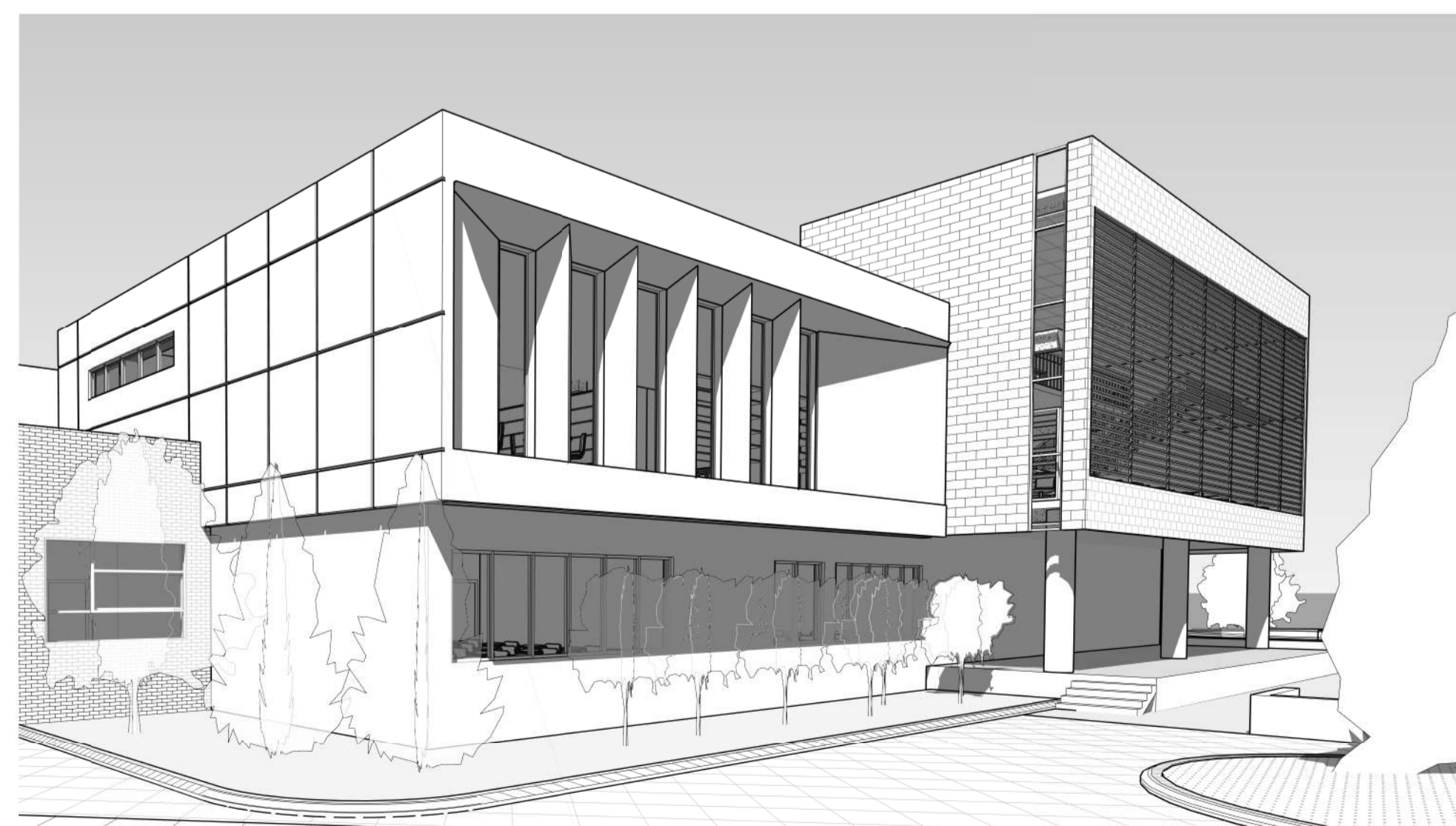


04. Third Floor Plan 12000
 03. Second Floor Plan 8000
 02. First Floor Plan 4000
 01. Ground Floor Plan 0
 00. Ground Level -750

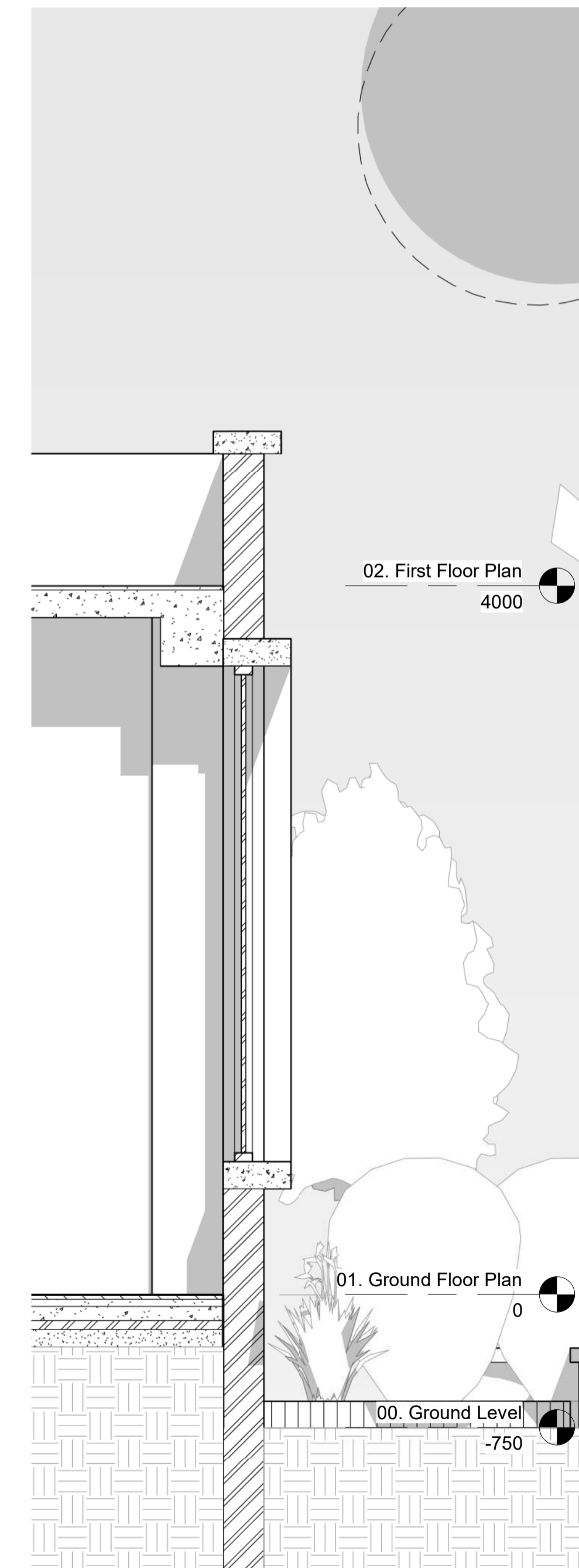
2 Library section
 1 : 100



5 Workshop View



4 Library Backside View



02. First Floor Plan 4000
 01. Ground Floor Plan 0
 00. Ground Level -750

3 Multipurpose section - Callout I
 1 : 25



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 074BAE206

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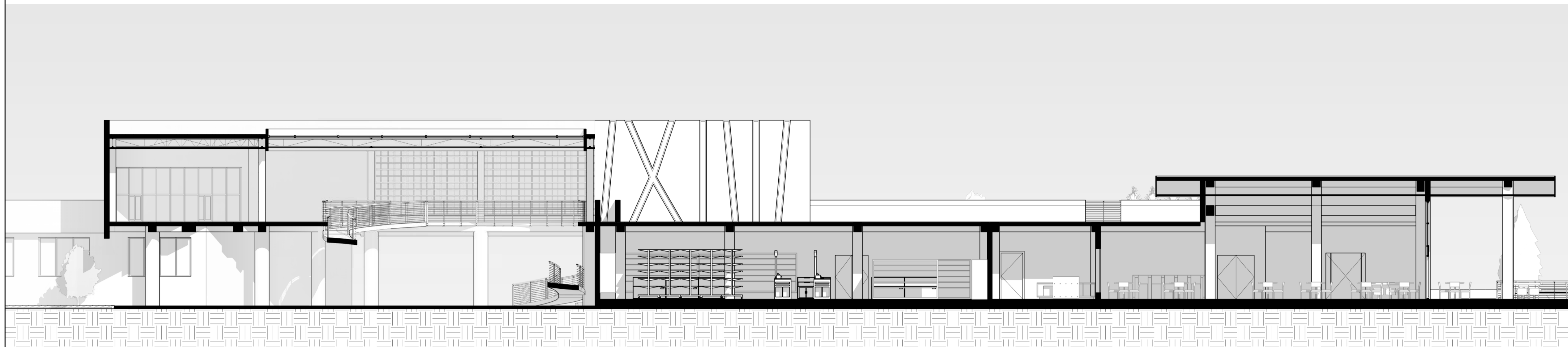
SHEET TITLE

Educational Block
 Sections

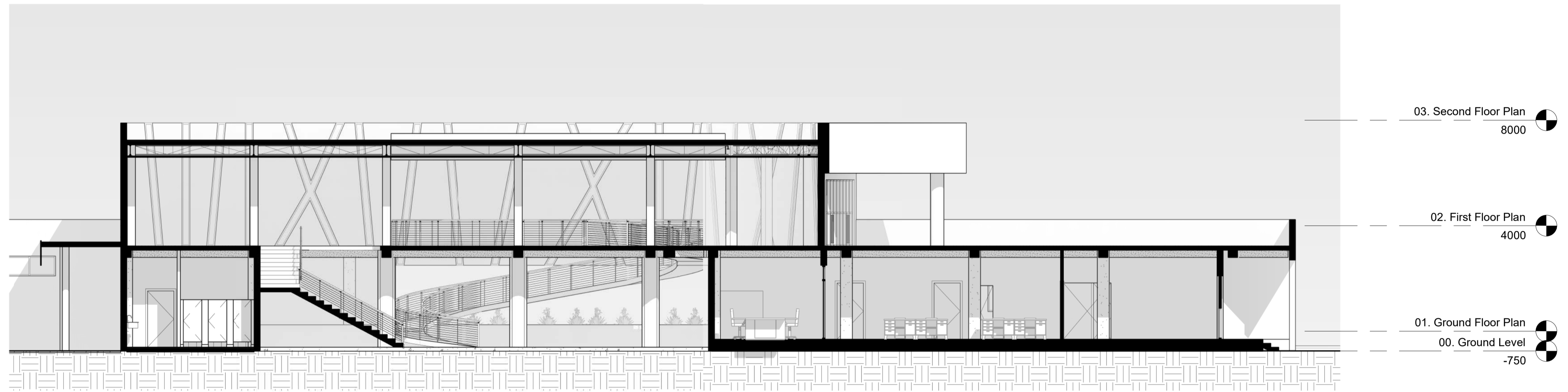
SCALE : As indicated

AR-12.a
 04/11/23

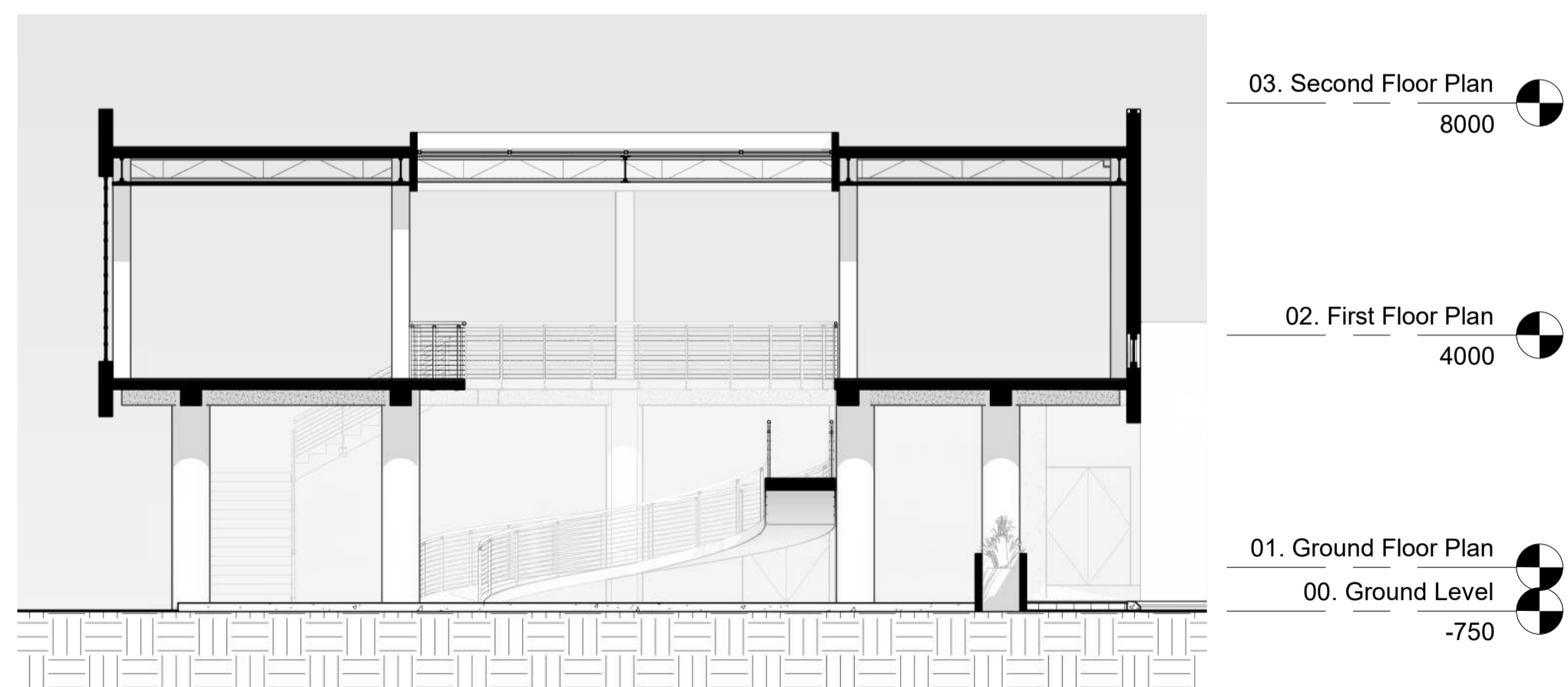
URBAN COMMUNITY CENTER



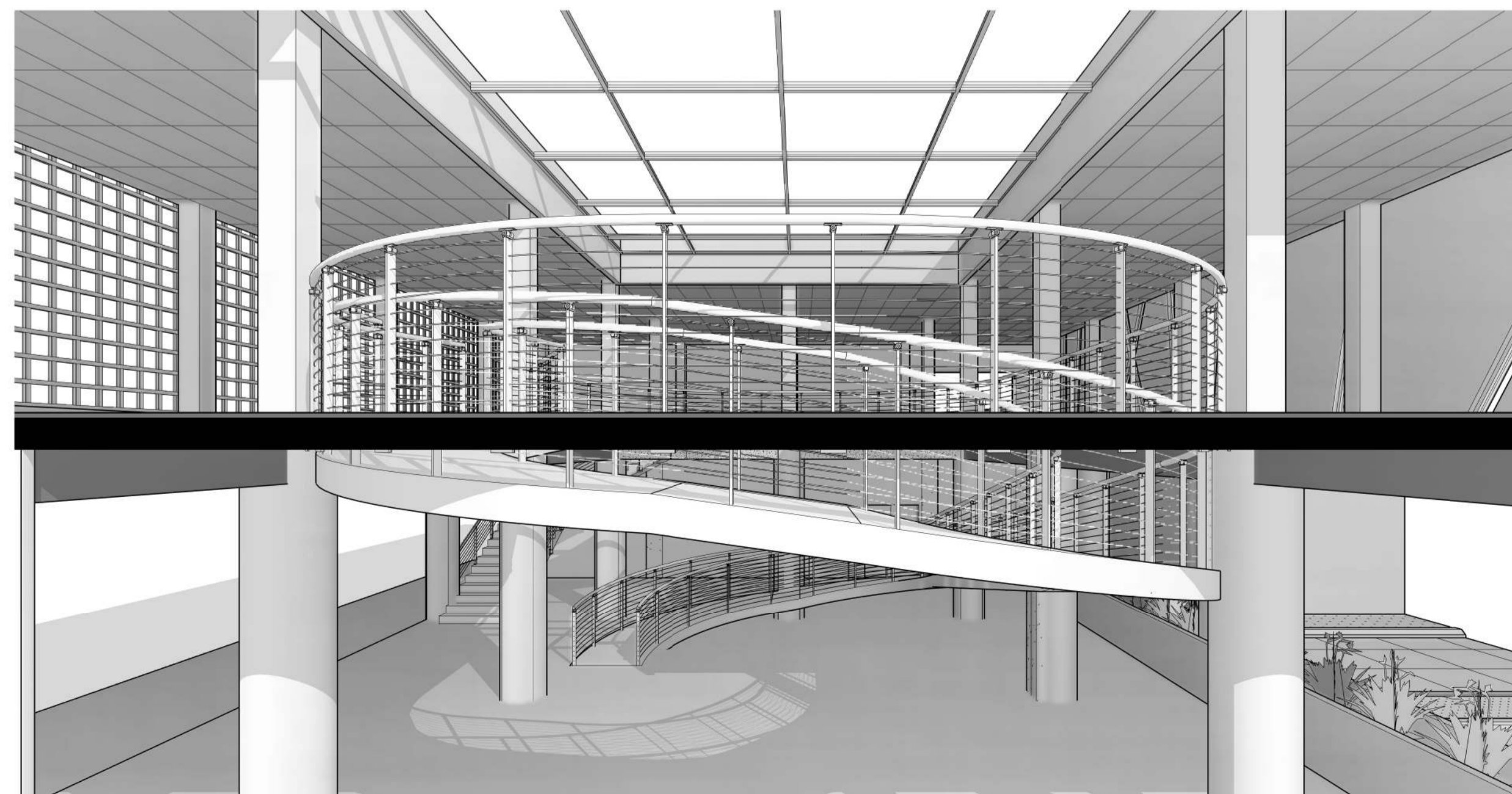
1 Support Block Longitudinal section
1:100



2 Support Block Section 2
1:100

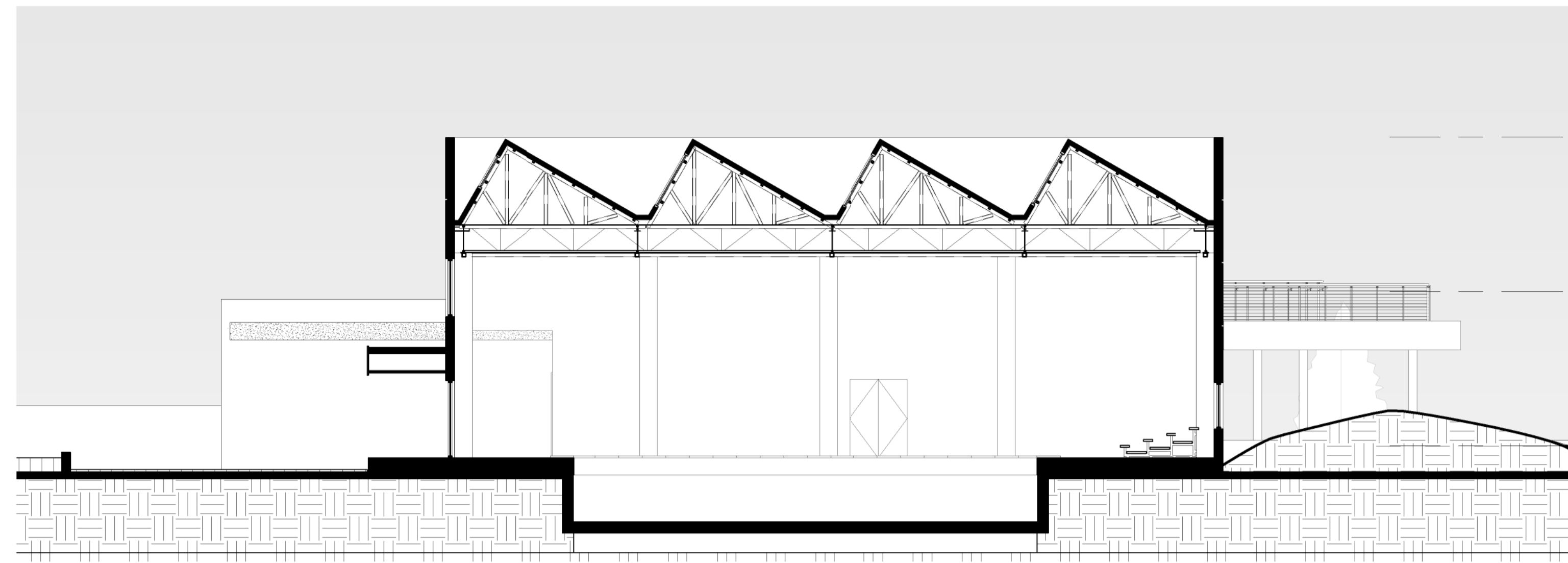


4 Support Block Cross Section
1:100

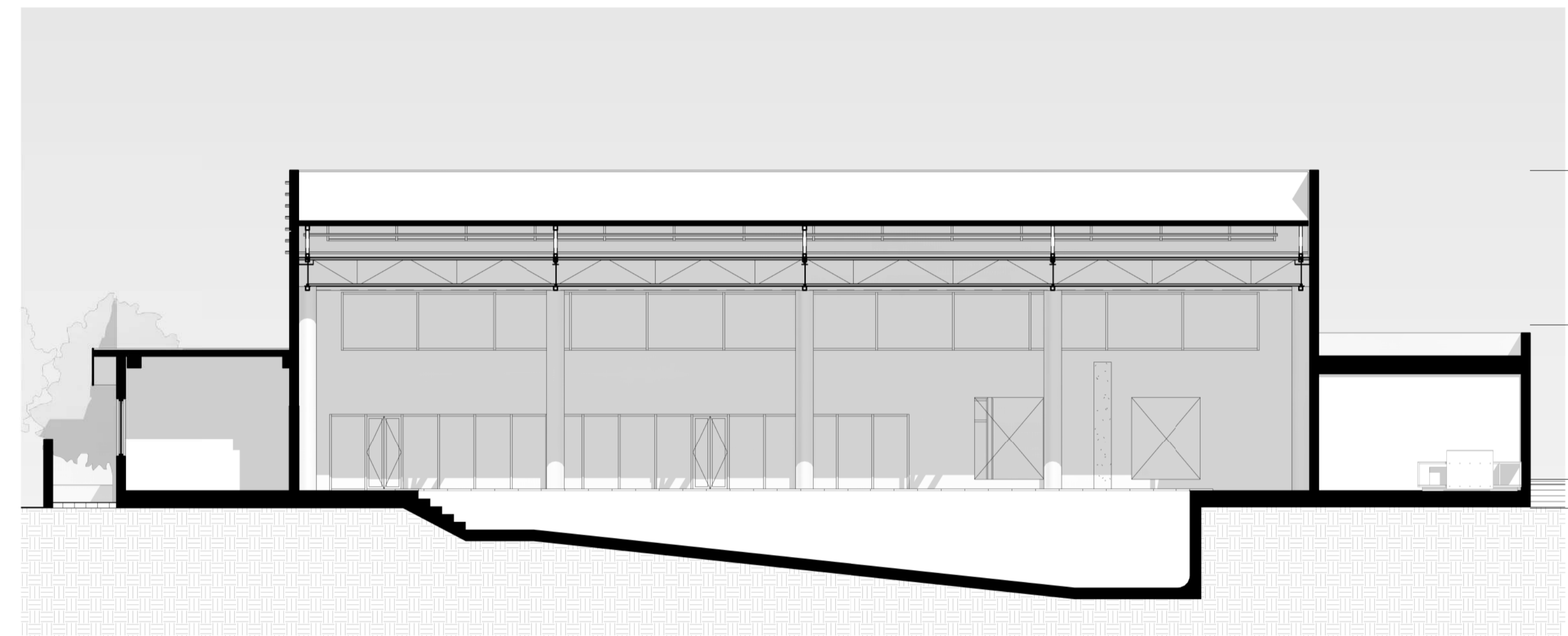


5 Exhibition Hall- Perspective section

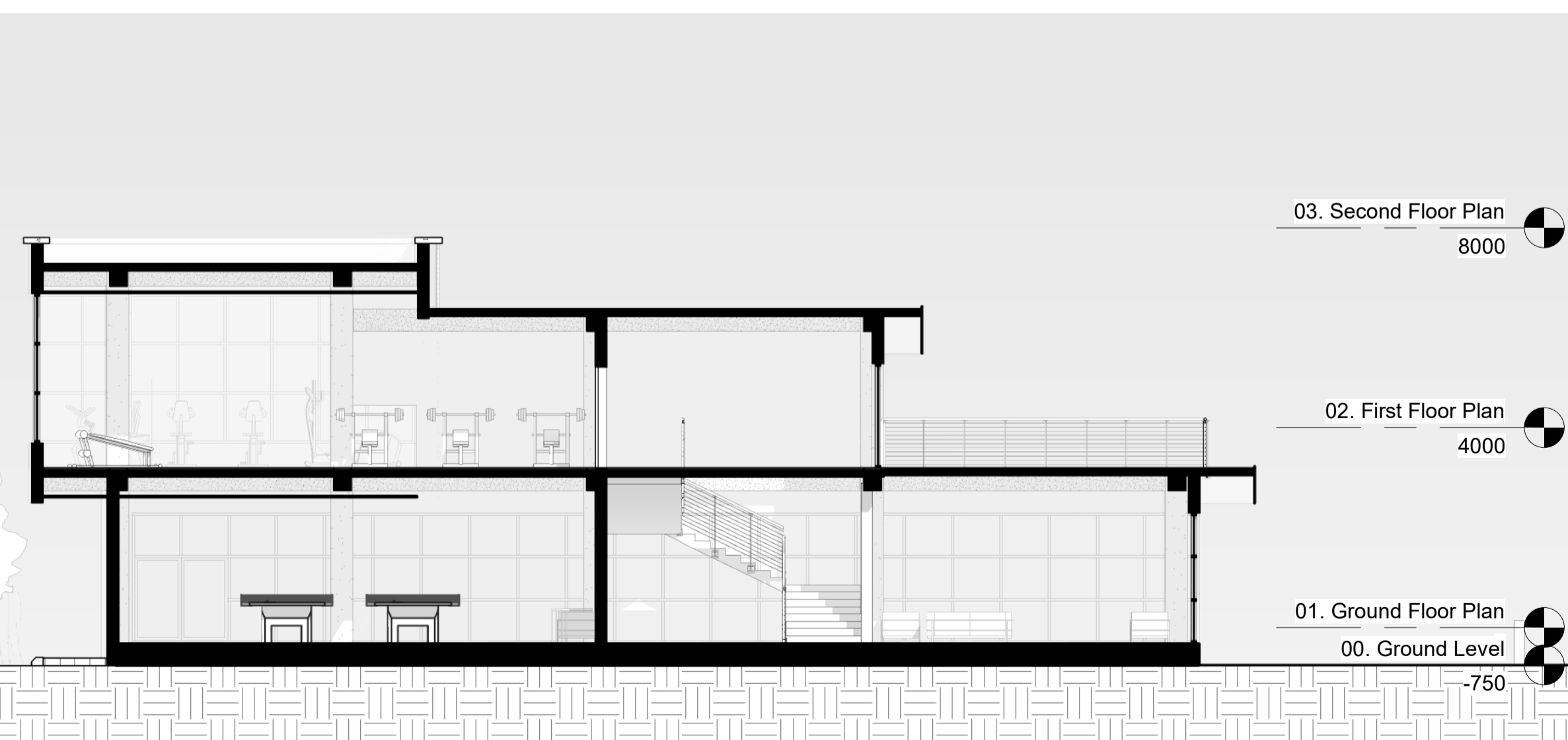




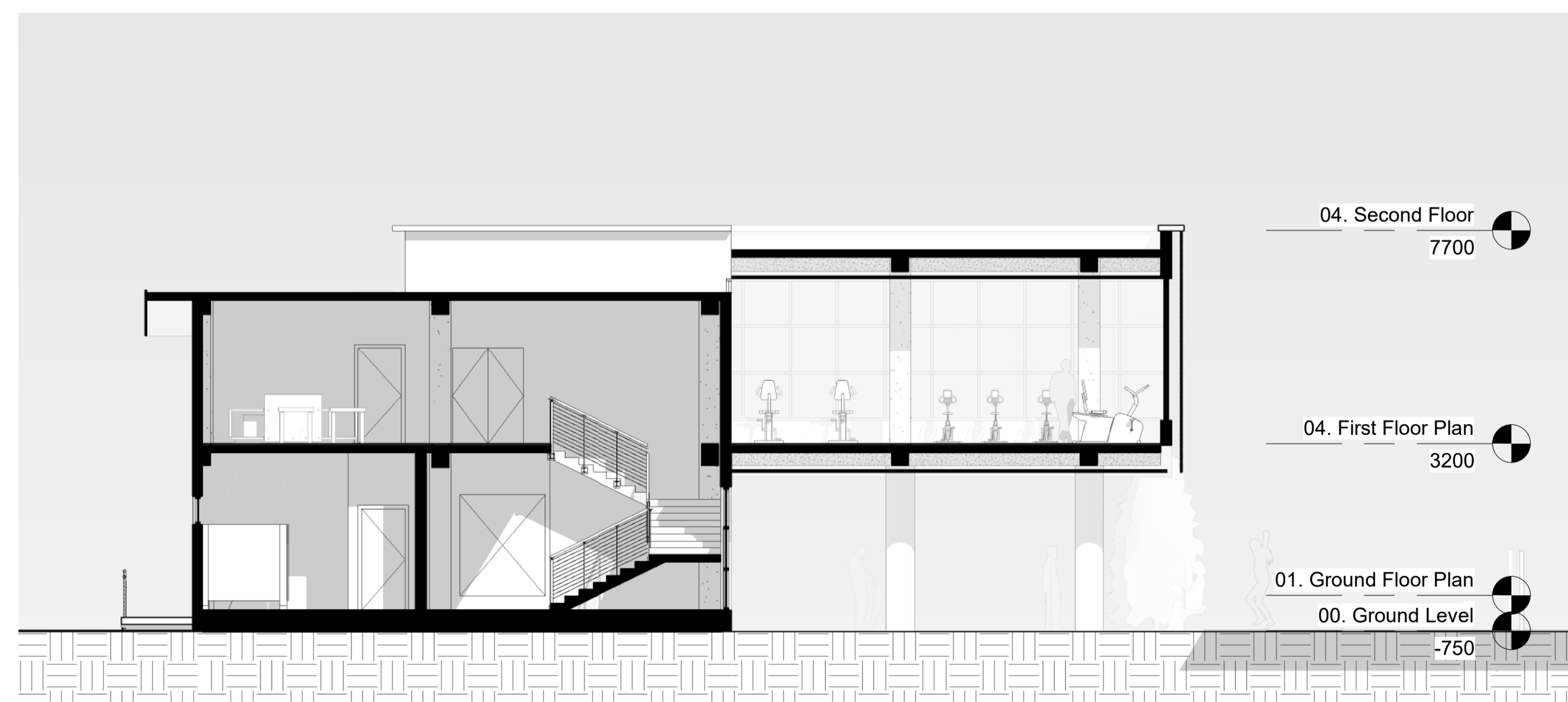
1 Swimming Pool section 1
1 : 100



2 Swimming Pool section 2
1 : 100



3 Sports Hall Section 1
1 : 100



4 Sports hall Section 2
1 : 100

03. Second Floor Plan
8000

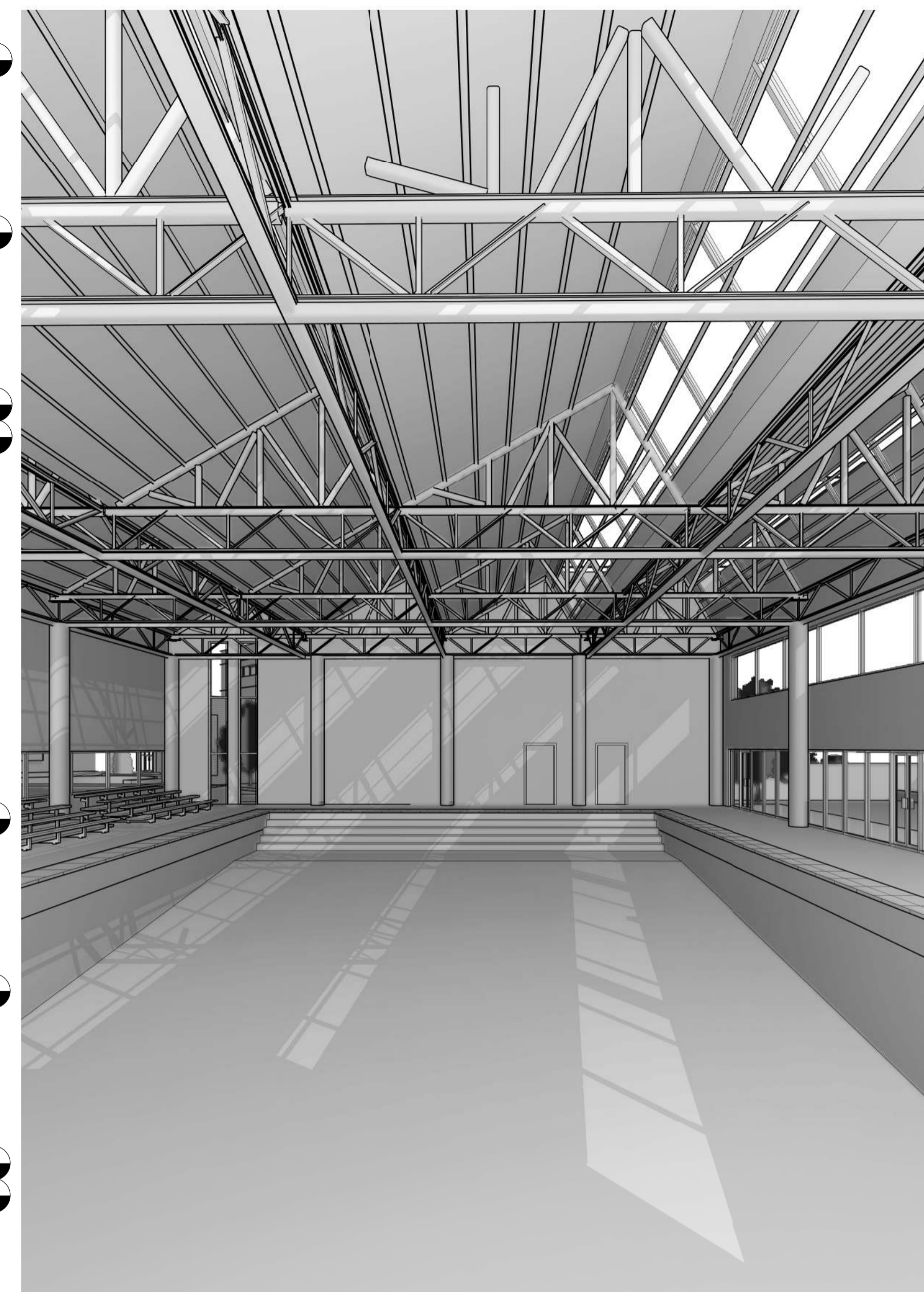
02. First Floor Plan
4000

01. Ground Floor Plan
00. Ground Level
-750

03. Second Floor Plan
8000

02. First Floor Plan
4000

01. Ground Floor Plan
00. Ground Level
-750



5 Swimming Pool Interior View



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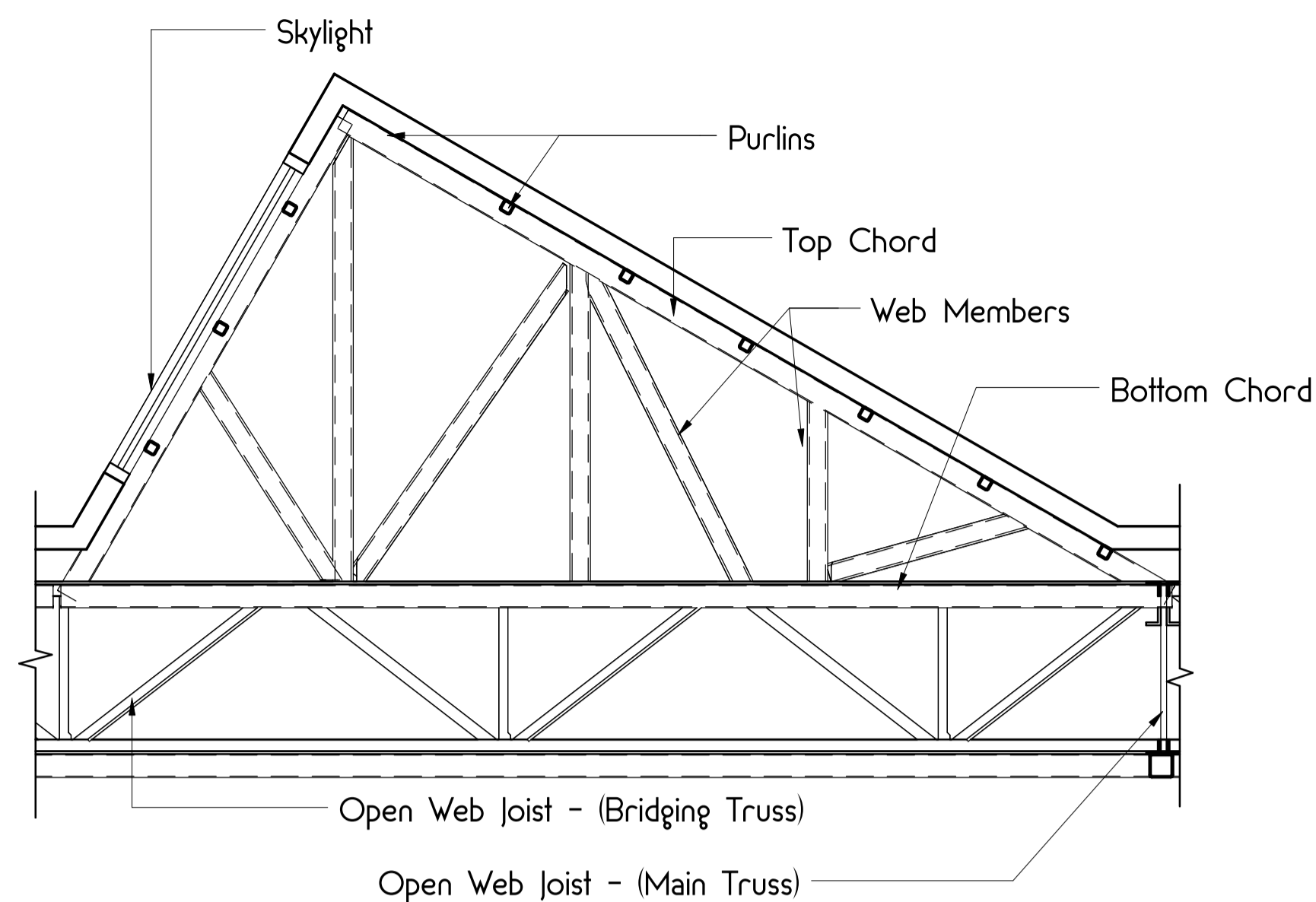
Asst. Prof. Ram Laxmi
Tamrakar

SHEET TITLE

Recreational Block
Section

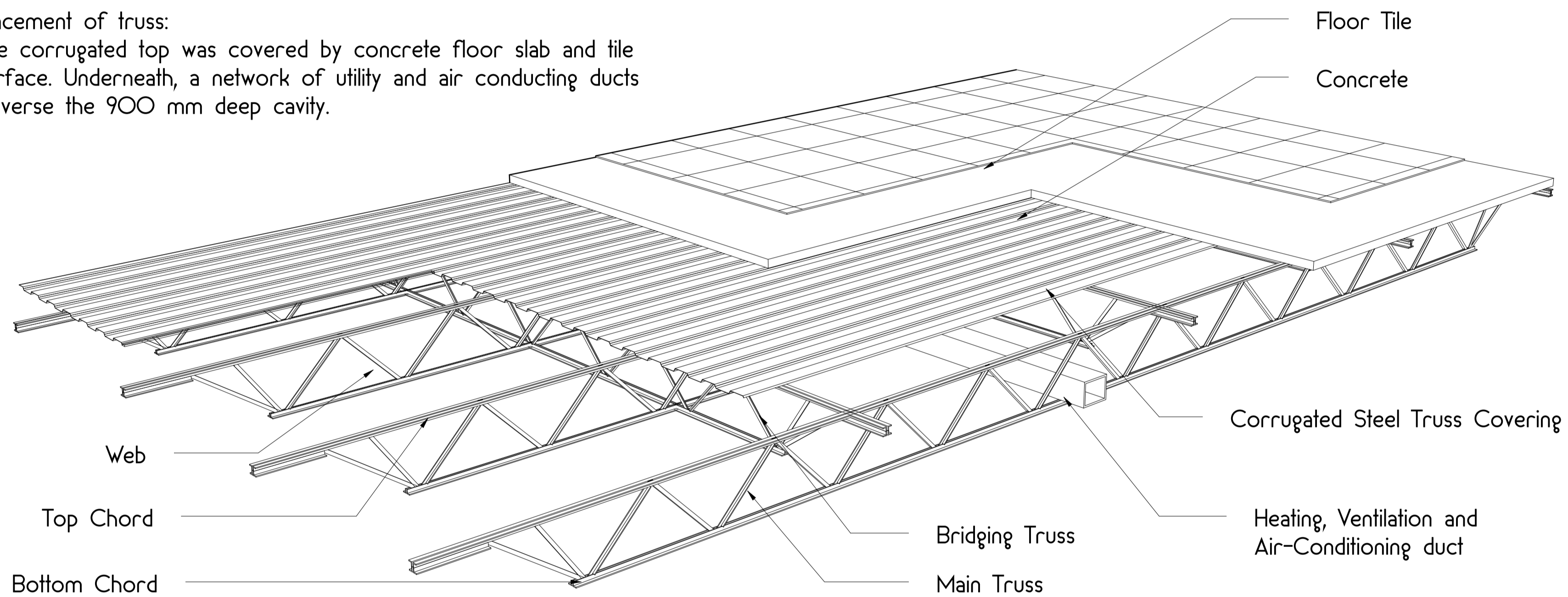
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AR-12.c
04/11/23

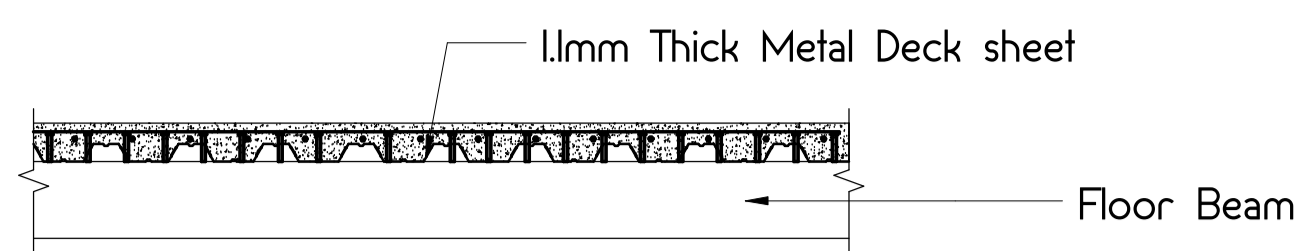


1 North Light Truss Blow-up Detail
1 : 25

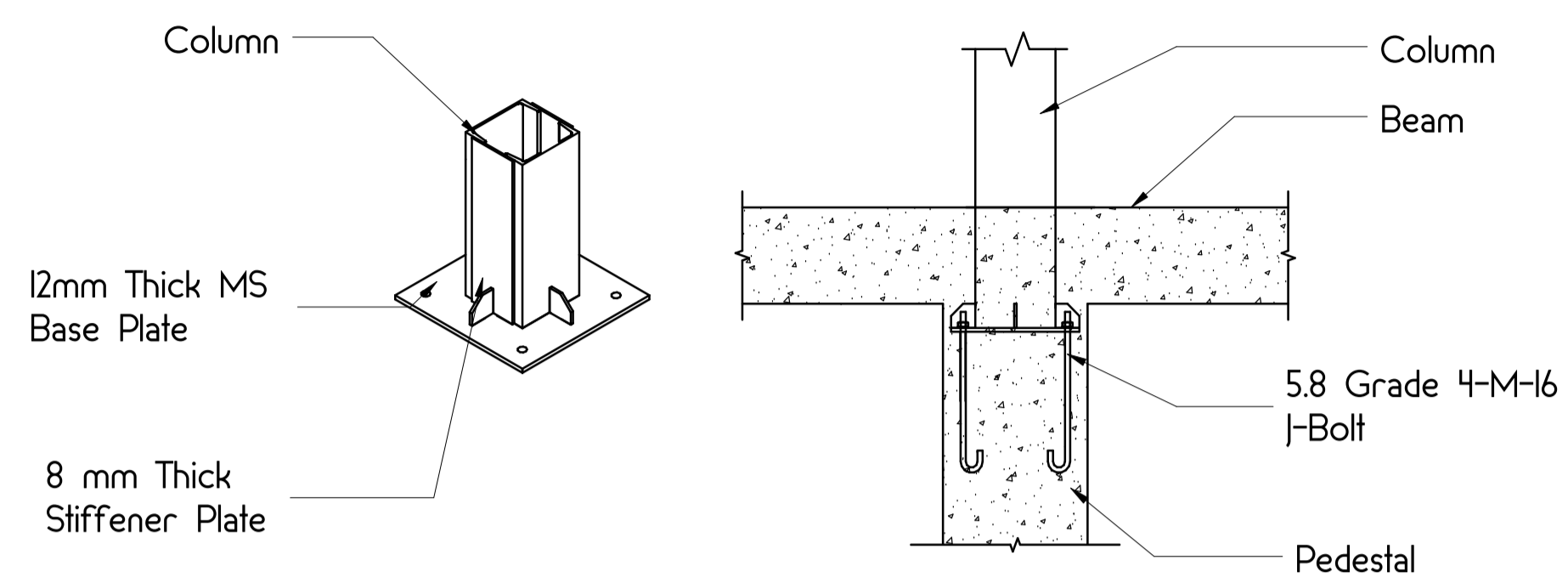
Placement of truss:
The corrugated top was covered by concrete floor slab and tile surface. Underneath, a network of utility and air conducting ducts traverse the 900 mm deep cavity.



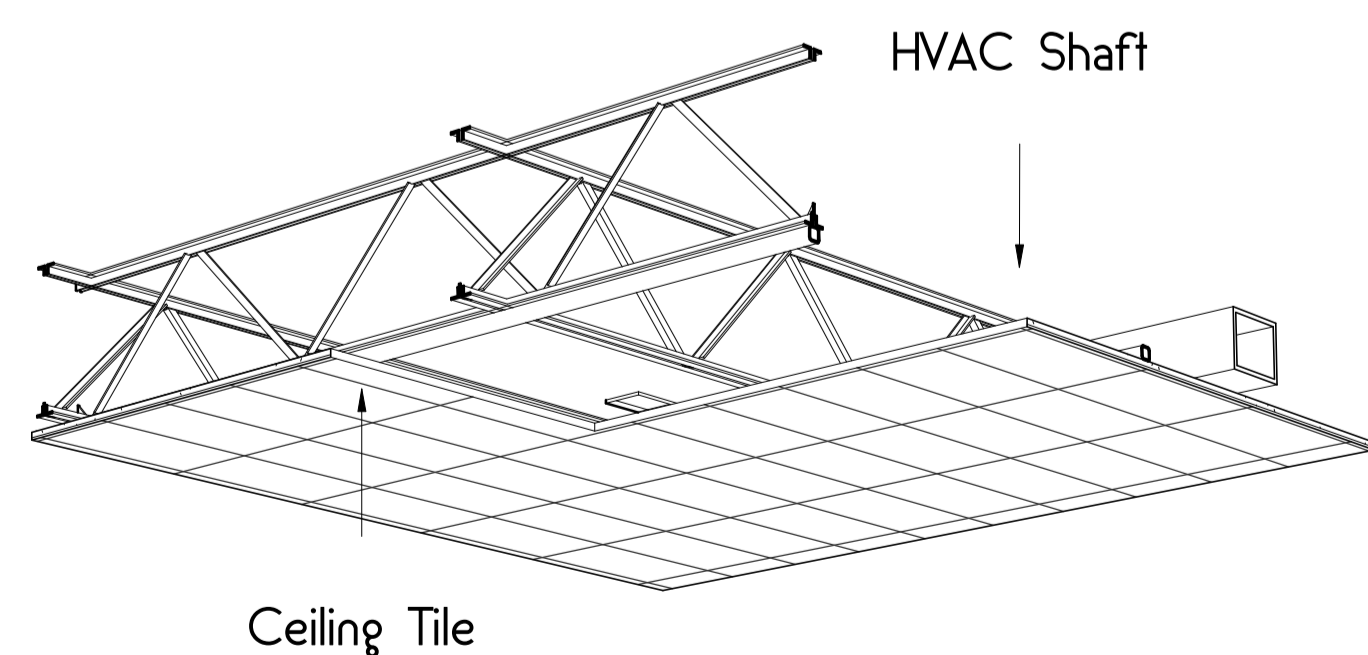
4 Truss Roof Detail



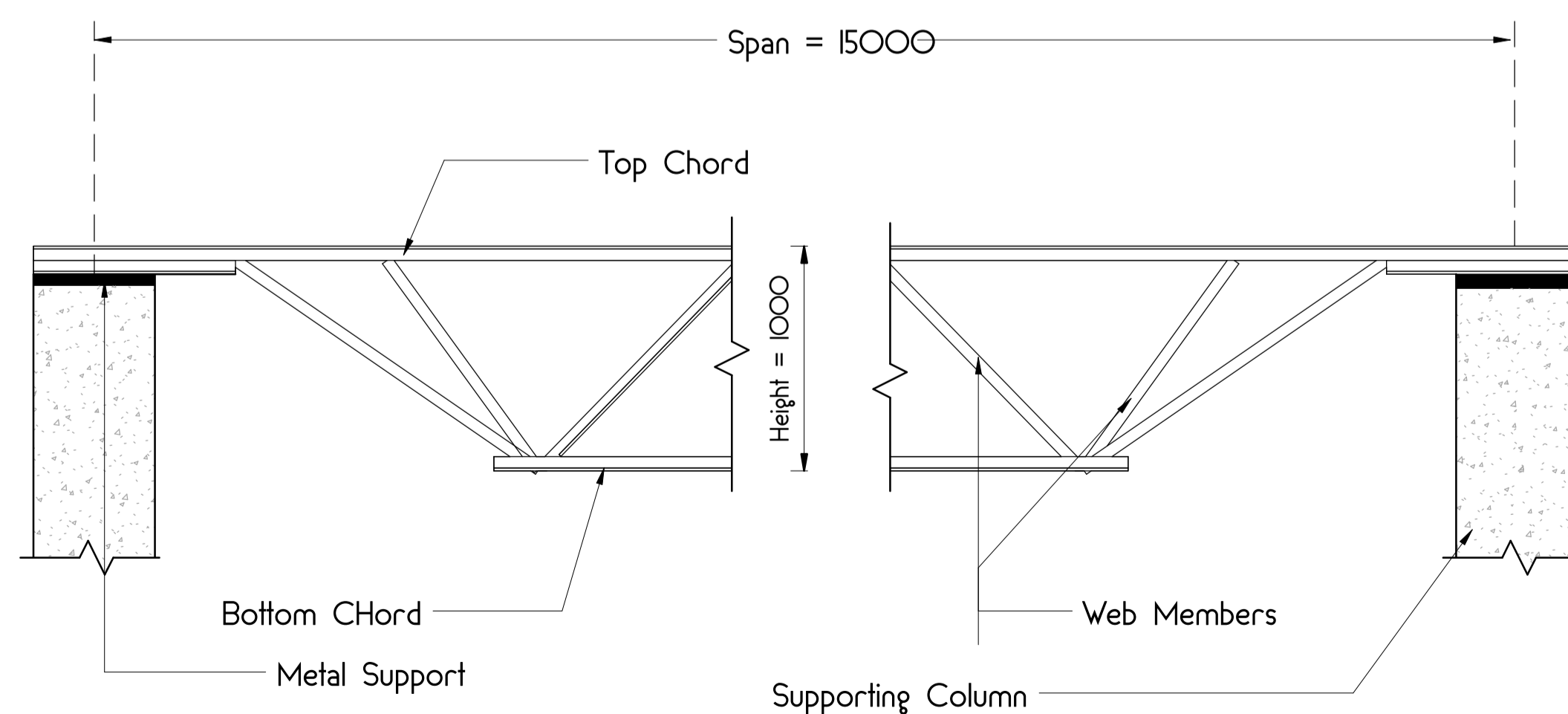
2 Typical Metal Deck Flooring Detail
1 : 20



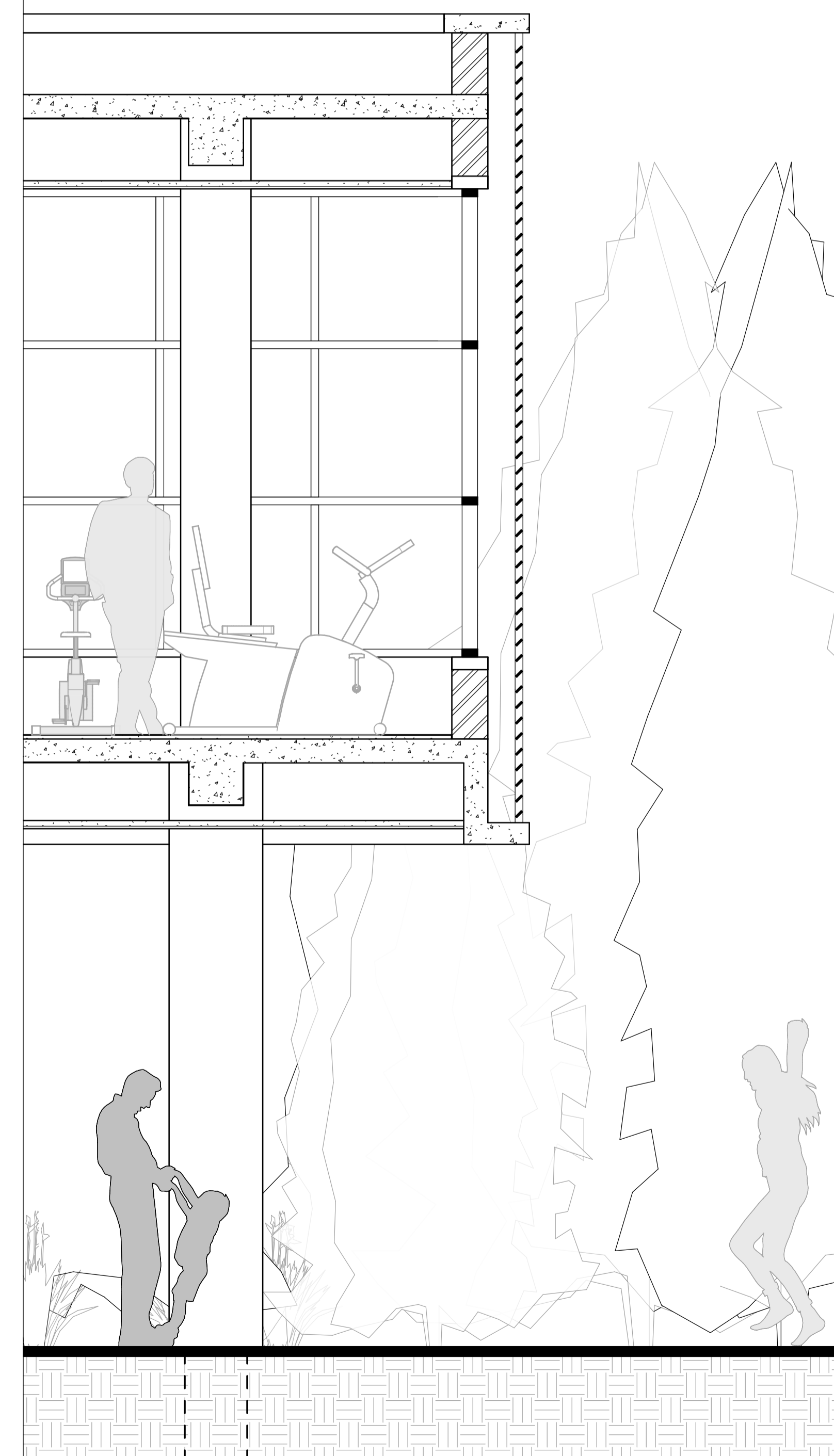
3 Typical Connection Detail
1 : 20



5 Ceiling Detail



6 Open Web Joist
1 : 25



7 Screening Detail
1 : 25

