

INCLUSIVE PUBLIC LIBRARY

A THESIS

Submitted in partial fulfillment of the requirements for the award of
Bachelor of Architecture degree

By

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**DEPARTMENT OF ARCHITECTURE
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SATHYABAMA

**INSTITUTE OF SCIENCE AND TECHNOLOGY
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With Grade "A" by NAAC

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NOVEMBER 2021



DEPARTMENT OF ARCHITECTURE

BONAFIDE CERTIFICATE

This is to certify that this Thesis Report is the bonafide work of Arijeet Deb Roy who carried out the Thesis entitled "Inclusive Public Library" under our supervision from July 2021 to November 2021.

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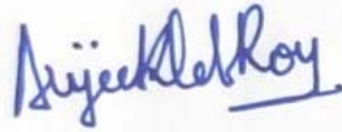
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DECLARATION

I, **Arijeet Deb Roy** hereby declare that the Thesis Report entitled “**Inclusive PublicLibrary**” done by me under the guidance of **Ar. Shankar. V**(Internal Guide), **Ar.SuryaRajkumar**(Internal Review Member) and **Ar. Ar. Kishore Panikkar** (ExternalGuide)SathyabamaInstituteofScienceandTechnologyissubmitted in partialfulfillment of the requirements for the award of Bachelor ofArchitecture Degree.



DATE:06.12.2021

PLACE: Chennai

SIGNATUREOFTHECANDIDATE

ACKNOWLEDGEMENT

I am pleased to acknowledge my sincere thanks to the Board of Management of **Sathyabama Institute of Science and Technology** for their kind encouragement in doing this Thesis and for completing it successfully. I am grateful to them.

I convey my thanks to **Dr. Devyani Gangopadhyay**, Dean and Head of the Department, School of Building and Environment, Our Design Chair **Dr. Suresh Kuppaswamy**, Thesis coordinator **Ar. Surya Rajkumar** for providing me necessary support and details at the right time during the progressive reviews.

I would like to express my sincere and deep sense of gratitude to my Thesis Internal guide **Ar. Shankar. V** Internal Review member **Ar. Surya Rajkumar** and External Guide **Ar. Kishore Panikkar** their guidance, suggestions, and constant encouragement paved the way for the successful completion of my Thesis work.

I wish to express my thanks to all Teaching and Non-teaching staff members of the **Department of Architecture** who were helpful in many ways for the completion of the Thesis.

Arijeet Deb Roy

THESSYNOPSIS

Inclusive design aims to remove the barriers that create separation in an environment. It enables everyone to engage equally, independently, and comfortably in everyday activities. A good design should aim to reflect the diversity of the users and not impose barriers of any kind.

Public spaces are the heart of an urban neighborhood. They need to reflect the diverse culture and encourage people to live together effortlessly in harmony. These spaces provide opportunities for interactions and the exchange of ideas between people. If we are successful in creating inclusive public spaces, it will have a positive influence on the urban neighborhood.

My Thesis is to design an Inclusive Public Library in Madurai in which the users feel a sense of belonging to the space and ensuring they gain knowledge and opportunities from different sources.

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CHAPTERONE

INTRODUCTION

CHAPTER1

INTRODUCTION

1.1 INTRODUCTION

Public libraries are a resource that is available for the public and instead of a specialized collection they house a varied range of resources to serve different people. Instead of referencing, they encourage lending and loaning practices. Since they are public institutions, they play an active role in community engagement and serve as public spaces.

1.2 INCLUSIVE DESIGN

Recent studies show that there has been a significant increase in the disability rate and aging population of the society. This has a great impact on the interactions of the current generation with their built environment. Hence integrating Inclusive design into a space ensures equal participation of everyone and avoids discrimination within the society.

A space can be said to be inclusive if it is accessible to everyone without any boundaries. The space should provide a sense of comfort and attachment to the user.



Figure1.1

It is important to understand the needs of the different users to design a space that can be inclusive.

1.3 NEED FOR A PUBLIC LIBRARY IN THIS MODERN AGE

One of the most essential functions is access to resources for all regardless of any disabilities, caste, class, or gender.

A multifunctional approach to a library design can be successful in creating an experience, which helps in understanding and absorption of knowledge. It can provide a conducive learning environment.

By integrating co-working spaces and gathering venues, public libraries can encourage interaction and exchange of ideas which will in turn help in creating a sense of community among people.

Libraries can serve as active public spaces—garnering social, cultural, and educational facilities to the general public regardless of where they come from.

1.3 AIM

- To design an inclusive public library with multiple functions by dedicating spaces for learning, interaction, experience, and performance.

1.4 OBJECTIVES

- Create interactive spaces to encourage active engagement and provide a platform for sharing knowledge.
- An inclusive design strategy to encourage greater participation by the people.
- Adopt passive design strategies to ensure less energy consumption of the building.
- Create awareness of the rich cultural heritage of Madura by providing spaces for display which can foster a sense of belonging towards the space.

CHAPTERTWO

METHODOLOGY

CHAPTER2

METHODOLOGY

The methodology can be divided into five stages. Data collection is the first stage which includes the collection of data based on my interests to identify a suitable topic.

After selecting a topic, data has been collected from publications like research papers, books, articles, and blogs.

The second stage includes the identification of relevant case studies. The data from the case studies are analyzed and compared based on different factors to gain a better understanding of the project.

The third stage is the study of site and standards. A suitable site is identified and data on norms specific to the site and project are collected. The site and its features are thoroughly studied to gain knowledge on the pros and cons of the site.

The fourth stage is the collection of data specific to people in Madurai using Survey. This helped to frame a suitable program for the people in Madurai.

The final stage is the design stage. Since this is a live project, the program list had been provided by the Public Works Department. But, after the collection of data from the survey, a few additional spaces were added to the program based on the needs and requirements of people in Madurai. After this, based on the program, site features, and site context an appropriate library is designed while ensuring the aim and objectives of the project are accomplished.

CHAPTER THREE

LITERATURE STUDY

CHAPTER3

LITERATURESTUDY

3.1 CASESTUDY1:SEATTLECENTRALLIBRARY

Architects: LMN, OMA

Location: Seattle, Washington, USA

ProjectArea: 38,300sqm

Site area: 6000 sqm (1.48Acres)

No.offloors: 11



Figure 3.1

TheSeattleCentralLibraryredefinesthelibraryasaninstitutionnolongerexclusively dedicated to the book, but as an information store where all potent forms of media— new and old—are presented equally and legibly.

In an age where information can be accessed anywhere, it is the simultaneity of all media and, more importantly, the curatorship of their content that will make the library vital.

Each platform is a programmatic cluster that is architecturally defined and equipped for maximum, dedicated performance. Because each platform is designed for a unique purpose, its size, flexibility, circulation, palette, structure, and MEP vary.

The spaces in between the platforms function as trading floors where librarians inform and stimulate, where the interface between the different platforms is organized—spaces for work, interaction, and play.

Program: Library (33,700 sqm), Auditorium (275 seater), Learning centre, Meeting rooms, Multimedia lab, Kids zone, Cafe, Admin office.

Zoning Analysis:

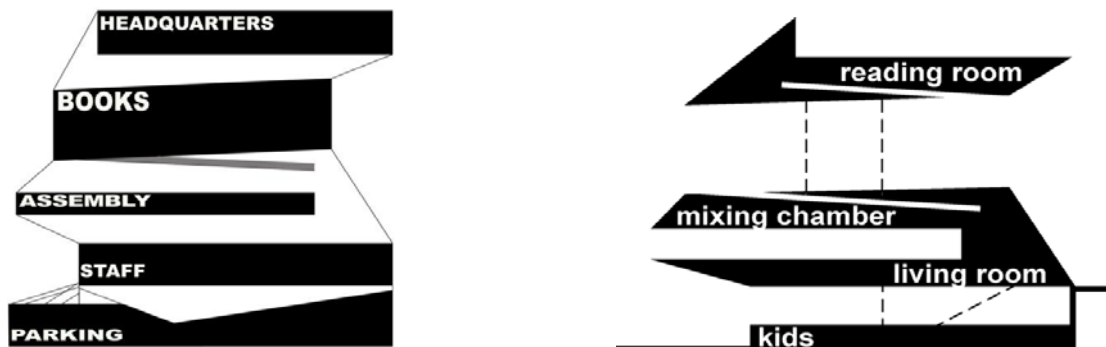


Figure 3.2

The first operation was to “comb” and consolidate the library’s apparently ungovernable proliferation of programs and media. By combining like with like, programmatic clusters were identified: five of stability and four of instability.

The five stable spaces are the traditional spaces assigned to a library and the four unstable spaces are the non-traditional programs.

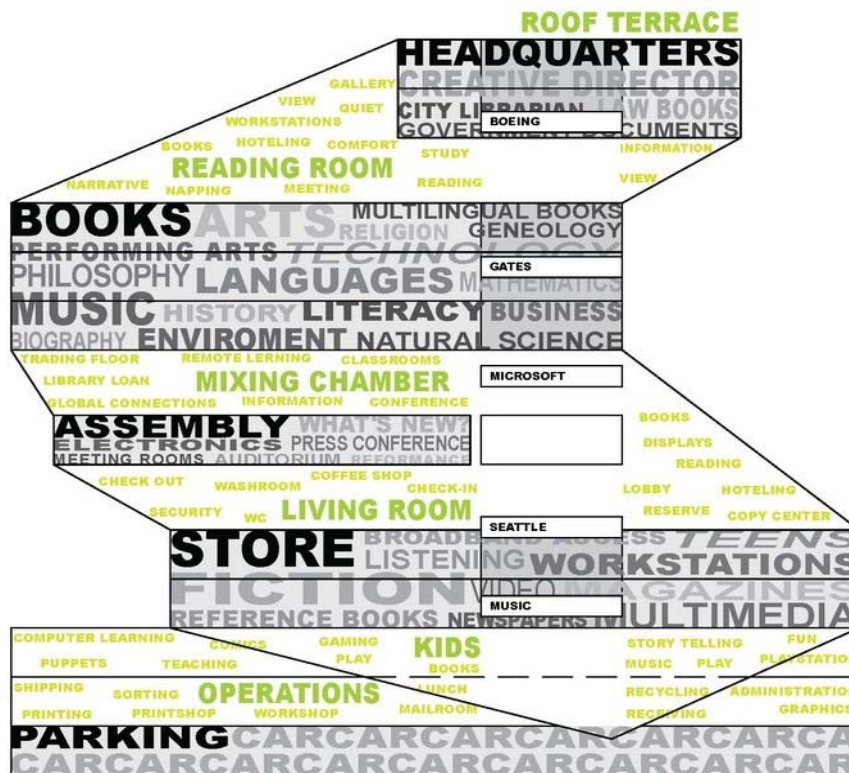


Figure 3.3

These unstable spaces are intertwined in between stable spaces creating an interactive environment between the two contrasting spaces. Public, Semi-Public, and Private zoning are clearly defined and the vertical alignment of spaces from most noisy to least noisy can be observed in the sections.

Spaces:

The interior is divided into 5 distinguishable blocks from the outside: the parking area, public reading area, and café deployed in the large atrium and main library space, area information, collections, and reading rooms, and administration, all of them culminating in a terrace on the roof.

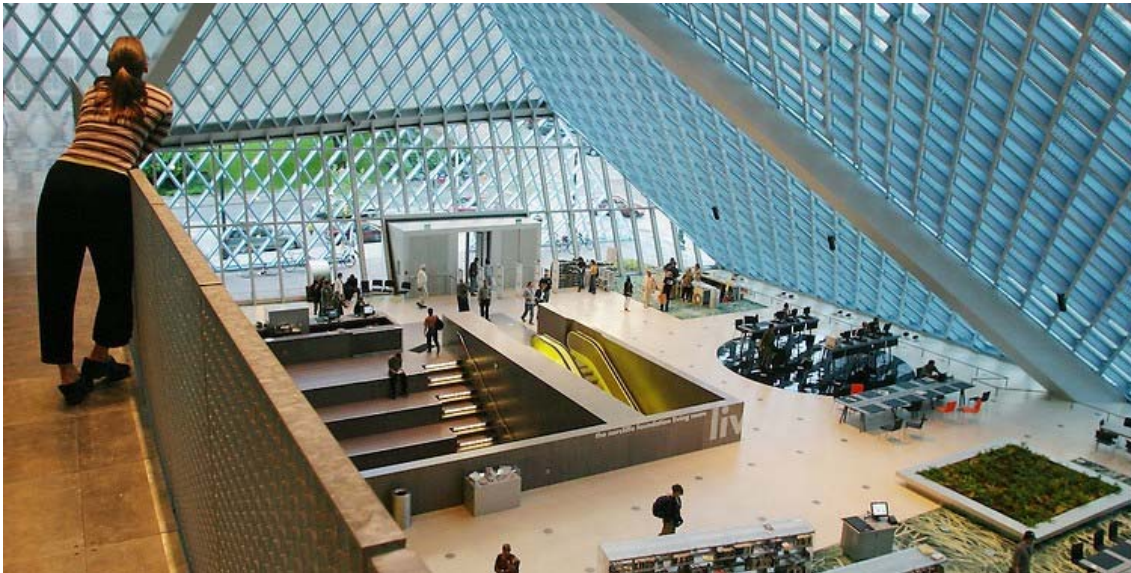


Figure 3.4

The third floor of the library is called the “living room”. The main feature of the interior is its large public spaces and leisure reading, illuminated with natural light coming through the glass walls. Also, noteworthy plant collections, consisting of a ramp that goes over 4 floors. All areas bind with brightly colored escalators (except collections), and the furniture and objects are modern and colorful design.



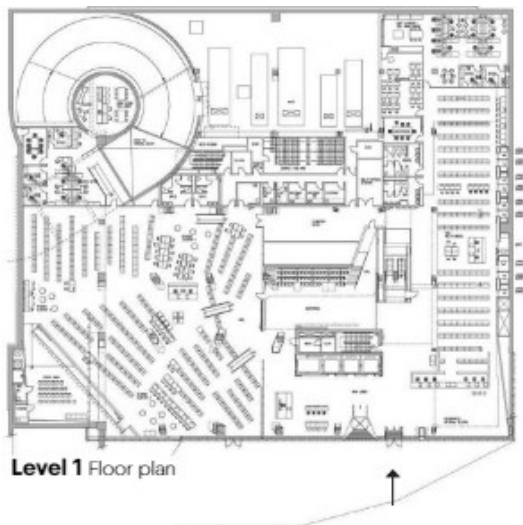
Figure 3.5



Figure 3.6

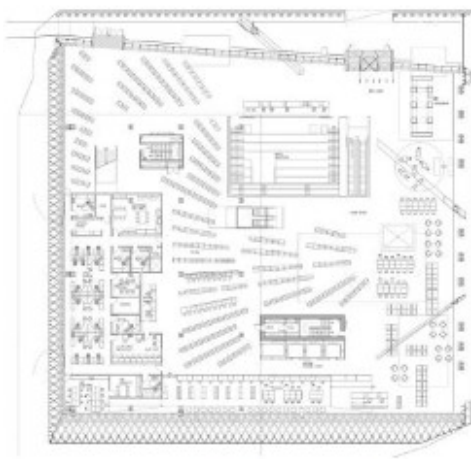
The library provides a “meeting level” with curved walls painted red and a children’s area with playful inclined columns. Shelves have panels in extreme indicators that help in the organization.

Floor Plans:

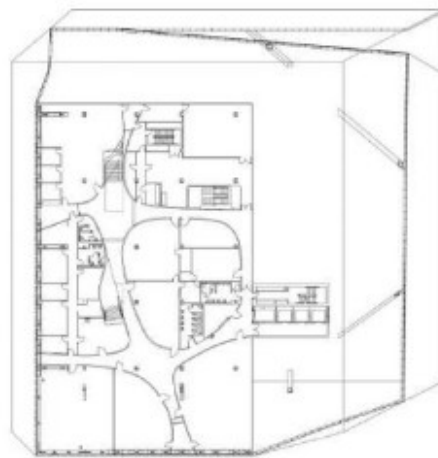


Level 1: Accessible via Fourth Avenue at this level is the large hall of 1200m² public computer section, a front desk, public phones, and playground.

Level 2: Level 2 is for staff and is not open to the public. From this level the sending, receiving, sorting and technical services of books and collections are performed.



Level3FloorPlan

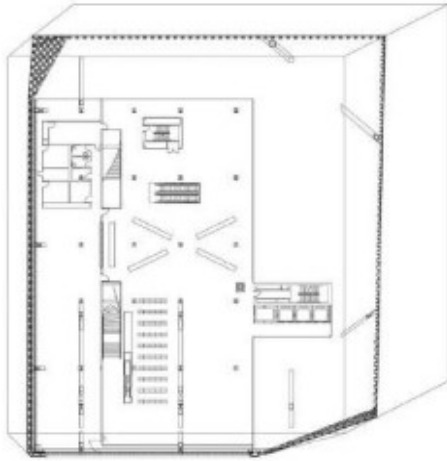


Level4FloorPlan

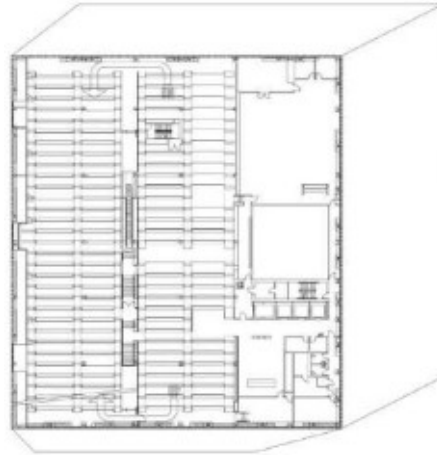
Level 3: The living area of this level is called the “living room”, and includes areas of reading or meditation. It is a spacious and airy space, with a maximum height of 15m. In this plant, also found the receipt or delivery of books, gift shop, cafe, collection of videos and DVD collections, new books, magazines, and popular newspapers and public payphones.

Level 4: Level 4 has four large meeting rooms. The hallway walls, floors, and ceiling are painted in deep shades of red and pink while meeting in appealing colors and neutral tones like brown and gray. Two laboratories Technology Training

CentresBoening are used for public and personal computer instruction.



Level 6 Floor Plan

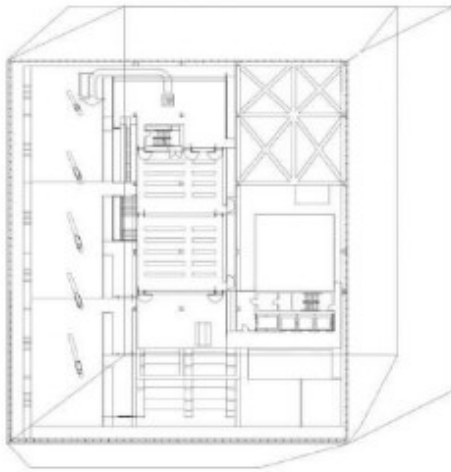


Level 5 Floor Plan

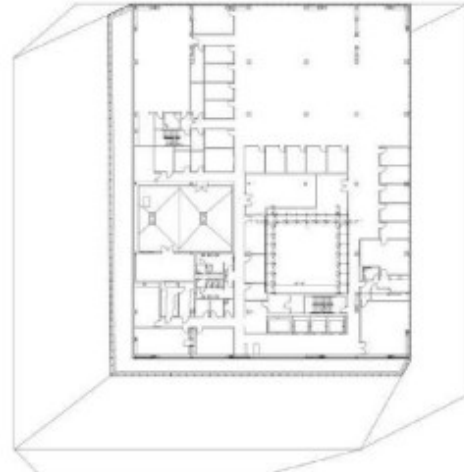
Level 5: A House Mixes, 1811.61 m², visitors flock to for help in general and research issues. In this plant, the largest computer lab, the Employment Resource Centre, workbooks and study, scanners, and public review documents are located tax, Legrady Installation Art, "Making the invisible visible " and study tables.

Level 6 to 9: Occupying the 4 levels of shelves, " spiral books " are connected by gentle ramps. The spiral allows all customers, including people with disabilities, to move along the entire collection without relying on escalators or elevator stairs.

Level 10: The atrium which rises in level 4 light fills the room 1114.84m² Betty Jane Narver Reading, with 400 seats, a roof 12.19m high, and overlooking Elliott Bay. The Hugh and Jane Ferguson Seattle Room rooms are also on this level overlooking the reading room. It is accessed via an escalator or elevator.



Level11FloorPlan



Level10FloorPlan

Level 11: Level 11 has administrative offices, including the office of the City Librarian, Virginia Burnside Board Room, Human Resources, and the staff cafeteria.

Materials:

The building is covered by a striking glass and steel structure. Construction costs were lower than those of most new libraries constructed in major cities.



Figure 3.7



Figure 3.8

Designed taking into account the function and aesthetics, the building has incorporated many elements supporting sustainability, so it has been awarded the "Silver" Certification granted by the US Green Building Council, becoming one of the largest buildings in receiving certification for Leadership in Energy and Development.

There are aluminum floors that pay homage to Carl Andre's minimalist grid floors. The recycled wood pieces from the ends are chipped and stained in a variety of solid colors. Most carpets are made with metal wires directly to clean them with water. Then there are the homes in which concrete is poured covered with thick layers of colored polyurethane.

In the area dedicated to language learning, the 669m² floor is maple wood with decorative visual artist Ann Hamilton.

In its construction, the following materials were used:

- 18.400m³ of concrete
- rebar 2.050tn
- 4.644tn Steel Outdoor
- 9,994 pieces of glass exterior curtain 126.767m².

In addition to the asymmetries and color, Koolhaas makes terrific use of concrete. Huge slabs of reinforced concrete, with small cracks binding and flooded with tonal variation, seem to draw a kind of geological time

Structural System:

First System

In the first system, the platform perimeter truss, comprising a multistory profound support gravity loads of the building.

The trusses are supported by inclined columns and carefully positioned to increase opportunities counterweight, cantilevered platforms 1.32 m

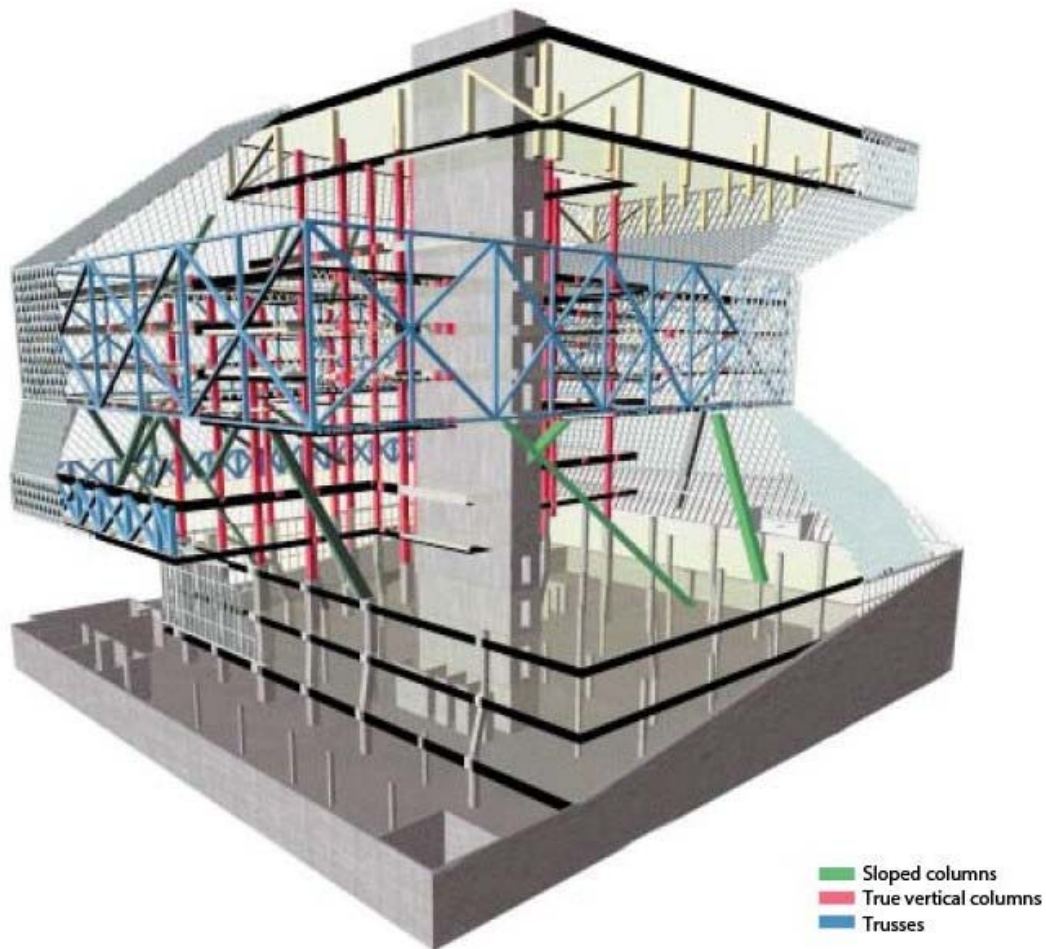


Figure 3.9

Second System

In the second system, the grid of diamond-shaped steel, the building form the exoskeleton. Steel grid provides the lateral system of the building, roof trusses interconnected platforms serve as architectural interior finish, and supports the glass covering curtain construction.

Connects specially designed sliding laterally attached to the steel grid reinforcement of the platforms. The connections of both structural systems fused while preventing the transfer of gravity loads to the steel grille. The system maintains the thin grid without fire protection, and most importantly, with the desired aesthetic. Models were made full-scale connections, molded in 3-D, to test and verify the results.

Inference:

- Integration of traditional and non-traditional spaces in a library through vertical zoning.
- Use of natural light in the interior to reduce the energy consumption of the structure.
- Variation in size, MEP, flexibility, plan according to the use of spaces on each floor.

3.2 CASESTUDY2:ANNACENTENARYLIBRARY

Location:Kotturpuram,Chennai,TamilNadu

LandArea:8Acres

Built-upArea:34,838sqm(8.6Acres)

Floor Details: 8 Floors

Construction Period: 2 years

Seating: 1250 person at a time



Figure 3.10

Anna Centenary Library is the second-largest library in SouthAsia.

The Foundation stone of the Library was laid on August 16th, 2008 by former ChiefMinister Dr.Karunanidhi in memory of former CM Annadurai commonly known asAnna who is very much fond of Books and Education.

The Library is being built up with 8 Floors with various sections catering to different classes of people with a huge collection of books from various authors and publications and a few of the available rare books being contributed by famous well-known personalities.

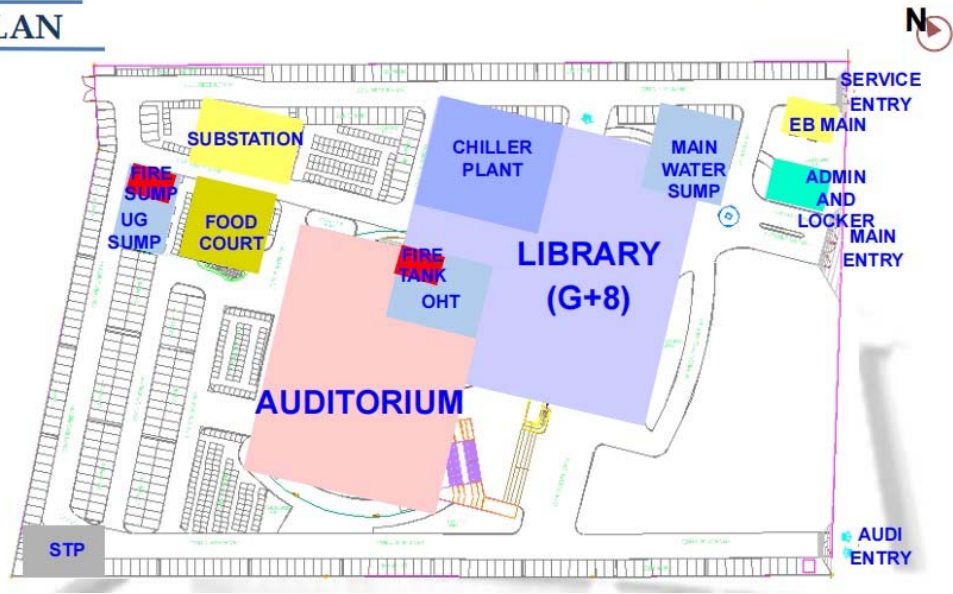
The Library is also being supported with ample parking facility with separate Entry and Exit gates for both 2 and 4 wheelers.

The Library has been certified as a Gold Certified Green Building developed with gardens, fountains, and trees around the compound of the Library to have a good feel towards the nature of its environment.

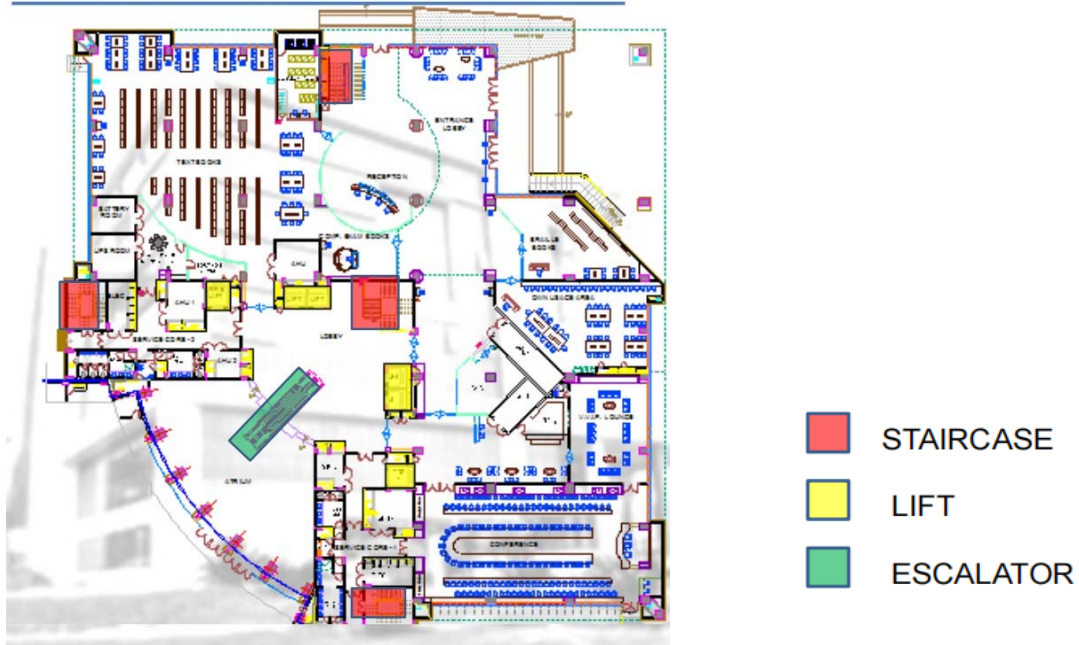


Figure 3.11

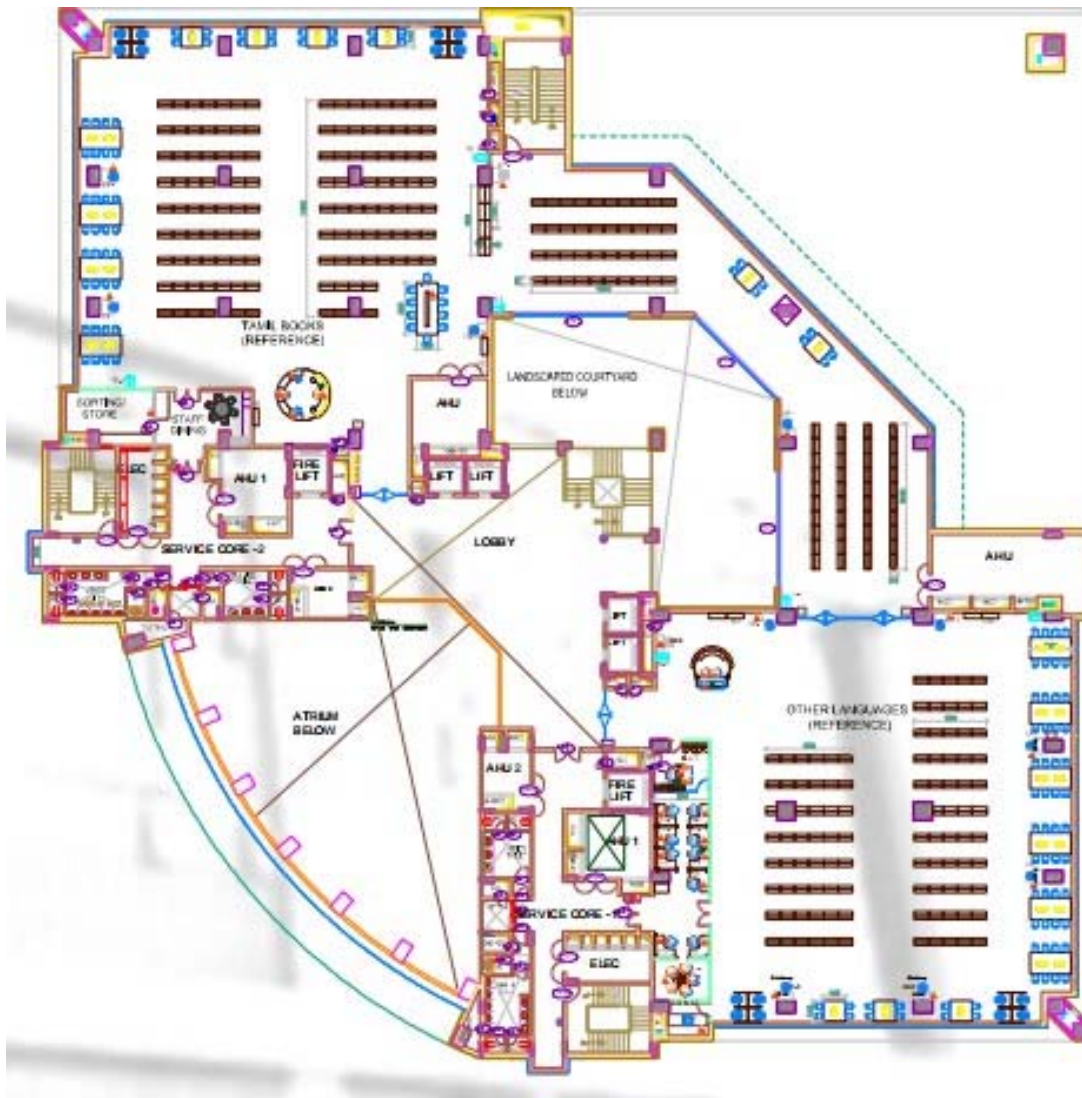
SITE PLAN



VERTICAL TRANSPORTATION LAYOUT



Typical Floor Plan:



Program:

Parking, Fully Automated Library, Braille Section, Competitive Exam Section, Exclusive Kids Sections, Auditorium, Amphitheater, Conference Hall, Coffee Lounge, Proposed Food Court

Passive design features:

- Building shape and form (optimizing surface to volume ratios)
- Appropriate orientation and integrated shading devices achieving
- Maximum daylight penetration with minimum heating loss.

Reading areas facing

North and East directions are located next to

- Structurally glazed facades. Along the Southwest direction (where heat gain is highest) are located
- Thermal buffer zones of service cores
- Roof overhangs, Pergolas, Metal louvers provide distinct architectural
- Features creating an identity for the complex, while cutting off heat and glare.
- Landscaped terraces reduce the heat island effect.

Active design features:

- Efficient Air conditioning system
- Lighting fixtures with daylight and motion sensors
- Sensor-based sanitary fixtures
- Intelligent building management system
- Wastewater recycling system
- Building materials with low embodied energy like Flyash blocks, PPC cement, Solar
- Efficient glass, Low VOC Paints and chemicals, Recycled Carpets



Figure 3.12

Barrier-Free Environment:

- Ramp bridging between the formed level and plinth level.
- Ramp in the atrium bridging the lobby and cafeteria.
- Zero level difference between the corridor and sections, toilet areas.
- Provision of 2 nos of Toilet for Differently abled in each floor.
- Sliding Door in the toilet for easy access.
- SS railings in the Toilet and lifts.

Spaces:



Figure 3.13



Figure 3.14

Ground Floor: The Ground Floor is provided with a Reception, Waiting Hall, BrailleSection, Own Book Reading section, Competitive Exam Section, and ConferenceHall with Lifts, Escalators, Restrooms, and Cafeteria. The Ground Floor is separatedbyAand B wings.

First Floor: The First floor is separated by 2 wings. Wing A is provided with aperiodical section and wing B is provided with Kids Section. The periodic section isprovided with a huge collection of journals, magazines with different volumes, andauthors.



Figure 3.15

Second Floor: This section is commonly known as Tamil Books Section and it is being specially designed for readers who are interested in the Tamil language and desire to learn Tamil. In this section, you can find a huge collection of Tamil books, Tamil Novels, Tamil Stories, and different Celebrities Biographies.

Third Floor: This section is called the English Books Section and is separated by 2 wings. Wing A is being provided with Computer Science, Philosophy, Psychology, Religious and Sociology types of books and this section is specially designed for Students, Researchers, and Teachers for their references and if necessary this section may ask for proof of Id card or Authorization Letter from the respective Institutions.



Figure 3.16



Figure 3.17

Fourth Floor: This floor is separated by 2 wings. A wing caters to Public Administration, Criminology, Criminal Justice, Education, Economics, and Law. The B wing caters to English Literature, Etiquette, Body Language, Languages.

Fifth Floor: This floor is divided into 2 separate sections and caters to various sets of books like Natural Sciences, Mathematics, Astronomy, Physics, Chemistry, Earth Science, Paleontology, Biology, Medicine and Health, Botany, and Zoology. This section is mainly accessed by Science students and Medical students.

Sixth Floor: This floor is divided into 2 wings and A-wing caters with books like Engineering, Agriculture, Veterinary Science, Home, and Family Management, Business Management and Accounting and B wing caters to Advertising, Chemical Engineering, Bio-Tech, Food Tech, Manufacturing, Textiles, Buildings, Fine arts, and decorations, Civic and Landscape art, Architecture, Plastic art, and sculptures, Drawing and decorations, Painting, Graphic Arts, Printmaking and prints, Photography, Music, Recreational and performing arts. As this section is more subject oriented it is being accessed by Students, Teachers, and Researchers.

Seventh Floor: This floor is provided with History and Geography oriented Books.

Eighth Floor: This floor is highly restricted as it is only used for Administration and used by various staff of the Library.

Green Features:



Figure 3.18

- The top 20 cm soil during excavation is protected and used for landscape applications.
- The extensive landscape is provided to an area of 6361 Sq.m. to address the heat island effect.
- The project is provided with 341 numbers of car parking spaces, in which 18 car spaces have been earmarked for car/ vanpool spaces.
- 11 number 15 amp sockets have been provided in the parking lot to encourage the use of electric vehicles.
- Adequate rainwater harvesting structures (rainwater sump and percolation pits) of capacity 780 m³ are provided, which ensures good rainwater harvesting and an increase in the groundwater table.
- A collection well/ sand filter is provided at the lowest point of the site, which helps to remove the sediments from storm runoff moving out of the site.
- To reduce the heat ingress into the building, the library terrace area is painted with high albedo paints, and a green roof is provided to the Auditorium terrace and Library terrace level at 1st, 2nd, and 3rd floor.

Inference:

- The vertical zoning of the library is based on the noise levels. The noise levels keep decreasing as we move upwards in the building.
- Active and Passive design features are provided to reduce building energy consumption.
- All basic facilities are provided for physically disabled people to create a barrier-free environment.

3.3 CASESTUDY3:SENDAIMEDIATHEQUE

Architects: Toyo Ito and

Associates**Location:** Kasuga

Machi, Sendai**ProjectArea:** 21,680

sqm



Figure 3.19

With the intention of designing a library in the form of a transparent cultural media center that is supported by a unique system to allow complete visibility and transparency to the surrounding community, the Sendai Mediatheque by Toyo Ito is revolutionary in its engineering and aesthetic.

Program: Media Library, Cafe, Library, Public Art Gallery, Studio, Cinema, Offices, Meeting rooms.

Upon approaching the Sendai Mediatheque, the public is led into a continuation of the surrounding city into the double-height hall of the main entrance through large panes of glass. This open square includes a cafe, retail shop, and community space that is capable of supporting film screenings and other events.

Concept:



Figure 3.20

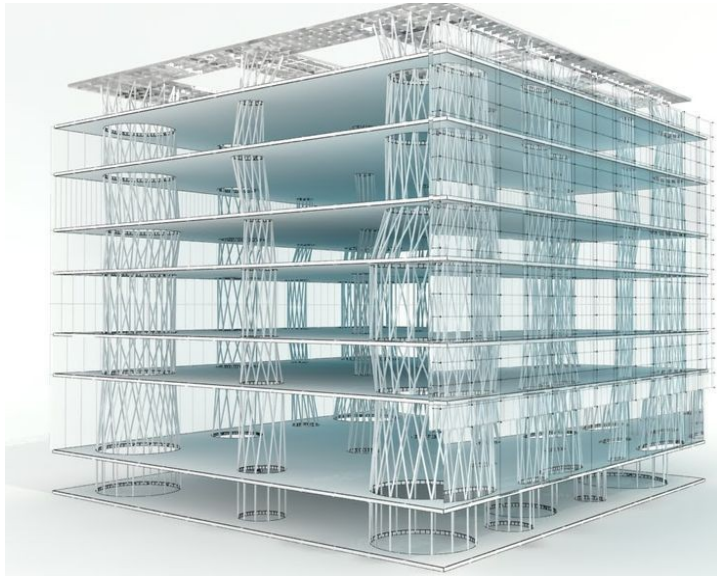
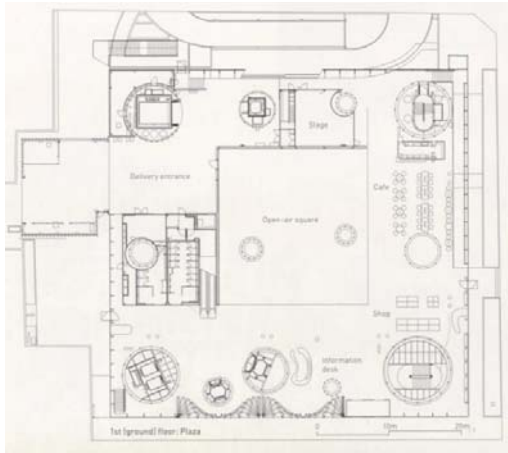


Figure 3.21

Set in Sendai, which is famous for its trees, the intention of the building was to create a free and open center.

The twisted organic tubes mimic the trees and also provide structural strength against earthquakes.

The Sendai Mediatheque is a mixed-program public facility that combines a library and an art gallery. It is located in the city of Sendai, Japan. The seven platforms are supported by what Ito calls "characterizing" architectural elements: a forest of 13 non-uniform tubes which appear to rise fluidly through the building.



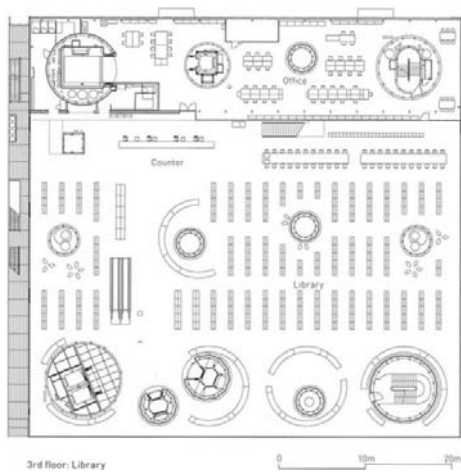
Level1FloorPlan



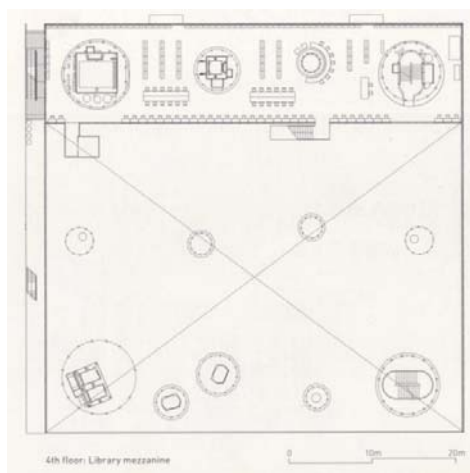
Level2FloorPlan

With the idea of providing free access to the media for everybody, there was a strong emphasis on transparent and egalitarian spaces. Positioning the cafe at ground level allows the building to remain active from 9:00AM to 10:00 PM.

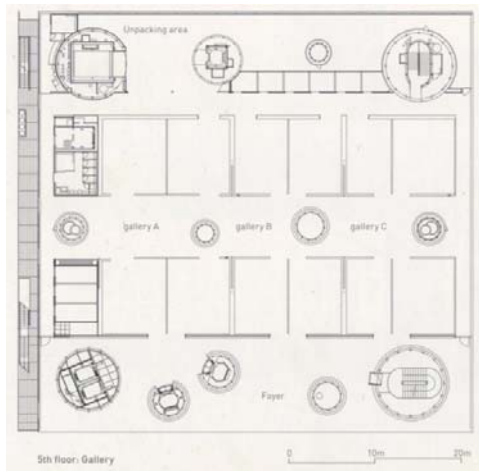
The Shimin Library found on the second and third levels includes a browsing lounge complete with internet access and specially designed furniture by K.T. Architecture.



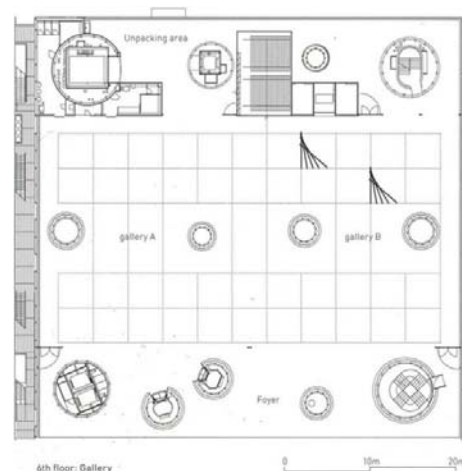
Level3FloorPlan



Level4FloorPlan



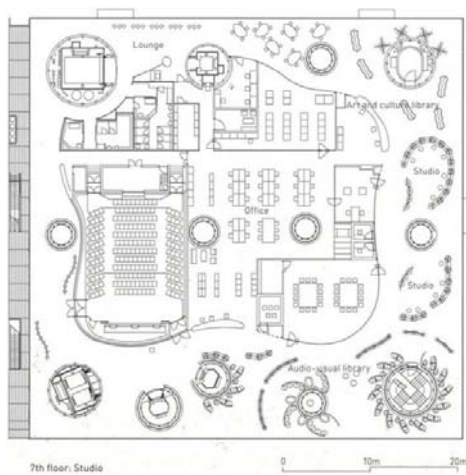
Level5FloorPlan



Level6FloorPlan

As one moves higher up the building, the walls start to disappear and reflect the thick foliage across the road. Due to the minimal structural supports required, most of the spaces remain flexible and open.

The gallery space of the fourth and fifth levels contains a flexible exhibition space with moveable walls, and also a more static space with fixed walls, and a rest area with seating.



Level7FloorPlan



Figure 3.22

The building changes along with the seasons, its openness reflective of the summergreenand also the streets duringwinter.

The North face is designed as a continuous glass facade. Transparent panels allowvisitors, even from the street, a chance to experience and explore deep inside thebuilding. Track lighting, movable furniture, and channels for movable wall partitions -further enhance the flexibility of spaces.

Structural System:

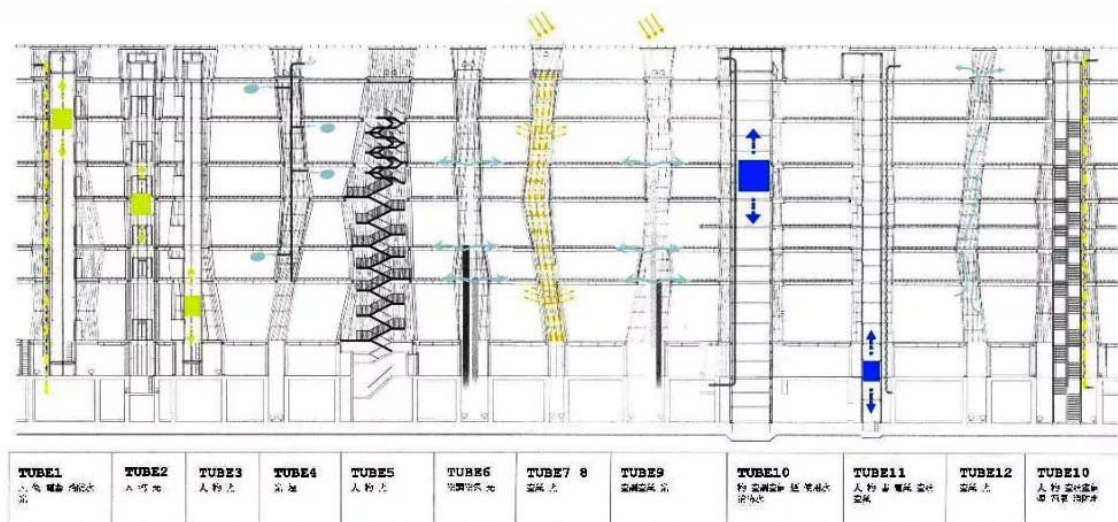


Figure 3.23

- Designed like a set of platforms and tubes. Minimal spaces are occupied in the building by the structural elements.
- The tubes are made out of metal rings, braced at various levels. This allows them to gain organic geometry and house many components like lifts, staircases, or simply as light shafts.

- The four largest tubes are situated at the corners of the plates, which serve as the principal means of support and bracing.
- Five of the nine small tubes are straight and contain elevators, while the other four are more crooked and carry the ducts and wires.



Figure 3.24

Inference:

- The importance given to transparent spaces is in the intention of providing free access to media for everyone.
- Organic structural tubes that support the structure and also enclose services providing dual function.
- The minimal support encourages more flexible and open spaces.

3.4 CASE STUDY 3: ARMAND CARDONA TORRANDELL LIBRARY, SPAIN

Efficient public spaces are redesigned for the comfort and inclusion of everyone including those with physical, sensory, cognitive, or developmental abilities. Any feature in a public space can be optimized to increase accessibility like color contrast applications to poles, bollards, and steps, tactile strips at crosswalks, accessible restrooms, and more. The public spaces shouldn't just follow the guidelines mentioned in the "Persons with Disabilities Act" but also ensure that everyone can feel comfortable in that space.



Figure 3.25

The Armand Cardona Torrandell Library, inaugurated on 11 April 2003, is in a comparatively recently constructed building covering 1,582m² over two floors.

Highly aware of groups of persons with disabilities, the library has invested in services, activities, and collections adapted to needs regarding reading and access to information since its inauguration in 2003.

Some of the improvements in accessibility carried out so far include window signs, an induction loop, activities leaflets in varying formats, activities for groups with disabilities, and reading support materials.

In early 2017, an induction loop was installed in the meeting room for people with hearing disabilities who use hearing aids or a cochlear implant.

Inclusive Design:

Special activities for groups of people with disabilities have been developed and include:

- A book club for people with intellectual/vision disabilities. With regular meetings in the library.
- Activities on normalized disability.
- Family reading and writing workshop in Braille given by a blind person.
- Story-telling in sign language and signing classes for babies aged 0 to 2.
- Story-telling interpreted in sign language.
- Author's presentations of books featuring main characters with disabilities.



Figure 3.26



Figure 3.27

Since the start of 2017, the Library has offered all users an activities leaflet adapted to easy reading, which uses a system of colors and icons to identify the type of activity and target the public, making the leaflet accessible to people with intellectual and cognitive disabilities.

Pictogram representation of content has been used and an audio format is available.

Reading support materials including a digital magnifying glass has been provided. Collections have been diversified with the acquisition of material suitable for easy reading. Large print, audiobooks, stories adapted for sign reading, easy reading, and pictographic language have been acquired.

CHAPTERFOUR

STANDARDS

CHAPTER4

STANDARDS

4.1 LOCATION

The proper location of a library will substantially influence the extent to which its services will be made use by the reading public. The location of a library should be such that it is conveniently accessible to those it is designed to serve.

The site selected for building should satisfy the following norms:

- a) Adequate separation (about 10m) should preferably be available between the building and the other neighboring buildings.
- b) The site shall not be in the immediate neighborhood of any hazardous occupancy.
- c) The site shall abut on a road of not less than 12m width. One end of the road shall join another road of the same width and the road shall not have a dead end.
- d) Adequate supply of water is assured for fire fighting purposes.
- e) A public fire brigade is within easy running distance from the site.

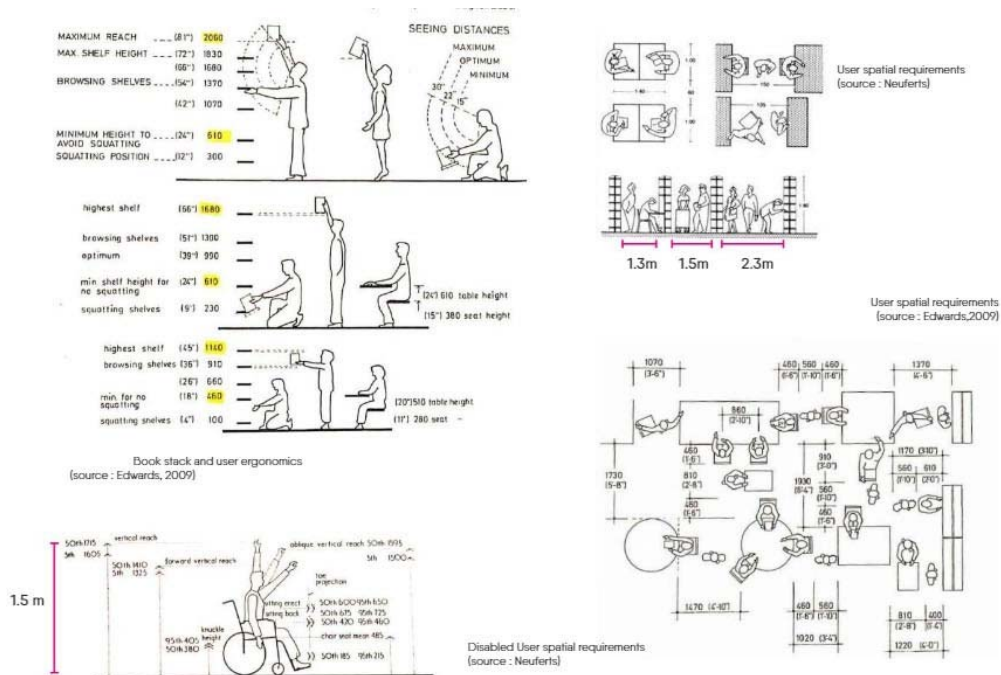
4.2 CIRCULATION

Each floor of the library building shall be at one single level to facilitate the movement of the book trolley from one part to another. Thresholds shall not be provided anywhere inside the building.

The movement of the book trolley from one tier to another where there are three or more tiers in the stack room should be through electric lifts provided within the stackroom with landing at every tier of the stack room and at other connected adjacent rooms.

In large libraries where quick mechanical carriage of books and related materials are required, special arrangements, such as pneumatic tubes and belt conveyors may become necessary. This may require to be considered at the initial stages of the design of the library and its building.

The rooms shall be arranged in such a way that the staff other than those servicing the reading room shall not have to pass through the reading room disturbing the readers.



4.3 DESIGNCONSIDERATIONS

Exhibition hall

The Exhibition Spaces are intended as a combination of indoor and open-air exhibition space in order to create a strong relation between covered and green open spaces through thematic content.

The goal is to create an integrated expositive landscape and a Visitor Experience that immediately establishes a positive relationship between humankind and nature, creating a bridge between the content of the Event and the nature of exhibition spaces.

OPEN-AIR EXHIBITION SPACE

Like architecture, the landscape shall also help to tell intriguing stories about the pleasures of the table, delightful scents or strange and curious stories related to food cultivation and processing.

The landscape has to document the most advanced research in the field of food production and the transformation of agricultural products.

Countries will showcase their capabilities in food production, the biodiversity of their products, and their agricultural and food supply chains.

Open spaces

- # A minimum of 30% of each lot must be dedicated to open areas and greenery. Excluding lot setbacks the Open-air Exhibition Space represents around 50% of each lot, where it is possible to build:
- # Structures used for plants ensuring soil permeability (e.g. trellises, pergolas, garden structures, planters).
- # Landscaping structure (e.g. structures used to retain soil or other materials, pools, exhibition structures, art works).

COVERED EXHIBITION SPACE

Covered Exhibition Spaces are buildings or enclosed structures containing exhibition areas or other spaces, including all overhanging upper floors or balconies.

Participants may decide to build more than one level within the Covered part of the Exhibition Space, based on their individual needs.

Height of Buildings

- The height of the Covered part of Exhibition Space (or Building Height) must be less than 12 meters.
- The height limit for any additional architectural elements (such as skylights, roof elements, vertical connections to the roof, sunscreens, signals, etc.) is 17 meters.

Building Setbacks

- The setback from the main boulevard must be no less than 10 meters, in order to create a small square.
- The distance between buildings and the side street shall be no less than 2 meters; there shall be no building concession directly to squares, greens, streets or public spaces, without the 2 meters' setback.
- The setback from the neighboring lot shall be no less than 3 meters.
- The distance between buildings shall comply with fire control requirements.

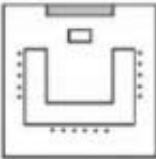
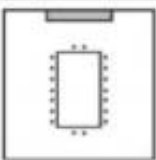
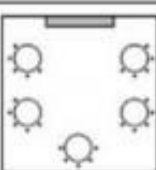
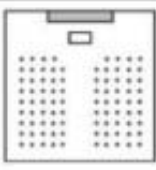
Indoor exhibition and Flow management

The indoor exhibition space design has to offer to visitors a full immersion in the Theme on the human scale with content presented at every moment of the visit. The visitor should be guided on a discovery of the exhibition content using the most innovative technology. The challenge lies in getting beyond the outdated paradigm of queues and visitor flows to create an efficient, dynamic and fluid experience

4.3. Conference Rooms

A conference hall or conference room is a room provided for singular events such as business conferences and meetings. Sometimes other rooms are modified for large conferences such as arenas or concert halls. Conference rooms can be windowless for security purposes.

4.3.1.Types of seating

	Type	Description	Layout
1.	U shaped	- Seating around three sides of the room. - It is good for presentations from front. - Presentation space in the middle of the room. - Can be used for up to 50 persons. - Per seat area is 3.25m².	
2.	Boardroom style	- Centrally located table. - Classic layout ideal for debate and discussion. - Seating capacity 5-30 persons. - Per seat area is 3.71 m².	
3.	Cabaret style	- All delegates facing front-center on round tables. - Large space in the middle of the room. - Ideal for small-group work. - Per seat area is 1.57m².	
4.	Theater style	- Used for product launches, presentations, displays. - Used to present to large numbers of delegates. - Can be used for 100-250 persons. - Per seat area is 0.83 m².	

4.3.2. Space standards

Consideration must be given to clearances and circulation around the larger conference table, as indicated in the adjoining figure.

Type	Dimension
A	1210-1520
B	100-150
C	510-610
D	150-255
E	460-610
F	790-910

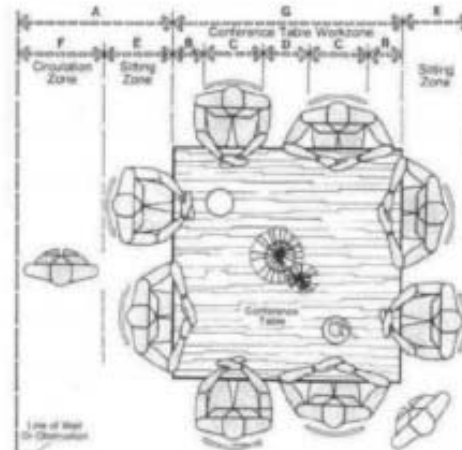


Figure 22: Seating standards for a conference table

4.4. Exhibition Galleries:

An Exhibition is an organized presentation and display of a selection of items. In practice, exhibitions usually occur within museums, galleries and exhibition halls, and World's Fairs. Exhibitions can include many things such as art in both major museums and smaller galleries, interpretive exhibitions, natural history museums and history museums, and also varieties such as more commercially focused exhibitions and trade fairs.

4.4.1. General Planning

The relationships between functions are common to all museums and art galleries. Figure 23 shows collection item movements in the operation of collection services, but note that not every operation necessarily requires a separate space, and some services may be provided by outside agencies.

As far as possible, collection movement and public circulation should be kept separate. Figure 24 shows one approach to zoning and expansion based on this principle.

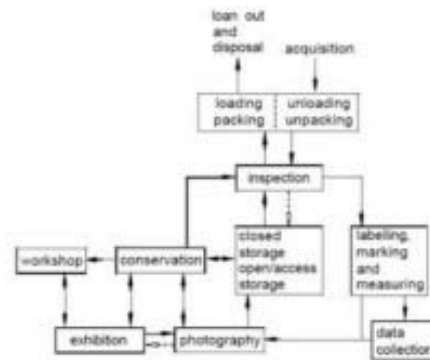


Figure 23: Flow diagram of collection item movements in the operation of collection services: exhibitions, conservation and collections management

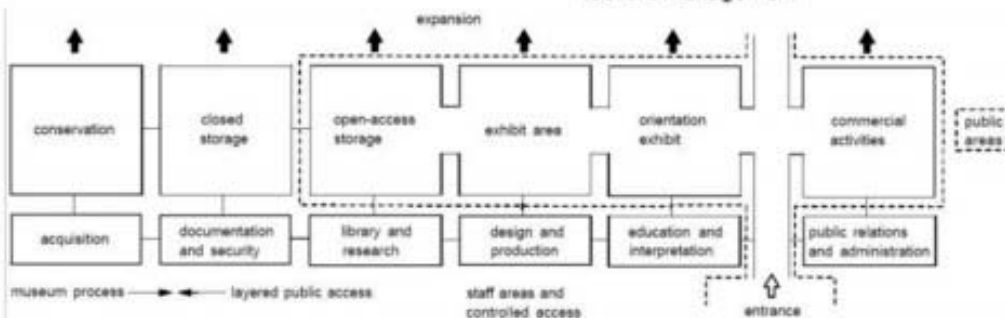


Figure 24: A layout concept showing a clear relationship between museum functions and an approach to zoning and expansion

4.4.2. Space Standards

a. Aisles:

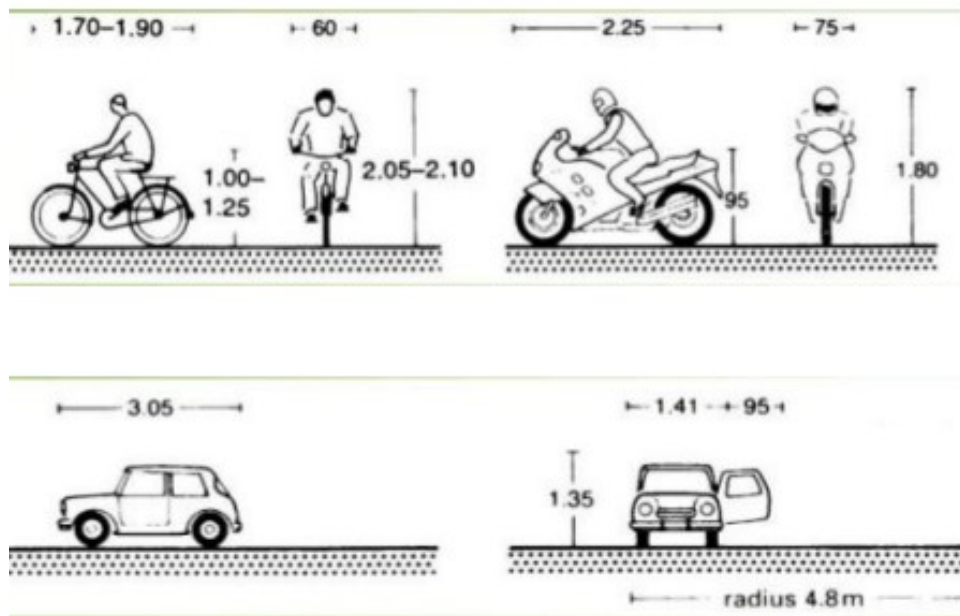
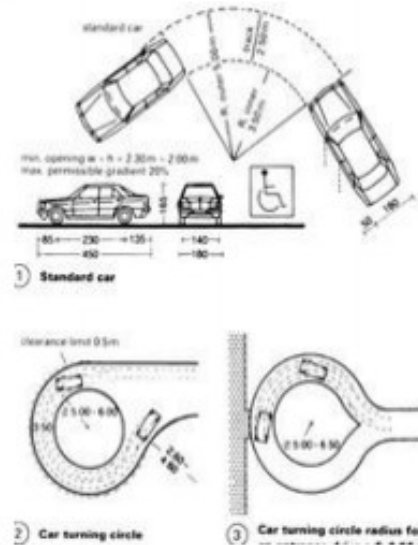
- Must be a minimum width of 3 meters.
- Must equal total width of existing exits.
- Must have 2 exits.
- Must have no dead ends.

b. Fire exits / Clearways:

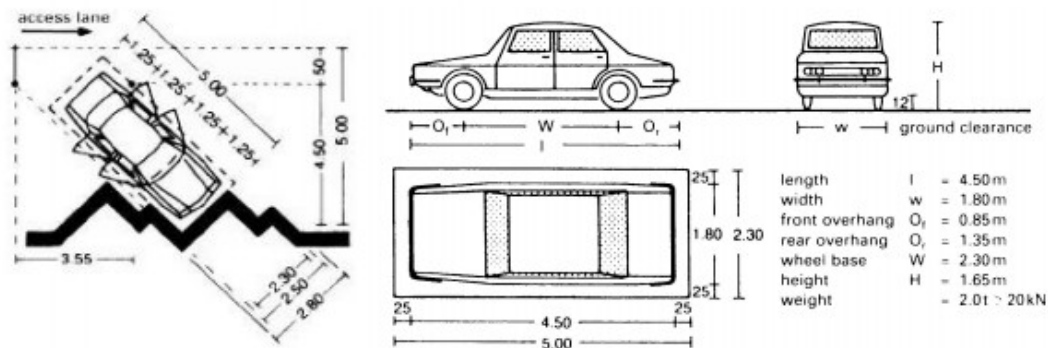
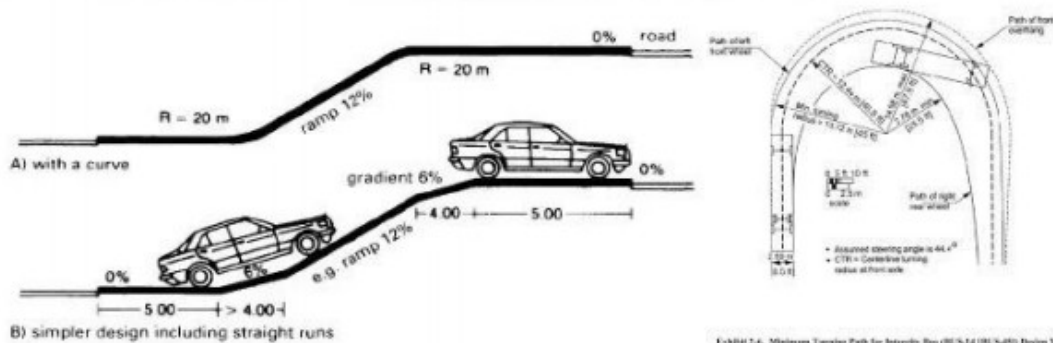
- Designated fire exits and clear ways cannot be encroached upon under any circumstance. Storage of materials or equipment in these areas is not permitted. It is the responsibility of the event organizer to ensure that stand holders comply with this requirement.

Parking:

- The parking spaces acts as a place for the ceremonies of arrival & departure.
- Parking can be done in various ways:
 - Inclined with various angles or perpendicular.
 - Parking can also be done in basement or on surface outside the complex.
 - surface parking requires less space than the basement parking due to absence of columns.
 - In case of basement parking, a relatively narrow column grid pattern can be used, with careful planning and design



type of vehicle	length (m)	width (m)	height (m)	turning circle radius (m)
motorcycle	2.20	0.70	1.00 ²³⁾	1.00
car				
- standard	4.70	1.75	1.50	5.75
- small	3.60	1.60	1.50	5.00
- large	5.00	1.90	1.50	6.00
truck				
- standard	6.00	2.10	2.20 ¹³⁾	6.10
- 7.5 t	7.00	2.50	2.40 ¹³⁾	7.00
- 16 t	8.00	2.50	3.00 ¹³⁾	8.00
- 22 t (+16 t trailer)	10.00	2.50	3.00 ¹³⁾	9.30
refuse collection vehicle				
- standard 2-axle vehicle (4 x 2)	7.64	2.50	3.30 ¹¹⁾	7.80
- standard 3-axle vehicle (6 x 2 or 6 x 4)	1.45	2.50	3.30 ¹¹⁾	9.25
fire engine	6.80	2.50	2.80 ¹¹⁾	9.25
furniture van	9.50	2.50	2.80 ¹¹⁾	9.25
(with trailer)	(18.00)			



CHAPTERFIVE

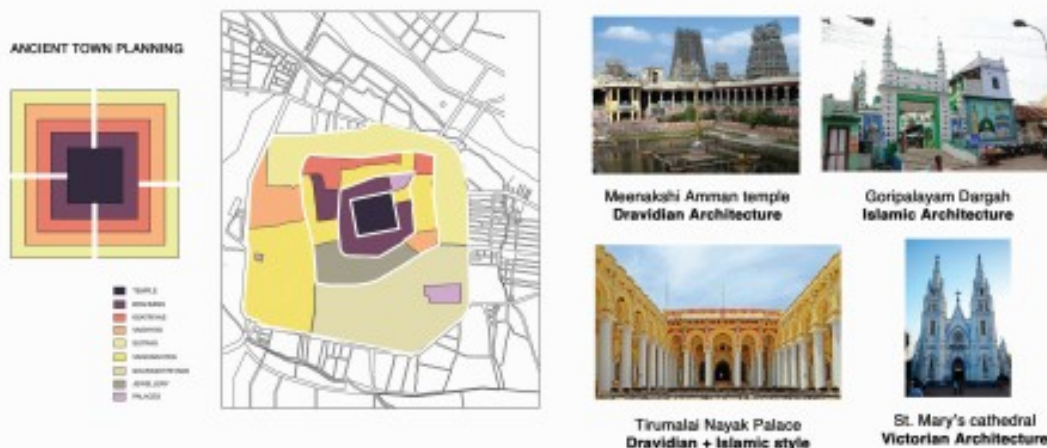
SITE

CHAPTER5

SITE

HISTORY:

Madurai is one of the major cities in Tamil Nadu which has been a cultural capital for two millennia. The natural determinant for the origin of settlement is River Vaigai which is one of the 17 river basins of Tamil Nadu. The old city is a planned settlement based on ancient town planning principles of Shilpasatra, as four concentric squares with Meenakshi Amman temple in the center. The planning is also based on caste and occupational hierarchy.



Madurai has rich cultural heritage and history, ruled at different times by Pandyas, Cholas, Madurai Sultanate, Vijayanagar Empire, Madurai Nayaks, Carnatic kingdom and then the British. This city is closely associated with Tamil literature. We could find their influence in the form of distinct architecture of each period. Dravidian architecture, Islamic architecture, Tirumalai Nayak palace – which is a combination of both Dravidian and Islamic style, and Victorian era architecture.

URBAN GROWTH AND EVOLUTION:

Older core city was a fortified settlement on the southern banks of river Vaigai, few scattered buildings and agricultural farm lands outside the fort area. After the 1900s, the city's growth started towards Northern part with the advent of the railways and other public services. The administration centre of the city also shifted to the Northern part as a decongestion measure. While the Northern part of the city provides administrative and civic services, the South city provides commercial and socio-cultural activities.

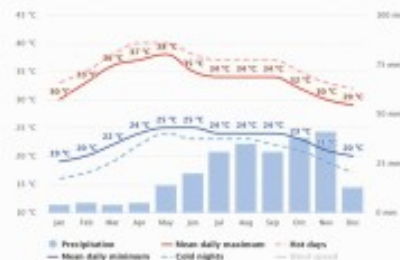


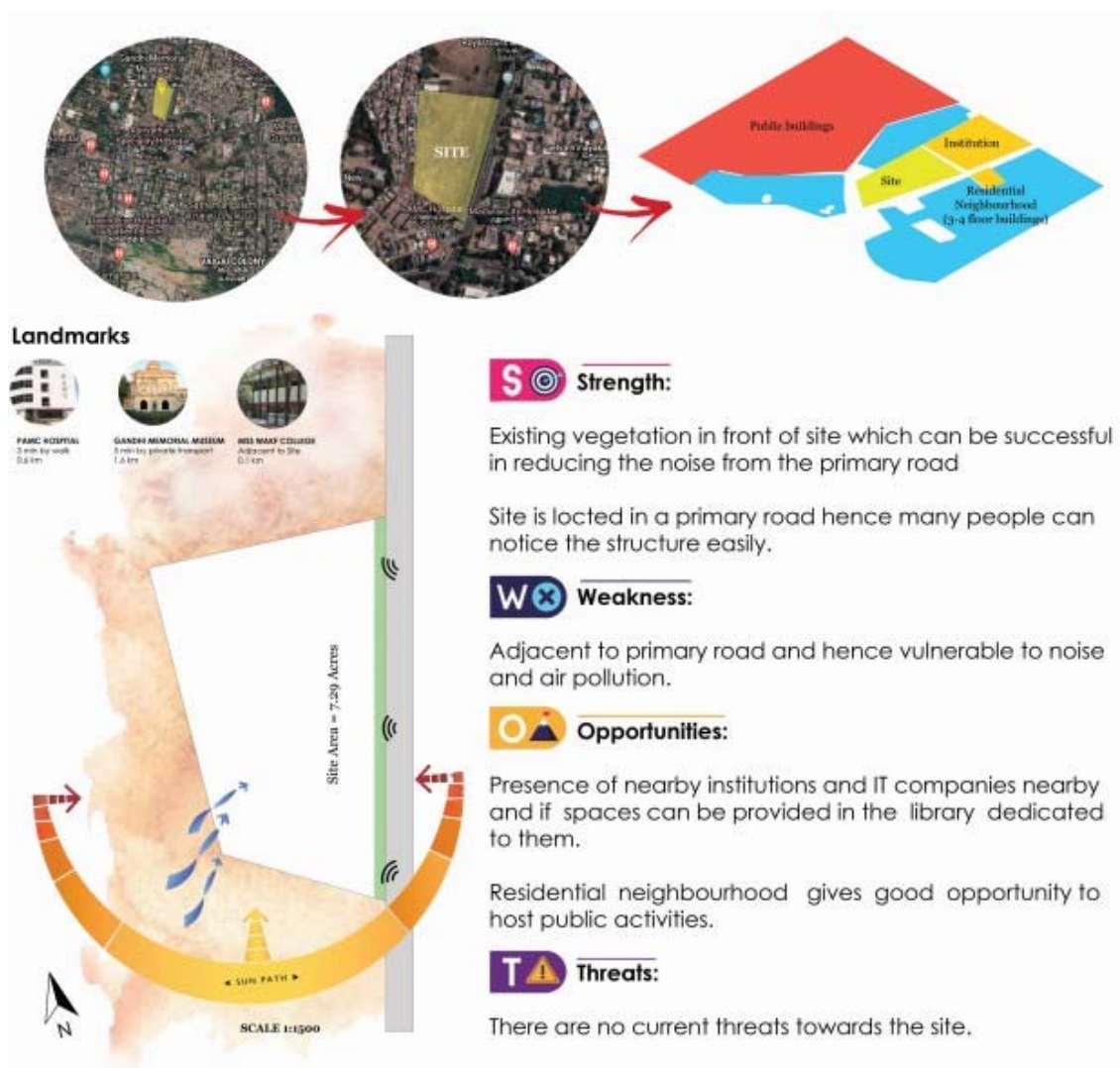
There is a distinct demarcation in the city as Old and New city, North and South city.

CLIMATE

The climate here is tropical. The summers are much rainier than the winters in Madurai. In Madurai, the average annual temperature is 28.2 °C | 82.7 °F.

In a year, the rainfall is 849 mm | 33.4 inch. The driest month is January, with 16 mm | 0.6 inch of rain. The greatest amount of precipitation occurs in October, with an average of 180 mm | 7.1 inch.





Wind Speed and Direction

Madurai in general has good wind speed throughout the year. In most number of days in a month the wind speed is higher than 12km/hr which is sufficient to bring in ventilation inside a structure using a wind tower.



The predominant wind direction is from SW to NE.

Transportation

The nearest bus stop is KK Nagar Bus Stop which is a 8 min walk from the Site. The Railway station is a 16 min drive from the Site. The Airport is at a distance of 5.2 km from site and it takes only 12 min to reach from the Site.

We can understand that the Site is nearly centrally located to major transport facilities. The traffic around the site ranges from less to moderate during a typical day. Hence the Site can be easily accessible by people in Madurai



CHAPTERSIX

CONCEPT

CHAPTER6

CONCEPT

Creating a place where community is given first priority

The important starting point in developing a concept for any public space is to identify the talents and assets within the community.



SILK WEAVING AT MADURAI



GOLD MAKING AT MADURAI



THIRUMALAI NAYAK PALACE

In any community there are traditions and people with historical perspectives, valuable insights into how the area functions, and an understanding of the critical issues and what is meaningful to people. Tapping this information at the beginning of the process will help to create a sense of community ownership in the project that can be of great benefit to both the project sponsor and the community.

Design for Differing abilities:

Efficient public spaces are designed for the comfort and inclusion of everyone including those with physical, sensory, or cognitive abilities.

Special activities for groups of people with disabilities have been evolving and include:



1. Book club for people with intellectual/vision disability. With regular meetings in the library.
2. Activities to normalize disability.
3. Family reading and writing workshop in Braille given by a blind person.
4. Story-telling interpreted in sign language.
5. Author's presentations of books featuring main characters with disability.

Spaces:

Design a **Vibrant Public Realm** and a **Socially Inclusive** built environment reflecting local context .



Culture - Integrate space that can help people connect with their culture.

Diversity - Creating a mix of uses and activities.

Interactive Environment - Integrate spaces inside library that encourage people to interact and share knowledge.

Design undisturbed Pedestrian network - Clear pedestrian network.

Open spaces - Interactive open spaces

Club Complementary Functions



Vertical Zoning



CHAPTERSEVEN

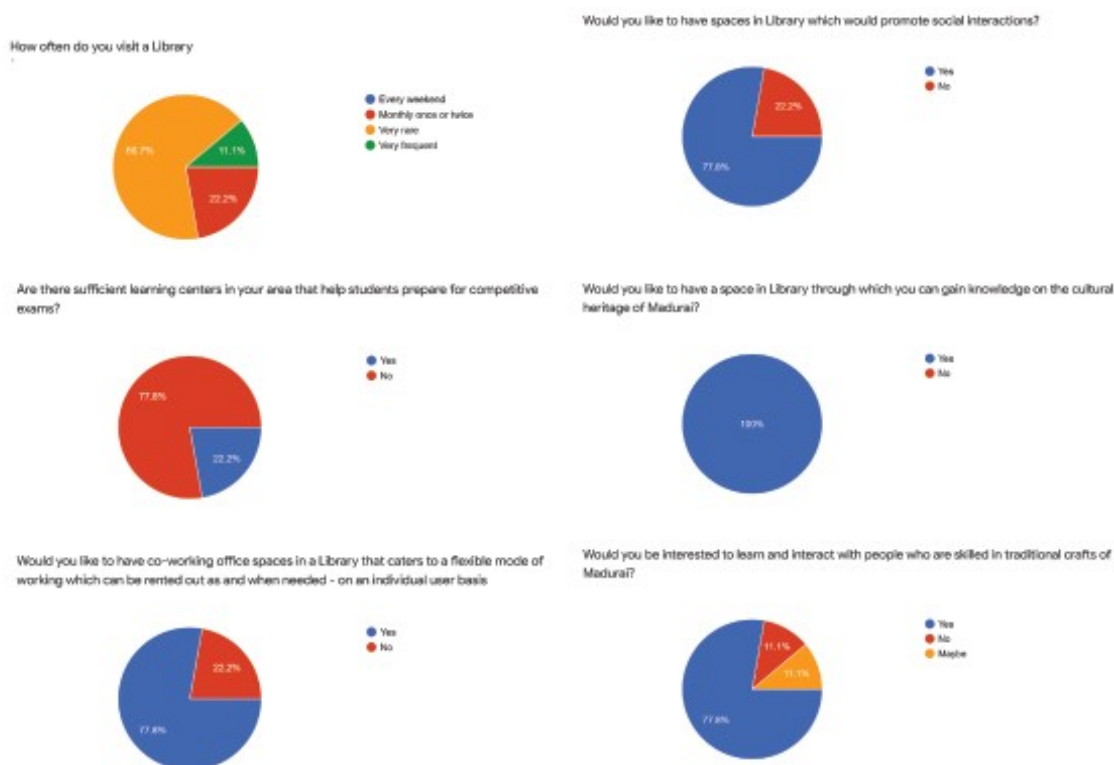
PROGRAMANDAREASTATEMENT

CHAPTER7

PROGRAMANDAREASTATEMENT

Survey Data

A survey was circulated amongst 27 known contacts in Madurai to collect data to confirm the understanding of program for the library. 66.7% of participants belonged to the age category of 36-55 and the other 33.3% of participants belonged to the age category of 15-35.



When asked about general problems faced in Madurai, a few responded saying public spaces were not properly organised and amenities like public parks were not in close proximity to their residence. Frequent power shortages were also mentioned as a problem. A few good suggestions by the participants for a space to be added to library include semi open spaces for reading and natural landscapes.

Area Statement

Spaces in Library	Per unit area	No. of units	Total area
Stack area	10 sqm (Per 1000 books)	500	5000 sqm
Area to access the collection	2.5 sqm (Per 1000 books)		1250 sqm
Reader seating space	0.75 sqm (Per seat)	120	900 sqm
Multimedia Resource centre	4.84 sqm (Per terminal)	30	145 sqm
		Total Area	7590 sqm
Spaces in Auditorium	Per unit area	No. of units	Total area
Pre function area	0.8 sqm (Per person)	400	320 sqm
Reception Area		1	50 sqm
Entrance Lobby		1	100 sqm
Seating Area	1.2 sqm (Per person)	400	480 sqm
Stage and Backstage			400 sqm
Green rooms	80 sqm	2	160 sqm
VIP rooms	30 sqm	2	60 sqm
		Total Area	1050 sqm
Learning and Coaching spaces	Per unit area	No. of units	Total area
Classrooms	100 sqm (40 students)	6	600 sqm
Lecture/Workshop halls	200 sqm	2	400 sqm
Careers area	100 sqm	1	100 sqm
		Total Area	1100 sqm
Event spaces	Per unit area	No. of units	Total area
Reception	50 sqm	1	50 sqm
Indoor Convention area	800 sqm sqm	1	800 sqm
Semi Outdoor Convention area	800 sqm	1	800 sqm
		Total Area	1650 sqm
Interactive Workspace	Per unit area	No. of units	Total area
Workstation area	3.7 sqm	100	370.5 sqm
Conference halls	50 sqm	3	150 sqm
Meeting rooms	25 sqm	3	75 sqm
Reception	20 sqm	3	60 sqm
Cafe	150 sqm	2	300 sqm
		Total Area	847.5 sqm
Exhibition space	Per unit area	No. of units	Total area
Permanent display area	600 sqm	2	1200 sqm
Temporary display area	500 sqm	3	1500 sqm
Retail area	150 sqm	1	150 sqm
		Total Area	2850 sqm

Suggested Program by Public Works Department:

Auditorium

Seminar Halls

Exhibition Halls

Lecture Rooms

Children Section

Self book reading areas

Reference Sections

Open Air Theatre

Canteen

Additional spaces to make Library more inclusive:

Interactive Co-Working space

Space for Physically Disabled

Event Space

Flexible Learning Spaces

Space for Workshops

CHAPTER EIGHT

SITE PLAN

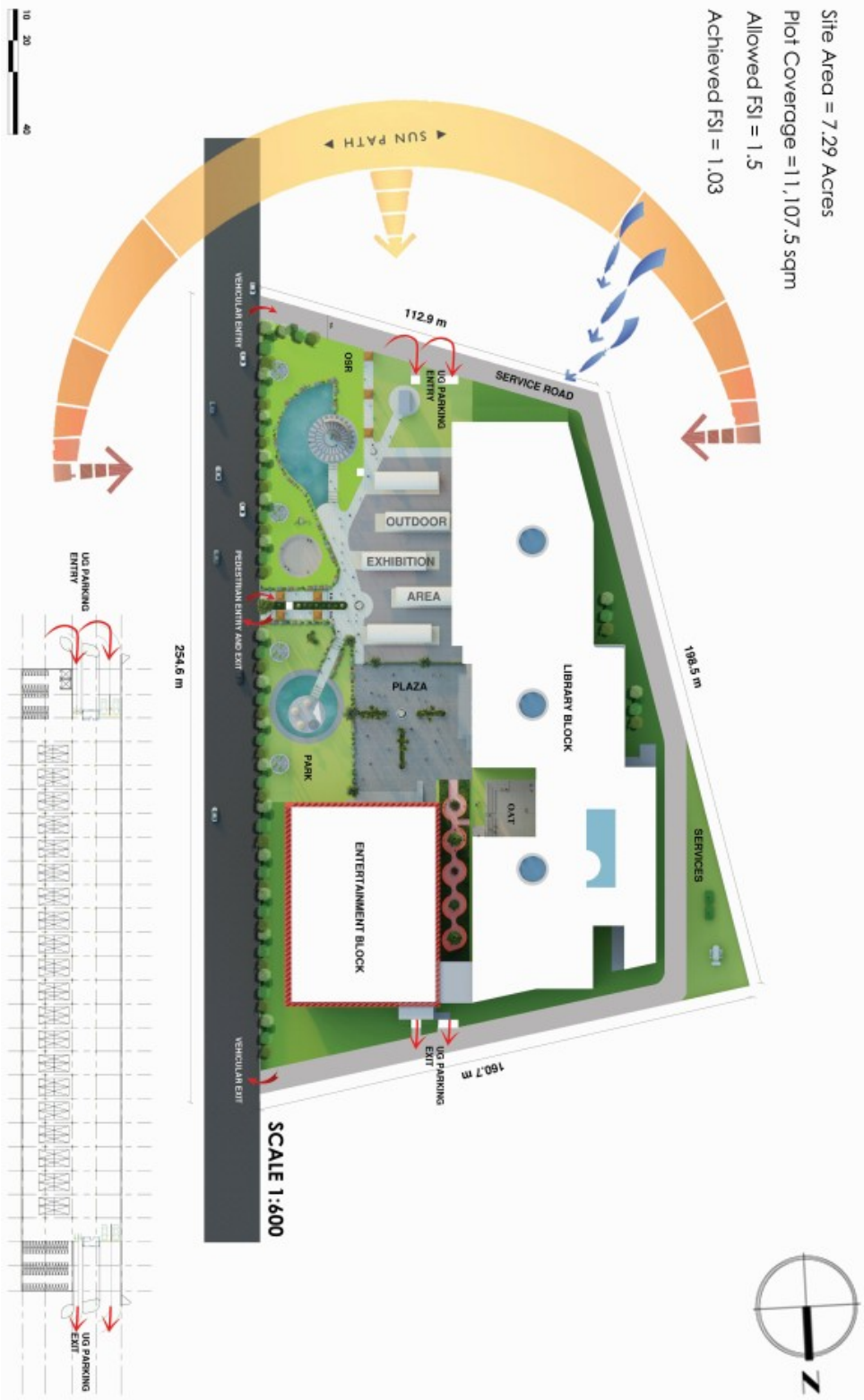
SITE PLAN

Site Area = 7.29 Acres

Plot Coverage = 1,107.5 sqm

Allowed FSI = 1.5

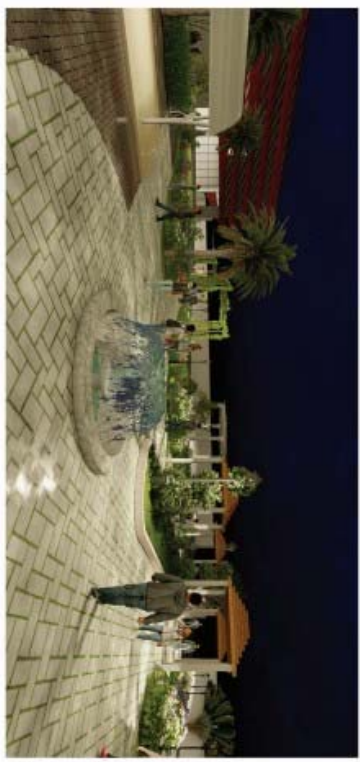
Achieved FSI = 1.03



SITE VIEWS



Landscape View



Night Pedestrian View



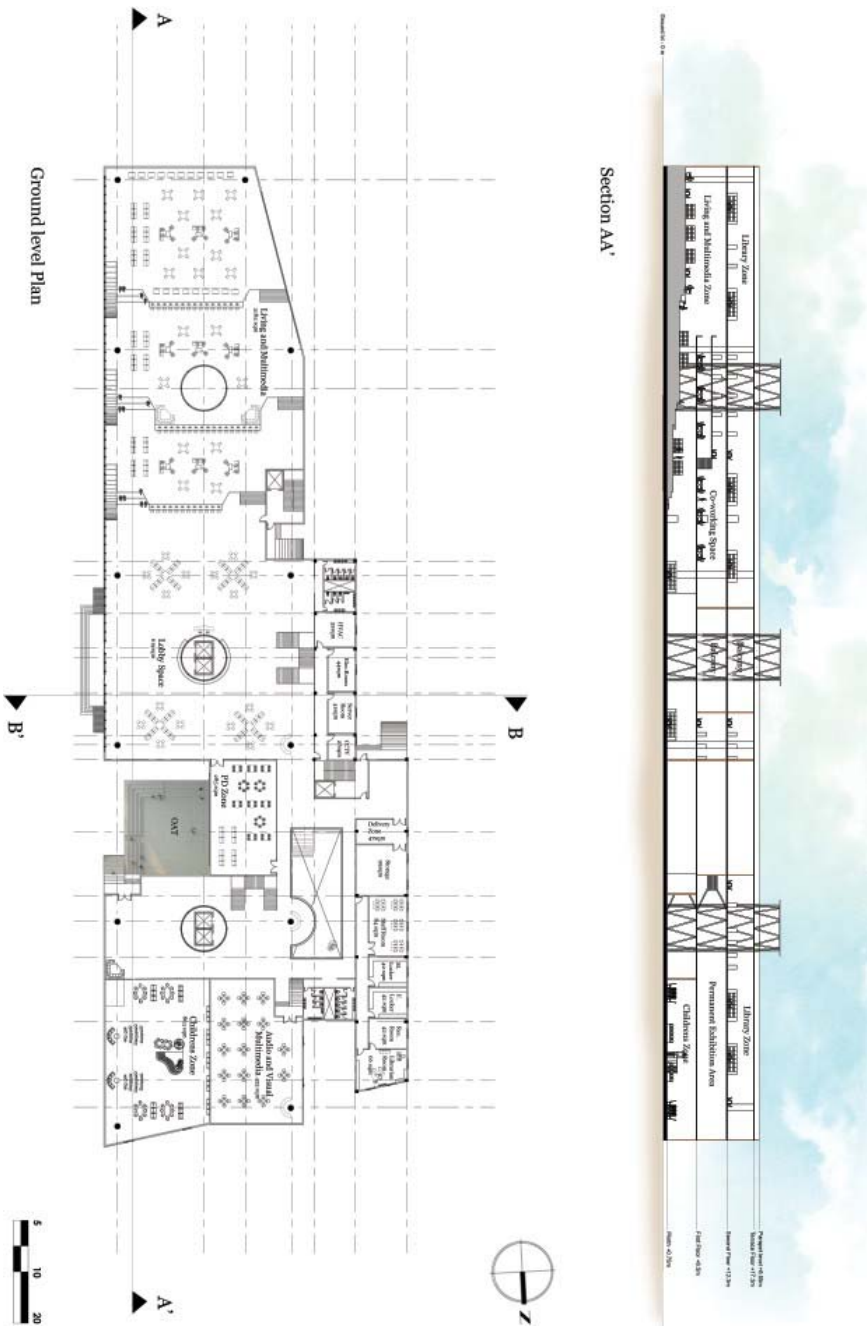
Site Front View

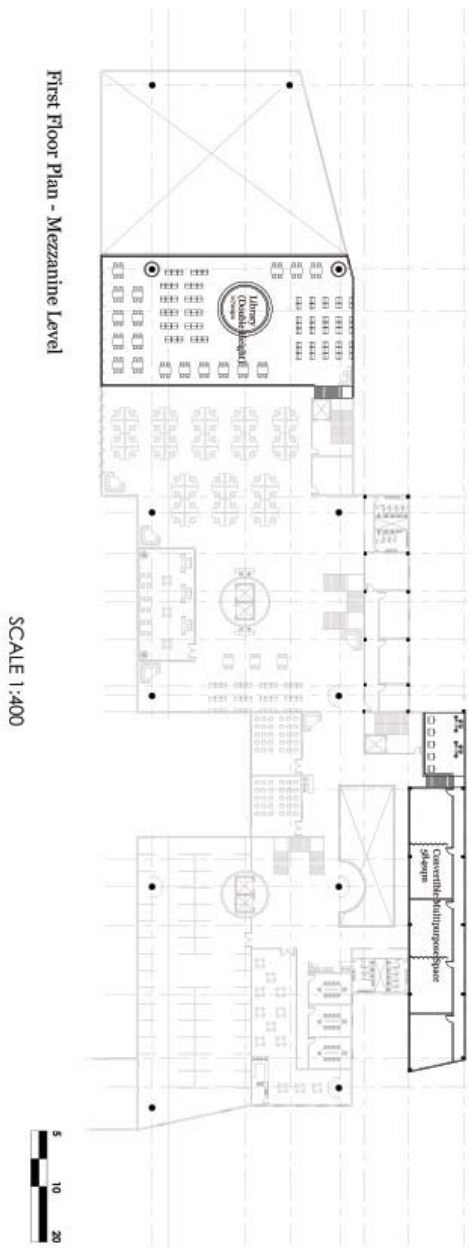
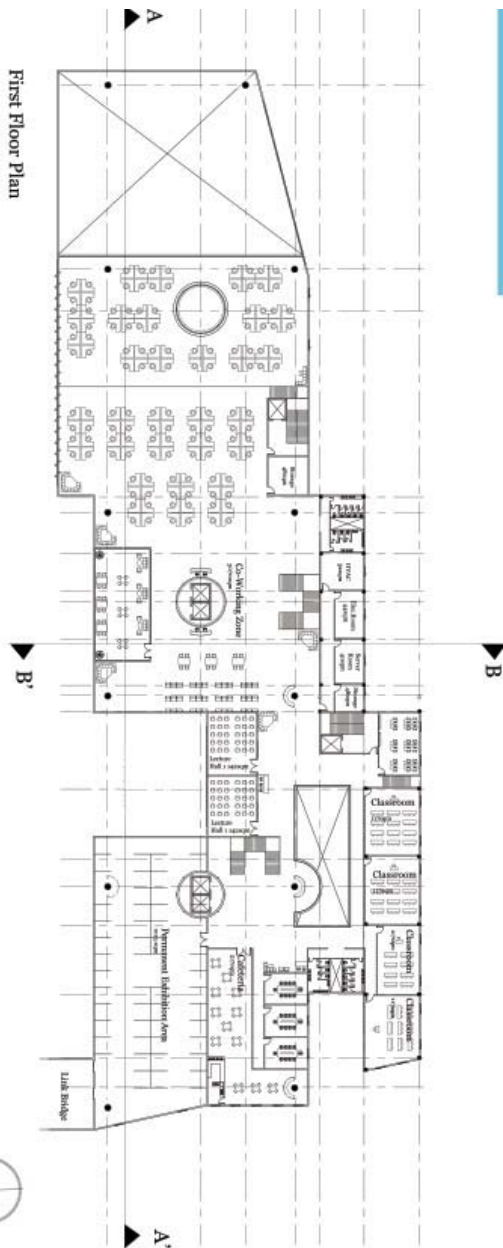
CHAPTERNINE

LIBRARY

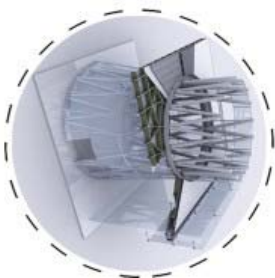
CHAPTER9

LIBRARY





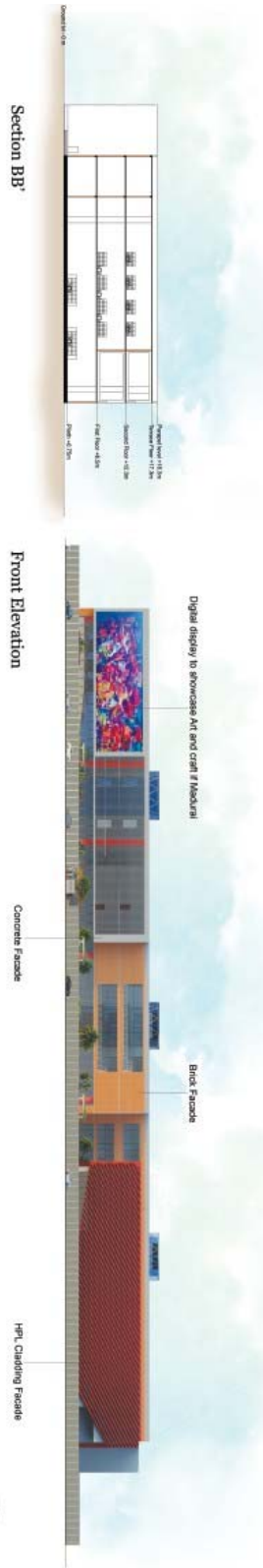
Lobby Space View



Structural Column



Skylight to increase daylight





Pedestrian View



View towards Mezzanine



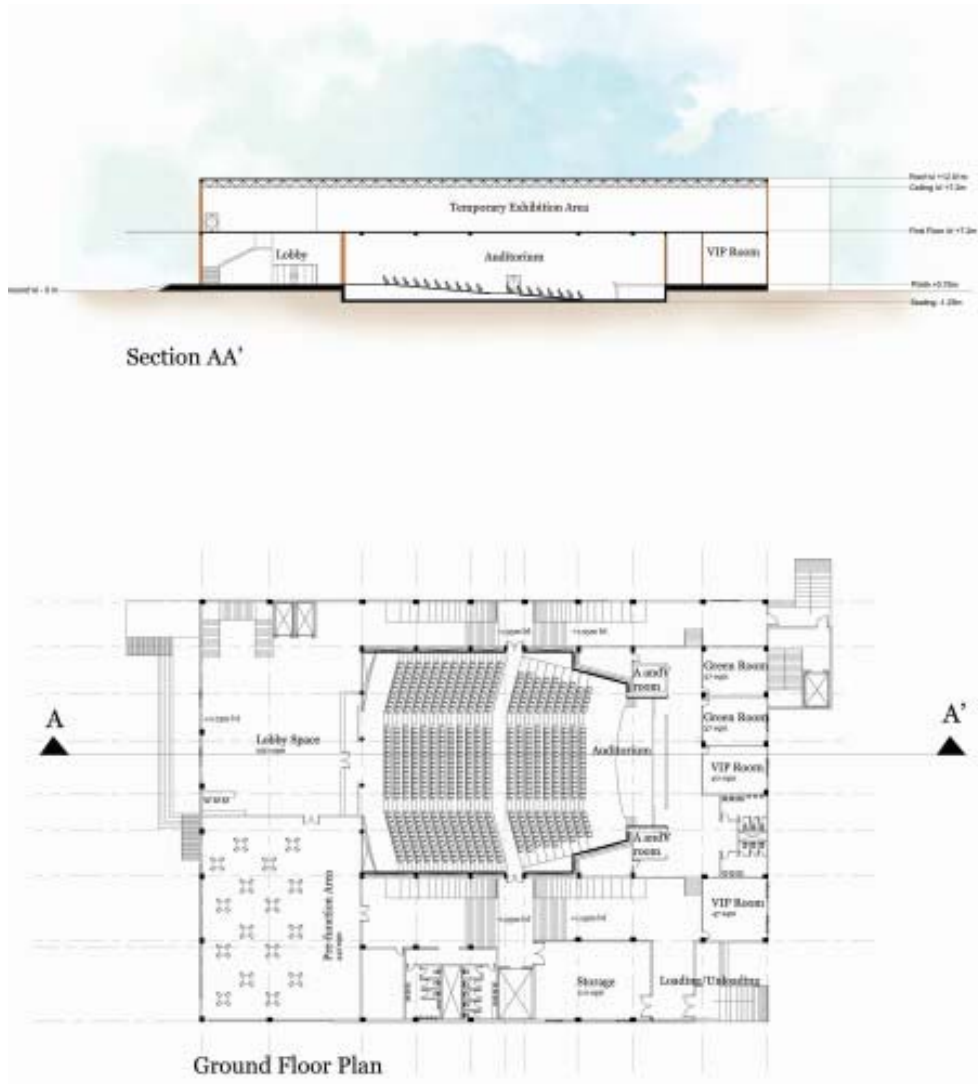
Interior View

CHAPTER TEN

ENTERTAINMENTBLOCK

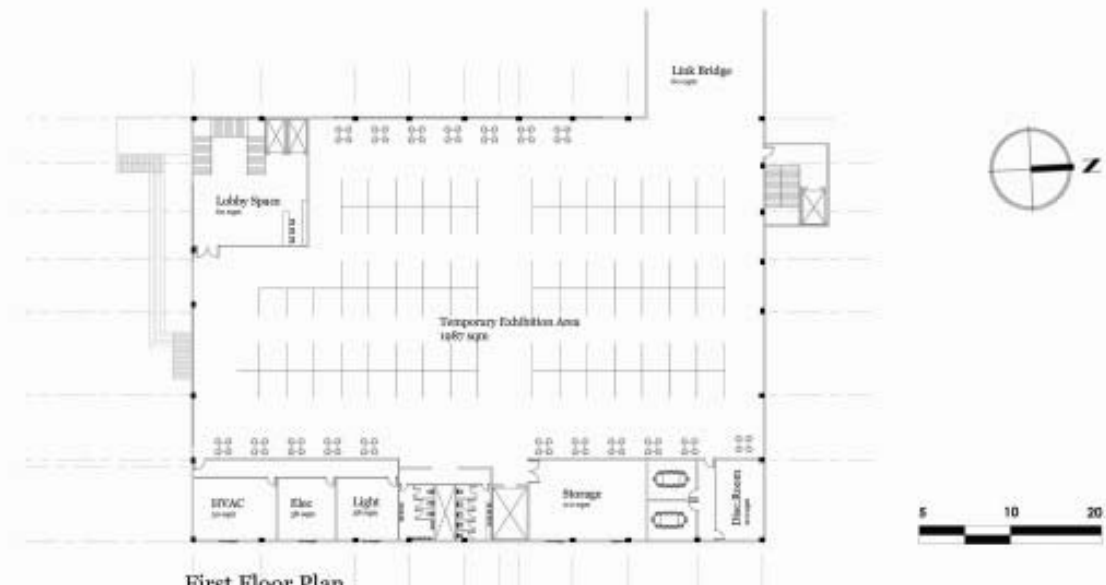
CHAPTER10

ENTERTAINMENTBLOCK





South Elevation



First Floor Plan

CHAPTER ELEVEN

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CHAPTER11

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