

MUSEUM OF SCIENCE AND TECHNOLOGY,
Agargaon, Dhaka

By

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A thesis submitted to the Department of Architecture
in partial fulfillment of the requirements for the degree of
Bachelor of Architecture

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Department of Architecture
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May, 2020

Declaration

It is hereby declared that

1. The thesis submitted is my own original work while completing a degree at Brac University.
2. The thesis does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The thesis does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
4. I have acknowledged all main sources of help.

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Abstract

In the early years of science museums, collections of private materials, historical specimens were shown as exhibits. Over the centuries science museums have developed from showcasing historical remains to fully interactive hands on experience exhibits. Modern science museum acts as a science centre providing research, training and product selling and promotion thus mostly known as a science centre. In Bangladesh creative minds do not have a proper platform for sharing their knowledge and promoting skills which leads to a knowledge gap between creators and users. Regarding the context of the current scientific extent in our country and considering the evolution of science museums, a museum is a potential solution for knowledge sharing platforms. Thus it should ensure four fundamental points such as bridging the gap, mutual platform, public education, and adopting the ever changing nature of scientific advancement. Site surrounding was analyzed considering pedestrian movements around the old museum which led to designing a thoroughfare keeping in mind that people tend to subconsciously engage with surrounding activities. Central civic space was created in the middle of the thoroughfare and proposed programs were clustered around it. Treatments of exterior facades were solved according to climatic conditions utilizing modern energy efficient materials. Considering all the facts the designed museum provides maximum public accessibility and reflects an extrovert showcasing experience.

Acknowledgement

First and foremost praise and thanks to the almighty for the showers of blessing during these critical periods and grant me the patience and good health to complete my project in time.

I would like to express my deep and sincere gratitude to my project instructors, Fuad Hasan Mallick, Mohammad Habib Reza, Saiqa Iqbal Meghna, Hasibul Kabir, Iftekhar Ahmed, Zillur Rahman sir for guiding and inspiring me throughout the semester. Thanks to Habib sir for always inspiring for great work and instructing me to develop strong conceptual grounds. Furthermore, all the lectures from Kabir sir helped me understand the landscape from a contextual point of view. Special thanks to Zillur sir who always stood by and reviewed detailed corrections throughout the design process.

I am grateful to Anu Prova Mandal for helping and providing necessary materials during the design process. Zahidul Haque Bonny who always acted as a mentor and guided me throughout the semester.

Finally I can not express my gratitude enough to my parents who always supported me, prayed for me and educated me. Their prayers and support are the reason for what I have achieved today.

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Chapter 1: Introduction

1.1 Introduction to the Project

The Museum of science and technology aims to showcase the inventions and knowledge and elements regarding various subjects of science. Science museum in Dhaka is full of showcases regarding different fields of science, for example, physics, astronomy, geology, electronics, etc. It is run by an independent organization that was initially proposed by the Pakistan government on 26th April 1965. The idea of establishing this museum was to offer visuals and knowledge of science to the students, children, and locals. Currently the museum has 8 galleries and runs different awareness campaigns throughout the country. Among these galleries include physical science, biological science, astronomy, interactive, children science, etc. The museum also added modern technological facilities, for example, 4D simulation, sky observation through a telescope which is offered with a small price for students to enjoy the magnanimous visuals of the galaxy. Unlike any other museums, it has a movable museum facility which is known as musu bus. It travels throughout the country's small schools and colleges to teach the students with modern video projection technology to fulfill the thirst for science lovers. Currently, the museum has 6 musu buses. Each of them is facilitated with 26 projections. Museum bus moves from school to school and shows small short projections of video clips, books, materials, etc to the students. It promotes the young generation towards more interactive learning of science from the very childhood. Thus eventually carries out the curiosity of school and college-going students in learning about technology. Furthermore, the museum authority runs different student programs. These programs include student competitions, sponsorship for science clubs and school fairs. It also runs many children's special science programs and competitions. Which is mostly conducted by three categories

starting from central Dhaka, Division based and finally across the different small districts of Bangladesh. Inside the museum, there is a public library with a huge amount of science books. The library offers both reading material and learning equipment like the telescope, microscope, projection machine, etc. The museum authority has been running a new quiz program for students since 2017. At present the institute runs 5 different student programs, those are competition-based showcasing, science Olympiad, science quiz program, symposium and showcasing of research institutes. It also publishes monthly and yearly publications about new inventions that occurred both in the country and abroad in the field of science and technology.

The museum authority wishes to redesign the existing museum with more galleries and programs on the existing site. The new museum will have 24 galleries, lecture hall, 4D simulation hall, auditorium, etc. The museum will be able to provide more visuals and knowledge and reach out to more participants from schools and colleges. Museum of science in Dhaka works to promote the youth towards interactive learning and understanding of technology.

1.2 Aim and Objectives of the Project

The museum aims to showcase the innovation and achievements of science and technology throughout the world and introduce modern technology. It also runs supporting facilities to encourage the youth into a more technology-oriented future. Furthermore, it aims to provide material and guidelines to education institutes regarding more interactive learning environments. The main objectives of the museum are as follows:

- raise awareness among the public regarding knowledge and usefulness in the field of technology. Furthermore, creating more popularity in science.
- showcase still exhibits of science in the museum

- arrange science fair, competition and interactive participation among the youth
- movable science museum showcasing operation.
- publishing magazines and articles in the field of science and technology on a monthly and yearly basis.
- conduct monthly seminars, symposiums and gathering toward a more interactive learning environment.
- run research programs and introduce a planetarium to study astronomical science.
- introduce educational programs at school and college level which would complement the learning of science and technology.
- promote and encourage the new curious children's minds. Furthermore, promote and sponsor the school level science clubs and fairs to work together in building a technology-enriched generation
- exhibit science history through showcasing the past achievements and inventions in the field of technology.
- preserve the recent and past innovation elements that made a revolutionary change in the field of science and showcasing them to students to raise awareness.

1.3 Project Summary

Name of the Project: Museum of science and technology

The implementer of the Project: Ministry of science and technology

Location: Agargaon, Dhaka

Site area available for the Project: 2, 17,800 sqft (5acres)

The proposed built-up area of the Project: 1, 84,000 sqft

Proposed Program of the Project:

Administrative, Gallery (physical science, biology, astronomy, agriculture, heritage, maritime, evolution, etc.), observatory, watchtower, dormitory, cafeteria, auditorium, research Centre, conference, training gallery, lecture theatre, mechanical workshop, library, cinema hall, prayer hall, etc.)

Chapter 2: Literature Review

This literature talks about different definitions of a museum and its flexible nature. It also shows the origins of the science museum and its original characteristics of exhibits. Furthermore analyzing the evolution of science museums over the centuries it is known how the purpose and concept of science museums has evolved. The goal is to understand the evolution and from that perceive what will be the future version of a science museum. To determine space quality and requirements for modern facilities, in depth analysis was done based on visitors age and interest. Furthermore the study shows features for modern multimedia exhibits, special space requirements for children, elderly and adults. The influence of the internet, current technological extent in Bangladesh and how The existing science museum contributes towards public participation are also part of this research.

2.1 Flexible nature of museum

A museum is an empowering institution that will incorporate all who would become part of a shared cultural experience. Citizens can walk into the museum and appreciate the highest achievements of their nation or culture (Mark lilla, 1985). Nowadays museums are no longer built with the ideology of a nationalist temple of culture. Almost anything can turn out to be a museum. Starting from farms, boats, coal mines, warehouses, cottages, etc. A museum is a complex institution. However, confined in the simplest building to house various collections of artifacts to study, inspect and observe said Allan, former director of Royal Scottish Museum in Edinburgh (Greenhill, 1992).

2.2 Evolution of science museum

When did the first science museum start? Researchers have traced in the late 18th century Ashlomen science museum oxford used to showcase private collections. Many of these objects were leveled geological and biological specimens. In the beginning artifacts and historical remains were used as exhibits (Development of the Science Museum Concept. (n.d.). Retrieved January 9). Museum researchers have categorized different phases of museum development. First generation museums during 19th century exhibits were remains of 1st and 2nd world war machines and industrial materials. Second generation museums during the 20th century emphasized on trade material promotion, advertisement of manufacturing companies. At this period the idea for public education started to evolve. It wasn't until 1922 when Albert Einstein's visit to Paris stimulated the interest of informal education of general people. Introduction of the science centre was the profile for a third generation museum during the mid 20th century. It was during this period that public education became number one priority and museums started to adopt interactive exhibits. The newest example of the Science and Technology museum was introduced through Exploratorium in San Francisco in 1969. It had interactive only exhibits (Friedman, A, 2010).

Modern science museums allow for product replication and selling of certain exhibits for economic sustainability. Researchers have said the science museum has three folds such as exhibition of collection, sponsoring research and education. (Development of the Science Museum Concept. (n.d.). Retrieved January 9). Nowadays to ensure public engagement science centres and museums are developing new strategies to increase inclusiveness to engage the public more actively. In this process the public are informed not only about exhibits development but also are shared governance in the decision making process (Bandelli, A., Konijn, E. A., & Willems, J. W, 2009).

2.3 Evolution of exhibit typology

The exhibits in a museum somewhat explain the category of a museum. For example, a museum of history museums provides evidence and sights into the incidents that occurred over time. Art and craft museums showcase collections of artifacts that represent the richness of a nation in its cultural origin. Unlike any other type of museum, a museum of science can offer more interactive showcasing objects and learning environments (Silvestro, C. M., & Alexander, 1980).

In the early years, artificial collection of material included a broad spectrum of practical, scientific technology tools, utensils, locks, watches, armors, astrolabes, navigational devices, musical instruments, optical apparatus, magnetic devices, machine, telescope, microscope, etc. However, since the industrial revolution in the 18th century and the arrival of world affairs to the curious minds of people, the idea of a museum of science and technology had come to mind. Throughout time many of the museums turned out to be science centers that emphasize more on teaching the public about the principles of science and technology rather than preserving collection to study and for future generations (Alexander, M., & Decker, J. 2017). Melanie Quin talks about scientific centers such as scientists, workshops, technological trade fair, historical storehouse, and adventure playground. She stated that many of the centers are a combination of multiple of these forms. She also states that modern science museums which emphasize more interactive learning based materials rather than still objects (Quin, M, 1991). Furthermore, museums that focus on collection-based institutions are followed by newly originated science centers that emphasize interactive exhibitions rather than historical collections (Alexander, M., & Decker, J. 2017).

2.4 Experience of museum visit

Interactive exhibitions in museums create a journey that is most unlikely to others. The experience of a historical museum is different from a music and art museum. Perhaps some special types of the museum focus on unusual types of experience which can be designed from a conceptual basis. For example, the Jewish Museum in Berlin is designed with features like underground axes, angled walls, bare concrete voids, without heating and air conditioning. And causes the visitors a certain amount of discomfort symbolizing the physical and spiritual awareness of holocaust into the consciousness and memory of city the city of Berlin (Quoted in Libeskind & Goldberger, 2008). Science centers or museums should include exhibits that offer an interactive approach to teach people about science in which people can touch, participate, and listen to information. Thus computer-based exhibits are becoming more and more common in multimedia galleries, museums and science centers. Young generations are more prone to participatory exhibits rather than traditional showcasing (Honeyman, B. 2005).

2.5 Influence of internet

Nowadays due to available access to the internet, many of these science centers of museums are providing multimedia interactive exhibitions online. Honeyman stated that for a visitor to participate, listen or experience a hand-on session, one needs to be present at the spot. Therefore, online access to museum material is now growing popular. Whenever a person accesses the website of a science center, listens to audio, watches a video clip or participates in a science competition, one can have the same facilities despite the limitation of building opening and closing hours. (Honeyman, B. 2005).

2.6 Science museum in Dhaka

26th April 1965 the East Pakistan government took initiatives to establish a national museum of science and technology in Dhaka. This museum consists of 8 galleries including physical science, biology, astronomy, etc. The main objective of this institute is to promote the knowledge and implementation of science and technology across the country. Furthermore, the institute emphasizes approaching the students with the knowledge of science through competition, museum, magazines, monthly publication of science inventions, etc. The museum also focuses on educating children about science And is arranging children competition, planetarium facilities, observing the moon from telescopes, etc. for children. (National museum of science and technology).

2.7 Children museum features

New children's museum galleries are opening every day not only in America but also around the world. Furthermore, there is a strong trend which developed in the 1960s, that says all types of museum should include a children's discovery room, a gallery within its boundary (Lord & Piacente, 2014). Creating a child-friendly museum with a proper learning environment requires special measures. Children museum is not only a new mode of presentation but also it is a new type that flourished in the late half of the 20th century. This type of museum uses newly created materials for learning, exploration, and discovery. Similarly, science centers are now presenting interactive exhibits from Paris, London to Singapore and Bangkok. Children galleries or museums that provide interactive exhibits and stimulate enjoyable learning for the family which originated during the late 19th century in Brooklyn. Children's museums need less requirements for care of the collection. On the other hand, it requires special types of interactive workshop spaces. These special requirements include live animals, insects, plants, moving water, military technology or wind tunnels, etc.

the reason behind these types of facilities is to allow the children to participate instead of just looking at the objects. Most of these facilities are designed in a way that they can be demonstrated, allowing hands-on experience either right in the galleries or adjacent to the gallery (Lord & Piacente, 2014).

2.8 Requirements for interactive exhibition

Interpretative space for both children's museum and science center galleries are similar to thematic exhibition galleries. These exhibits strongly require being designed in a smart technology capability so that they are flexible enough to move from one location to another within a short period, one in three months to six years. Furthermore, they need to be stand-alone multimedia machines that can be replaced or added to extension without disturbing other exhibits. Many of these types of machines are made from special technology which is purchased from companies specializing in them. Both in science centers and children, interactive museums highly require material able to be capable of plugging in without disturbing others (Lord & Piacente, 2014).

2.9 Children space design

Children's museums often have an orientation towards science, technology, arts and ethnology for learning and exploration. Many children's museums focus on the life of a child living in an urban environment. The largest one now exists in Mexico city. Museums that are specially designed for children often consider the age group of preschool or 12 years old. However modern designed museums are even considering accommodating toddlers (18 months), kindergarten (6 years old), primary and middle school children (6-8 years to 12-14 years). Designing a space for children also requires the ability to provide facilities for the whole family since both the children and the family will be satisfied if they are close in visual

proximity. Spaces should be designed in a way that they can accompany different aged children and must be special facilities for children in need. Spaces should be designed in a way that Parents, grandparents should be able to play, participate in the environment. These special features make sure that children can explore while guardians are satisfied (Piacente, 2014).

In terms of designing the interior of a child-friendly museum, space allocation, furniture design, level variation, assigning child coordinator, utility facilities should be considered sensitively. Utility facilities, for example: baby changing station, child washroom, toilet for specially-abled, easy access racks, clean up rooms, etc need to be close to the play area. To design a child space an architect must learn the ergonomics of table height, size, weight, the visual height of exhibits, sitting, stairs. Spaces should be designed with mezzanines rather than flat surfaces. Furthermore, low ceiling heights with cozy spaces are more favourable to children. Designers should consider offering escalators or ramps rather than stairs for extra safety. Low height stage facilities with backstage for children's performance are now common. A child coordinator with up to date knowledge about child science can be assigned to teach the students. Accumulation of many small discovery spaces is preferred rather than large massive spaces. Very small discovery spaces of 50 sqm can be sufficient, ensuring 50 sq ft per child would mostly accommodate 10 children at a time. Somewhat as big as 150 sqm can accommodate a school of 30 students. Perhaps a more useful size of children's discovery space would take up to 200 sqm (Piacente, 2014).

The concept and character of museums have changed over the last few centuries. It has evolved from showcasing industrial product materials like watches, automobile engines to interactive technology. A science museum has served as an institute for product promotion, ensuring public participation, educating general people in both formal and informal ways through multimedia interactive exhibits. Museum authorities introduced educational programs,

research and training facilities and are now sharing authorities in governance bodies. Unlike any other forms of institution, a museum of science focuses on the capacity of interactive learning and participatory exhibits rather than collection of artifacts. Educating children in a science museum has been one of the utmost importance for many decades. However, children's learning environments need special measures. The Museum of Science and technology in Dhaka emphasizes on teaching the public and mostly engaging the young generation into technological advancement. Creating an exhibition space interesting for both children and adults takes special care.

Chapter 3: Site Appraisal



Figure 1 (Location map. source: author)

Site location: Agargaon, Dhaka

Approx site area: 2,17,000 sqft.

- Latitude: 23.779195°
- Longitude: 90.373658°
- Elevation: 12 m

Source: *geodash.gov.bd*

3.1 Site surroundings

East side of the site is surrounded by mostly administrative buildings for example University Grant Commission, IAB, Election commission, Betar Bhaban and Post office headquarter. And on the west side it is mostly surrounded by residential buildings. There is a local bazar named BNP bazar on the west side. Nuclear centre is located close to the site at the south side of the site.

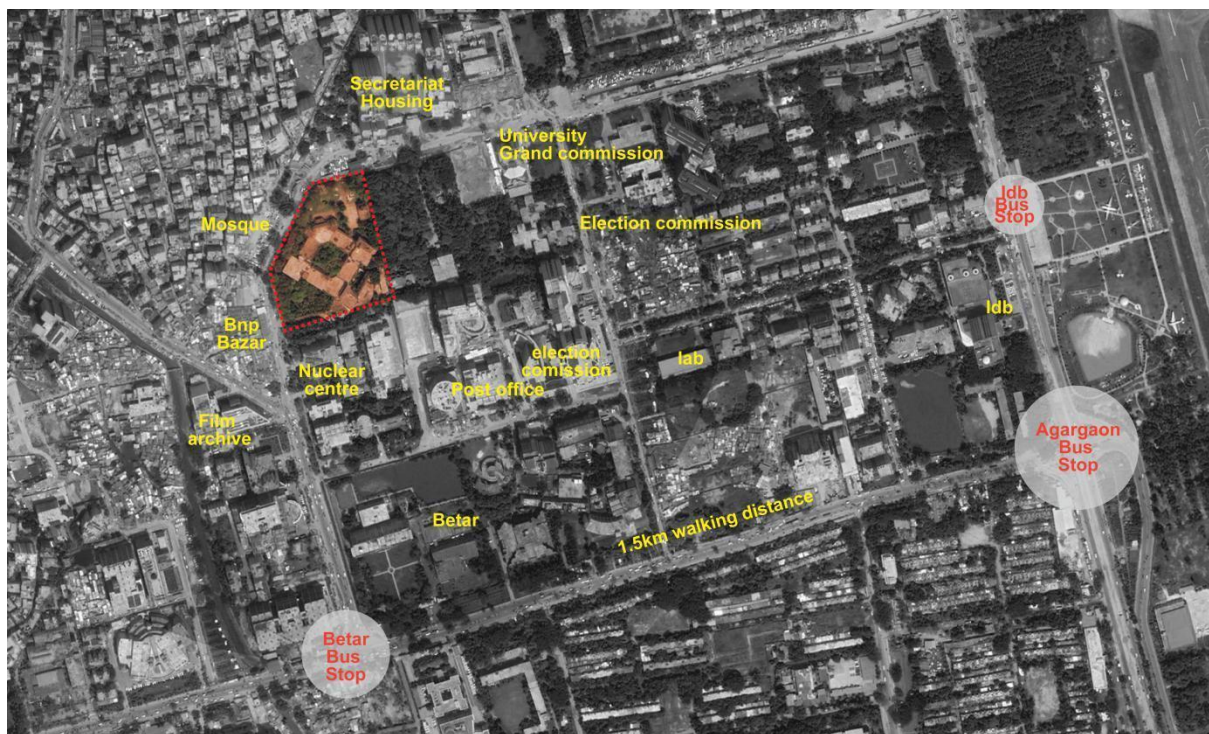


Figure 2 (Site surrounding map. source: author)

3.2 Historical Development of the Site

It is seen that the south, south-west, south-east, north, north-east side of the site has gone through a huge development since 2001. north-west lands have not gone through much infrastructural development since it has been mostly occupied by residential buildings.

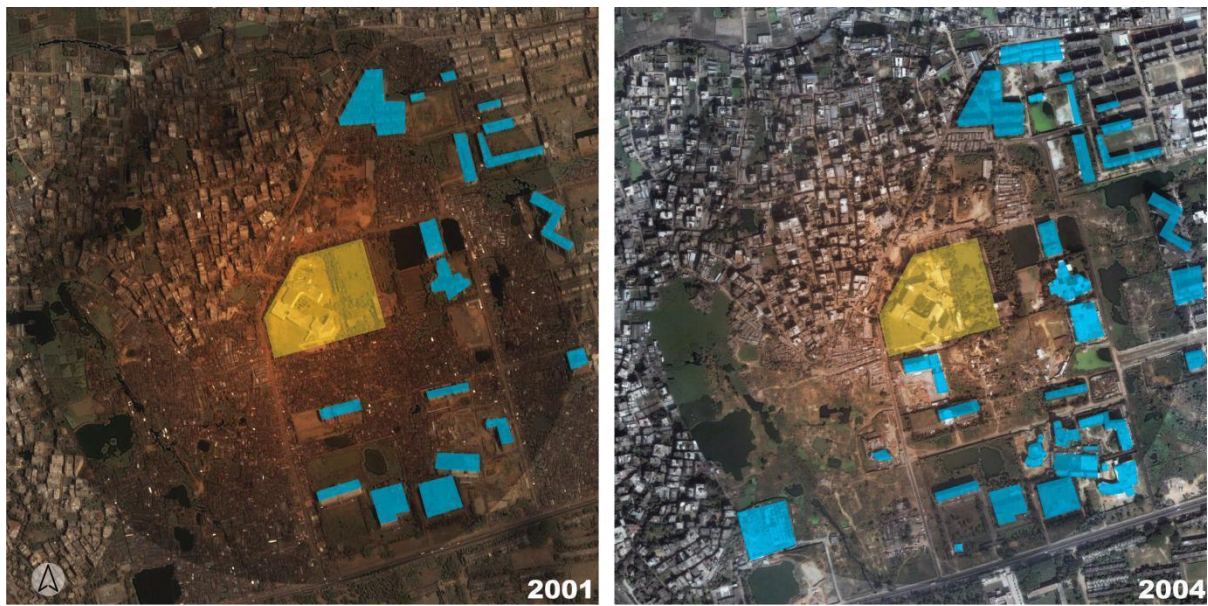


Figure 3 (West side residential, south and east zone are starting to develop administrative buildings.

source: author)

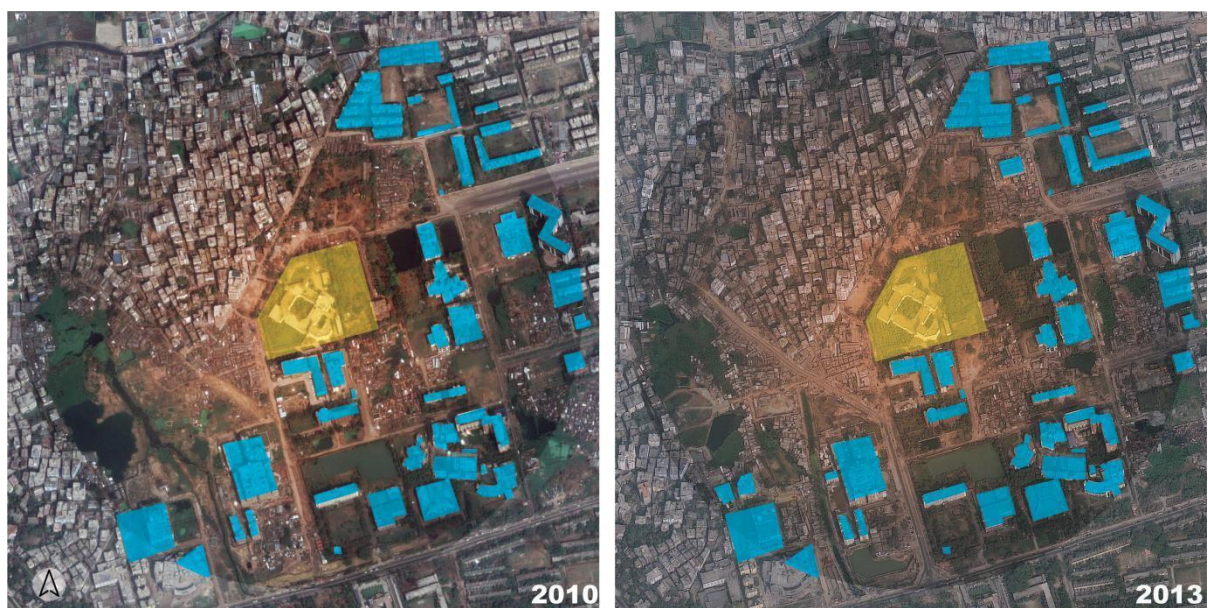


Figure 4 (Administrative buildings have been developed in the east side of the site. Markets and

mixed use buildings are starting to emerge in the west. source: author)

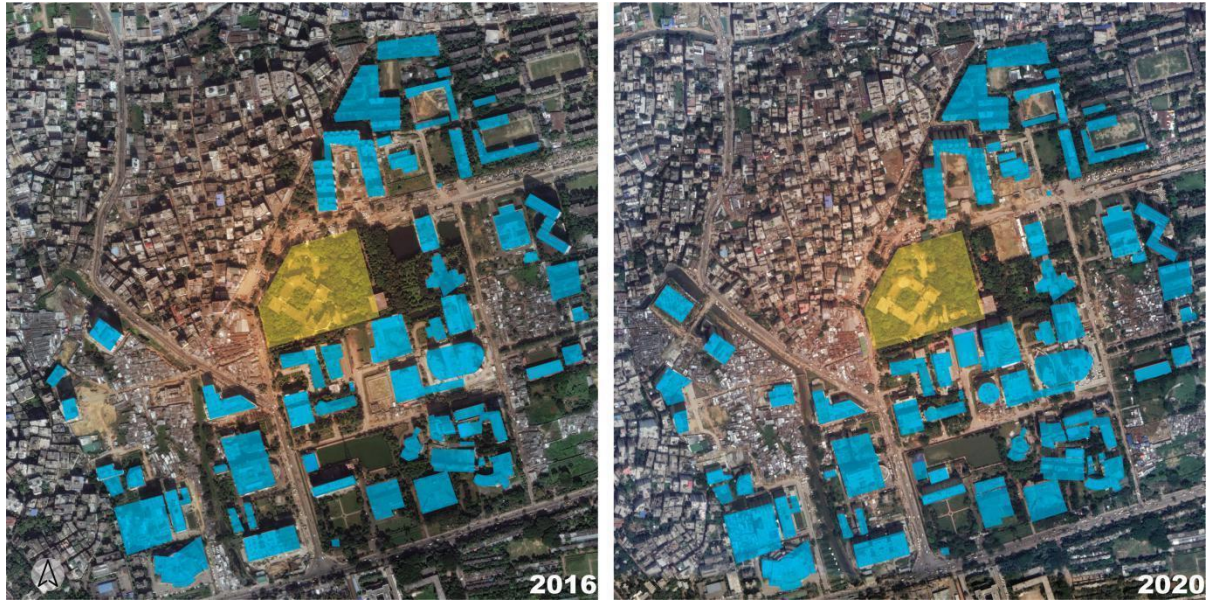


Figure 5 (Administrative buildings are spreading on the west side as well and a huge number of residential buildings have also been established on the north west side of the site. source: author)

3.3 Geographical Characteristics of the Site

The national science museum site itself has a lot of existing natural vegetation. However outside the museum the nearby site lacks vegetation. There are two newly revived canals close to the site location. It was revived during 2010.

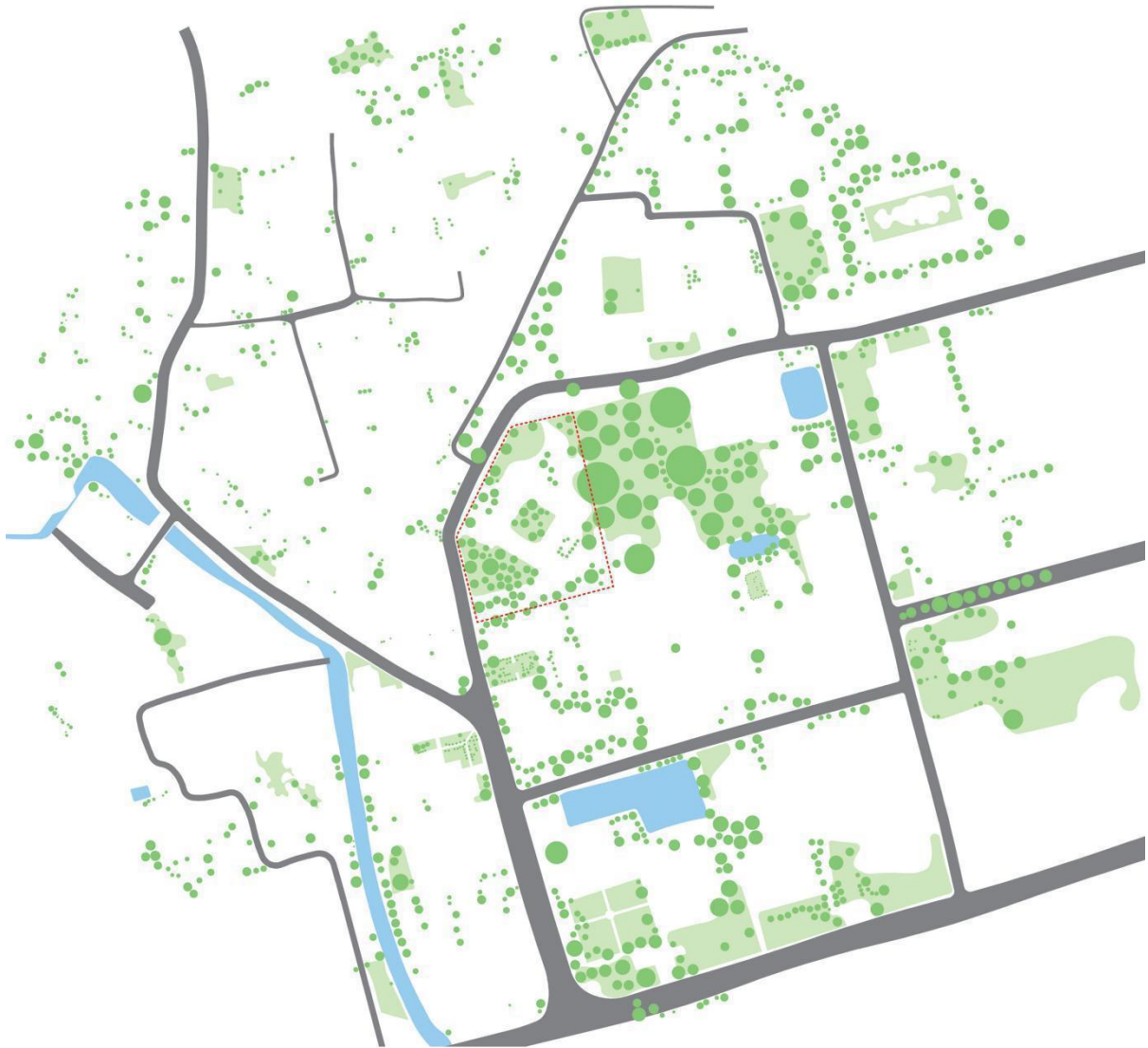


Figure 6 (Vegetation map. source: author)

3.4 Land-use Pattern of the Surroundings

North west side of the site is mostly populated with residential settlements. The east side is mostly established with administrative buildings. A major portion of west lands are crowded with informal settlements. Commercial buildings, recreational and religious buildings are seen on the south side.



Figure 7 (land use map, source: author)

3.5 Accessibility and Connectivity

One way of coming to the site is through a bus route from secondary SYED MAHBUB MORSHED road to SHAHID SHAHABUDDIN SARAk and finally to a museum. The front road of the site is going under road extension development.



Figure 8 (Road network, source: author)

3.6 Climatic Conditions

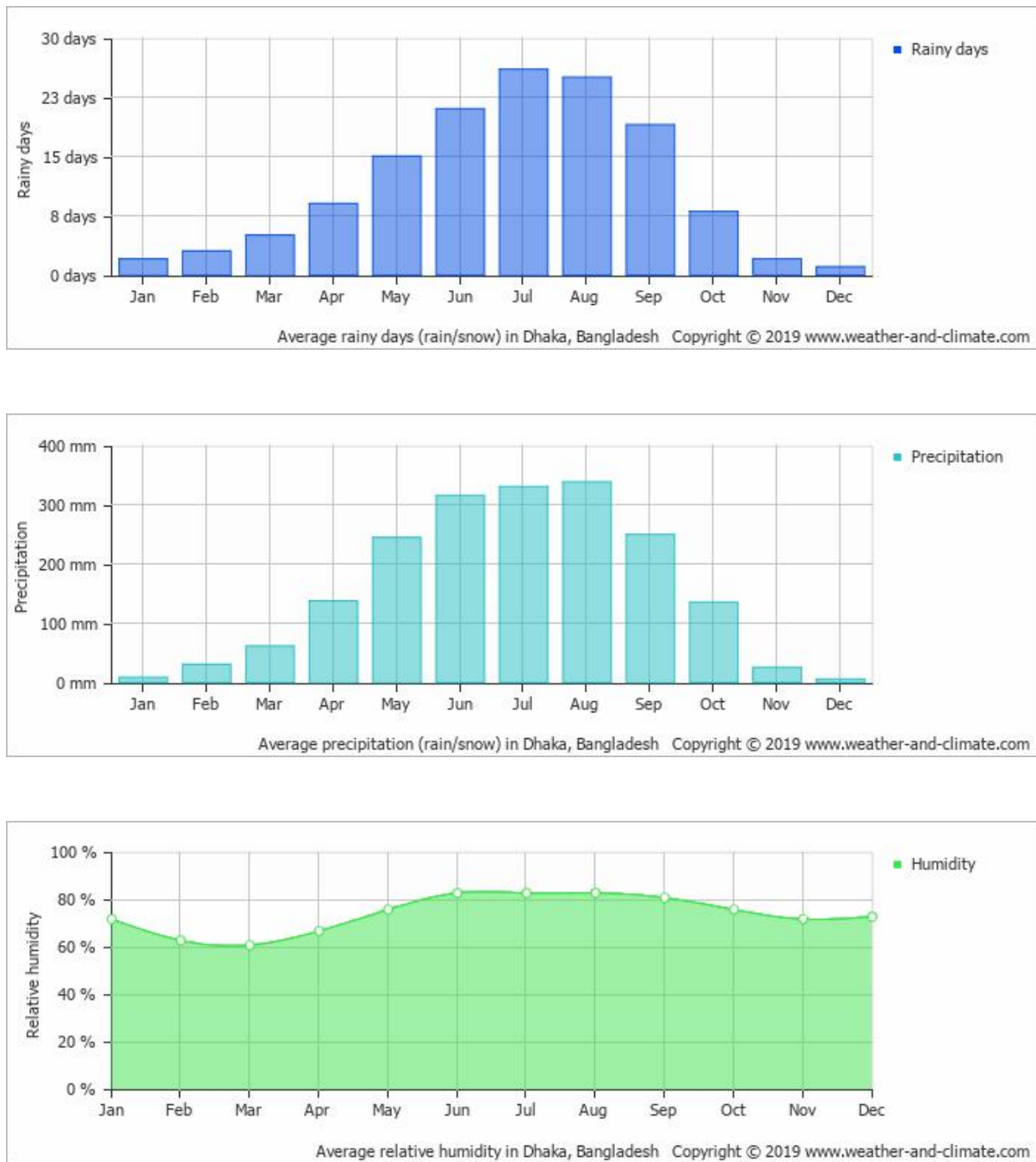


Figure 10 (rainfall, precipitation, relative humidity, source: weather-and-climate.com)

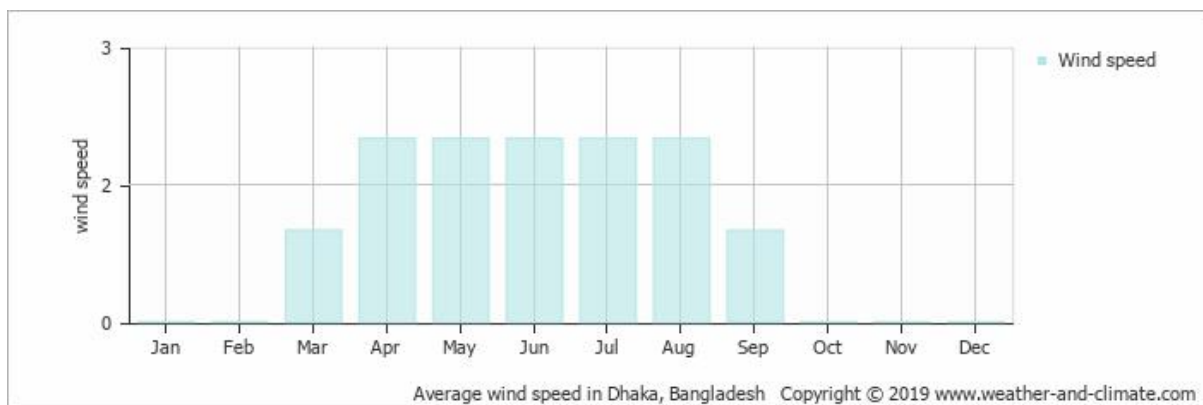
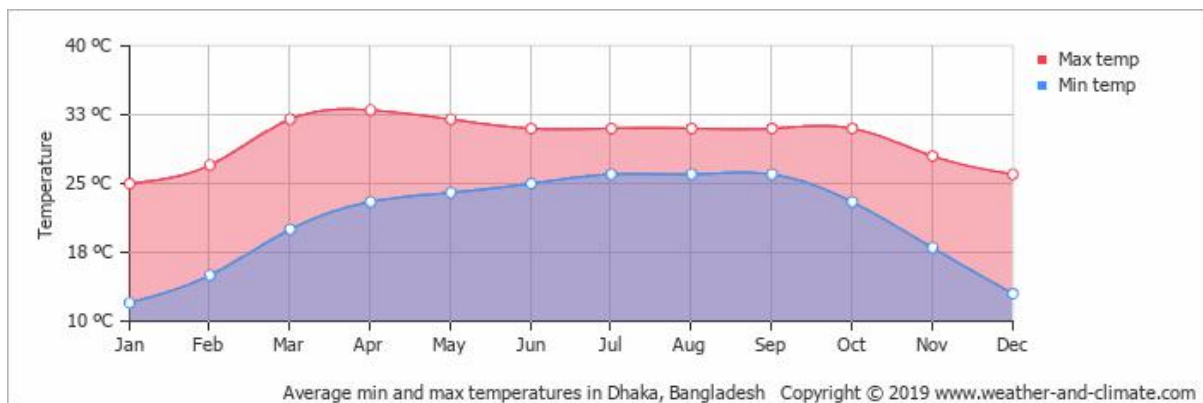
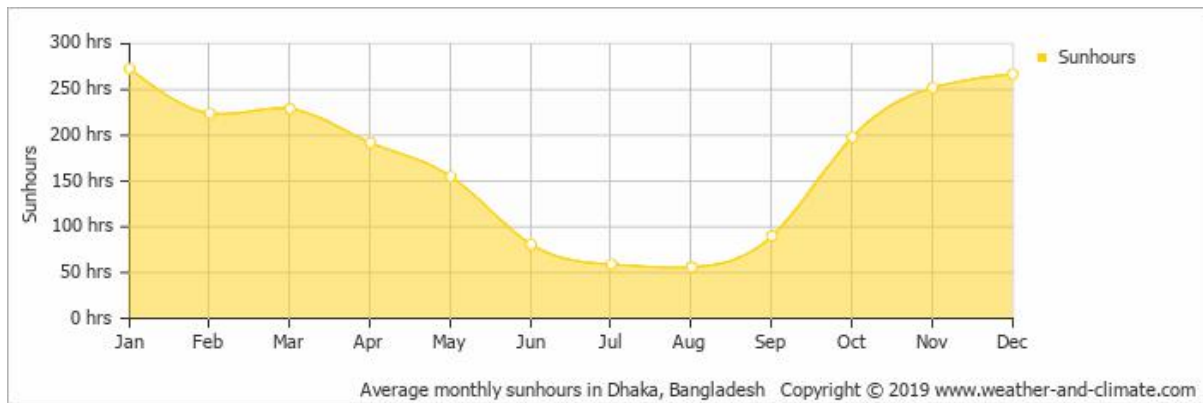


Figure 11 (sun hour, temperature, wind speed, source: weather-and-climate.com)

- Since the existing site has a huge amount of vegetation therefore shading of trees makes the site cool most of the time.
- South and south east side of the site does not have very dense building structure thus natural airflow maintains cool temperature and low humidity around the site in micro scale.

- During the dry season maximum temperature reaches about 33 degree and in winter it falls to 18 degrees. Furthermore average rainfall is projected to be maximum during June-July and minimum during January-December. Therefore during the summer season climatic condition remains warm and humid and during winter it becomes cool dry. So proper arrangement of landscape elements should be taken into consideration.

3.7 Social-Cultural and Economic Contexts

Agargaon is mostly populated with administrative buildings and very low residential and educational settlements. Therefore cultural and social gatherings do not occur on a large scale. However there are some playgrounds and museums. For example, the Liberation war museum is seen as a catalyst for public gatherings. The residential zone on the west and north-west side of the site has some open spaces where public gatherings are seen in the morning and afternoon due to temporary kacha bazar. Most of the south and east side is settled with administrative buildings and job holders and staff are seen gathering around during lunch hour in street shops. Users of administrative settlements are the biggest customer for Vendors and temporary street shop owners. Therefore the potential visitor group for the proposed museum can be from both residential and administrative groups. And the museum itself can contribute to the economy of this area.

3.8 Images of Existing Site Condition



Figure 12 (showing the museum from newly constructed road, source: author)



Figure 13 (showing the newly constructed road, source: author)



Figure 14 (showing the newly constructed road and Nuclear centre on the left , source: author)



Figure 15 (showing the newly constructed road and Museum on the left , source: author)

Chapter 4: Case Study Appraisal

Three projects have been selected for case study. including: NEMO science center at Amsterdam, Incheon children science museum South Korea and Winton Mathematics gallery in London. The first project, Nemo science museum was designed by Renzo piano which was completed in 1997. It was designed on Amsterdam docklands on an existing vehicular underground tunnel. The roof of the museum was designed as a mounting plaza where people can access and enjoy the view of Amsterdam docks and sea. Second project, Incheon children museum was designed by HAEAHN architectural firm in Incheon city where the context is a mixture of city and natural elements such as mountains, hills, river etc. It is the first children specialized science center in the country. It was long cherished by the Incheon city people through promotion. Finally, Winton gallery is a science gallery in London science museum dedicated to Mathematics. It was commissioned to Ar. Zaha hadid. The architect designed the gallery with the conceptual shape of the mathematics of aeroplane aerodynamics.

4.1 Winton gallery of Mathematics, museum of science London

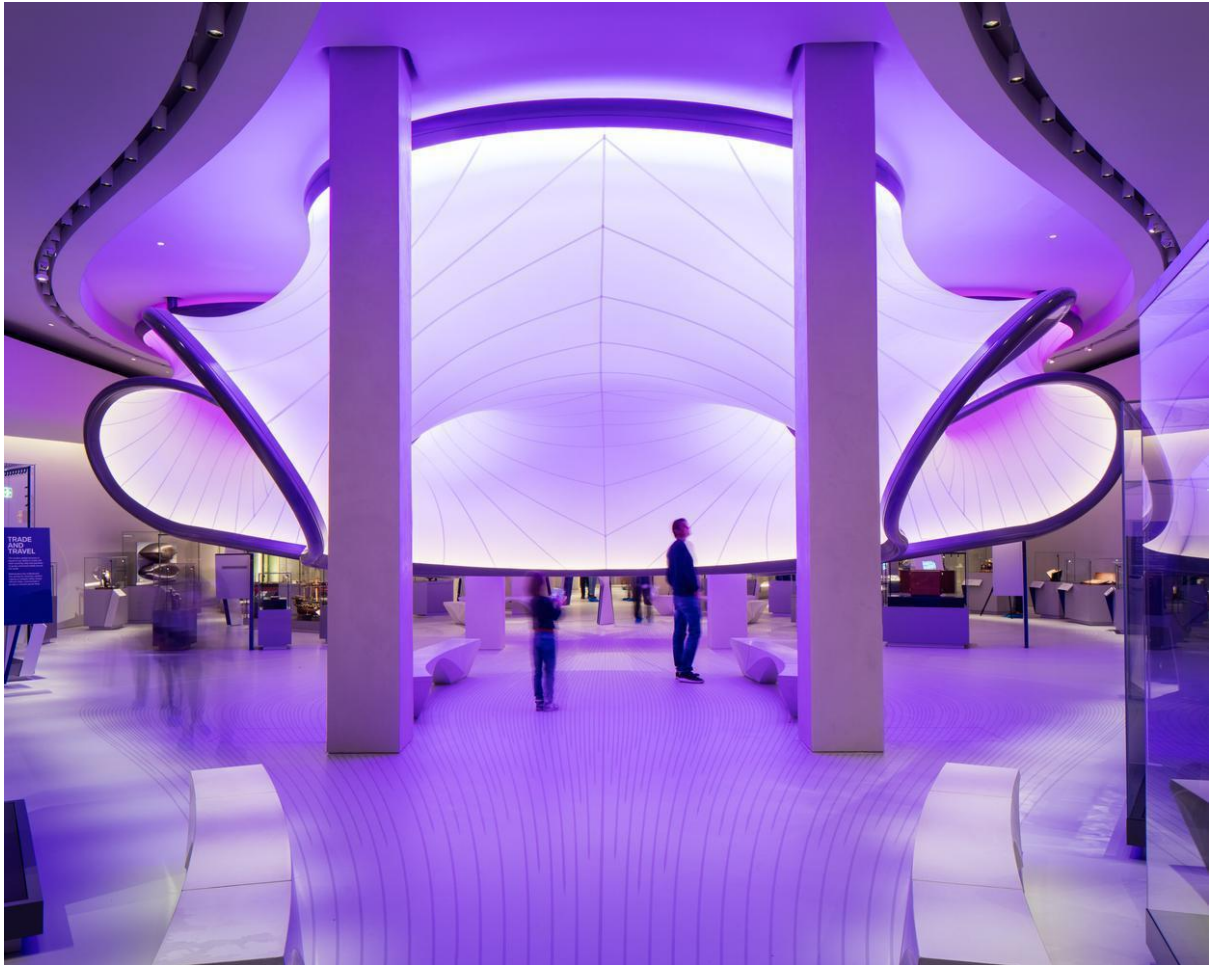


Figure 16 (winton gallery, showing interior)

Concept of designing the interior of the Winton gallery of mathematics was derived from the simulation of aeroplane aerodynamics of aeroplane during its flight in mid air. Inside the gallery there is an original Handley page aeroplane hanging in the middle which was designed in 1929. Three large non -euclidean shaped forms surround the aeroplane which shows the formulation of aerodynamics in a tangible form.

4.1.1 *User behavior and requirements*



Figure 17 (winton gallery, showing interior exhibits)

Currently there are 120 exhibits in the gallery. All of them are subjected to the innovation of mathematics throughout history. Exhibits are arranged around the corners, allowing the visitors to freely utilize the middle space. Furthermore most of the antique pieces are stored in glass boxes for protection, for example Enigma machines from world war two. However a few exhibits allow the visitors to explore with hands on experience. Around the circulation space there are small benches designed to provide the elderly visitors with comfort. With the arrangements of exhibits and open circulation space the gallery can hold up to 60-80 people at a time.

4.1.2 *Form and Function*

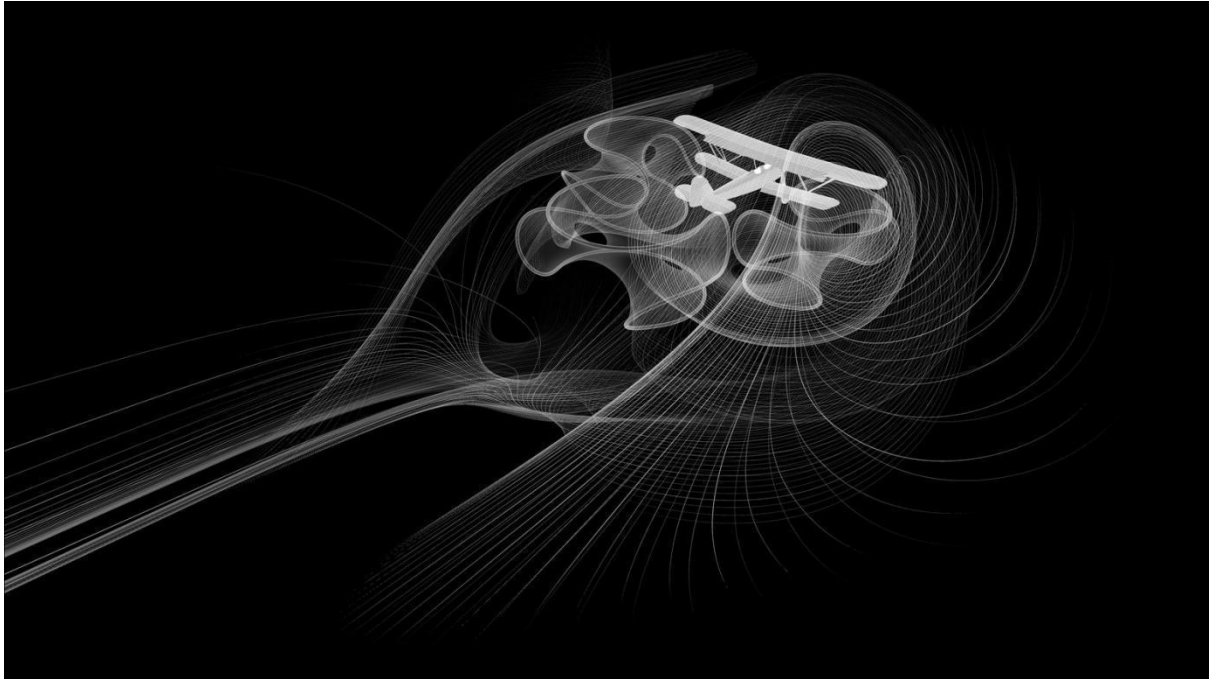


Figure 18 (aeroplane dynamic simulation and form generation)

The non-euclidean shape of the hanging form was generated with digital simulation with mathematics equations. Three parametric forms were then constructed around the hanging aeroplane. Furthermore, the floor pattern and the arrangements of exhibits were designed

with reference to the flow or parametric shape. This shape hanging in the middle of the gallery attracts most of the visitors' attention.

4.1.3 Horizontal circulation

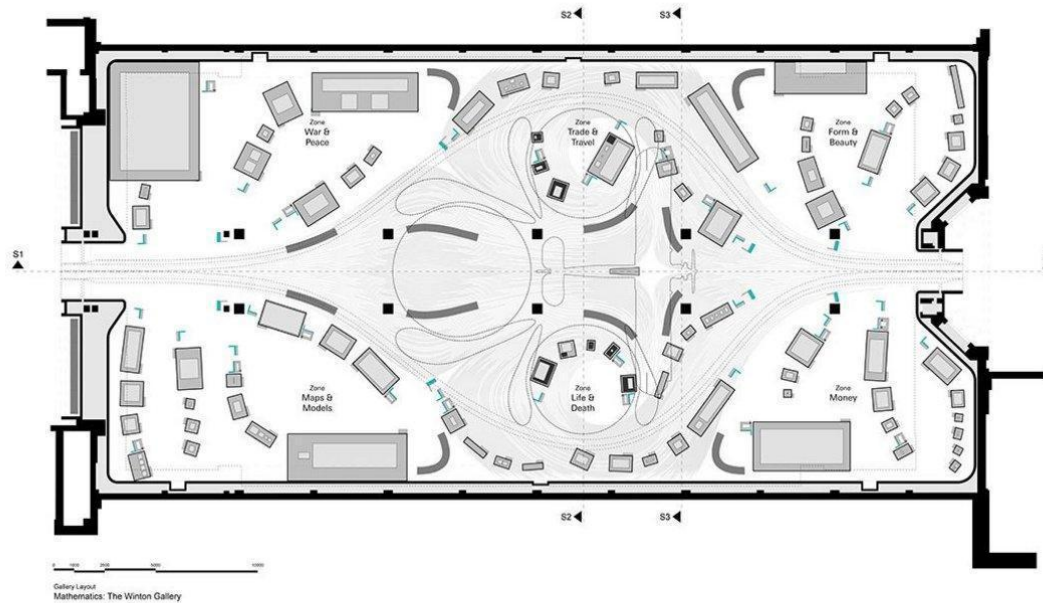


Figure 19 (horizontal circulation, inspired from aerodynamics)

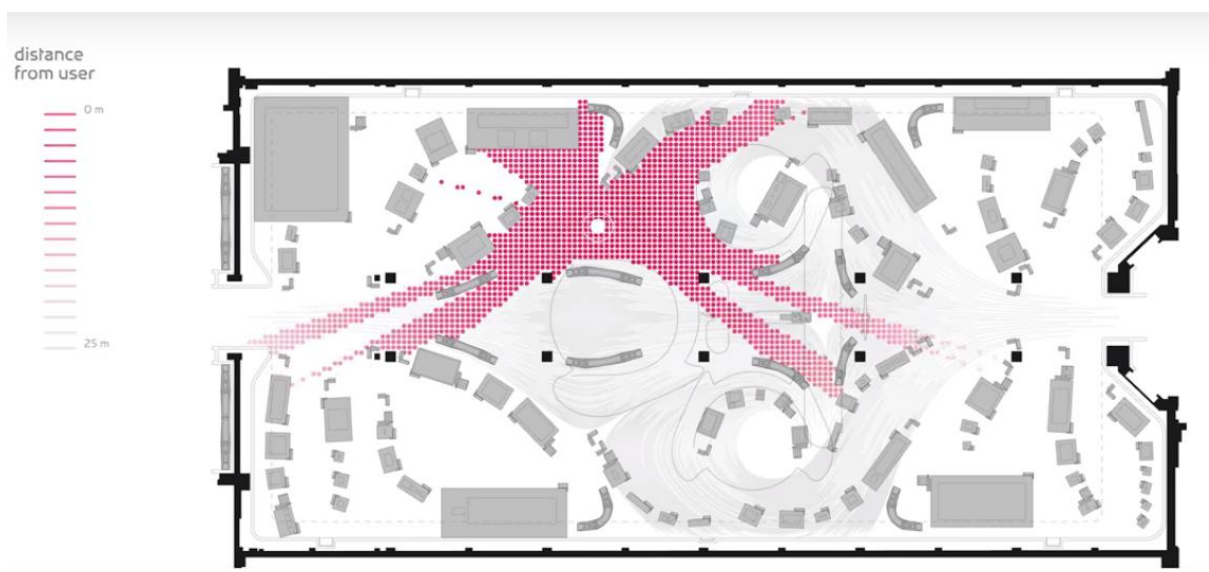


Figure 20 (user visibility from any point)

Circulation path was designed with respect to the geometry of aerodynamics. Curatorial objects are arranged in a way that people can walk around them and carefully inspect each and every exhibit. Due to the arrangements of objects around the gallery in a certain shape, from a certain point any visitor can have maximum visuals around him/her.

4.1.4 Site Planning and Landscape detailing



Figure 21 (showing site image with landscape and gallery location in the compound indicating with red)

South side of the museum complex where it faces the primary road is designed with green setbacks and landscape elements. Some green vegetation is also seen in the small courtyards and in the parking area.

4.1.5 *Parking details and standards*



Figure 22 (showing site image with parking location in the compound indicating with purple)

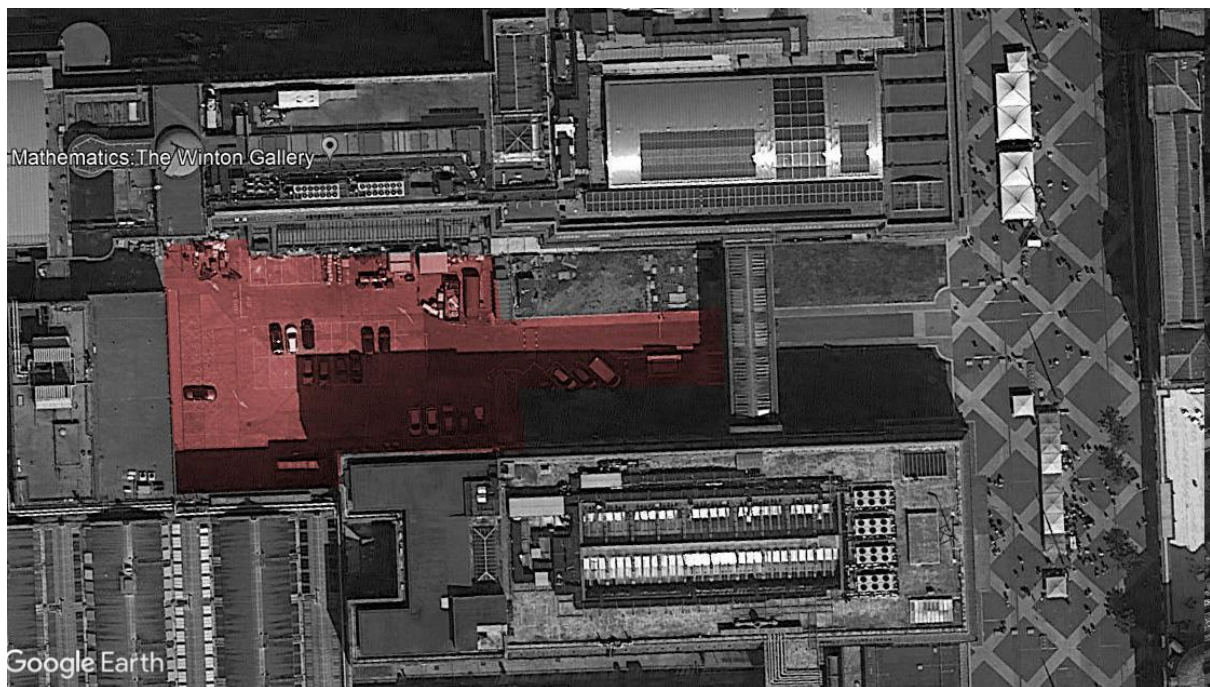


Figure 23 (showing site image with parking location in the compound indicating with red)

Surface parking facility is provided at the entrance of the museum. Entrance having an area of 21,000 sq ft, is capable of holding 60 car parking spaces.

4.1.6 Structural details

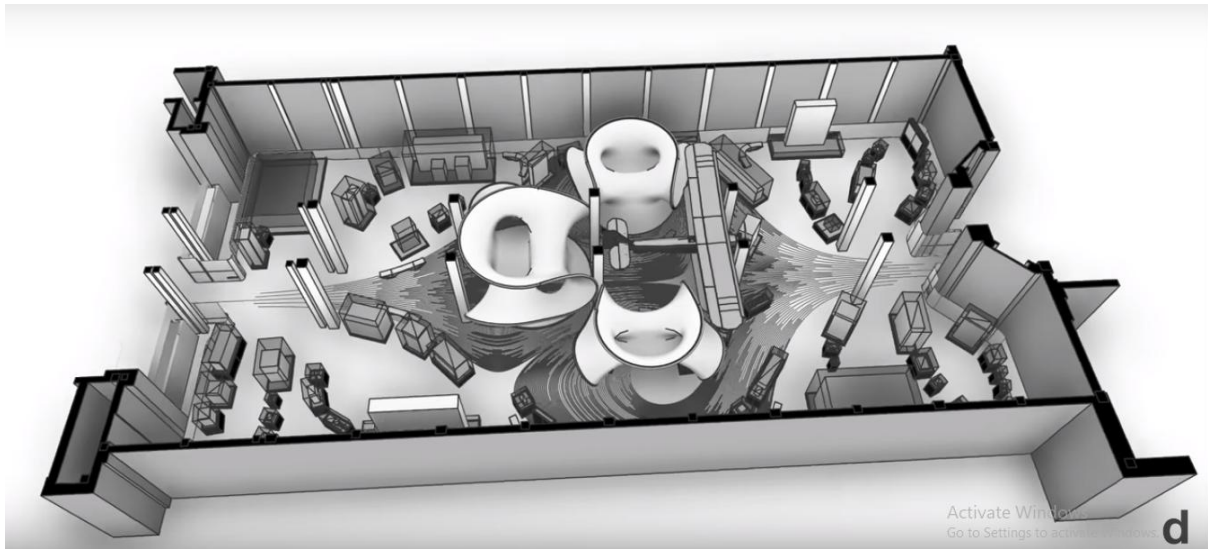


Figure 24 (structural elements and glass fiber shell)

Three parametric shapes were constructed with enhanced polymer glass. Illuminated with violet light from the inside. These glass forms were hung with support at both top and bottom.

4.1.7 Design detailing

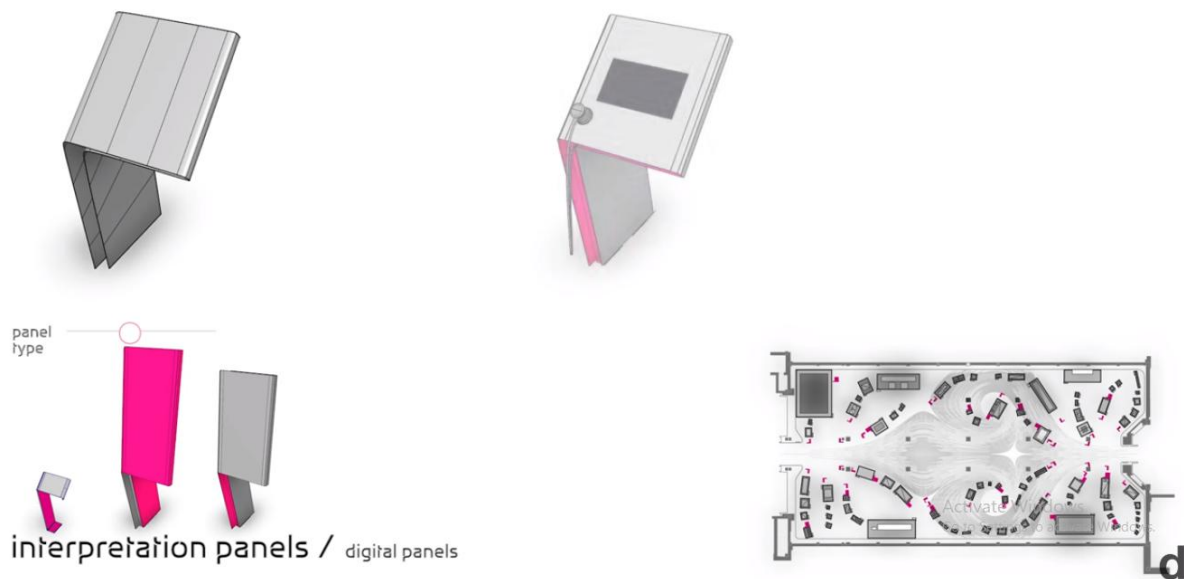


Figure 25 (interactive display panel)

Digital panels are arranged around the gallery to provide interactive showcasing and it shows details about the exhibits as well. Each and every panel is custom made designed in parametric shapes.

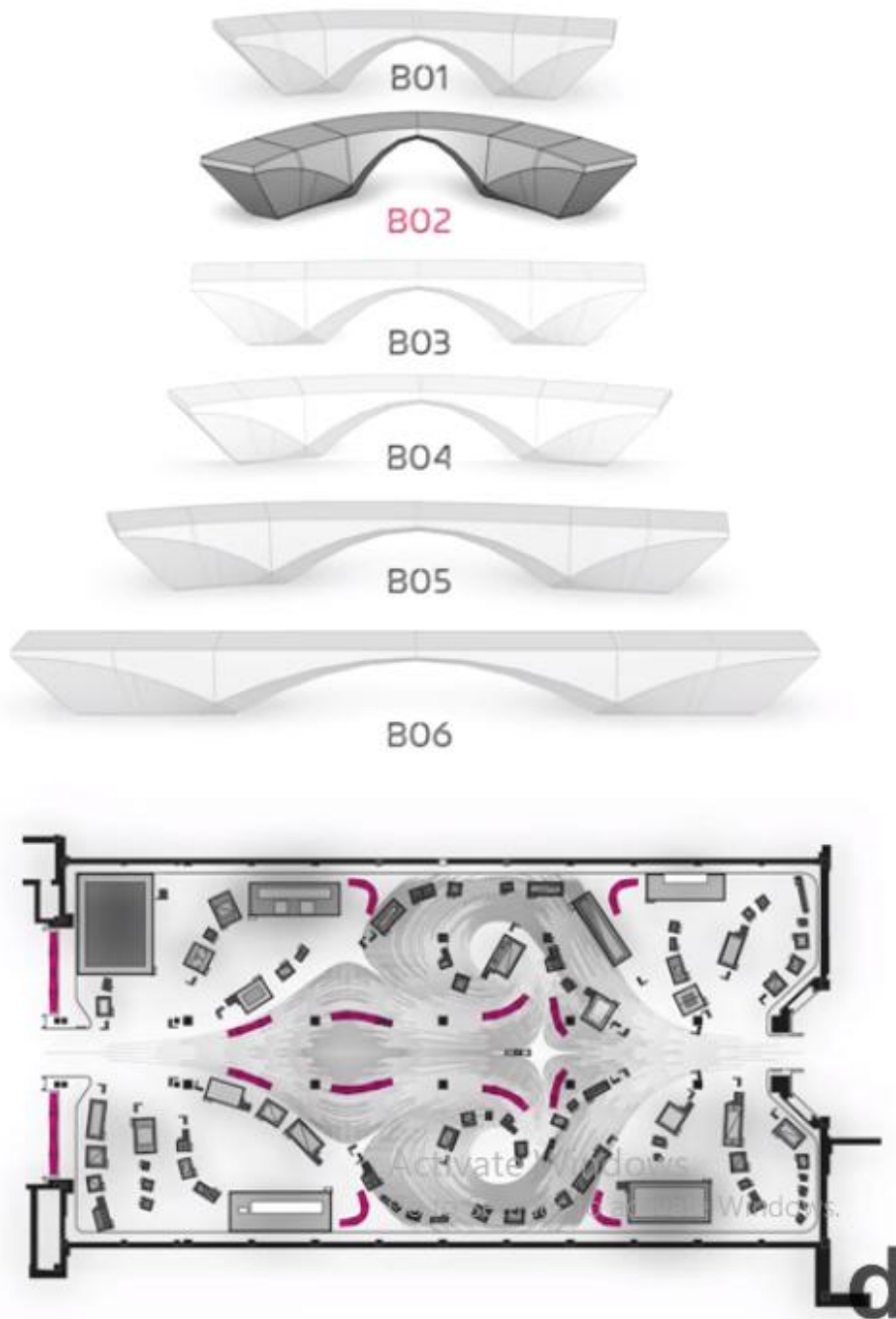


Figure 26 (3d printed seating benches made from concrete)

Organic shaped sitting benches are around the gallery providing both the elderly and curious children with comfort and joy. These benches are constructed by ODICO formwork robotics. The exterior surface of the benches is UHPC (ultra high performance concrete) with a lightweight foam core on the inside.

4.2 Nemo science center, Amsterdam



Figure 27 (Nemo Science Centre showing from deck of Amsterdam)

Nemo science center situated on the docklands of Amsterdam, founded in 1923 as a labour museum (national center for science and technology) was housed in 1997 in a five storey building. The building sits on an underground IJ tunnel in the heart of oosterdok, as part of development of IJ waterfront. The museum is designed in an mounting shape so that it allows an entrance to the roof plaza. The plaza is connected with a continuous stair that starts from the pedestrian road allowing the city people with direct access from the ground. Architect Renzo Piano wanted to provide the city with a public plaza near the coast since the city lacks the presence of a plaza. The roof plaza is facilitated with two cafeterias, fountain and green roof from where Visitors can enjoy the 360 view of the Amsterdam city and docks.

4.2.1 *Environment and micro-climate*



Figure 28 (deck of Amsterdam)

The museum is located in the middle waterfront development of oosterdok where the weather is cold and humid. During summer it reaches 22 degree celsius. Since the roof is designed for public plaza, the architect designed half the roof with a green garden and the other half with a water fountain and sitting steps. The green roof protects the building from solar heat and saves energy consumption. Thus keeping the interior space of the museum cool during summer. The building is shaped in a mounting ship where the slope starts from the south and reaches its top on the north side. Therefore the roof plaza gets all the south breeze. Since the roof fountain flows from top to bottom of the plaza, the air from the south flows above the fountain keeps the terrace cool.



Figure 29 (showing roof)

4.2.2 *User behavior and requirements*

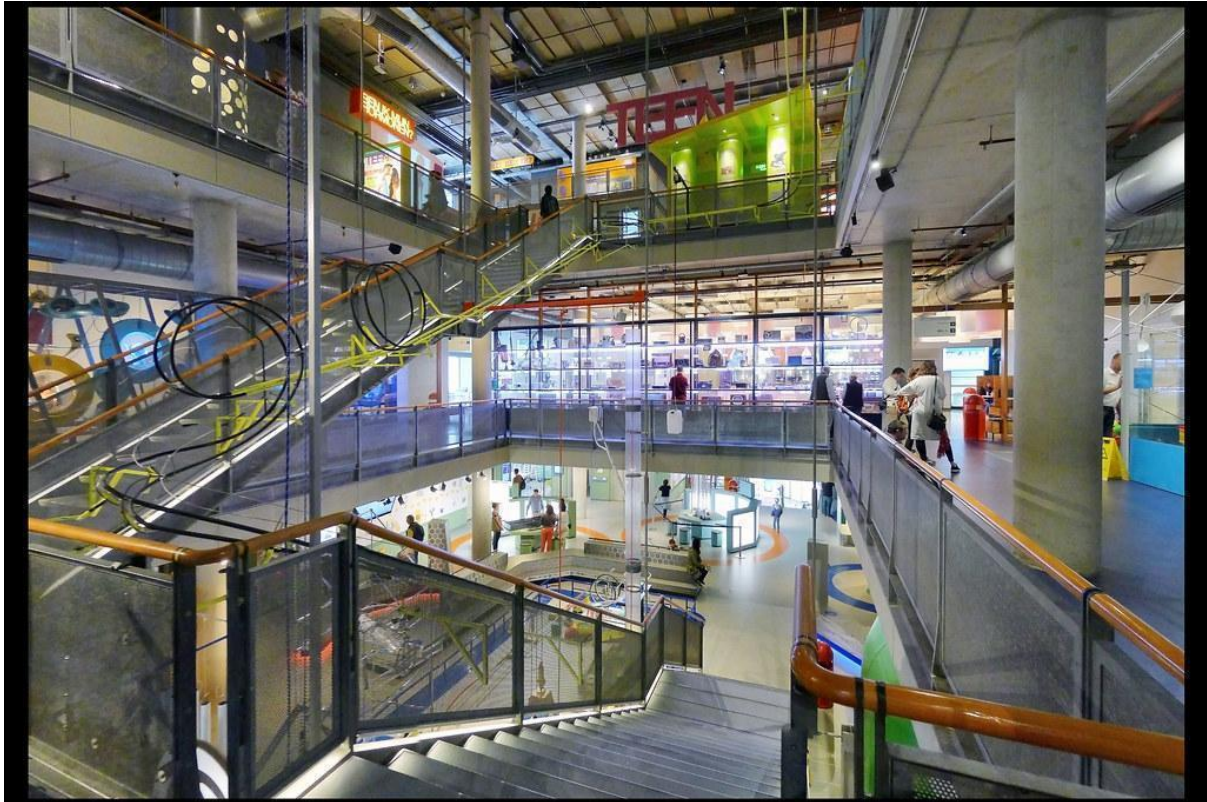


Figure 30 (showing museum interior)

Exterior facade of the museum is mostly designed with small windows. Therefore the interior is not much lit with sunlight. The reason behind this is to force the visitors attention towards the exhibits inside.



Figure 31 (showing museum exterior facades)

However the entrance lobby and surrounding circulation is facilitated with large openings to allow daylight.



Figure 32 (showing museum interior exhibits)

Most of the exhibition galleries are equipped with interactive installation. Some rare pieces of art materials are protected with glass covering Although allows the curious visitors to inspect closely as possible.



The museum provides a large number of hands-on experience exhibits and interactive installations which are mostly featured towards the experience of children, families and schools.

There are currently eleven semi-permanent exhibition galleries including miracles of science, phenomena, machine park, etc. Furthermore, the museum features multimedia galleries, 4D simulation, etc.

4.2.3 Form and Function

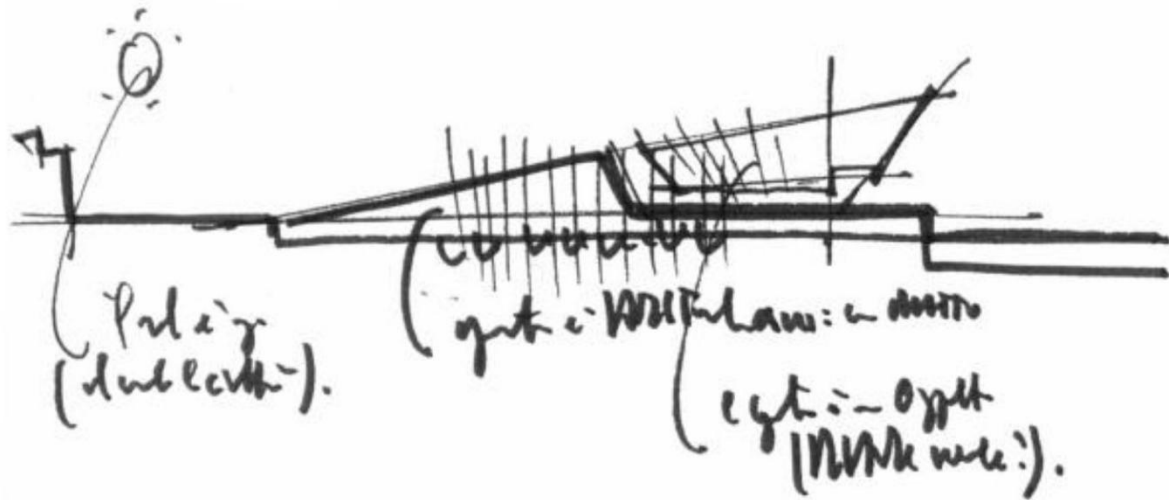


Figure 33 (conceptual sketch by Renzo piano)

Since the museum sits on an underground tunnel the architect wanted to use the tunnel piers as construction support. He designed an ascending theatrical shaped counter form. The ascending starts from the point where vehicular traffic enters below the museum and the form reaches its top on the other side creating a sloped plaza that allows a 360 view towards the city.

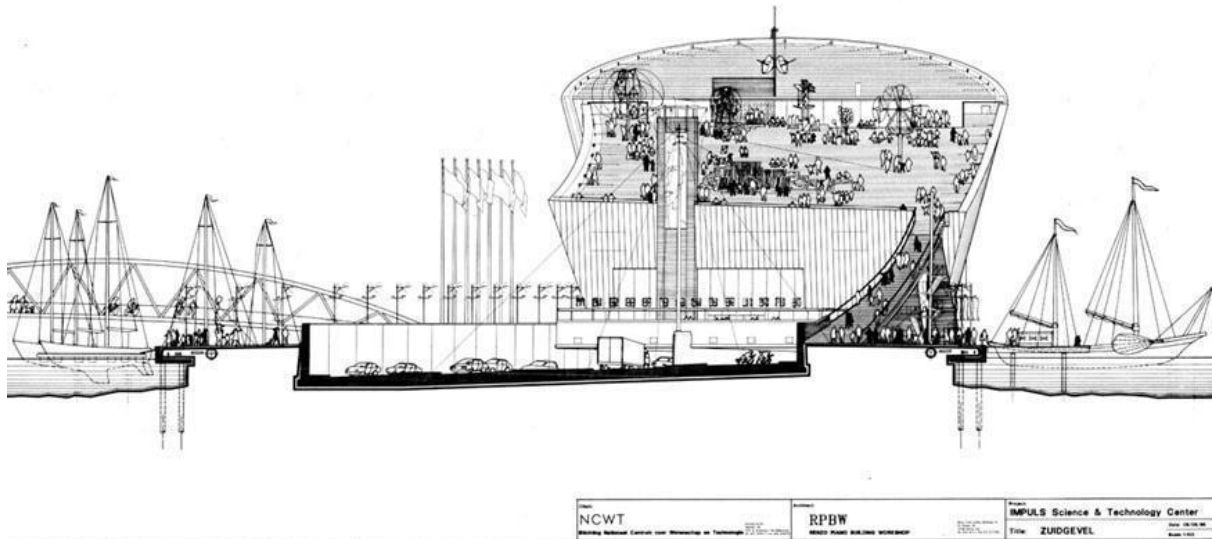


Figure 34 (showing section)

4.2.4 Horizontal and vertical circulation

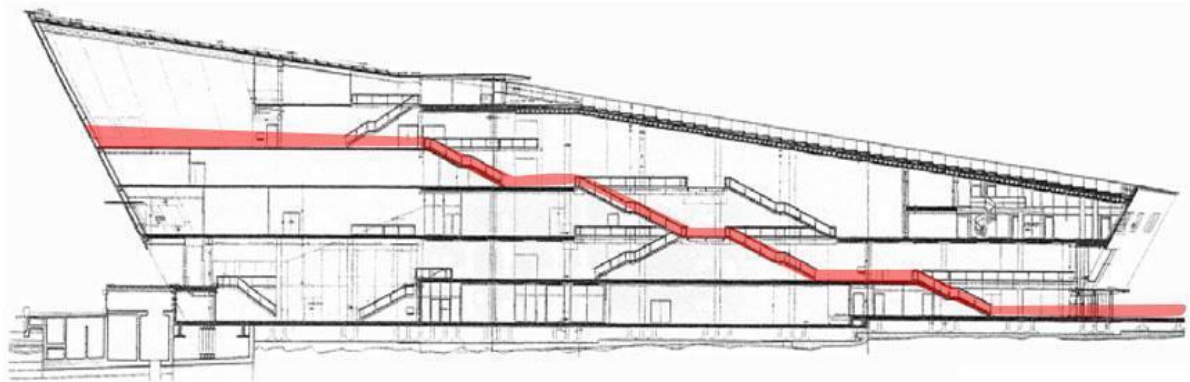


Figure 35 (showing section through circulation)

In the interior there is an ascending line of view. Open, wide and linear stairs connect the museum from floor to floor taking the visitors to top of the museum. The architect wanted to keep the direction of the circulation simple to prevent any sort of distraction.



Figure 36 (showing public access to roof and vertical circulation)

Entrance to the roof plaza starts with an ascending staircase that rests on the pedestrian. Furthermore, an elevator is provided for specially abled people.

4.2.5 Site Planning and Landscape detailing



Figure 37 (showing roof garden)

Entire museum complex sits on an old port. Therefore, the location of the building provides the museum with a beautiful waterfront landscape view. The architect also designed a public plaza on the roof where one third of the roof is allocated for gardening.



Figure 38 (showing roof garden)

Nemo has had a roof garden since 2013. It has 14 types of sedum and 25 types of herbs that grow on the roof. Estimating about 1000 sqm of surface area currently holding 17,500 number of plants. Furthermore, 20,000 buck fast bees are also farmed on the roof. The green roof keeps the building cool and protects from the solar heat.

4.2.6 *Parking details and standards*

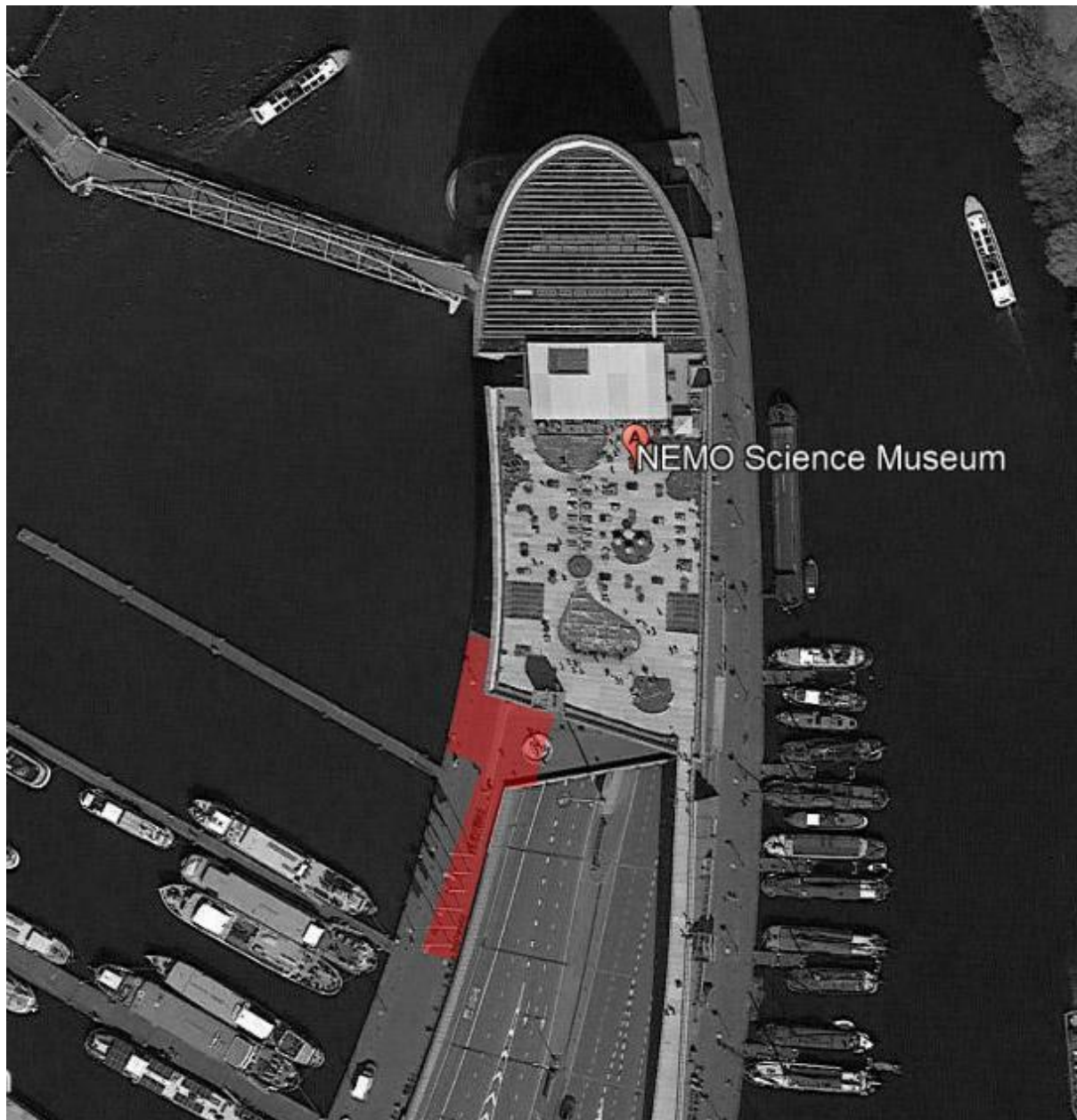


Figure 39 (showing surface parking)

The building itself does not provide any underground parking facility. However, on the west side entry of the building it has a long array of space for motorbike and cycle parking. The space can accommodate about 50-60 bicycles.

4.2.7 Structural details

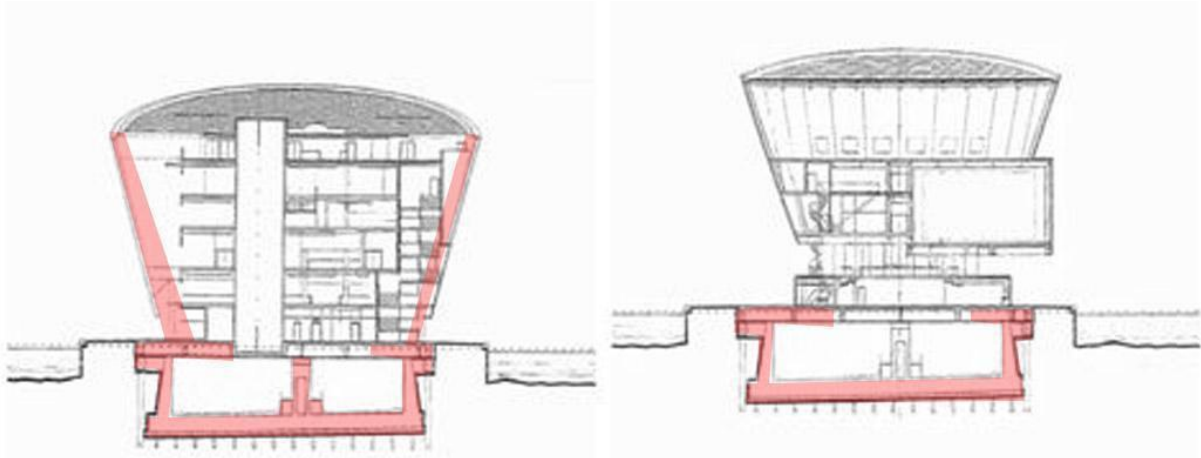


Figure 40 (showing structural elements)

The museum building sits on an underground tunnel thus the architect designed the building in an ascending theatrical form and taking support from the three tunnel piers.

4.2.8 *Design detailing*



Figure 41 (showing exterior facade)

Exterior facade of the building is cladded with ionized copper sheets painted green. The texture of the facade symbolizes the water surface. The rustiness of the facade also gives the vive of an old port. The architect wanted to resemble a ship anchored in an old port with the ship like form and metal texture. The exterior facade is provided with very small windows but on the ground level the openings are wide and uninterrupted to resemble metal screens floating over water reflection.



Figure 42 (showing roof activities)

Roof terrace is featured with open air exhibition and energetica and composed with installation to demonstrate the functions of how energy is conveyed by wind, water and sunlight.

4.3 Incheon children science museum



Figure 43 (Incheon children science museum)

Incheon children museum is located at the entrance of gyeyang mountain, in Bang chung-dong. Incheon city claims this museum to be the nation's biggest children specialist museum after 10 years of long cherished promotion. The museum was built in 2011 and it covers 15,000 sqm built area. The museum was built with the concept of “sponge that embraces children's dreams”.

4.3.1 Environment and micro-climate

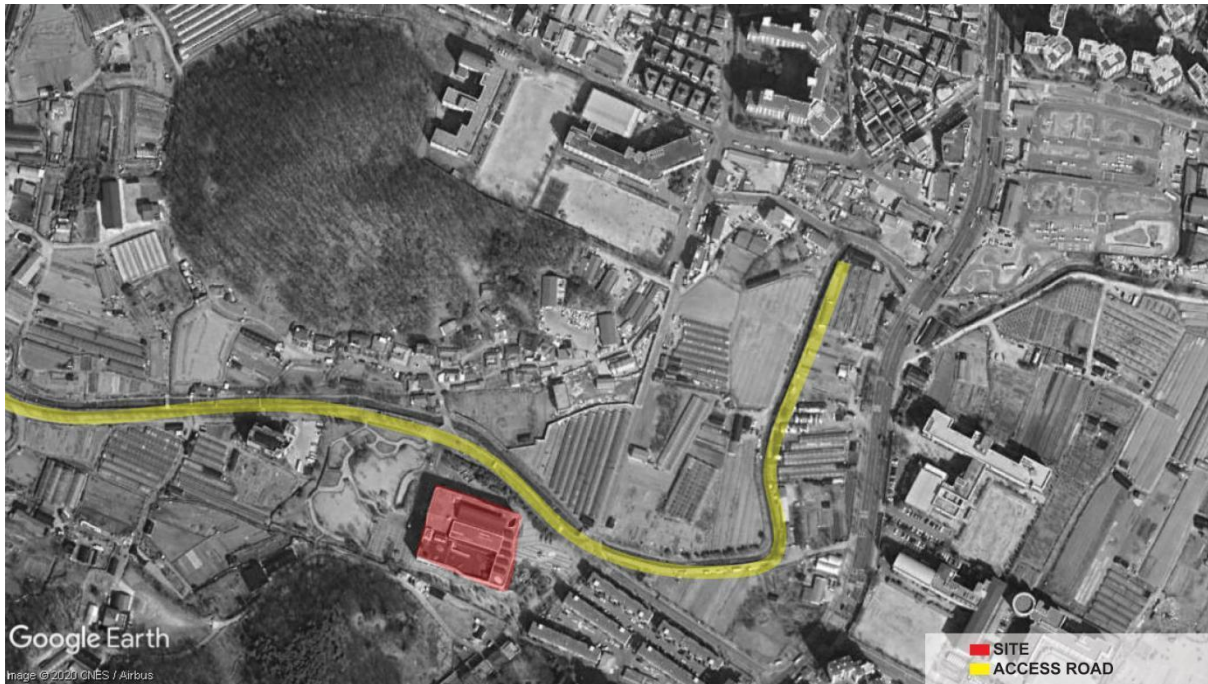


Figure 44 (showing vehicular access and museum location indicating red)

The museum is located at the base of Gyeongyang mountain and most of the land around the museum has a rich amount of vegetation . Weather conditions of the site are wet and humid. Maximum humidity is 82% and maximum temperature is 29 degree celsius.

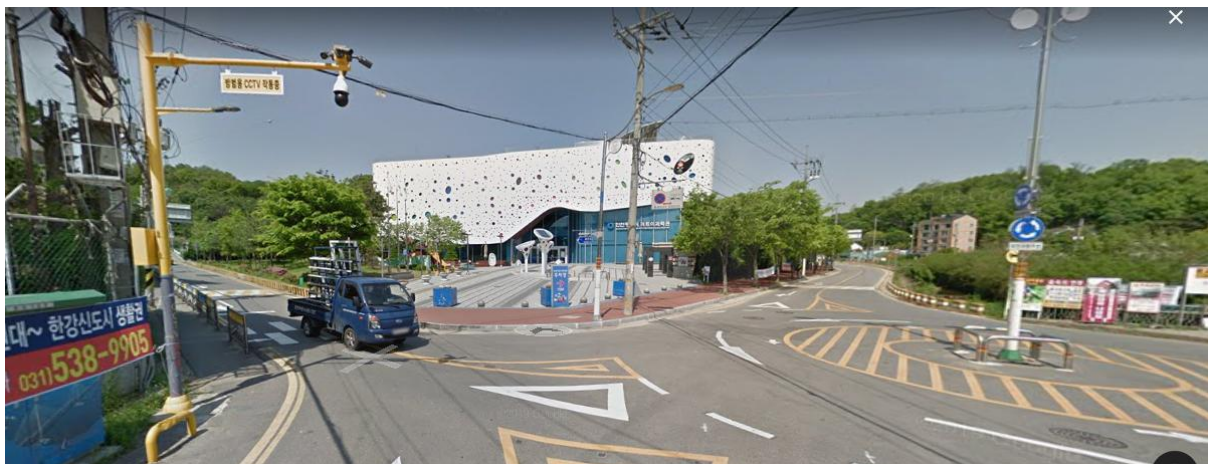


Figure 45 (entry gate of museum)

The east and west side of the site does not have high rise buildings or mountains therefore the southeast breeze flows through the site and keeps the exterior spaces of the museum cool.

4.3.2 *User behavior and requirements*



Figure 46 (showing entry lobby)

The museum is designed specially for children. Therefore the development of the concept was done with four icons. Dream icon, eco icon, funny icon and community icon. The building was designed with child like shape with distinctive perforated elevation which represents Dream icon, the diverse outdoor spaces that connect the interior with the exterior represents Eco icon, the space at the central hall, exhibition space with various attraction, exhibits that allow the children to enjoy the journey represents Funny icon finally, the flow of the building that allows the visitor to cross from inside to outside represents the Community icon.



Figure 47 (showing entry lobby)



Figure 48 (showing exterior facade)

Most of the exhibition halls are designed for interactive learning facilities. Interior spaces are designed with bright color, attractive installation, intimate spaces, small benches, tables, play cards so that children can enjoy and learn at the same time.



Figure 49 (showing children learning zone)

4.3.3 *Form and Function*



Figure 50 (Incheon children science museum)

The museum was designed with the concern that it would reflect and resemble the children's psychology and merge with the context of Incheon city. Therefore allowing a large amount of exterior green space resembles the context where nature and the city runs continuously. Furthermore, the shape of the building allows a cross pass from one end to the other to establish one of four icons, known as community icons. The exterior face of the building is covered with distinctively perforated elevation to create a child-like resemblance.



Figure 51 (showing roof garden)

Roof is partially curved on the south side of the building inspired by the gyeyang mountain. Also the roof terrace is featured with a green amphitheatre so that people can enjoy the view of the city and mountain.

4.3.4 Horizontal and vertical circulation

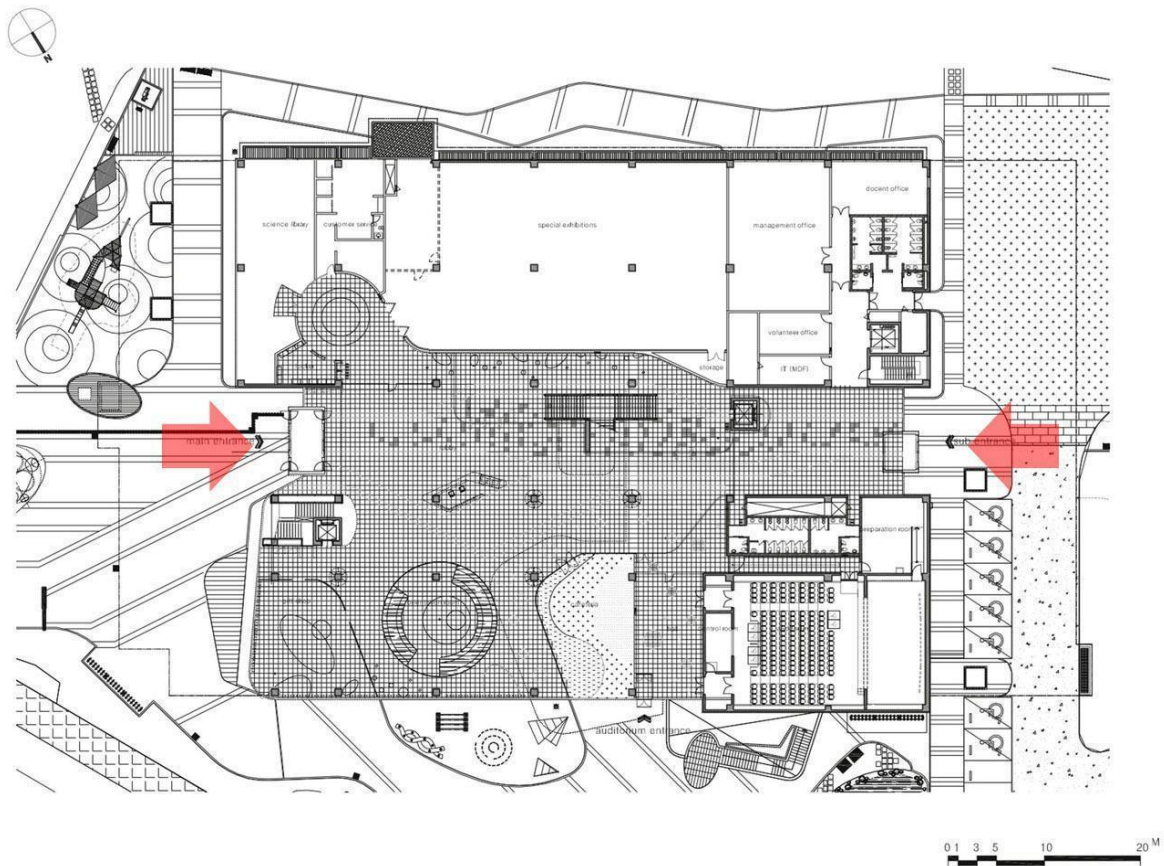


Figure 52 (showing service and guest entry)

Main entrance of the building is from the west side. There is another entry that mostly serves the administration which is from the east side of the building. On the ground floor level there are two exhibition halls in the north and a multipurpose hall in the southeast. Rest of the space is allocated for the entry lobby that connects all the exhibition halls, exterior and interior.

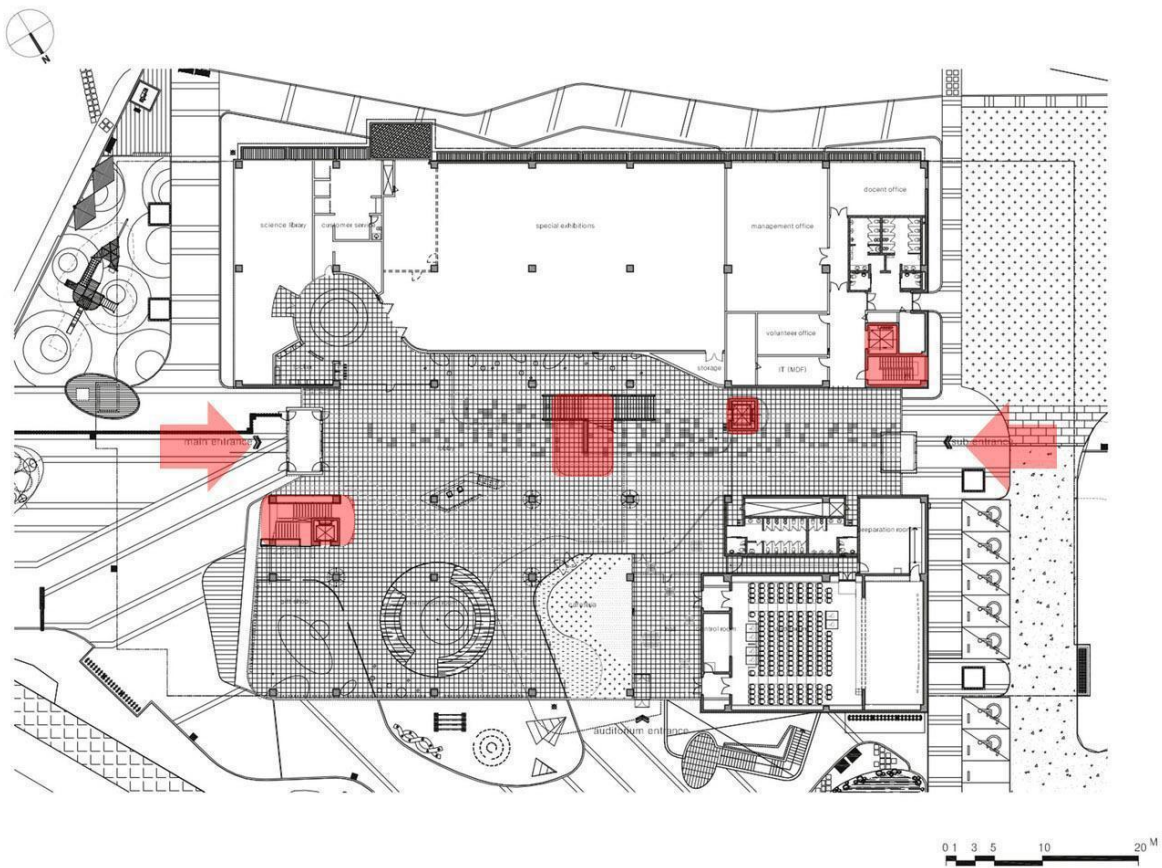


Figure 53 (showing vertical circulation)

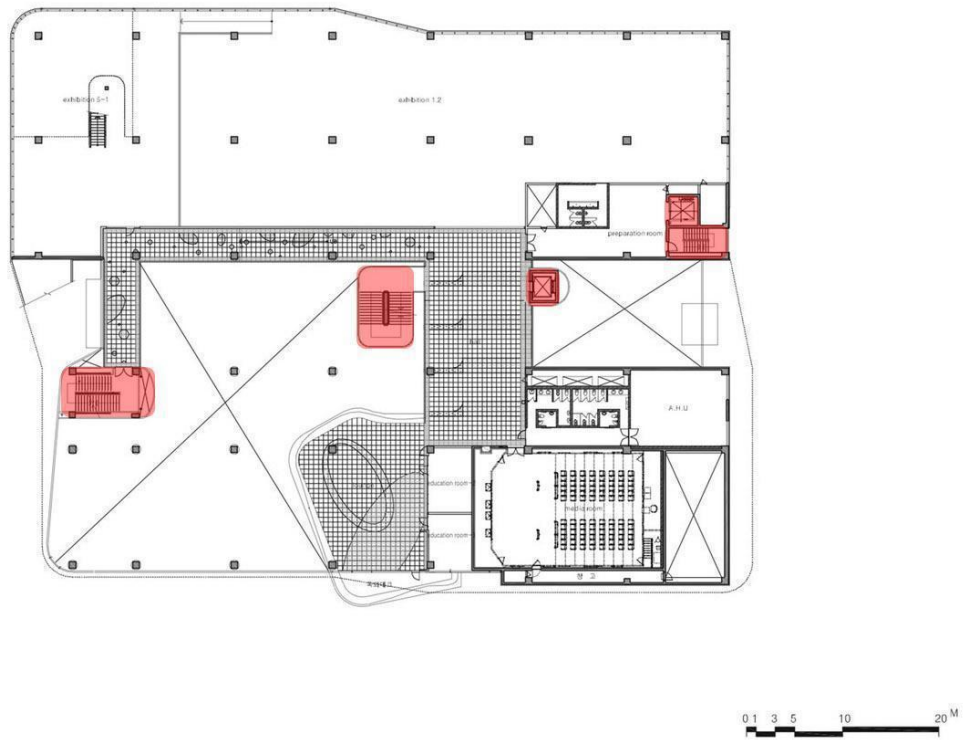


Figure 54 (showing vertical circulation)

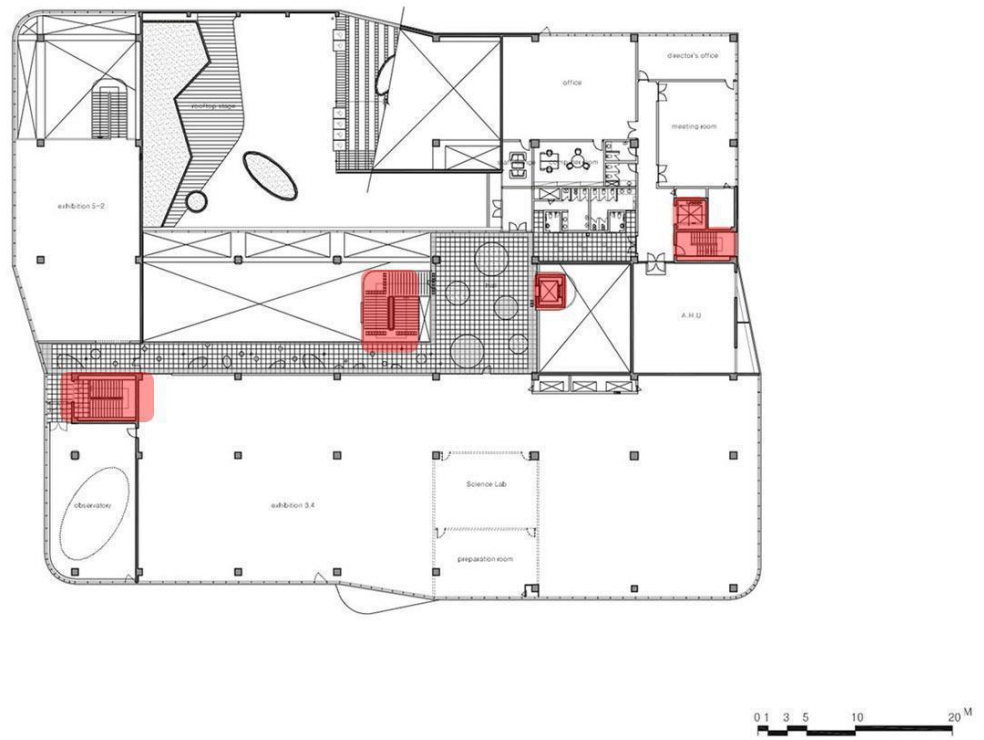


Figure 55 (showing vertical circulation)

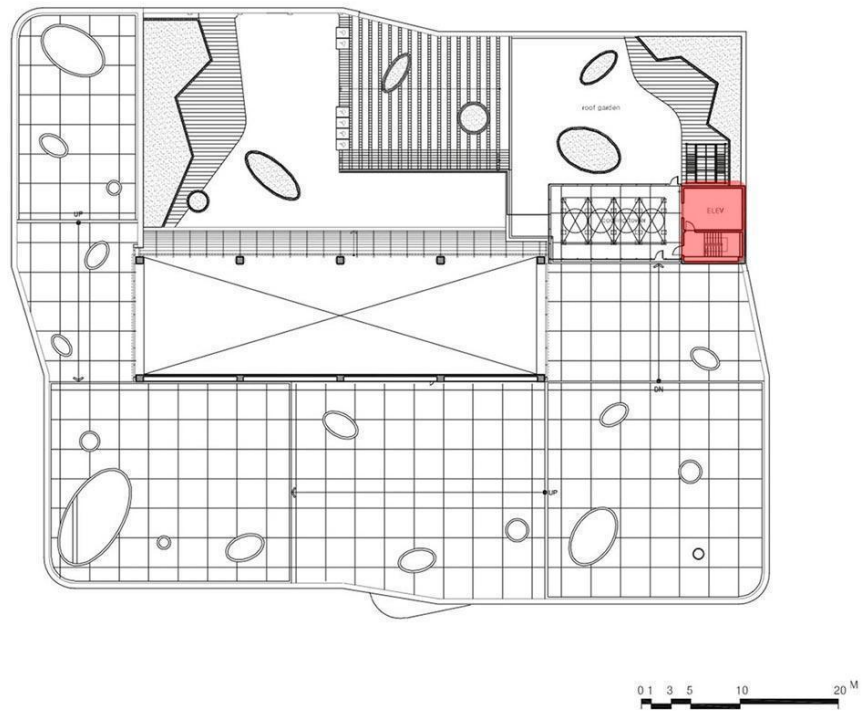


Figure 56 (showing vertical circulation)

From the ground floor there are two wide staircases and one elevator for public access and one circulation core for service functions which also runs to the top of the building.

4.3.5 Site Planning and Landscape detailing

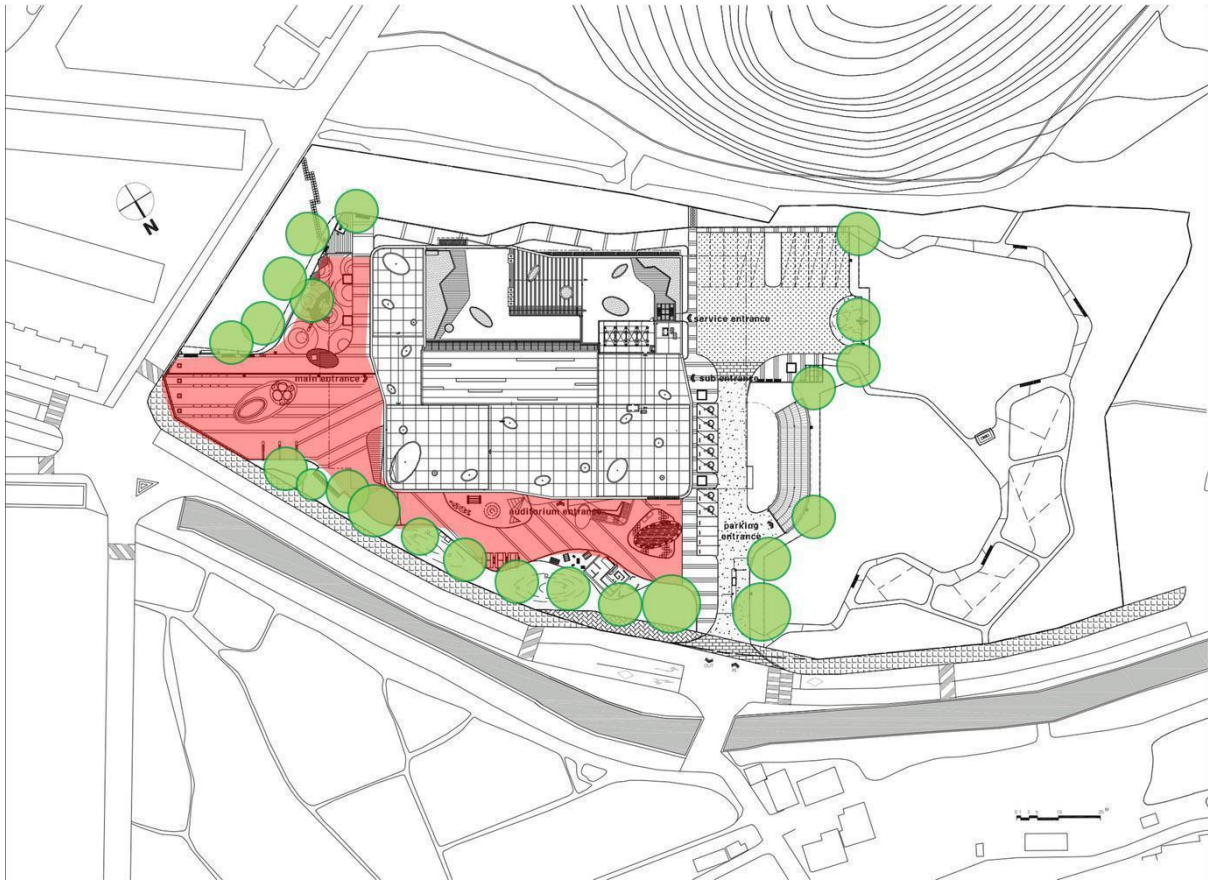


Figure 57 (showing landscape elements)

Entry plaza is paved with tiles with geometric patterns. The north and south site has a rich amount of vegetation that keeps the exterior spaces cool. Service entry and guest parking on ground level is paved with pitch although the site boundary has long tree lines providing shade to the cars and backyard.

4.3.6 *Parking details and standards*

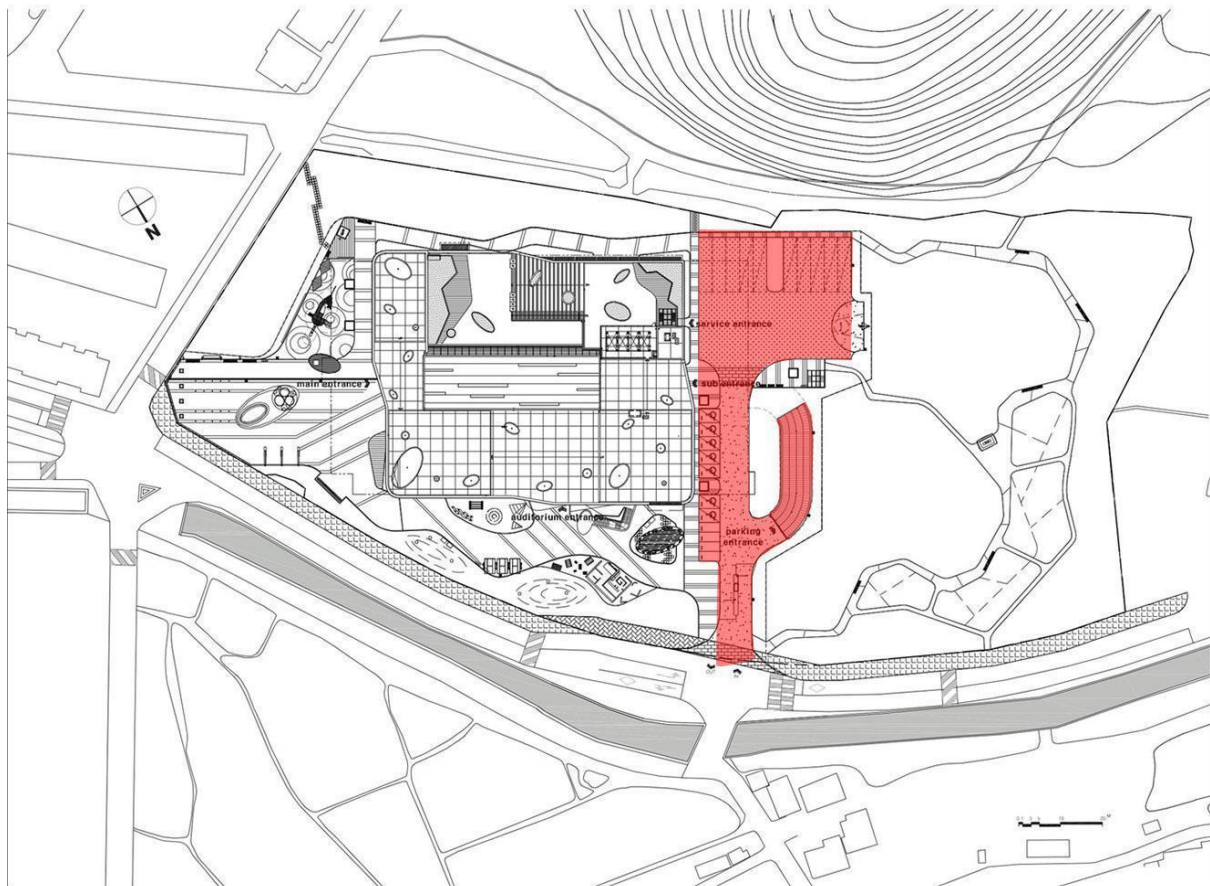


Figure 58 (showing parking facilities)

At ground level, entry to the basement is at the west side of the building. The museum site provides a large surface parking area allocating 10 guest parking and 10 service vehicle parking facilities.

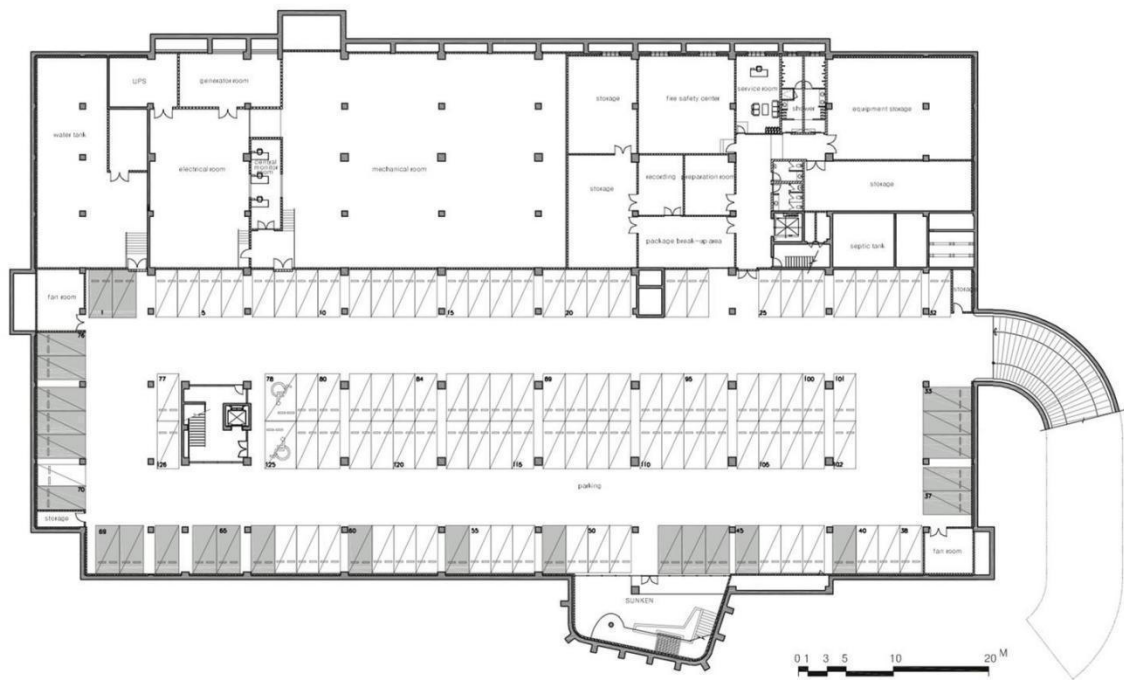


Figure 59 (showing basement parking facilities)

The basement provides spaces for 130 parking along with other service facilities.

4.3.7 Utility planning

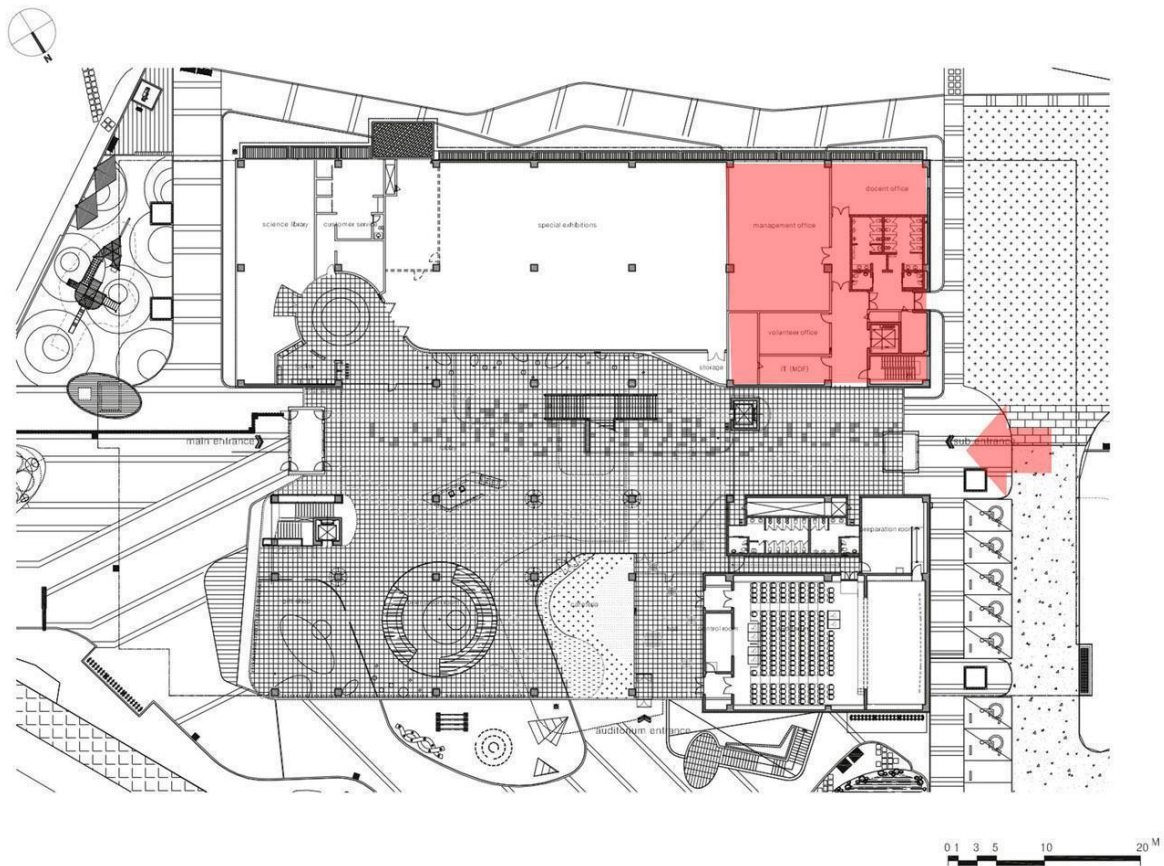


Figure 60 (showing utility service facilities)

At the ground floor level utility facilities, administration, storage, MDF, surveillance room etc are located on the west side of the building. Service circulation core that runs from the basement to the top of the building is also located alongside the administration room.

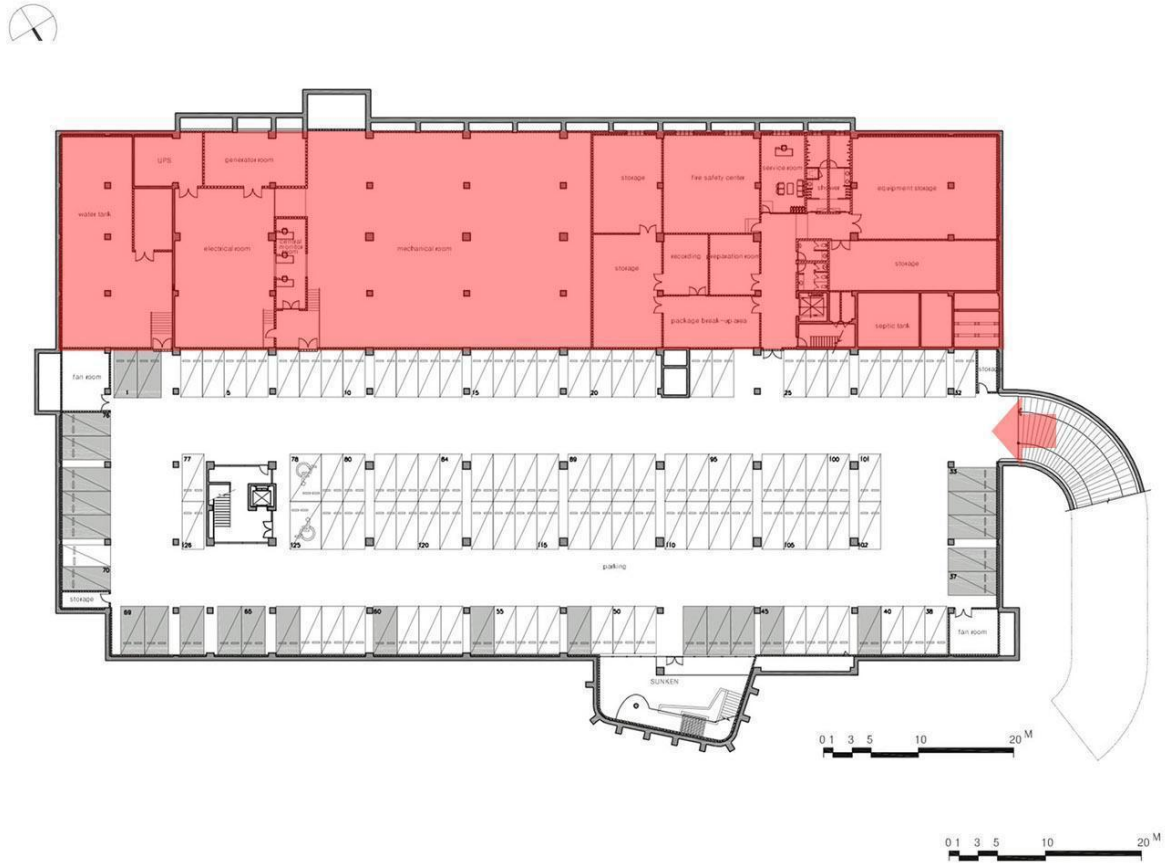


Figure 61 (showing basement service facilities)

Basement houses all the mechanical rooms, HVAC, storage, water tank, UPS, generator room, fire safety room, equipment storage, cloak room, septic tank etc.

4.3.8 Structural details

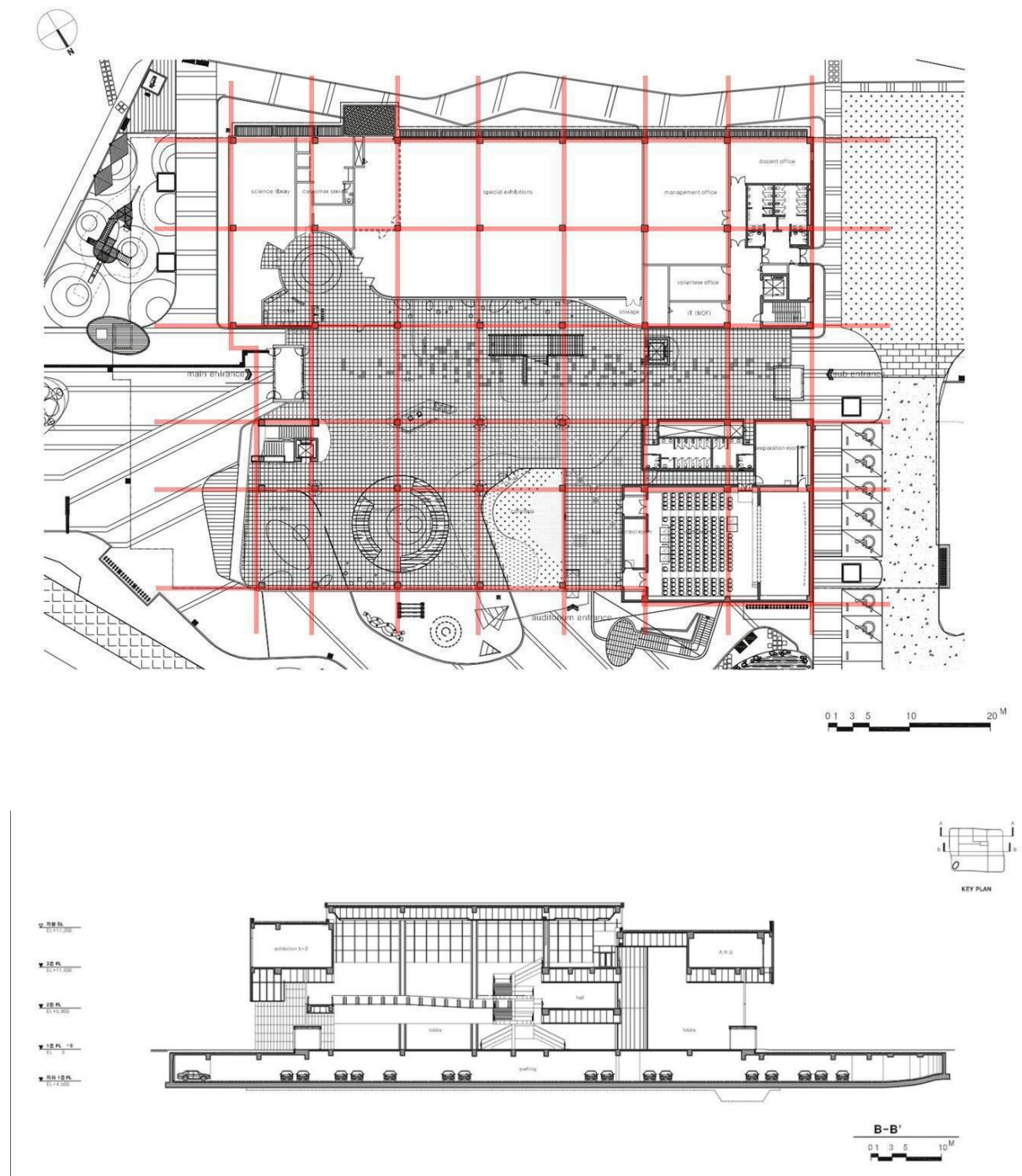


Figure 62 (showing structural system and section through entry lobby)

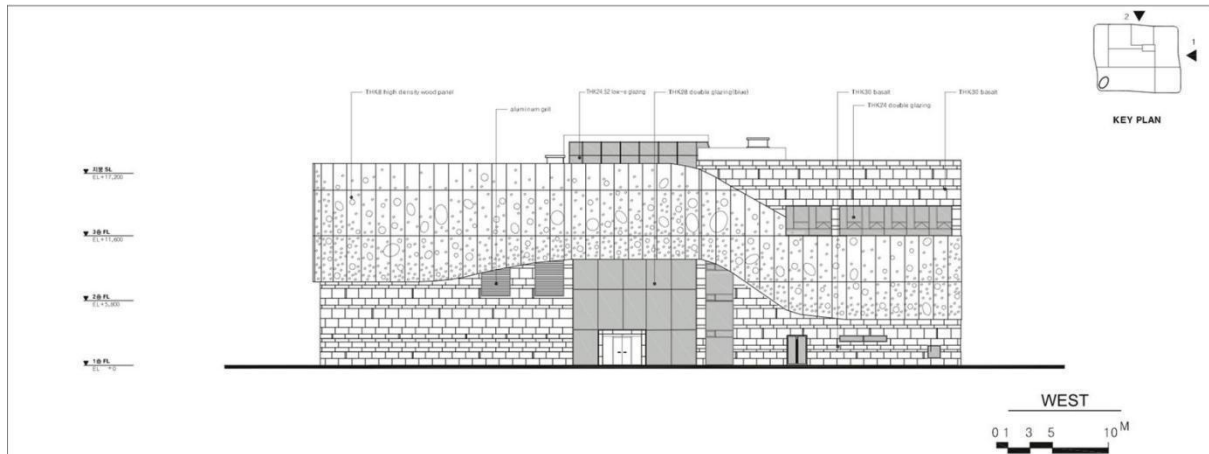


Figure 63 (showing west elevation)

The museum was constructed with a beam column structural grid system. Exterior facade is made with aluminium perforated sheets.

4.3.9 Design detailing

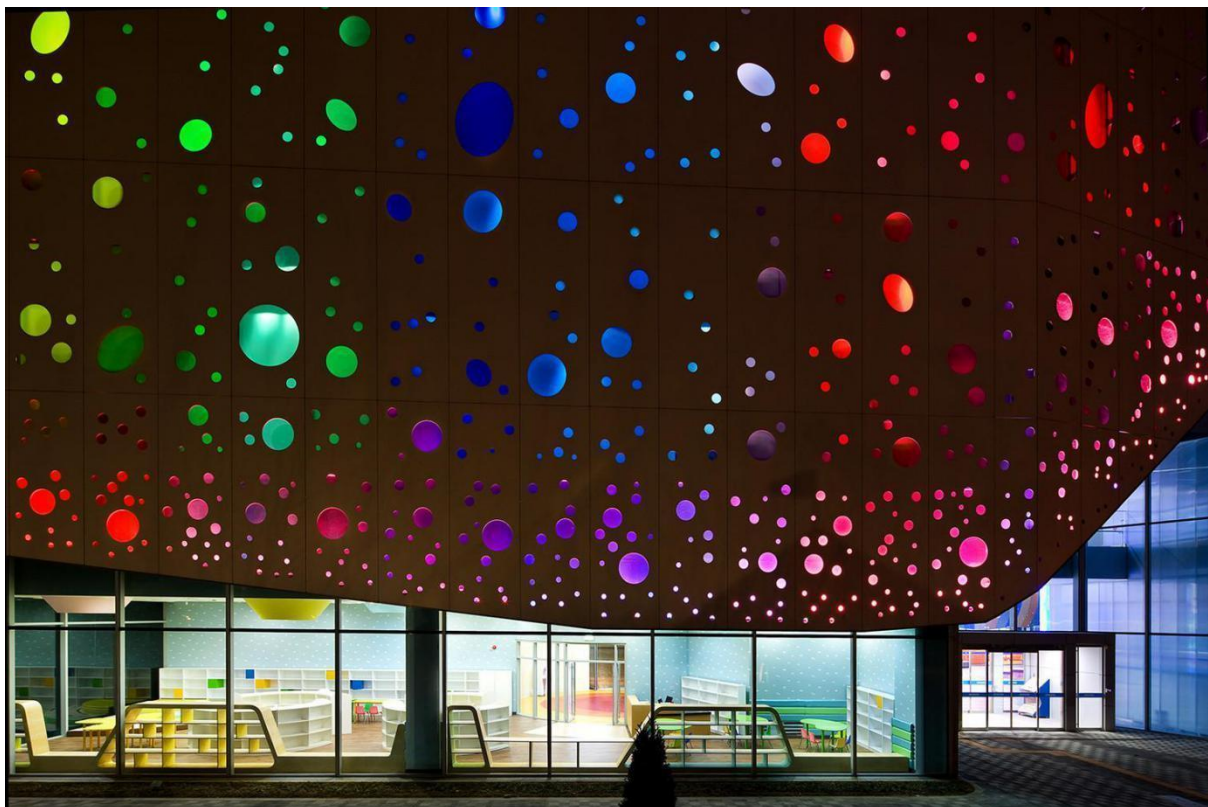


Figure 64 (showing exterior screen)

Perforated aluminum sheets allow light from the outside during daytime and lit the interior. And during the night the interior colorful lights that come out of the perforation lights the exterior spaces around the museum.



Figure 65 (showing mezzanine floor)

The architect carefully designed all the openings corresponding to the corridors in a way that during daytime artificial lights are not needed.



Figure 66 (showing entry lobby)

Interior hall rooms, courts and benches were covered with soft covering to prevent any types of harmful injury to the children. colorful lights, shapes, floors, patterns create a happy environment for the children.

Chapter 5: Program Appraisal

The museum is proposed on a 2, 17,000 sq ft site area. Currently it has 8 galleries and 80 employees working on a regular basis. The museum committee proposed a redesign of the museum. Proposed museum will have 24 galleries and 398 number of employees. The museum also has proposals for 200 seat dormitories for visitors, 50 seat dormitories for emergency staff, 1000 person auditorium and lecture theatre. All the programs were considered based on current context and similar project facilities. Space allocation for most of the functions are based on time savers standards. Starting from, each of the galleries is proposed to accommodate 30 people at a time. According to standards an exhibition space requires from 30-50 sq ft area per person. Therefore most of the galleries are designed with 50 sq ft per person capacity. Exhibition storage facilities are given at the ratio of 30% of total exhibition space. Furthermore many outdoor spaces can be utilized for open air exhibits and interactive galleries.

However some of the proposed functions seem very large. For example the current proposal has a 1000 seat auditorium which is too large for a museum in our context. The largest auditorium in Dhaka is currently capable of holding about 475 people which is in Bangabandhu International Conference Centre. Similar facilities like National Museum of Bangladesh, Liberation War Museum, Novotheatre does not have an auditorium this big. Most of the multipurpose halls, or banquet halls in Dhaka have capacity between 150-450 people. Therefore the auditorium size for this museum is considered to have 500 people which is both feasible and economic.

The museum currently has 3 Musu buses and plans to extend it to 5nos. Guest parking calculation is done based on a national building gadget which is 1 car per 200 sq m area.

Administration space facilities are designed according to time savers office standards. Directorial office will have 200 sq ft per person office space, the curatorial department is designed with 150 sq ft per person space allocation. All the employees are provided with 125 sq ft per person floor area. Finally staff, gallery attendants are given adequate space for work and monitoring adjacent to their respective functions.

The museum has a proposal for a 200 person dormitory for visitors and 50 person emergency staff dormitory. Firstly, research people in similar facilities tend to reside in nearby residences, hotels or service apartments. Furthermore the frequency and amount of research people visiting any museum is far less than two hundred. Moreover the museum itself does not provide a research facility for so many visitors. Secondly, staff in the current museum tend to live with their family in a nearby colony. Therefore the museum facilities are considered without a visitor and staff dormitory. Proposed Science museum with all its facilities will have approximately 1,84,000 sq ft built area.

GALLERY SPACE				
functional space	number of unit	number of users	area per unit (in sqft)	total area (in sqft)
physical science	3	90	4500	13500
biology	3	90	4500	13500
fun	1	30	1500	1500
astronomy	1	30	1500	1500
agriculture	1	30	1500	1500
electricity	1	30	1500	1500
heritage	1	30	1500	1500
maritime	1	30	1500	1500
dynamics	1	30	1500	1500
natural history	1	30	1500	1500
mathematics	1	30	1500	1500
statistics	1	30	1500	1500
human body	1	30	1500	1500
evolution	1	30	1500	1500
earth science	1	30	1500	1500
invention	1	30	1500	1500
music and sports	1	30	1500	1500
information technology	1	30	1500	1500
Reconstruction and deconstruction	1	30	1500	1500
interactive	1	30	1500	1500
30% Circulation				16200
service facility				
storage	1		15000	15000
			Subtotal	71700

Additional Facilities				
functional space	number of unit	number of users	area per unit (in sqft)	total area (in sqft)
observatory	1	3	30	30
special observation	1	10	10	10
cafeteria	1	50	1000	1000
auditorium	1	500	14000	14000
conference room	1	50	550	550
waiting lounge reception	1	50	2000	2000
research room	1	30	3000	3000
training room	3	30	750	2250
lecture theatre	2	80	450	900
modern mechanical workshop	1	25	1250	1250
library	1	50	2500	2500
laser show cinema hall	2	100	500	1000
daycare	1	30	1200	1200
medical I center	1	4	200	200
prayer space	1	40	450	450

			30% circulation	9102
utility facility				
auditorium washroom	1	500	700	700
gallery and additional space	6	1272	384	2304
			Subtotal	42446

Parking facility				
functional space	number of unit	number of users	area per unit (in sqft)	total area (in sqft)
guest parking	50	1272	246	12300
auditorium parking	100	500	246	24600
admin parking	10	10	246	2460
service parking	5	254	246	1230
bus parking	5	200	900	4500
			Subtotal	45090

ADMINISTRATION					
functional space	department	number of person	total number of users	area per person (in sqft)	total area (in sqft)
director	director general	1	8	200	1600
	additional director general	1			
	director	2			
	deputy director	3			
	private secretary	1			
curator	chief curator	1	40	150	6000
	senior curator	4			
	curator	7			
	assistant curator	28			
office employee	care taker engineer	1	64	125	8000
	executive engineer	4			
	programmer	1			
	chief display officer	1			
	assistant engineer	3			
	deputy chief display officer	1			
	senior artist cum audio visual officer	1			
	assistant programmer	1			
	bookkeeping officer	1			
	public relation officer	2			
	administrative officer	1			

	transport officer	1			
	security officer	1			
	deputy assistant staff	6			
	assistant administrative officer	1			
	bookkeeper	2			
	office superintendent	1			
	typewriter cum computer coinage	3			
	senior accounting assistant	2			
	type coinage cum computer operator	3			
	accounting assistant	2			
	office assistant cum computer coinage	25			
employee	receptionist	2	16	125	2000
	high quality assistant	3			
	camera assistant	1			
	artist	1			
	sculpture	1			
	sculpture assistant	1			
	video cameraman	1			
	graphics designer	1			
	still cameraman	1			
	taxidermist	2			
	her barium assistant	2			
medical	nurse	1	4	30	120
	medical officer	1			
	paramedics	1			
	medical attendant	1			
library	librarian	1	4	30	120
	assistant librarian	1			
	library assistant	1			
	library attendant	1			
staff	technician	4	111	25	2775
	audio technician	1			
	automobile technician	1			
	mechanic	1			
	store assistant	2			
	ticket seller	4			
	musu bus driver	4			
	movie bus driver	4			
	micro bus driver	6			
	pickup driver	1			
	transport driver	4			
	driver	7			

	electrician	3			
	lade operator	1			
	pump operator	1			
	lift operator	1			
	generator operator	1			
	task assistant	2			
	plumber	1			
	musu bus attendant	8			
	workshop attendant	4			
	musu bus helper	4			
	lift man	4			
	message carrier	2			
	security guard	21			
	bus helper	4			
	gardener	3			
	cleaner	12			
gallery	gallery assistant	36	143	25	3575
	telescope operator	4			
	laser show operator	2			
	4D movie operator	2			
	painter	1			
	pattern maker	1			
	carpenter	1			
	gallery attendant	24			
	museum attendant	1			
	attendant	7			
	telescope attendant	2			
	gallery guard	24			
	office attendant	37			
	cash pion	1			
total employee			390	Subtotal	24190

utility facility	number of unit	number of users	area per unit (in sqft)	total area (in sqft)
director+curator+employee+ medical+library	1	136	384	384
staff+gallery	2	254	384	768
			Subtotal	1152

Total built area				184578
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Chapter 6: Design Considerations

The concept of the museum is greatly influenced by the museum evolution throughout the last two centuries. Evolution has changed science museums from traditional exhibits gallery to fully interactive hands on user experience gallery and initiated more public involvement through providing a mutual platform for knowledge sharing. This typology is merged with the current technological extent of our country and how people tend to learn technological advancement. Building arrangement of the museum is directed by site surrounding and existing site condition. Facade treatment and use of material is also designed to utilize maximum amount of light and ventilation.

6.1 Concept generation

ASHLOMEN SCIENCE MUSEUM OXFORD Consists of private collection Leveled geological and biological specimen	BEGINNING Artifacts, sculptures, historical Remains were Used as exhibits	FIRST GENERATION Remains of 1st 2nd World war machine Privately owned Materials Industrial innovation material	SECOND GENERATION Trade material show for Making promotion Advertisement of man Manufacturing company Idea of public education	PUBLIC EDUCATION Albert Einstein's visit to Pairs Inspired the introduction of palais de la decouverte 1937.	THIRD GENERATION Introduction of science Center Public education priority number one Interactive exhibits	SCIENCE AND TECHNOLOGY MUSEUM exploratorium in san francisco, 1969. No product promotion Interactive only
LATE 18TH CENTURY	LATE 18TH CENTURY	19TH CENTURY	20TH CENTURY	AROUND 1922	MID 20TH CENTURY	LATE 20TH CENTURY
				A pioneer of showing Principles of light, Mechanics, heat, Sound was the buffalo Museum of natural Science	Allows for product Replication and selling of Certain exhibits for Economic sustainability	Modern science Museum Has three folds Exhibition of collection Sponsoring of research Education Show contemporary development rather than 19th century physics, astronomy, biology

Evolution of science museum

Figure 67 (evolution of science museum, source: author)

Evolution of science museums has been going on for centuries. During the late 18th century Science museum consisted of private collection, sculptures, and historical remains. Later it

started showing 2nd world war machines. The idea of public education started to evolve during 1937 and at this time Buffalo Museum of natural science pioneered showing principles of Mechanics, light, heat etc. Science centers started to evolve during the mid 20th century which incorporated both training and research facilities. Product promotion was a big aspect for newer science centres. Replication and selling of products became essential parts of the museum for economic sustainability. (Friedman, A, 2010).

Following few characteristics were considered as fundamental parts for a modern science museum.

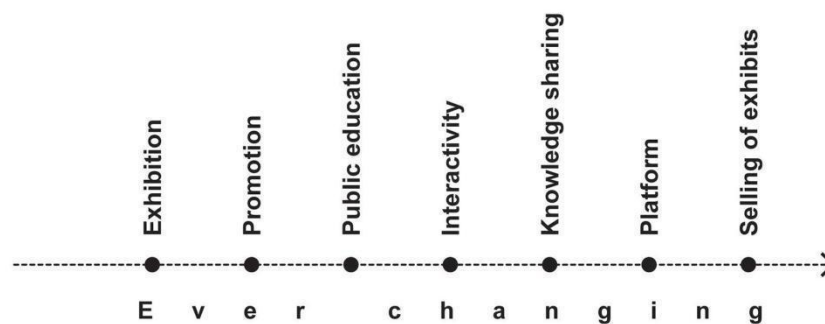


Figure 68 (modern museum fundamental characteristics)

Considering our local context of technological advancement, the newly proposed science museum should have four essential folds to ensure success. Firstly, the museum should bridge the gap between inventors and product users(someone who utilizes technological products or machines or skills). Secondly, it should ensure public education. Thirdly, the museum should work as a mutual platform for knowledge sharing and finally the character of the museum would adapt to the continuous changing nature of scientific discovery.

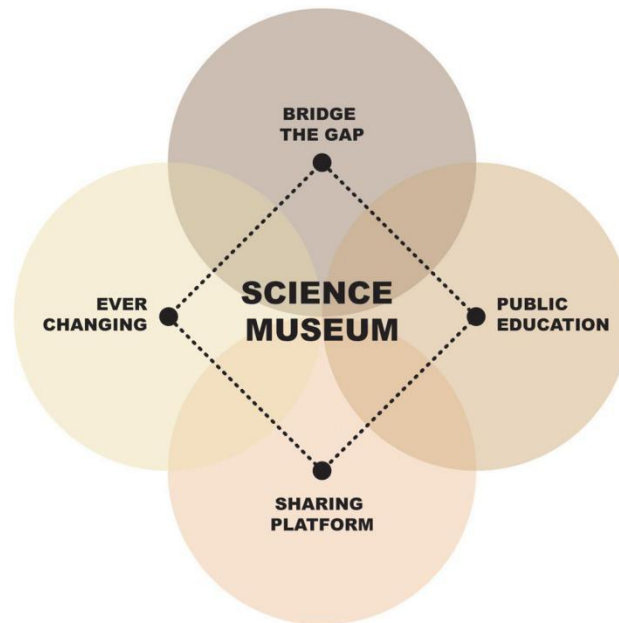


Figure 69 (four conceptual elements of science museum)

The platform for knowledge sharing between one creator/ innovator and user/ consumer of any innovation is not well defined. Therefore the idea is to define the gap between experts and users and provide a mutual platform for sharing and demonstration of skills of any sort.

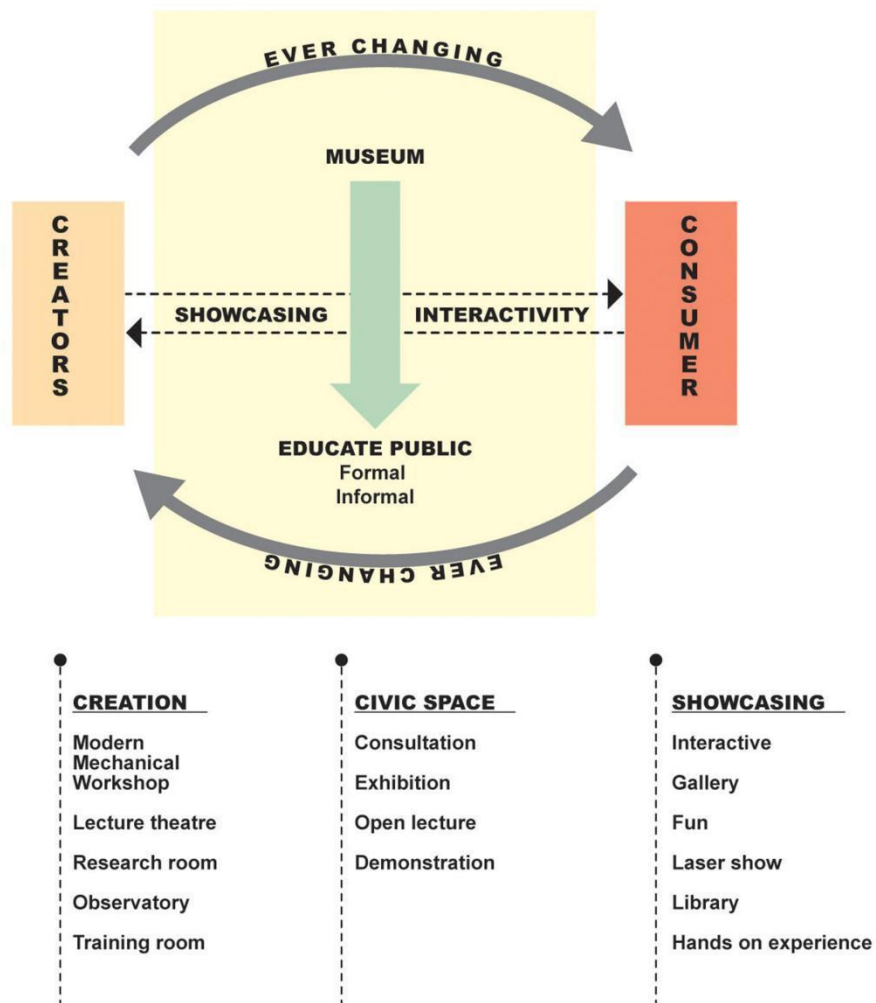
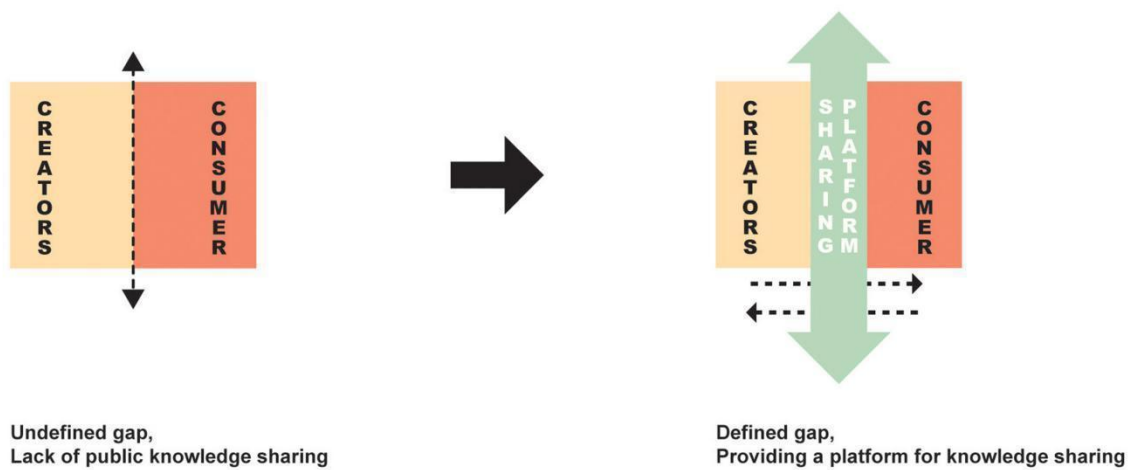


Figure 70 (concept diagram)

From the evolution and contextual understanding the derived concept for a modern science museum should be like : a science museum should ensure public education in both formal and informal ways, bridging the gap between experts and users through showcasing and interactivity. In this process adapting the ever changing nature of scientific discoveries. Proposed programs for the museum are arranged according to conceptual organization.

6.2 Creating thoroughfare

Adjacent road to the museum site is currently going under construction for future extension and making the old 60 feet wide road to 120 feet wide vehicular road. However people from residential areas to the west, administrative at the south and commercial at the east use the adjacent pedestrian road on a daily basis. Images from 2013 and 2020 of pedestrian node A-B shows how over the years it has become more vehicular dominant and lost street side shops and public gathering. Newly constructed 120 feet wide road will disrupt both pedestrian comfort and social gathering.

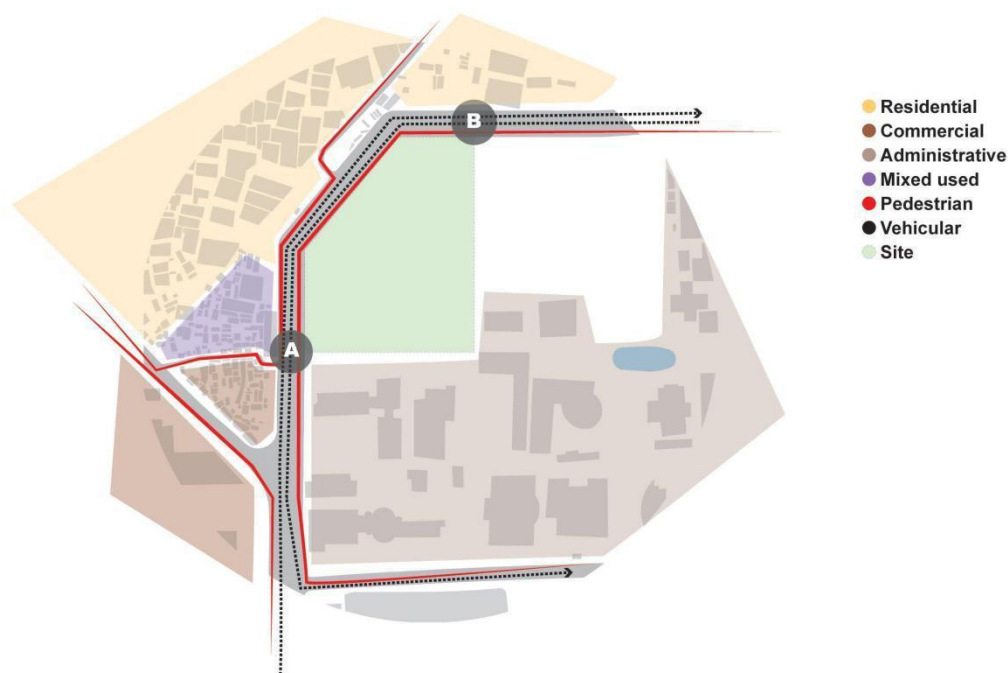


Figure 71 (showing pedestrian and vehicular movement)



Figure 72 (showing 2013 scenario from node A to B)

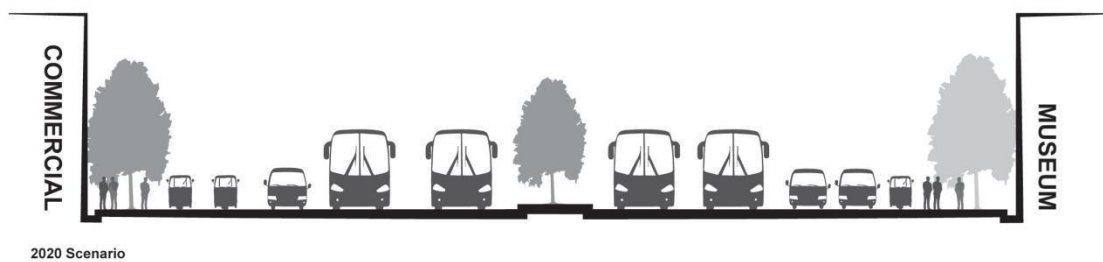


Figure 73 (showing 2020 scenario from node A to B)

The idea is to provide the regular pedestrian a soft green walkway through allowing thoroughfare across the site from node A to B.

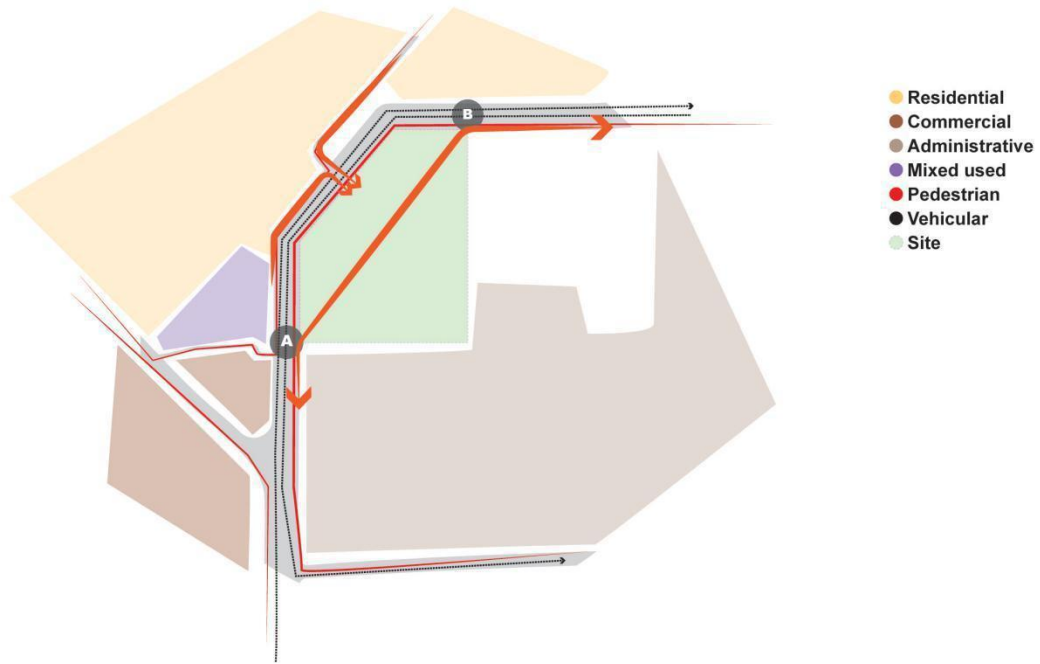


Figure 74 (thoroughfare and access diagram)

6.3 Proposed programs around central public gathering

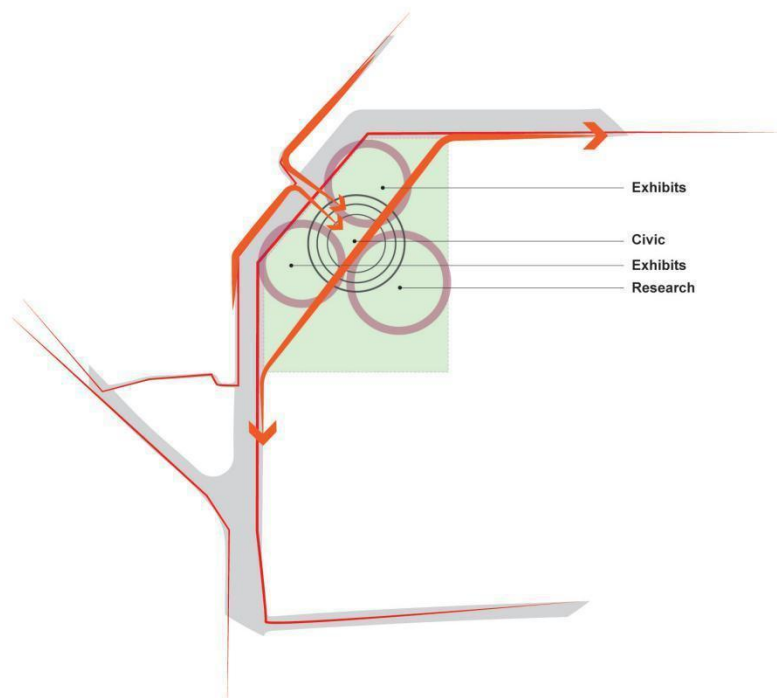


Figure 75 (central civic space at intersecting pedestrian movement)

In urban context people tend to interact with surrounding activities. Considering the fact pedestrian movement across the site is captured and a central civic gathering is created. Museum functions are placed around considering the civic space as a nucleus.

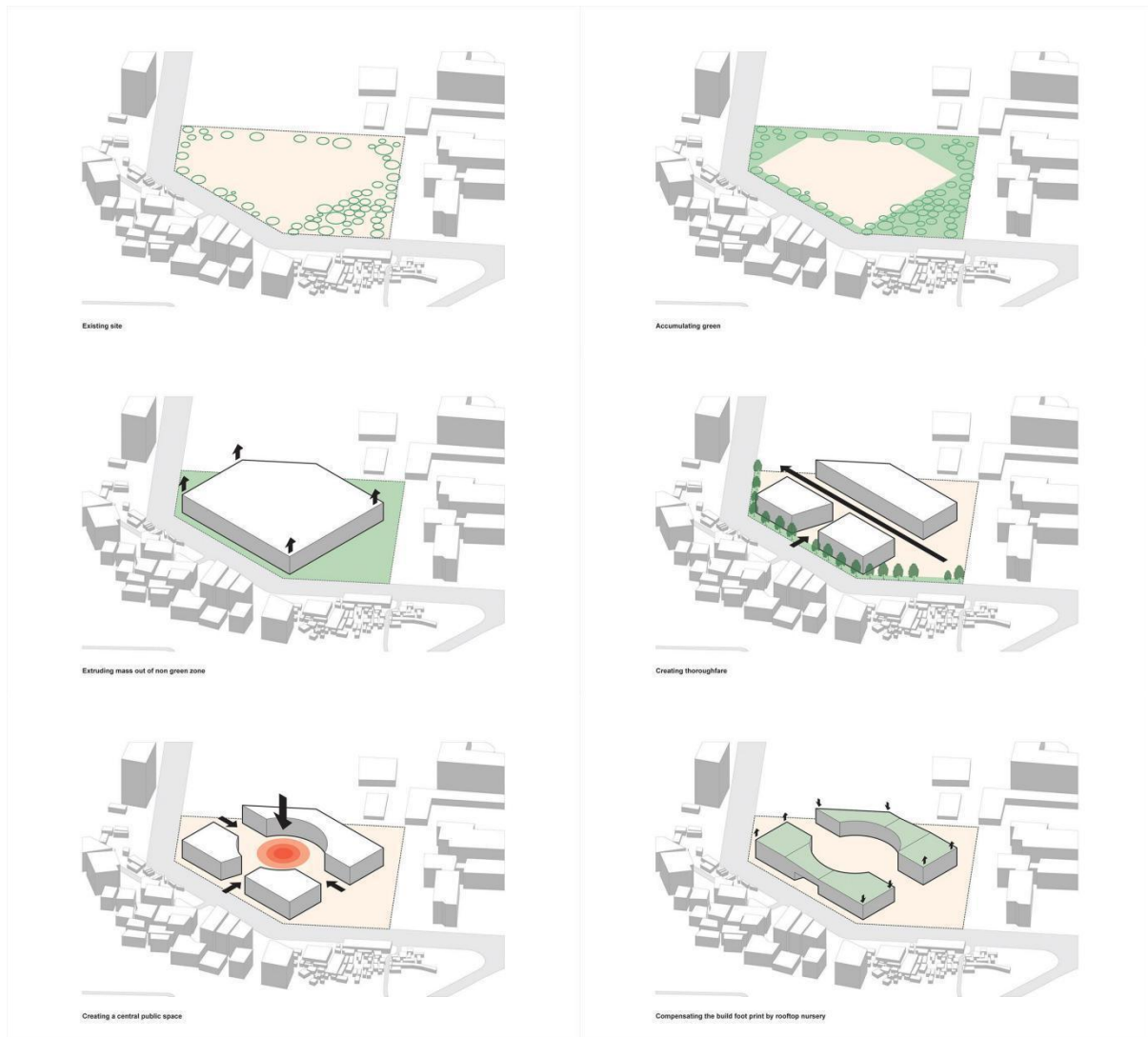


Figure 76 (form derivation diagram)

Existing museum has a huge amount of green. Site greens are accumulated and building masses are generated from leftovers. The museum has a nursery at the ground level which is taken above the ground to make the roof a green garden thus a public accessible roof is designed.

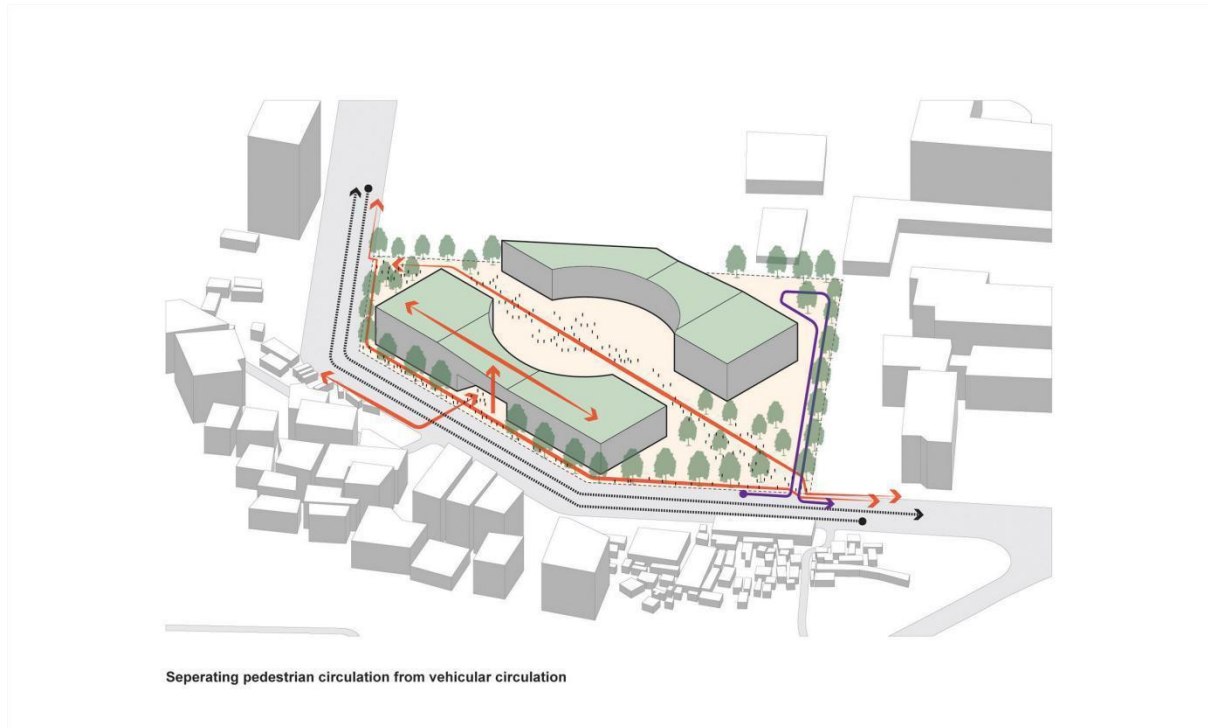


Figure 77 (showing pedestrian and vehicular circulation)

6.4 Sustainable color changing facade

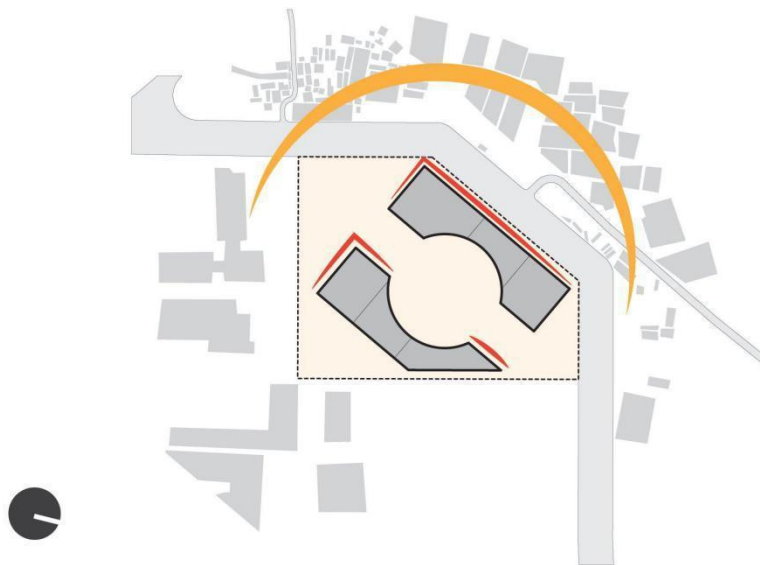


Figure 78 (facades exposed to west)

Due to the thoroughfare across the site and building arrangement a portion of the museum facade faces west. In our context west facing facades generate solar heat. However modern

technology has advanced and pushed the boundaries to utilize the maximum possibilities available. The idea was to incorporate the changing nature of the science museum to the overall profile of the building with help of facade treatment.



Figure 79 (facade idea)

Sustainable solar facades are not new modern architectural material. However photo voltaic cells have been developed since the 21st century. Traditional opaque solar cells were replaced by semi transparent solar panels. In 2014 a group of MSU(Michigan States University) research teams invented fully transparent solar cells which generate almost equal energy as traditional solar cells. These transparent solar cells can be used as typical window glass which allow light and generate energy at the same time. Some of the transparent solar cells have a light refraction mechanism that absorbs a certain amount of light and reflects the rest creating a changing colorful glass over the day (Mag., S,2020). A designed automated exterior screen utilizing transparent color changing photovoltaic panels will protect the building from unwanted solar heat acting as louvers.

Fully transparent Solar facade



Thermal and noise insulate
Efficient daylight
Generate equal energy

Transparent Solar facade



Figure 80 (transparent photovoltaic panel)

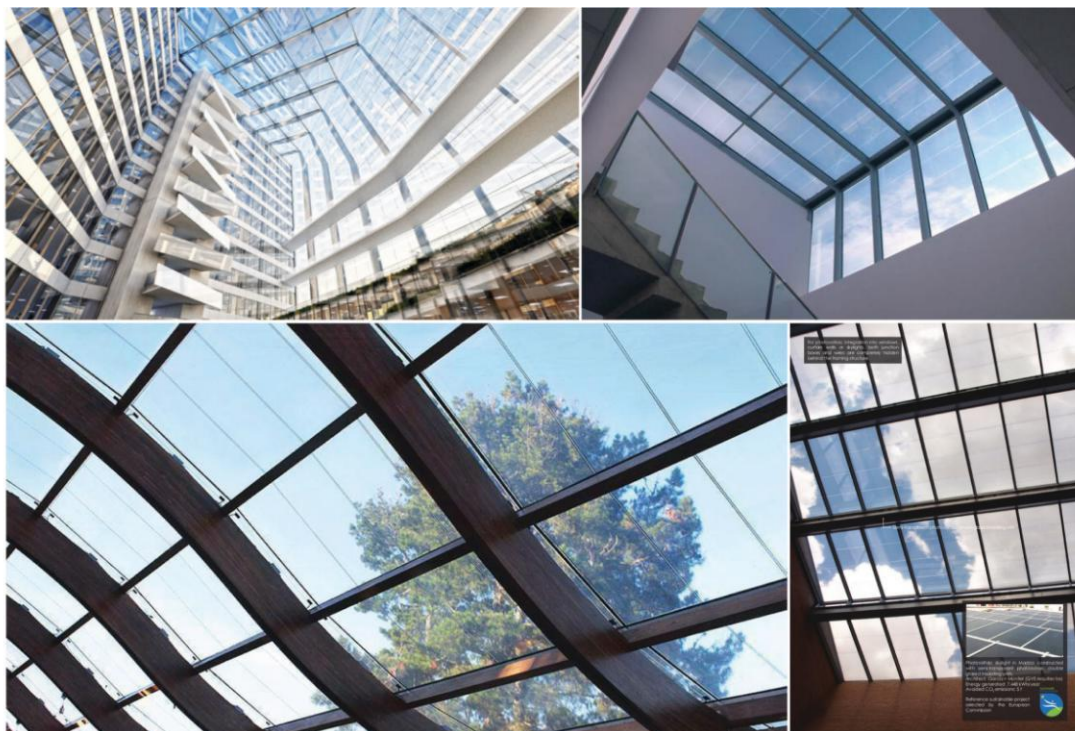
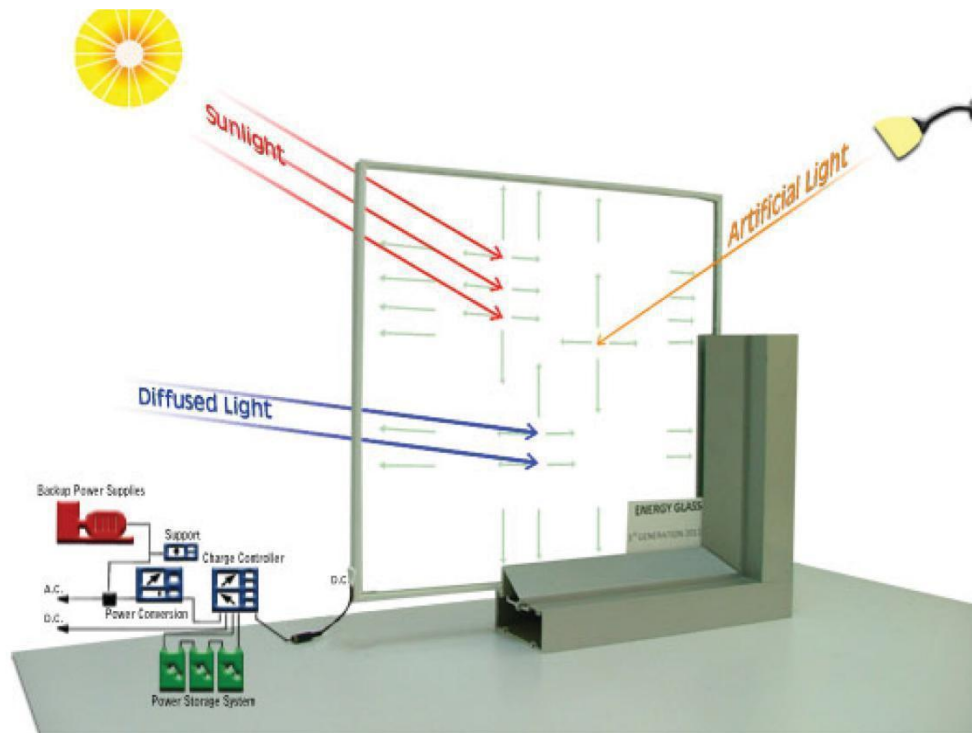


Figure 81 (example of transparent photovoltaic cell installation)

Color changing solar facade



Mode of exhibit
Season
Weather

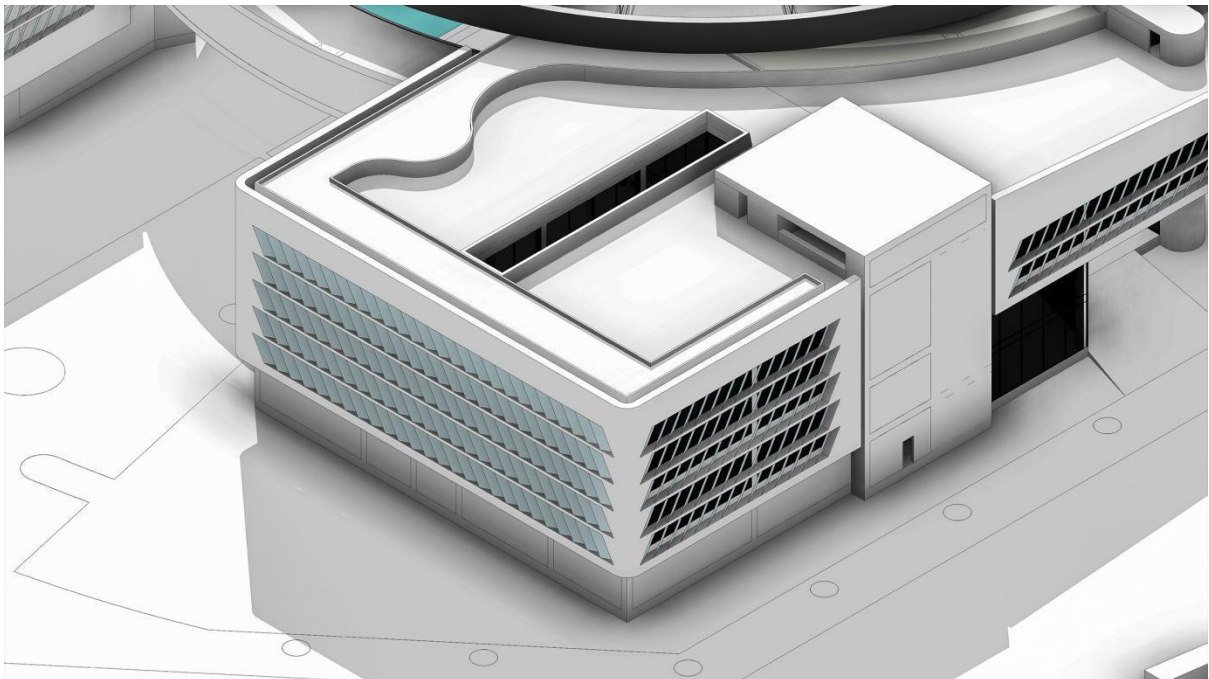


Figure 82 (designed sustainable photovoltaic screen)

Chapter 7: Design Suggestions

The project is presented through floor plans, sections, elevations, spot renders and concept diagrams. Given below are some of the project drawings and renders.

7.1 Circulation diagram

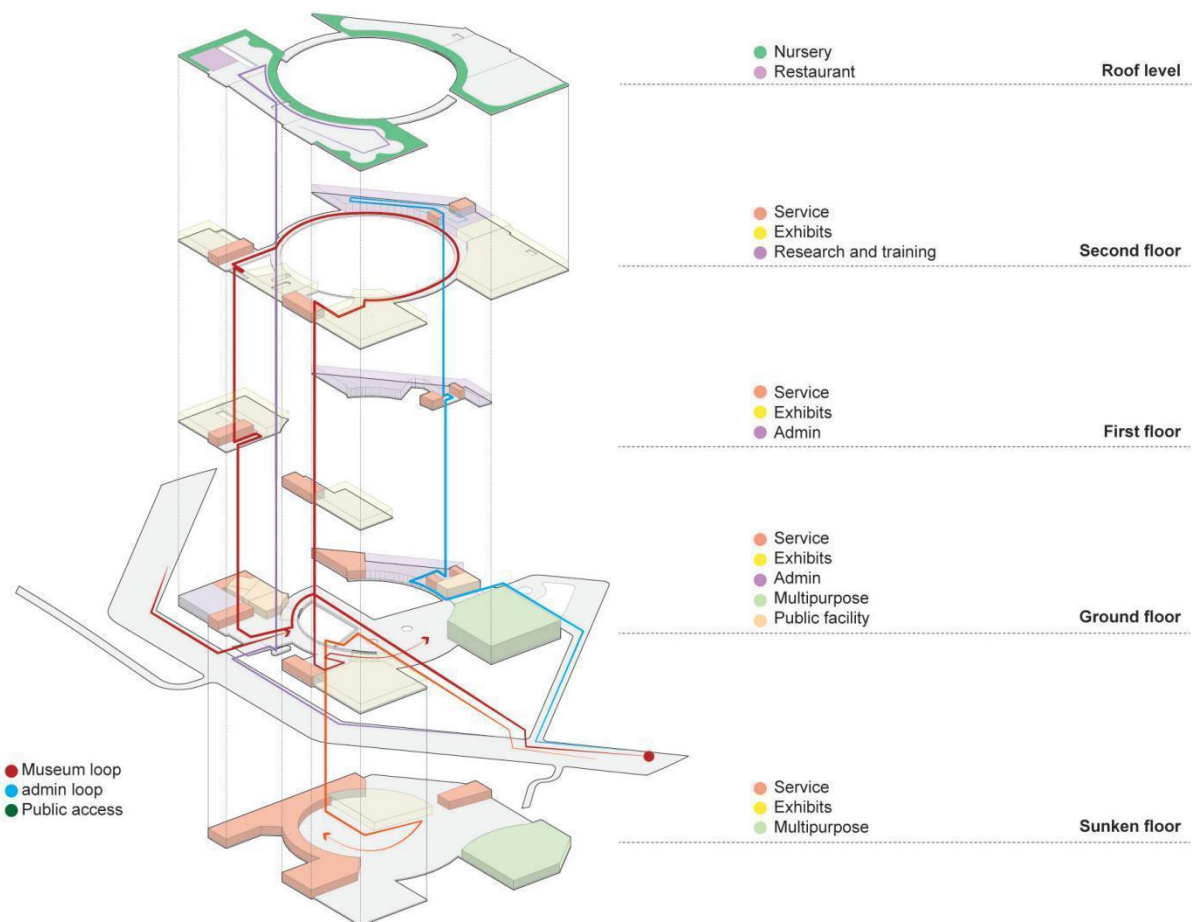


Figure 83 (showing visitor, admin, service and public circulation)

7.2 Floor plan

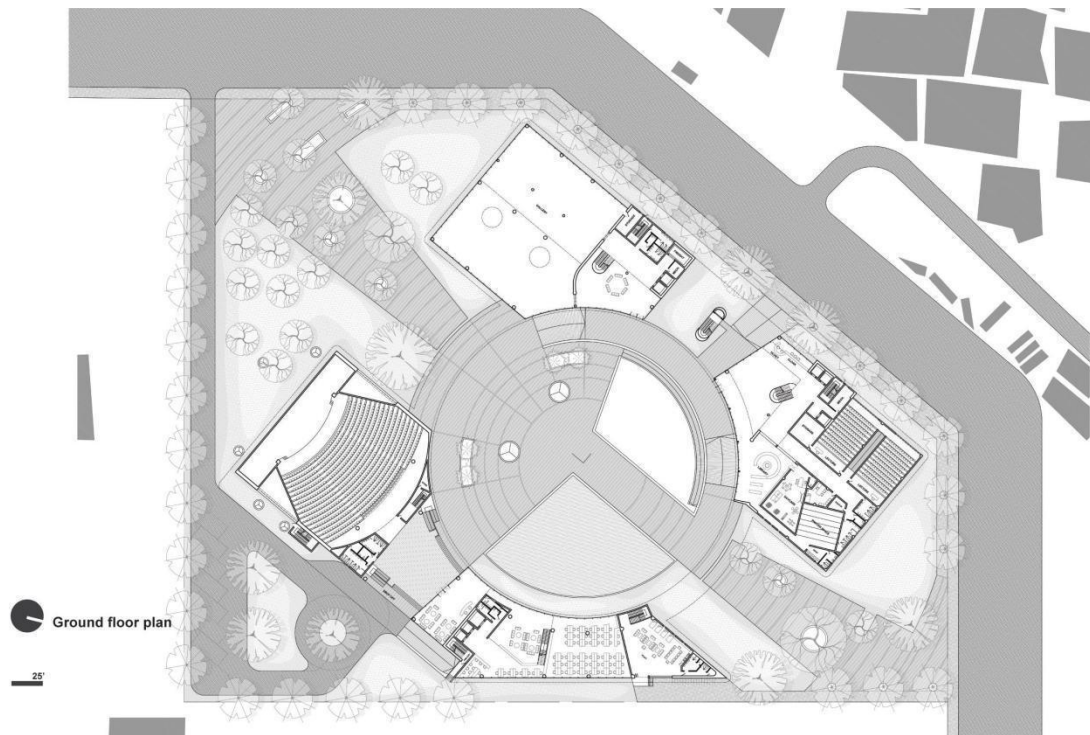


Figure 84 (ground floor plan)

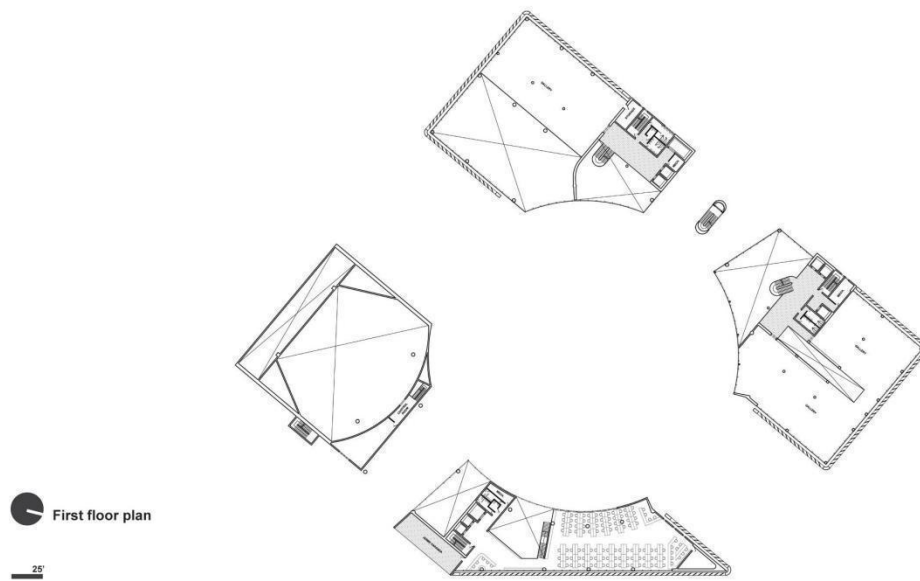


Figure 85 (first floor plan)

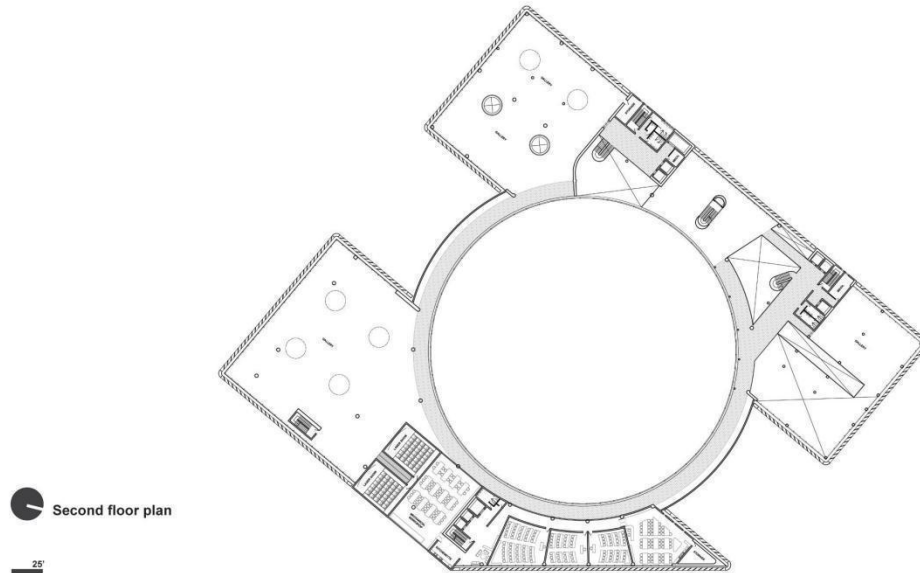


Figure 86 (second floor plan)

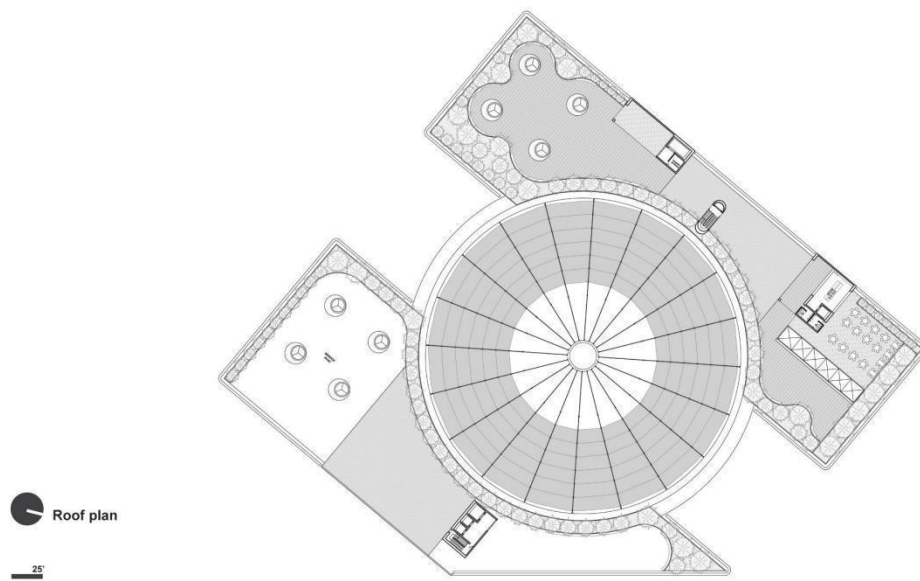


Figure 87 (roof plan)

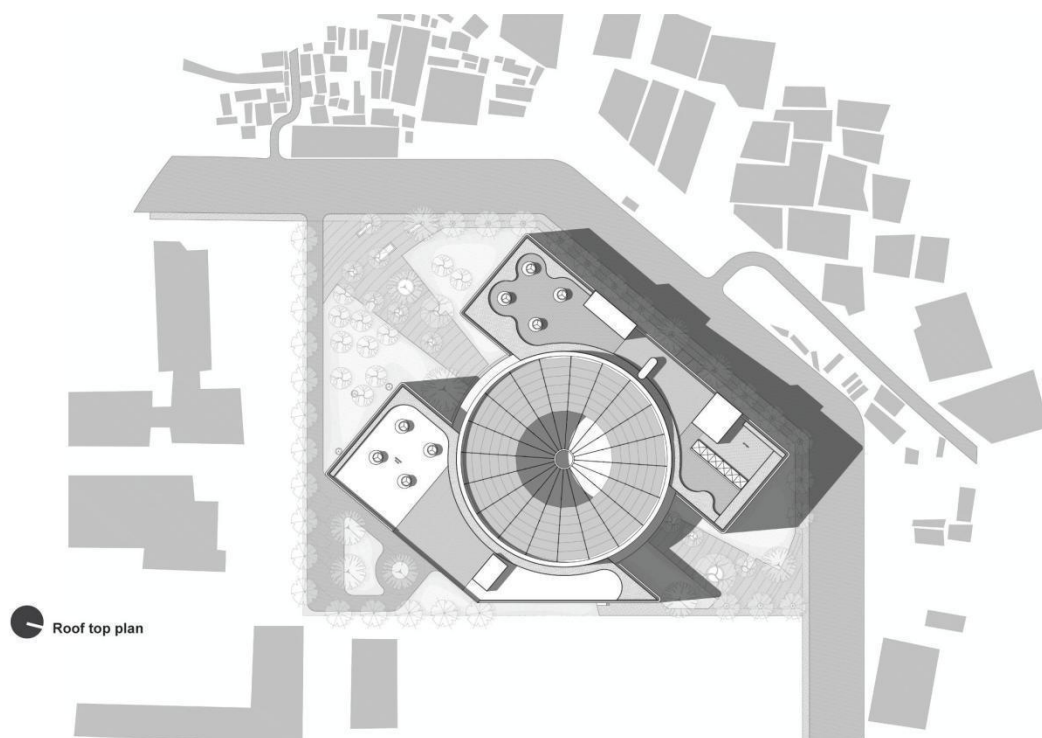


Figure 88 (roof top plan)

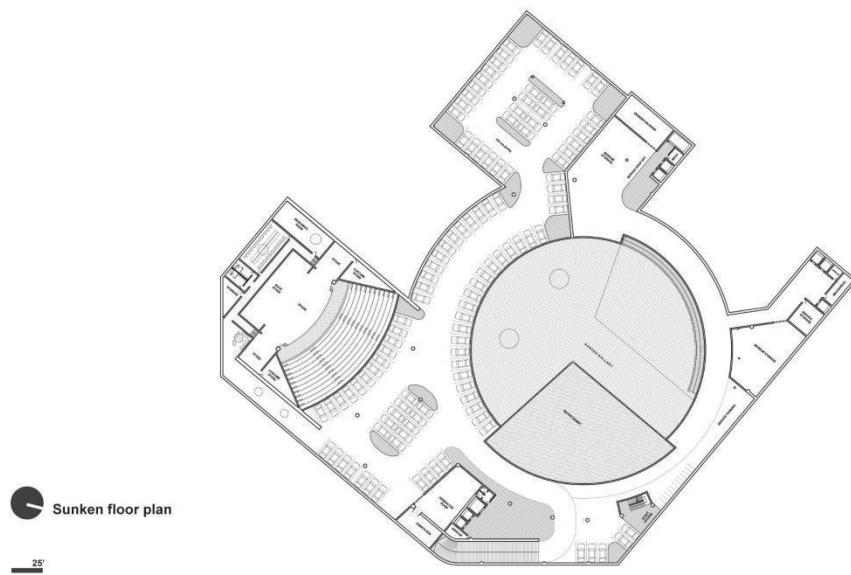


Figure 89 (sunken floor plan)

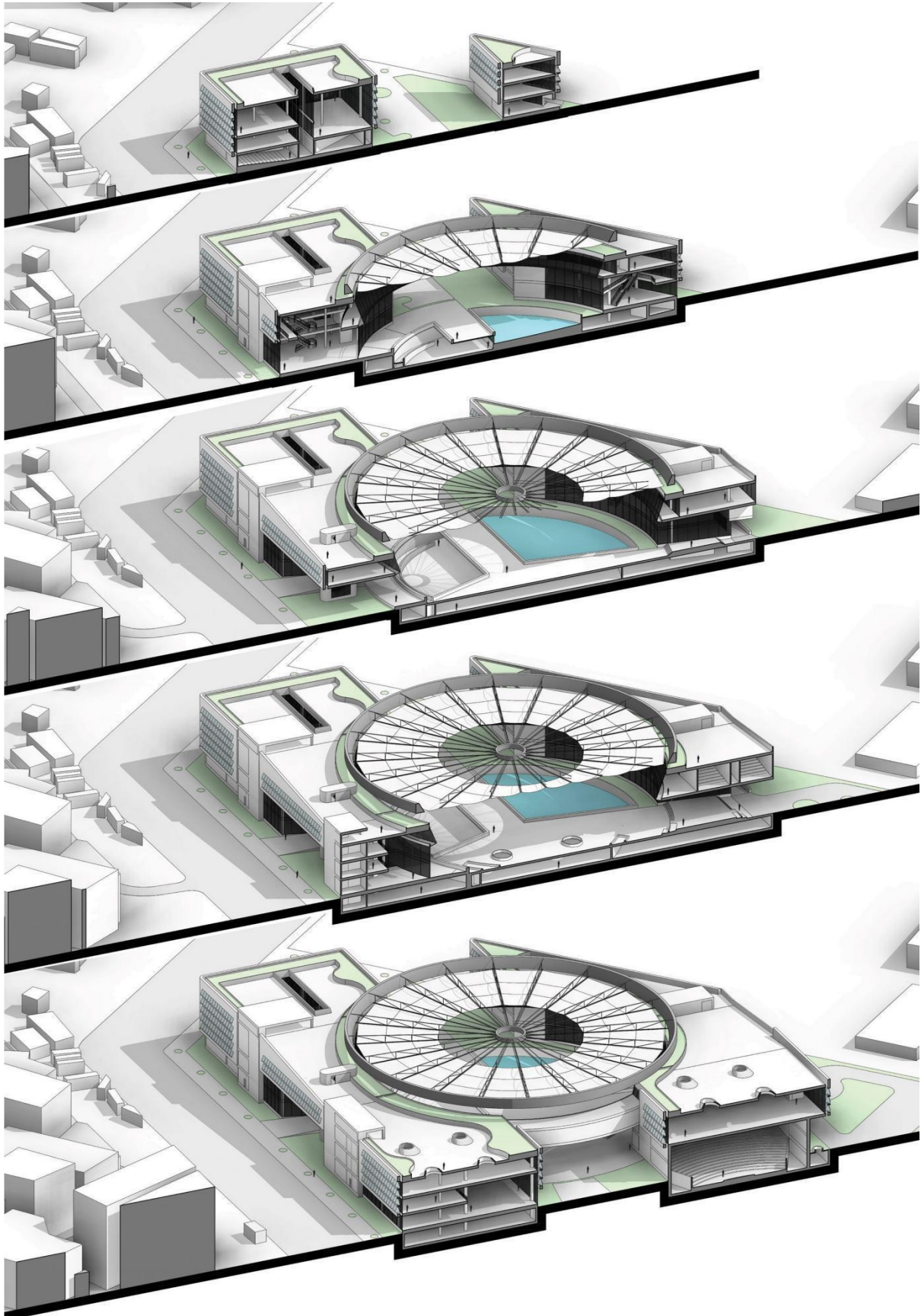
7.3 Elevation



West elevation

Figure 90 (west elevation)

7.4 Section



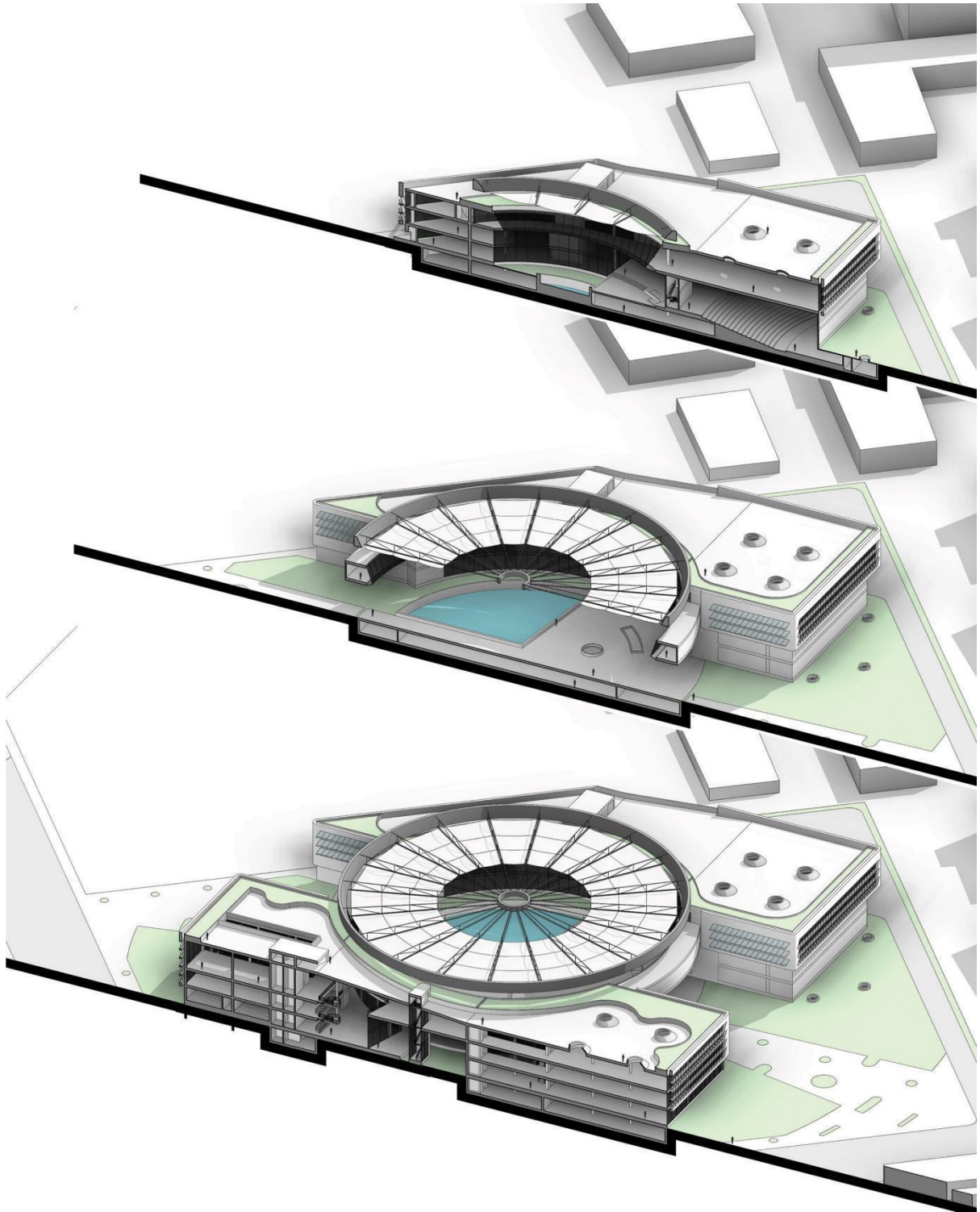


Figure 91 (sections)

7.5 Render

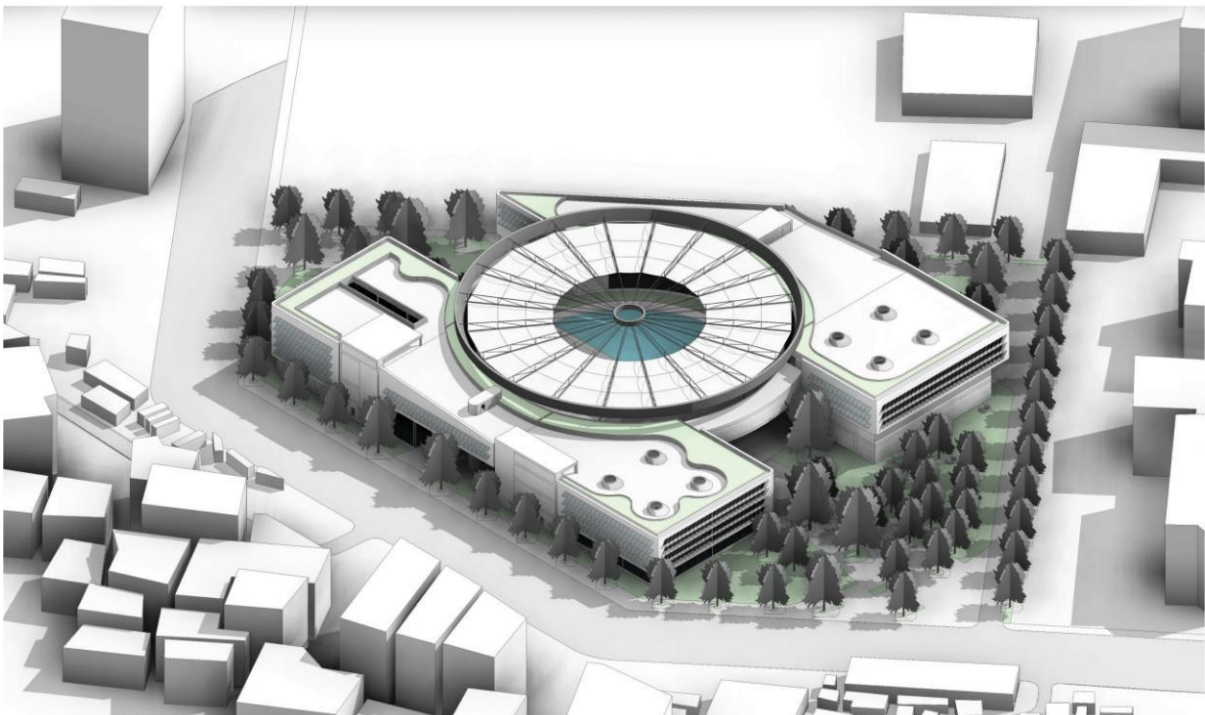
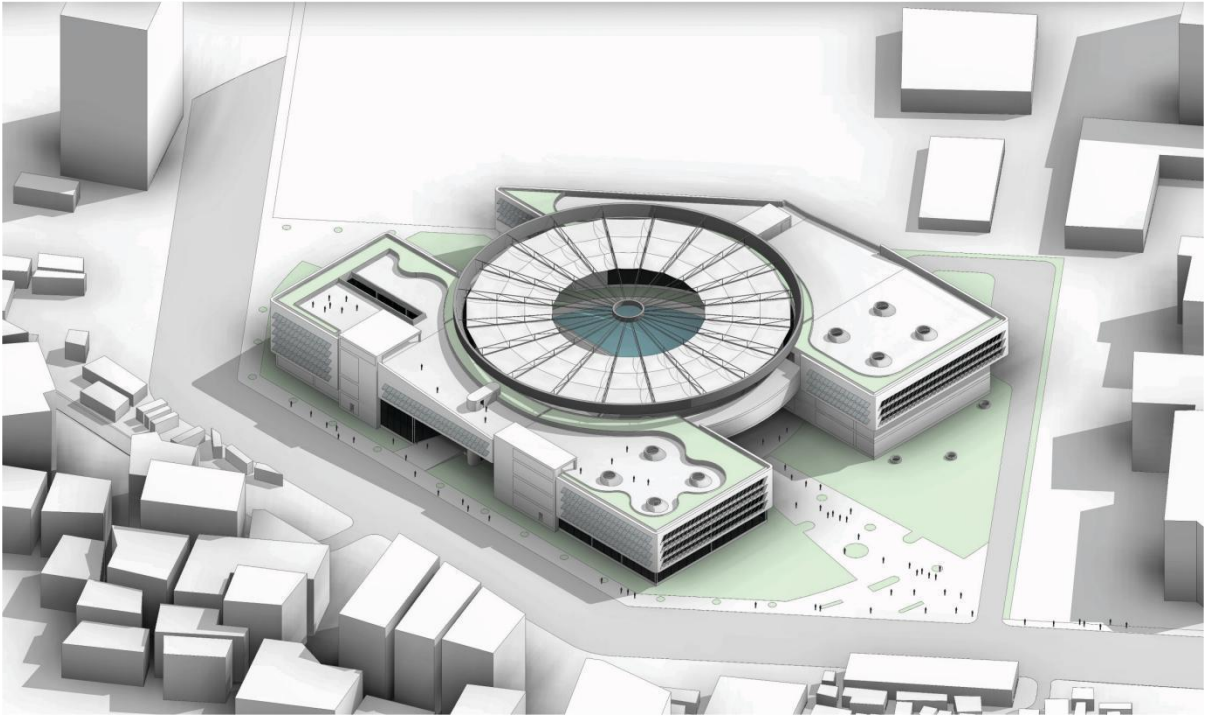


Figure 92 (showing landscape elements and relation to site surrounding)



Figure 93 (view from opposite side of adjacent road)



Figure 94 (view from central civic space)

References

- [1] Alexander, E. P., Alexander, M., & Decker, J. (2017). *Museums in motion: an introduction to the history and functions of museums*. Lanham, MD: Rowman & Littlefield.
- [2] Bandelli, A., Konijn, E. A., & Willems, J. W. (2009). The need for public participation in the governance of science centers. *Museum Management and Curatorship*, 24(2), 89–104.
- [3] Errington, S., Stocklmayer, S. M., & Honeyman, B. (2005). *Using museums to popularize science and technology*. London: Commonwealth Secretariat.
- [4] Friedman, A. (2010, October 01). The evolution of the science museum. Retrieved January 09, 2021, from <https://physicstoday.scitation.org/doi/10.1063/1.3502548>
- [5] Greenhill, E. H. (1992). *Museums and the Shaping of Knowledge*. doi: 10.4324/9780203415825.
- [6] Lord, B., & Piacente, M. (2014). *Manual of Museum Exhibitions*. Rowman & Littlefield.
- [7] Mag., S. (2020, April 21). *Transparent Solar Panels: Reforming Future Energy Supply*. Solar Magazine. <https://solarmagazine.com/solar-panels/transparent-solar-panels/>
- [8] *Museums of science: Development of the Science Museum Concept*. (n.d.). Retrieved January 9, 2021, from Infoplease.com website: <https://www.infoplease.com/encyclopedia/science/physics/general/museums-of-science/development-of-the-science-museum-concept>

- [9] National museum of science and technology, retrieved 22nd July 2019.
- [10] Quin, M. (1991, October 26). Forum: All grown up and ready to play - Melanie Quin celebrates the role of interactive science centres. *New Scientist* (1971). Retrieved from
- [11] <https://www.newscientist.com/article/mg13217926-000-forum-all-grown-up-and-ready-to-play-melanie-quin-celebrates-the-role-of-interactive-science-centres/>
- [12] Silvestro, C. M., & Alexander, E. P. (1980). Museums in Motion: An Introduction to the History and Functions of Museums. *The Journal of American History*, 67(2), 374. doi: 10.2307/1890414.

Appendix A.

বিশ্বমানের বিজ্ঞান জাদুঘর ভবনের চাহিদাপত্র

চাহিদা বিবরণ	বিদ্যমান বিজ্ঞান জাদুঘর			বিশ্বমানের বিজ্ঞান জাদুঘর		
জনবল সংক্রান্ত	পদেরনাম	শ্রেণি	সংখ্যা	পদেরনাম	শ্রেণি	সংখ্যা
	মহাপরিচালক	২	১	মহাপরিচালক	১	১
	সিনিয়র কিউরেটর	৫	১	অতিরিক্ত মহাপরিচালক	২	১
	কিউরেটর	৬	২	প্রধান কিউরেটর	৩	১
	উপ-পরিচালক	৬	১	পরিচালক	৩	২
	প্রধান ডিসপেন্স কর্মকর্তা	৬	১	তত্ত্বাবধায়ক প্রকৌশলী	৪	১
	সহকারী কিউরেটর	৯	৭	সিনিয়র কিউরেটর	৫	৪
	উপ-প্রধান ডিসপেন্স কর্মকর্তা	৯	১	নির্বাহী প্রকৌশলী	৫	৪
	সিনিয়র আর্টস্ট কাম অডিও	৯	১	কিউরেটর	৬	৭
	ভিস্যুয়াল অফিসার			প্রোগ্রামার	৬	১
	একাউন্টস অফিসার	৯	১	উপ-পরিচালক	৬	৩
	জনসংযোগ কর্মকর্তা	৯	১	প্রধান ডিসপেন্স কর্মকর্তা	৬	১
	প্রশাসনিক কর্মকর্তা	৯	১	সহকারী কিউরেটর	৯	২৮
	লাইব্রেরিয়ান কাম	৯	১	একান্ত সচিব	৯	১
	ডকুমেন্টেশন অফিসার			সহকারী প্রকৌশলী	৯	৩
	উপ-সহকারী প্রকৌশলী	১০	১	উপ-প্রধান ডিসপেন্স কর্মকর্তা	৯	১
	ভাস্কর	১০	১	সিনিয়র আর্টস্ট কাম অডিও ভিস্যুয়াল	৯	১
	অফিস সুপারিনটেন্ডেন্ট	১১	১	অফিসার		
	গ্যালারীসহকারী	১১	৫	সহকারী প্রোগ্রামার	৯	১
	আর্টস্ট	১১	১	মেডিকেল অফিসার	৯	১
	ভিডিও ক্যামেরাম্যান	১১	১	হিসাবরক্ষণ কর্মকর্তা	৯	১
	সহকারী লাইব্রেরিয়ান	১২	১	জনসংযোগ কর্মকর্তা	৯	২
	টেক্সটাইল	১৩	১	প্রশাসনিক কর্মকর্তা	৯	১
	উর্ধ্বতন হিসাব সহকারী	১৩	১	পরিবহন কর্মকর্তা	৯	১
	হারবেরিয়াম সহকারী	১৩	১	নিরাপত্তা কর্মকর্তা	৯	১
	সীটলিপি কার কাম	১৩	১	লাইব্রেরিয়ান	৯	১
	কম্পিউটার মুদ্রাক্ষরিক			উপ-সহকারী প্রকৌশলী	১০	৬
	কেয়ার টেকার	১৪	১	নার্স	১০	১
	উচ্চমান সহকারী	১৪	১	প্যারামেডিকস	১০	১
	সীট মুদ্রাক্ষরিক কাম	১৪	১	সহকারী প্রশাসনিক কর্মকর্তা	১০	১
	কম্পিউটার অপারেটর			হিসাব রক্ষক	১০	২
	টেকনিশিয়ান	১৫	১	ভাস্কর	১০	১
	হিসাব সহকারী	১৬	১	অফিস সুপারিনটেন্ডেন্ট	১১	১
	অভ্যর্থনাকারী	১৬	১	আর্টস্ট	১১	১
	অফিস সহকারী কাম	১৬	১	গ্যালারী সহকারী	১১	৩৬
	কম্পিউটার মুদ্রাক্ষরিক			ভিডিও ক্যামেরাম্যান	১১	০১
	স্টোর সহকারী	১৬	১	ভাস্কর সহকারী	১১	০১
	ইলেক্ট্রিশিয়ান	১৬	১	গ্রাফিক্স ডিজাইনার	১২	০১
	ডাইভার	১৬	৪	সহকারী লাইব্রেরী	১২	০১
	প্যাটার্ন মেকার	১৭	১	স্টিল ক্যামেরাম্যান	১৩	০১
	কার্পেন্টার	১৮	১	টেক্সটাইল	১৩	০২
	মিউজিয়াম এ্যাটেন্ড্যান্ট	১৮	১	হারবেরিয়াম সহকারী	১৩	০২
	গ্যালারী এ্যাটেন্ড্যান্ট	১৮	৮	সীটলিপি কার কাম কম্পিউটার	১৩	৩
	লাইব্রেরী এ্যাটেন্ড্যান্ট	১৮	১	মুদ্রাক্ষরিক		
	ওয়ার্কশপ এ্যাটেন্ড্যান্ট	১৮	১	উর্ধ্বতন হিসাব সহকারী	১৩	২
	গ্যালারী গার্ড	২০	৩	ক্যামেরা সহকারী	১৪	১
	অফিস সহায়ক	২০	৬	উচ্চমান সহকারী	১৪	৩
	বার্তা বাহক	২০	১	সীট মুদ্রাক্ষরিক কাম কম্পিউটার	১৪	৩
	নিরাপত্তা প্রহরী	২০	৩	অপারেটর		
	বাস হেল্পার	২০	১	টেকনিশিয়ান	১৫	৪
	মালী	২০	১	অডিও টেকনিশিয়ান	১৫	১
	পরিচ্ছন্নতা কর্মী	২০	৩	অটোমোবাইল টেকনিশিয়ান	১৫	১
	মোট পদ		৭৯			

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প্রদর্শনী গ্যালারীর সংখ্যা	বর্তমান গ্যালারীর সংখ্যা = ৯ ভৌতবিজ্ঞান, জীববিজ্ঞান, মহাকাশবিজ্ঞান, মজারবিজ্ঞান, ছোটদেরবিজ্ঞান, শিল্প-প্রযুক্তি, তথ্য-প্রযুক্তি, তরুণ-বিজ্ঞানীএবংবিজ্ঞানমেলা আয়োজনের জন্য একটি ফাঁকা গ্যালারী, বহুমাত্রিক প্রেক্ষাগৃহ, লেসারস্পেসশো	ভবিষ্যতে গ্যালারীর সংখ্যা = ন্যূনতম ২৪ বিবরণনিম্নরূপ: ভৌত বিজ্ঞান-১, ভৌত বিজ্ঞান-২, ভৌত বিজ্ঞান-৩, জীব বিজ্ঞান-১, জীব বিজ্ঞান-২, জীব বিজ্ঞান-৩, মজা, মহাকাশ, কৃষি, বিদ্যুৎ, হেরিটেজ, মেরিটাইম, গতি, ন্যাচারাল হিস্ট্রি, গণিত, পরিসংখ্যান, মানবদেহ, বিবর্তন, আর্থসায়েন্স, উদ্ভাবন, মিউজিক এন্ড স্পোর্টস, তথ্য প্রযুক্তি, ভাংগ ও গড়, ইন্টারএকটিভ, সায়েন্স পার্ক)																																																																																																																																										

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অন্যান্যসুবিধা	মেশিন ওয়ার্কশপ (তিনটি লেদ, একটি শেপার, একটিমিলিং, দুটিশেয়ারিংসহ ২৫টি ভারীযন্ত্রসজ্জিত), লাইব্রেরী (দশসহস্রাধিকবই-পত্র), পঞ্চাশ আসনের কনফারেন্সরুম, চারশত আসনের অডিটোরিয়াম, ক্যাফেটেরিয়া, স্টোর-রুম (সর্ব-নিম্নআটটি), ইনোভেশনল্যাব, তিনটি বাস রাখার গ্যারেজ, সাবস্টেশন, স্ট্যান্ডবাই জেনারেটর হাউস, কর্মচারীদের জন্য ডমিটরী, কেয়ার-টেকারহাউস,	১। প্রশাসনিক ভবনের ছাদে অবজারভেটরী, ২। বিশেষ পর্যবেক্ষণ টাওয়ার, ৩। দূর থেকে আগত দর্শনার্থীদের জন্য থাকার ডমিটরী (২০০ জন) এবং কেয়ারটেকারসহ জরুরী কর্মচারীদের জন্য আবাসন ব্যবস্থা (৫০ জন), ৪। সকল শ্রেণির জন্য উপযুক্ত ক্যাফেটেরিয়া, ৫। ভবনের গ্রাউন্ডফ্লোর সায়েন্সপার্কের জন্য উন্মুক্ত থাকা এবং ১০ বড় গাড়ী রাখার গ্যারেজ, ৫। মাটির নিচে যানবাহনের (বড়গাড়ীসহ) জন্য তিনটি বেজমেন্ট থাকবে, ৬। অডিটোরিয়াম (১০০০ জন) এবং কনফারেন্সরুম (১০০ জন) ৭। অভ্যর্থনা কক্ষের পাশে সাময়িক অবস্থানের জন্য বিশ্রামাগার, ৯। পাঁচটা গবেষণাগার ও একটি প্রশিক্ষণপ্লেন্স, ১০। লেকচার থিয়েটার প্রতি তলায় একটি করে, ১০। আধুনিক যান্ত্রিকওয়ার্কশপ, ১১। উপযুক্ত লাইব্রেরি, ১২। সাব-স্টেশনএ বং এমেরজেন্সি জেনারেটর, ১৩ বহুমাত্রিক সিনেমা হল লেজারশো'র স্থান
বিশেষচাহিদা		জাদুঘর ক্যাম্পাসের জন্য ট্রান্সপারেন্ট নিরাপত্তাবেটনী ও দৃষ্টি-নন্দনপ্রবেশদ্বার, টিকেট কাউন্টার, অনুসন্ধান কক্ষ, নিরাপত্তা কক্ষ, পাবলিক প্রেস হিসেবে পর্যাপ্ত অটোক্রিন টয়লেট, ফ্লোরসহ জেই মেক্যানিক্যালিক্লিনেবল হতে হবে, খেলতে খেলতে বিজ্ঞান এমন স্পেস থাকতে হবে, বিজ্ঞান অলিম্পিয়াডের মত প্রতিযোগিতা চালানোর মত সুবিধা থাকতে হবে, ডেকেয়ারসেন্টার, ডাইভারদেরবসার ও বিনোদনের ব্যবস্থা থাকতে হবে, গাড়ীর ওয়াশিংএ রিয়া, বিভিন্ন ধর্মালম্বীদের জন্য প্রার্থনার স্থান, পর্যাপ্ত লিফটও এক্সেলিটর, মেডিক্যালসেন্টার, শিশুদের প্লেএরিয়া, একুয়ারিয়ামইত্যাদি

