

CENTRE FOR EXCELLENCE IN URBANPLANNING

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
SCHOOL OF BUILDING AND ENVIRONMENT**

SATHYABAMA

**INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY) Accredited**

With Grade "A" by NAAC

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SATHYABAMA
INSTITUTE OF SCIENCE AND TECHNOLOGY

DEPARTMENT OF ARCHITECTURE

BONAFIDE CERTIFICATE

This is to certify that this Thesis Report is the bonafide work of Sneha C N (37210037) who carried out the Thesis entitled "Urban Centre of Excellence" under our supervision from July 2021 to November 2021.

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I, **Sneha C N** hereby declare that the Thesis Report entitled “**Centre for Excellence in Urban Planning**” done by me under the guidance of **Ar. Seetha Visalakshi** (Internal Guide), **Ar. Shankar.V** (Internal Review Member) and **Ar. Lavanya Shankar** (External Guide) Sathyabama Institute of Science and Technology is submitted in partial fulfilment of the requirements for the award of Bachelor of Architecture Degree.

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C N Sneha

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CHAPTER ONE

INTRODUCTION

1.1 INTRODUCTION

The center is expected to create an interdisciplinary platform where academia, industry professionals, civic bodies & other stakeholders would participate in creating knowledge-based solutions to current urban problems. Urban Centre of Excellence is a synergetic concept which is expected to leverage the individual strengths of the multifaceted players it encompasses.

One of the prime agendas of the center would be to engage in the translational research leading to the development of region-specific solutions to urban problems, development of state-of-art knowledge modules to be disseminated to civic bodies and other stakeholders and to engage in defining the emerging paradigms of Indian urban development. Focus of the center is to adopt a pragmatic approach in designing urban places and environments.

The research center, would host prototype solutions for urban issues of the cities not only in India but across Asia. UCE (Urban Centre of Excellence) will act as an urban think - tank and urban hub with facilities for training, research, urban innovation, place to depict and house best practices in urban sector on a dynamic basis, along with accommodations to host & lodge dignitaries and venue for hosting workshops/seminars etc.

This structure will be an integrated development of mixed-use typology with a character between the built form & the natural geographic feature. This forum will not only have space to nurture & mold the minds of future generations, but also provides spaces for the wider public to share knowledge and ideas.

1.2 NEED FOR THE PROJECT:

The rapid industrialization post-Independence, has caused exponential increase in population along with large-scale rural to urban migration. In this increasingly urbanizing India, opportunities for growth have come into view while being accompanied by new risks & challenges. Hence the question of how cities are planned, governed, and indeed, for who, becomes all the more crucial. This scenario today demands the use of knowledge to bring about change.

Fig.1.1 - **CURRENT SENARIO**

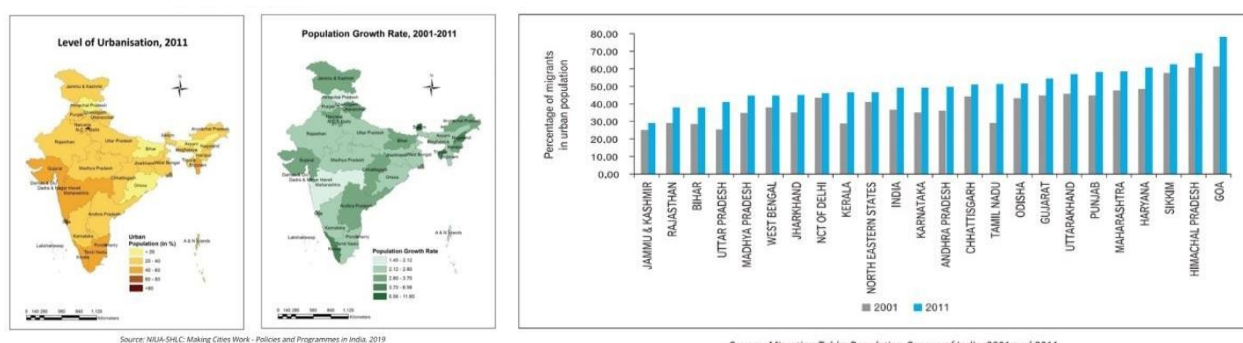


Table 1: Trend of Urbanisation in India

Census Years	Number of Individual Towns/Cities	Urban Population (in million)	Percentage of Urban Population to Total Population	Annual Exponential Growth Rate
1961	2657	78.94	17.97	-
1971	3081	109.11	19.91	3.24
1981	3891	159.46	23.34	3.79
1991	4615	217.57	25.70	3.11
2001	5161	286.12	27.81	2.74
2011	7933	377.11	31.14	2.76

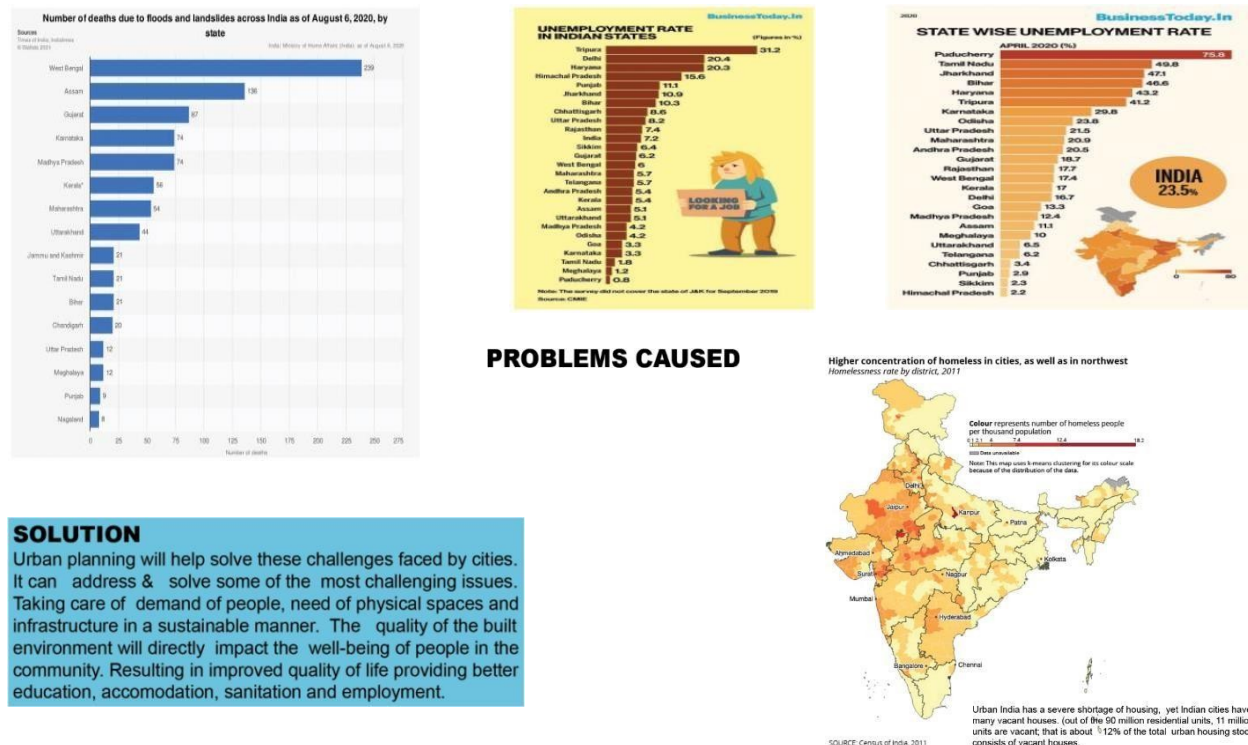
Source: A Series, Population Census of India, 1961-2011.

Table 2: Number of Urban Centres in India

Type of Towns	2001	2011	Addition
Statutory Towns	3799	4041	242
Census Towns	1362	3892	2530
Urban Agglomerations	384	474	90
Outgrowths	962	981	19
Metropolitan Cities	35	52	17

Source: Population Census of India, 2001 and 2011.

Urban design and planning help synthesis ideas, theories, practices in shaping the physical & social setting for life in Indian cities. This interdisciplinary & creative spatial problem-solving aptitude, will unfold a dynamic process providing expertise & technical assistance for the city, state and national-level projects. It also enables developing toolkits and customized training programs to strengthen the capacity of local, regional and governing agencies. It aims to enrich & expand the urban knowledge bases of the country.



1.3 **AIM:**

To design an Urban Centre of Excellence capable of solving all Urban related issues by providing facilities for training, research, innovation and exhibition.



Fig.1.3 – Advantages of Facility

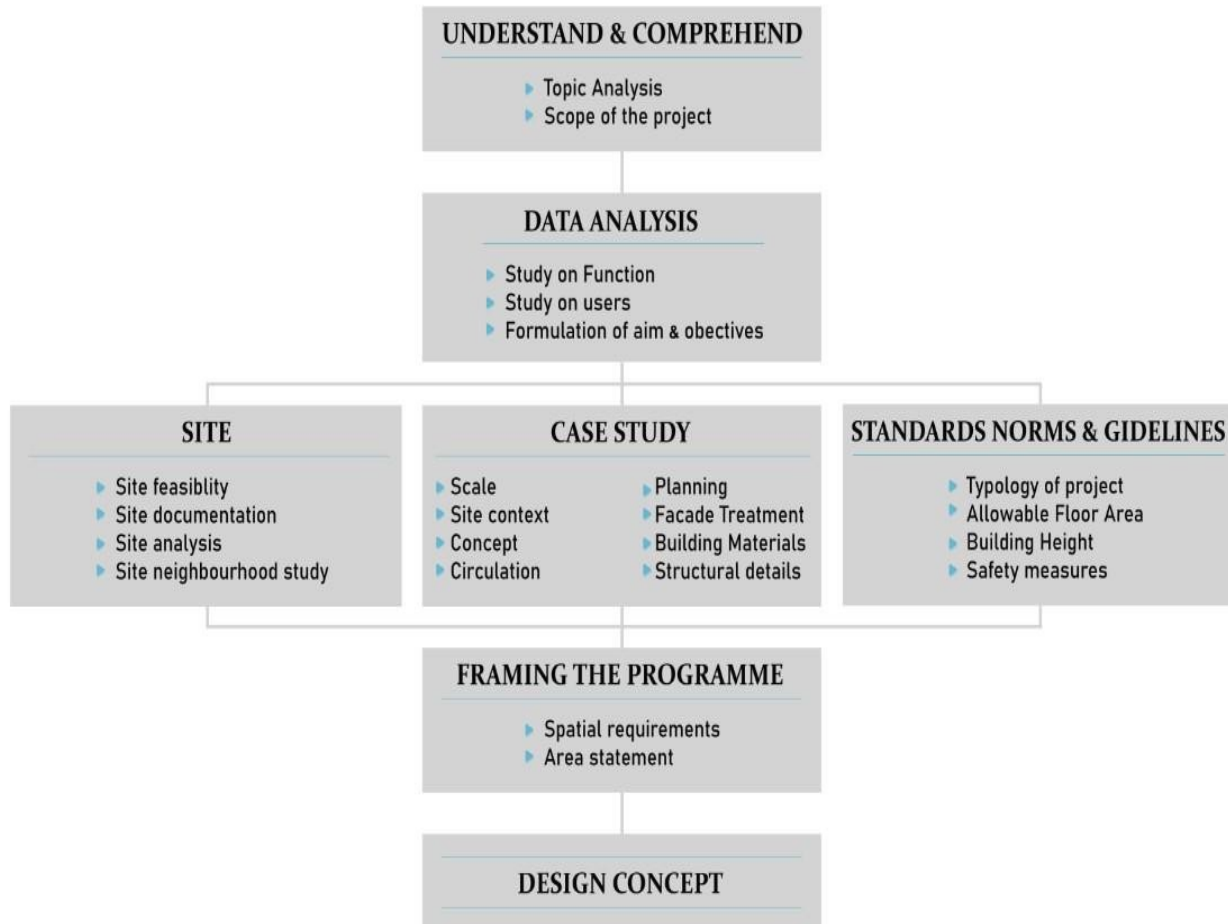
1.4 **OBJECTIVE:**

- To create a coherence and visual landmark while fulfilling the spatial needs of a campus to foster interchange and innovation of knowledge.
- Create a climate responsive design by adapting passive design strategies to minimize the negative impact on the environment.
- Designing spaces to encourage visual and physical interaction using spatial planning incorporated with smoothly transitioning spaces.



Fig.1.4 – Objectives

1.5 METHODOLOGY:



CHAPTERTWO

CASE STUDY ANALYSIS

2.1 TITAN INTEGRITY CAMPUS (TYPOLOGY 1 – CAMPUSPLANNING)

2.1.1 INTRODUCTION:

LOCATION: Bangalore

SITE AREA: 26304sq.m

ARCHITECT: Mindspace Architects

NO OF FLOORS: 3 Floors

BUILT UP AREA: 36232sq.m

YEAR OF COMP: 2017



Fig.2.1 Ariel view of the campus



Fig.2.2 View of the existing lake extending into the structure.



Fig.2.3 View from the interiors overlooking the bio lake



The night view of the structure
Fig. 2.4

This corporate office building was designed by Sanjay Mohewho is the Principal Architect and founder of Mindspace – a Bengaluru based architecture firm with extensive experience in designing projects that responds and evolves around its context. The design intent was to encourage collaboration in the workspace and enable a connection with nature for co-workers.

2.1.2 **DESIGN INTENT:**

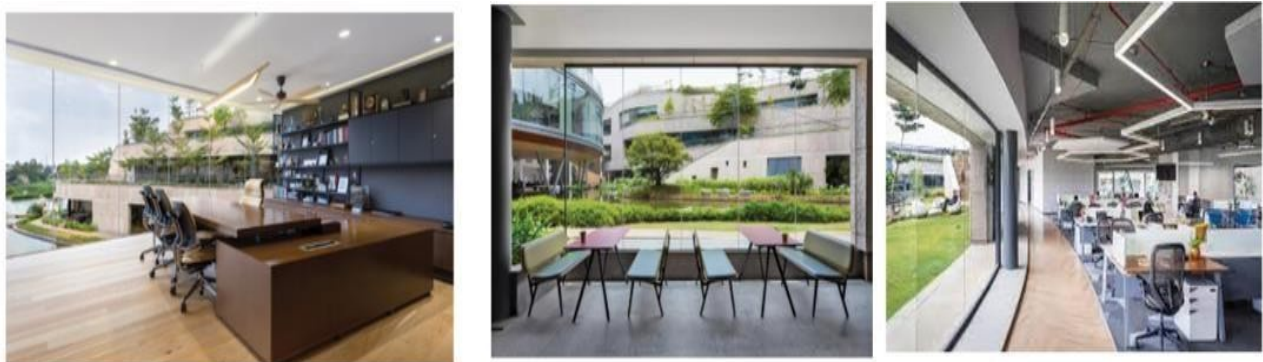
The design intent was to encourage collaboration in the work space and enable a connection with nature for co-workers.



Fig.2.5 - Activities

2.1.3 **BUILT FORM:**

The fundamental goal was maximum utilization of every view possible to focus on the lakeside and making any user a spectator of the serene setting.



The building's form was sculpted to provide every space with the view of lake.

Fig.2.6 – Building Form

This led to formulating the idea of having tapering towers and thus, the campus has free flowing cascading green terraces which is reminiscent of rice fields.

These terraces are connected through external staircases that create a sense of being elevated from the ground at each level similar to being on the hills.

2.1.4 NATURE & BUILT FORM TRANSITION:

This 3-storey structure located along the Veerasandra Lake is quite often perceived as a valley. The design integrates dynamic flow of spaces with landscapes in order to seamlessly merge from outside to inside. It has a terrace garden at every level. The building's ground floor is lifted to about 2.7m in height, creating an illusion of a floating island incorporating a central waterbody with multiple walkways around it.



Green terrace at each level makes like a valley



Fig.2.7 - Spaces

Indoor outdoor spaces with very less differentiation



A bold welcoming staircase along the cascading water body takes us to the central spine that connects to the water body along with the greenery beyond, unfolding serenity. This acts as an element of surprise, that transforms as the atmosphere around it changes.



Wide staircase acts as a linking element.



Fig.2.7 – Views

Smooth integration of green covers.



Every movement of the water can be seen reflected on the ceiling. A game of movement and rhythm renders the space an extra dimension as it unfolds. Hence the raising up of the ground level has created a seamless connect between indoor spaces and external environment making the point of the boundary to disappear.



Reflection of the water's movement as perceived from and towards the structure

Fig.2.9 – Design Feature

2.1.5 USER EXPERIENCE:

This campus is being known as the people's home, not only because of the careful integration of interactive spaces in the design but also taking the user's needs into consideration.



Fig.2.10 – User Experience

The primary idea behind settling around nature was that of its employees' &, they also engaged in developing the design brief.

2.1.6 CONTEXTUAL ASPECT:

It is located next to a calm lake. The building's biolake has a specific connection with the existing Veerasandra lake, the thought behind creating this connection was to make use of all the views of the lake which will create emotions in the user for this particular setting.

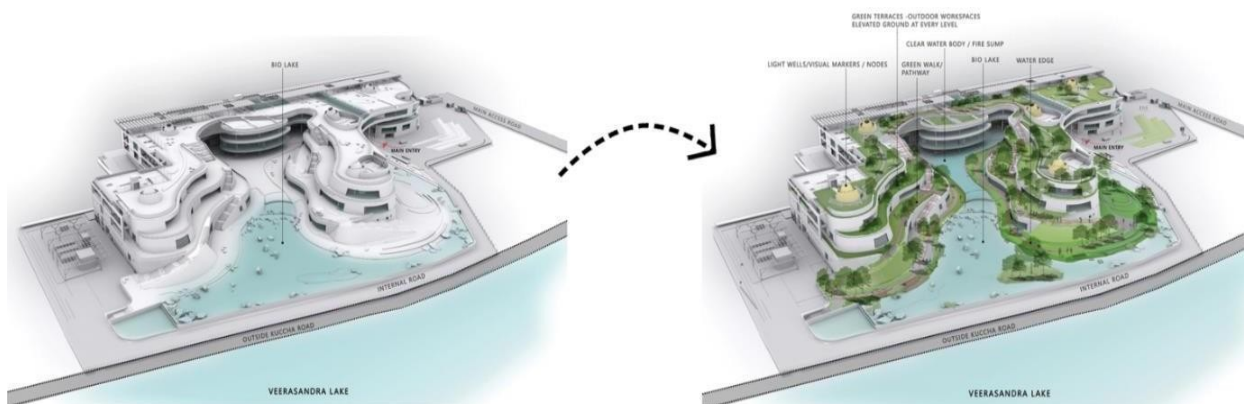


Fig.2.11 – Responding to the context

It has a lake on its eastern side; a road towards the north and is in a well-developed region with access to public transportation and basic amenities. The existing tree has been preserved and planting of several new ones during construction was done to complement each other. The longer sides of the building are oriented north-south in order to receive natural light and ventilation.

2.1.7 PLANNING:

FUNCTIONALITY - Unifying Diversity of departments

The planning of program was done in a way that every department had its own zone but are still linked to the other departments by voluminous atriums that brings light, allowing hot air to escape and accommodates elevators and staircases.



Fig.2.12 – Plans

The idea of office space is made in such a way that entire office space is enclosed with daylight as long as there is light outside therefore, minimizing need for artificial light. Artificial lighting is with light sensors and occupancy sensors. The second floor is designed to cater a huddle brainstorming space.



Fig.2.13 – Section showing various levels

The green areas at each level designed as an extension of indoor office spaces that allow one to work outdoors and stimulate interaction in nature. However, in order to encourage the employees to use terrace gardens as outdoor work spaces and for interaction, a two/three stage air conditioning system was planned to minimize energy consumption by 30% compared to conventional AC.



Fig.2.14 – Section showing the atrium

2.1.8 STRUCTURAL ASPECT:

This structure, is a great example for large span steel structure with the resemblance of an amoeba in geometry. There is a considerable level difference across the site which has been excellently utilized in the landscaping to form several mezzanine levels.



Fig.2.15 – Structural elements

The columns are composites of structural steel embedded in concrete in order to achieve the desired load flow and design strength. Part of the property has been encroached by a small pond, this creates challenges in the construction sequence and foundation systems.

2.1.9 MATERIALS USED:

About 83.5% of the materials used for false ceiling, wall paneling, internal partitioning and in-built furniture were of low-energy. Autoclaved aerated concrete (AAC) blocks were used for majority of the construction of load bearing and non-load bearing walls. AAC blocks used here contained 68% of fly ash by volume. As these porous blocks are lightweight, reusable, renewable, recyclable and nontoxic in nature.



Close up view of the AAC Blocks used.

2.1.10 INFERENCE:

- A connection has been developed between the building and the context through orientation of views towards the lake.
- Integration of landscape at different levels to create interest and lively atmosphere throughout the building.
- Spaces have been planned efficiently to utilize daylighting to reduce building cooling loads.
- This is a design where the idea of a conventional corporate office is reimagined and seated among the nature to inspire and elevate experience of its end users.

(TYPOLOGY II – CONVENTION & EXHIBITION)

2.2 VANCOUVER EXHIBITION AND CONVENTION CENTRE

2.2.1 INTRODUCTION:

LOCATION: Vancouver, Canada

NO OF FLOORS: 3 Floors

SITE AREA: 111500 sq.m

BUILT UP AREA: 36232sq.m

ARCHITECT: DA Architects&Planners

YEAR OF COMP:2009



Fig.2.17 – Ariel views



Being one of Canada's largest conventions centers it has hosted the International Broadcast Centre for the 2010 Winter Olympics and the 2010 Winter Paralympics. It also won several accolades like LEED Platinum for its efficient management of resources.

2.2.2 CONCEPT:

The planners indicated did not want a design that could 'steal the thunder' of the adjacent iconic sails of Canada Place. The design was sensitively developed as a compliment to the internationally recognized image of Canada Place with its sail-like fabric roofs.



Fig.2.18 – Spatial circulation

To maintain the view corridors from the downtown core, limited the overall building height, and has given the project a horizontal emphasis.

2.2.3 COMPONENTS OF BUILT FORM:

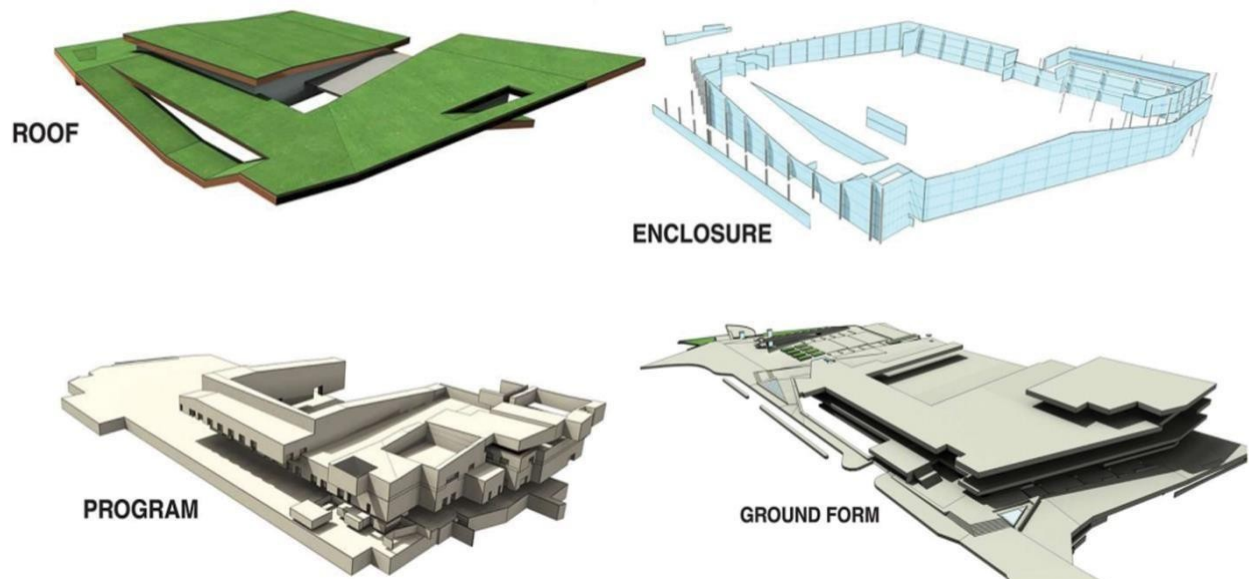


Fig.2.19 – Built form components

2.2.4 INTEGRATION WITH EXISTING ENVIRONMENT:

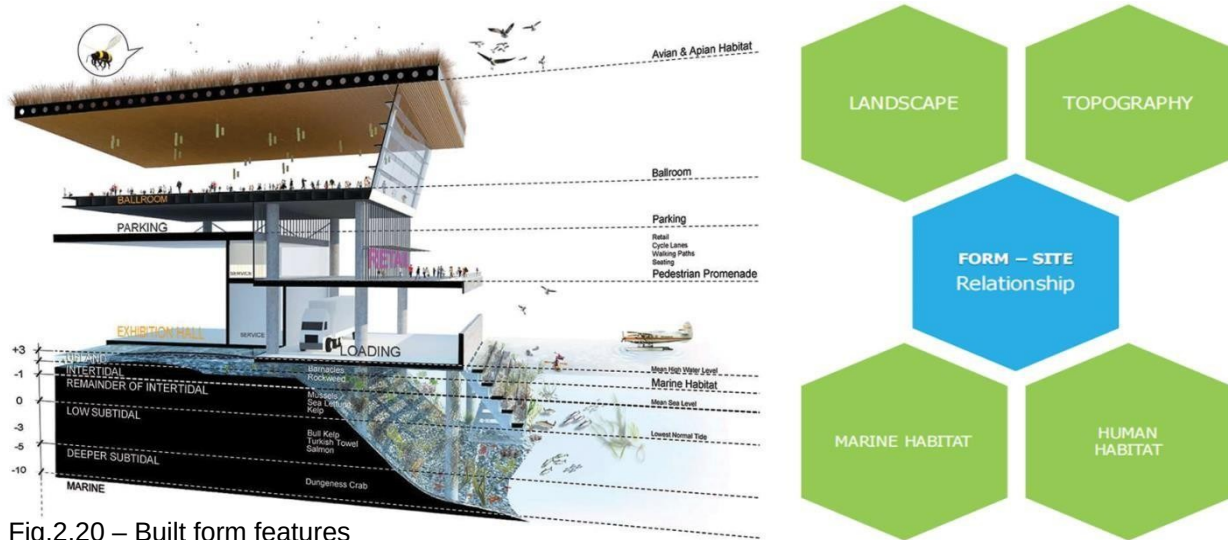


Fig.2.20 – Built form features

2.2.5 INDOOR OUTDOOR CONNECTIVITY:

The entire perimeter of this building's facade is an ultra-clear glass system, which provides strong linkages between interior & exterior public spaces, and visually reinforces the integration of urban and waterfront context into the user experience of the building.



Fig.2.21 – Indoor outdoor connectivity

Waterfront and urban pedestrian activities extend the public realm through and around the site.

2.2.6 HUMANHABITAT:

Addressing the human environment, the architectural approach creates a public experience that is simultaneously a building, an urban place, a park, and an ecosystem.



Fig.2.22 – Public engagement



Urban spaces formed by the building's landforms extend the downtown street grid to preserve view corridors out to the water. The convention center program emphasizes spaces for both public and private events, gatherings, and circulation.

2.2.7 LANDSCAPEINTERVENTIONS:



Fig.2.23 – Landscape integration

2.2.8 **ROOF FEATURES:**

It is one of Canada's Largest green roofs. VCCEP's green roof. It will reduce summer heat gain by as much as 26%. In addition to these building-related benefits, a living roof can provide significant improvements to stormwater management by detaining runoff and reducing peak flows.

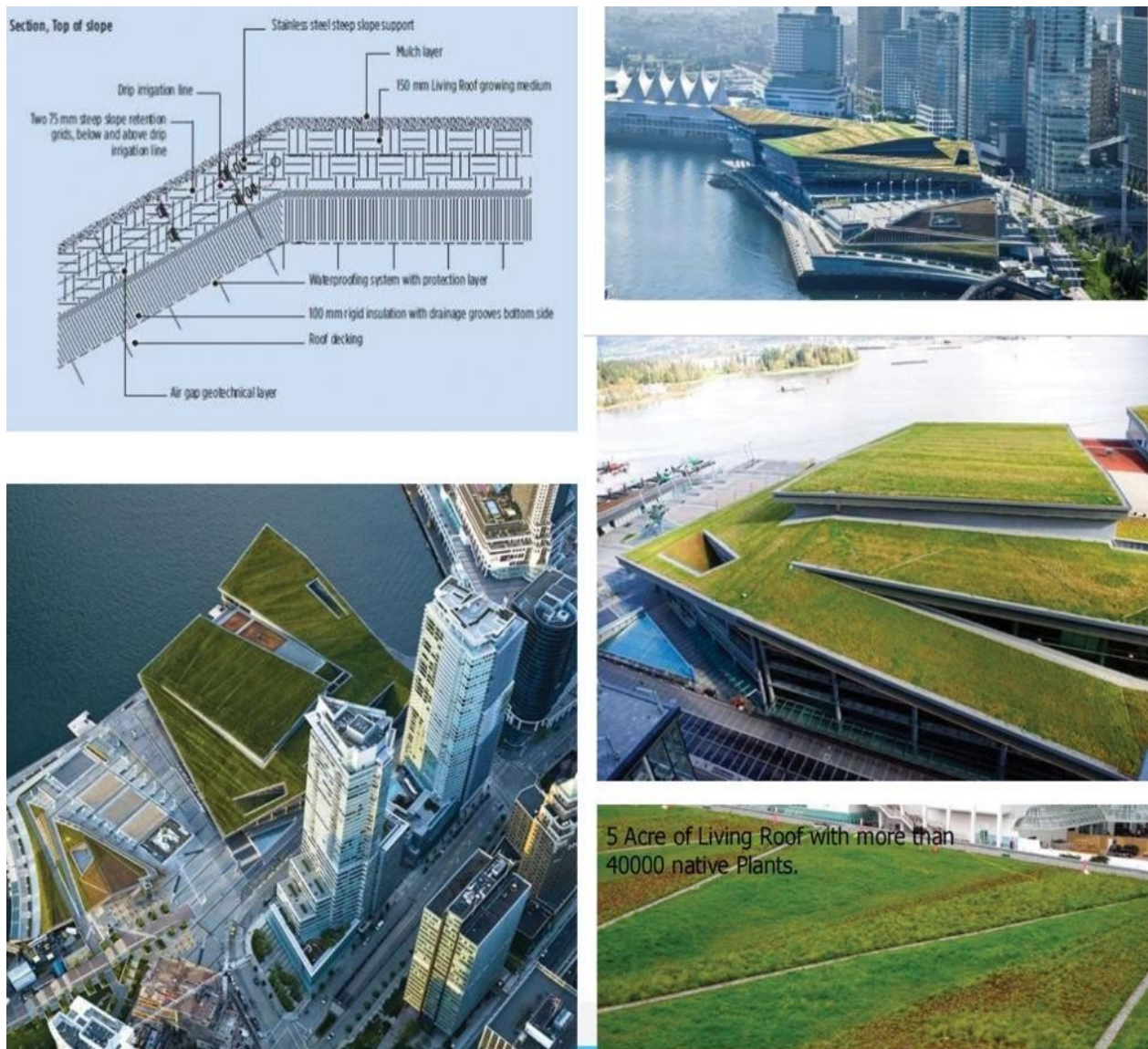


Fig.2.24 – Landscape integration

Urban air quality is also improved as the living roof traps airborne particles and the plants absorb carbon dioxide and release oxygen.

2.2.9 PARKING:

It offers secure parking through independent operators within both buildings. They operate 24 x 7 days a week. It has 440 stalls and is operated by Impark. There are also other convenient and sustainable transportation options for getting to the Vancouver Convention Centre, including walking, biking, or public transport.



Fig.2.25 – Parking facility



2.2.10 PLANNING:

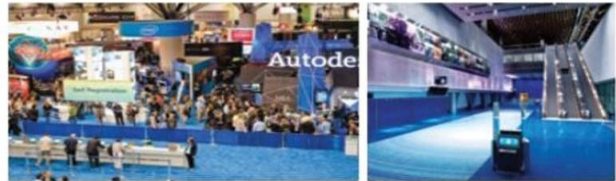
WEST EXHIBITION LEVEL

EXHIBITION HALLS	BOOTH CAPACITIES	CAPACITIES* (MAXIMUM)				USABLE AREA	DIMENSIONS		CEILING HEIGHT	
		THEATRE	CLASSROOM	BOOTH	RECEPTION		FEET	METRES		
	10' x 10' (3m x 3m)					sq' / m ²	FEET	METRES	FEET	METRES
A	301	4,062	3,195	3,080	4,062	58,502	5,435	193' x 300'	59.44 x 91.44	30' / 9.14
B	385	4,865	3,892	3,910	4,865	72,008	6,689	240' x 300'	73.15 x 91.44	30' / 9.14
B1	148	1,832	1,464	1,454	1,832	27,000	2,500	80' x 300'	27.43 x 91.44	30' / 9.14
B2	144	1,826	1,458	1,448	1,826	27,000	2,500	80' x 300'	27.43 x 91.44	30' / 9.14
B3	98	1,221	965	955	1,221	18,000	1,672	60' x 300'	18.29 x 91.44	30' / 9.14
C	489	5,888	4,633	5,180	5,888	80,000	7,391	300' x 300'	91.44 x 91.44	30' / 9.14
A & B	686	8,945	7,087	7,430	8,945	130,502	12,124	435' x 300'	132.59 x 91.44	30' / 9.14
A & B1	443	5,836	4,641	4,940	5,836	95,000	8,843	285' x 300'	86.87 x 91.44	30' / 9.14
A & B1 & B2	592	7,720	6,165	6,330	7,720	112,500	10,432	375' x 300'	114.3 x 91.44	30' / 9.14
B1 & B2	292	3,658	3,039	3,030	3,658	54,000	5,017	180' x 300'	54.86 x 91.44	30' / 9.14
B2 & B3	242	3,047	2,700	2,300	3,047	45,000	4,181	150' x 300'	45.72 x 91.44	30' / 9.14
B3 & C	587	7,209	5,659	6,300	7,209	108,000	10,034	390' x 300'	118.73 x 91.44	30' / 9.14
B2 & B3 & C	741	9,255	7,671	7,810	9,255	135,000	12,542	450' x 300'	137.16 x 91.44	30' / 9.14
B & C	889	10,879	8,525	9,530	10,879	162,000	15,050	540' x 300'	164.58 x 91.44	30' / 9.14
ABC Conference	1,182	14,803	11,800	12,910	14,803	220,500	20,485	735' x 300'	224.03 x 91.44	30' / 9.14

* Additional set-up and requirements will impact room capacity. Please contact us for your custom event needs.



1. Our expansive exhibition hall is capable of accommodating an event of any size and complexity.
2. Pre-function space with unique lighting and art work enhances any event experience.



Pre-function

- 20,000 sq' (1,860 m²) of pre-function space
- Entire space flooded with natural light from above
- Mosaic flooring feature, part of the permanent art program installation
- Programmable LED lighting
- Accessible design

Exhibition space

- 220,500 sq' (20,485 m²) of flexible exhibition space
- Divisible into three halls
- 22 loading bays with dock levelers and ramps for convenient drive-on access
- Floor load: 350 psf

Fig.2.26 – Exhibition Level planning



MEETING ROOMS	CAPACITY* (CHAIRMEN)					USABLE AREA	DIMENSIONS		CEILING HEIGHT			
	THEATRE	CLASSROOM	BOARD	RECT'NG	ROUND		FEET	METRES	FEET	METRES		
107	33	18	30	62	18	20	500	47	22' x 22'	8.71 x 8.64	10'0"	4.54
108	23	18	30	62	18	20	500	47	22' x 22'	8.71 x 8.64	10'0"	4.54
107 & 108	66	43	70	124	42	42	1,000	94	44' x 22'	13.41 x 7.04	10'0"	4.54
109	33	18	30	62	18	20	500	47	22' x 22'	8.71 x 8.64	10'0"	4.54
106	33	18	30	62	18	20	500	47	22' x 22'	8.71 x 8.64	10'0"	4.54
105 & 106	66	43	70	124	42	42	1,000	94	44' x 22'	13.41 x 7.04	10'0"	4.54
105	30	12	20	40	18	14	434	40	18'0" x 23'0"	5.72 x 7.01	10'	4.37
108	30	18	30	60	18	20	531	49	22'0" x 23'0"	6.69 x 7.01	10'	4.37
105 & 108	63	43	68	120	36	40	965	90	42'0" x 22'0"	12.70 x 7.01	10'	4.37
107	30	12	20	40	18	14	441	41	18'0" x 23'4"	5.79 x 7.11	10'	4.37
108	30	18	30	60	18	20	540	50	23'0" x 23'4"	7.01 x 7.11	10'	4.37
107 & 108	63	43	68	120	36	40	980	91	42' x 23'4"	12.80 x 7.11	10'	4.37
109	110	110	200	110	110	110	2,340	217	38'0" x 60'0"	11.58 x 18.29	18'0"	4.90
110	110	110	200	110	110	110	2,340	217	38'0" x 60'0"	11.58 x 18.29	18'0"	4.90
108 & 109	240	240	380	380	84	100	4,680	430	77'0" x 60'0"	23.52 x 18.29	18'0"	4.90
11	60	24	30	60	30	20	602	56	18'0" x 33'0"	5.79 x 10.06	10'0"	4.54
102	72	36	50	86	26	16	754	70	22'0" x 33'0"	6.69 x 10.06	10'0"	4.54
101 & 102	132	60	80	172	36	42	1,508	138	42'0" x 33'0"	12.70 x 10.06	10'0"	4.54
103	96	37	48	100	30	20	739	69	22'0" x 33'0"	6.69 x 10.06	10'0"	4.54
104	84	36	50	90	26	16	695	65	20'0" x 34'0"	6.10 x 10.36	10'	4.37
105	84	36	50	100	26	16	695	65	20'0" x 34'0"	6.10 x 10.36	10'	4.37
104 & 105	168	72	100	190	46	32	1,390	128	40'0" x 34'0"	12.19 x 10.36	10'	4.37
106	84	36	50	100	26	16	695	65	20'0" x 34'0"	6.10 x 10.36	10'	4.37
107	84	36	50	100	26	16	695	65	20'0" x 34'0"	6.10 x 10.36	10'	4.37
108 & 107	168	72	100	200	46	32	1,390	128	40'0" x 34'0"	12.19 x 10.36	10'	4.37
109	216	100	120	254	50	60	2,089	194	53'0" x 38'0"	16.13 x 10.41	10'	5.18
110	37	36	60	95	28	20	890	82	20'0" x 34'0"	6.10 x 10.36	10'	5.18
105	96	48	60	120	30	20	1,033	96	30'0" x 34'0"	9.14 x 10.36	10'	5.18
106 & 105	192	84	120	240	50	36	2,066	192	30'0" x 58'0"	9.14 x 17.68	10'	5.18
108 & 109	324	273	240	380	84	84	4,098	379	53'0" x 54'0"	16.13 x 16.13	10'	5.18
121	120	60	80	163	34	40	1,298	121	30'0" x 42'	9.14 x 12.80	10'	4.37
122	120	60	80	168	34	40	1,298	121	30'0" x 42'	9.14 x 12.80	10'	4.37
121 & 122	240	144	120	332	68	80	2,596	241	60'0" x 42'	18.29 x 12.80	10'	4.37

* Additional set up and requirements will impact room capacity. Please contact us for your custom event needs.

BALLROOMS	CAPACITY* (CHAIRMEN)					USABLE AREA	DIMENSIONS		CEILING HEIGHT		
	THEATRE	CLASSROOM	ROUND	RECTANG.	ROUND/RECT.		FEET	METERS			
A	1,680	840	720	1,880	—	14,448	1,342	80' x 80'	24.31 x 21.31	30'	9.14
B	1,680	840	720	1,880	—	15,120	1,405	80' x 80'	24.31 x 21.31	32'0"	9.80
C	1,680	840	720	1,880	—	15,120	1,405	80' x 80'	24.31 x 21.31	42'0"	12.80
D	700	400	400	1,100	—	5,000	467	47'0" x 100'	14.33 x 30.48	24'0"	7.32
A & B	3,360	1,680	1,440	3,760	—	29,568	2,747	170' x 80'	51.81 x 21.31	30'	9.14
A, B & C	4,700	2,372	2,160	5,647	—	44,688	4,152	260' x 80'	81.28 x 21.31	30'	9.14
B & C	3,320	2,216	1,800	3,760	—	30,240	2,809	180' x 80'	54.86 x 21.31	32'0"	9.80
B, C & D	4,175	2,328	2,100	4,901	—	38,220	3,550	237'0" x 80'	69.34 x 21.31	32'0"	9.80
C & D	2,580	1,300	1,200	3,075	—	25,100	2,346	137'0" x 180'	41.91 x 45.72	42'0"	12.80
A, B, C & D	8,225	3,480	2,880	6,786	—	52,868	4,933	312'0" x 168'	95.16 x 41.14	30'	9.14



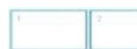
- Pre-function**
 - ~ 82,000 ft² (7,600 m²) of pre-function space
 - Ocean views and outdoor terrace
 - Fully staffed information desk at Burrard Street entrance
 - Accessible design
- Ballrooms**
 - ~ 52,688 ft² (4,893 m²) of ballroom space
 - Divisible into four ballrooms
 - Ballroom D offers ocean and mountain views
- Meeting rooms**
 - ~ 20,952 ft² (1,947 m²) of meeting space
 - 22 fully serviced and configurable meeting rooms
 - Sizes range from 434 to 4,680 ft² (40 to 435 m²)

WEST
LEVEL 1

Fig.2.27 – Level 1 planning



MEETING ROOMS	CAPACITIES* (MAXIMUM)					USABLE AREA	DIMENSIONS		CEILING HEIGHT			
	THEATRE	CLASSROOM	U-NOOD	RECEPTION	BOARDROOM		VOLUME SQUARE	sq' / sq'	FEET	METRES	FEET	METRES
201	200	102	102	238	42	52	1,858	182	489' x 43'	13.87 x 11.02	17'	5.18
202	99	54	60	134	34	32	1,048	96	267' x 43'	7.36 x 13.11	15'	4.57
203	99	54	60	115	34	32	1,045	97	267' x 43'	7.39 x 13.11	15'	4.57
204	99	54	60	134	34	32	1,029	95	259' x 43'	7.24 x 13.11	15'	4.57
203 & 203	207	90	120	240	42	60	2,062	193	485' x 43'	14.78 x 13.11	15'	4.57
203 & 204	207	90	120	240	42	60	2,064	192	48' x 43'	14.83 x 13.11	15'	4.57
203 to 204	207	182	210	383	64	64	3,183	288	722' x 43'	21.99 x 13.11	15'	4.57
205	99	54	60	130	34	32	1,045	97	264' x 43'	7.62 x 13.11	15'	4.57
206	99	54	60	115	34	32	1,025	95	259' x 43'	7.26 x 13.11	15'	4.57
207	99	54	60	130	34	32	1,028	96	231' x 43'	7.29 x 13.11	15'	4.57
205 & 206	207	90	120	251	42	60	2,071	192	482' x 43'	14.88 x 13.11	15'	4.57
206 & 207	207	90	120	251	42	60	2,053	191	479' x 43'	14.55 x 13.11	15'	4.57
205 to 207	207	182	210	387	64	64	3,099	288	721' x 43'	21.57 x 13.11	15'	4.57
208	99	54	60	123	34	32	880	91	237' x 41'	7.29 x 12.50	15'	4.57
209	99	54	50	124	34	32	880	91	237' x 41'	7.26 x 12.50	15'	4.57
208 & 209	207	108	120	247	42	60	1,980	182	47' 9" x 41'	14.55 x 12.50	15'	4.57
210	112	75	80	168	28	38	1,322	123	357' x 361'	10.92 x 11.35	15'	4.57
211	439	234	240	475	68	88	3,825	335	50' x 78' 0"	15.24 x 23.32	17'	5.18
212	144	72	80	168	42	40	1,245	115	493' x 257'	15.14 x 7.94	17'	5.18
213	144	72	80	146	42	40	1,274	118	493' x 258'	15.14 x 7.82	17'	5.18
214	144	72	70	175	42	40	1,250	118	493' x 252'	15.14 x 7.67	17'	5.18
212 & 213	280	141	180	301	44	66	2,520	234	498' x 50' 9"	15.14 x 15.47	17'	5.18
213 & 214	288	147	170	321	44	66	2,521	235	498' x 50' 10"	15.14 x 15.49	17'	5.18
212 to 214	432	287	290	476	68	84	3,789	350	498' x 75' 7"	15.14 x 23.15	17'	5.18
211 to 214	825	546	562	951	90	126	7,594	706	591' x 78' 6"	30.38 x 23.32	17'	5.18
215	88	45	50	130	28	28	830	77	35' x 23' 0"	10.67 x 7.21	15'	4.57
216	88	45	50	95	28	28	830	77	35' x 23' 0"	10.69 x 7.24	15'	4.57
215 & 216	132	90	90	225	42	54	1,660	154	35' x 47' 0"	10.69 x 14.45	15'	4.57
217	88	45	50	94	28	28	880	80	247' x 35'	7.69 x 10.67	15'	4.57
218	88	30	50	87	28	28	758	78	218' x 35'	6.80 x 10.67	15'	4.57
219	98	45	50	95	28	28	880	80	247' x 35'	7.69 x 10.67	15'	4.57
217 & 218	132	72	100	181	40	54	1,618	150	462' x 35'	14.09 x 10.67	15'	4.57
218 & 219	132	72	100	182	42	54	1,618	150	462' x 35'	14.09 x 10.67	15'	4.57
217 to 219	231	125	180	328	64	76	2,479	230	710' x 25'	21.59 x 10.67	15'	4.57
220	308	120	110	254	48	56	2,425	196	532' x 392'	16.39 x 11.94	17'	5.18
221	96	45	60	116	28	32	1,006	93	289' x 351' 0"	8.78 x 10.93	17'	5.18
222	104	60	60	138	28	24	894	82	248' x 351' 0"	7.52 x 10.92	17'	5.18
221 & 222	192	84	120	254	48	62	1,890	176	535' x 351' 0"	16.38 x 10.92	17'	5.18
220 to 222	442	252	240	588	68	92	3,395	371	535' x 75'	16.38 x 21.86	17'	5.18
223	180	45	50	92	28	34	1,747	72	224' x 24' 9"	6.81 x 10.56	15'	4.57
224	180	98	100	214	42	48	1,687	150	468' x 34' 9"	14.22 x 10.56	15'	4.57
223 & 224	285	144	150	246	64	72	2,381	222	69' x 34' 9"	21.02 x 10.56	15'	4.57



- Our open pre-function space with wood detailing offers comfort and unique outside views.
- Delegates are encouraged to experience our living roof with unique views from designated areas.



- Pre-function**
- ~ 42,196 ft² (3,872 m²) of pre-function space
 - Outdoor terrace with ocean views
 - Views of living roof
 - Accessible design
- Meeting rooms**
- ~ 28,564 ft² (2,745 m²) of meeting space
 - 24 fully serviced and configurable meeting rooms
 - Sizes range from 758 to 7,594 ft² (70 to 706 m²)

* Additional set-up and requirements will impact room capacity. Please contact us for your custom event needs.

Fig.2.28 – Level 2 planning

WEST
LEVEL 2





Living Roof

- A unique, six acre (2.4 hectare) living roof featuring a variety of 400,000 indigenous plants and four beehives



Pre-function

- 5,877 ft² (546 m²) of pre-function space
- Natural light and breathtaking views
- Outdoor terrace with ocean view
- Views of living roof
- Accessible design

Meeting rooms

- 8,810 ft² (818 m²) of meeting space
- Six fully serviced and configurable meeting rooms with spectacular harbour and mountain views
- Sizes range from 636 ft² to 6,504 ft² (59 to 604 m²)



Fig.2.29 – Level 3 planning

WEST LEVEL 3

MEETING ROOMS	CAPACITIES* (MAXIMUM)						USABLE AREA	DIMENSIONS		CEILING HEIGHT	
	THEATRE	CLASSROOM	DINING	RECEPTION	BOARDROOM	WHEELCHAIR		FEET	METRES	FEET	METRES
301	456	273	240	907	68	94	3,946	367	76'8" x 51'9"	23.37 x 15.70	15' 4.57
302	54	24	30	76	26	24	636	59	18'11" x 33'8"	5.76 x 10.26	15' 4.57
303	54	24	30	76	26	24	642	60	18'11" x 33'8"	5.82 x 10.26	15' 4.57
304	54	24	30	76	26	24	642	60	18'11" x 33'8"	5.82 x 10.26	15' 4.57
305	46	24	30	76	26	24	636	59	18'11" x 33'8"	5.76 x 10.26	15' 4.57
302 & 303	92	92	60	152	32	40	1,278	118	38'2" x 33'8"	11.58 x 10.26	15' 4.57
302 & 304	96	60	60	152	32	40	1,294	119	38'2" x 33'8"	11.63 x 10.26	15' 4.57
304 & 305	96	60	60	152	32	40	1,278	118	38'2" x 33'8"	11.58 x 10.26	15' 4.57
302 to 304	114	96	100	228	52	60	1,920	178	57'1" x 33'8"	17.40 x 10.26	15' 4.57
303 to 305	106	96	100	228	52	60	1,900	178	57'1" x 33'8"	17.40 x 10.26	15' 4.57
302 to 305	210	190	170	304	68	78	2,556	237	76' x 33'8"	23.16 x 10.26	15' 4.57
301 to 305	727	450	420	811	76	126	6,504	604	76'8" x 85'2"	23.37 x 25.96	15' 4.57
306	234	129	140	283	52	64	2,308	214	38'9" x 62'9"	11.20 x 19.13	17' 5.18

* Additional set-up and requirements will impact room capacity. Please contact us for your custom event needs.



2.2.11 EXHIBITIONSPACE:

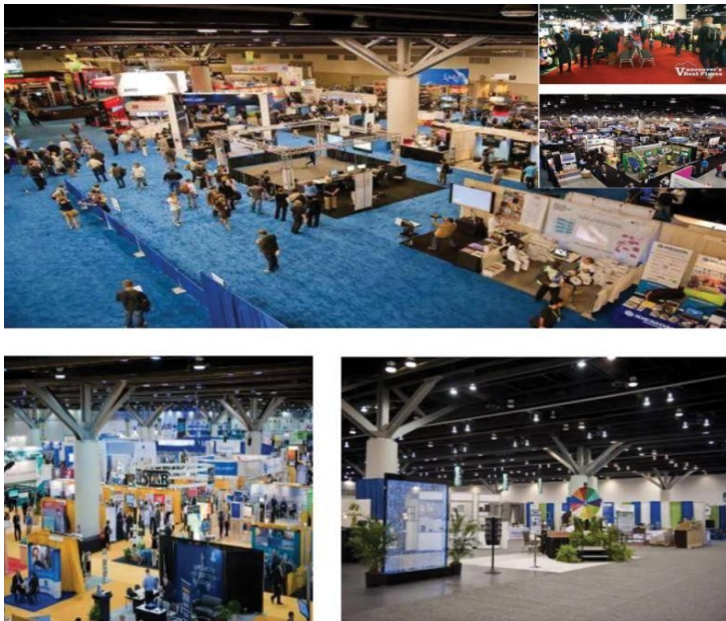


Fig.2.30 – ExhibitionSpace

2.2.12 OUTDOORPLAZA:



Fig.2.31 – Plaza

2.2.13 SERVICES:

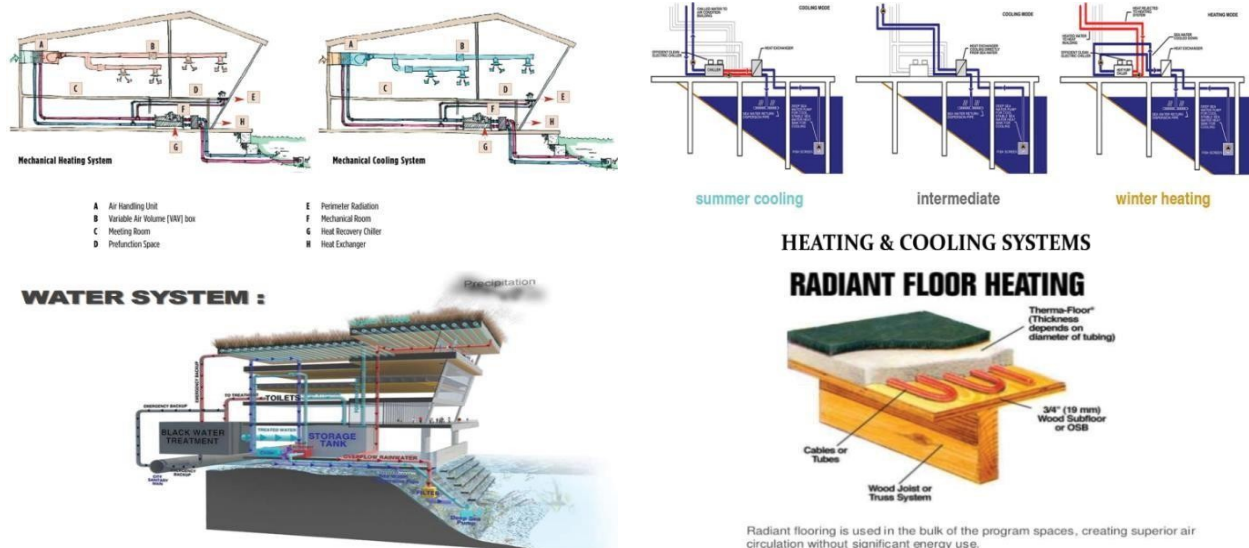


Fig.2.32 – Services

2.2.14 STRUCTURAL INTERVENTIONS:

CHALLENGE –

To avoid blocking the view of residents in nearby high-rise buildings, the roof height was restricted, leaving minimum depth for structure.

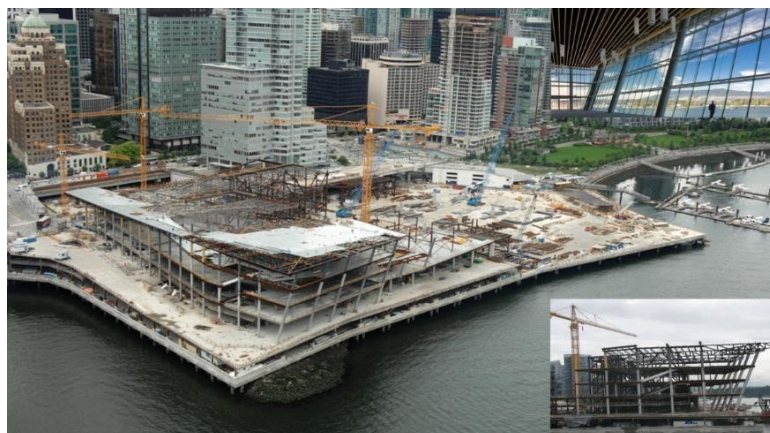


Fig.2.33 – Structural feature

SOLUTION –

To optimize depth and achieve long span with heavy load, a unique layout of multiple story deep trusses was used to accommodate door openings and passageways suitable to the building function.

CHALLENGE –

Located in a seismic region.

SOLUTION –

Eccentric braced bays were chosen for lateral load resistance but like all steel bracing systems they need to be free to yield equally in each direction to dissipate seismic energy and allow flexibility without failure. Braced bays have very heavy force transfer to the marine deck. Steel templates for all anchor bolts, and heavy anchor systems were cast into the marine deck.



Fig.2.34 – Structural feature

2.2.15 **INFERENCE:**

It has a visual connection — with full on all sides. This connection to 'place' sets the project apart from most contemporary convention centers. Though the project imposed physical constraints for its construction, with proper innovative integrations from all aspects made this a successful project.

2.3 COMPARATIVE ANALYSIS – (CONVENTION & EXPOTYOLOGY)

► COMPARATIVE ANALYSIS

PARAMETERS OF STUDY ANALYSIS	VANCOUVER EXPO CENTRE	PRAGATI MAIDAN INTEGRATED EXPO - CONVENTION CENTRE	KUALA LUMPUR EXPO CENTRE
LOCATION	VANCOUVER, BRITISH COLUMBIA, CANADA	NEW DELHI, INDIA	KUALA LUMPUR, MALAYSIA
CLIMATE	TEMPERATE CLIMATE	COMPOSITE CLIMATE	TROPICAL CLIMATE
SITE AREA	27 ACRES(109265m20)-18 ACRES IN LAND AND 9 ACRES IN WATER	APPROX. 150 ACRES (4,99,829 sq.m)	APPROX. 98 ACRES OF COMPLEX AREA (3,96,592 sq.m)
BUILT-UP AREA	18 ACRES (72843m2)	98 ACRES (3,97,249 sq.m)	6.8 ACRES (27,659 sq.m)
MAX FOOTFALL	FLOATING POPULATION OF ABOUT 12,000	FLOATING POPULATION OF ABOUT 3,00,000 PEOPLE	FLOATING POPULATION OF ABOUT 10,000 PEOPLE
CONCEPT	THE IDEA IS TO CREATE A VISUAL CONNECTION TOWARDS THE BEAUTIFUL VIEWS OF THE PACIFIC OCEAN AND THE VANCOUVER ISLAND. THE SAIL LIKE FABRIC ROOF IS INTENDED TO REPRESENT THE INTERNATIONAL IMAGE OF CANADA.	VARIOUS INSPIRATIONS ARE TAKEN FROM ARCHITECTURE OF OLD FORT AND LUTYENS' DELHI. TRADITIONAL MATERIALS AND STYLE TO EVOLVE A CONTEXTUAL AND HISTORICALLY SIGNIFICANT DISPLAY COMPLEX HIGHLIGHTING RELATIONSHIP BETWEEN NATURE AND BUILT FORM.	DESIGNED TO BLEND IN WITH ITS SURROUNDING BUILDINGS. THE ROOFING IS AN ABSTRACTION OF THE TRADITIONAL MALAY ROOF WITH RIDGES AND SLOPED SIDES.
ENTRY INTO SITE	2 ENTRANCES TO THE SITE: • ENTRANCE 1- 1/2 BLOCK WEST OF BURRARD STREET INTERSECTION ON RIGHT SIDE. • ENTRANCE 2- ENTRY AT THE FOOT OF HOWE STREET	10 ENTRY GATES TO THE SITE : • G1,G2 - HOTEL ENTRY/ EXIT • G3,G5 - SERVICE ENTRY/EXIT • G4-VIP AND PUBLIC ENTRY • G6,G7,G8,G9,G10 - PUBLIC AND PARKING ENTRY/EXIT	FOUR ENTRANCES TO THE CENTRE IN FOUR CARDINAL DIRECTIONS: • MAIN ENTRANCE - VIP & PUBLIC • PARK ENTRANCE - PUBLIC • EAST ENTRANCE - SERVICES • WEST ENTRANCE - PARKING
PARKING	• SECURED PARKING THROUGH INDEPENDENT OPERATORS. • BASEMENT PARKING-350 STALLS • LEVEL 2- 440 STALLS OPERATED BY IMPARK.	BASEMENT PARKING - 4606 no's OPEN PARKING - 72 no's PODIUM PARKING - 128 no's TOTAL PARKING - 4806 no's PARKING : CARS -4124 BIKES - 500 BUSES - 182	UPPER CONCOURSE LEVEL - 138 CARS LOWER CONCOURSE LEVEL - 588 CARS ON GROUND PARKING - 650 CARS

Table 2.1 – Comparative Analysis

► SPACES DERIVED

PARKING
TICKETING COUNTERS
REGISTRATION COUNTERS
ORGANISER'S OFFICE
EXHIBITOR SERVICE CENTRE
EXHIBITION HALLS
CONVENTION CENTER
BALLROOMS
MEETING ROOMS
CONFERENCE HALL
CLOAK ROOM
VIP LOUNGE
CATERING OUTLET
LOADING BAYS
STORAGE (UTILITY)
CONTROL ROOM
SUPPORT SERVICES
LANDSCAPE

► INFERENCE

The ideal location for such structures - urban centers / rapid developing regions.

Entrance to the site are from more than one access thereby creating a congestion free circulation.

The entrances are predominantly from major arterial, sub arterial and highway roads in order to avoid traffic congestion.

(TYPOLOGY III – RESEARCH CENTRE)

2.4 STRUCTURAL ENGINEERING & RESEARCH CENTRE

SERC THARAMANI – LIVE CASE STUDY

2.4.1 INTRODUCTION:

This Centre specializes in research and development in the field of designing, construction and rehabilitation of structures. The institute provides services including design consultancy and proof checking to various public and private sector organizations. Specialized courses for practicing engineers are also provided by the institute.



Fig.2.35 – Views of the building

The institute offers facilities for various laboratories, which are listed as follows,

1. Advance Concrete Testing and Evaluation Lab
2. Advance Materials Lab
3. Advanced Seismic Testing and Research Lab
4. Fatigue and Fracture Lab
5. Special and Multifunctional Structures Lab
6. Steel Structures Lab
7. Structural Health Monitoring Lab
8. Theoretical & Computational Mechanics Lab
9. Tower Testing & Research Station
10. Wind Engineering Lab

2.4.2 SPATIAL ANALYSIS:



Fig.2.36 – Spaces in the building

2.4.2 INFERENCE:

After having an interaction with the people who were a part of a research team at SCRC, I got a few suggestions that could be added to my design program.

They felt that research is a monotonous process and the current planning didn't facilitate them to feel very excited about the spaces.

So, I wanted to provide breakout zones where they can get fresh air and a peaceful environment to think & interact with other members. Zoning & segregation of spaces according to the functions will also create a more convenient and efficient work flow.



CHAPTER THREE

DATA COLLECTION AND STANDARDS

3.1 DATACOLLECTION

3.1.1 STUDY ON DIVISIONS AND ITS FUNCTIONS:

► **Coordination, Research & Training Division**

FUNCTIONS & SPATIAL REQUIREMENTS :

Coordination, Research and Training Division is created to undertake the tasks related to review of Recruitment Rules, induction, pre-promotion, capacity building & mid-career training for all cadres, cater to e-governance initiatives of the Government. The division is headed by Town and Country Planner and assisted by One Associate Town and Country Planner, One Assistant Town and Country Planner, One Research Officer and by one Planning Assistant.

CRT Division is currently involved in:

- National Urban Policy Framework and Working Group on Urban Planning
- Monthly progress report and monthly returns
- Annual Report, Outcome Budget and Annual Work Plan
- Brochures and presentations
- Internship Programme
- E-office training
- Design, develop and organize
- Prepare an independent detailed action plan for Administration Online (ADMOL) activities for employees and pensioners including all e-governance initiatives such as ANUBHAV, SANKALP of Department of Pension and Pensioners Welfare for pensioners/ retirees, PFMS, Bhavishya and other initiatives like Citizen's Charter, RTI based e-governance modules compliance
- Periodical e-newsletter
- Cadre related research activities on various subjects such as training and cadre review proposals as per 7th CPC recommendations, Government's implementation guidelines and DOPT model monograph-2010 etc. and submit comprehensive proposals periodically for consideration of Chief Planner for implementation.
- Any other work assigned by Chief Planner, Ministry of Housing and Urban Affairs or Government of India.
- Coordination, Research & Training Division
- Reports & Studies

► **Environmental Planning Division**

FUNCTIONS & SPATIAL REQUIREMENTS :

The Environmental Planning Division (EPD) is one of the important divisions and major function is to facilitate Ministry of Housing and Urban Affairs (MoHUA) in all urban environmental planning and management issues & policies. EPD provides a holistic and integrated framework to achieve smart, inclusive, sustainable solutions in order to create a Sustainable Green Community. Environmental Planning Division also participates and interacts environmental programmes, projects, conferences, seminar, capacity building and control of pollution with Ministry of Environment, Forests and Climate Change (MoEF&CC), Centre and State Pollution Control Boards, National Mission for Clean Ganga (NMCG), Ministry of Water Resources (MoWR) and other similar agencies.

The EPD is the pioneer for many environmental development projects, Guidelines. Example - One of the good examples is Coastal Zone Management in India. The TCPO has brought out a comprehensive report on Coastal Zone Management Plan in India, On February 7, 1991, Ministry of Environment and Forests through a notification declaring Coastal Stretches as Coastal Regulation Zone (CRZ) and regulating Activities in CRZ. The Ministry of Environment and Forest subsequently approved these CZMP's in September 1996. Environmental Planning Division (EPD) is headed by Town and Country Planner (TCP) and assisted by one Associate Town and Country Planner.

Management Of the Following ex:

Conservation and restoration of Ghats of Banaras
National Mission for Clean Ganga
Ministry of Water Resources
Eco Sensitive Zone (ESZ)
Expert Committee set up by Ministry of Environment for Forest and Climate Change.

Example Projects

Smart Urban Green Community (SUGC) - Abatement of Vehicular Pollution in Delhi
Combating Urban Heat Island effects through Town Planning measures
Environmental Planning Division
Reports & Studies

► Metropolitan and Union Territories Division

FUNCTIONS & SPATIAL REQUIREMENTS :

The MUT division deals with policy and schemes pertaining to the Ministry of Housing and Urban Affairs and relating to NCT of Delhi, NCR and other States and Union Territories of the country including the North-Eastern states, other. It assists the State Governments on matters of planning and development of their metropolitan and smaller towns by providing technical assistance and handholding in various aspects of urban planning and development. It also undertakes research studies on selected themes of urban development for empirical research. The division is headed by Town & Country Planner and is assisted by Three Assistant Town & Country Planners and Two Research Assistants.

The division also attends to works and references pertaining to MoHUA and inter-Ministerial matters. Important development guidelines, model bye-laws, manuals, planning toolkits, and various other reports are published and circulated to all the States/UTs and are used for reference and plan preparation by specialized agencies viz., Urban Development Authorities, Urban Local Bodies, Para-statal including the Private Sector.

The division is also responsible for preparing comments on monitoring and evaluation of various Central schemes and projects like UIDSST/AMRUT Mission/Smart cities Mission including maintenance of various statistical database like Census- 2011, Status of Master Plan for all urban areas, Data inventories for all Cities on Online Building Permission System, compliance to Model Building Bye Laws, 2016, and for monitoring Urban Infrastructure Development Scheme for Satellite Towns (UIDSST). Further, the division also attends to references on World Bank and ADB assisted urban development projects. Other works assigned by Secretary (Ministry of Housing and Urban Affairs) and Joint Secretary (AMRUT) with regard to draft speech, talking points and advisories to State Governments pertaining to urban development.

The division has representation in various committees e.g. Heritage Conservation Committee, Chandigarh Coordination Committee, Technical Committee of Delhi Development Authority, Board of Directors (Ahmedabad Smart City) and various other inter-Ministerial committees.

► Regional Planning Division

FUNCTIONS & SPATIAL REQUIREMENTS :

The Division undertakes research studies on topical issues pertaining to Regional Planning in India including issues related to the 73rd and 74th Constitutional Amendment Acts and renders technical assistance and advice to the Ministry of Housing and Urban Affairs on various issues pertaining to urban transportation planning including preparation of policy notes, etc.

It also offers comments to the Ministry of Panchayati Raj and Rural Development. The division will prepared Perspective Plans / Development plans of different cities/regions.

Example - Works By RPD of TCPO

This division has completed reports on Perspective Plan of Bageshwar District (Uttarakhand), Perspective Plan of Jodhpur District (Rajasthan), Perspective Plan of Chandrapur District (Maharashtra), and Report on Environmental Imperative for planning a pilgrim city of Haridwar. It has also provided support in finalizing the report on India City Profile: Consultation Report – 2010, which was sponsored by the Kyoto University, Japan in cooperation with National Institute of Disaster Management (NIDM), Ministry of Home Affairs, where TCPO was a partner. The division has completed reports on Comparative Transportation profile of Mega Cities, Comparative Transportation profile of Selected Metropolitan Cities in India and Digest on Research Studies on Urban Transportation in Metropolitan Cities. The division has been involved in scrutiny/appraisal/ examination of technical reports pertaining to urban transport received through the Ministry of Housing and Urban Affairs, Niti Aayog and other Central / State Government Departments. Regional Planning Division is headed by Town and Country Planner and assisted by One Associate Town and Country Planner and Two Planning Assistants.

► Urban and Regional Information System Division

FUNCTIONS & SPATIAL REQUIREMENTS :

URIS Division is headed by Town & Country Planner and assisted by Two Assistant Town and Country Planners, Five Research Assistants and Three Planning Assistants. The National Commission on Urbanisation (NCU) has also made a number of recommendations for the development of URIS and has suggested strategies for its implementation through case studies, research programmes coordination and creation of essential databases for monitoring the urban environment. Keeping in these in view, TCPO has made a comprehensive proposal for the development of URIS at National and State levels. Seeing the work undertaken by TCPO in the areas of URIS, the Ministry decided to create National Urban Observatory in TCPO. The Planning Commission recommended Ministry to launch the National Urban Information System (NUIS) Scheme in March 2006 to develop GIS databases for 152 cities/ towns in the country at two scales i.e., 1:10000 using satellite images and 1:2000 using aerial photography.

Ex. works by TPOC's URISD,

Taking the Urban & Regional Information System mapping forward, the Ministry of Housing & Urban Affairs has launched 'Sub-Scheme on Formulation of GIS-based Master Plans for 500 AMRUT Cities' which is being implemented by TCPO through URIS Division. The Sub-Scheme is aiming to formulate Master Plans through GIS enabled platform. The direct and indirect benefits of the Sub-Scheme are enormous. The URIS Division also takes pride in the successful implementation of an International MoU signed between TCPO, Govt. of India and Singapore Cooperation Enterprise (SCE), Govt. of Singapore, for Urban Planning and Governance in Nov.2015. The Division coordinated with Govt. of India, State/UT Govts. and Govt. of Singapore to train 99 Central and State Government Officials at Singapore, in four runs planned over a period of two years. Besides technical work, the Division also contributes in office administration, management of IT facility and store, representing Medical Reimbursement Committee, Prevention of Harassment of Women at the Workplace Committee and several other functions assigned from time to time. The Division is also instrumental in establishing Space Technology Application Cell for Urban & Regional Planning in TCPO, website updations and maintenance and now implementing e-office in TCPO.

► Urban Missions Division

FUNCTIONS & SPATIAL REQUIREMENTS :

The Urban Missions Division is presently engaged to enhance transparency, governance and quality service delivery with improved environmental conditions in cities. The reforms which account for Good governance, accountability, service delivery and improved environmental conditions. Broadly covered – Municipal Governance, Finance, Municipal service delivery, and Environment etc

Ex. TCPO's UMD has worked in the monitoring and evaluation of reforms under the AMRUT Mission. This division has successfully completed the implementation and monitoring of Integrated Development of Small & Medium Towns (IDSMT) and Urban Infrastructure Development Scheme for Small and Medium Towns Scheme (UIDSSMT) of Ministry of Housing & Urban Affairs. This division has been entrusted with the job of Appraising of Project Reports, processing for release of ACA, scrutiny of MOAs, monitoring of Projects, examining of QPR, coordination with Ministry and State Government, collating and providing information/data to the Ministry of Housing & Urban Affairs, attending to Parliament Questions, status note to Parliamentary Standing Committees, preparation of Annual Budget, Performance Budget, Reply to Court cases, PIL, Legal Notices etc. in reference to Centrally sponsored UIDSSMT Scheme under the Jawaharlal Nehru Urban Renewal Mission, IDSMT and AMRUT

► Special Projects Division

FUNCTIONS & SPATIAL REQUIREMENTS :

The Division is responsible for rendering advice and assistance to State Governments, Development Authorities, Local Bodies etc. with regards to formulating Regional Development Plan, Master Plans or Development Plans. Additionally, the division deals with the issues of barrier free environment for the Persons with Disabilities (PwD) and the elderly persons, green buildings, Planning and building standards, Building bye-laws etc. The division is also involved in the layout approvals and gives expert advice to the Central Vista Committee. The Division is headed by Associate Architect, assisted by One Assistant Town and Country Planner, One Research Assistant and Two Planning Assistants in the Division.

► Preparation of Plans

FUNCTIONS & SPATIAL REQUIREMENTS :

This department prepares and implements the statutory plans viz., Master Plan, New Town Development Plan and Detailed Development Plan for the planning areas under Tamil Nadu Town and Country Planning Act 1971. In addition to these special plans like heritage town development plans having historical, cultural, archeological and tourist importance and traffic improvement plans have been prepared and implemented through local bodies by extending funding assistance as grant from Town and Country Planning Development Fund.

(a) Regional Plan

The importance of regional planning was first stressed at Governmental level by the Housing & Regional Planning Panel (1955) of the Planning Commission. The objectives of balanced regional development was sought to be achieved through industrial location policy as "through balanced and coordinated development of industrial and agricultural economy in each region, the entire country can attain higher standard of living". In Tamil Nadu the state has been demarcated into eight regions taking into factors like geographical boundary, resource base, market potential and facilities, population threshold etc. Identification of growth poles, growth centres, service centres and proposal for development of transportation and communication network, provision of regional level facilities, conservation of flora and fauna, historical and heritage sites and constitution of regional planning authority to prepare and implement regional plan for the above causes are under process.

(b) Master Plan/New Town Development Plan

Master Plan/New Town Development Plan is a land use plan prepared for towns with regulatory guidelines to ensure orderly development of the planning area. In the broader sense, it aims at land use regulations and provision of effective road network, fixing alignment of bye-pass roads, ring roads etc. It involves a continuous process like deriving, organizing and presenting a broad comprehensive programme for urban development and renewal. It is designed to fulfill local objectives of the physical well being and also indirectly including social, economic aspects considering both the immediate need and those of foreseeable future. The development is regulated according to the Master Plan/ New Town Development Plan prepared for the particular town, which paves way for fair development of the town improving the quality of life of the urban populace. This department has so far prepared Master Plan/New Town Development Plan for 123 towns including all corporations except Chennai, all Municipalities except for 50 newly upgraded Municipalities and certain town panchayats. Review of these plans is taken up once in five years.

(c) Detailed Development Plan (DD Plan)

These are the micro level action plans that are in conformity with the master plans (macro level) prepared for areas vulnerable for rapid development. The plan contains zoning of land in detail for specific land use, infrastructural facilities like park and play fields, small link roads, roads for proper traffic circulation, public purposes, commercial and industrial areas etc., to facilitate a balanced development within the ambit of the Master Plan.

The functions of the Chennai Metropolitan Development Authority are :

- i. To carry out a survey of the Chennai Metropolitan planning area and prepare reports on the surveys so carried out.
- ii. To prepare a Master Plan or Detailed Development Plan or New Town developmentPlan as the case may be for the Chennai Metropolitan planning Area.
- iii. To prepare an existing land use map and such other maps as may be necessary for the purpose of preparingany development plan.
- iv. To cause to be carried out such works as are contemplated in any developmentplan.
- v. To designate the whole of Chennai Metropolitanplanning area or any part thereof with in its jurisdiction as a new town and toperform the following function viz.
 - a. To prepare a New Town development plan for the area concerned , and
 - b. To secure the laying out and development of the new town in accordance with the New Town development plan.
- vi. To perform such other functionsas may be entrusted to it by the Government.
 - a. The Chennai Metropolitan DevelopmentAuthority may by order, entrust to any local authority or other Authority asmay be specified in such order, the work of execution any development planprepared by it.
 - b. The Chennai Metropolitan Development Authority may by order, authorize any local authority or other authority as may be specified in such order , toexercise any of the power vested in byor under the Town and Country PlanningAct -1971 and may in like manner withdraw such authority and the exercise of any power delegated in this behalf shall be subject to such restrictions and conditions as may be specified in such order.

REFERENCE FROM :

NATIONAL LEVEL

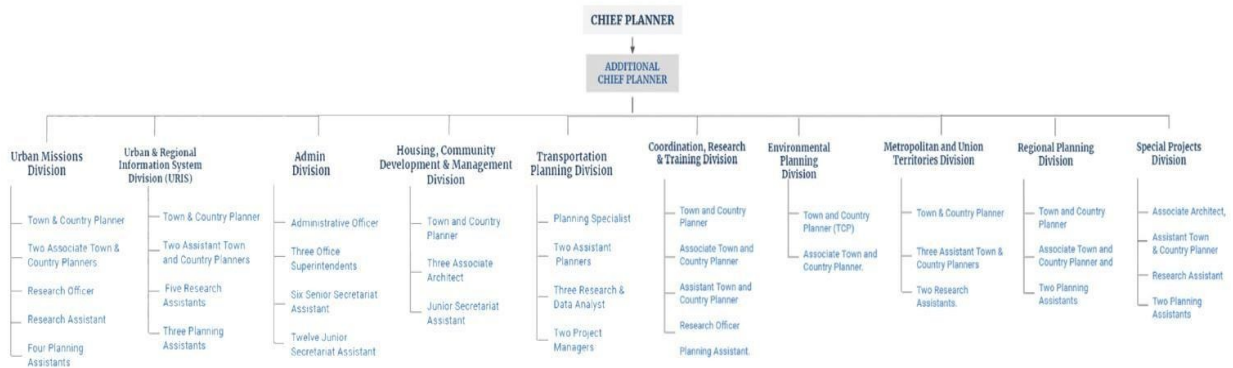
TCPO - Town & Country Planning India
Mohua - Ministry of housing & Urban Affair
AMDA - Association of Urban Management
and Development Authority.

STATE LEVEL

HMDA - Hyderabad Metropolitan
Development Authority
CMDA - Chennai Metropolitan
Development Authority
TCPO - Town & Country Planning Tamil Nadu

3.1.2 INFERENCE:

► ORGANIZATIONAL HIERARCHY



RESEARCH PLANNING & DEVELOPMENT DEPART.:

► PROGRAMME :

Reception
Waiting Room
Mini Halls for workshops/training

Work Spaces - Start-ups
Work Stations
Individual Work Stations
Meeting Rooms
File Storage

Research Labs

- Surveying Lab
- Photogrammetry Lab
- Geology and Hydrology Lab
- Structures Lab
- Materials Lab
- Geo-Informatics Lab
- Climatology Lab
- Data Analytics Lab
- GIS Lab
- Computer Lab
- Environmental Impact Assessment Lab
- PPP in Urban Environmental Services
- Infrastructure Planning Lab
- Disaster Risk Mitigation & Management Lab

Functions :

Training in Urban Renewal and Conservation-Planning Legislation-Project Formulation-Appraisal & Management-Surveying and Photogrammetry-Metropolitan Planning-Statistical and Quantitative Analysis-Specifications, Estimation and Valuation Statistical and Quantitative Methods-Technical Report Writing & Research Methodology-Graphics & Presentation Techniques-Settlement Geography Survey-Traffic and Transportation Planning-Ecology, Environment and Resource Management-Demography and Urbanization-Housing and Community Planning-Settlement Sociology-Real Estate Planning and Management-Management of Utilities and Services-Landscape Planning and Design-Urban Governance-Urban Finance-Disaster Risk Mitigation & Management-PPP in Urban Environmental Services

Functions :

Urban Planning

-Smart City Planning-Climate Change and Human Settlements-Urban Design and Conservation-Statistical Methods & Planning Techniques-Housing and Urban Renewal-Disaster Mitigation Planning - Planning Legislation Socio-economic Basis of Planning Metropolitan and Regional Planning Urban Governance and Finance Planning

Environmental Planning

GIS Mapping

Transportation Planning

Rural Development

Infrastructure & Network and Services

3.2 STANDARDS

MAJOR DESIGN CONSIDERATIONS :

Access and Entrance:

- # Separate access is required for visitors, staff, goods and service vehicles and emergency requirements. It is usually desirable to provide alternative entry for public which is independent from that used by conference visitors. This not only facilitates management and security, but also enables two or congress events or exhibitions to be run independently in parallel.
- # Easily identifiable entrance and exit, and clear external signage, which may need to be illuminated.
- # Sufficient unloading/loading space to accommodate multiple events.
Level ground floor with loading docks of sufficient size for all services including client vehicles.
- # Large coach drops off and collection points adjacent to main entrance, with sufficient turning space and height, accessible under cover.
- # Doors of sufficient width and height or demountable/retractable walls to permit truck access(trucks delivering exhibit and staging equipment pose particular problems).
- # Floor loadings to permit truck access.
- # Easily identifiable and weather protected entrance and reception area for attendees.
- # Clearly identified disabled access.
- # In larger venues, security systems and monitoring at loading docks.
- # Separate entry for venue staff
- # Storage space (for several days) for pre- congress consignments including exhibitors' displays materials.

DESIGN CONSIDERATION AND GUIDELINES

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

USER GROUPS AND THEIR MOVEMENT

4.1. Public movement pattern for convention centers:

Communication and functionality can be improved by implementing efficient circulation patterns in a convention center. People visiting or working in a convention center can be divided into 5 broad user categories:

- Public flow
- Delegate flow
- VIP flow
- Journalist flow
- Staff flow

4.1.1. Delegates flow:

Delegates form the most important group of users for a convention center. The parking shall lead them to the main entrance foyer which further directs them to their destination. An unobstructed delegate movement is very important.

4.1.2. Public flow:

Dignified personalities are invited depending on the nature of conference. It can also have relatives and public guests invited by the organization. The public guests also have access to the exhibition areas and hence these areas shall have separate access to manage the public flow during peak hours efficiently.

4.1.3. VIP flow:

They shall either directly lead to the dais of the main hall or shall enter through the VIP entrance which is connected to a VIP lounge.

4.1.4. Staff flow:

The staff can be divided into two categories namely the technical staff who are responsible for the efficient working of the convention center while the others are the administrative staff who are exposed to the people coming to the center. The paths of the technical and administrative staff diverge at the staff entrance.

4.1.5. Journalist flow:

It includes press people, cameraman and diplomats. They shall have a direct access to the documentation center and the TV studio of the convention center.

4.7. Fire safety norms by the National Building Code of India

Every building shall be so constructed, equipped, maintained and operated as to avoid undue danger to the life and safety of the occupants from fire, smoke, fumes or panic during the time period necessary for escape.

4.7.1. General Exit Requirements

- An exit may be a doorway; to an internal staircase, or external staircase, or terrace(s), which have access to the street, or to the roof of a building or a refuge area.
- All exits shall provide continuous means of egress to the exterior of a building or to an exterior open space leading to a street.
- Exits shall be so arranged that they may be reached without passing through another occupied unit.

4.7.2. Capacity of exits

- The unit of exit width, used to measure the capacity of any exit, shall be 500 mm. A clear width of 250 mm shall be counted as an additional half unit. Clear widths less than 250 mm shall not be counted for exit width.
- In an assembly building (convention center), the capacity per storey per unit width of exit of stairways, ramps and doors is 40, 50 and 60 respectively.
- The travel distance to an exit from the dead end of a corridor shall not exceed 30m in case of assembly buildings.

4.7.3. Doorways

- No exit doorway shall be less than 1000 mm in width except assembly buildings where door width shall be not less than 2000 mm. Doorways shall be not less than 2000 mm in height.

4.7.4. Stairways and ramps

- The minimum width of tread shall be 300 mm and the maximum height of riser shall be 150 mm for assembly buildings.
- The minimum width for a staircase shall be 2m.
- The minimum headroom in a passage under the landing of a staircase and under the staircase shall be 2.2 m.
- The slope of a ramp shall not exceed 1 in 10. In certain cases steeper slopes may be permitted but in no case greater than 1 in 8.

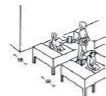
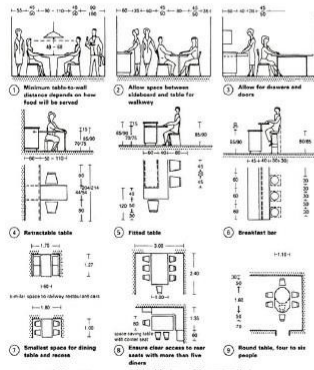
4.7.5. Horizontal exits

- For buildings more than 24 m in height, refuge area of 15 m² or an area equivalent to 0.3 m² per person to accommodate the occupants of two consecutive floors.

❖ ADMINISTRATION AREA

- reception – 80 sq ft
- executive director – 200 sq ft
- toilet – 50 sq ft
- work room – 180 sq ft
- small meeting – 100 sq ft
- storage – 80 sq ft

• RECEPTION AREA:



• SMALL MEETING:

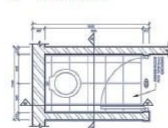
- Formal meeting 100-150sqft(2-3hr meeting)
- Formal layout : audio visual , good ventilation.

• WORK ROOM:

- Work room – office
- Space – open

Space all people can access desk ,storage, wide circulation zone.

• TOILET:



- toilet attached with executive officer room.

❖ FIRE PRECAUTIONS :

- Alternative exit route must be provided travel distance of exit, flame resistance materials, fire and smoke compartment.

❖ SECURITY:

- FIREDETECTION SYSTEM ALARM

❖ FIRE PROTECTION SYSTEM:

- To prevent spread of fire classified into two system.

1.active fire protection

2.passive fire protection

• Active fire protection

- Active fire protection-fire alarm system (single and two stages) single stage -activated the alarm signal immediately transmitted throughout the buildings to warn the occupants.
- two stage –signal alert the people

• Passive fire protection

- Integral components of fire protection.

❖ Exit Requirements:

- All aspects of exit requirements for corridors, doors, stair cases, ramps, etc in respect of widths

❖ FIRE ESCAPES OR EXTERNAL STAIR CASES:

- All fire escapes shall be directly connected to the ground.
- Entrance to the fire escape shall be separate and remote from internal staircase.
- The route to fire escape shall be free of obstructions at all times except the doorway leading to the fire escape which shall have the required fire resistance.
- Fire escape shall be constructed of non-combustible materials.
- Fire escape stairs shall have straight flight not less than 125 cm wide with 25 cm treads and risers not more than 19 cm.
- Handrails shall be at a height not less than 100 cm
- Provision of the lifts shall be made for all multi-storey building having a height of 15.0 m. and above.

Plate 3.1

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 3.71m².	
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

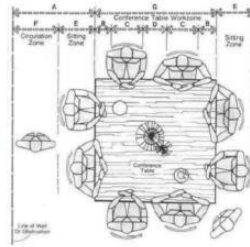


Figure 22: Seating standards for a conference table

Plate 3.2

❖ CONFERENCE HALL

- The Conference space types are areas used for formal meeting, training, and teleconference activities special equipment such as rear projection screens; special electronics control and audiovisual recording, and computer-assisted meetings.

- Conference reception -80SQ FT
- Seating places-800 SQ FT
- Toilets (Male)-60SQFT
- Toilets (Female)-60 SQ FT

- Large conference ,presentation , lecture and training session.
- Provide tv system , projector , audio visual , space for seating .

- The Conference is typically designed to accommodate a variety of audiovisual equipment, with special attention to acoustical separation from surrounding spaces.

• FOOD COURT -DESIGN GUIDELINES:

- The Food Court shall be located adjacent to the auditorium.
- All the Food Tenancies should have a service corridor , atleast 1500mm wide
- Various types of seating including chairs, banquet and booth types.
- Terraces are welcomed as part of the Foodcourt.

2-Types of seat arrangement in food courts

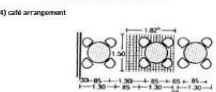
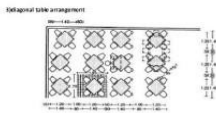
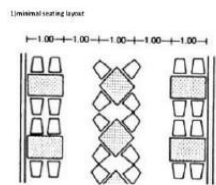


Plate 3.3

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.

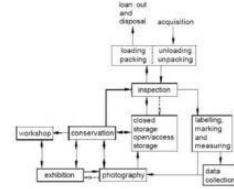


Figure 23: Flow diagram of collection item movements in the operation of collection services: exhibitions, conservation and collections management

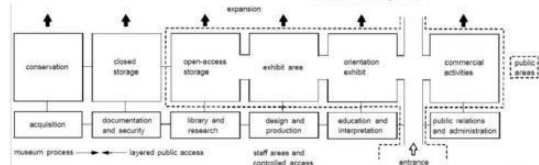


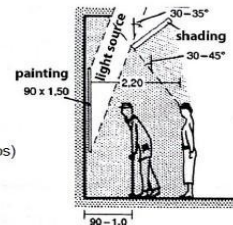
Figure 24: A layout concept showing a clear relationship between museum functions and an approach to zoning and expansion

4.4.2. Space Standards

- 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.
- 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.

❖ EXHIBITION PAVILION

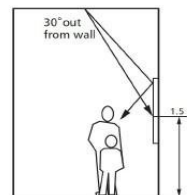
- Design area
- Storage - 60 ft
- Out door (Food court - (2-3 nos) minimum 60 sq ft)



• STALL AREA:

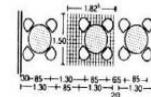
- Space 6-10 m2
- Table size -36in (915 mm)

Items placed below an average height exhibit barrier (1065 mm; 42 in.) cannot be seen by people who are short or seated



❖ DESIGN CIRCULATION SPACE :

- Wide corridor - 8-9 feet
- Corridor should able to handle two way traffic break up the corridor length - this will reduce the travel time provide round or angular corner it can create a intersecting sight line to corridor Minimize the number of steps.
- Avoid design two side exhibition



• FOOD COURT

Seating area -60-65%
Tenancy area-30-

4.8. Vertical circulation:

4.8.1. Escalators:

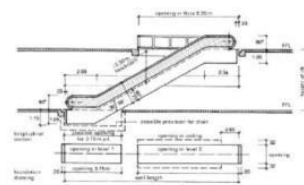


Figure 35: Cross section of an escalator

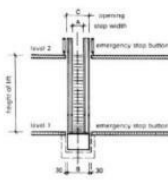


Figure 36: Escalator width

Escalators are required for continuous mass transportation of people. The standard dimensions for various depths of an escalator are prescribed in the adjoining table.

Step width	600	800	1000
A	605-620	805-820	1005-1020
B	1170-1220	1320-1420	1570-1620
C	1280	1480	1680
Transportation capacity/hr	5000-6000	7000-8000	8000-10000

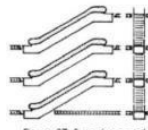


Figure 37: Superimposed

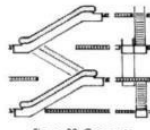


Figure 38: Crossover

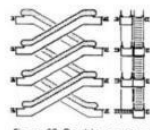


Figure 39: Double crossover

- Angle of inclination of an escalator from the horizontal shall not exceed 30°, but for rises not exceeding 6 m the angle of inclination is permitted to be increased up to 35°.
- In accordance with a worldwide standard, the width of the step to be used is 60cm (for one person), 80cm (for one-to-two people width) and 100cm (for two people width). A 100cm step provides ample space for carrying goods.
- Calculation of length in plan for an escalator:
 - with 30deg. escalator = 1.732*storey height
 - with 35deg. escalator = 1.428*storey height
- The landing area of escalators shall have a surface that provides a secure foot hold for a minimum distance of 0.85 m measured from the root of the comb teeth.

4.8.3. Ramps:

- These are used to allow wheeled vehicles such as trolleys, wheelchair and buggies to change levels.
- A ramp when provided should not have a slope greater than 1 in 20 or maximum of 1 in 12 for short distance up to 9000 mm.

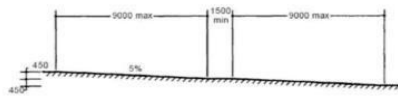


Figure 41: Location of landing in a straight external ramp

- Each ramp shall have at least 1800 mm of straight clearance at the bottom.
- At least one entrance usable by individuals in wheelchairs shall be on a level that would make the elevators accessible.
- Width of a ramp:
 - It is determined according to type and intensity of use. One-way travel requires a minimum width of 900 mm clear, whereas two-way travel needs 1500 mm. Where turns occur at landings adequate space for manoeuvring wheelchairs must be provided.

4.8.4. Internal staircase:

- All assembly buildings having area more than 500 m² on each floor shall have a minimum of two staircases.
- The minimum width for a staircase in an assembly building shall be 1500mm.
- The formula for most staircases of twice the rise plus the going lies between 600 and 630mm will give a suitable relationship.
- The rise should not exceed 190 mm, and the going should not be less than 250 mm.

Maximum Pitch	Rise	Going	Maximum risers per flight
32.7degrees	Minimum 135	Minimum 280	16 risers
	Maximum 180	Maximum 340	

- The top of the handrail should be between 900 and 1000 mm above the pitch line.
- The minimum headroom in a passage under the landing of a staircase and under the staircase shall be 2.2 m.

4.8.2. Elevators:

Location:

Passenger lifts should be within a reasonable walking distance from the furthest part of the floor areas served (say, 70 m maximum) and, where they are the only or main lifts near an entrance. The location of goods and service lifts will depend on their function, but they should not open into passenger lift lobbies or public areas.

Planning a passenger lift:

Cul-de-sac or recessed lobbies, are essential to get the maximum performance from lift groups. Clearly, having called for lift service the waiting passengers should not have to walk further than necessary to the responding lift car, and should not be obstructed by passers-by.

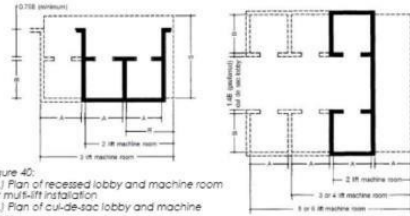


Figure 40: (a) Plan of recessed lobby and machine room for multi-lift installation. (b) Plan of cul-de-sac lobby and machine room.

Selecting the size of an elevator:

Type	Capacity/load persons/kg	Shaft size mm	Car size mm	Door mm	Pit mm
General purpose passenger traffic (speed : 1m/s)	13/1000	2400*2300	1600*1400	1100	1800
	16/1250	2600*2300	1950*1400	1100	1900
	21/1600	2600*2600	1950*1750	1100	1900
Intensive passenger electric traction (speed : 2.5 m/s)	13/1000	2400*2300	1600*1400	1100	2800
	16/1250	2600*2300	1950*1400	1100	2800
	21/1600	2600*2600	1950*1750	1100	2800
General-purpose goods lifts, electric traction (speed : 0.5/0.63/1 m/s)	13/1000	2100*2100	1400*1800	1400	1500
	26/2000	2600*2900	1700*2000	1700	1500-1800
Heavy-duty goods, electric traction	26/2000	2900*2300	2000*2100	1800	1500-1800
	26/2000	2900*2300	2000*2100	1800	1500-1800

AREA	FUNCTION	SLOPE IN PERCENT	
		MAX.	MIN.
Streets & Drives		5%	1%
Ramps		8%	0.5%
Walkways Approaches and Entrances		10%	1%
Service Areas and Collector Walks		15%	NA
Terrace and Sitting Areas		4%	1%
Lawn Area and Playgrounds		5%	0.5%
Swales		8%	0.5%
Grassed Banks		10%	0.5%
Planted Banks (unmowed vines or ground cover)		2%	1%
		33% (3:1)	NA
		25% (4:1)	NA
		50%	NA
		2:1	NA

Ramp Gradients - 6m Length

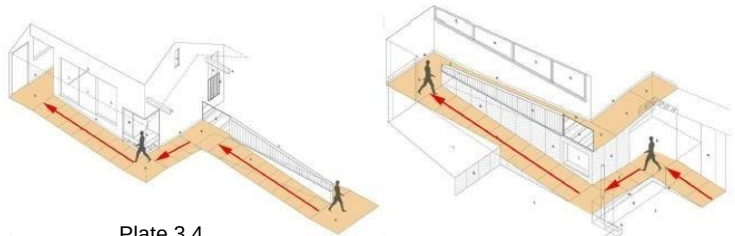
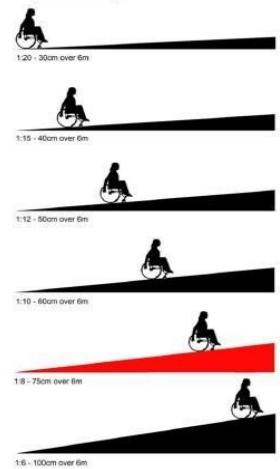
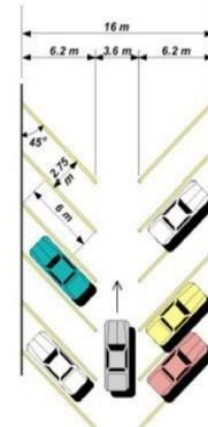
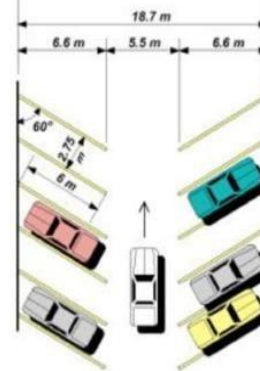
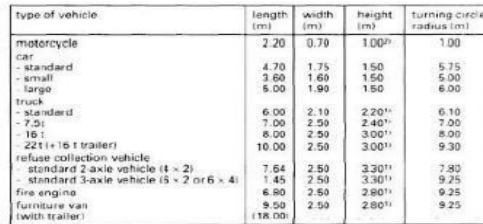


Plate 3.4

- The parking spaces acts as a place for the ceremonies of arrival & departure.
- Parking can be done in various ways:

-

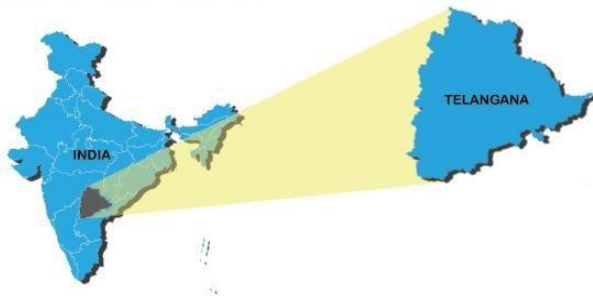


CHAPTERFOUR

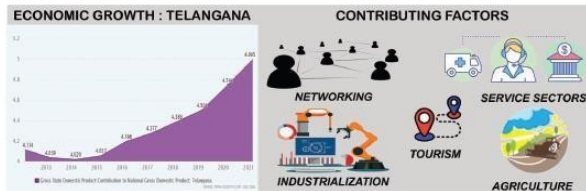
SITE DOCUMENTATION & ANALYSIS

4.1 SITE JUSTIFICATION

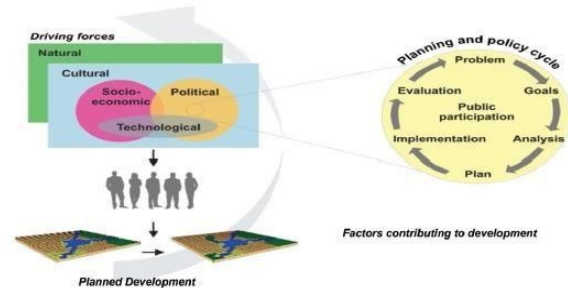
WHY TELANGANA :



Telangana government has a major thrust on urban development in order to promote a structured urban growth plan in the state. Having come into existence recently, it is on a fast track mode in urban development, thereby achieving significant milestones in government administration. The state firmly believes that urban development is the social, cultural, economic & physical development of cities, as well as the underlying causes of these processes.



Telangana is one of the fastest growing states in India, making rapid strides in all fields since its formation in 2014. It has a total area of 112 lakh hectares. It is predominantly an urban state with nearly 45% of its population in urban areas. It has an average annual growth rate of 13.90% over the last five years. Its nominal gross state domestic product for the year 2020-21 stands at ₹12.05 lakh crore. Agriculture forms the backbone along with tourism & other service sectors contributor to the its economy.



In 2019, domestic tourist arrivals to the state were 83.03 million & foreign tourist arrivals crossed 0.32 million. While in 2020, domestic & foreign tourist arrivals in the state dropped to 35.0 million 0.05million resp. The government has conducted a study to prepare comprehensive district tourism development plans and identified 477 tourist destinations. The districts identified with the most no. of proposed tourist destinations are Hyderabad (41), Rangareddy (26), Nalgonda (23), Adilabad (21) & Suryapet (21).

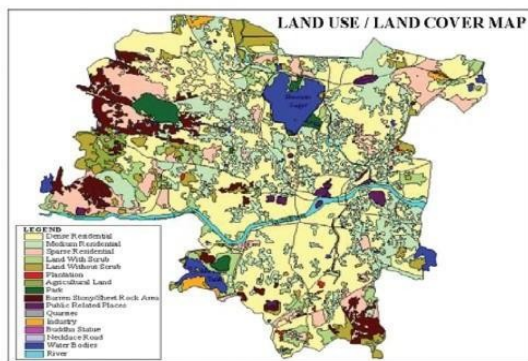
Plate 4.1

4.2 SITE ANALYSIS – MACRO LEVEL

HYDERABAD

Hyderabad is a sprawling metropolis and an incipient megacity with a rich cultural heritage and historic background. It has been growing continuously every field, hosting several major companies & public sector enterprises with central research and training institutions as well as universities & professional colleges. This dynamic city has emerged as a knowledge hub making rapid strides not only in information technology, biotechnology & medical care but also in tourism. Its targets for the future development are set in Hyderabad's master plan by the HMDA.

UNDERSTANDING THE URBAN FABRIC



HISTORY

The city is famed for its rich historic monuments temples, churches, masjids & bazzars most of which are greatly influenced due to the history of mughal rule. It was established by Qutb Shah on the southern banks of the Musi River modern day's - "Old City", while the "New City" encompasses the urbanized area on the northern banks. These are connected by many bridges which catered the trade of pearls. Hyderabad is still known as the City of Pearls.

URBAN SPRAWL

A large number of factors have influenced and shaped the character of the city in the last 400 years. Its location on the crossroads of North & South India, has developed the city layer by layer and the result is a culmination of cultures. Thus the old city can be identified as to have inculcated an **ORGANIC FORM** of development, whereas the new city is being planned **RADIALLY** with precision.

Plate 4.2

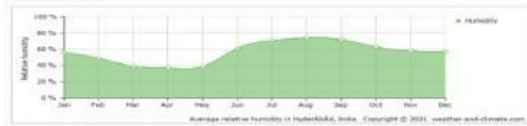
SITE ANALYSIS : MACRO LEVEL

UNDERSTANDING THE URBAN FABRIC

CLIMATE ANALYSIS

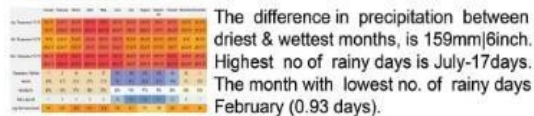
Hyderabad city has a moderate climate throughout the year. It has a unique combination of tropical wet - dry climate that borders on a hot dry climate. The climate is pleasant from October to February. March-May can be uncomfortable due to heavy heat. From Jul-Sep it is warm and humid, which is mostly uncomfortable.

HUMIDITY

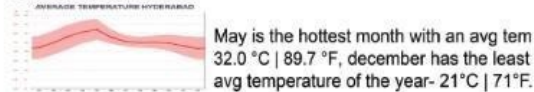


Hyderabad experiences moderate humidity. Relative humidity ranges from 60% to 70%. During monsoon period it raises to 80%. Moderate humidity provides proper evaporation and comfort.

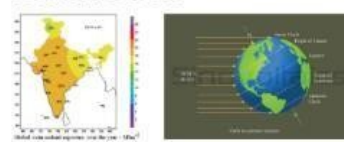
PRECIPITATION



TEMPERATURE



SOLAR INSOLATION



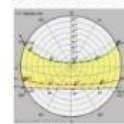
Solar Insolation is the amount of solar radiation incident on surface of the earth. Basically that means how much sunlight is shining upon the specific region.

AZIMUTH ANGLE

The azimuth angle is the compass direction from which the sunlight is coming. At solar noon, the sun is mostly directly south in northern hemisphere & directly north in the southern hemisphere. The azimuth angle varies throughout the day as shown in the image. The sun rises directly east and sets directly west regardless of the thus making the azimuth angles 90° at sunrise and 270° at sunset.



SUN DIRECTION



From this analysis we can conclude that the city receives 2731 hrs of daylight per year. With a maximum daylight exposure occurring during february.

WIND DIRECTION

The predominant wind direction is from.

INFERENCE



Plate 4.3

SITE ANALYSIS : MACRO LEVEL

UNDERSTANDING THE URBAN FABRIC

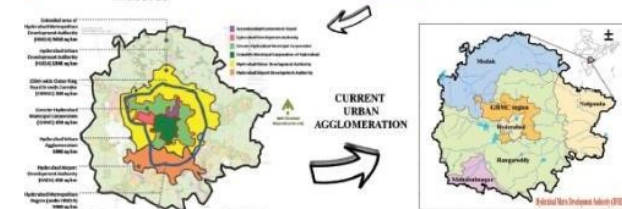
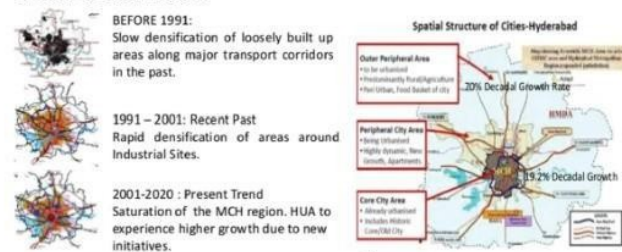
URBAN MORPHOLOGY

POPULATION

Being the largest city and capital of Telangana, it has a population of 8.7 million, which makes it the 4th most populous city in India. It has a population density of 18,480 people per square km i.e (47,000 per sq mi).



THE EXPANDING CITY



SERVICES

SOURCES OF WATER SUPPLY

The Hyderabad Metropolitan Water Supply and Sewerage Board (HMWSSB) is in charge of providing and maintaining water supply and sewerage facilities in Hyderabad.



SEWERAGE DISTRIBUTION NETWORK

The Sewerage System system is connected to main intercepting sewers one each on the North and South side of River Musi.

S.No.	Components	MCH Area	Surrounding Municipalities
1	Network Coverage	70%	20%
2	Access to Sewerage	65%	N/A
3	Total Quantity Generated	1885 ML/D	N/A
4	Capacity of Treatment Plants	1335 ML/D	N/A
5	Treatment & Disposal	25%	N/A
6	Recycling / Reuse	3%	N/A

CONNECTIVITY & TRANSPORT

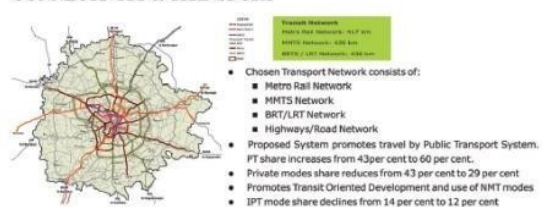


Plate 4.4

SITE ANALYSIS : MICRO LEVEL

LOCATION



Himayat Sagar,
Rajendranagar mandal,
Hyderabad,
Telangana 500030



The area has been realised as highly valuable and prime as it adjoins the crucial spine connecting the Outer Ring Road.



EDGE TREATMENT

There is a high scope for creating a visual land mark by designing a bold **PUBLIC PLAZA** on the fore-end that will lead to the internal blocks.

COORDINATES :

17°19'21.1"N 78°23'02.4"E



Plate4.5

NOISE

The major source of noise is from the highways ORR, however since the site is located at 1.2km from it, the current noise levels are minimum.

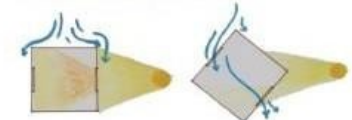
WIND DIRECTION

Predominant wind direction is from south-east to north-west with an avg. wind speed of 9.5Km per.hr (Jan 2015 - Oct 2020).

SUN DIRECTION

Predominant direction of radiation is from east to west.

DESIGN INTERVENTIONS:

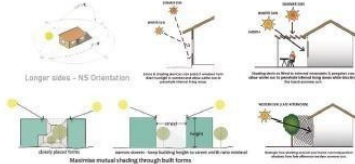


Block positioning & orientation along with proper shading & size of openings can help optimum utilization of existing parameters.

SITE ANALYSIS : MICRO LEVEL

CLIMATE

Since it is a semi-arid area, it has a hot and dry climate.
Summers March-May
Winter November - February
Monsoon June-September
Precipitation - 755 mm
Avg temp 23 °C - 42 °C range (approx).



INTERVENTIONS IN MASSING:

Facade treatment to achieve proper light & shading along with orientation, position, size and no. of openings; and shading strategies.

HYDROLOGY

Ground water at ~ 45' below gl - basement construction is easy & desirable. Rainwater harvesting to be incorporated in design by collecting through pavements & rainwater pits.

SEISMIC CONSIDERATIONS

It lies in zone IV having least level of activity so no special earthquake resistant measures are required-following bylaws & nbc sufficient.



SOIL TYPE

The soil type is mainly red sandy with areas of black cotton soil.

Plate4.6

TOPOGRAPHY

The site has varying contours at each point with a dispersed spread of wild plants on the first half & the rest opening out onto a spread of plain fields.



The gradual slope helps ease the drain and collection of water and the flow of other pipe systems.

VEGETATION

A dispersed spread of wild grass & shrubs about one half of the site that adjoins the main road. A row of trees are present that lines the site entry.



The existing trees along the site adjoining the road can be used as a noise and air filtering buffer.

SITE ANALYSIS : MICRO LEVEL

NEIGHBOURHOOD ANALYSIS

LOCATIONS IN PROXIMITY

INSTITUTIONS :

- Telangana State Engineering Research laboratories- 1.4 km
- Water and Land Management Training and Research Institute - 650 m
- National Institute of Rural Development- 2.6 km
- Agriculture Research Institute- 1km
- Indian Institute of Public Health- 650 m

OFFICES :

- Mandal Revenue Office- 2.8 km
- Civil Supply Office - 500m
- Sub Registrar Office - 250m

ATM & BANKS :

- Andhra Bank - 270m
- Andhra Bank ATM - 250m
- HDFC ATM - 4km
- ICICI ATM - 5km

HOSPITALS :

- Government Hospital -5km
- Rshitha Hospital - 8km
- Renova Hospital - 10km
- Mythri Hospital - 15km



LAND USE

The proposed land use map shows that the site comes under mixed-use type of development area.

Plate 4.7

TRANSPORT

- AIRPORT - 15KM**
Rajiv Gandhi International
- RAILWAY STATION - 8KM**
Netaji Nagar Station
- BUS Depot - 1KM**
Hanuman Nagar Depot
- BUS STOP - 2KM**

NEIGHBOURHOOD CONTEXT

The site is surrounded by an extended metropolitan region known as Greater Hyderabad. Consisting of residences, educational, commercial, healthcare zones.

This makes the site easily accessible by the students for learning & public for viewing while also having all basic facilities in close proximity.

It is encircled by the (ORR) high-speed expressway - Outer Ring Road. Which also help hassle free connectivity to a wide network of roads.

EXISTING FEATURES



View 1: South-West of site. Main entrance of WALAMBAR GATE. View 2: South-West of site. Tower adjacent to WALAMBAR GATE.



View 3: Entrance of Genious villa across the road. View 4: West wall of site. Building of WALAMBAR adjacent to boundary.



View 5: West wall. Gate of Private Property. View 6: South Wall Center. Viewing towards north.



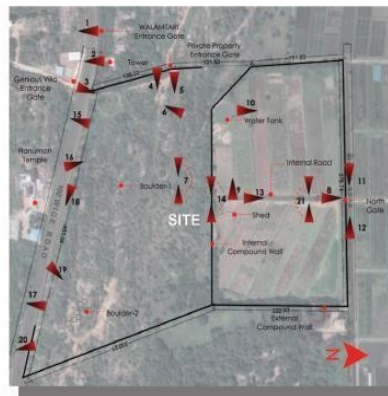
View 7: At North gate of site viewing towards South. View 8: Existing shed, East of the internal road located at the center of the site.



View 9: Panoramic view (180°) of the center of the existing north. Internal features being internal Road, existing shed. Internal boundary wall at both ends of the view.



View 10: Panoramic view (180°) of the entire campus standing at the north gate and facing south.



KEY PLAN



View 11: Existing water tank adjacent to west compound wall. View 12: 40' Road at the north gate of site viewing towards West.



View 13: Road at the north gate of site viewing towards East. View 14: On the internal Road facing South and view towards internal compound wall.



View 15: Hanuman Temple opposite to the Centre. South of 100' Road. View 16: From south of Property Viewing towards the cluster of Boulder-1 location.



View 17: Hanuman temple viewed from the edge of the Property facing the 100' Road. View 18: Compound wall facing 100' road at the south-east corner of the campus.



View 19: Panoramic view (180°) looking down to View 1 (from property gate).

Plate 4.8

CHAPTERFIVE

ARCHITECTURAL DESIGN

5.1 DESIGN INTENT

- ▶ Understanding the function and carefully crafting the spaces to fulfill the requirements. Designing spaces that are not only inspiring but also accessible by all members of the society. Establishing a platform to accomplish the goals of social learning through interaction.
- ▶ The functions specific to each typology can be analyzed under the following categories,



Plate 5.1

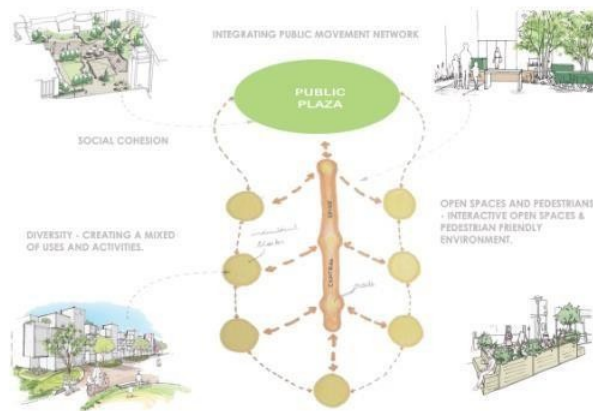
5.2 PROGRAMME

▶ CONFERENCE & CONVENTION CENTRE Help Desk Reception Lounge Multi-purpose space Amphitheatre Auditorium Audio & Light Control Room Audio Pit Green Rooms Discussion Room Storage AHU Electrical Room	▶ RESEARCH PLANNING & DEVELOPMENT DEPARTMENT Reception Mini Halls - Training/ Workshops Staff Lounge Meeting Rooms Research Labs Conference Rooms Workspace - Startups Individual Workstations File Storage Records Room Storage AHU & Electrical Room	▶ ADMIN - EXPO Help Desk Reception Waiting Lounge Work stations Registration Room Director's Room Conference VIP Dining Staff Dining Storage BMS Room Electrical Room Reprography
▶ EXHIBITION CENTRE Help Desk Reception Baggage Collection Display Area Organizers Room Audio & Light Control Room AHU Electrical Room Storage Loading Zone Unloading Zone	▶ DINING FACILITIES MESS Mini-Cafes -Billing Counter -Service Counter -Dinning -Kitchen -Cold Storage -Storage -Loading Bay	▶ ADMIN - CAMPUS Help Desk Reception Waiting Lounge U.G & P.G Office Counselling Student & Staff Affairs Exam cell Director's Room Conference Staff Dining File Storage BMS Room Electrical Room

5.3 CONCEPT

VISION

- ▶ To create a **LANDMARK** in the urban area integrated with a **VIBRANT PUBLIC REALM** and a socially inclusive built environment.
- ▶ To create a built environment that encourages **ACTIVE INTERACTION** & provides an appropriate setting for the convergence of its users.
- ▶ Designing a bold **PUBLIC PLAZA** that will be transforming the user experience making the spaces engaging & relevant to the changing times.
- ▶ This can be achieved by adopting mixed use development that will be supporting the functions of the contemporary trends.



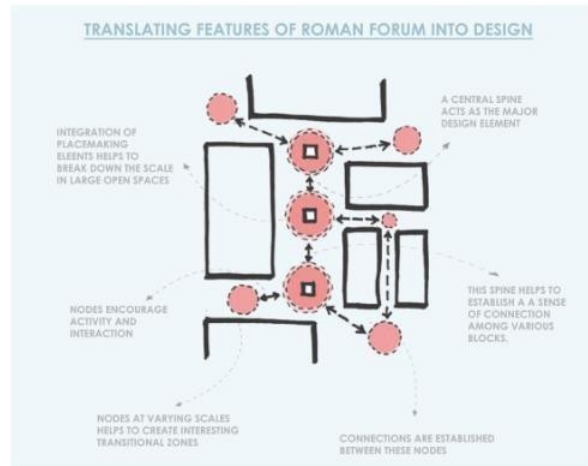
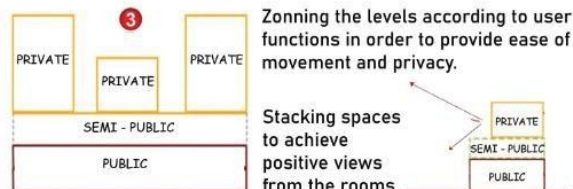
TRANSLATING FEATURES OF ROMAN FORUM INTO DESIGN

DESIGN INTERVENTIONS



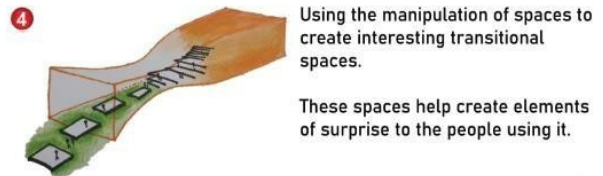
Zonning the site from public access zones to private and service access zones.

Providing easy way finding, uninterrupted flow and dedicated circulation paths.



INSPIRATION

- ▶ Taking inferences from the **ROMAN FORUM** which ideally plays with the arrangement of spatial hierarchy.
- ▶ This helps in creating an **URBAN FORUM** that will serve as TRULY PUBLIC SPAACE for the people from all backgrounds to use it as a district centre, meeting place for intercaching ideas, knowledge, culture and needs.
- ▶ By integrating the elements of the **URBAN REALM** we can create a more welcoming spatial experience for the users.



Creating interactive zones to encourage sociability among the users.

This will in turn help in active exchange of knowledge between them.



Plate 5.2

5.4 DETAILED DRAWINGS

SITE PLAN :



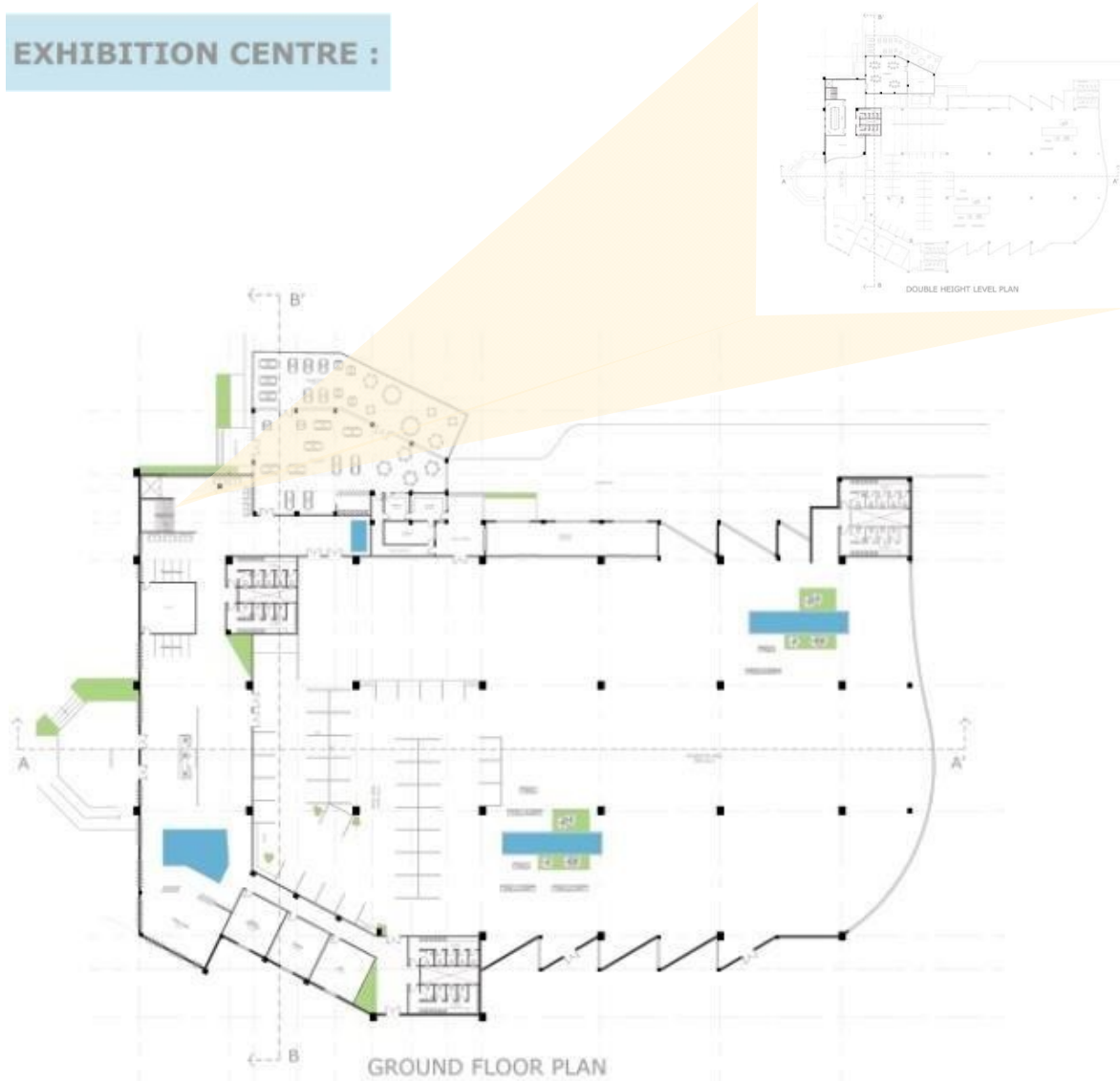
Plate 5.3

CONVENTION CENTRE :



Plate 5.4

EXHIBITION CENTRE :



TBA = 7329.9 sq.m



SECTION BB'

SECTIONS

Plate 5.5



SECTION AA'

RESEARCH PLANNING & DEVELOPMENT :



Plate 5.6



Plate 5.7



SECTION AA'

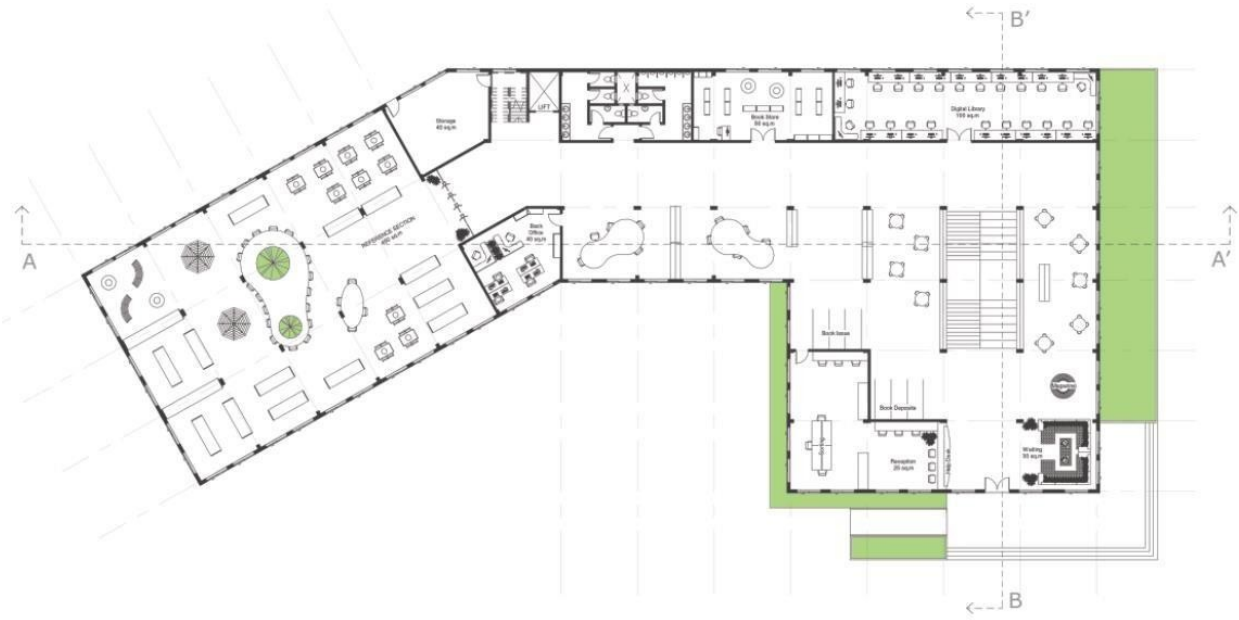


SECTION BB'

SECTIONS

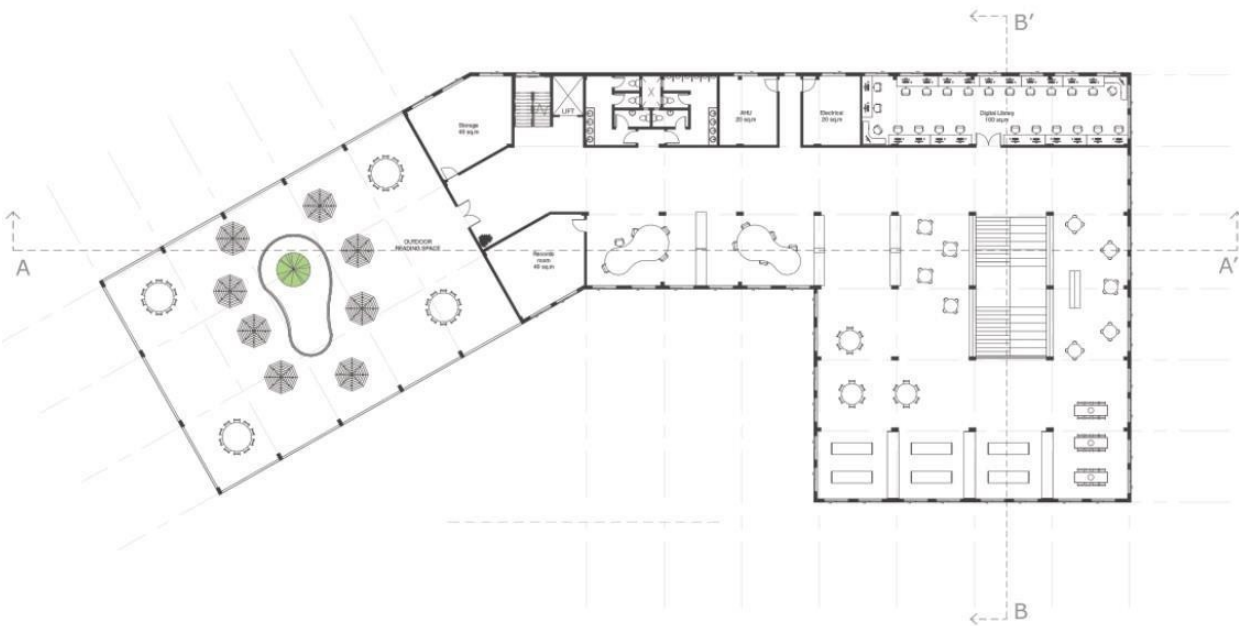
Plate 5.8

LIBRARY :



GROUND FLOOR PLAN

Plate 5.9



FIRST FLOOR PLAN



SECTION AA'



SECTION BB'

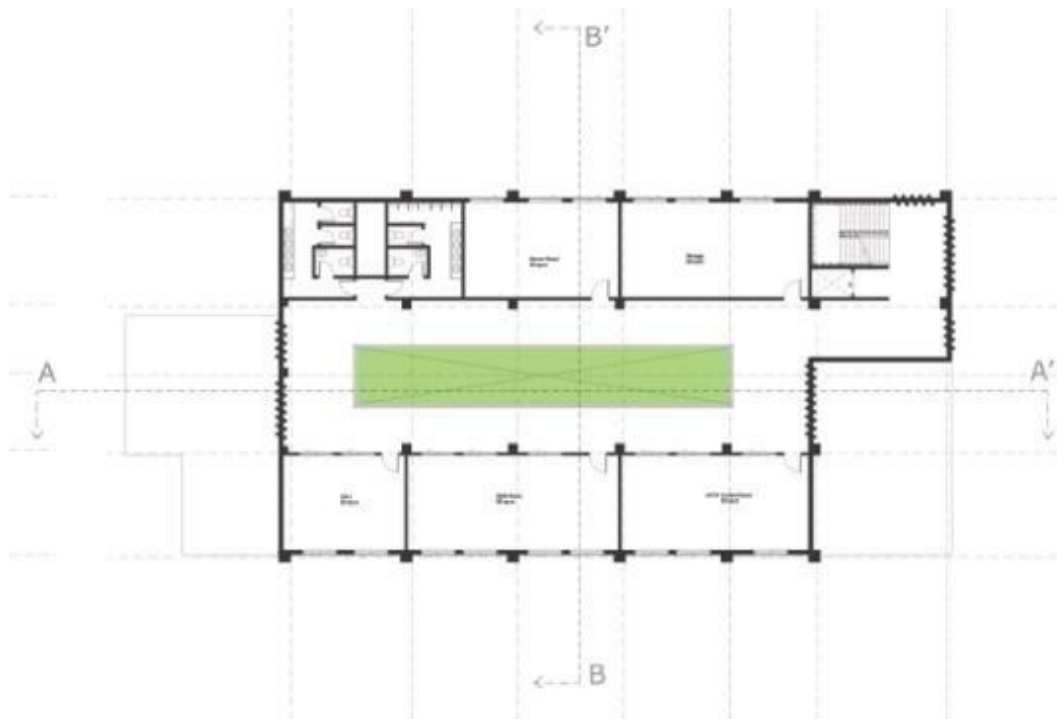
SECTIONS

Plate 5.10

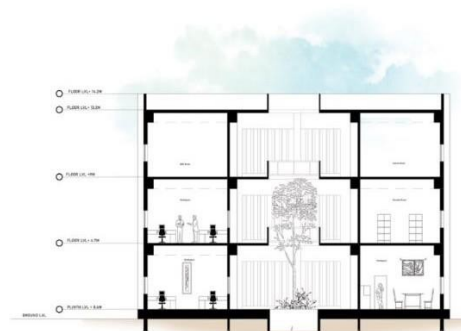
ADMIN BLOCK :



Plate 5.11



SECTION AA'



SECTION BB'

Plate 5.12

5.5 MODELS

CONVENTION CENTRE



EXHIBITION CENTRE



Plate 5.13

RESEARCH PLANNING & DEVELOPMENT DEPARTMENT



LIBRARY



Plate 5.14

ADMIN



Plate 5.15

SITE MODEL



VIEWS FROM CENTRAL SPINE



Plate 5.16

CHAPTERSIX

REFERENCES

6 REFERENCES

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