THESIS REPORT ON

"SCHOOL FOR DIFFERENTIALLY ABLED AND VOCATIONAL TRAINING CENTER, VARANASI"

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF:

BACHELOR OF ARCHITECTURE

BY

KHUSHNUMA BANO

1180101022

THESIS GUIDE

AR. AANSHUL SINGH

SESSION

2022-2023

TO THE

SCHOOL OF ARCHITECTURE AND PLANNING

BABU BANARASI DAS UNIVERSITY,

LUCKNOW.

SCHOOL OF ARCHITECTURE AND PLANNING
BABU BANARASI DAS UNIVERSITY, LUCKNOW (U.P.).

CERTIFICATE

I hereby recommend that the thesis entitled "**School For Differentially Abled And Vocational Training Center, Varanasi**" under the supervision, is the bonafide work of the students and can be accepted as partial fulfillment of the requirement for the degree of Bachelor's degree in architecture, school of Architecture and Planning, BBDU, Lucknow.

Prof. Mohit Kumar Agarwal
Dean of Department

Prof. Sangeeta Sharma
Head of Department

Recommendation

Accepted

Not Accepted

External Examiner

External Examiner

BABU BANARASI DAS UNIVERSITY, LUCKNOW (U.P.).

Certificate of thesis submission for evaluation

1. **Name : KHUSHNUMA BANO**
2. **Roll No. : 1180101022**
3. **Thesis Title : SCHOOL FOR DIFFERENTIALLY ABLED AND VOCATIONAL TRAINING CENTER, VARANASI**
4. **Degree for which the thesis is submitted: BACHELOR OF ARCHITECTURE**
5. **Faculty of University to which the thesis is submitted: Yes / No**
6. **Thesis preparation guide was referred to for preparing the thesis. Yes / No**
7. **Specification regarding thesis format have been closely followed. Yes / No**
8. **The content of the thesis have been organized based on the guidelines. Yes / No**
9. **The thesis has been prepared without resorting to plagiarism Yes / No**
10. **All the sources used have been cited appropriately Yes / No**
11. **The thesis has not been submitted elsewhere for a degree. Yes / No**
12. **Submitted 3 hard bound copied plus one CD Yes / No**

…….....
(Signature(s) of the supervisor)
Name: AR. AANSHUL SINGH

…….....
(Signature of the Candidate)
Name: KHUSHNUMA BANO
Roll No.: 1180101022

ACKNOWLEDGEMENT

The journey which started 5 years ago has culminated….as I step into the world a series of people flash in my memory.

To start with first and foremost gratitude towards almighty GOD for his blessings.
Then I would like to thank all my faculty members who have supported and guided me all these memorable 5 years.

I would like to thank my thesis guide AR. AANSHUL SINGH, who guided me through active participation in discussions and gave her kind attention throughout the process.

My sincere thanks to Thesis coordinator AR.AANSHUL SINGH, AR. SATYAM SRIVASTAVA, for his cooperation and understanding at every stage of the study, which gave my study a new direction and made it more meaningful.

I would further like to show my gratitude to my parents, for their forever support and blessings. Their motivation and support helped me to be more dedicated and inclined towards my goal.

Above all, thanks to my friends for their sincere help throughout, without which this report would not have been in its present shape.

I have put in my best of efforts and worked day and night to make this project a success and hope you too will appreciate my endeavor.

I am also thankful to the persons concerned to my studies for their cooperation and devoting their valuable time for discussing with me.

THANKING YOU
KHUSHNUMA BANO
ROLL NO. : 1180101022
B.B.D. UNIVERSITY, LUCKNOW

TABLE OF CONTENT

CHAPTER -1
SYNOPSIS

1)SCHOOL FOR DIFFERENTIALLY ABLED AND VOCATIONAL TRAINING CENTER

INTRODUCTION:

Disability is the consequence of an impairment that may be physical, cognitive, mental, sensory, emotional, developmental, or some combination of these. A disability may be present from birth, or occur during a person's lifetime.

One of the major problems facing the physically disabled child attempting to complete his formal education centers on architectural barriers, which prevent access to both conventional, and special education facilities.

Disability is not a curse. With dedication and hard work and perseverance, disabled people can achieve the desired goal. This has been demonstrated by sources of handicapped persons who have excelled in different lifestyles. One of the major problems facing the physically disabled child attempting to complete his formal education centers on architectural barriers, which prevent access to both conventional, and special education facilities.

A barrier is any obstruction, hurdle or obstacle that might hinder or control movement.

These barriers make the area inaccessible to many a public. They might not necessarily be disabled persons but the elderly, pregnant women and people suffering from temporary disabilities. If these barriers are in public, buildings they pose even more difficulties. On the face of it, it is only persons with disabilities for whom barriers become major obstacles. However, it is necessary to realize that every person, at some stage of life, face barriers. A small child, an elderly person, a pregnant woman, the temporarily disabled, all are vulnerable to barriers.

Therefore, to list out people affected by barriers:

- Wheelchair users
- Children with limited walking/movement abilities
- Children with visual impairment or low vision
- Children with hearing impairment
- Children with temporary disabilities.

Disability is not a curse. With dedication and hard work and perseverance, disabled people can achieve the desired goal. This has been demonstrated by sources of handicapped persons who have excelled in different lifestyles. One of the major problems facing the physically disabled child attempting to complete his formal education centers around architectural barriers which prevent access to both conventional and special education facilities.

Most contemporary experts in the field of special education recommend that the physically disabled child be afforded as much opportunity for independent behavior as possible. This is not only desirable in terms of the development of an adequate self-concept, but has certain obvious economic advantages as well in terms of reduction in number of staff and effective utilization of personnel.

HISTORY AND BACKGROUND:

During the past century, great studies have been made in the education, training, rehabilitation and employment of the disabled in the country. They are taking advantage of the scientific, educational and technological developments. With dedication and hard work and perseverance, disabled people can achieve the desired goal.

According to the census of year 2011 the population of female and male of Varanasi as follows: -

Male- 54297

Female -42627

Total- 96924

NEED OF THE TOPIC:

A differently able child who may be in the wheel chair for the rest of his life can be refurbished in an institute under a medical guidance which is not only by medicine or by surgery but also by some special treatment like physiotherapy and occupational therapy which may not be available in the normal hospital or any other institute. These children also need special school where they can get treatment, care and motivation which a regular school can't provide them.

The program for the project is based on the functional requirements of complete physical and mental growth facilities and was established from the proposal of the authority. The program includes all facilities required for a complete disabled institute.

AIM OF THE PROJECT:

-To understand the difficulties faced by handicapped people and to create a place, which gives them a barrier free environment through this topic.

-To design such an institute which helps them to stand in parallel to the ordinary people.

-To create a way disabled people by this type of institute so that they can present their skills.

- Mostly such buildings are funded by NGOs and hence need to be as cost-effective as possible. Therefore, techniques of low cost housing will be applied essentially.

OBJECTIVE OF THE PROJECT:

-The program includes all facilities required for a complete disabled institute.

-To design its infrastructure for cost reduction (social benefits of putting two types together.)

-To create common spaces within the campus separately from that of their private domes, maintaining the privacy and health related safety for both groups.

-To provide learning and growing spaces to keep them engaged and find new passions and opportunities for them.

-To make homely feel spaces having both physically as well as psychological effect to the users.

-To design an atmosphere that encourages creative spirit by varied natural illumination and a play of lights and shadows in the exteriors as well as interior of the building.

SCOPE:

-To adopt the universal design norms making the space accessible to all.

-To design a self-sustained campus using eco-friendly materials and construction techniques thus generating local employment.

-To indulge the concept of Biophilic design interventions which connects occupants to natural environment.

-To design a co-education space for special children as well as normal children from class VI TO XII.

The overall project deals with the planning and designing concerned with the improvement and upbringing of special children. To provide design solution that will create barrier free environment.

LIMITATION:

-The prime limitation is the lack of availability of relevant data as less work has been done in this field of architecture.

-Fully skilled and well-equipped administrative blocks are required for separate working teams.

SITE DETAILS:

Name of the project: SCHOOL FOR DIFFERENTIALLY ABLED AND VOCATIONAL TRAINING CENTER

Location of the project: Rampur Village, Tehsil Pindra, Varanasi

Site Area: 11.94 acres.

Approach: The site can be reached through the Pindra market, which is located 30km from Varanasi bus stand with 12m wide road on north side.

TENTATIVE PROJECT REQUIREMENTS:

Private spaces

-Administration block
-Academic block
-Therapy (Service Block)
-Hostel blocks for boys and girls
-Staff accommodation
-Guest Room
-Library

Common spaces

-Dining hall/study
-Kitchen
-Multipurpose hall
-Gymnasium and
-Meditation center.

METHODOLOGY:

The methods of study to be followed-
-Understanding the basic needs of the project.
-Site Analysis
-Literature studies
-Case studies
-Design strategies
-Built forms

CASE STUDIES:

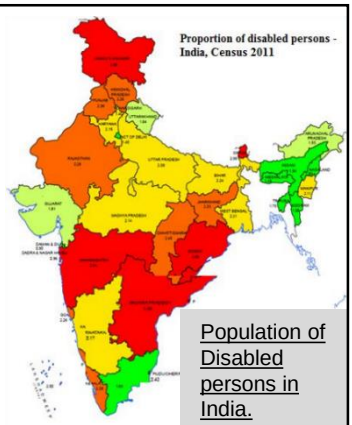
1) Amar Jyoti Charitable Trust, New Delhi.
2) Hazelwood School, Scotland
3) Econef Children's Center, Tanzania.
4) Manaav Sadhna, Ahmedabad
5) NVTI, Noida

CHAPTER -2

SITE ANALYSIS AND CLIMATIC DATA

INTRODUCTION:

Disability is the consequence of an impairment that may be physical, cognitive, mental, sensory, emotional, developmental, or some combination of these. A disability may be present from birth, or occur during a person's lifetime.
One of the major problems facing the physically disabled child attempting to complete his formal education centers around architectural barriers which prevent access to both conventional and special education facilities.
Disability is not a curse. With dedication and hard work and perseverance disabled people can achieve the desired goal. This has been demonstrated by sources of handicapped persons who have excelled in different walks of life.



Population of Disabled persons in India.

WHAT IS A BARRIER FREE ?:

A barrier is any obstruction, hurdle or obstacle that might hinder or control movement.
These barriers make the area inaccessible to many a public. They might not necessarily be disabled persons but the elderly, pregnant women and people suffering from temporary disabilities. If these barriers are in public buildings they pose all the more difficulties.
On the face of it, it is only persons with disabilities for whom barriers become major obstacles. However, it is necessary to realize that every person, at some stage of life, face barriers. A small child, an elderly person, a pregnant lady, the temporarily disabled, all are vulnerable to barriers.
Therefore, to list out people affected by barriers:

- Wheelchair users
- Children with limited walking/movement abilities
- Children with visual impairment or low vision
- Children with hearing impairment
- Children with temporary disabilities

Types of Physical disability

WHY COMBINING BOTH THE PROJECT?

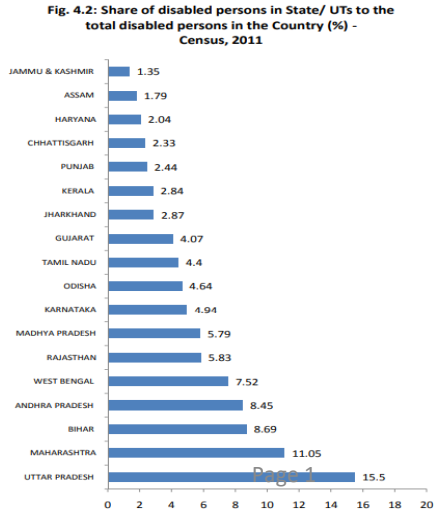
- The program includes all facilities required for a complete disabled institute.
- To understand the difficulties faced by handicapped people and to create a place which is barrier free environment.
- To design its infrastructure for cost reduction(social benefits of putting two types together.)
- To design architectural spaces for old and young that brings new energy, knowledge and enthusiasm to each other lives.
- To create common spaces within the campus separately from that of their private domes, maintaining the privacy and health related safety for both groups.
- To provide learning and growing spaces to keep them engaged and find new passions and opportunities for them.
- To make homely feel spaces having both physically as well as psychological effect to the users.
- To design an atmosphere that encourages creative spirit by varied natural illumination and a play of lights and shadows in the exteriors as well as interior of the building.

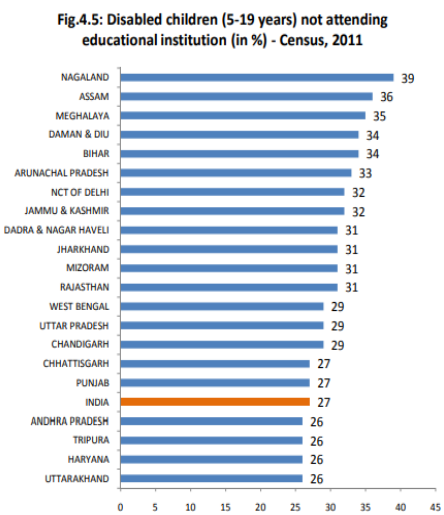
- According to the census of year 2011 the population of female and male of Varanasi as follows: -

  Male- 54297

  Female- 42627

  Total- 96924





INTRODUCTION:

TYPES OF DISABILITIES:

Various disabilities which have been considered while preparing the guidelines for barrier free built environment are broadly classified under four categories-

1) Non-Ambulatory:

Impairments that, regardless of cause or manifestation, for all practical purposes, confine individuals to wheel-chairs.

Design requirements-

- Width of entrances and exists (clear 900mm)
- Width of the passage/corridor (min. 900mm)
- Slope of the climbing (min. ramp slope 1:12)
- Passing over different levels and grooves (Grafting with narrow slots in the direction of movement and level difference to limit to 2 cm or less).
- Lift size
- Toilet size

2) Semi-Ambulatory :

Impairments that cause individuals to walk with difficulty or insecurity. Individual using braces or crutches, amputees, arthritics, spastics and those with pulmonary and cardiac ills may be semi-ambulatory.

Design requirements-

- Width of passage for crutch users (min. 900 mm)
- Finishes of floor surface with non slip floor material.
- Installation of handrail to support the body weight at the critical places e.g. staircase, toilet, ramp, passage with a change of level (800-850 mm).
- Extension of handrail on the flat landing at the top and bottom of the stairs (300 mm).
- To prevent a cane or crutch tip from slipping off the side of
- the stairs or ramp, install a 20 mm high lip on the exposed edge.

3) Sight :

Total blindness or impairments affecting sight to the extent that the individual functioning in public areas is insecure or exposed to danger.

Design requirements-

- Use of guiding blocks for persons with impaired vision to guide them within the buildings and facilities.
- Installation of information board in braille.
- Installation of audible signages .
- Removal of any protruding objects and sufficient walking space for safe walking.
- For persons with limited vision use of contrasting color arrangements.

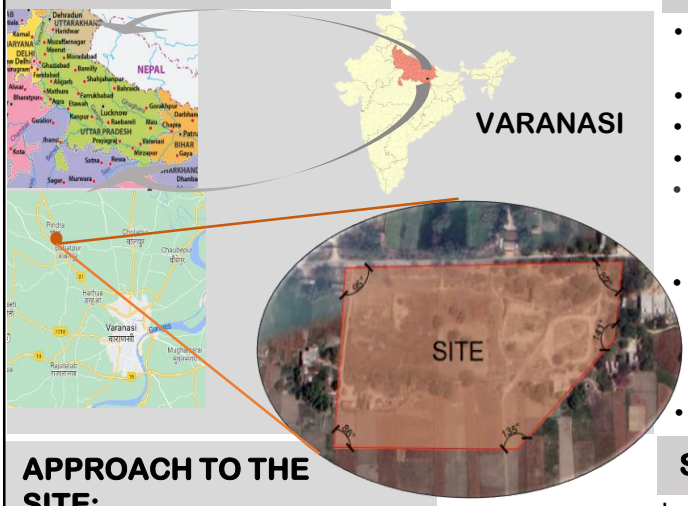
4) Hearing:

Deafness or hearing handicaps that might make an individual insecure in public areas because he is unable to communicate or hear warning signals.

Design requirements-

- Provision of information board in an easily understandable manner.
- Provision of illuminated signages, layout diagrams to help the persons easily reach the desired place.

SITE ANALYSIS:



SITE INFORMATION:

- Location: Rampur Village, Tehsil Pindra, Varanasi, U.P.
- Site Area: 11.94 acres or 48157.59 sq m
- Latitude- 25°30'46.36"N
- Longitude- 82°46'13.58"E
- The site can be reached through the Pindra market, which is located 30km from Varanasi bus stand with 12m wide road on north side.
- Shape: Paralellogram
- Soil: The site has black alluvial soil.
- Topography: It has very gradual slope. Therefore, can be considered as a flat site.
- Vegetation: Mainly mango and neem tree.

APPROACH TO THE SITE:

14km
Babatpur Airport

6km
Pindra Station

4.3km
Pindra Bus Stop

SITE SURROUNDINGS:

Located in Rampur Village, the site is surrounded with some residential and farming agricultural lands. Adjacent road is 12m wide. There are lots of trees in the site and there is also an open field for future extension of this project.
No Traffic problem.
The site is calm and quiet.

SITE JUSTIFICATIONS:

The main criteria's of selecting the site are-
Transportation-The school should be easily accessible to users and the staffs working as well as visitors.
Hospitals- As the users are the persons with the Visual Disability or physical disability they need the eye-speciality or physical speciality hospitals around their school area.

DEMOGRAPHY:

Historical population

Year	Pop.	±% p.a.
1901	3,460	—
1911	3,433	-0.08%
1921	3,500	+0.19%
1931	3,540	+0.11%
1941	3,600	+0.17%
1951	3,700	+0.27%
1961	3,758	+0.16%
1971	5,387	+3.67%
1981	7,668	+3.59%
1991	8,337	+0.84%
2001	9,628	+1.45%
2011	15,257	+4.71%

The local language of the area is Hindi.
Total population(2020): 804,481
Population Density: 907 people per sq m
Male population: 411,176
Female population: 393,305

LANDMARKS:

1) Ramnagar Fort
It is constructed by Maharaj Balwant Singh on the sacred bank of river Ganges. The well maintained fort is a blend of Indo-Islamic architecture. The 'Durbar Hall', museum, and the temple inside the Ram Nagar Fort are the prime focus of the fort.

2) Dhamekh Stupa
The great Mauryan ruler Asoka built this 39m high circular mound like structure in 249BCE, which was later restructured in 500 CE. It is the place where Lord Gautama Buddha explained his first ever sermon among his five followers.

3) Benaras Hindu University

It has grown to accommodate around 15,000 students today and now covers some five square kilometres / two square miles in total.
The campus offers a very green and relaxed feeling, with tree-lined streets and plenty of open spaces.

4) Vishwanath Temple

It is definitely amongst the most visited and noteworthy of all the Hindi landmarks in Varanasi and is dedicated to Lord Vishveswara. It is also widely referred to as the 'Golden Temple', since 50 years after its completion in 1776, no less than 800 kg of gold was used to cover the dome and tower above, giving this Shiva temple a rather distinctive appearance. Lying within the very heart of the city centre, found on the western bank of the River Ganges. Many religious Hindi ceremonies are staged here, often lasting well into the night.

INFRASTRUCTURE:


Pindra Gov. Office


National Inter College


Police Fire Station


Pindra Post Office


PHC Health Center


St. S.N Public School

SITE CONTEXT

Existing Approach Road

Electric Poles near site

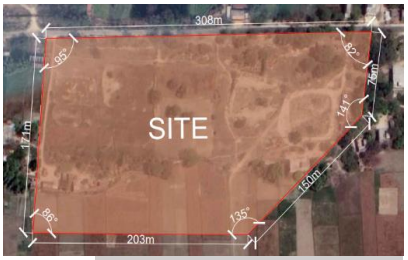
Existing Vegetation

View from Front Road

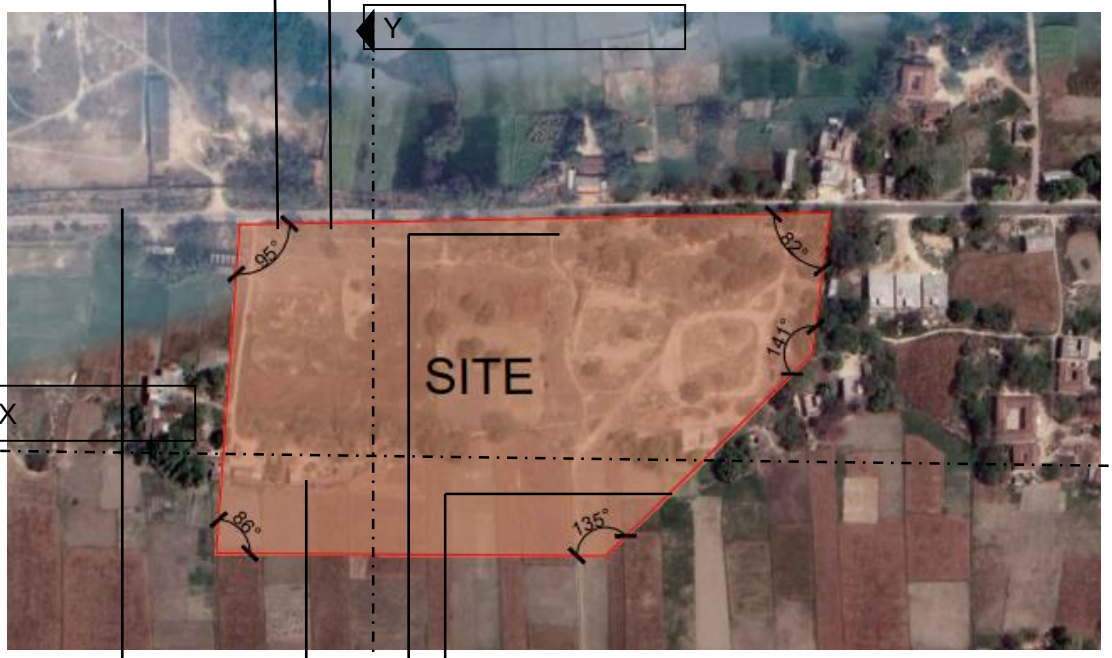
Front side

Left side

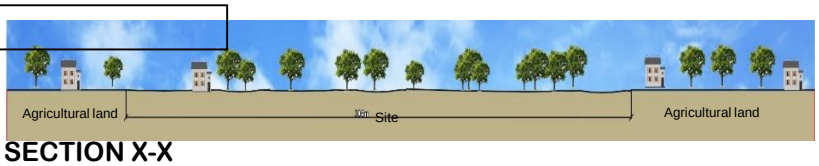
ELEVATION PROFILES



SITE DIMENSIONS



View from Front Road



SECTION X-X

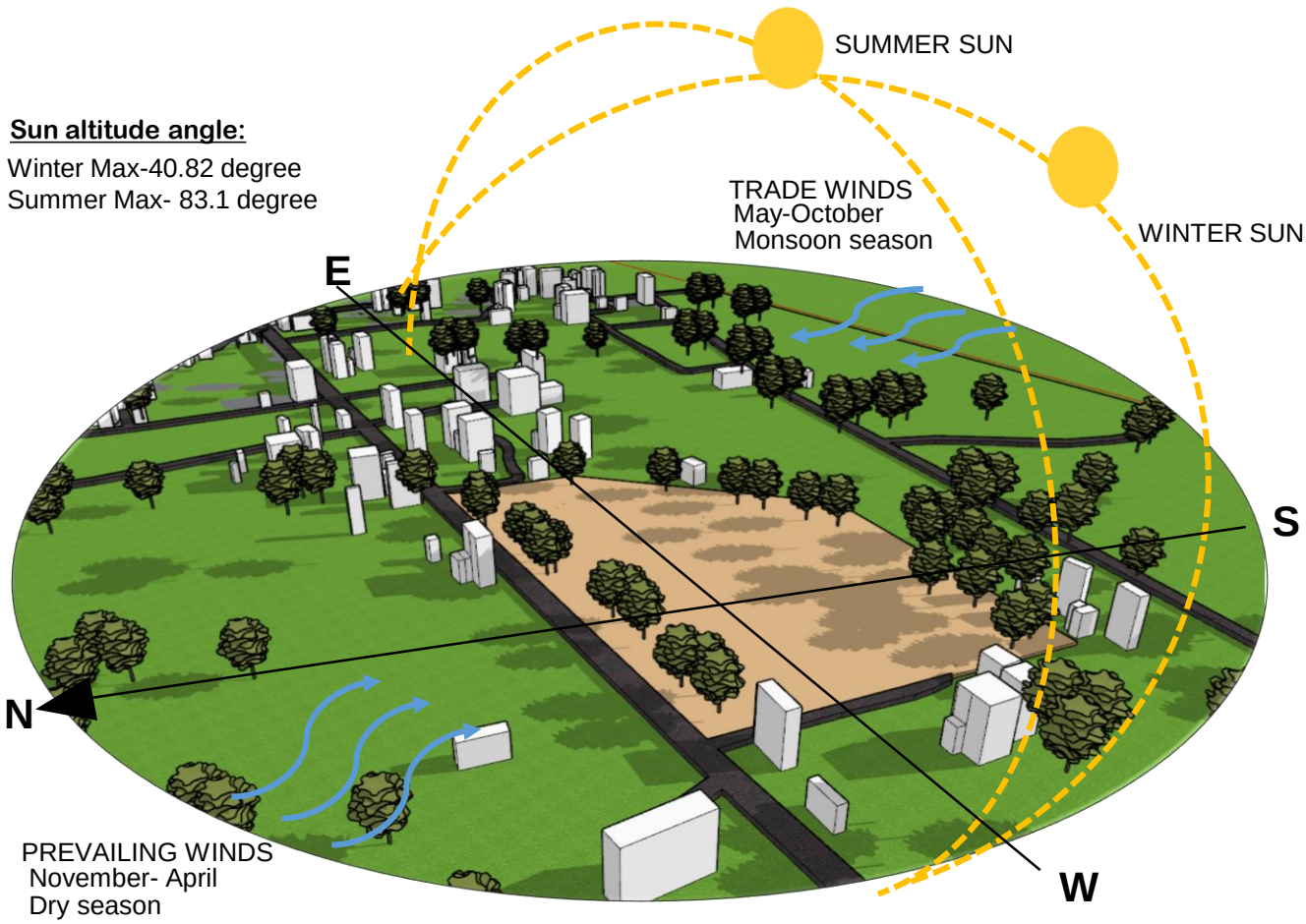
SECTION Y-Y

Rear view

Existing Tubewell

East side view

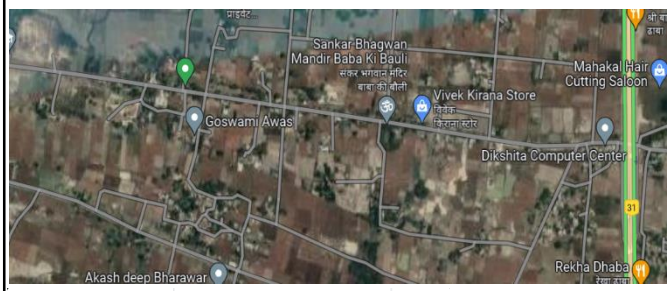
SITE MODEL:



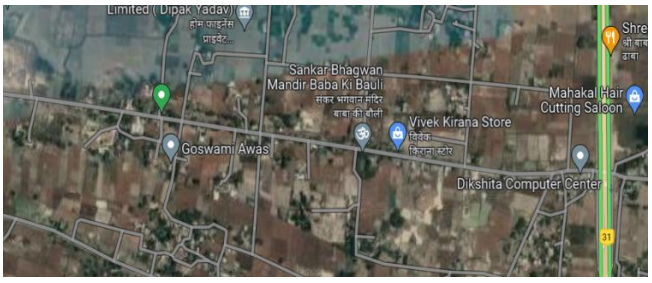
Sun altitude angle:

Winter Max-40.82 degree
Summer Max- 83.1 degree

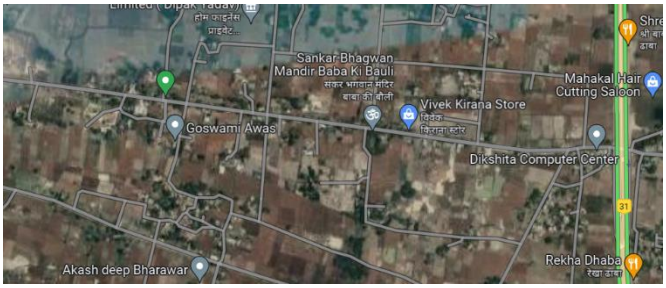
TRAFFIC ANALYSIS:



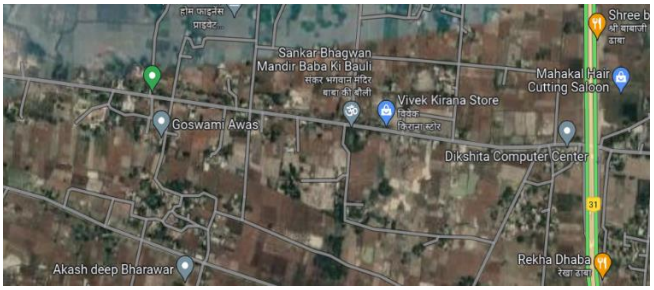
Time- 8:00 AM



Time- 12:00 PM



Time- 4:00 PM



Time- 8:00 PM

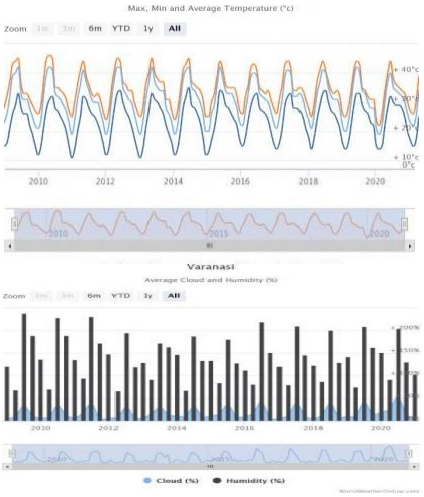
CLIMATE ANALYSIS-

Varanasi experiences a humid subtropical climate (with large variations between summer and winter temperatures. The dry summer starts in April and lasts until June, followed by the monsoon season from July to October. The temperature ranges between 22 and 46 °c (72 and 1 15 °F) in the summers. Winters in Varanasi see very large diurnal variations, with warm days and downright cold nights. Cold waves from the Himalayan region cause temperatures to dip across the city in the winter from December to February and temperatures below 5 °c (41 °F) are not uncommon. The average annual rainfall is 1 , 1 10 mm (44 in). Fog is common in the winters, while hot dry winds, called 100, blow in the summers. In recent years, the water level of the Ganges has decreased significantly; upstream dams, unregulated water extraction, and dwindling glacial sources due to global warming may be to blame.

Temperature:

The hot season lasts for 2.6 months, from April 4 to June 23, with an average daily high temperature above 99 °F. The hottest day of the year is May 23, with an average high of 106° F and a low of 80° F.

The cool season lasts for 2.1 months, from December 6 to February 10, with an average daily high temperature below 78° F. The coldest day of the year is January 10, with an average low of 49° F and a high of 72°F.



Humidity:

Varanasi experiences extreme seasonal variation in the perceived humidity.

The muggier period of the year lasts for 6.1 months, from May 5 to November 8, during which time the comfort level is muggy, oppressive, or miserable at least 26% of the time.

The muggiest day of the year is August 9, with muggy conditions 100% of the time.

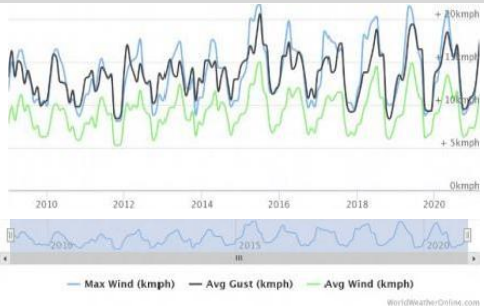
The least muggy day of the year is January 1 1, with muggy conditions 2% of the time.

Precipitation:

A wet day is one with at least 0.04 inches of liquid or liquid-equivalent precipitation. The chance of wet days in Varanasi varies very significantly throughout the year.

The wetter season lasts 3.3 months, from June 15 to September 24, with a greater than 32% chance of a given day being a wet day. The chance of wet day peaks at 63% on July 21 . The drier season lasts 8.7 months, from September 24 to June 15. The smallest chance of a wet day is 2% on December 6.

Winds:



The average hourly wind speed in Varanasi experiences significant seasonal variation over the year.

The windier part of the year lasts for 7.0 months, from February 15 to September 14. with average wind speeds of more than 6.7 miles per hour. The windiest day of the year is June 19, with an average hourly wind speed of 8.5 miles per hour.

The calmer time of year lasts for 5.0 months, from September 14 to February 15. The calmest day of the year is October 24, with an average hourly wind speed of 4.8 miles per hour.

Inference and design recommendations

Since the weather conditions in Varanasi are very harsh specifically during the summers in April to July, an effective and energy-efficient centralized air conditioning & VRV system is required while keeping in mind the pollution level in the city.

Climate:

Varanasi experiences a humid subtropical climate with large variations between summer and winter temperatures. The temperature ranges between 22 and 46 °c (72 and 115 °F) in the summers.

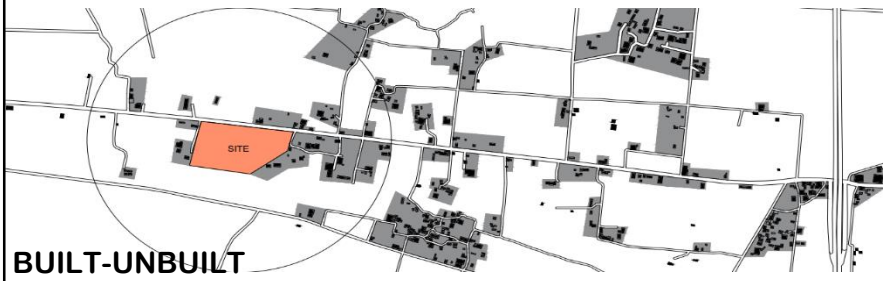
Climate data for Varanasi

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Average high °C (°F)	23.1 (73.6)	26.7 (80.1)	33.1 (91.6)	38.9 (102)	40.8 (105.4)	38.7 (101.7)	33.8 (92.8)	32.9 (91.2)	32.8 (91)	32.7 (90.9)	29.4 (84.9)	24.6 (76.3)	32.292 (90.125)
Average low °C (°F)	8.8 (47.8)	11.4 (52.5)	16.3 (61.3)	21.9 (71.4)	26 (78.8)	27.7 (81.9)	26.3 (79.3)	25.9 (78.6)	25 (77)	20.7 (69.3)	14.1 (57.4)	9.6 (49.3)	19.475 (67.05)
Rainfall mm	16.9	17.4	8.2	5.5	12.2	102.1	305.8	267.9	236.6	35.6	9.4	5.7	85.275
Avg. rainy days	2.5	3	1.8	1	1.6	6.5	17.2	17.4	12.1	3.2	0.6	1.2	5.675

SITE OPPORTUNITIES & CHALLENGES:

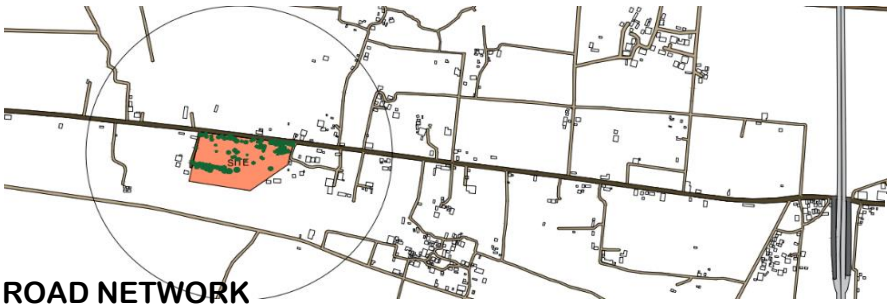
- The site also contains a good number of trees and vegetation.
- The site is a bit secluded on its own which leads to the increase in the quality of activities like Meditation, Yoga, Music, etc.
- The presence of spaces like gardens, playgrounds, temples, etc. leads to the availability of breathing space for the building.
- In this area, water levels are always high even in the summer season. This is due to the local source of water. The subsoil at the upper level is silty clay (Alluvial soil). Due to the presence of high-water level in all the season. The subsoil at the upper level is loose.

SITE ANALYSIS:



BUILT-UNBUILT

BUILT
UNBUILT
ROADS ARE NOT CONSIDERED



ROAD NETWORK

NH ROAD
SERVICE LANE
SECONDARY ROAD
TERTIARY ROAD

LAND USE

RESIDENTIAL
COMMERCIAL
CULTURAL
INSTITUTIONAL
AGRICULTURAL LAND
GREEN SPACE

DEVELOPMENT OF THE AREA:

2003

2008

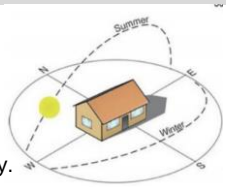
2012

2022

DESIGN STRATEGIES:

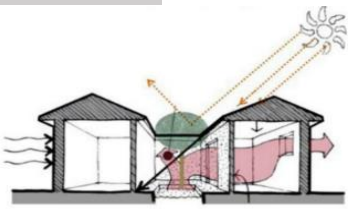
Orientation of Building-

In composite climate, the orientation of the building is preferable in North-South. Helps in receiving less radiations reduces overall AC requirement and saves energy.



Form and planning-

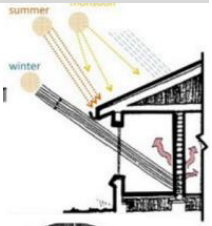
Open spaces such as courtyards are beneficial. Buildings should be grouped in such a way to take advantage of prevailing winds during short period.



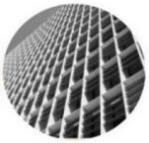
Courtyard Type of Planning

External-spaces-

A courtyard is a most pleasant outdoor spaces for most of the year as it excludes wind and traps sun.
Use of Brise-soleils, louvers and other sun breaks.



Brise-Soleil:Chandigarh High Court,Lecorbusier



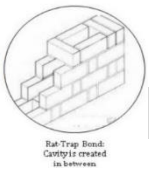
Brise-Soleils with louver

Louvers

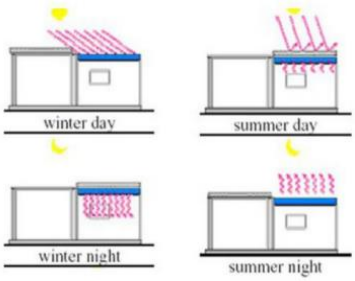
Roofs & walls-

Should be constructed of solid masonry or concrete to have 9-12 hours time lag in heat transmission.
The roof pond building type, the passive collector storage mass has been relocated into the roofs from floor and wall for radiant heat distribution.

Exposed Brickwork



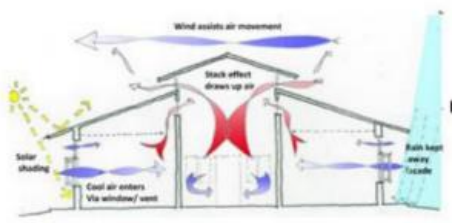
Rat-Trap Bond: Cavity is created in between



Roof-Pond System

Ventilation & condensation-

Two small openings, one high level and one low level can provide solution .



Openings-

Towards the breeze prevailing during the warm humid season to utilize cooling effect.
Towards the sun during cold season to utilize heating through windows.
Large openings in opposite walls are suitable which helps in cross ventilation.

Adjustable Louvers

Solid Shutters

Adjustable Louvers

SITE ANALYSIS:

BYE-LAWS:

Setbacks:

FOR RESIDENTIALS

SET BACK (METRES)				
PLOT AREA (SQUARE METRES)	FRONT	REAR	SIDE 1	SIDE 2
A)ROW- HOUSING				
>50	1.00		0	
50-100	1.50	1.5	0	
100-150	2	2.00	0	
150-300	3.0	3.00		
B)SEMI-DETACHED				
300-500	4.5	4.50	3.0	
C) DETACHED				
500-1000	6.00	6.0	3.0	1.5
1000-1500	9.0	6.00	4.50	3.0
1500-2000	9.00	6.00	6.00	6.0

1.) 40% OF REAR SET BACK AREA IS PERMISSIBLE TILL 7.0 METRE HEIGHT.
>BUT ON CORNER PLOT SIDE SETBACK MUST BE TAKEN TO GET PERMITTED.
>STILT FLOOR WILL BE PERMISSIBLE IN DETACHED BUILDING BUT WILL NOT PERMIT 40% PERCENT OF REAR SET BACK AREA.

2.) IN NEW SUB-DIVISION AREA ,THE SIDE SET BACK WILL BE SAME AS THE FRONT SET BACK IN PLOT.
>IN OTHER AREA'S IF SET BACK IS NOT MENTIONED IN THE LAYOUT PLAN,THEN THE CORNER PLOT AREA WORTH 300SQM WILL HAVE MINIMUM SET BACK AT SIDE OF 1.5 METRES.
> CORNER PLOT AREA MORE THAN 300SQM WILL HAVE SET BACKS ACCORDING TO THE LIST.

3.)IF ANY BLOCK HAS ODD NO. OF PLOTS THEN FOR THE PLOTS HAVING SIZE MORE THAN 500SQM ,THE REQUIREMENT OF SIDE SETBACKS WILL BE MORE IN CORNER PLOTS ACCORDING TO THE SIZE OF THE PLOT.
>FOR CORNER PLOTS THE SIZE OF FRONT AND REAR SET BACK WILL BE SAME AS THE SCHEME APPLIED FOR THE OTHER PLOTS .

4.) IN THE AREAS DEVELOPED ACCORDING TO THE PLANNED PROCESS,IF THE PLOT IS SUB DIVIDED THEN THE DIVIDED PLOTS SET BACK WILL BE ACCORDING TO THE NORMAL SET BACK FOR ALL THE PLOT.

5.) IN ANY SPECIAL CASE THE SET BACKS ON CORNER PLOTS CAN BE GIVEN STABILITY BY THE AUTHORIZED BOARD.

6.) THE LIST(TABLE) WILL BE APPLICABLE FOR NEW SUB-DIVISION / LAYOUT PLAN ONLY. BUT FOR THE DEVELOPED AND DEVELOPING AREA WHICH HAVE RESIDENTIAL PLOT AND THE SET BACK IS NOT MENTIONED, THE SET BACK WILL BE ACCORDING TO THE LIST(TABLE)

Light and ventilation:

LIGHT AND VENTILATION ARRANGEMENT

FOR ROOMS

1.) FOR LIGHT AND VENTILATION THERE MUST BE 1 OR MORE THAN 1 WINDOWS AND VENTILATORS WILL BE PROVIDED,WHICH WILL OPEN TOWARDS THE OPEN SPACES LIKE THE BALCONY WHOSE MINIMUM WIDTH SHOULD BE 03.00 METRES

2.) IN ROOMS AFTER DOORS , THE WINDOWS AND VENTILATORS OR OTHER ANY OPENING WILL BE 10% OF THE FLOOR AREA.

3.) IN A ROOM,PART OF A ROOM AT A DISTANCE OF 07.5 METRES WILL NOT BE CONSIDERED AS LIGHTED AREA, BUT IN CASE IF THERE IS A PROVISION OF AIR CONDITIONING SYSTEM, THIS POINT WILL NOT BE NECESSARY.

4.) IF LIGHT AND VENTILATION FOR THE ENTRANCE ROOM IS THROUGH INTERNAL OPEN AREA ,THEN MINIMUM SPACE FOR OPEN AREAS WILL BE
> FOR 12.5 METRES HIGH BUILDING WILL BE 7.5SQM AND MINIMUM WIDTH WILL BE 2.5 METRES.
> FOR MORE THAN 12.5 METRES BUILDINGS MINIMUM WIDTH WILL BE 03 METRESAND INTERNAL OPEN AREA WILL BE EQUAL TO 1/5 SQUARE OF THE ATTACHED WALL WITH MAXIMUM HEIGHT.
FOR EX.- IF A WALL HAS A MAXIMUM HEIGHT OF 30 METRES,THEN, OPEN AREA SPACE WILL BE
$(30x\frac{1}{5})$ x $(3x\frac{2}{3})$ =36 SQM.

FOR KITCHENS

1.) THE WINDOW WILL BE OF MINIMUM 01 SQM OR 10% OF THE FLOOR AREA,WHICHEVER IS MAXIMUM AND WHICH WILL OPEN DIRECTLY INSIDE OR OUTSIDE.

FOR TOILETS AND BATHROOMS

1.) FOR TOILETS AND BATHROOM ETC. VENTILATION, IF FRONT ,SIDES AND BACK DON'T HAVE A 03 METRES WIDE PORCH THEN VENTILATION SHAFT WILL BE ACCORDING TO THE TABLE GIVEN :

HEIGHT OF THE BUILDING (METRES)	SIZE OF VENTILATION SHAFT (METRES)	MINIMUM WIDTH OF THE SHAFT(METRES)
<07	1.2	0.9
<12.5	2.8	1.20
<18	4.0	1.50
<24	5.4	1.8
<30	8.0	2.4
>30	9.0	3.0

Vegetation:

NO. OF TREES ACC TO AREA	
AREA OF THE PLOT	NO. OF TREES
<200 M SQ	1
200M SQ- 300 M SQ	2
301 M SQ-500 M SQ	4
500 M SQ OR MORE	1 TREE / 100 M SQ
GROUP HOUSING	50 TREES / 01 HECTARE
INDUSTRIAL	1 TREE / 60 M SQ
COMMERCIAL	1 TREE / 100 M SQ
INDUSTRIAL / COMMUNITY FACILITIES OR HALLS , SPORTS VENUES , OPEN AREAS AND PARK	20 % MIN OF TOTAL AREA SHOULD BE GREEN WHERE 125 TREES / HECTARE.

Parking:

PARKING MEASUREMENTS - FOR VARIOUS PURPOSE/OCCUPANT BUILDING PARKING WILL BE ACOORDING TO THE GIVEN MEASUREMENT

SERIAL NO.	USE	NO. OF PARKINGS ALOTTED
1.	A.)RESIDENTIAL PLOT	01 PARKING FOR PLOT AREA OF 101-200 SQM
		02 PARKING FOR PLOT AREA 201-300 SQM
		01 PARKING PER ONE UNIT FOR PLOT SIZE <301 SQM
	B.) GROUP HOUSING	FOR PLOT AREAS TILL 50 SQM ,2 WHEELER PARKING SHOULD BE 02 SQM PER FLAT
		01 PER FLAT FOR 50-100 SQM PLOT AREA
		1.25 PER FLAT FOR PLOT AREA 100-150 SQM PLOT AREA
		1.50 PER FLAT FOR PLOT AREA MORE THAN 150 SQM
		NOTE: 10% OF ESTIMATED PARKING WILL BE RESERVED FOR THE VISITORS PARKING,WHICH WILL HAVE ENTRY AND EXIT FOR THE VEHICLE.
2.	A.)CENTRAL BUSINESS DISTRICT	**METRO CITIES :** 02 PER >100 SQM
		OTHER CITIES: 1.5 PER >100 SQM
	B.) SUB URBAN DISTRICT /ZONAL BUSINESS CENTER	**METRO CITIES :** 1.5 PER >100 SQM
		OTHER CITIES: 1.25 PER >100 SQM
	C.) ANY OTHER COMMERCIAL(SECTOR/NEIGHBOURHOOD, LOCAL SHOPPING CENTER,MARKET STREET,AND DAILY USE STORES)	**METRO CITIES :** 1.25 PER >100 SQM
		OTHER CITIES: 1.0 PER >100 SQM

G.F and F.A.R:

GROUND COVERAGE AND FAR

PLOT DEVELOPMENT (RESIDENTIAL)

SET BACK (METRES)		
	GROUND COVERAGE (%)	F.A.R
A) BUILT/ DEVELOPED AREA		
>100 SQM	75.00	2.00
101-300 SQM	65.00	1.75
301-501 SQM	55.00	1.50
501-2000 SQM	45.00	1.25
B) NEW/ NOT DEVELOPED AREA		
>100 SQM	75.00	2.00
101-300 SQM	65.00	1.75
301-501 SQM	55.00	1.50
501-2000 SQM	45.00	1.25

OFFICE SPACE

SET BACK (METRES)		
	GROUND COVERAGE (%)	F.A.R
A) BUILT AREA	50.00	1.50
B) DEVELOPED AREA	45.00	2.00
C)NEW/ UNDERDEVELOPED AREA	40.00	2.50

NOTES:

1.) FOR LAND AREA >200 SQM OFFICE BUILDINGS ,THE GROUND COVERAGE WILL BE ACCORDING TO BUILDING ENVELOPE LINE INSTEAD OF TALUKA/TEHSIL OF THAT AREA.

FOR COMMERCIAL/OFFICES/ AUDITORIUM

SET BACK (METRES)				
PLOT AREA (SQUARE METRES)	FRONT	REAR	SIDE 1	SIDE 2
A)ROW- HOUSING				
>200	3.00	3.00	0	
201-500	4.50	3.00	3.00	3.00
500<	6.00	3.00	3.00	3.00

COMMERCIAL BUILDINGS WHOSE PLOT COVERING IS TILL 500 METRE AFTER FIGURING CUT LIGHT AND VENTILATION IN PLAN, PROVIDING BACK AND SIDE SET BACKS WILL NOT MONTORY. BUT FOR THE CORNER PLOT FRONT SET BACK WILL BE SIMILAR TO BACK SET BACK. BUT FOR THE CONSTRUCTED OR DEVELOPED AREA THE SET BACK IN THE DSED LAYOUT PLAN WILL BE APPLICABLE.

R THE COMMERCIAL/OFFICE PLOT AREA TILL 100 METRES ,THE MINIMUM FRONT SET BACK WILL BE 1.5 METRES.

R THE COMMERCIAL/OFFICE PLOT AREA FROM 101-200 METRES, THE MINIMUM FRONT SET BACK WILL BE 03.00 METRES

DER LAND DEVELOPMENT AUTHORITY SECTOR/NEIGHBOURHOOD/ LOCAL MARKETS CAN BE PLANNED INTO LINED SHOP,ON WHICH MAXIMUM 03 METRES WIDE ARCADE CAN LY PERMITTED.

PARKING

ACCORDING TO THE NATURE OF PARKING,EVERY PARKING AREA WILL HAVE CIRCULATION AREA ACCORDING TO THE TABLE	
OPEN AREA PARKING	23 SQM
COVERED PARKING	28 SQM
BASEMENT PARKING	32 SQM
MECHANISED PARKING	16 SQM OR ACCORDING TO ACTUAL DESIGN
TWO WHEELER PARKING (INCLUDING CYCLE)	2.00 SQM

GROUP HOUSING,COMMERCIAL,ORGANIZATION OFFICES AND ANY OTHER TALL BUILDINGS PARKING PLAN WILL BE PRESENTED WITH ALL OTHER PLANS FOR APPROVING OF PLAN,WHICH WILL INCLUDE ALL TYPES OF VEHICLE PARKING AREA AND ITS ENTRY AND EXIT WITH ALL ITS CIRCULATION AREA.

SWOT ANALYSIS:

Strength:

- Lots of trees in the site.
- Enough land and space for an institutional project.

Weakness:

- No public transportation facilities.
- No accessibility to the site from any other boundary of the site.
- No service lane.

Opportunity:

- Scope for landscaping .
- Scope for creating a soothing space for disabled children.
- Tree act as sound barrier.
- After the urban development there will be a good communication system with transport facilitie
- Since no similar project exist in Varanasi ,the project could be a landmark of its own in the city.

Threat:

- Noise will be created after the urban and housing development.
- There is a high possibility of traffic problem in the near future.
- Poor lighting through night hours.

CHAPTER -3

LITERATURE STUDY

STANDARDS

Mobility Devices and Space Allowances

Adequate space should be allocated for persons using mobility devices, e.g. wheelchairs, crutches and walkers, white cane etc. as well as those walking with the assistance of other persons.

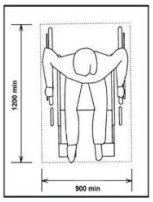


Figure 3-5: Clear floor space

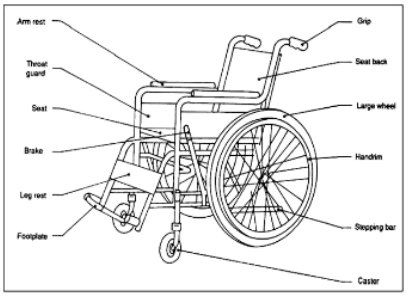


Figure 3-1: Structure of wheelchair and name of each part (standard type)

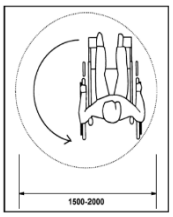


Figure 3-4: Turning radius

Reach Range

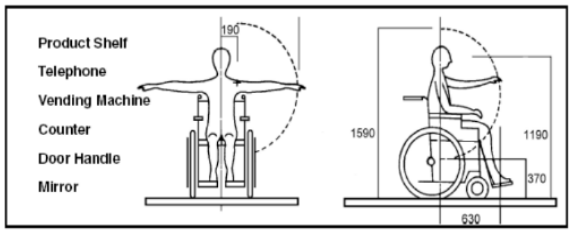


Figure 3-8: Range of reach of wheel chair user

Reach without obstruction

- Max. forward upper reach:1200 mm
- Max. forward lower reach: 380 mm
- Max. side reach (upper level): 1300 mm
- Max. side reach (lower level): 250 mm

Reach over obstruction (Max. 500mm deep)

The maximum forward reach over an obstruction is 1000mm from the floor (Figure 3- 11)
The maximum side-reach over an obstruction 860mm high x 500mm deep is 1200mm (Figure 3-12).

- Max. Side reach over obstruction (upper) – 1200 mm from floor level
- Max. Side reach over obstruction (lower) – 500 mm

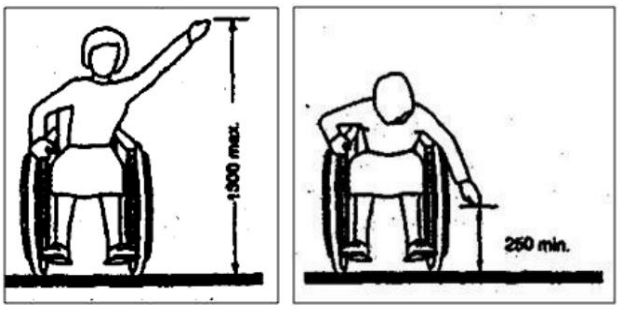


Figure 3-10: Side upper reach and side lower reach

Common reach zone

- The comfortable reach zone when seated on a wheelchair is between 900 mm and 1200 mm.
- The maximum reach zone is between 1200 mm and 1400 mm.

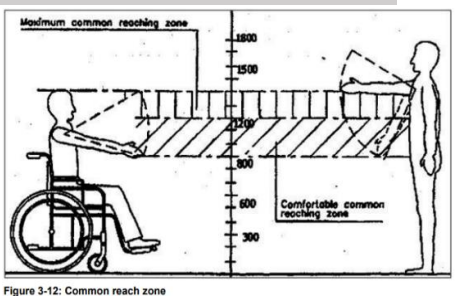


Figure 3-12: Common reach zone

The minimum clear floor or ground area required accommodating a single, stationary wheel chair and occupant is 900 mm x 1200 mm

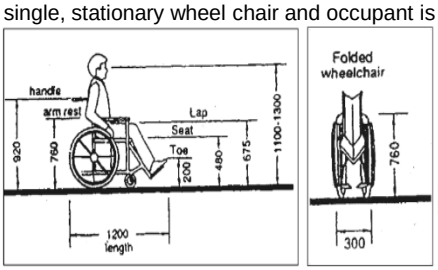


Figure 3-2: Dimensions of manual wheel chair in usable and folded condition

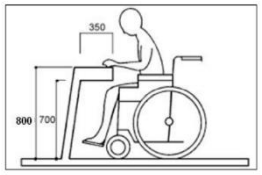


Figure 3-3: Knee clearance

Space Allowance for crutch user

- Width: 920mm
- With no obstruction up to 300mm height

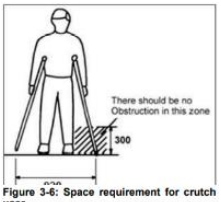


Figure 3-6: Space requirement for crutch user

Space allowance for white cane users

The radial range of the white cane is a band 900 mm wide.

- Any obstacle above 60 mm cannot be detected by the white cane. If there are projections above this height then the projections have to be reflected at the floor level in terms of level or textura differences.

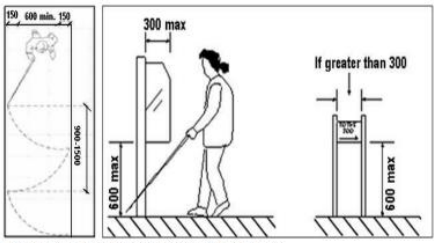


Figure 3-7: Radial range and object detection by the visually impaired

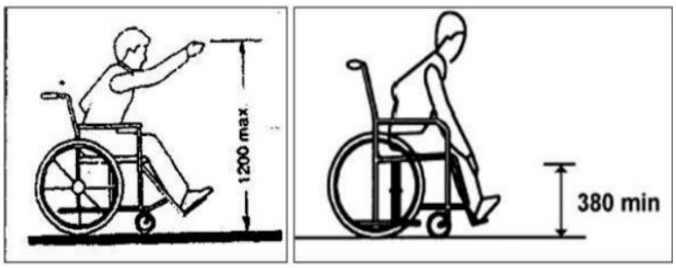


Figure 3-9: Forward and lower reach of wheel chair user

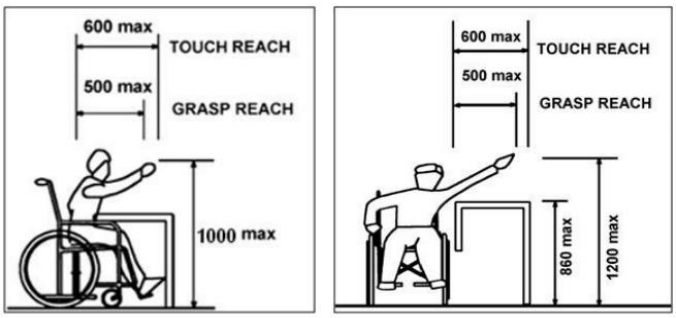


Figure 3-11: Forward and side reach over obstruction

Vision Zone

- Vision zone: 900 - 1800 mm

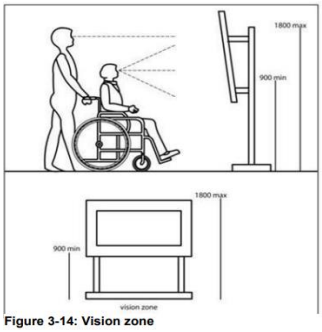


Figure 3-14: Vision zone

The smallest letter should not be less than 15 mm. Map and information panels along pathways should be placed at a height between 900 mm and 1800 mm

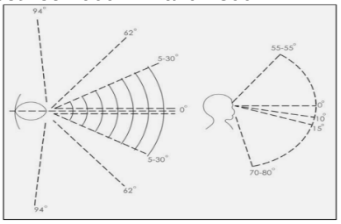


Figure 3-13: Field of Vision

Site Development

Walks and paths

- Walks should be smooth, hard and have levelled surface suitable for walking and wheeling. Irregular surfaces as cobble stones coarsely exposed aggregate concrete, bricks etc. often cause bumpy rides and should be avoided
- Minimum walk way width for two way traffic should be 1800mm. However, in exceptional cases (such as around trees/poles etc.); the width could be 1500mm.
- The walkway should not have a gradient exceeding 1:20. It also refers to cross slope.
- When walks exceed 60 meter in length it is desirable to provide rest area adjacent to the walk at convenient intervals of 30 meter for bench/ resting seats. For comfort, seat height should be between 450 mm-500 mm, have a backrest and hand rests at 700 mm height.
- Texture change should be provided for persons with vision impairment in walkways adjacent to seating by means of warning tactile pavers.
- Avoid gratings and manholes in walks.

Levels, grooves and gratings

Passing over different levels and grooves, vertical level changes up to 6 mm may not need edge treatment. Changes in level between 6 mm and 12 mm should be leveled off with a slope no greater than 1:2.

- To prevent a wheelchair from getting its casters caught in a drainage ditch or grating cover, install grating with a narrow slots not more than 10mm wide, perpendicular to the direction of movement.
- Grating should be flushed with finished ground level.
- Treat the grating with a non-slip finish.

Lighting for walkways

- Lighting should illuminate the walkway; lighting fixtures not exceeding a height of 4m from ground level should be provided.
- Lighting must be provided every 20 – 30m, focusing light not on the car lanes, but on the walkways.
- A whiter light source, for example high-pressure sodium, is preferable in city and town centers for the aesthetic effect and for better colour definition, which benefits those with poor sight.
- White lighting at average 35-40 lux is recommended to ensure colour contrast of tactile pavers and visible at night to persons with low vision.

Barriers and hazards

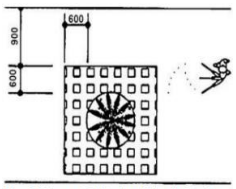


Figure 5-6: Placement of obstacles outside path of travel

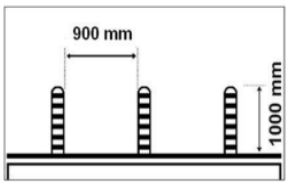


Figure 5-3: Bollards with spacing for wheelchair users/prams

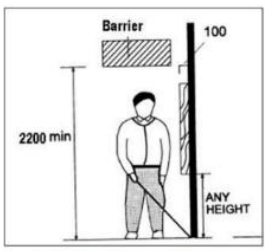


Figure 5-5: Protruding obstacles placed in a niche

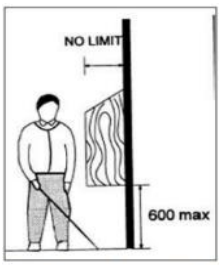


Figure 5-4: Clearance from protruding obstacles

Protruding objects

Typical detail of walkway

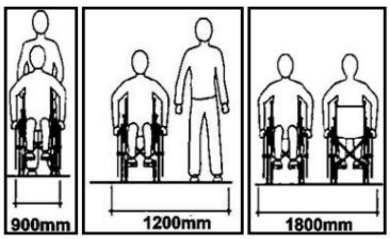


Figure 5-7: Minimum width of a clear walkway

Kerb ramp

a tactile pathway along the road crossing shall be provided for persons with visual impairments

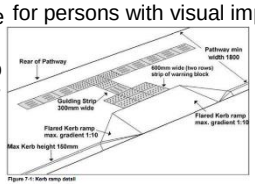


Figure 7-1: Kerb ramp detail

The gradient of a kerb ramp should not be steeper than 1:12; the flared sides should not be more than 1:10.The width should not be less than 900mm min.

Tactile pavers: guiding & warning blocks


Figure 5-1: **Chequered tile on footpath**

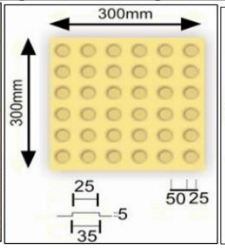


Figure 5-1: **Warning blocks**

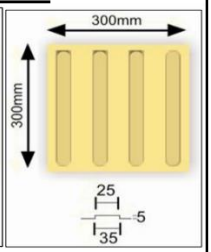


Figure 5-3: **Guiding blocks**

Tactile guiding blocks (Line-type)

This block indicates a correct path/route to follow for a person with visual impairment. It is recommended to install one/two rows of tactile guidance tiles along the entire length of the proposed accessible route.

Tactile warning blocks (Dot-type)

This block indicates an approaching potential hazard or a change in direction of the walkway, and serve as a warning of the approaching danger to persons with visual impairments, preparing them to tread cautiously and expect obstacles along the travel path, traffic intersections, doorways, etc.. Warning blocks should be placed 300mm at the beginning and end of the ramps & stairs, at landings and entrance to any door.

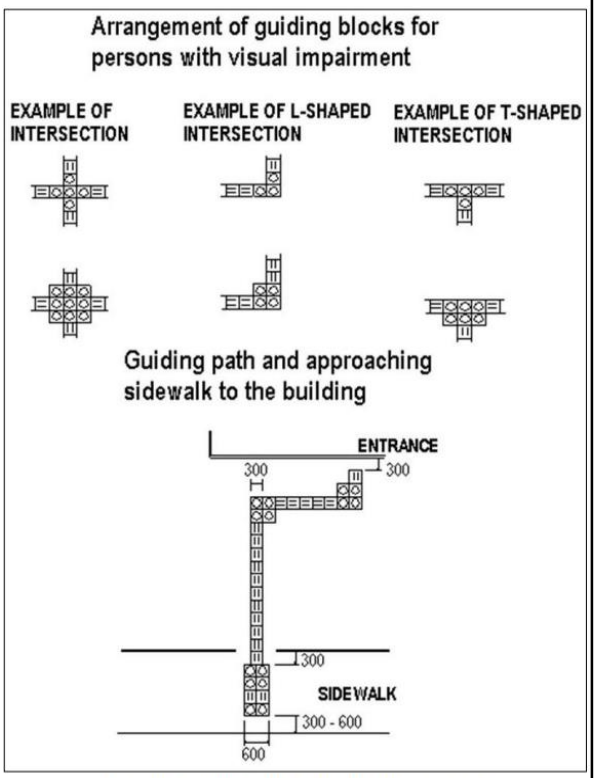


Figure 5-2: Configuration and layout of tactile pavers: guiding and warning

Gratings

Have spaces not greater than 12 mm wide in one direction.


Figure 5-11: Preferred design of gratings

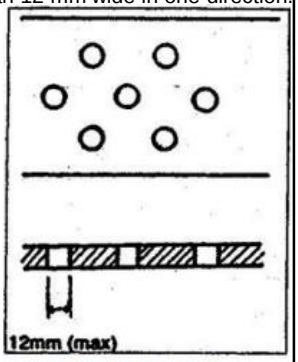


Figure 5-10: Grating Width

Internal corridors and accessible routes

Width

- The minimum clear with of an accessible route should be1500mm minimum to allow both a wheelchair and a walking person to pass except when additional manoeuvring space is required at doorways.
- Where space is required for two wheelchairs to pass, the minimum clear width should be 1800mm.

Resting benches/seats

- In long paths of travel resting areas should be provided at frequent intervals not exceeding 30 meters complying with Section 5.11.

Doors

Clear width

The minimum clear opening of doorways should be 900mm, measured between the face of the door and the face of the door stop with the door open at 900.

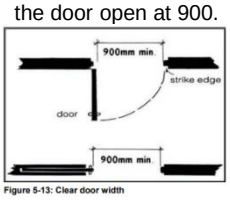


Figure 5-13: Clear door width

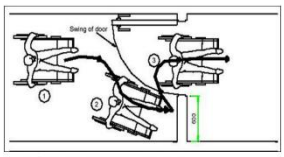


Figure 5-15: Position taken by wheelchair when negotiating door in passageway

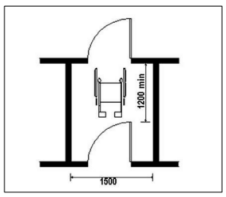


Figure 5-16: Space between two doors

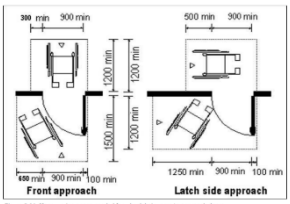


Figure 5-14: Maneuvering space needed for wheelchair users to approach doors

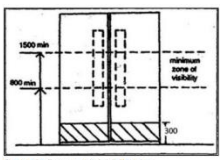


Figure 5-23: Recommended visibility zone

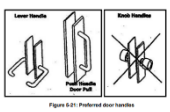


Figure 6-21: Preferred door handles

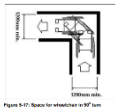
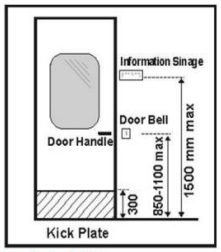


Figure 5-17: Space for wheelchair in 90° turn



roughout a building.

Figure 5-20: Door hardware location

Windows

Curtain or Venetian blind controls/ropes should be at 800-1000 mm height from the finished floor level for wheelchair users/short stature persons.

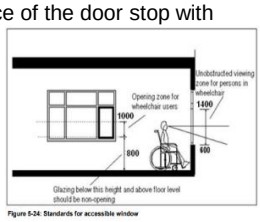


Figure 5-24: Standards for accessible window

Electrical points, Controls and Outlets

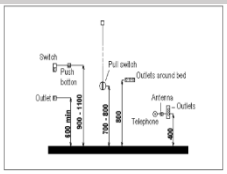


Figure 5-28: Location of electrical sockets, control, etc.

Seating Spaces

Clear Floor Space

Seating space, such as those provided at counters, tables, or work surfaces for persons in wheelchairs should have a clear and level floor space of not less than 900 mm x 1200 mm

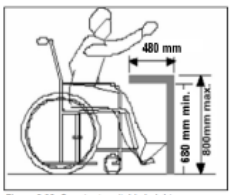


Figure 5-32: Counter tops/table height

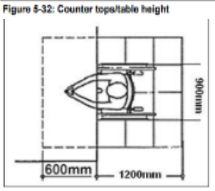


Figure 5-31: Clear floor space for wheelchair

Drinking Water Fountain

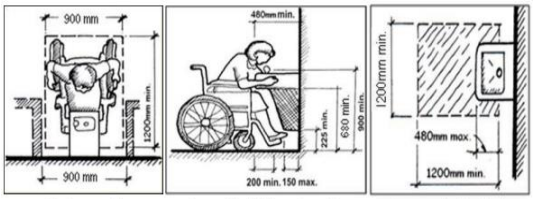


Figure 5-33: Drinking water fountain

Signage

Types of Signages

According to the purposes it serves, Signage can be of following types:

(a) Directional
(b) Information
(c) Identification
(d) Instructive
(e) Health & Safety

Figure 6-1: Directional signage for ramp

Figure 6-2: Directional signage for rooms

Figure 6-5: Instructive signs

Location

a. Approach to building / facility / service
b. Entrance / exit
c. Main lobby or reception
d. Public facilities such as library, toilets etc.
e. Departments and offices
f. Fire exits
g. Parking and garages

Figure 6-4: Information signage

Figure 6-3: Destination signage

Figure 6-6: Mandatory signs

Universal Signage

To make signage universally usable, following components must be kept in mind:

a. Colour contrast Signs
b. Character, Content and Layout
c. Pictograms and accessibility symbols
d. Positioning
e. Viewing Distance
f. Lighting (measured in lux)
g. Material and surface finish
h. Alternative formats etc. embossed letters with Braille (Audio/ Visual information, Maps and models)

Directional Signage

(For Way-finding- with arrows along travel routes) are usually wall mounted or overhead signs and include directional arrows to direct users to specific areas or elements within an area. This can incorporate provision of signage at navigational decision points.

Information

(Provide detailed info- includes maps & directories with „You are Here" labels) inform users about the features and facilities of a place or space. Information signs include directions, maps, building identification signs, notices and interpretative signs.

Identification

(To signify arrival. Also called Destination Sign) usually identify entrances, street addresses, buildings, rooms, facilities, places and spaces.

Instructive

(To give instruction for operating a device, way finding, etc.)

Health & Safety

(Provide lifesaving directives and/ or mandatory rules to be followed)

Figure 6-7: Signage with embossed letters and Pictogram

Internal Corridors and Accessible Routes

Width

 The minimum clear with of an accessible route should be1500mm minimum to allow both a wheelchair and a walking person to pass except when additional manoeuvring space is required at doorways.

 Where space is required for two wheelchairs to pass, the minimum clear width should be 1800mm.

Resting benches/seats

 In long paths of travel resting areas should be provided at frequent intervals not exceeding 30 meters complying with Section 5.11.

Table 6-1: Typical Schedule of Colour Contrast for Signs

Background	Sign Board	Legend
Red Brick or Dark Stone	White	Black, dark green or dark blue
Light brick or light stone	Black/dark	White or Yellow
Whitewashed walls	Black/Dark	White/Yellow
Green Vegetation	White	Black, dark green or dark blue
Back-lit sign	Black	White or yellow

Figure6-8: Signage- Preferred colour contrast

Positioning the signs


Figure 6-16: Preferred location of signages

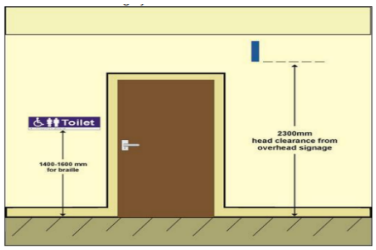


Figure 6-17: Height and placement of signages

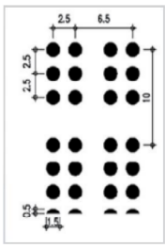


Figure 6-21: Braille specifications

Dot Spacing:	2.5 mm	Character Spacing:	6.5 mm
Dot Height:	0.5 mm	Line Spacing:	10.0 mm
Dot Base Diameter:	1.5 mm		

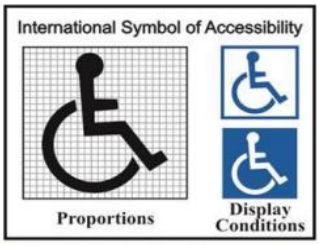


Figure 6-27: International Symbol of Accessibility

Figure 6-22: Tactile map


Figure 6-23: Tactile and Audio map


Figure 6-28: Signage for accessible Access

Figure 6-29: Signage for Accessible Facilities

Character, Content and Layout

Figure 6-9: Typeface and Style

Figure 6-10: Signage in upper and lower case


Figure 6-25: Talking signs


Figure 6-24: Speaker and buttons in talking signs

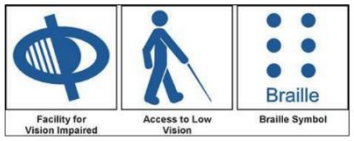


Figure 6-30: Signage for Persons with Vision Impairment

Pictograms

Figure 6-14: Access symbols

Figure 6-15: Information signage


Figure 6-20: Embossed letters – tactile signs

Figure 6-19: Braille locator -tactile signs

Wheelchair Stair-lift and Platform Lift

Vertical Movement Platform Lifts

 For maximum level changes of 2500 mm, vertical movement platform lifts may be installed.

 Minimum size should be 1200 X 1000 mm.


Figure 7-18: Platform chair lift and platform lift

Figure 6-31: Pictograms for Accessible Facilities

Ramps

Where the horizontal run of the approach ramp exceeds 9000 mm length, in addition to the ramp approach, should be provided for people with ambulatory disabilities.

The minimum clear width of a ramp should be 1200 mm.

Landings

should:- - Be provided at regular intervals of not more than 9000 mm of every horizontal run.

Have a level platform of not less than 1500 mm;

Handrails

A ramp run with a vertical rise greater than 150 mm should have handrails that:

 are placed at a height of between 760 mm and 900 mm above the floor level;

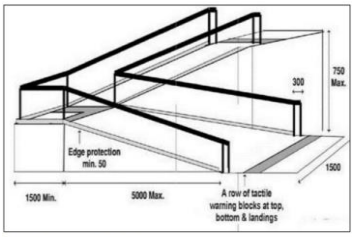


Figure 7-5: L-shape ramp with landing

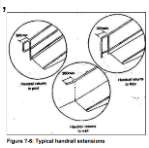


Figure 7-8: Typical handrail extensions

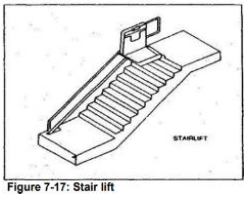


Figure 7-17: Stair lift

Stairs

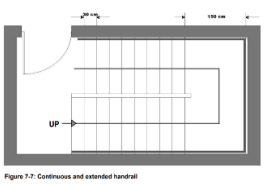


Figure 7-7: Continuous and extended handrail

-Warning blocks should be installed 300 mm before the beginning and 300 mm after the end of each flight of steps to aid people with visual impairments.

Treads should be 300 mm deep and risers not higher than 150 mm.

 There should be no more than 12 risers in one flight run.

 The stairs landing should be minimally 1200mm deep.

 The stairs should have minimum 1500mm clear width.

Figure 7-9: Warning blocks at landings

Figure 7-8: Placement of warning blocks for steps

-Step edges must contrast in colour to the risers and the treads.
-Contrast colour bands 50 mm wide should be provided on edge of the tread

Figure 7-10: Colour contrast for step edges

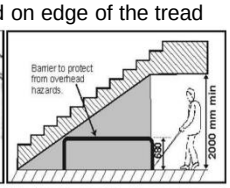


Figure 7-11: Guard rail under soffit

Lifts

The Minimum width of the stairs should be 900 mm to allow the installation of the lift. Platform lifts can be installed on all types of stairs including switch back stairs i.e. those with a rotation of 180 and spiral staircases

Lift Size

 The minimum width of the platform lift should be 1050 mm and the minimum length should be 1250 mm.

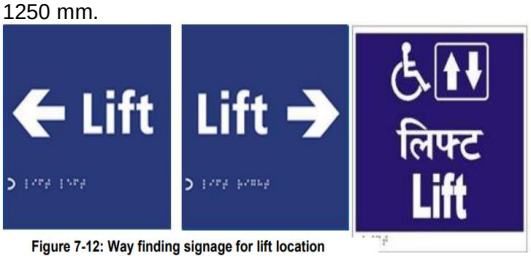


Figure 7-12: Way finding signage for lift location

Lift Size-

The minimum size of the lift should be 1500 mm wide by 1500mm deep (Figure 7- 13); wherever possible, 13 passenger lift to be provided, which allows easy maneuverability of wheelchair user.

The lift door should have a clear opening of not less than 900 mm (Section 5.7) and contrasting in colour from the adjoining wall.

 There should be no difference in level between the lift door and the floor surface at each level. The gap between the lift door and building floor should not be more than 12 mm.

 Time of closing of an automatic door should be more than 5 seconds and the closing speed should not exceed 0.25 meters per second.

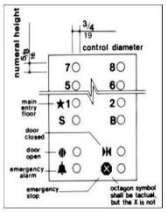


Figure 7-16: Layout of lift control panel

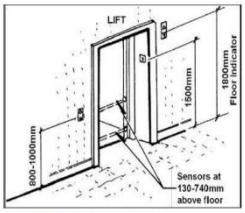


Figure 7-15: Specifications of lift controls

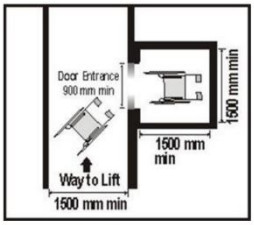


Figure 7-13: Size of lift

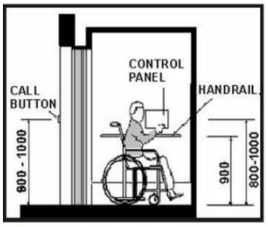


Figure 7-14: Placement of lift accessories

Toilet

Minimum internal dimensions of 2200 X 2000 mm minimum (Figure 8-2);

- The layout of the fixtures in the toilet should be such that there is a clear maneuvering space of 1800mm x 1800mm in front of the water closet and wash basin in the accessible toilet unit (Figure 8-1);
- All fixtures and utilities should provide a clear space of 900mm x 1200 mm for wheelchair users to access them;
- Have clear space of not less than 900 mm wide next to the water closet.

Washroom Accessories

 Washroom accessories should comprise the following:

- A mirror installed in a way to have the bottom edge at a height of not more than 1000 mm from the floor and mirror should be tilted at an angle of 300 for better visibility of wheelchair user
- Towel and soap dispensers, hand dryer and waste bin positioned such that the operable parts and controls are between 800 mm and 1000 mm from the floor.
- Accessories should be placed in close proximity to the basin, to avoid a person with wet hands wheeling a chair.

Toilet Doors

Essential requirements for toilet door

 The toilet door should be either an outward opening door or two-way opening door or a sliding type and should provide a clear opening width of at least 900 mm (Section 5.7).

 Be provided with a horizontal pull-bar, at least 600 mm long, on the inside of the door, located so that it is 130 mm from the hinged side of the door and at a height of 1000 mm.

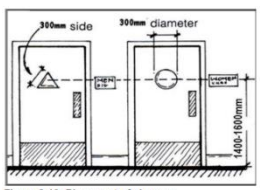


Figure 8-10: Placement of signage

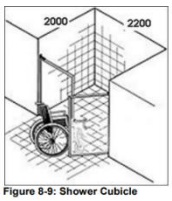


Figure 8-9: Shower Cubicle

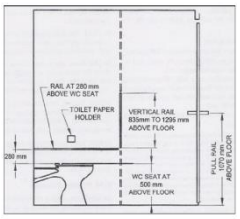


Figure 8-4: WC Compartment for the Ambulant Disabled

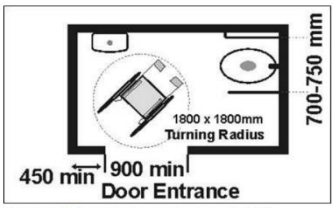


Figure 8-1: Wheelchair maneuvering space in toilet

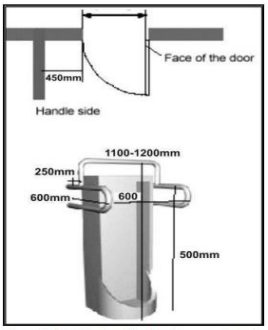


Figure 8-7: Urinal with chest support grab bar

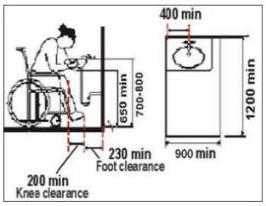


Figure 8-6: Washbasin specifications

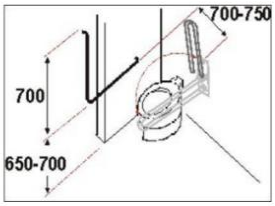


Figure 8-5: Grab bars specifications

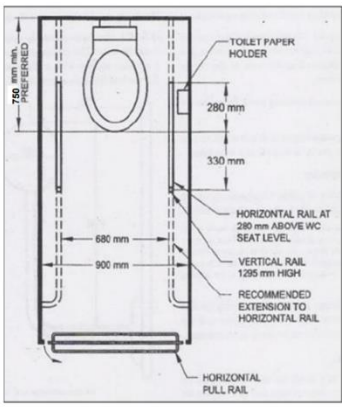


Figure 8-3: Suggested Plan WC Compartment for the Ambulant Disabled

Figure 8-8: Signage for Unisex toilet, gents and ladies toilet

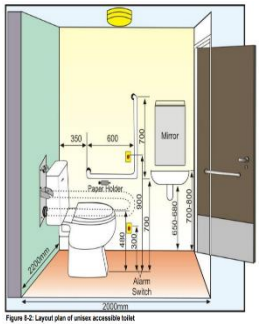


Figure 8-2: Layout plan of unisex accessible toilet

CHAPTER -4

CASE STUDY

AMAR JYOTI SCHOOL, DELHI

Introduction

Location - Karkardooma , Delhi

Concept- Amar Jyoti Charitable Trust started a school with a pioneering concept of educating children with and without disability in equal number from nursery to class VIII. The entire campus is accessible to all. It has tactile path, ramps, loop induction and disabled friendly bus for school students.

Amar Jyoti School

Temple

Workshops

Concept and designing

-The concept of designing is to create a barrier free environment all around the campus.

- Courtyard planning is done in the school building. But it is kept covered and it is beautifully landscaped.

-The school building is kept away from rest of the buildings so that medical and administration section do not dampen the cheering environment of the school.

- Vertical movement is prominent in both the building blocks.

-Building has got longitudinal planning. Exterior ramps in front of the building is an important accessibility feature.

Amar Jyoti Research and Rehabilitation centre has two buildings:

School for inclusive and integrated education.

Administrative and hospital block

Other parts of the building are –

Auditorium

Vocational training.

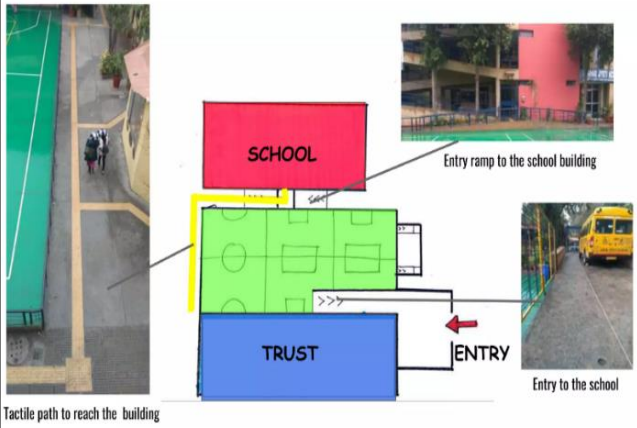
Fire extinguisher

Computer lab

Legend

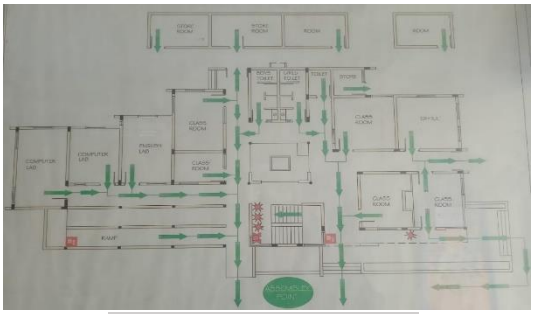
Entrance ramp

Court

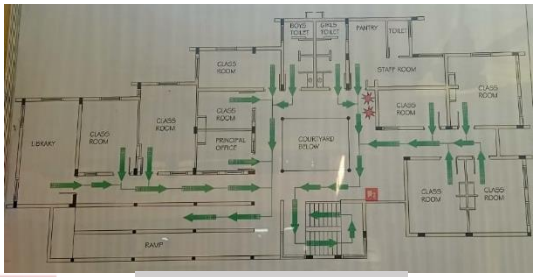


Ramp

Wheelchair stand



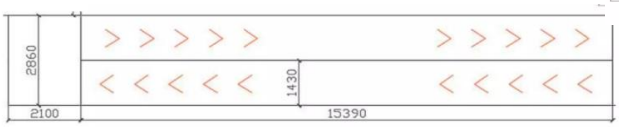
GROUND FLOOR PLAN



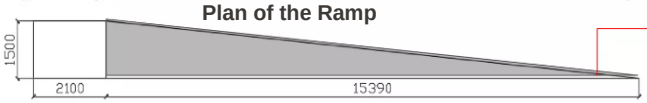
FIRST FLOOR PLAN

Ramp to upper floors

Key Plan



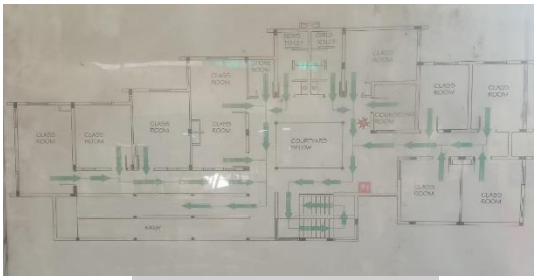
Plan of the Ramp



The ramp has 6 degree slope (1:10)

Side Elevation

- The entry ramp had slope on both sides , one with tactile while other without it
- The ramp has a 3 degree slope with 1:18 ratio .
- Handrails are on both sides of the ramp and the height of handrail is 900mm Side elevation Plan of ramp.
- The ramp continued from ground floor to second floor on the outer part of the building.
- No tactiles are provided on these ramps.
- The height of handrail is 900 mm.
- The handrail has an extended grill (for safety of students) over it on the outer part of ramp which including the ramp height is 1600 mm.

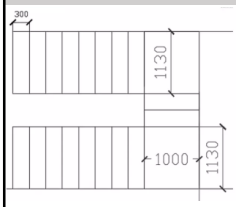


SECOND FLOOR PLAN

AMAR JYOTI SCHOOL, DELHI

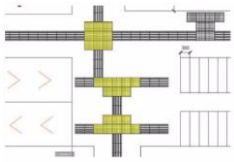
Staircase

Key Plan

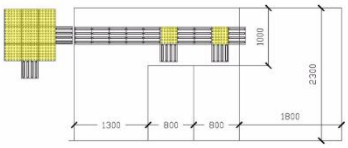


-Stairs are highlighted with different colours to help the children with low vision .
-Handrails of height 900mm are provided on both the sides of the staircase.

Tactile in corridors (in front ramp and staircase)



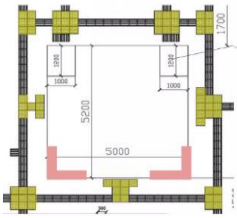
Two types of tactiles were used throughout the school –
- Directional tile
- Positional tile (provided at junctions or where there is a possibility of change in direction)

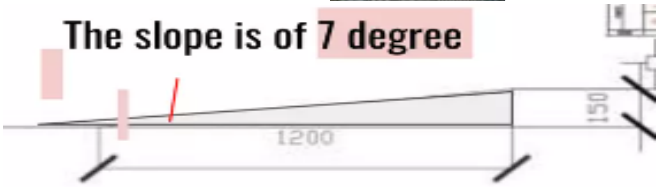


The central courtyard is 1 step down and so on one side of the courtyard 2 small slopes are provided and on the opposite side 2 seating's are provided.
Tactiles were provided in washrooms of ground floor only .

Tactile around courtyard

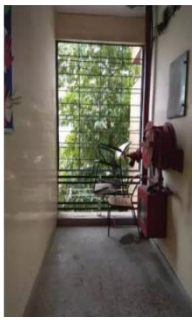
Key Plan





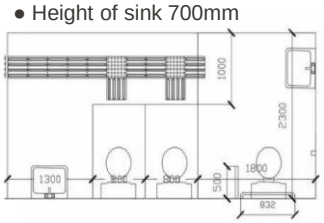
Illuminance in building

Courtyard in the center provides ample amount of light in the corridors.
Large windows in classroom and in corridor ends are provided to allow more light
to get in thereby helping the children with lower vision



Washroom

- 1000mm wide sliding doors for disabled friendly washrooms.
- Handrails for support on 3 sides
- Height of sink 700mm



Standards

DESIGN ELEMENTS	AMAR JYOTI SCHOOL	STANDARD DIM.
Ramps		
Slope	1:18 & 1:10	1:20 – 1:15
Width	1400-1430	1200(min)
Handrail	900	900-1100
Landing(width)	1500,2100	1200(min)
Staircase		
Width	1130	1050(min)
Handrail	900	900-1100
Landing(width)	1000	1000(min)
No. Of steps in single flight	8	11(max)
Corridor		
Width	1400-1700	1200(min)
Door		
Width	1000	900(min)
Toilet		
Washbasin height	700	750(min)
Size of cubicle	1800x2300	2200x1750(min)
No. Of grab rails	2	2(min)
Length of grab rail	830,1100	600(min)

Other facilities

Drinking

Stage

Water coolers are provided both inside and outside the school building .
The height of water cooler is 705 mm from the ground.

- Stage is provided with ramps on both sides with railings of 900mm
- The ramp provides is 1.4m wide and having a slope of 2 degree (1: 25) is provided.

HAZELWOOD SCHOOL, SCOTLAND

Introduction

Hazelwood school is designed for children and young people aged 2 to 17 years who are blind and deaf with cognitive impairment and physical disabilities. The school snakes through the parkland Site, forming gentle curves around the existing mature trees.

The single story, built with natural materials creates a series of small garden spaces ideal for small class sizes and maximizes the potential for more intimate outdoor complex demands for an institute way finding system as well as the substantial storage needs for a wide range of equipment used by children with a variety of disabilities.

Architects: Gordon Murray + Alan Dunlop Architects
Location: Glasgow, Scotland
Landscape Architect: Richard East
Structure: Paul McCrorey
Area: 2660 sqm
Project Year: 2007
Client: Glasgow City Council Education Services

Background

Hazelwood School caters for 60 students with multiple disabilities, aged from 2 to 19. Each student has a combination of two or more of the following impairments: visual impairment, hearing impairment, mobility or cognitive impairment. The design focused on creating a safe, stimulating environment for both pupils and staff. The design is aimed at eliminating any institutional aspects and avoiding conventional or standard details, creating a bespoke design that incorporates visual, sound and tactile clues. The school is set within a landscaped green adjacent to Bellahouston Park in Glasgow, which is surrounded by mature lime trees with three beech trees in the centre. The building snakes through the site, curving around the existing trees, creating a series of small garden spaces, and maximising the potential for more intimate external teaching environments.

Accessibility-

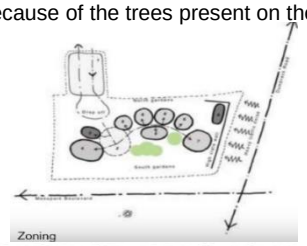
The site is easily accessible by road. The main entrance is from the Mosspark boulevard side. Most of sites edge faces the main road, hence a thick tree cover is provided to isolate the site from all the noise.

Main features of the school

- The realization that the project was all about light, not darkness, "Because the children can distinguish light and dark, as well as colours. So contrast and colour play an important role in the design
- The school contains eleven (11) classrooms in a single story structure, providing nursery through secondary education
- The distinctive curving interior spine meets the complex demands for an intuitive way finding system
- Design of the games hall, trampoline area, and hydrotherapy pool created opportunities for children to explore, extend their skills, and gain confidence

Zoning-

The institute exists as one continuous block with a central movement corridor. This leaves the site with clear open and built zoning. Curve form of the building is because of the trees present on the site.



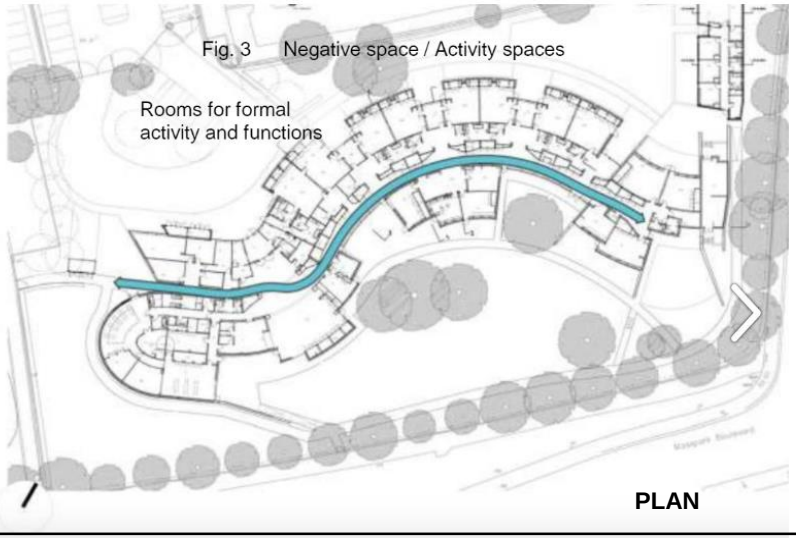


Fig. 3 Negative space / Activity spaces

PLAN

Purpose of the study-

The Hazelwood school in Glasgow is one of first designed school based on a lot of research on designing for visually impaired. It has a unique movement pattern inside the building specially for visually and hence generate the overall form which is curve-linear.

The school also provides dedicated therapy areas related to nature and other kinds.

Distinctive Features

•The playground and playground furnishings enable children the freedom to play and take risks at their own level .

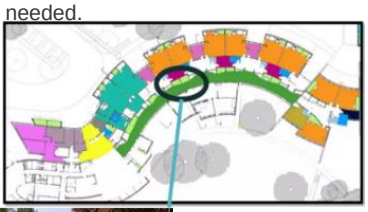
•A sensory garden attributed with walkways, play yard, swings create a park-like setting for the school grounds.

Plan

The curved form of the building reduces the visual scale of the main circulation spaces and helps remove the institutional feel that a single long corridor might create.

The Focus Learning Room

The focus-learning rooms offer viewing for staff and visitors without disturbing the children. These areas also offer quiet time as needed.



Life Skill House

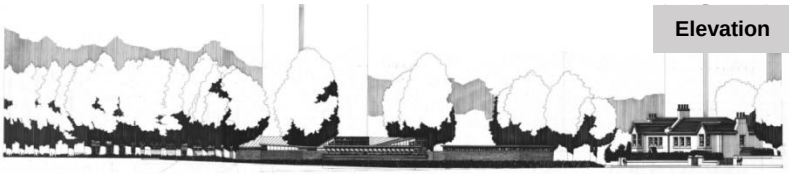
A separate residential unit, is used to teach the children basic life skills but also provides respite accommodation.

HAZELWOOD SCHOOL, SCOTLAND

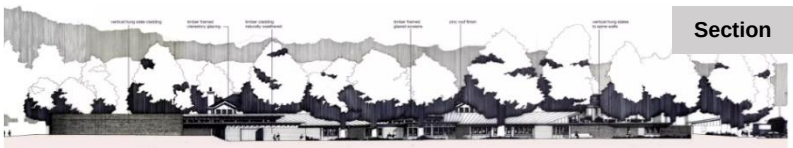
Design Features

•The unique sensory **"trail rail wall"** weaves throughout the school and enables children to practice mobility and orientation skills .
•The trail rail wall is clad in cork, and has a warm feel

•It provides signifiers or tactile cues to assist children
with orientation and navigation through the school
•Within **two weeks** of exposure to the trail wall system, they were successfully moving around the building independently.



Elevation



Section

Materials used on the roof- Timber, Brick, Zinc and Glass

Backyard

Front facade

High sill

Movement using see

Open classroom

Corridor

Trampoline

Sensory wall

-High-level windows are used to reduce distraction.
-Classrooms are oriented north and open onto the quietist part of the grounds, the classroom garden spaces
-The structural glulam* timber frame casts shadows within the building to establish a clear pattern along the internal street of the school

•The Architect also creates hindrance, to train the students better.
•Corridors are designed as streets, which also assist with orientation and mobility.

Materials and features-

-Sensory wall. The "trail rail" is integrated into the cork clad wall and has warm tactile feel. It provides signifies along the route to confirm children's location within the school.
-The creation of architectural space that promotes participation, personalization and particularity the personal independence of the students.
-Curved wooden walls serve to institutionalize the feel of the school and reduce the visual scale the timbers offer sensory stimulation: smell and touch grounds.
-Large Timber Boarding on These Exterior Walls Creates A Natural Extension of the Wooded Landscape Outside the School.
-Mature trees, walkways, and a play yard with wooden climbing structures and swings create a park like setting for the school grounds.

-Designed to maximize the use of natural and durable materials, and when fiscally possible, locally sourced. Fully glazed circulation space faces south and overlooks large sunlit gardens.
-North facing classrooms pitch up to provide large areas of clerestory glazing to allow maximum day lighting to penetrate deep into classroom spaces and ensure an even distribution of light, critically important for children with visual impairments.
-The outside environment is considered as an external classroom. Areas have been left unplanted to allow the school's involvement in the design and development of future sensory gardens.

Plan

NATIONAL VOCATIONAL TRAINING INSTITUTE, NOIDA

Introduction

Site Area- 8 acres (approx.)
Location- D-1, Block D, Sector 1, Noida, Uttar Pradesh

-The programme attempts to promote the women employment in industry (mainly organized sector) as semi- skilled/skilled & highly skilled workers by increasing their participation in skill training facilities.

-National Vocational Training Institute is the training institute only for women. The institute was established by Ministry of Labor and Employment 1977.

Courses offered are-
- Electronics Mechanic
- Computer Operator
- Architectural Draughtsman ship
- Desk Top Publishing
- Secretarial Practices (English)
- Hair & Skin Care
- Fashion Technology

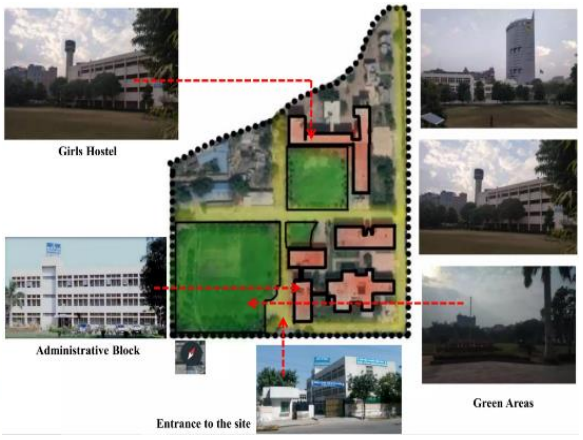
Aim and Objectives

-Planning, designing, executing and pursuing long-term policies for vocational training of women in areas having wage/self employability; thereby increasing women's participation in economic & social development of the country.
-Drawing plans and schemes for promoting participation of women in vocational training.
-Identification of vocational skill training areas.
-Sensitizing social environment through publicity campaigns.

B. Courses offered :

- As this vocational institute id for only girls. They have provided hostel facility for all the students at very convenient fees because its an government institute.
- They are two types of courses are there short and long term.
- For both workshops are there, one classroom for each course 15x10m.

Site Plan of N.V.T.I, Noida



D.G SETS
Proper facility for electricity by providing individual structure

GIRLS HOSTEL
Accomodation facility for both long and short term courses.

OVERHEAD WATER TANK
Institute has its own water tank for supply in hostel and other blocks

SURFACE PARKING
Covered parking for Teachers for appr. 8 cars

N.V.T.I MODEL
Model of N.V.T.I placed near Admin block

WIDE PATHWAYS
8 m wide pathways on all sides for fire brigade

SITE PLAN
Site area =28720 sq.m

WORKSHOP -2
3 Storey building with appr. 15 classroomin 1st & 2nd floor with long and unventilated coridoors. Ground floor have classrooms with staff rooms.

ADMIN BLOCK
Reception on entrance with training Section, Wainting, Pricipal chamber,Director of Training, Adiminstrative Section

GREEN AREA
Two main parks, one is on entrance and other is in front of hostel

FEE SUBMISION
Fee Submission is between two blocks and covered with Green curved fibre sheet

Site & Surroundings:

- The main landmark around NVTI is 22 storey Gail building.
- It also has connectivity with metro.
- 40% of site area is covered in green..

Services:

- Institute is located in Noida , has no electricity issue and have its own Diesel Generator incase of power efficiency.
- For water supply it has its own overhead tank that stores water from municipality and supply it in whole institute.

Site Views

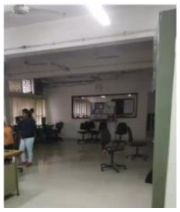
NATIONAL VOCATIONAL TRAINING INSTITUTE, NOIDA

Administrative Block

- Principal Office
- Reception Area
- Assistant Director Office
- Waiting Area
- Staff Room
- D.T.P Section
- COPA Section
- Store Room
- Library
- Canteen
- Secretarial Practice – Computer Lab
- HUB (DLP)
- Conference Room
- Dining Room (for guest)

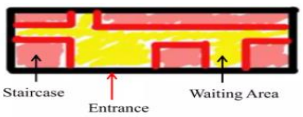

Administration Block-Front Elevation


Administration Block-Rear Elevation (model)


DTP Room


Computer Operator & Programming Assistant Section


Waiting area-near entrance



Jaalis of such type are provided in many walls of the building for light and ventilation in corridor.)


Canteen


HUB (DLP)

Workshop Block - 1

- Theory Rooms
- Cosmetology
- Fashion Designing (Basic)
- Fashion Designing (Advanced)
- Dress Making sewing lab
- Fashion technology lab
- HSC lab
- Drafting Lab
- Audio Visual Lab


Workshop Block


Courtyard

Workshop Block - 2

- Meditation Room
- Architectural Draughtsman ship
- Electronic Mechanic
- CAD Labs
- Interior Designing Class
- Audio – Visual Lab
- Principles of Teaching


Architectural Draughtsman ship


Workshop Block


Solar Panels installed at roof top


Interior Design

COSMETOLOGY CLASSES

FASHION TECHNOLOGY

Merits:

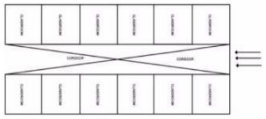

Connectivity with Metro.

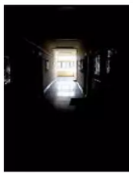

Ample amount of Natural ventilation in classroom.


Proper arrangement of electricity unit and water overhead tank.


40% Green Space

Demerits:





Inferences

Administrative Block	Workshop 1	Workshop 2	Overall
Easy to access	Large Circulation space	Installed Solar panels	Green area (large) provided on south-west
Connected with Workshop – 1 block	Courtyard Provided for light and ventilation	No Jaalis only in this block	Planning & connectivity done according to the use
Very less space for canteen provided	Large spaces given to Cosmetology classes	Smelly corridor due to toilets	Girls Hostel separated by green area
Jaalis provided for ventilation and light in corridor	Labs for Fashion Technology Course	Floors are segregated through courses	Toilets in every block are in bad condition
	Unhygienic toilets		Toilets and other areas need renovation in girls hostel

MANAAV SADHNA, AHMEDABAD

Introduction

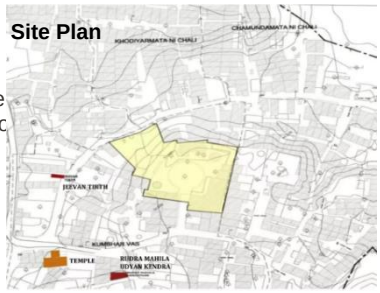
Architect- Yatin Pandya
Site Area- 1200 sq m
Location- Ahmedabad
Total Built-up Area- 515 Sq. mts.+ 438 Sq.mts Plinth Area
Total Cost- Rs. 31 Lakh with Landscape and Interior

Aim of the Project

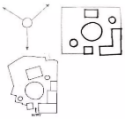
To serve the underprivileged by seeing the god in every individual (manav), mere service is transferred into worship (sadhna).

Manaav Sadhna chose to work with the Tekro because of its proximity to Gandhi ashram. Lack of education and employment opportunity are the core causes of many problems in the Tekro.

Site Plan



Ground Floor Plan



1. ENTRY
2. ADMIN
3. STORE-ROOM
4. TOILET
5. CLASSROM
6. LIBRARY
7. KITCHEN
8. DINNING AND WASH AREA
9. DENTAL CLINIC
10. SITTING
11. MEDITATION SPACE
12. COURTYARD
13 DAY CARE
14 GYM
15 ANGANWADI

First Floor Plan

Role of the Activity Center

The multi purpose activity center serves as an informal school for young children's, provides evening education for adults and serves as a center and activity workshop for manufacturing of craft based products by women and elderly.

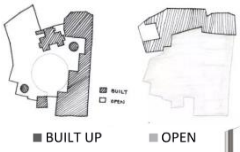
Spatial Organization

It has the radial organization a radial organization combines elements of both central and linear organization here all the spaces tend to open at the central court the courtyard acts as a multipurpose space where children's dance and play various outdoor games. Many cultural programmer's are conducted here.

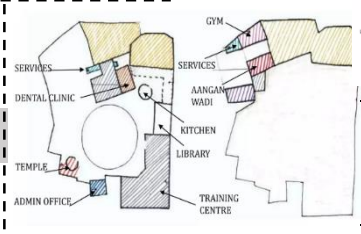
Climate

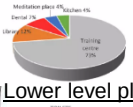
Ahmedabad has the hot and dry climate. All the spaces are oriented towards the windward side facing the open court for the ease in cross ventilation.

Built-Open

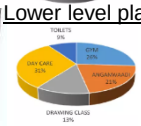


Program



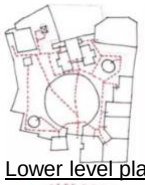


Lower level plan



Upper level plan

Circulation

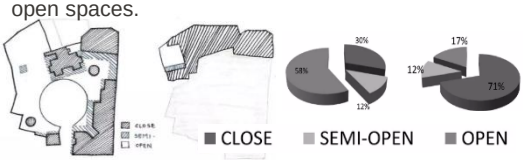


Lower level plan

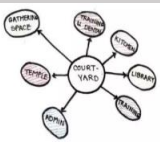
Upper level plan

Open, Semi-Open, Close

Semi open spaces acts as a good transition from open spaces to closed space. Due to hot and humid climate users mostly prefer to use this semi-open spaces.



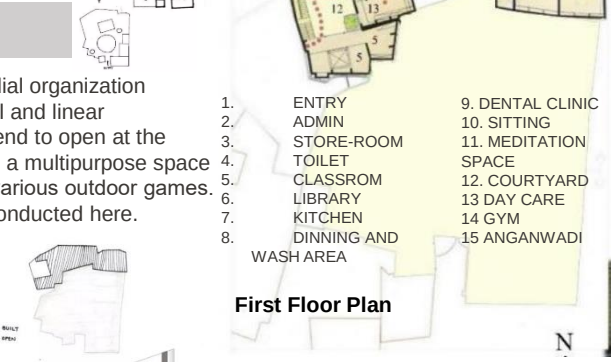
Inter-Relationship



Design Concerns

Non polluting environment, economic empowerment and affordable built forms are the three key dimensions of this initiative. The project is an outcome of three years of empirical research at the Vastu Shilpa foundation for studies an research in environmental design with the goal of converting municipal waste from domestic sector into building components. The project also demonstrates that building can become an economic activity, empowering people.

Interaction between indoor and outdoor spaces.

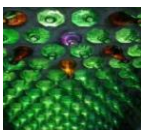


Section A-A'

Section B-B'

Materials

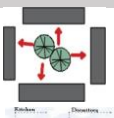
Steel frame, cycle spareparts, resin, cobalt, glass fibre matt, glass bottle, cement mortar, fly-ash, water residue, cement, gypsum, lime, river sand.



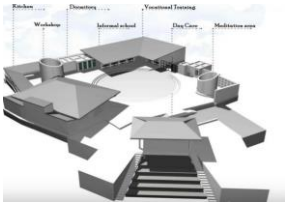
Design Observation

The semi-open space provides the possibility of in-out space, such introverted places assist the kid in growing and learning confidence. Students may appreciate and feel the difference in different sorts of materials utilized the area.

The extended plinth is a key component of the structure, connecting the entire structure as a whole single unit used for dance, painting, art and crafts, and so on.The corridor here serves as the centre's backbone, connecting all activities and leading to the central courtyard.



Central open court



For the most part, sporting activities take place on the central open court, which gives the Centre an airy feel. The middle court is shady throughout the day, making it ideal for youngsters.

COMPARATIVE CHART

FACTORS	AMAR JYOTI SCHOOL	HAZELWOOD SCHOOL	NATIONAL VOCATIONAL TRAINING INSTITUTE	MANAAV SADHNA	INFERENCES
LOCATION CLIMATE APPROACH	Karkardhooma, Delhi Composite climate Maharshi Valmiki road	Scotland Oceanic climate Mosspark boulevard side.	Noida	Ahmedabad	Site located in peripheral area offers peace and security. Moderate climate works best for the project. Well connected to social modes of the city.
CONNECTIVITY	Institute of Physiotherapy in the campus.	No tie up with hospital and far away.	No tie up with hospital and far away.	No tie up with hospital and far away.	Connectivity to the major city nodes, activity hubs, hospitals and employment workplaces.
VEHICULAR MOVEMENT	Not allowed	Allowed till parking space.	Not allowed	Not allowed	Separate from pedestrian pathways.
PEDESTRIAN MOVEMENT	Pathways connected with ramps and stairs with railings wherever required.	Pathways connected with ramps and stairs with railings wherever required.	Pathways connected with ramps and stairs with railings wherever required.	Pathways connected with ramps and stairs with railings wherever required.	Meander pathways with barrier free design considerations.
SITE AREA & DENSITY	Site area-2 acres (approx) School-504.4 sqm Class nursery-VII , 30 students and 20 students classroom.	13300 sqm 60 students	8 acres	1200 sq m	Suburb sites should be considered with more open areas and away from city environment.
PARKING	Not provided	Surface parking			
MASTER PLANNING	Simple	Curve shaped	Paralellogram	Paralellogram	CLUSTER PLANNING Feeling of smaller neighborhood within large community.
BUILDING TYPE	G+2	Ground floor		G+2	Mostly low-rise individual and building components.
OPEN AREA					70%
BUILT UP AREA	46%	2663 sqm 21%		525 sq m	30%
LANDSCAPE AREA					40% landscape, 30% road and pathways

SITE ELEMENTS	School Physiotherapy block Temple Workshop area Canteen court	School	Admin, workshops		Residential apartments Health care block Activity block Peace & learning block Yoga court Library and workshop and more.
RESIDENTIAL UNITS TYPOLOGIES	Not provided	Not provided	Not provided	Not provided	Single units Low- rise apartments
HEALTH & WELLNESS CENTER	Physiotherapy block	Physiotherapy room	Not provided	Not provided	24 hours nursing departments-50 sqm 24 hours Pharmacy-10 sqm Physiotherapy room-45 sqm Yoga & gymnasium-100sqm
ADMINISTRATIVE AND MAINTENANCE BLOCK	Administration-in basement	no	Provided	no	Managers Cabin-35 sqm Intercom Dept-10 sqm Laundry Dept-40 sqm House keeping-40 sqm Common Kitchen-100sqm
CLUBHOUSE	Not provided	Not provided	no	no	Total area-240 sqm Different game zones Badminton & tennis court Party hall-120 sqm Theatre-50 people
RECREATIONAL & LEISURE	Central court area Stage	Library	provided	provided	Library-40 sqm Peace & yoga centre Open Air Theatre Restaurent-120 sqm Party hall-120 sqm
FIRE SAFETY SPECIFICATION	Fire safety exits provided	Fire safety exits provided	Fire safety exits provided	Fire safety exits provided	Curve moldings at every sharp edges. Door width-1.2m Window sill-low Anti slip tiles LPG-detectors and alarms Balcony seatouts.

CHAPTER -5

AREA CHART

TYPE	COMPONENT	AREA REQUIRED	NO. OF UNITS	TOTAL AREA
SCHOOL BUILDING				
ADMINISTRATION	Reception +waiting	80	1	80
	Admission	100	1	100
	Principal's room + toilet	20	1	20
	Vice Principal office + toilet	20	1	20
	Director's room + toilet	20	1	20
	Accounts office	30	1	30
	Record room	30	1	30
	Conference room	50	1	50
	Teachers room	80	1	80
	Stationary store	20	1	20
	Uniform store	20	1	20
	Toilet + store	100	1	100
				550

TYPE	COMPONENT		AREA REQUIRED	NO. OF UNITS	TOTAL AREA
VOCATIONAL TRAINING CENTER	Course 1	Workshop	100	1	100
		Classroom	50	3	150
	Course 2	Workshop	100	1	100
		Classroom	50	3	150
	Course 3	Computer lab	100	1	100
		classroom	50	1	50
	Course 4	workshop	200	1	200
		Classroom	50	3	150
	Course 5	Workshop	100	2	200
		Stitching workshop	50	1	50
	Course 6	Hand block printing	200	2	400
		Storage spaces	30	1	30
	toilets		100	1	100
					1780

TYPE	COMPONENT	AREA REQUIRED	NO. OF UNITS	TOTAL AREA
SPECIAL EDUCATION (200 CHILDREN) Secondary-Class 5th to 8th Higher-Class 9th to 12th	General classroom (Secondary)	48 (8X6) (2 per grade)	16	768
	General classroom (Higher)	48 (8X6) (1 per stream)	4	192
	Special classroom	48 (8X6)	8	384
	Staff room	50	1	50
	Teachers Training Room	30	1	30
	Physics Lab	96 (for 24 student classroom)	1	96
	Chemistry Lab	96 (for 24 student classroom)	1	96
	Biology Lab	96 (for 24 student classroom)	1	96
	Computer Lab	65	1	65
	Art & Craft room	65	1	65
	Music Room	65	1	65
	Social science lab	65	1	65
	Library	112	1	112
	Sensory room	65	1	65
	Store	30	1	30
	Infirmary	30	1	30
	Toilets	WC & WB-1 per 40 pupils, 1 per 30 staff members. Urinals-1 per 20 pupils, 1 per 30 staffs		100
				2309

TYPE	COMPONENT	AREA REQUIRED	NO. OF UNITS	TOTAL AREA
STAFF RESIDENCES	Reception & foyer	50	1	
	Rooms	25	16	400
	Kitchen	15	1	
	Dining	160	1	
	Common room	20	1	
	toilets	20	2	40
				665

TYPE	COMPONENT	AREA REQUIRED	NO. OF UNITS	TOTAL AREA
MEDICAL CARE & THERAPY UNIT	Reception+ waiting	80	1	80
	Social worker's room	12	1	12
	Physician Consultant	20.25(4.5X4.5)	2	40
	Psychiatrist consultant	20	2	40
	Examination & placement with early intervention program	30	1	30
	Physiotherapy	100	1	100
	Occupational therapy	100	1	100
	Speech & hearing therapy	30	1	30
	Prosthetics & orthotics	120	1	120
	Intellectual therapy room	12	2	24
	Individual therapy room	20	1	20
	Group therapy sessions	65	1	65
	Resource centre	112	1	112
	Teacher training centre	50	1	50
	Staff room	30	1	30
	Nurse station	15	1	15
	Staff discussion area	20	1	20
	Toilets+ store	100	1	100
				988

TYPE	COMPONENT	AREA REQUIRED	NO. OF UNITS	TOTAL AREA
HOSTELS FOR 50 CHILDREN (2 BLOCKS))	Lobby+ reception	40	1	
	Rooms+ toilet (2 persons for each room)	1500	25	
	Supervisor room + toilet (each floor)	200	1	
	Dining hall + study hall	400	1	2140
	1 block for girls	2140	1	2140
				4280

TYPE	COMPONENT		AREA REQUIRED	NO. OF UNITS	TOTAL AREA
COMMON AREAS	Library		50	1	
		Lounge	100	1	
		Librarian office	15	1	
		Informal reading area	150	1	
		Outdoor reading area	75	1	
		Group study area	120	1	
		Book stack area	100	1	
		Storeroom	15	1	
		Toilets	20	2	645
	Canteen	kitchen	100	1	
		Seating	300	1	
		toilet	20	2	420
	Food court		200	1	
		pantry	30	1	230
	Exhibition display area		800	1	800
	Handicraft flea market		1500	1	1500
		Loading/ unloading area	20	1	
	Event hall		500	2	1000
	Stationary shop		40	1	40
					4635
	Multipurpose hall	500		1	500
	Indoor games	500		1	500
	Meditation and sensory unit	Special classes for activities daily living & life-skill training	30	4	120
		Yoga & meditation classrooms	160	4	640
		Toilet+ store	100	1	100
					6495

CHAPTER -6

CONCEPT

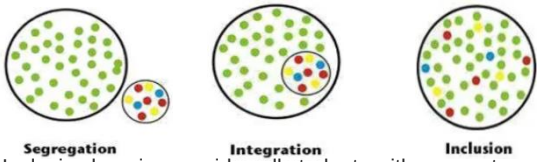
CONCEPT:

The form of the building originated from the concept of "meeting hands" which symbolizes support and confidence.The shape of the plan resembles two meeting hands symbolizing the school block and vocational training block as the support system which helps students gain confidence.
The two main blocks area School block and vocational training block, to boost or gain confidence in the differentially abled students by observing works, communicating and learning the experiences from the experts or already successful differentially abled students in their carrier.

To stimulate learning and promote community cohesiveness through easily accessible nature, rich spaces user oriented planning is considered towards-
-Circulation
-Planning
-Function
-Human senses

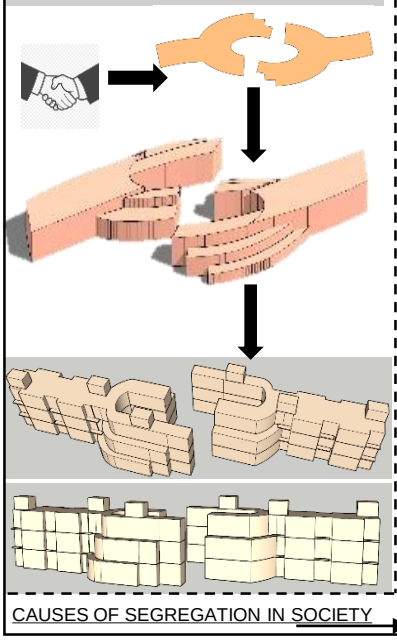
WHAT IS INCLUSION?

Inclusive Education is an approach towards educating the children with disability and learning difficulties with that of normal ones within the same roof. It brings all age-appropriate peers together in one classroom and community, regardless of their strengths or weaknesses in any area and seeks to maximize the potential of all students. Inclusive education entails identifying and removing barriers and providing reasonable accommodation, enabling every learner to participate and achieve within mainstream settings.

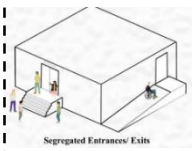


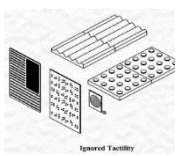
Inclusive learning provides all students with access to flexible learning choices and effective paths for achieving educational goals in spaces where they experience a sense of belonging. In an inclusive education environment, all children, regardless of ability or disability, learn together in the same age-appropriate classroom. It is based on the understanding that all children and families are valued equally and deserve access to the same opportunities

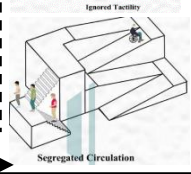
FORM EVOLUION



CAUSES OF SEGREGATION IN SOCIETY





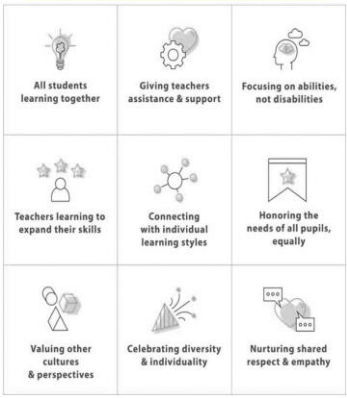


Strategies

Use universal design principles to create accessible classrooms.
Use a variety of instructional formats.
Know your students.
Develop a behavior management plan.

Benefits of Inclusive Education

Studies have shown the benefits that inclusive classrooms offer for children with disabilities and their peers. Instead of pulling children out of the classroom to offer them specialized instruction, in an inclusive classroom special education teachers come into the classroom. This allows for general education teachers and specialists to work together in the same learning environment, benefiting all students, who are offered additional resources and support. This support often results in greater academic gains for students with disabilities as well as students without disabilities.



DESIGN MEASURES

1) Provision of Special Rooms for students with profound disabilities. Spaces such as SENSORY ROOM, AUTISM ROOM, ROOM FOR BLIND STUDENTS etc. has been designed for students who required special help in education.
- General and Special Classroom have been placed in a manner that different learning spaces have share outside learning and recreational spaces. This does not makes them feel segregated, maintains the dignity of users and retains the idea of Inclusiveness.

2) Placement of ramp and staircase in a manner that -
-Ramp is preferred over staircase.
-Vertical Circulation is one of the main reasons for segregation, This shall help is taking decreasing that degree of segregation. Even if the two people are traveling via different means both can have the same experience.
3) Provision of wide corridors, and Handicap toilets in every toilet space.
4) Water dispensers provided at different Heights (considering the varying height of students from 5th to 12 standard).
5) Height of equipment's, color contrasts, tactility etc. designed considering the special students. This shall add to the ease of normal students also.

SITE DEVELOPMENT MEASURES

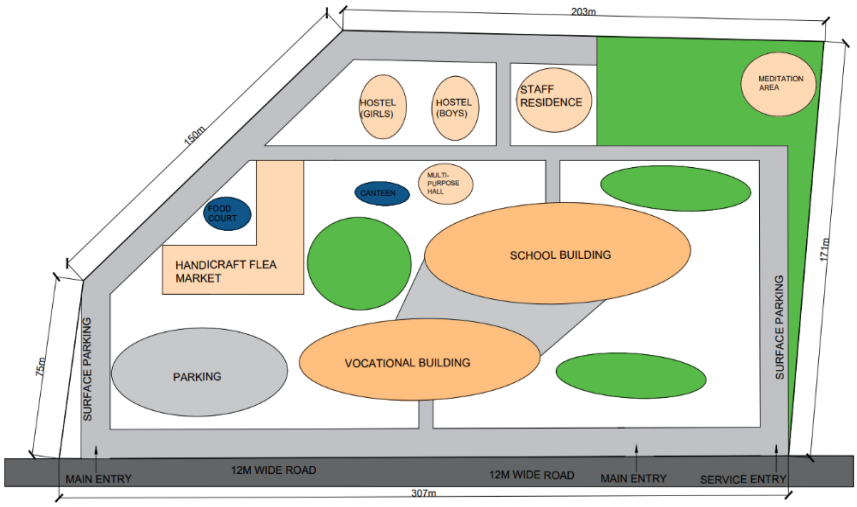
1. Drop off point of students taking public transport.
2. Car parking as much close to code requirement.
3. Pedestrian walkways for access to school building as much may be incorporated.
4. Vehicular drop off under porch of school building.
5. Courtyard + landscaped sitting for Students.
6. 2 separate Parent's waiting with toilet inside and outside of the school compound.
7. Sanctuary garden and playground placement properly.

PLANNING MEASURES

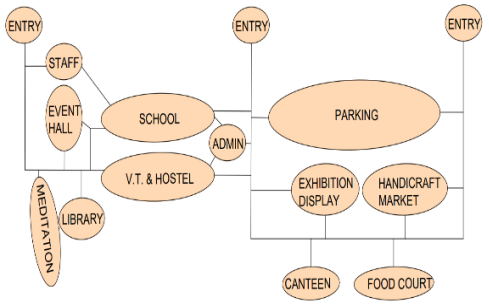
The typology of planning used must guide developing a layout with abundance of natural light, ventilation and connection with nature, which is of extreme importance to improve the learning abilities of students(research shows that students exposed to these factors tend to learn 25% faster and retain attention for a longer span, when compared to those who learn in a space with deficiency of these components.)

-Sensory Awareness: Sensory elements - using color, light, sound, texture, Green landscape and aroma therapeutically, in particular for children with complex health needs.
-Healing Therapy: An accessible environment helps children with disabilities take part in school activities alongside their Peers. Accessible circulation routes.
-Color Therapy: Color should be considered in relation to light levels, visibility, maintenance and psychological effect
-Light Therapy: Multi-sensory spaces contain light, sound and other equipment for their therapy.

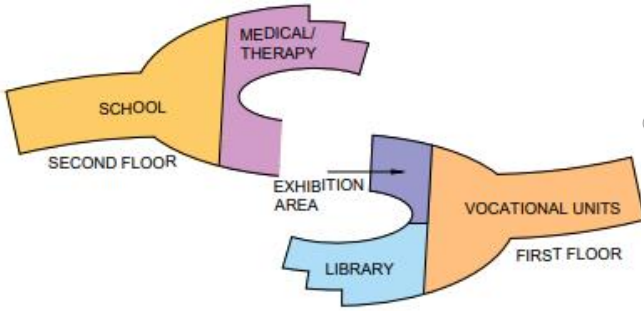
SITE ZONING

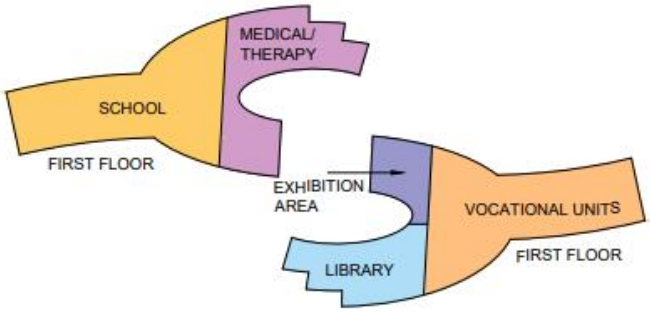


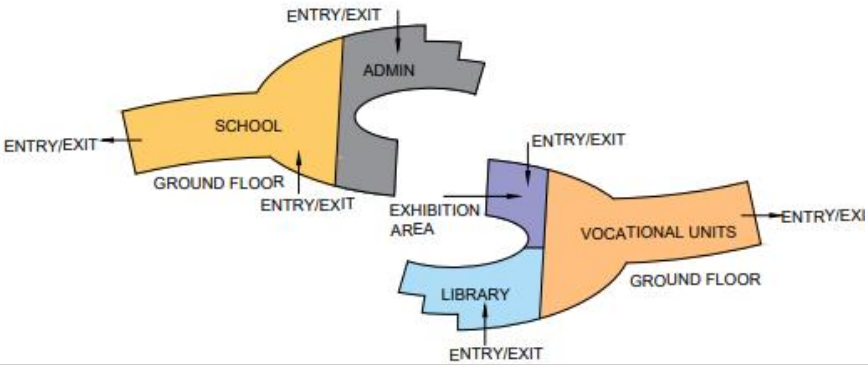
FUNCTIONAL RELATION BETWEEN BLOCKS



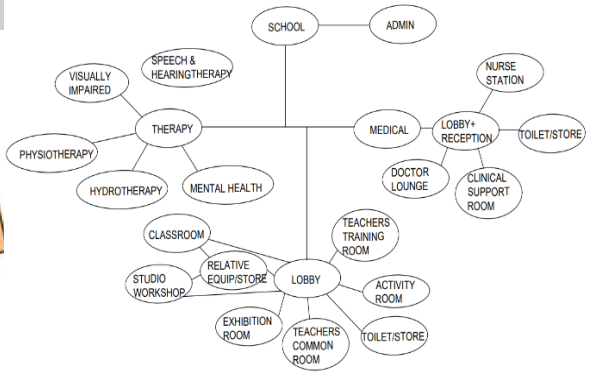
HORIZONTAL STACKING

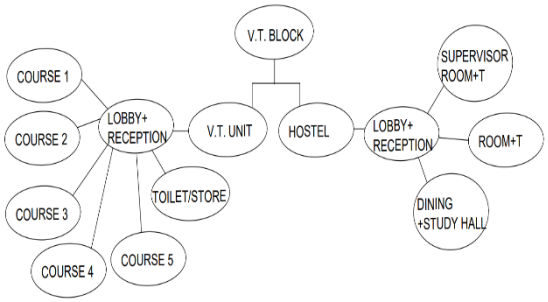


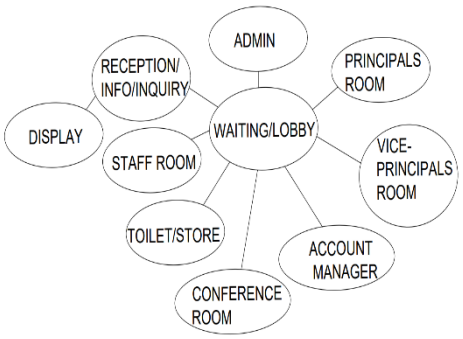




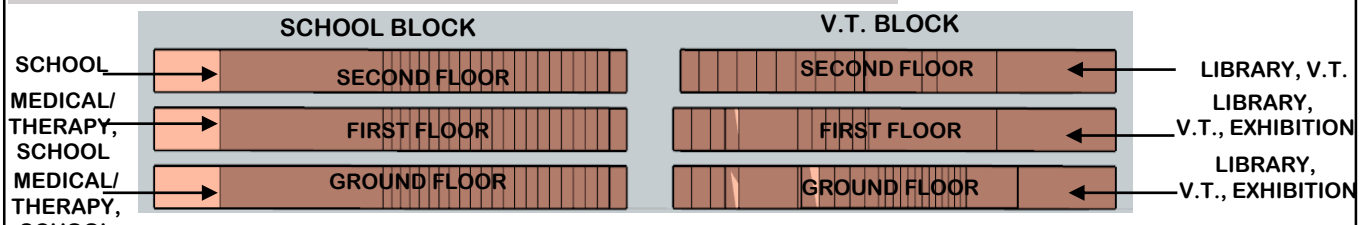
BUBBLE DIAGRAMS







VERTICAL STACKING

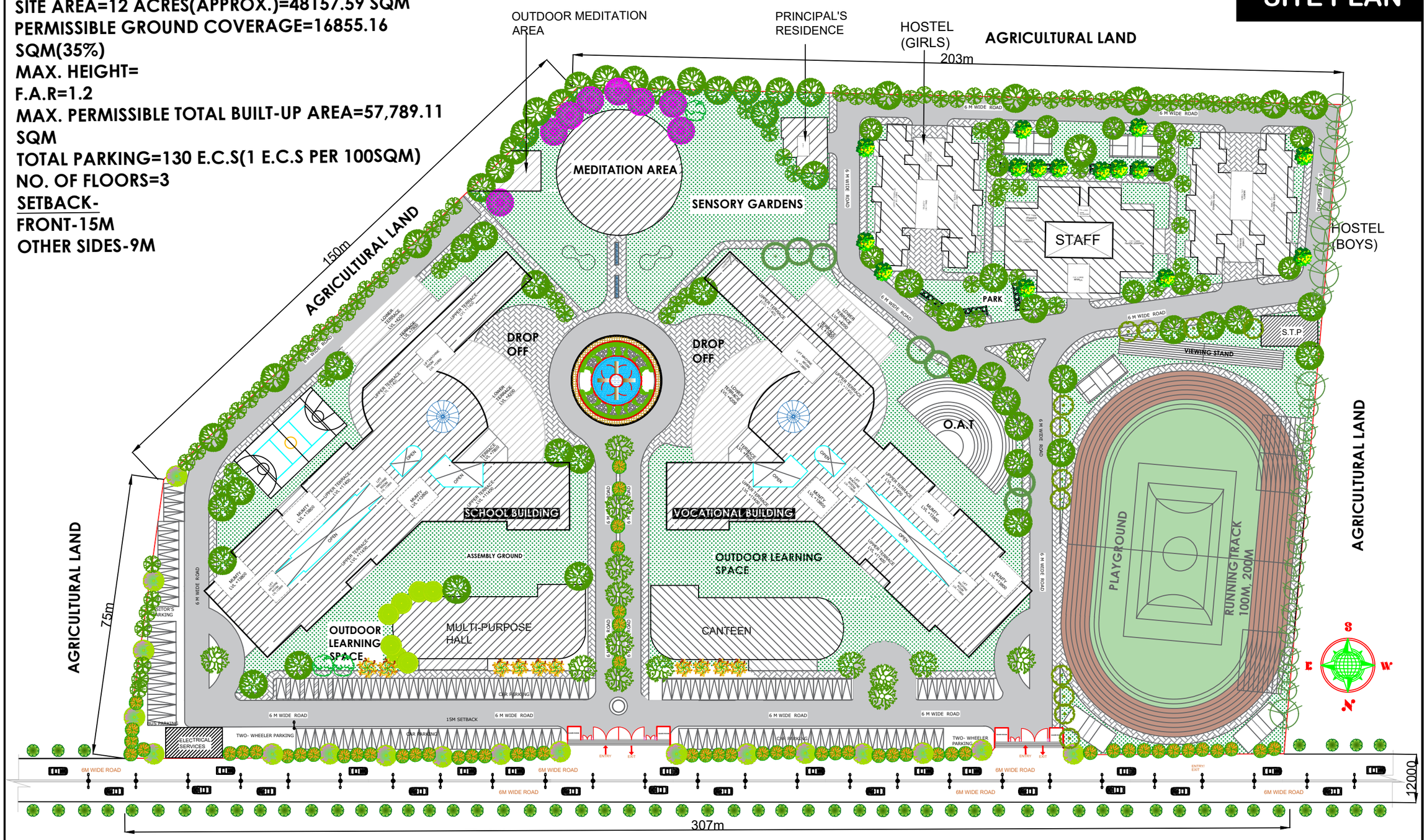


CHAPTER -7

DRAWINGS

SITE PLAN

SITE AREA=12 ACRES(APPROX.)=48157.59 SQM
PERMISSIBLE GROUND COVERAGE=16855.16 SQM(35%)
MAX. HEIGHT=
F.A.R=1.2
MAX. PERMISSIBLE TOTAL BUILT-UP AREA=57,789.11 SQM
TOTAL PARKING=130 E.C.S(1 E.C.S PER 100SQM)
NO. OF FLOORS=3
SETBACK-
FRONT-15M
OTHER SIDES-9M



SITE PLAN

SCHOOL FOR DIFFERENTIALLY ABLED AND VOCATIONAL TRAINING CENTER

N

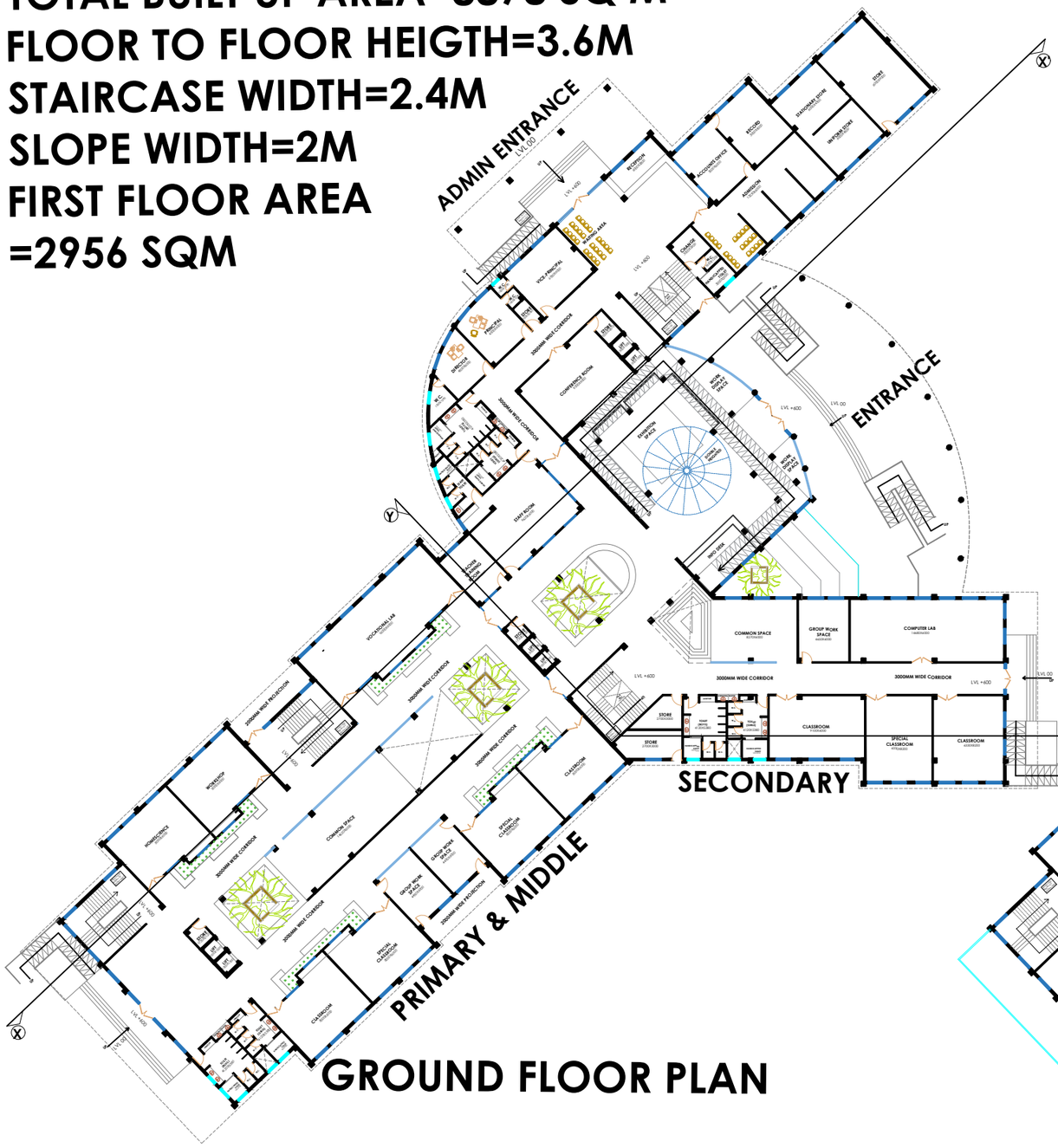
SCHOOL OF ARCHITECTURE AND PLANNING
BBD UNIVERSITY, LUCKNOW

KHUSHNUMA BANO
ROLL NO.-1180101022

01

PLAN

GROUND COVERAGE=3095 SQM
TOTAL BUILT UP AREA=8878 SQ M
FLOOR TO FLOOR HEIGTH=3.6M
STAIRCASE WIDTH=2.4M
SLOPE WIDTH=2M
FIRST FLOOR AREA =2956 SQM



GROUND FLOOR PLAN

FIRST FLOOR PLAN

SCHOOL BUILDING

SCHOOL FOR DIFFERENTIALLY ABLED AND VOCATIONAL TRAINING CENTER

N

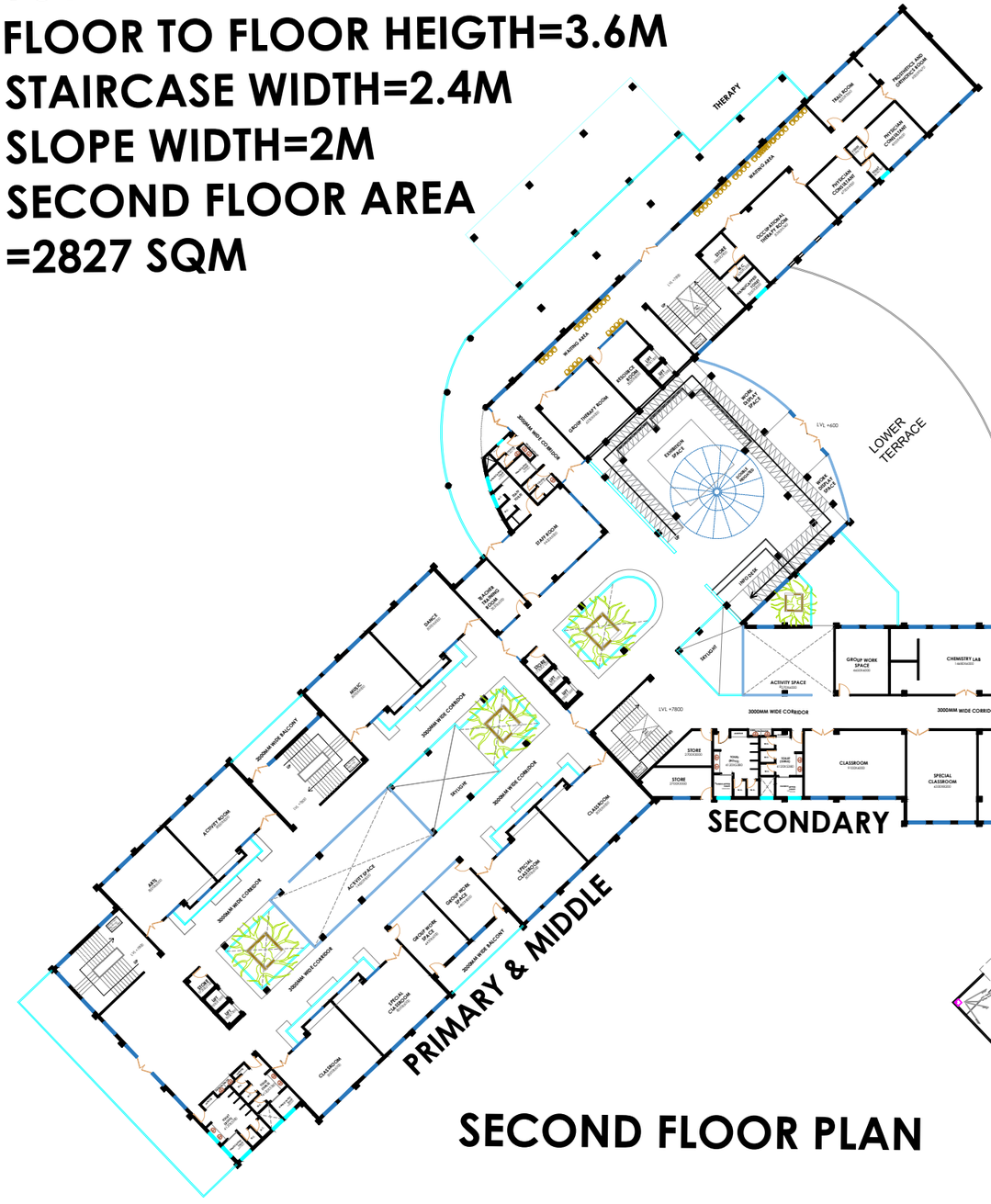
SCHOOL OF ARCHITECTURE AND PLANNING
BBD UNIVERSITY, LUCKNOW

KHUSHNUMA BANO
ROLL NO.-1180101022

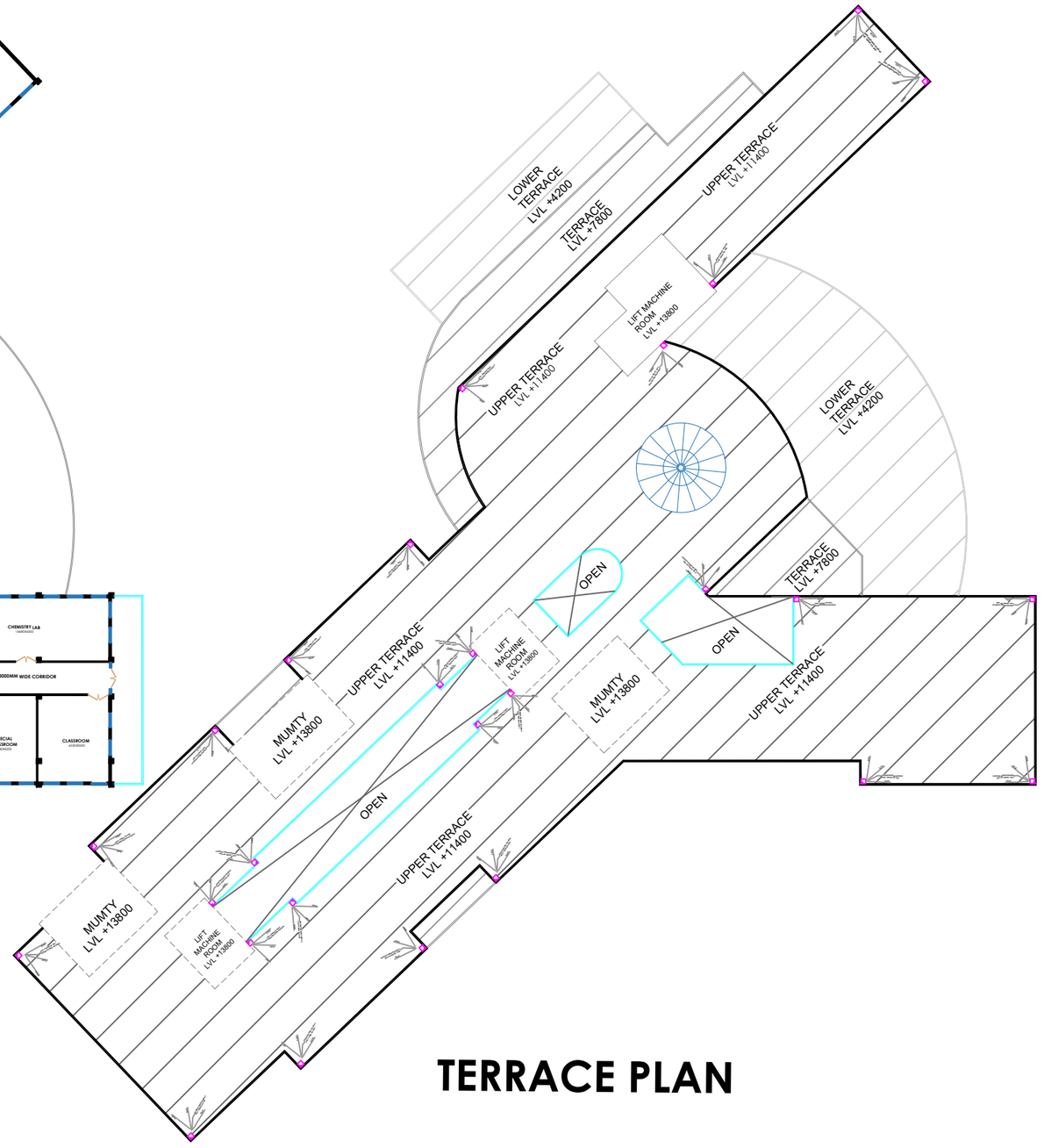
02

PLAN

GROUND COVERAGE=3095 SQM
TOTAL BUILT UP AREA=8911 SQ M
FLOOR TO FLOOR HEIGTH=3.6M
STAIRCASE WIDTH=2.4M
SLOPE WIDTH=2M
SECOND FLOOR AREA =2827 SQM



SECOND FLOOR PLAN



TERRACE PLAN

SCHOOL BULDING

SCHOOL FOR DIFFERENTIALLY ABLED AND VOCATIONAL TRAINING CENTER

N

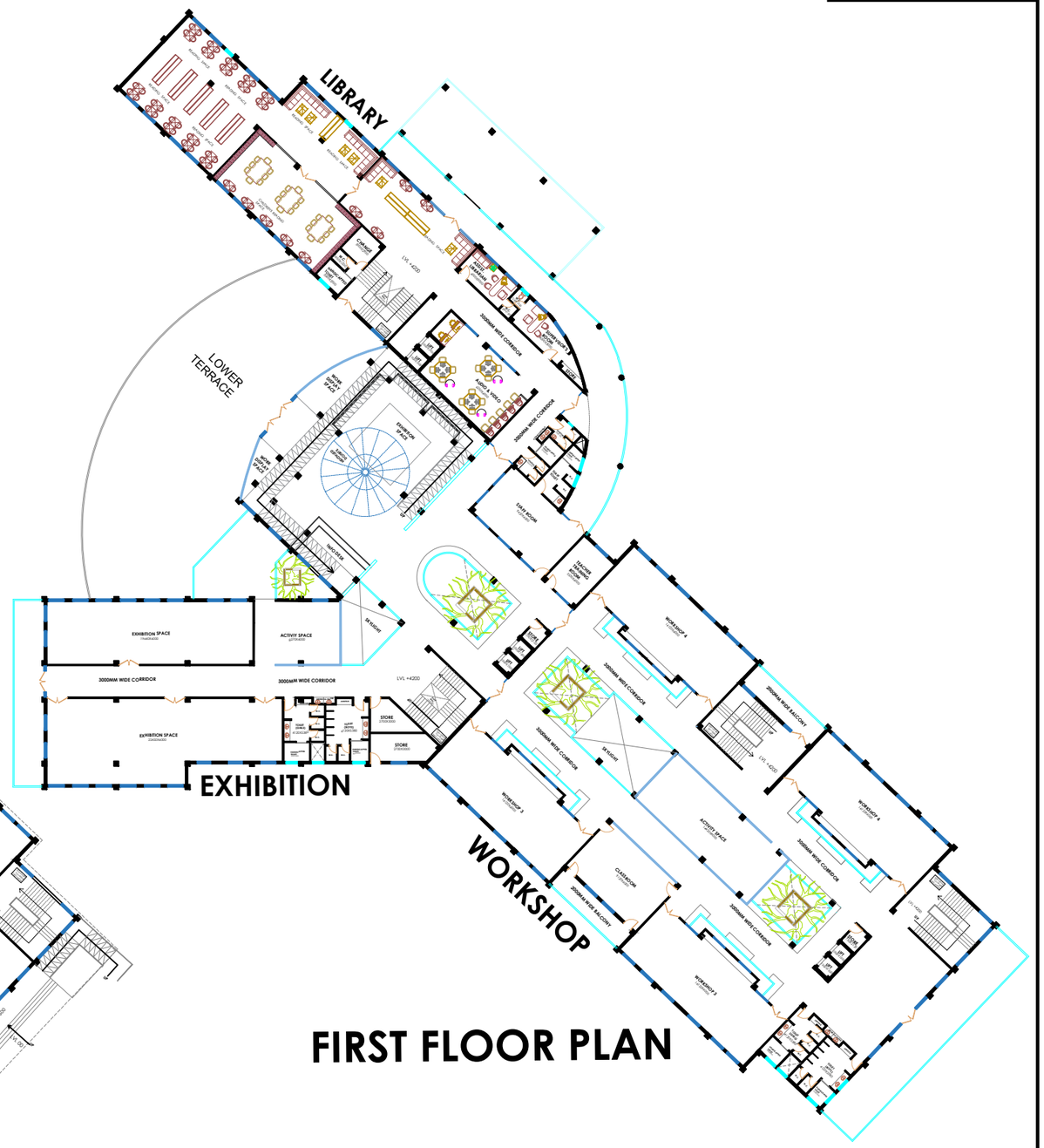
SCHOOL OF ARCHITECTURE AND PLANNING
BBD UNIVERSITY, LUCKNOW

KHUSHNUMA BANO
ROLL NO.-1180101022

03

PLAN

GROUND FLOOR PLAN



FIRST FLOOR PLAN

VOCATIONAL BLOCK

SCHOOL FOR DIFFERENTIALLY ABLED AND VOCATIONAL TRAINING CENTER

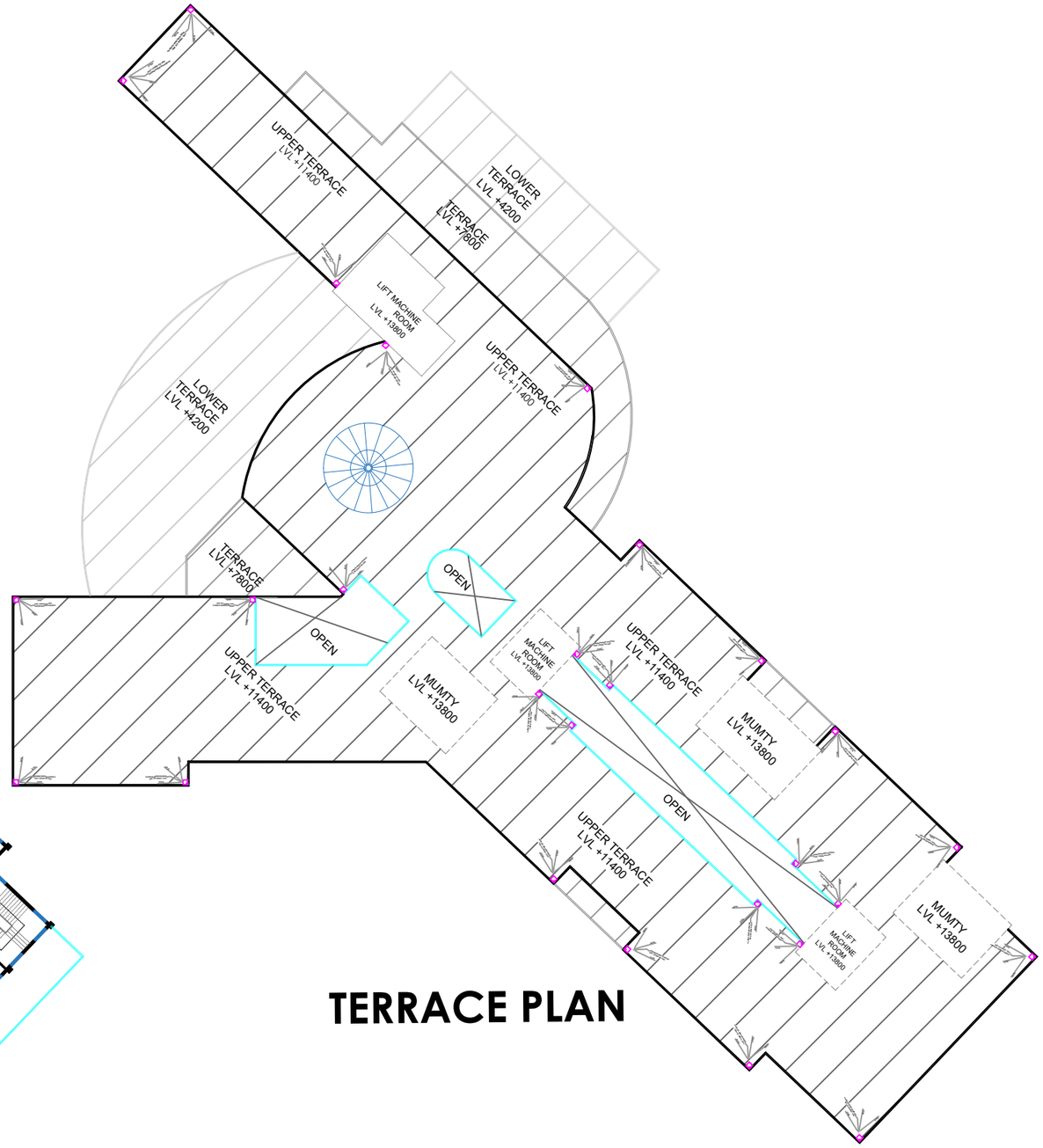
N

SCHOOL OF ARCHITECTURE AND PLANNING
BBD UNIVERSITY, LUCKNOW

KHUSHNUMA BANO
ROLL NO.-1180101022

PLAN

SECOND FLOOR PLAN



TERRACE PLAN

VOCATIONAL BLOCK

SCHOOL FOR DIFFERENTIALLY ABLED AND VOCATIONAL TRAINING CENTER

N

SCHOOL OF ARCHITECTURE AND PLANNING
BBD UNIVERSITY, LUCKNOW

KHUSHNUMA BANO
ROLL NO.-1180101022

05

ELEVATION

NORTH SIDE ELEVATION

SOUTH SIDE ELEVATION

EAST SIDE ELEVATION

WEST SIDE ELEVATION

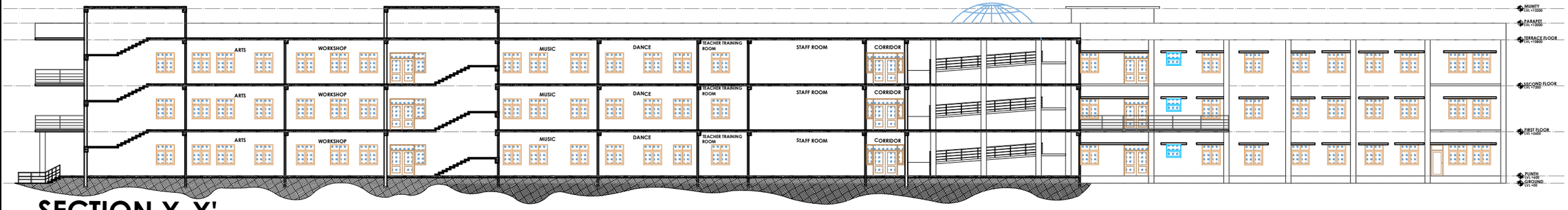
SCHOOL FOR DIFFERENTIALLY ABLED AND VOCATIONAL TRAINING CENTER

N

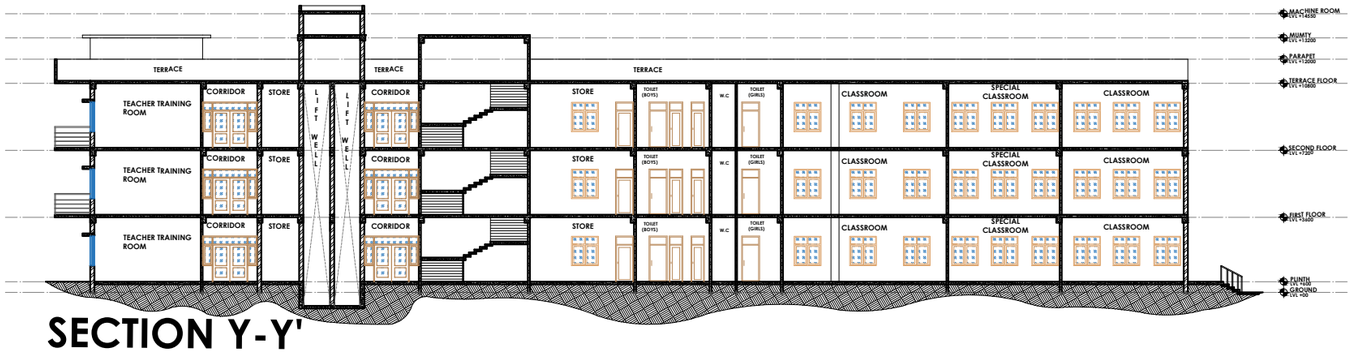
SCHOOL OF ARCHITECTURE AND PLANNING
BBD UNIVERSITY, LUCKNOW

KHUSHNUMA BANO
ROLL NO.-1180101022

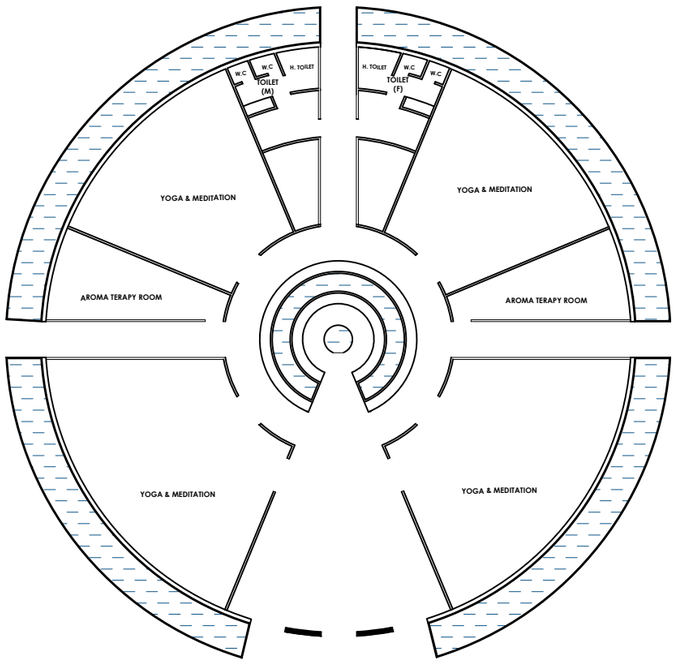
SECTION



SECTION X-X'



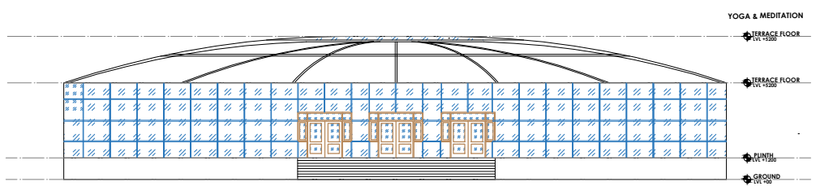
SECTION Y-Y'



PLAN

GROUND COVERAGE=3095 SQM
TOTAL BUILT UP AREA=8878 SQ M
FLOOR TO FLOOR HEIGTH=3.6M
STAIRCASE WIDTH=2.4M
SLOPE WIDTH=2M
FIRST FLOOR AREA =2956 SQM
MEDITATION HALL AREA=870 SQ M

MEDITATION HALL



FRONT ELEVATION

SCHOOL FOR DIFFERENTIALLY ABLED AND VOCATIONAL TRAINING CENTER

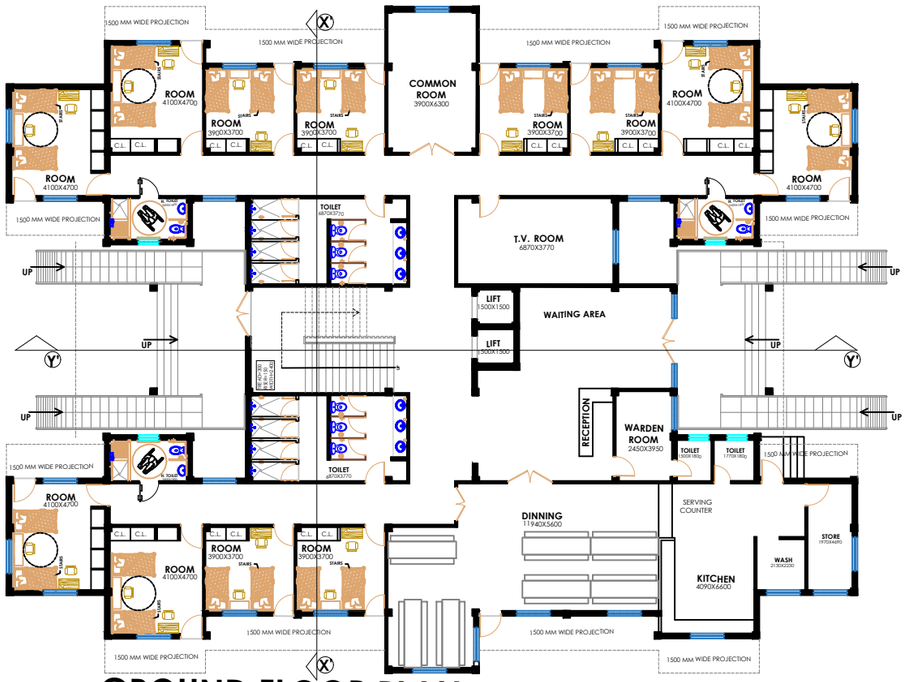
N

SCHOOL OF ARCHITECTURE AND PLANNING
BBD UNIVERSITY, LUCKNOW

KHUSHNUMA BANO
ROLL NO.-1180101022

07

GIRL'S HOSTEL



GROUND FLOOR PLAN

TERRACE PLAN

GROUND COVERAGE =713 SQM
BUILT UP AREA= 2139 SQ M
FOR 176 PERSONS
44 HANDICAP

TYPICAL FLOOR PLAN

FRONT ELEVATION

RIGHT SIDE ELEVATION

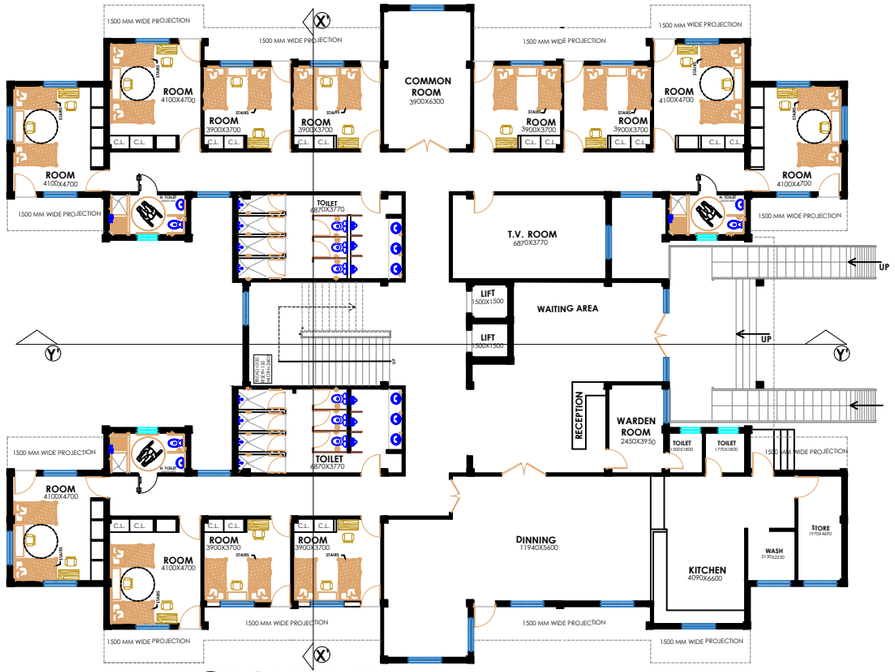
SCHOOL FOR DIFFERENTIALLY ABLED AND VOCATIONAL TRAINING CENTER

N

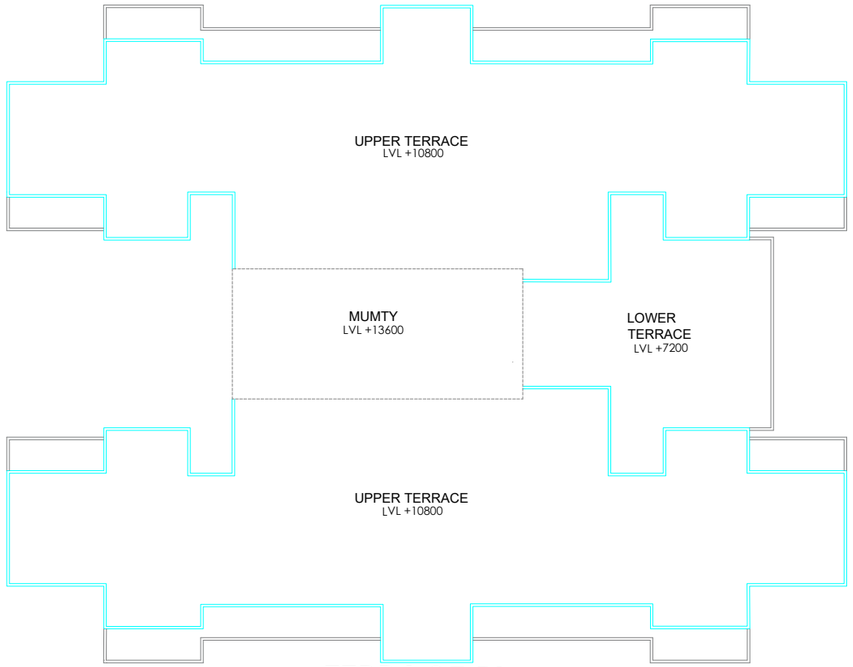
SCHOOL OF ARCHITECTURE AND PLANNING
BBD UNIVERSITY, LUCKNOW

KHUSHNUMA BANO
ROLL NO.-1180101022

BOY'S HOSTEL

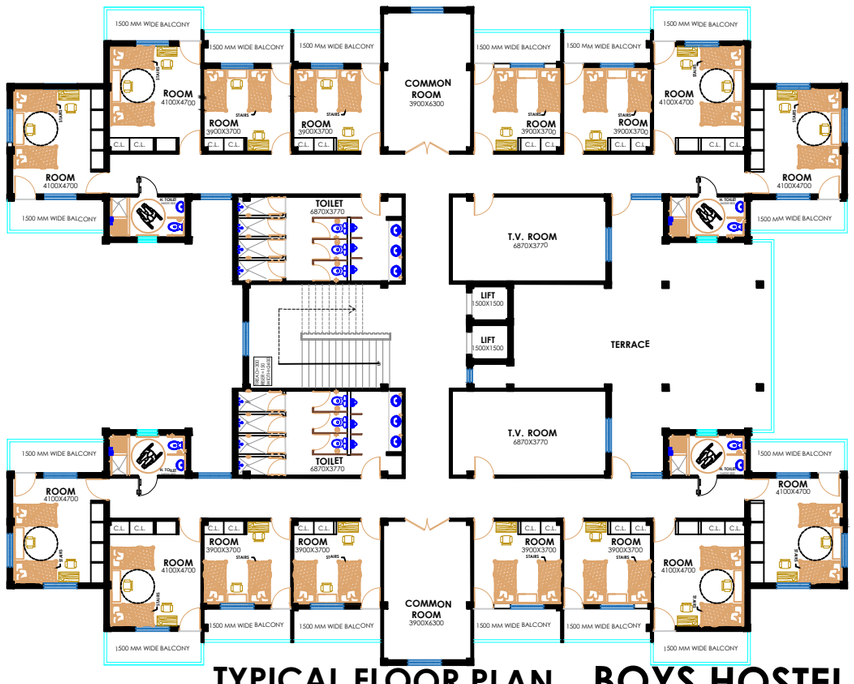


GROUND FLOOR PLAN



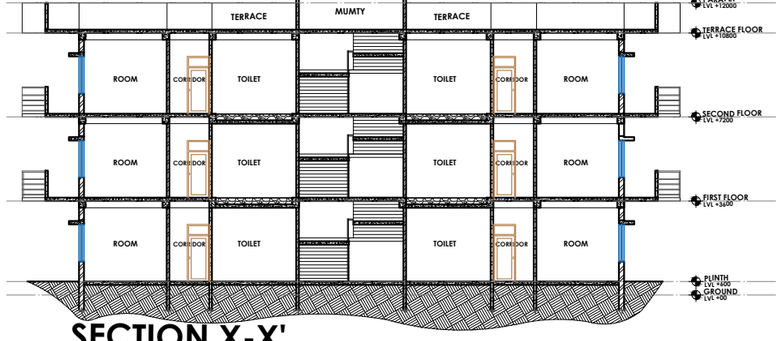
TERRACE PLAN

GROUND COVERAGE =713 SQM
BUILT UP AREA= 2139 SQ M
FOR 176 PERSONS
44 HANDICAP

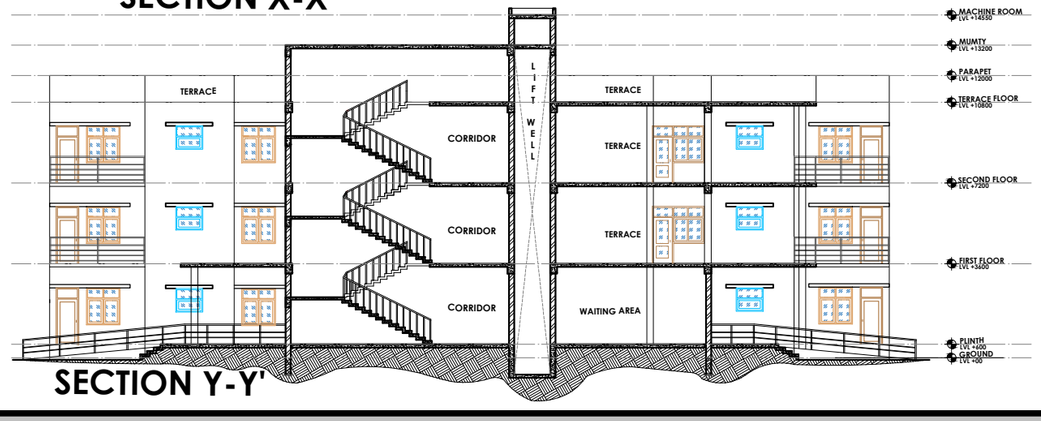


TYPICAL FLOOR PLAN

BOYS HOSTEL



SECTION X-X'



SECTION Y-Y'

SCHOOL FOR DIFFERENTIALLY ABLED AND VOCATIONAL TRAINING CENTER

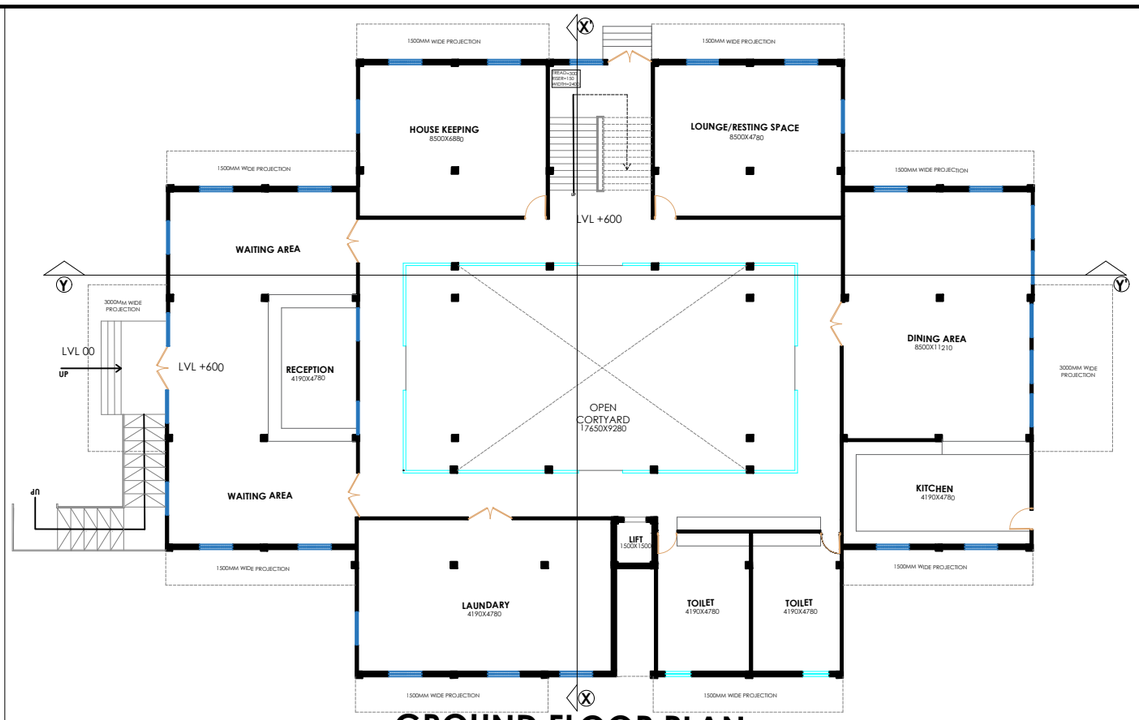
N

SCHOOL OF ARCHITECTURE AND PLANNING
BBD UNIVERSITY, LUCKNOW

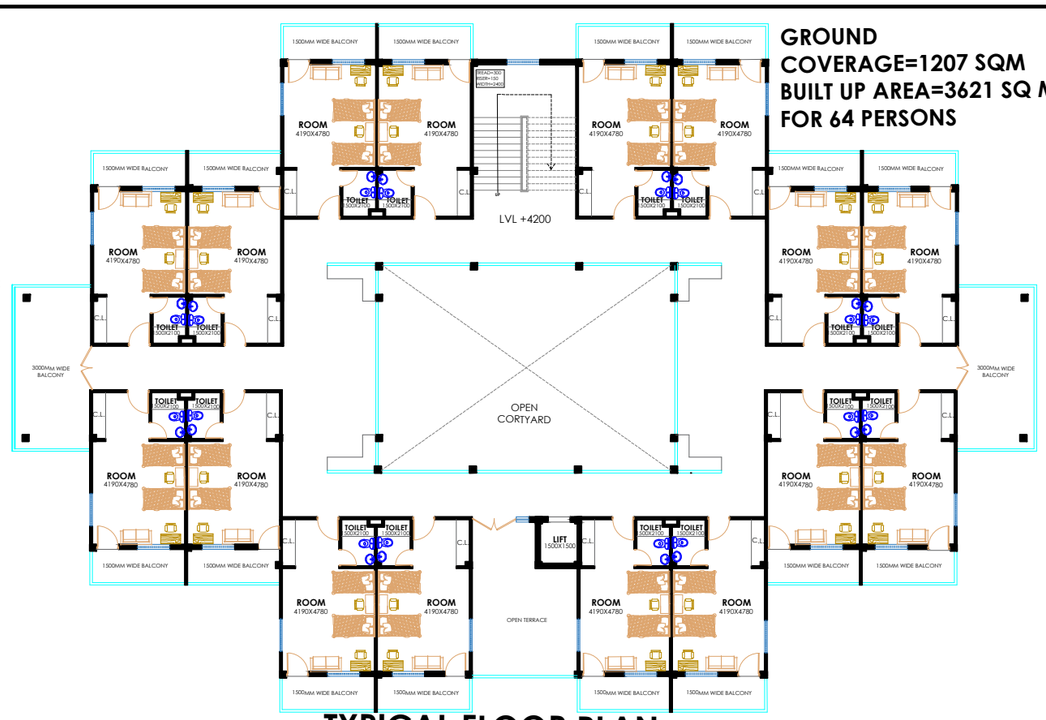
KHUSHNUMA BANO
ROLL NO.-1180101022

09

STAFF QUARTER

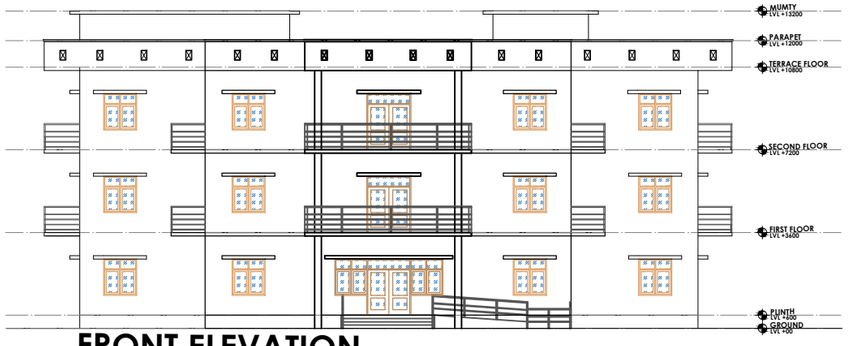


GROUND FLOOR PLAN



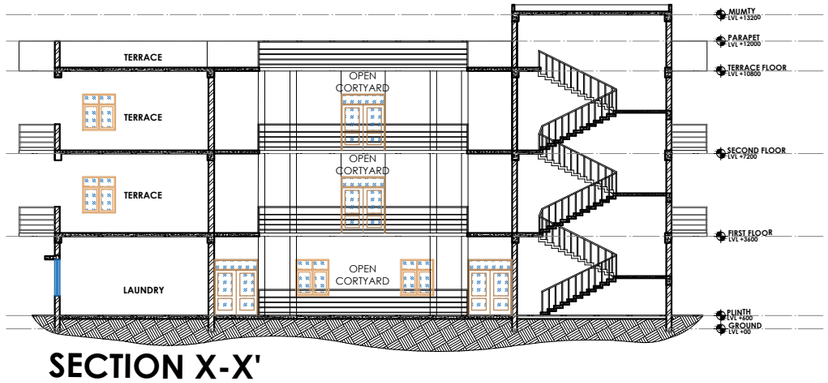
TYPICAL FLOOR PLAN

GROUND
COVERAGE=1207 SQM
BUILT UP AREA=3621 SQ M
FOR 64 PERSONS

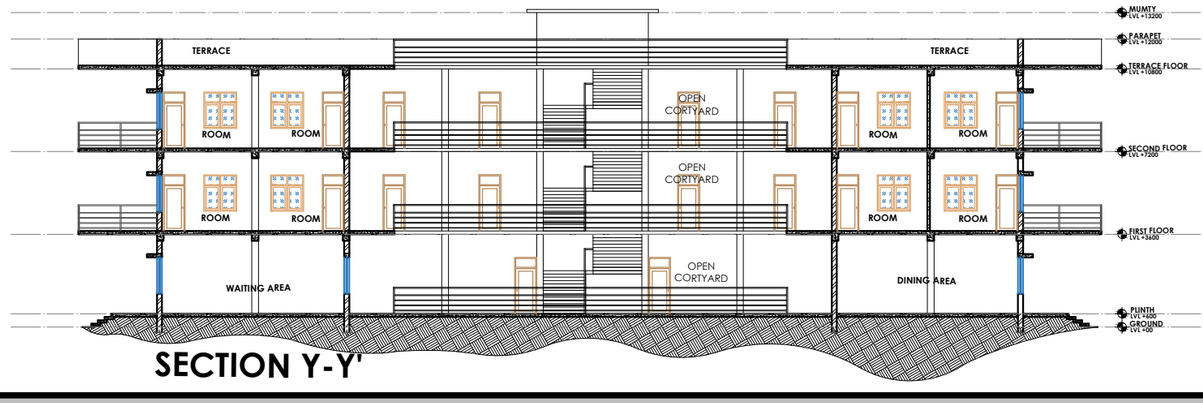


FRONT ELEVATION

RIGHT SIDE ELEVATION



SECTION X-X'



SECTION Y-Y'

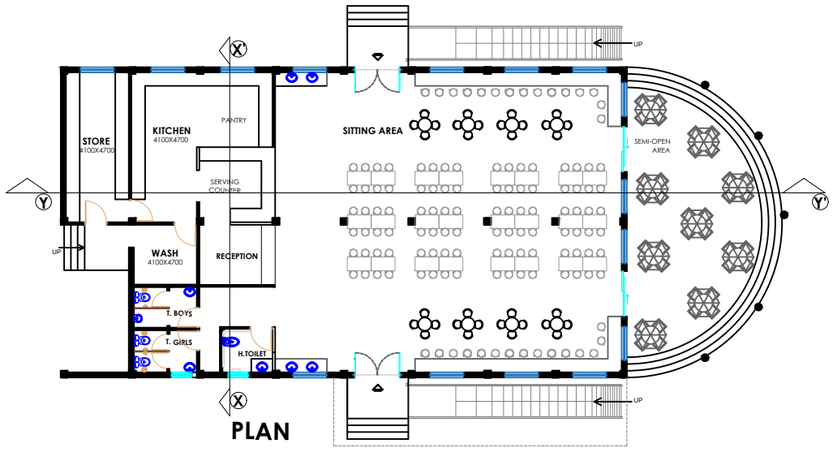
SCHOOL FOR DIFFERENTIALLY ABLED AND VOCATIONAL TRAINING CENTER

N

SCHOOL OF ARCHITECTURE AND PLANNING
BBD UNIVERSITY, LUCKNOW

KHUSHNUMA BANO
ROLL NO.-1180101022

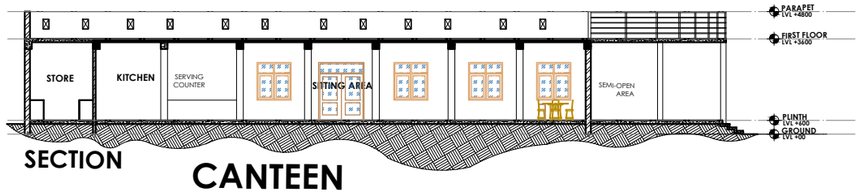
10



PLAN

RIGHT SIDE ELEVATION

FRONT ELEVATION

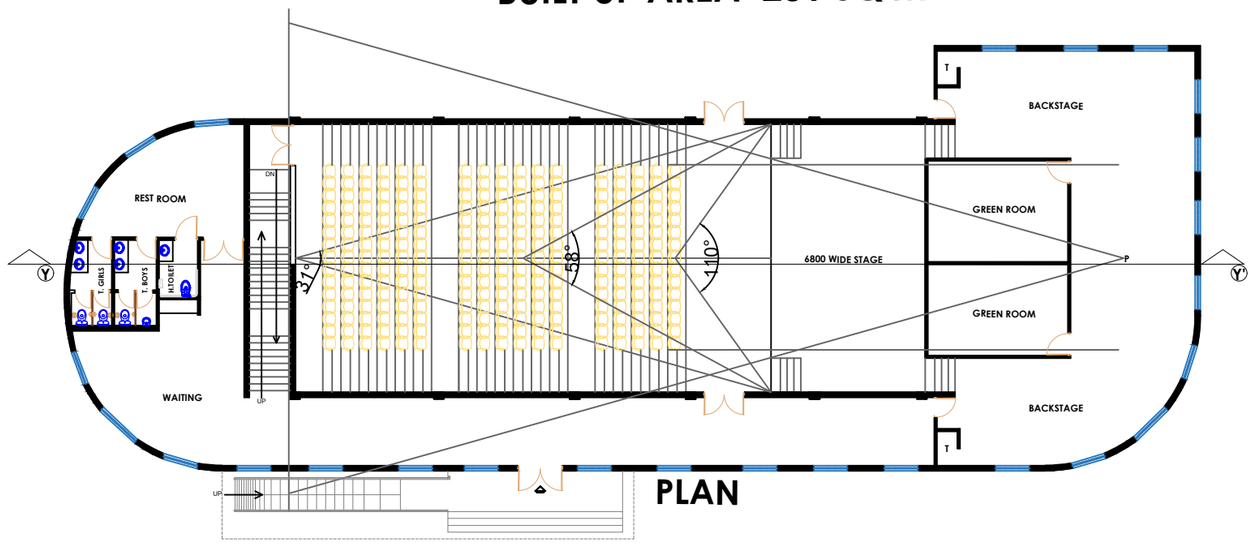


SECTION

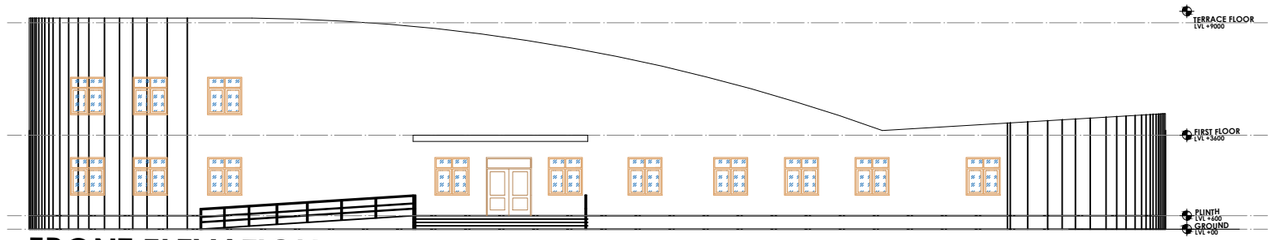
CANTEEN

CANTEEN = 836 SQ M, 200 NO., 32 OUTDOOR
MULTIPURPOSE HALL=836 SQ M, 255 NO.

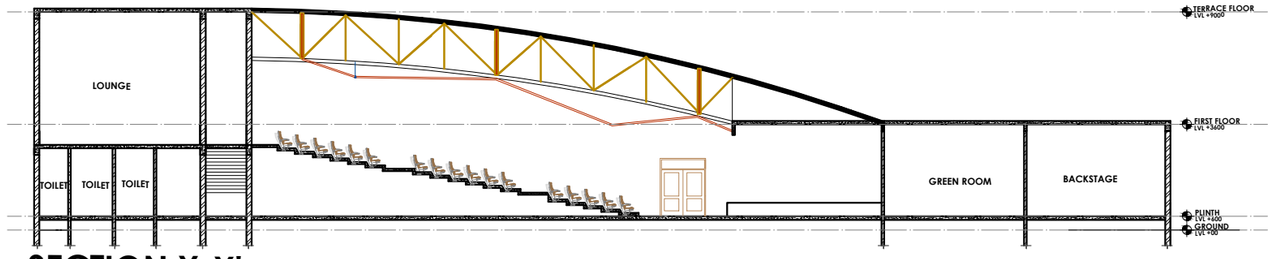
PRINCIPAL RESIDENCE=131 SQ M,
BUILT UP AREA=231 SQ M



PLAN

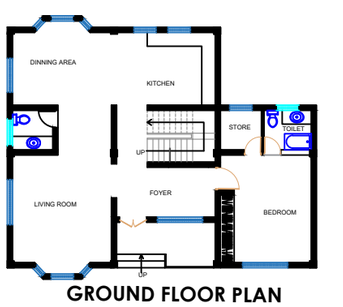


FRONT ELEVATION

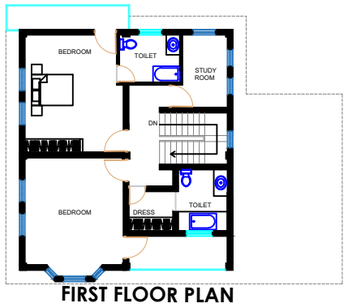


SECTION Y-Y'

MULTIPURPOSE HALL



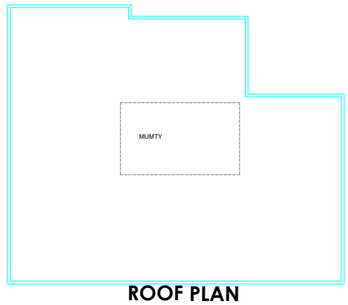
GROUND FLOOR PLAN



FIRST FLOOR PLAN

FRONT ELEVATION

PRINCIPAL'S RESIDENCE



ROOF PLAN

SCHOOL FOR DIFFERENTIALLY ABLED AND VOCATIONAL TRAINING CENTER

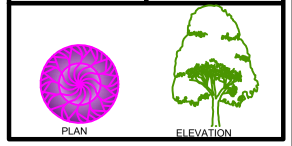
N

SCHOOL OF ARCHITECTURE AND PLANNING
BBD UNIVERSITY, LUCKNOW

KHUSHNUMA BANO
ROLL NO.-1180101022

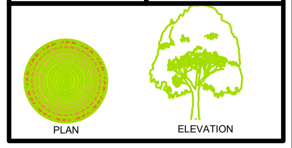
TREES LEGENDS : -

BOTINCAL NAME	SYZYGIUM CUMIM
LOCAL NAME	JAMUN
HEIGHT / SHAPE	25 TO 30MT OVAL
FOLIAGE	DARK GREEN, GLOSSY ROUND LEAVES
FLOWERING	SMALL DIRTY WHITE IN FEB-MAY, FRUIT OBLONG FLESHY DEEP PURPLE PULP
SPECIAL FEATURE	BARK IS ASTRIGENT AND USED IN SORE THROATS, ASTHMA ETC.
USES	SHADE FOR SITOUT AT YOGA HALL

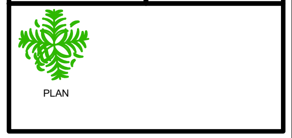


BOTINCAL NAME	AZADIRACHTA INDICA
LOCAL NAME	NEEM
HEIGHT / SHAPE	10 TO 16MT SPHERICAL
FOLIAGE	DELICATE SHINYY 20 TO 40 CMS, SCENTED
FLOWERING	YELLOW IN MAR-APR
SPECIAL FEATURE	MEDICINAL PURPOSE, SLOW GROWING
USES	SHADE FOR SITOUT

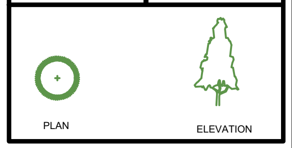
BOTINCAL NAME	DELONIX REGIA
LOCAL NAME	GULMOHAR
HEIGHT / SHAPE	10 TO 15M; UMBRELLA SHAPED
FOLIAGE	LIGHT FEATHERY 10 TO 20 CM PINNACAE
FLOWERING	SCARLET RED, ORANGE WRINKLED AT TIP, APR-JUN
SPECIAL FEATURE	EVERGREEN, QUICK GROWING
USES	EAST PERIPHERY ALONG AUDITORIUM



BOTINCAL NAME	CHRYSANTHIUM
LOCAL NAME	SADABAHAR
HEIGHT / SHAPE	40 TO 60 CM
FOLIAGE	DULL GREEN SMALL
FLOWERING	WHITE / YELLOW / PINK / PURPLE IN WINTER, NUMEROUS PETALS
SPECIAL FEATURE	
USES	ALONG EMERGENCY ROAD



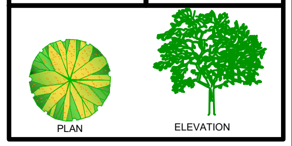
BOTINCAL NAME	MILLING TONIA HORTENSIS
LOCAL NAME	AKASH NEEM
HEIGHT / SHAPE	20MT COLUMNAR
FOLIAGE	LARGE, 50 TO 60 CM, LEAFLET 4 TO 6 CM LONG
FLOWERING	WHITE CYLINDRICAL 25 TO 30CM LONG FRANGRANCE, HT. BLOOMING IN AUTUMN AND SPRING
SPECIAL FEATURE	EVERGREEN, QUICK GROWING
USES	ALONG NORTH WEST PERIPHERY OF PREMISES



BOTINCAL NAME	PONGAMIA PINNATA
LOCAL NAME	PONGA OIL PLANT
HEIGHT / SHAPE	10 TO 12M, SPREADING
FOLIAGE	LEAVES 25CM LONG, LEAFLETS SHINY DARK GREEN
FLOWERING	ROSE OR LILAC, ABOUT 1.2CM LONG IN SHORT RACEMES IN IN AXILS OF NEW TWIGS
SPECIAL FEATURE	DECIDUOUS
USES	ALONG WEST PHERIPHERY

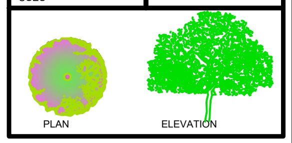
BOTINCAL NAME	HIBISCUS ROSA SINENSIS
LOCAL NAME	CHINA ROSE
HEIGHT / SHAPE	1 TO 3M
FOLIAGE	OVATE COARSELY TOOTHED
FLOWERING	LARGE WHITE / RED/ PINK / ORANGE COLOURED
SPECIAL FEATURE	USED AS HEDGE
USES	AROUND SWIMMING POOL

BOTINCAL NAME	SPATHODEA CAMPANULATA
LOCAL NAME	AMALTAS
HEIGHT / SHAPE	6 TO 10M HIGH
FOLIAGE	LIGHT FEATHERY 10 TO 20 CM PINNACAE
FLOWERING	SCARLET RED, ORANGE WRINKLED AT TIP, APR-JUN
SPECIAL FEATURE	EVERGREEN, QUICK GROWING
USES	ALONG NORTH PERIPHERY

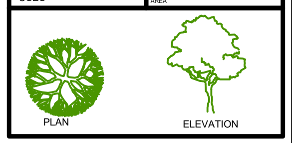


BOTINCAL NAME	CESTRUM NOCTURNUM
LOCAL NAME	QUEEN OF NIGHTS
HEIGHT / SHAPE	LARGE SHURB
FOLIAGE	LEAVES ALTERNATE OVATE, ABLONG 10.4CM LONG
FLOWERING	CREAMY WHITE LIGHTLY SCENTED, AT NIGHTS, 2CM LONG TUBULAR, BLOOM IN SUMMER AND RAIN
SPECIAL FEATURE	EVERGREEN
USES	OVER EARTH MOUNDS

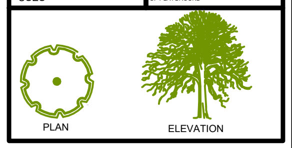
BOTINCAL NAME	CASSIA NODOSA
LOCAL NAME	PINK CASSIA
HEIGHT / SHAPE	12 TO 16M HT; UMBRELLA
FOLIAGE	20 TO 30 CM LONG LEAFS, DENSE
FLOWERING	BRIGHT PINK ON ERCT OCCURS DURIN MAR-APR
SPECIAL FEATURE	EVERGREEN
USES	SHADE FOR PARKING



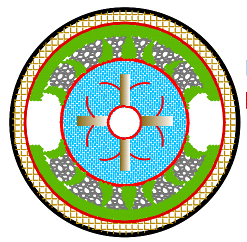
BOTINCAL NAME	ZIZYPHUS MAVITIANA
LOCAL NAME	INIDIAN JUJUBE BER
HEIGHT / SHAPE	8 TO 10 MT ROUNDED IRREGULAR CANOPY
FOLIAGE	SMALL ROUNDED GREEN SILKY LEAVES, LIGHT FOILAGE
FLOWERING	GREENISH YELLOW FLOWERS, FRUIT GREEN YELLOW, ORANGE, BROWN SCARLET AND SOUR
SPECIAL FEATURE	ACT AS WIND BREAK
USES	FOR SITOUT NEAR RECREATIONAL AREA



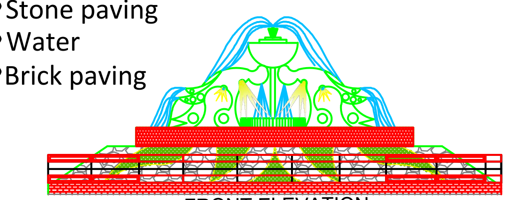
BOTINCAL NAME	FICUS BENJAMINA
LOCAL NAME	JAVAFIG
HEIGHT / SHAPE	15 TO 20 M LARGE SPREAD DROOPING BRANCHES
FOLIAGE	SMALL SHINING 5 TO 8 CM LONG LEATHERY LEAVES.
FLOWERING	MALE AND FEMALE IN SAME GLOBSE 1 TO 2CM DIA RED WHEN RIPE
SPECIAL FEATURE	EVERGREEN, GOOD SHADY TREE
USES	ALONG EAST PERIPHERY OF PLATGROUND



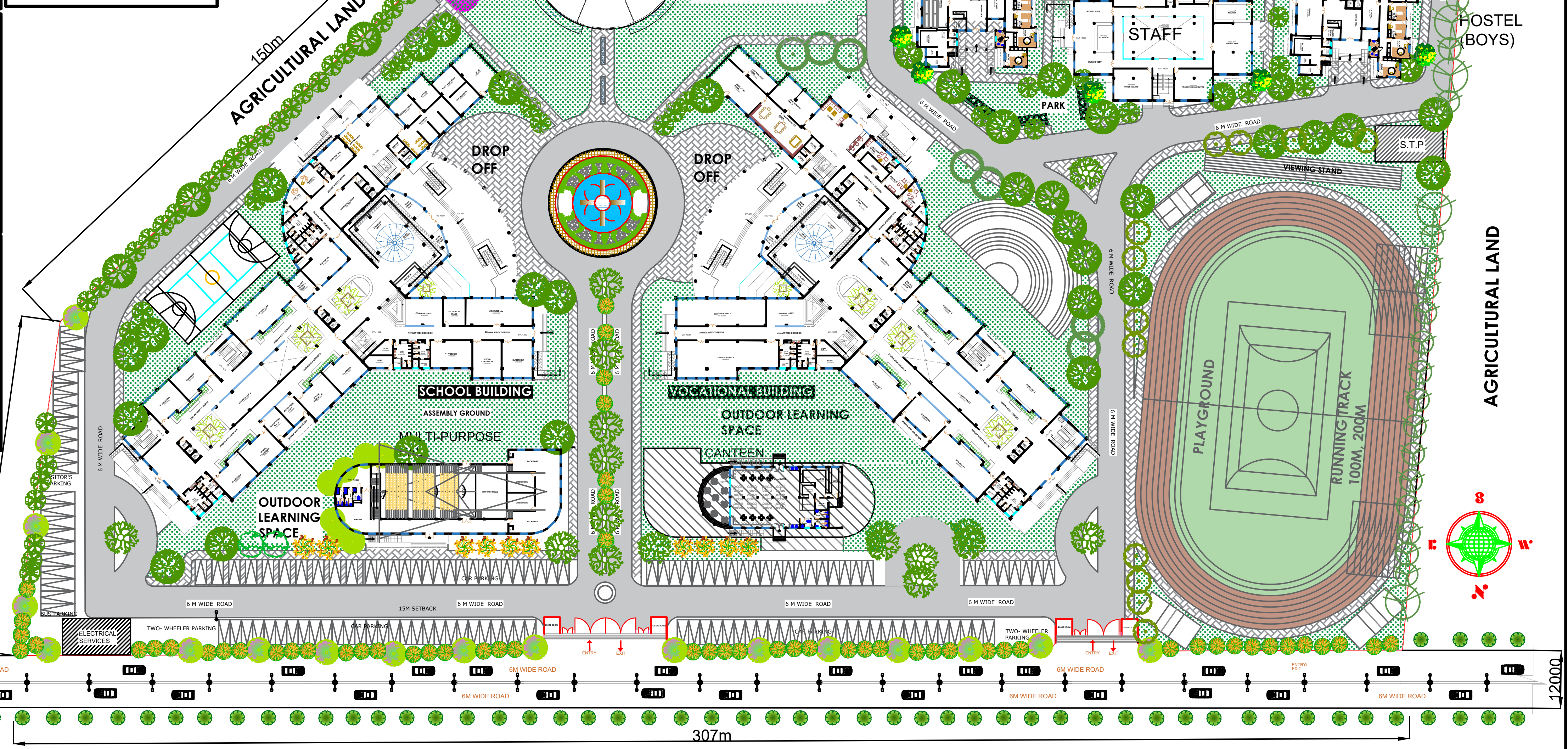
FOUNTAIN



Grass
Mud
Stone paving
Water
Brick paving



LANDSCAPE PLAN



SITE PLAN

SCHOOL FOR DIFFERENTIALLY ABLED AND VOCATIONAL TRAINING CENTER

N

SCHOOL OF ARCHITECTURE AND PLANNING
BBD UNIVERSITY, LUCKNOW

KHUSHNUMA BANO
ROLL NO.-1180101022

WATER REQUIREMENT CALCULATION : -

WATER REQUIREMENT CALCULATION			
SCHOOL	lpd/head	Users	Total lpd
DOMESTIC PURPOSES	25	1045	26,125
FLUSHING	20	1045	20,900
TOTAL			47,025
FIRE SAFETY			25,000 lts.

WATER REQUIREMENT CALCULATION			
HOSTEL	lpd/head	Users	Total lpd
DOMESTIC PURPOSES	90	180	16,200
FLUSHING	45	180	8,100
TOTAL			24,300
FIRE SAFETY			10,000 lts.

WATER REQUIREMENT CALCULATION			
CANTEEN	lpd/head	Users	Total lpd
	35	200	7,000lts

OVERHEAD WATER TANK

Water Requirements (Daily Use)	**=47,025 lpd**
Capacity of Water Tank @ 50%	=23,512.5 lts.
No. of tanks	=2
Capacity of Each Water Tank needed	=11,765.25 lts.
Dimensions of Water Tank	=3.2X2X2m
Volume of Water Tank	=12.8 cubicm.
Capacity of Each Water Tank provided	=12,800 lts.
Total Water Stored	=25,600 lts.

Capacity of Water Tank(Fire Safety)O.H.T **=25,000 lts.**

Capacity of Water Tank @ 100%	=25,000 lts.
No. of tanks	=2
Capacity of Each Water Tank needed	=12,500 lts.
Dimensions of Water Tank	=3.2X2X2m
Volume of Water Tank	=12.8 cubicm.
Capacity of Each Water Tank provided	=12,800 lts.
Total Water Stored	=25,600 lts.

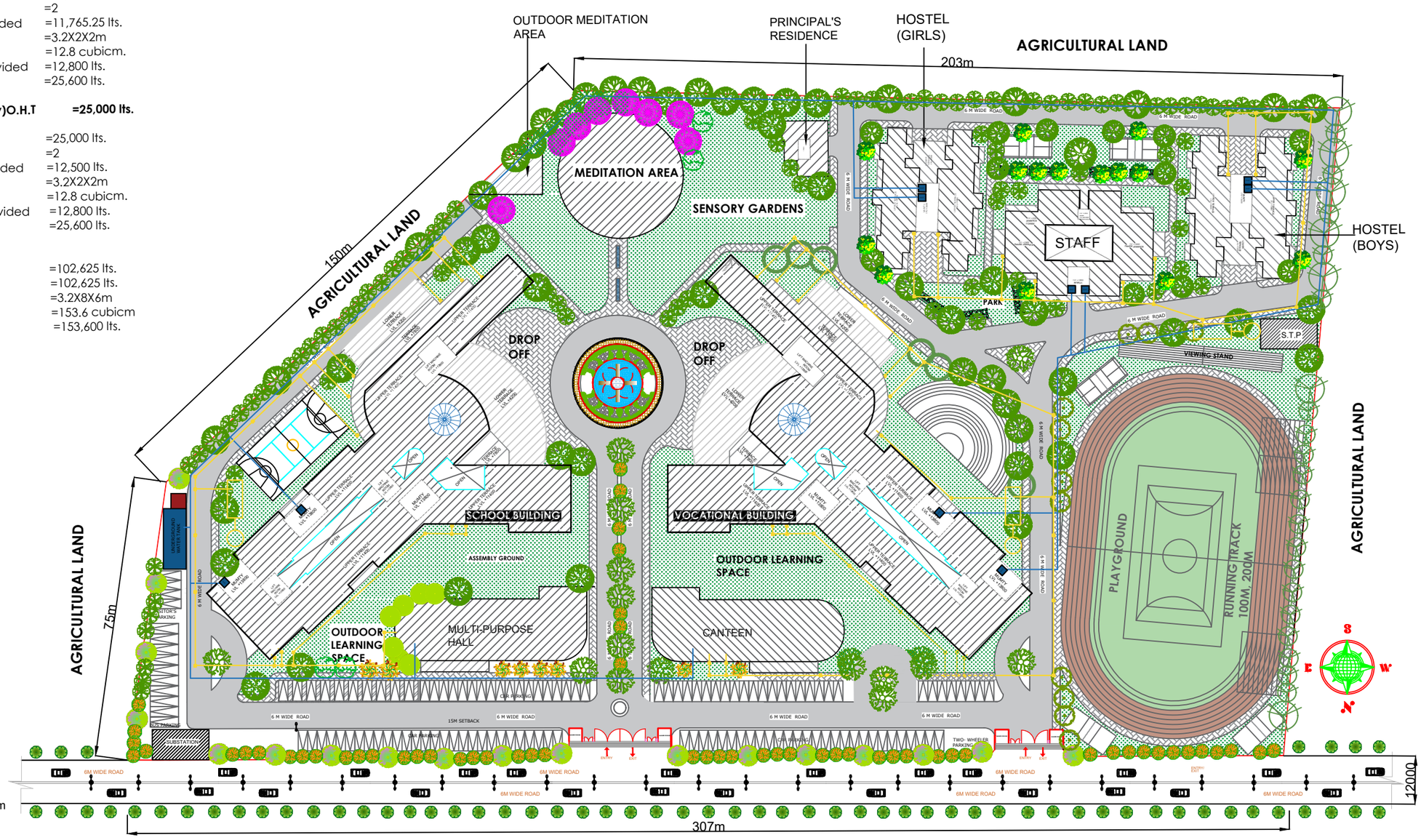
Underground Water Tank

Water Requirement (Daily Use)	=102,625 lts.
Capacity of Water Tank @ 100%	=102,625 lts.
Dimensions of Water Tank	=3.2X8X6m
Volume of Water Tank	=153.6 cubicm
Total Water Stored	=153,600 lts.

PLUMBING, WATER SUPPLY & R.W.H PLAN

SEPTIC TANK CALCULATION:
TOTAL WASTE WATER COMING TO SEPTIC TANK=200X1045X0.8=167,200 L/DAY
DETENTION PERIOD=18HRS
CAPACITY OF TANK REQ.=(167,200/24)X18=125,400 L
CAPACITY REQ. FOR SLUDGE ACCUMULATION=1045X30=31,350 L/YR
TOTAL CAPACITY REQ.=125,400+31,350=156,750L
THEREFORE, VOLUME OF SEPTIC TANK=156.8 cu.m
AS THE HEIGHT OF SEPTIC TANK IS 4M(CONSIDERED)=156.8/4=39.2~40 sqm
NOW, THE AREA OF THE TANK=CONSIDERING TANKRATIO OF 1:4
THEREFORE, SIZE OF THE SEPTIC TANK=4x4x10m

SOAK PIT CALCULATION:
WASTE WATER COMING FROM SEPTIC TANK=167,200 L/DAY
PERCOLATE RATE= 1500 L/CU.M/DAY
VOLUME OF FILTER MEDIA=167,200/1500=111.5 cu.m
DEPTH TAKEN=3M
AREA OF SOAK PIT=111.5/3=37.2 sq m
RADIUS OF SOAK WELL REQIRED=37.2/(2x3.14)=4m



LEGENDS

- SEPTIC TANK
- SOAK PIT
- INSPECTION CHAMBER
- SEWER PIPE 75mm,100mm
- WATER INLET PIPE
- UNDERGROUND WATER TANK
- FIRE WATER TANK

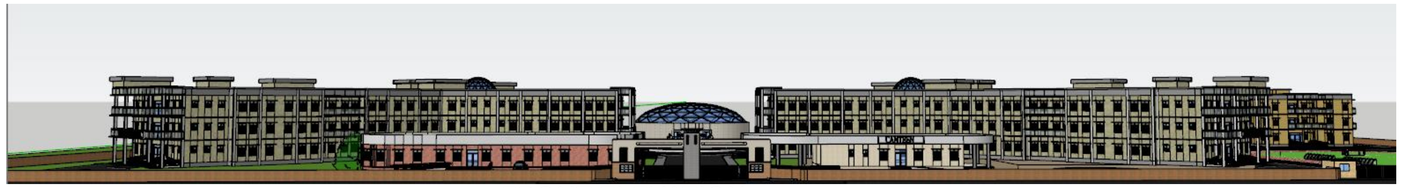
SCHOOL FOR DIFFERENTIALLY ABLED AND VOCATIONAL TRAINING CENTER

N

SCHOOL OF ARCHITECTURE AND PLANNING
BBD UNIVERSITY, LUCKNOW

KHUSHNUMA BANO
ROLL NO.-1180101022

3D VIEWS



FRONT ELEVATION

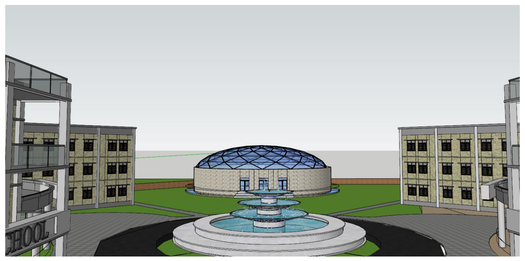
EAST SIDE ELEVATION

MAIN GATE

ADMIN BLOCK

PRINCIPAL'S RESIDENCE

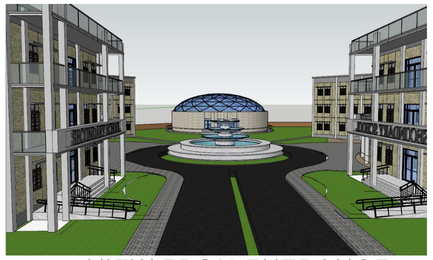
WEST SIDE ELEVATION



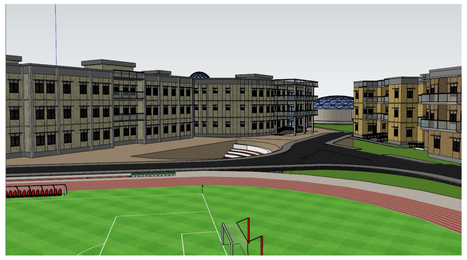
FOUNTAIN

O.A.T

PLAYGROUND

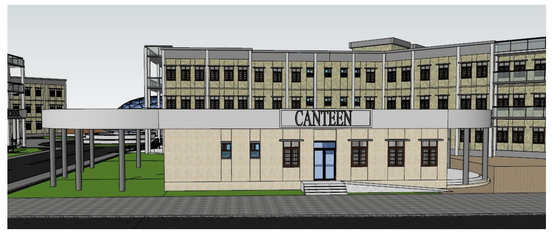


VIEW FROM ENTRANCE

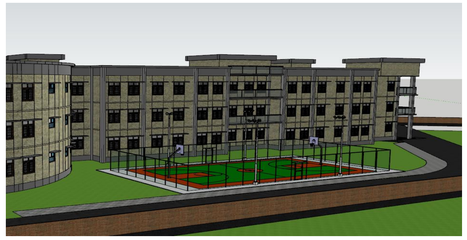


VIEW FROM PLAYGROUND

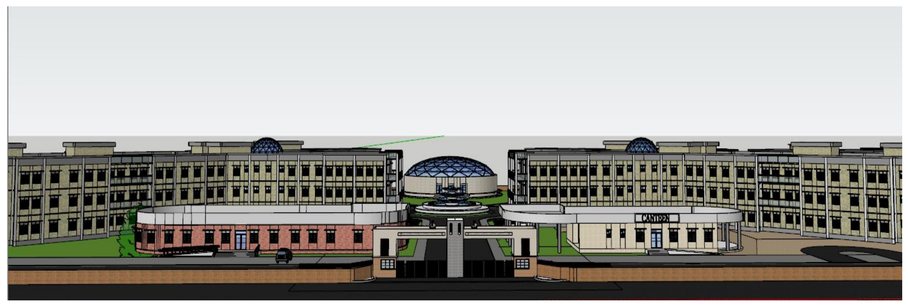
MULTIPURPOSE HALL



CANTEEN



BASKETBALL COURT

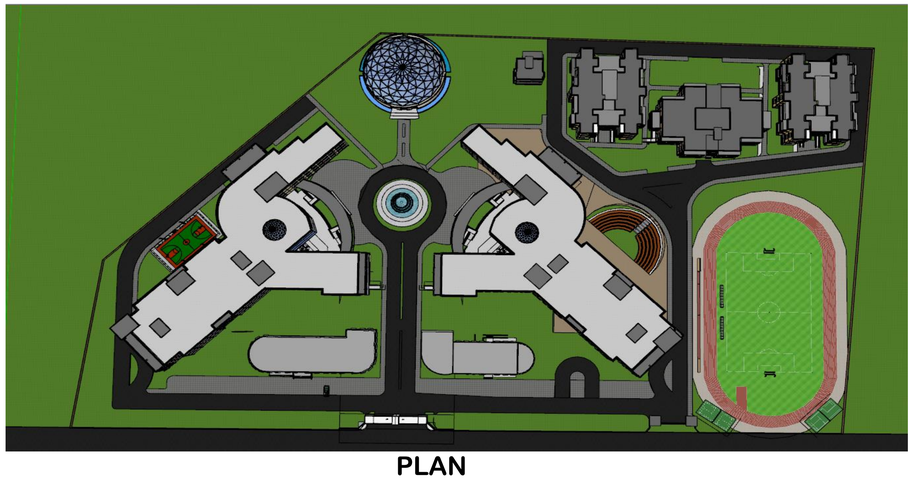


VIEW FROM ROAD

STAFF QUARTERS

GIRL'S HOSTEL

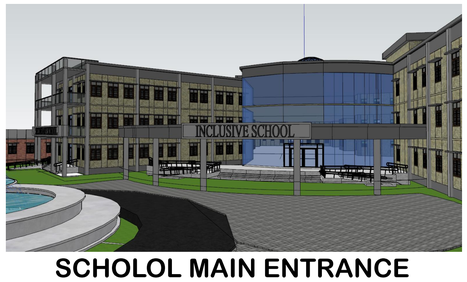
BOY'S HOSTEL



PLAN

PRIMARY SCHOOL ENTRANCE

SECONDARY SCHOOL ENTRANCE



SCHOLOL MAIN ENTRANCE

SCHOOL FOR DIFFERENTIALLY ABLED AND VOCATIONAL TRAINING CENTER

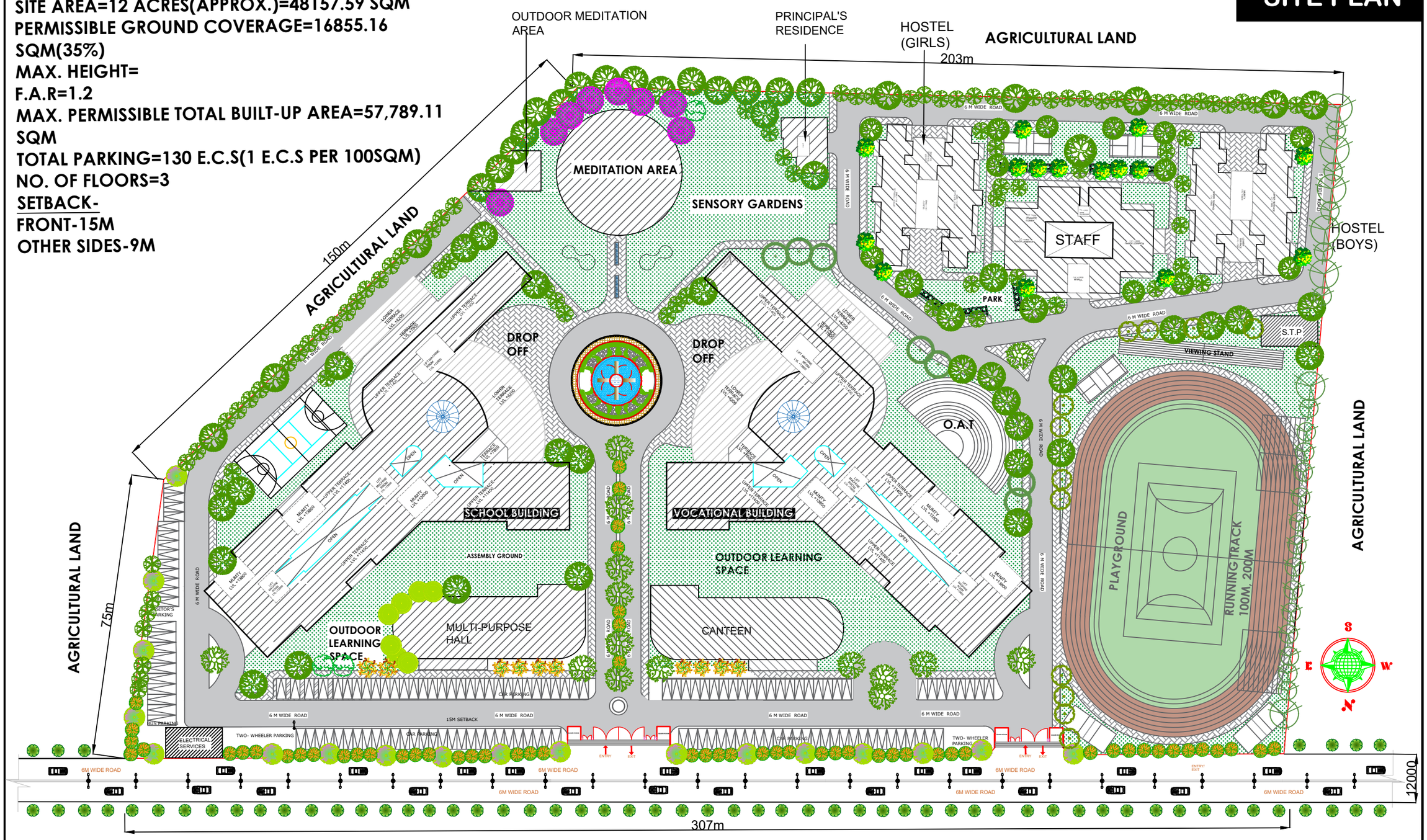
N

SCHOOL OF ARCHITECTURE AND PLANNING
BBD UNIVERSITY, LUCKNOW

KHUSHNUMA BANO
ROLL NO.-1180101022

SITE PLAN

SITE AREA=12 ACRES(APPROX.)=48157.59 SQM
PERMISSIBLE GROUND COVERAGE=16855.16 SQM(35%)
MAX. HEIGHT=
F.A.R=1.2
MAX. PERMISSIBLE TOTAL BUILT-UP AREA=57,789.11 SQM
TOTAL PARKING=130 E.C.S(1 E.C.S PER 100SQM)
NO. OF FLOORS=3
SETBACK-
FRONT-15M
OTHER SIDES-9M



SITE PLAN

SCHOOL FOR DIFFERENTIALLY ABLED AND VOCATIONAL TRAINING CENTER

N

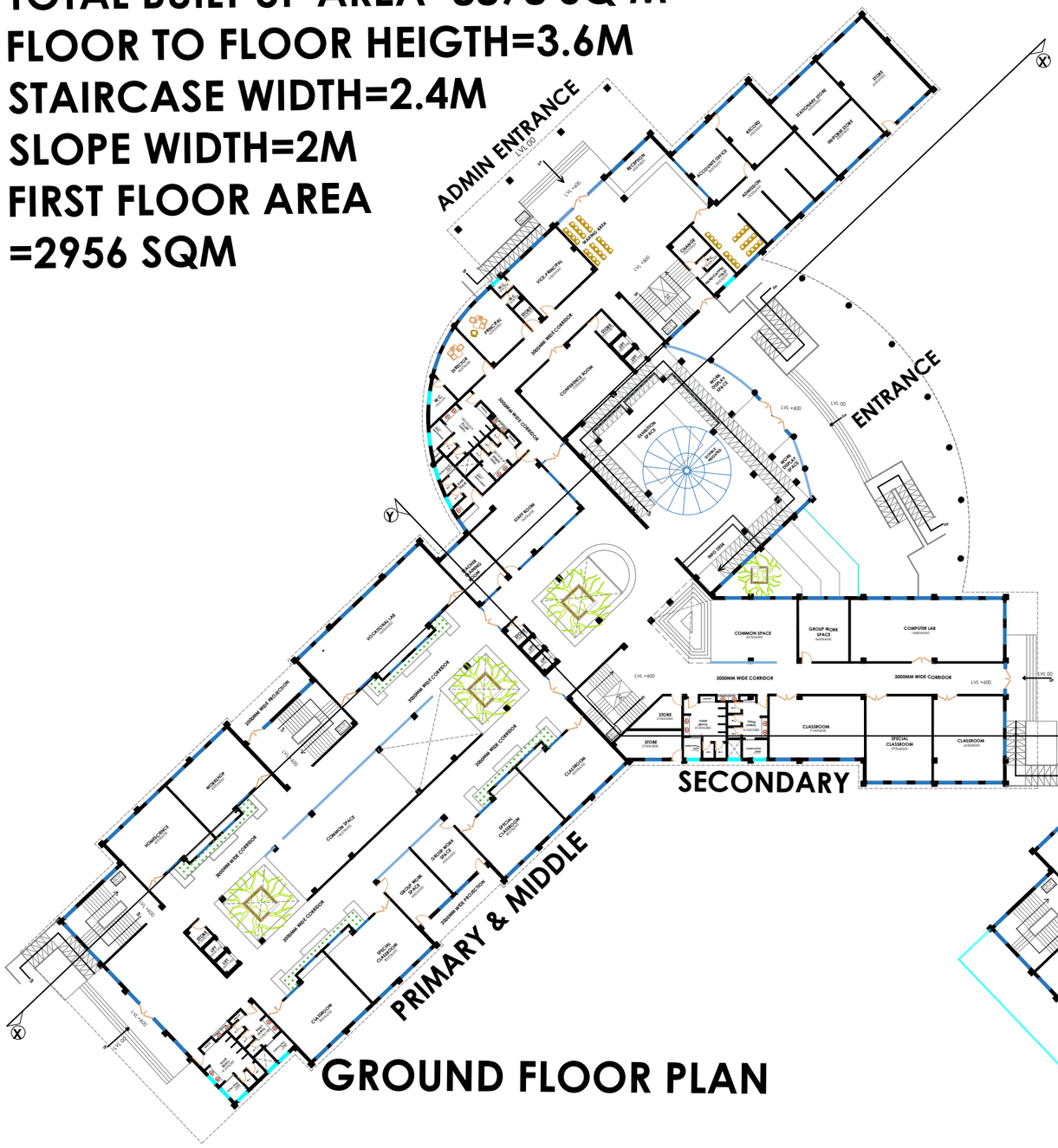
SCHOOL OF ARCHITECTURE AND PLANNING
BBD UNIVERSITY, LUCKNOW

KHUSHNUMA BANO
ROLL NO.-1180101022

01

PLAN

GROUND COVERAGE=3095 SQM
TOTAL BUILT UP AREA=8878 SQ M
FLOOR TO FLOOR HEIGTH=3.6M
STAIRCASE WIDTH=2.4M
SLOPE WIDTH=2M
FIRST FLOOR AREA =2956 SQM



GROUND FLOOR PLAN

FIRST FLOOR PLAN

SCHOOL BUILDING

SCHOOL FOR DIFFERENTIALLY ABLED AND VOCATIONAL TRAINING CENTER

N

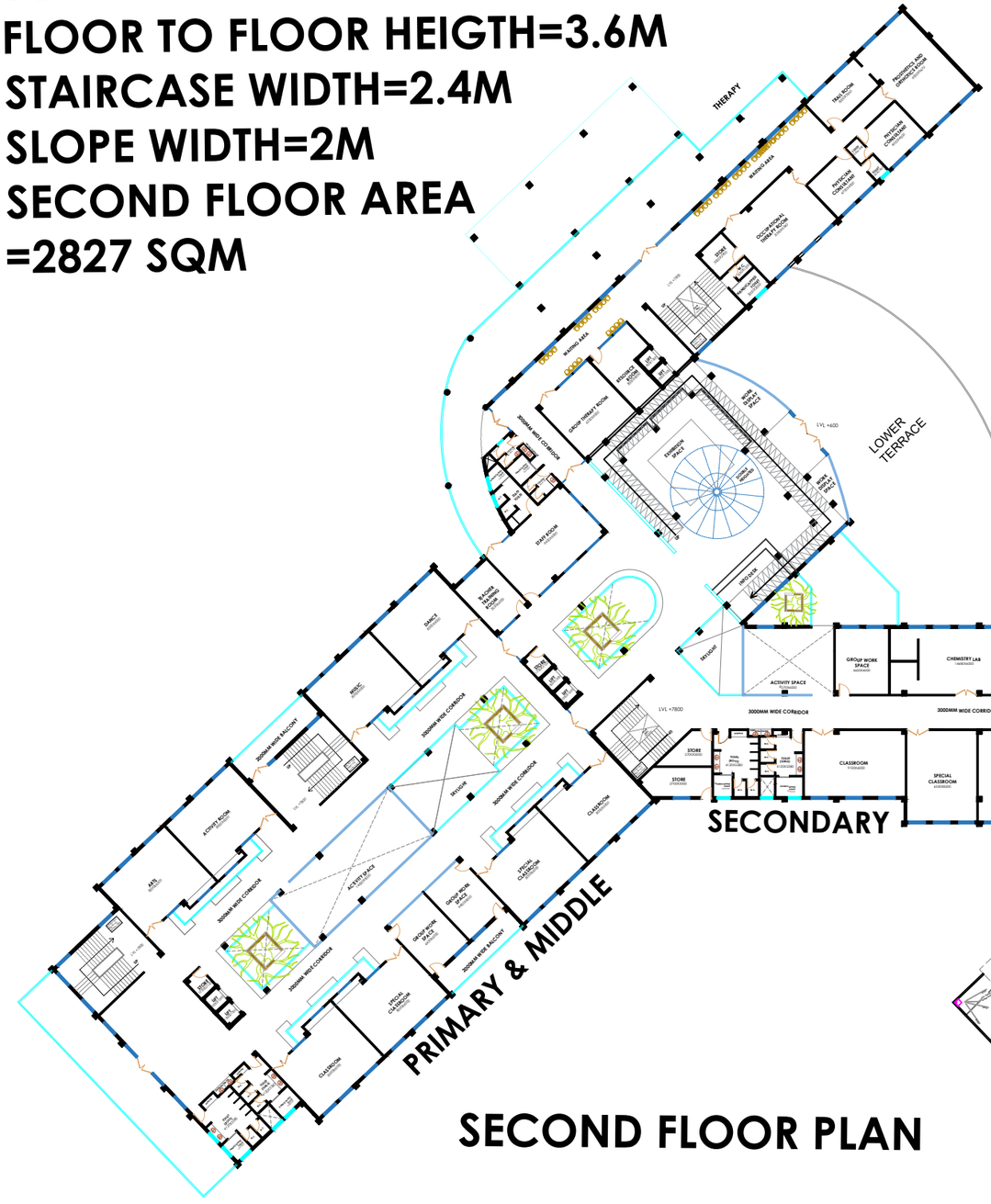
SCHOOL OF ARCHITECTURE AND PLANNING
BBD UNIVERSITY, LUCKNOW

KHUSHNUMA BANO
ROLL NO.-1180101022

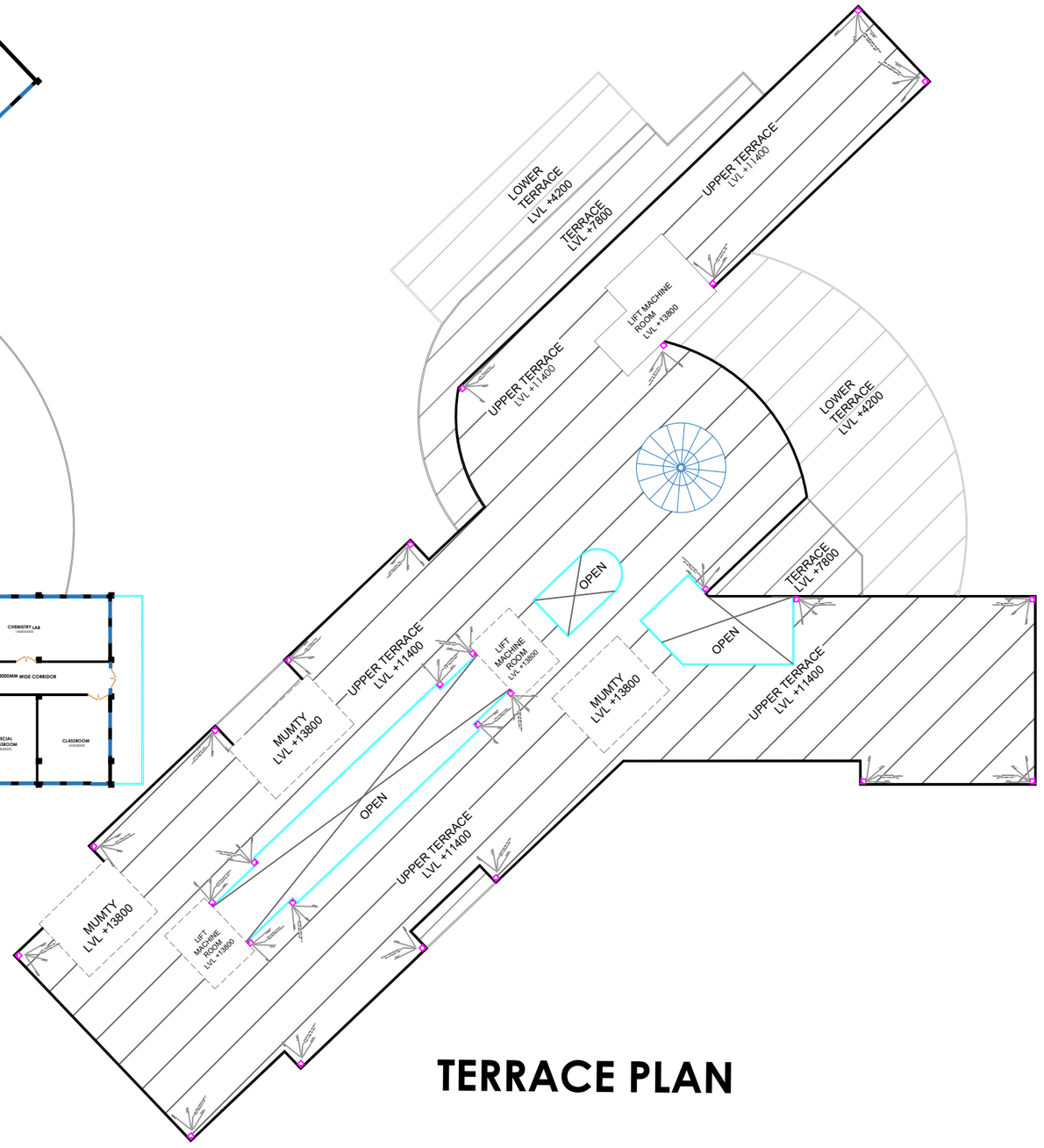
02

PLAN

GROUND COVERAGE=3095 SQM
TOTAL BUILT UP AREA=8911 SQ M
FLOOR TO FLOOR HEIGTH=3.6M
STAIRCASE WIDTH=2.4M
SLOPE WIDTH=2M
SECOND FLOOR AREA =2827 SQM



SECOND FLOOR PLAN



TERRACE PLAN

SCHOOL BULDING

SCHOOL FOR DIFFERENTIALLY ABLED AND VOCATIONAL TRAINING CENTER

N

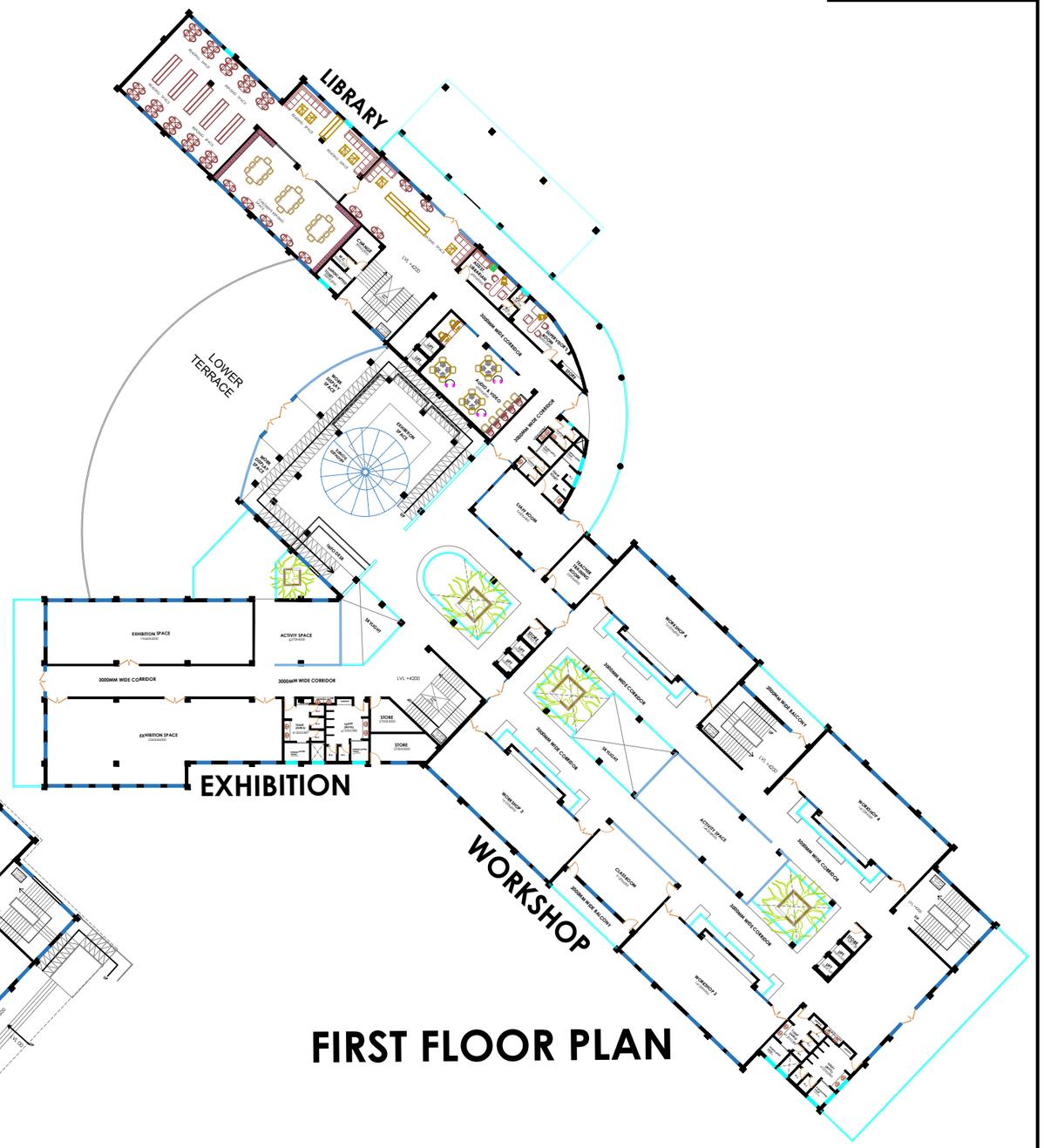
SCHOOL OF ARCHITECTURE AND PLANNING
BBD UNIVERSITY, LUCKNOW

KHUSHNUMA BANO
ROLL NO.-1180101022

03

PLAN

GROUND FLOOR PLAN



FIRST FLOOR PLAN

VOCATIONAL BLOCK

SCHOOL FOR DIFFERENTIALLY ABLED AND VOCATIONAL TRAINING CENTER

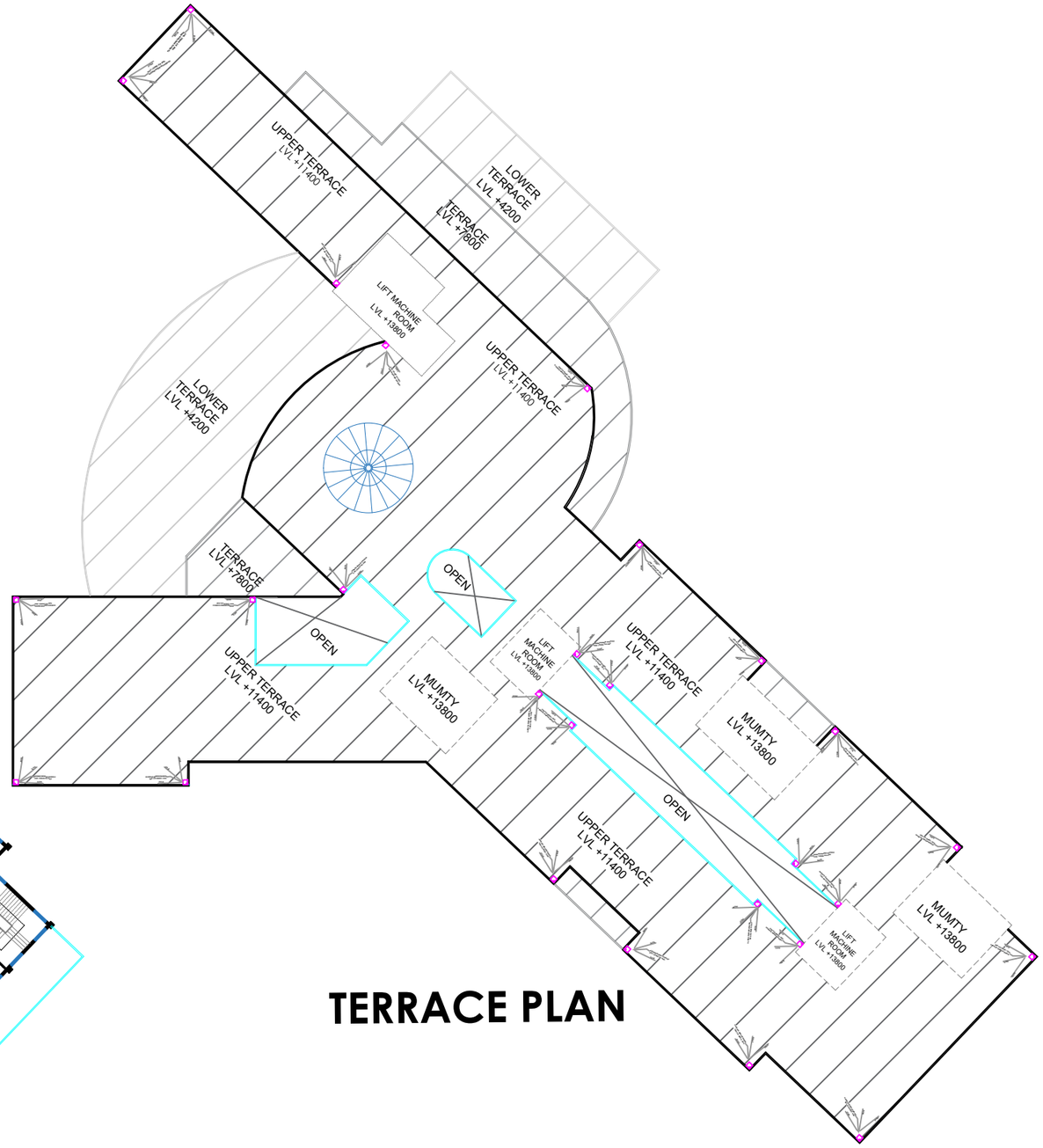
N

SCHOOL OF ARCHITECTURE AND PLANNING
BBD UNIVERSITY, LUCKNOW

KHUSHNUMA BANO
ROLL NO.-1180101022

PLAN

SECOND FLOOR PLAN



TERRACE PLAN

VOCATIONAL BLOCK

SCHOOL FOR DIFFERENTIALLY ABLED AND VOCATIONAL TRAINING CENTER

N

SCHOOL OF ARCHITECTURE AND PLANNING
BBD UNIVERSITY, LUCKNOW

KHUSHNUMA BANO
ROLL NO.-1180101022

05

ELEVATION

NORTH SIDE ELEVATION

SOUTH SIDE ELEVATION

EAST SIDE ELEVATION

WEST SIDE ELEVATION

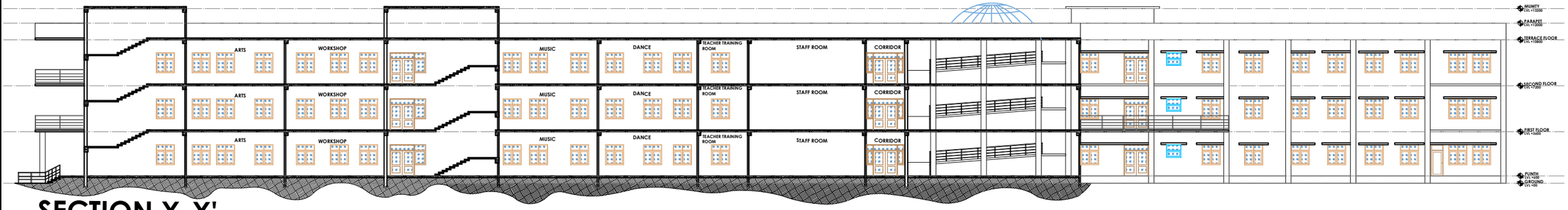
SCHOOL FOR DIFFERENTIALLY ABLED AND VOCATIONAL TRAINING CENTER

N

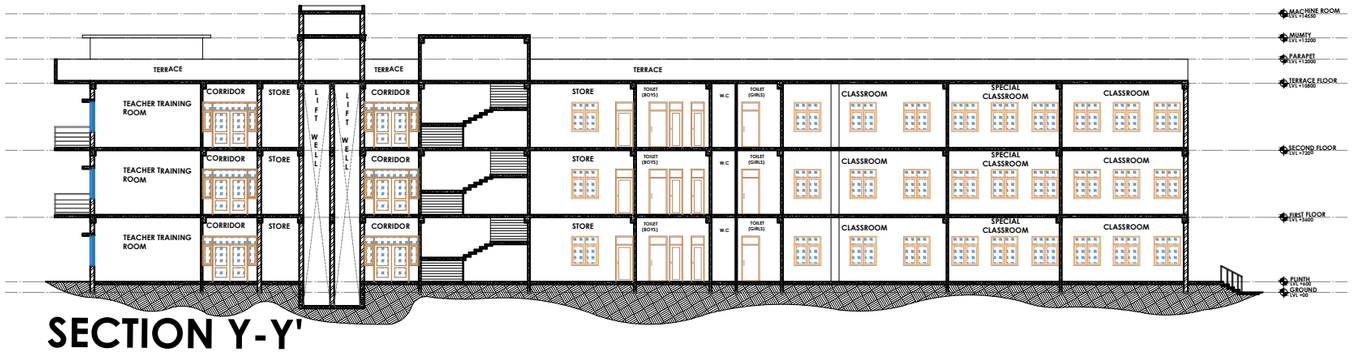
SCHOOL OF ARCHITECTURE AND PLANNING
BBD UNIVERSITY, LUCKNOW

KHUSHNUMA BANO
ROLL NO.-1180101022

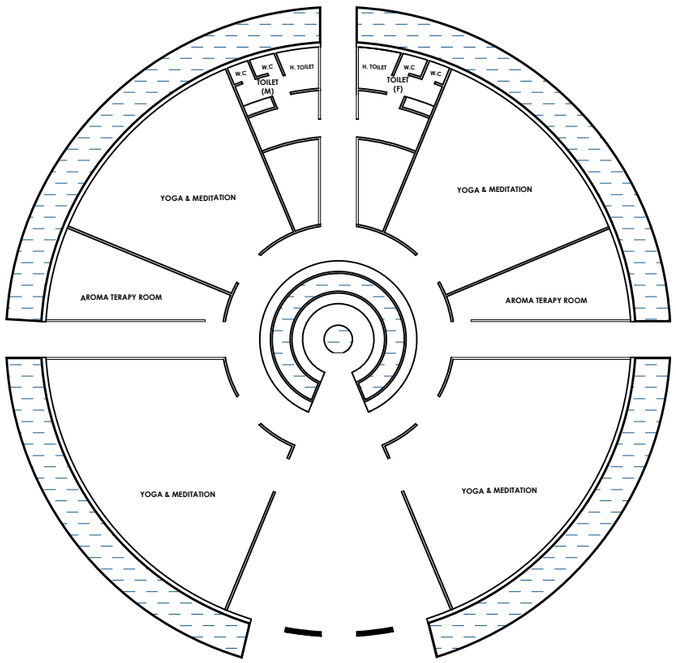
SECTION



SECTION X-X'



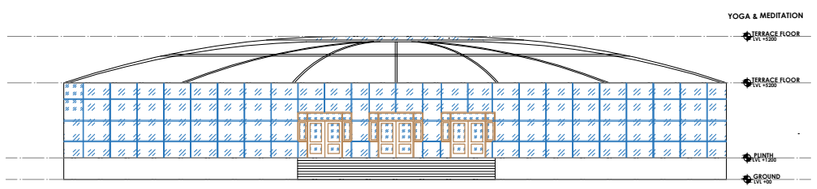
SECTION Y-Y'



PLAN

GROUND COVERAGE=3095 SQM
TOTAL BUILT UP AREA=8878 SQ M
FLOOR TO FLOOR HEIGTH=3.6M
STAIRCASE WIDTH=2.4M
SLOPE WIDTH=2M
FIRST FLOOR AREA =2956 SQM
MEDITATION HALL AREA=870 SQ M

MEDITATION HALL



FRONT ELEVATION

SCHOOL FOR DIFFERENTIALLY ABLED AND VOCATIONAL TRAINING CENTER

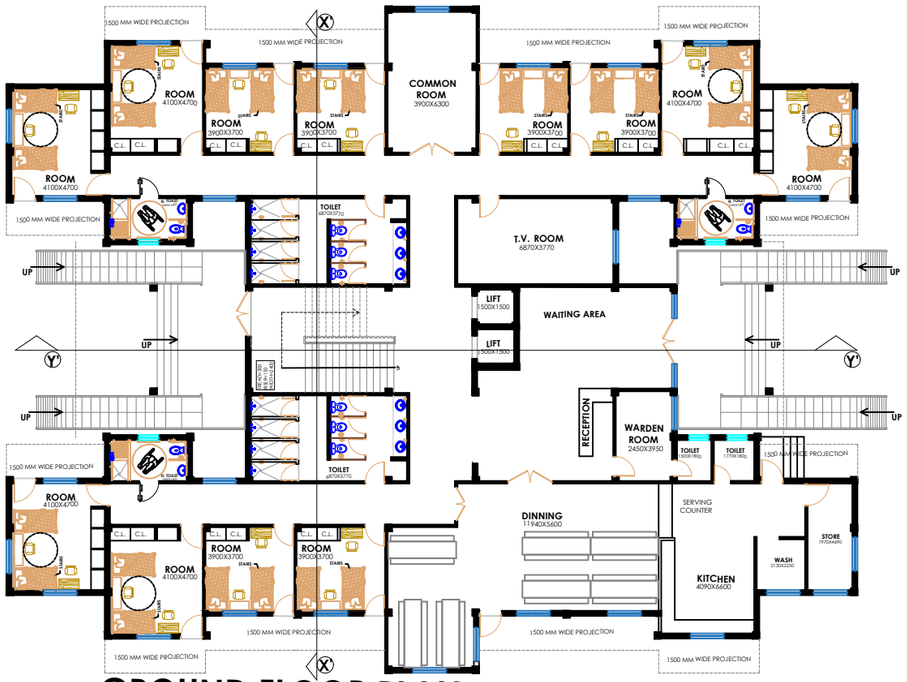
N

SCHOOL OF ARCHITECTURE AND PLANNING
BBD UNIVERSITY, LUCKNOW

KHUSHNUMA BANO
ROLL NO.-1180101022

07

GIRL'S HOSTEL



GROUND FLOOR PLAN

TERRACE PLAN

GROUND COVERAGE =713 SQM
BUILT UP AREA= 2139 SQ M
FOR 176 PERSONS
44 HANDICAP

TYPICAL FLOOR PLAN

FRONT ELEVATION

RIGHT SIDE ELEVATION

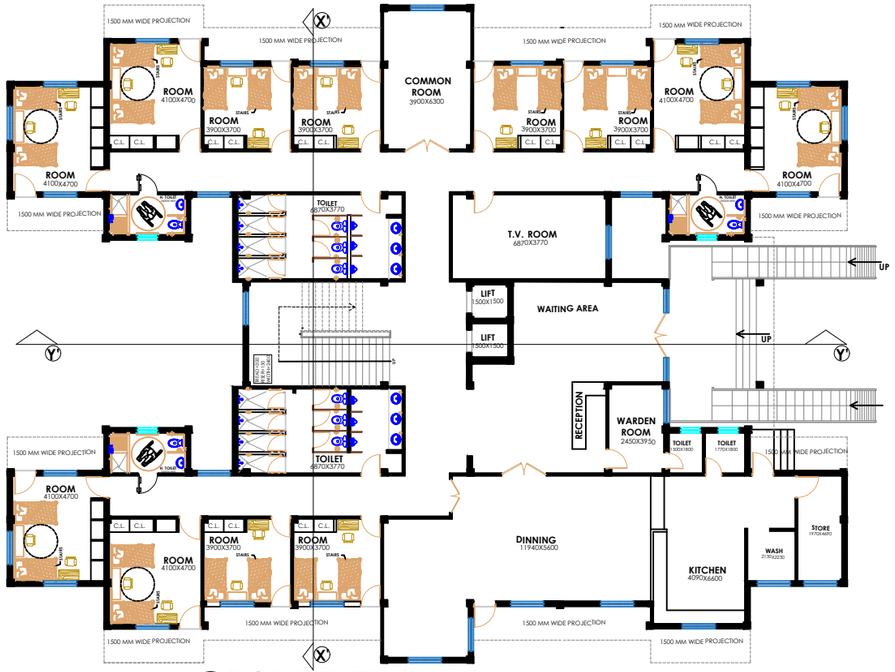
SCHOOL FOR DIFFERENTIALLY ABLED AND VOCATIONAL TRAINING CENTER

N

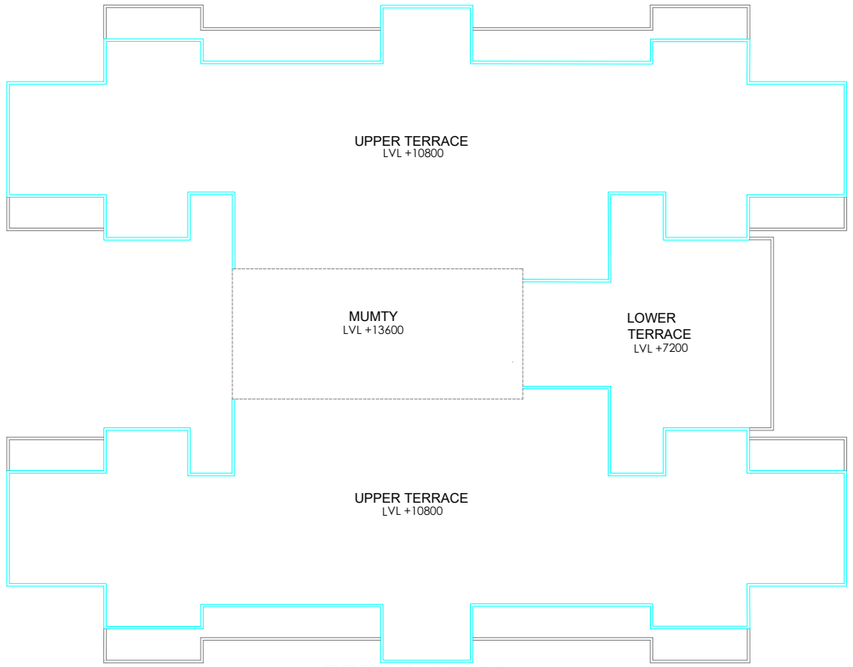
SCHOOL OF ARCHITECTURE AND PLANNING
BBD UNIVERSITY, LUCKNOW

KHUSHNUMA BANO
ROLL NO.-1180101022

BOY'S HOSTEL

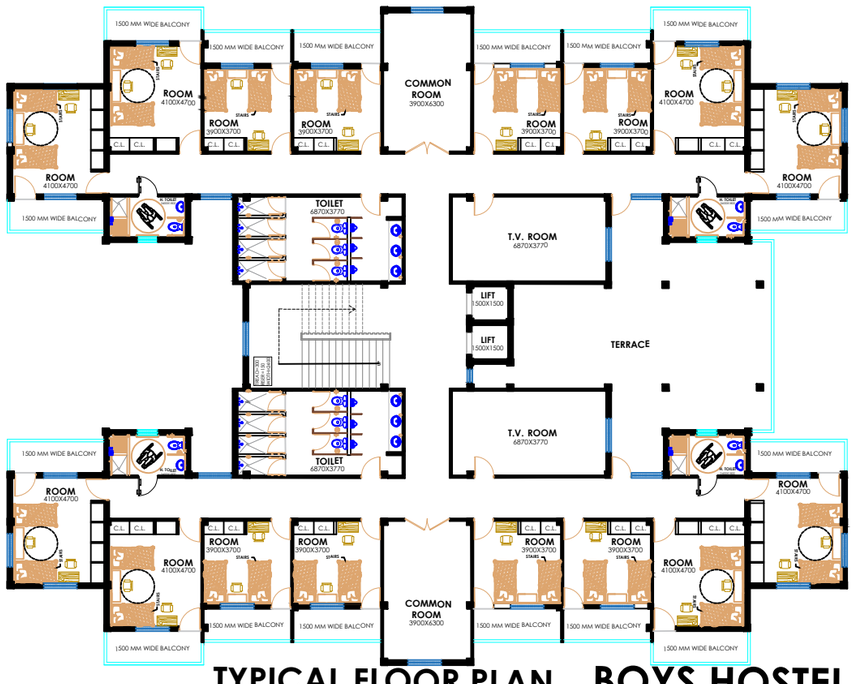


GROUND FLOOR PLAN



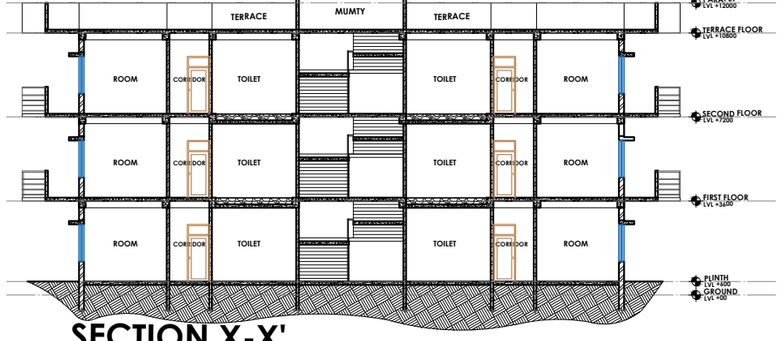
TERRACE PLAN

GROUND COVERAGE =713 SQM
BUILT UP AREA= 2139 SQ M
FOR 176 PERSONS
44 HANDICAP

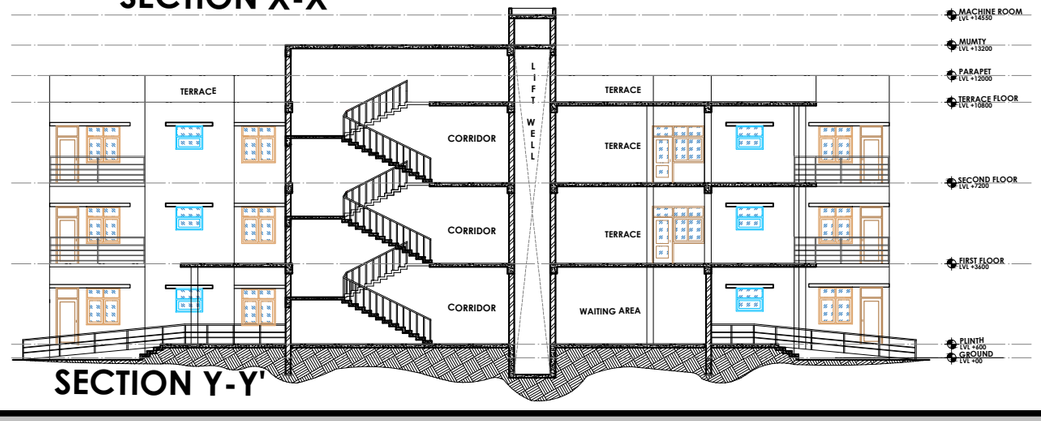


TYPICAL FLOOR PLAN

BOYS HOSTEL



SECTION X-X'



SECTION Y-Y'

SCHOOL FOR DIFFERENTIALLY ABLED AND VOCATIONAL TRAINING CENTER

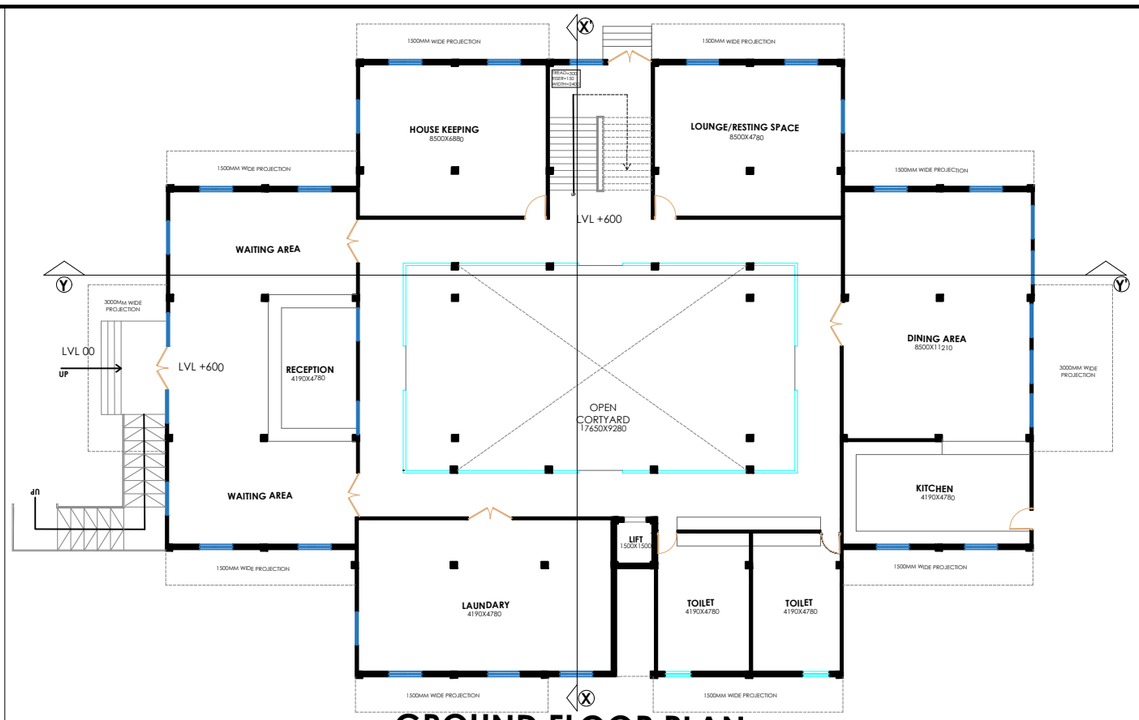
N

SCHOOL OF ARCHITECTURE AND PLANNING
BBD UNIVERSITY, LUCKNOW

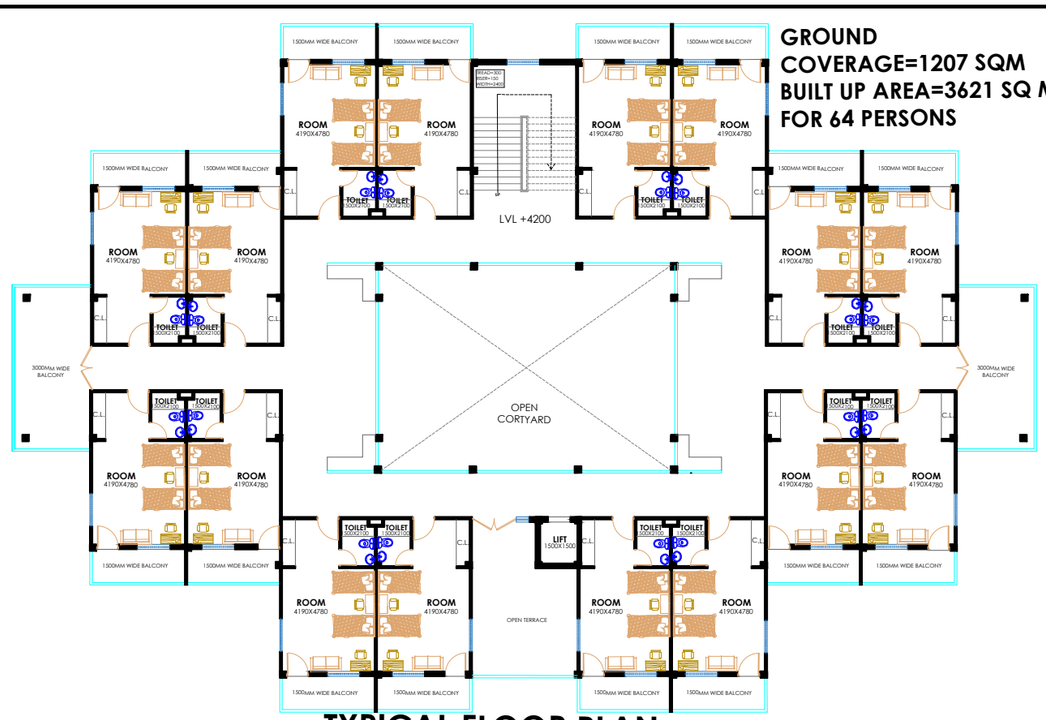
KHUSHNUMA BANO
ROLL NO.-1180101022

09

STAFF QUARTER

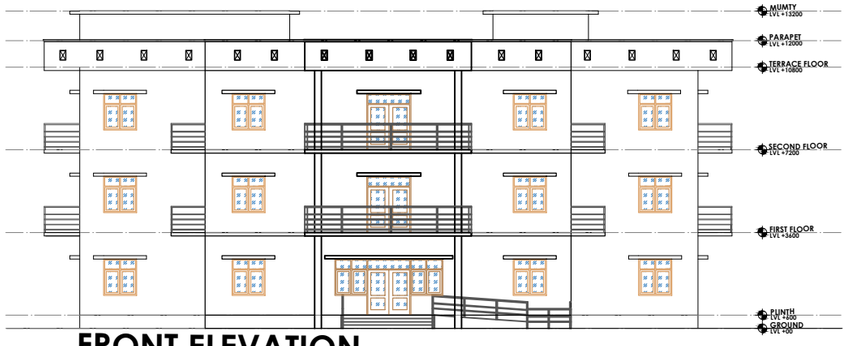


GROUND FLOOR PLAN



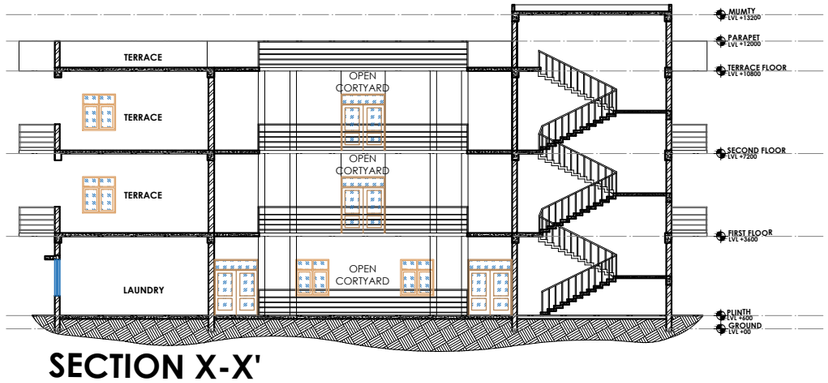
TYPICAL FLOOR PLAN

GROUND
COVERAGE=1207 SQM
BUILT UP AREA=3621 SQ M
FOR 64 PERSONS

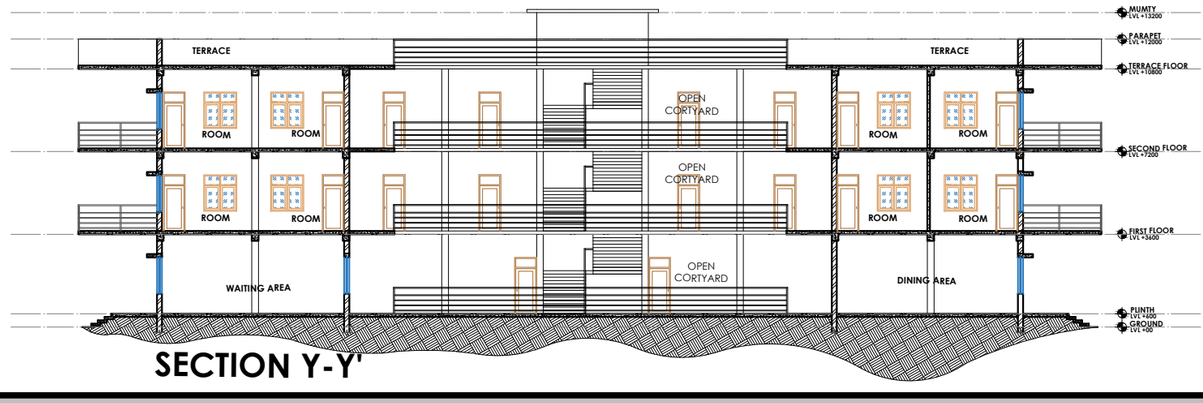


FRONT ELEVATION

RIGHT SIDE ELEVATION



SECTION X-X'



SECTION Y-Y'

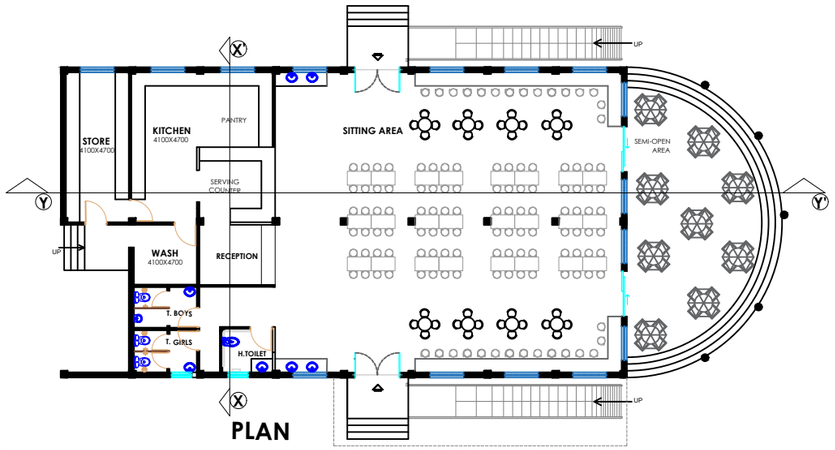
SCHOOL FOR DIFFERENTIALLY ABLED AND VOCATIONAL TRAINING CENTER

N

SCHOOL OF ARCHITECTURE AND PLANNING
BBD UNIVERSITY, LUCKNOW

KHUSHNUMA BANO
ROLL NO.-1180101022

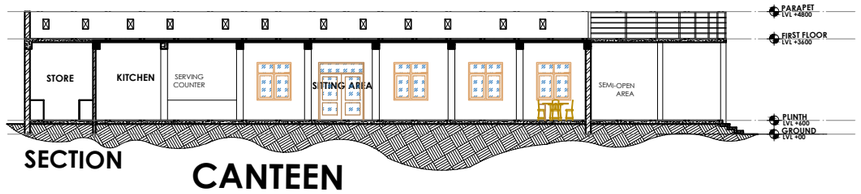
10



PLAN

RIGHT SIDE ELEVATION

FRONT ELEVATION

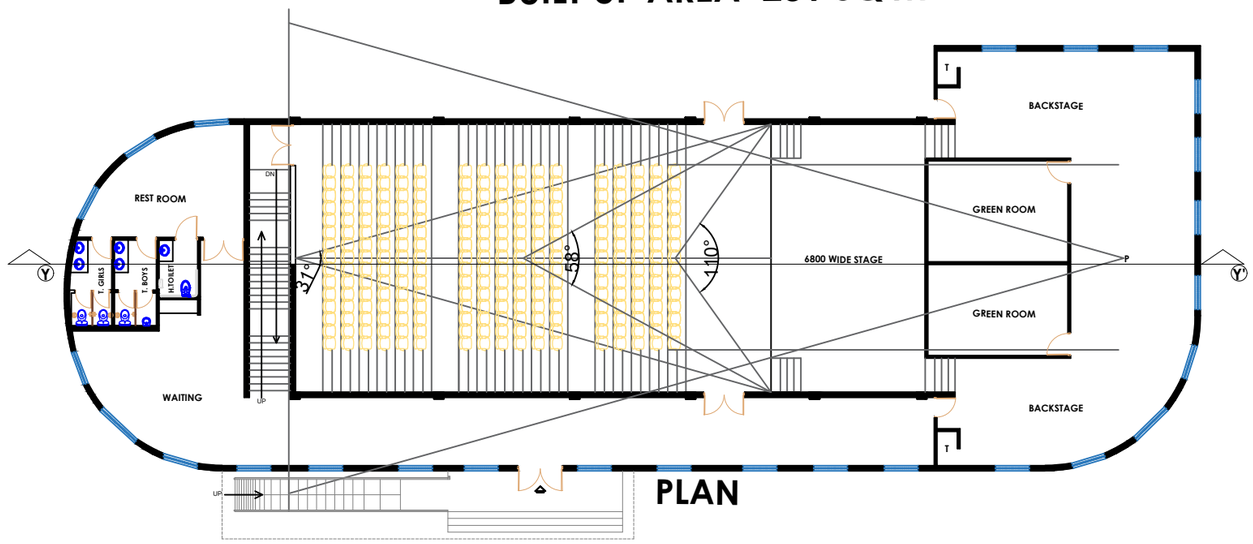


SECTION

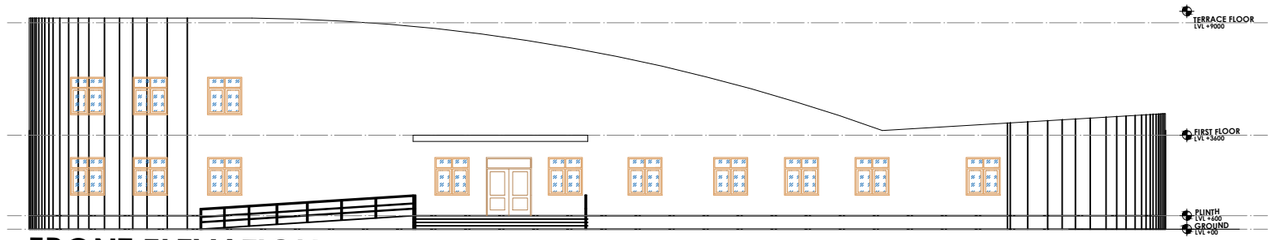
CANTEEN

CANTEEN = 836 SQ M, 200 NO., 32 OUTDOOR
MULTIPURPOSE HALL=836 SQ M, 255 NO.

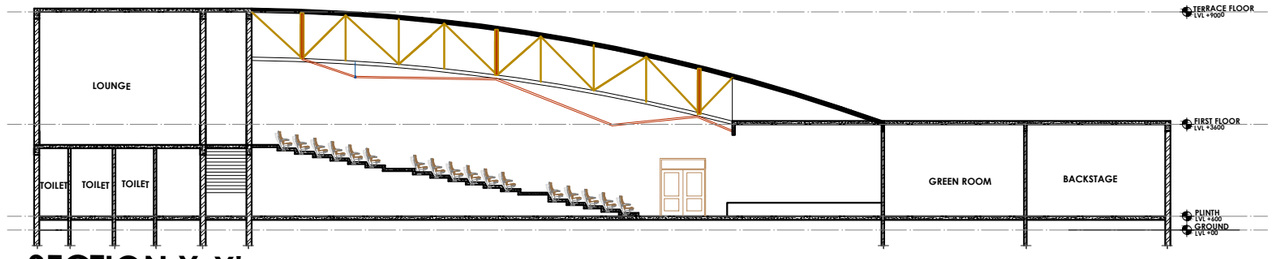
PRINCIPAL RESIDENCE=131 SQ M,
BUILT UP AREA=231 SQ M



PLAN

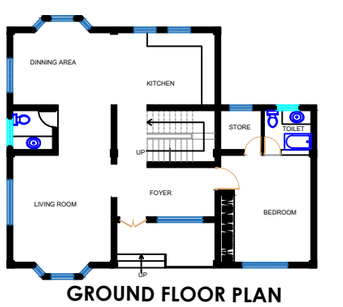


FRONT ELEVATION

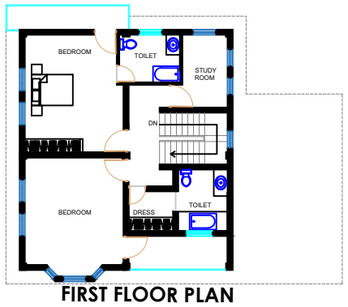


SECTION Y-Y'

MULTIPURPOSE HALL



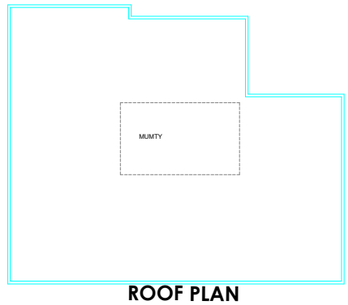
GROUND FLOOR PLAN



FIRST FLOOR PLAN

FRONT ELEVATION

PRINCIPAL'S RESIDENCE



ROOF PLAN

SCHOOL FOR DIFFERENTIALLY ABLED AND VOCATIONAL TRAINING CENTER

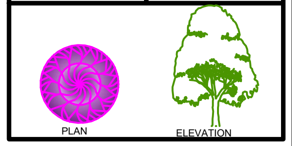
N

SCHOOL OF ARCHITECTURE AND PLANNING
BBD UNIVERSITY, LUCKNOW

KHUSHNUMA BANO
ROLL NO.-1180101022

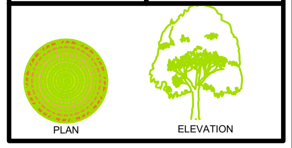
TREES LEGENDS : -

BOTINCAL NAME	SYZYGIUM CUMIM
LOCAL NAME	JAMUN
HEIGHT / SHAPE	25 TO 30MT OVAL
FOLIAGE	DARK GREEN, GLOSSY ROUND LEAVES
FLOWERING	SMALL DIRTY WHITE IN FEB-MAY, FRUIT OBLONG FLESHY DEEP PURPLE PULP
SPECIAL FEATURE	BARK IS ASTRIGENT AND USED IN SORE THROATS, ASTHMA ETC.
USES	SHADE FOR SITOUT AT YOGA HALL



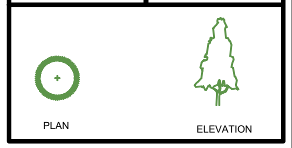
BOTINCAL NAME	AZADIRACHTA INDICA
LOCAL NAME	NEEM
HEIGHT / SHAPE	10 TO 16MT SPHERICAL
FOLIAGE	DELICATE SHINYY 20 TO 40 CMS, SCENTED
FLOWERING	YELLOW IN MAR-APR
SPECIAL FEATURE	MEDICINAL PURPOSE, SLOW GROWING
USES	SHADE FOR SITOUT

BOTINCAL NAME	DELONIX REGIA
LOCAL NAME	GULMOHAR
HEIGHT / SHAPE	10 TO 15M; UMBRELLA SHAPED
FOLIAGE	LIGHT FEATHERY 10 TO 20 CM PINNACAE
FLOWERING	SCARLET RED, ORANGE WRINKLED AT TIP, APR-JUN
SPECIAL FEATURE	EVERGREEN, QUICK GROWING
USES	EAST PERIPHERY ALONG AUDITORIUM



BOTINCAL NAME	CHRYSANTHIUM
LOCAL NAME	SADABAHAR
HEIGHT / SHAPE	40 TO 60 CM
FOLIAGE	DULL GREEN SMALL
FLOWERING	WHITE / YELLOW / PINK / PURPLE IN WINTER, NUMEROUS PETALS
SPECIAL FEATURE	
USES	ALONG EMERGENCY ROAD

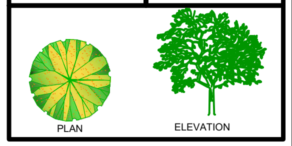
BOTINCAL NAME	MILLING TONIA HORTENSIS
LOCAL NAME	AKASH NEEM
HEIGHT / SHAPE	20MT COLUMNAR
FOLIAGE	LARGE, 50 TO 60 CM, LEAFLET 4 TO 6 CM LONG
FLOWERING	WHITE CYLINDRICAL 25 TO 30CM LONG FRANGRANCE, HT. BLOOMING IN AUTUMN AND SPRING
SPECIAL FEATURE	EVERGREEN, QUICK GROWING
USES	ALONG NORTH WEST PERIPHERY OF PREMISES



BOTINCAL NAME	PONGAMIA PINNATA
LOCAL NAME	PONGA OIL PLANT
HEIGHT / SHAPE	10 TO 12M, SPREADING
FOLIAGE	LEAVES 25CM LONG, LEAFLETS SHINY DARK GREEN
FLOWERING	ROSE OR LILAC, ABOUT 1.2CM LONG IN SHORT RACEMES IN IN AXILS OF NEW TWIGS
SPECIAL FEATURE	DECIDUOUS
USES	ALONG WEST PHERIPHERY

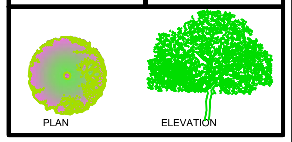
BOTINCAL NAME	HIBISCUS ROSA SINENSIS
LOCAL NAME	CHINA ROSE
HEIGHT / SHAPE	1 TO 3M
FOLIAGE	OVATE COARSELY TOOTHED
FLOWERING	LARGE WHITE / RED/ PINK / ORANGE COLOURED
SPECIAL FEATURE	USED AS HEDGE
USES	AROUND SWIMMING POOL

BOTINCAL NAME	SPATHODEA CAMPANULATA
LOCAL NAME	AMALTAS
HEIGHT / SHAPE	6 TO 10M HIGH
FOLIAGE	LIGHT FEATHERY 10 TO 20 CM PINNACAE
FLOWERING	SCARLET RED, ORANGE WRINKLED AT TIP, APR-JUN
SPECIAL FEATURE	EVERGREEN, QUICK GROWING
USES	ALONG NORTH PERIPHERY

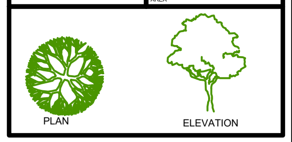


BOTINCAL NAME	CESTRUM NOCTURNUM
LOCAL NAME	QUEEN OF NIGHTS
HEIGHT / SHAPE	LARGE SHURB
FOLIAGE	LEAVES ALTERNATE OVATE, ABLONG 10.4CM LONG
FLOWERING	CREAMY WHITE LIGHTLY SCENTED, AT NIGHTS, 2CM LONG TUBULAR, BLOOM IN SUMMER AND RAIN
SPECIAL FEATURE	EVERGREEN
USES	OVER EARTH MOUNDS

BOTINCAL NAME	CASSIA NODOSA
LOCAL NAME	PINK CASSIA
HEIGHT / SHAPE	12 TO 16M HT; UMBRELLA
FOLIAGE	20 TO 30 CM LONG LEAFS, DENSE
FLOWERING	BRIGHT PINK ON ERCT OCCURS DURIN MAR-APR
SPECIAL FEATURE	EVERGREEN
USES	SHADE FOR PARKING



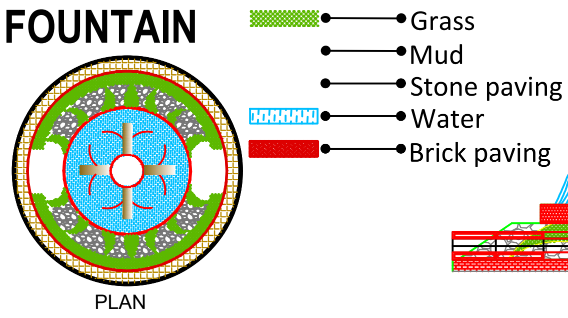
BOTINCAL NAME	ZIZYPHUS MAVITIANA
LOCAL NAME	INIDIAN JUJUBE BER
HEIGHT / SHAPE	8 TO 10 MT ROUNDED IRREGULAR CANOPY
FOLIAGE	SMALL ROUNDED GREEN SILKY LEAVES, LIGHT FOILAGE
FLOWERING	GREENISH YELLOW FLOWERS, FRUIT GREEN YELLOW, ORANGE, BROWN SCARLET AND SOUR
SPECIAL FEATURE	ACT AS WIND BREAK
USES	FOR SITOUT NEAR RECREATIONAL AREA

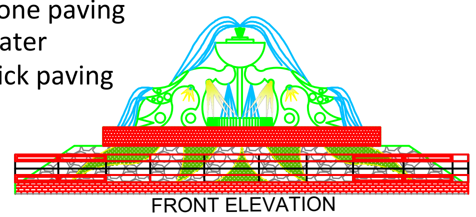


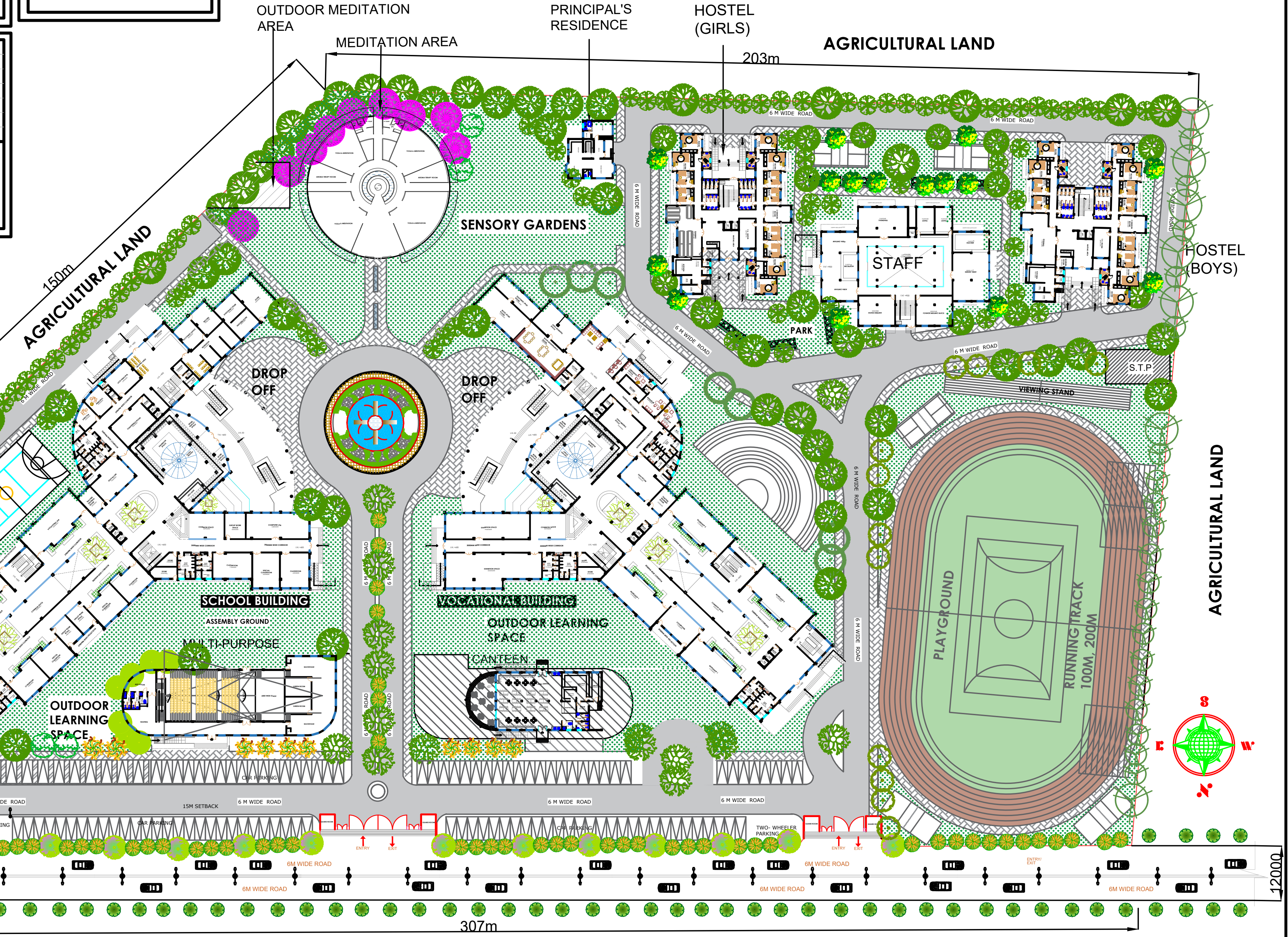
BOTINCAL NAME	FICUS BENJAMINA
LOCAL NAME	JAVAFIG
HEIGHT / SHAPE	15 TO 20 M LARGE SPREAD DROOPING BRANCHES
FOLIAGE	SMALL SHINING 5 TO 8 CM LONG LEATHERY LEAVES.
FLOWERING	MALE AND FEMALE IN SAME GLOBSE 1 TO 2CM DIA RED WHEN RIPE
SPECIAL FEATURE	EVERGREEN, GOOD SHADY TREE
USES	ALONG EAST PERIPHERY OF PLATGROUND

LANDSCAPE PLAN

FOUNTAIN







SITE PLAN

SCHOOL FOR DIFFERENTIALLY ABLED AND VOCATIONAL TRAINING CENTER

N

SCHOOL OF ARCHITECTURE AND PLANNING
BBD UNIVERSITY, LUCKNOW

KHUSHNUMA BANO
ROLL NO.-1180101022

WATER REQUIREMENT CALCULATION : -

WATER REQUIREMENT CALCULATION			
SCHOOL	lpd/head	Users	Total lpd
DOMESTIC PURPOSES	25	1045	26,125
FLUSHING	20	1045	20,900
TOTAL			47,025
FIRE SAFETY			25,000 lts.

WATER REQUIREMENT CALCULATION			
HOSTEL	lpd/head	Users	Total lpd
DOMESTIC PURPOSES	90	180	16,200
FLUSHING	45	180	8,100
TOTAL			24,300
FIRE SAFETY			10,000 lts.

WATER REQUIREMENT CALCULATION			
CANTEEN	lpd/head	Users	Total lpd
	35	200	7,000lts

OVERHEAD WATER TANK

Water Requirements (Daily Use)	**=47,025 lpd**
Capacity of Water Tank @ 50%	=23,512.5 lts.
No. of tanks	=2
Capacity of Each Water Tank needed	=11,765.25 lts.
Dimensions of Water Tank	=3.2X2X2m
Volume of Water Tank	=12.8 cubicm.
Capacity of Each Water Tank provided	=12,800 lts.
Total Water Stored	=25,600 lts.

Capacity of Water Tank(Fire Safety)O.H.T **=25,000 lts.**

Capacity of Water Tank @ 100%	=25,000 lts.
No. of tanks	=2
Capacity of Each Water Tank needed	=12,500 lts.
Dimensions of Water Tank	=3.2X2X2m
Volume of Water Tank	=12.8 cubicm.
Capacity of Each Water Tank provided	=12,800 lts.
Total Water Stored	=25,600 lts.

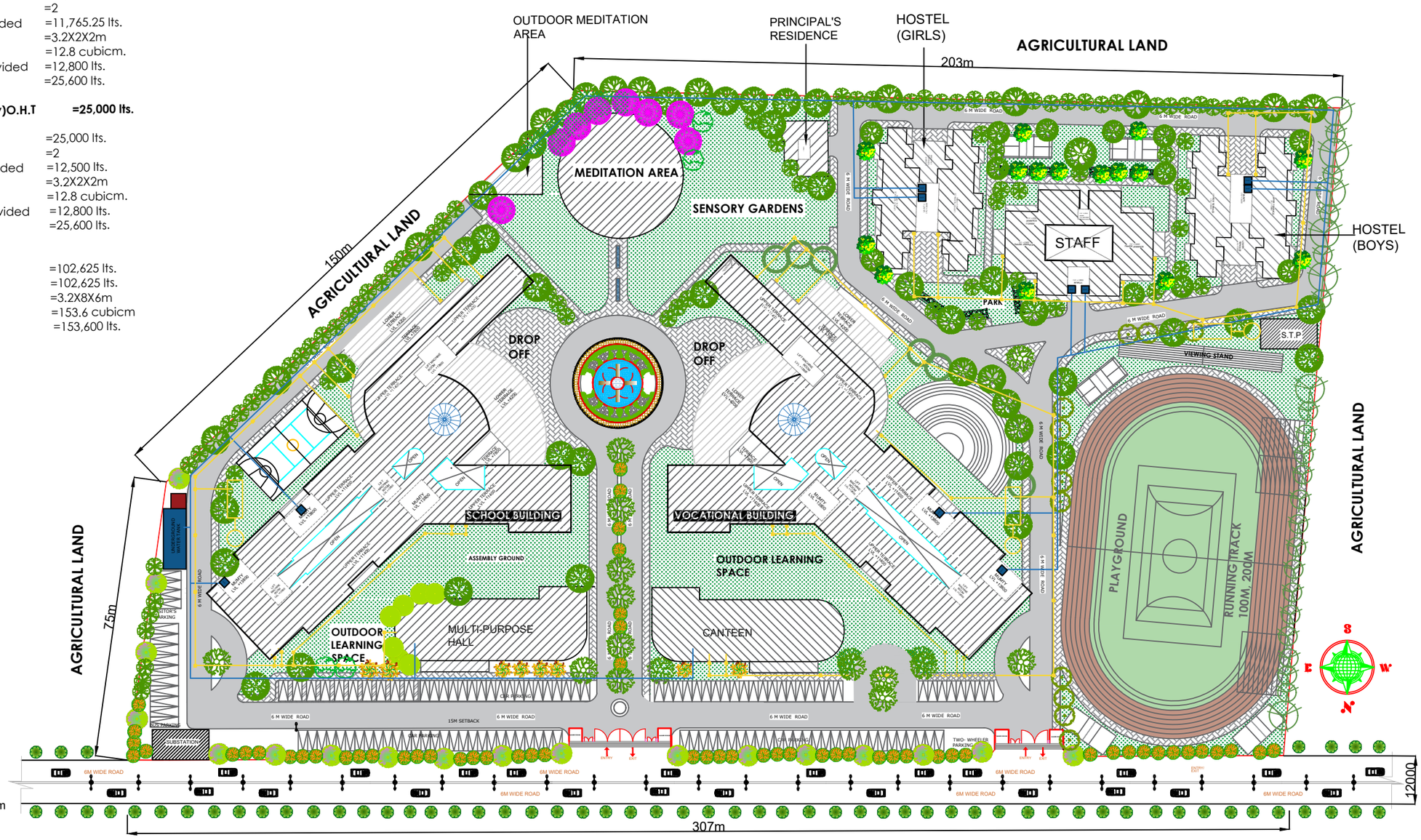
Underground Water Tank

Water Requirement (Daily Use)	=102,625 lts.
Capacity of Water Tank @ 100%	=102,625 lts.
Dimensions of Water Tank	=3.2X8X6m
Volume of Water Tank	=153.6 cubicm
Total Water Stored	=153,600 lts.

PLUMBING, WATER SUPPLY & R.W.H PLAN

SEPTIC TANK CALCULATION:
TOTAL WASTE WATER COMING TO SEPTIC TANK=200X1045X0.8=167,200 L/DAY
DETENTION PERIOD=18HRS
CAPACITY OF TANK REQ.=(167,200/24)X18=125,400 L
CAPACITY REQ. FOR SLUDGE ACCUMULATION=1045X30=31,350 L/YR
TOTAL CAPACITY REQ.=125,400+31,350=156,750L
THEREFORE, VOLUME OF SEPTIC TANK=156.8 cu.m
AS THE HEIGHT OF SEPTIC TANK IS 4M(CONSIDERED)=156.8/4=39.2~40 sqm
NOW, THE AREA OF THE TANK=CONSIDERING TANKRATIO OF 1:4
THEREFORE, SIZE OF THE SEPTIC TANK=4x4x10m

SOAK PIT CALCULATION:
WASTE WATER COMING FROM SEPTIC TANK=167,200 L/DAY
PERCOLATE RATE= 1500 L/CU.M/DAY
VOLUME OF FILTER MEDIA=167,200/1500=111.5 cu.m
DEPTH TAKEN=3M
AREA OF SOAK PIT=111.5/3=37.2 sq m
RADIUS OF SOAK WELL REQIRED=37.2/(2x3.14)=4m



LEGENDS

- SEPTIC TANK
- SOAK PIT
- INSPECTION CHAMBER
- SEWER PIPE 75mm,100mm
- WATER INLET PIPE
- UNDERGROUND WATER TANK
- FIRE WATER TANK

SCHOOL FOR DIFFERENTIALLY ABLED AND VOCATIONAL TRAINING CENTER

N

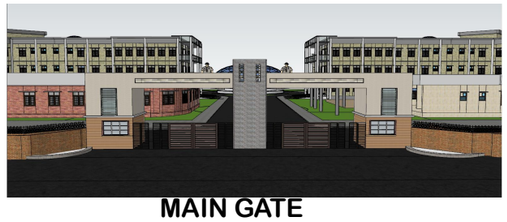
SCHOOL OF ARCHITECTURE AND PLANNING
BBD UNIVERSITY, LUCKNOW

KHUSHNUMA BANO
ROLL NO.-1180101022

3D VIEWS

FRONT ELEVATION

EAST SIDE ELEVATION

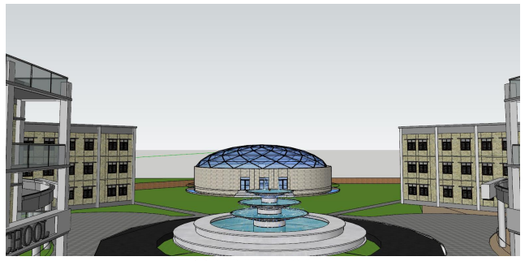


MAIN GATE

ADMIN BLOCK

PRINCIPAL'S RESIDENCE

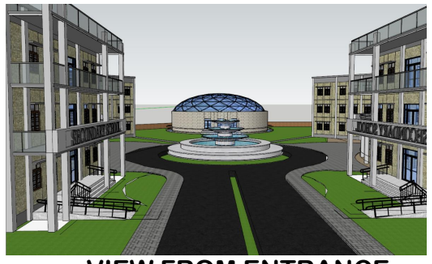
WEST SIDE ELEVATION



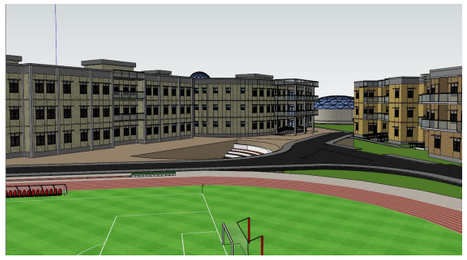
FOUNTAIN

O.A.T

PLAYGROUND

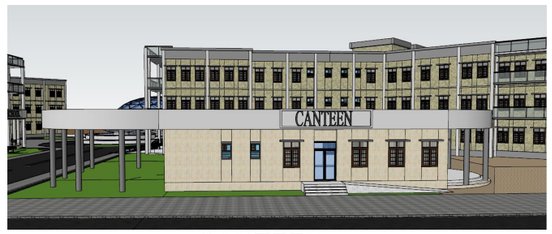


VIEW FROM ENTRANCE

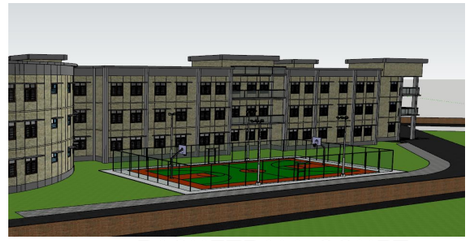


VIEW FROM PLAYGROUND

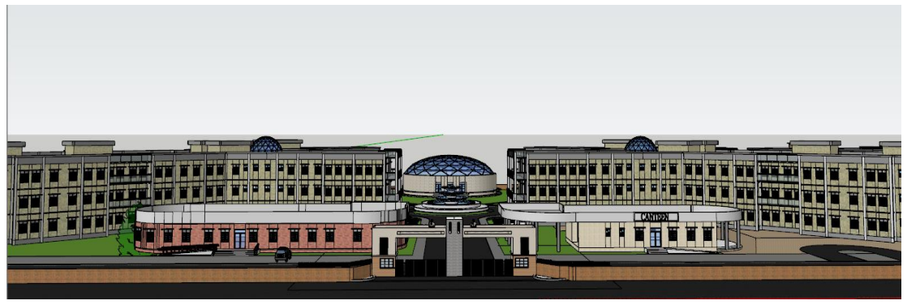
MULTIPURPOSE HALL



CANTEEN



BASKETBALL COURT



VIEW FROM ROAD

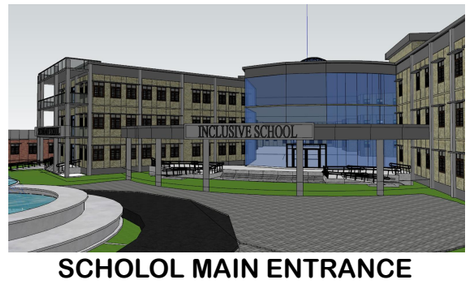
STAFF QUARTERS

GIRL'S HOSTEL

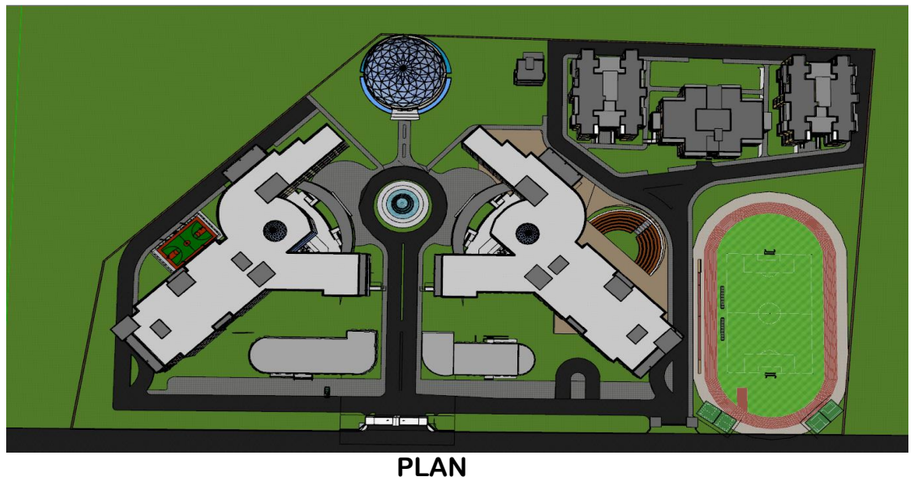
BOY'S HOSTEL

PRIMARY SCHOOL ENTRANCE

SECONDARY SCHOOL ENTRANCE



SCHOLOL MAIN ENTRANCE



PLAN

SCHOOL FOR DIFFERENTIALLY ABLED AND VOCATIONAL TRAINING CENTER

N

SCHOOL OF ARCHITECTURE AND PLANNING
BBD UNIVERSITY, LUCKNOW

KHUSHNUMA BANO
ROLL NO.-1180101022