

INTERNATIONAL RESIDENTIAL SCHOOL

A THESIS

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

By

ROBBI NAGA SATYA SRI BHAVANI
(39210069)



DEPARTMENT OF ARCHITECTURE
SCHOOL OF BUILDING AND ENVIRONMENT

SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY) Accredited
With Grade “A” by NAAC

JEPPIAAR NAGAR, RAJIV GANDHI SALAI,
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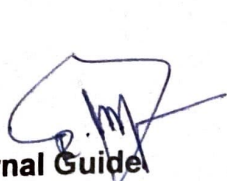
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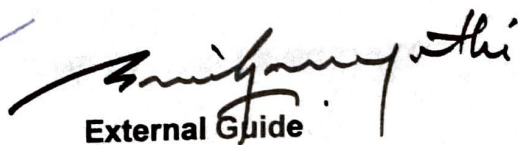
This is to certify that Thesis Report is the bonafide work of **ROBBI. NAGA SATYA SRI BHAVANI (39210069)** who carried out the Thesis entitled "**INTERNATIONAL RESIDENTIAL SCHOOL**" under our supervision from December 2023 to May 2024.



Internal Guide
Ar. Surya Rajkumar



Internal Review Member
Ar. Catherine Selvaraj



External Guide
Ar. Sriram Ganapathy



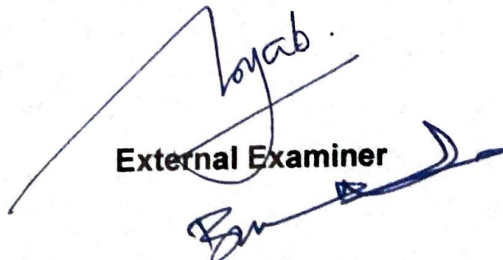
Dean and Head of the Department

Dr. DEVYANI GANGOPADHYAY

Submitted for Viva voce Examination held on 21/05/2024



Internal Examiner



External Examiner

DECLARATION

I, **Robbi Naga Satya Sri Bhavani** hereby declare that the Thesis Report entitled "**INTERNATIONAL RESIDENTIAL SCHOOL**" done by me under the guidance of **Ar.Surya Rajkumar** (Internal Guide), **Ar.Catherine Selvaraj** (Internal Review Member) and **Ar. Sriram Ganapathy** (External Guide) Sathyabama Institute of Science and Technology is submitted in partial fulfillment of the requirements for the award of Bachelor of Architecture Degree.

DATE: 21/05/2024

PLACE: Chennai


SIGNATURE OF THE CANDIDATE

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ROBBI NAGA SATYA SRI BHAVANI

THESIS SYNOPSIS

The Government of Andhra Pradesh intends to develop international schools in each of the cities of Visakhapatnam, Nellore, Tirupati, Guntur, Anantapur and Puttaparthi on Public Private Partnership (PPP) mode. These international schools will play a key role in not just imparting world-class education to the residents of Andhra Pradesh but also in attracting industrialists, investors, diplomats and students from across the globe.

An International School promotes school education in an international environment, either by adopting a curriculum such as International Baccalaureate (IB), Cambridge International General Certificate of Secondary Education (IGCSE) or by following a national curriculum different from that of the school's country of residence.

As we race towards a multicultural and metropolitan world, national curriculum has become increasingly dated. With a choice of several boards and varying levels of differences and difficulties transition from one board to another or from one country to country may prove to be stressful for children. Through a comprehensive analysis of various aspects of international residential schools, it is evident that these institutions serve multiple purposes, catering to the diverse needs of students and their families.

Utilizing a combination of qualitative case studies, this thesis examines the impact of international residential schools on shaping students attitudes and perceptions towards their education. Aims to explore the contemporary challenges faced by these schools and propose design for their revitalization to align with the demands of modern education. By integrating interactive and collaborative spaces within the campus, encourage students to engage more deeply with their education and peers, helping them find balance and stability by fostering a sense of belonging and security.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

For a number of reasons, notably the direct impact it has on students learning, school design is of utmost importance. The infrastructure and growth of any civilization depend heavily on the development of schools.

Students learn, participate in social and cultural activities, and get ready for the future at these educational institutions. A well thoughtful school design can have a profound influence on the learning environment and the overall success of educational institutions. The learning environment and the overall effectiveness of educational institutions can be significantly impacted by a well-planned school design.

1.2 NEED OF THE PROJECT

As we race towards a multicultural and metropolitan world, national curriculum has become increasingly dated. With a choice of several boards, and varying levels of differences and difficulties, transition from one board to another or from one country to country may prove to be stressful for children.

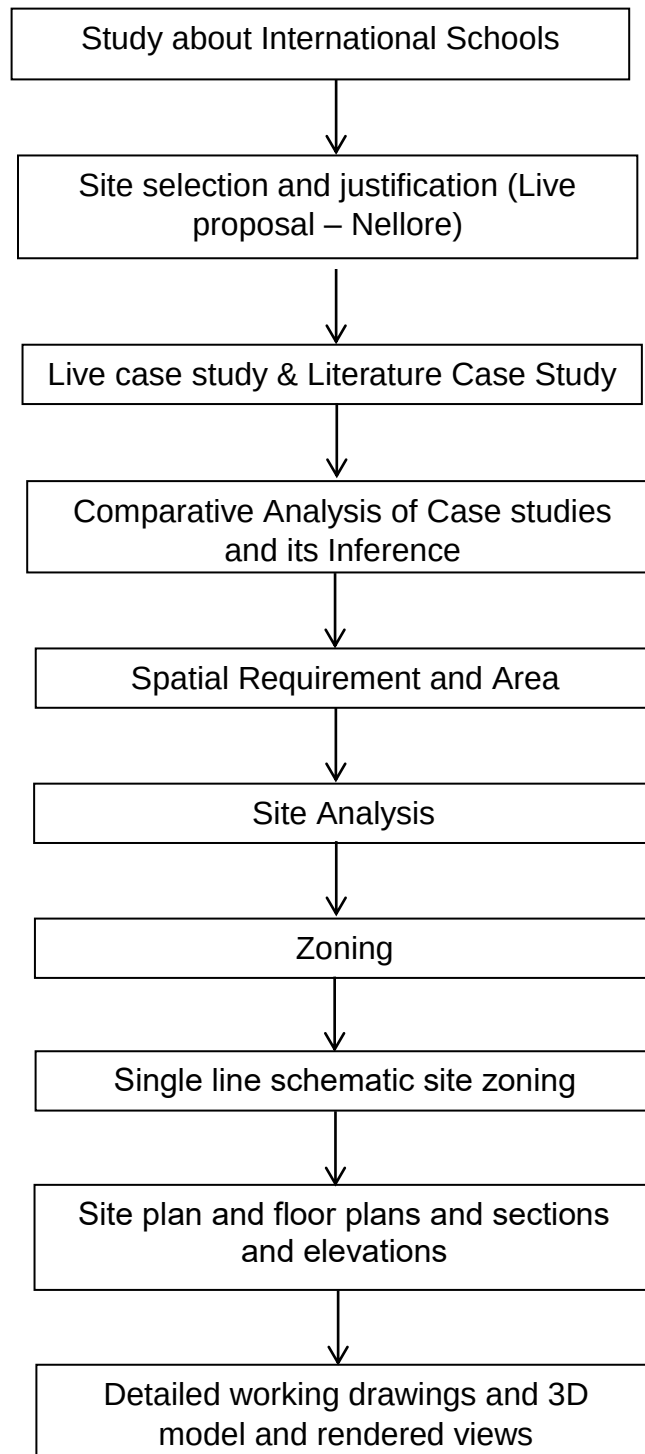
1.3 AIM

To come up with a well-designed school creating an environment that fosters learning, safety, and student development, while also taking into account sustainability.

1.4 OBJECTIVE

- (a) To create a learning space as adaptable to various teaching methods and the evolving needs of students to enhance the learning experience.
- (b) To develop School design that should provide scope to often extend the method of teaching beyond the classrooms.
- (c) To make sure the engaging areas (common areas) to be visible to the surrounding spaces/zones

1.4 METHODOLOGY



CHAPTER 2

LIVE CASE STUDIES

2.1 EURO SCHOOL

Location : Bangalore, Karnataka, India

Architect : Vijay Gupta Architects

Site Area :20,180 sqm (5 Acres)

Built-up Area : 11,473.43 sqm

Year : 2022

Grade : Pre-school, K-12



Figure 2.1 Euro School. Image Source :
(Vijay Gupta Architects)

2.1.1 DESIGN APPROACH & FACILITIES PROVIDED

Euro School Bannerghatta campus creates an environment that lets children walk around freely, explore, and interact with their surroundings set against the wonderful backdrop of the lush Bannerghatta National Park.

Administration spaces :

- Reception
- Waiting Lobby
- Discussion area (staff & Parent)
- Conference room
- Principal cabin
- CEO cabin
- Toilets

Academic spaces :

- Classrooms
- Labs- Computer, Physics, Chemistry, Science
- Maths club
- Library
- Outdoor Learning spaces

Co- curricular spaces :

- Robotics lab
- Activity room

- Art maker room (model making)
- Music Room
- Dance Room
- Club Room (for nursery students)
- Swimming Pool

Sports & Games :

- Outdoor Play Area
- Basketball
- Football Field

Other spaces :

- Dining
- Toilets
- Multipurpose Hall
- Parking
- Security Cabin with waiting area

2.1.2 MATERIALS USED

A minimal material palette of concrete and glass has been used for the structure so that the building can blend discreetly into its natural context. Facade and the interior spaces has Exposure of materials with an idea to create the experience of textures.

- Brick
- Concrete
- Glass
- Metal
- Wood



Figure 2.2 Material Exposure. Image Source : (Vijay Gupta Architects)



Figure 2.3 Courtyard Design. Image Source : (Vijay Gupta Architects)

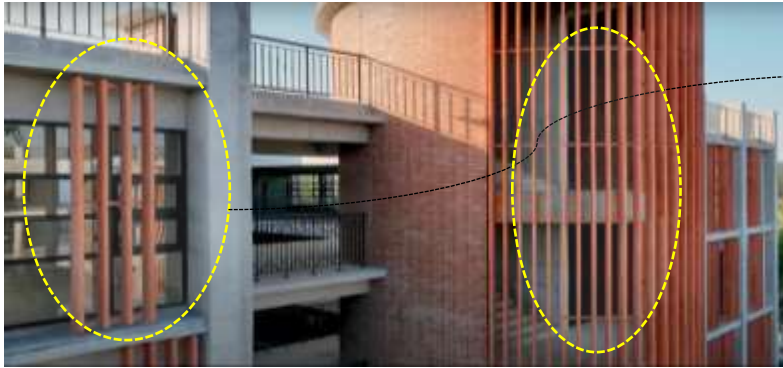
2.1.3 ORIENTATION

The built up mass flows around the site's northern edge with a green area in between links the various building components into a single as a whole.

As they grow out of the building in courtyards between classroom clusters, as spill-over spaces from activity zones, as green connects to the walkways and as visual relaxation for gathering spaces, the existing trees emerge within the structure in a network of transitional spaces.

2.1.4 PASSIVE STRATEGY

Passive strategies such as adequate shading devices, and courtyards enable cross ventilation in the building so that comfortable interior temperatures are maintained. Moreover, the classrooms are oriented along the North-South axis to ensure there is minimal heat gain, further eliminating the need for air-conditioning. The glazed openings of the school also ensure that the interiors capture the daylight, bringing down operational costs.



Fins are used as vertical shading device

Fins : Terracotta

Figure 2.4 Terracotta fins. Image Source : (Vijay Gupta Architects)

2.1. 5 OUTDOOR ACTIVITIES

All of the activity spaces flow directly onto the central green space, creating a tectonic link between the built fabric and this region below ground. This connection is visible at higher levels, where an abundance of glazing across the built envelope offers wide views of the surroundings.

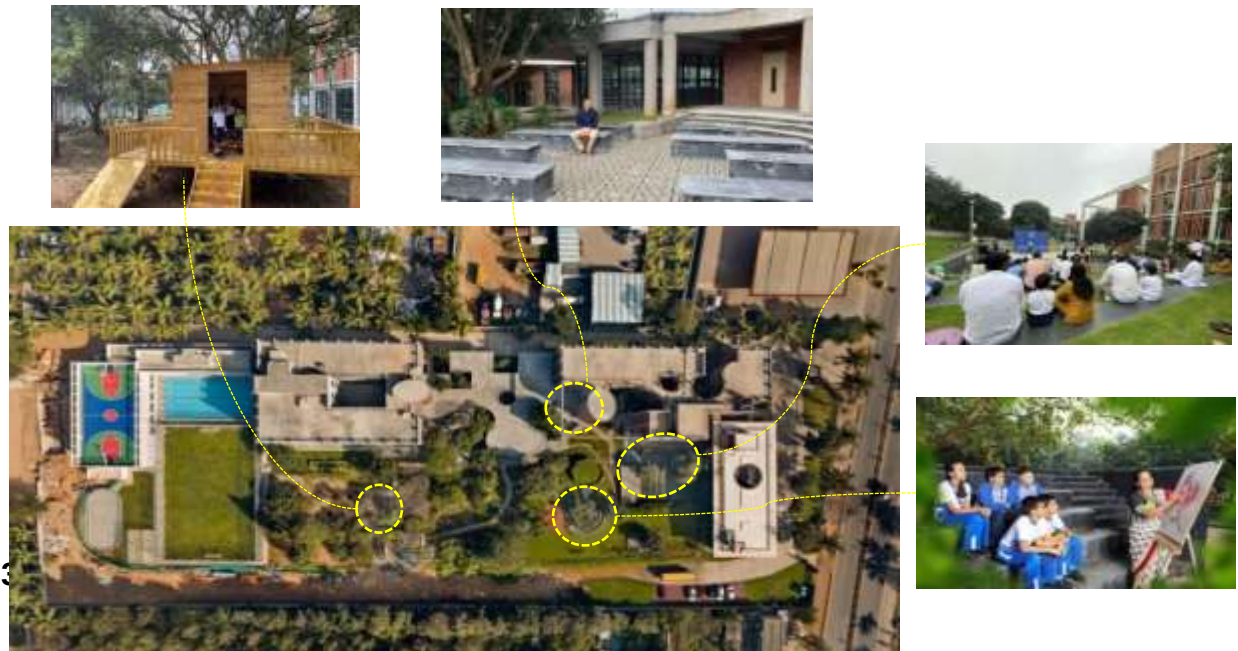


Figure 2.5 Outdoor Activities. Image Source : (euroschoollindia)

2.1. 6 ZONING & CIRCULATION – SITE LEVEL

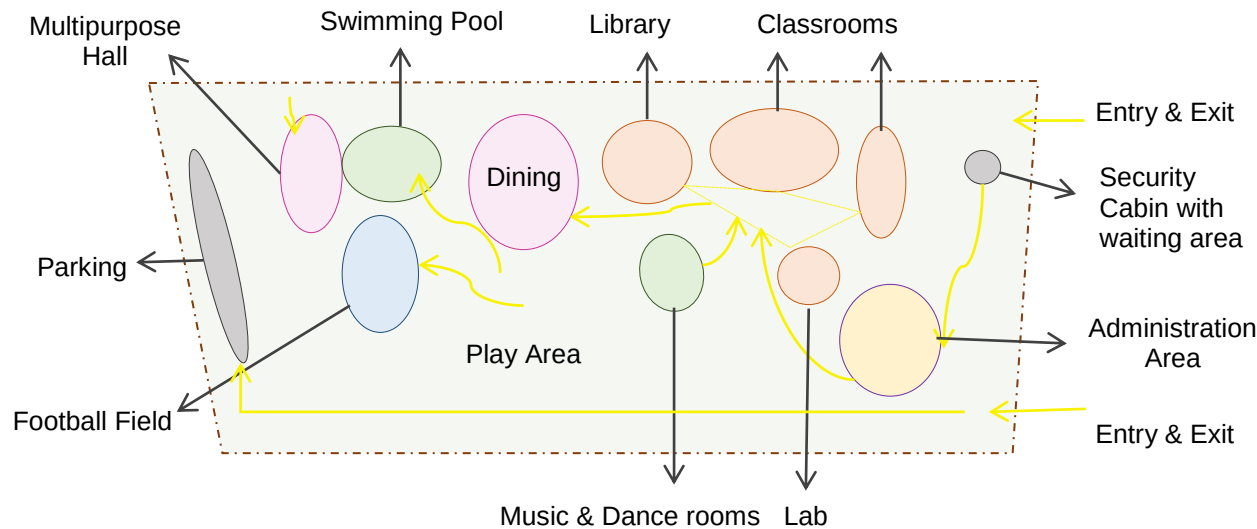


Figure 2.6 Site Zoning



Figure 2.7 Site Plan and Circulation. Image Source : (Vijay Gupta Architects)



2.1. 7 ZONING & CIRCULATION – BLOCK LEVEL

2.1. 7.1 ADMINISTRATION BLOCK



Figure 2.8 Administration Block. Image
Source : (Vijay Gupta Architects)

Admin Block : 2 storied

Ground Floor Zoning

First Floor Zoning

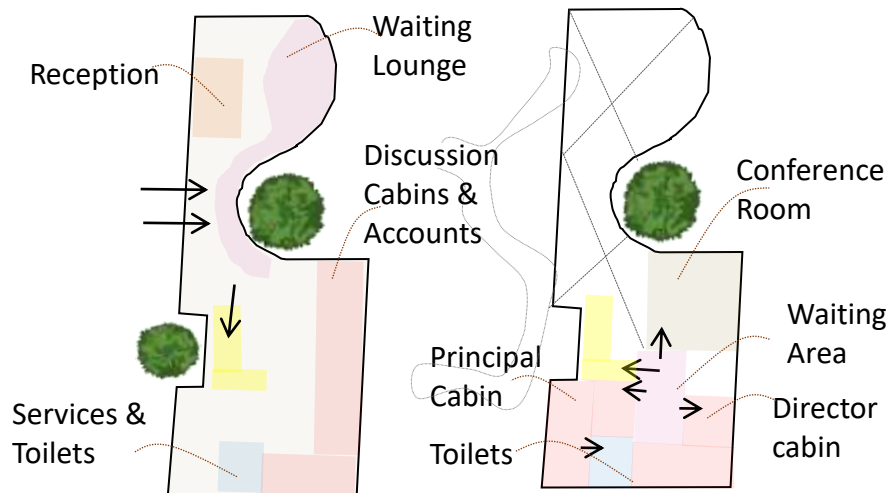


Figure 2.9 Admin Block Zoning

Ground floor Admin area has Reception, waiting lounge and space to perform discussions and meetings between with the parents. First floor spaces are designed completely for the management & staff.

2.1. 7.2 ACADEMIC BLOCK



Figure 2.10 Academic Block. Image Source : (Vijay Gupta Architects)

Academic & Co-curricular :

Ground Floor Zoning

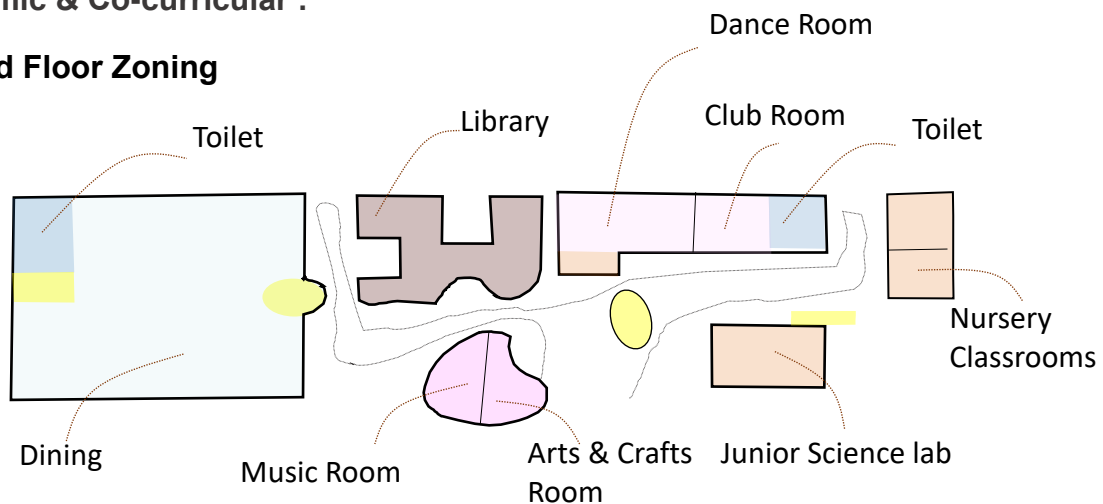


Figure 2.11 Administration Block Ground Floor Zoning

All these separate spaces on the ground floor will be connected on the first floor for the circulation to create a sense of connectivity.



Figure 2.12 Arts Room.



Figure 2.13 Music Room.

Image Source : (euroschoolindia)



Figure.2.14 Pre-school Classroom.

Image Source : (euroschoolindia)



Figure 2.15 Dining Hall.

Image Source : (euroschoolindia)



Figure 2.16 Library

Image Source : (euroschoolindia)

First Floor Zoning

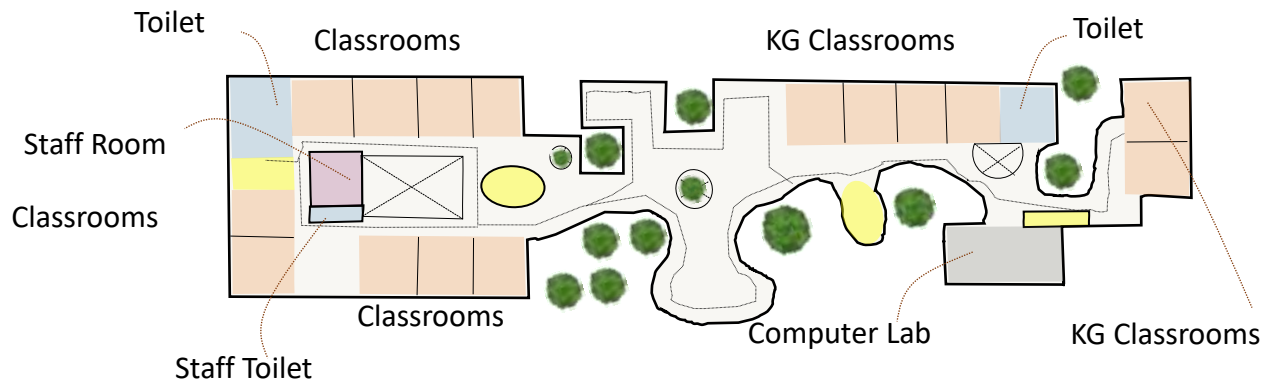


Figure 2.17 Administration Block First Floor Zoning



Figure 2.18 Classrooms type 1



Figure 2.19 Classrooms type 2



Figure 2.20 Computer Lab
Image Source : (euroscoolindia)



Figure 2.21 Football Court
Image Source :



Figure 2.22 Classroom
Image Source :

2.1. 8 FLOOR PLANS

Ground Floor

1. Admin block
2. Junior Science Lab
3. Library
4. Dance Room
5. Club Room
6. Nursery
7. Dining
8. Music Room
9. Arts & Crafts Room
10. Multipurpose Hall

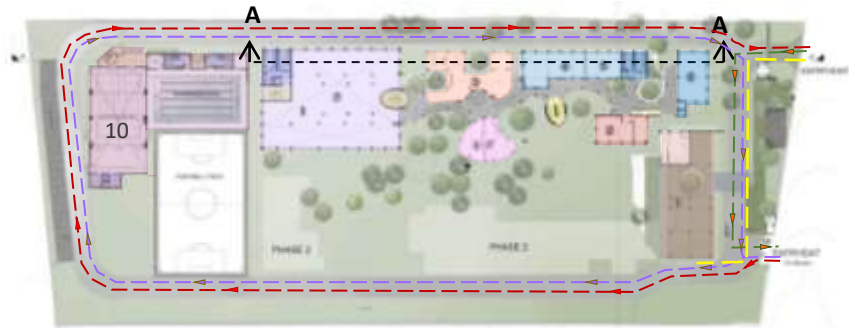


Figure 2.23 Ground Floor Plan.

Image Source : (Vijay Gupta Architects)

First Floor

1. Admin block
2. Computer Lab
3. Academic Area
4. KG Classrooms
5. KG Classrooms

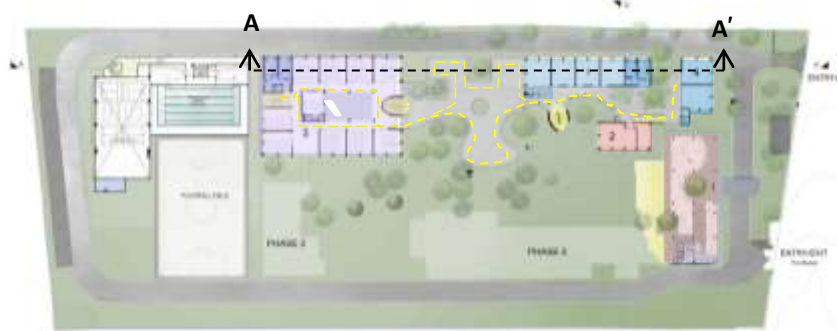


Figure 2.24. First Floor Plan.

Image Source : (Vijay Gupta Architects)

Second Floor

1. Admin block
2. Classrooms
3. Classrooms
4. Prep rooms
5. Activity rooms
6. Basketball court



Figure 2.25 Second Floor Plan.

Image Source : (Vijay Gupta Architects)

Third Floor

1. Admin block
2. Classrooms
3. Labs & Classrooms
4. Classrooms
5. Classrooms

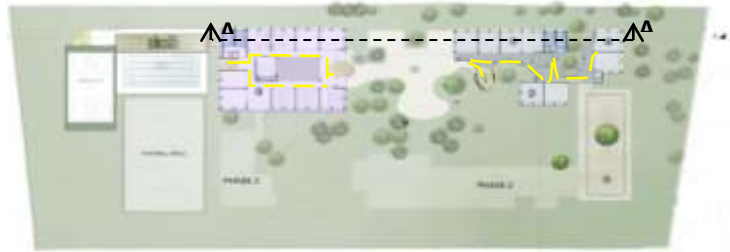


Figure 2.26 Third Floor Plan.

Image Source : (Vijay Gupta Architects)

2.1. 8 Sections & Elevations



Figure 2.27 Sections. Image Source : (Vijay Gupta Architects)



Figure 2.28 Elevation. Image Source : (Vijay Gupta Architects)

2.2 EKYA SCHOOL

Location : BTM Layout, Bangalore, India

Architect : Mindspace

Site Area : 8020 sqm (2 Acres)

Year : 2016

Grade : Pre-school, K-12



Figure 2.29 Eky School. Image Source : (Mindspace)

2.2.1 DESIGN APPROACH & FACILITIES PROVIDED

Eye levels for the kids can also be exploited and be made exciting for children' was the initial that that is turned out as a main concept of the school design. Concept is to design a school that allows visual connectivity through flow of spaces and also providing playgrounds as the main attraction.

The idea of the projections is to create a visual expression to the kids with the playful colors without overpowering. It also creates shading which allows the students to use as nooks for the study or to hangout.

Administration spaces :

- Reception
- Waiting Lobby
- Discussion area (staff & Parent)
- Meeting room
- Accounts
- Principal cabin
- Director's cabin
- Toilets

Academic spaces :

- Classrooms
- Labs - Computer, Physics, Chemistry, Science
- Maths club
- Library
- Outdoor Learning spaces

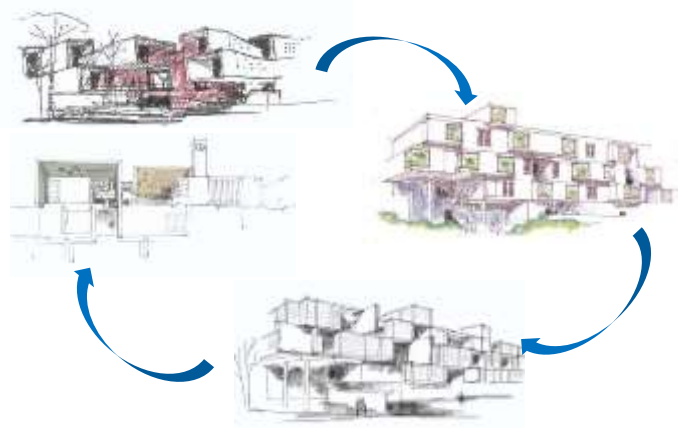


Figure 2.30 Concept.

Image Source : (Mindspace)

Co- curricular spaces :

- Robotics lab
- Arts room
- Art maker room (model making)
- Music Room
- Dance Room
- Swimming Pool

Sports & Games :

- Outdoor Play Area
- Basketball
- Football
- Volleyball
- Throw ball
- Badminton

Other spaces :

- Toilets
- AV room
- Amphitheater
- Parking
- Security Cabin
- Infirmary

2.2.2 MATERIALS & COLORS USED

The use of the colors are not very overpowering, stretch of the color are neutralized with the tint and by maintaining the wall texture muting it not to be harsh to be touched for the kids.

- Brick
- Concrete
- Glass
- Metal
- Wood



Figure 2.31 Use of colors.

Image Source : (Mindspace)

2.2.3 VISIBILITY

As classrooms are planned either side of the corridor, noise will be more as crowded activities might take place, to control and activities, visibility to the each floor from corridors is prioritized to notice the activities which helps to reduce the noise.

2.2.4 VENTILATION

Cross ventilation is being taken place with the skylight in the corridor (classrooms on either side of the corridor) which helps the hot air to go up and allows sunlight that spreads from the corridors to the classrooms.



Figure 2.32 Corridors.

Image Source : (Mindspace)

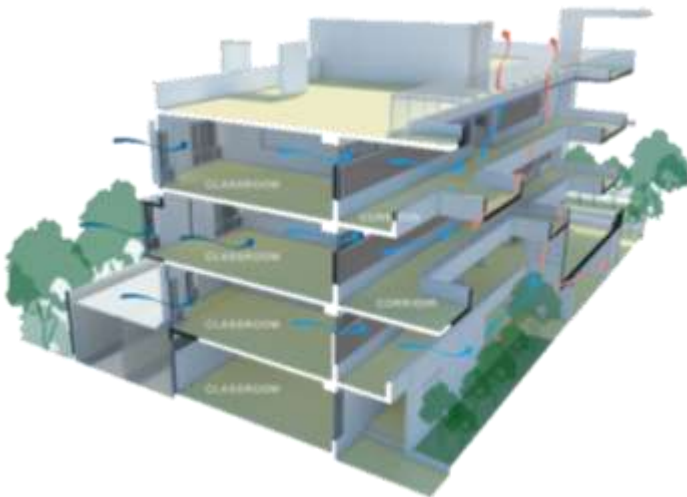


Figure 2.33 Ventilation.

Image Source : (Mindspace)



Figure 2.34 Projections.

Image Source : (Mindspace)

2.2.5 ORIENTATION

The building is oriented towards south west with the projections to cut down the excess capture of the sunlight directly into the classrooms.

2.2.6 ZONING & CIRCULATION

The ground floor is segregated into two zones - one for the kindergarten, which has its own drop off and pickup area, and the second for the administrative facilities, separated from the kindergarten to give the young children the required security and privacy. The rest of the ground floor area is kept open, and becomes a part of the play area for students.

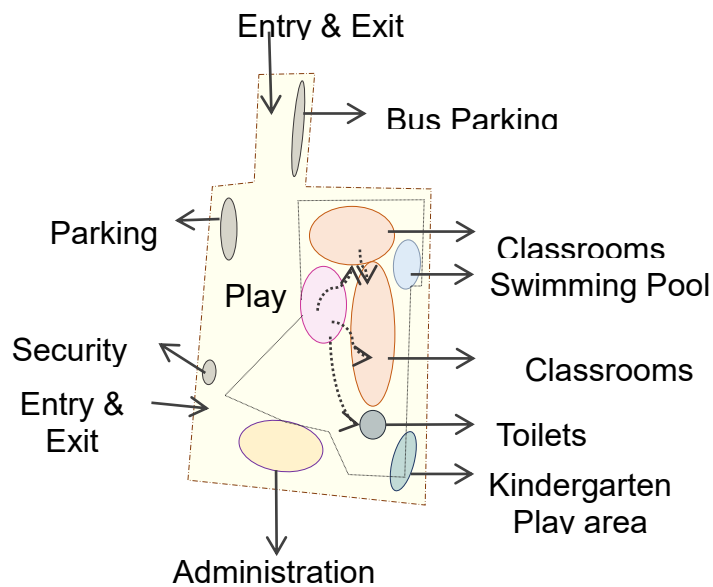


Figure 2.35 Ekya School Site Zoning

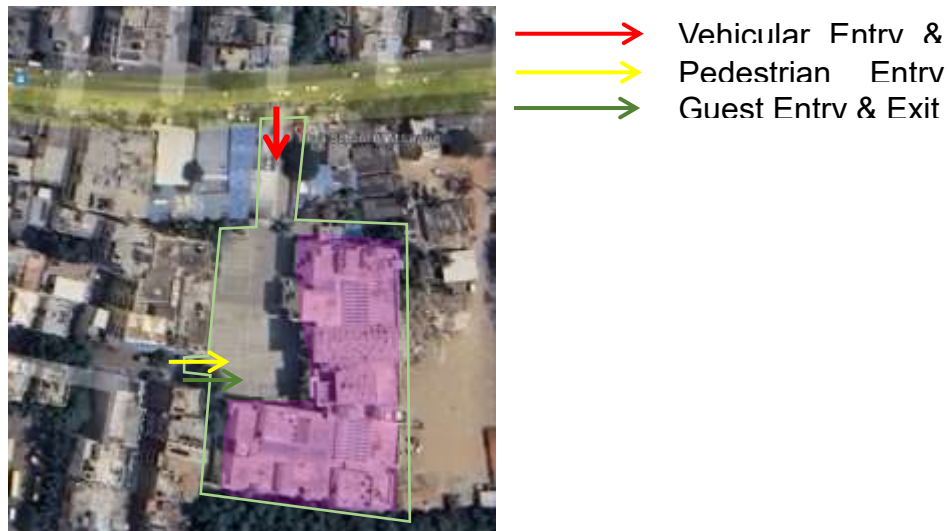
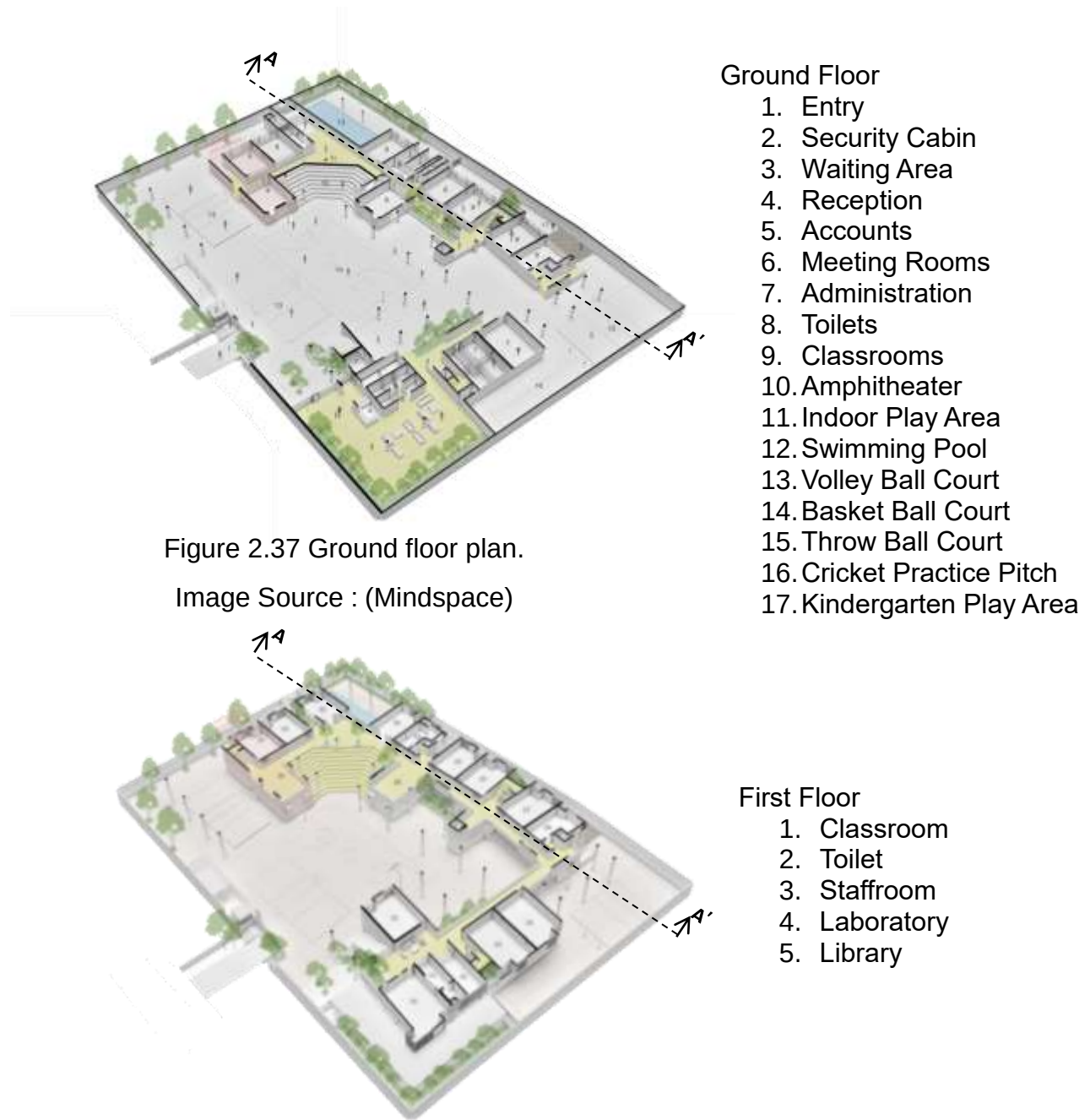


Figure 2.36 Circulation. Image Source : (Mindspace)

2.2.7 FLOOR PLANS



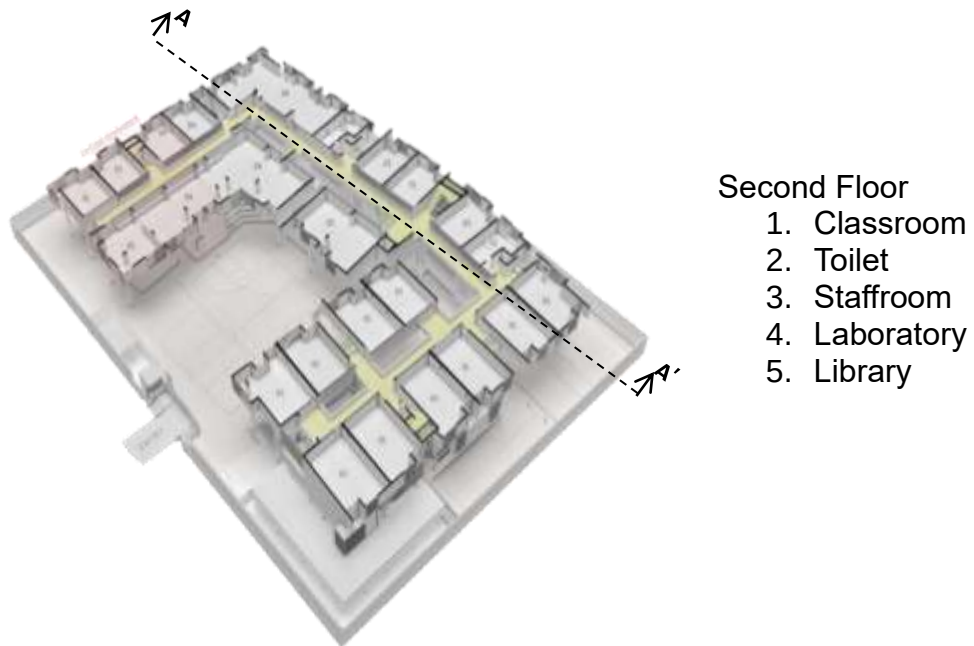


Figure 2.39 Second floor plan. Image Source : (Mindspace)

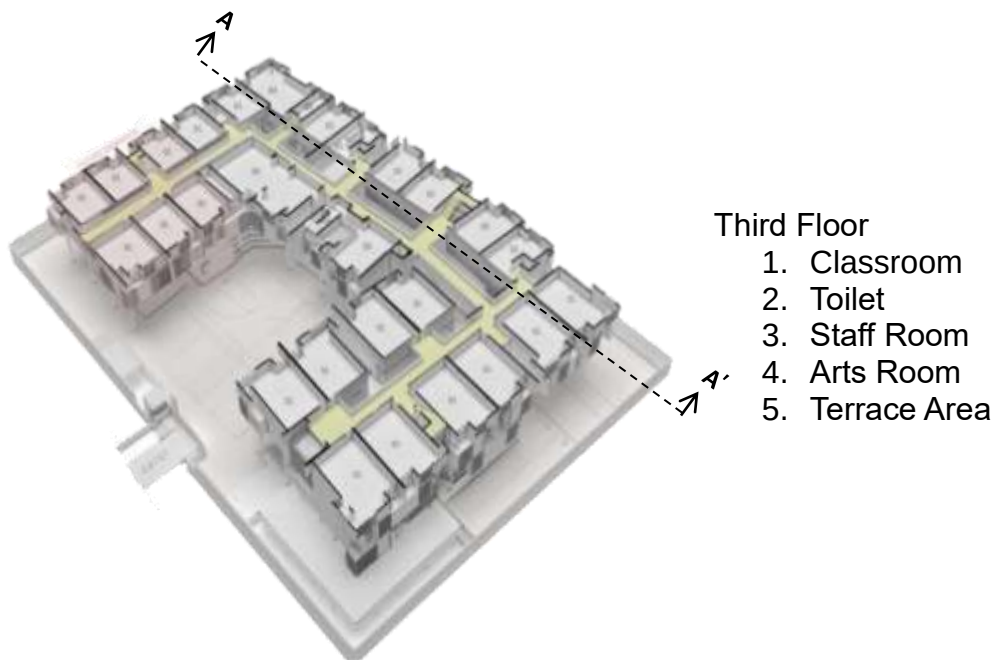


Figure 2.40 Third floor plan. Image Source : (Mindspace)

Ground floor is segregated into two zones - one for the kindergarten, which has its own drop off and pickup area, and the second for the administrative facilities, separated from the kindergarten to give the young children the required security and privacy. The rest of the ground floor area is kept open, and becomes a part of the play area for students.

First floor, Second floor and Third floor are planned with the classrooms and other supportive spaces such as Labs, Library, Staff room and Toilets.

2.2.8 SECTIONS



Figure 2.41 Section. Image Source : (Mindspace)



Figure 2.42 Section-AA'. Image Source : (Mindspace)

2.2.9 SPACES

Classrooms are designed efficiently to perform different activities by the specific age group of the students who are belong to that specific classroom.



Figure 2.43 (a), (b) Kindergarten Classrooms



Figure 2.44 Primary Classroom



Figure 2.45 Secondary Classroom

Engaging Corridors : Wide Corridors are designed as classrooms are on the either side of the corridor. This helps to level down the noise. Skylight are used to have better natural light transmission into the rooms from the corridors.

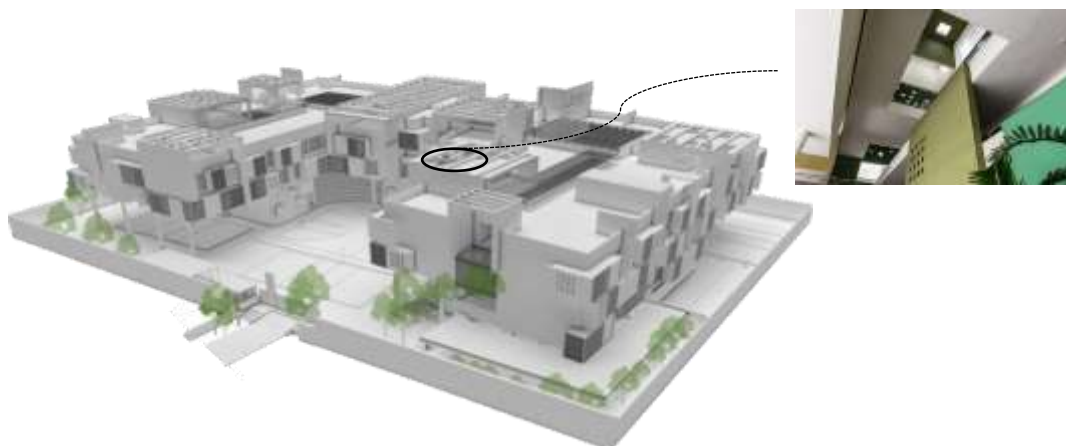


Figure 2.46 Ekya School Model showing Skylight

Amphitheater during class hours is empty which defines the busy academics but comparatively one of the most engaging space during the breaks as corridors. Also being used as a common space for any announcements and as a seating area for events and lunch space.



Figure 2.47 (a), (b) Amphitheater

Indoor play area for kindergarten students and KG students is designed considering the students age to define the space with the scale of the space.



Figure 2.48 (a), (b) Play Area

Outdoor space is being used as open event zone such as fashion walks, stalls area and also being used for photography.



Figure 2.49 Outdoor Space Usage

CHAPTER 3

LITERATURE CASE STUDIES

3.1 VEDANYA SCHOOL

Location : Gurugram, Haryana, India

Architect : Vijay Gupta Architects

Site Area : 5000 sqm (1.2 Acres)

Year : 2020

Grade : Pre-school, k-6

3.1.1 DESIGN APPROACH & FACILITIES PROVIDED

The goal of architects is to improve movability and openness through double-height volumes, curving spaces, and vertical and horizontal linkages rather than the boring way of contained classrooms. Open areas, creative nooks, and stimulating environments all serve to mould and inspire children through a variety of perceptive designs that foster individuality, creativity, and a sense of community. Each student and teacher at Vedanya is inspired to be curious, imaginative, and joyful by the expressive spaces there.

Administration spaces :

- Reception
- Waiting Lobby
- Discussion area (staff & Parent)
- Conference room
- Principal room
- CEO cabin
- Toilets

Academic spaces :

- Classrooms (Labs (Computer, Physics, Chemistry, Science))
- Library
- SEN room (sensory)



Figure 3.1 Vedanya School.

Image Source : (ARCHIDIARIES)

Co- curricular spaces :

- Art & maker room (model making)
- Art Room
- Music Hub
- Dance Hub

Sports & Games :

- Outdoor Play Area
- Indoor Play Area

Other spaces :

- Dining
- Toilets
- Infirmary
- Parking
- Security Cabin
-

3.1.2 MATERIALS & COLORS USED

The overall palette is a mix of carefully selected muted, earthy and pastel tones complemented by a timeless base of light-toned wood, grey floors, and black steel frames.

- Brick
- Concrete
- Glass
- Metal
- Wood



Figure 3.2 Use of colors.

Image Source : (Vijay Gupta Architects)

3.1.3 ORIENTATION

The building is oriented towards northeast with the passive strategies to avoid the excess capture of sun.

3.1.4 Passive Strategies

The building's south sides have deep recesses and balconies, and service cores are planned on the west to block the harsh sun. The northern side has extensive glazing on all floors bringing in pleasant natural light throughout the day, reducing the need for artificial light.

3.1.6 ZONING

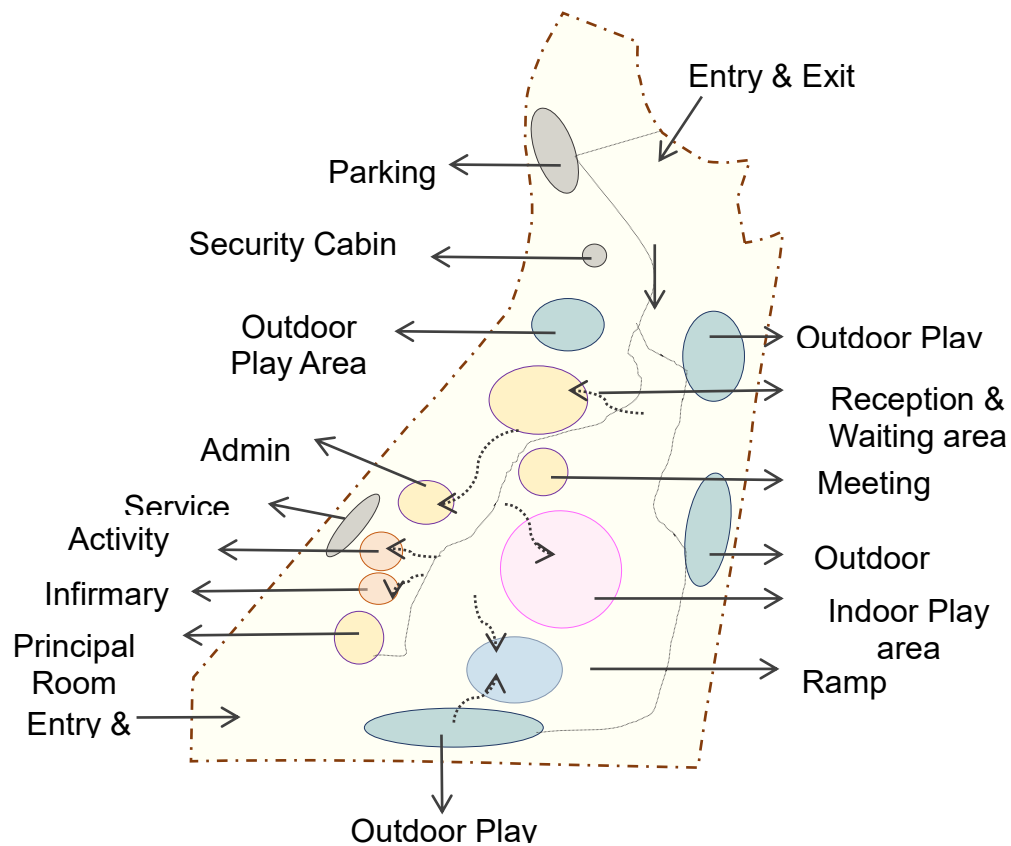


Figure 3.3 Vedanya School Site Zoning

3.1.7 Floor Plans

Ground Floor

1. Main Entrance
2. Visitor Parking
3. Parents waiting Area
4. Kids Outdoor Play Area
5. Reception
6. Meeting Rooms
7. Staircase
8. Restroom
9. Administration Areas
10. SEN Room (sensory activities)
11. Infirmary
12. Conference Room
13. Principal Room
14. Lift
15. Ramp
16. Restroom
17. Silted Play Area

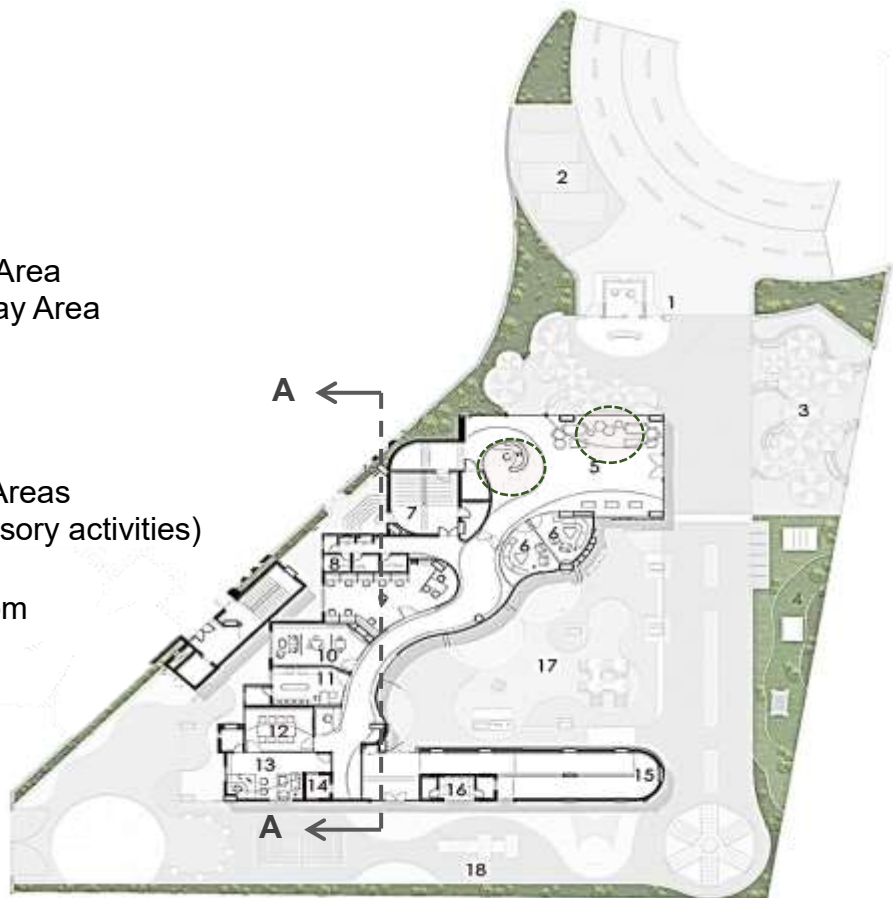
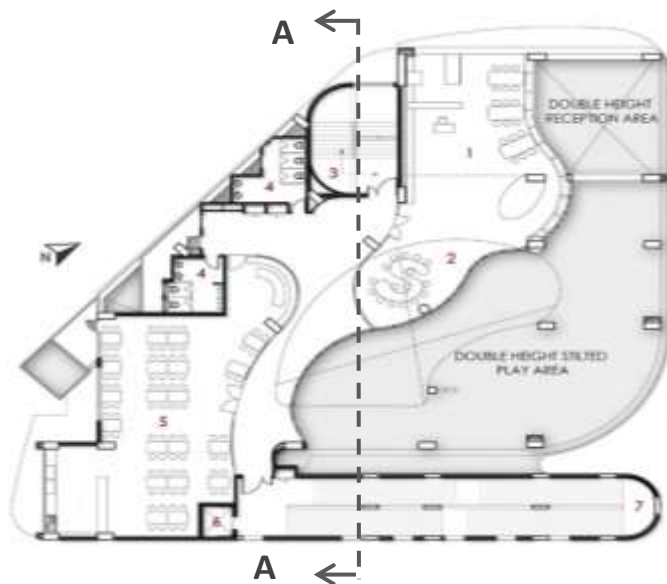


Figure 3.4 Ground Floor Plan. Image Source : (Vijay Gupta Architects)



First Floor

1. Art & Maker
2. Art Room
3. Staircase
4. Student's Restroom
5. Dining Area
6. Lift
7. Ramp

Figure 3.5 First Floor Plan. Image Source : (Vijay Gupta Architects)

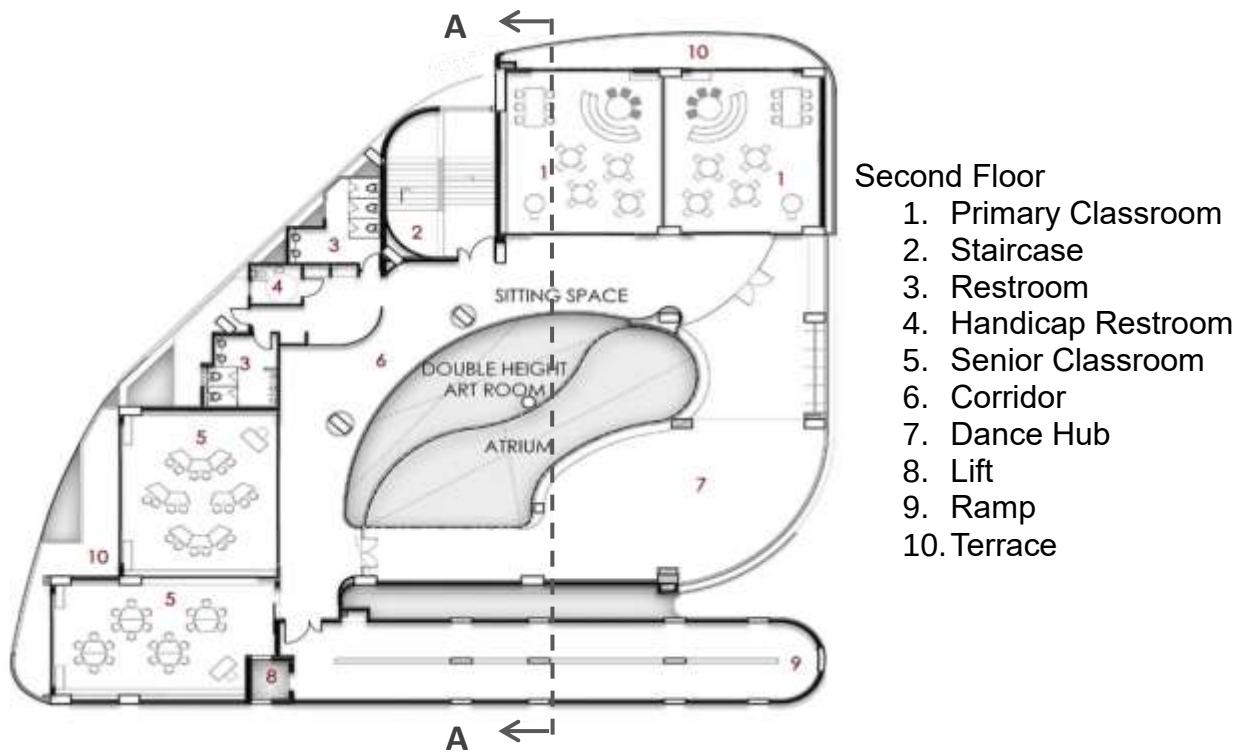


Figure 3.6 Second Floor Plan. Image Source : (Vijay Gupta Architects)

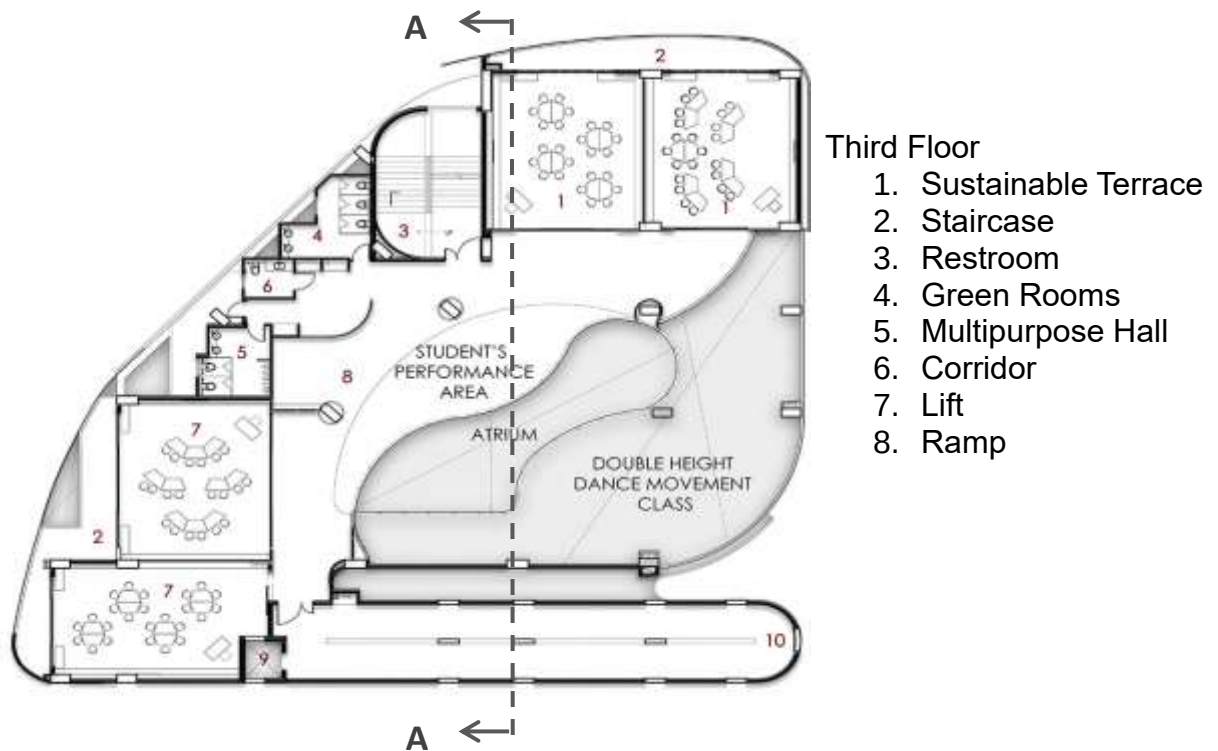


Figure 3.7 Third Floor Plan. Image Source : (Vijay Gupta Architects)

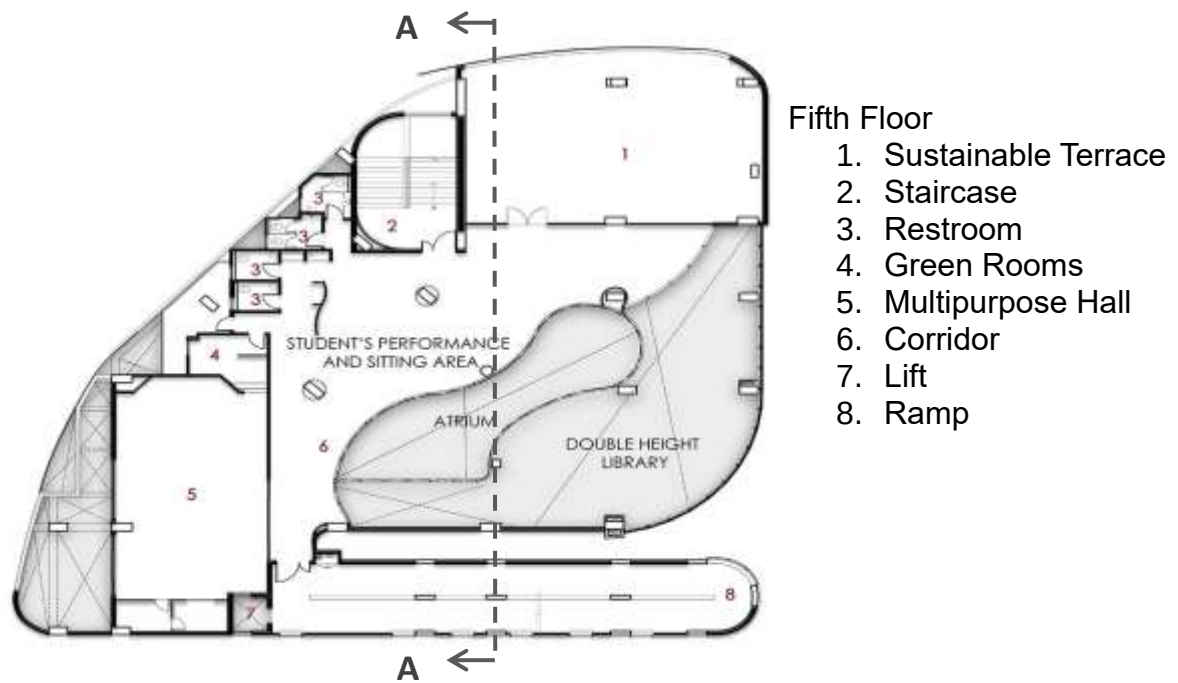


Figure 3.8 Fourth Floor Plan. Image Source : (Vijay Gupta Architects)

3.1.8 SECTIONS

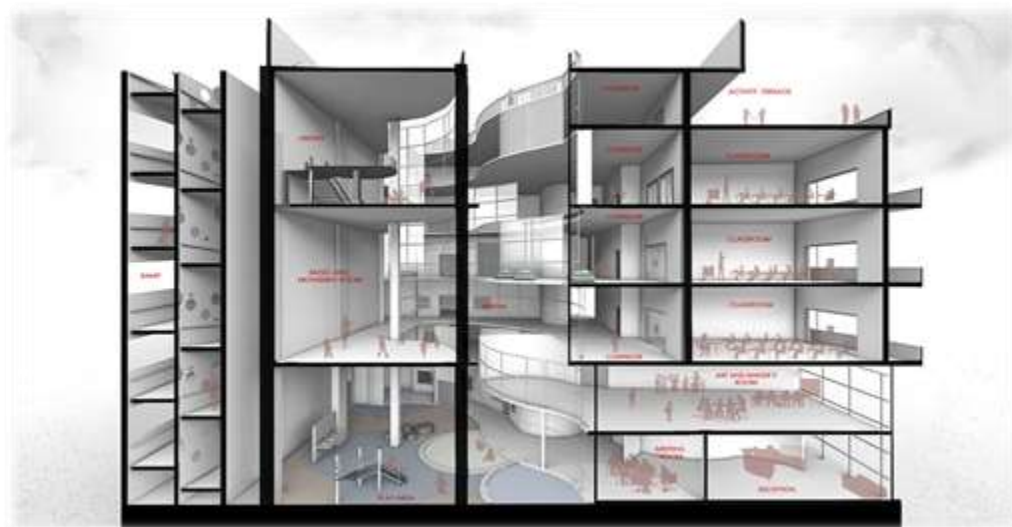


Figure 3.9 Section. Image Source : (Vijay Gupta Architects)

3.1.9 SPACES & VIEWS

Junior classrooms are designed spaciouly to perform various activities within the class which allows to perform various teaching and learning methods as diverse.

Primary classrooms are alive with possibilities, sunlight and warmth. Includes wooden blocks, open seating to personal cushion space, storytelling corners to a pegboard they provide new-age. A fun pretend-and-play area is accessible to learners just outside these classrooms to actively foster imagination and role playing in our daily lessons.

Senior Classrooms are Equipped with interactive screen, which introduces virtual environments.



Figure 3.10 Junior Classroom
Image Source : (Vijay Gupta Architects)



Figure 3.11 Primary Classroom
Image Source : (Vijay Gupta Architects)



Figure 3.12 Senior Classroom
Image Source : (Vijay Gupta Architects)



Figure 3.13 (a), (b) Views.
Image Source : (Vijay Gupta Architects)

CHAPTER 4

ANALYSIS AND INFERENCE

4.1 COMPARATIVE ANALYSIS

Table 4.1 Comparative Analysis

Parameters	Euro School	Ekya School	Vedanya School
Design Approach	Focused on Creating an environment that lets children walk around and explore, interact with their surroundings.	Focused on the different eye levels of the kids that allows visual connectivity through flow of spaces.	Main focus is to improve movability & openness through double height volumes, curving spaces, and vertical and horizontal linkages.
Orientation	The built up mass flows around the site's northern edge with a green area in between links the various building components into a single as a whole.	The building is oriented towards south west with the projections to cut down the excess capture of the sunlight directly into the classrooms.	The building is oriented towards northeast with the passive strategies to avoid the excess capture of sun.
Strategies	Used shading devices and created courtyards that enable cross ventilation.	Cross ventilation is being taken place with the skylight in the corridors.	The building's south side have balconies and northern side has extensive glazing on all floors bringing in pleasant natural light throughout the day, reducing the need for artificial light.
Classroom Layouts	Rigid Layout	Rigid Layout	Rigid Layout

Outdoor Learning	Outdoor learning is being encouraged as a part of academics	Outdoor learning is being encouraged as a part of academics	Most of the Outdoor Activities as Context based.
Use of Colors	A minimal material palette of concrete, brick and glass has been used for the structure so that the building can blend discreetly into its natural context.	The use of the colors are not very overpowering, stretch of the color are neutralized with the tints.	The overall palette is a mix of muted, earthy and pastel tones complemented by a light-toned wood and black steel frames.
Scope for the Future Expansion	Space for the future expansion in pre-planned while zoning (phase 2)	Space for the future expansion in pre-planned while zoning	No scope for future expansion

4.2 INFERENCE

Euro School : Euro School in Bannerghatta is lively campus that enable the children to explore in different ways which leads to growth in academic, mental & physical stability. The focus of planning for future expansion and alternative use spaces are the aspects that makes a school design better. Pre-school classroom zoning with the outdoor spaces enabled the kids to be much more active.

Ekya School : The classrooms can be designed in a more interactive way comparative to the designed classroom layouts. In a case of having classrooms occupied on either side of the classrooms, light and ventilation circulation is major drawback. In this design the use of wide corridors and skylights in the corridors makes the space to spread the natural light. The layout created a rigid active zone within the built area more than with the outdoor space.

Vedanya School : The idea of curved spaces has positive impact on kids mind creating the openness of a space to explore with the safety of visibility. Zones such as drinking water, hand wash area doesn't only act as engaging spaces but also promote hygiene and its importance as a basic need. The use of muted colors in a proper way create a sense of activeness than appearing as boring spaces.

CHAPTER 5

LITERATURE STUDY & STANDARDS

5.1 INTERNATIONAL RESIDENTIAL SCHOOL

International residential schools provide boarding facilities and offer a curriculum designed to accommodate students from diverse cultural backgrounds, often including both local and international students. These schools aim to provide a holistic educational experience that fosters academic excellence, cultural understanding, and personal growth in a residential setting.

The curriculum in international residential schools often integrates elements of both local and global perspectives, aiming to foster cultural understanding, cross-cultural communication skills, and personal development alongside academic excellence. These schools play a crucial role in preparing students for a globalized world by promoting diversity, multiculturalism, and international cooperation.

5.2 IB CURRICULUM

The International Baccalaureate (IB) curriculum is a globally recognized educational framework that aims to develop students intellectually, personally, emotionally, and socially. It is designed to foster critical thinking, intercultural understanding, and a holistic approach to learning. The IB offers programs for students aged 3 to 19, with each program tailored to different age groups and educational goals.

5.2.1 EARLY YEARS PROGRAMME (PYP-Preschool & Kindergarten)

The children are engaged in active dramatic play, stories, discussions, games, rhymes, word play and mind problems that develop strong language skills with the help of structured A to Z reading and writing programme and mathematic integration.

Core subjects : English, Mathematics, Science, Social Studies

Movements : Physical Education, Yoga, Dance

Arts : English, Mathematics, Science, Social Studies

5.2.2 MIDDLE YEARS PROGRAMME (MYP-Grade1 to Grade 5)

The children are engaged in active dramatic play, stories addressing students academic, social and emotional well-being. Encourages the students to develop independence and take responsibility for their own learning. It also supports students effort to gain understanding of the world and to function comfortably within it.

Core subjects : English, Mathematics, Science, Social Studies
Movements : Physical Education, Yoga, Dance
Arts : English, Mathematics, Science, Social Studies

5.2.3 MIDDLE YEARS PROGRAMME (MYP-Grade 6 to Grade 8)

This Curriculum Framework identifies a set of learning objectives for English, Mathematics and Science for each year of lower secondary education and provides a structure that focuses on what students should be able to do at the end of each stage.

Core subjects : English, Hindi/French, Mathematics, Science, Social Studies
Movements : Physical Education, Yoga, Dance
Arts : English, Mathematics, Science, Social Studies

5.2.4 DIPLOMA PROGRAMME (Grade 11 & Grade 12)

IGCSE develops learner knowledge, understanding and skills in Subject content, applying knowledge and understanding to new as well as unfamiliar situations, intellectual enquiry, flexibility and responsiveness to change, working and communicating in English and cultural awareness.

5.3 IGCSE CURRICULUM

The International General Certificate of Secondary Education (IGCSE) curriculum is a globally recognized educational program administered by Cambridge Assessment International Education (CAIE). It is designed for students aged 14 to 16 and typically serves as a two-year course of study leading to the completion of the IGCSE examinations.

5.3.1 MIDDLE YEARS PROGRAMME (MYP-Grade 9 & Grade 10)

Students of Classes 9 and 10 study a range of subjects that broaden their understanding and deepen their learning through varied methodologies. Students are encouraged to collaborate and use appropriate technology to enrich their learning and enhance their understanding of local, national, and global issues.

5.4 STANDARDS :

5.4.1 Corridors

Minimum Width Provisions for Passageway/Corridors		
S. No.	Type of Building	Minimum width (m)
(A)	(B)	(C)
1	Individual Residential buildings	1.00
2	Other Residential buildings, e.g. Hostels, Group Housing etc.	1.25
3	All Other Buildings including Hotels	1.50
4	Assembly Buildings like Auditoria, Theatres and Cinemas	2.00
5	Hospital, Nursing Homes, etc.	2.40
6	Ramps- for applicability in all other building types refer CHAPTER-IX-2 [PROVISIONS FOR DIFFERENTLY ABLED, ELDERLY & CHILDREN]	Ramps & Gradients

Figure 5.1 Corridor Provisions. Image Source : (Andhra Pradesh Building bye-laws)

(a) Exit corridors and passageways shall be of width not less than the aggregate required width of exit doorways leading from them in the direction of travel to the exterior.

(b) The minimum width of a corridor in a residential building shall be 1.2m for single loaded and 2.0m for double loaded and in all other buildings shall be 1.5m.

(c) Where stairways discharge through corridors and passageways, the height of corridors and passageways shall be not less than 2.4m.

5.4.2 Pathways

(a) Public walks should be at least 1200mm wide and should have a gradient not greater than 1 in 20

(b) A walk shall have a level platform at the top which is at least 1500mm long, if a door swings out onto the platform or towards the walk. This platform shall extend at least 300mm beyond each side of the doorway.

(c) A walk shall have a level platform at least 900 mm deep, if the door does not swing

onto the platform or towards the walk. This platform shall extend at least 300 mm beyond each side of the doorway

5.4.3 Staircase

Minimum Width Provisions for Stairways		
S. No.	Type of Building	Minimum width for each stairway (m)
(A)	(B)	(C)
1	Residential Non High Rise Buildings	1.00
2	Other Residential Buildings e.g. Apartments, Hostels, Group Housing, Guest Houses, etc.	1.25
3	Educational Buildings like Schools, Colleges	1.50
4	All other buildings including Hotels, Nursing Homes etc.	1.50
5	Institutional Buildings like Hospitals etc.	2.00
6	Assembly Buildings like Auditoria, Theatres and Cinemas	2.00

Figure 5.2 Staircase Provisions. Image Source : (Andhra Pradesh Building bye-laws)

5.4.4 Ramps

(a) Ramps shall not be allowed in the mandatory setbacks including building line, however ramps may be permitted in the side and rear setbacks after leaving minimum 7m of setback for movement of the fire-fighting vehicles.

(b) The ramps to basement and parking floors shall be with at least two ramps each with a minimum of 3.6m wide or one ramp with a minimum of 5.4m wide, provided with gradient of 1:8 for cars and 1:15 for heavy vehicles. At curved portions of the ramp the slope should not be more than 1:12.

5.4.5 SETBACK

Sl. No.	Plot Size (in Sqm) Above – Up to	Parking provision	Height (in m) Permissible Up to	Building Line or Minimum Front Setback to be left (in m)					Minimum setbacks on remaining sides (in m)
				Abutting Road Width					
				Up to 12 m	Above 12m & up to 18m	Above 18m & up to 24 m	Above 24m & up to 30m	Above 30m	
(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)
11	Above 2500	Stilt + 2 or more Cellar floors	7	3	4	5	6	7.5	5.0
			15	3	4	5	6	7.5	6.0
			18**	3	4	5	6	7.5	7.0

Figure 5.3 Setback. Image Source : (Andhra Pradesh Building bye-laws)

5.4.6 Sanitary fitting

TABLE 9 SANITARY FITTINGS FOR SCHOOLS				
(Clause 16.2)				
Sl. No.	FITMENTS	PRE-SCHOOLS	SCHOOLS OTHER THAN PRE-SCHOOLS	
			For Boys	For Girls
(1)	(2)	(3)	(4)	(5)
1.	Water-closets	1 per 15 pupils or part thereof	1 per 40 pupils or part thereof	1 per 40 pupils or part thereof
			← 1 per 30 members of staff or part thereof →	
2.	Ablution taps	1 in each water-closet	1 in each water-closet	1 in each water-closet
		1 water tap with draining arrangements shall be provided for every 50 pupils or part thereof in the vicinity of water-closets and urinals		
3.	Urinals	—	1 per 20 pupils or part thereof	Squatting plate urinals 1 per 20 pupils or part thereof
			← 1 per 30 members of staff or part thereof →	
4.	Wash basins	1 per 15 pupils or part thereof	1 per 40 pupils or part thereof	1 per 40 pupils or part thereof
			← 1 per 30 members of staff or part thereof →	
5.	Baths	1 bath-sink per 40 pupils or part thereof	—	—
6.	Drinking water fountains	← 1 for every 50 pupils or part thereof →		
7.	Cleaner's sink	← 1 per floor, Min →		

Figure 5.4 Sanitary Requirements.

Image Source : (Andhra Pradesh Building bye-laws)

5.4.7 Classroom Layouts:

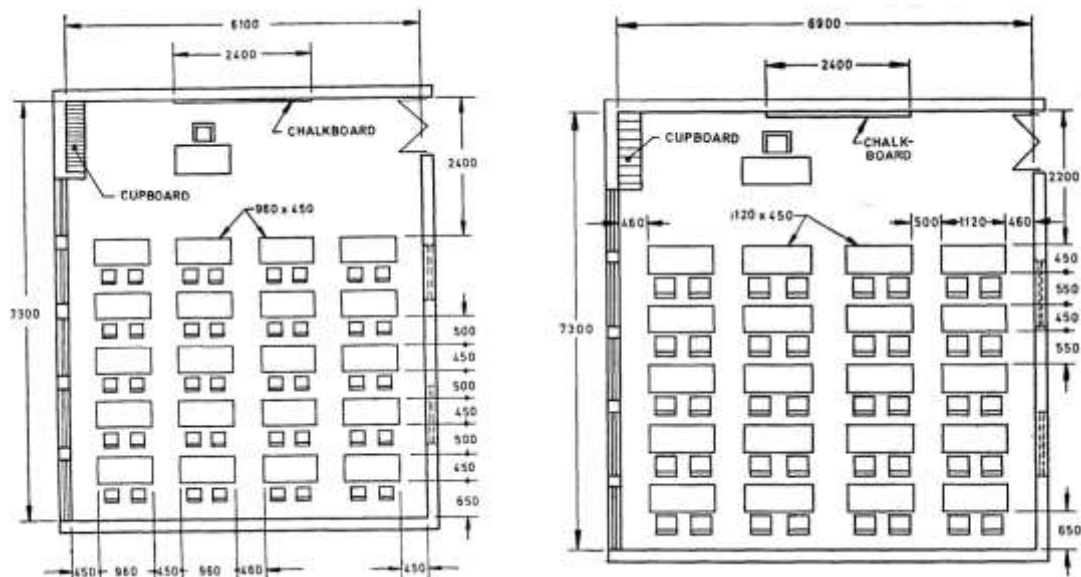


Figure 5.5 (a), (b) Typical Classroom Layouts.

Image Source : (Andhra Pradesh Building bye-laws)

5.4.8 Laboratories

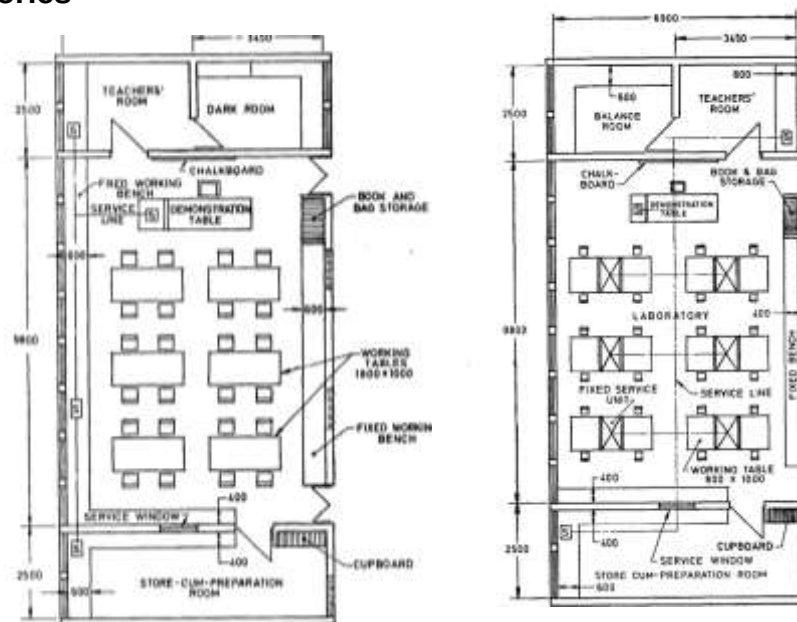


Figure 5.6 (a), (b) Typical Physics & Chemistry Labs Layout.

Image Source : (Andhra Pradesh Building bye-laws)

CHAPTER 6

SITE STUDY AND ANALYSIS

6.1 SITE LOCATION

Site Location : Boddavaripalem, Kodavalur mandal, Nellore, Andhra Pradesh.

Site Area : 14.95 Acres

Project Undertaken by : Infrastructure corporation of Andhra Pradesh (INCAP)

Site ownership : The proposed Site belongs to the Revenue Department and the Title of the Land lies with the Government of Andhra Pradesh.

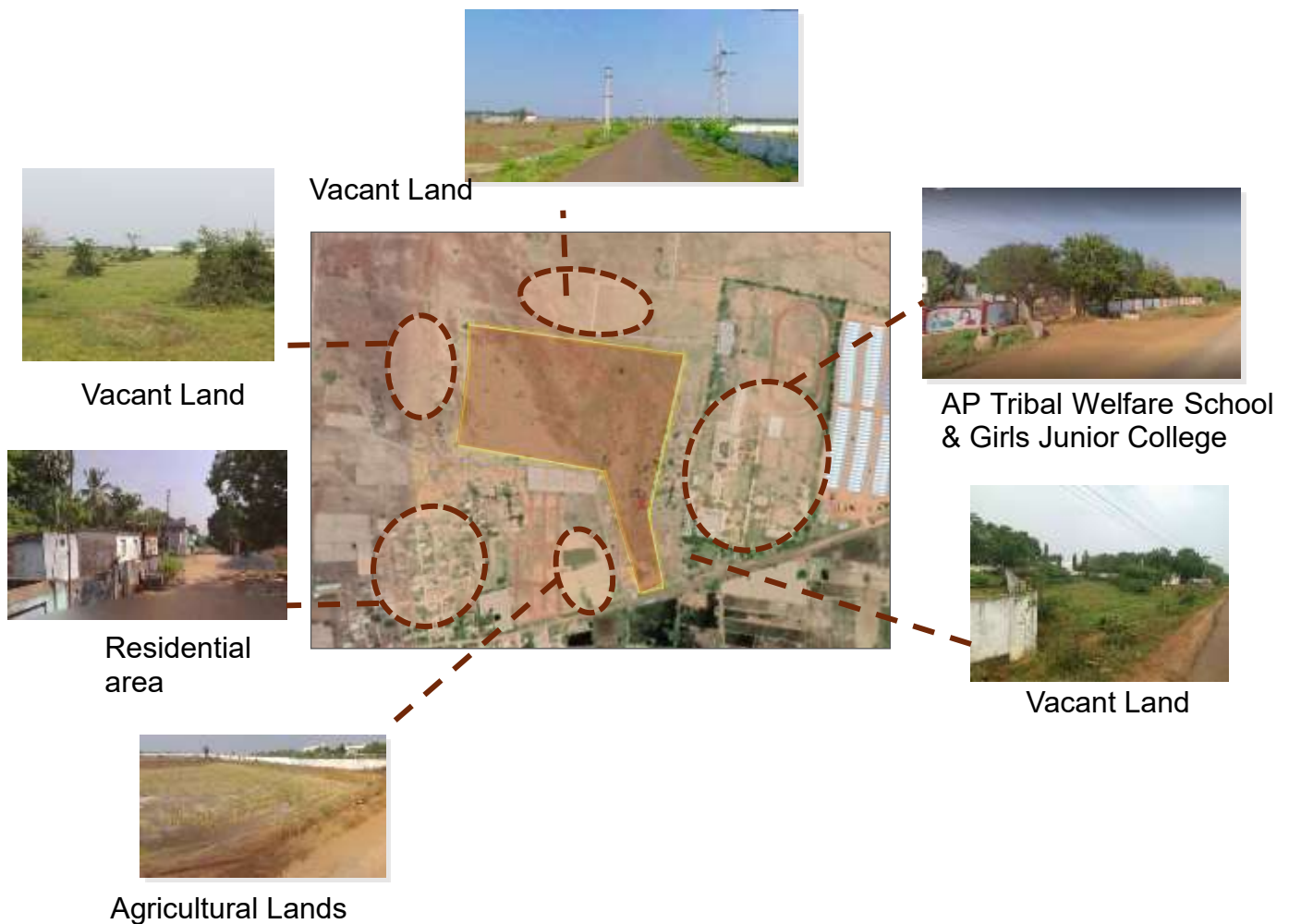


Figure 6.1 Site & Neighborhood Context

6.2 NEIGHBOURHOOD CONTEXT & SITE BOUNDARIES

Buildings within 1km to the site are predominantly residences of single storied.

Most of the area around the site within 5km is vacant or agriculture land and major buildings are residential and few commercial (Warehouse, mechanical stores, general stores, restaurants).

- Northern side : Vacant Government Lands
- Southern side : 3.8M Adjacent road (Proposed road width is 18M)
- Eastern side : AP Tribal Welfare School & Girls Junior College
- West side : Agricultural Lands

6.3 Proximity

- Nellore Railway Station – 18 km
- Nellore RTC Bus Stand – 22 km
- Tirupati International Airport – 140 km
- Proposed Airport at Dagadarthi – 5 km
- National Highway (NH-16) – 0.8 km

6.4 Climate Analysis

The climate of Nellore city can be placed under Tropical climate category which has hot and humid summers and warm winters. April and May are the hottest months, generally last until the end of the June. December, January and February are the coolest months.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Record high °C (°F)	39.5 (102.9)	38.4 (101.0)	43.8 (110.8)	45.8 (114.4)	46.7 (116.1)	46.7 (116.1)	42.3 (108.1)	40.8 (105.4)	41.7 (107.1)	39.4 (102.9)	35.3 (95.5)	32.1 (90.0)	40.7 (105.3)
Mean daily maximum °C (°F)	29.5 (85.1)	32.4 (90.3)	35.2 (95.4)	37.8 (100.0)	38.8 (101.8)	38.2 (100.8)	35.1 (95.2)	33.1 (91.6)	32.4 (90.3)	31.5 (88.7)	29.5 (85.1)	28.0 (82.4)	34.2 (93.6)
Mean daily minimum °C (°F)	20.7 (69.3)	22.0 (71.6)	23.9 (75.0)	26.2 (79.2)	28.4 (83.1)	27.3 (81.1)	26.7 (80.1)	26.4 (79.5)	26.4 (79.5)	25.3 (77.4)	23.2 (73.8)	21.5 (70.7)	25.0 (77.0)
Record low °C (°F)	15.0 (59.0)	16.1 (61.0)	17.2 (63.0)	20.3 (68.4)	22.1 (71.8)	22.5 (72.5)	21.2 (70.2)	21.5 (70.7)	21.5 (70.7)	18.9 (66.0)	16.7 (62.1)	14.4 (57.9)	14.4 (57.9)
Average rainfall mm (inches)	38.0 (1.50)	1.7 (0.07)	3.5 (0.14)	8.7 (0.34)	43.1 (1.70)	28.9 (1.14)	85.9 (3.38)	96.6 (3.79)	97.2 (3.83)	287.1 (11.30)	290.8 (11.45)	100.4 (3.95)	1,089.4 (42.89)
Average rainy days (at 17.30 (5/8))	1.3	0.2	0.2	0.4	1.8	3.0	8.1	8.4	8.4	9.7	9.1	3.7	48.3
Average relative humidity (%) (at 17.30 (5/8))	64	61	61	62	65	51	56	56	62	71	74	71	62

Figure 6.2 Climate Chart

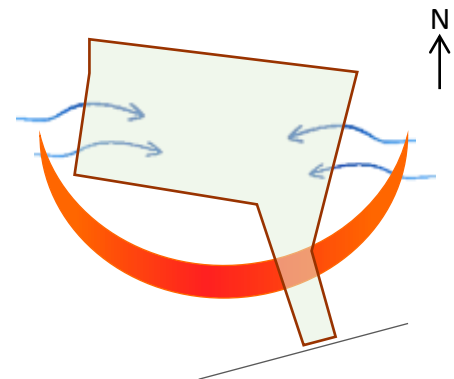


Figure 6.3 Sun & Wind Direction

6.5 NATURAL FEATURES

6.5.1 TOPOGRAPHY

Site has contour before the project is initiated, later on for with the hope of constructing the school, the land is filled with sand to level the site. Currently Construction work is not started.

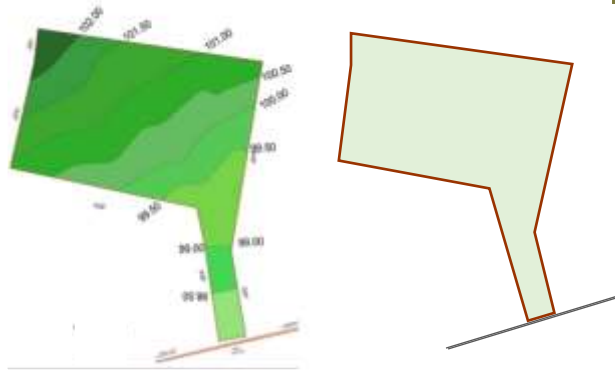


Figure 6.5 Contour before & after the project initiation



Figure 6.4 Site Topography



Figure 6.6 Land Surface

6.5.2 VEGETATION

LAND SURFACE

Site has ground cover and bushes and the Land surface is sandy.



Figure 6.7 (a), (b), (c) Vegetation

6.6 MAN MADE FEATURES

COMPOUND WALL

As the site belongs to revenue department, the whole site (approx. 38 Acres) is defined with the compound wall in which 14.95 acres is allocated to build International School



Figure 6.8 Compound Wall

6.7 SWOT ANALYSIS

6.7.1 STRENGTHS

- Proximity & Connectivity: The location is conveniently accessible from Nellore via the NH-16
- Potential: The new Nellore airport is planned to be developed in Dagadarthi which is just few kilometres away from the project site. In the future the city would expand towards the airport and residential areas would come up near to the project site

6.7.2 WEAKNESS

- Nascent Market: The market for International Schools at Nellore is at a nascent stage and it will take longer duration to establish the market for the same.
- Operational Costs: The cost of running a School with IB / IGCSE curricula is high when compared to schools offering only National Curricula.

6.7.3 OPPORTUNITIES

- Growing Awareness: There is a growing awareness of International Schools and their curricula and parents are willing to send their children to the international curricula as the benefits of a well-rounded and holistic curriculum become apparent.
- Low Competition: There are very few schools offering IB / IGCSE curricula in Nellore and the planned international school can become the market leader if suitably marketed due to its inherent advantages.

6.7.4 THREATS

- New Market: The Project is the first time that an International School will be developed on a Public Private Partnership and there are inherent risks involved for various parties before the project can be made successful.

CHAPTER 7

ARCHITECTURAL DESIGN

7.1 SPATIAL REQUIREMENTS

Table 6.1 Area Requirement

Zone	Spaces	Capacity (in each room)	Area per person (sqm)	Area (sqm)	No.of rooms	Total Area (sqm)
Administration	Reception & Waiting Lobby			150	1	150
	Administration & consulation	30		50	1	50
	Principal Room	5		12	1	12
	Chairman Room	8 (approx)		20	1	20
	Staff Lounge	50 (approx)	1.5	75	1	75
	Board Room	20	4.5	90	1	90
	Staff Cabins	10		20	1	20
	Accounts & Locker Room			60	1	60
	Toilets (staff)	2		12	4	48
	Total	Carpet Area				525
	Circulation	35% of carpet area				183.75
	Total Area					708.75
Early Years Education	Entrance Lobby			50	1	50
	Nursery Classrooms	20	3.2	64	2	128
	Day care center	20	3.8	76	2	152
	KG Classrooms	20	3.6	72	4	288
	Indoor Play Area	25		150	1	150
	Students Toilet	7		20	2	40
	Staff Room	10 (approx)	1.7	17	1	17
	Staff Toilet	2		6	2	12
	Total	Carpet Area				837
	Circulation	35% of carpet area				292.95
	Total					1129.95
Primary	Entrance Lobby			75	1	75

Education	Classrooms (Grade 1-5)	25	3.8	95	15	1425
	Maths Lab	25	2.5	62.5	1	62.5
	Computer Lab	25	2.5	62.5	1	62.5
	Library	25		75	1	75
	Staff Room	10(approx)	1.7	17	2	34
	Toilet	6		16	6	36
	Total	Carpet Area				1770
	Circulation	35% of carpet area				619.5
	Total					2,390
Secondary Education	Entrance Lobby			75	1	75
	Classrooms (Grade 6-8)	25	3.8	95	9	855
	Classrooms (Grade 9-12)	25	4.5	112.5	12	1350
	Computer Lab	25	2.5	62.5	1	62.5
	Physics Lab	25	3.5	87.5	1	87.5
	Chemistry Lab	25	3.5	87.5	1	87.5
	Biology Lab	25	3.5	87.5	1	87.5
	Lab storage	25			3	75
	Library	25		75	1	75
	Staff Room	15(approx)	1.7	25.5	2	51
	Toilet	8		22	6	132
	Total	Carpet Area				2938
	Circulation	35% of carpet area				1028.3
	Total					3,966
Shared Facilities	Infirmary			75	1	75
	Arts Room	25	5	125	2	250
	Music Room	25	5	125	2	125
	Dance Room	25	9	225	1	225
	Drama Room	25		75	1	75
	Robotics Lab	25		125	1	125
	Language Room	25		75	1	75
	Exhibit Area	100	2.8	280	1	280
	Club Activities Room	25		125	2	250
	Learning Resource Centre	50 (approx)		150	1	150
	Photography studio/Dark room	10 (approx)		30	1	30

	Multipurpose Hall	100 (approx)		300	1	300
	Gymnasium	50 (approx)	9	450	1	450
	Cafeteria & Dining	500	1.3	650	1	650
	Auditorium	600	0.9	540	1	540
	Indoor Stadium					355
	Total	Carpet Area				3955
	Circulation	35% of carpet area				1384.25
	Total					5339.25
Boys Hostel	Rooms	3		14	100	1400
	Common Area			60	1	60
	Dining Hall	300	1.3	390	1	390
	Kitchen			260	1	260
	Warden Office			25	1	25
	Total	Carpet Area				2135
	Circulation	35% of carpet area				747.25
	Total					2882.25
Girls Hostel	Rooms	2		10	100	1000
	Common Area			60	1	60
	Dining Hall	200	1.3	260	1	260
	Kitchen			260	1	260
	Warden Office			25	1	25
	Total	Carpet Area				1605
	Circulation	35% of carpet area				607.25
	Total					2212.25
Staff Quarters	Staff Units				24	2000
	Director's Quarters					500
	Total					2500
TOTAL AREA						21,128

Site Area – 60,500 sqm

Parking – 20% of built-up area

7.2 DETAILED DRAWINGS

MASTER PLAN



LEGEND

1. ENTRANCE PLAZA
2. ADMINISTRATION
3. EARLY YEARS EDUCATION BLOCK
4. PRIMARY EDUCATION BLOCK
5. PRIMARY, SECONDARY & HIGHER SECONDARY EDUCATION BLOCK
6. PERFORMING ARTS & INDOOR SPORTS
7. CHANGING & LOCKER ROOMS
8. ENTRANCE PLAZA (LEADING TO HOSTEL)
9. DINING HALL
10. STUDENTS HOSTEL (MALE)
11. STAFF & STUDENTS HOSTEL (MALE)
12. DIRECTORS QUARTERS
13. STUDENTS HOSTEL (FEMALE)
14. STAFF & STUDENTS HOSTEL (FEMALE)
15. BADMINTON COURT
16. FOOTBALL COURT
17. BASKETBALL FIELD
18. TRACK & FIELD
19. SWIMMING POOL
20. CAR PARKING
21. BUS PARKING
22. SECURITY CABIN

Plate 1 Master Plan

ADMINISTRATION BLOCK



Plate 2 Administration Ground floor & First Floor Plans



Plate 3 Administration Terrace Plan, Section & Elevation

EARLY YEARS EDUCATION BLOCK

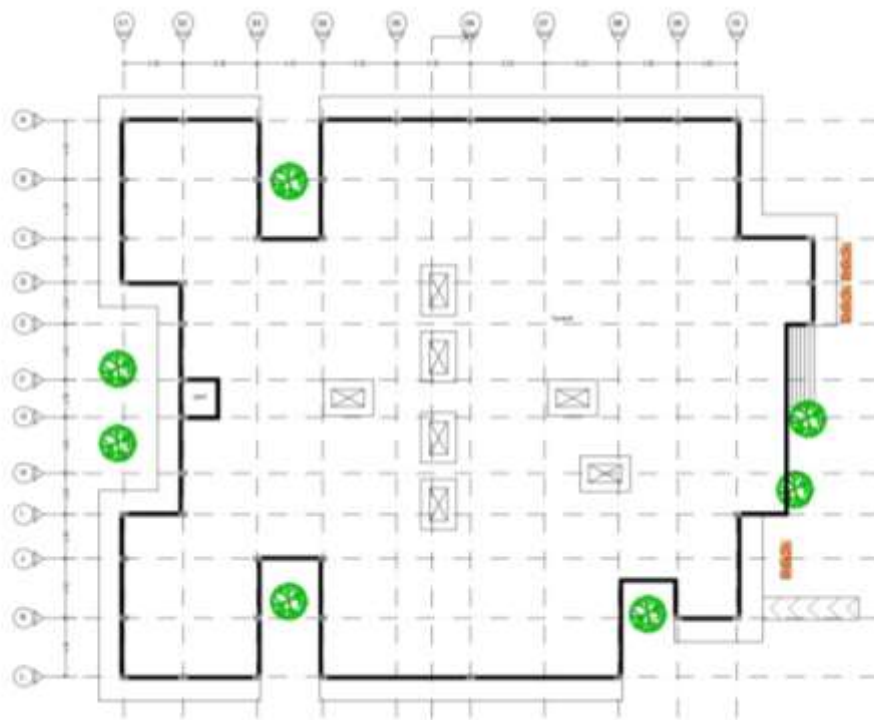
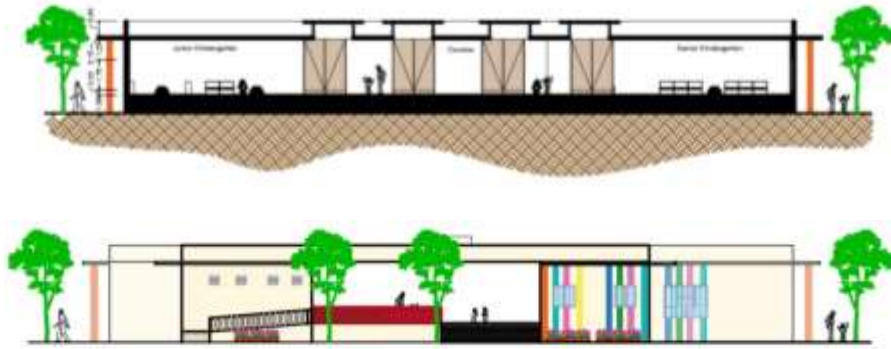


Plate 4 Early Years Education Block Ground Floor & Terrace Plan



PRIMARY EDUCATION BLOCK



Plate 5 Early Years Education Block Section, Elevation & Primary Education Block –First Floor Plan



Plate 6 Primary Education Block Second Floor, Terrace
Plan, Section & Elevation

PRIMARY, SECONDARY & HIGHER SECONDARY BLOCK

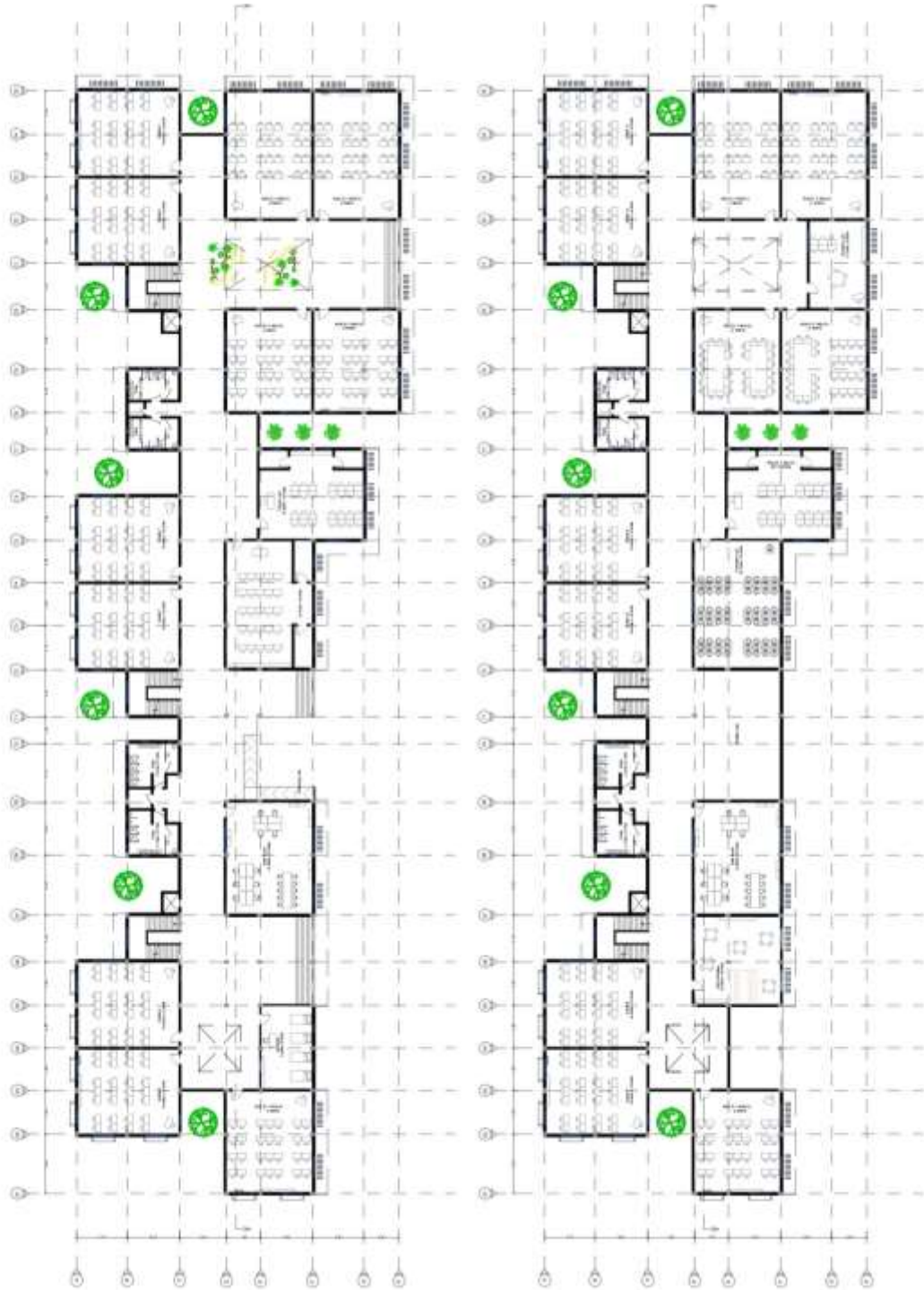


Plate 7 Primary, Secondary & Higher Secondary Ground Floor & First Floor Plans

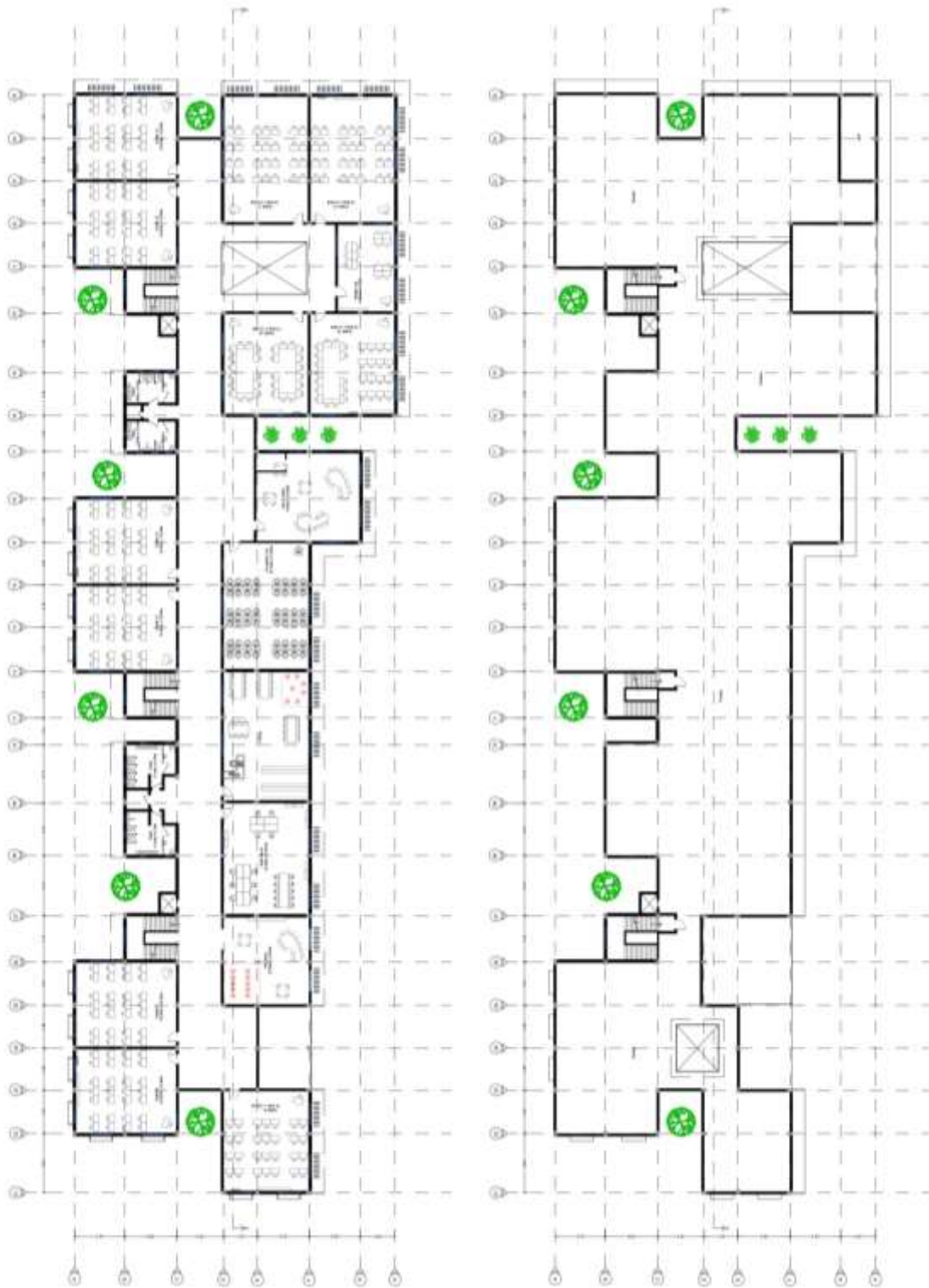


Plate 8 Primary, Secondary & Higher Secondary First Floor & Terrace Plans



Plate 9 Primary, Secondary & Higher Secondary Section
and Elevation

PERFORMING ARTS

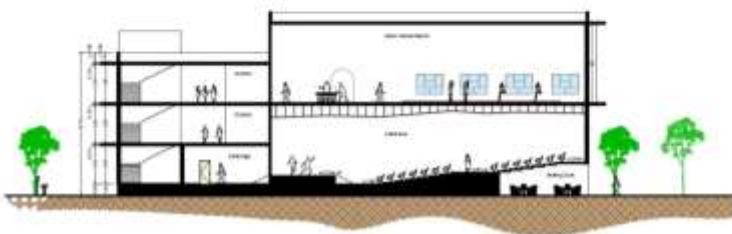
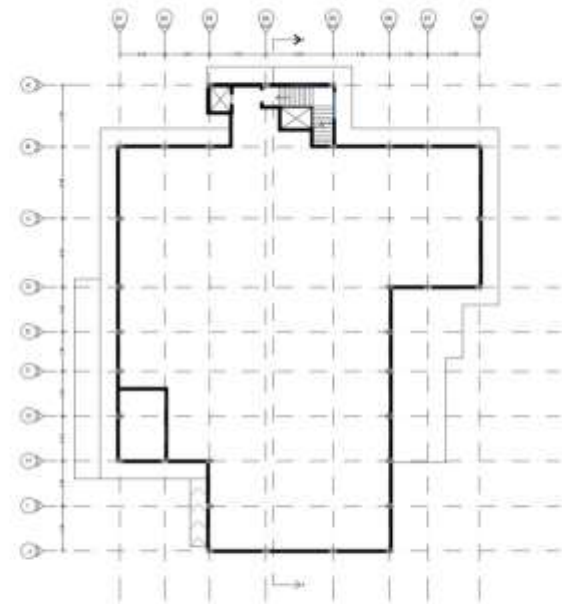
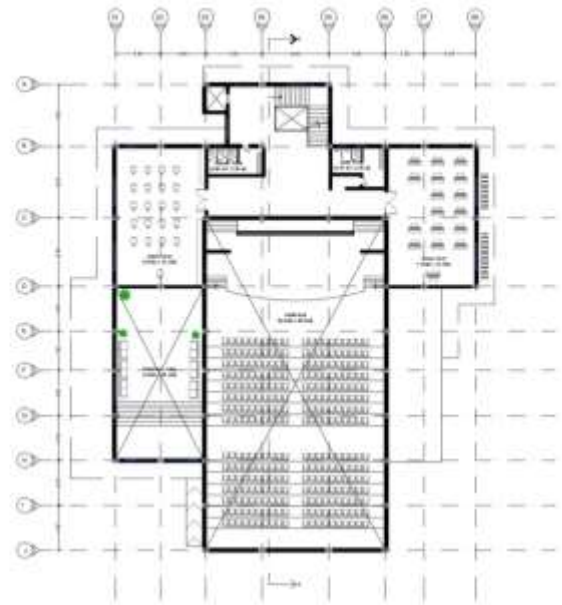


Plate 10 Performing Arts Floor Plans, Section & Elevation



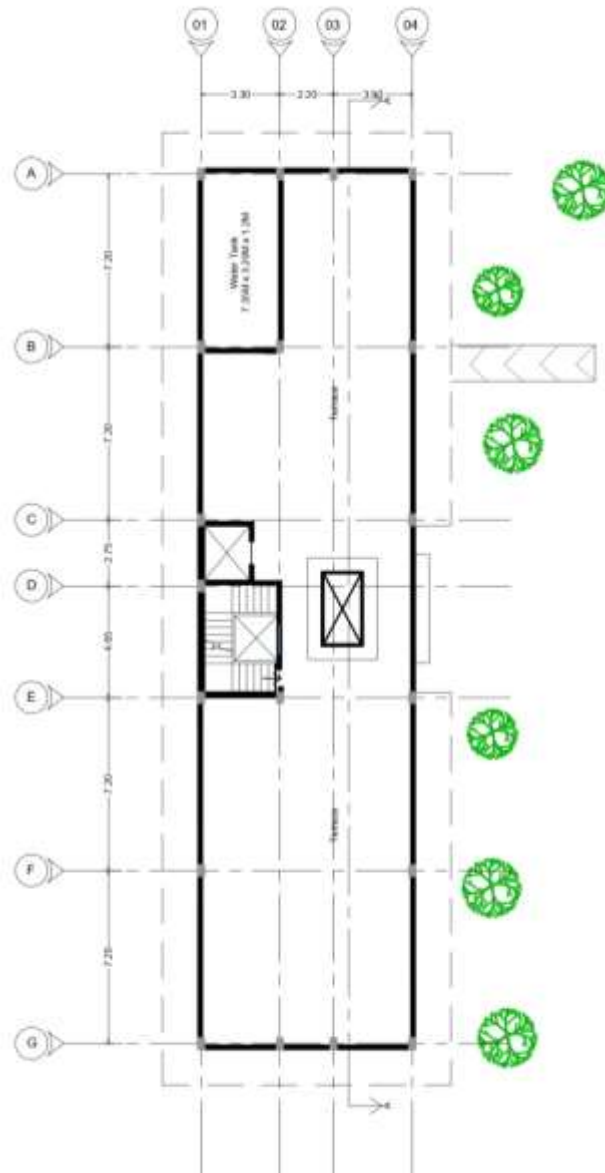


Plate 12 Students Hostel Fifth Floor & Terrace Plan



Plate 13 Students Hostel Section & Elevation

STAFF AND STUDENTS HOSTEL - MALE

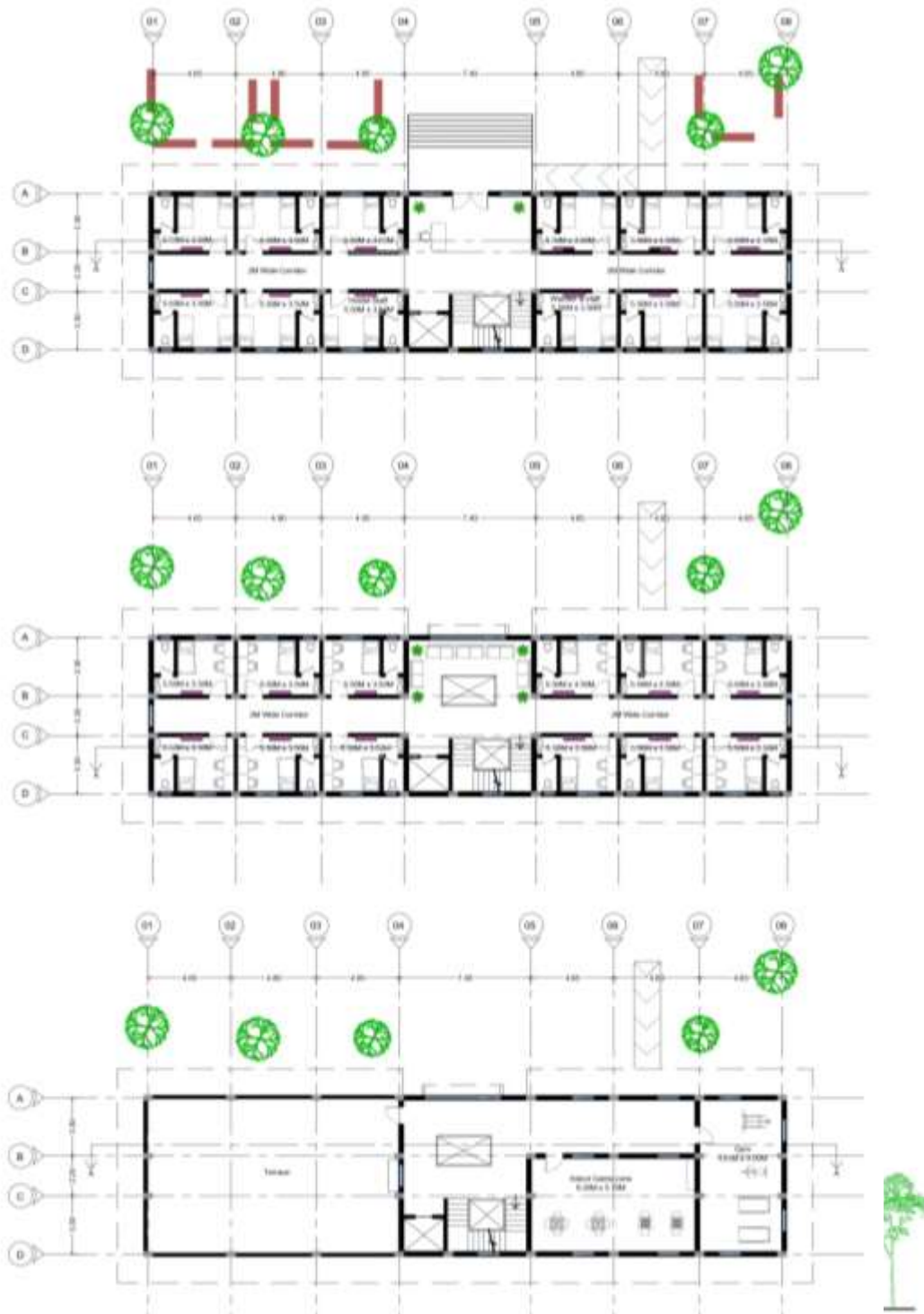


Plate 14 Female Staff & Students Hostel Floor Plans

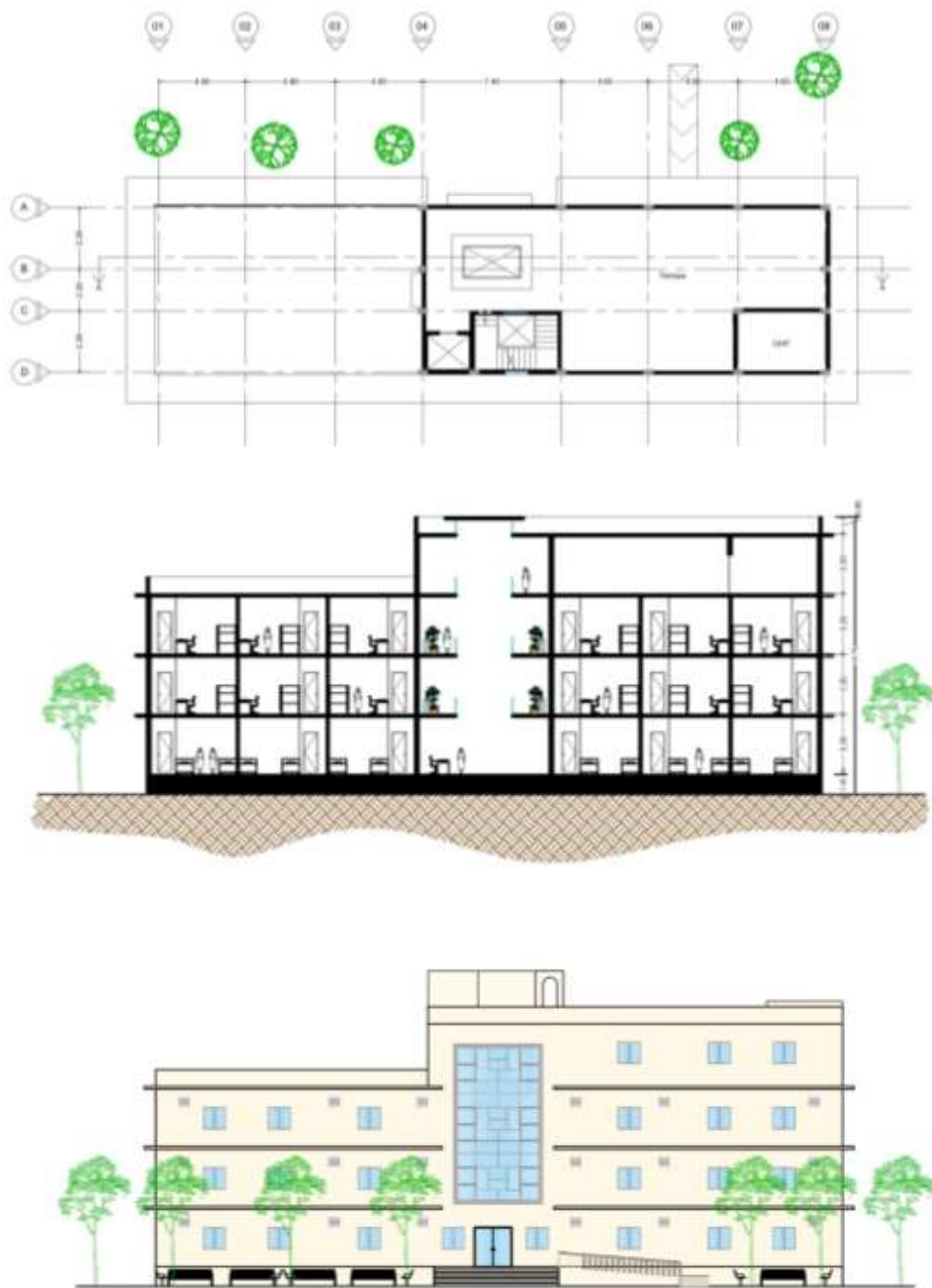


Plate 15 Female Staff & Students Terrace Plan, Section Elevation

VIEWS



Plate 16 Primary, Secondary & Higher Secondary Block Views and Outdoor Seating View

CONCLUSION

Based on the findings of the study and analysis, an International Residential School serves as an ideal environment for the holistic development of students from diverse cultural backgrounds. The school's design and structure significantly influence the educational experience, promoting a sense of community and global citizenship.

In international settings, schools often evolve organically, reflecting the multicultural fabric of their student body. Purpose-built educational facilities require careful planning and thoughtful integration to harmonize with the surrounding environment and meet the diverse needs of their occupants.

Understanding student behavior and learning patterns is crucial, as educational spaces have undergone substantial changes in both design and function over time. Traditional educational models often fall short compared to modern, flexible designs that accommodate various learning styles and activities. Issues such as inadequate communal areas and inflexible classroom layouts can hinder the school's ability to foster a vibrant, interactive community. Additionally, funding constraints and high operational costs can limit the accessibility and inclusivity of these schools, preventing them from fully realizing their potential as multicultural learning hubs.

This Thesis is carried out by prioritize adaptability and resilience, ensuring that the facilities can evolve with changing educational paradigms and technological advancements. Flexible learning spaces, modular furniture, and technologically integrated classrooms are essential in accommodating a dynamic curriculum and diverse teaching methodologies. Moreover, the integration of green spaces and outdoor learning environments supports physical health and well-being, fostering a connection with nature and promoting environmental stewardship among students.

This thesis demonstrates that thoughtful architectural design can significantly impact educational outcomes, creating spaces that not only meet the practical needs of a diverse student body but also inspire and nurture their holistic development. By prioritizing cultural sensitivity, environmental responsibility, and community engagement, the International Residential School serves as a beacon of what modern education can achieve, providing a nurturing ground for future global citizens.

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