



DAID FORUM FOR RESEARCH AND DESIGN SOLUTIONS

2024/25,

VOL I, STUDIO IV,

Design of School Complexes

Chapter Three: Design
Solutions

Editor in Chief: Prof. Arch, Paul Mwangi Maringa
(PHD), CBS, FAAK, MKIP





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Chapter Three: Design Solutions

DEPARTMENT OF ARCHITECTURE AND INTERIOR DESIGN (DAID)

SCHOOL OF ENGINEERING AND ARCHITECTURE (SEA)

KENYATTA UNIVERSITY (KU)





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Department of Architecture and Interior Design (DAID),

School of Engineering and Architecture (SEA), Kenyatta University (KU),

Nairobi, Kenya.



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KENYATTA UNIVERSITY (KU).



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FOREWORD

It is with immense satisfaction, I introduce this volume celebrating the architectural achievements of the fourth-year, first-semester Design Studio cohort. The projects featured here are a testament not only to the refined resolution of their designs, but to the unwavering dedication, imagination, and advancement that each individual has exhibited over the course of this semester.

Our semester emphasized diverse design considerations for learning environments, catalysts for dynamic conversations about school/institutional design, personal and collective identity, and the nature of shared public spaces. Accompanying these talented students through an exploration of the pivotal building types inherent in learning institutions, was immensely rewarding, as we delved into their societal impact on learning and essential interaction, spatial requirements, and their remarkable power to motivate and unite young people in learning and character formation.

What stands out most is how these students infused conceptual analyses into built form, responding and aligning to the existing archetypal images and local context with both sensitivity and bold ambition. Their perseverance, enthusiasm for learning, and inventive spirit continually raised the bar of our studio practice, making this journey deeply fulfilling.

Thank you, dear students, for your diligence, tenacity, and wholehearted commitment. May this book mark a significant step forward in your academic journey, serving as a lasting source of inspiration.

Dr. Rehab Hamdi Elnaggar (PhD), EEE-EES,
Studio Master, Department of Architecture and Interior Design (DAID),
Kenyatta University (KU), Nairobi, Kenya.

September 2025



EDITORIAL NOTE



A spirit of inquiry, play, and continuous exploration forms the foundation of architectural education. Pioneering building design calls for students to embrace risk, adapt to change, and pursue unconventional pathways. Their creativity thrives when imagination merges seamlessly with hands-on technical expertise.

Every designer's journey is shaped by a blend of local context and global perspective, fostering a dynamic exchange of influences. This diversity ignites inventive approaches and fresh solutions in the design process. Students are instructed through a balance of structured methodologies with opportunities for spontaneous expression. This approach offers students a robust framework yet ample space to unleash their originality. By engaging in direct, client-focused projects, students tackle authentic architectural challenges, contributing meaningfully to their communities.

Collaboration and shared learning experiences are at the core of bringing remarkable ideas to life. Genuine innovation emerges from interactive teamwork and the ability to respond to shifting social and environmental contexts. Students are guided through all phases of architectural development, from uncovering client goals and reading the nuances of each site, to untangling complex problems and envisioning unique design options.

Progressing through every stage, whether investigation, critical analysis, site assessment, or actual design, students rely on constructive feedback through class presentations and desk crits. They are also encouraged to exercise regular thoughtful self-assessment to refine their creations. Throughout the process, careful attention is given not only to how a building is conceived but also to the practicalities of its realization and its role within its surroundings.

Welcome to this didactic discourse of an empirical, creative architectural design process.

Prof. Arch. Paul Mwangi Maringa (PhD), CBS, FAAK, MKIP,
Adjunct Professor of Architecture and Planning, Department of Architecture and Interior Design (DAID), School of Engineering and Architecture (SEA), Kenyatta University (KU).



TABLE OF CONTENTS

- ✓ Disclaimer
- ✓ Foreword
- ✓ Editorial note
- ✓ Content
- ✓ Preface

CHAPTER 1: CASE STUDIES (Pg 1-58)

Reflections on Sabis International School (2-18)

Reflections on Hayah International Academy (19-32)

Reflections on Copenhagen International School (33-46)

Reflections on Diamond Ranch High School (47-58)

CHAPTER 2: SITE ANALYSIS (Pg 59-122)

Topical cues on site analysis (60-61)

Jamhuri High School site analysis - Group two perspectives (62-88)

Jamhuri High School site analysis - Group three perspectives (89-112)

Jamhuri High School site analysis - Group four perspectives (113-122)

CHAPTER 3: DESIGN SOLUTIONS (Pg 123-206)

Topical cues on design philosophies and concepts (Pg 124-128)

Signal portfolio of design solutions for the school complex (129-200)

1. Emmanuel Kibet Yego (130-139)
2. Amoko Jasper Balm Ogeno (140-155)
3. Joseph Stephen Amimo (156-168)
4. Geoffrey Munyui Muriithi (169-182)
5. Harith Mohamed Abdulwahab (183-196)
6. Tabitha Wanjiru Maina (197-206)



PREFACE

PROJECT 01: DESIGN A SCHOOL COMPLEX. PRINCIPAL POLICY ANCHORS:

- I. Sustainable Development Goal (SDG) 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.
- II. Africa Agenda 2063 goal 2: Well-educated citizens and skills revolution underpinned by science, technology, and innovation.

The importance of schools extends far beyond their physical structures; they serve as foundational hubs where knowledge meets aspiration, shaping the minds and futures of generations. Schools are pivotal in nurturing intellectual curiosity, fostering social development, and instilling values that prepare individuals for active participation in society. Moreover, they embody cultural heritage and community identity, serving as gathering places that cultivate collaboration and lifelong learning.

As architects tasked with designing a school complex, we recognize the profound impact these institutions have on shaping society and are committed to creating environments that promote innovation, inclusivity, and a sense of belonging for all stakeholders.

Our goal is to design a visionary school complex. This project presents a unique opportunity to redefine educational spaces, blending functionality with creativity to foster an environment conducive to learning and growth. As architects entrusted with shaping the future of education, our goal is to design a campus that not only meets the practical needs of a modern educational institution but also inspires and empowers the community it serves. This brief outlines the objectives, challenges, and creative avenues for designing a school complex that promotes innovation, inclusivity, sustainability, and excellence in the educational process. Our aim is to envision a space where architecture becomes a catalyst for educational transformation and student enrichment.



PREFACE

Design objectives for a school complex typically aim to create a conducive environment for learning, safety, and community engagement. Here are some key objectives:

- 1. Educational Functionality:** Design spaces that support various educational activities, from classrooms to laboratories, libraries, and recreational areas, ensuring they are adaptable, attractive, stimulating and conducive to effective learning (Scheduled 1-hour topical lecture inputs on essentials of interiors).
- 2. Safety and Security:** Prioritize the safety of students and staff with secure building layouts, controlled access points, and emergency response plans.
- 3. Accessibility:** Ensure the school complex is accessible to all, including students with disabilities, by incorporating ramps, elevators, and accessible facilities throughout the campus.
- 4. Sustainability:** Integrate sustainable practices such as energy-efficient building design, renewable energy sources, water conservation measures, and green spaces to promote environmental stewardship. Considered choice of materials for internal and external use is encouraged. This feeds well into sustainability concepts of a circular economy in building resource use. It minimises embodied energy by reducing extraction, processing/manufacture, transportation and waste of materials. It also scales down life cycle environmental impacts of the buildings (Scheduled topical lecture input).
- 5. Community Engagement:** Create spaces that foster community interaction, such as multipurpose halls, outdoor gathering areas, and facilities for extracurricular activities to enhance social development.



PREFACE

- 6. Flexibility and Adaptability:** Design flexible (adjustable, versatile, refitable, convertible and scalable) spaces that can accommodate changes in educational methods and technologies over time, allowing for easy adaptation to future needs without major renovations. Apply well thought-out design with regard to space organisation, structural order, services and the building envelop. Adaptable buildings reduce the life cycle environmental impacts of the buildings (Scheduled 1-hour topical Lecture input).
- 7. Aesthetic Quality:** Enhance the aesthetic appeal of the school complex through thoughtful attractive, stimulating, architectural design, landscaping, and integration with the surrounding environment to create an inspiring and pleasant atmosphere (Scheduled 1-hour topical lecture inputs on principal landscaping features).
- 8. Technology Integration:** Incorporate modern technology infrastructure including high-speed internet, smart classrooms, and digital resources to support contemporary teaching methods and learning experiences.
- 9. Health and Well-being:** Promote the well-being of students and staff with well-ventilated spaces, natural light, ergonomic furniture, and facilities that encourage physical activity and healthy lifestyle choices.
- 10. Maintenance and Durability:** Design buildings and outdoor spaces with durable materials and efficient maintenance practices to ensure longevity and cost-effectiveness over the life cycle of the school complex (Anchored well by earlier scheduled inputs on the circular economy and adaptability).
- 11. Neighbourhood context:** Conform with prevailing development and user profiles of the immediate urban setting. Recognise and creatively adhere to the governing zoning policies and development control guidelines.



PREFACE

These objectives collectively aim to create a school complex that not only meets educational requirements but also enhances the overall experience and development of its students and staff while contributing positively to the community and environment. The ultimate focus of learning in design to the thematic areas of sustainability and environment, in the functionality and efficiency of design is in this way ably introduced.

Design Elements

- 1 Kindergarten building.
- 2 Elementary building.
- 3 Middle school building.
- 4 High school building.
- 5 Playground areas.
- 6 Courts (soccer, basket, pool,)
- 7 Auditorium.
- 8 Parking area.

CHAPTER THREE

DESIGN SOLUTIONS

TOPICAL CUES ON DESIGN PHILOSOPHIES & CONCEPTS

In order to maintain accuracy of the originally intended meanings and retain authenticity, materials obtained from online sources and published references are acknowledged using essential links and names of authors.

An introductory lecture by: Prof. Paul Mwangi Maringa (PhD), CBS, FAAK, MKIP,
Adjunct Professor of Architecture and Planning

UNDERSTANDING DESIGN:

DEFINITION OF DESIGN AND ITS PURPOSE:

Designing is the art of creating something that is both functional and visually appealing.

We design to communicate, express ourselves, and solve problems.

Designing helps us to create products that are more efficient, effective, and user-friendly. Mohammed Adib, <https://bootcamp.uxdesign.cc/why-design-understanding-the-purpose-behind-designing-1673d25019c7>

ELEMENTS OF DESIGN:

Line, shape, form, space, texture, tone (or value) and colour, are elements or materials from which all designs are built." Hiking Trail Club,

<https://guelphhiking.com/Elements-of-Design#:~:text=The%20elements%20of%20design%20are,which%20all%20designs%20are%20built.%>

BASIC PRINCIPLES OF DESIGN:

These include, contrast, balance, emphasis, proportion, hierarchy, repetition, rhythm, pattern, blank-empty or void spaces, movement, variety, and unity.

These principles are configured in careful complementation to create appealing and functional designs that have contextual value to users. Design often addresses spaces and artifacts for use by people. It is defined by the intended purpose of use by the client.

Design therefore necessarily is driven by a functional purpose. In this regard it is different from art that may purely express ideas or emotions. (Meg Reid,

<https://www.vistaprint.com/hub/principles-of-design#:~:text=The%20fundamental%20principles%20of%20design.attention%2C%20a%20point%20of%20focus.Cameron%20Chapman>,

<https://www.toptal.com/designers/gui/principles-of-design-infographic#:~:text=There%20are%20twelve%20basic%20principles,that%20make%20sense%20to%20users>).

GENERAL MEANING OF PHILOSOPHY:

Scholars generally associate philosophy with the study of the fundamental nature of knowledge, reality, and existence. They relate it to theory or attitude that guides behaviour. As a philosophical stance, managing expectations for instance leads one to set modest goals or targets. This as a principle impulse to behaviour aids one to absorb poor or low performance with less vexation and anxiety. The term wisdom has over the years often been used interchangeably with philosophy, often seen as a venture to comprehend basic truths of existence, with its intricate social relationships (<https://philosophy.fsu.edu>). Philosophers are seen as logical thinkers involved in an enterprise to gain completeness of well-reasoned, evidential knowledge. Two philosophical threads that easily come into view here are:

1. The history of philosophy. These are evident in: (1) Ancient Philosophy, from Socrates to Augustine; (2) Medieval Philosophy, from Augustine to Machiavelli; and (3) Modern Philosophy, from Descartes to Kant.
2. Systematic philosophy. This is manifested in: (1) metaphysics - the study of reality; (2) ethics - the study of what is morally right and good; (3) Epistemology - the study of how we know reality; (4) logic - the study of good arguments; (5) Aesthetics - the philosophy of art, or the study of appreciating the beautiful; and theory of art; and (6) Socio-political philosophy - the study of political and legal theories.

(<https://www.depauw.edu/academics/department-s-programs/philosophy/what-is-philosophy/#:~:text=Examples%20of%20systematic%20philosophy%20would,the%20study%20of%20appreciating%20the>)

PHILOSOPHY OF DESIGN – WHAT DESIGN IS:

Design relies on art as an input and is therefore not exclusively defined by art. There is practice or use of art to creating great design, but the final output of the design process is not art.

Art is creative expression intended to provoke questions and individual interpretation. Art is inspiring, emotional and important. However, it often does not fill a specific need beyond humanities' desire to express itself. Design though is a process intended to solve a problem, and as a result, satisfy a need for users that will ultimately interact with the solution that is developed.

In consequence, design should not be open to interpretation, but instead should define how it is to be engaged with and should guide a user at each stage of that engagement. So, whereas art provokes questions, design proffers solutions.

As design is driven by purpose, it manifests the reality, function or context it seeks to serve. Appropriate design therefore resonates with the end-user client population, and their reality or context of functional needs, socio-spatial settings and cultural realities, all which must be truly felt and be well understood by the designer.

This perspective is well captured in Dieter Ram's dictum, "*Indifference towards people and the reality in which they live is actually the one and only cardinal sin in design*", which reflects his design philosophy of Less, but better, that accorded premium to a functionalism design approach, placing function before form.

Design is a never-ending cyclic spiral rather than a journey to an end state. It is never perfect. It is a continuous process subject to change through a user feedback loop. Its suggested solutions, evolves with a dynamically transforming complex social context, which changing circumstance also receives and responds to the impulses from the design itself. As such, design is always in transition, always in cumulative self-reinforcing iterations, and can never quite attain an end state perfection or perfect fit.

Design is an informal sequencing of thought and reflection. It is neither a set of tools, nor a standardized process. As such, every problem presents its own unique set of characteristics, such that there is no rule of thumb route or sequence of activities to follow in order to achieve a favourable solution.'

Design must be easily legible to the user. It therefore ought to reflect its intended function in a simple forthright manner, without ambiguity. Design elicits empathy with users and by extension, the subjective complex and ever shifting emotions of pleasantness, ease, comfort, interest and therefore delight.

(Jessee Weaver, "What is your design philosophy", 2015,

<https://hairyelefante.medium.com/what-is-your-design-philosophy-a32d43985899>).

POPULAR DESIGN PHILOSOPHIES:

1. Form Follows Function (Architect Louis H. Sullivan). In this mold, design is expected to be straight forward, relating expression to functional needs of users. Spaces then must derive character from the desired uses of such spaces.

The building envelop and resulting forms are also expected to express the internal functions of the buildings they embellish. To this extent, and consistent with a view that aesthetics must be founded upon functional value, Frank Lloyd Wright averred that form and function are one.
2. Details are not mere details, rather they make the design (Architect Charles Eames). This attitude towards design is anchored in the common adage that "God or the good God is in the details", that affirms the value of details and the need to take them seriously.

The saying was coined much earlier first by Gustave Flaubert, followed by the German art historian Aby Warburg and then architects Ludwig Mies van der Rohe and Le Corbusier.

For this orientation, designers are encouraged to give every aspect of a design full attention. The understanding that great design is both pleasing and functional and that it emerges from a composition of well-crafted details finds a home in this philosophy too.

(<https://blog.proto.io/10-of-the-best-design-philosophies-of-all-time/>).

3. To provide meaningful architecture is not to parody history, but to articulate it (Architect, designer and artist Daniel Libeskind). The intention here is to display the horror of history so as to engender learning and understanding while integrating it with hope for a better tomorrow. Libeskind strove to attain this in his designs of the Jewish Museum in Berlin, Denver Art Museum's extension in the U.S., and the Imperial War Museum in England.

This thinking resonates with Frank Gehry's perceptions of deconstructivism as a philosophy for designing a better future from the brokenness of human experience. His pronouncement that Architecture, should speak of its time and place, while yearning for timelessness finds resonance here too.

Here, architecture is expected to serve as a repository of human experiences past, present and future with full deep historical value, as a timeless archive. It should avoid mere replication of artifacts and ideas of the past but instead infuse full, relevant present meaning to designs.

Also relevant here is the philosophical poise of design as a cultural artifact. Yves Behar, chief creative officer of Jawbone and arguably the most influential industrial designer alive, asserts that the work of a designer is really at the intersection of commerce and culture. True value in designs therefore emerges when they are nested in and exude distinctive cultural flavour.

<https://blog.proto.io/10-of-the-best-design-philosophies-of-all-time/>).

4. Life is chaotic and buildings should reflect this reality (Architect Frank Gehry). Interpreted here is the deconstructivism design philosophy to defy tradition and expand personal choice, in the sense of appreciating that, life is not a set of monotones and reduced simple rules, but rather an ever-changing dynamic of diversity of preferences and choices. Gehry ventures to capture this thinking in his design of the Guggenheim Museum.

5. Anything that exists only to satisfy the ego of the designer must be eliminated, (Eric Reiss, Theoretician, consultant and author).

Emphasis here is laid on the need to subsume the preferences of an architect and instead give pre-eminence to the priorities of the user. Consistent with this is the associated philosophy that a design is not complete until it is put into use (Brenda Laurel, researcher and a videogame designer).

Of prime value here is the end consumer who then is ascribed the dominant role of validating all design. Also cast in this same framework is the philosophy that all fine architectural values are human values, else they are not valuable (Architect Frank Lloyd Wright).

The persuasion that humanity is at the centre of all design for man and society is accorded centre stage.. Buildings and their contrived environments must therefore reflect the essence of humanity and its culturally contextual values.

In the absence of such inclinations, architecture becomes stale and irrelevant. Value is seen in the philosophical thought that while good design is obvious, great design is transparent (Joe Sparano, Graphic Designer). In such an understanding, designers are encouraged to imagine how people use their designs as a way to keep the designs accessible, simple legible and easy to use.

6. Simplicity is not the absence of clutter (Jonathan Ive, designer for Apple). Integral to this thinking is the ongoing discussions kicked off by Mies van der Rohe of 'less is more', and repudiated by Robert Venturi "less is a bore" in his writings on complexity and contradictions in architecture.

Simplicity then should not require reduction in diversity and intensity of variance, but rather an introduction or complex order and clarity. Reinforcing this thinking is the notion that good design is as little design as possible.

Further, thought is underpinning here on the conviction espoused by Jonathan Ive and Stefan Sage Meister, Diego Armani and Ludwig Mies van der Rohe among others that is founded on the value of controlled reduction or minimalism (less is more) as opposed to unwarranted embellishment

<https://blog.proto.io/10-of-the-best-design-philosophies-of-all-time/> :)

7. Good design redefines itself, rapidly. Alexander Rodchenko, one of the founding fathers of the constructivist movement, advocated for making multiple variations of the same subject to capture its essence, declaring that *"one has to take several different shots of a subject, from different points of view and in different situations, as if one examined it in the round rather than looked through the same keyhole again and again"*. Accordingly, therefore, design does not exist in isolation but rather it emanates from and reflects its client society changing and adapting in rhythmic iterations and at pace with corresponding changes in society. (<https://blog.proto.io/10-of-the-best-design-philosophies-of-all-time/> :).

The preceding discussion restates and articulates the ideas of Karen Elyssa, 2020, in her writing "10 Design Philosophy Ideas for Architecture Students

<https://girlbossarchitect.com/2020/07/27/10-design-philosophy-ideas-for-architecture-students/>).

A GENERAL UNDERSTANDING OF CONCEPTS:

A concept may be understood to be a core or basic abstract idea, impression, notion, or thought

<https://www.vocabulary.com>
<https://www.merriam-webster.com>).

It reflects an intention that is frequently illustrated through words, images and sketches

<http://airfocus.com>).

SPECIFIC MEANINGS OF CONCEPTS:

Architectural concepts are abstract ideas or notions that are provoked by particular user needs, functional and contextual instances. They infer or hint at essential meanings or values of a specific design circumstance. Though are abstract and intangible, they are the main essence behind all decision-making in the subsequent design process.

Architectural concepts anchor ideas that are conceived out of an initial incisive analysis of the design functions, its setting and the nature and values systems of the target users. This is an absolutely necessary first step of the design process.

Concepts constrain the design to set philosophical boundaries, according the singular identity of the design. They ward off compromises and distortions that may arise from possible digressions away from the seminal core values of the design.

<https://www.novatr.com/blog/architectural-concepts-types>).

SOURCES OF CONCEPTS:

Competitive concepts derive from a good understanding arising from an in-depth analysis of the functional needs and planning predilections, accessible technology and physical environment (terrain, flora, fauna, climate, weather – rainfall, sunshine, water and wind), culture (meanings and identity), and site context (circumstances, surroundings and prevailing structure of space use). In this way, they offer a clear framework for well-reasoned, rational decision making, (Maringa & Okello, 2006).

NATURE OF CONCEPTS:

Concepts are dynamic. They evolve constantly throughout the design lifetime as new perspectives of the design and locational areal parameters come into view. Concepts therefore metamorphose with a changing understanding of the holistic design context and user needs as well as internal functional interactions. A designer can cumulatively assemble, different types of architectural concepts in a design throughout the design development process

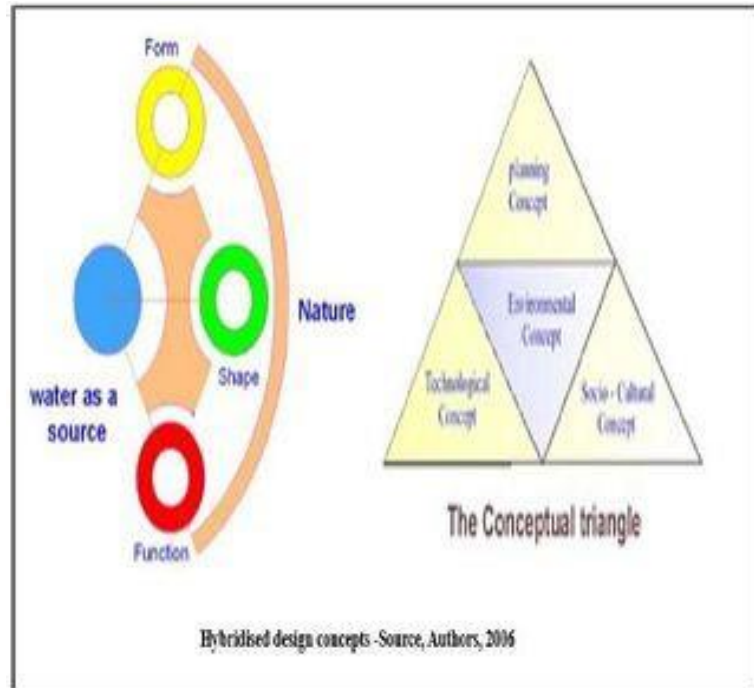
<https://www.novatr.com/blog/architectural-concepts-types>).

SYNTHESIS OF CONCEPTS:

There are multiple concepts in every design, and these align to the many diverse imperatives that drive the designs. Principally, designs will rely on the following three classifications of concepts:

- Planning and organisation concepts – site, spatial character and meaning.
- Technological concepts – structural order, assembly, materials, environment.
- Socio-cultural concepts – meaning, identity, structure.
- Environmental concepts - the site and its natural and developed physical context.

These translate from the holistic context of the design imperatives and location through images that are frequently abstracted into functional analogies/symbolism, metaphors or allegories. At times biomimicry of natural and created artifacts in the environment are synthesised for expression or structure and meaning and captured into equivalent visual representations.



Framework of sources of concepts, Source, Maringa & Okello, 2006.

ANCHORING CONCEPTS ON DESIGN THEORY:

Appropriate design approaches are brought to bear in order to integrate the concepts and their representative analogies into space organisation and form making in an orderly manner along the design process. The standard four, iconic, pragmatic, canonic, analogic design approaches can be brought on board, either singularly, or in complementation, as they are able to provide value to the design solution sought.

The wide array of architectural styles and the emerging neologisms or variants that are on hand throughout recent history of evolving architectural practice, are referenced freely though critically. These cover the range of regionalism, postmodernism, functionalism expressionism, eclecticism, structuralism, historicism and the rather recent radical deconstruction/disintegration/destruction.

They are, selectively grafted into the process of creating compulsive, evocative images, order, identity and meanings that manifest the selected concepts effectively to produce imageable environments, forms or edifices.

ELEMENTAL DEFINITION OF FORM:

A Form is a three-dimensional (3D) object or void with real or implied mass, volume, height, width and depth. Geometric forms are contrived into visual or physical expressions using, squares, rectangles, circles, and polygons as flat shapes. Shapes are modelled through 3D expressions of cubes, spheres or polyhedra and in this way take on forms.

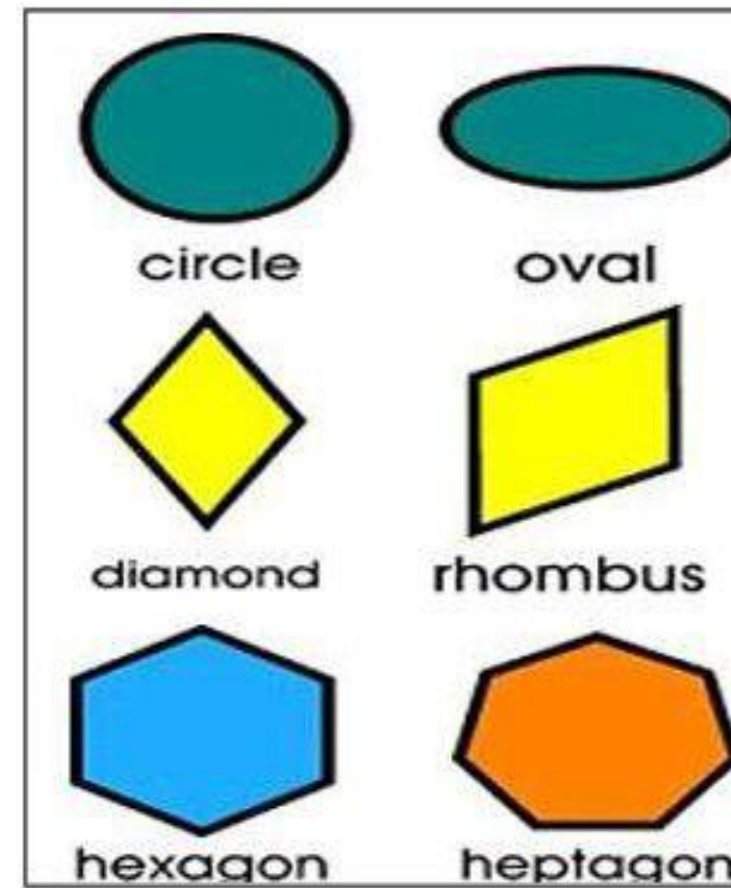
The latter covers the range of four sided tetrahedrons, six sided hexahedrons, eight sided octahedrons, twelve sided dodecahedrons with equal pentagonal faces, and twenty sided icosahedrons (Ching, 2015, Vandyke, 1990). Forms are volumes in three dimensions as prescribed by length, width and depth or circumference and radius (Vandyke, 1990). In consequence, forms manifest scale, size, colour & texture (surface treatment), position, orientation, visual motion or inertia/stability (Maringa & Okello (2006).

Visual and physical art as well as architecture that embraces three dimensional sculptures and models is expressed through forms. A circle therefore is a shape that corresponds in form to a cylinder and sphere. In turn, a triangle is a shape which translates into the form a pyramid. Forms, can also be irregular or amorphous and these too find use in design.

(Hiking Trail Club, <https://guelphhiking.com/Elements-of-Design#:~:text=The%20elements%20of%20design%20are,which%20all%20designs%20are%20built.%22>).

DEFINITION AND TYPES OF SHAPES:

A shape can be defined as a two-dimensional area that stands out from the space next to or around it on account of well delineated or implied boundaries. These boundaries may assume the form of physical lines and barriers, change of patterns or differences of value, colour, and texture. Drawings are bounded by lines that separate internal space & the surroundings.



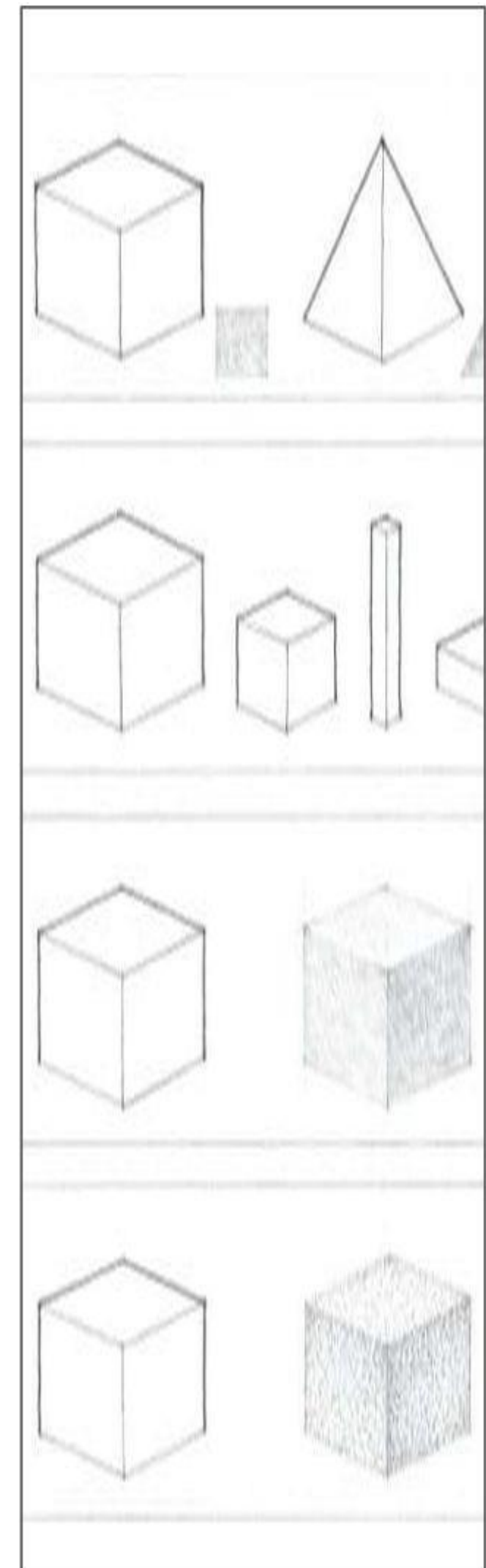
These lines serve as barriers that place the drawing and the shape it represents apart when disposed against a background of papers, boards or tables.

Basic shapes available to designers include geometric shapes that often reflect regular proportions and definite shapes as seen in squares, circles, and triangles. Rhombuses and other diverse polygons are other variations that assume unequal proportions while retaining recognisable shape. It is therefore common to classify geometric forms into the following two primary sets:

- A. Curvilinear shapes that generally display smooth curvature.
- B. Rectilinear shapes that are characterised by conspicuous angularity, with the convergence of their constituent lines ranging from acute to obtuse angles.

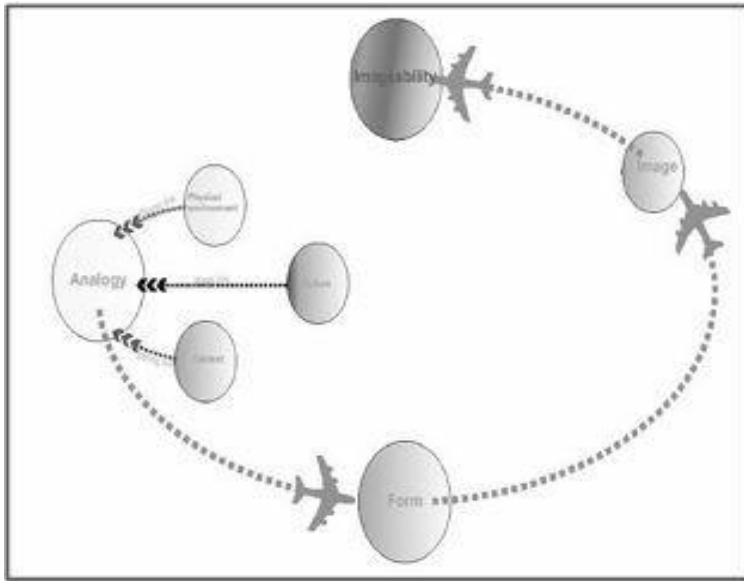
Then there are organic shapes that commonly manifest complex irregular patterns of intricate proportions that evoke nature, with indefinite edges, and free-flowing outlines.
Hiking Trail Club,

<https://guelphhiking.com/Elements-of-Design#:~:text=The%20elements%20of%20design%20are,which%20all%20designs%20are%20built.%22>

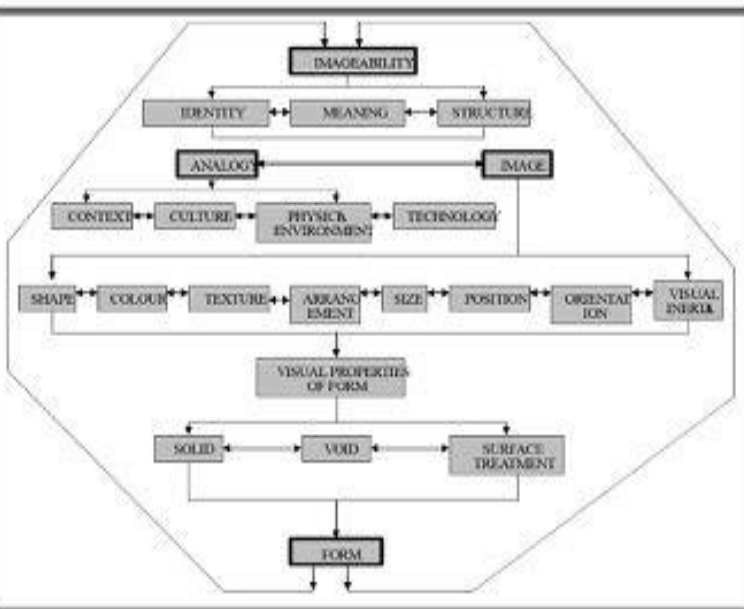


IMAGEABILITY: Buildings have certain qualities that give them a high probability of evoking a strong image in any given observer (Lynch 1960). This is imageability that may also be termed legibility or even accentuated visibility. It is an image with clarity and harmony of form, which is well formed, distinct and remarkable (Stern 1914 -15, Lynch 1960).

ANALOGY, FORM AND IMAGEABILITY, Maringa & Okello (2006).



Maringa & Okello (2006)



THE EMOTIONAL BASIS or MEANING OF ARCHITECTURE, Maringa & Okello (2006)

Metaphors and analogies that are founded on local codes (as is expected of architectural metaphors), are here abstracted from the adjacent ocean, its animal life and seafaring vessels, are extensively used too, as sensory cues that evoke rich meaning to the user.

Metaphors are brought into use with 'wit' – an indirect innuendo that provokes the user to make thought provoking, but nevertheless believable associations. Drama in the design scheme is accelerated by the use of a collage of metaphors. Mystery and power on their part are enhanced by intentionally keeping the metaphors only slightly suggestive – in a sense, camouflaging their meanings from obvious interpretation.

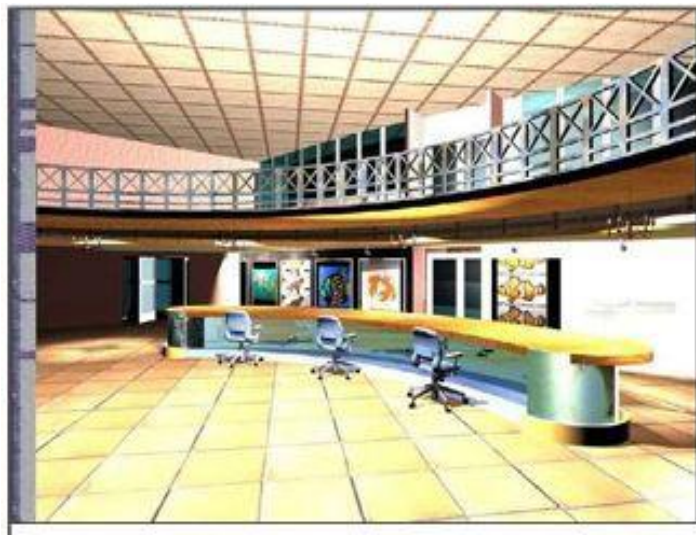


Metaphors & analogies founded on local codes used as sensory cues that give meaning, Source, Maringa & Okello, 2006.

Mixed or hybridised metaphors give even more compulsive value to the design in a synergistic contrivance providing exciting emotional energy.

Together, this blend of metaphors provides the basis upon which people find their emotional affinity or connection with the built form.

The users are attracted in this manner to these forms because by design, the forms are contrived to carry metaphorical analogies that people can relate to easily.



Forms designed to carry metaphorical analogies that people can relate to easily, Saring & Okello, 2006

Man is taken here in agreement with theory, to instinctively perceive the large scale as hostile and threatening unless it is moderated by, or carefully crafted from a well-ordered small scale. The desired scaling then is achieved here at the level of detail, materials, and the smaller building elements, whose size approximates well, man's anthropometrics.



A large scale that is moderated by a well-ordered small scale Saring & Okello, 2006

A large scale that is moderated by a well-ordered small scale, Saring & Okello, 2006 Similar reflections apply here once more that: Man is taken here in agreement with theory, to instinctively perceive the large scale as hostile and threatening unless it is moderated by, or carefully crafted from a well-ordered small scale. The desired scaling then is achieved here at the level of detail, materials, and the smaller building elements, whose size approximates well, man's anthropometrics. Perceptively beautiful forms that establish an emotional link with the elemental structural order, Saring & Okello, 2006



Perceptively beautiful forms that establish an emotional link with the elemental structural order Saring & Okello, 2006

Concepts constrain the design to set philosophical boundaries, according the singular identity of the design. They ward off compromises and distortions that may arise from possible digressions away from the seminal core values of the design.

<https://www.novatr.com/blog/architectural-concepts-types>.

SOURCES OF CONCEPTS:

Competitive concepts derive from a good understanding arising from an in-depth analysis of the functional needs and planning predilections, accessible technology and physical environment (terrain, flora, fauna, climate, weather – rainfall, sunshine, water and wind), culture (meanings and identity), and site context (circumstances, surroundings and prevailing structure of space use). In this way, they offer a clear framework for well-reasoned, rational decision making, (Maringa & Okello, 2006).

NATURE OF CONCEPTS:

Concepts are dynamic. They evolve constantly throughout the design lifetime as new perspectives of the design and locational areal parameters come into view. Concepts therefore metamorphose with a changing understanding of the holistic design context and user needs as well as internal functional interactions. A designer can cumulatively assemble, different types of architectural concepts in a design throughout the design development process

<https://www.novatr.com/blog/architectural-concepts-types>.

SYNTHESIS OF CONCEPTS:

There are multiple concepts in every design, and these align to the many diverse imperatives that drive the designs. Principally, designs will rely on the following three classifications of concepts:

- A. Planning and organisation concepts – site, spatial character and meaning.
- B. Technological concepts – structural order, assembly, materials, environment.
- C. Socio-cultural concepts – meaning, identity, structure.
- D. Environmental concepts - the site and its natural and developed physical context.

**SIGNAL PORTFOLIO
OF
DESIGN SOLUTIONS**



NAME: Emmanuel Kibet Yego
INSTITUTION: Department of Architecture and Interior Design (DAID), School of Engineering and Architecture (SEA)
Kenya University (KU)
EMAIL: emmanuelye45@gmail.com

BIOGRAPHY:
Emmanuel Kibet Yego is a dedicated fourth-year Architecture student at Kenya University, passionate about exploring how design shapes human experience and transforms communities. With a strong balance of creativity and technical expertise, he excels in architectural visualization, planning, and sustainable design, using both digital tools and hand-drawn expression to bring ideas to life.

His academic journey reflects a commitment to detail, innovation, and contextual sensitivity, producing work that integrates aesthetics, functionality, and human-centered solutions. Skilled in industry-standard software and guided by a collaborative spirit, Emmanuel approaches architecture as a discipline that bridges culture, technology, and community, aspiring to create spaces that inspire, connect, and endure.



BRIEF ANALYSIS

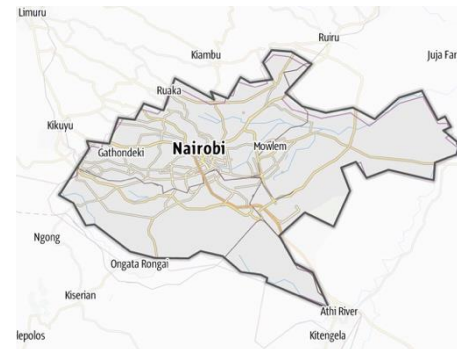
LOCATION



KENYA

Source;

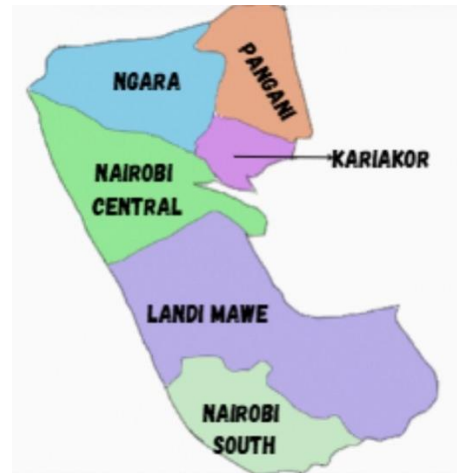
<https://www.mapsland.com/africa/kenya/large-map-of-kenya-with-cities>



NAIROBI

Source;

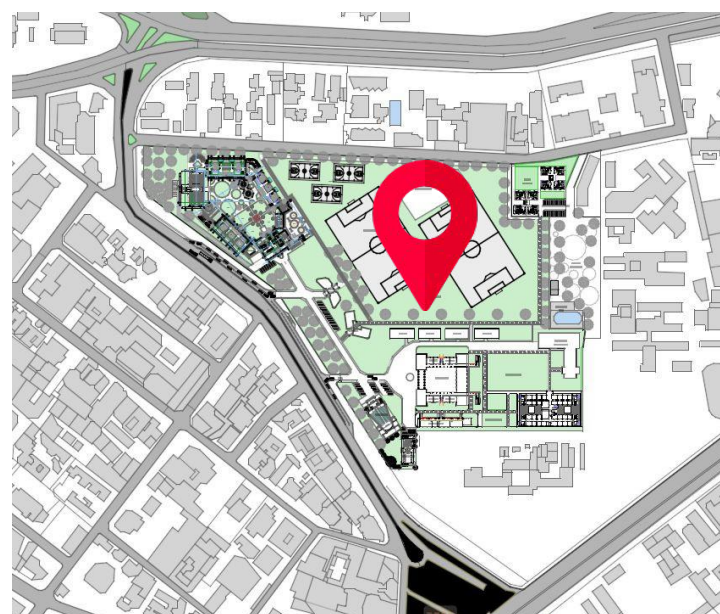
<https://www.outdooractive.com/en/travel-guide/kenya/nairobi/55150084/>



STAREHE WARD

Source;

<https://www.elimucentre.com/sub-counties-in-nairobi/>



JAMHURI HIGH, LIMURU ROAD, NGARA.

PROJECT DETAILS

PROJECT NAME: Jamhuri School Complex
LOCATION: Jamhuri high school, Limuru Rd, Ngara
SITE AREA: 161874 square metres
CLIENT: Jamhuri high school

PROJECT BRIEF

To transform an existing high school into a comprehensive educational institution with a Kindergarten, Middle School, Elementary School, High School.

PROJECT OBJECTIVES

1. Provide safe and secure environment for learning.
2. Transform existing school to a comprehensive institution as directed by competency based curriculum.
3. Provide, improve and redesign of facilities within the school.
4. Enhance sports facilities.
5. Integrate land uses that will generate revenue to school.

TARGET GROUP



Students



Parents



Community



Staff

POPULATION AND DEMOGRAPHIC DESCRIPTION

KINDERGARTEN

- Ages 4 yrs-5 yrs.
- Playful.
- Informal Learning.
- Study half a day and sleep.
- 15 pax per class
- PP1 and PP2



KINDERGARTEN

- Ages 6 yrs-12 yrs.
- Playful.
- Semi-Informal Learning.
- Study full day.
- 30 pax per class



MIDDLE SCHOOL

- Ages 13 yrs-15 yrs..
- Semi-Informal Learning.
- Study full day.
- 30 pax per class.
- Complex subjects introduced



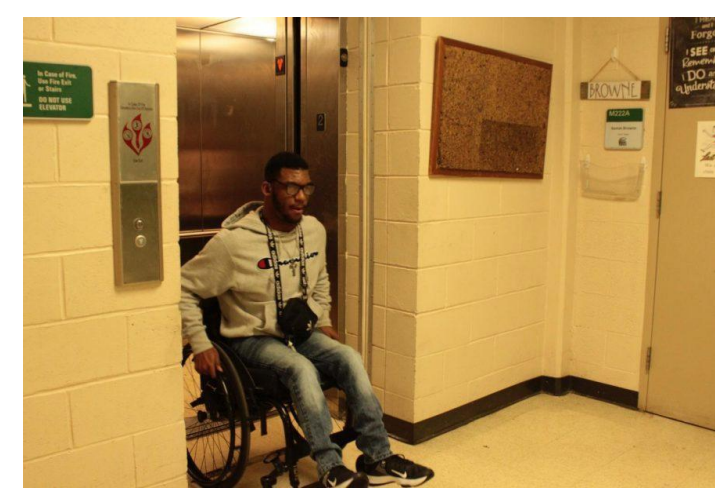
HIGH SCHOOL

- Ages 15 yrs-18 yrs..
- Formal Learning.
- Study full day.
- 30 pax per class.
- Complex subjects.
- Highest Level of Education before campus.



THINGS TO NOTE

- Inclusivity in design by integrating ramps and elevators to accommodate even the physically challenged persons. A design that does not discriminate and is inclusive of all individuals no matter their status in society.



Person on a wheelchair

Source;

<https://ar.inspiredpencil.com/pictures-2023/wheelchair-people>

- Equity in design to promote social equity and unity through design..

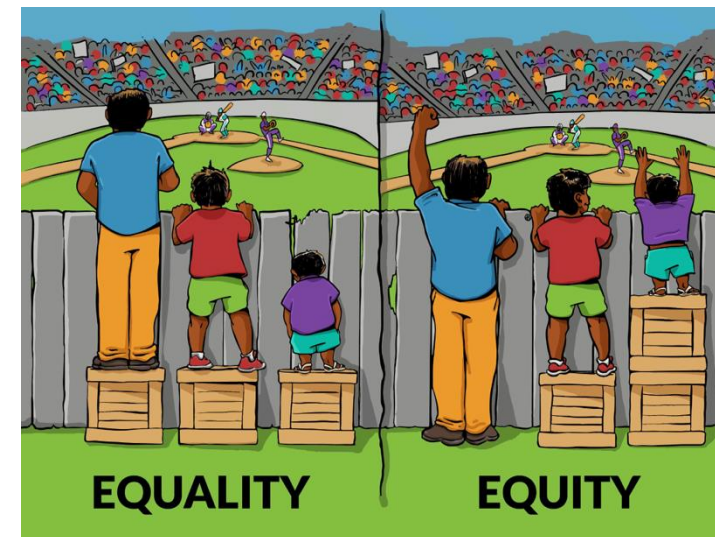


Illustration of Equity

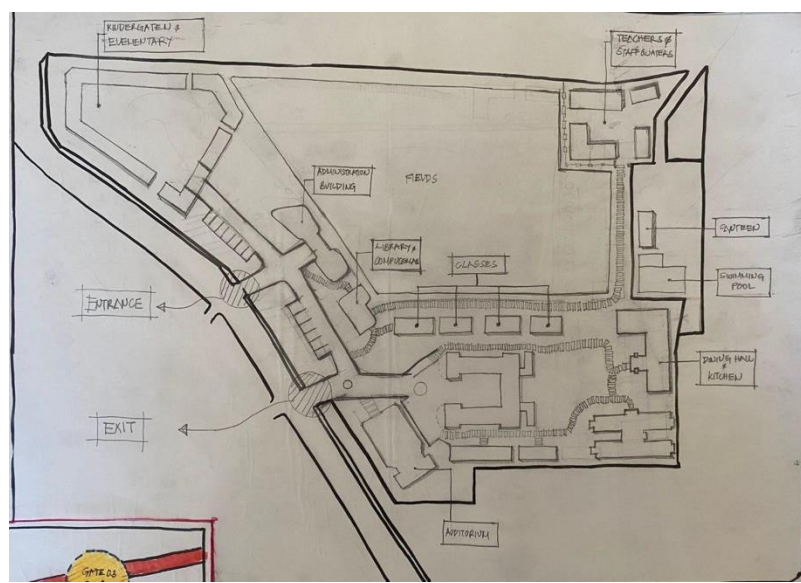
Source;

<http://interactioninstitute.org/illustrating-equity-vs-equality/>

The goal is to ensure that we have a school that ensures there is unity and the design brings together every individual. Being a school it needs to be conducive for every individual. Young kids, and the young adults and also the adult teachers all in a complex ecosystem that needs to be efficient for everyone. From here we now delve into the details of the design keeping in mind these foundational principles as guide to every design decision made. The other thing to consider is the financial implications trying to keep the design as economical as possible but also not compromising quality.

SPACES REQUIRED TO BE PROVIDED

- Kindergarten
- Elementary
- Middle school
- High school
- Playground areas
- Game courts (Basketball & Hockey)
- Auditorium
- Parking areas
- Botanical Garden/ Arboretum
- Staff Quarters
- Library
- Paths and vehicular paths



Sketch of planning..(detailed)

Source; author

PHILOSOPHY AND CONCEPT

Philosophy of Design

‘THERE IS ART IN DESIGN BUT DESIGN IS NOT ART,’ by Jesse Weaver.

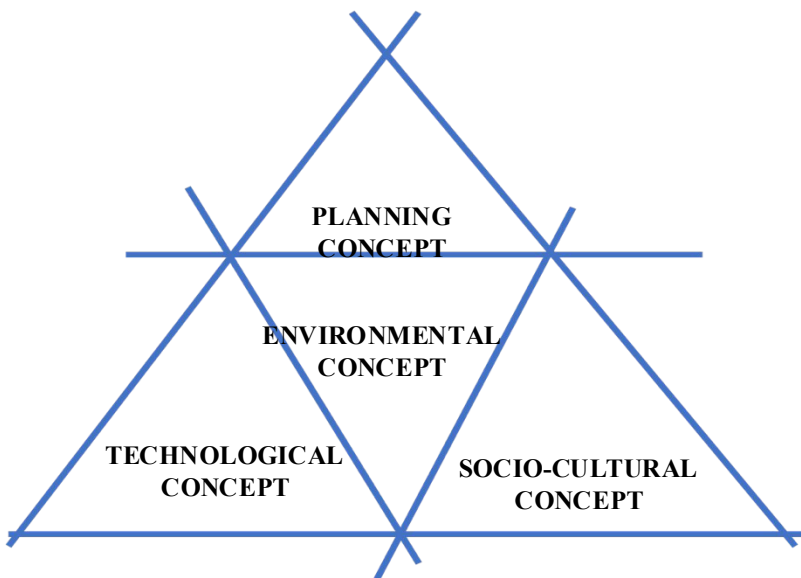
This means that while design incorporates artistic elements, it serves a functional purpose unlike art which is primarily about expression and aesthetics.

Design Philosophy

‘FORM FOLLOWS FUNCTION,’ by Architect Louis Sullivan. Emphasizes that the practical use of a structure should guide its design, ensuring that every element serves a purpose before focusing on visual appeal.

Concepts

There are four major concepts that guide the design.



Planning concept;

‘Learning City’

This concept takes an analogy of the city with its different zones of use. The different elements guide the arrangement of uses within the school.

ELEMENTS OF A CITY.

1. Neighbourhood
 - Kindergarten
 - Elementary
 - Library
2. Residential Areas
 - Dormitories
 - Staff Quarters
 - Teachers quarters
3. Administrative areas
 - Administration Buildings
 - Teacher’s offices
4. Parks and Plazas
 - Different Fields
 - Courtyards
 - Outdoor Areas
5. Multicultural Spaces
 - Swimming Pool Area
 - Auditorium
 - Dining Hall

Technological Concept;

This refers to the integration of advanced tools, systems or innovations that enhance the design, construction and performance of buildings.

‘ADAPTIVE REUSE AND RETROFITS’

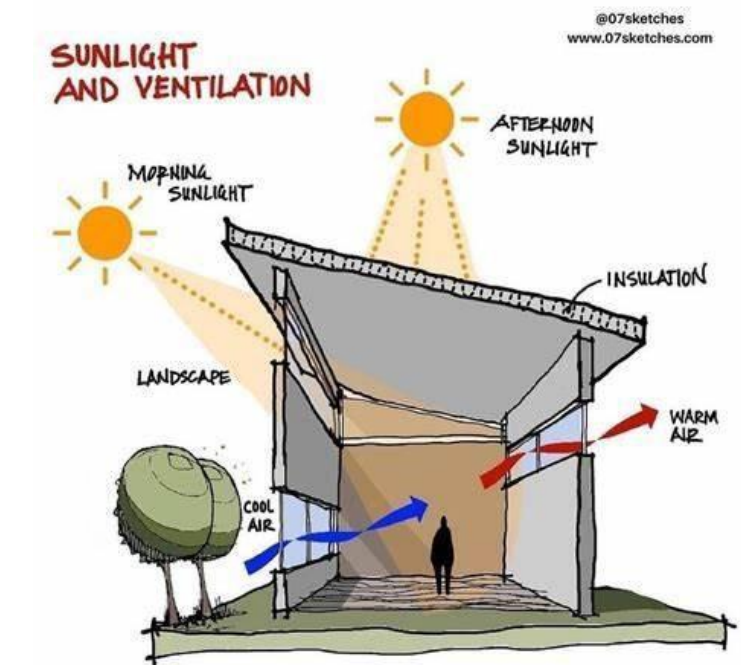
Using modern technologies to renovate and repurpose old existing buildings therefore, enhancing their functionality while preserving their historical significance.



Environmental Concept;

This refers to design principles and strategies that prioritize sustainability, ecological balance and their relationship between buildings and their surrounding environments.

‘PASSIVE DESIGN’



Passive design

Source; <https://www.artofit.org/image-gallery>

Socio-cultural concept;

This refers to design principles and strategies that account for social, cultural and historical context of a community or society.

‘PLACE MAKING’

Fostering a sense of place by creating character and identity.



Uhuru Park

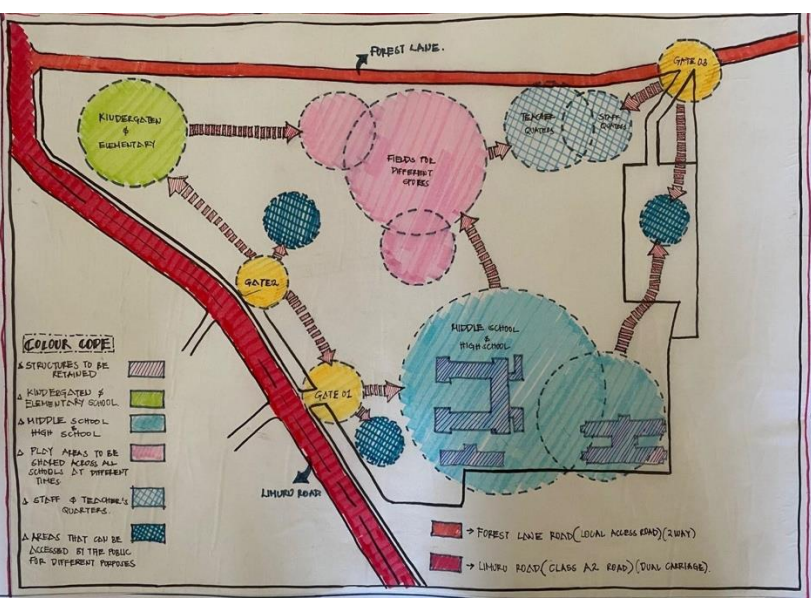
Source; <https://www.arrivalguides.com/en/Travelguide/NAIROBI/doandsee/uhuru-park-126263>

The existing spaces on site will be dealt with in one of three ways:

- Demolished- completely destroyed and torn down
- Maintenance- will be kept in good working condition through regular repair
- Redecoration- updating the interior and exterior without any structural changes

SITE PLANNING APPROACH

The planning starts on an empty plot of land and the main things that guide the planning are uses, hierarchy of spaces, the goals needed to be achieved and the pre-existing buildings just to name a few.



Sketch of planning..(bubbles)

Source; author

ELEMENTARY AND KINDERGATEN



03 Dining Hall

Has the following spaces;
Hall, kitchen, storage spaces and opens to outdoors to allow flow of interior spaces to the exterior. Has a unique use of wooden pergolas that stretch outwards and provide cover to the outdoor dining areas. Has columns at the edges of the outdoor spaces to provide a feel of seclusion rather than fully exposed spaces.

Source; author



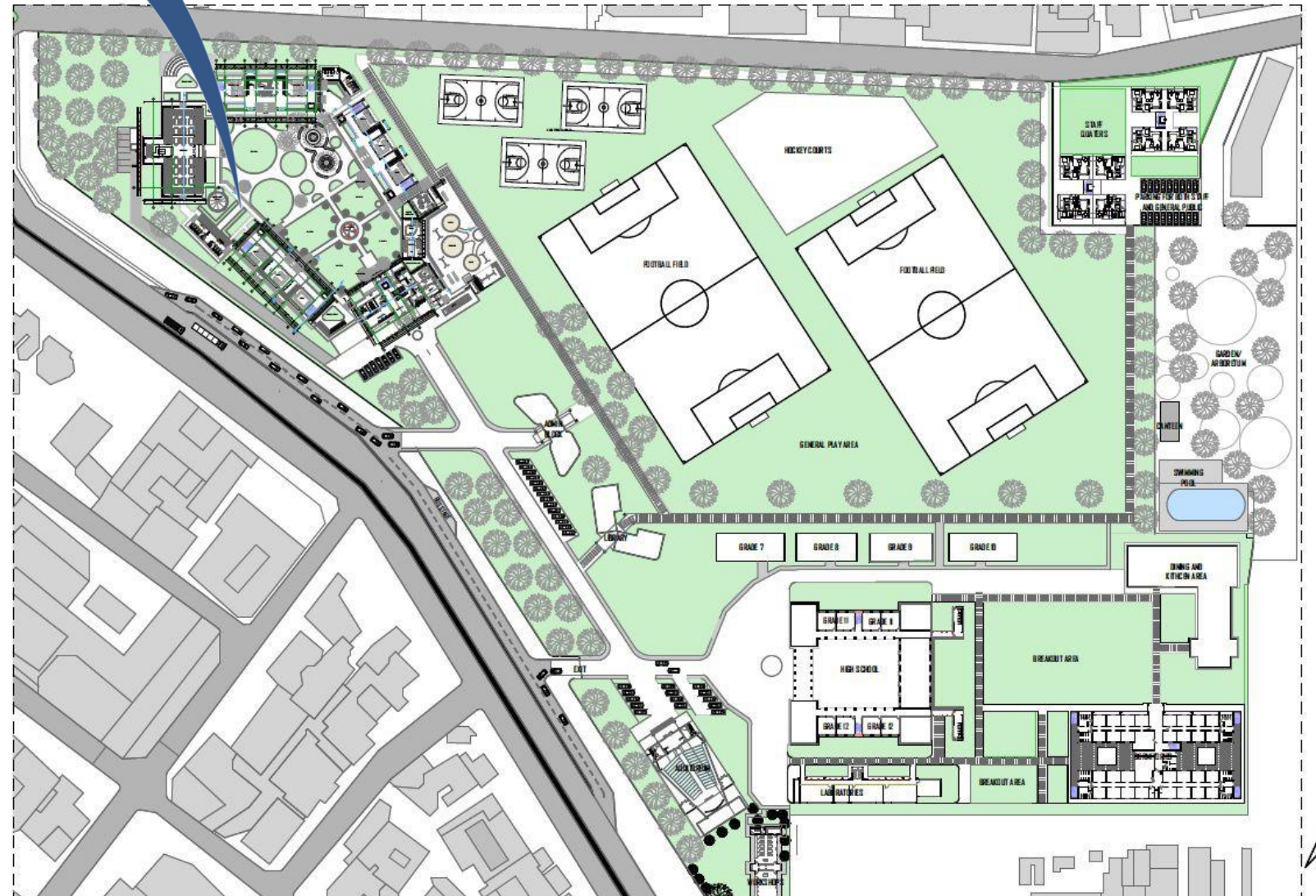
05 Kindergarten

Has the following spaces;
The PP1, PP2 classes, sandpits, play areas, storage area and washrooms. Here the scale of spaces and buildings is smaller to allow for the young users to relate with their spaces. The spaces are versatile and can be joined from one to the other to allow for combination of classes. The spaces are wide with enough storage for toys and learning materials.

*This is a zoomed in photo of the elementary and kindergarten side
Source; author*

MASTER PLAN

Source; author



01 Admin Block

Has the following spaces;
Principal's office, deputy principal office, finance, secretary, waiting areas, conference. Has a unique character and is bold to highlight the entry into the school. Also acts as a control of entry into the school.

Source; author



02 Typical Building

Has the following spaces;
Classes, shared spaces and washrooms. Has a unique character and is characterised by use of symmetry and colorful facades with different shades of material to improve the aesthetics and character of the school as a whole.

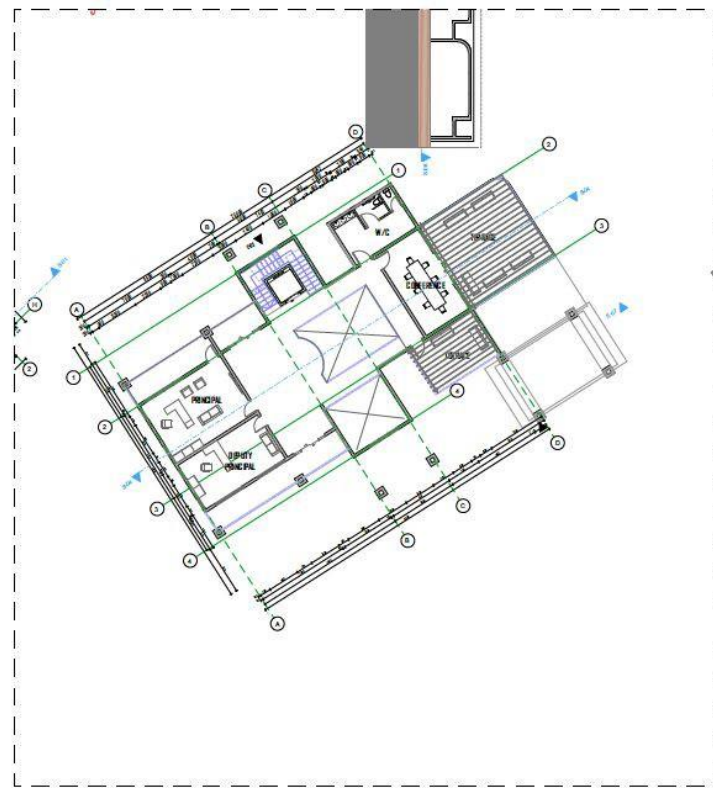
Source; author

*Masterplan showing the whole site of Jamhuri high school and area designated for elementary is blown up
Source; Author*

01 ADMINISTRATION BLOCK



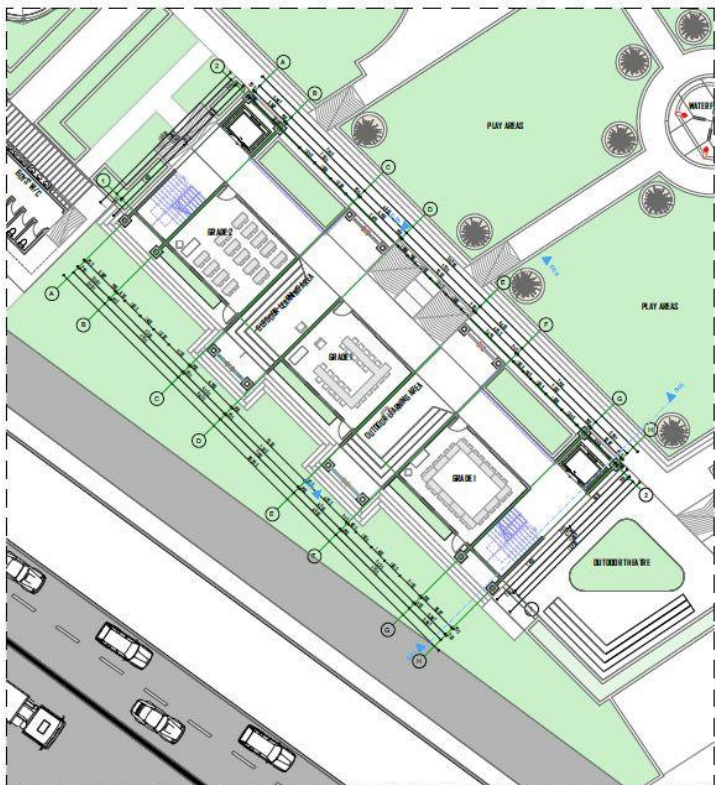
GROUND FLOOR



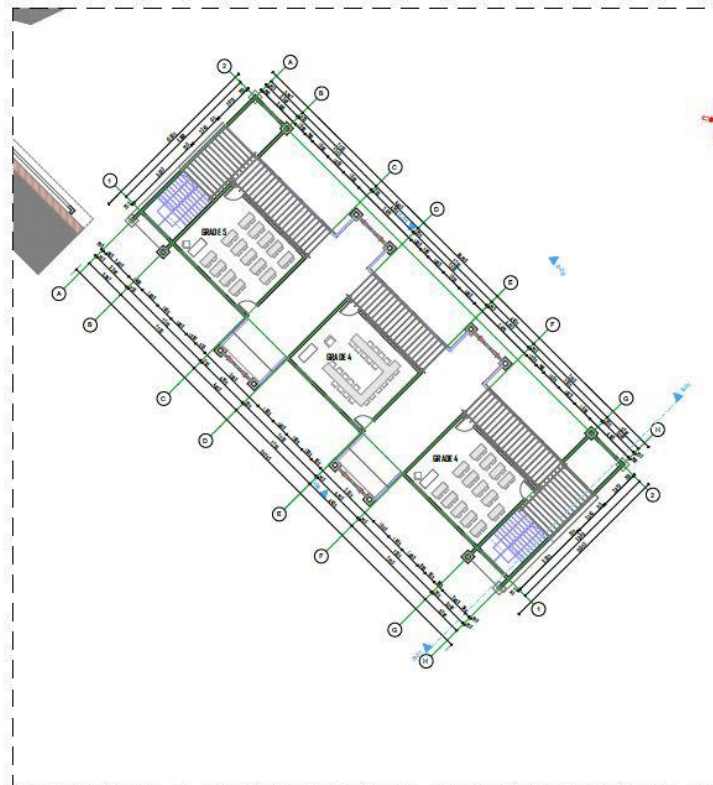
FIRST FLOOR

Plan 01 shows details of the spaces in the ground and first floor. Key points to highlight are the access points and different uses in the building as long as the ergonomics
 Source; Author

02 TYPICAL CLASSES BLOCK



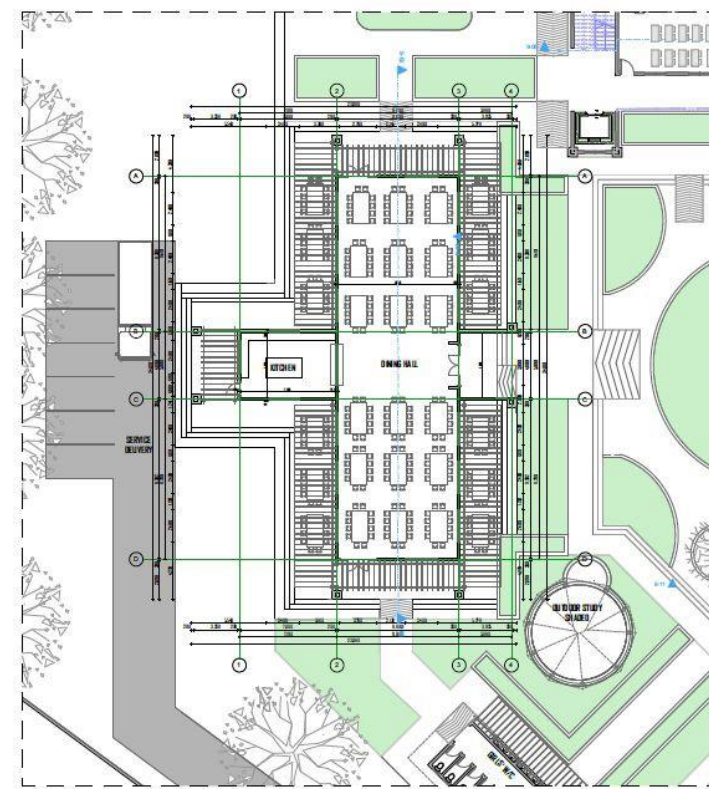
GROUND FLOOR



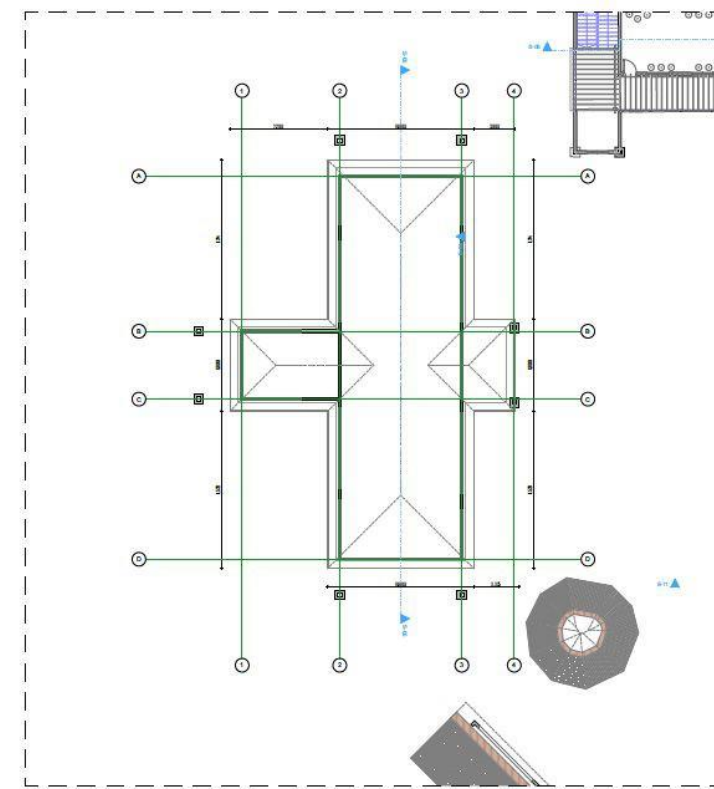
FIRST FLOOR

The typical classes are mainly adaptive spaces with furniture orientations fitting different learning.
 Source; Author

03 DINING BLOCK



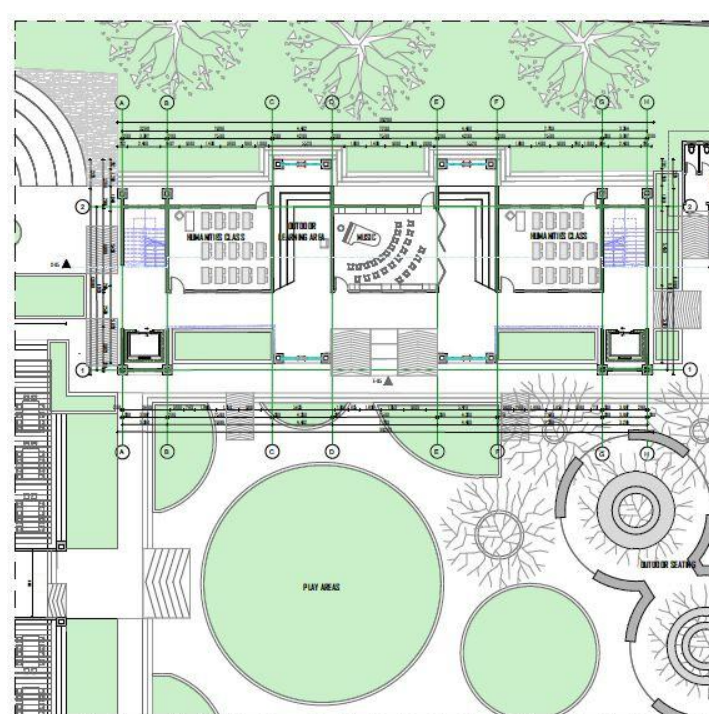
GROUND FLOOR



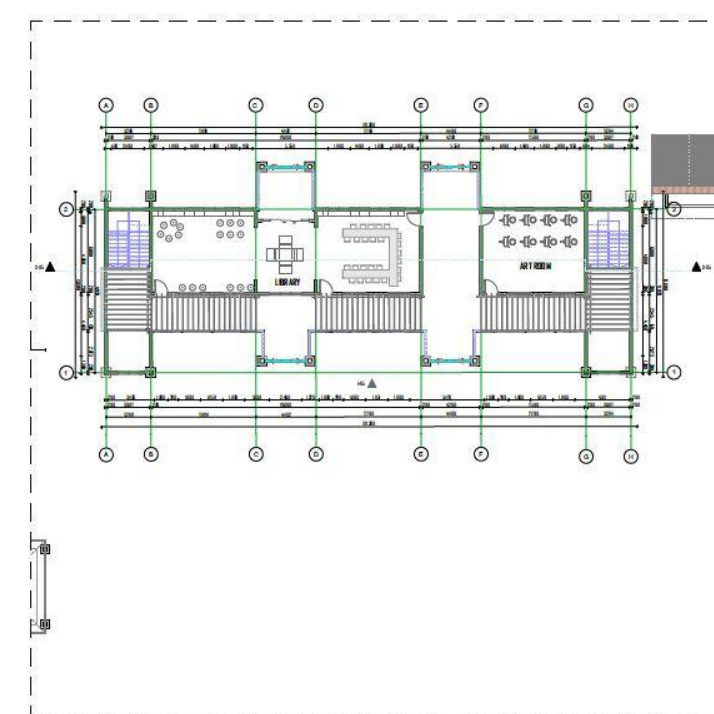
ROOF PLAN

Plan 03 shows details of the spaces in the dining hall and kitchen and the seating areas along with the number of seating spaces designed for.
 Source; Author

04 MULTIPURPOSE CLASSES BLOCK

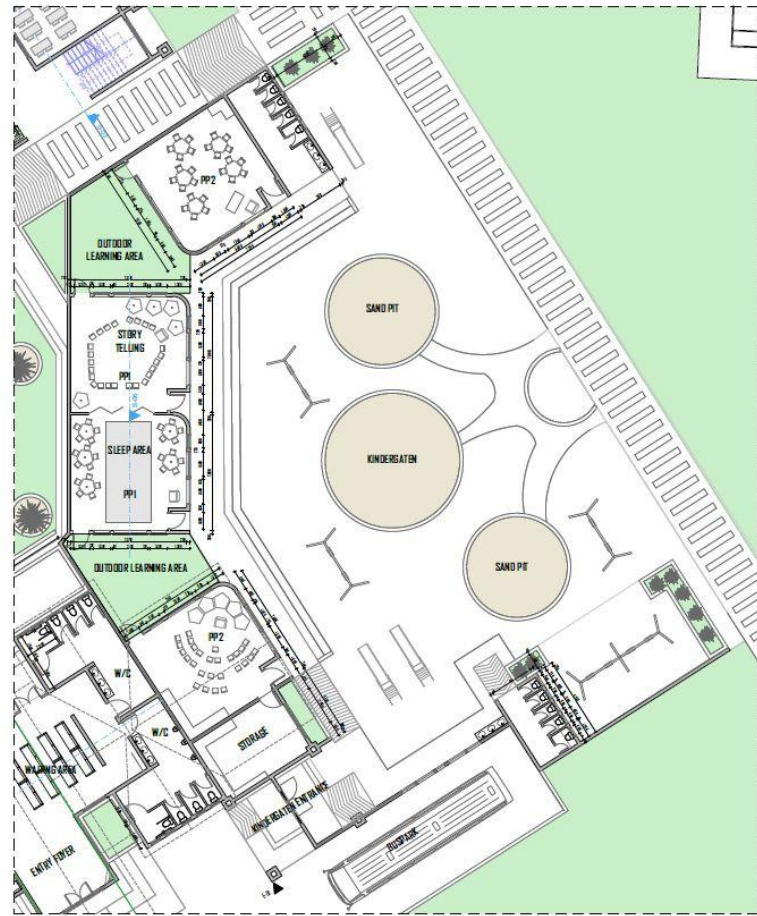


GROUND FLOOR



FIRST FLOOR

The multipurpose classes are mainly those that carry several different uses that is a library, music room, art classes and Humanities.
 Source; Author



GROUND FLOOR

Plan 05 shows details of the Kindergarten spaces and how they flow into the outdoor areas/ have a strong connection with exterior as most learning is done outside and is combined with play.

Source; Author

The design was achieved successfully and the different blocks had a similar language which was unique to the school. The challenges were mainly in ensuring that all the spaces are in the perfect orientation to prevent learners being hit with direct sun from their sitting positions. Different uses also poses a huge challenge as different levels of education use different methods of teaching some of which may clash. It was therefore paramount to separate them but at the end of the day ensure that it is still one unit and access is controlled. The other challenge was noise from the busy Limuru Road which connects with Ngara. This therefore required the erecting of earth mounds and use of trees to prevent noise from reaching the classes.



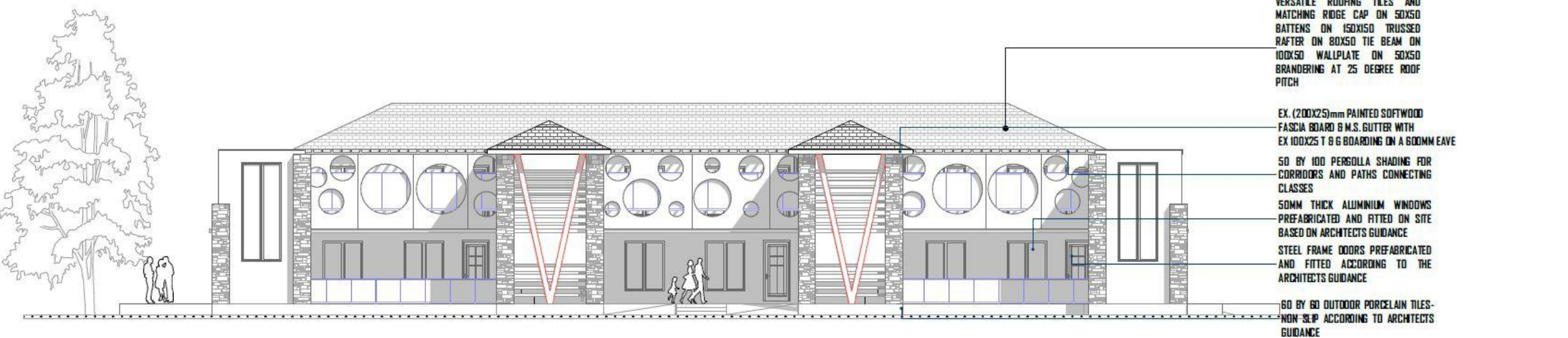
ADMIN BLOCK FRONT

- VERSATILE ROOFING TILES AND MATCHING RIDGE CAP ON 50X50 BATTENS ON 150X150 TRUSSED RAFTER ON 80X50 TIE BEAM ON 100X50 WALLPLATE ON 50X50 BRANDING AT 25 DEGREE ROOF PITCH
- EX. (200X25)mm PAINTED SOFTWOOD FASCIA BOARD & M.S. GUTTER WITH EX 100X25 T & G BOARDING ON A 600MM EAVE
- 200MM CLAY BRICK FACADES KEYED TO MASONS GUIDANCE
- 50MM THICK ALUMINIUM WINDOWS PREFABRICATED AND FITTED ON SITE BASED ON ARCHITECTS GUIDANCE
- 60 BY 60 OUTDOOR PORCELAIN TILES- NON SLIP ACCORDING TO ARCHITECTS GUIDANCE



ADMIN BLOCK BACK

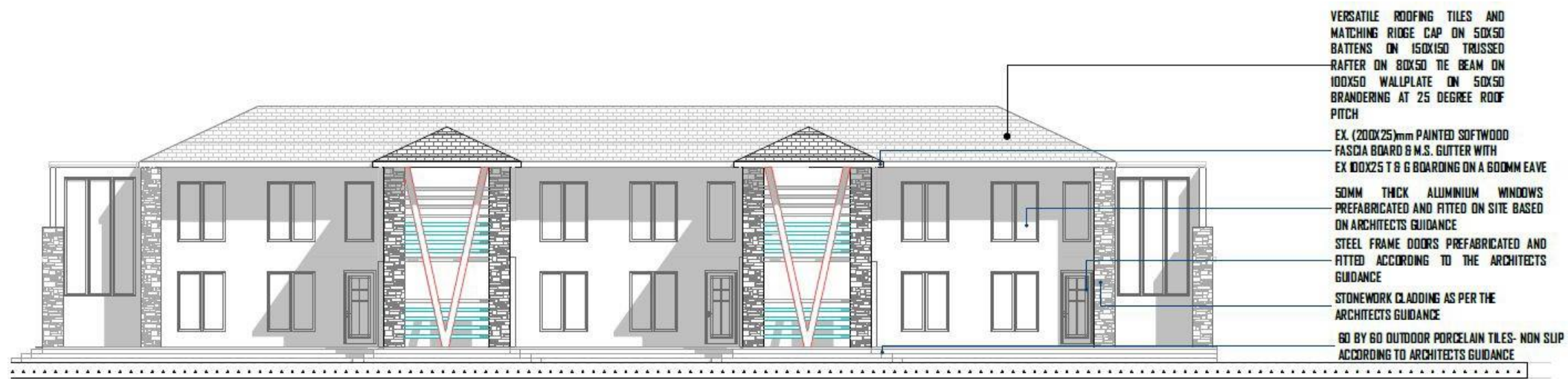
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- 60 BY 60 OUTDOOR PORCELAIN TILES- NON SLIP ACCORDING TO ARCHITECTS GUIDANCE



TYPICAL CLASSES BLOCK FRONT

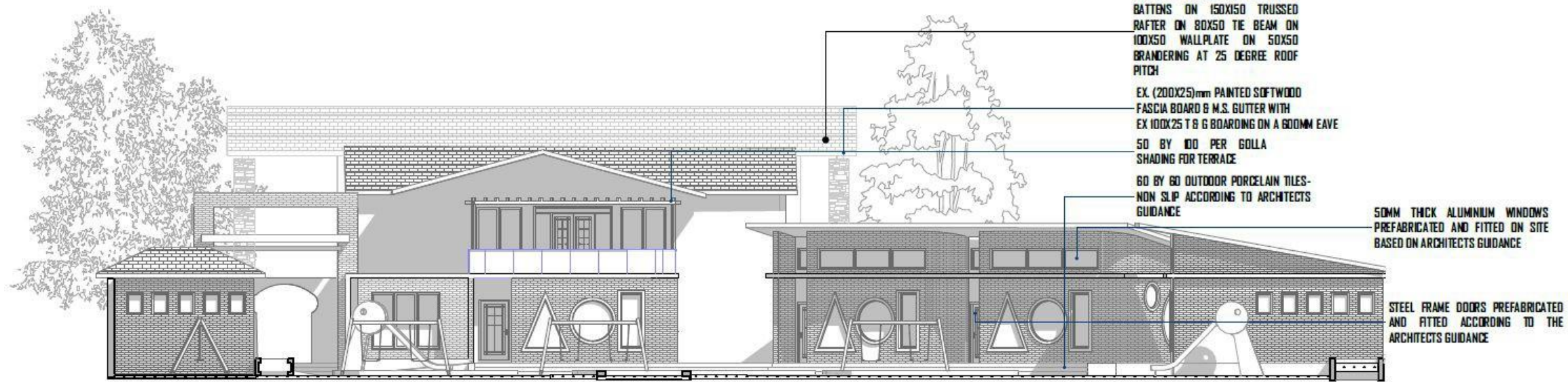
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- EX. (200X25)mm PAINTED SOFTWOOD FASCIA BOARD & M.S. GUTTER WITH EX 100X25 T & G BOARDING ON A 600MM EAVE
- 50 BY 100 PERGOLLA SHADING FOR CORRIDORS AND PATHS CONNECTING CLASSES
- 50MM THICK ALUMINIUM WINDOWS PREFABRICATED AND FITTED ON SITE BASED ON ARCHITECTS GUIDANCE
- STEEL FRAME DOORS PREFABRICATED AND FITTED ACCORDING TO THE ARCHITECTS GUIDANCE
- 60 BY 60 OUTDOOR PORCELAIN TILES- NON SLIP ACCORDING TO ARCHITECTS GUIDANCE

TYPICAL CLASSES BLOCK BACK



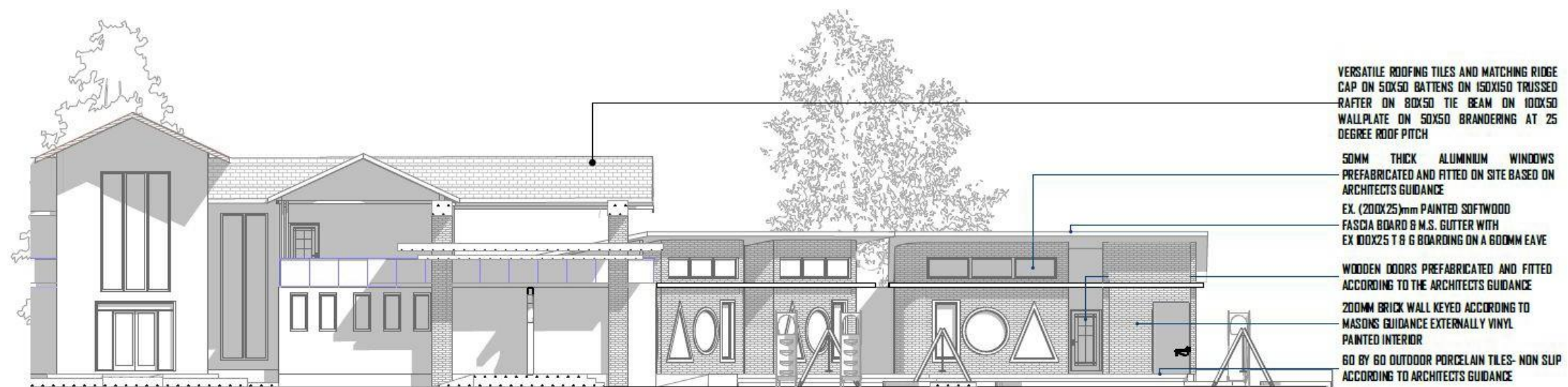
KINDERGARTEN BLOCK FRONT VIEW

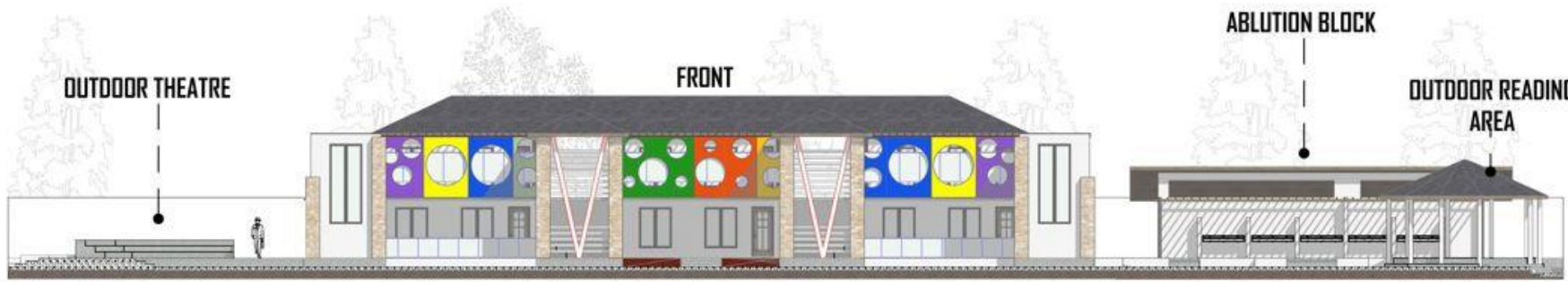
Source; Author



KINDERGARTEN BLOCK BACK VIEW

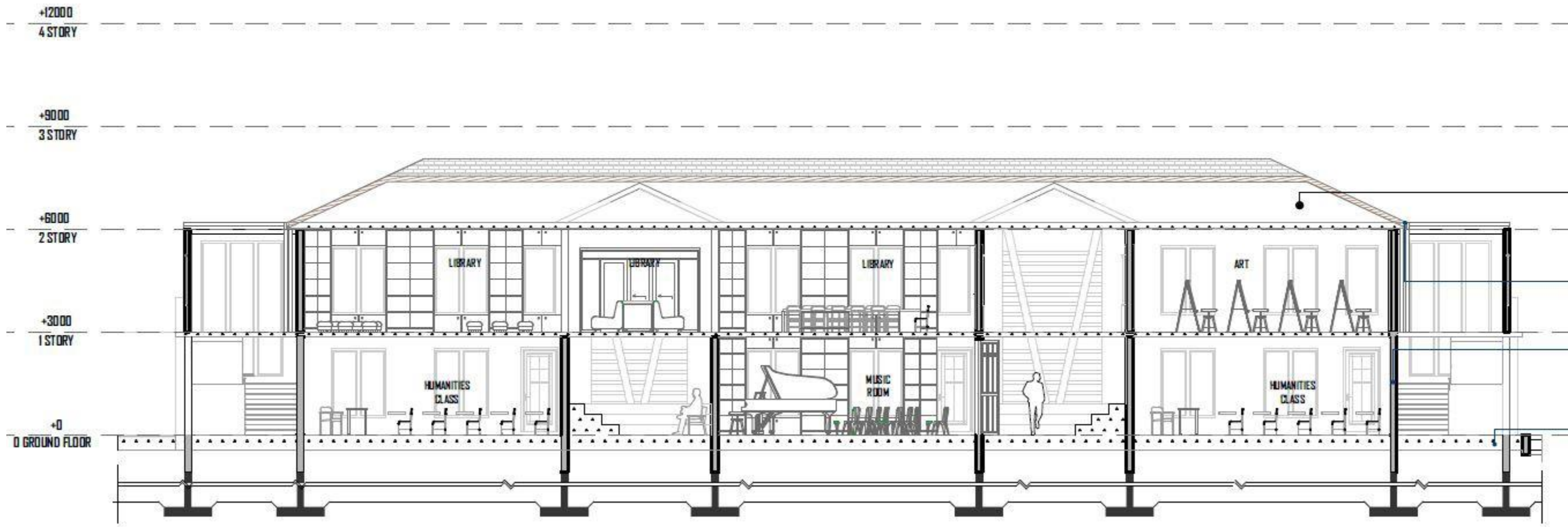
Source; Author





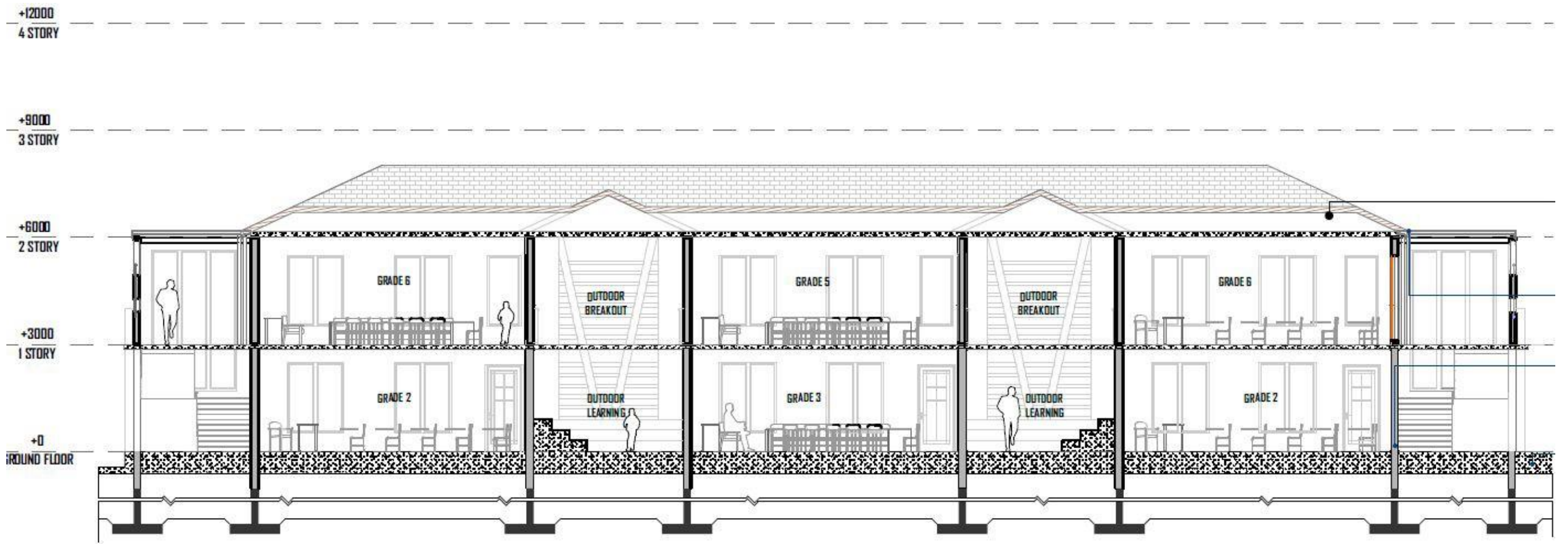
SECTIONS

SECTION THROUGH THE MULTIPURPOSE BLOCK



Source; Author

SECTION THROUGH THE TYPICAL CLASS BLOCK



Source; Author

‘ARCHITECTURE IS ABOUT PEOPLE,’
- Architect francis kere -



The goal is to grow daily in Arch School!



AMOKO JASPER BALM OGENO

DEPARTMENT OF ARCHITECTURE AND
INTERIOR DESIGN
SCHOOL OF ENGINEERING AND
ARCHITECTURE

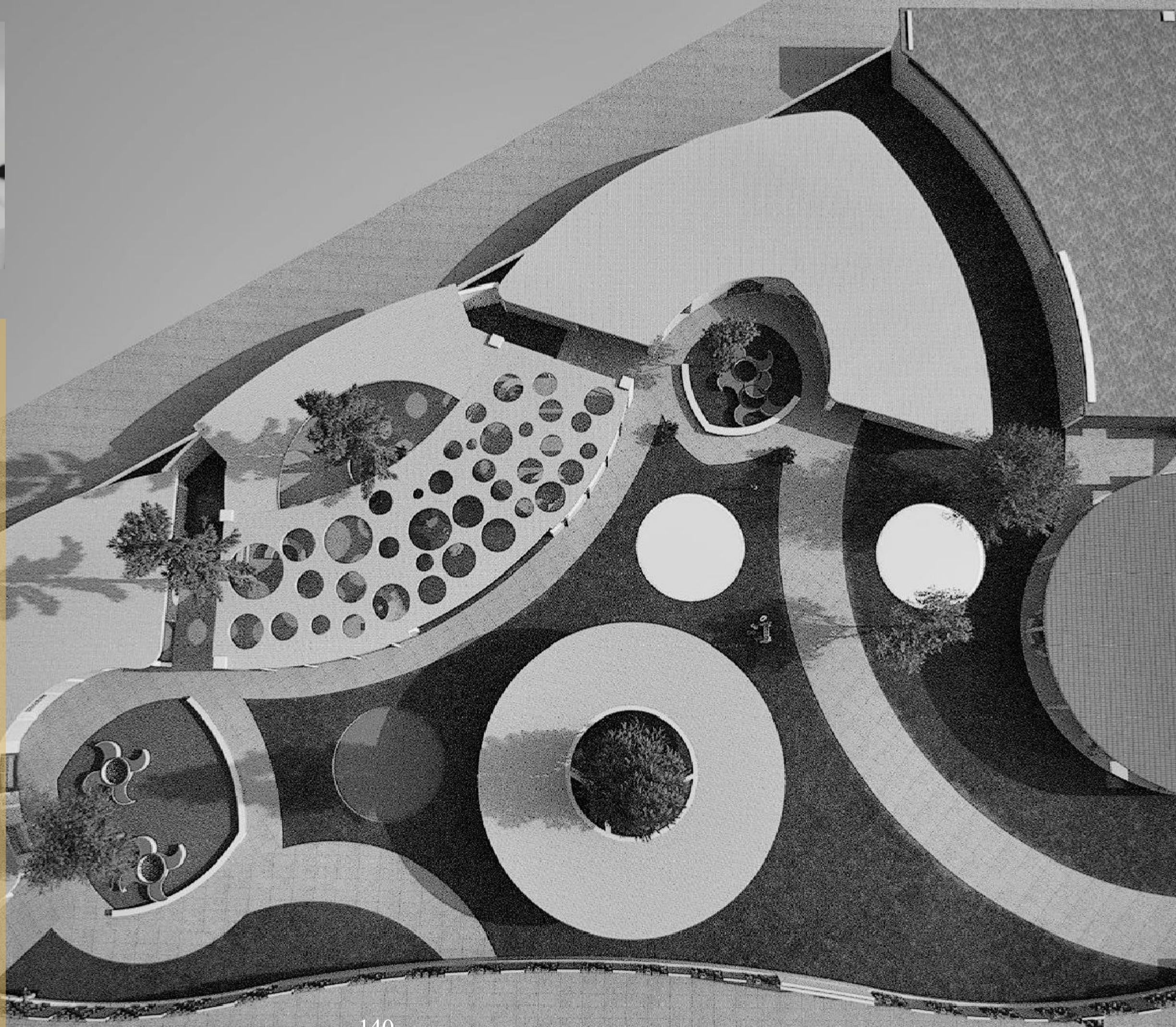
STUDIO IV

KENYATTA UNIVERSITY

amokojasper@gmail.com

BIOGRAPHY

Amoko, a creative, approaches his endeavors with an inherent architectural mindset and strong emphasis on conceptualization. His passions converge across fashion, music, and photography, areas where he translates a deep drive for problem-solving into tangible outputs. The minimalist yet powerful impact of Tadao Ando's work deeply influences his understanding of form and space, while the transformative visions of Virgil Abloh and Kanye West fuel his ambition to push boundaries and redefine industries. Fascinated by the "architecture" of an idea—how it's conceived, constructed, and ultimately impacts its environment—he applies this lens to craft purposeful and culturally resonant creations across every medium.



PLANNING CONCEPT

Keeping the students in a loop of activities, from one successive one to another. This allows for continuous learning and play subtly. This is at the core of breaking the class and playground barrier. As this special group of people learn better through play inside and outside class.

TECHNOLOGY CONCEPT

Extensive use of half walls, large windows, floor to ceiling and glass to bring in the exterior feeling in classroom for strong connection. Perforated walls and roofs will also be highly employed towards embracing outdoor learning and similarly facilitating learning outside.

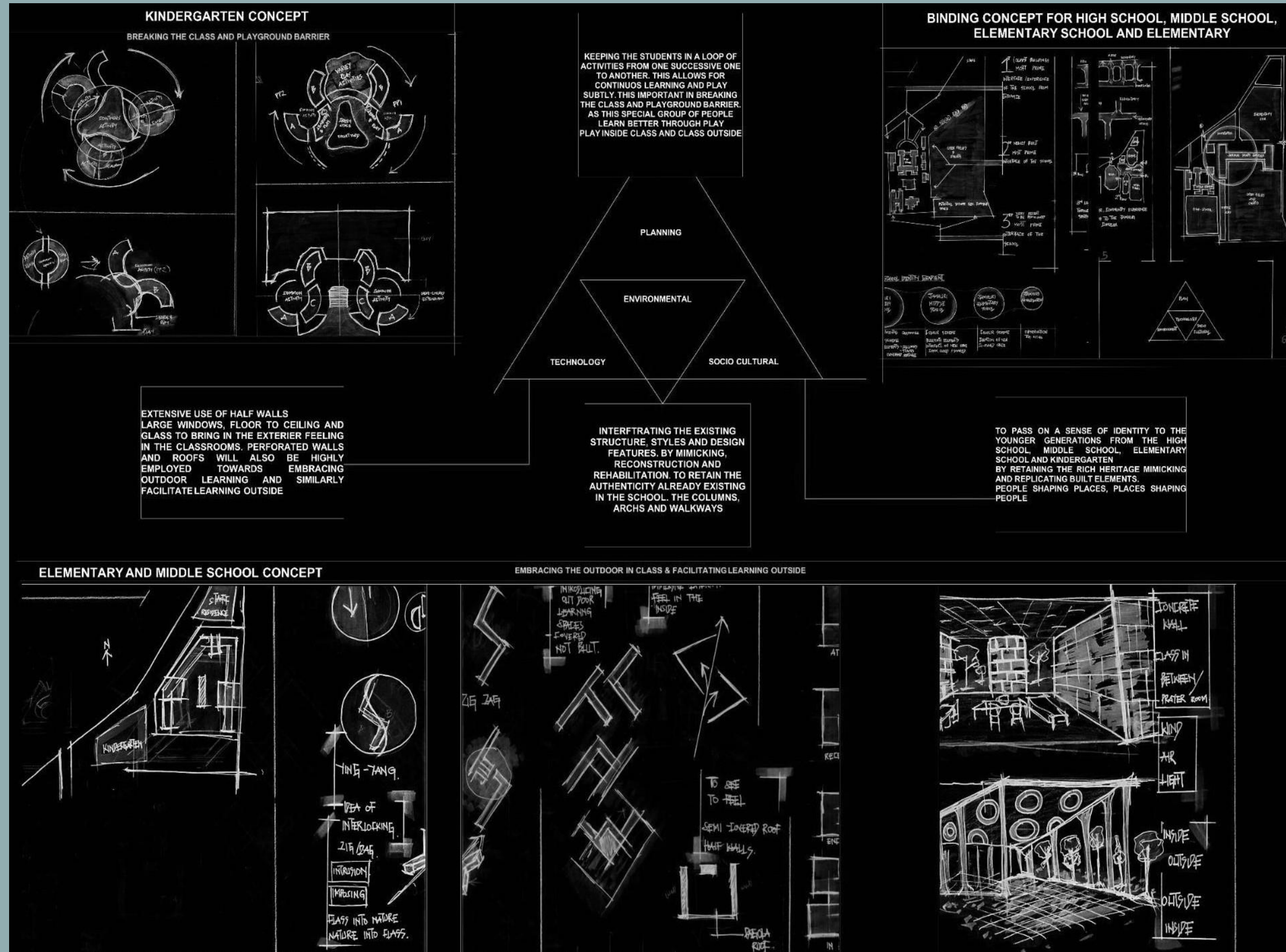
ENVIRONMENTAL CONCEPT

Integrating the existing structure, styles and design features achieved by mimicking, reconstruction and rehabilitation to retain the authenticity already existing in the school. Elements to be duplicated or rehabilitated include columns, archs and walkways

SOCIO CULTURAL CONCEPT

BRIDGING CONCEPT

To pass on a sense of identity to the later generations from the high school to kindergarten through middle school by retaining the rich heritage, rehabilitating and replicating the built elements. For social integration and harmony a select number of activities such as the organic annual kindergarten wall, fence, building would foster a sense of responsibility and ownership



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PLANNING CONCEPT

Keeping the students in a loop of activities, from one successive one to another. This allows for continuous learning and play subtly. This is at the core of breaking the class and playground barrier. As this special group of people learn better through play inside and outside class.



BRING YOUR PLANT TO SCHOOL DAY

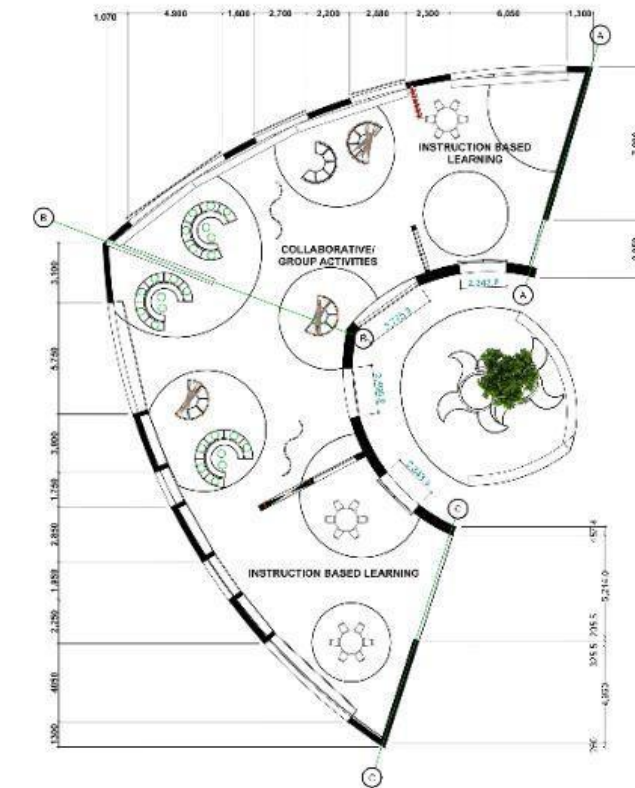
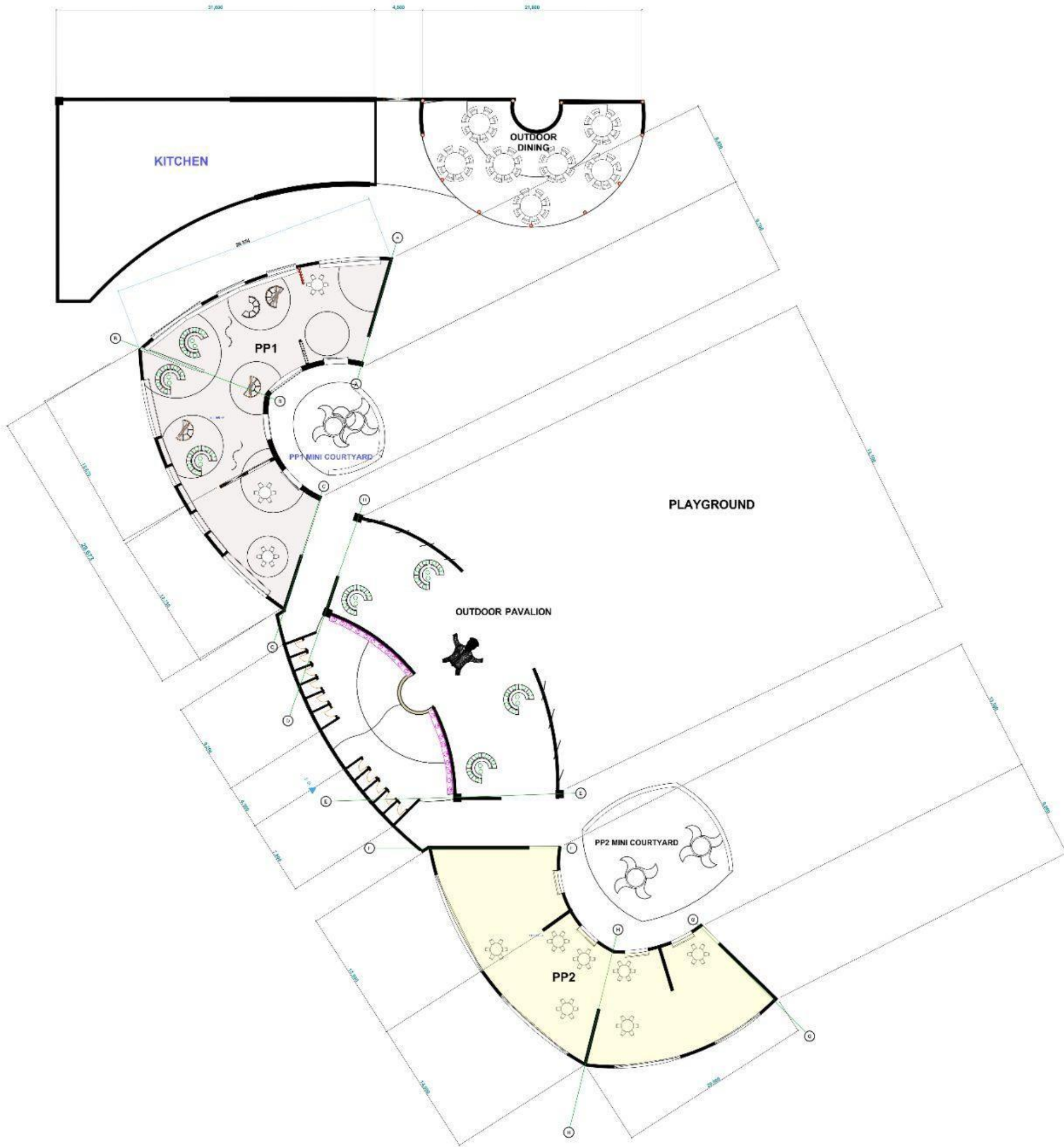
'JAMHURI'S FENCE OF RESPONSIBILITY'

A design feature, uniquely thought through fence to protect the children. The children in kindergarten. The pots and plants are replaced on a seasonal basis. For instance in the beginning and end of term or year. It's a safe live fence consisting of edible plants

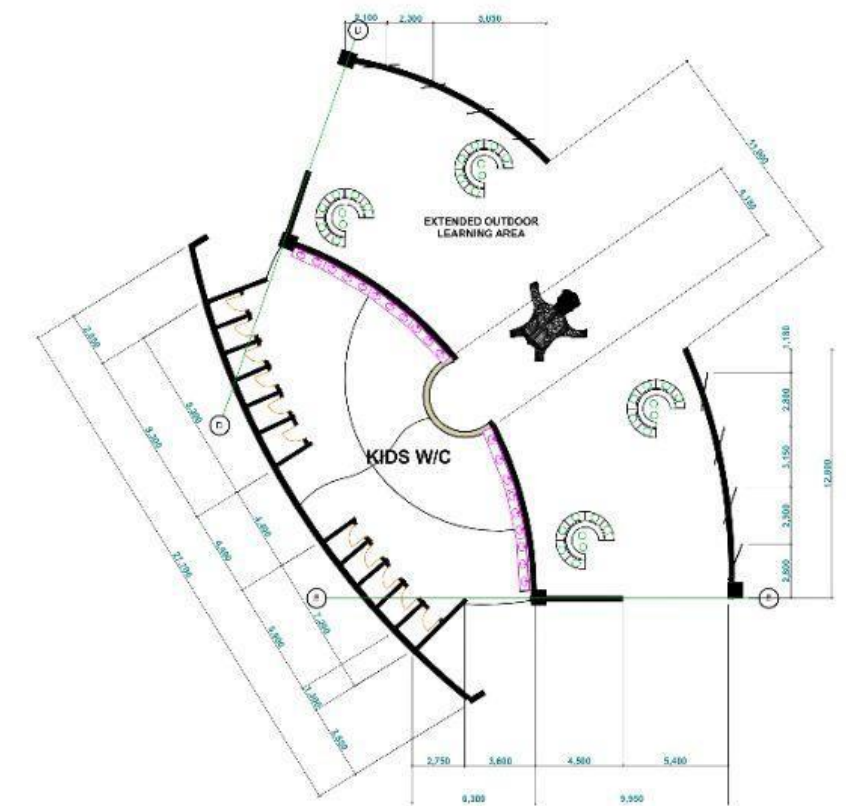
The live fence aims at bringing the jamhuri community together in this routine activity. This includes the high school, middle school and elementary school in this activity

Fostering community integration by enhancing a sense of responsibility, in its own act of building the wall by students and community. The children also innately look forward to taking care of their plants. Learning to nurture and grow things while respecting each others property.

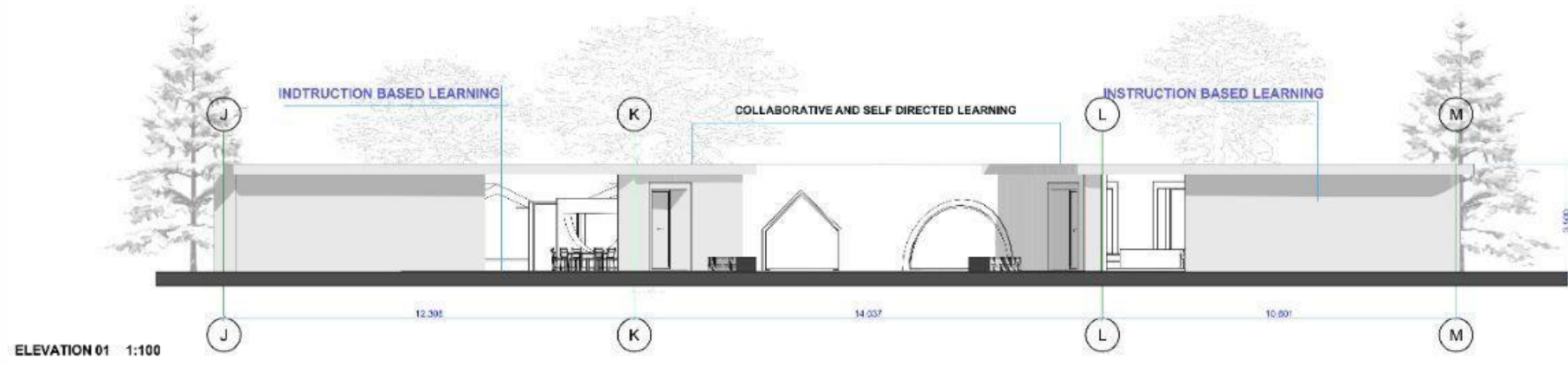
Its design flexibility is that the wall can take different forms and color. That is the pots can be repainted to do a mosaic.



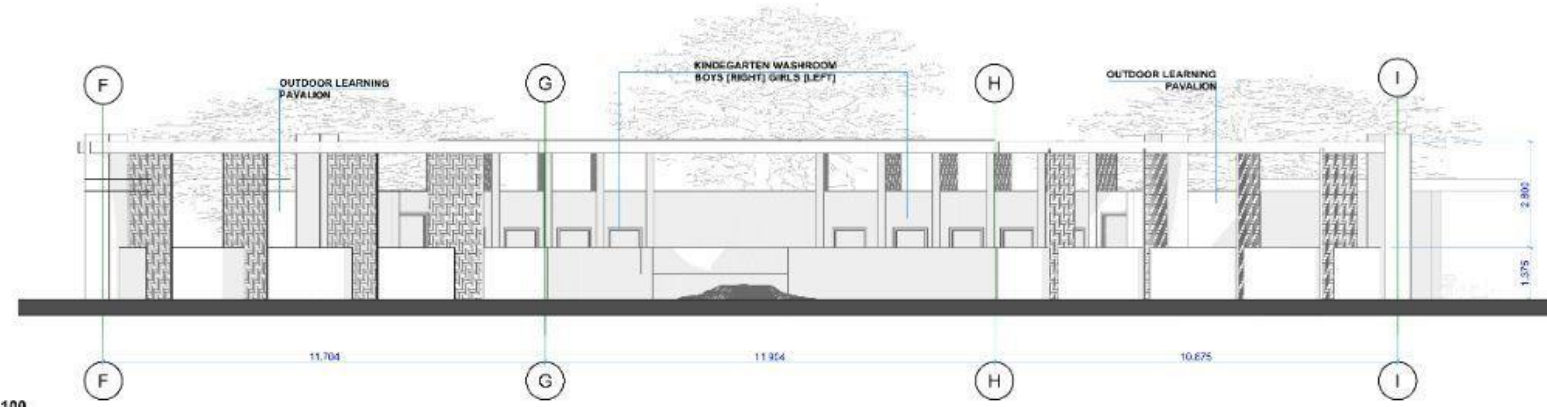
PP1 PLAN 1:200



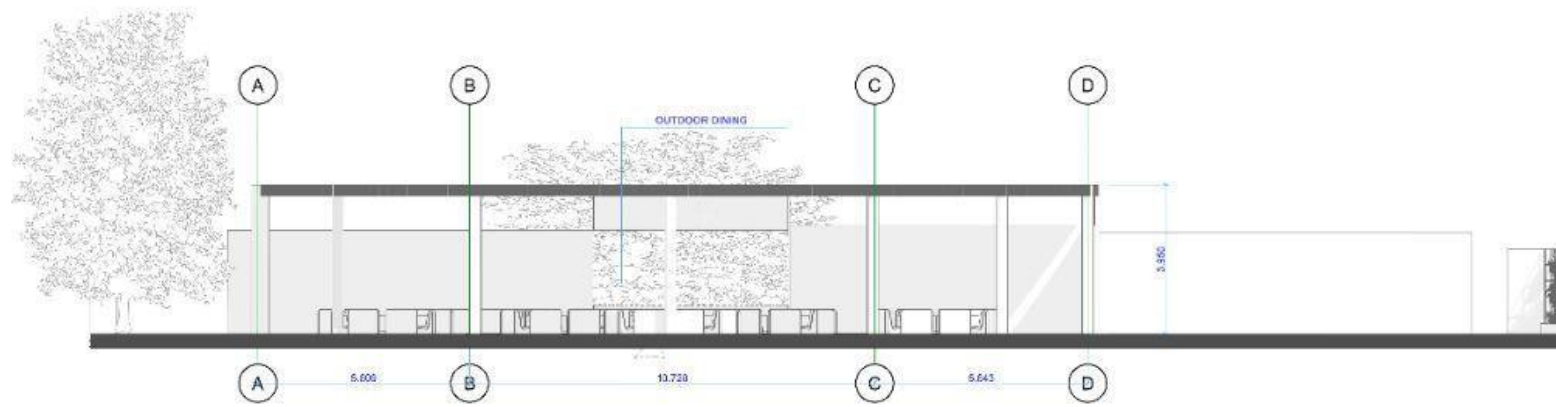
PP2 PLAN 1:200



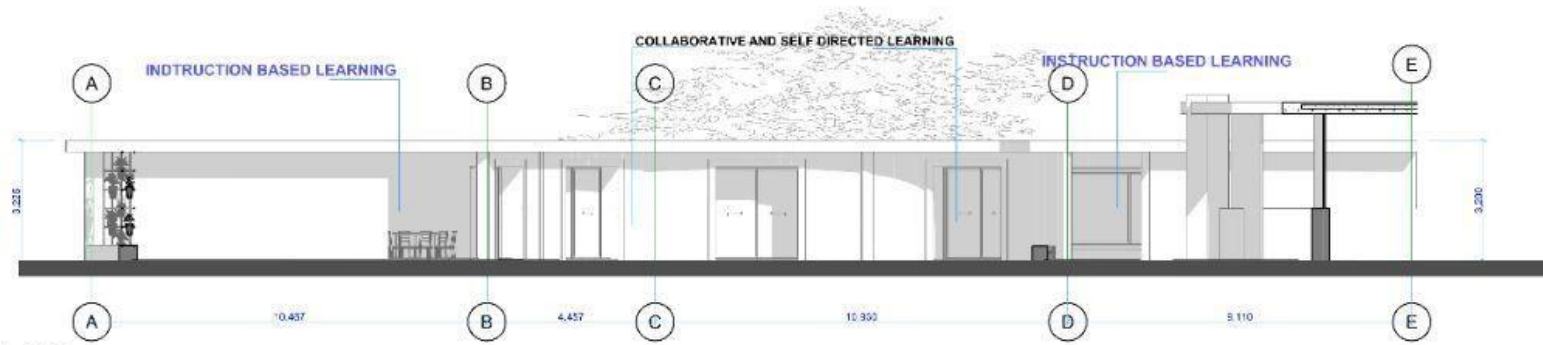
ELEVATION 01 1:100



ELEVATION 02 1:100



ELEVATION 03 1:100



ELEVATION 04 1:100



VIEW OF THE PP1 CLASS



PERSPECTIVE OF OUTDOOR LEARNING PAVALIONCLASS



OUTDOOR DINING SPACE 3D



PP2 CLASSROOM AND ACTIVITY SPACE



WHY A SPORTS COMPLEX?

JAMHURI SPORTS COMPLEX FACILITY MEANT TO INTEGRATE BOTH COMMUNITY AND THE 3 SCHOOLS [HIGH SCHOOL, MIDDLE SCHOOL AND ELEMENTARY]

JUSTIFICATION

THE PROPOSAL IS ANCHORED ON THE SCHOOLS RICH HISTORY IN SPORTS

DESIGN

DESIGNED WITH THE THEME COLORS ACROSS ALL SCHOOLS, [GREEN & YELLOW], THE SPORTS COMPLEX BLENDS IN.

STRATEGIC POSITIONING

ITS STRATEGIC POSITIONING ALLOWS THE COMMUNITY TO ACCESS IT WHILE HAVING A FAIR SHARE OF EXPERIENCING THE HERITAGE SCHOOL, JAMHURI HIGH SCHOOL, WHILE SUBTLY CONTROLLING ACCESS TO THE REST OF THE SCHOOL

SERVICES

THE SPORTS COMPLEX HOSTS AN INDOOR HEATED OLYMPIC SIZE POOL, RACKET GAMES COURTS, BASKETBALL COURT AND AN ULTRA MODERN GYM
FIGURE 1 ~ VIEW OF THE JAMHURI SPORTS COMPLEX FROM THE ENTRANCE

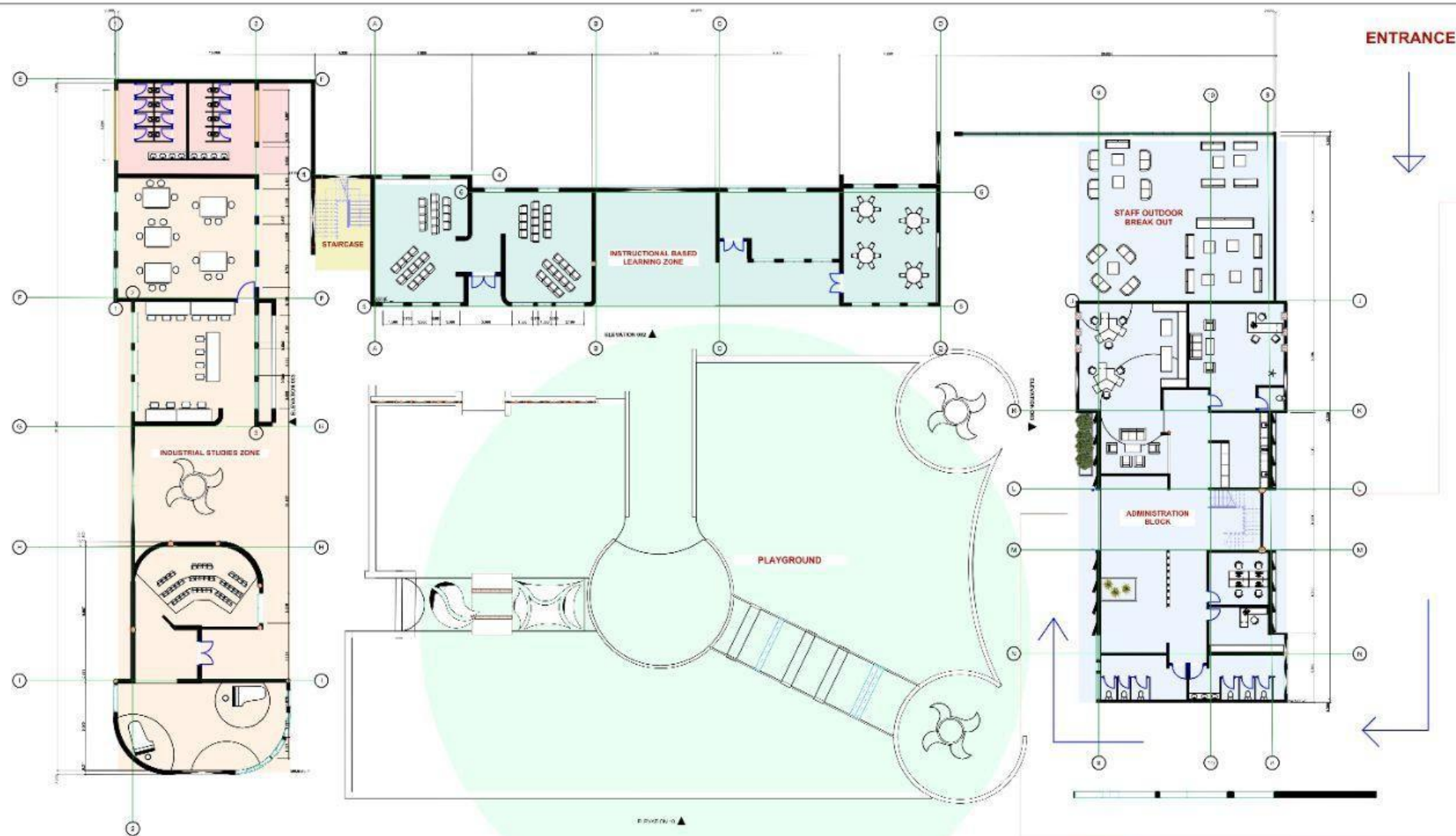
DESIGN FEATURES FROM JAMHURI HIGH SCHOOL INTEGRATED INTO JAMHURI ELEMENTARY SCHOOL

**MIMICKED JAMHURI HIGH SCHOOL PITCHED ROOFS AND THEME COLOURS, PREDOMINANTLY YELLOW AND GREEN
[IMAGE OF JAMHURI ELEMENTARY ENTRANCE]**

THE ARCHED WORKSHOP WINDOWS WERE MIMICKED FROM JAMHURI HIGH SCHOOL'S DINING HALL. THE WORKSHOP IS A DOUBLE VOLUME JUST LIKE THE MAIN HALL IN JAMHURI HIGH SCHOOL

**COVERED WALKWAYS THROUGHOUT THE ELEMENTARY JUST AS IN THE HIGH SCHOOL
COLUMNS TECHNOLOGY REPLACED WITH MUCH MORE PLAYFUL CLADDING
[SPIDERMAN/SPIDEY SENSE]**

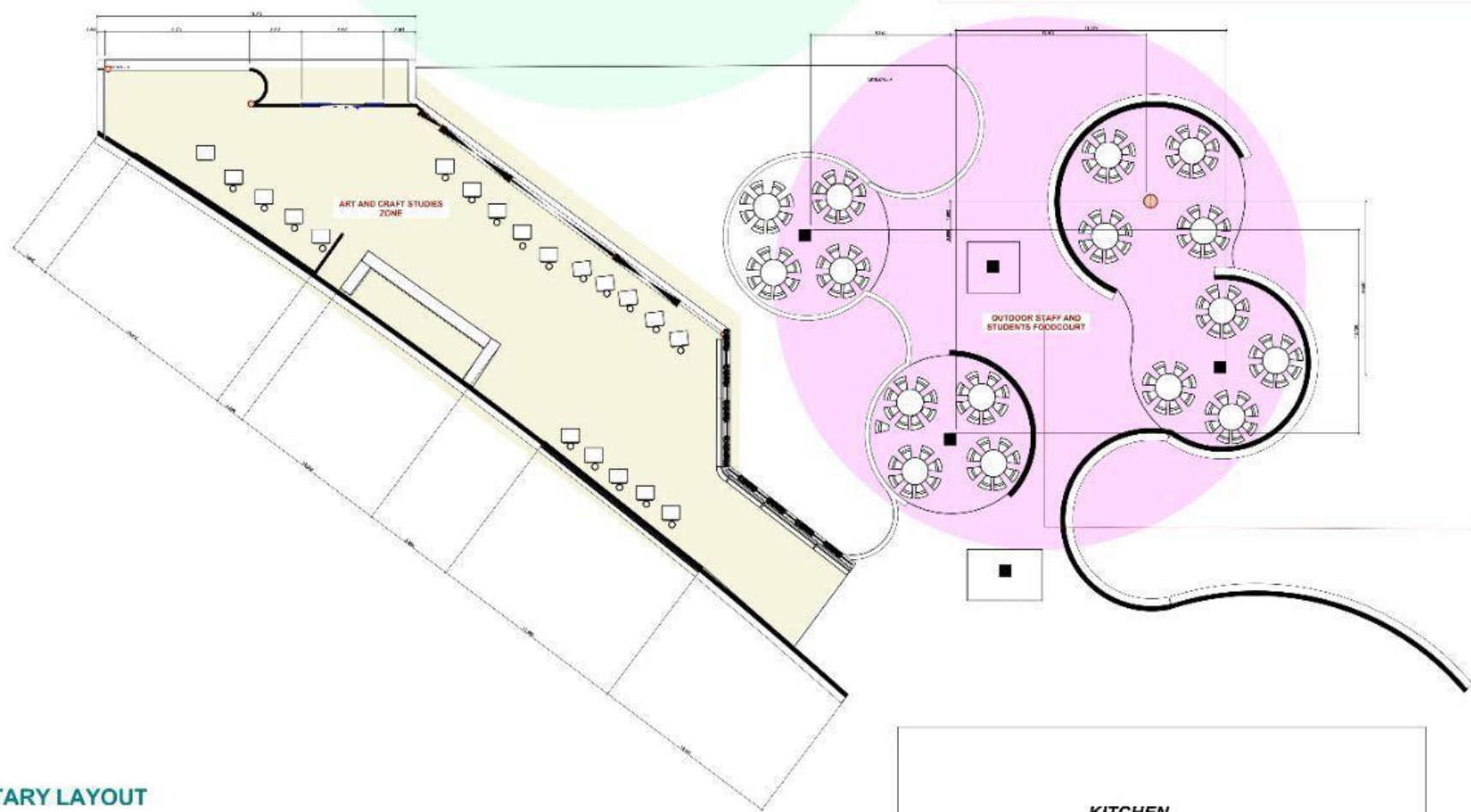




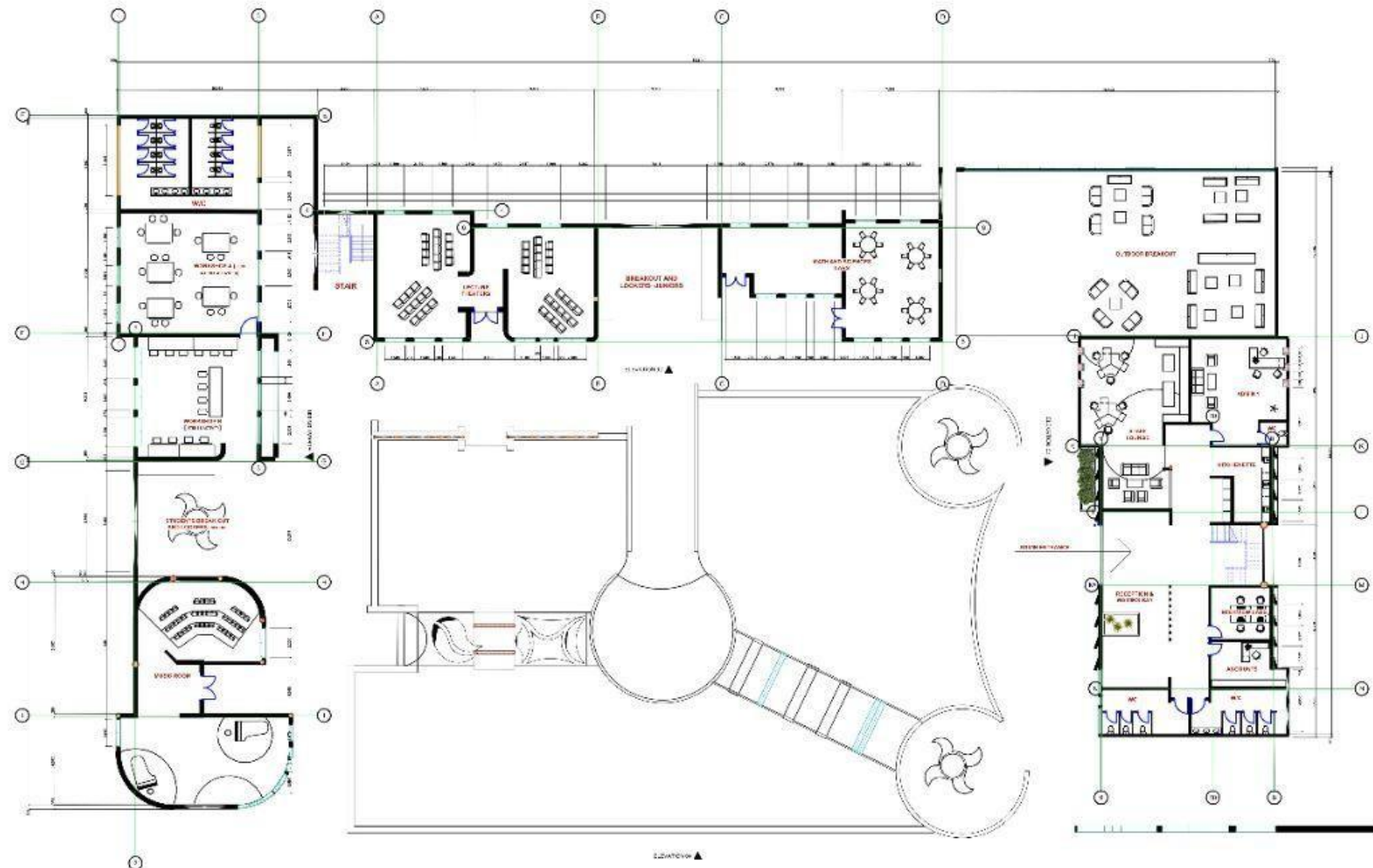
ENTRANCE THAT UNIQUELY SERVES BOTH JAMHURI ELEMENTARY AND KINDERGARTEN
PEDESTRIAN WALKWAY ON THE RIGHT, VEHICULAR PARKING ON THE LEFT TOWARDS THE JAMHURI SPORTS COMPLEX
THE FACADES ON THE ADMINISTRATION BLOCK IS MIRRORED



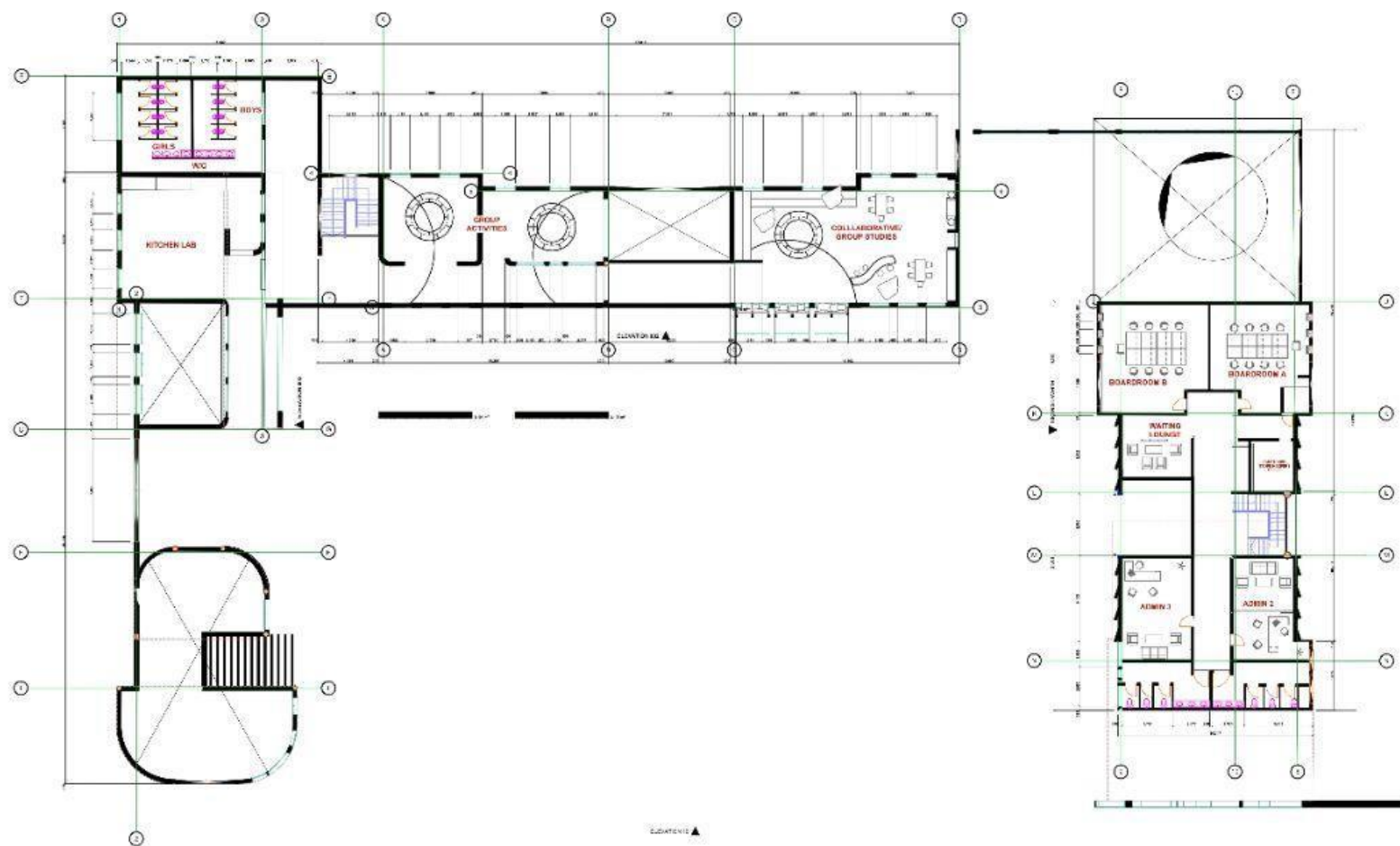
THE FACADE AT THE ENTRANCE AND BACK OF THE SCHOOL IS MIRRORED
NEXT TO THE ADMINISTRATION BLOCK IS A STAFF OUTDOOR BREAKOUT, SOFTLY EASING THE STAFF STUDENT BARRIER.
ALSO ALLOWS FOR SUPERVISION OF THE PUPILS SUBTLELY



AN AERIAL VIEW OF THE JAMHURI ELEMENTARY PLAYGROUND, WATER STRIPS, SAND PIT AND WIDE ENOUGH PEDESTRIAN STREET
THE OUTDOOR FOOD COURT, ART AND FINE CRAFTS SPACE AND CLASSROOMS
THE KITCHEN IS A SHARED FACILITY BETWEEN JAMHURI KINDERGARTEN AND JAMHURI ELEMENTARY SCHOOL



GROUND FLOOR 1:200



FIRST FLOOR 1:200



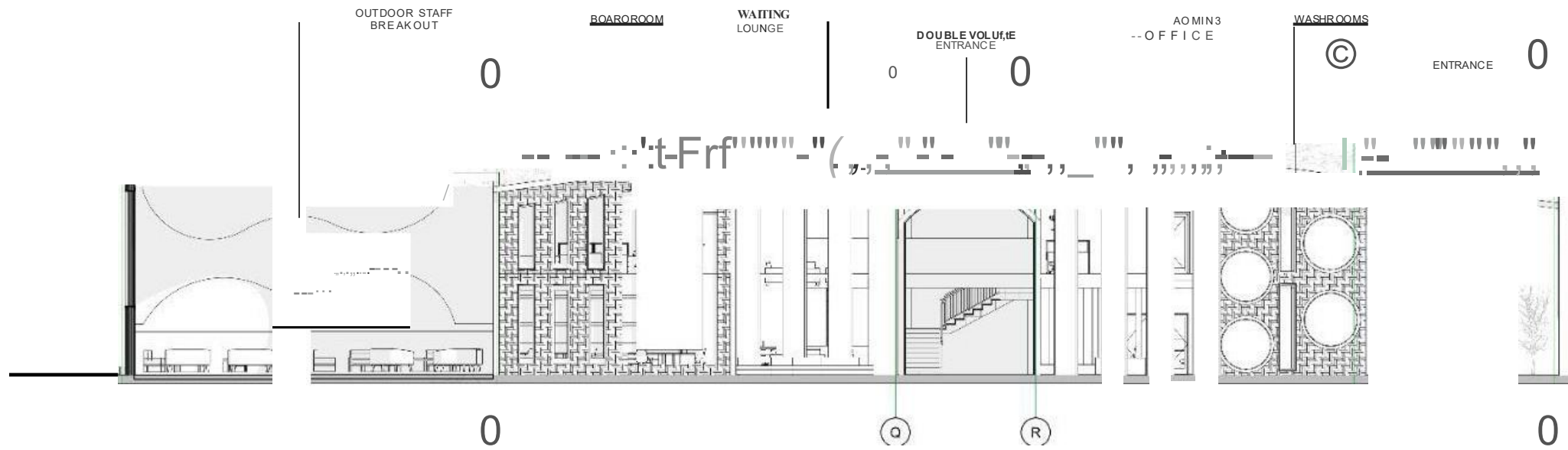
VIEW FROM THE JUNIORS BREAKOUT AND LOCKER SPACE
ADJACENT IS THE LECTURE THEATRE AND FURTHER AHEAD ARE THE WORKSHOPS



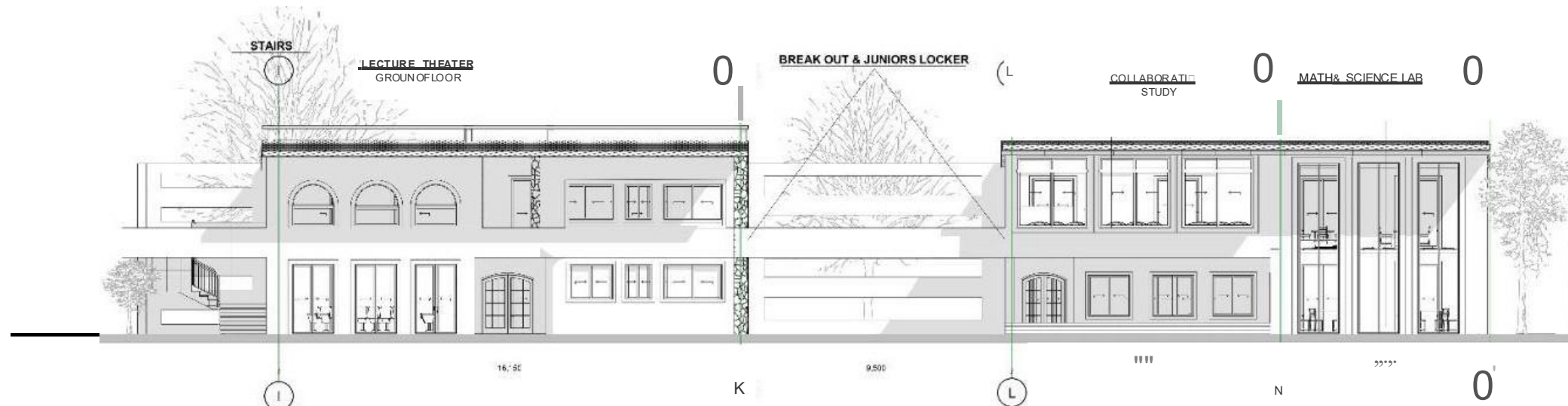
VIEW OF THE MUSIC ROOM(LEFT) THE WORKSHOPS AND THE PART OF THE INSTRUCTIONAL LEARNING ZONE[LECTURE THEATRE]
FROM THE FOOD COURT POV



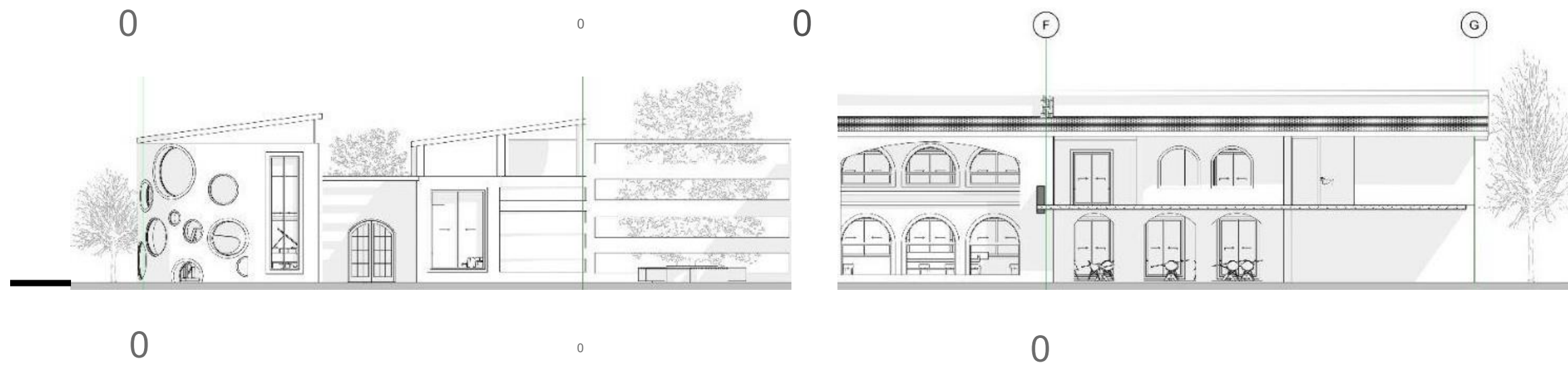
FOOD COURT [RIGHT] AND ADMINISTRATION BLOCK
JUNIORS LOCKERS AND BREAK OUT SPACE POV



ELEVATION 01 1:100

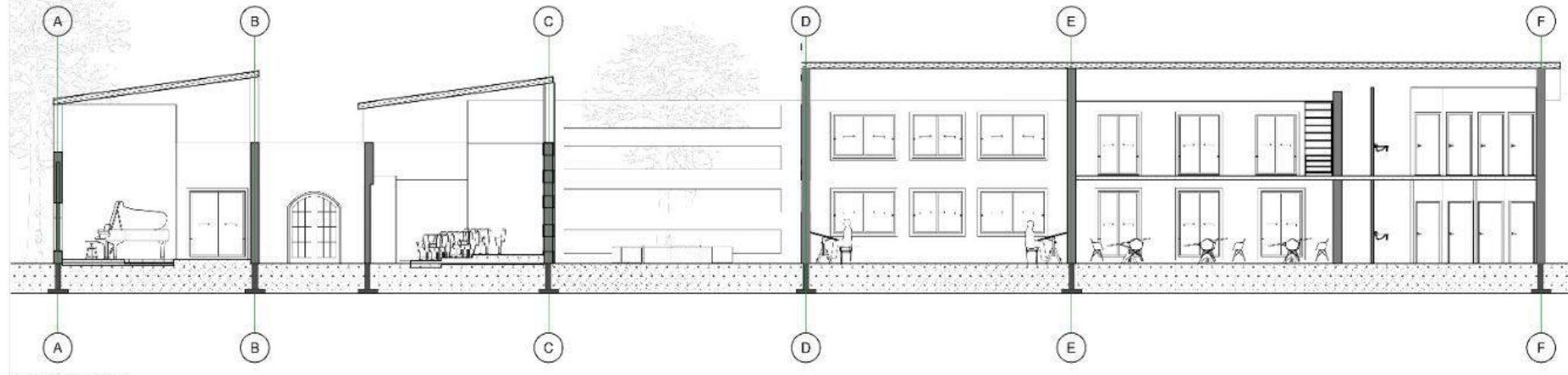


ELEVATION 02 1:100

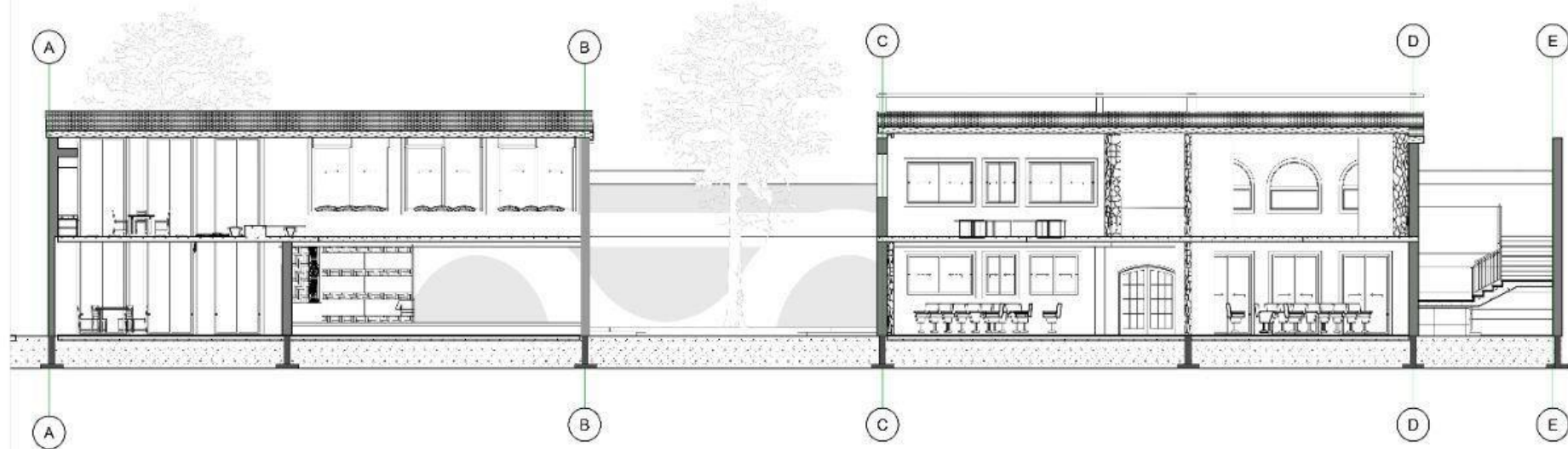


ELEVATION 03 1:100

ELEMENTARY

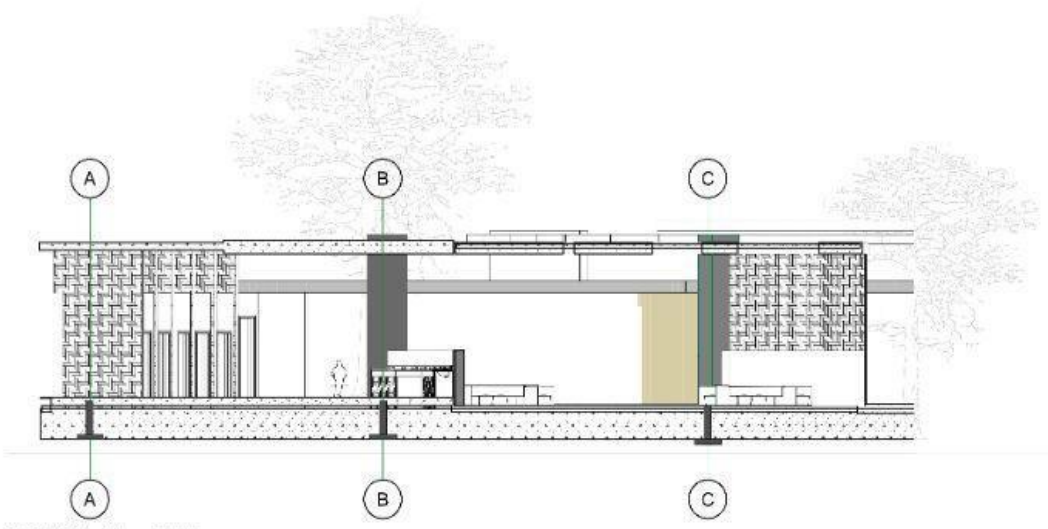


SECTION 01 1:100

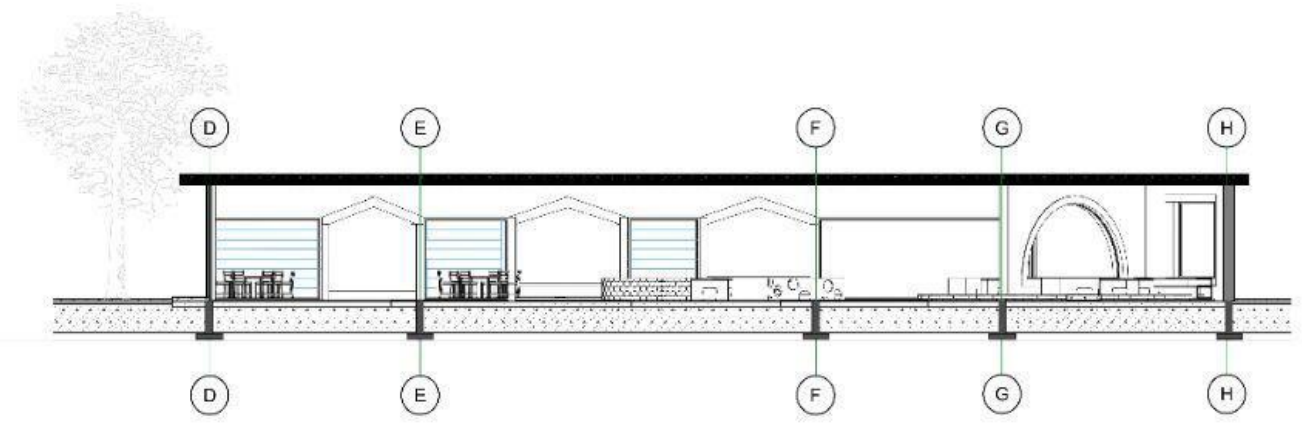


SECTION 02 1:100

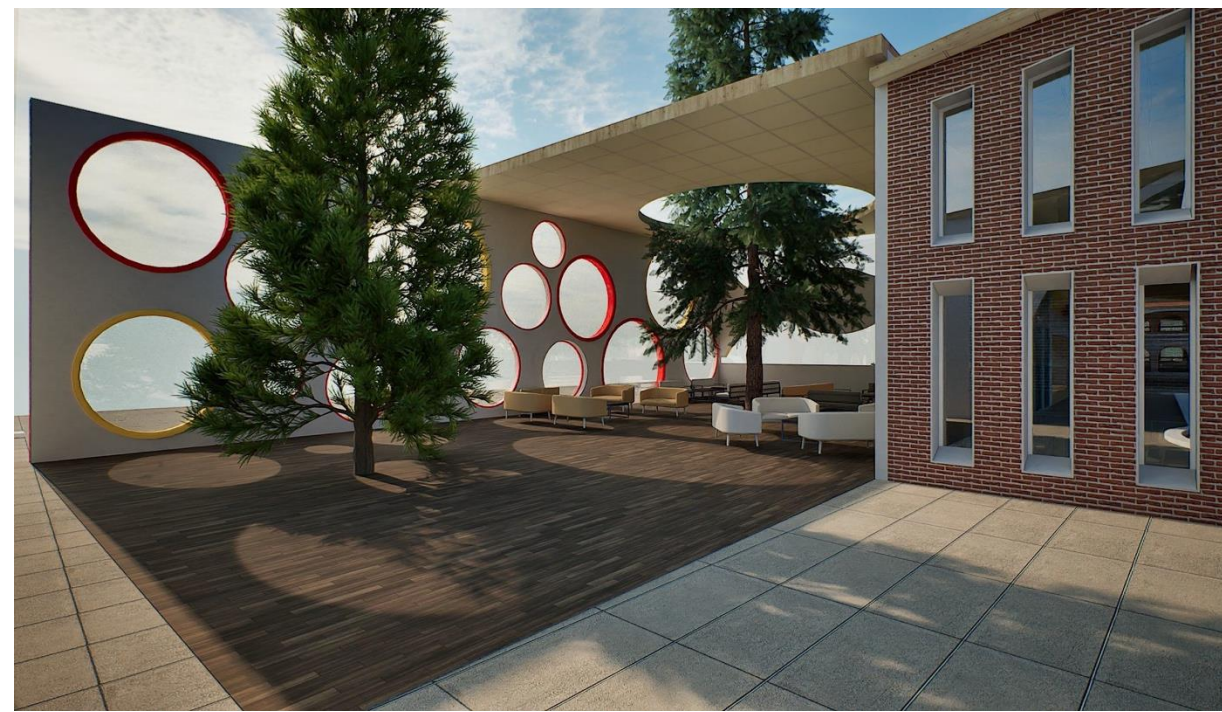
KINDERGARTEN



SECTION 01 1:100



SECTION 02 1:100



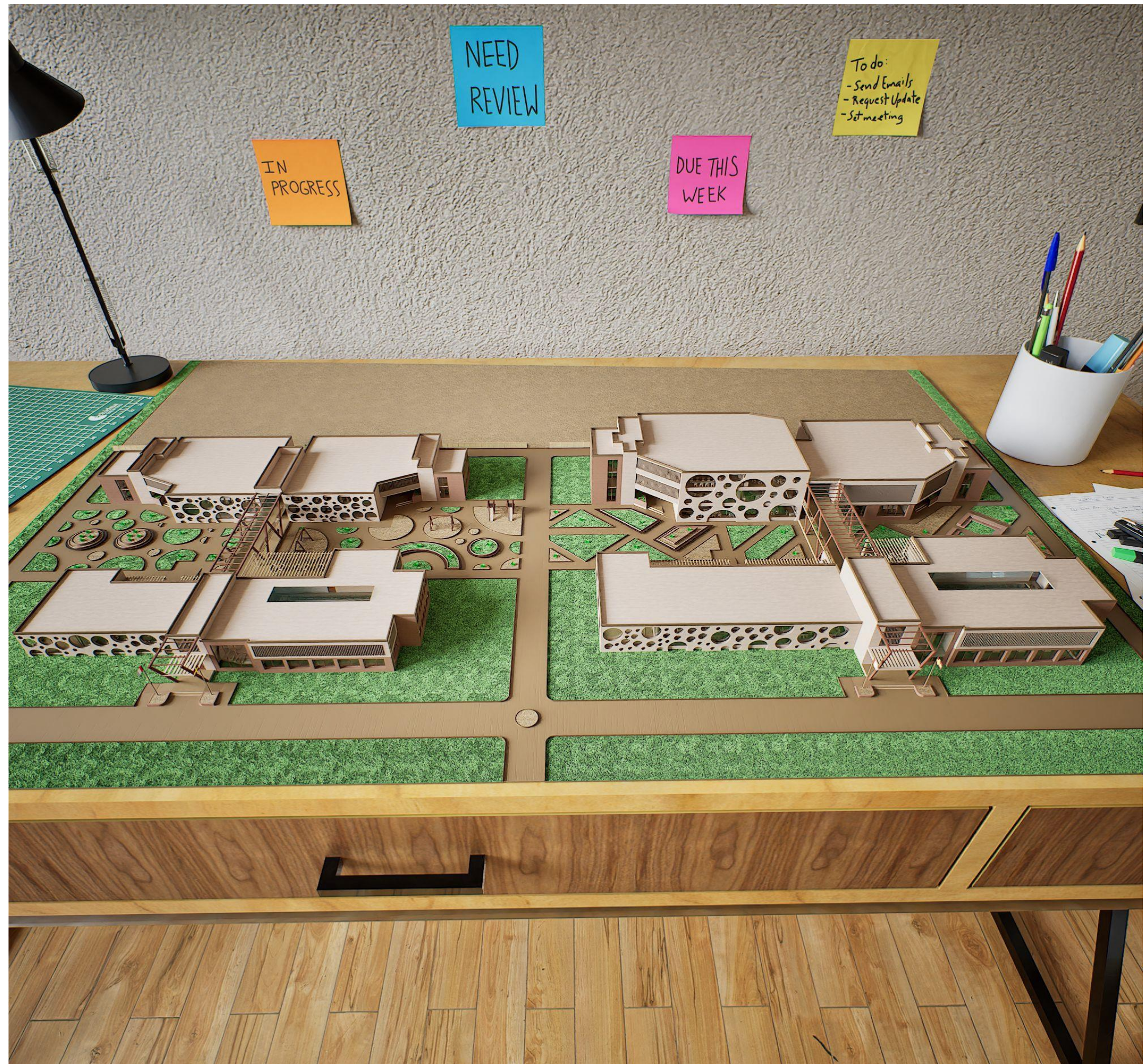


NAME: Joseph Stephen Amimo
INSTITUTION: Department of Architecture and Interior Design (DAID), School of Engineering and Architecture (SEA)
Kenyatta University (KU)
EMAIL: josephamimo754@gmail.com
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BIOGRAPHY:

Joseph Amimo is a dedicated student at Kenyatta University, currently pursuing his studies in the School of Engineering and Architecture, within the Department of Architecture and Interior Design. He possesses a deep passion for designs that exhibit unique character and effectively address both user needs and site-specific conditions.

Joseph has actively sought out opportunities to gain practical experience, completing attachments at Edon Consultants International Limited firm. His work with licensed architects has significantly honed his abilities in technical drawing, design, 3D visualization, and presentation skills, preparing him for a promising career in the field of architecture.



JAMHURI KINDERGARTEN & ELEMENTARY SCHOOL DESIGN, LIMURU ROAD, NGARA, NAIROBI.

Source: Author 2024

BRIEF ANALYSIS

LOCATION



KENYA



NAIROBI COUNTY



STAREHE CONSTITUENCY



PROJECT DETAILS

PROJECT NAME: Jamhuri School Complex
LOCATION: Jamhuri high school, Limuru Rd, Ngara
SITE AREA: 161874 square metres
CLIENT: Jamhuri high school administration

PROJECT BRIEF

To transform an existing high school into a comprehensive educational institution with a Kindergarten, Middle School, Elementary School, High School.

PROJECT OBJECTIVES

1. To design spaces sporting different learning activities.



School with different spaces for different activities
Source : [Schoolyard School Speciality](#)

2. Prioritize the safety and security of students.



need for enhancing safety and security.
Source : [Shutterstock images](#)

3. Integrate sustainable practices in the design.



School that has integrated sustainable design practices
Source : [geNEOUS](#)
<https://www.geneous.world/posts/sustainability-in-education-k12-schools-are-leading-the-way>

4. Foster a cohesive and interactive community through the design.



Community and family being involved with the school
Source : <https://hw.org/community-schools/>

TARGET AUDIENCE

Students



Parents/ Guardians



Community



Tourists

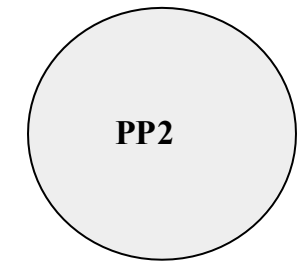
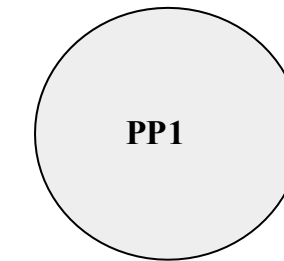


Images of Target audience for proposed school complex design
Source : <https://www.freepik.com/vectors>

POPULATION PER SCHOOL LEVEL

KINDERGARTEN

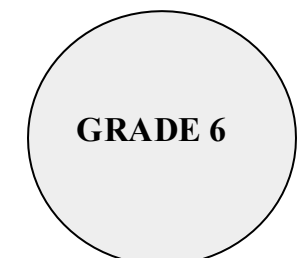
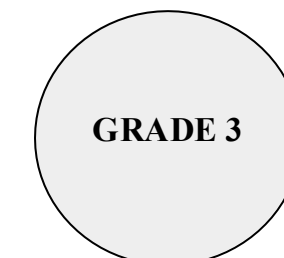
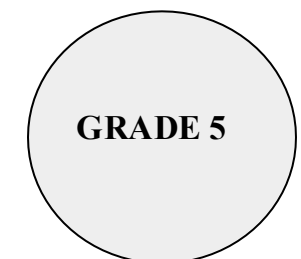
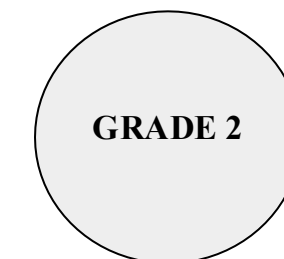
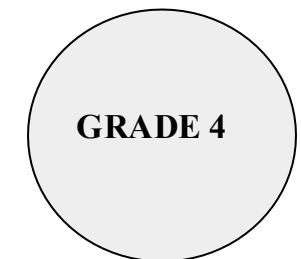
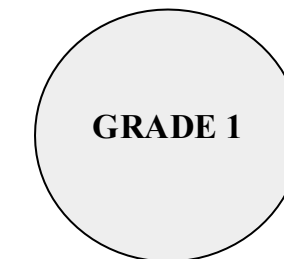
Classes



Capacity per class: 15 students per class
Streams per class: 2 streams per class
Total no. of students: 60 students

ELEMENTARY

Classes



Source, Author 2024

Capacity per class: 28 students per class
Streams per class: 2 streams per class
Total no. of students: 336 students

PROPOSED SCHEDULE OF ACCOMMODATION

Administration

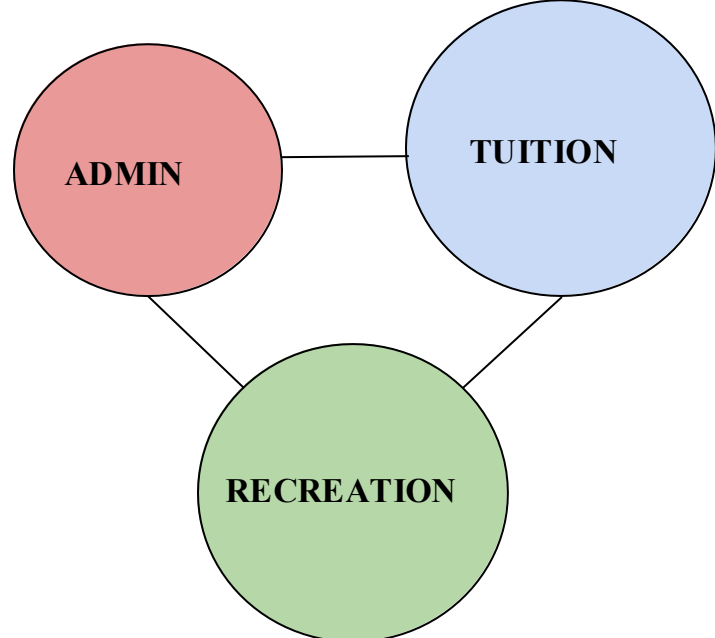
- Reception and waiting bay
- Finance office
- Secretary office
- Vice principal office
- Principal office
- Boardroom
- Staffroom
- Infirmary
- School storage
- Washrooms

Tuition

- Classrooms
- Artrooms
- Music rooms
- Digital literacy room
- Library
- Learning garden
- Dining hall & kitchen

Recreation

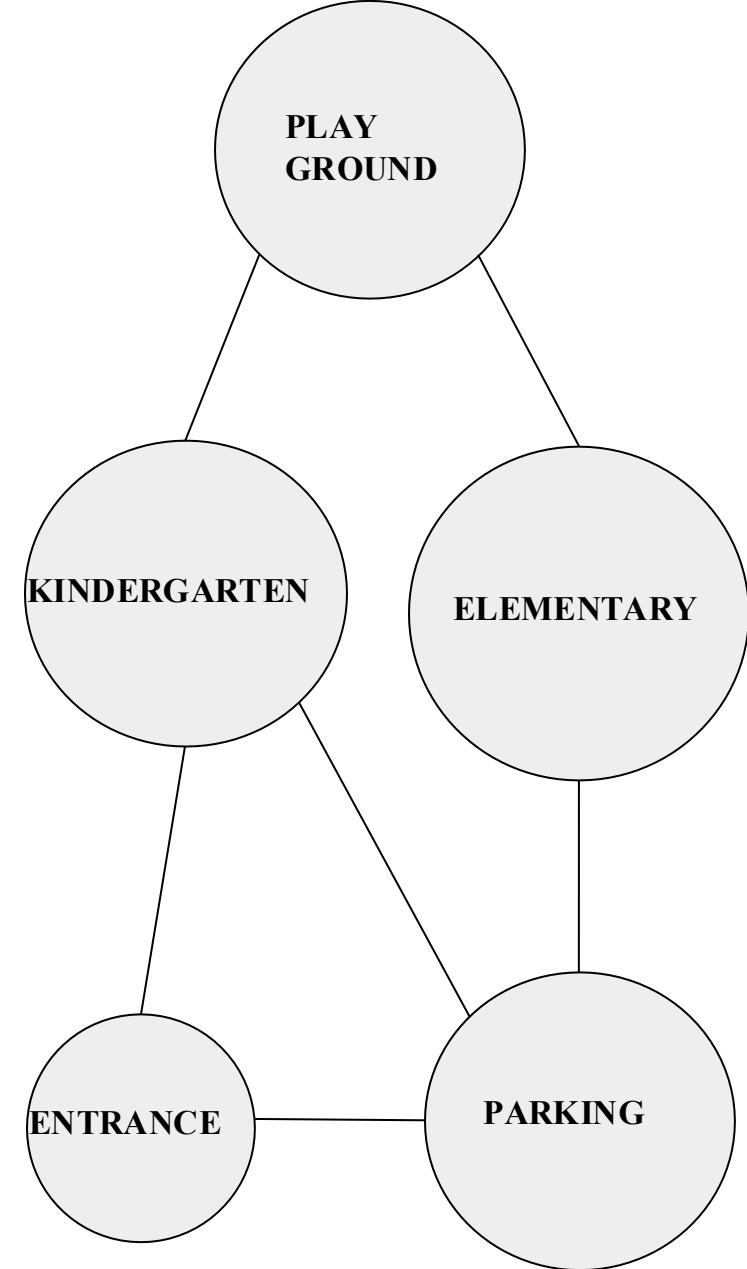
- Indoor playroom
- Outdoor playground



Source, Author 2024

BUBBLE DIAGRAMS

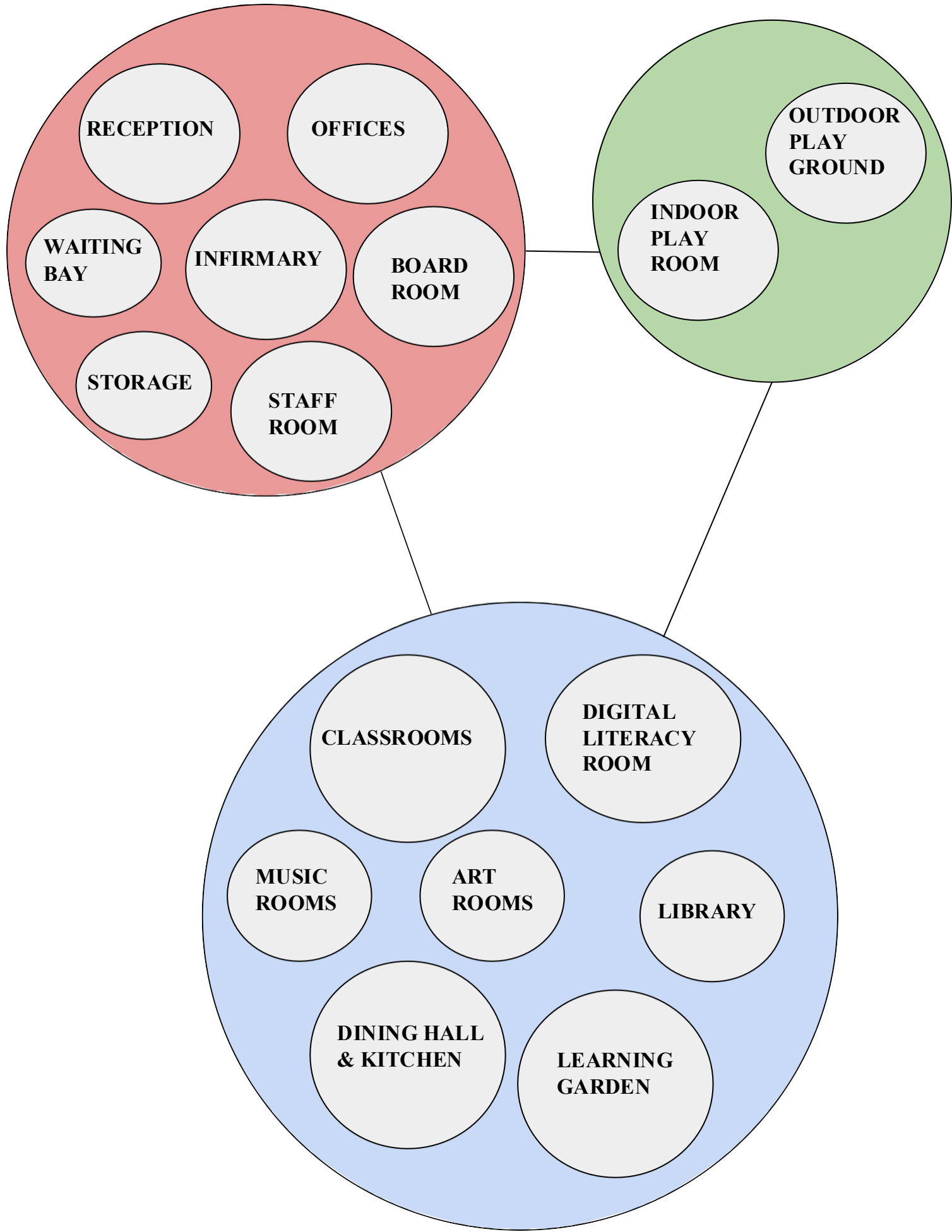
SITE PLANNING



Source, Author 2024

The Kindergarten and Elementary school will have their own separate access for the students/parents/visitors. Upon entry, motorists can access the shared parking lot that accommodates users from middle and high schools as well. The parking lot can hold 90 vehicles at a time. The elementary and kindergarten school designs are positioned to be adjacent to each other with a shared playground area across. The middle school and high school students have their own shared playgrounds.

MAIN FACILITIES PLANNING



Source, Author 2024

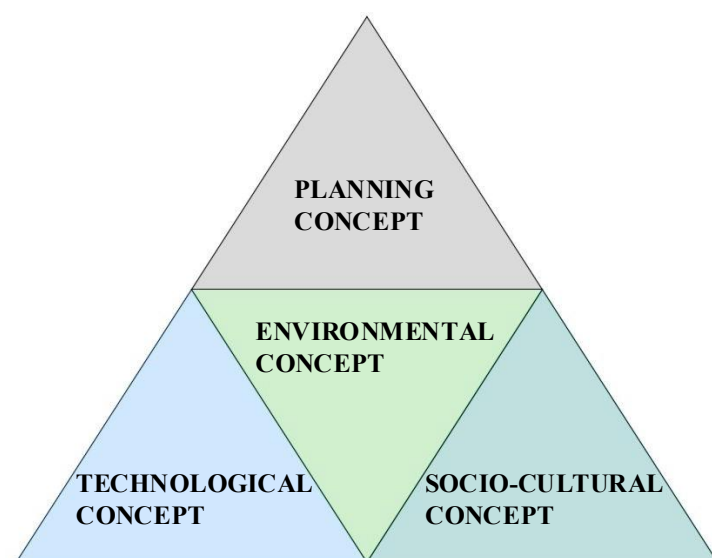
CONCEPT DEVELOPMENT

DESIGN PHILOSOPHY

“Form follows function,” by Louis Sullivan. The design will aspire to prioritize purpose and functionality, aesthetics to emerge naturally from building’s use.

PHILOSOPHY OF DESIGN

“Design must be rooted in reality,” by Dieter Rams. The designer must fully be aware of the users and the reality/context in which they are and the activities so as to ensure the design meets their needs.



The Concept triangle diagram

Source : *The Relationship between Imageability and Form in Architecture.*

PLANNING CONCEPT

“Cohesion.” The design aims to create a seamless interconnection between the school spaces that bring students together.

This is to be achieved by:

-Incorporation of a central courtyard space to serve as breakout space for students from their classes, that forster interaction among them.

-Consistent architectural language.

-Linkage of built environment with natural environment enhancing continuity between indoor and outdoor



School complex with central courtyard.

Source: <https://www.shapirodidway.com>

TECHNOLOGICAL CONCEPT

“Biophilic learning sanctuary,” The design aims to implement building material/construction strategies that enhance user comfort.

This is to be achieved by:

-Use of large windows in indoor spaces to maximize daylight and improve on energy efficiency.

-Use of green courtyards which naturally ventilate the school spaces.

-Accommodation of multipurpose spaces, flexible and adaptable to different activities that may be performed by the users.



School facade with glazed windows and circular patterns.

Source: <https://www.archilovers.com>



Flexible classroom space that can accommodate various activities

Source:

<https://www.edutopia.org/article/reflections-shifting-flexible-classroom>

ENVIRONMENTAL CONCEPT

“Indoor-outdoor synergy.” The design aims to merge both indoor and outdoor environments to create a fluid and adaptable experience.

This is to be achieved by:

-Semi-outdoor classrooms.

-Visual connectivity via large windows/glazed facades for visual access from indoor areas.

-Learning gardens where students can learn about plants.

-Integrated pathways allowing seamless transition between school zones.



Outdoor Learning garden.

Source: <https://www.jenlewinstudio.com>



Outdoor Classroom setting.

Source: <https://groundsforplay.com/products/outdoor-classroom>

SOCIO CULTURAL CONCEPT

“Safety and security.” The design goes beyond physical protection, considers social, cultural and emotional needs of students/staff/community. Design to emphasize security both physically and psychologically to foster sense of trust and community engagement.

This is to be achieved by:

-Controlled access to school.

-Design for visibility and supervision with open sightlines to allow for passive supervision.

-Inclusive design for users of all abilities.



A Ramp to simplify access for users with different abilities.

<https://ccsbestpractice.org.uk>

MASTERPLAN: Jamhuri School Complex



Main entrances to the site are situated along the Limuru road, which is a busy road during peak hours..

The community entrance is situated along Forest lane which has less traffic compared to Limuru road. The staff members also have their access situated along the Forest lane and have accommodation and parking lot area to serve them.

Kindergarten and Elementary school have a different access point as compared to the Middle and High school, but all of them have a shared parking lot area to accommodate motorists coming into the school. Kindergarten and Elementary school have a central courtyard forming a green street in between them, which serves as breakout area for the students. Their playground is right across, neighbouring the Forest lane.



Elementary
Courtyard street
Kindergarten
Playground

Zoomed in site plan of Kindergarten and Elementary schools

Source: Author, 2024



Entrance to the Kindergarten school

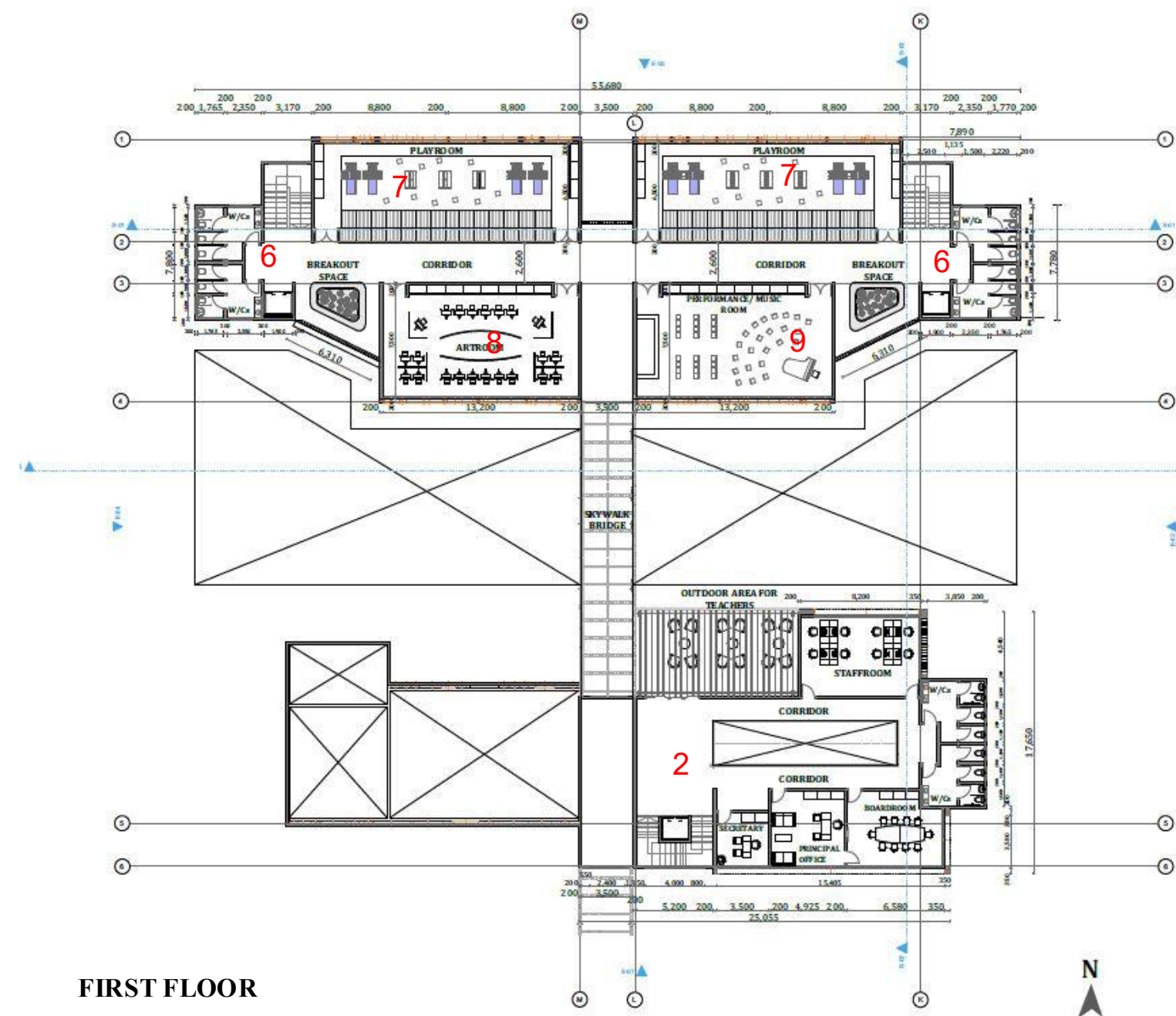
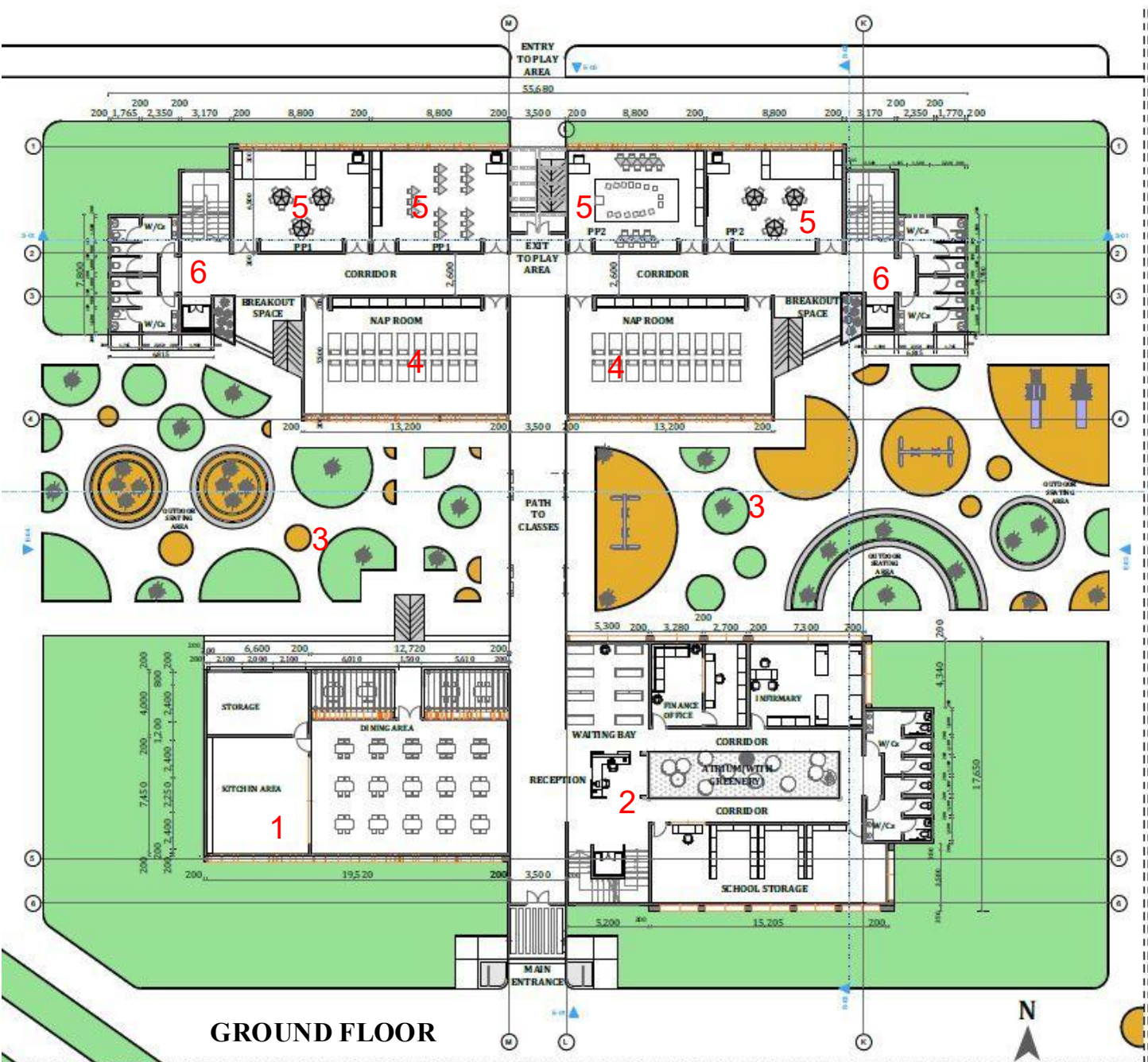
Source: Author, 2024

Source, Author 2024

LEGEND:

- | | | |
|---|-----------------------------------|--|
| 1. Staff Quarters. | 11. Laboratories and lecture hall | 22. Lawn tennis |
| 2. Kindergarten School | 12. Resource centre | 23. Rugby pitch |
| 3. Elementary School | 13. Middle School | 24. Football pitches (can be combined to be a cricket field) |
| 4. Kindergarten and Elementary playground | 14. Special classes | 25. Sports facility with indoor games, changing rooms washrooms and an indoor swimming pool area) |
| 5. Kindergarten and Elementary entrance | 15. Green breakout space | 26. Community entrance and parking lot area. |
| 6. Parking lot | 16. Student dormitories | (Community can access school playgrounds via this entrance without interference with normal learning activities) |
| 7. Middle and High school entrance | 17. Dining hall and kitchen | |
| 8. Central Administration | 18. Canteen | |
| 9. Auditorium | 19. Basketball court | |
| 10. High School | 20. Handball pitch | |
| | 21. Volleyball pitch | |

FLOOR PLANS : KINDERGARTEN



Source, Author 2024

LEGEND:

1. Dining hall, kitchen and storage.
2. Administration
3. Courtyard
4. Naproom
5. Classrooms
6. Washrooms
7. Indoor playrooms
8. Artroom
9. Music room

On the ground level, one gets access to the building using either ramps or steps after which they encounter the administration zone. The reception area houses a waiting bay for visitors along with secretary's desk. Other spaces in the admin zone include school storage area, the finance office, an infirmary for healthcare and restrooms. Across the entrance corridor is the dining hall and kitchen/storage area. The hall can host up to 60 students. The courtyard area has learning gardens/small play areas which act as breakout spaces from normal learning areas.

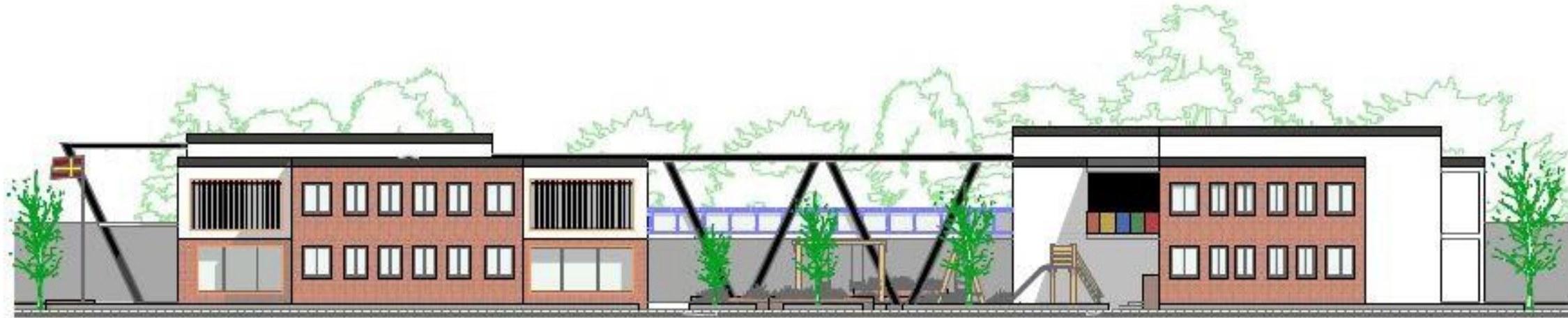
The courtyard has greenery which enhances the aesthetics and naturally ventilates the spaces. At the peripheries are the washrooms where students can relieve themselves. The classrooms have a variety of layouts which can accommodate different learning activities, from individual seating to group seating. There are nap rooms where students can rest after the lunch break.

On the first level, in the administration zone has a secretary's office, a vice principal's office, principal's office, a boardroom and a staffroom for the teaching staff. Adjacent to the staffroom is a terrace, that serves as a breakout area as well as a supervision point due to the open sightlines.

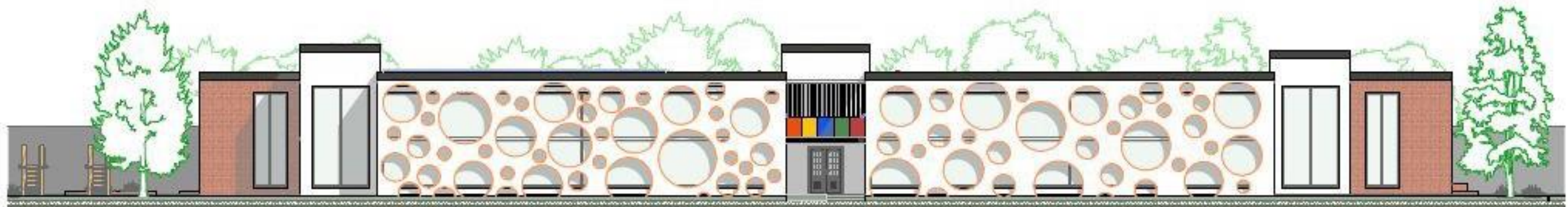
The atrium in between the admin spaces helps with ventilation and interior daylighting due to the skylights placed at the top. The special classrooms; Artroom and Music room are located on the upper level. Adjacent to them are indoor playrooms where the kindergarten students can play indoors. At the ends are mini-breakout areas with greenery and a bench which provide a vantage point to the courtyard. A sky bridge with a glazed ceiling and slanted steel columns joins the administration zone/dining hall and kitchen to the tuition area where the classes are situated. The bridge also offers scenic views into the courtyards.



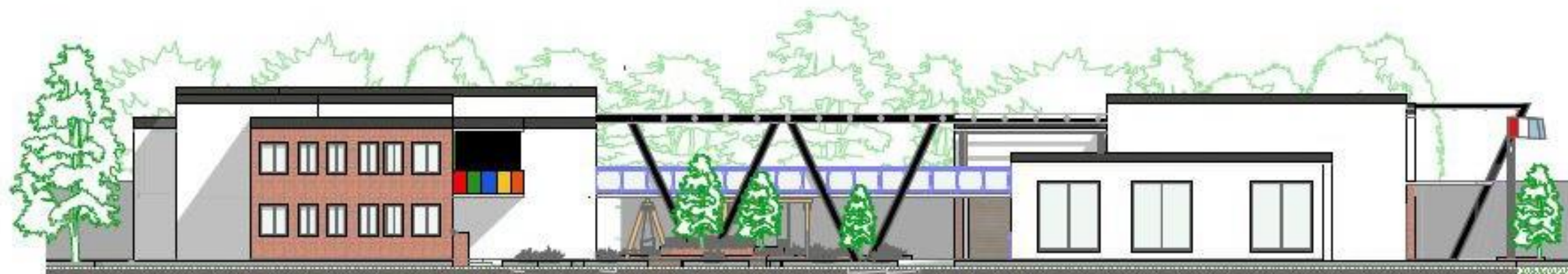
ELEVATION 1



ELEVATION 2



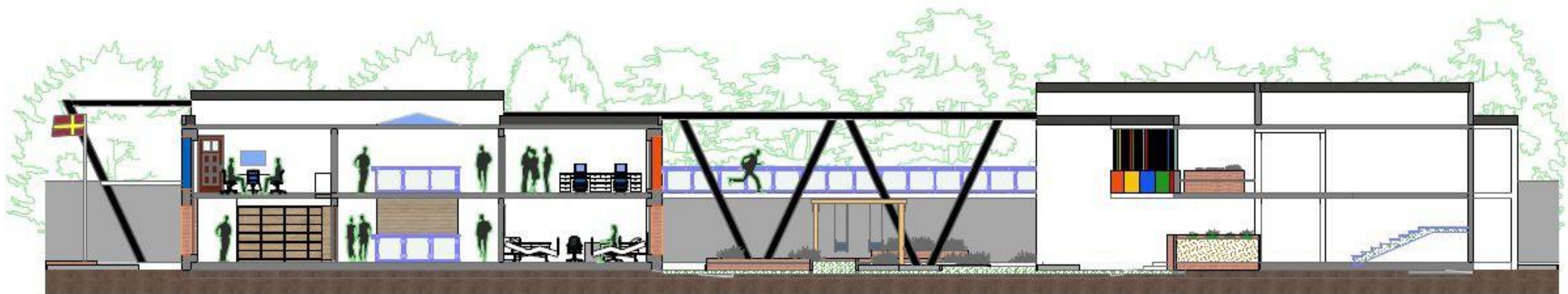
ELEVATION 3



ELEVATION 4



SECTION 1



SECTION 2

Source, Author 2024

The design presents a modern and playful aesthetic, well-suited for a kindergarten. A recurring motif of circular and rounded fenestration (windows and openings) in various sizes creates a dynamic and inviting facade, especially prominent in the top two elevations. This breaks away from rigid, rectangular forms and adds visual interest.

The design has employed use of materials such as brick and plastered walls with different colours of paint which create a pleasant aesthetic for the school design.

The circular large openings/fenestrations allow for influx of natural light into classrooms and other learning spaces. In the courtyard are green outdoor spaces with greenery that serve as learning gardens, which provide suitable breakout spaces for the students.

The sky bridge through the courtyard acts as a linkage from administration zone to tuition spaces. The bridge is covered and offers views into either side of the courtyards and can serve as open sightline for easy visibility of students by teaching staff.

The modern design exhibits a flat form of roofing which is slanted slightly to prevent water ingress. This is well hid by the plastered reinforced concrete parapet wall of 350mm which encompasses it.

The floor to ceiling height in the school design is 2700mm, a smaller scale to cater to the younger Kindergarten students.

The elevations display some passive strategies that make it sustainable. Some of these strategies include:

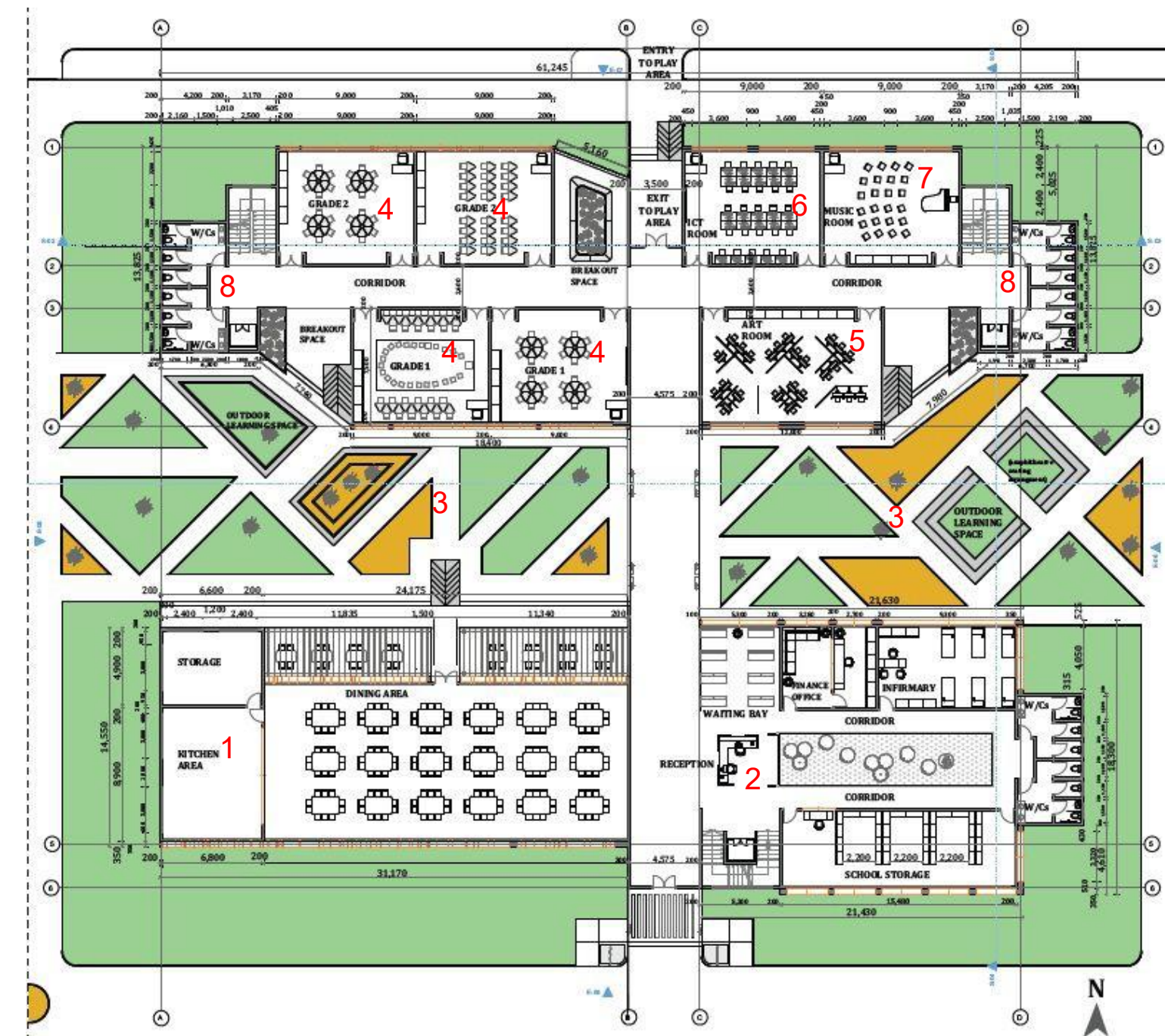
- The generous and varied window sizes to maximise on natural daylight, reducing need for artificial lighting during the day.

- Integration of greenery in the courtyards contributing to biodiversity and providing a pleasant microclimate.

- The use of durable materials which have longevity and have low maintenance.

- Outdoor Learning/Play which provide dedicated and covered outdoor spaces encourages children to spend time outdoors, promoting well-being and reducing energy consumption associated with indoor activities

FLOOR PLANS : ELEMENTARY



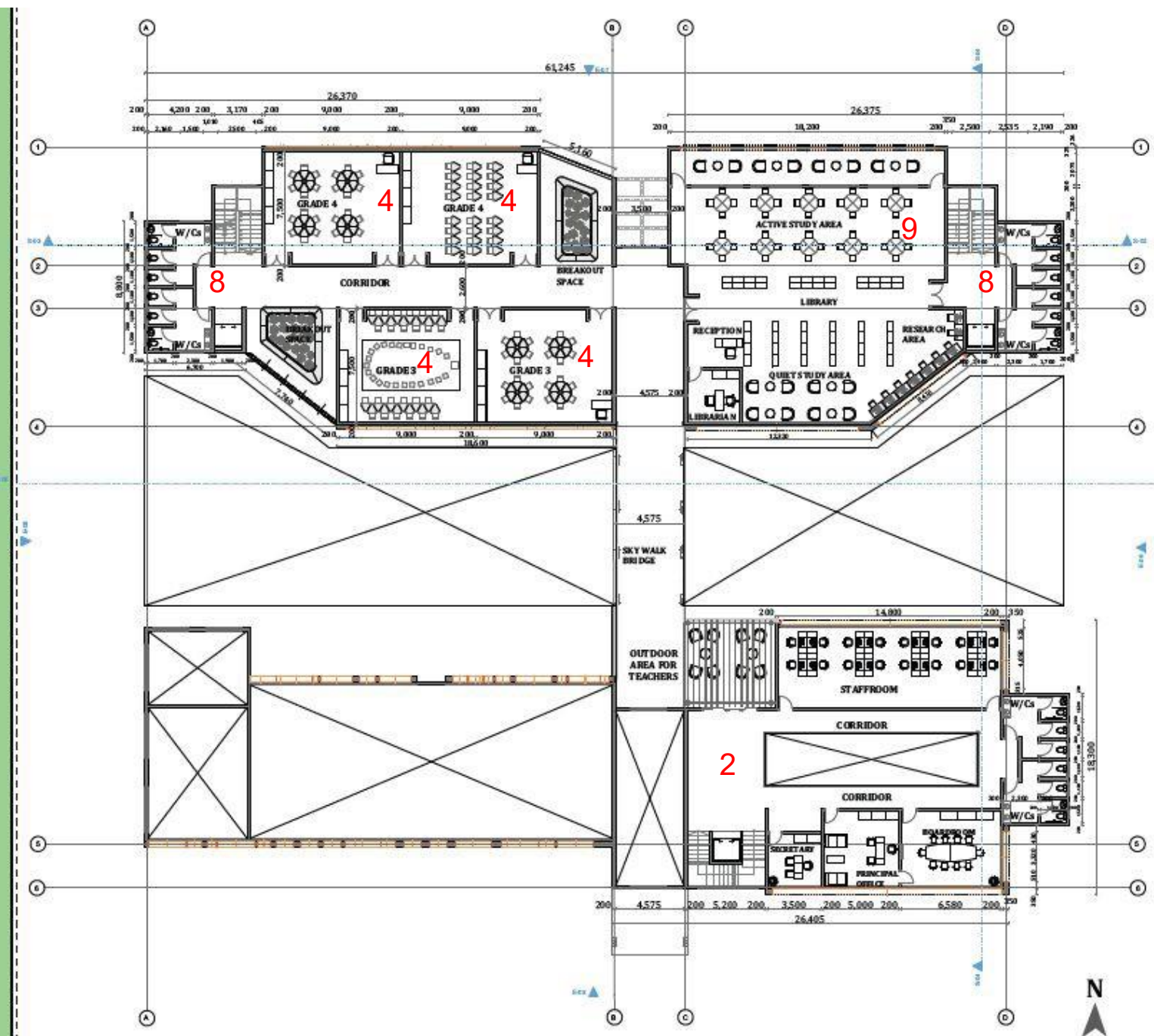
GROUND FLOOR

Source, Author 2024

LEGEND:

- 1. Dining hall, kitchen and storage.
- 2. Administration
- 3. Courtyard
- 4. Classrooms
- 5. Art room
- 6. Digital Literacy room
- 7. Music room
- 8. Washrooms
- 9. Library

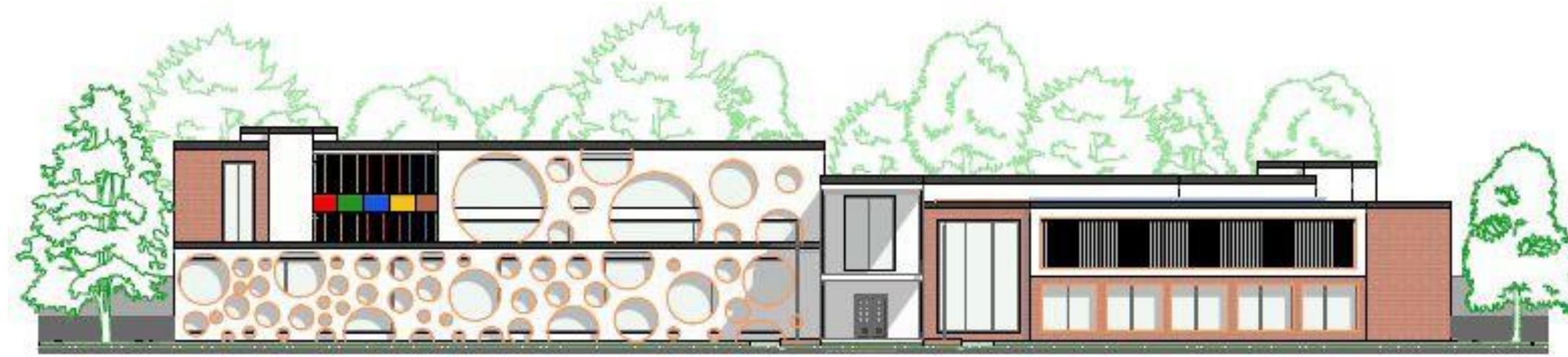
On the ground level, similar to the Kindergarten school, one gets access to the building using either ramps or steps after which they encounter the administration zone. The reception area accommodates a waiting bay for visitors along with secretary's desk. Other spaces in the admin zone include school storage area, the finance office, an infirmary for healthcare and restrooms. Across the entrance corridor is the dining hall and kitchen/storage area. The hall is bigger and can host up to 200 students. The courtyard area has learning gardens/outdoor learning spaces which act as breakout spaces from normal learning areas.



FIRST FLOOR

The greenery in the courtyard helps improve ventilation as well as aesthetics. Also present is learning space that can act as outdoor theatre for performances. Each grade has two classes each, with different sets of layouts to serve different purposes. The peripheries hold the restrooms, where the students can relieve themselves. Special classes on this level include the digital literacy room, the art room and music room. On the first level of the administration zone is a similar layout to the Kindergarten school with similar offices/boardroom and staffroom serving the facility.

The atrium here also helps in ventilation and natural lighting of the interior. On the tuition zone are more classes with a common library which serves the Elementary school students. The library has a librarian who is in charge of managing activities within the library and enforce guidelines. The library space is divided into a quiet study zone; mostly for individual reading, active study area; for group discussions/reading and a research centre with computers for any academic research. The library also has an outdoor learning area on the balcony facing the playground area.



ELEVATION 1



ELEVATION 2



ELEVATION 3



ELEVATION 4



SECTION 1



SECTION 2

Source, Author 2024

The modern school design has clean lines and diverse material use together with varied heights which make the form more interesting. The circular openings have varied sizes to increase playful nature of the design as well as its organic stature. The variedly coloured vertical panels add a vibrant touch.

The central courtyard serves as breakout area for students as well as outdoor learning space to break monotony of indoor learning. This courtyard is connected to the Kindergarten's courtyard forming a green-like street stretching from one end to another, exhibiting cohesion between both schools.

The circular large openings/fenestrations allow for influx of natural light into classrooms and other learning spaces. In the courtyard are green outdoor spaces with greenery that serve as learning gardens, which provide suitable breakout spaces for the students. The sky bridge through the courtyard acts as a linkage from administration zone to tuition spaces.

The bridge is covered and offers views into either side of the courtyards and can serve as open sightline for easy visibility of students by teaching staff. The modern design also exhibits a flat form of roofing which is slanted slightly to prevent water ingress. This is well hid by the plastered reinforced concrete parapet wall of 350mm which encompasses it. The floor to ceiling height in the school design is 3000mm, a slightly bigger scale to cater to the older Elementary school students.

3D VIEWS : KINDERGARTEN & ELEMENTARY



View of Kindergarten school; courtyard area
 Source: Author, 2024
 From the view above, one can see the courtyard with outdoor seating area where the students can breakout and interact with each other as well as with the greenery present. It seems like a corridor from one end to the other.

View of Kindergarten school; courtyard area
 Source: Author, 2024
 The view above shows playing area integrated into the courtyard where students can play as well as integrated seating areas for the teachers who offer supervision to the students ensuring their safety and security.

View of Elementary school; shared playground area
 Source: Author, 2024

The view above shows back facade of the Kindergarten and Elementary schools from the Shared playground area with equipment that enable child play.

The playground area is fenced all around to contain the students while they play and avoid exposure to any accidents.



View of Kindergarten school; courtyard area
 Source: Author, 2024
 This view above shows the adjacency of the courtyard to the dining hall/kitchen where the students go to get refreshments/food

View of Elementary school; courtyard area
 Source: Author, 2024

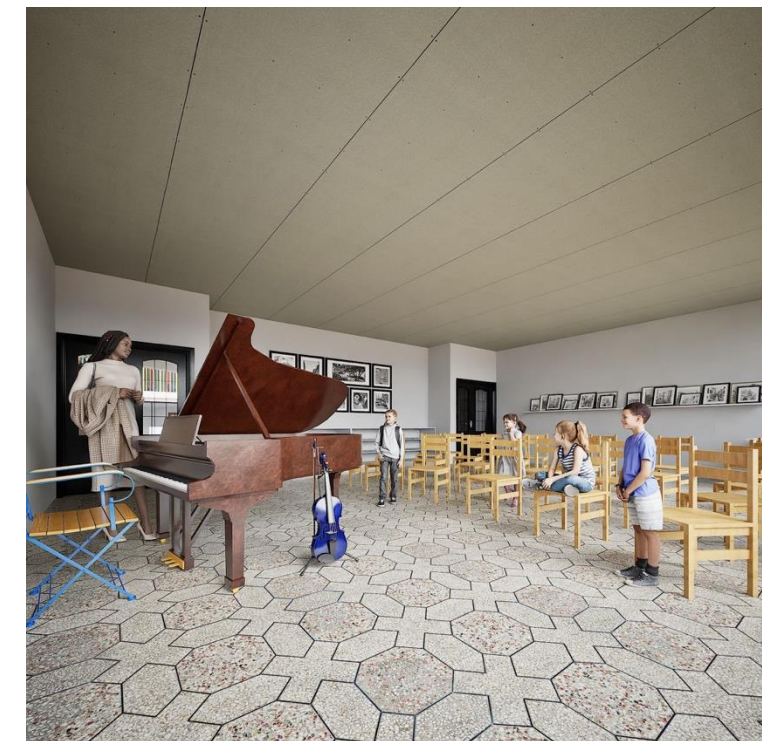
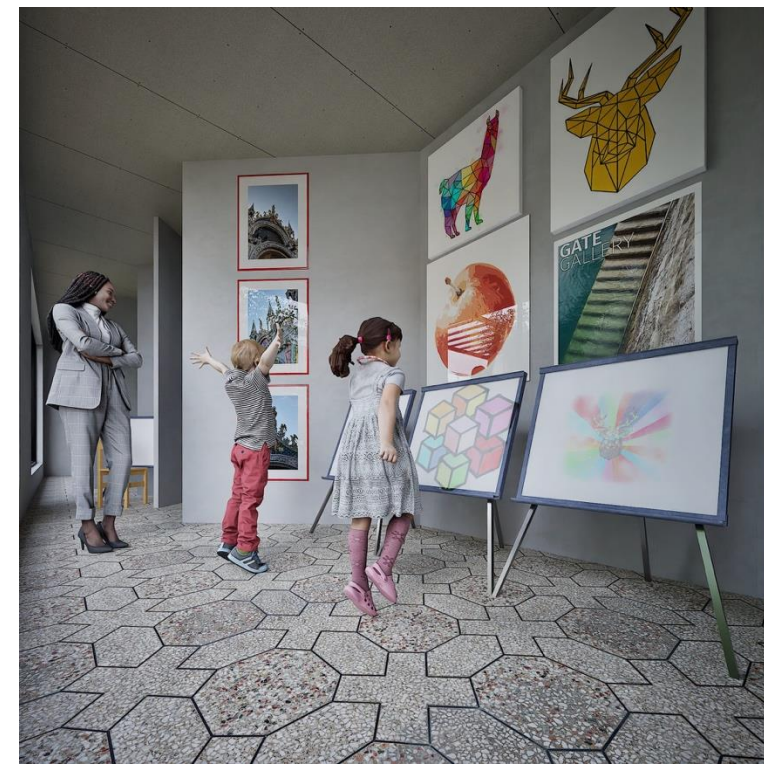
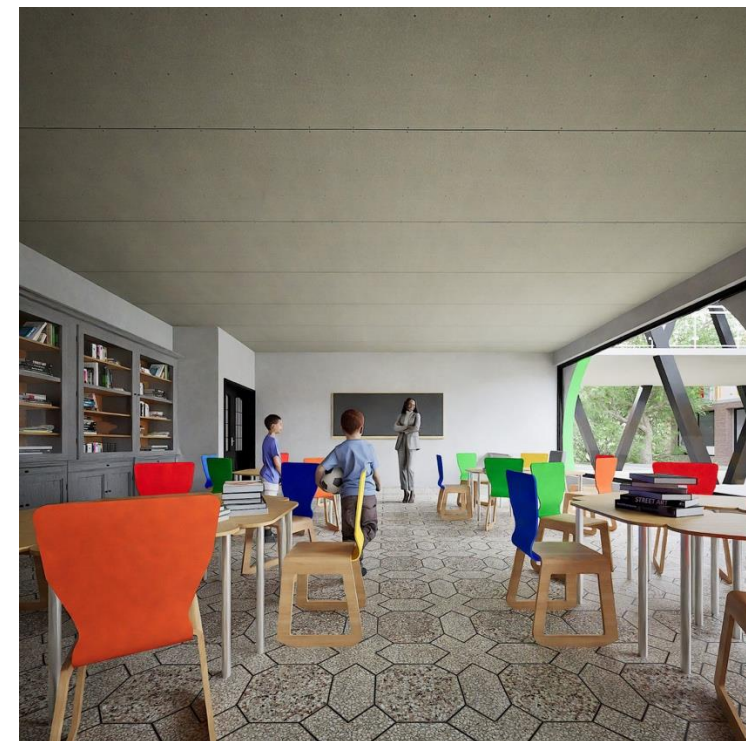
The view above shows an outdoor classroom where students can learn and break monotony from normal indoor learning.

View of Kindergarten school; shared playground area
 Source: Author, 2024

The view above also shows back facade of the Kindergarten and Elementary schools from the Shared playground area with equipment that enable child play

The playground area is a 'large sand pit' area to allow students to play safely avoiding accidents.

3D VIEWS : KINDERGARTEN & ELEMENTARY



View of Kindergarten classroom, activity seating
Source: Author, 2024

View of Elementary classroom; group seating
Source: Author, 2024

View of Art classroom
Source: Author, 2024

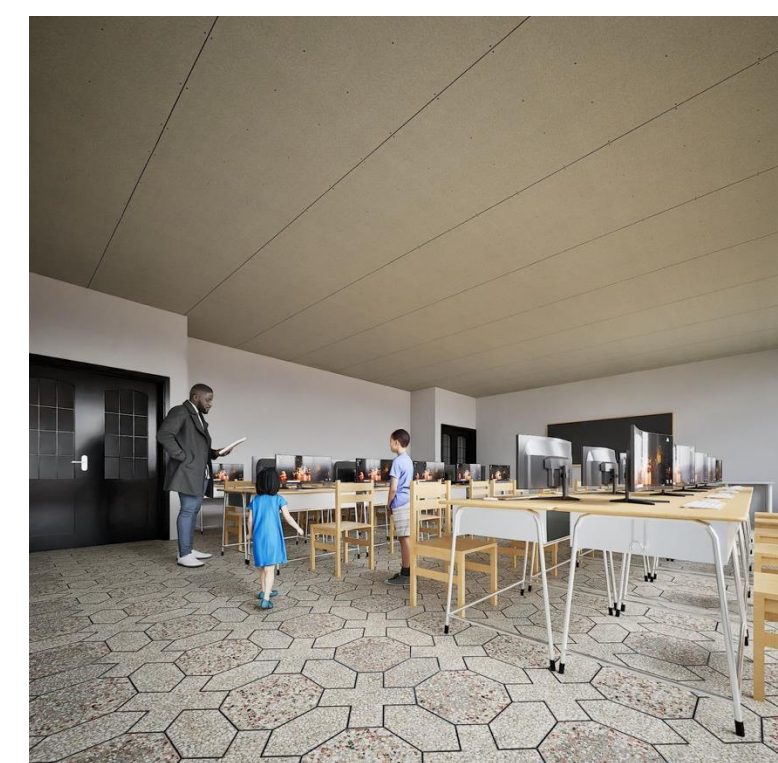
View of Music room
Source: Author, 2024

From the view above, one can see a Kindergarten class layout for activities where students seat on the carpet to engage in reading activities/ indoor games. There is adequate storage to store books/ equipment

From the view above, one can see an Elementary classroom laid out to enable group seating, where flexible desks are conjoined together to allow students to seat in a group.

From the view above, one can see the Elementary school Art room where students engage in art activities and get to exhibit their art pieces on the walls for viewing.

From the view above, one can see the Elementary school Music room where students engage in learning and performing music.



View of Kindergarten classroom, activity seating
Source: Author, 2024

View of Digital Literacy Room, for learning ICT
Source: Author, 2024

View of Kindergarten indoor playroom
Source: Author, 2024

From the view above, one can see a Kindergarten class layout for story telling activities where students seat on the carpet with desks/chairs placed on the sides to create the space for this activity.

From the view above, one can see a room where students come to learn ICT. The room has computers/ keyboards laid out on the desks where students seat.

From the view above, one can see a room where Kindergarten students come to play. The room is set up to be very lively and eye-catching for child play.

Playing equipment has been set up across the room with toys present for play/ interaction. Seating benches have also been placed; where students can rest.



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BIOGRAPHY:

Geoffrey is an autonomous and ambitious fifth-year Architecture student at Kenya University, passionate about the craft and its transformative potential. With experience working alongside leading firms in the built environment, he has cultivated a keen eye for detail and a strong commitment to sustainability-driven design. His approach emphasizes user-focused solutions that create comfortable, livable spaces while aligning with clients' visions and budgets.

At university, Geoffrey is a socially adaptable ambivert who values collaboration and learning from peers. Beyond the studio, he enjoys hiking, sports, and student leadership, always seeking growth beyond the drafting table.

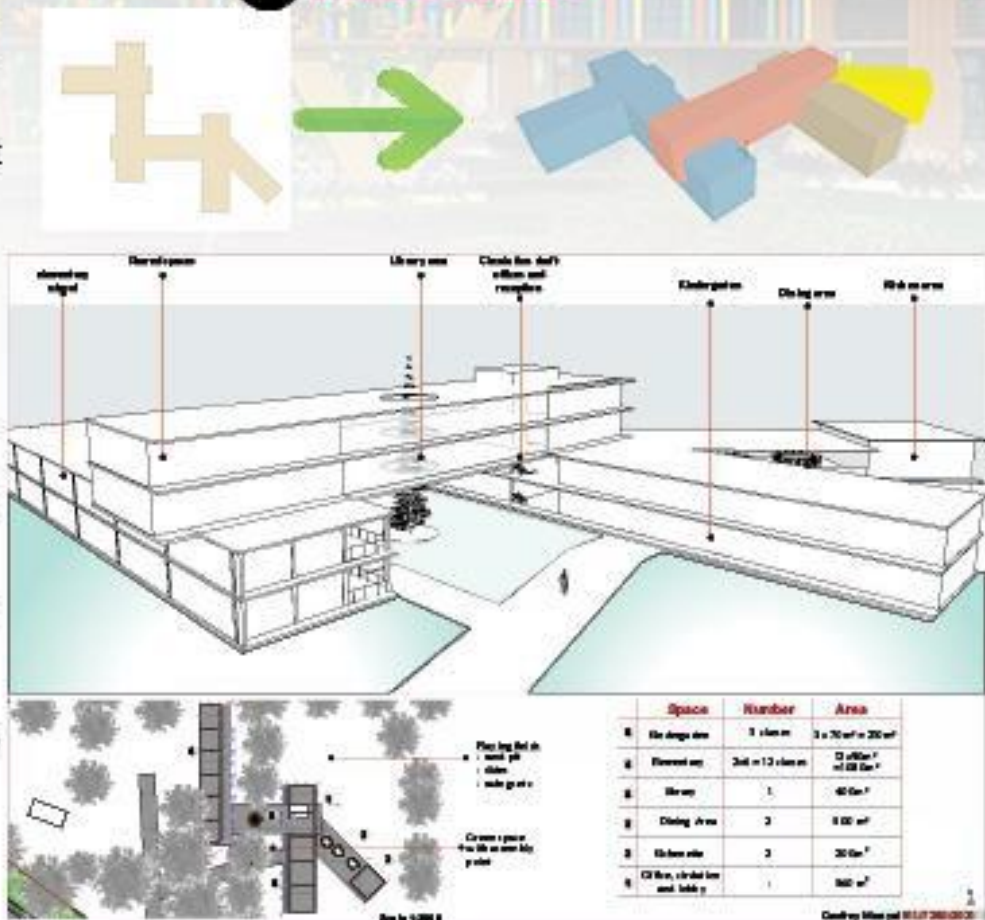
A young man dedicated to becoming the best version of himself, he is also a steadfast brother and a reliable friend to those he holds dear.

Proposed Kindergarten and Elementary school for Jamhuri High school

1 INTRODUCTION

The purpose of this project is to transform the existing Jamhuri High School into a modern educational complex that seamlessly blends contemporary infrastructure with the school's enduring heritage. The redevelopment is designed to accommodate students across all levels — from kindergarten and elementary to middle and high school — creating a unified, future-ready learning environment. Beyond academic facilities, the project also seeks to revitalize the campus by introducing community gardens, enhancing social interaction, environmental stewardship, and the school's role as a shared community resource.

2 MASSING



3 PROBLEMS

-  UNCONTROLLED DEVELOPMENT
-  CHANGING EDUCATION MODEL
-  DESIGNING FOR SUSTAINABILITY
-  INCLUSIVE DESIGN
-  ACCESS CONTROL TO USERS

4 TARGET USERS



BRIDGEPOINT ACADEMY

JAMHURI, NAIROBI COUNTY








1.0 INTRODUCTION

BridgePoint Academy is a modern early and primary learning complex within Jamhuri High School, along Limuru Road in Nairobi. Developed as part of a masterplan to support the school's expansion under a new curriculum model, the design responds to its setting by preserving mature trees, integrating outdoor learning spaces, and aligning new facilities with the existing campus character. Positioned beside the hockey field and near the teachers' quarters, the academy creates a seamless link between heritage and contemporary learning.

The site's combination of sports grounds, established vegetation, and urban accessibility provides the foundation for the design. Every spatial, structural, and material decision directly reflects these environmental, social, and cultural factors, resulting in a school that is functional,

sustainable, and deeply connected to its community.

1.1 PROJECT DETAILS

-  **LOCATION: JAMHURI HIGH SCHOOL, LIMURU TOAD NAIROBI**
-  **AREA: 161,874 SQM**
-  **FLOORS: 3 FLOORS**
-  **TPOLOGY: INSTITUTIONAL**
-  **USES: LEARNING, PLAYING, EVENTS AND COMMUNITY AREAS**

1.2 PROJECT GOALS

-  **PRESERVE EXISTING NATURAL ENVIRONMENT**
-  **DESIGN FOR YOUNG LEARNERS**
-  **ENHANCE ACCESS AND CONNECTIVITY**
-  **IMPLEMENT SUSTAINABLE BUILDING PRACTICES**

1.3 SITE LOCATION



Source; Google earth screenshot

1.4 SITE JUSTIFICATION

This site occupies a strategic position between the hockey field and the teachers' quarters within Jamhuri High School, accessible directly from Limuru Road through a newly defined entry point. This location benefits from a gentle slope that facilitates natural surface drainage away from learning spaces, minimizing the risk of flooding during heavy rains. Prevailing wind patterns from the northeast allow for effective cross-ventilation when classrooms are oriented along the east-west axis, while the mature trees on site provide a natural microclimate, reducing heat gain and creating shaded outdoor learning areas. Noise levels from the main road are mitigated by a buffer of existing vegetation and the positioning of non-teaching functions, such as administration and service blocks, toward the roadside edge. Proximity to the sports fields supports the integration of physical education into daily school life, while visual connections to open green spaces enhance the sense of openness and safety for young learners. This site also avoids disruption to the existing middle and high school zones, an helping maintain the Cherished Jamu Old Architecture.

2.1 PROGRAM LAYOUT

Second Floor

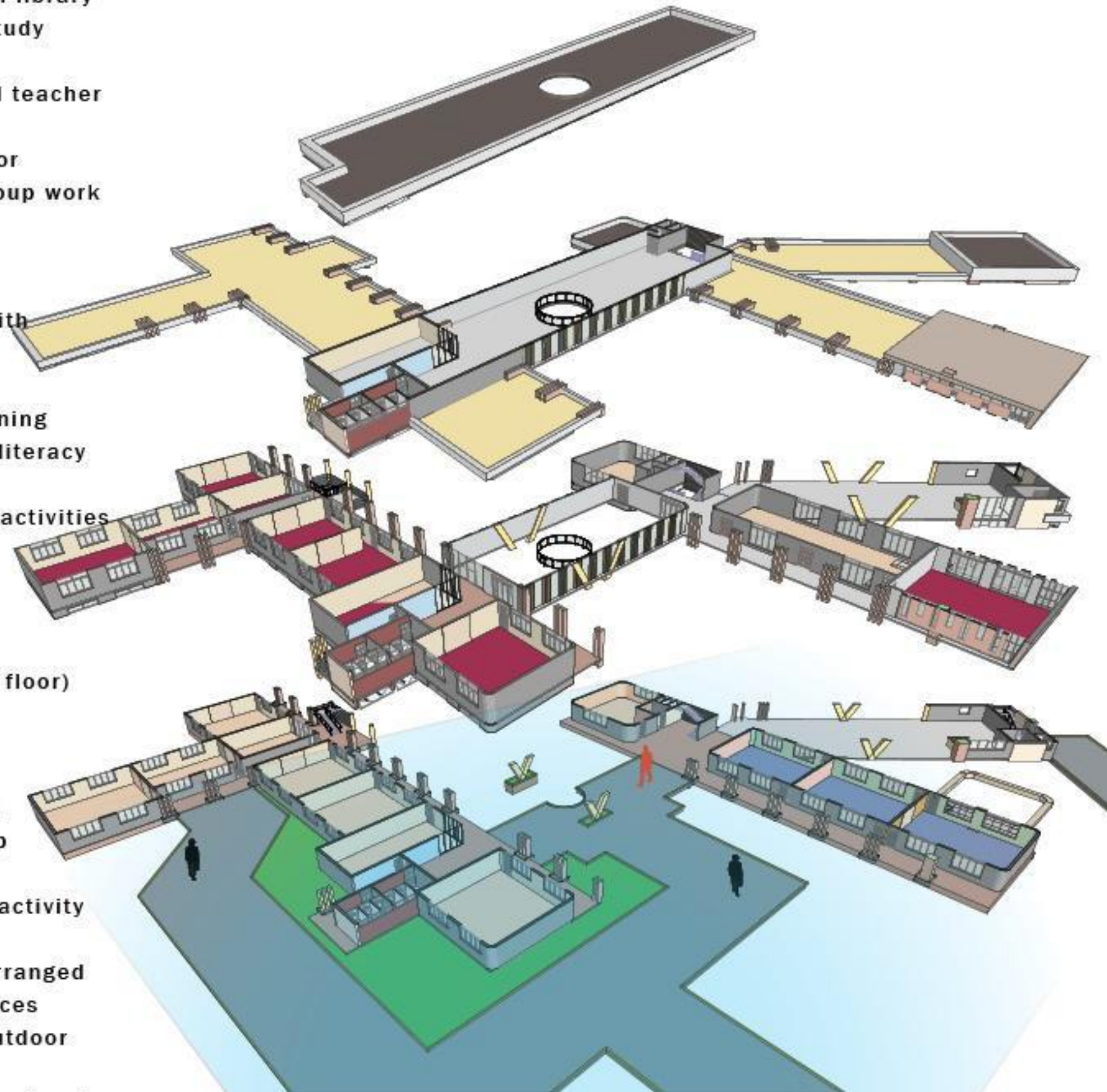
1. Upper level of the central library with reading lounges and study booths
2. Quiet research areas and teacher resource rooms.
3. Access to roof terraces for outdoor study and small group work

First Floor

1. Grade 4-6 classrooms with breakout learning zones
2. Music room for instrumental and vocal training
2. Computer lab for digital literacy and research
3. Common room for group activities and relaxation
4. Dining hall mezzanine with views to ground floor
5. Central double-volume library (shared with second floor)

Ground Floor

1. Kindergarten classrooms with dedicated play and nap areas
2. Art studios and creative activity zones
3. Grade 1-3 classrooms arranged around shared learning spaces
4. Dining hall with direct outdoor access
5. Outdoor learning/play courtyards integrated with preserved trees



LEGEND

3 SECOND FLOOR

2 FIRST FLOOR

1 GROUND FLOOR

2.2 CONCEPT and FORM DEVELOPMENT

Proposed Project Name:
BRIDGEPOINT ACADEMY

It combines two symbolic ideas:

Bridge → A connection between two places, ideas, or stages in life. In a school context, it often represents helping students move from one stage of learning to the next, or from potential to achievement. It also suggests inclusivity—bringing together people from different backgrounds.

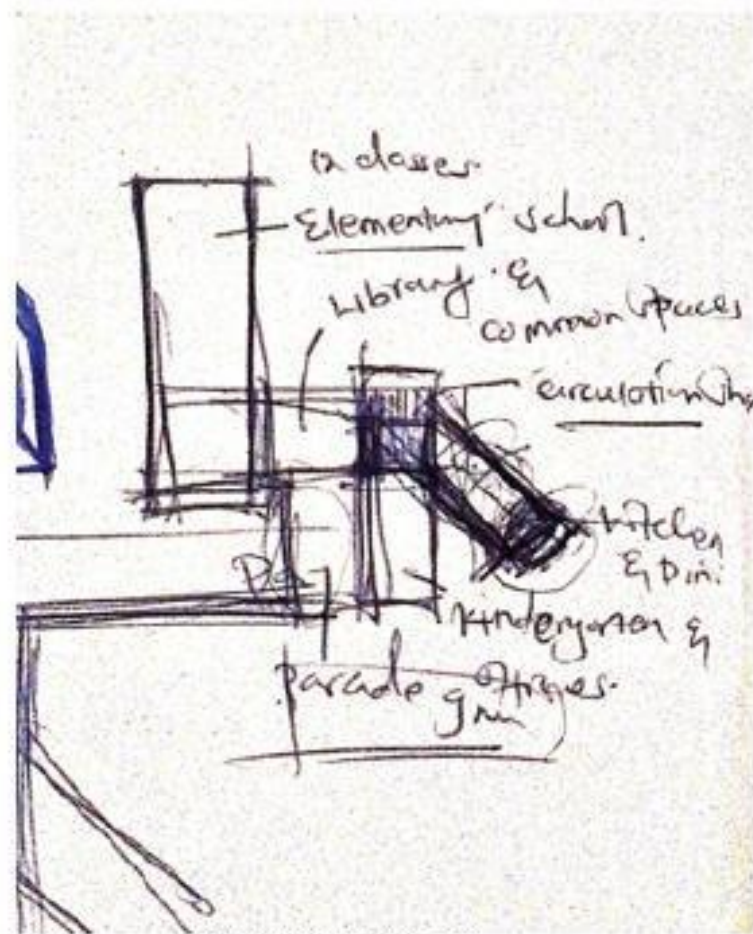
Point → A destination, a specific goal, or a focal place where something important happens. In an educational sense, it's **where learning meets opportunity**.

Academy → A formal place of learning, giving it credibility and seriousness.

Concept Triangle

1. Social-Cultural Concept "Heritage in Motion"

The design celebrates Jamhuri's identity by maintaining the original middle and high school architecture while introducing vibrant, child-friendly spaces for kindergarten and elementary learners. Playgrounds, communal gardens, and culturally inspired color schemes foster a sense of belonging, while flexible classrooms encourage interaction

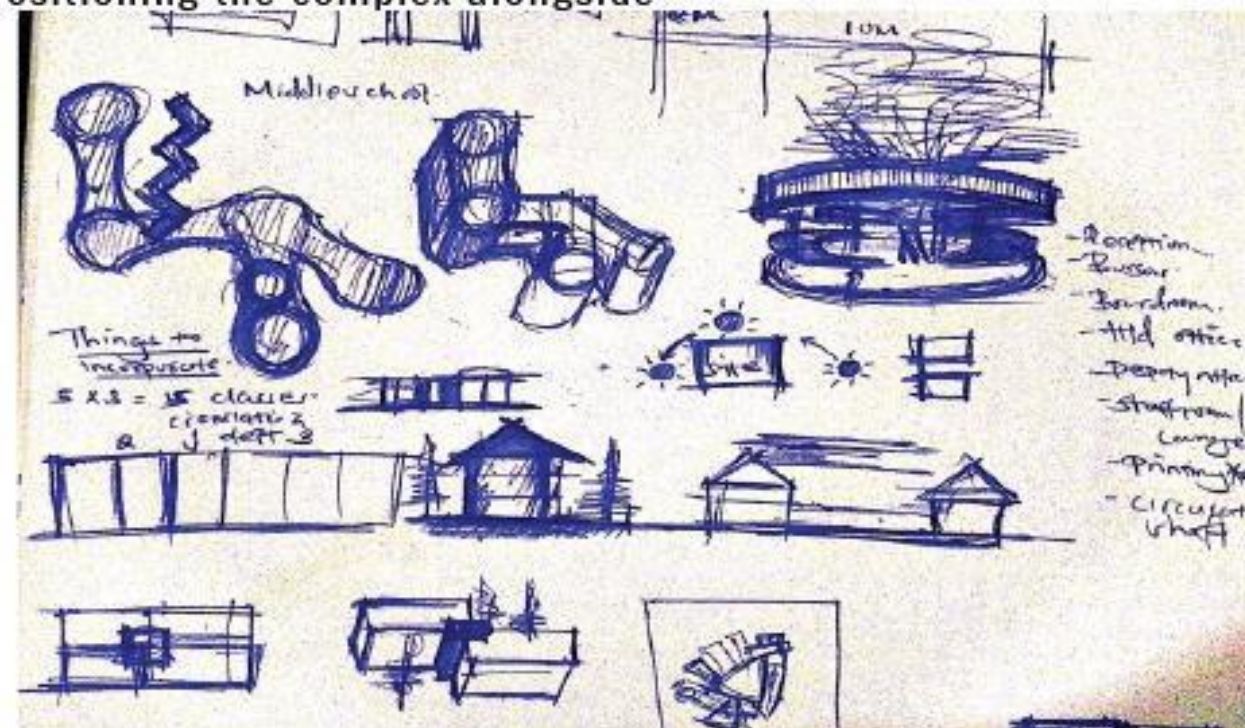


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and collaborative learning.

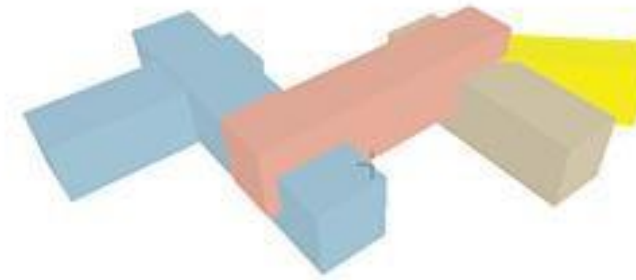
2. Environmental Concept "Green Spine"

Positioning the complex alongside



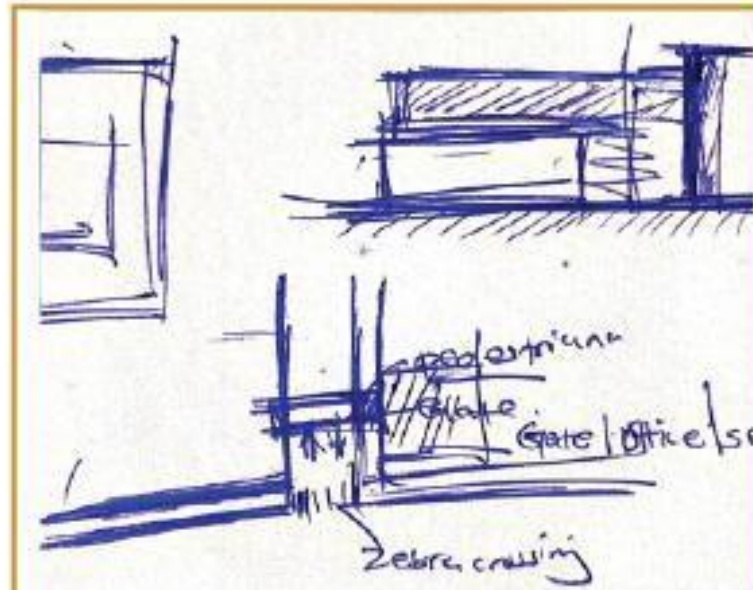
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the hockey field allows preservation



Screenshot 2024-12-17 153913.png

of mature trees and creation of shaded learning zones. Rainwater harvesting, cross-ventilation corridors, and native landscaping reduce energy use while offering outdoor teaching spaces. The layout ensures visual continuity between green sports fields and the new academic blocks, reinforcing a nature-immersed learning experience.



3. Technological Concept "Future-Ready Framework"

Incorporating smart lighting, energy-efficient glazing, and modular furniture supports adaptability for the changing curriculum. Integrated ICT hubs and interactive smart boards enhance teaching methods, while the building's infrastructure allows easy upgrades as technology evolves.

4. Planning Concept "Courtyard Learning Village"

The masterplan adopts a cluster-based layout with interconnected courtyards for safe, age-appropriate zoning: kindergarten near play areas, elementary near shared resources, and a visual link to sports facilities. Circulation paths are clear, shaded, and promote informal encounters, with the new Limuru Road gate serving as a welcoming, easily navigable entry point.

3.1 ELEVATIONS

I. MATERIALS

The building's elevations are designed to reflect a balanced composition of modern architectural language and functional clarity. External façades combine neutral-toned plaster finishes with accents of textured stone and aluminum cladding, creating a warm yet contemporary aesthetic.



Elevation Design 3D renders: Source Authors 2025

II. OPENINGS

Fenestration patterns are organized to optimize daylight penetration while maintaining thermal comfort, with larger glazed panels in communal areas and smaller openings in classrooms to reduce glare.

III. HEIGHTS

Building heights respond to the programmatic hierarchy, with a maximum height of approximately 12 meters for three-story blocks, ensuring appropriate scale within the surrounding context. The heights also respect the different user scales for kids to create an interactive building school for the kids.

Material selections are durable and low-maintenance, suitable for a high-use educational environment. The façade articulation also integrates shading devices to improve energy efficiency and visual comfort.

3.2 SECTIONS

The longitudinal section reveals a structural grid

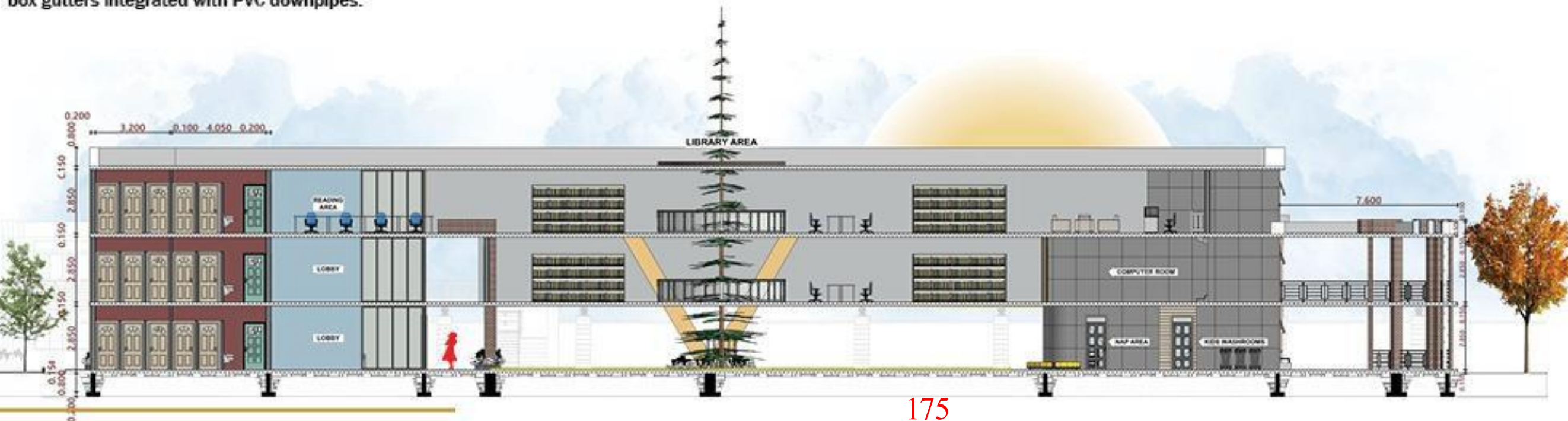
with load-bearing walls composed of 200 mm reinforced concrete integrated with vertical rebar cages anchored into the strip foundation. Floor slab is a 150 mm thick RC slab with a 50 mm screed finish over vapour barrier, achieving a total build-up of 200 mm from the structural beam soffit.



Ceiling voids accommodate MEP distribution, with a

suspended acoustic ceiling grid positioned at +2.500 m above finished floor level (FFL).

The foundation detail includes a 450 mm wide by 750 mm deep reinforced strip footing, with DPC installed 150 mm above external grade level. Roof build-up consists of 1.2 mm single-ply membrane over tapered insulation, achieving a 1:60 fall towards concealed box gutters integrated with PVC downpipes.



FLOOR PLANS



3D rendering of the Proposed BridgePoint Academy showing the kindergarten, staff lounge, common room and dining areas. Sand Pit for kids as well. Source Authors 2025

1 WASHROOMS

Designed for access and functionality, the washrooms are strategically located for easy access by students from their classes, as well as shared spaces like the library and playing areas. They are also positioned to allow proper cross-ventilation by referencing the prevailing site wind direction.

2 COMMON ROOM

Also used as the auditorium, the common room is meant to be used for performances, meetings, etc. It is strategically located to allow easy access from classrooms and shared spaces

2 STAFF LOUNGE

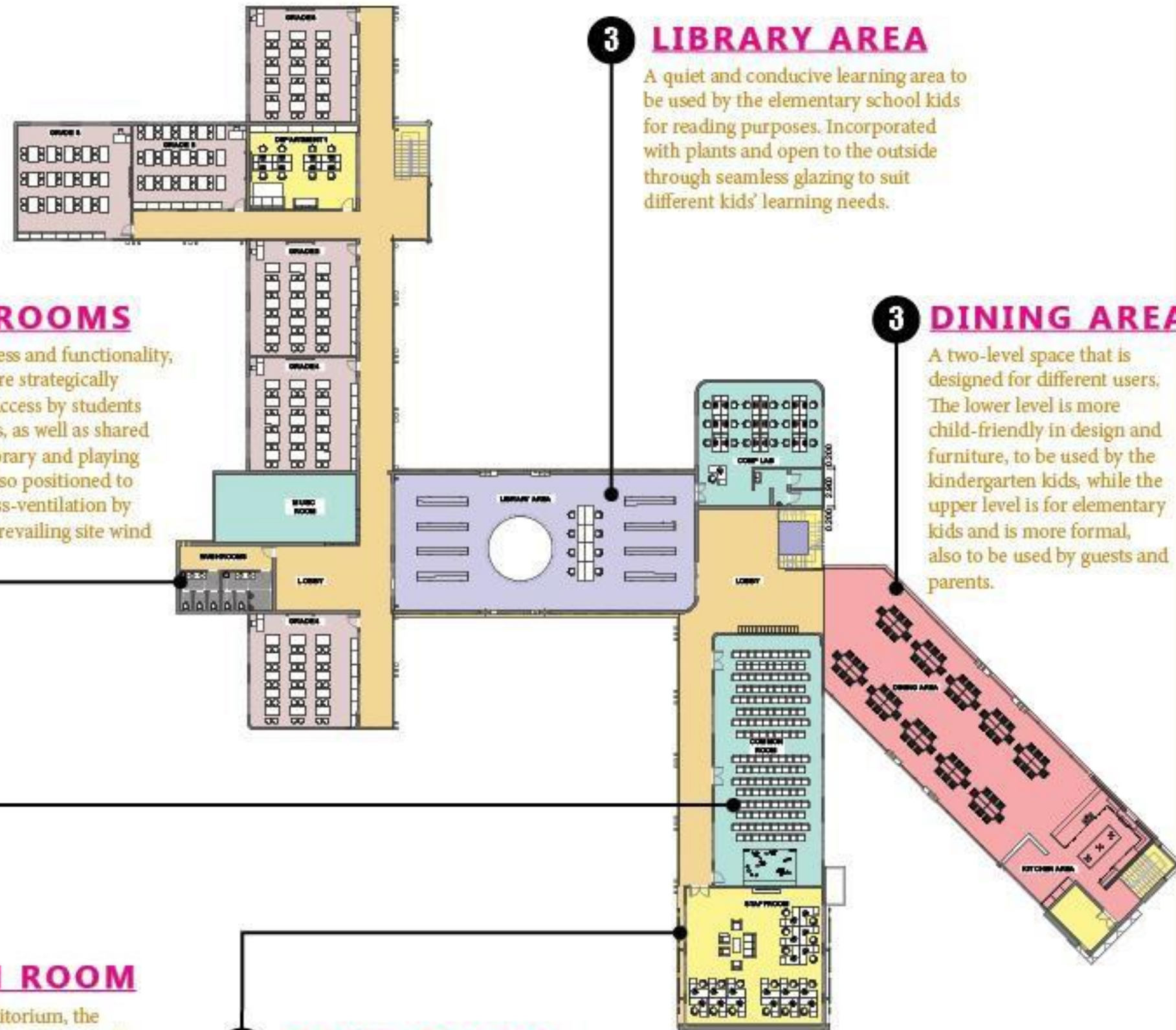
A high vantage point that sets the teachers at a level where they can relax after class and have unobstructed surveillance of the kids throughout the campus.

3 LIBRARY AREA

A quiet and conducive learning area to be used by the elementary school kids for reading purposes. Incorporated with plants and open to the outside through seamless glazing to suit different kids' learning needs.

3 DINING AREA

A two-level space that is designed for different users. The lower level is more child-friendly in design and furniture, to be used by the kindergarten kids, while the upper level is for elementary kids and is more formal, also to be used by guests and parents.



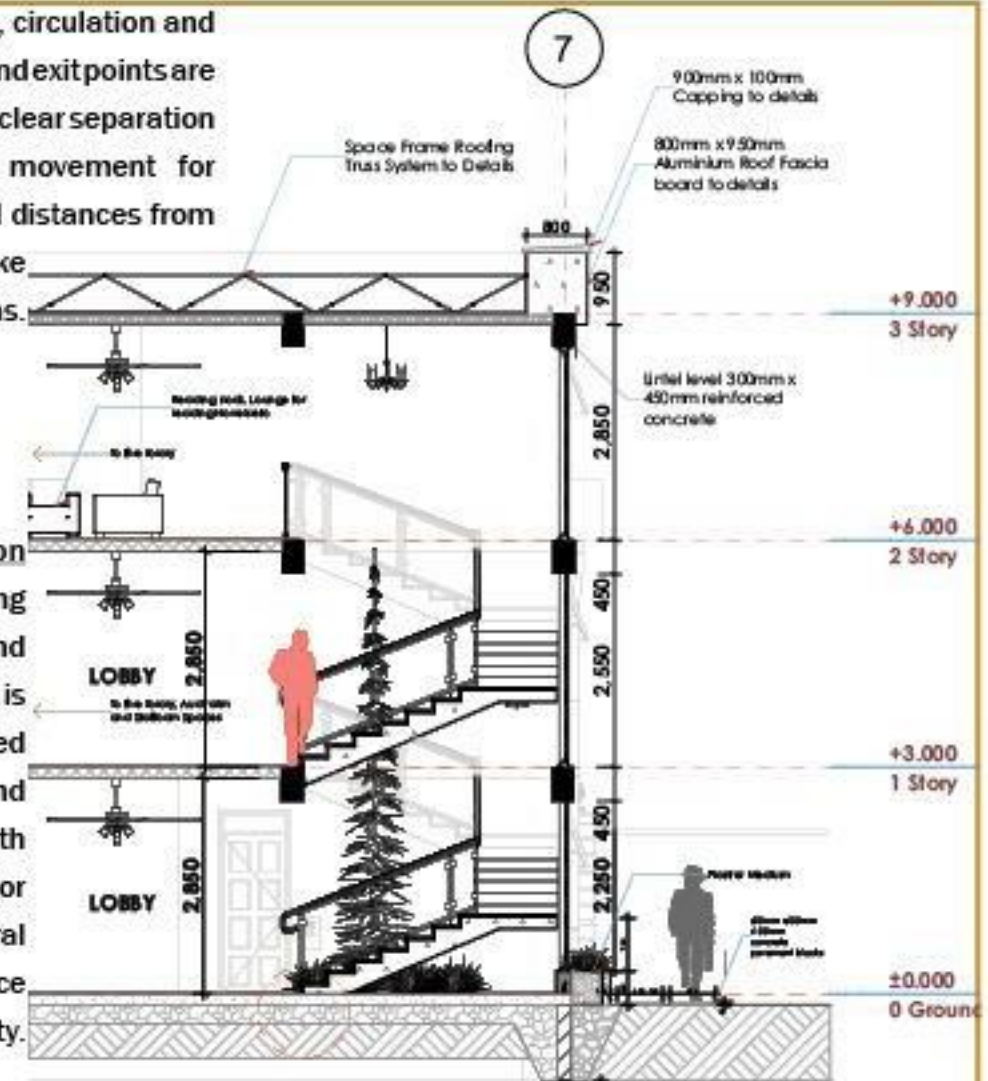
4.2 WORKING DRAWINGS

When designing the ground floor plan, circulation and accessibility were key priorities. Entry and exit points are arranged for smooth traffic flow, with a clear separation between pedestrian and vehicular movement for safety. The layout ensures short travel distances from classrooms to shared facilities like washrooms, the library, and play areas.

Cross-ventilation is achieved by aligning openings with the prevailing wind direction, while natural lighting is maximized through strategically placed windows and courtyards. Security and supervision were also considered, with classrooms and play areas positioned for easy visual control by teachers. Structural grid spacing was selected to balance cost efficiency and spatial flexibility.

The staircase was designed with ergonomic safety and child-friendliness in mind. Riser and tread dimensions are kept low and wide to suit young children, while handrails are provided at two heights – one for children and another for adults. Adequate headroom clearance is maintained along the full run of the stairs, with intermediate landings to reduce fatigue and improve safety in case of falls. Materials were considered carefully: non-slip finishes on treads, rounded nosings, and durable handrail materials to withstand heavy use.

Natural lighting and ventilation were incorporated into the stairwell through windows and openings, reducing reliance on artificial lighting and creating a more

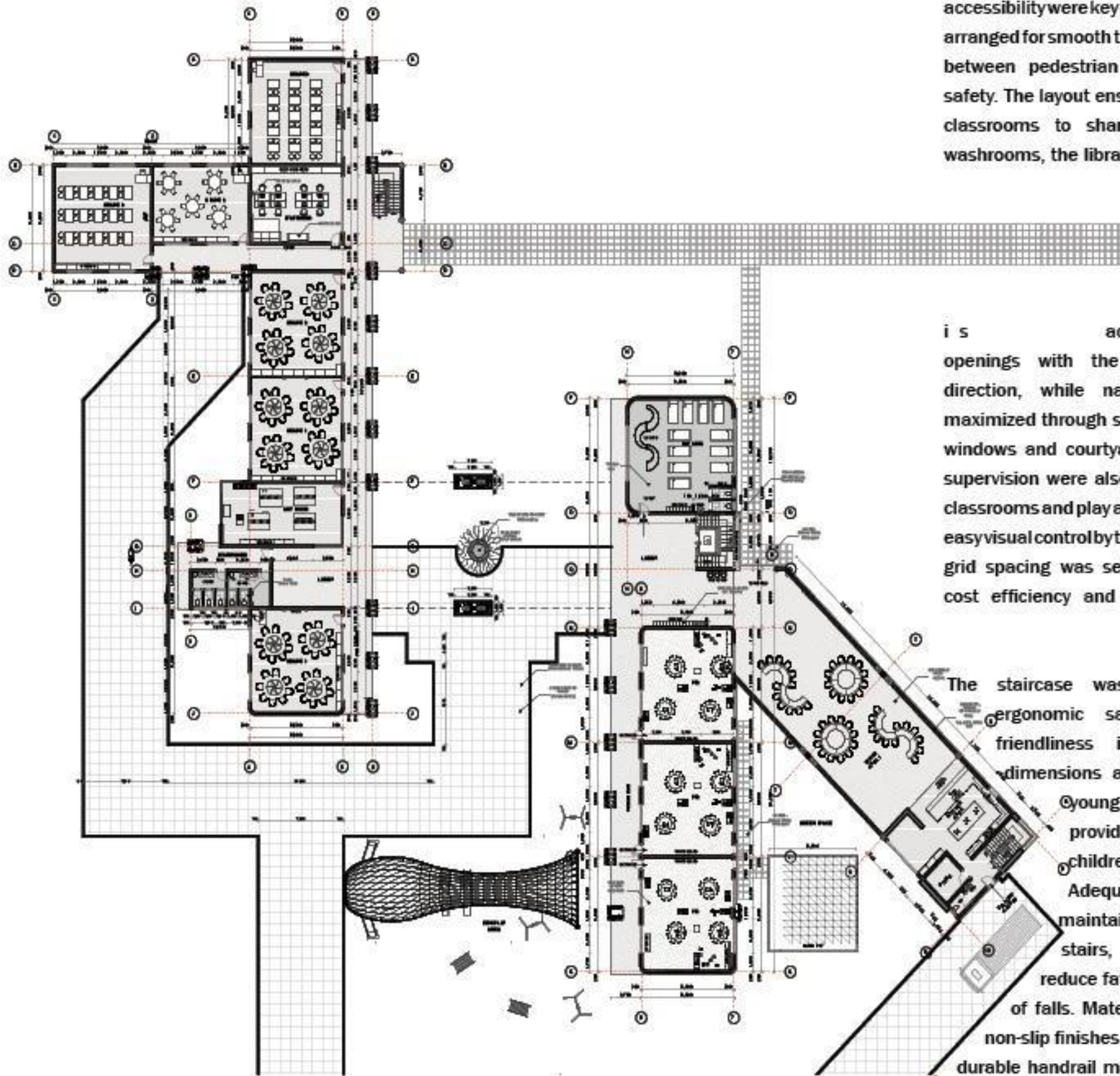


Detailed Section
SCALE 1:100

inviting circulation space. Fire safety and evacuation requirements were also integrated, ensuring the stairs serve as a safe and accessible escape route.



3D rendering of the Proposed BridgePoint Academy showing the Rear birds eye View of the campus, the wider look shows the play areas, dining areas and the stair areas clearly. Source Authors 2025



GROUND FLOOR
SCALE 1:500

5.1 INTERIOR DESIGN

Key Considerations

- 1. Scale and Proportion.
- 2. Color Palette
- 3. Furniture Design
- 4. Light and Ventilation
- 5. Access and Circulation

The kindergarten interiors are designed at a child-friendly scale, with low furniture, soft edges, and playful proportions that make the spaces safe and welcoming. A bright color scheme with primary tones like red, yellow, blue, and green stimulates creativity while maintaining harmony. The use of rubber flooring provides comfort, safety, and durability, allowing children to move and play freely without risk. Overall, the interior blends functionality with a joyful atmosphere that supports early learning.



Elementary school classroom. A more Formal Furniture and color palette. Source, Authors 2025



Nap Area for kindergarten Kids. A child's Scale and bright color palette. Source, Authors 2025



Elementary school dining area. A more Formal Furniture and color palette. Source, Authors 2025



Elementary school computer room. Source, Authors 2025

EXTERIORS



3D rendering of the Proposed BridgePoint Academy showing the Dining Areas for a night scene: Source Authors 2025

1 MATERIALS

The exterior design uses simple, durable, and low-maintenance materials such as stucco, brick, and painted concrete. These materials were chosen for their strength, weather resistance, and ability to age gracefully in the local climate. Textured finishes and brick details also create warmth and familiarity, making the school approachable for both children and parents.

2 COLOR PALETTE

The color palette embraces bold, cheerful tones such as yellow, red, green, blue, and orange. These colors are applied in simple, playful accents on walls, windows, and shading elements, making the school lively and stimulating for young learners. Bright hues encourage creativity and excitement.

3 FORM MAKING

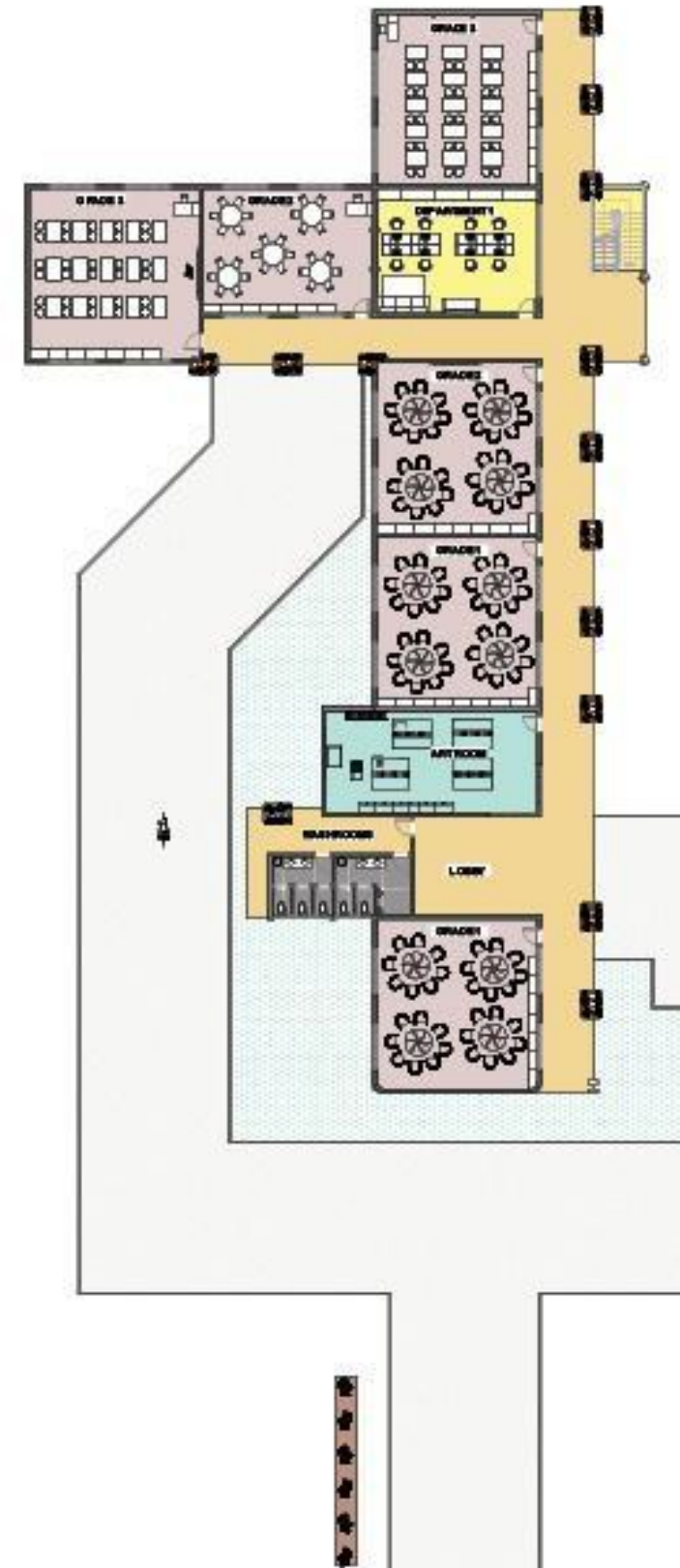
The building form is designed with clarity and playfulness in mind. Clean geometric shapes, varied roof heights, and scaled-down proportions ensure the spaces feel child-friendly while remaining functional for adults. Openings are carefully placed to maximize natural light and ventilation, while also creating an engaging rhythm on the façade.



3D rendering of the Proposed BridgePoint Academy showing the whole complex from the main Gate entrance. Birds Eye View: Source Authors 2025

PARKING AREAS

From the main gate entrance, the school opens into well-designed parking spaces. A dedicated pick-and-drop area allows a school bus to park, turn, and pick school children, while parents can also wait safely. In addition, there is a six-car parking area for staff and parents, as well as a delivery access zone where a delivery van can supply goods directly to the kitchen area.



1 PLAY FIELDS

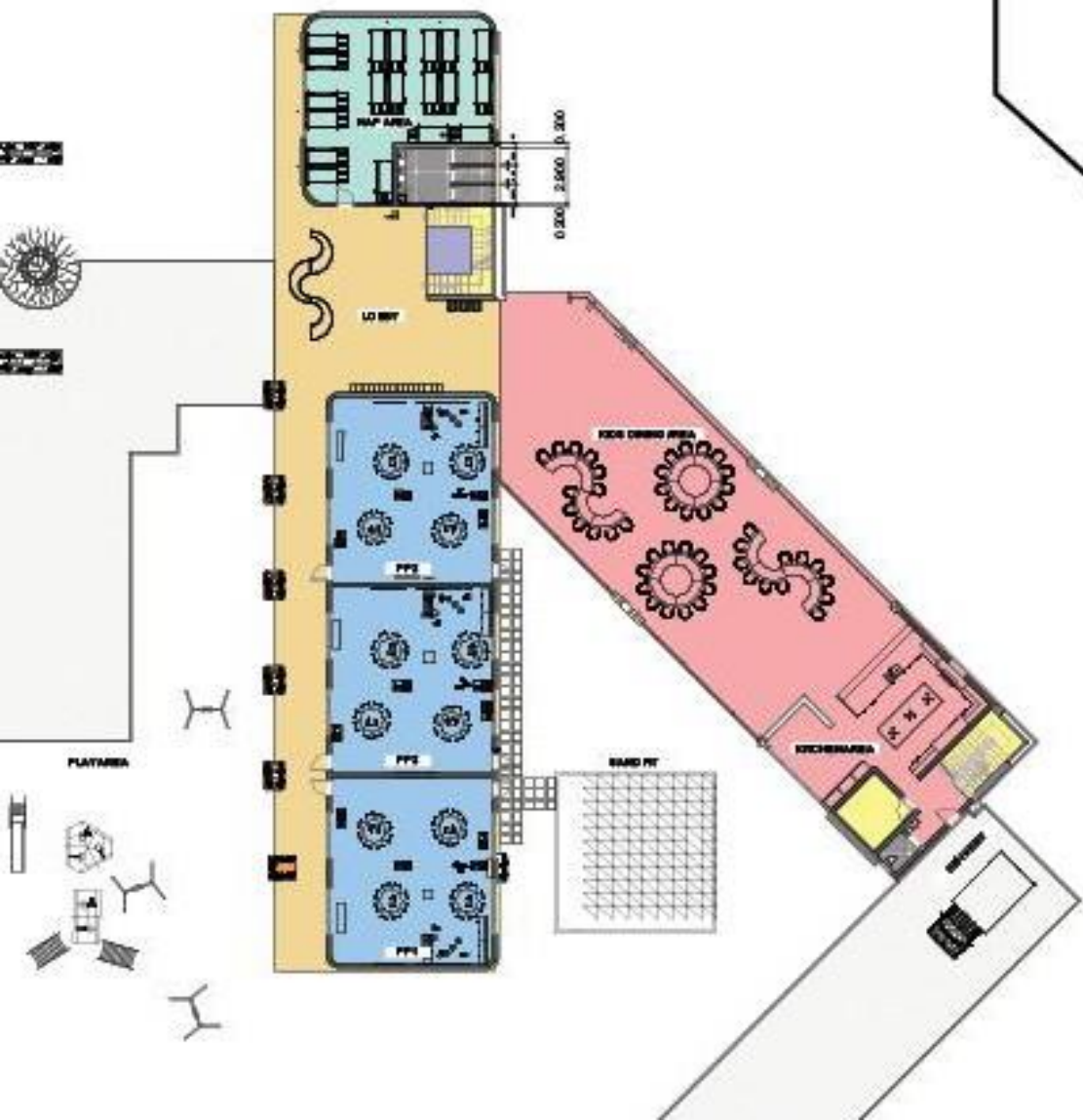
The play fields are designed as open, flexible green spaces where children can run, play, and engage in group activities. Natural grass surfaces create a safe and comfortable environment, while clear boundaries ensure safety and supervision. These fields also double as gathering areas for outdoor events and sports.

2 LIBRARY AREA

The library area is a quiet, child-friendly space designed to encourage reading and discovery. Low shelves, cozy seating, and natural light create an inviting atmosphere for young learners. Bright accent colors and plants make the space lively while still maintaining calmness for concentration.

3 KIDS PLAY AREA

The kids' play area is designed at a smaller scale with playful equipment, safe surfaces, and shaded spots. Rubber flooring ensures safety during active play, while colorful features stimulate imagination and creativity. The layout encourages both individual exploration and group interaction.



3D rendering of the Proposed BridgePoint Academy from the Play Field for Elementary Kids, Below a view from the Kids Playground:
Source Authors 2025



PHOTO GALLERY | THE BRIDGEPOINT ACADEMY





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Abdulwahab
INSTITUTION: Department of
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(DAID), School of Engineering
and Architecture (SEA)
Kenyatta University (KU)
EMAIL: typicalharith@gmail.com

BIOGRAPHY; Harith Mohamed is a dedicated intern at ANAAKA Architects in Mombasa, specializing in sustainable design that integrates user needs with site-specific conditions. He gains hands-on experience through collaborations on projects that incorporate local materials and innovative solutions to create functional and vibrant community spaces.

EPIGRAPH; I am tirelessly exploring the question: ‘what does it mean to build for a specific place, a specific people, and a specific moment in time?’ ‘I found my answer in the work of the visionary Jean Nouvel. He teaches that a building shouldn't shout the architect's name, but rather whisper the secrets of its surroundings.



Dive into this project and discover how a space designed for learning can also be a work of art. I invite you to explore how thoughtful architecture can shape not just buildings, but also futures. Below is a render of a shared-learning space for both PP1 and PP2 :



CONCEPT

Concept: "DUAL PATH IN LEARNING"

Norman Foster's main philosophy on school design is to create spaces that inspire, adapt, and connect. "Schools should be places of inspiration, not just instruction." emphasizes the importance of creating spaces that stimulate creativity, imagination, and a love for learning. Foster believes that schools should go beyond simply imparting knowledge and should foster a holistic educational experience.

"Schools should be designed to be adaptable and flexible, so that they can evolve with the needs of the students." highlights the importance of creating spaces that can accommodate changing educational needs and technologies. Foster believes that schools should be designed to be adaptable and future-proof.

Technological Concept: Fraxinus griffithi is a species of ash tree within site that could offer Engineered wood products: These products are made by combining smaller pieces of wood into larger, more durable components.

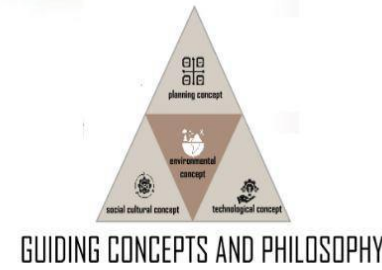
Biocomposites: These materials are created by combining wood with other natural or synthetic materials, such as bamboo or plastic.

Socio-Cultural : Develop the Neoclassical style, while maintaining the idea of duality. For example, the design could incorporate traditional Kenyan architectural elements, materials, or motifs that represent contrasting ideas or concepts, another idea would be developing modern neo classical style

Environmental Concept: The buildings can incorporate elements that reference the concept, such as double courtyard that divides the blocks, or classrooms that are designed to foster two blocks such as kindergarten and lower elementary.

Planning Concept: The concept can be integrated into the design through architectural elements that evoke a sense of duality.

It is Symbolic, the number 2 can represent duality, choice, and balance. In the context of education, this can symbolize the balance between theoretical and practical knowledge, Shared learning spaces such as Kindergarten and lower Elementary together, indoor and outdoor learning, formal and informal knowledge and more



BLOCKS	GC	TOTAL A
KINDERGARTEN	480M ²	M ²
ELEMENTARY	1250M ²	M ²
MIDDLE	2050M ²	M ²
HIGH	2260M ²	M ²
DORMS	1895M ²	M ²
STAFFQUARTERS	1670M ²	M ²
KITCHEN	1160M ²	M ²
AUDITORIUM	710M ²	M ²
SPORTS CLUB	1320M ²	M ²
FIELDS/COURTS	37000M ²	M ²

- HIGH SCHOOL
- LABORATORIES
- ADMIN BLOCK (UPPER)
- DORMS
- KITCHEN AND DINING
- WORKSHOP
- LIBRARY
- FIELDSEAT SEATS
- PARKING

BRIEF ANALYSIS

Project description

Project: School design complex
 Client: Principal Juma Anyango
 Location: Jamhuri High School along Limuru Rd, Ngara
 Area: 108,036.17sqm

Project brief

To transform the existing high school into a comprehensive educational institution, offering kindergarten, middle school and high school education. Ought to elevate the school's standards to international levels, while also enhancing its sporting facilities and adding community amenities that generate revenue.

Project justification

1. Meeting educational needs by providing modern facilities that enhance learning experiences.
2. Creation of employment for local residents, boosting the local economy.
3. The proposed school complex will be a focal point for community activities fostering engagement between students and local residents.
4. Designing adaptable facilities that allows the school to evolve with the changing needs and community demographics.

Population catered for

Level	Capacity	Grade	Classes	Pax per stream
Kindergarten	60	1 to 2	4	15
Elementary	360	1 to 6	12	30
Middle school	360	7 to 9	12	30
High school	420	10 to 12	12	35

TOTAL= 1032

Existing Site



Spaces to provide

ADMIN BLOCK

CLASSES AND LEARNING FACILITIES

WORKSHOPS

DINING HALL AND KITCHEN

DORMITORIES

SPORTS CLUB

FIELDS

COURTS AND POOLS

STAFF RESIDENCE

PARKING AREAS

EXISTING SPACE	CHANGES	REASON
PAVILLION	DEMOLISHED	IT IS BLIGHTED THUS REMOVED TO GIVE SPACE FOR MIDDLE SCHOOL BLOCK
STAFF QUARTERS	DEMOLISHED	SPACES ARE SCATTERED AND LACK ORGANISATION
FIELD	DIVIDED	TO PROVIDE EXTRA SPACE FOR ADDITION OF COURTS, SEATS AND OTHER FACILITIES
FORM 1 AND 2 BLOCKS	REPURPOSED	PROVIDE SPACE FOR WORKSHOPS TO BE USED BY MIDDLE AND HIGH SCHOOL
OLD WESTERN DORM	RENOVATED	TO REPURPOSE INTO MIDDLE AND HIGH SCHOOL ADMIN BLOCK
KITCHEN	RENOVATED	TO IMPROVE FOOD SAFETY AND HYGIENE, REPURPOSE OLD DORM TO STORAGE

SPACES MAINTAINED ARE OLD ADMIN/HIGHSCHOOL BLOCK, LABS, EASTERN DORM, DINING HALL, POOL AND LOCATION OF COMMUNITY CENTRE



ALLOCATED SPACE FOR STAFF RESIDENCE

PROPOSED KINDERGARTEN AND ELEMENTARY

PROPOSED ADMIN

EXISTING HIGHSCHOOL

PROPOSED AUDITORIUM



FIELDS

PROPOSED SPORTS CLUB

PROPOSED MIDDLESCHOOL

ALLOCATED SPACE FOR KITCHEN RENOVATION

DINING HALL

DORMS




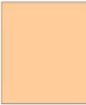








BIRDS VIEW OF ENTIRE SITE



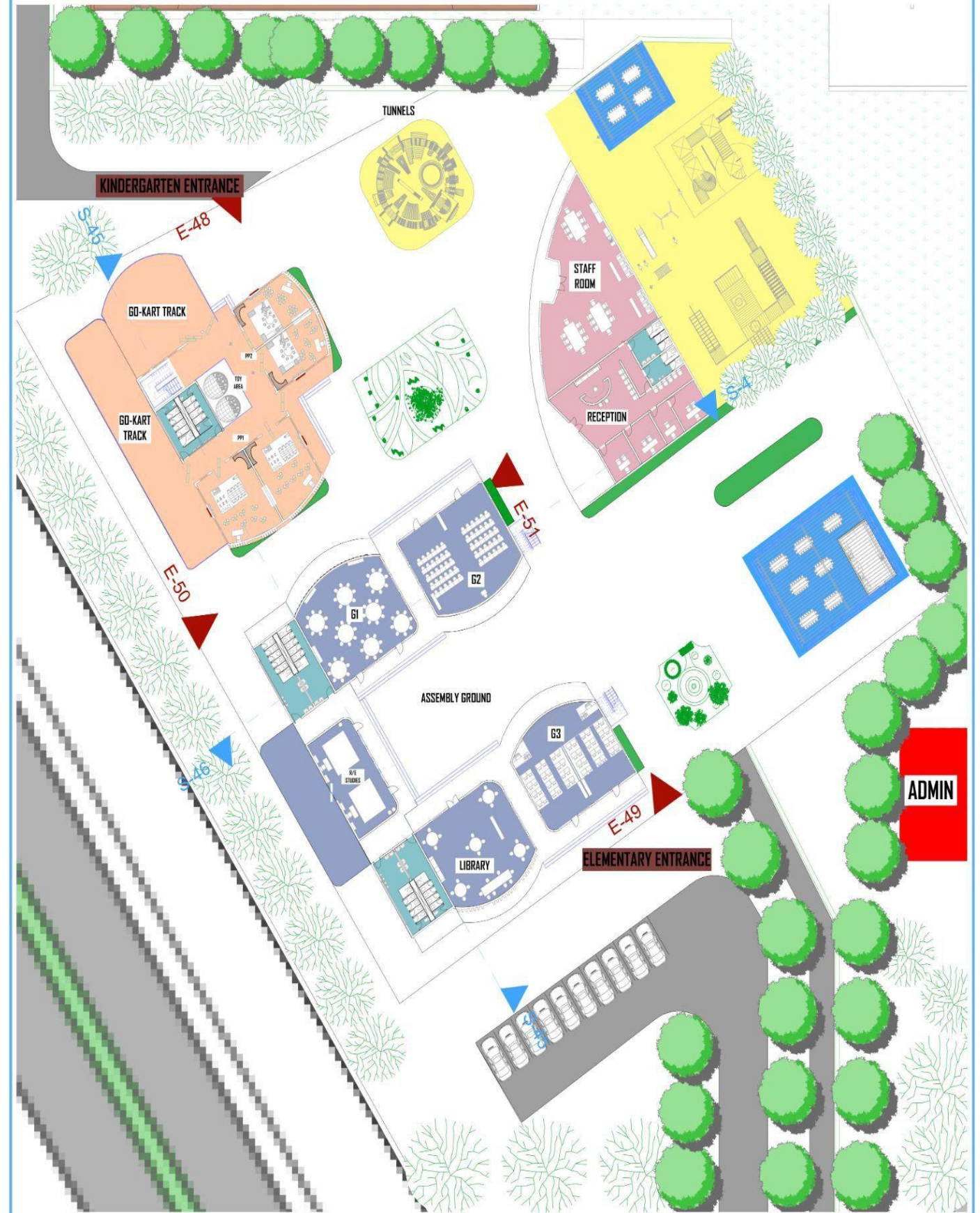
MASTER PLAN



KEY

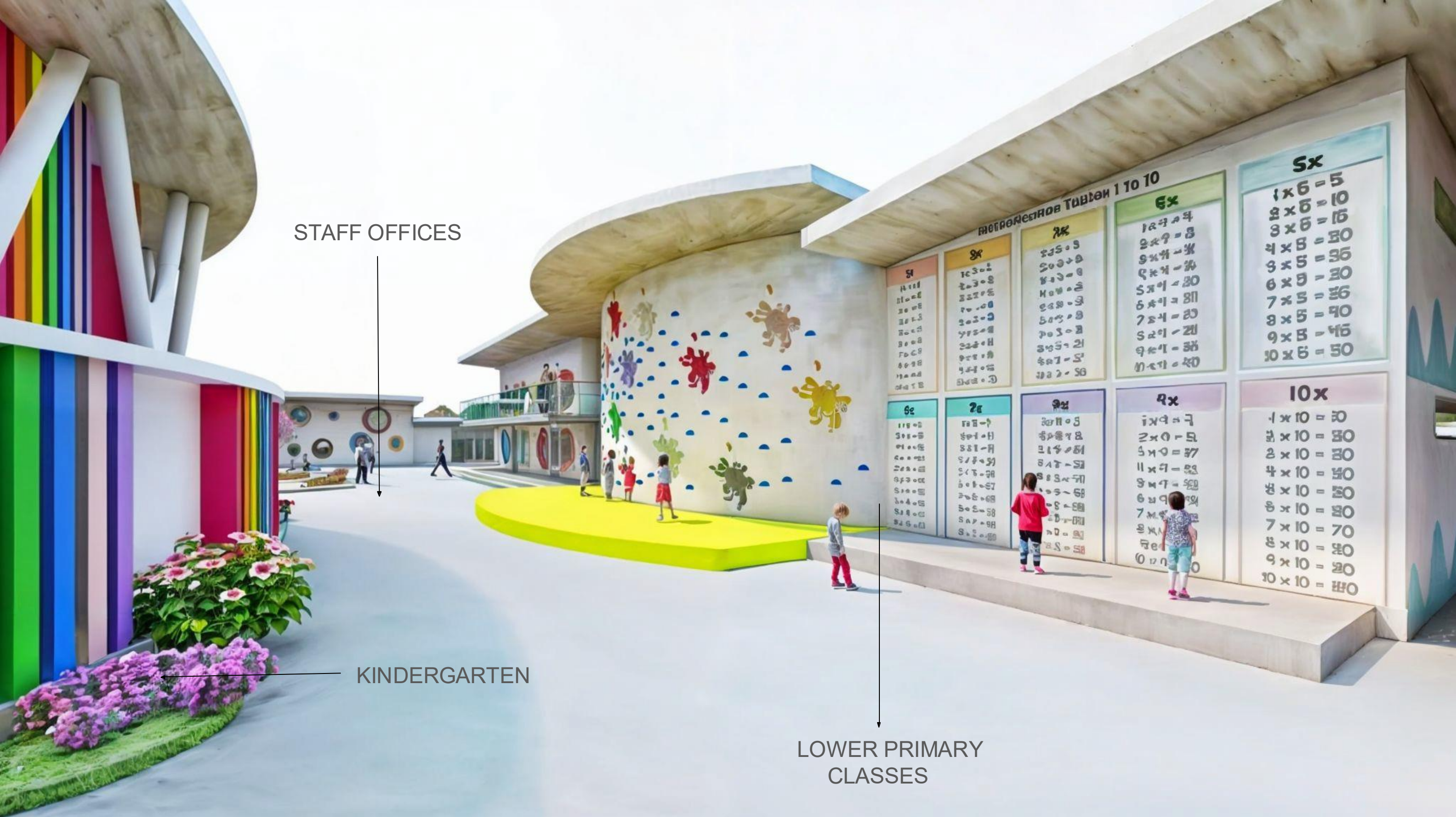
	KINDERGARTEN		ELEMENTARY		MIDDLE SCHOOL		HIGH SCHOOL
	ADMIN BLOCK		DORMS		STAFF RESIDENCE		POOL
	SPORTS CLUB		AUDITORIUM		DINING		KITCHEN

PRESENTATION PLAN



GROUND FLOOR

	KINDERGARTEN		ELEMENTARY		STAFF ROOM AND OFFICES
	WASHROOM		FOOD COURT		PLAYGROUND



STAFF OFFICES

KINDERGARTEN

LOWER PRIMARY CLASSES

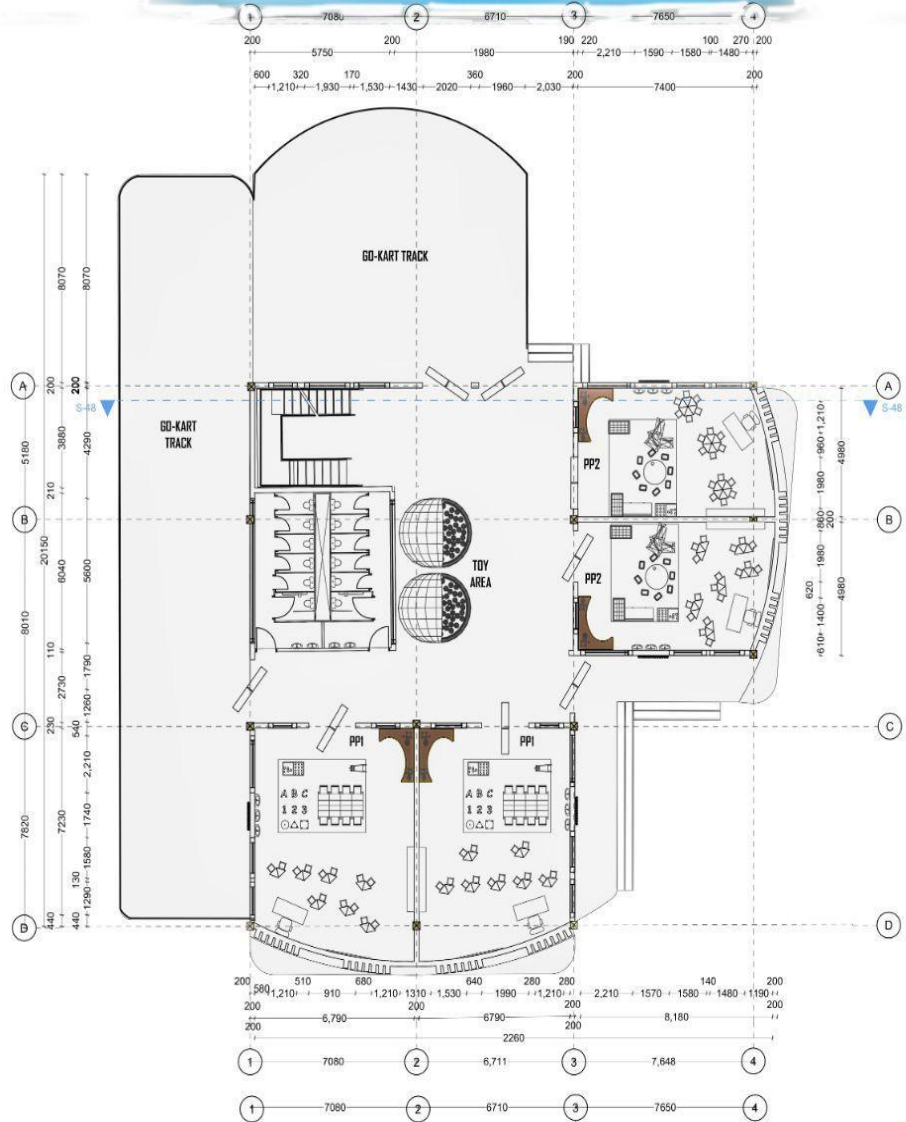
МНОЖИТЕЛЬНОСТЬ Таблица 1 TO 10

1x	2x	3x	4x	5x
1x1=1	2x1=2	3x1=3	4x1=4	5x1=5
1x2=2	2x2=4	3x2=6	4x2=8	5x2=10
1x3=3	2x3=6	3x3=9	4x3=12	5x3=15
1x4=4	2x4=8	3x4=12	4x4=16	5x4=20
1x5=5	2x5=10	3x5=15	4x5=20	5x5=25
1x6=6	2x6=12	3x6=18	4x6=24	5x6=30
1x7=7	2x7=14	3x7=21	4x7=28	5x7=35
1x8=8	2x8=16	3x8=24	4x8=32	5x8=40
1x9=9	2x9=18	3x9=27	4x9=36	5x9=45
1x10=10	2x10=20	3x10=30	4x10=40	5x10=50

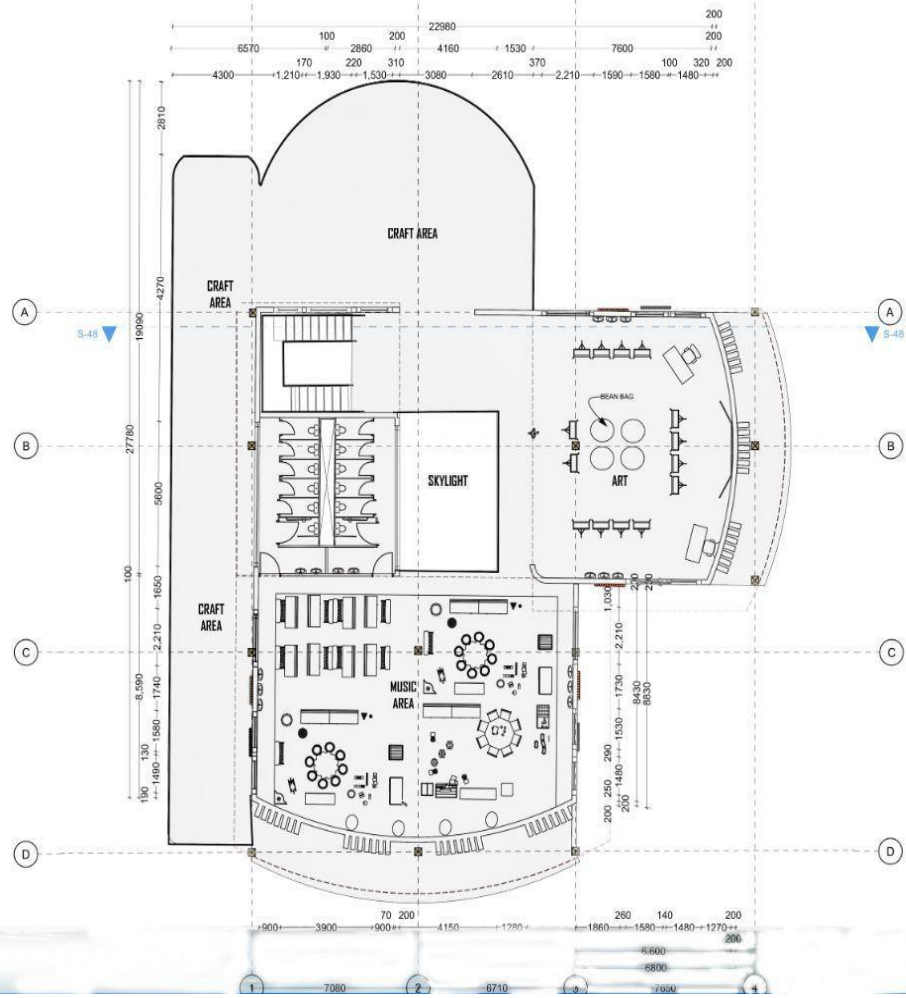
The design of the kindergarten and lower primary school prioritizes playful architecture and strategic placement of amenities to create a safe and engaging learning environment for young students. Key design features include a colorful window frame, facade, durable and easy-to-maintain interior flooring, and an outdoor play area with a naturalistic design. Educational art on walls enhances learning through interactive visual aids.

Strategically placed crawl tunnels, staff offices, playground, climb wall and garden ensure ease of supervision, minimizing the risk of accidents and promoting a safe learning environment. These design elements aim to foster creativity, socialization, and overall development among children, while providing a stimulating and supportive environment for teachers to facilitate learning and growth.

KINDERGARTEN FLOOR PLANS



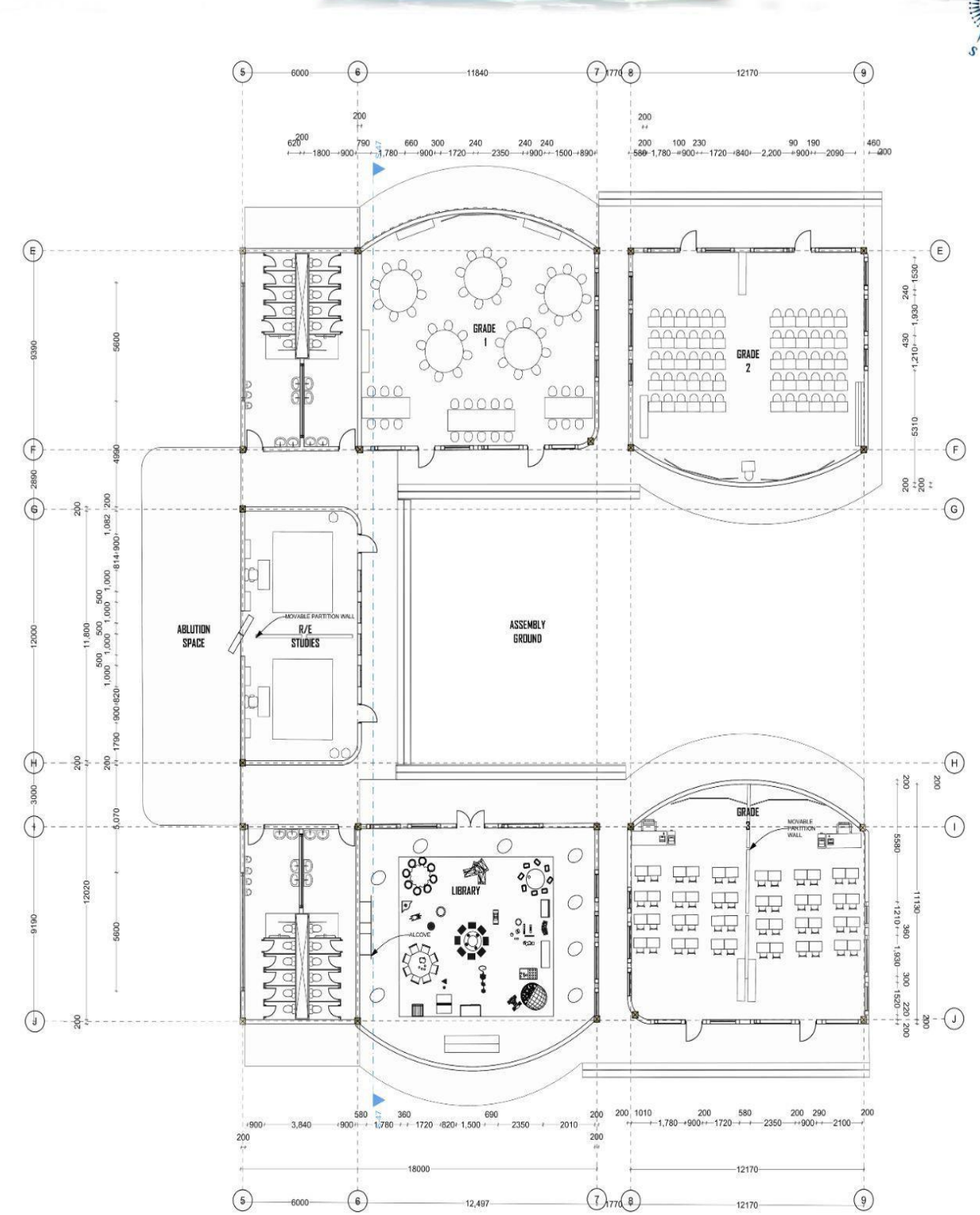
GROUND FLOOR
1:100



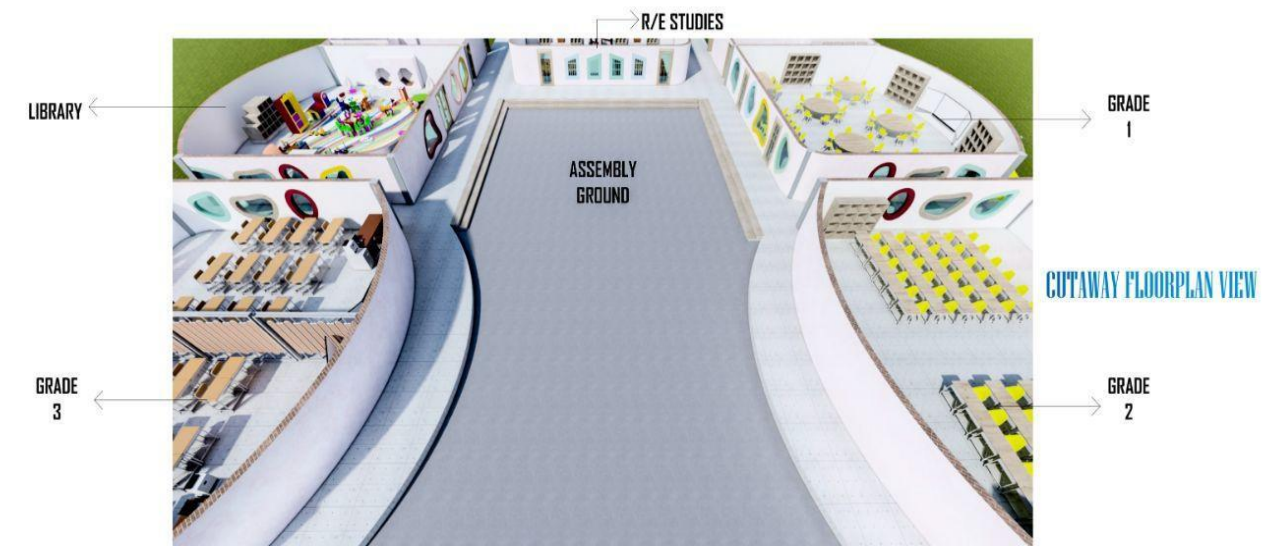
FIRST FLOOR
1:100



ELEMENTARY FLOOR PLANS



ELEMENTARY GROUND FLOOR FLOORPLANS
SCALE 1:100

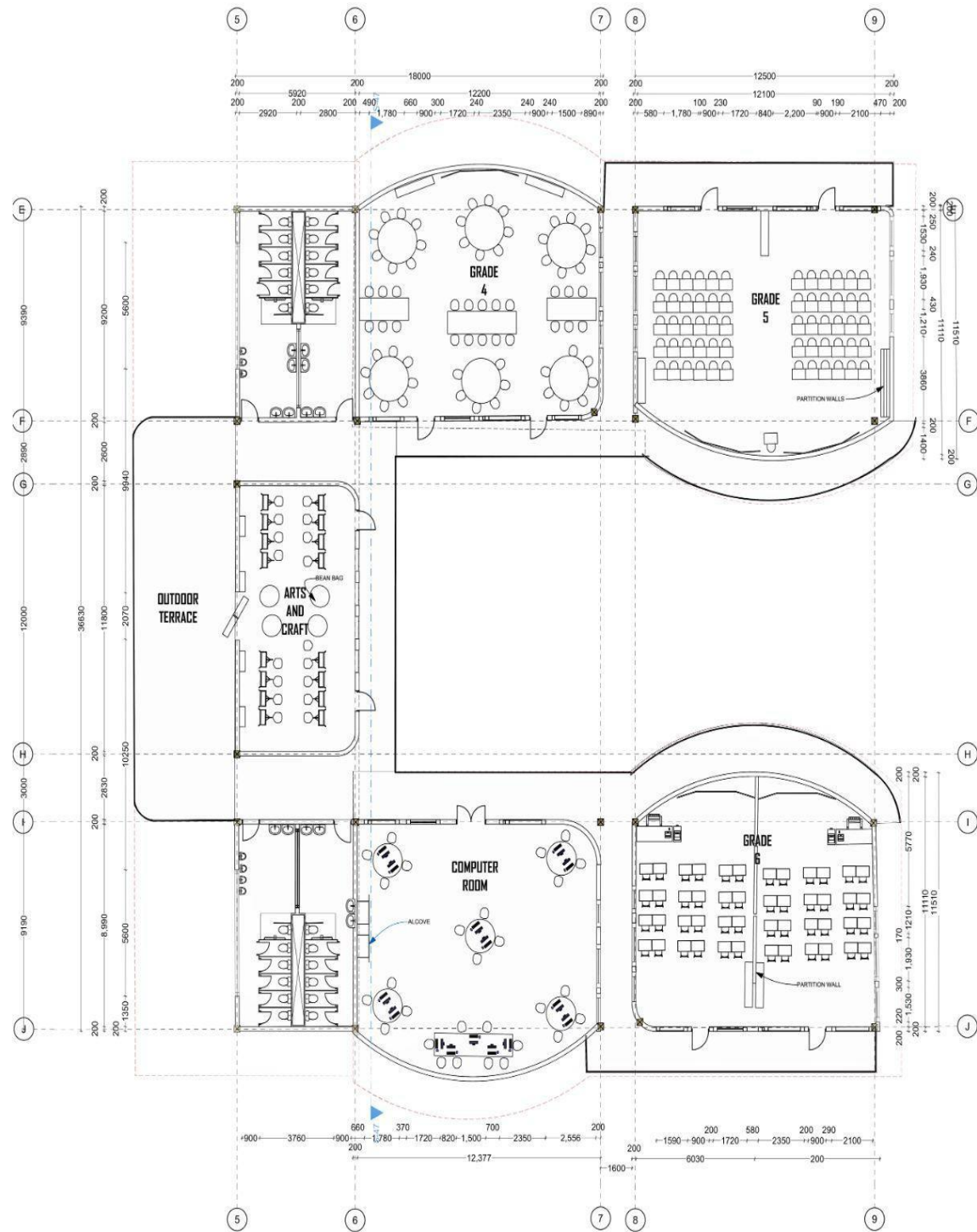


CUTAWAY FLOORPLAN VIEW

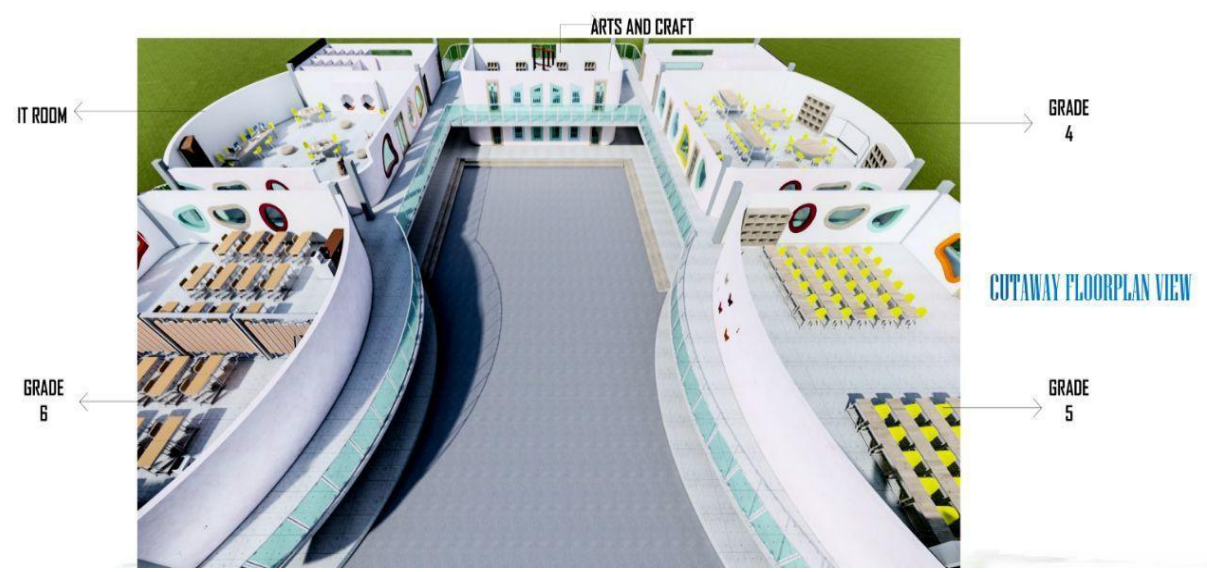
Formal and informal learning blended into an activity-based learning environment. This ensures holistic development of the children by encouraging creativity and problem solving in a fun space. Below is a Render of a PP1 classroom;



ELEMENTARY FLOOR PLANS

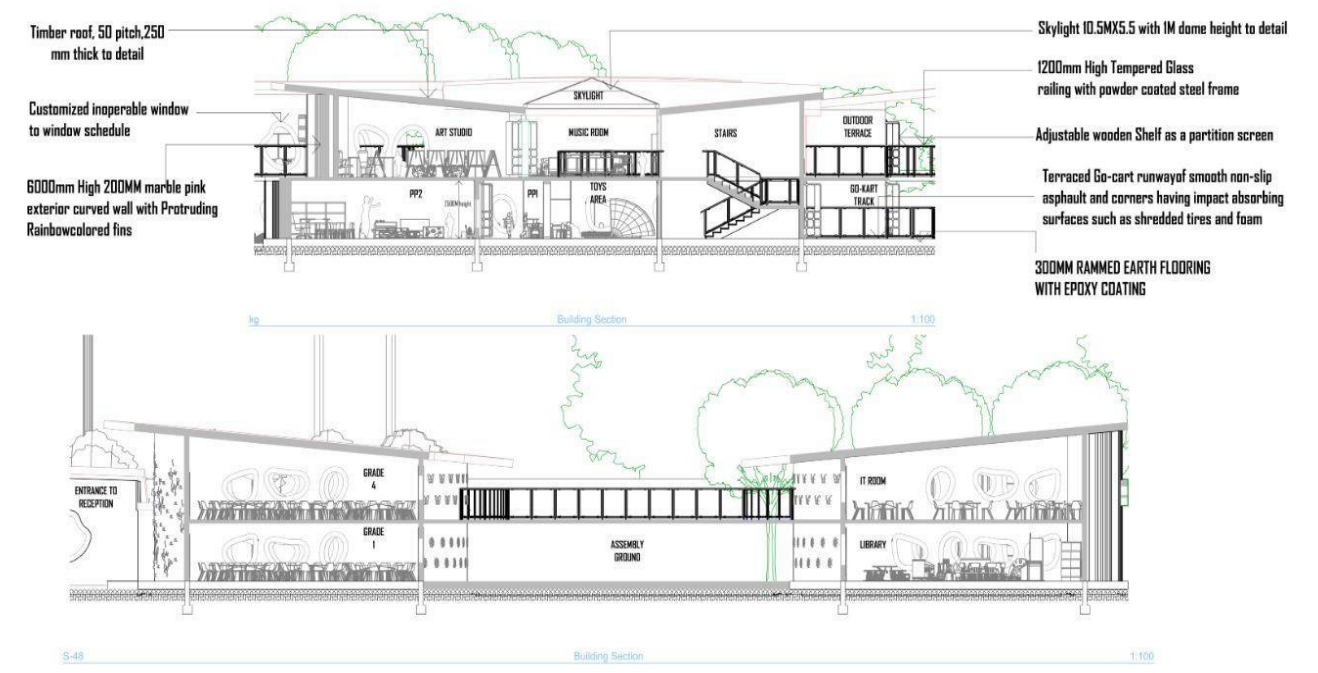


ELEMENTARY FIRST FLOOR FLOORPLANS SCALE 1:100



CUTAWAY FLOORPLAN VIEW

SECTIONS

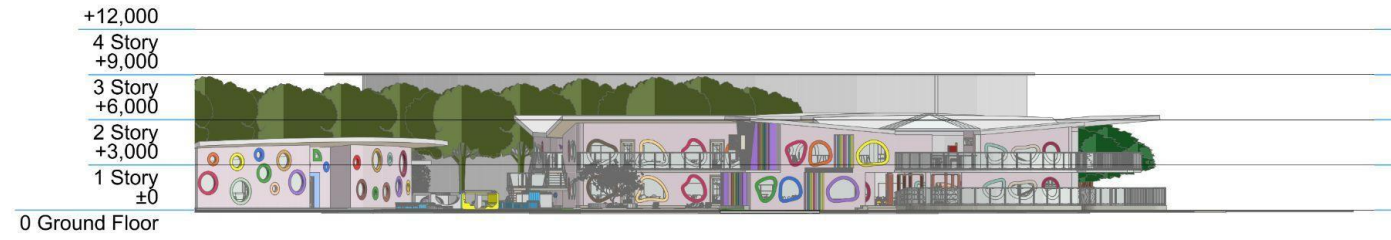


EXTERIOR PERSPECTIVE



Children learn best in a space that's both fun and interactive. Tools are more advanced and diverse different colored flooring for easier identification for children. Below is a Render of a PP2 classroom,

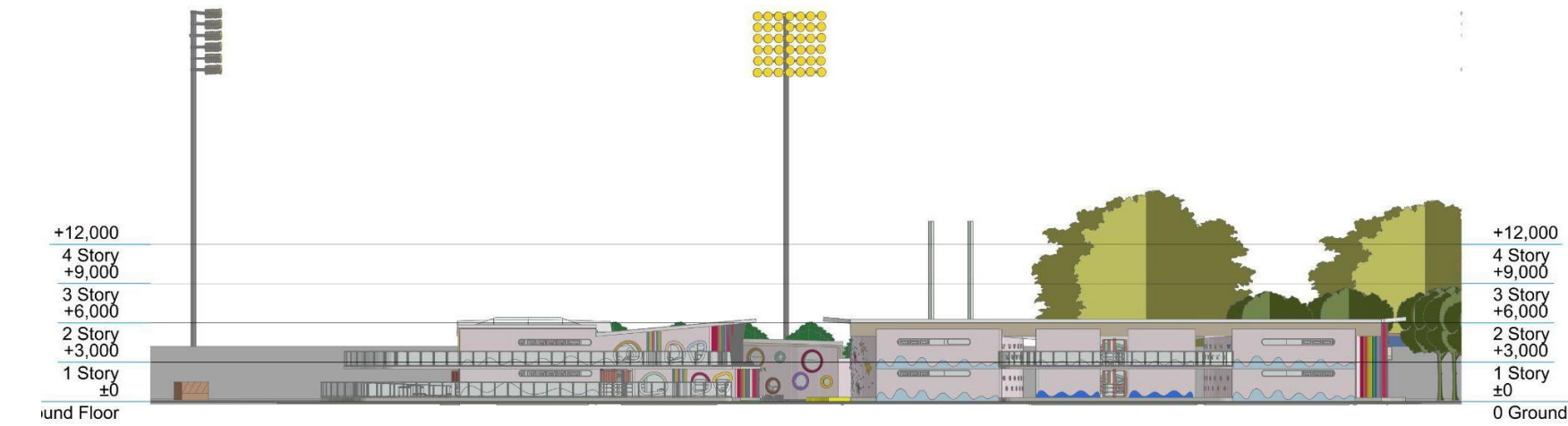




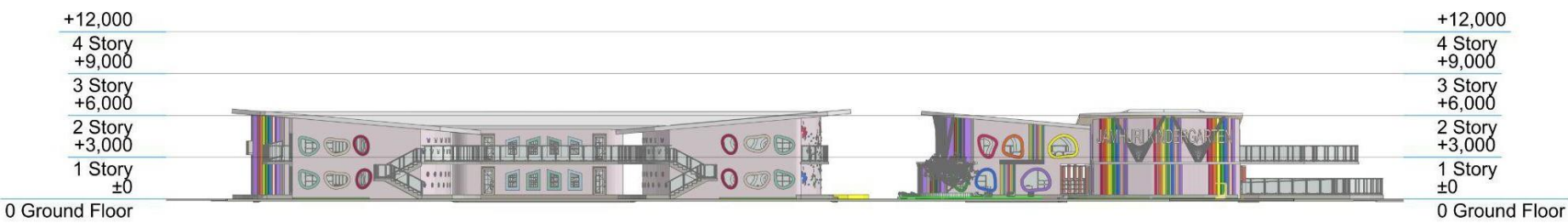
KINDERGARTEN ELEVATION



ELEMENTARY ELEVATION



SIDE ELEVATION

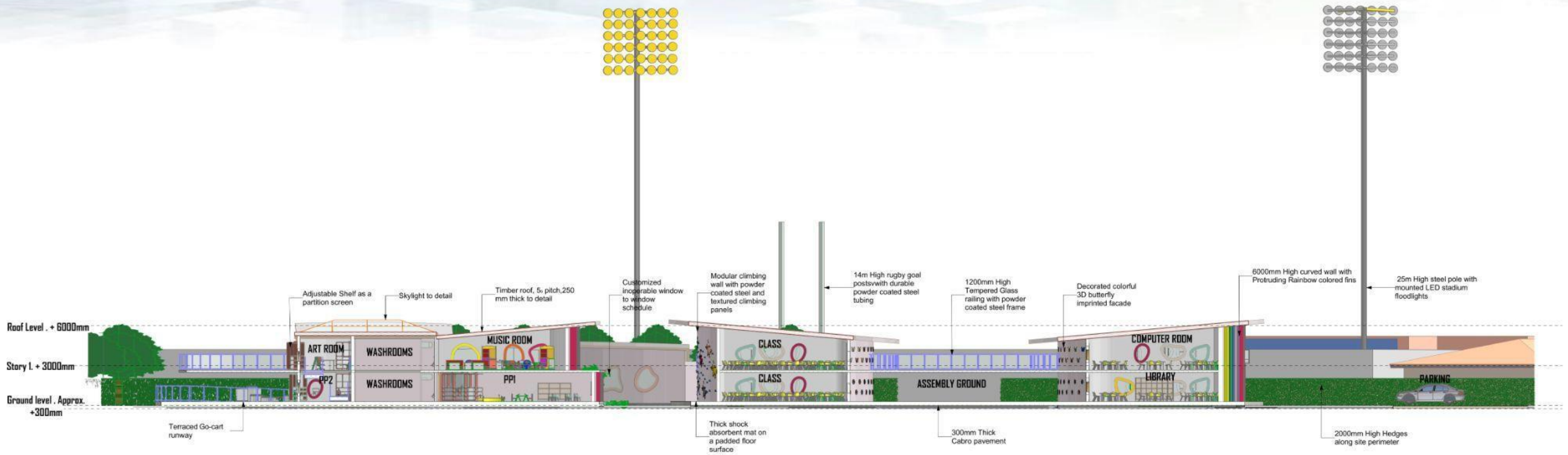


SIDE ELEVATION

Environments that blend formal music education with hands-on practice, encouraging exploration of their musical talents and develop problem-solving skills through interactive and engaging activities. Below is a Render of music room :



SECTIONS



SECTION 1

1:150



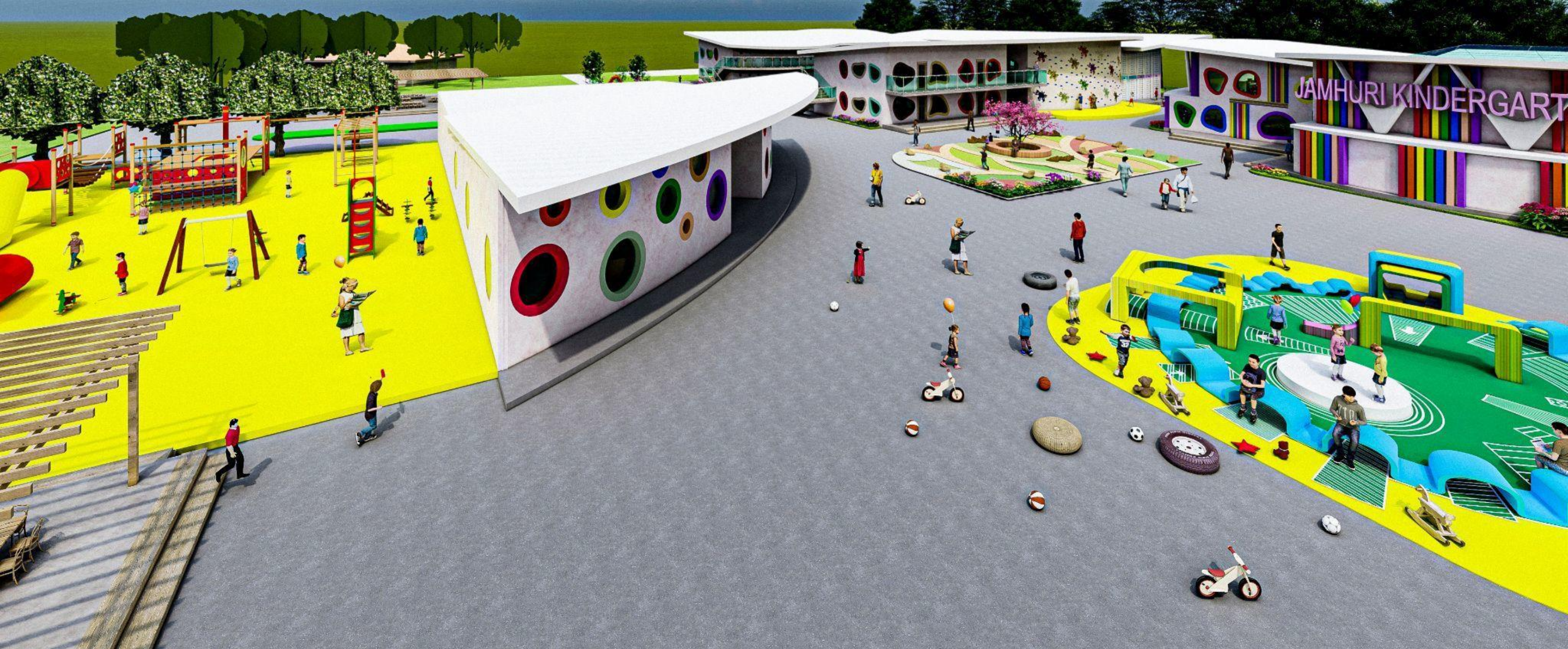
SECTION 2

1:150

Academic spaces such as classrooms, art, music, computer, and library rooms are arranged across two levels, often divided with adjustable shelves and skylights to enhance flexibility and natural light. Play and sports facilities, including modular climbing walls, terraced go-kart runways, play areas, and rugby posts, are integrated alongside academic areas to encourage active engagement. Circulation is supported by staircases, assembly grounds, and defined walkways with durable 300 mm cabro pavements.

Materials emphasize both durability and aesthetics: timber roofs with structural detailing, tempered glass railings with powder-coated frames, steel tubing for sports structures, and colorful decorated façades with 3D butterfly imprints and rainbow-colored fins for vibrancy. Landscaping elements, such as 2000 mm high hedges, complement functional zones like parking and outdoor playgrounds, while 25 m high steel poles with LED floodlights provide illumination for large gatherings.

Having multiple play areas both indoor and outdoor ensures children are always eager to explore. Below is a render of Aerial view of site :



EPIGRAPH; Thank you for exploring this publication. I hope that this journey through a context-driven design has offered you a fresh perspective on the profound connection between a building and its environment. As we look to the future, I invite you to consider how every structure we create can tell a story, not just of an architect, but of a place, a people, and a purpose. It is in this thoughtful dialogue with our surroundings that we can truly begin to build, not just for today, but for a beautiful and sustainable tomorrow.



JAMHURI SCHOOL COMPLEX



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Kenyatta University (KU)
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BIOGRAPHY

Tabitha Maina is a dedicated student at Kenyatta University, currently pursuing her Bachelor of Architectural Studies in the School of Engineering and Architecture, within the Department of Architecture and Interior Design. She has had hands-on practice gained through internships at ORAD GROUP and Naturarc Consultants, where she collaborated with multidisciplinary teams on diverse design projects. Currently serving as President of the Architecture Student's Association, Tabitha demonstrates exceptional leadership and organizational abilities. She is an EDGE trained sustainable architecture enthusiast. Her methodical approach to design, positions her as a thoughtful and innovative designer ready to contribute meaningfully to complex architectural projects while advancing her professional growth in architecture.

CONCEPTUALIZATION

INTRODUCTION

PROJECT NAME: SCHOOL COMPLEX
 SITE LOCATION: JAMHURI HIGHSCHOOL, NG'ARA
 SITE AREA: 123,889.87M²
 CLIENT: JAMHURI HIGH SCHOOL

PROJECT DESCRIPTION

THE PROJECT IS A RENEWAL OF THE EXISTING JAMHURI HIGH SCHOOL INVOLVING PRESERVATION, ADAPTIVE RE-USE, RENOVATION OF SOME STRUCTURES WHILE DEMOLISHING OTHERS TO CONVERT THE SCHOOL TO A SCHOOL COMPLEX

PROJECT OBJECTIVES

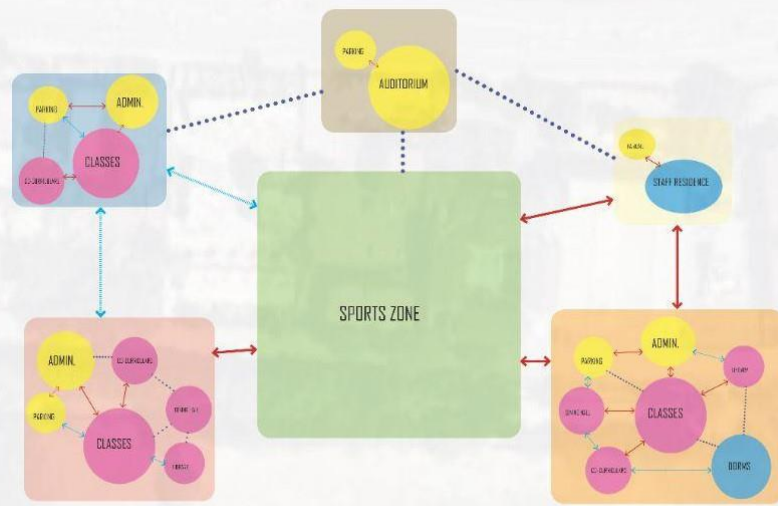
- DESIGNING SPACES SUPPORTING A VARIETY OF EDUCATIONAL FACILITIES
- INTERGRATING SUSTAINABLE PRACTICES IN THE BUILDING DESIGN
- PRIORITIZING SAFETY OF STUDENT AND STAFF.
- PROMOTING TECHNOLOGICAL INTERGRATION IN DESIGN OF SCHOOLS.
- CREATING FLEXIBLE SPACES THAT ARE EASILY ADAPTABLE TO CHANGE OF EDUCATION METHODS.
- FOSTERING COMMUNITY INTERACTION.

SPATIAL REQUIREMENTS

SCHEDULE OF ACCOMMODATION

SPACE	NUMBER	OCCUPANCY	AREA (M ²)	TOTAL AREA (M ²)	LOCATION	COMMENTS
KINDERGARTEN						
Classrooms	7	20-25 each	88	170	Ground floor	Near outdoor play area
Shared activity area	1	40-50	88	88	First floor	Multi-purpose space
Teachers	2	-	15	30	Near classrooms	Separate for boys and girls
Storage	1	-	15	15	Each floor	Accessible from classrooms
MIDDLE SCHOOL						
Classrooms	6	25-30 each	80	360	Ground and first floor	Distributed evenly
Science lab	1	25-30	80	80	First floor	With proper ventilation
Computer lab	1	25-30	70	70	First floor	With adequate power points
Library	1	50-100	100	100	Ground floor	Quiet area
Art room	1	25-30	70	70	Ground floor	Good natural light
Music room	1	25-30	70	70	Ground floor	Sound insulated
Teachers	2	-	30	60	Each floor	Separate for boys and girls
Storage	1	-	30	30	Centrally located	For general supplies
HIGH SCHOOL						
Classrooms	6	25-30 each	80	360	Ground and first floor	Distributed evenly
Science lab	2	25-30 each	80	160	First floor	Physics/chemistry and biology
Computer lab	1	25-30	80	80	First floor	With adequate power points
Library	1	50-100	100	100	Ground floor	Quiet area
Art room	1	25-30	80	80	Ground floor	Good natural light
Music room	1	25-30	80	80	Ground floor	Sound insulated
Teachers	2	-	40	80	Each floor	Separate for boys and girls
Storage	1	-	40	40	Centrally located	For general supplies
DORMITORIES (HIGH SCHOOL)						
Dormitories	20	8-10 each	40	800	Separate building	Gender segregated floors
Common rooms	2	40-50 each	80	160	Each floor	For socializing
Study areas	2	30-40 each	80	160	Each floor	Quiet zones
Teatime and showers	2	-	80	160	Each floor	Separate for boys and girls
Laundry room	1	10-15	30	30	Ground floor	With washing machines
STAFF ACCOMMODATION						
Staff apartments	10	7-8 each	60	600	Separate building	For teachers and admin staff
Common room	1	20-25	50	50	Ground floor	For staff socializing
Laundry facilities	1	5-10	20	20	Ground floor	Shared facility
ADMINISTRATIVE SPACE						
Reception area	1	5-10	30	30	Main entrance	Welcoming area
Principal's office	1	3-4	25	25	Near reception	With meeting space
Vice-Principal's office	1	3-3	20	20	Near principal's office	-
Administrative offices	1	8-10	60	60	Near reception	Open plan or partitioned
Conference room	1	15-20	40	40	Admin area	For meetings
Staff room	1	30-40	80	80	Centrally located	Work and relaxation space
Storage room	1	2-3	20	20	Secure area	For document storage
IT server room	1	1-2	15	15	Secure area	Climate controlled
Teachers	2	-	10	20	Admin area	For staff and visitors
Storage	1	-	15	15	Admin area	For office supplies
COMMON AREAS						
Cafeteria/ Dining hall	1	200-250	800	300	Ground floor	Central location
Kitchen	1	10-15	80	80	Adjacent to cafeteria	With service area
Multi-purpose hall/ Auditorium	1	400-500	400	400	Ground floor	With stage
Medical room	1	5-10	30	30	Ground floor	Easily accessible
INDOOR GYMNASIUM COMPLEX						
Main court area	1	50-80	800	800	Ground floor	Multi-sport use
Fitness center	1	30-40	200	200	Adjacent to main court	With exercise equipment
Indoor running track	1	20-30	200	200	Above main court	Suspended track
Changing rooms and showers	2	20-25 each	80	160	Ground floor	Separate for boys and girls
Equipment storage	1	-	50	50	Accessible from main court	For sports equipment
Instructor's office	1	2-3	30	30	Near main court	For PE teachers
First aid room	1	2-3	20	20	Easily accessible	For minor injuries
Spectator seating area	1	80-100	80	80	Around main court	Retractable seating
Toilet area	2	-	30	60	Near main court	Separate for males and females
OUTDOOR SPORTS FACILITIES						
Football/Rugby/Cricket field	1	-	7000	7000	Open area	Multi-use field
Hockey field	1	-	5027	5227	Open area	Separate from main field
Basketball courts	2	-	420	840	Near gymnasium	Standard size
Tennis courts	4	-	260	1040	Open area	Standard size
Swimming pool	1	-	1250	1250	Open area	Olympic size with deck
Obstacle track	1	-	-	-	Around main field	400m standard
Long jump and triple jump pit	1	-	100	100	Near track	-
Shot put area	1	-	100	100	Open area	Away from main traffic
Changing rooms and showers	2	20-25 each	80	160	Near fields	Separate for boys and girls
Equipment storage	1	-	50	50	Accessible from	For outdoor equipment

SPATIAL RELATIONSHIPS



ZONING



RENEWAL PROCESS

AS PART OF THE RENEWAL PROCESS, SOME BUILDINGS WILL BE MAINTAINED, SOME WILL BE DECORATED WHILE OTHERS WILL BE DEMOLISHED



DEMOLITION: INVOLVES REMOVING BUILDINGS THAT ARE IN A POOR STATE PHYSICALLY OR AESTHETICALLY. THE STAFF RESIDENCES, OLD DINING HALL, SWIMMING POOL, OLD PAVILION AND CANTEN WILL BE DEMOLISHED
MAINTENANCE: INVOLVES PRESERVING EXISTING BUILDINGS WITH MINOR REPAIRS AND UPKEEP. MAINTENANCE WILL BE DONE TO THE QUADRANGLE BUILDING AND LABORATORIES
DECORATION: INVOLVES AESTHETIC IMPROVEMENT AND FINISHING WORK. DECORATION WILL BE DONE TO THE DORMITORIES

PHILOSOPHIES

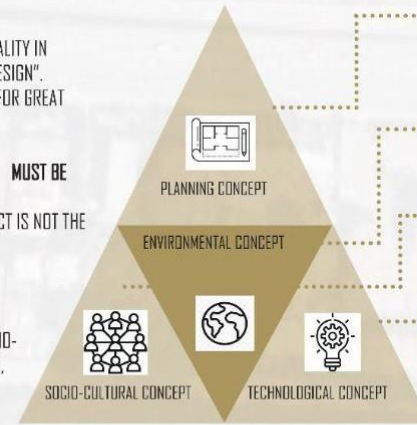
DESIGN MUST BE ROOTED IN REALITY:

AS DIETER RAMS SAYS, "INDIFFERENCE TOWARDS PEOPLE AND THE REALITY IN WHICH THEY LIVE IS ACTUALLY THE ONE AND ONLY CARDINAL SIN IN DESIGN". EMPATHY IS THE CONDUIT TO GREAT DESIGN AND THE CRITICAL SKILL FOR GREAT DESIGNERS.

"ANYTHING THAT EXISTS ONLY TO SATISFY THE EGO OF THE DESIGNER MUST BE ELIMINATED", ERIC REISS.
 THIS PHILOSOPHY EMPHASIZES THE CONSIDERATION THAT THE ARCHITECT IS NOT THE USER AND MUST DESIGN FOR USERS AND NOT HIS OR HER EGO.

HYBRID PHILOSOPHY

A FUNCTIONAL DESIGN BASED ON EMPATHY AND FOCUS BALANCING EMOTIONAL INTELLIGENCE AND ACADEMIC EXCELLENCE THROUGH ADAPTIVE, INCLUSIVE DESIGN.



PLANNING CONCEPT

FOCUS ON INTERGRATING THE SITE'S NATURAL FEATURES WITHIN THE SCHOOL LAYOUT, CREATING MEANINGFUL SPACES THAT SUPPORT LEARNING

ENVIRONMENTAL CONCEPT

PRIORITIZE DESIGN STRATEGIES THAT MINIMIZE ENVIRONMENTAL IMPACT AND CREATE HEALTHY SPACES FOR LEARNING.

SOCIO-CULTURAL CONCEPT

INCORPORATE ELEMENTS THAT REFLECT AND CELEBRATE THE SCHOOL'S CULTURE FOSTERING A SENSE OF IDENTITY AND COMMUNITY WITHIN THE SCHOOL

TECHNOLOGICAL CONCEPT

EMPHASIZE INNOVATIVE STRUCTURES AND MATERIALS THAT ENHANCE THE LEARNING ENVIRONMENT AND ADAPT TO CHANGING NEEDS.

ANALOGIES

PLANNING CONCEPT

- INTERCONNECTED INDOOR & OUTDOOR LEARNING SPACES.
- BUILDINGS ARRANGED AROUND SHARED OUTDOOR SPACES

ENVIRONMENTAL CONCEPT

- GREEN ROOF ON A SCHOOL BUILDING WITH SOLAR PANELS.
- RAINWATER HARVESTING SYSTEMS.

SOCIO-CULTURAL CONCEPT

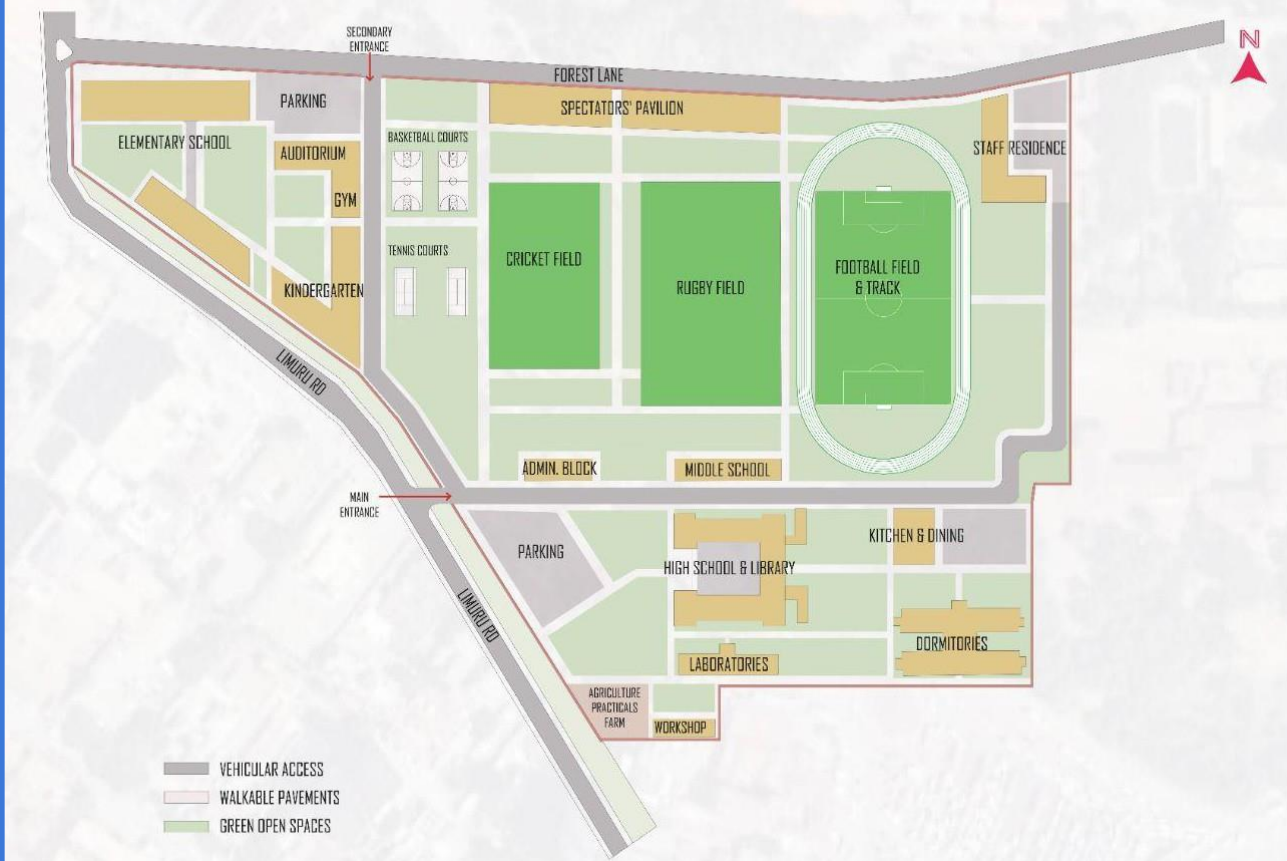
- MULTI-GENERATIONAL GROUP ENGAGEMENT IN LEARNING ACTIVITIES
- MURALS OR EXHIBITIONS OF SCHOOL HISTORY

TECHNOLOGICAL CONCEPT

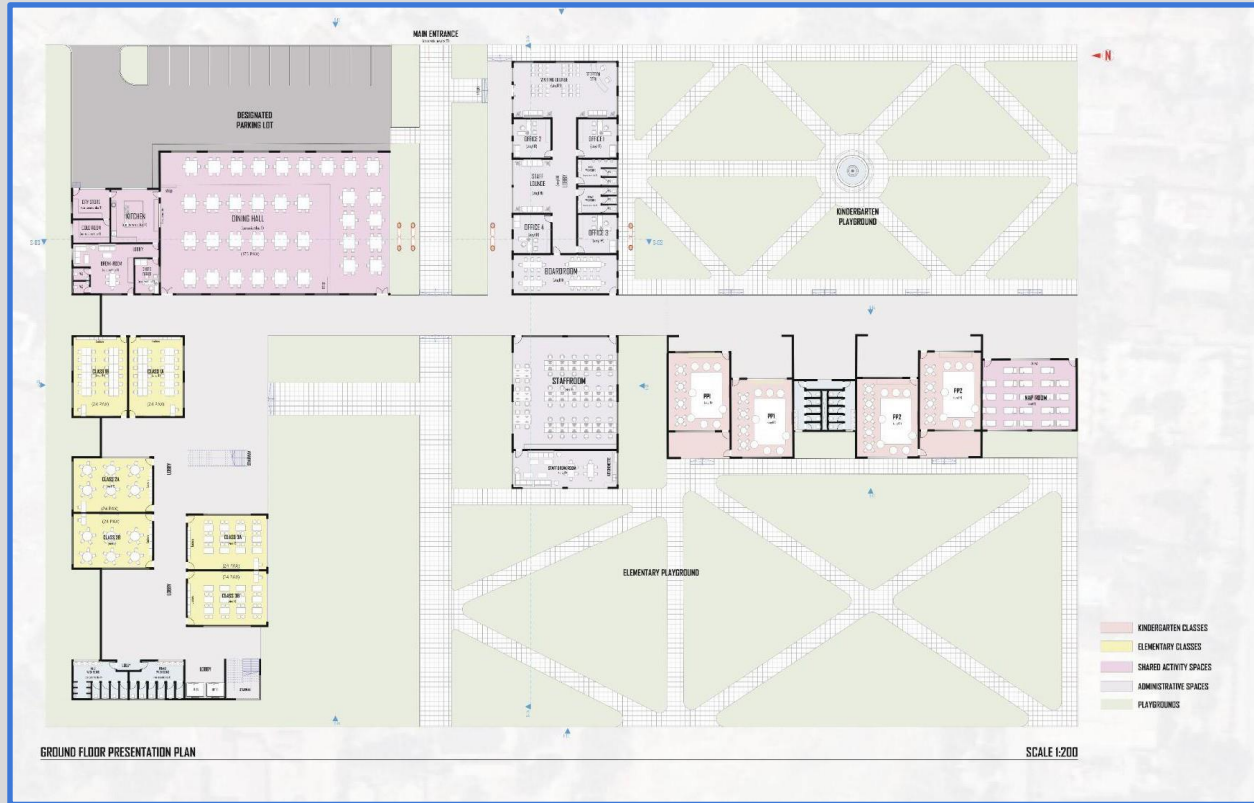
- COMPUTER AIDED LEARNING THROUGH USE OF INTERACTIVE SCREENS AND TABLETS.
- USE OF SMART BUILDINGS SYSTEMS LIKE MOTION SENSORS



PROPOSED SITE PLAN



SITE ORGANIZATION



Jamhuri School Complex has two major access points- from Limuru Rd and Forest Lane
The original position of Jamhuri High School has been retained

The elementary school and kindergarten are accessed off Forest lane while the high school is accessed off Limuru Road limiting vehicular movement within the site.

The staff residence is located near Forest Lane entrance to provide independent residential access while maintaining oversight of campus activities.

Specialized facilities like laboratories, workshops, and dormitories are positioned at the site periphery to contain noise and operational activities away from primary learning spaces.

Parking placement near the main entrance controls vehicle penetration while serving visitors and staff without interfering with student circulation patterns.

The covered walkway network creates weather-protected pedestrian circulation connecting all buildings while clearly separating foot traffic from vehicular movement, ensuring safe campus navigation for all users.

The central sports complex serves all school levels efficiently while providing community access through the spectators' pavilion without disrupting daily academic operations.

The kindergarten and elementary buildings are organized around central playgrounds that provide secure outdoor learning environments while enabling surveillance from classrooms.

Horizontal circulation follows a linear corridor system connecting age-appropriate clusters, with the kindergarten maintaining ground-level access and the elementary incorporating vertical circulation through strategically placed staircases.

The buildings are oriented to maximize natural lighting in classrooms while the designated parking area provides convenient access without compromising child safety within the campus core.

Administrative spaces are positioned at building entrances to control access and provide oversight.

The spatial organization separates younger kindergarten students from elementary pupils while maintaining shared facilities like the dining hall and outdoor play areas.

Classroom clusters are arranged to minimize noise transfer between different age groups while the corridor system ensures clear wayfinding for young users.

Service areas and storage spaces are integrated discretely to support daily operations without disrupting learning environments.

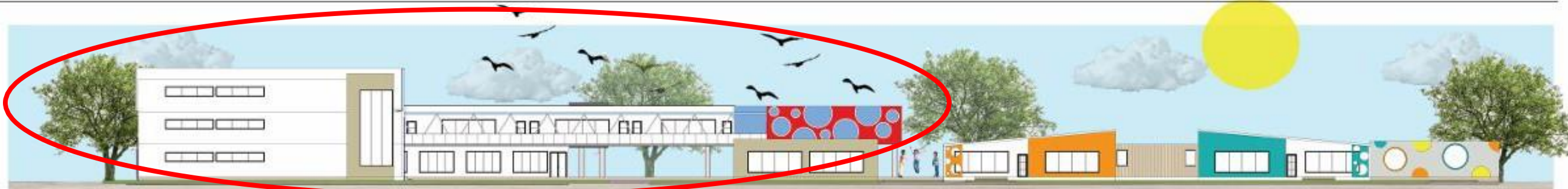


JAMHURI ELEMENTARY SCHOOL



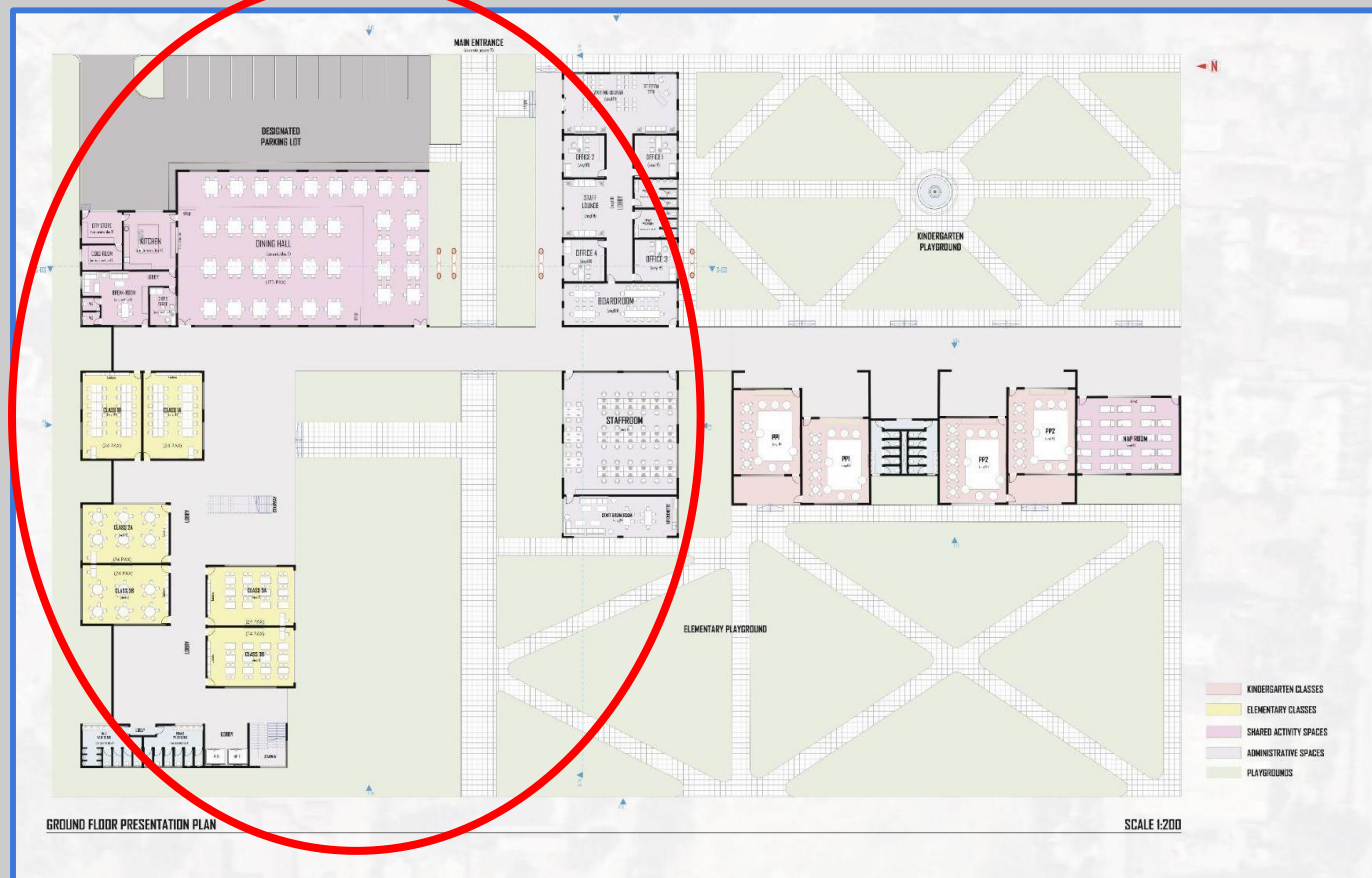
ELEVATION E-01 : ALONG THE FRONT OF THE KINDERGARTEN AND ELEMENTARY

SCALE 1: 200



ELEVATION E-02 : ALONG THE BACK OF THE KINDERGARTEN AND ELEMENTARY

SCALE 1: 200



The **ground floor plan** demonstrates thoughtful **zoning strategies** that separate functional areas. The **central corridor system** serves as the primary circulation spine, connecting major spaces while maintaining clear sight lines for supervision.

The **administrative zone** is strategically positioned near the main entrance, allowing effective visitor control and facilitating **security protocols** while providing easy access for parents and community members.

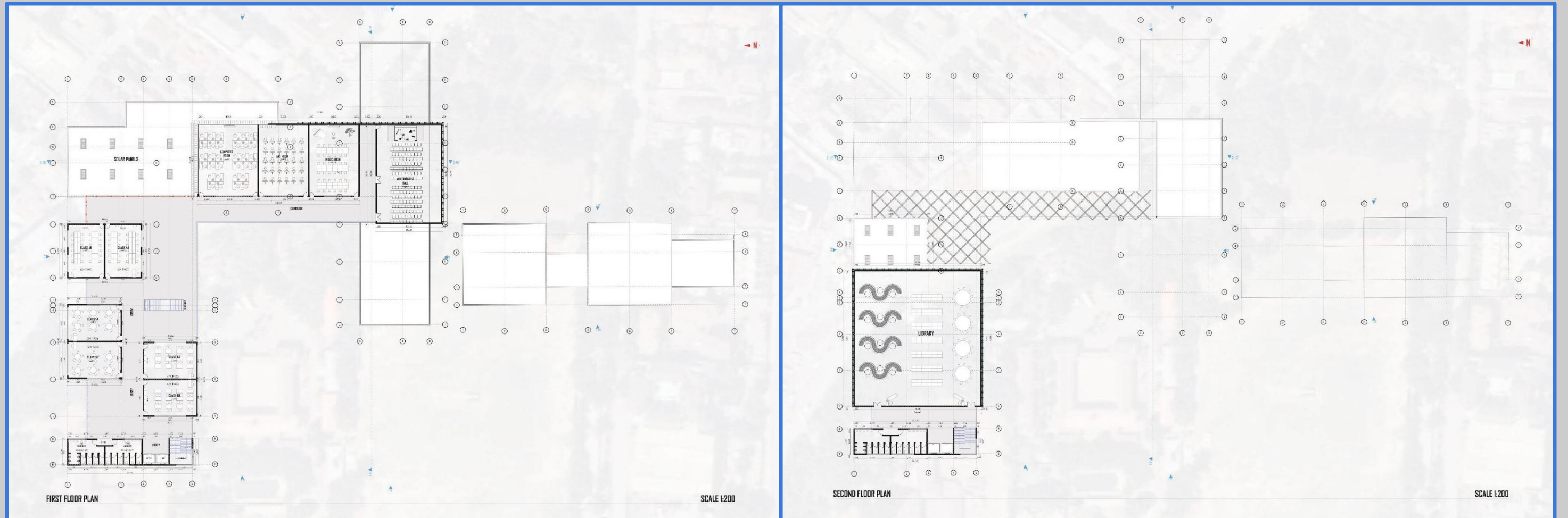
Classroom clusters are arranged to minimize noise transfer between learning spaces, with careful consideration of natural lighting orientation. The positioning suggests **age-appropriate zoning**, with younger students closer to support spaces and facilities.

The **multi-purpose hall** serves as a flexible community space, strategically located to allow independent access during after-hours events while connecting to main school circulation for daily activities.

Fenestration patterns show careful consideration of natural lighting requirements. Classroom windows are optimally sized and positioned to provide consistent daylight while minimizing glare and heat gain for the Kenyan climate.

The **outdoor learning spaces** and covered walkways demonstrate understanding of tropical design principles. These transitional spaces extend learning beyond traditional classrooms while providing weather protection.

JAMHURI ELEMENTARY SCHOOL



Circulation efficiency is evident through logical flow patterns that separate student movement from service access. The design minimizes congestion while creating opportunities for informal learning in widened corridor

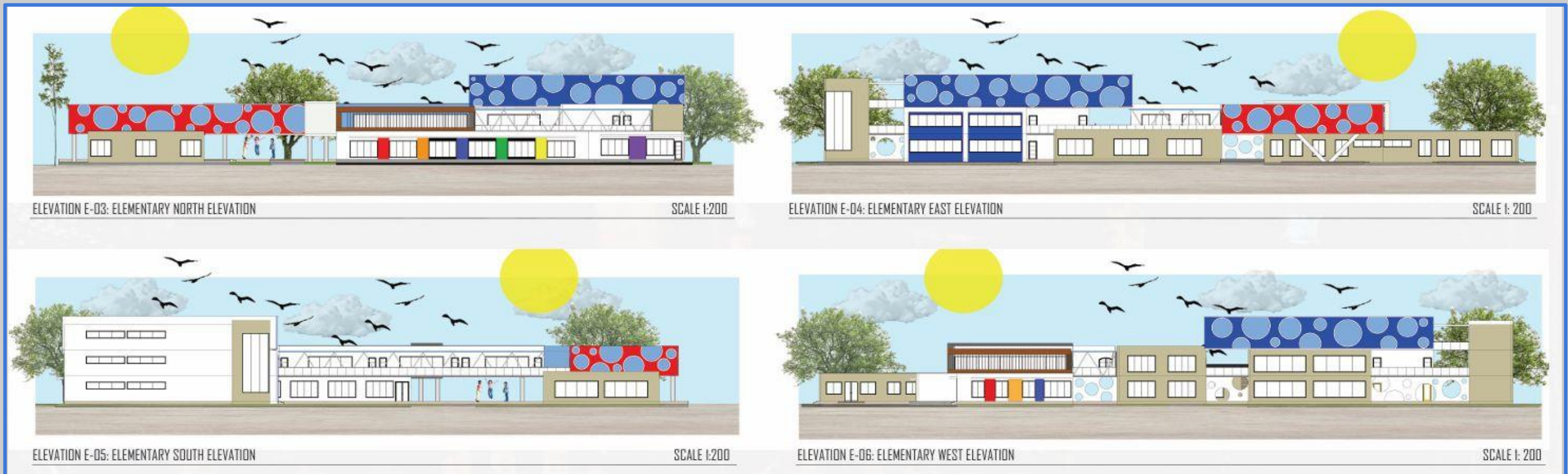
The **first floor** houses specialized learning spaces including a **multipurpose hall**, **music room**, **art room**, and **computer room**, alongside six upper elementary **classrooms (4A-6B)** for 24 students each.

The **second floor** features a central **library** that provides quiet study space above the active learning areas.

Solar panels on the roof demonstrate sustainable design, reducing energy costs and environmental impact.

The **vertical organization** places noisy activities like music and assemblies on the first floor with the quiet library above, showing good acoustic planning.

JAMHURI ELEMENTARY SCHOOL



The **elevation design** showcases a contemporary approach to educational architecture through **varied building heights** and dynamic massing that creates visual interest while responding to functional requirements.

The **vibrant color palette** featuring bright yellows, greens, reds, and blues creates a stimulating and welcoming environment specifically designed for young learners, fostering creativity and engagement.

The **horizontal emphasis** of the building masses relates well to the landscape.

The integration of **outdoor covered areas** extends learning spaces beyond the building envelope, supporting tropical design principles and creating seamless indoor-outdoor educational environments.

JAMHURI KINDERGARTEN

Spatial Organization

The section demonstrates a design that is both functional and responsive to context. Teaching, administrative, and communal spaces are arranged with clear circulation routes, ensuring accessibility and ease of movement. Wide corridors and a central lobby strengthen spatial connections and allow smooth transitions between specialized rooms, supporting both efficiency and supervision.

Environmental Response

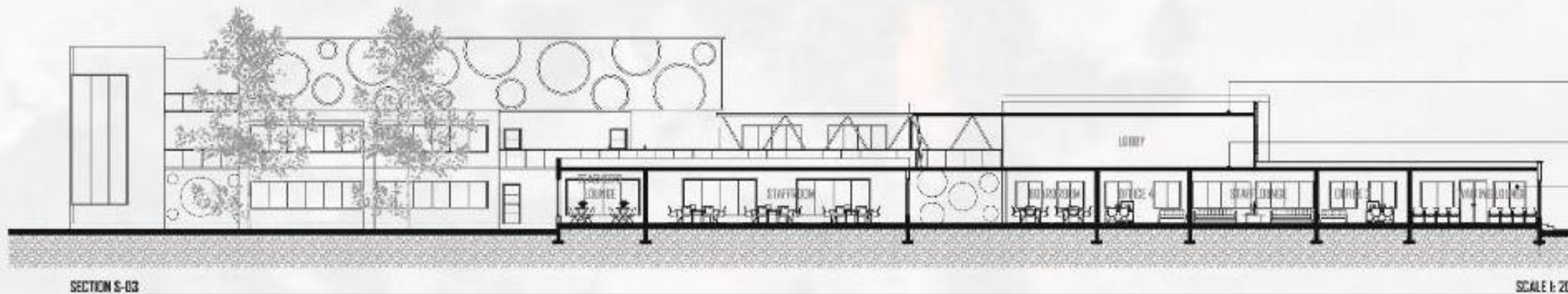
Natural ventilation and daylight are addressed through aluminium-framed windows placed strategically to encourage cross-ventilation and maximize interior brightness. This reduces reliance on artificial lighting and cooling, creating comfortable learning environments while lowering operational demands.

Structural Integrity

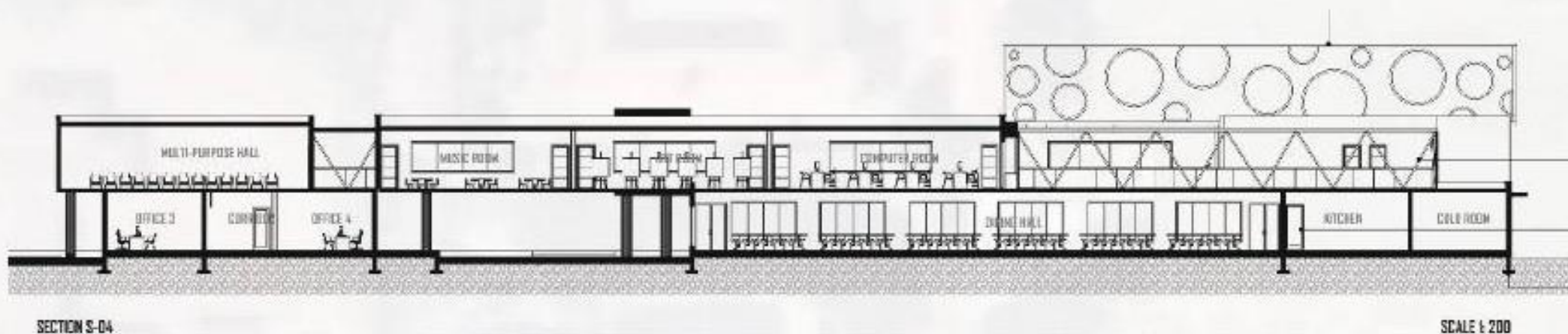
The building relies on reinforced concrete slabs and foundations detailed with DPC and hardcore fill, ensuring long-term stability and protection against ground moisture. The flat roof, sloped at 5° and edged with a parapet and coping, ensures efficient rainwater drainage while maintaining a clean architectural silhouette.

Material and Expression

Slanting steel columns introduce both lateral stability and a distinctive architectural identity, breaking the monotony of vertical supports. Interior finishes such as terrazzo flooring are durable and easy to maintain, making them ideal for high-use educational settings. Together, these elements create a resilient, functional, and climatically responsive design.



- Flat roof at an angle of 5 degree to provide slope for rain water drainage
- 350mm high 150mm thick parapet wall surrounding whole roof plan, constructed with reinforced concrete with plaster finishes for smooth appearance, with 50mm weatherproof coping to prevent water ingress
- 60mm by 80mm indoor terrazzo tile inish screed on 150mm Reinforced concrete slab
- 50mm thick aluminium windows prefabricated and fitted on site according to architect's guidance
- Foundation details to structural engineer details
- DPC to be put under ground floor as per engineer's instructions
- Reinforced concrete slab on masonry blinding with DPM or hardcore, on compact earth.



- Flat roof at an angle of 5 degree to provide slope for rain water drainage
- 350mm high 150mm thick parapet wall surrounding whole roof plan, constructed with reinforced concrete with plaster finishes for smooth appearance, with 50mm weatherproof coping to prevent water ingress
- Slanting Column at an angle of 60 degrees constructed of high grade steel, with protective anti corrosion coating as per architect's guidance
- Veneer frame doors, prefabricated and fitted according to architect's guidance
- Foundation details to structural engineer details
- DPC to be put under ground floor as per engineer's instructions
- Reinforced concrete slab on masonry blinding with DPM or hardcore, on compact earth.

JAMHURI KINDERGARTEN



JAMHURI KINDERGARTEN



ELEVATION E-01 : ALONG THE FRONT OF THE KINDERGARTEN AND ELEMENTARY

SCALE 1: 200



ELEVATION E-02 : ALONG THE BACK OF THE KINDERGARTEN AND ELEMENTARY

SCALE 1: 200

PP1 and PP2 classrooms positioned on opposite sides with central washroom providing convenient access for both groups.

Dedicated nap room supports essential rest periods required for young children's daily routine.

Each classroom features central carpet area for group activities and story time gatherings.

Activity tables arranged around perimeter enable diverse learning stations and small group work.

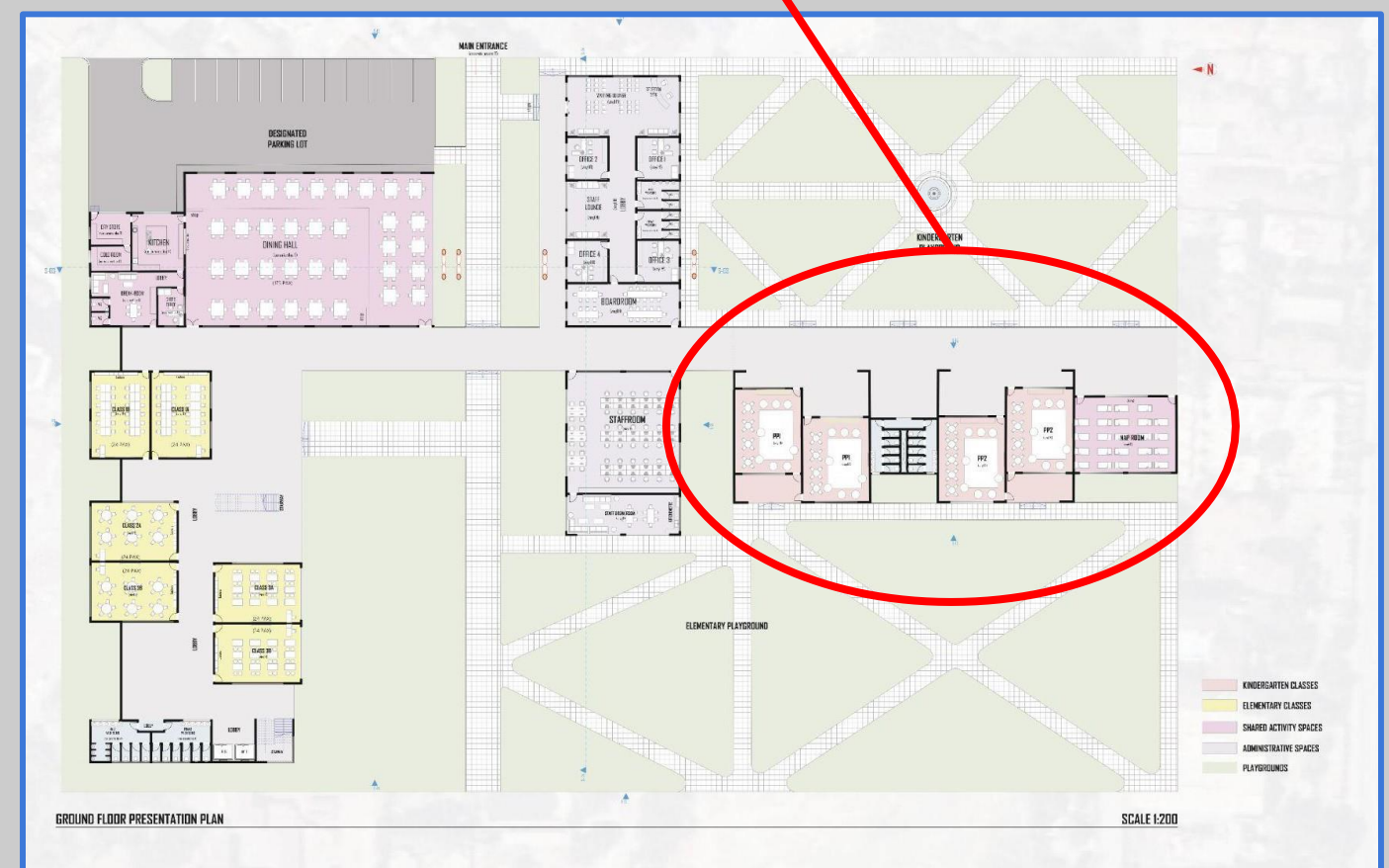
Bag storage areas maintain organization and teach children responsibility for personal belongings.

Small verandahs outside each classroom extend learning space outdoors and provide covered transition zones

Central washroom placement ensures easy supervision while serving both classrooms efficiently.

Compact layout promotes teacher oversight across all spaces while maintaining distinct functional zones

The kindergarten has a dedicated playground that ensure the children can be easily supervised during play..



GROUND FLOOR PRESENTATION PLAN

SCALE 1:200

JAMHURI KINDERGARTEN



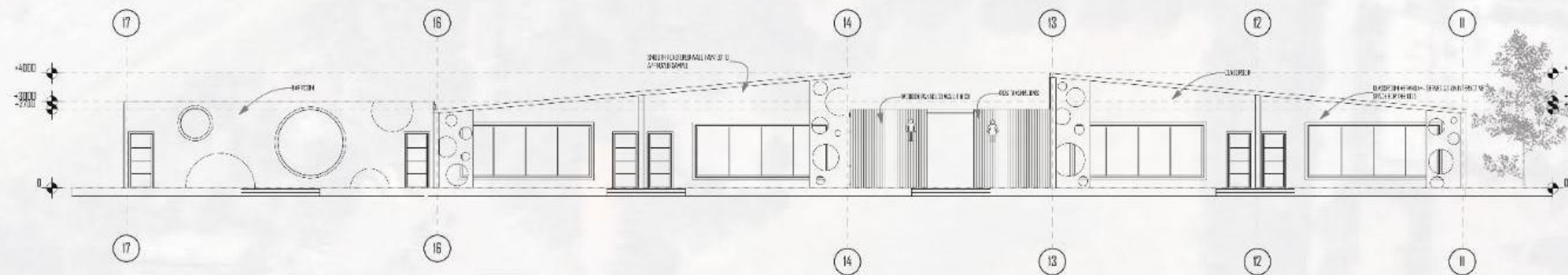
ELEVATIONS E-07: KINDERGARTEN FRONT ELEVATION

SCALE 1: 200



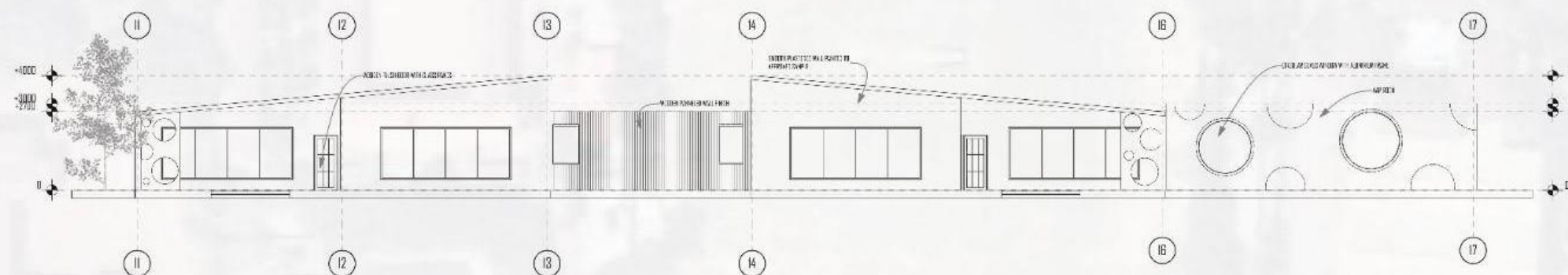
ELEVATIONS E-08: KINDERGARTEN BACK ELEVATION

SCALE 1: 200



ELEVATION E-07: ALONG THE FRONT OF THE KINDERGARTEN

SCALE 1: 100



ELEVATIONS E-08: ALONG THE BACK OF THE KINDERGARTEN

SCALE 1: 100

The kindergarten elevations showcase a playful, child-friendly design with vibrant color blocks in turquoise, orange, and yellow that create visual interest and wayfinding cues for young users.

Varied textures and materials including smooth rendered surfaces contrasted with natural wood elements create tactile diversity that engages children's sensory development.

The roof combines flat sections over common areas with pitched shed roofs over the classrooms, creating visual variety and better natural light for learning spaces.

Special round windows add a playful touch that makes the building more interesting and child-friendly



Dr. Rehab Hamdi Elnaggar (PHD), EEE-EES

Rehab Hamdi Elnaggar is a lecturer, architect and urban designer with 25 years of academic and professional experience. She has been a lecturer at Kenyatta University since 2021. Dr. Elnaggar began her academic journey by earning a Bachelor's degree (BSc Hons) in Architecture and Urban Design from Ain Shams University in 1997. She furthered her education by obtaining a Master's degree (MSc) from the same institution in 2007 and a PhD from Cairo University in 2015. Dr. Elnaggar's teaching career spans nearly two and a half decades, including her tenure at Arab Academy for Science, Technology and Maritime Transportation (AASTMT) from 2000 to 2019 and at AI Shorouk Academy from 2016 to 2019. Throughout these years, she has demonstrated an unwavering commitment to education and the advancement of architectural knowledge. In parallel with her academic endeavours, Dr. Elnaggar has developed a robust professional practice. Since her graduation, she has designed and supervised the implementation of numerous significant and specialized projects, ranging from hospitals and residential towers to resorts, schools, private residences, showrooms and a variety of interior design projects. Her dual career as an educator and practicing architect highlights her dedication to both the academic and practical dimensions of architecture and urban design.



Prof. Arch. Paul Mwangi Maringa (PHD), CBS, FAAK, MKIP

He is an Adjunct Professor of Architecture and Planning at JKUAT, KU and UoN, with 36 years of academic and professional experience. He has taught various courses, published widely, and served as editor for academic journals, and research books. Maringa has also worked as a consulting architect/planner for government and private firms. He is a registered architect and member of several professional bodies. Additionally, he has held senior expatriate roles in Kigali, Rwanda, serving as Ag., Deputy Vice Chancellor AA in KIST; technical expert & master trainer, associate project team leader (SCE) & Senior Expert project management and planning in WDA. He was a long serving State Officer - Principal Secretary in Kenya's Ministry of Transport, Infrastructure, Housing, Urban Development, and Public Works, in three of its five state departments. He has considerable expertise in sustainability, urban growth management, and TVET planning.

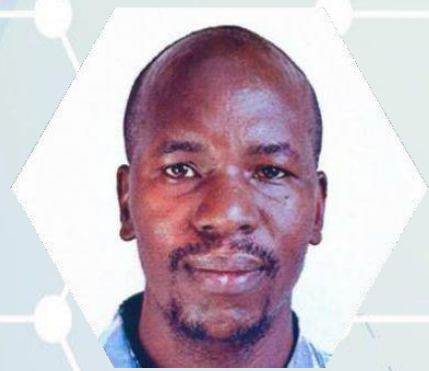
Google Scholar: https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Paul+Mwangi+Maringa&oq= Orcid:

<https://orcid.org/0009-0007-3471-8028>.

ResearchGate: <https://www.researchgate.net/profile/Paul-Maringa-2/publications>

Academica.Edu: <https://jkuat.academia.edu/PaulMwangiMaringa>

Amazon: https://www.amazon.com/Books-Prof-Paul-Mwangi-Maringa/s?rh=n%3A283155%2Cp_27%3AProf%2BPaul%2BMwangi%2BMaringa



Arch. Robinson Manguro

Robinson Manguro is a registered Architect with 19 years of practical experience in architectural design, supervision and project management within the East African region (Kenya, Uganda, Rwanda, DR Congo and Tanzania). He is a PMP Certified Project Manager with 10 years' experience at senior management level and has participated in International Conferences, Trainings and Workshops. He holds a masters in Architecture for Health from Sapienza University of Rome, a master of Arts in Project Planning and Management as well as a bachelor of Architecture from the University of Nairobi. He has a passion in healthy designs and affordable housing. He also has keen interest in education and is currently engaged as an adjunct lecturer at Kenyatta University department of Architecture. He has a passion for mentoring young people and has lectured at Kirinyaga University, the Technical University of Kenya and Maseno University.



Landscape Arch. Regina Wango Kasau

A Landscape Architect and Lecturer at Kenyatta University, Department of Architecture & Interior Design, specializing in Environmental Design. With a robust academic foundation, that includes a Master's degree in Architecture (Environmental Design option) and a Bachelor's degree in Landscape Architecture, Regina conveys a profound understanding of how built and natural environment intersect to effect ecological and human wellbeing. Her works emphasize the incorporation of sustainable principles into landscape and architectural design, specifically regarding how spaces can support emotional well-being. Among her published works include:

- 1). Inmates' perception of environmental factors affecting psychological well-being: a case of Kamiti maximum security prison in Nairobi, Kenya. *Journal of African Interdisciplinary Studies*, 8(10), 121-140.
- 2). The built environment of Kamiti maximum security prison, Nairobi: implications for rehabilitation and psychological well-being. *East African Journal of Interdisciplinary Studies*, 8(1), 176-191. <https://doi.org/10.37284/eajis.8.1.2865>.
- 3). Thermal comfort in urban open spaces in the tropics: a case of Nairobi County, Kenya. *Innovare Academic Sciences*.

Thesis supervised:

Inclusive design on gender diversity in sports grounds: a case of Stima Sports Club, Nairobi, Kenya.

Biophilic design enhancing recovery of drug addicts in rehabilitation centres in Murang'a County.

Architecture on human-wildlife coexistence in safari lodges: a case of Nanyuki, Kirinyaga County, Kenya.

