Architecture portfolio

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DISSERTATION PROJECT :KAJIADO WEST TECHNICAL & VOCATIONAL COLLEGE

PROJECT BACKGROUND

For significant economic growth a country has to invest in human development. A prudent government assigns priority to human development in its policy formulation. One of the important component in HD is the technical vocational education and training (TVET).

TVET refers to education and training that prepares you for employment. In 2013 Kenya established the Technical and Vocation Training Act, to provide for establishment of technical and vocational education training system and to provide governance and management of institutions offering technical and vocational training.

Vision 2030, the country's development blue print, aims to transform Kenya into a newly industrializing "middle income economy by the year 2030.To Meet this target Kenya must avail a work force that is highly skilled, creative and innovative. TVET is recognized to play a major role in the preparation of such man power.

With the introduction of the Act in 2013,the government has shifted its focus on building and equipping new technical schools that conforms to international standards, infrastructural development that is a prerequisite for development of this skills.

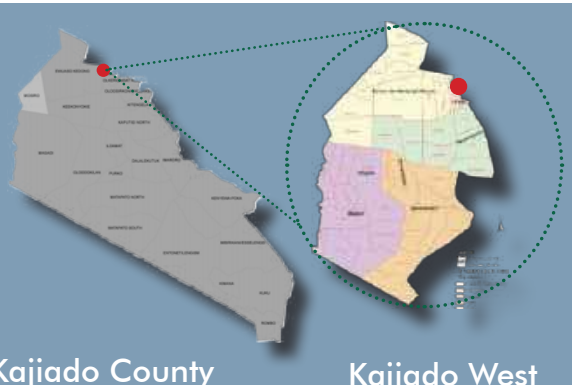
PROJECT BRIEF

Design of a technical training college, one of its kind in Kajiado West,and fully equip it with proper equipment necessary for dissemination of skills that meets the demands of the job market. The college is going to be a spring board for the country's vision 2030, in recent times the government has identified 4 pillars that will catalyze growth this are Affordable Housing, Manufacturing, Food security and universal health care,for attainment and realization of this targets skilled man power is a prerequisite, thus provision of infrastructure where attainment of necessary skills needed to fuel the above mentioned sector is of much importance.

The Site

Africa

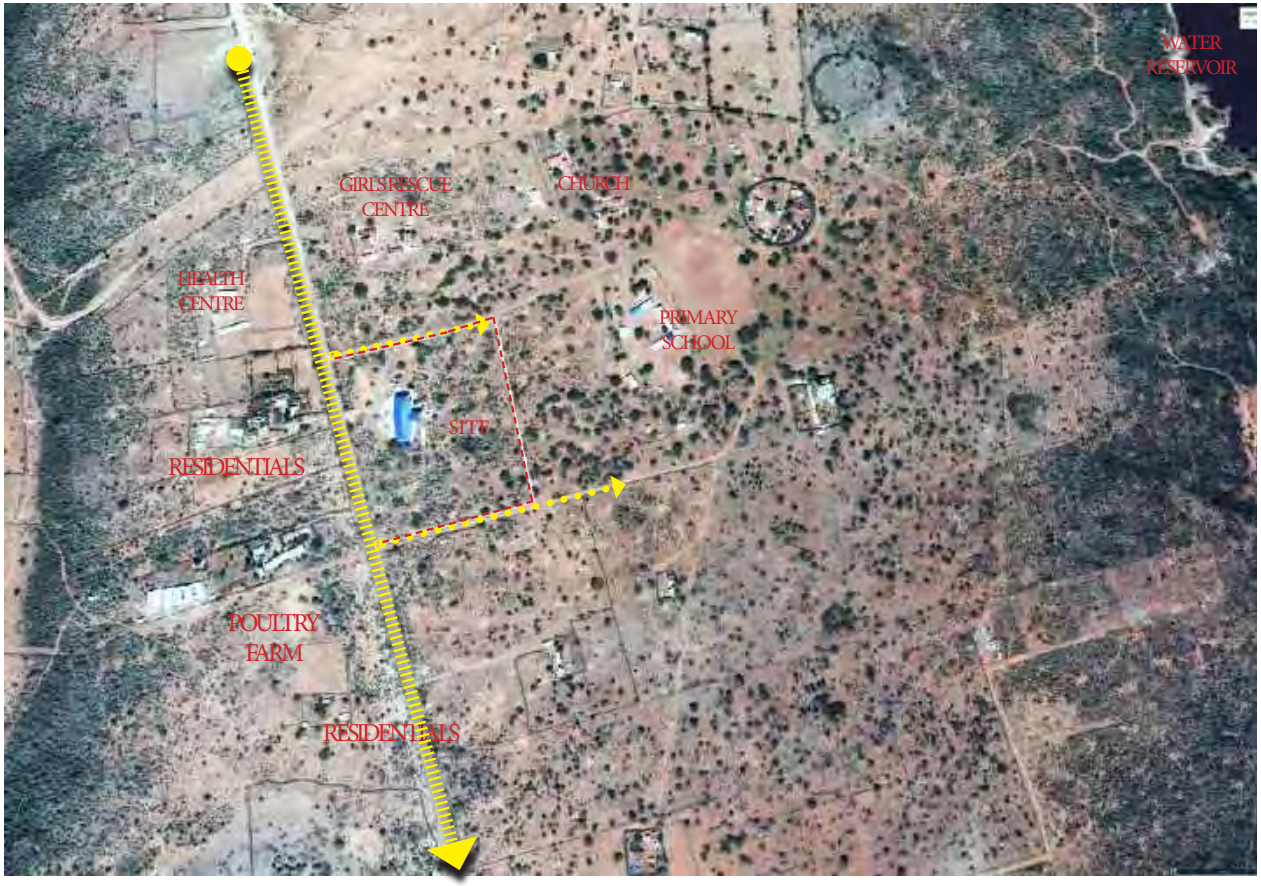
Kenya



Kajiado County

Kajiado West

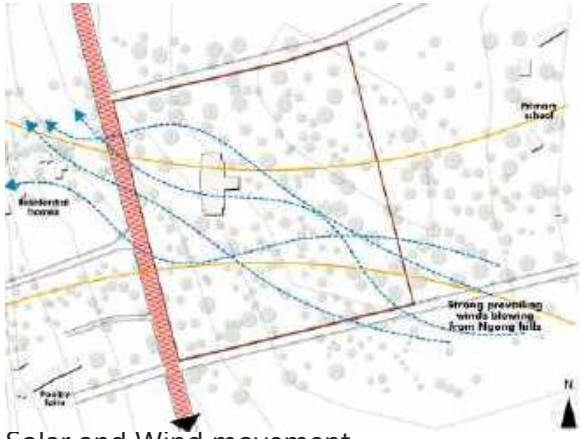
The site is located in an area called Oloshoor Oibor Along Kimuka-Kisames road and apprx. 4 kilometers from Kimuka town in kajiado west constituency,Kimuka is approximately 18 Kilometers from Ngong town. The site is an 18 Acres piece of land along the Ngong-Magadi Road an all-weather road which is currently being tarmacked. The site is flat and dotted with shrubs and Acacia trees.



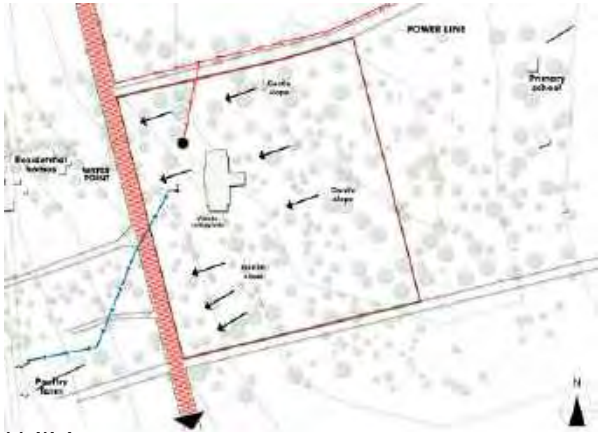
SITE ANALYSIS

The site lies in the savanna climate zone This type of climate is located between Semi-Arid and the Highlands Zones The predominant forms of vegetations are dry woodlands and grasslands. The zone experiences very high diurnal temperature and chill nights. Annual rainfall varies from 895 mm to 1148 mm. As the rainfall amount decreases the vegetation dries up and some shade their leaves.The mean annual relative humidity at 1500hrs vary from 43%at to 55% at seasonal fluctuations are closely related to the rainfall. The annual mean minimum and maximum temperatures range from 19.4 C to30.5 C (altitude 560 m) while the diurnal temperature range is 11.0 – 13.5 c.

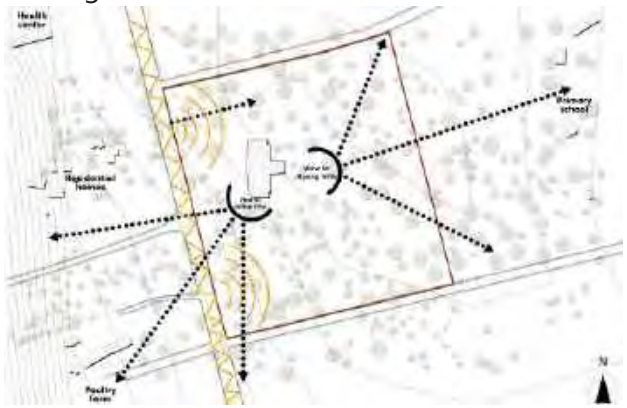
Existing structure & Vehicular access



Solar and Wind movement



Utilities



Sensory: Views and Noise

Topography

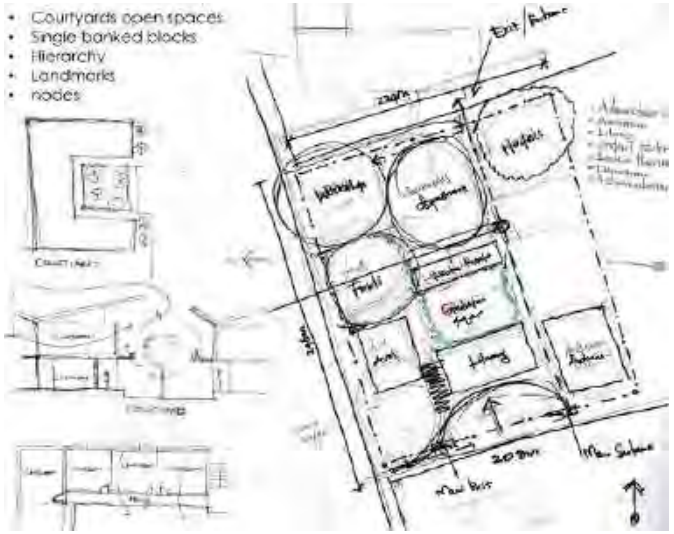
Vegetation

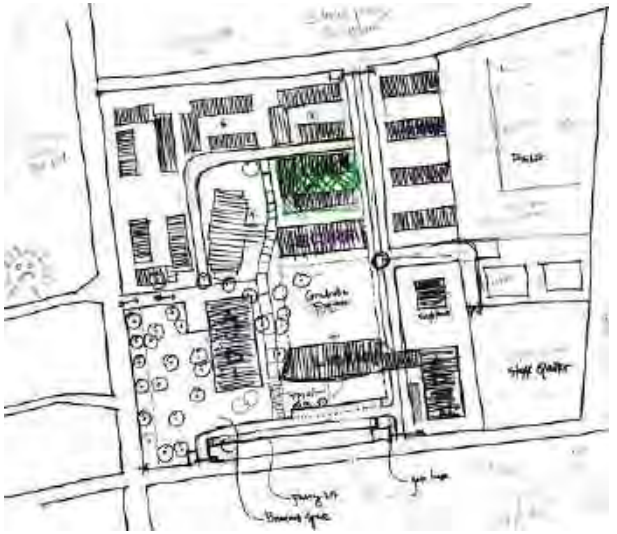
Conceptualization + Master Planning

The pre-design studies taken help shaped the design direction and prioritized what the design should articulate. Kajiado is a hot and dry zone. Human comfort is key especially for spaces where learning is taking place. This shaped greatly the master plan design other factors like,privacy gradient also played a role.

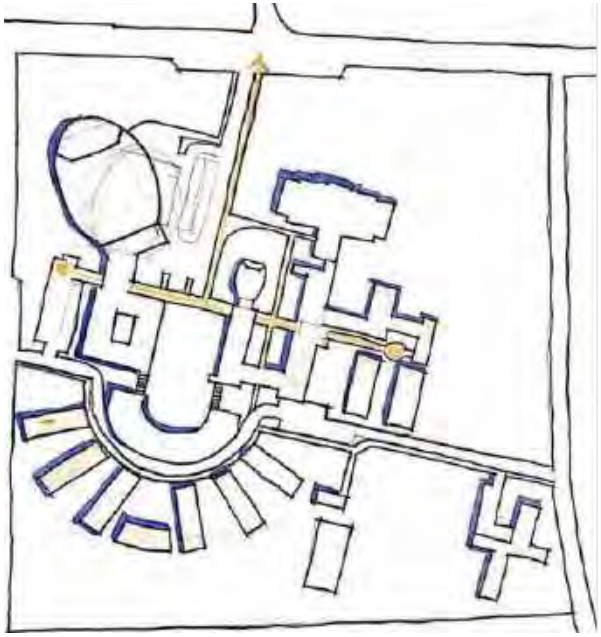
In a typical institution learning takes place in varied spaces on key space where tremendous discussion take place is the outdoor spaces. This is where spontaneous interactions between students and lecturers of different faculties happen. The Master plan accommodates a lot of Courtyards which apart from being discussion and relaxation spaces also doubles up as an oasis / sheltered space with its own micro-climate.

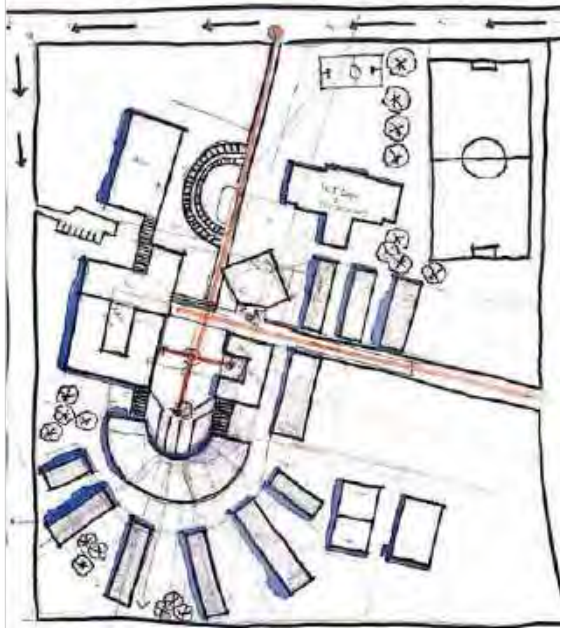
Being an academic institution of its kind in a remote town the architect wanted to set precedence for any other future development . simple but eye catchy facade design that are functional and also fit within context were adopted



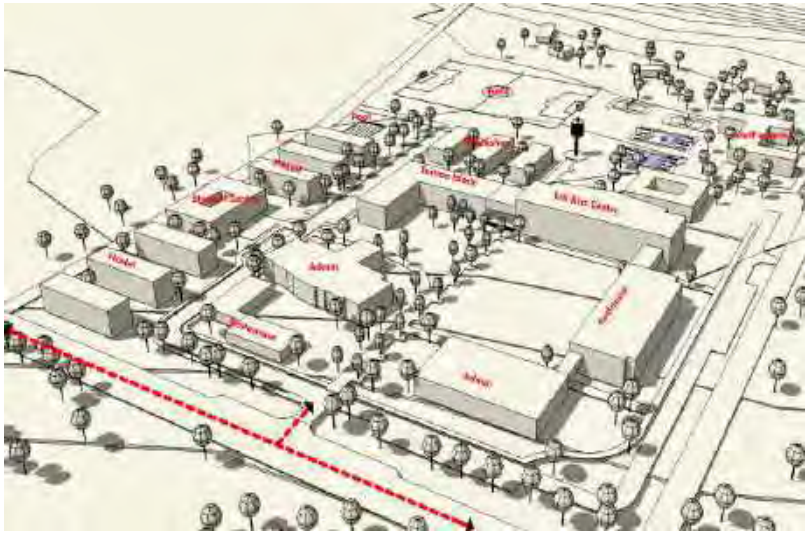


Ideation





Master plan Iterations

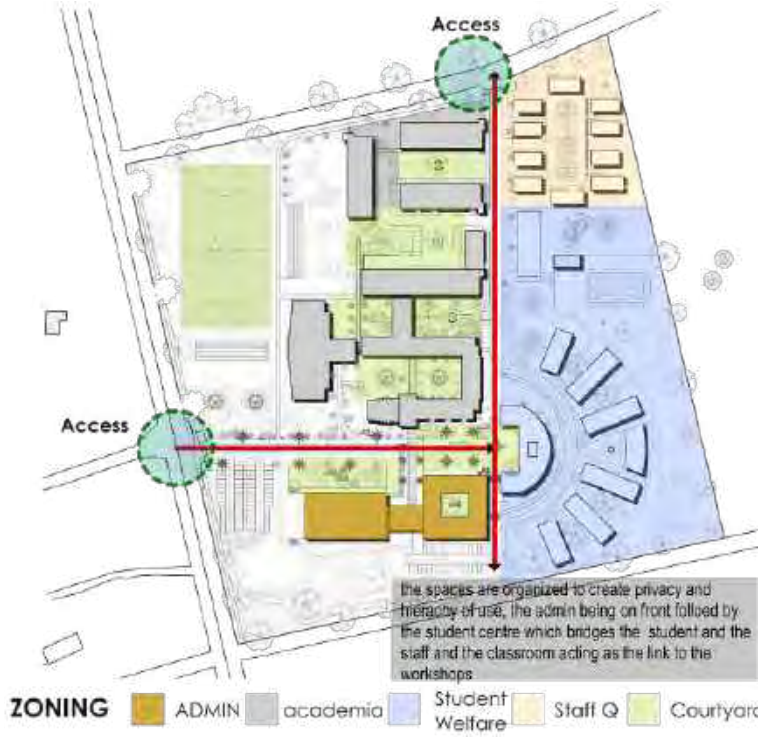


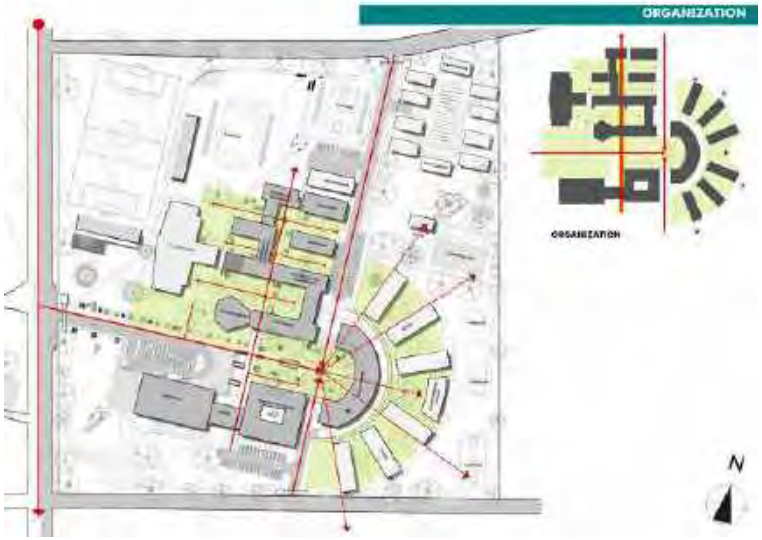
Setup in a rural center with hot dry climate the designer intended to design a school which offers the learners with an apt and conducive learning environment. The design sought to pave the way and give direction in matters design and construction in the region.

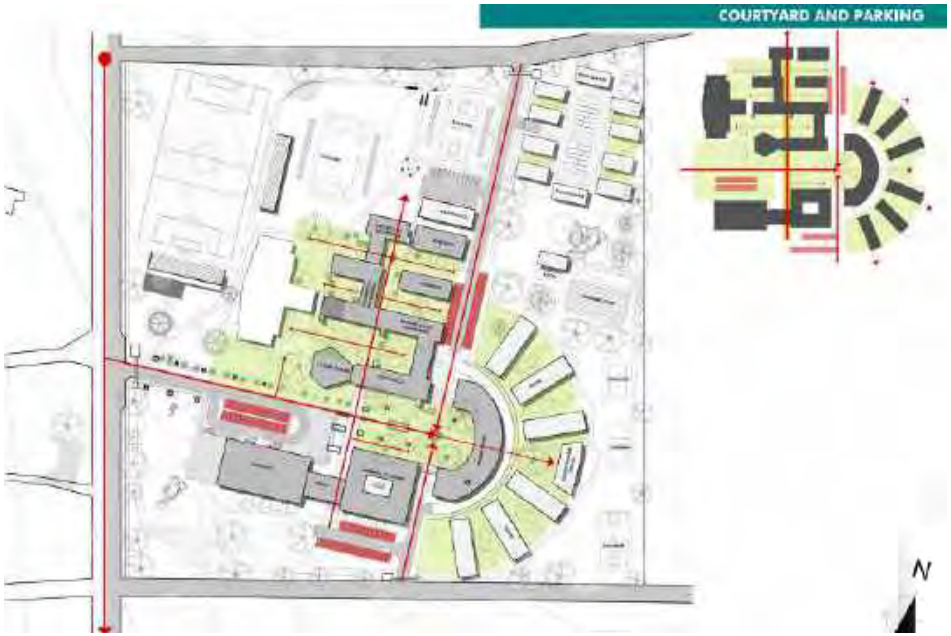
The concept is having the learning spaces around pockets of landscaped courtyards, these courtyards are intended to foster and encourage out of class discussion and interactions between students of different faculties, it also improves the experience of movement through campus.

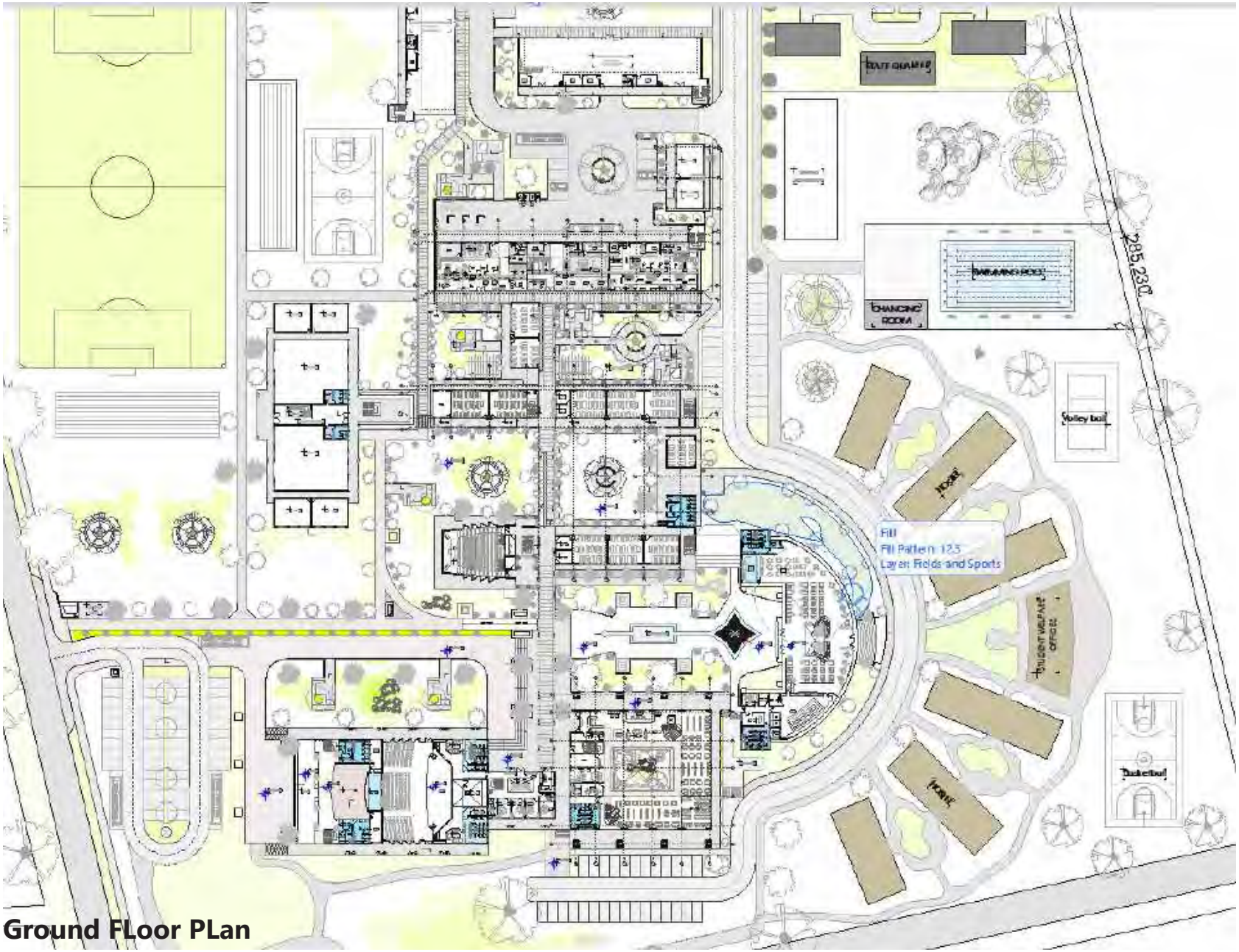
The buildings are narrow and elongated this helps reduce surface area exposed to solar radiation thus minimized heat gains. The planning zones the school into four zones namely; Academia,Student welfare,Administration, and staff area. The layout is design to create a sequence is both hierarchy of spaces and privacy with the administration and more public spaces fronting the road and the more private spaces on the rear as can be seen from the layouts above.

MASTER PLAN ANALYSIS + MASTER PLAN



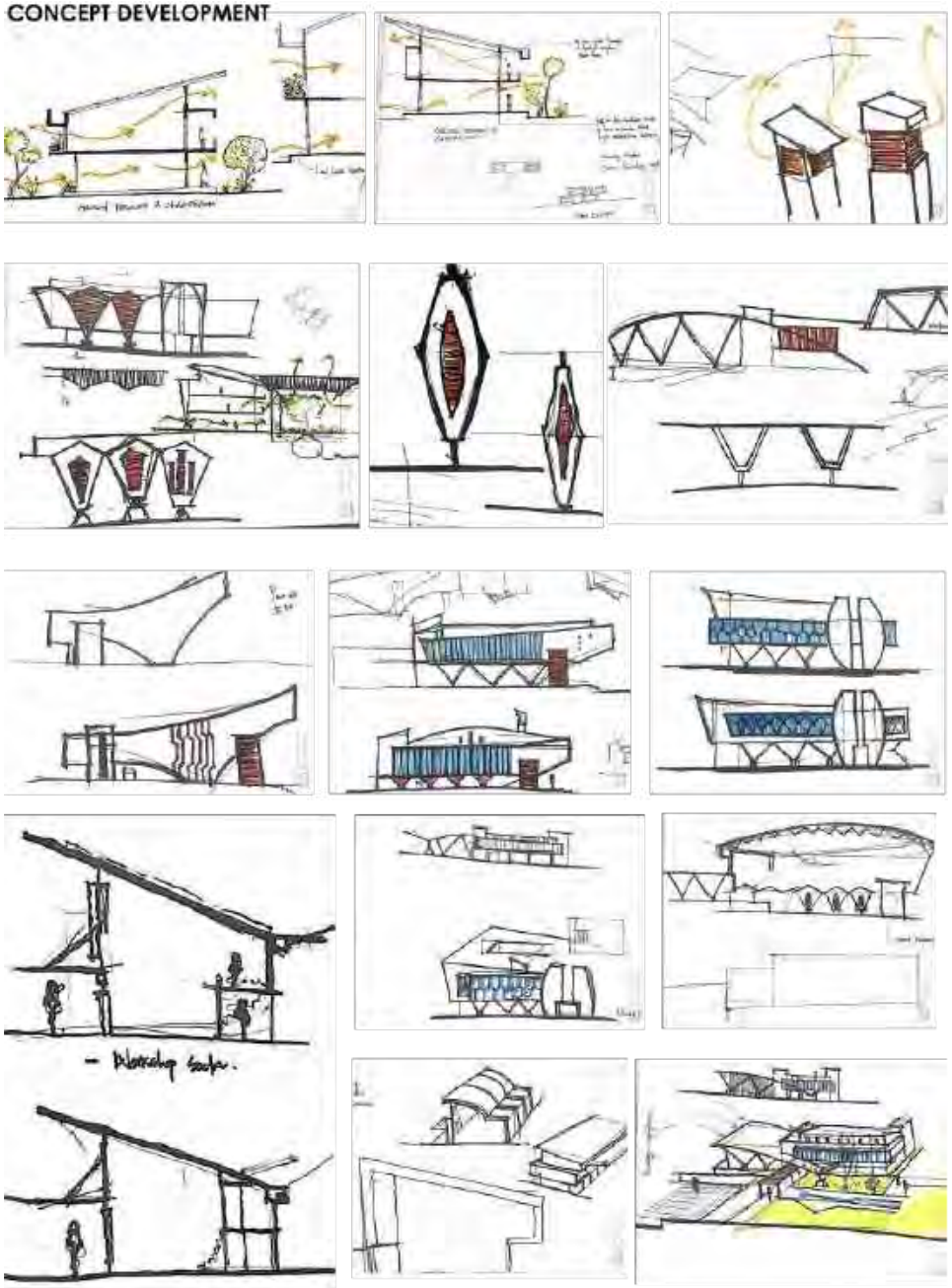






Ground FLoor PLan

FORM + FACADE DESIGN



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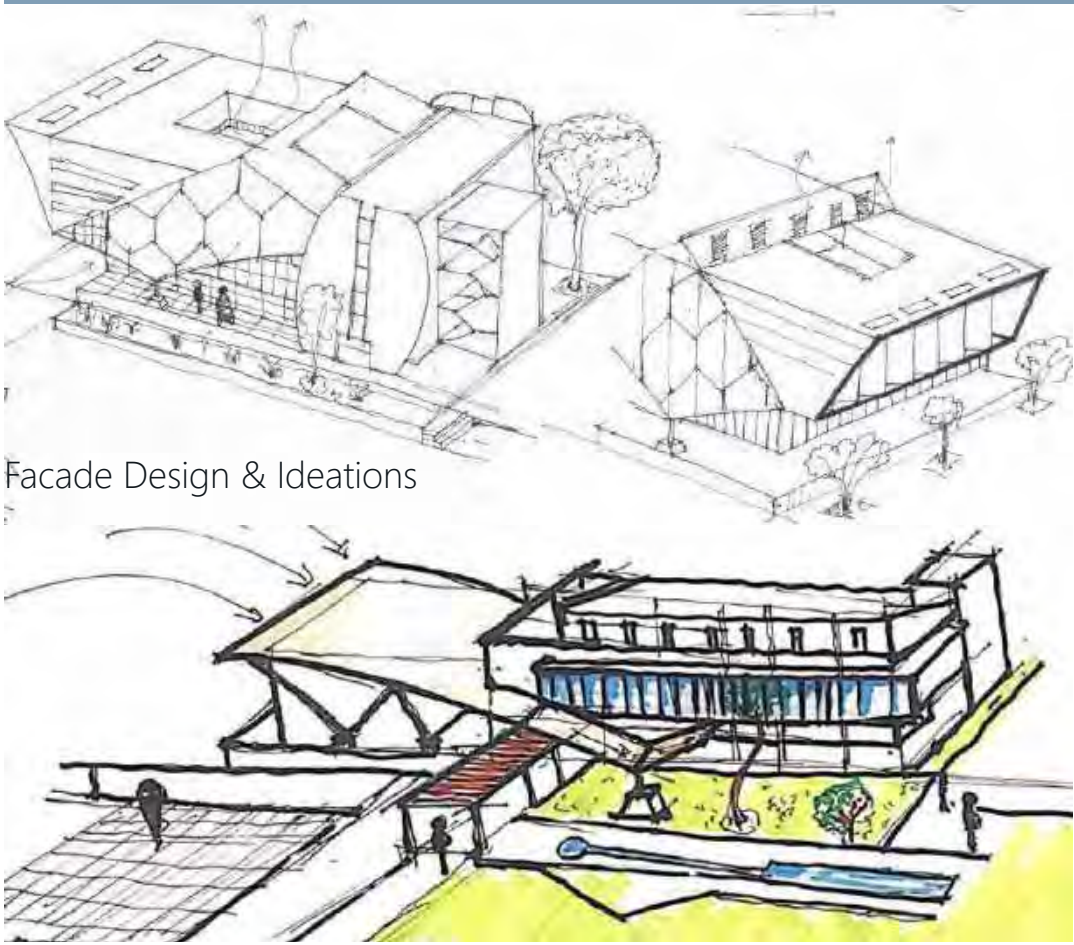
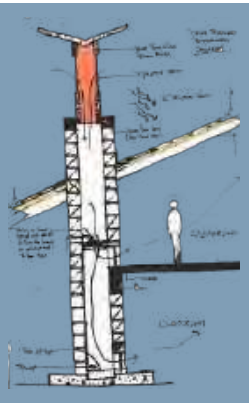
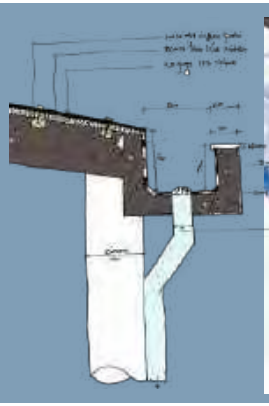


Facade Design & Ideations





Classroom + Courtyard

Student Centre

Classroom

Courtyard

Auditorium

The Form

The design is simple with a monopitch roof that harvest the little rain experienced.

All the windows are recessed and articulated with a pojection that doubles up as sunshading element. This design element has been used all across campus to create a common facade language/pattern and to also create character.

Light colored finishes together with the locally available brick consititute the main materials used.

Classrooms

Library

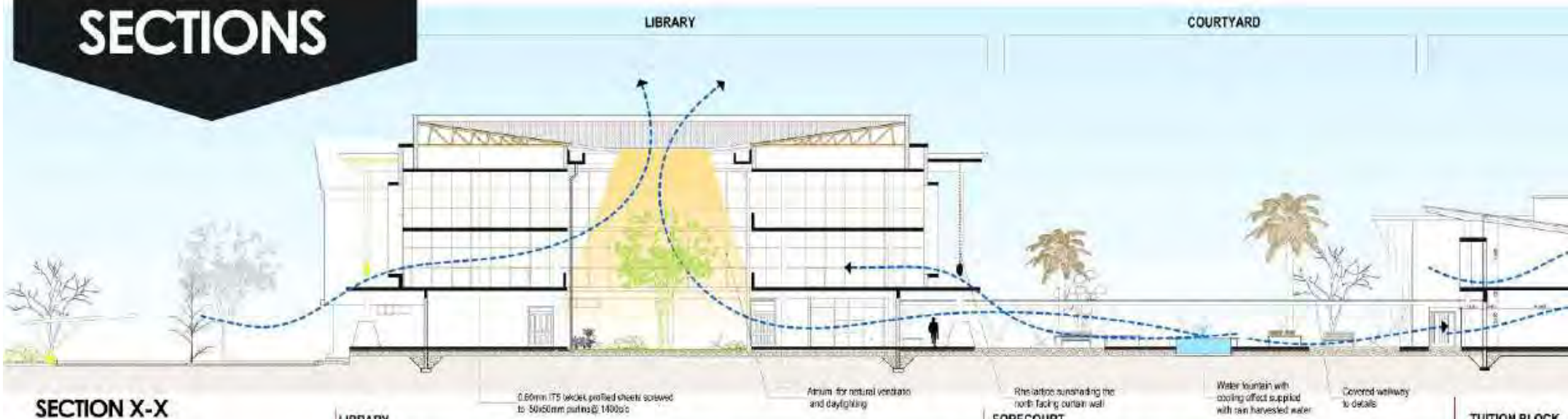
MASTER PLAN

Thorough Fare

Workshops

Student Center

SECTIONS



SECTION X-X

LIBRARY

The library is a skeleton frame structure with beams and columns forming the main frame ,masonry walls together with aluminium partions are used to divide the spaces.The main openings are on the north and south facade and are sunshaded with 'V' shaped lattice. The cental part is an atrium which ventilates and light the interior spaces its also used as a reading space.

FORECOURT

The forecourt is an important foci with relaxation spaces parked with benches and a water feature, the spaces has both soft and hard lanscape. the water fountain helps cool the library.,student centre and the Classrooms as dry air passes through before entering the adjacent spaces.

TUITION BLOCK

The tuition block is a t
ventilation and adequ
windows on the lower
with the thermal chim

SECTION Y-Y

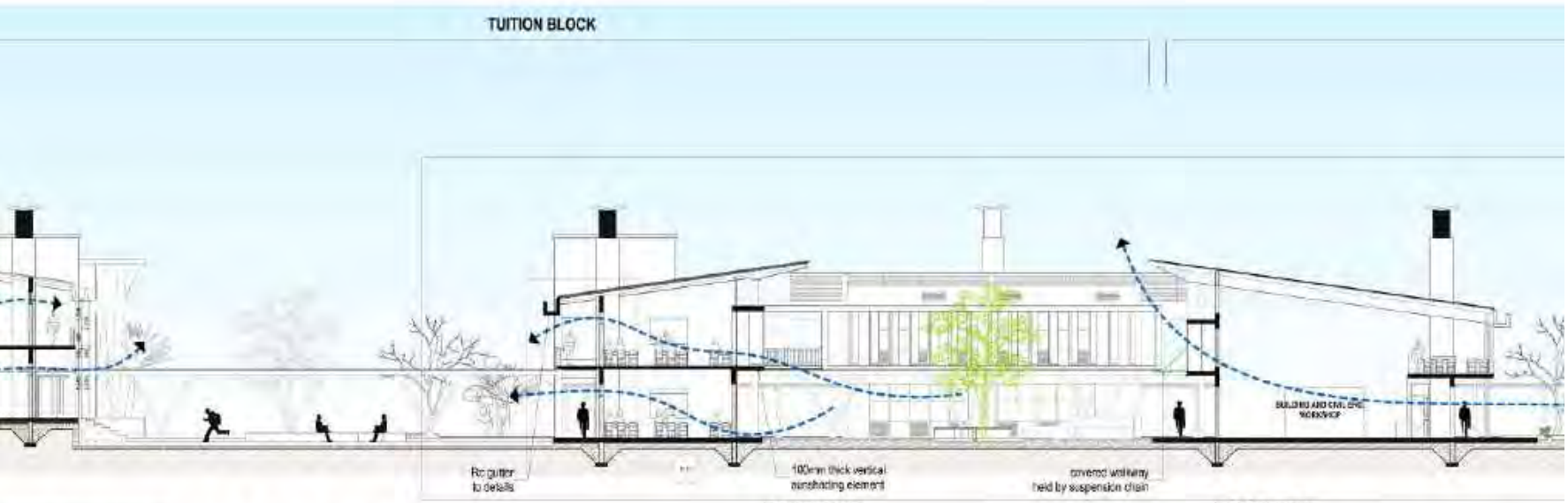
FORECOURT

The forecourt is a breakout space for interaction and chats after a lecture in the auditorium

AUDITORIUM

The Auditorium has a capacity of 800. It is massive structure made of masonry wall,columns and Steel girder as the roof structure.The internal walls have been designed to improve the acoustic of the space

TUITION BLOCK



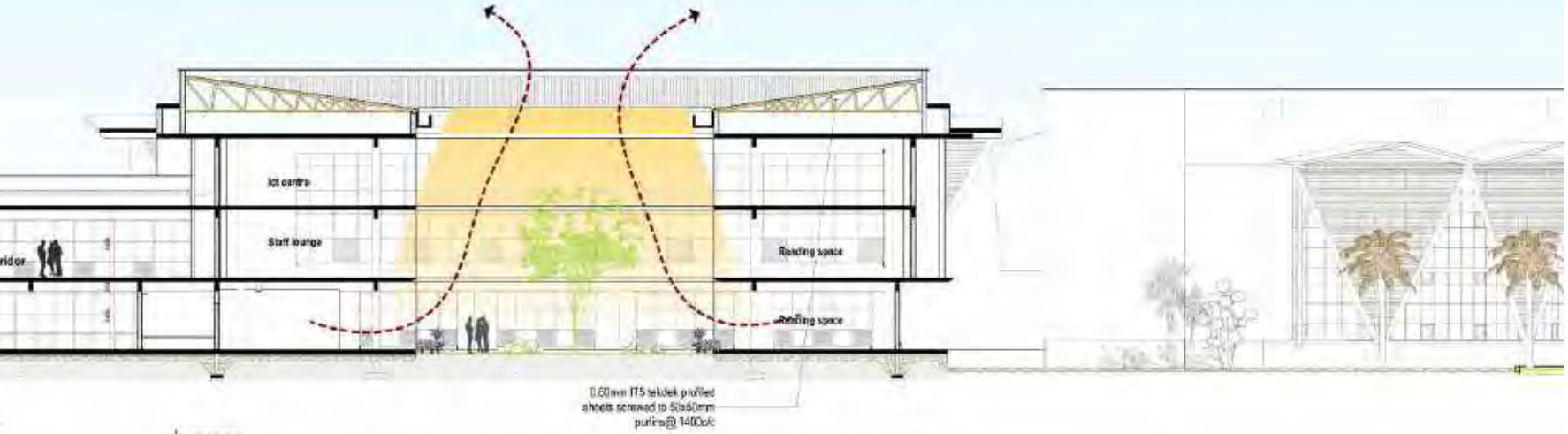
wo level building which is narrow in plan, this allows for cross
ele daylighting which are much needed in a study space the
lever is sunshade by a protrusion on the first floor this together
ney keeps the interior spaces cool trhoughout the day.

COURTYARD

The courtyard is lanscaped with native trees which create suitable shaded spaces to be enjoyed during the day.The trees cuts of the sun from reaching the ground thereby reducing radiant heat and glare.The trees also cools the warm air before entering the classrooms

WORKSHOP

Is a double volume spaces, with a mezanine floor towar
shorter end the headroom helps keep the space cool de
heavy machinery.Thermal chimney and wide shaded wi
allows for cross ventilation and quick dissipation of heat



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CLASSROOMS

ELEVATIONS

WORKSHOP

This is one of the most important space in the institution it is where hands on skills are acquired. Apart from the stores, open workspaces the workshop also has classrooms staff rooms and laboratories

TUITION BLOCK

There are about 30 classrooms distributed to different departments. the classrooms are made of masonry wall, columns, beams and covered with IT5 iron sheets

ELEVATION 01 1:100

LIBRARY

The library is a 3 storey block housing different functions on ground floor is the reception/issuing desk, reading space and carrels. The first floor accommodates more reading spaces, staff offices and the staff lounge. Second floor is the college ICT data centre

FORECOURT

The forecourt is a democratic space designed to boost spontaneous interaction between students of different department and member of staff. It forms the library and student centre creating a focal breakout space which essentially forms the heart of the college.

TUITION BLOCK

The tuition block is a two level building with classrooms on both levels The circulation is on one side this makes which faces the courtyard on this side the designer deliberately erected large opening to control noise level. the window are sunshaced and design to boost cross ventilation

COURTYARD

The courtyard bridges the quite classrooms and the workshops it is landscaped to create pocket of relaxation spaces which are ideal for continuation of discussion of lectures and practical sessions

WORKSHOP

This is one of th
hands on skills,
workspaces the
laboratories.

ELEVATION 02 1:100

GATE

The gate house is the main entry to the college it houses the security office, holding cell and waiting space

AUDITORIUM

The auditorium is the most prominent building on campus both by design and size it has a capacity of 900 and has been design to fit in the hot and dry climate of kajiado west the coffee lounge on the main entrance serves as a waiting space

ADMINISTRATION

The admin is sandwitched between the library with some functions overflowing to other buildings its visible from the main entrance for ease of access by the public

LIBRARY

The library is a 3 storey block hous
desk,reading space and carrels .Th
the staff lounge. Second floor is the

ELEVATION 03 1:100

STUDENT CENTRE

The student centre is strategically positioned to bridge the more formal administration square and the student accommodation it houses several functions which includes dining spaces,games rooms student leaders offices among others

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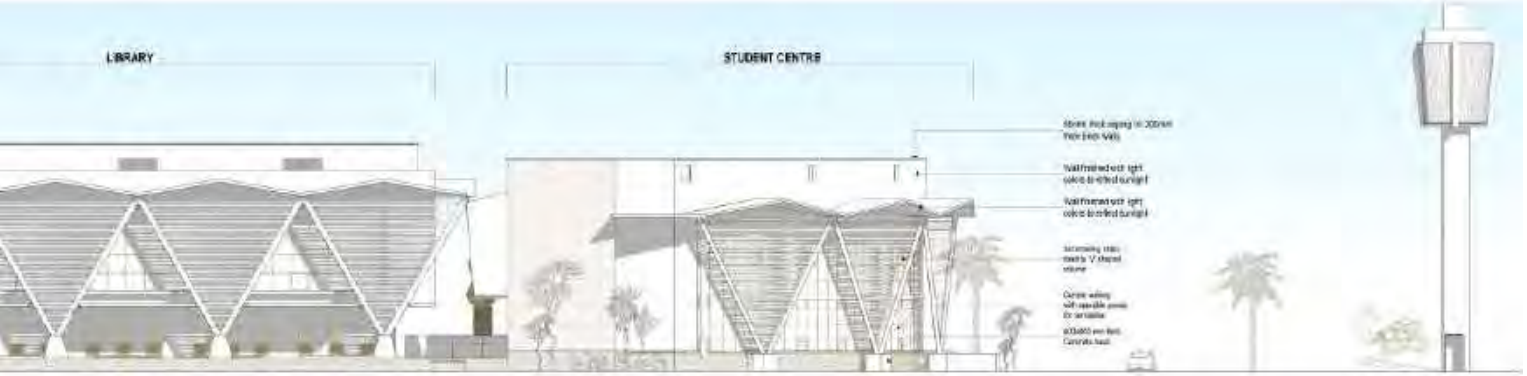
GATE HOUSE

The gate house is the main entry to the college it houses the security office, hosting cell and waiting space



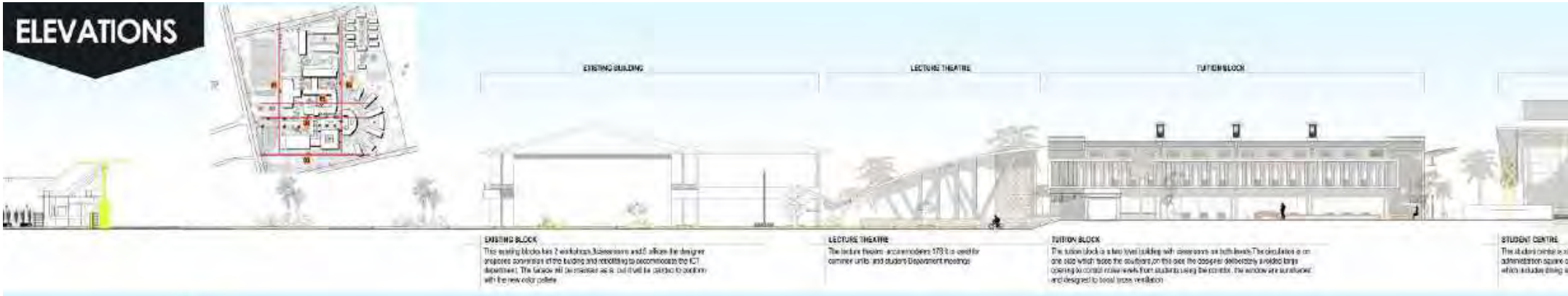
STUDENT CENTRE

The admin is sandwiched between the library with some functions overflowing to either buildings its visible from the main entrance for ease of access by the public

WATER TOWER

15metre high water tower

ELEVATIONS



EXISTING BLOCK
This existing blocks has 2 workshops,8classrooms and 5 offices the designer proposes conversion of the building and retrofitting to accommodate the ICT department. The facade will be maintain as is but it will be painted to conform with the new color palette

LECTURE THEATRE
The lecture theatre accommodates 176 It is used for common units and student Department meetings

TUITION BLOCK
The tuition block is a two level building with classrooms on both levels.The circulation is on one side which faces the southern,on this side the designer deliberately avoided large opening to curtail noise levels from students using the corridor. the window are sunshaded and designed to boost cross ventilation

STUDENT CENTRE
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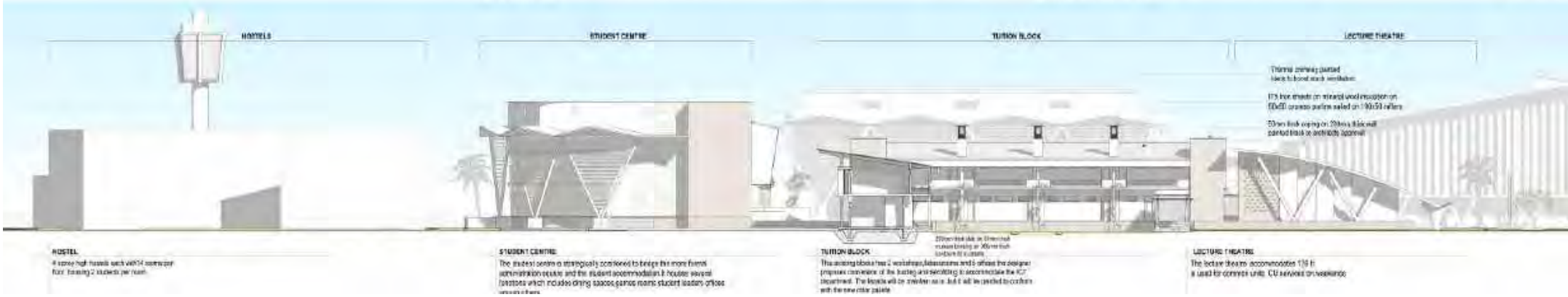

HOSTEL
4 storey high hostels each with14 rooms per floor housing 2 students per room

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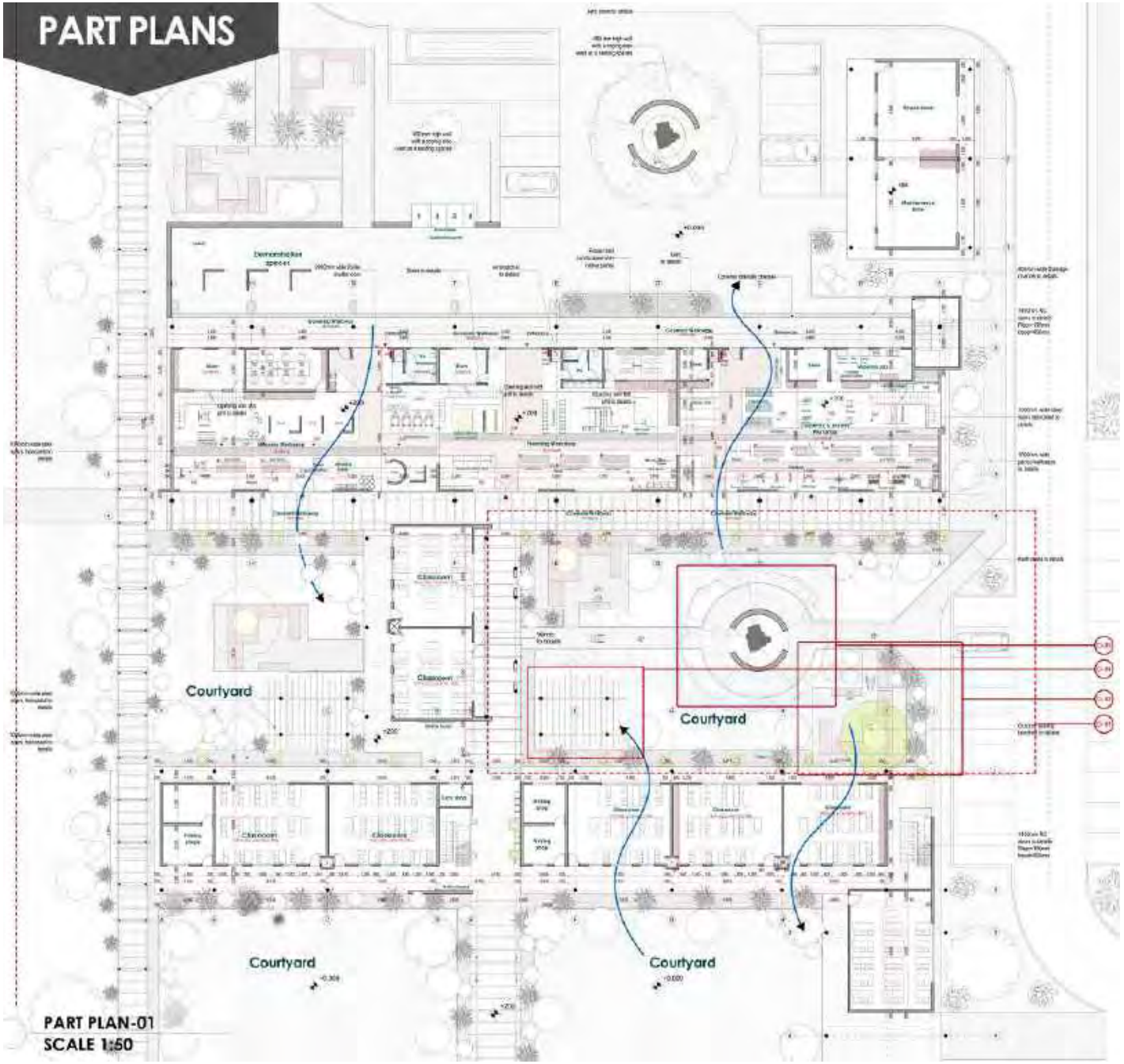
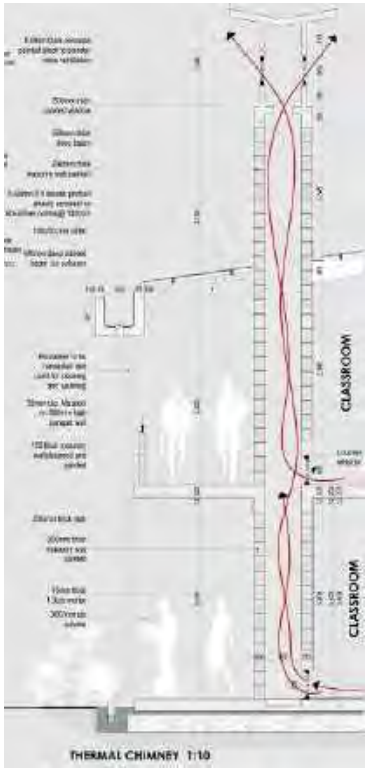
200mm thick cob on 50mm thick
murram blinding on 400mm thick
hardcore fill to details

LECTURE THEATRE
The lecture theatre accommodates 176 It is used for common units. CU services on weekends

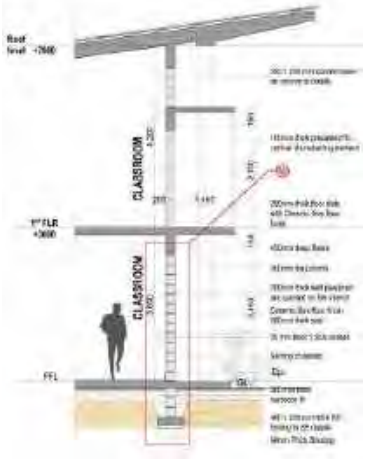
PART PLANS



PART PLAN-01
SCALE 1:50



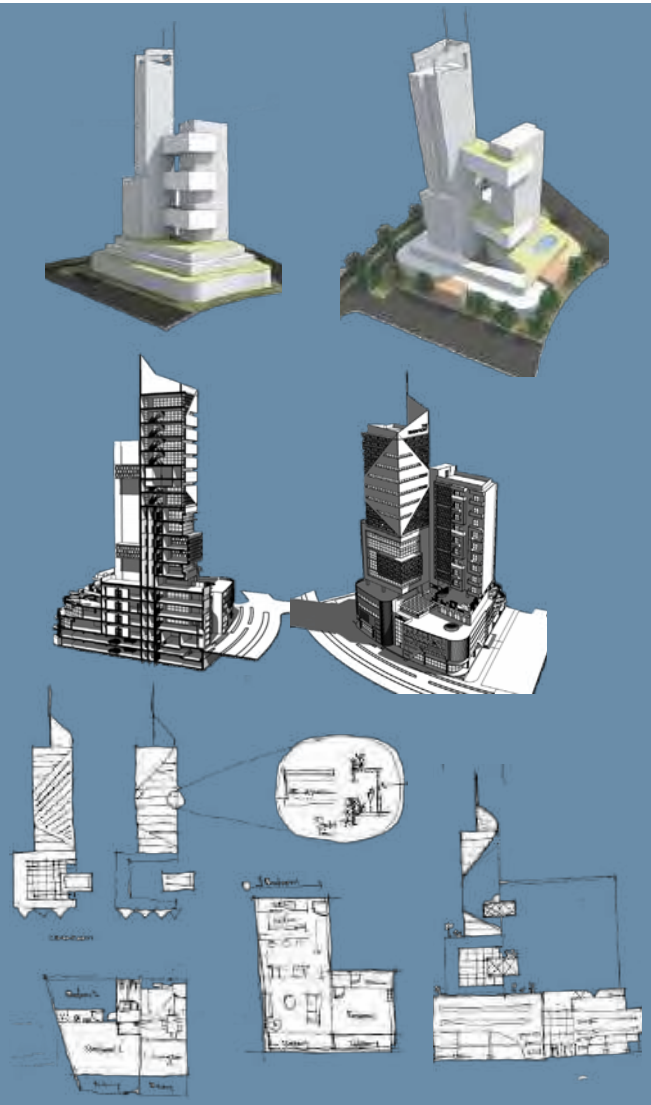
THERMAL CHIMNEY 1:10



MIXED URBAN DEVELOPMENT-YR 5

The proposed urban renewal project site is in Downtown Nairobi on a 35hectare piece of land bounded by race course Rd,quarry road and Pumwani road. Nairobi river cuts through the site,a feature used as datum in the organization of the master plan. The aim is to accommodate enough densities based on current and projected future needs and to also create order, this has been achieved through replacement of the current buildings with mid rise commercial towers and high-rise MUD's. A foci is created by widening and slowing down the river into a shallow pond that will allow organization of activities around the pond

The project involves densification of Kariakor area in Downtown Nairobi this involved Master planning to re-organize circulation arteries, introduce order and to open up the area. With Nairobi river cutting through site the Architect was able to revitalize the river and redesigned the area to have river front developments. A strip of green belt along the river gave the area a breathe of life and a comfortable relaxation park and circulation route for pedestrian.



Ideation & Form Development

The tower consists of a podium which is purely commercial with a mixture of retail spaces,food courts and a mall. The two distinct towers houses residential apartments and offices.

Facade design + articulation

The facade design has taken into consideration the local climate with passive design strategies in place the design stives to strike a balance between functionalism and clean modern iconic feel.

River front design

The facade overlooking the river has been design to take full advantage of views .The cascaded terrace accommodates food courts with view to the river this creates desirable ambiance

Master Plan

Master Plan

The design embraces the Nairobi river and makes it part of the building through connecting arcades, this gives the design a fresh breathe.

PLOT AREA: 1000m²-2500m²
GROUND COVER 80%
PLOT RATIO 6:0
TYPE OF DEVELOPMENT ALLOWED
COMMERCIAL/RESIDENTIAL/LIGHT INDUSTRIES

1.RETAIL AND WHOLESALE
2.ACCOMMODATION(Furnished apartments)
3.consultancy & professional services

The new development will be on a 2500sqm area and will compose retail,wholesale,recreo, entertainment, and accommodation i.e both hotel rooms and furnished apartments, creating New CBD' in downtown Nairobi".Located in the heart of the Development the projects Aims to create vibrance and bring life to this part of town, this will be through revitalization of the neglected nairobi river through creation of ponds, gardens and activities aimed at attracting people to the area are the key concerns of the project.

The river will be cleaned up and used as a major movement corridor for pedestrian moving from the neighbouring estates and the busy Gikomba Market to Ngara,CBD and downtown Nairobi. The projects Capitalizes on this huge human transport create a busy hub with amenities,furnished apartments,retail shops,Luxury hotel suites,parking e.t.c this will be captured through the design of an open podium with arcades and thorough fares to invite the pedestrians into the building.
Functionality,sustainability and openness(to the public) forms the project backbone.

RETAIL AND WHOLESALE

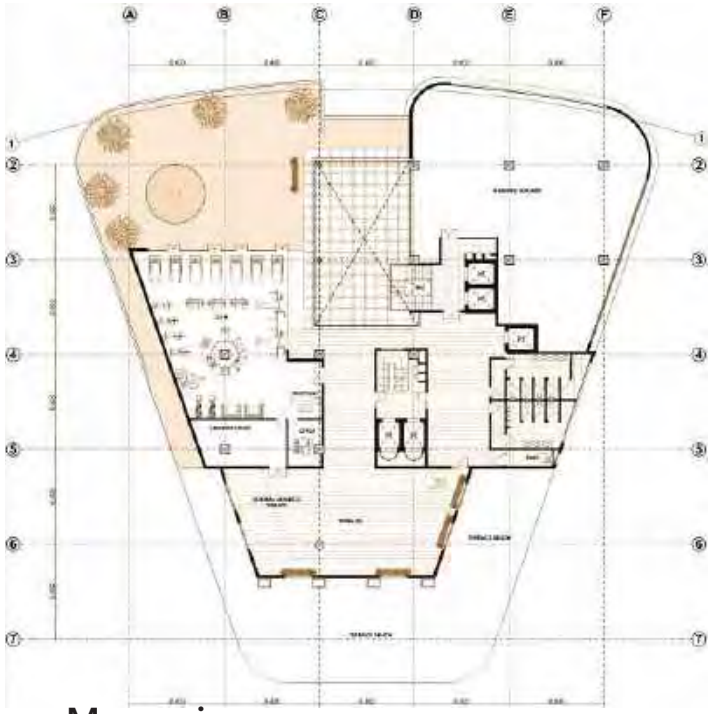
Restaurant
M-pesa
Safaricom shop
Chemist
Gift shop
Boutique
Cafe
super market
Departmental Stores
Atm's lobby
Gaming arcade
Curio shop
Convinience store
Cosmetic shops
Florist
Electronics shop

RECREATION AND ENTERTAINMENT

Cinema Halls
Gaming Arcades
Bowling
Food courts
Swimming pool

FURNISHED APARTMENT
1Bedroom
2Bedroom

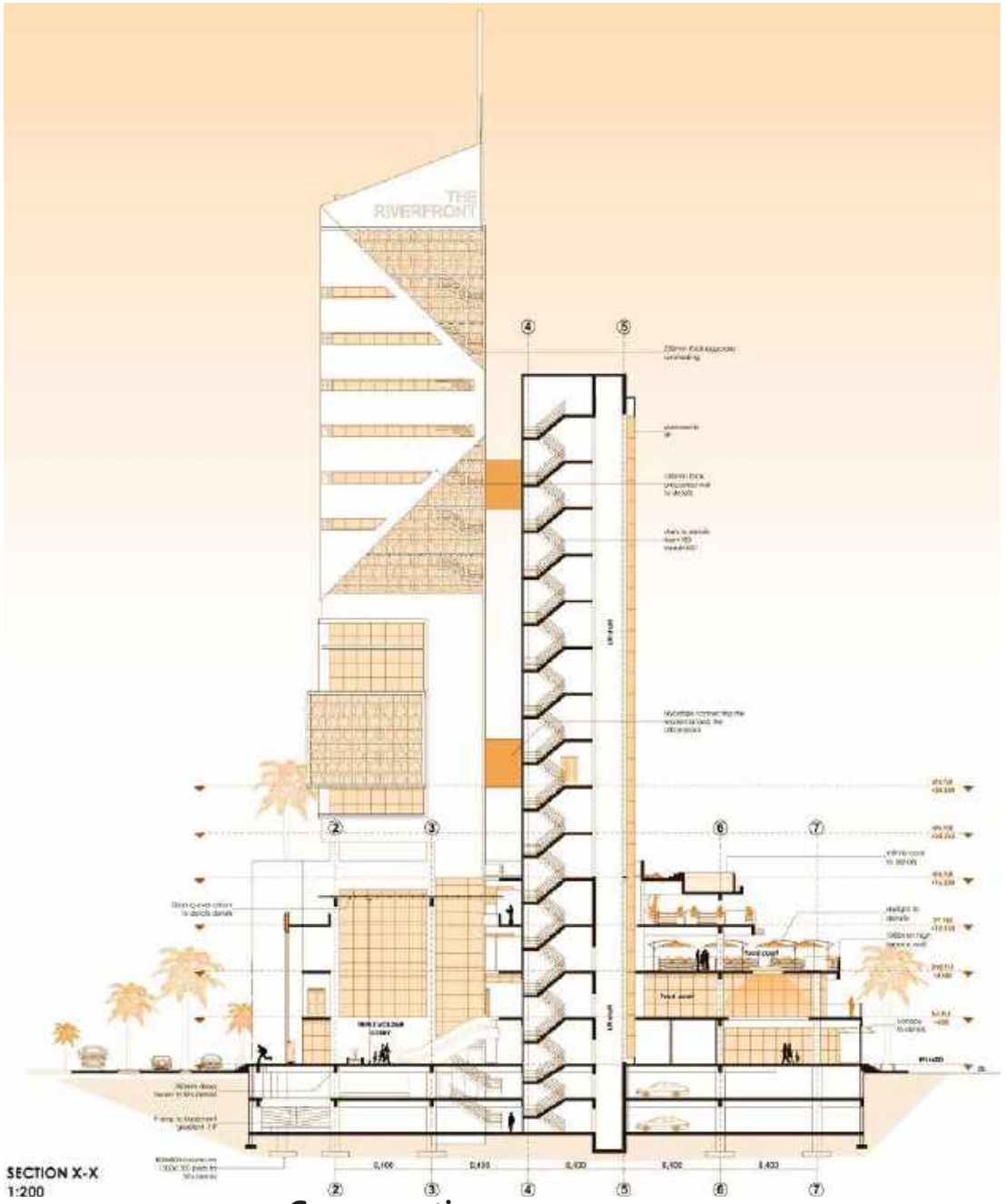
MUD with assorted commercial activities on the lower ground



Mezzanine

Side ELevation

Rear ELevation



Cross-section