

CENTRE OF EXCELLENCE, CRICKET

A THESIS

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

By

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DEPARTMENT OF ARCHITECTURE
SCHOOL OF BUILDING AND ENVIRONMENT

SATHYABAMA

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

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NOVEMBER 2021



DEPARTMENT OF ARCHITECTURE

BONAFIDE CERTIFICATE

This is to certify that this Thesis Report is the bonafide work of Varun.M (37210042) who carried out the Thesis entitled “Centre Of Excellence, Cricket ” under our supervision from July 2021 to November 2021.

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I, **Varun.M** hereby declare that the Thesis Report entitled “Centre Of Excellence, Cricket” was done by me under the guidance of **Ar. Arun** (Internal Guide),

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Varun. M

TABLE OF CONTENTS

CHAPTER NO.	TITLE	PAGE NO.
1	INTRODUCTION	
1.1	INTRODUCTION	1
1.2	NEED FOR THE PROJECT	1
1.3	AIM	2
1.4	OBJECTIVE	2
1.5	METHODOLOGY	2
1.6	DATA COLLECTIONS	2
2	CASE STUDY	
2.1	DATONG SPORTS CENTRE	3
2.2	RAJIV GANDHI INTERNATIONAL CRICKET STADIUM	9
2.3	MERRION CRICKET CLUB	17
3	SITE STUDY	
3.1	LOCATION ANALYSIS	23
3.2	NEIGHBORHOOD ANALYSIS	24
4	DESIGN	
4.1	SITE PLAN	29

4.2	CROWN CRICKET STADIUM	30
4.3	HOTEL	36
4.4	PLAYERS PAVILION	40
4.5	INDOOR TRAINING CENTRE	45
4.6	GYM & BADMINTON COURT	48
4.7	ADMINISTRATION BLOCK	51
4.8	SITE VIEWS	55

LIST OF FIGURES

FIGURE NO.	TITLE	PAGE NO.
2.1	DATONG SPORTS CENTRE	3
2.2	SITE PLAN OF DATONG SPORTS CENTRE	4
2.3	PLAN OF THE INDOOR TRAINING BLOCK	6
2.4	SECTION OF THE INDOOR TRAINING BLOCK	6
2.5	SEATING LAYOUT AND PLAN OF THE PRIVATE AREAS IN THE STADIUM	7
2.6	ELEVATIONS OF THE STADIUM	8
2.7	SECTION OF THE STADIUM	8
2.8	RAJIV GANDHI STADIUM	9
2.9	LAYOUT OF THE STADIUM	11
2.10	NORTH PAVILION	12
2.11	SOUTH PAVILION	13
2.12	EASTERN STANDS	14
2.13	JOINERY DETAILS	15
2.14	TURF OUTFIELD	15
2.15	FLOODLIGHTS	16
2.16	ROOFING	16
2.17	MERRION CRICKET CLUB	17
2.18	THE ROOF OF THE NEW PAVILION	18
2.19	VIEWING AREA	19

2.20	FLOOD DEFENSIVE DIVIDERS	20
2.21	FORM DERIVATION FOR THE ROOF	21
2.22	SITE PLAN	22
2.23	PLAN OF THE PAVILION	22
3.1	SITE LOCATION	23
3.2	5 KMS RADIUS OF THE SITE	23
3.3	SITE DIMENSIONS	24
3.4	CIRCULATION	25
3.5	PUBLIC TRANSPORT	26
3.6	VIEWS AND NOISE	27
3.7	NEIGHBORHOOD ANALYSIS	28
4.1	SITE PLAN	29
4.2	MASTERPLAN	29
4.3	AERIAL VIEW OF THE SITE	30
4.4	ISOMETRIC VIEWS	31
4.5	MATERIALS USED	31
4.6	VIP BLOCK MUSEUM LEVEL	32
4.7	VIP BLOCK VIP LEVEL	32
4.8	VIP BLOCK CORPORATE LEVEL	32
4.9	SECTION OF VIP BLOCK	33
4.10	SEATING LAYOUT	33
4.11	INTERIOR VIEWS	34
4.12	WEST ELEVATION	34
4.13	SECTION	35
4.14	EXTERIOR VIEWS	35
4.15	STRUCTURAL MODEL	36
4.16	ISOMETRIC VIEW	37

4.17	MATERIALS USED	37
4.18	GROUND FLOOR PLAN	38
4.19	FIRST FLOOR PLAN	38
4.20	TYPICAL FLOOR PLAN	39
4.21	SOUTH ELEVATION	39
4.22	SECTION	40
4.23	ISOMETRIC VIEW	41
4.24	MATERIALS USED	41
4.25	HOME TEAM ROOM PLAN	42
4.26	SOUTH ELEVATION	42
4.27	SECTION AA1	43
4.28	VIEW OF MEETING ROOM	43
4.29	VIEW OF PHYSIO ROOM	43
4.30	VIEW OF CAFE	44
4.31	VIEW OF DRESSING ROOM	44
4.32	ISOMETRIC VIEW	45
4.33	MATERIALS USED	46
4.34	GROUND FLOOR PLAN	46
4.35	FIRST FLOOR PLAN	47
4.36	SOUTH ELEVATION	47
4.37	SECTION AA1	48
4.38	ISOMETRIC VIEWS	48
4.39	MATERIALS USED	49
4.40	FLOOR PLAN	50
4.41	WEST ELEVATION	50
4.42	VIEW OF GYM	51
4.43	VIEW OF BADMINTON COURT	51

4.44	ISOMETRIC VIEW	52
4.45	MATERIALS USED	52
4.46	GROUND FLOOR PLAN	53
4.47	FIRST FLOOR PLAN	53
4.48	SECTION AA1	54
4.49	VIEW OF WAITING ROOM	54
4.50	VIEW OF RECEPTION	54
4.51	VIEW OF DIRECTORS ROOM	55
4.52	VIEW OF CONFERENCE ROOM	55
4.53	VIEW FROM PLAYERS ENTRY	56
4.54	VIEW OF GARDEN 1	56
4.55	VIEW OF GARDEN 2	57
4.56	VIEW FROM NETS	57

1. INTRODUCTION

1.1 INTRODUCTION

India has always been a sports-crazy nation but the obsession is always towards Cricket because of the tremendous success the Indian team saw in recent years. Cricket is the most popular sport in India and can be seen playing by people of all age groups in every nook and corner of India. India has the most number of viewers for cricket and so there are 52 international cricket stadiums present which is the most by any country followed by England at 23. The downfall of having this many stadiums is that each stadium on average gets 2 matches a year including international and domestic matches. The stadium is all lit up and worked on for a couple of weeks and left untouched for a major part of the year since there are no match fixtures. Each international stadium in India has a regional level training facility that has limited resources and space for training as the stadiums are mainly focused on increasing the number of spectators.

1.2 NEED FOR THE PROJECT :

- There is a national level training facility called as national cricket academy located in the Chinnaswamy stadium, Bangalore.
- Most of the time, mg road, Cuban park road, Kasturba road gets blocked due to traffic and players find it difficult to travel to the academy for training
- NCA was becoming less effective due to a shortage of training facilities, resources and space
- There are no accommodation facilities in NCA, so players need to stay in hotels and travel to NCA for training and players found it difficult.
- NCA was becoming more of a rehabilitation centre rather than a training academy
- So BCCI decided to build the centre of excellence, cricket which must be an international level training facility for cricketers and main analysis hub for Indian cricket

1.3 AIM

This project is a National project that aims at becoming the country's leading Cricket Training Academy, Analysis and Rehabilitation centre

1.4 OBJECTIVE

- To enhance the sense of national cohesion and united interest which would act as an important force in society as a whole
- To make circulation easy to access in different parts of the site
- To make it barrier-free
- To make it aesthetically and functionally effective

1.5 METHODOLOGY

1.5.1 Initial study about the topic :

- Mind mapping to deconstruct the topic, analyse them and find interconnections to this topic
- Discussions with Cricket players and coaches

1.6 DATA COLLECTIONS

1.6.1 Primary data collection

- Surveys(google forms)
- Discussions

1.6.2 Secondary data collection

- Books (standards)
- Video documentaries (about cricket in India)
- Research documentaries
- Magazines
- Article

1.6.3 Tertiary data collection

- Social media
- News articles
- Blogs

2. LITERATURE CASE STUDY

2.1 DATONG SPORTS CENTRE



Fig. 2.1 Datong sports centre

- Architects: CCDI, POPULOUS
- Area: 101700 m²
- Year of Completion: 2019
- City: DATONG
- Country: CHINA

2.1.1 Context

- Datong is a mining city that is located 1000 miles away from the beautiful city of Beijing.
- Datong is the northernmost community in the mineral-rich Shanxi province of central north china
- The mayor of Datong city had a vision of transforming the city from a mining city to back its glory days and historic significance as a meeting place and cultural hub of north
- The new Datong sports park is central to its plan forming the southernmost bookend of a cultural precinct
- The sports park has a 30,000 seat stadium, 8,000 seat arena, 1,500 seat natatorium, a multi-use training centre, a collection of outdoor sports fields, and educational facilities for sports academies for 700 residents on site.

2.1.2 Site arrangement

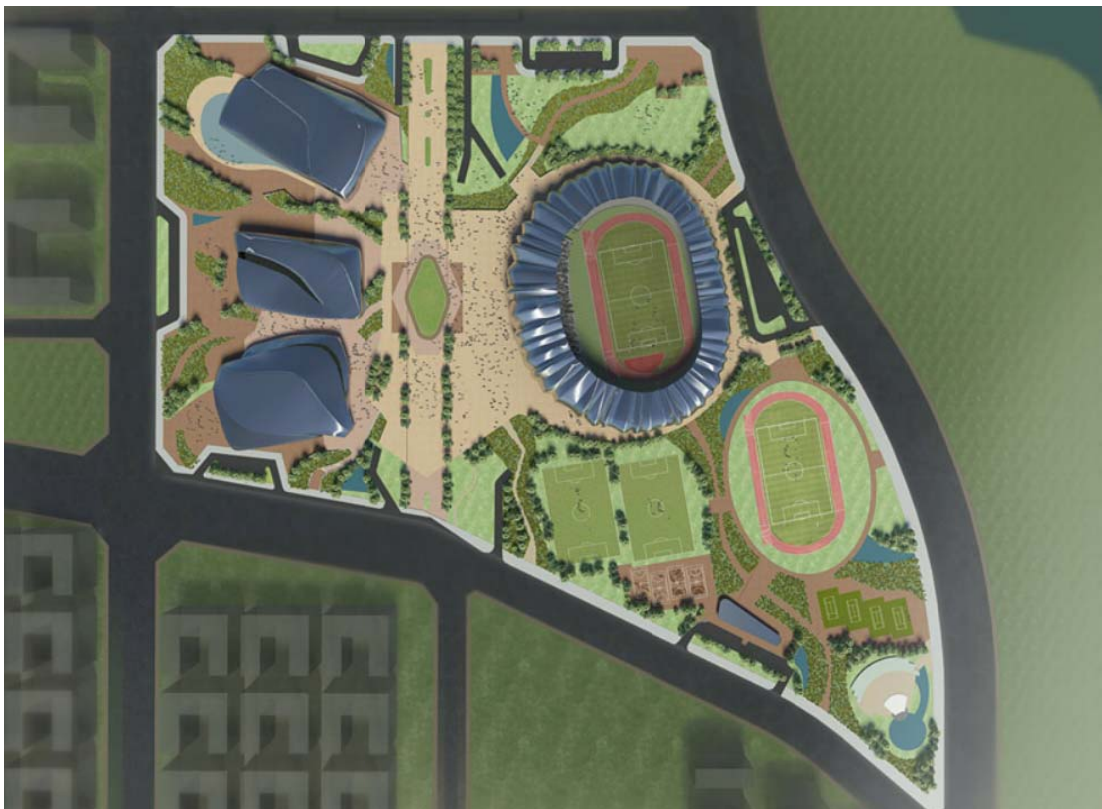


Fig. 2.2 Site plan of Datong sports centre

- The central piazza acts as the main entryway and distribution space before the west entrance of the stadium.
- The elevated piazza also functions as a roof deck that has over 700 car parks and servicing docks
- The overall site layout is framed by future expansions of commercial developments on the south and west, an artificial lake on the east.
- The 30,000 seat stadium is the main feature of this Datong sports park
- The natatorium, training centre and the indoor arena act as a counterbalance to the main facility and provides an interface with the future commercial developments
- The southern side of the site will be a more leisurely and private space for the student accommodation and outdoor activity zones.

2.1.3 Inspiration for the project :

- The inspiration for the design of the Datong sports centre has come from its impressive cultural heritage and the rugged beauty of the stunning landscape outside the city
- The rich valleys and weathered mountains face surrounding the loess plateau outside Datong city.
- The colour and texture of the mountain ranges are comparable to the landscape of the grand canyon in America.

2.1.4 About indoor sports arena :

- The design concept of the swimming pool mainly emphasizes the powerful movements of the swimmers in the water, the natural swimming posture, power and the cleat outline of the swimmer's muscles.
- The pool has three levels and a basement floor which can accommodate 1,500 fixed seats and 1000 temporary seats.

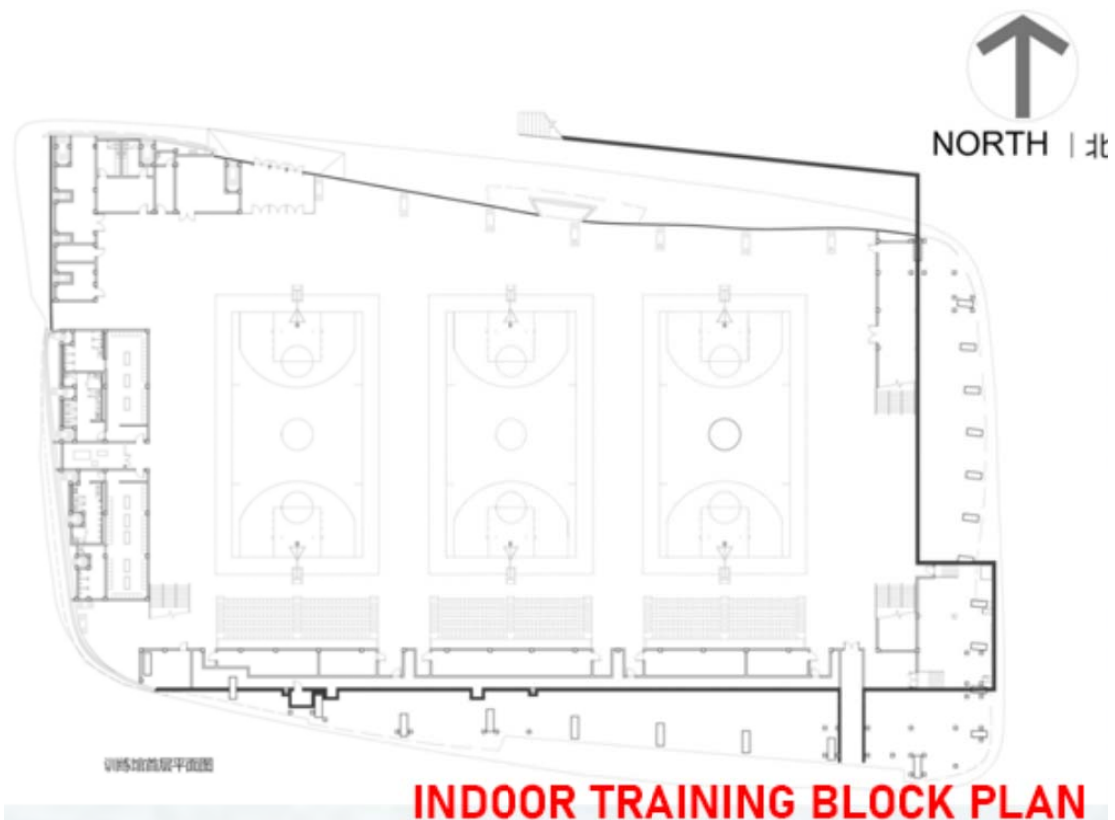


Fig. 2.3 Plan of the Indoor Training Block



Fig. 2.4 Section of the Indoor Training Block

2.1.5 Materials used in the main stadium :

- The main stadium owes its originality to the unique steel frame creating a dome that is supposed to be an association to the nearby Yungang Grottoes when seen from the inside
- The dome lowers to the east, which led to the erection of two floodlight masts on that side. But once the dome is discounted, the stadium is very unconventional.
- The seats are placed at a very low rate of 12 degrees with only the west stands upper-tier becoming really steep, at 30 degrees

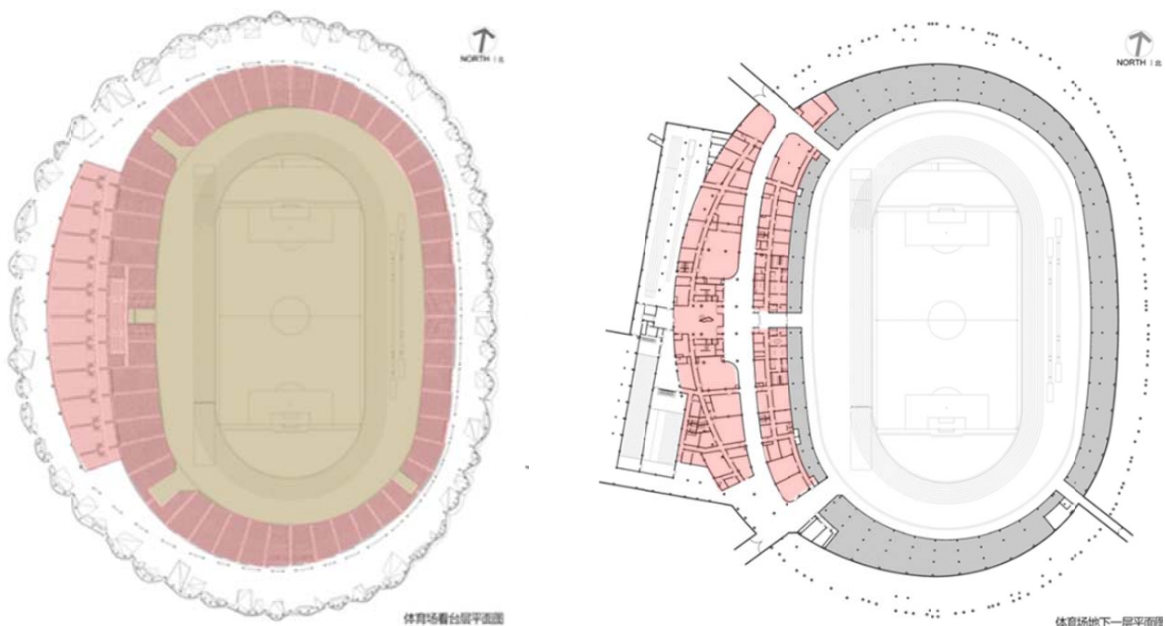
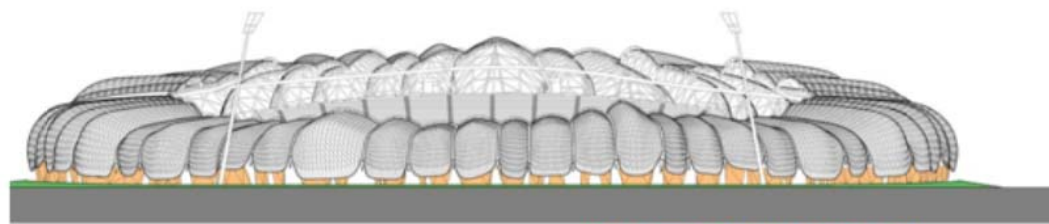
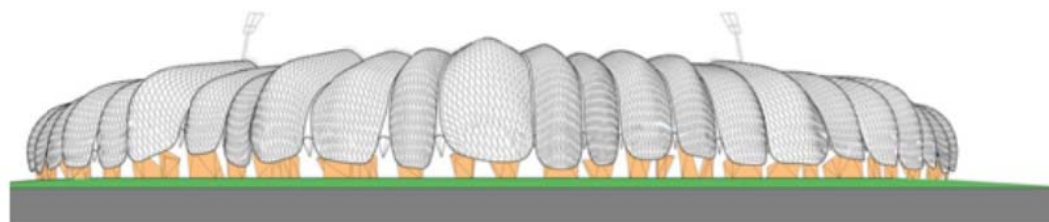


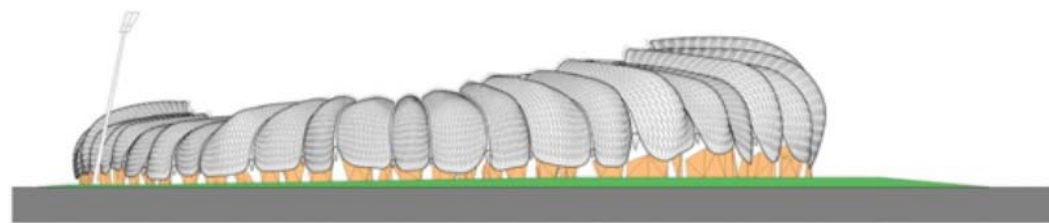
Fig. 2.5 Seating layout and plan of the private areas in the stadium



EAST ELEVATION 体育场东立面图



WEST ELEVATION 体育场西立面图



NORTH ELEVATION 体育场北立面图

Fig. 2.6 Elevations of the stadium

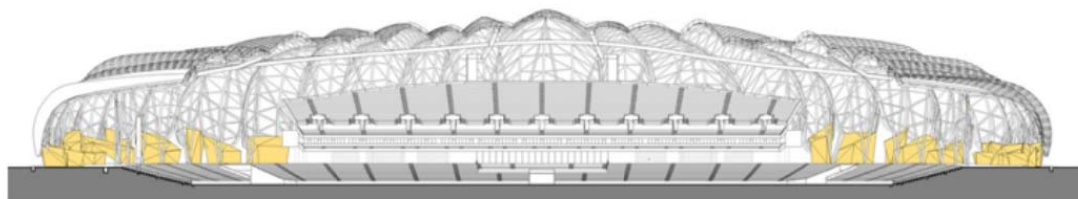


Fig. 2.7 Section of the stadium

2.2 RAJIV GANDHI INTERNATIONAL CRICKET STADIUM



Fig. 2.8 Rajiv Gandhi stadium

- Location: Uppal, Hyderabad, Telangana, India.
- Coordinates: 17°24'23.4" N 78°33'01.6" E
- Establishment : 2003#Capacity : 55,000
- Owner: Hyderabad Cricket Association
- Home team: Sunrisers Hyderabad
- Architect: Shashi Prabhu
- operator: Hyderabad Cricket Association
- Number of stands: 14
- Number of floodlights: 6
- Number of gates: 12
- Area of the site: 65000 sqm
- Users: a. Cricketers
 - b. Ground staffs
 - c. Broadcasting and Media crew
 - d. Spectators
- Climate: Arid climate
- Building orientation: NORTH - SOUTH
- Soil type: Red Sandy Soil
- Annual Rainfall: 136.1 mm
- Population: Estimated to be 10 million

2.2.1 Introduction

- HCA's previous home ground was the Lal Bahadur Shastri stadium in the Fateh Maidan Sports Complex At Basheer Bagh in Central Hyderabad
- the ground belong to the sports authority of Telangana state and HCA had Limited operating Autonomy over this ground
- Moreover, due to its smaller size, it soon became to be known as a high scoring ground so Hyderabad was not considered for many high profile cricket matches in India
- 2003, the proposal for new Stadium was submitted by HCA to the Government of Hyderabad
- This new stadium is located in the Uppal and Eastern suburbs of the city of Hyderabad. it has a capacity of 55000 spectators presently and extends across 16 acres of land
- Rajiv Gandhi International Stadium has the best green grass outfield and is one of the most well-maintained stadiums in India
- The stadium has a long span canopy of south and north stands which gives an aesthetic good view of the stadium
- The stadium has the best water drainage facility
- The stadium has a two-tier architecture and design in such a way that view of the match in action is not obstructed regardless of the seating location
- This ground has one of the best batting tracks in the world and the most preferred ground of BCCI to host cricket matches

2.2.2 Stadium layout :

- Oriented North-South
- To allow airflow of South West Winds, they have a standing break so that the airflow is better inside the stadium.
- The stadium has 4 sub-entrances to different stands
- The stadium has ground floor seating, gallery floor seating, first-tier seating, and second-tier seating.
- Northside has 8 boxes on the ground floor and 12 boxes on the first-floor level

- It has four levels with one terrace.
- it has 6 lifts which are accessed to level 2
- cellar plan Has admin parking with chief security cabin
- The ground floor has a players dressing room
- The second floor has 24 VIP boxes



Fig. 2.10 North pavilion

2.2.4 Mohammad Azharuddin and VVS Laxman stands (SOUTH PAVILION):

- Commentators Box with lobby area has a party hall underneath them
- for every 25 they have fire safety measures
- it has ground, gallery, first, second level (VIP) Boxes, and first and second tier seating
- it has canopy covers for both tiers

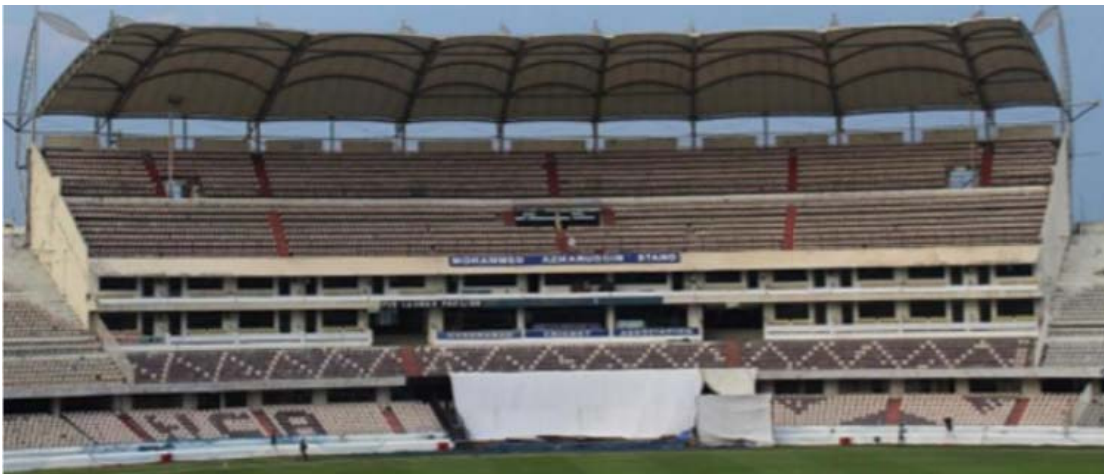


Fig. 2.11 South pavilion

2.2.5 Eastern stands :

- The Gallery area is on the ground floor
- there are four entry/ and exit points to access the next tier above the gallery tier
- it has five Stairway to access the stand which breaks the sequence of seating
- every 30 seats have stairway way and entry points which makes crowd congestion less
- this stand has a digital scoreboard
- it has four internal Gates to access the stands
- it has two floodlights with a backup generator
- The ground level has curators staff and ground staff rooms. Pantry, parking, and soil preparing area



Fig. 2.12 Eastern stands

2.2.6 Western stands :

- The Gallery area is on the ground floor
- there are four entry/ and exit points To access the next tier above the gallery tier
- It has five Stairway to access the stand which breaks the sequence of seating

- every 30 seats have stairway way and entry points which makes crowd congestion less
- this stand has a digital scoreboard
- it has four internal Gates to access the stands
- it has two floodlights with a backup generator

2.2.7 Joinery details :

- RCC column with a clear cover of 10 m at the peripheral all the stadium in North and South stands to support the roof
- the joints of the tensile structure has junctions 4, 6, 8 respectively



Fig. 2.13 Joinery details

2.2.8 Parking facilities :

- Car parking 550 (1 car park for 100 people)
- Bike parking 2500 (1 bike parking for 22 people)
- The stadium has provision for visitors parking during non-match days and parking for staff of the stadium and also players team bus parking

2.2.9 Turf outfield :

- Outfield Has grass of height 2 mm to 4 mm

- The grass is cut once every two days
- The outfield has a checkers pattern
- manure is mixed with rich soil for the outfield



Fig. 2.14 Turf outfield

2.2.10 Floodlights:

- Diameter at the base is 1.3 m hollow member And six such floodlights are present
- it has five rows of lights each row consisting of 8 lights each
- secondary floodlight has two numbers which have two rows of light

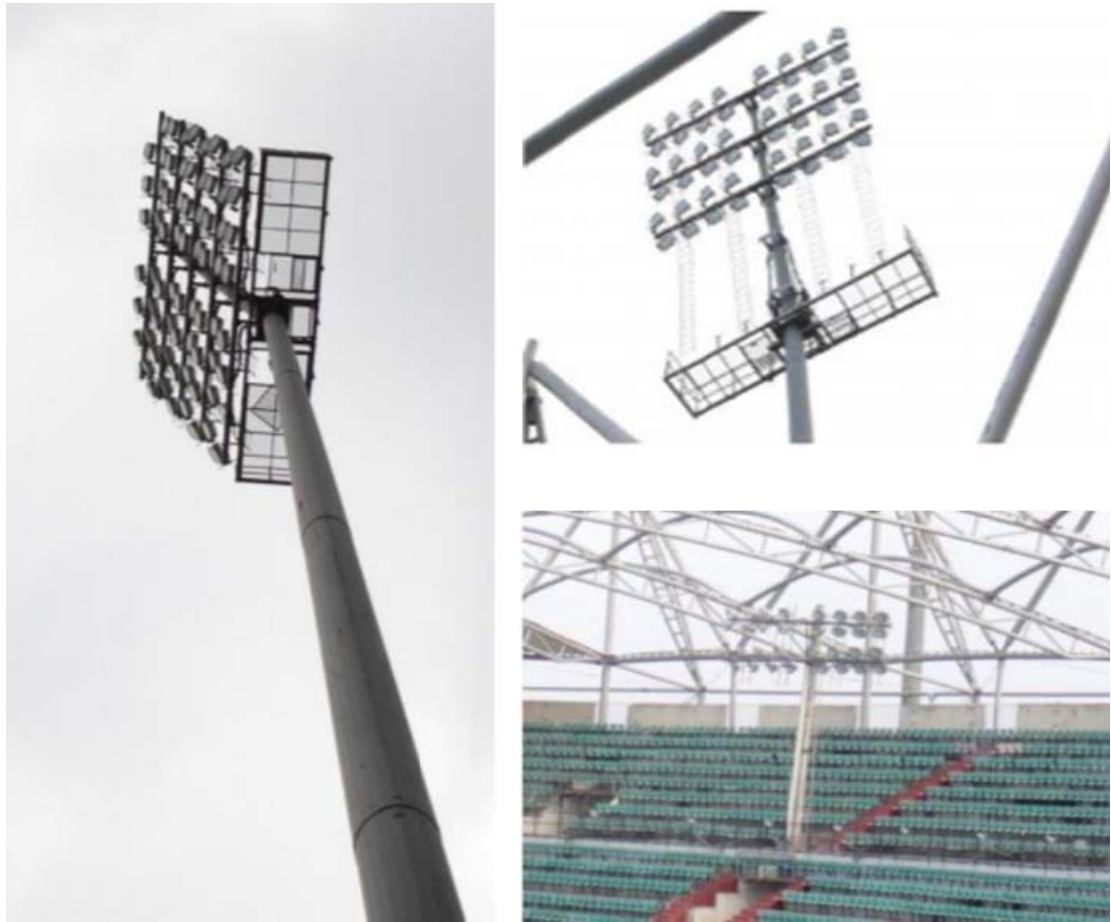


Fig. 2.15 floodlights

2.2.11 Roof structure :

- East and West stands are open.
- North and South stand has a roof cover which is a tensile canopy
- it has individual Wings of spans of 25 m and has three arches to support each member and Truss work on either side of each wing
- roofing material used is Teflon fiber design by the architect of the stadium



Fig. 2.16 Roofing

2.3 MERRION CRICKET CLUB



Fig. 2.17 Merrion cricket club

- Architect: TAKA Architects
- Project completed on: 2014
- Structural Engineer: Casey O'Rourke Associates
- Services Engineer: Engineering Environments

- City: Ballsbridge
- Country: Ireland

The Merrion Cricket Club was founded in 1879 and has been at its present location since 1906. The site of the club faces west towards the River Dodder. The new pavilion replaces an existing 1980's pavilion which was severely damaged by flooding in 2010

The Location and impression of the new pavilion were directed by various site imperatives. Albeit the type of the new structure shows up from certain vantage points to be exceptionally sporadic, it is true be told an even pyramidal volume slice to fit the unpredictable geometry of the site.



Fig. 2.18 The roof of the new pavilion

An enormous pitched rooftop is extended over these spaces to give a condo under the zenith, a covered survey patio confronting the pitch, and a passageway portico that outlines the square on approach. The twisted rooftop obliges the numerous necessities of the program while reviewing a solitary structure building. Under this primary rooftop, the inside rooms are settled, their forms relating straightforwardly to their own uses and wanted atmospheres.



Fig. 2.19 Viewing area

Specific consideration has been paid to the area between the bar windows, the viewing area, and the cricket pitch past to take into account different, synchronous viewing opportunities. Here the segment is ventured and layered in order to offer various formal and informal vantage points.

In light of the site's flood hazard, the structure is raised up various steps and has waterproof concrete covering up to window sill level. Temporary flood obstructions are dropped into door openings in case of a flood. Over this level, dividers are either coated or strong mud blocks. These block facades are utilized as a permanent covering for the concrete ring beam which wanders around the perimeter of the building.

There were 2 driving elements in the specialized goal of the new structure at Merrion Cricket Club – an unobtrusive development financial plan and flood assurance. These elements were joined with the essential thought of the ideal coherency and aesthetics of the structure. It was important that the site and spending limitations ought not to overpower the experience of the structure for the club part.

The latest flood level on the site in 2010 was 1500mm above the ground level. It was concluded that the new structure ought to be ensured up to 1700mm above the ground level. To stay away from a shelter-like feel and keep up with views from the fundamental social spaces (the bar and coffee bar) to the cricket pitch, the structure floor level was raised up by 3 steps (600mm) – the most extreme allowable without guarding. A water-proof concrete 'container' was developed

around the interior spaces with the dividers coming up from ground level to 1100mm over the raised floor level – the ideal height to incline forward while seeing cricket or tasting a beverage. Any place the waterproof dividers are infiltrated for entryways, drop-in flood boundaries is introduced. The flood obstructions are communicated by the substantial improvement into the brickwork at openings.



Fig. 2.20 Flood defensive dividers

Rooms are internally insulated behind the flood defensive dividers. Interior linings are conciliatory should the flood boundaries be penetrated. The line of flood security is perused all through the inward spaces in the tallness of the wood covering in the bar and coffee bar and artistic tiling in the evolving rooms. Where spending plans permitted, coated windows and entryways slide aside, both to build the association with the survey porch and pitch and to diminish the yearly expense of supplanting broken window sheets because of stray cricket balls.

The external viewing terrace is formed in the space between the flood-protected internal rooms and the colonnade at the edge of the overhanging roof. Green painted benches are fixed between columns under windows to the terrace. The delicate diagonally braced bench supports serve to visually contrast with the heaviness of the concrete structure. The edge of the raised concrete slab forming the external terrace is stepped to provide access to the pitch and informal seating at pitch level.

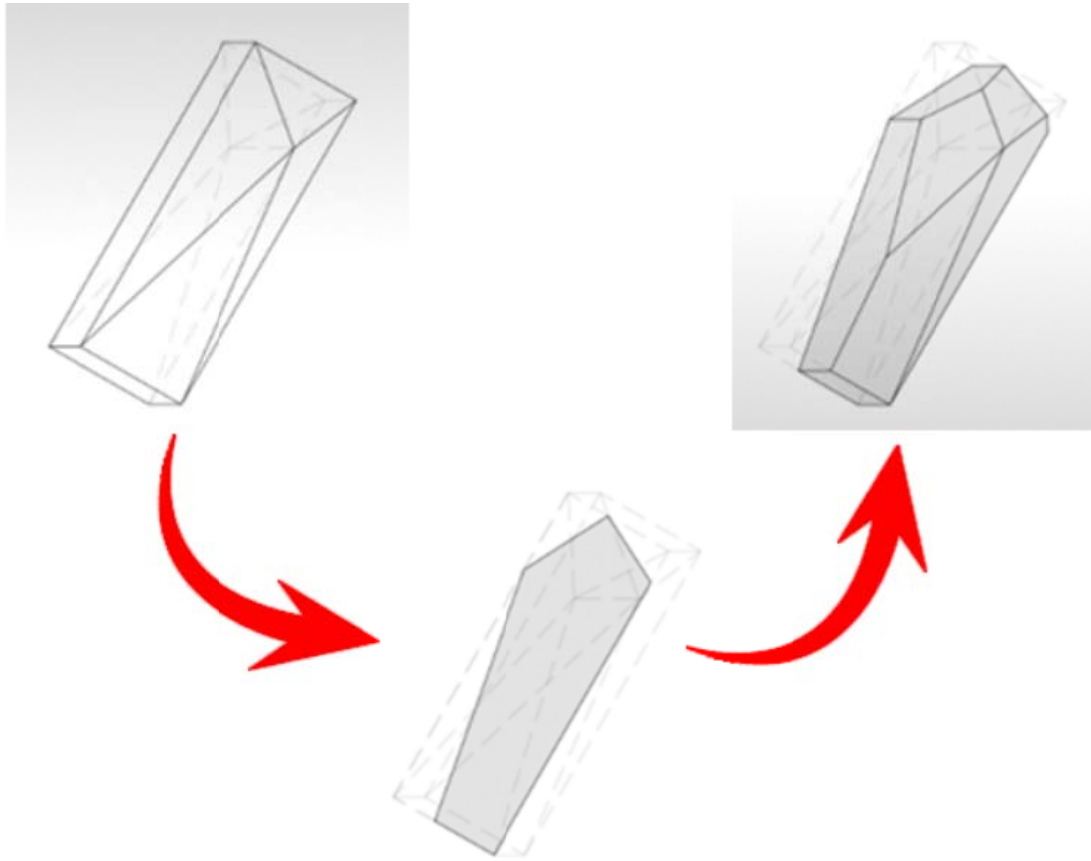


Fig. 2.21 Form derivation for the roof

The tautness of the external form was achieved by ensuring flush junctions between external surfaces. The brick walls (a block and brick composite tied together, as solid brickwork walls were too costly) are laid directly on top of the walls of the waterproof container. There are no cut bricks and the concrete ring beam for the roof structure is cast directly onto the stepped top of the brick walls. The beam is over-cast on the inner face of the wall to allow for a recessed gutter detail. Gutters have mesh inserts to ensure costly cricket balls are not trapped at a high level. Downpipes are concealed internally or cast into columns in the colonnade. The top surface of the ring beam slopes in 2 directions – with the top of the walls and with the slope of the roof – to maintain the profile of the building form

The roof is formed from timber joists with steel ridges, the most cost-efficient method due to its similarity to domestic construction. The longer spans of joists are

propped by internal walls. The roof is clad with standing seam pre-patinated zinc, chosen to withstand driving rain at a low pitch and cricket balls at high speed.



Fig. 2.22 Site plan

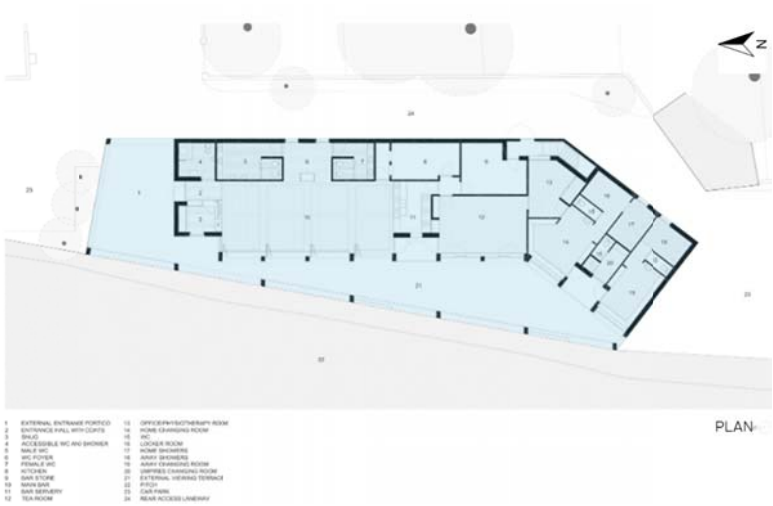


Fig. 2.23 Plan of the pavilion

3. SITE ANALYSIS

3.1 SITE LOCATION

- Site is located in a remote area in the Aerospace park in Devanahalli
- Shape of the site is a Proper rectangle
- Longer side of the site is 450 m and the other side being 360 m
- Total area of the site is 162000 sqm (40 ACRES)
- Since the site is in the 5km radius of an International airport, it falls under INNER HORIZONTAL SURFACE.
- Maximum height allowed to be constructed in the IHS is 65 m

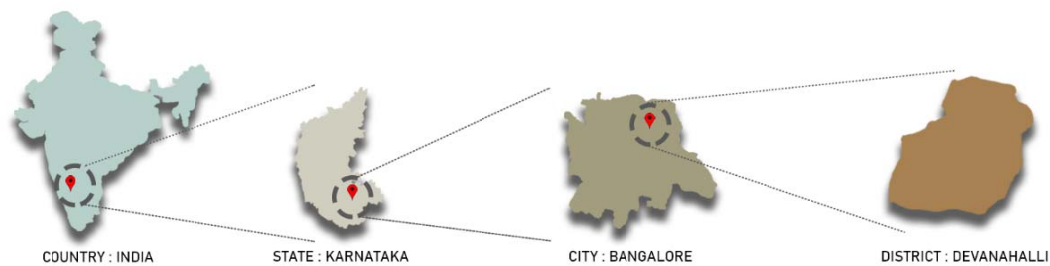


Fig. 3.1 Site location

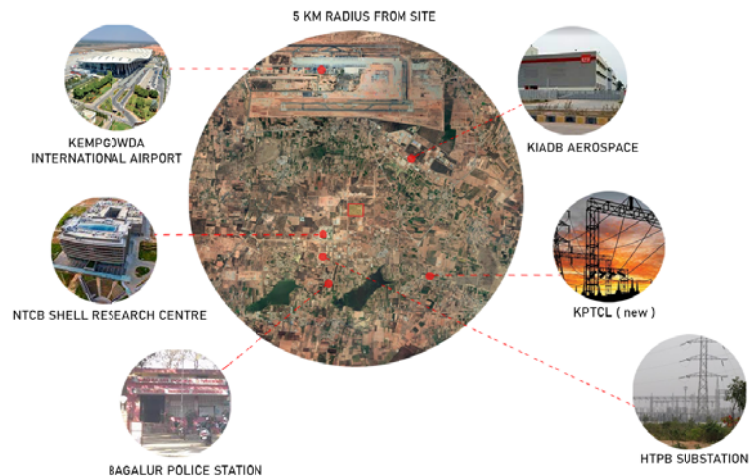


Fig. 3.2 5kms radius of the site

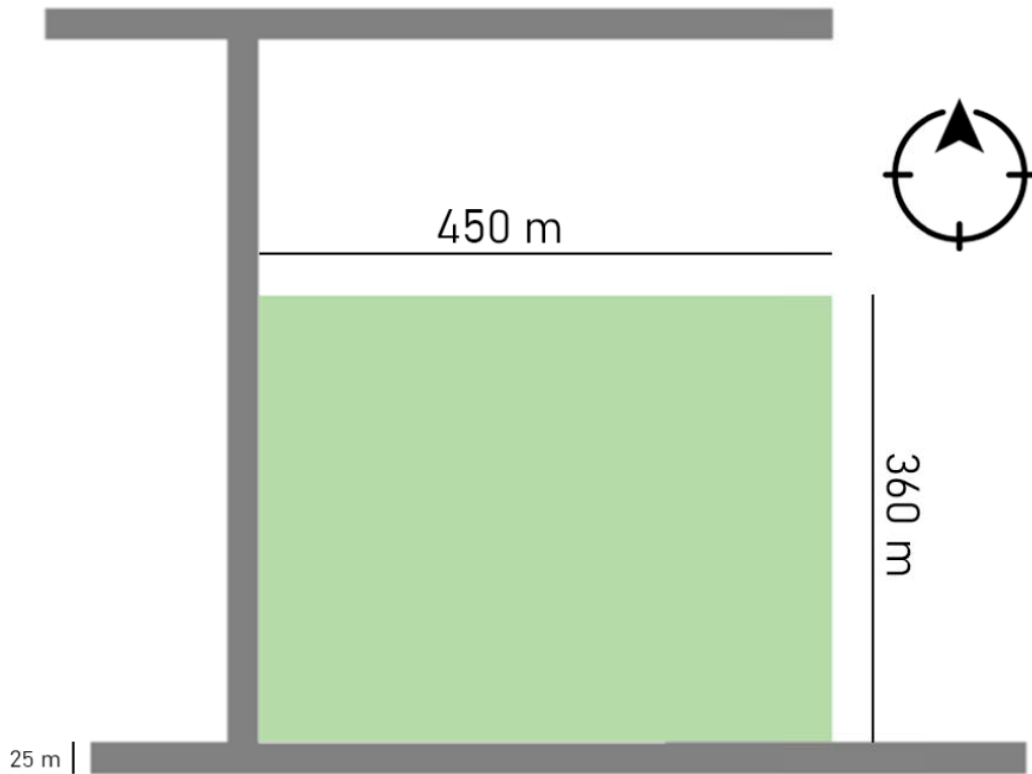


Fig. 3.3 Site dimensions

3.2 NEIGHBORHOOD ANALYSIS

3.2.1 Road network

- Primary roads are the main roads that connect the nearby villages of Kadayarapanahalli , Kodigehalli, Arebannimangala and other settlements. Made of Asphalt Bitumen .
- Secondary roads are the interior roads inside the aerospace park area that are normally wide (some roads are even 25m in width) made with rigid pavement and asphalt bitumen

3.2.2 Traffic density

- As of now, the nearby roads of the site is free from traffic congestion as the width of the road is high and not many vehicles use the road except for some heavy vehicles that carry goods to the private aerospace parks
- After construction of the Centre of Excellence, vehicle movement around this region would increase drastically. It can be easily controlled and administered by proper management. The width of the roads area an advantage as it does not allow any traffic congestion.

3.2.3 Circulation

- There is a limited circulation that is happening around the site.
- The main people who use the nearby roads are the workers who are working on the aerospace park that are located around the site
- The labourers who work there uses the road to walk to the factories
- The other workers who can afford vehicles drives in other way to reach the factories
- The heavy vehicles mostly uses a separate path

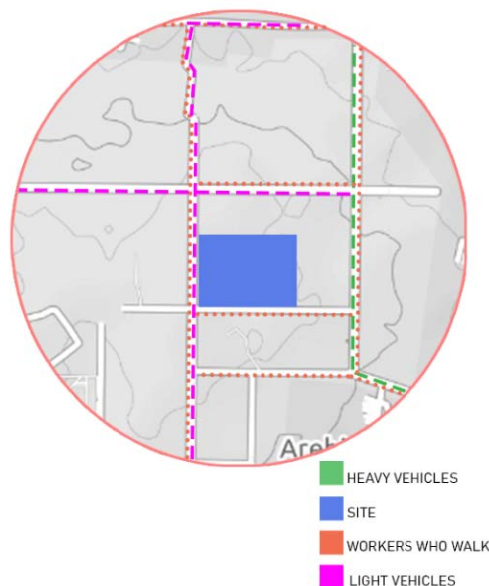


Fig. 3.4 Circulation

3.2.4 Public transport

- The main type of public transport to take to reach the site is by boarding a bus.
- There are 8 bus stops in a 3 km radius of the site with the nearest bus stop being at 1 km from the site
- The nearby railway station is located at Doddajala which is 6km away from the site
- Airport that is near the Kempegowda International Airport that is at a distance of 3 kms from the site

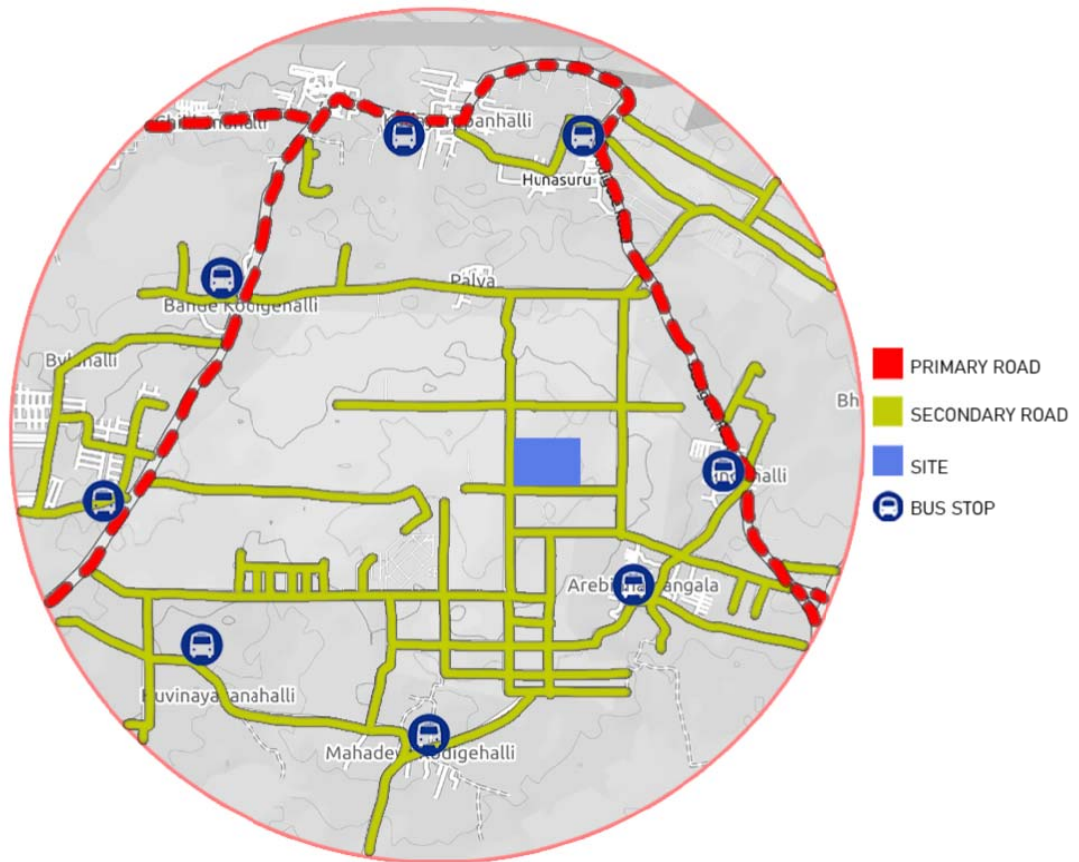


Fig. 3.5 Public transport

3.2.5 Views

Desirable view

- North and East sides of the site have Desirable views
- North of the site has the view of Aeroplanes landing and taking off
- East side of the site has a view of vast open spaces and agricultural areas

Undesirable view

- South and West sides of the site have Desirable views
- West of the site has the view of a couple of aerospace parks located
- South side of the site has a view of a Aerospace related heavy machinery factory located

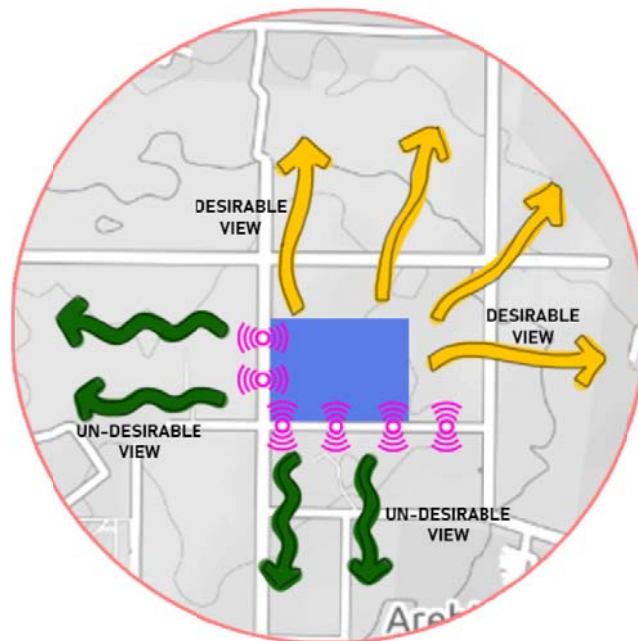
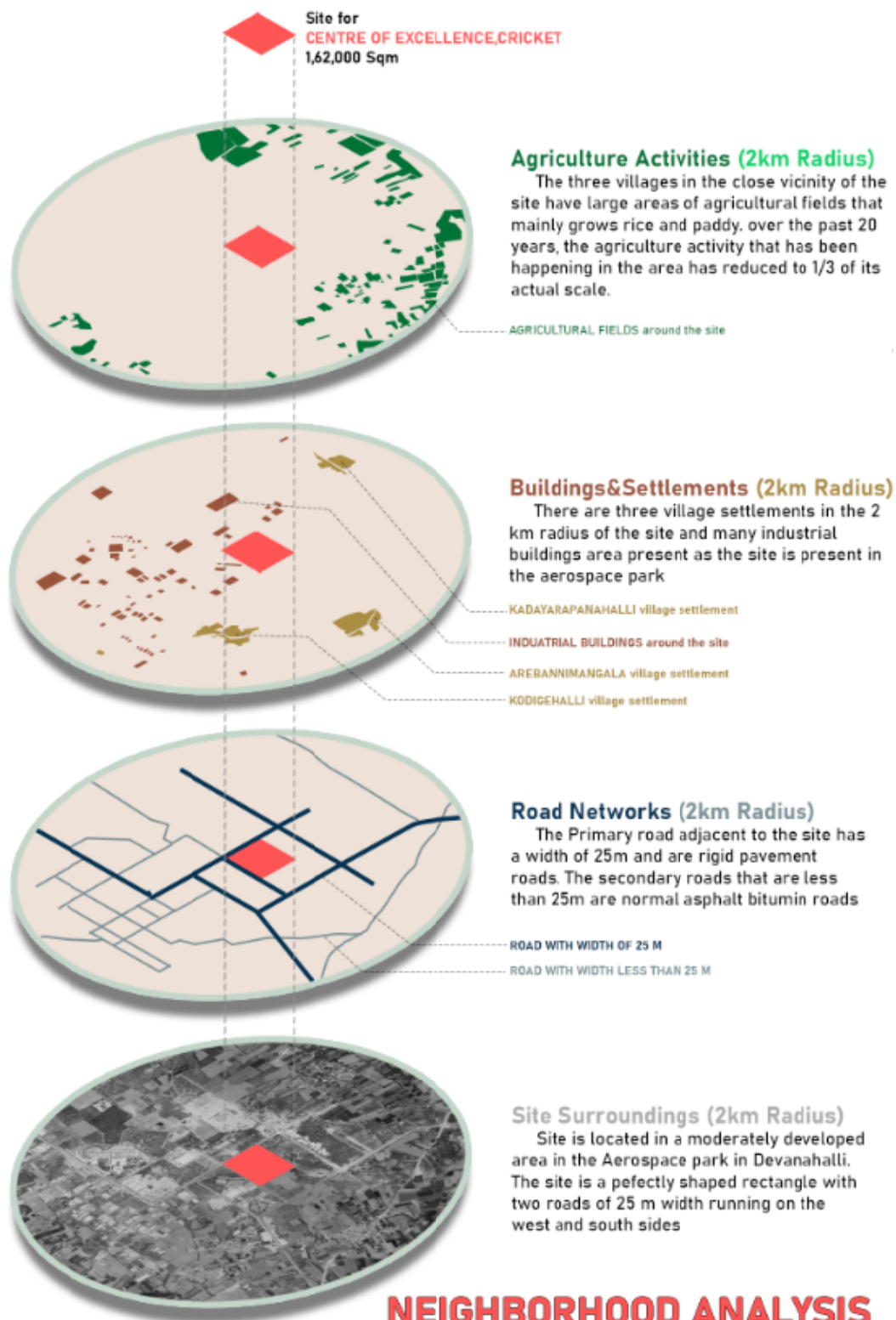


Fig. 3.6 Views and noise



NEIGHBORHOOD ANALYSIS

Fig. 3.7 Neighborhood analysis

4. DESIGN

4.1 Site plan

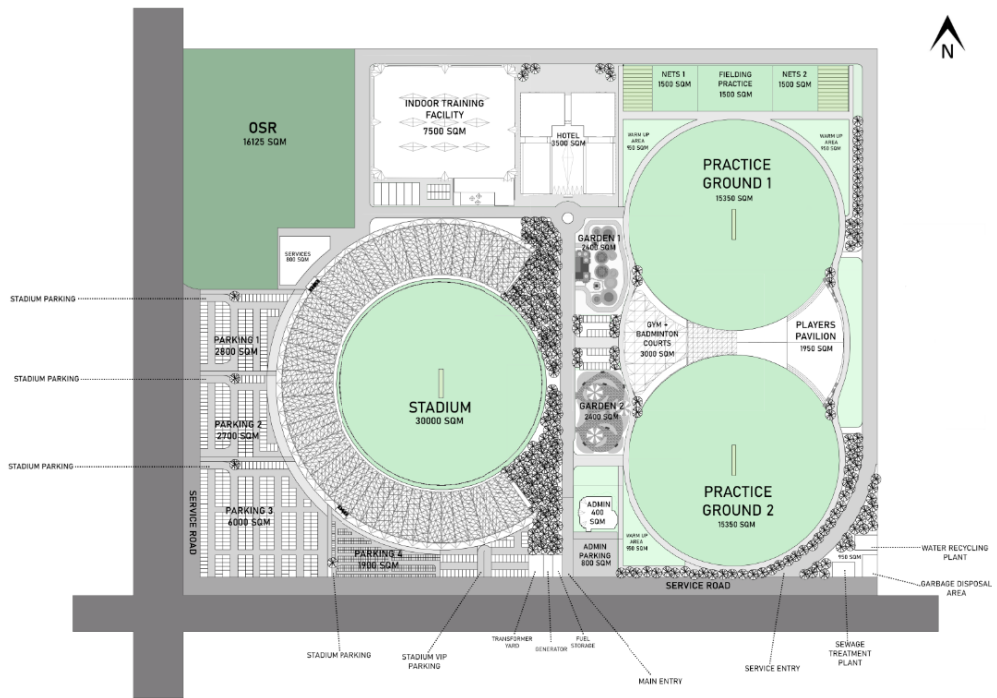


Fig. 4.1 Site plan
Fig. 4.2 masterplan

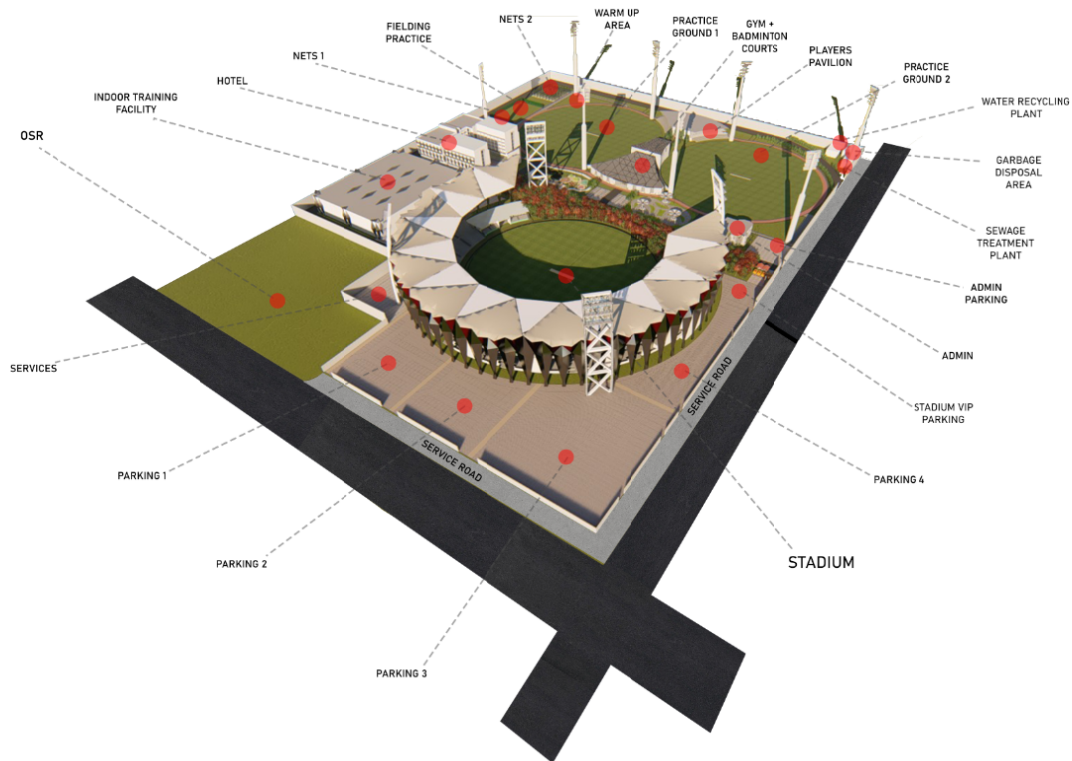


Fig. 4.3 Aerial view of the site

4.2 Crown stadium

- Has a seating capacity of 10500 people. The stadium has two tiers, the lower tier has a capacity of 6800 people, and the higher tier has a capacity of 3600 people
- Reflective panels have been used on the exterior facade of the stadium to deflect the time of the day.
- The stadium is designed in such a way that it looks like a crown looked from a distance
- Total height of the stadium : 38 m
- Total height of the flood lights : 63 m

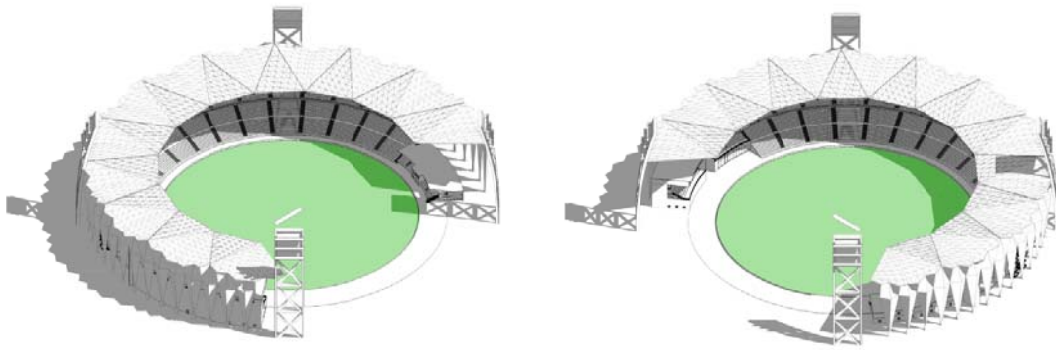


Fig. 4.4 Isometric views

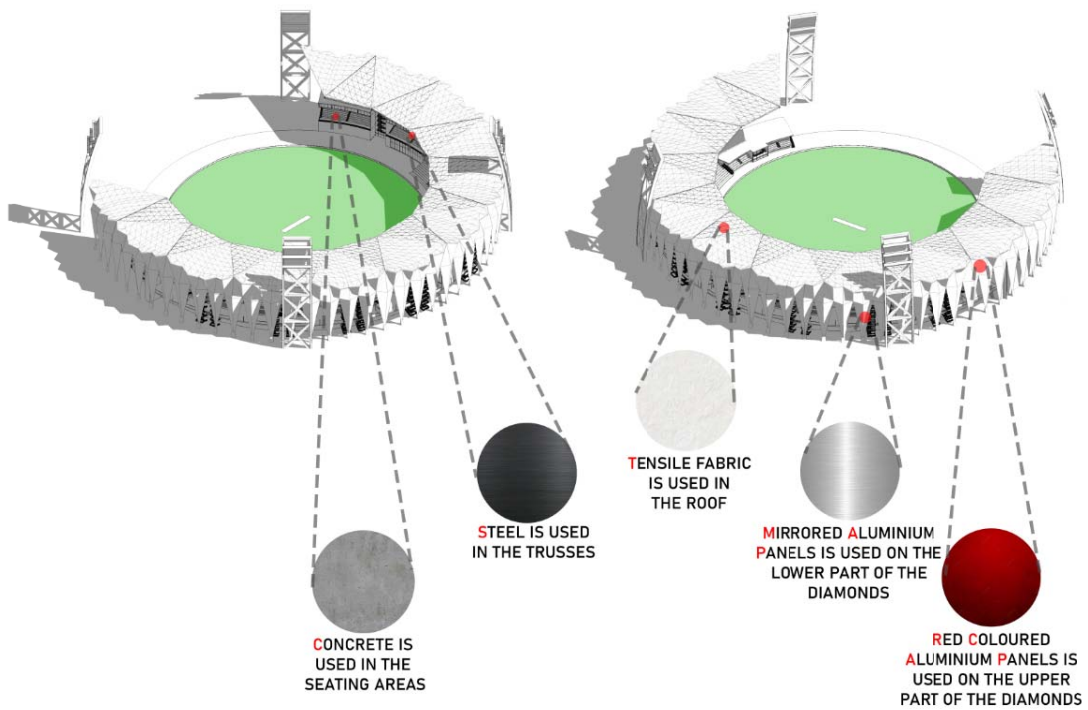


Fig. 4.5 Materials used

4.2.1 VIP block

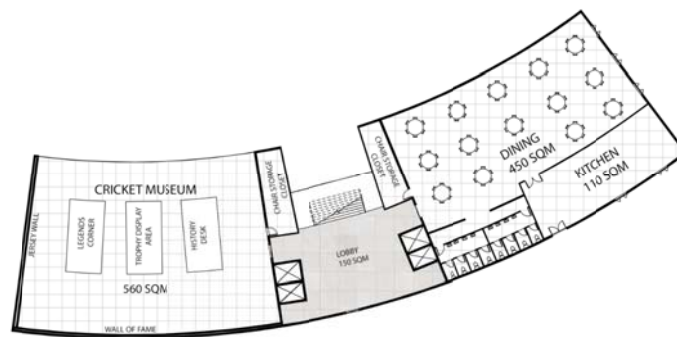


Fig. 4.6 Vip block museum level

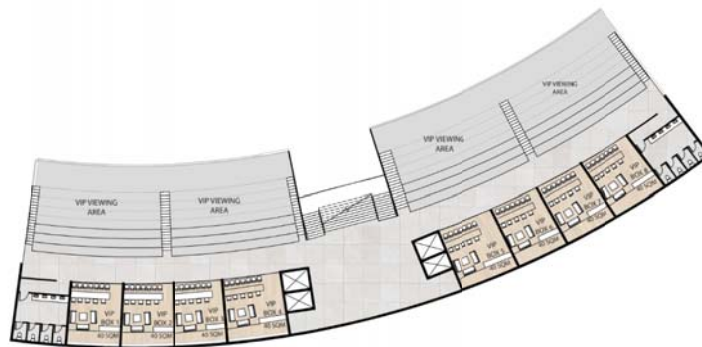


Fig. 4.7 Vip block vip level

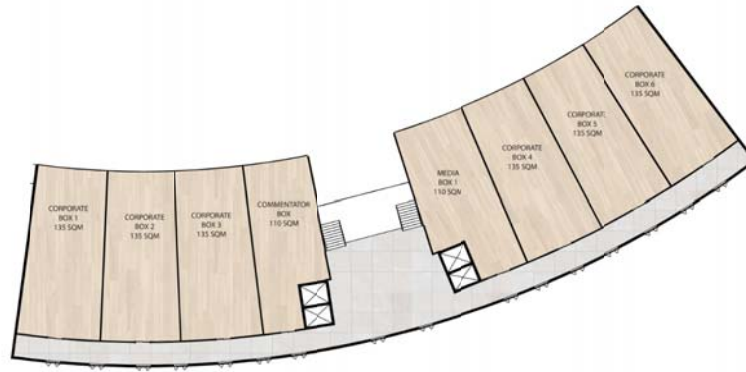


Fig. 4.8 Vip block corporate level

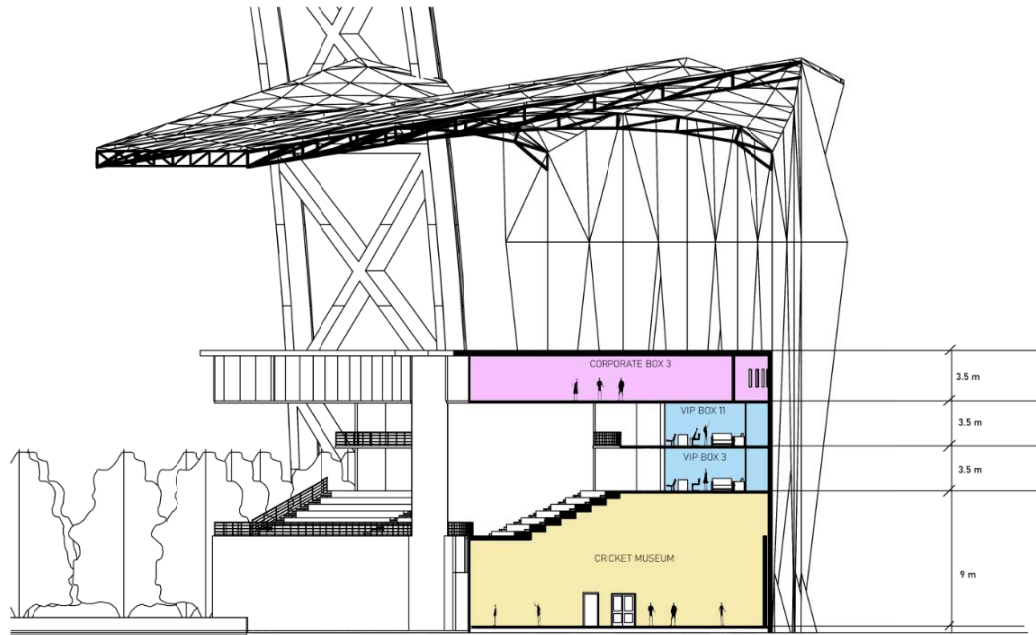


Fig 4.9 Section of vip block

4.2.2 Seating layout

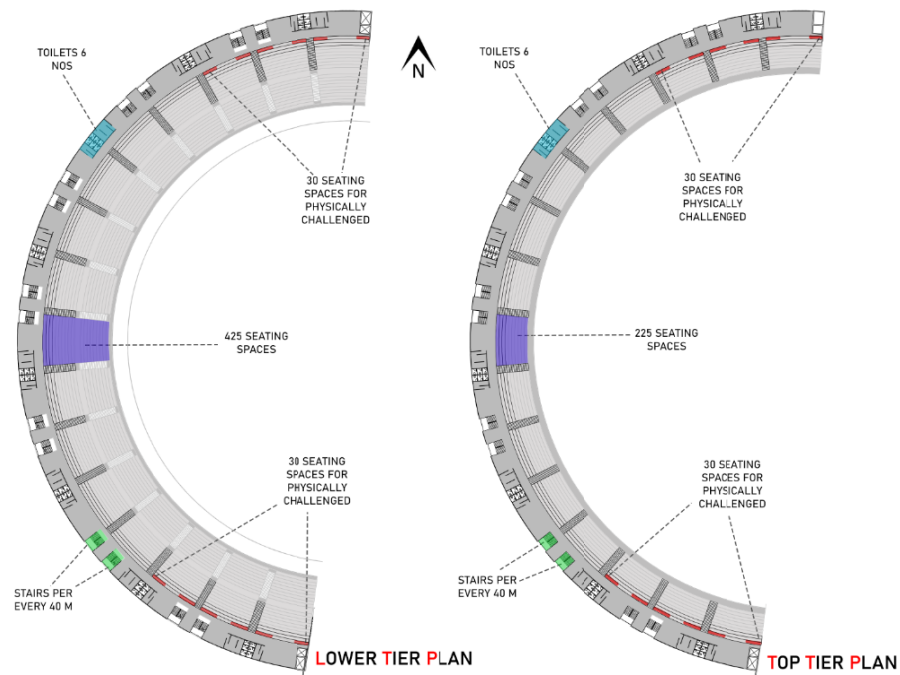


Fig. 410 Seating layout

4.2.3 Interior views

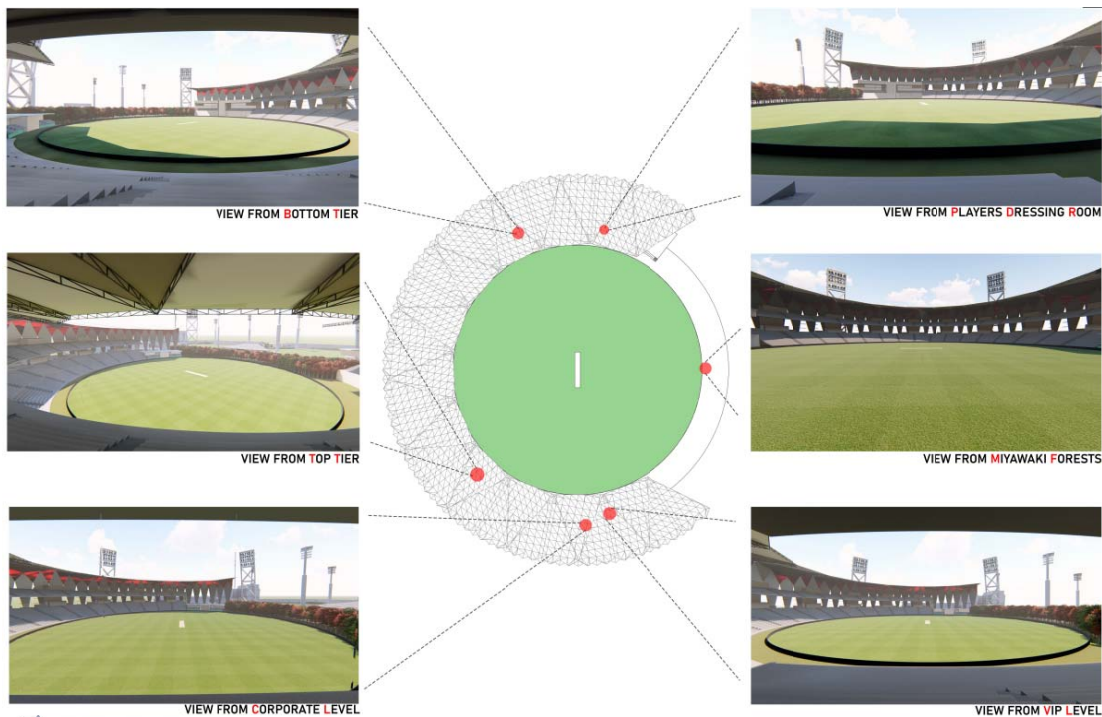


Fig. 4.11 Interior views

4.2.4 Elevation and Section

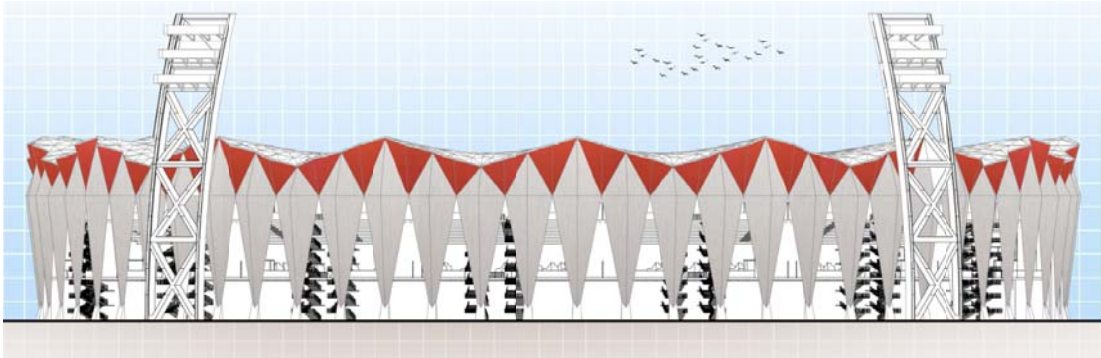


Fig. 4.12 West elevation

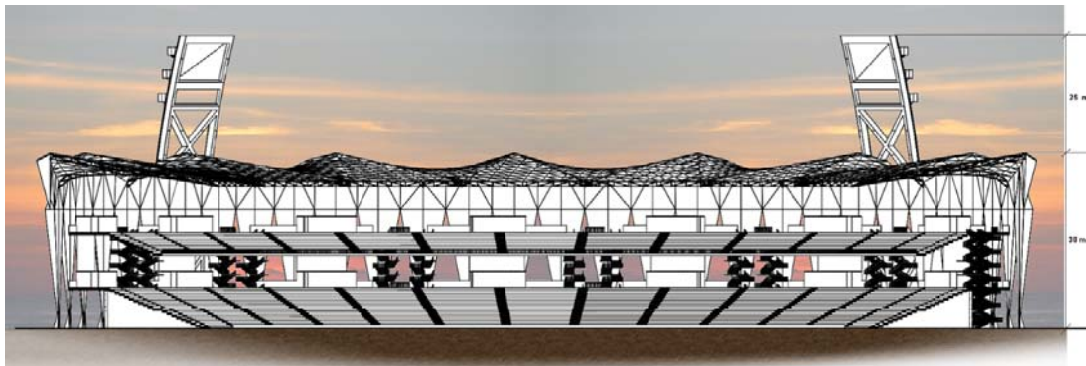


Fig. 4.13 Section

Fig. 4.15 Structural model

4.3 Hotel

- This hotel facility is designed to have 240 rooms as per the requirements by BCCI .
- First usable level is the ground floor level that has two functioning stand alone restaurants, a common kitchen and housekeeping area
- First floor has dining area for everyone and on top of that floor is a service floor
- From third floor, it is rooms for the players and support staffs

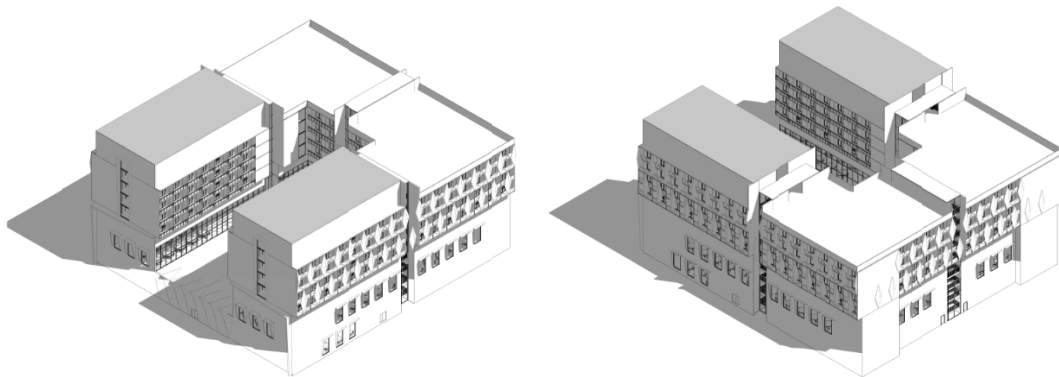


Fig. 4.16 Isometric view

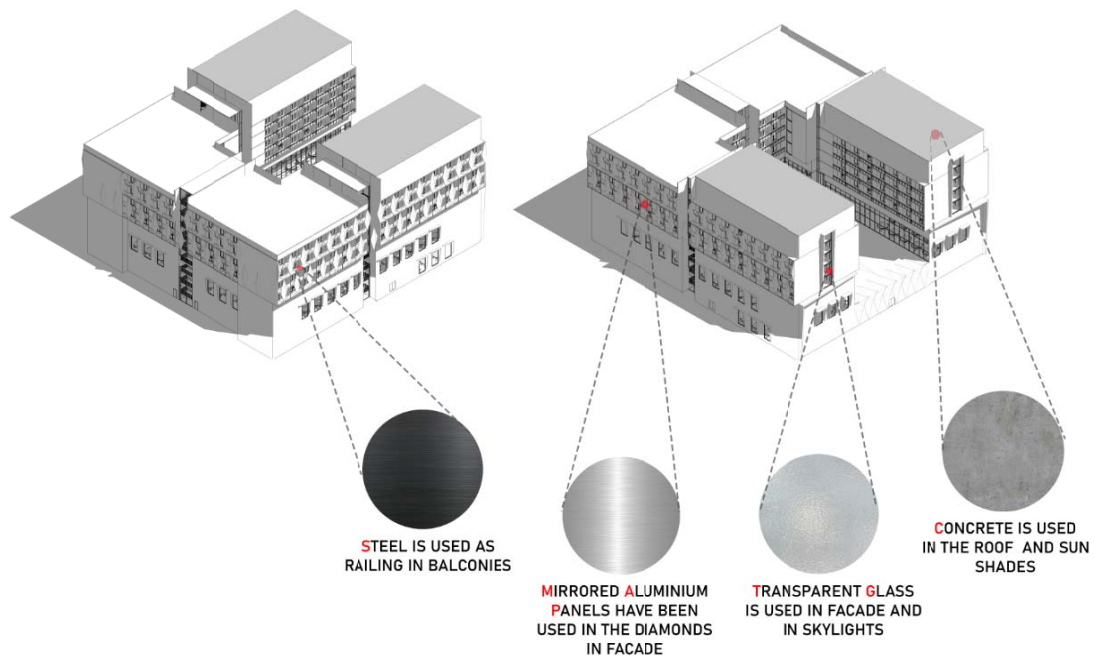


Fig. 4.17 Materials Used



Fig. 4.18 Ground floor plan

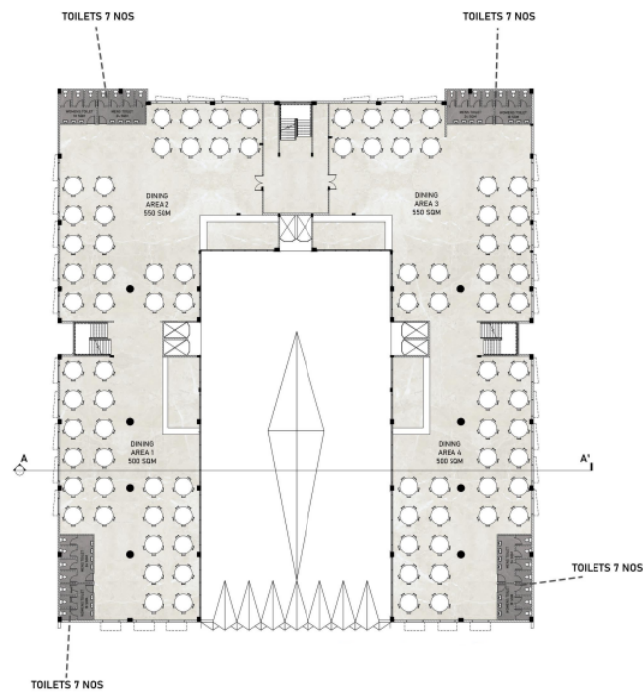


Fig. 4.19 First floor plan

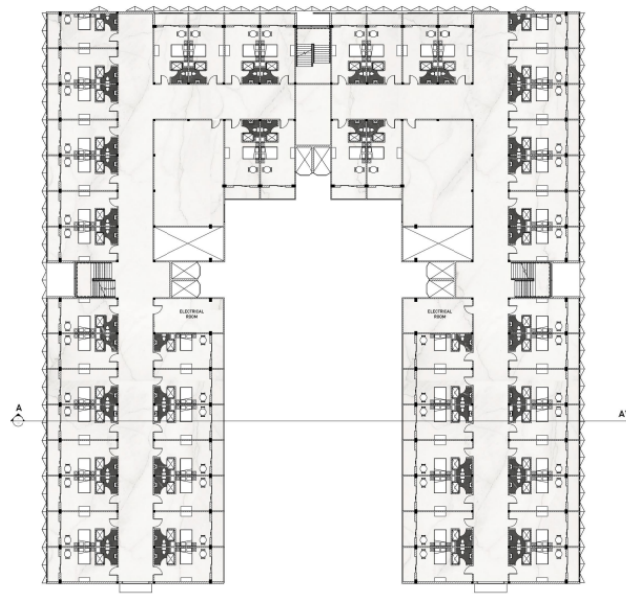


Fig. 4.20 Typical floor plan

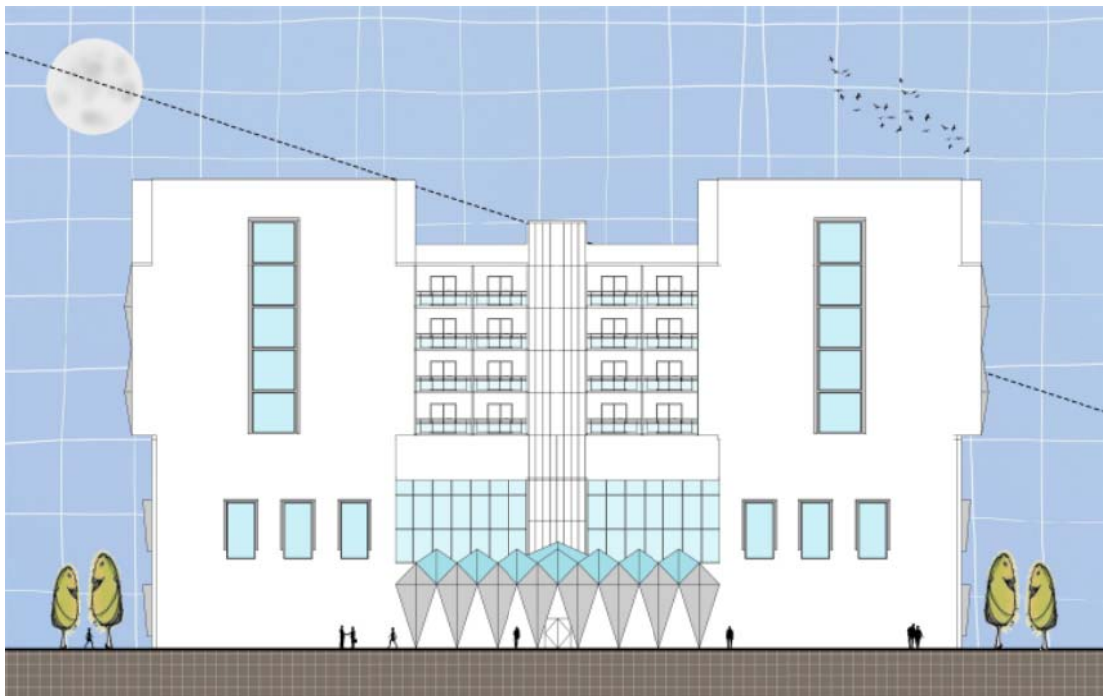


Fig. 4.21 South elevation



Fig. 4.22 section

4.4 Players pavilion

- It is placed in between the two stunning practice grounds so that the teams and players playing in these practice grounds can have a place to rest, recover and store their kits and belongings.
- It can accomodate 4 full teams and can be accessed from the grounds as well as from the service entry.
- The first usable floor is at 3m level so that the coaching staff and other players inside the pavilion will have an unobstructed view of what is happening inside the field. It is occupied by the Home team.
- Second usable floor is at 6 m level which will be occupied by the away team.
- Seating area and viewing area for both the teams is on the level 1 (3m) .
- Total height of the structure is 9.5 m
- Total built up area = 2720 sqm

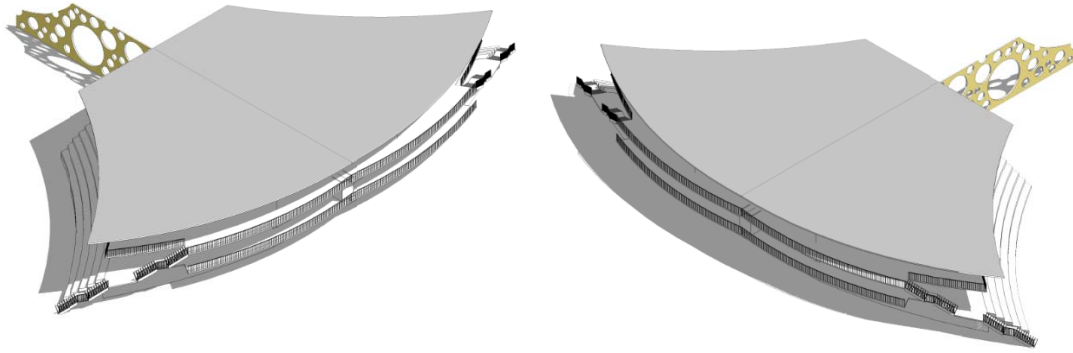


Fig. 4.23 Isometric view

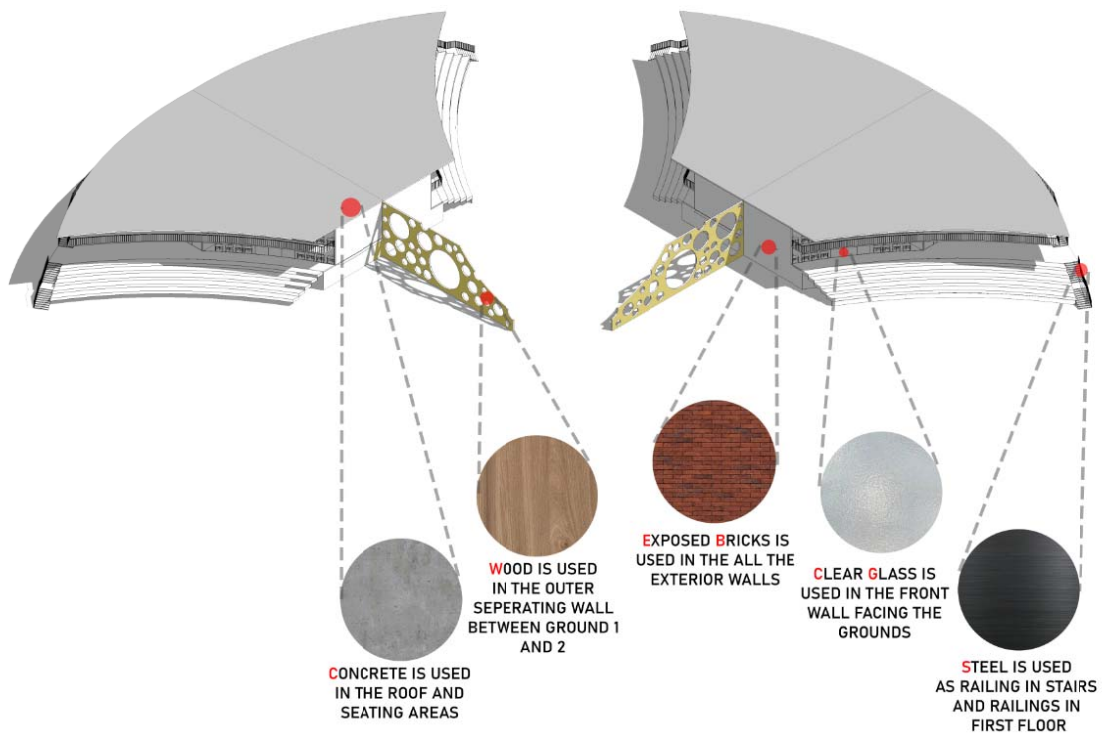


Fig. 4.24 Materials used

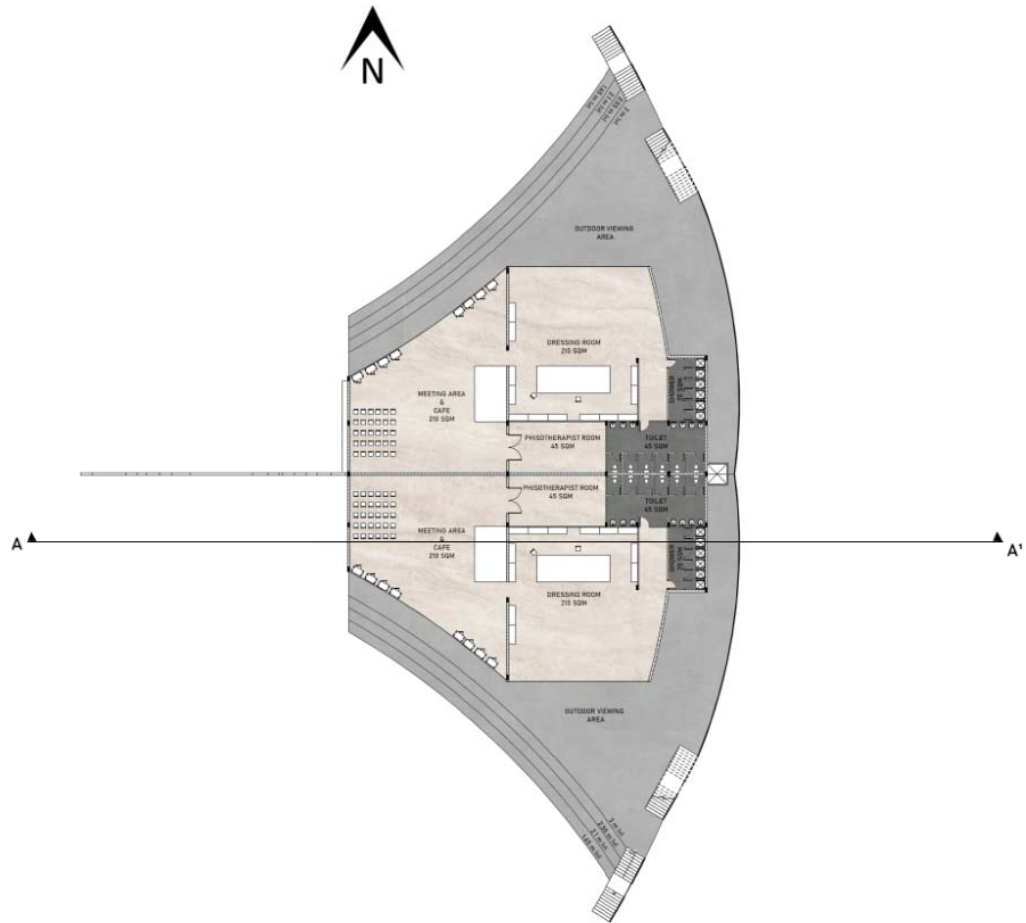


Fig. 4.25 Home team room plan



Fig. 4.26 South elevation



Fig. 4.27 Section aa1



Fig. 4.28 View of meeting room



Fig. 4.29 View of physio room



Fig. 4.30 View of cafe



Fig. 4.31 View of dressing room

4.5 Indoor training centre

- It is placed next to the hotel facility so that in case of harsh weather, players can make use of the world class indoor training facility.
- This indoor training facility has a doping test room and an ICC test room
- Sports doctors, Professional cricket analysts all work under this roof.
- This facility has space for setting up 50 full sized cricket nets as per the requirements from BCCI
- Separate entry is provided for the players and support staff who want to access the indoor facility and other entry is for the players and people who want to access the doctors cabin and ICC rooms.
- Total height of the structure is 17.45 m from ground to the tip of the skylight.

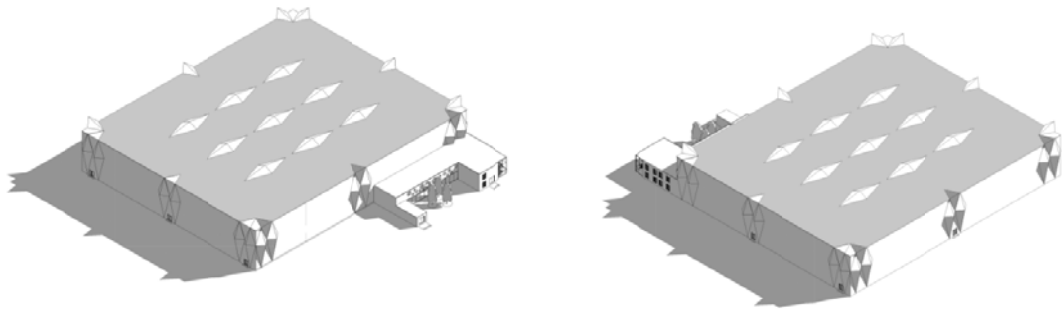


Fig. 4.32 Isometric view

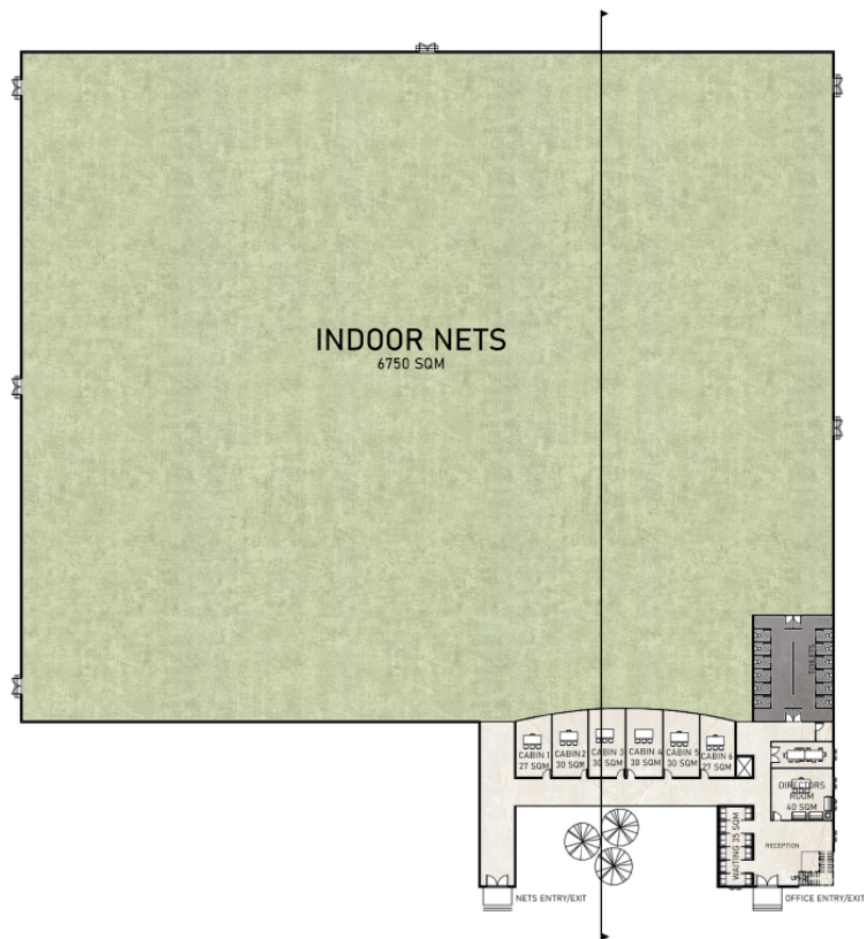
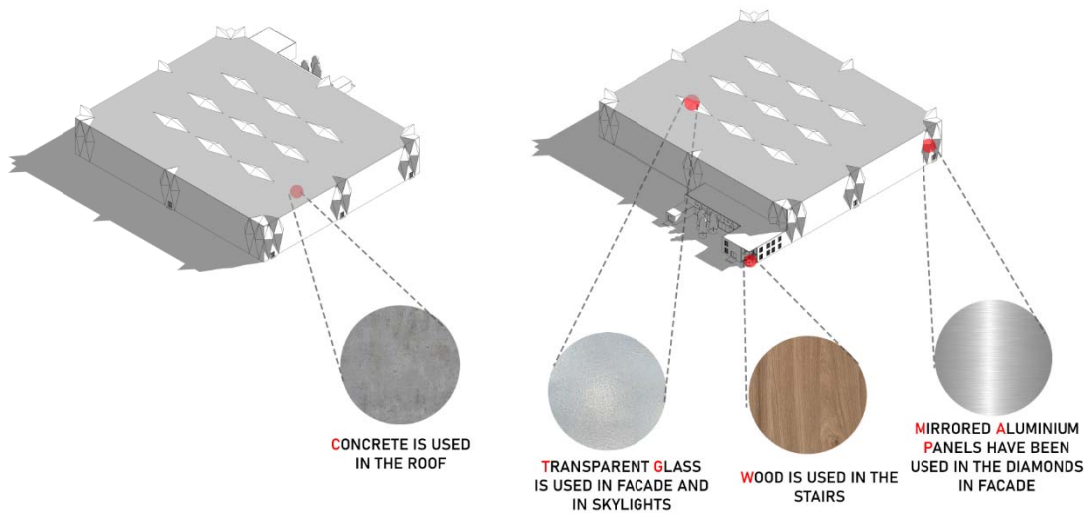


Fig. 4.33 Materials used
Fig. 4.34 Ground floor plan

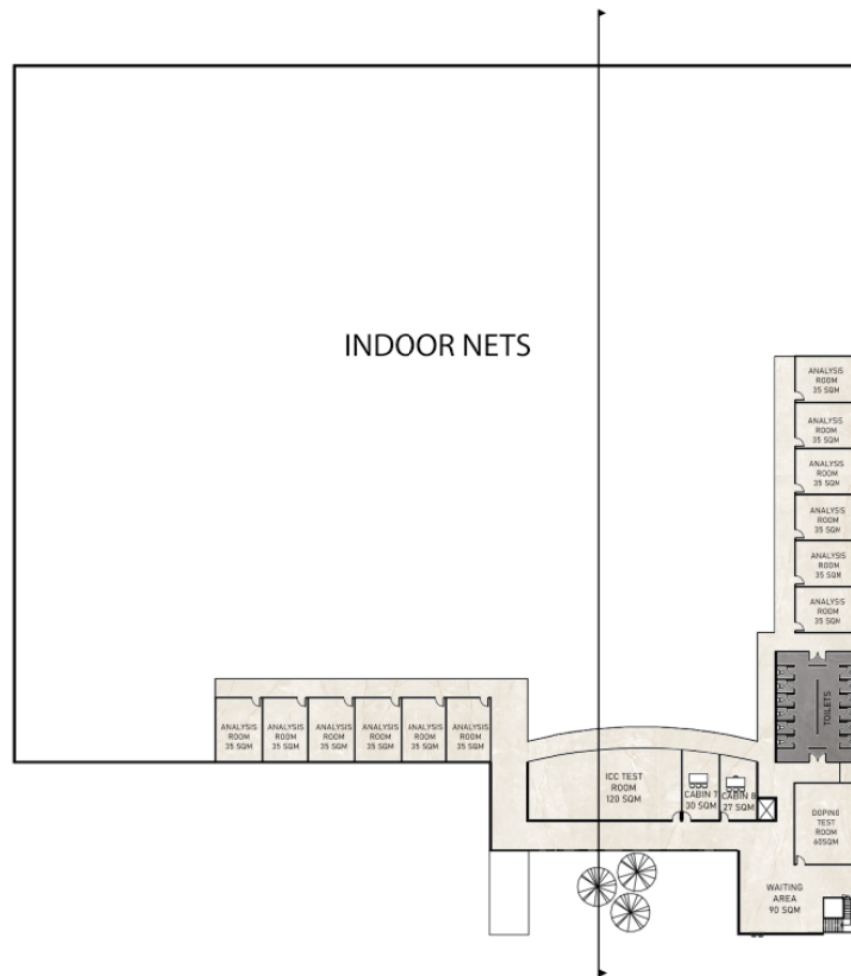


Fig. 4.35 First floor plan

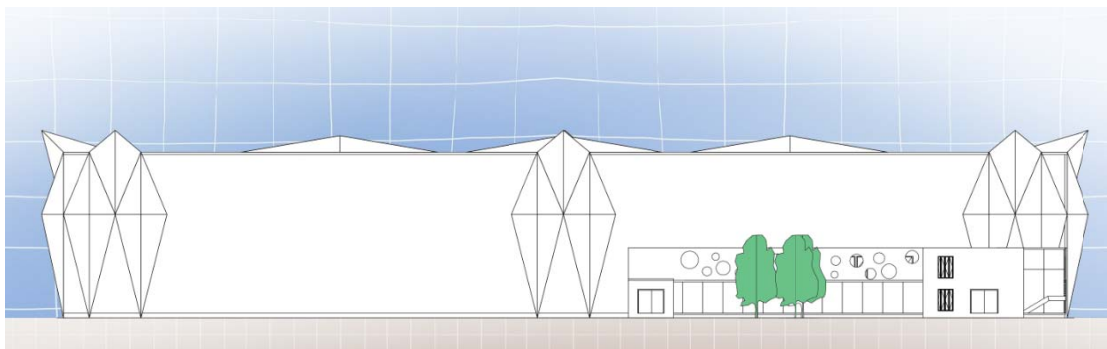


Fig. 4.36 South elevation

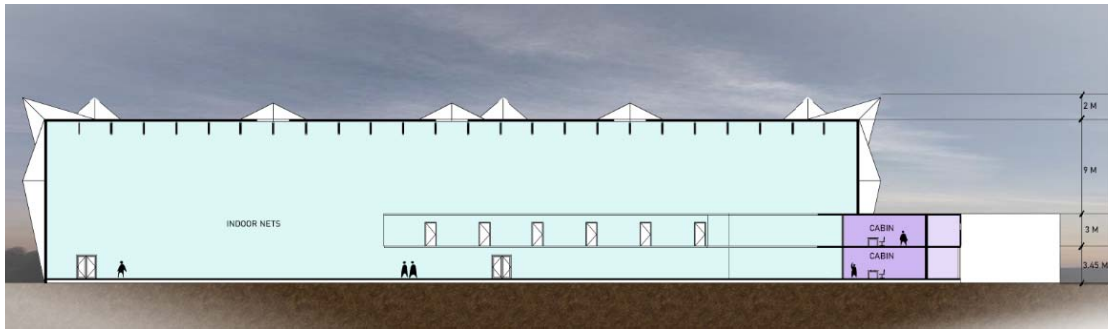


Fig. 4.37 Section aa1

4.6 Gym & Badminton court

- Gym and Badminton court is located next to the players pavilion and is accessible from the players entry.
- Both the Gym and Badminton courts are single floored. The gym has an total area of 1850 sqm and will comprise of all the latest equipment in the gym market.
- The badminton court block has two olympic sized badminton courts and has seating capacity that can accomodate 50 people.
- This duo of blocks has a seperate parking space so that players living in close vicinity can come and utilize these extras.
- Total height of the block is 15.5 m from ground to the roof of the Badminton court.

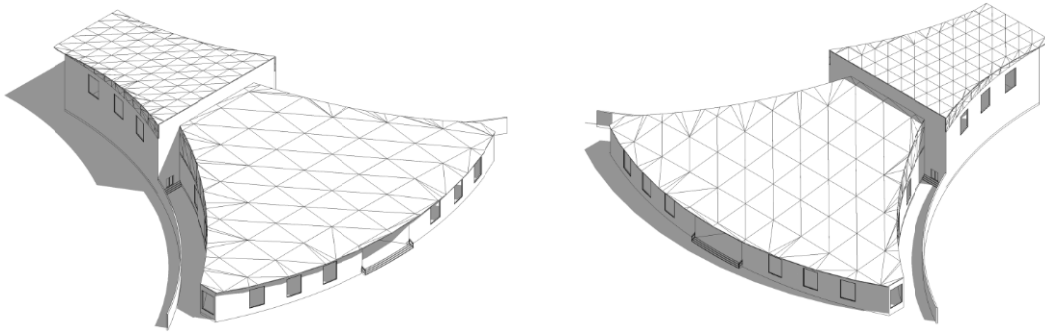


Fig. 4.38 Isometric views

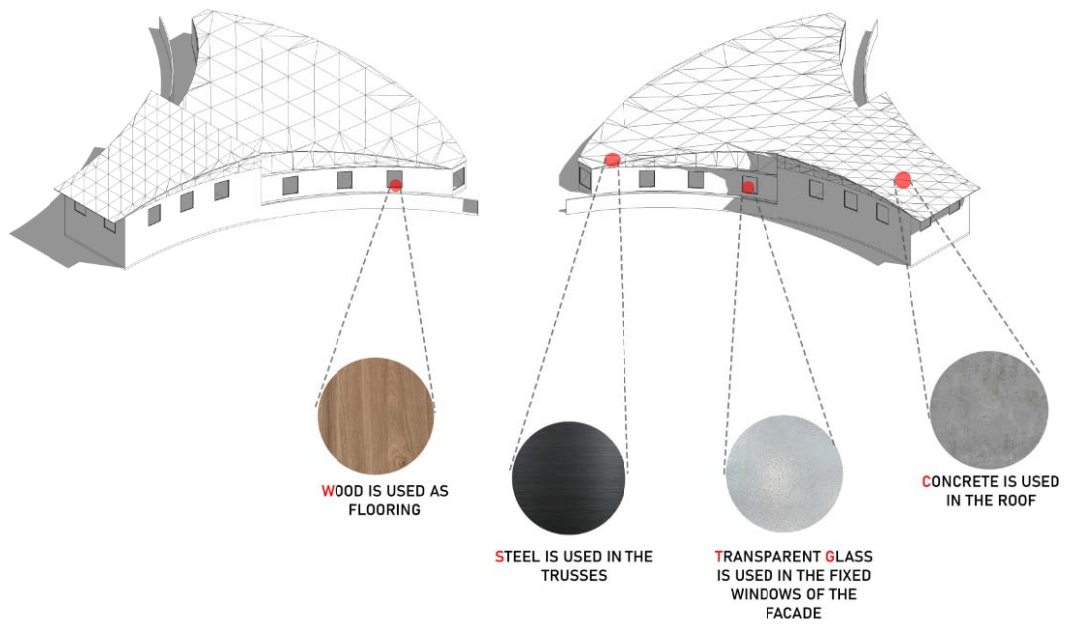


Fig. 4.39 Materials used

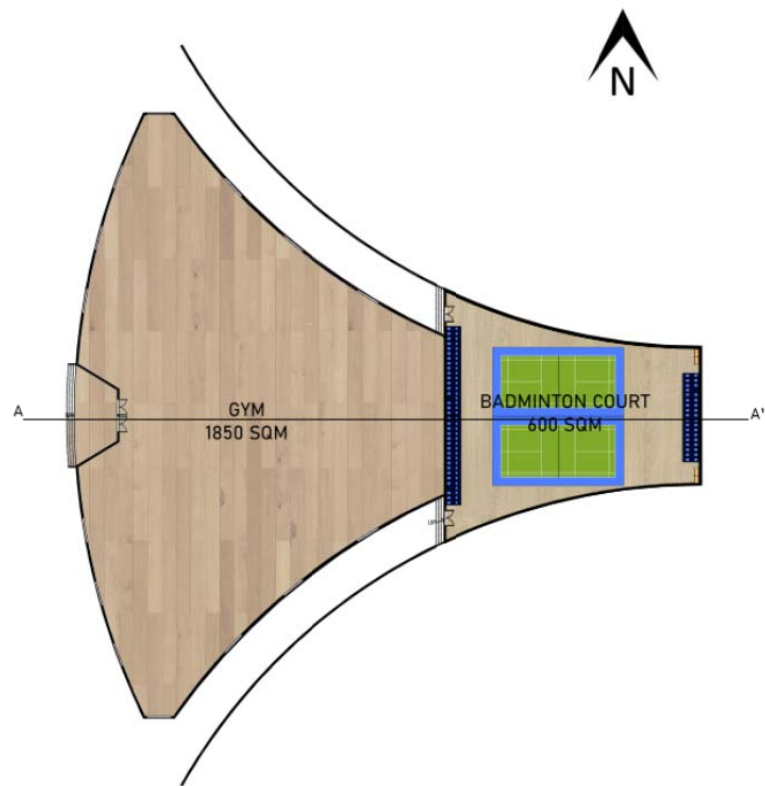


Fig. 4.40 Floor plan

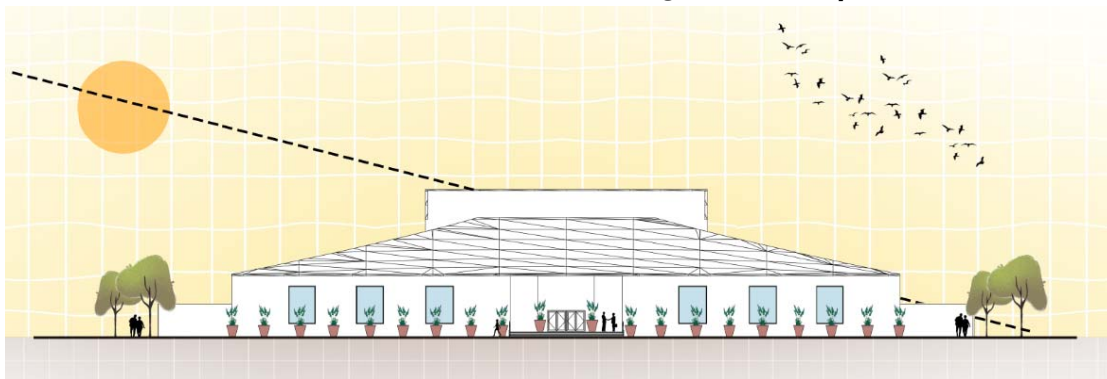


Fig. 4.41 West elevation



Fig. 4.42 View of gym



Fig. 4.43 View of badminton court

4.7 Administration block

- This block is the first block that is visible from the players entry and this block is a semi private block
- This block has a press / media room that can accomodate 50 journalists to whom the officials and players can give press conferences to.
- Administration block has two floors. Ground floor is a public space and the first floor is a private space.
- The total height of this block is 9.25 m from ground to the tip of the skylights

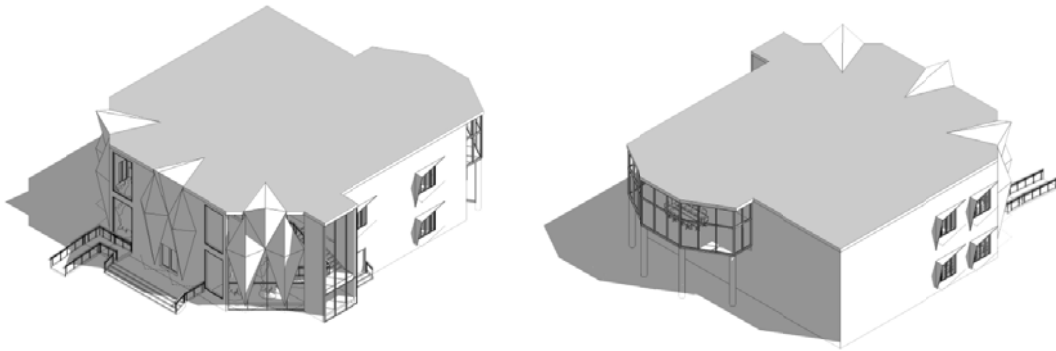


Fig. 4.44 Isometric view

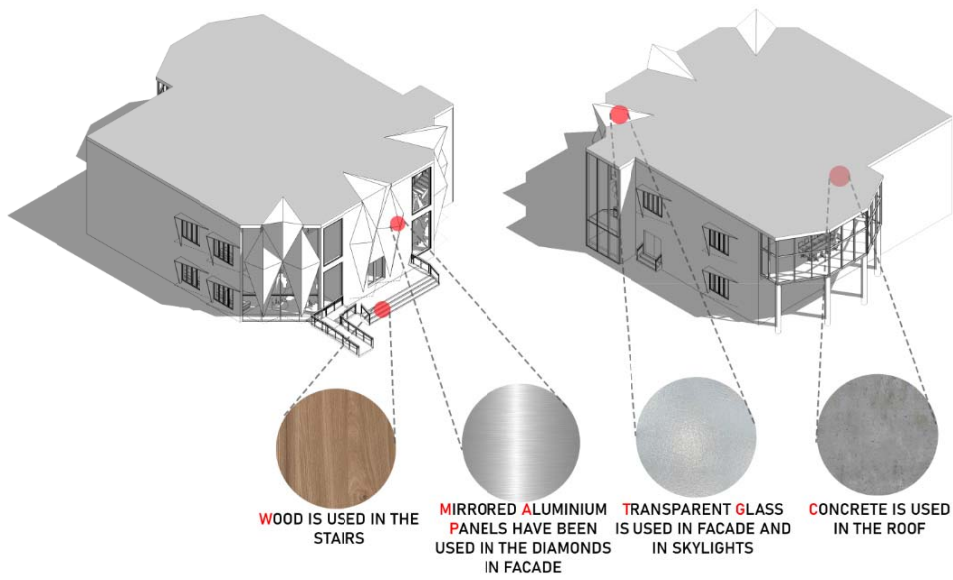


Fig. 4.45 Materials used

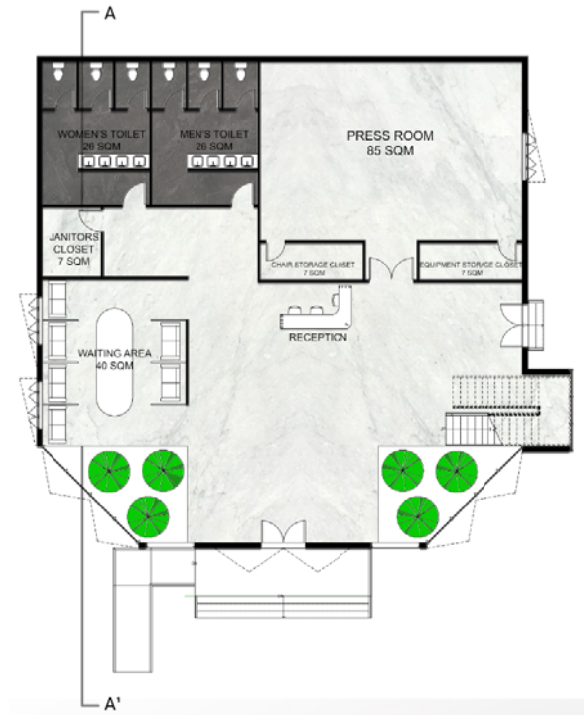


Fig. 4.46 Ground floor plan

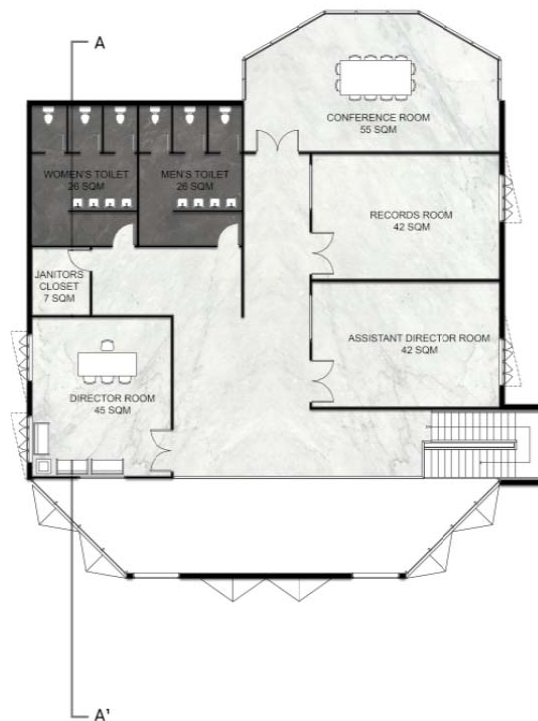


Fig. 4.47 First floor plan

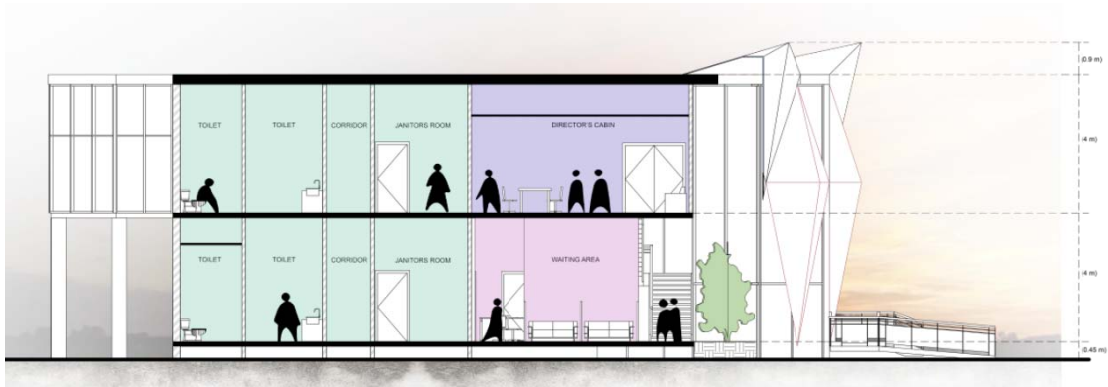


Fig. 4.48 Section aa1



Fig. 4.49 View of waiting room



Fig. 4.50 View of reception



Fig. 4.51 View of directors room



Fig. 4.52 View of conference room

4.8 site views



Fig. 4.53 View from players entry



Fig. 4.54 View of garden 1



Fig. 4.55 view of garden 2



Fig. 4.56 View from nets