SPORTS COMPLEX , NOIDA
SECTOR-152, UP

A Thesis Submitted
in Partial Fulfilment of the Requirements for the Degree of

BACHELORS OF ARCHITECTURE (B. ARCH.)

By

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CERTIFICATE

I hereby recommend that the thesis entitled **SPORTS COMPLEX, NOIDA, SECTOR-152, Noida** under the supervision, is the bonafide work of the students and can be accepted as partial fulfillment of the requirement for the degree of Bachelor's degree in architecture, school of Architecture and Planning, BBDU, Lucknow.

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Recommendation Accepted

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Aditya Narayan Singh 10th Semester

Roll No.: 1170101002

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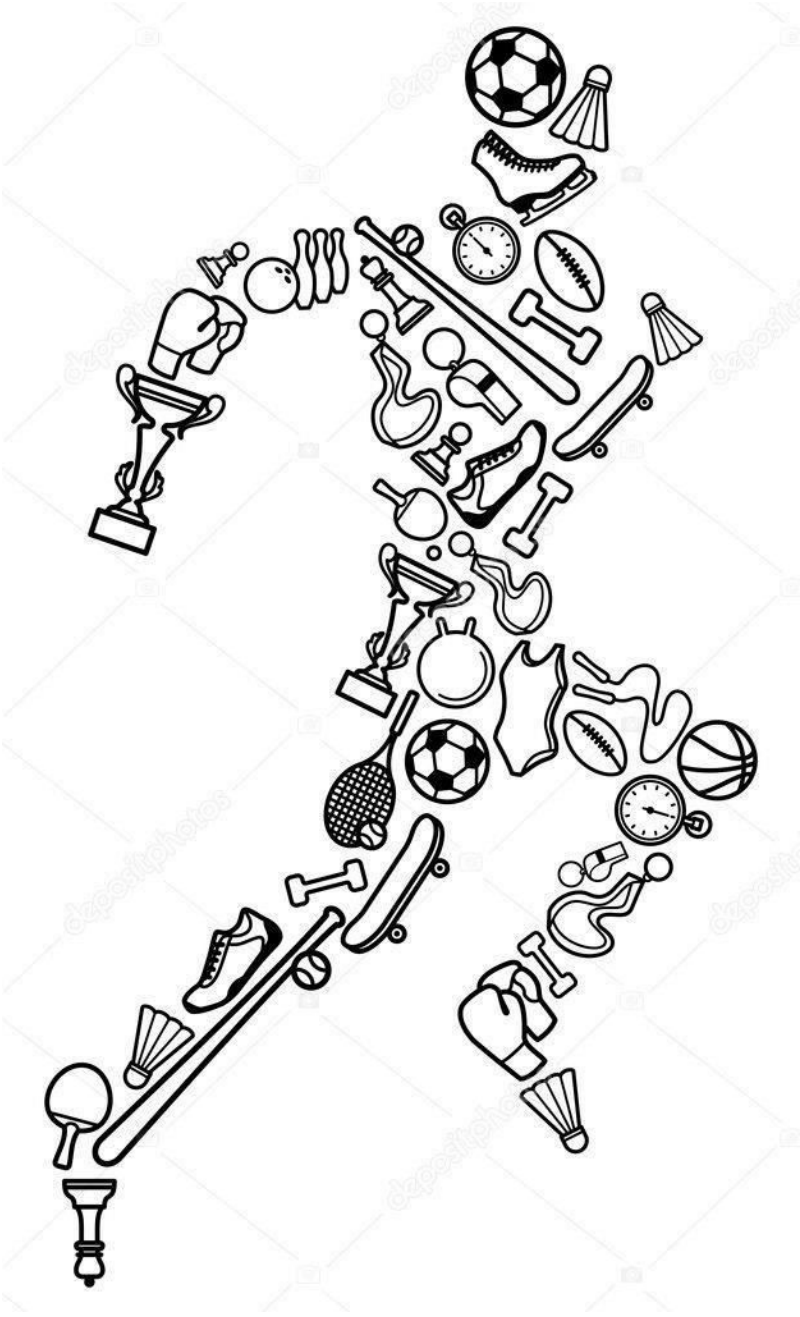


SPORTS COMPLEX

1.0 Introduction

1.1 Background of the project:

In a country of over a billion people, we only have a handful of champions. India has innumerable sports but less sportsmen. However, some sports are being valued but some have failed to get much attention. Many neglected athletes quit sports. Many of them don't get the recognition they deserve. There are a number of variables responsible for the poor sports culture. The sporting culture in India is very weak and sports as a career is still an unfamiliar thought. It is estimated that out of ten people, only one aspires to take up sports as a career. And the apparent answer to this is that there is no scope.
We can understand that sports is thought of as an activity limited to school or college level and nobody goes beyond that to think of it as a means of earning ones livelihood.

Due to lack of good coaches, proper infrastructure, opportunities and other supportive government schemes, sports in India have been left behind.

The concept of the sports complex is to create an advanced facility for sports that would help spread the sporting culture in the city as well as raise the sporting standards of the country. The project would serve as an urban initiative for an inclusive approach towards developing the quality of sports infrastructure an education in the city.
Access to quality facilities are important if we are to ensure that people have the opportunity to participate in sport and physical activity. We recognize the valuable role that sport and physical activity can play within a community and the importance of providing suitable facilities so that we all look to increase levels of activity whether that is through our normal daily routine, post-surgery or participation in sport, regardless of age. The sports complex seems to be meeting a crucial need to help the athletes practice before they play. It creates a sense of pride in those who use it regularly. It makes to the quality of life of people residing in the city.

1.2 Project outline:

The research topic is about the design development of a sports complex in a city of Noida, Uttar Pradesh, India. The research involves the in-depth study of the sports and athletes, their living environment and indigenous development and the future demands to improve their skills and techniques by providing a platform to train them. The first ever sports complex of India was built by Indian Government in order to host the indoor games events in 1982 Asian Games. It was established in Indraprastha Estate, New Delhi, India which became largest indoor sports arena in India and third-largest in Asia. Development of Sports sector can make path for various elements, such as economic opportunity growth, fitness benefits and for social empowerment in India. The proposition of this project is to create an advanced training facility by exploring new sports complex typologies, to spread the sporting culture in the city and make way for sports tourism. The project focuses on developing a best possible planning, incorporating the Indian architectural elements.

1.3 Aim & Objective

The aim of this research topic is to provide a structure that will enhance the sports ability and capability of every athlete, to provide sports facilities that can hold all sporting events and activities. It is an effort to popularizing sports amongst the youth as a way of life and to raise awareness of sporting and leisure facilities and achievements. The architectural initiative is to create an environment of a sports complex with all the facilities of training and practice for the athletes and sportsmen for betterment of their skills.

The objective of this research topic is to develop a sports complex in order to improve and promote sports and to provide a sustainable design that shows the interrelationship of each building to the environment. The project will provide both Active and Passive recreation such as Stadium for track and fields, football fields for the outdoor-active recreation; Basketball, volleyball and as well as swimming for indoor-active recreational.

The project of a sports complex will not only benefit the locality but it will also jump start the objectives of the government to promote sports excellence, encouraging both amateur and professional athletes with its new facilities and training environment, it can help our athletes in training hard and improving their skills for higher competence in global and national competitions.

1.4 Scope & Limitation

The project basically comprises of study and creation of spaces in complex such that they derive maximum benefit from the natural settings of the site, hence the climate as well. Analyzing and zoning of activities with respect to their relationships is an essential objective to design, construct, operate and maintain an indoor sports facility to attract out- of-market tournament business; and jointly be used, during non- tournament use, by residents for fitness activities, thus creating a more competitive resort by serving as an economic asset for tourism growth as well as enhancing the quality of life for Noida residents.

The conceptual layout is based on the potential and constraints of the site. Outlining the objectives of design concept is based on form, structure, hierarchy of open spaces and built area.

Social

•An interaction place for athletes and sportsmen.

•To provide a good environment for the practice.

Physical

•To provide an adequate, controlled and ideal environment for sportsmen.

•To create a new attraction for tourist.

•To bring professionalism, transparency and good governance in functioning of National Sports Federation.

1.5 State of Knowledge in the field

Sports culture in our nation continues to be in earliest stages and no true efforts are being made to revive this segment. One of the contradiction of India is, despite its huge population, India is almost always at the bottom in the Olympics medal tally because of the lack of facilities provided. The dreams of the sportspersons of winning medals for India at the Olympics are shattered as they are not provided with proper resources. India still lacks good coaches, proper infrastructure and other helpful schemes which the government can provide, hence the failure to acquire medals.

According to Boria Majumdar, an Indian sports scholar, “India does not have a sports culture.” He further explains that Indian athletes who have achieved international success are ex-ceptions rather than the products of the country’s sports system. He concluded by stating, “Unless there is a synergized sports culture you will never win a string of medals. A fundamental over-haul is needed and urgently so.”

2.1 Concept of Sports Complex

The roots of Indian sports are settled very deep and they are the integral part of Indian Culture. In present, most of the sports practiced are the legacy of the past and have been running for centuries.

With the aim of promoting sports and providing the facilities, the concept of sports complex came into being. This concept brought most of the sportsmen and athletes together. A platform that enlightens current generation by providing them with sports lessons and training to make them more skilled and professional in their particular sport. The sports complex is a place where all sports facilities are available at one platform and one gets regular training as per their interests and skills of particular sport. The sports complex is a mixed-use development of fitness center and training spot. Thus, it serves more than one purpose from a single platform.

This concept can help improve the capability of sportsmen, by educating them with different techniques. It also organizes the competition for general masses to test the capability of the sportsmen. This platform also compliments a unique edification exchange of ideas, experience and sports practice at national and international level amongst the sportsmen and athletes from diverse backgrounds. This concept is able to establish a link between various sports of India.

Fig.: Wrestling in Ancient India

Fig.: Chariot Racing

Fig.: Archery

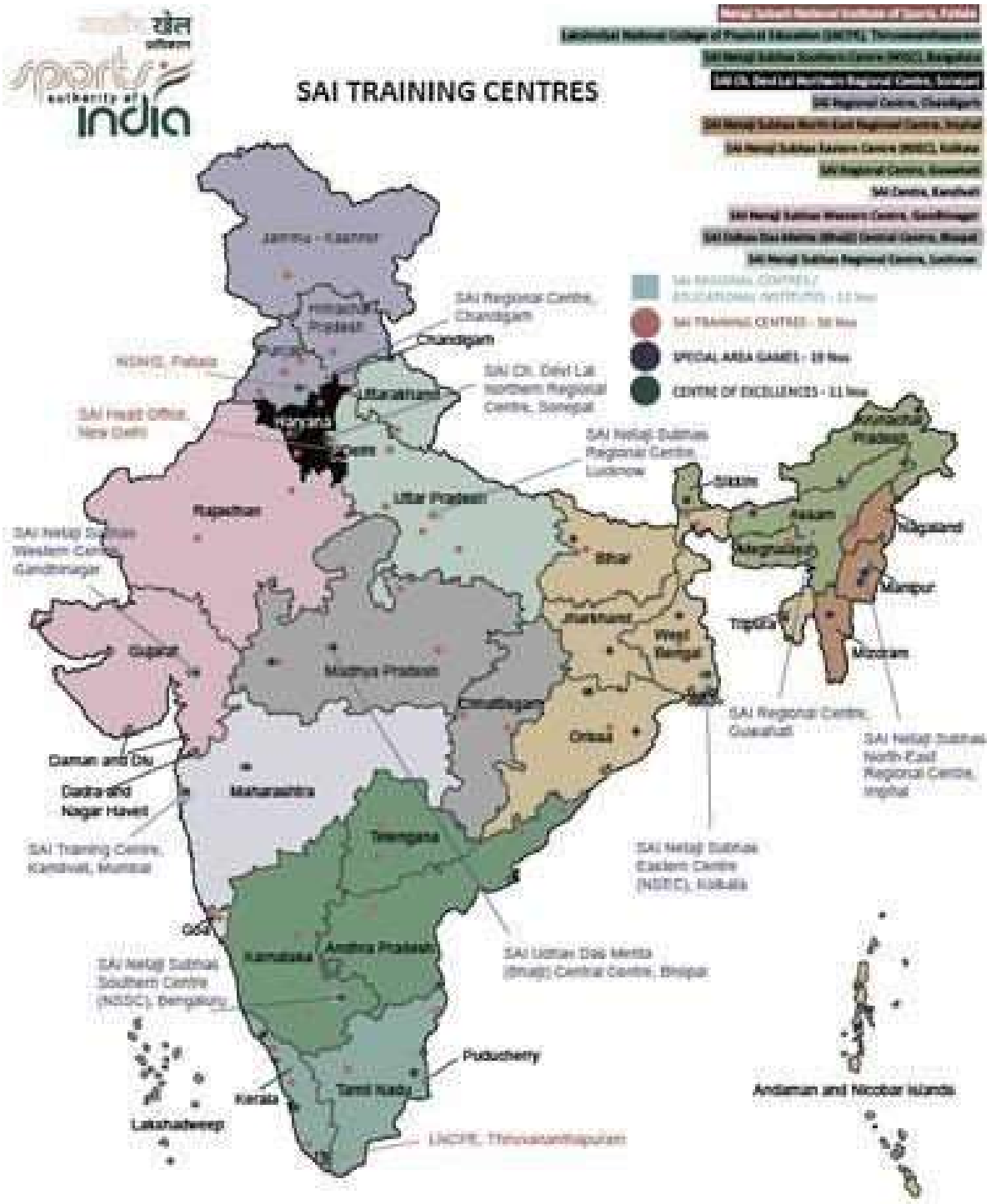


Fig : A rough map showing Sports centers around India

3.0 Case Study

Currently, India houses approximately 100 sports facilities fulfilling international standards of sports infrastructure. From which, few are recognized at national-international level and have hosted a number of tournaments.

Case study is selected which is similar to design project in context of site area, requirements, scale for the extensive research for this document and of frame requirement and comparative area of requirement.

Live Case study

- Yamuna Sports Complex, New Delhi
- Indira Gandhi Sports Complex, New Delhi

Literature Case study

- Talkatora Stadium, New Delhi

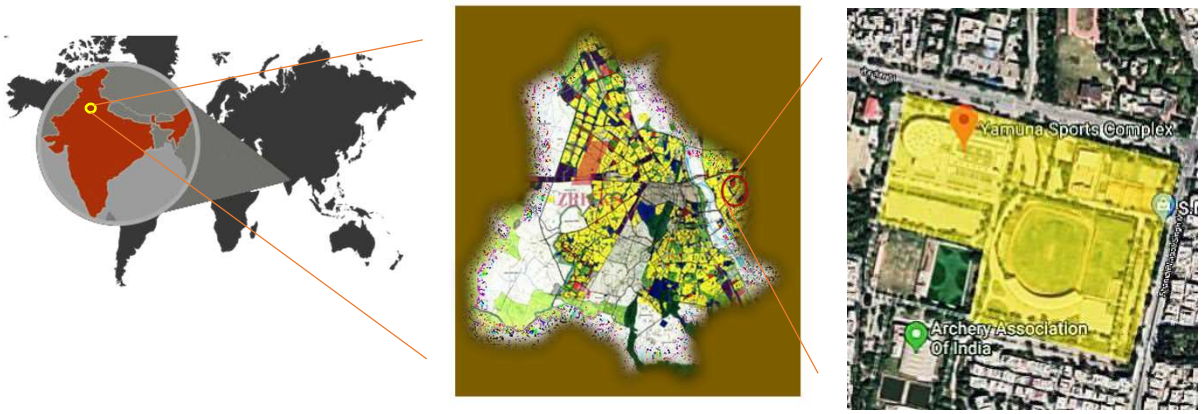


Fig. Images showing the location of Yamuna sports complex in Delhi map, from world map.

3.1 Yamuna Sports Complex

Yamuna sports complex has been set up by the Delhi Development Authority as a part of development of sports in Delhi. It provides Indoor game facilities, Outdoor game facilities, Swimming facilities, Fitness center etc. Foundation stone of this complex was laid by Late Shri Rajiv Gandhi, Honorable Ex-Prime Minister of India on 13th Jun, 1989 and inaugurated on 20th July 1999.

Fig.: Football Pitch

Fig.: Hockey Pitch

- Architect : Peddle Throp Architect.
- Location : Surajmal Vihar, Delhi
- Site area : 62.7 acre.
- Ground Coverage : 25%
- F.A.R. : 40%
- Front Setback : 20 m.
- Side Setback : 15 m.
- Rear Setback : 12 m.
- Parking : 2 e.c.s. per 100 sq.m.
- Nearest Airport : IGI Airport (25.4 km).
- Nearest Metro Station : Anand Vihar (5.3 km).

Fig.: Parking

Fig.: Entrance Gate

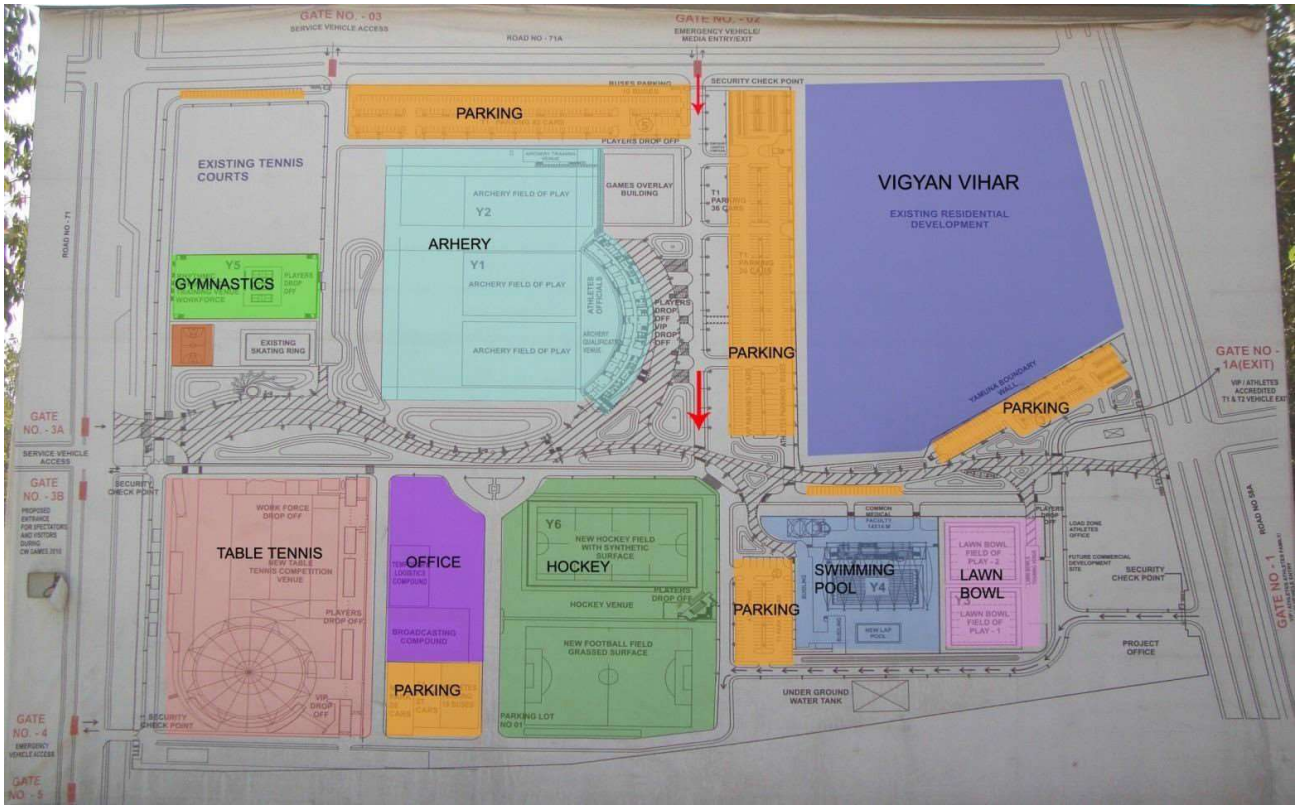
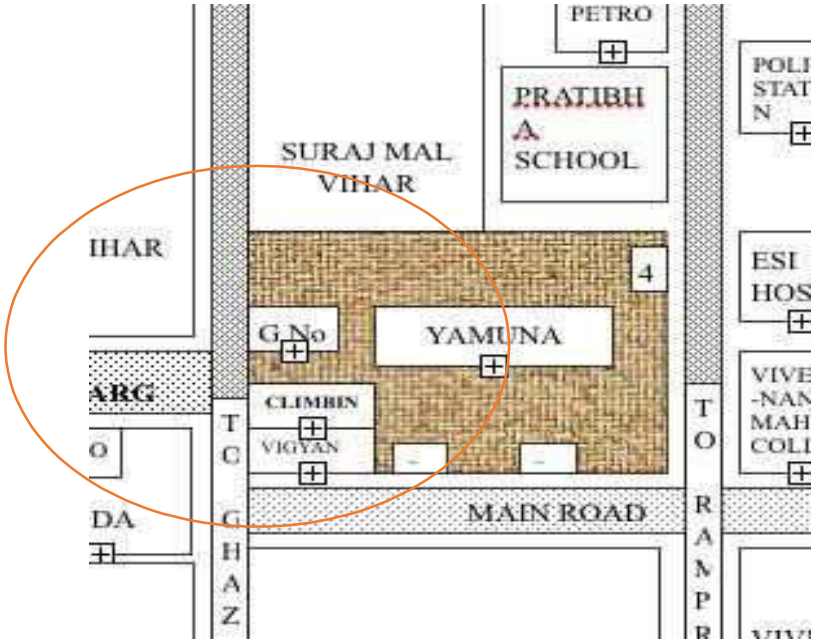


Fig.: Plan of Yamuna Sports Complex



3.1 Yamuna Sports Complex

Green Initiatives

•Orientation – North
•Rain water harvesting
•Effluent treatment plant
•CFL lighting
•Solar tubes are used for inside illumination of galleries, etc.
•Solar Cells
•Fly ash bricks are using to disposed the powerhouse fly ash.
•Heat insulation through :
- Walls with hollow concrete blocks/cavity walls.
- Glazing with double insulated glass.
- Thermal insulation on roof and walls.

•Conservation of water through : Use of recycled water for flushing and horticulture.
•Dual knob flushing cisterns.

Surroundings

- Surrounded by Road 71- a (on North).
- Master Somnath Marg (on South).
- Shahid Bhagat Singh Marg and Residential area (towards East).
- Kendriya Vidyalaya, Vigyan Vihar and Residential area(towards West).

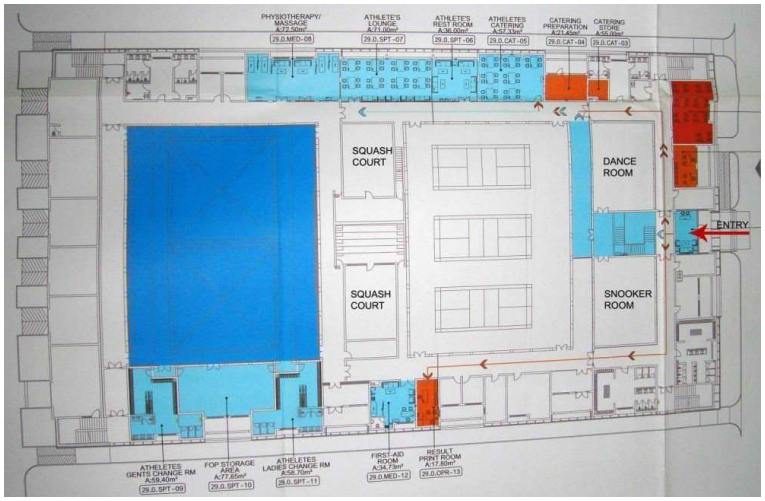


Fig.: Ground Floor Plan of Administrative Block

3.1 Yamuna Sports Complex

Admin Block

Admin Block is a G+1 building having facilities for :

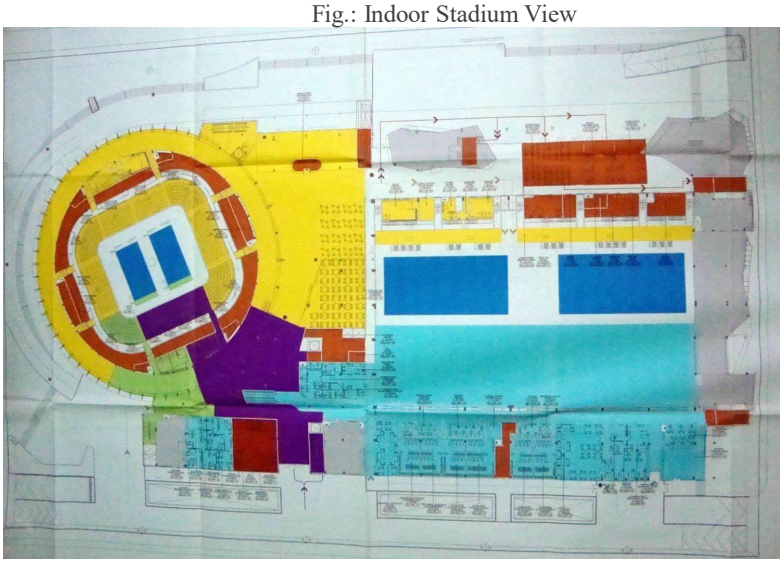
a) Billiards/ Snookers
b) Dance Room
c) Gym
d) Squash Courts
e) Volley Ball courts
f) Cafeteria
g) First Aid Room

3.1 Yamuna Sports Complex

Indoor Stadium Arena

•It has capacity of 5000 peoples.
•Total area of the plot is 26000 SQM.
•It has 2 show court table, 8 match table, 10 warm up table.
•It has wooden flooring in match court and Show court.
•The basement has parking facilities for 500 cars.
•It has wooden flooring in match courts and show courts.
•Aisles were 600mm wide .
•Lower rows were retractable. If more space is required then it can be retracted.
•Separate aisles for physically challenged persons.

Fig.: Indoor Stadium View



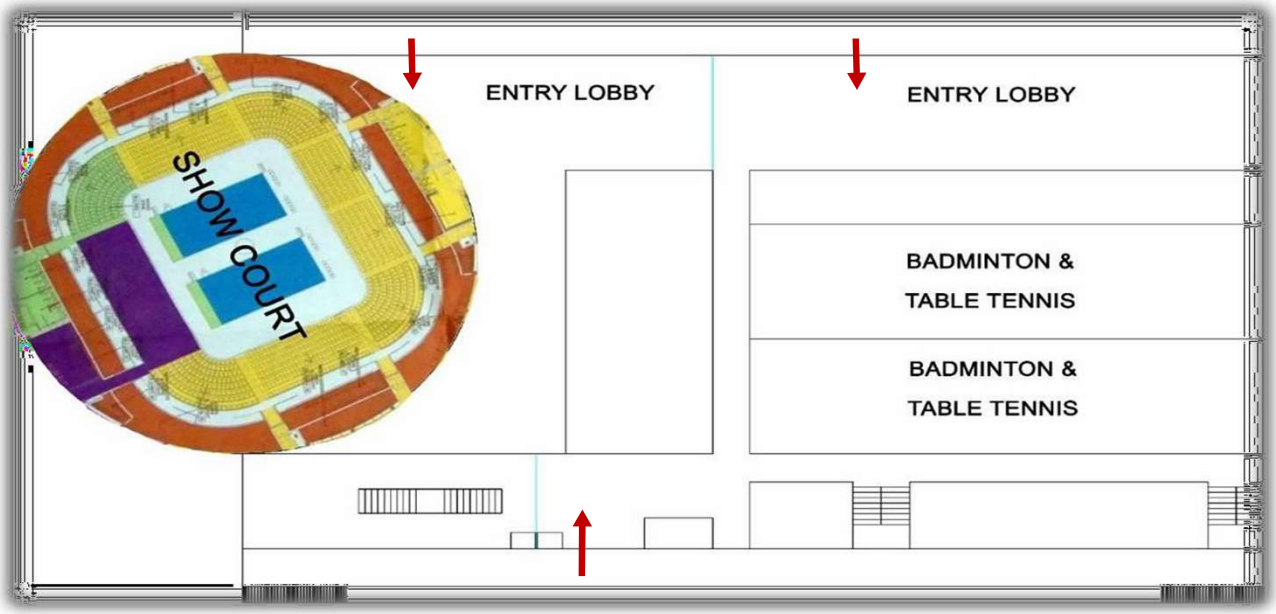


Fig.: Plan of Indoor Stadium

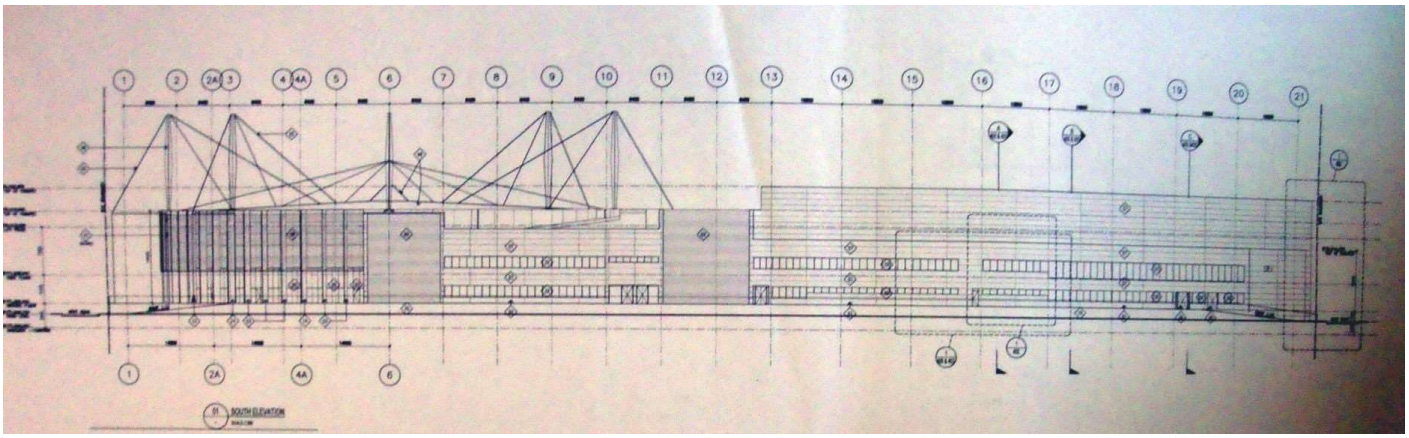


Fig.: South Elevation

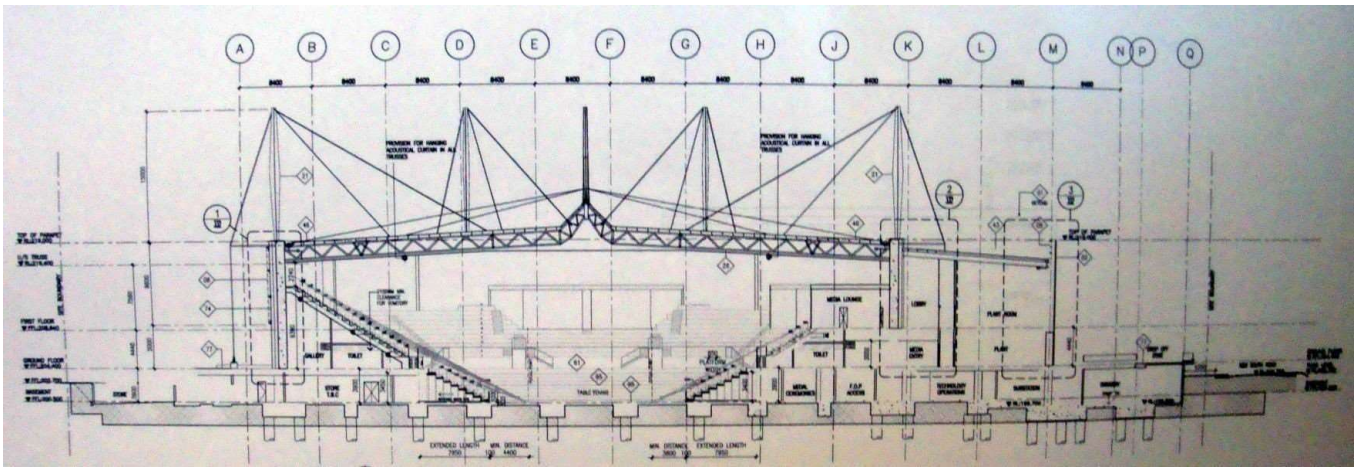


Fig.: Section through Table- Tennis Court

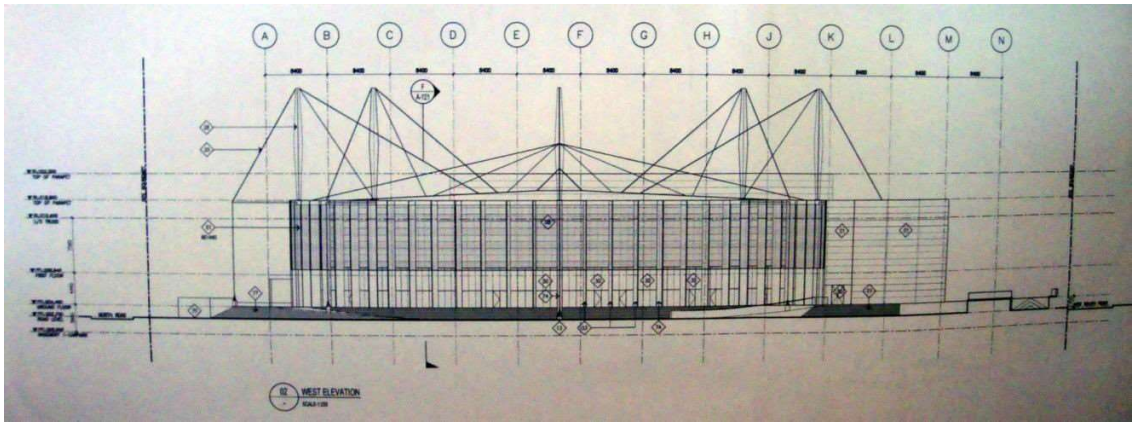


Fig.: West Elevation

Fig.: Archery Stadium View

Fig.: Archery Stadium

Fig.: View of Archery Ground

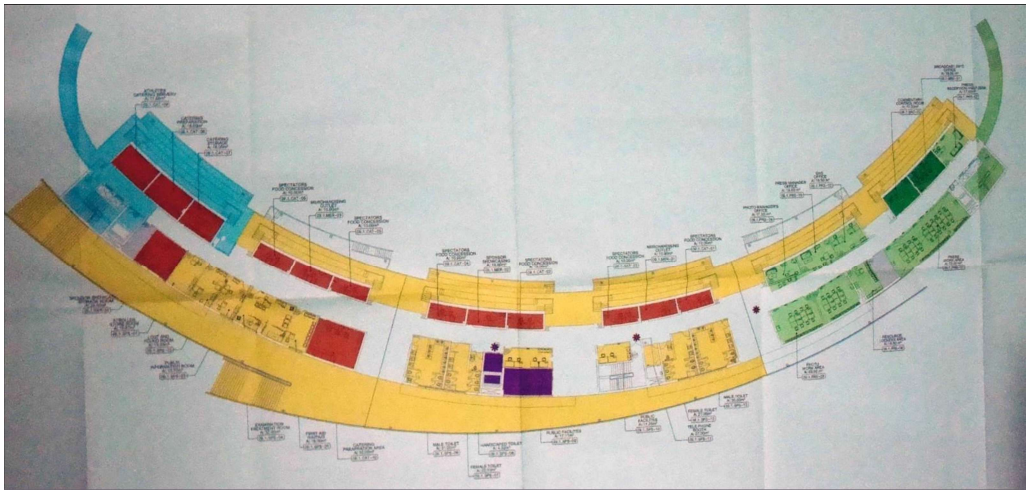
Fig.: View of Archery Ground

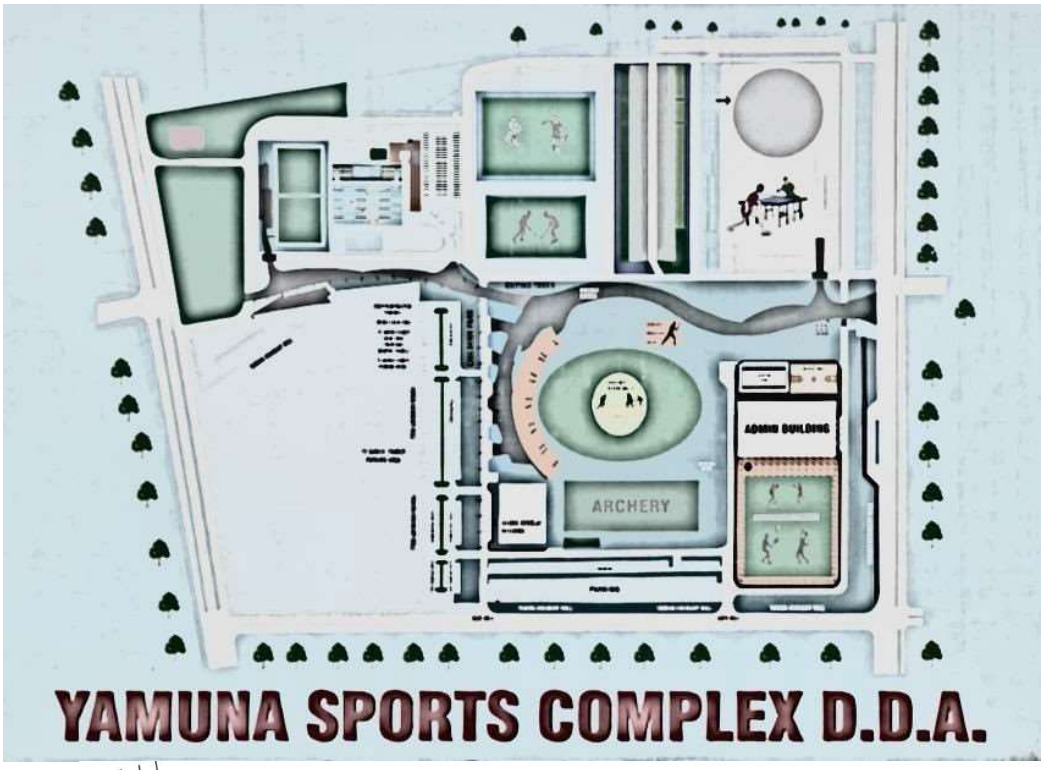
3.1 Yamuna Sports Complex

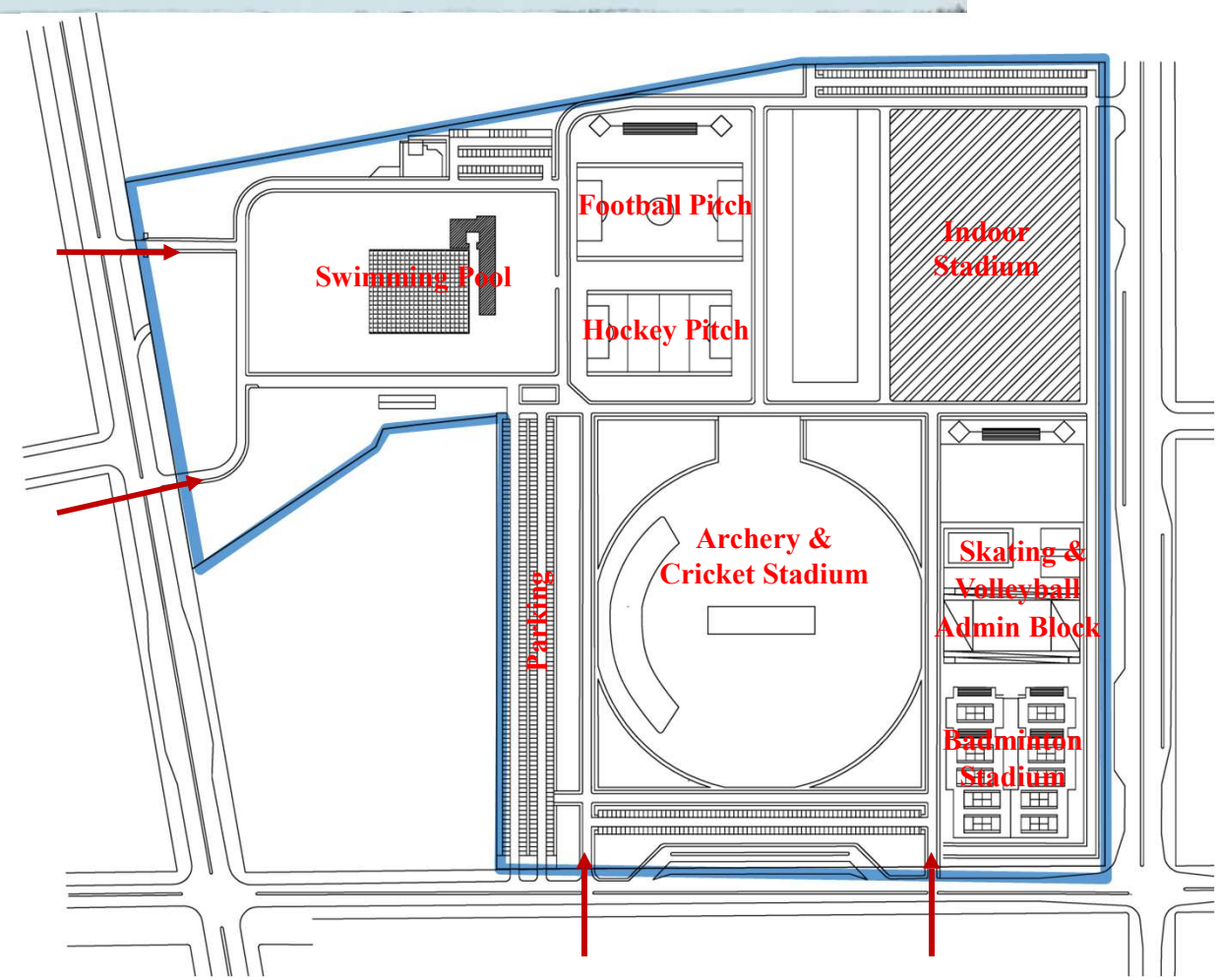
Archery Range

•The Archery Range has a capacity of 1500 peoples.
•The total area of the plot is 40000 sqm.
•This block has lift for PH peoples.
•The stadium host Archery Preliminaries apart numerous other sport events in the near future.

- A basic curvilinear form ensures unhindered play-view from all sides.
- The world-class design is spread over a site of 40000 sqm and houses spectator seating, air-conditioned lounges, changing rooms, medical and physiotherapy, doping control, logistics, cafeteria, venue management store facilities.
- The 4274 sq.m of plaza level is specially designed respecting the differently able.
- Special lifts, toilets and ramps ensure easy accessibility throughout the stadium and convenience of use.
- An external concourse area sweeps around the perimeter on the first floor, apart from housing the lounges and spectator's seating.
- The second floor contains the Commonwealth Games' family lounge and the media center and the grand stand sports a seating capacity of 1500 spectators.







Master Plan Of
Yamuna Sports Complex

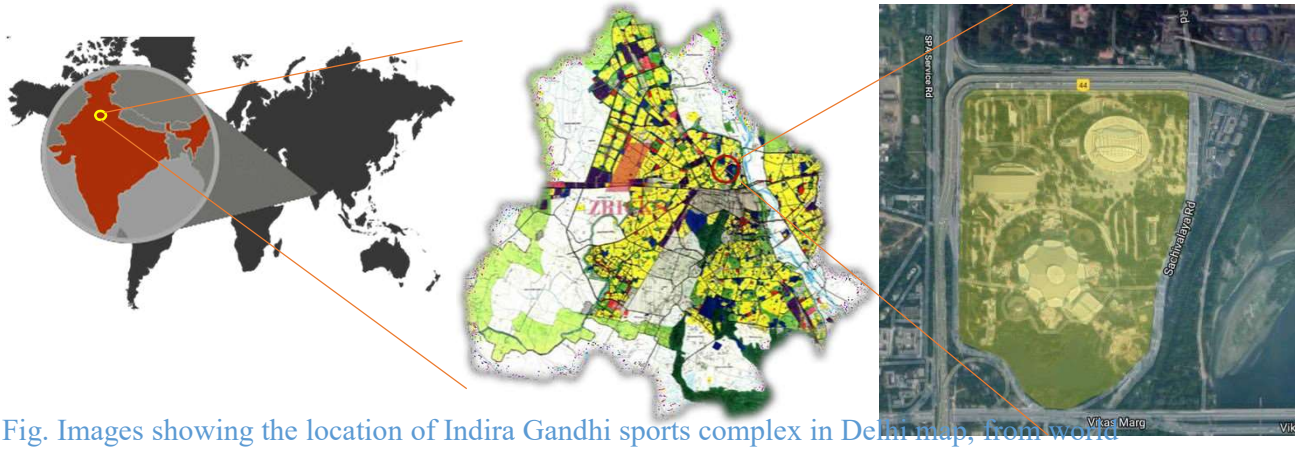


Fig. Images showing the location of Indira Gandhi sports complex in Delhi map, from world map.

3.2 Indira Gandhi Sports Complex

Indira Gandhi Sports Complex is located on the western bank of Yamuna River, in close proximity to the Delhi Secretariat (to its East) and the historical Ferozshah Kotla citadel (to its West).

It was built by the Government of India in 1982 in order to host the indoor games events in the 1982 Asian Games.

The stadium is the first of its kind in Asia and Europe and in size , ranks the third largest in the world .

During the Ninth Asian games, the stadium was venue for gymnastics, volley ball, badminton. However, other disciplines, like basket ball, table tennis, boxing, wrestling, hand ball, weight lifting, can be held with ease.

An artificial lake has been provided on the southern side of the site, which gets filled up with water from the Yamuna river running on the eastern side of the site .

Architect	: Sharat Das & Associates.
Location	: Indra Prastha Estate, Delhi.
Total Area of Plot	: 102 Acres.
Ground Coverage	: 25%
F.A.R.	: 40%
Front Setback Side	: 20 m.
Setback Back Setback	: 15 m.
Parking	: 15 m.
No. of Tress	: 2 e.c.s. per 100 sq.m.
	: 13,500

The stadium is approachable from all the four sides, though the western plaza is mostly used because of the presence of the bus terminal near this side .

The public vehicles have their entries on the west (Gate C), North (Gate D and F) and East (Gate G) roads.

The Gate 1 on the east side is meant for the players where as the Gate C serves for both private and service vehicles.

Fig.: K. D. Jadhav Stadium

3.2 Indira Gandhi Sports Complex

•The 102 acres complex has almost 40 acres in the form of landscaped areas.
•The stadium is circular in plan, has both its axis emphasized by strong statements in the form of pedestrian walkways.
•The stadium is a geodesic structure with skylights for lights and ventilation.
•All public entries are connecting directly to the plaza which serve as a massing movement for 6000 spectators through each plaza.
•The circular administrative block abuts the stadium to the South West while a similar looking coaching block is on the South East.
•Beyond the coaching block is the three winged players block.
•Four Blocks available for sports facilities are it's largest

Indoor Sports Arena, K.D. jadhav Stadium, Cycling Velodrome and Administrative Block.
•It is surrounded by:

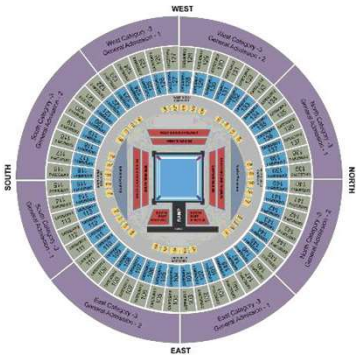
- Srinagar Kanyakumari Highway (On west)
- Sachivalya Road (On East)
- Velodrome Road (On North)

Fig.: Indoor Stadium

Fig.: Cycling Velodrome

Fig.: View of Indoor Arena

3.2 Indira Gandhi Sports Complex



Indoor Stadium Arena

•The main stadium, 150 mts in diameter, 42 mts height at the Apex.
•The playing arena measuring 60 mts X 78 mts, matches with the best in the world.
•Built almost 1200 mm above built up ground level.
•The seating capacity for the stadium is 25000 spectators.
•However , the provision of a foldable sound absorbing partition, a unique feature, enables this stadium to be divided into two parts, in a short span of seven minutes, each part quite independent of the other.
•The spectators access the arena from three levels:

- The podium level at 3.9 m.
- The foyer level at 9.10 m.
- The upper level at 14.1 m., by means of stairway provided within structural pylons.

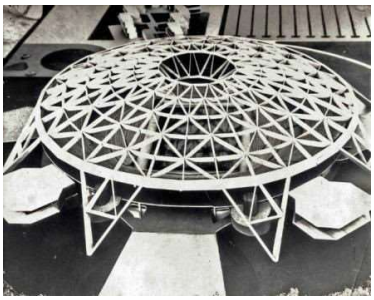


Fig.: View of Indoor Arena

•The ground level is reserved for the players, organizers, the media people, the maintenance staff, handicapped people and the VIP's. On the other side are the offices of the media people, with their individual storage areas, and these rooms are built on either side of the service entry. The VIP's have independent entry through VIP foyers, one each on North and South side. There are separate lounges and snack bar facilities for VIP's.
•The podium and foyer levels are strictly meant for spectators.
•Basic amenities like bars, toilets, drinking fountains, enquiry booths, lost and found department, first aid posts and public telephones have been provided at both levels, and special care has been taken to lead the spectators to the areas.
•There are four emergency exits at the arena level for players as well as for spectators of lower tier, for upper tier spectators an emergency exit stairways and from their to the foyer level and then to the podium level.

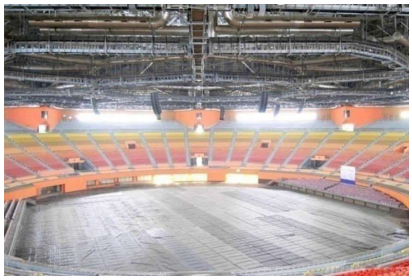


Fig.: Plan of Indoor Arena

Indoor Hall

Admin & Girls Hostel

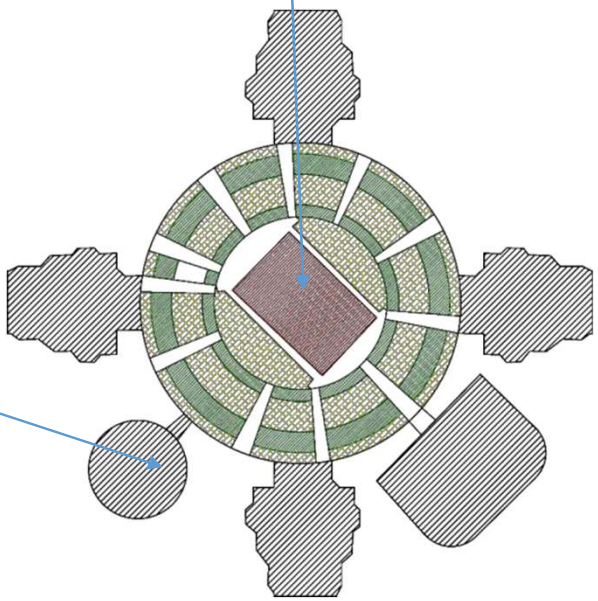
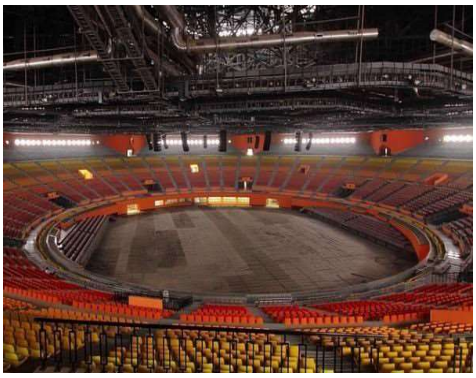


Fig.: Plan of Indoor Arena

3.2 Indira Gandhi Sports Complex

Indoor Stadium Arena



Land occupied by

stadium : 14416 sq. mts .
Total area of arena : 60 m X 78 m = 4680 sq. mts .
Height of stadium : 42 mts .
Power Requirements : 5500 Kw

Number of flood lights : Main lights : 216 (2 kw each)
Emergency lights : 72(1.5 kw each)
Seating Capacity 25000
Number of gates : 42 : Outer 10 no. and inner 32 no.

Length of internal roads : 24.5 kms

Construction Agency : Delhi Development Authority
Name of consultant : Sharat Das and Designs Consortium
Number of toilets 92
Quantity of Structural steel consumed : 1900 M.T.
Total area of roof : 18000 sq. mts.
Parking areas : 20 acres (80,000 sq. mts.)

Fig.: Indoor Stadium

3.2 Indira Gandhi Sports Complex

K. D. Jadhav Wrestling Stadium

•It is a 6,000 seater indoor stadium that hosted wrestling events of 2010 Commonwealth Games.
•After three months without official name, it was finally named after Indian wrestler K. D. Jadhav who won a bronze medal at 1952 Summer Olympics.

- G+2 Storey Building.
- With RCC structure elliptical shape in plan.
- Large multipurpose hall (130m X 40m) for legacy use.
- Built up area is 12,350 sq. mts.
- Roofing RCC slab and steel structure.
- New Indoor stadium alongwith warm- up hall.
- International Standard Facilities for VIPs, Athletes, Spectators, Media and Technical Officials.

Fig.: View of K.D. Jadhav Stadium

Fig.: View of Cycle Velodrome

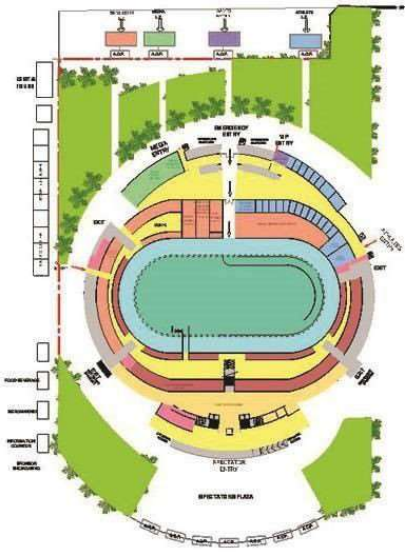


Fig.: Site Plan of Cycle Velodrome

3.2 Indira Gandhi Sports Complex

Cycling Velodrome

Velodrome block has two storey building :

Ground Floor, facility such as entry for wrestling arena, all office's, receptions, toilets, athletes lounge, change room, locker etc.

Basement, for ambulance & athletes entry to arena

First floor, exit spectators, family entry and exit.

Land occupied by stadium	: 17500 sq. mts .
Total area of arena	: 5000 sq. mts .
Total Width of stadium	: 124.3 m
Total length of stadium	: 145.8 m
Total length of track	: 250 m
Width of track Capacity	: 7 m
Height of stadium	: 4000
Seating capacity	: 38.7 m
	:4000

Administrative Block

Admin Block has two storey building.

•Ground Floor facility such as – offices, reception, toilets.

•First floor – For girls hostels.

•The shape of building was circular and covered with dome structure.

Fig.: Cycle Velodrome Timber Track

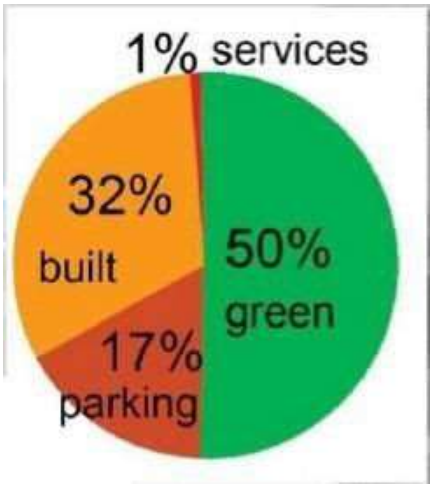


Fig.: Area Analysis

3.3 Talkatora Stadium, New Delhi

It is an indoor stadium located in New Delhi, India. The stadium is owned and managed by the New Delhi Municipal Council (NDMC). Upgraded Talkatora Indoor Stadium was inaugurated on 25 February 2010.

Fig.: View of Talkatora Stadium

Project	: M/S Raja Aederi Consultant Pvt. Ltd.
Location	: Talkatora Garden, President's Estate,New Delhi.
	: 49088 sq.m.(12.13 acres).
Site area	: 3.7 acres.
Built-up Area	: 3480 sq.m.
Services	: 4800 sq.m.
Indoor Stadium Parking	: 500 cars.
Capacity Nearest Airport	: 3035.
Nearest Metro Station	: IGI Airport (12 km).
	: Shivaji Metro Station (2.1 km).

It is named after a Mughal-era garden, known as Talkatora Gardens. A tal (tank) situated at the west side of the garden, is surrounded by hilly ground (part of the Delhi ridge, forms a *katora*, bowl-shaped natural depression), which gives the place its name.

The facilities available in Talkatora Stadium are :

- One competition ring
- Four warm-up areas
- A tunnel to facilitate movement of the athletes from the Facility Block to the main stadium. I
- Acoustic ceiling of dome
- Scoreboard, video screens and sports lighting
- 184 CCTV cameras, a media center with computers
- Anti- doping center, gym
- Separate rooms for boxers with a bed, a cupboard and a rack.

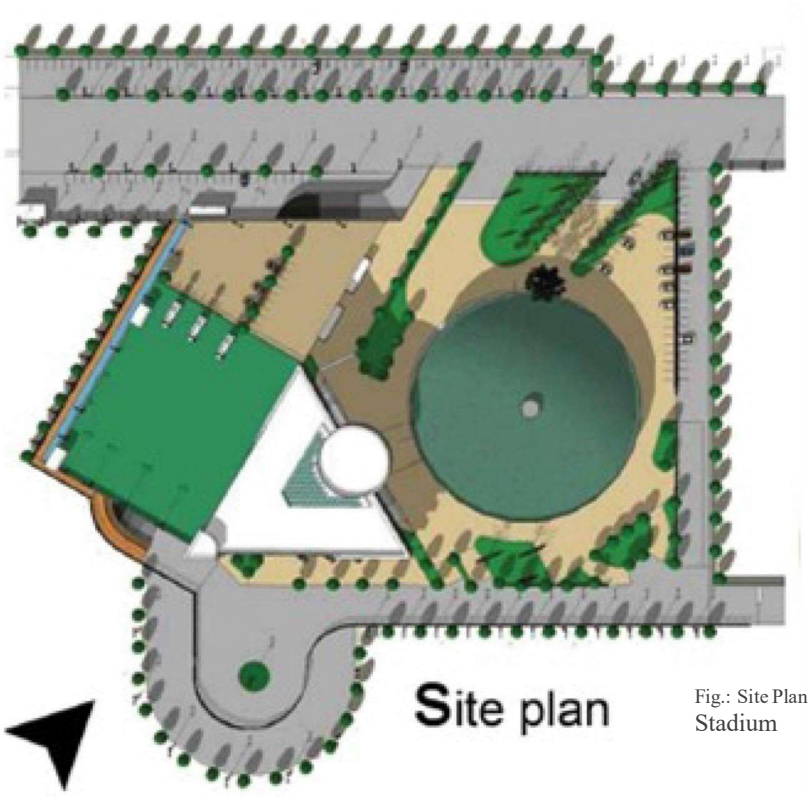


Fig.: Site Plan of Talkatora Stadium

Fig.: Circulation

3.3 Talkatora Stadium, New Delhi

The stadium is a unique piece of architecture with an elegant look.
The stadium was a venue for the 2010 Commonwealth Games for the event of boxing. A number of environment-friendly material and energy-efficient devices have been used in this block to make it a green building.
The venue has been re-designed and oriented in such a way so as to take advantage of solar angles and wind direction. The roof of stadium also have solar energy panels.

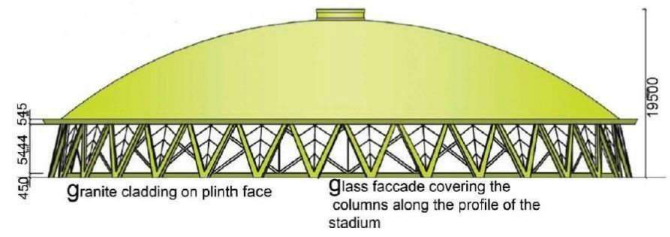
There are three entries to the site:
- Vehicular
- Pedestrian
- Players

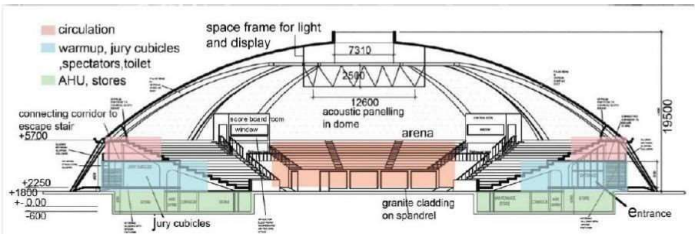
There are two parkings areas:
- Public
- V.I.P.

Built area:
- Administrative block
- Boxing Stadium

Fig.: Services

Services:
- Main sewer along Park Street.
- Covered drains for storm water run of throughout the site.
- 2 underground water tanks for rainwater harvesting.





3.3 Talkatora Stadium, New Delhi

Indoor Stadium Arena

Circular form is the basis of built structure.

It houses air-conditioning plants, hydro-pneumatic water supply system, emergency generating sets, fire fighting pumps and an underground water tank.

Boxers will reach the ring from an underground tunnel (30.5 feet) inside the players facility center, walking a total of 60 steps.

Roof is at the level of ground and can bear a load of a 40 ton fire tender.

Cost of construction 25 lakhs.

Indoor Stadium Arena

LIGHTING & ILLUMINATION

60 solar energy lights in the compound of Talakatora Indoor Stadium.

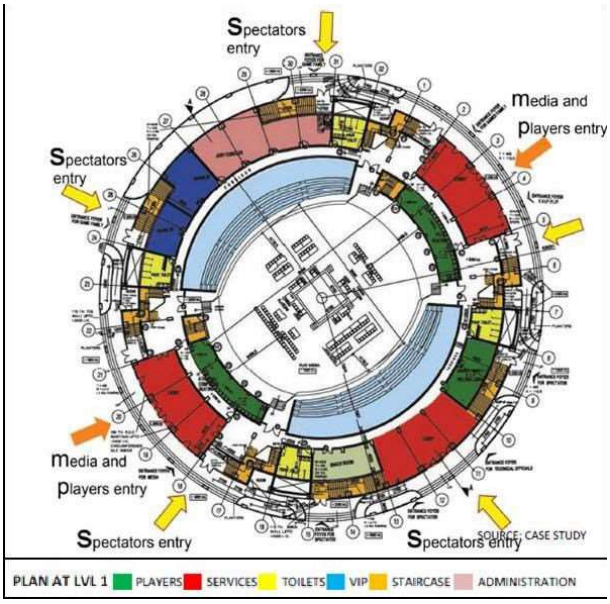
These lights are made of Light Emission Diode chip which consumes minimum energy.

The 60 Watt of LED lights provides more illumination than 400 Watt of sodium vapour lamps.

The average life time of each LED light is 50,000 hours and

due to their advanced technology these lights require very little maintenance as well.

Fig.: Indoor Stadium



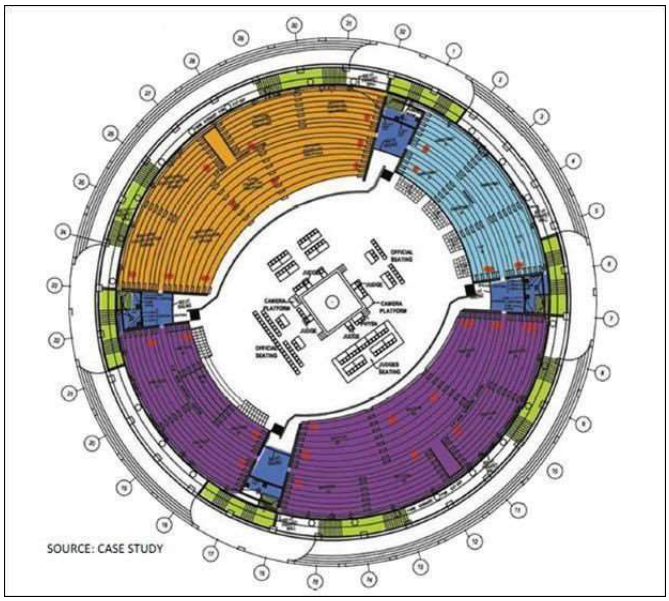


Fig.: Section of Indoor Stadium

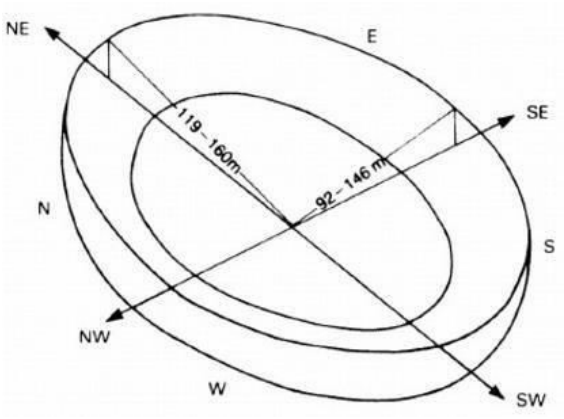


Fig.: Viewing distance determines the stadium size.

4.0 Study of Sports & Standards

4.1 Orientation of Stadium

•The orientation of the ancient stadiums were determined by the variable timing of the contest.
•Axes ran from west to east or north to south.
•In present time the main axis is usually northeast to south-west to avoid direct sunlight.
•Access gates are situated to the east.
•Turnstiles are provided so as to direct the stream of visitors to the various stadium entry points.

Types of Seating

Seating with backs, fixed and fold-up

•Row width 780–800 mm recommended.
•Minimum clear seat way 305 mm.
•Width of seats 460 –500mm for seats without arms 500 mm for seats with arms.

Benches without backs

•Row width 610 mm minimum recommended.
•Minimum clear seat way 400 mm.
•Width of seats 460 –500 mm.
•These allow closer spacing but are less comfortable.

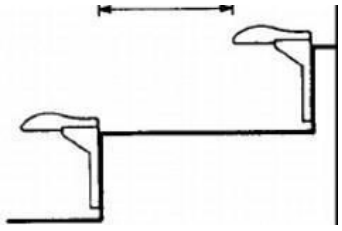


Fig.: Seating without backs

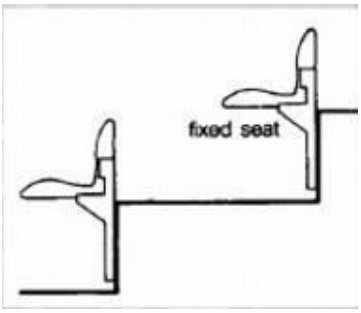


Fig.: Seating with backs

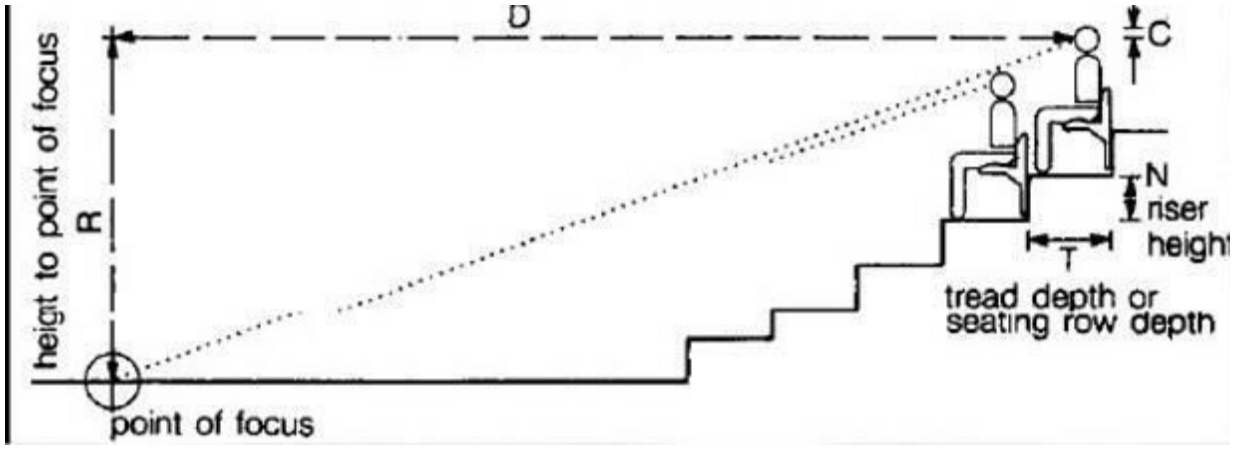


Fig.: Sight of Spectator

Sight of Spectator

The factors sight of spectator is determined by the following principal :

•The assumed constant of 'the crown', i.e. the distance from the eye to the top of the head which is known as the C value.
•The tread depth or seating row depth The point of focus (the middle of the innermost athletics track or the near touchline in football or rugby).
•The height of the spectator's eye in the first row.

Multipurpose Hall

Multipurpose halls should be designed, planned and constructed specific for sports disciplines it is proposed to be used for optimum utilization of space.
The necessary size of the site depends on the area required for the desired sporting activities and
administration rooms.
As a rule of thumb, it can be estimated as follows:
required sports area x 2+ necessary distance to site boundary
+ necessary parking area for vehicles

Flooring

Flooring should generally be seamless synthetic
Polyurethane flooring over shock absorbing layer for longer life and less maintenance.
Maple wood/Teak wood flooring with the flooring system
may be provided where the Multipurpose Indoor hall is to be used by National campers / Elite trainees of ball games/badminton.
If the area where the multipurpose hall is constructed / being constructed is termite infested, Synthetic Polyurethane flooring should only be provided. In no case wooden flooring should be provided, in termite infested areas.

type of hall	dimensions (m)	useable sports area (m^2)	indoor games[1]	number of training courts/ pitches	number of competition courts/ pitches[2]
games hall					
single hall	22 × 44 × 7[3][4]	968	badminton	6	5
			basketball		1
			football		1
			handball		1
			hockey		1
			volleyball	3	1
triple hall	44 × 66 × 8[3] div. into 3 sections (22 × 44)[5]	2,904	badminton	24	15
			basketball		4[6]
			football		
			20 × 40		3
			30 × 60		1
			handball		3
			hockey		3
			volleyball	9	3
quadruple hall	44 × 88 × 9[3] div. into 4 sections (22 × 44)[5]	3,872	badminton	32	25[6]
			basketball	5[6]	4
			football		
			20 × 40		4
			40 × 80		1
			handball		4
			hockey		4
			volleyball	12	4

Fig.: Types of Games Hall

type of hall	dimensions (m)	useable sports area (m^2)	indoor games[1]	number of training courts/ pitches	number of competition courts/ pitches[2]
multifunctional halls					
single hall	15 × 27 × 5.5	405	badminton basketball volleyball	4 1 1	
triple hall	27 × 45 × 7[3][4] div. into 3 sections (15 × 27)[5]	1,215	badminton basketball football handball volleyball	12 3 3	5[6] 1 1 1 1
quadruple hall	27 × 60 × 7[3] div. into 4 sections (15 × 27)[5]	1,620	badminton basketball football handball hockey volleyball	16 4 4	7[6] 2 1 1 1 1
alternative: double hall	22 × 44 × 7[3][4] div. into 2 sections (22 × 28 + 22 × 16 or 22 × 16 + 22 × 18[5])	968	badminton basketball football handball hockey volleyball	6 3	5[6] 1 1 1 1 1

Fig.: Types of Multifunctional Hall

room type	dimensions (m)	useable area (m^2)
conditioning/weight training room	depending on the range of apparatus, minimum height 3.5 m	35 to 200
fitness room	depending on the range of apparatus, minimum height 2.5 m	20 to 50
gymnastics room	10 × 10 × 4 to 14 × 14 × 4	100 to 196

	DESIRED ACTIVITY	SPACE
1	Provide basic technical knowledge & specialised assistance to residents for maintaining the property.	Setting up of building center, where research and improvisation is directly beneficial to the community.
2	Opportunity for revenue generation to the locals & subsidised assistance for training and leisure.	Apart from the membership programme, some sports facilities are open to pay-and-play on a daily basis.
3	Issues of entitlement and other institutional issues needs establishments.	The administrative center must function not only to supervise this complex but assist the entire settlement.
4	Performances and street food options go well together.	Interface between performance area and street food activities.
5	Live screening and minor public events.	Public plazas and galleries can turn into fan zones or fan areas during particular events.
6	People should experience the natural heritage of the site through the green and the backwaters.	Boating facilities for tourists. Jetty for the sttlement. Rowing for the athletes.
7	People should be able to stay for longer time, relax and enjoy the atmosphere	Plazas, galleries and other open areas should be made more active and enjoyable with many elements of interest.
8	Children need a safe space to play informally since the streets are occupied by traffic.	A children's park including swings and spaces for other games.
9	Tourists coming here should recieve more information about the place than they already know from the internet and books.	An interpretation center can help people understand the various layers of sports excellence - history, lifestyle, infrastructure, etc.
10	Interaction with the waterbody.	A well developed riverfront can create a festive atmosphere around it - kiosks, galleries, fishing decks, etc.

Fig.: Activity based Provision Spaces

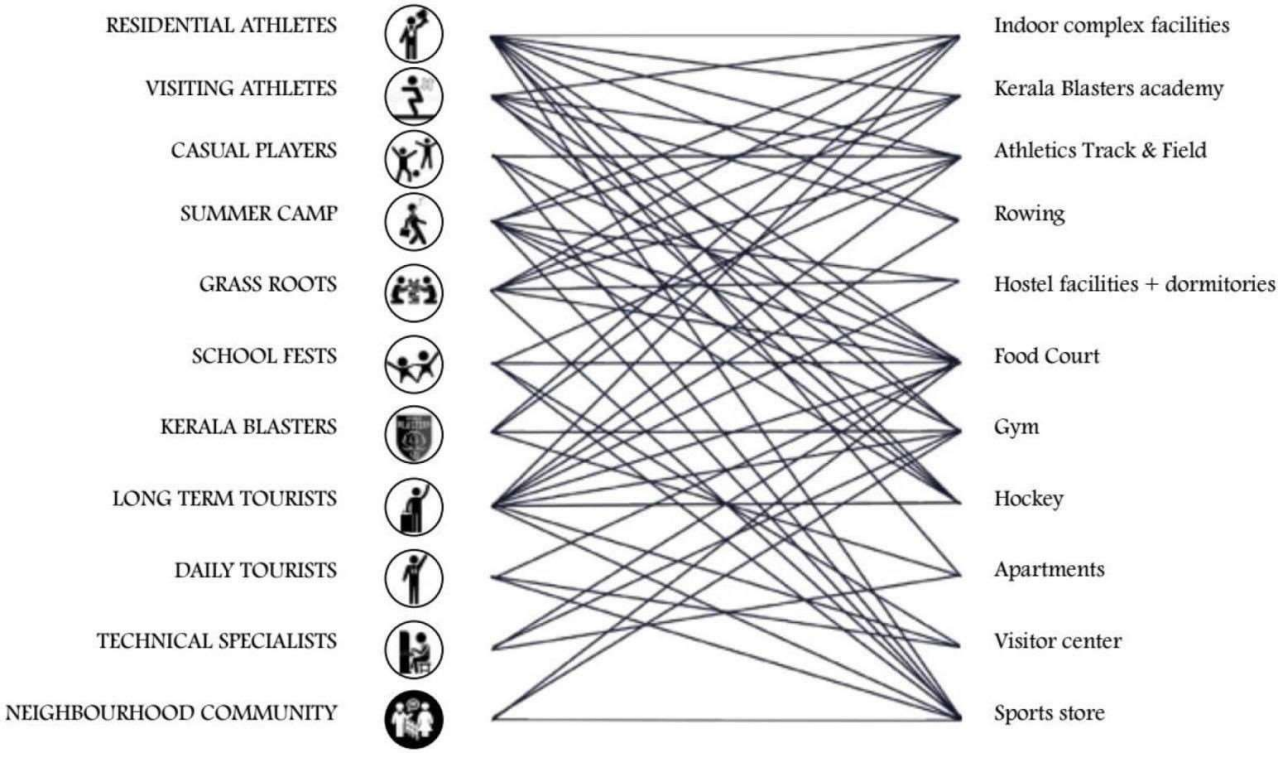


Fig.: Provision for all user groups

S.N.		SITE	CASE STUDY-1	CASE STUDY-2
A-	SITE INFORMATIO N			
	Total Plot Area	141860.66 Sqm	253684 sqm	360094 sqm
	Permissible Ground Coverage	30% of Plot Area	25% of Plot Area	20% of Plot Area
	Open Space	70% of Plot Area	75% of Plot Area	80% of Plot Area
	Permissible FAR		40	40
	Parking		2 ecs per 100 sqm	2 ecs per 100 sqm
B.	BUILDING BLOCK			
	Admin Block	-	4500 sqm	1965 sqm
	Indoor Facility/Block	-	26000 sqm	18000 sqm
	Total Toilets	-	68 Nos.	92 Nos.
	Velodrome	-	-	17500 sq. mts
	Wrestling	-	-	12350 sq. mts
	Swimming Pool	-	675 sq. mts	-

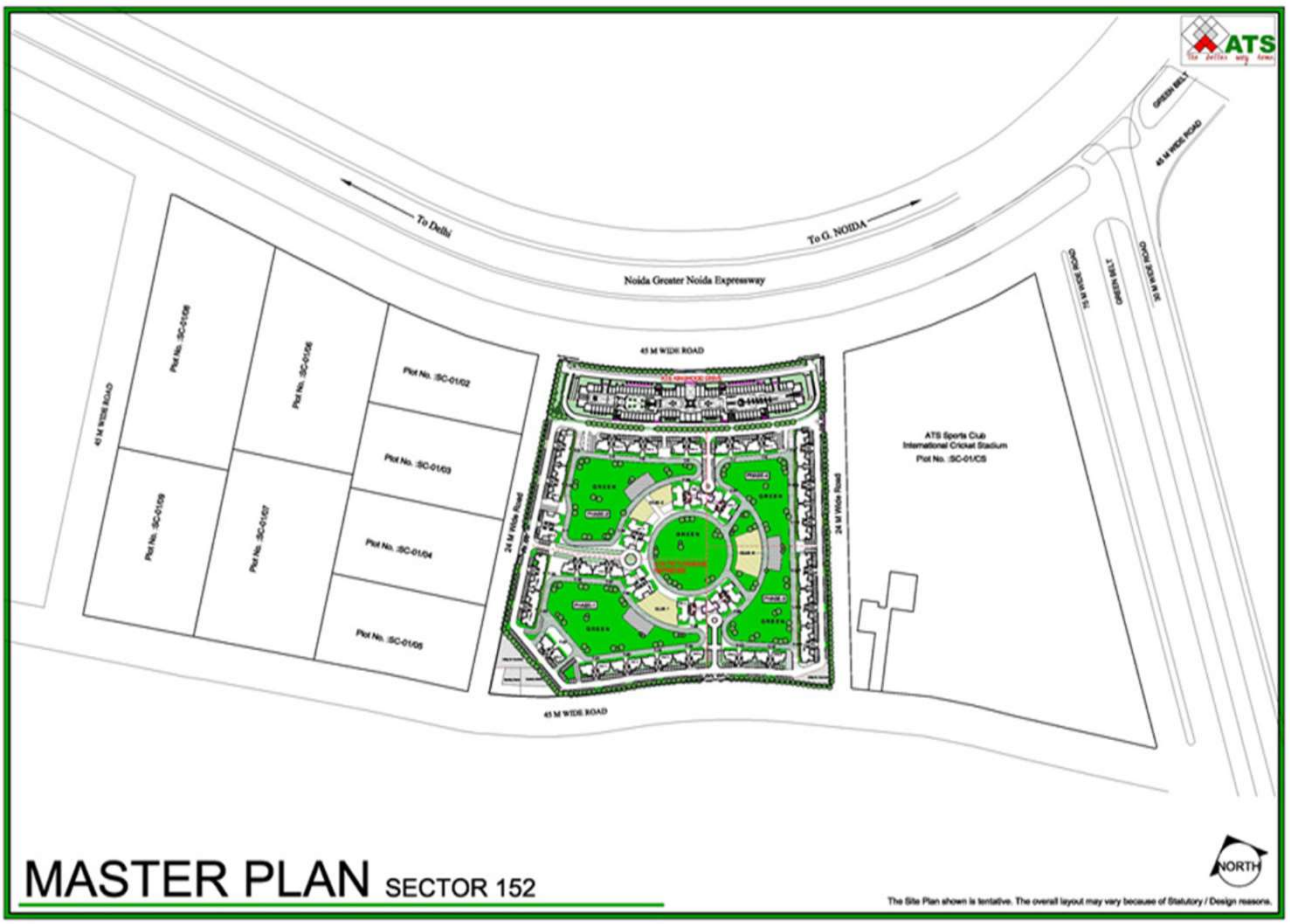


Fig.: Master Plan of sec-152 showing sectors and phase development

6.0 Site

6.1 Site Location

The site is located at
Plot No. SC-01/CS, Sector 152, Noida, District: Gautam Budh Nagar, State: U.P.
and has a site of 35 acre. INDIA U.P NOIDA SECTOR-152

ORIENTATION

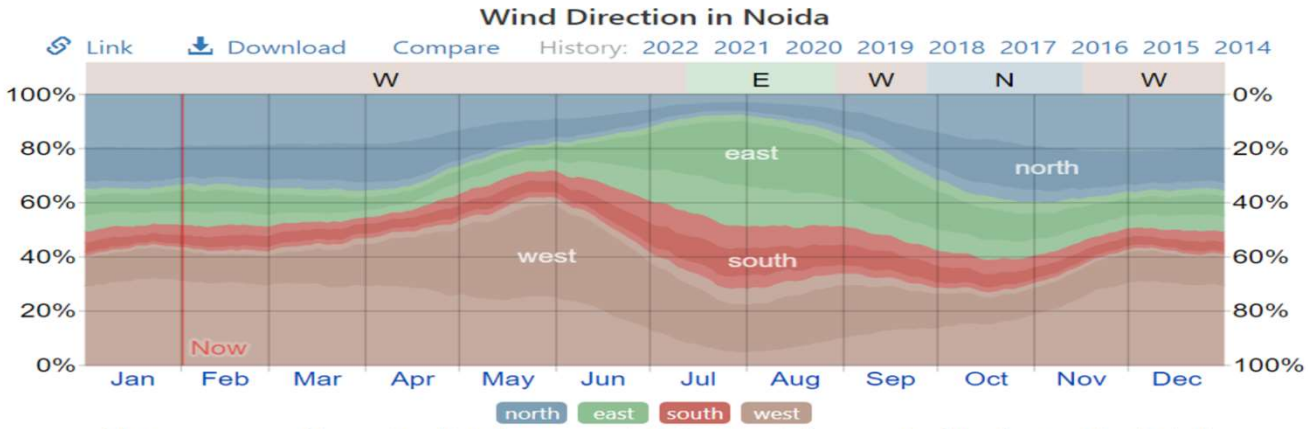
The latitudinal and longitudinal extends of Sector 152, Noida are 28.4453ºN, 77.4745ºE.

6.2 Demography of Noida

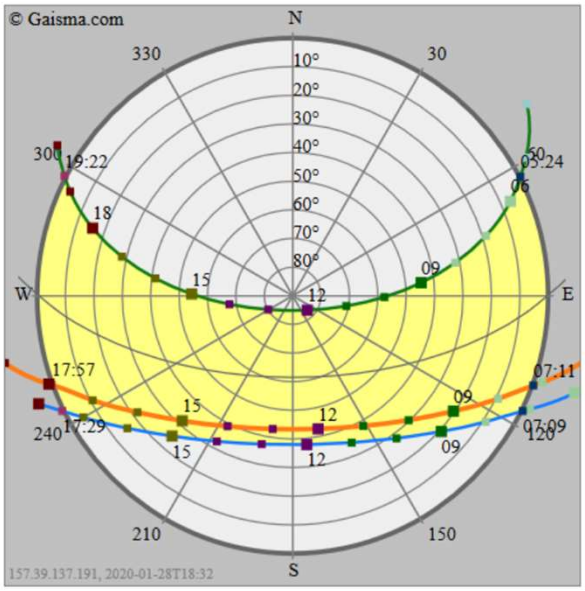
As per provisional data of 2011 census, Noida had a population of 642,381 out of which the male population was 352,577 and the female population was 289,804. The literacy rate was 88.58 per cent. Male literacy was 92.90% and female literacy was 83.28%.

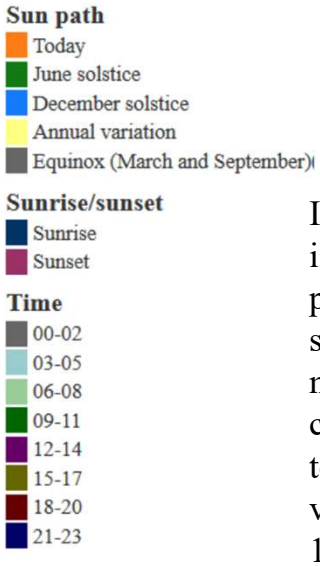
6.3 About Noida

Noida is a planned city in India's northern state of Uttar Pradesh. The riverside Okhla Bird Sanctuary is home to migratory and native birds, plus jackals and butterflies. Plants at the Botanic Garden of Indian Republic include water lilies and cacti. The ISKCON Noida temple has a diorama depicting the life of Lord Krishna. Southwest of Noida, Surajkund lake is a 10th-century reservoir with the ruins of a sun temple.



The percentage of hours in which the mean wind direction is from each of the four cardinal wind directions, excluding hours in which the mean wind speed is less than 1.0 mph. The lightly tinted areas at the boundaries are the percentage of hours spent in the implied intermediate directions (northeast, southeast, southwest, and northwest).



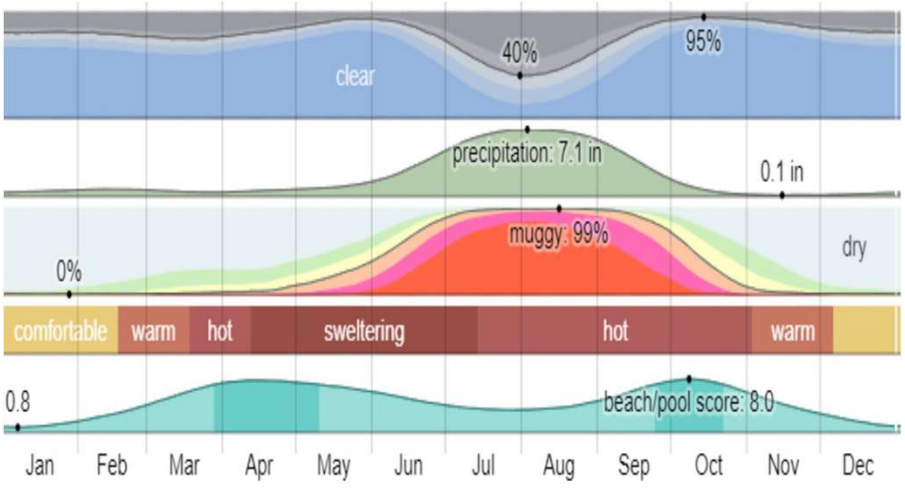


6.4 Climate

.

In Noida, the wet season is hot, oppressive, and partly cloudy and the dry season is warm and mostly clear. Over the course of the year, the temperature typically varies from 47°F to 103°F and is rarely below 42°F or above 110°F.

Based on the beach/pool score, the best times of year to visit Noida for hot-weather activities are from late March to mid May and from late September to late October.

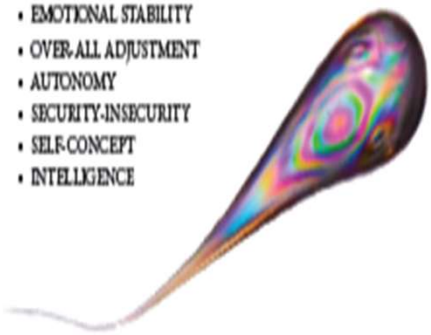


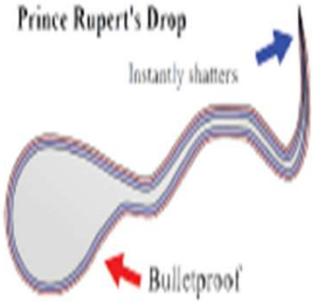
CONCEPT -IDEOLOGY

WINNING, LOSING OR RETIREMENT: SPORT IS MENTALLY CHALLENGING ON EVERY LEVEL

ELITE ATHLETES ARE BY NO MEANS IMMUNE AND ARE AT LEAST AT EQUAL RISK OF MENTAL ILLNESS AS THE REST OF THE POPULATION."

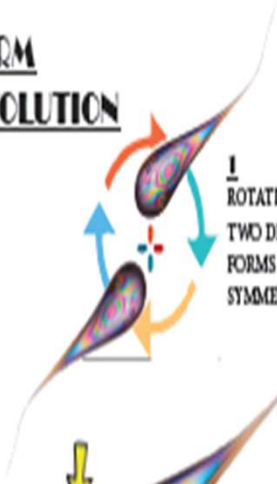
- EMOTIONAL STABILITY
- OVER-ALL ADJUSTMENT
- AUTONOMY
- SECURITY-INSECURITY
- SELF-CONCEPT
- INTELLIGENCE



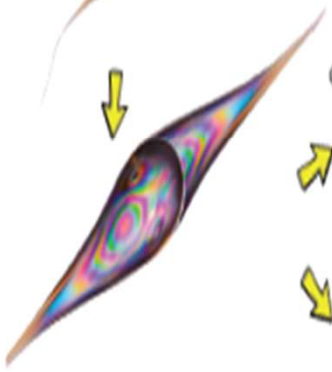


A SPORTS PERSON IS OFTEN MEASURED AND SEEN ON THE BASIS OF THEIR PHYSICAL FITNESS AND ABILITIES, WHICH IS NOT EVERYTHING NEEDED. MAJORLY NEGLETED IS THEIR MENTAL AND EMOTIONAL FITNESS PLAYERS ARE GETTING FORGOTTEN LEFT BEHIND BECAUSE WE LACK ON INFRASTRUCTURE.

FORM EVOLUTION



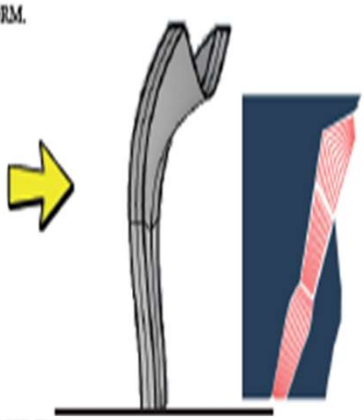
1
ROTATING AND ADDING TWO DROP FORMS TO ACHIEVE SYMMETRY



2
ADDING BOTH FORMS IN A MANNER THAT THEIR HEADS SYNCHRONIZE

1
UNDERSTANDING THE POINT OF PRESSURE AND APPLIED FORCE.

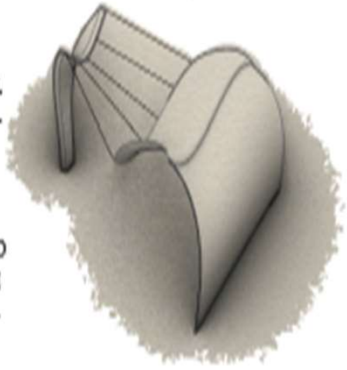
2
EXTRACTING AND MOULDING THE STRUCTURE AS PER THE FORM.



1
ARRANGING THE FORM AS PER THE FUNCTION OF THE STRUCTURE AND GENERATING THE OVERALL STRUCTURE LOOK.

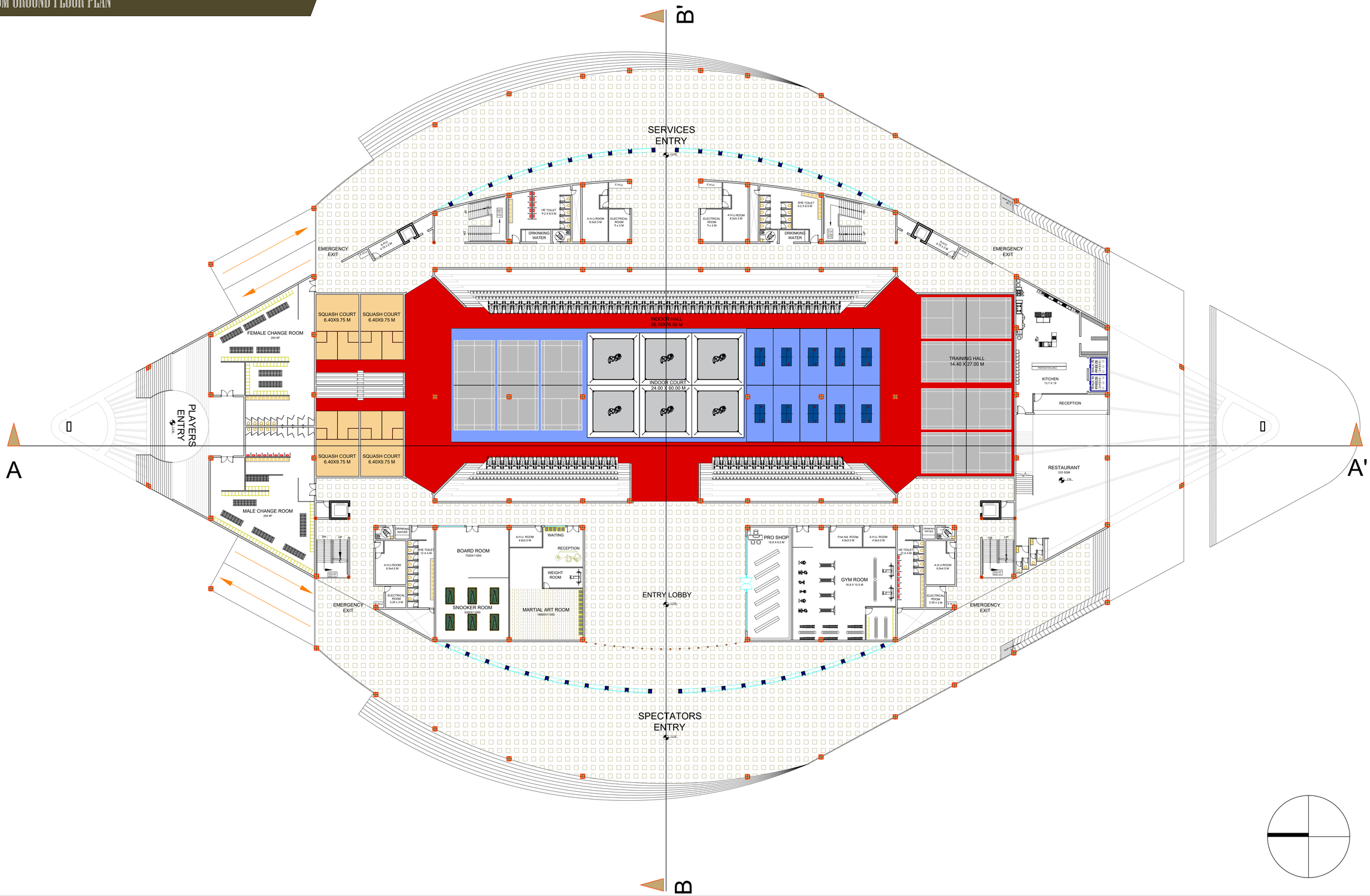
1
EXTRUDING AND MOLDING THE FORM ACHIEVED AS PER THE FUNCTION OF THE STRUCTURE.

THE CABLES HELP TO PULL UP AND HOLD THE STRUCTURE IN PLACE INCREASING ITS CAPABILITY TO COVER LARGE SPAN AREA WHICH IS HEIGHLY NEEDED IN SPORT ARENAS TO GIVE OBSTRUCTION FREE VIEWING EXPERIENCE.



SPORTS COMPLEX

INDOOR STADIUM GROUND FLOOR PLAN



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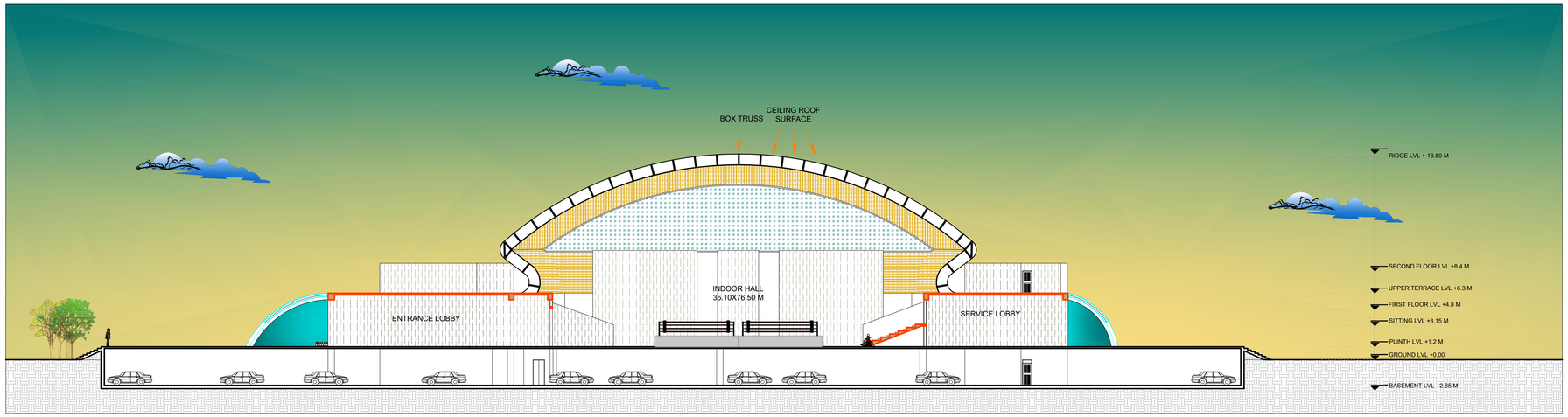
B.ARCH 10TH SEM
ROLL NO. 1170101002

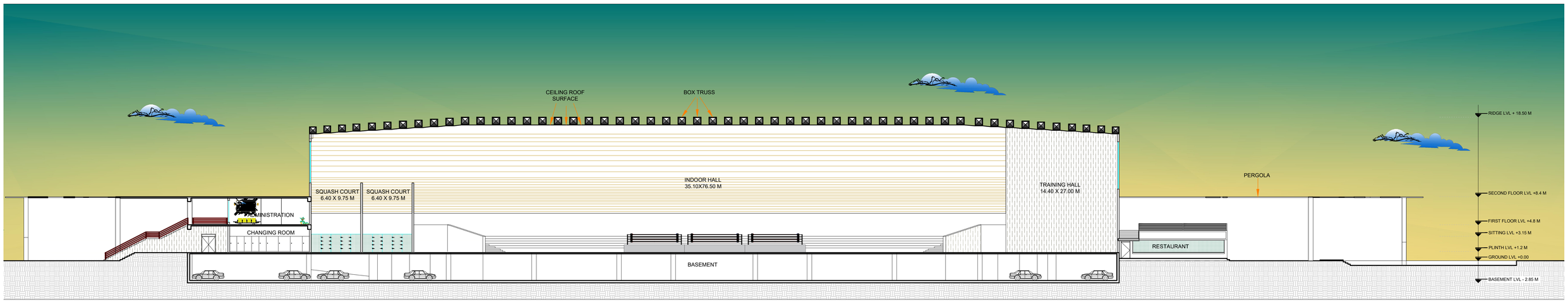
UNDER GUIDANCE : AR. AANSHUL SINGH

SPORTS COMPLEX

INDOOR STADIUM SECTION



SECTION AT BB'



SECTION AT AA'

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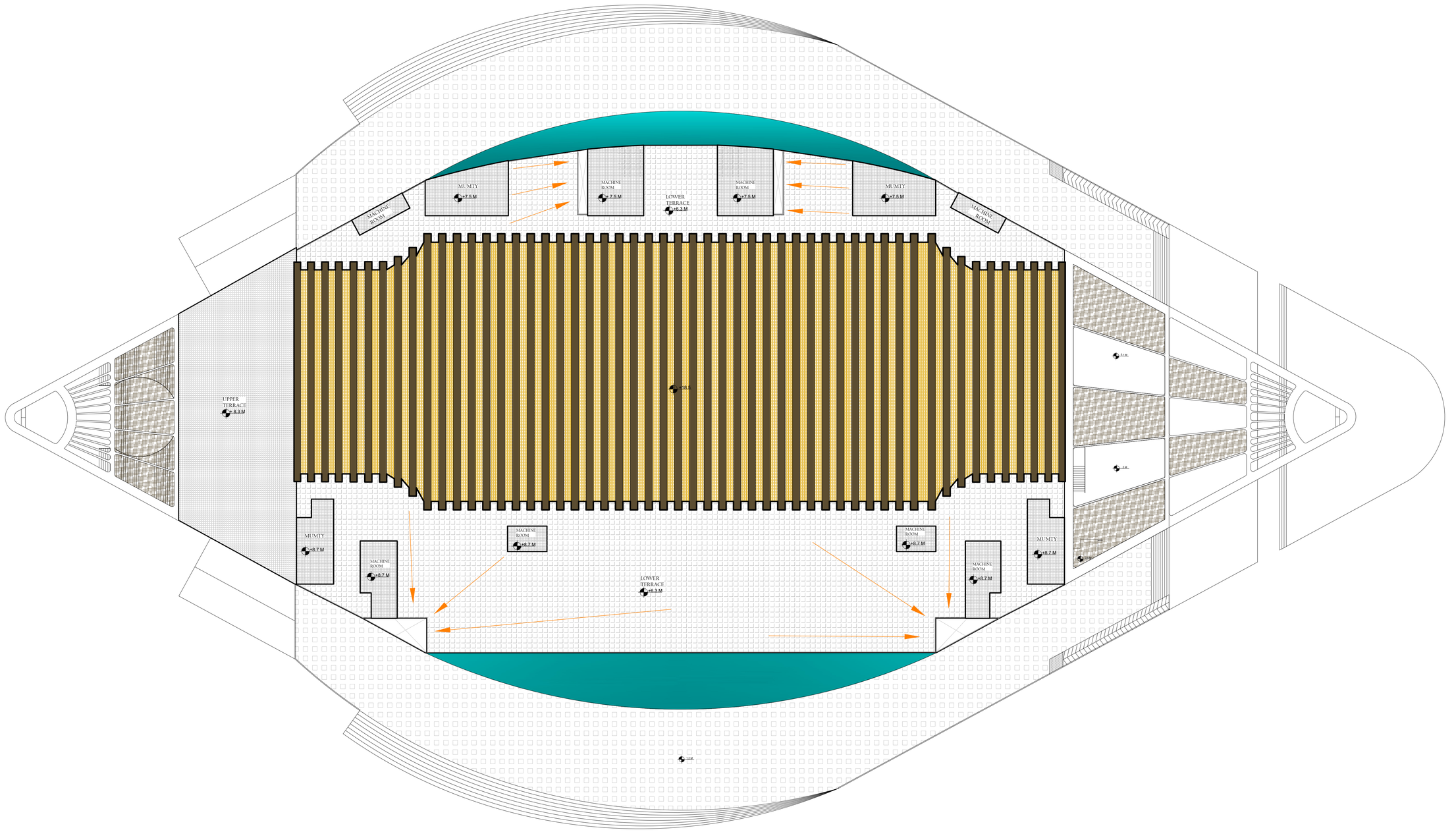
ROLL NO. 1170101002

UNDER GUIDANCE : AR. AANSHUL SINGH

SPORTS COMPLEX

INDOOR STADIUM TERRACE PLAN



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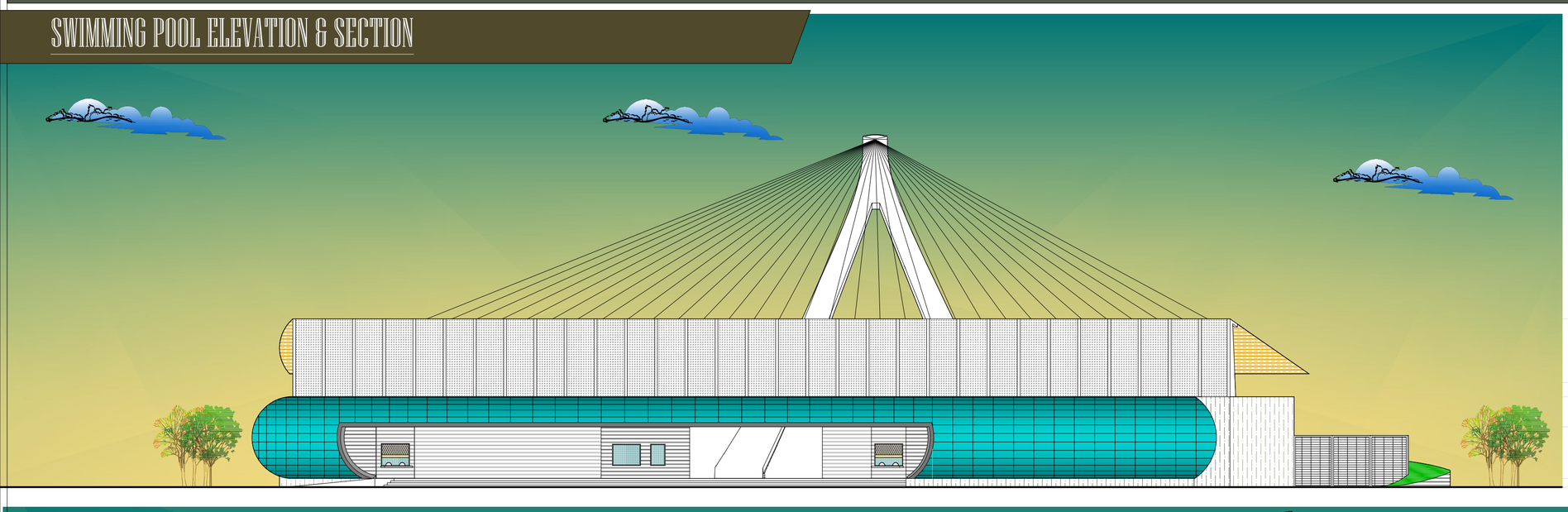
ROLL NO. 1170101002

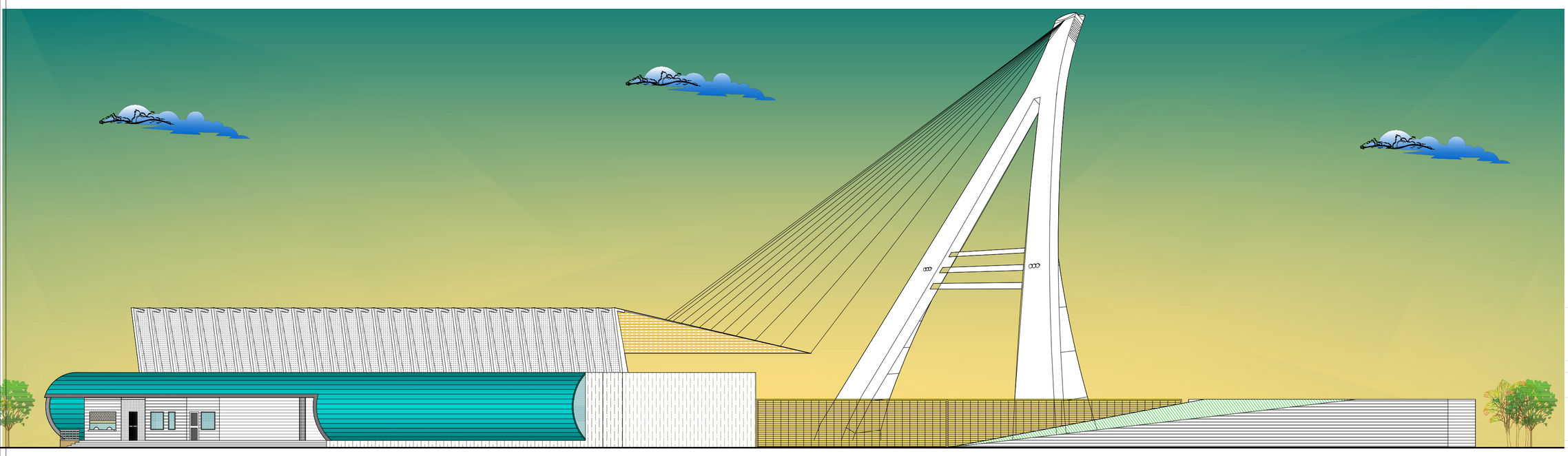
UNDER GUIDANCE : AR. AANSHUL SINGH

SPORTS COMPLEX

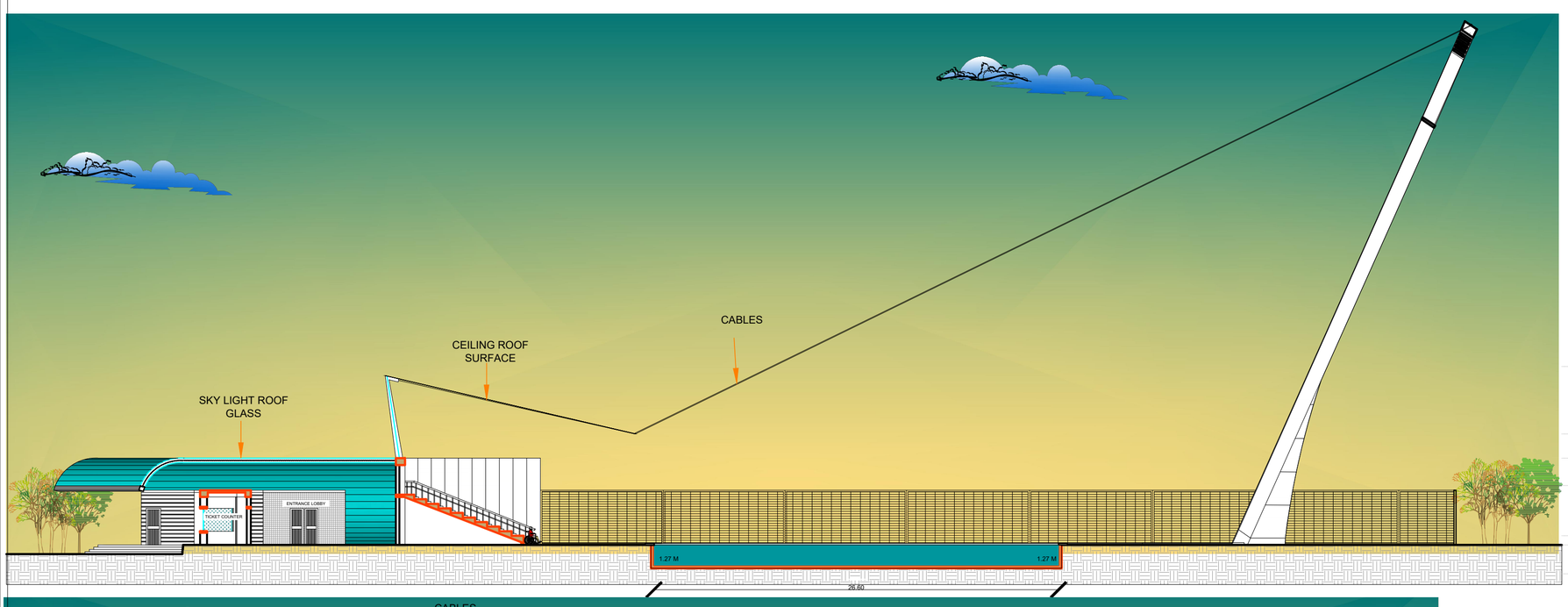
SWIMMING POOL ELEVATION & SECTION



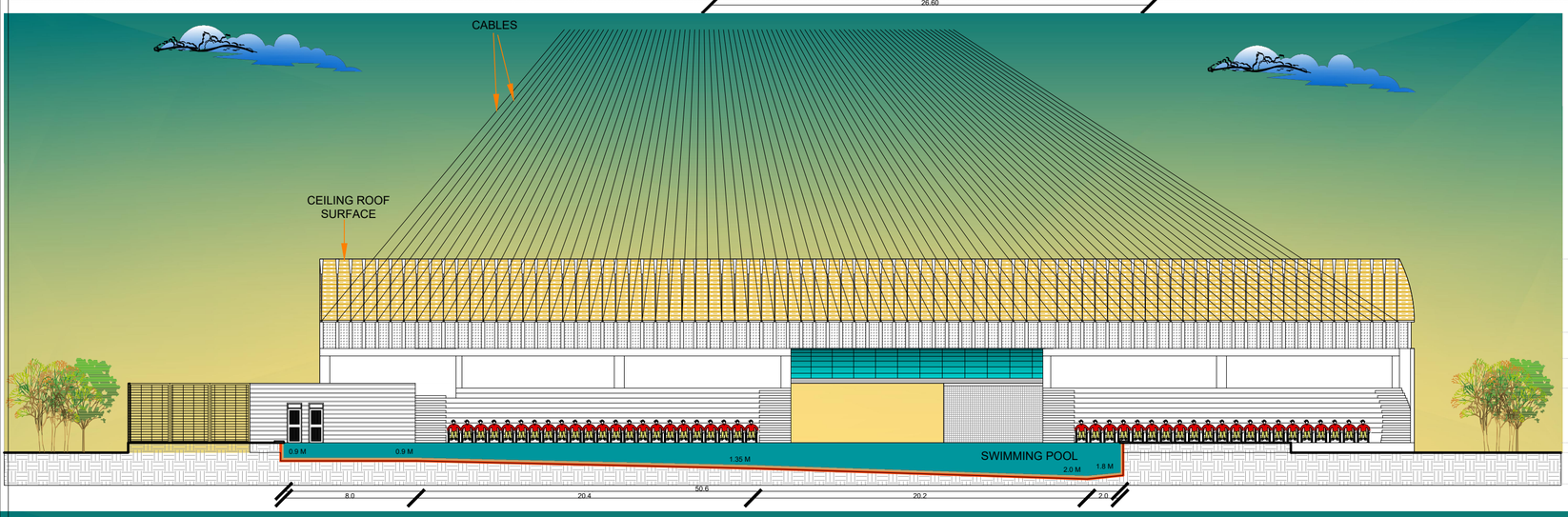
FRONT ELEVATION



REAR ELEVATION



SECTION AT AA'



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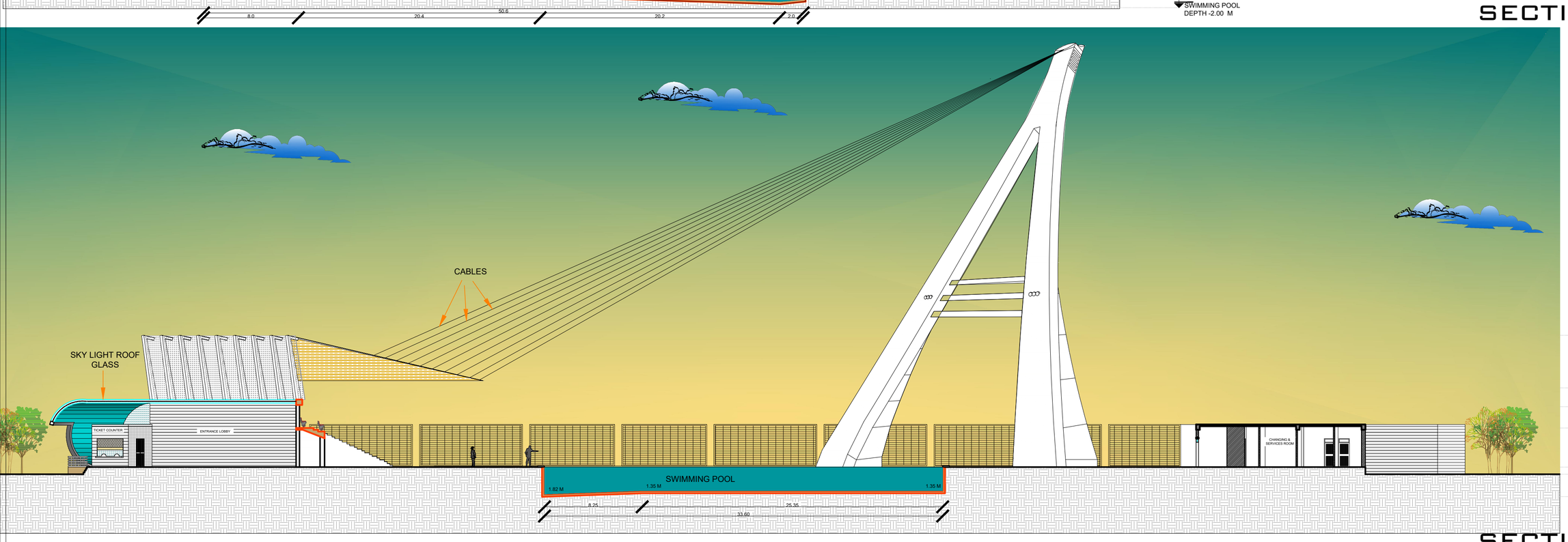

SECTION AT CC'

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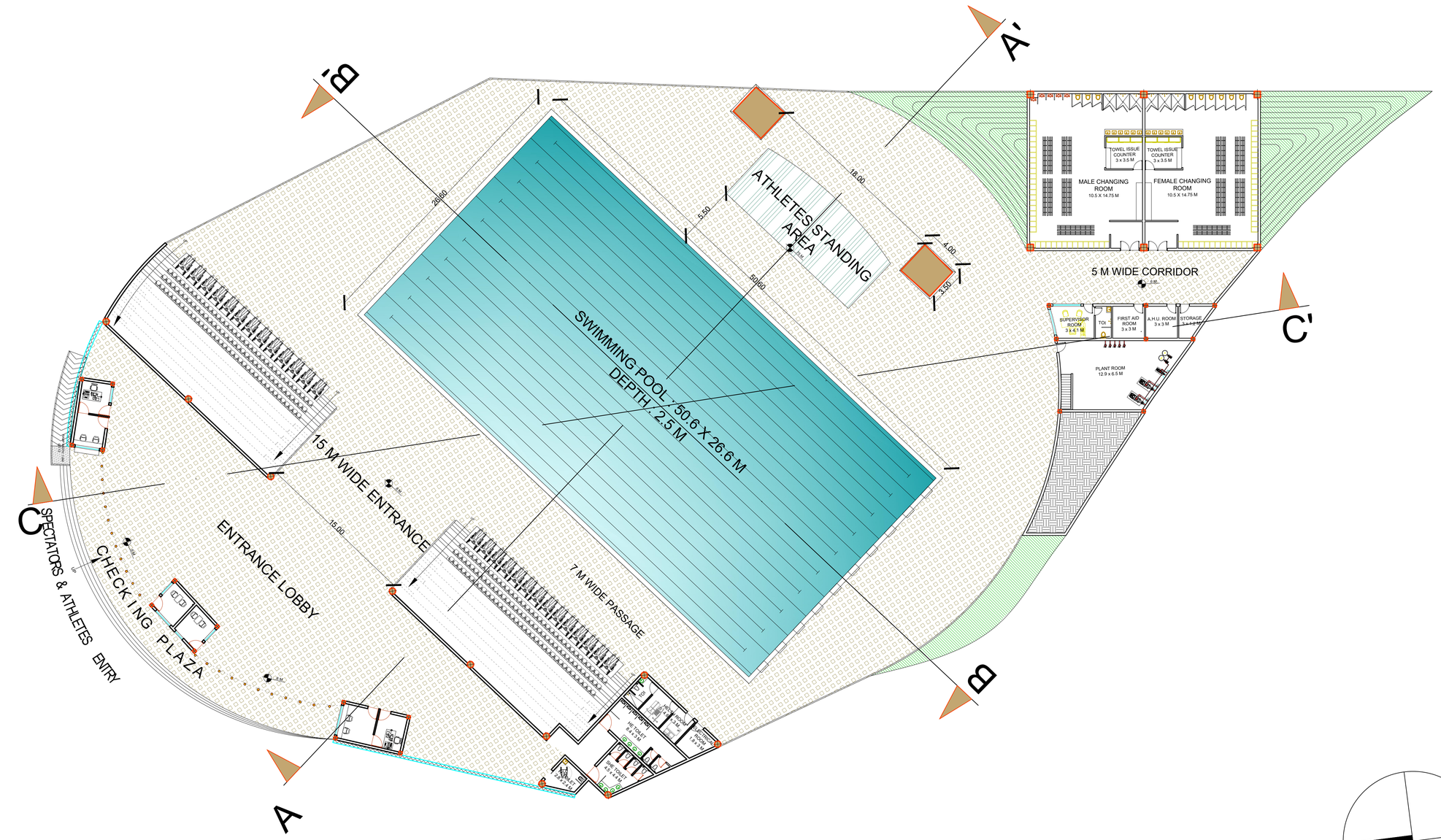
B.ARCH 10TH SEM
ROLL NO. 1170101002

UNDER GUIDANCE : AR. AANSHUL SINGH

SPORTS COMPLEX

SWIMMING POOL PLAN



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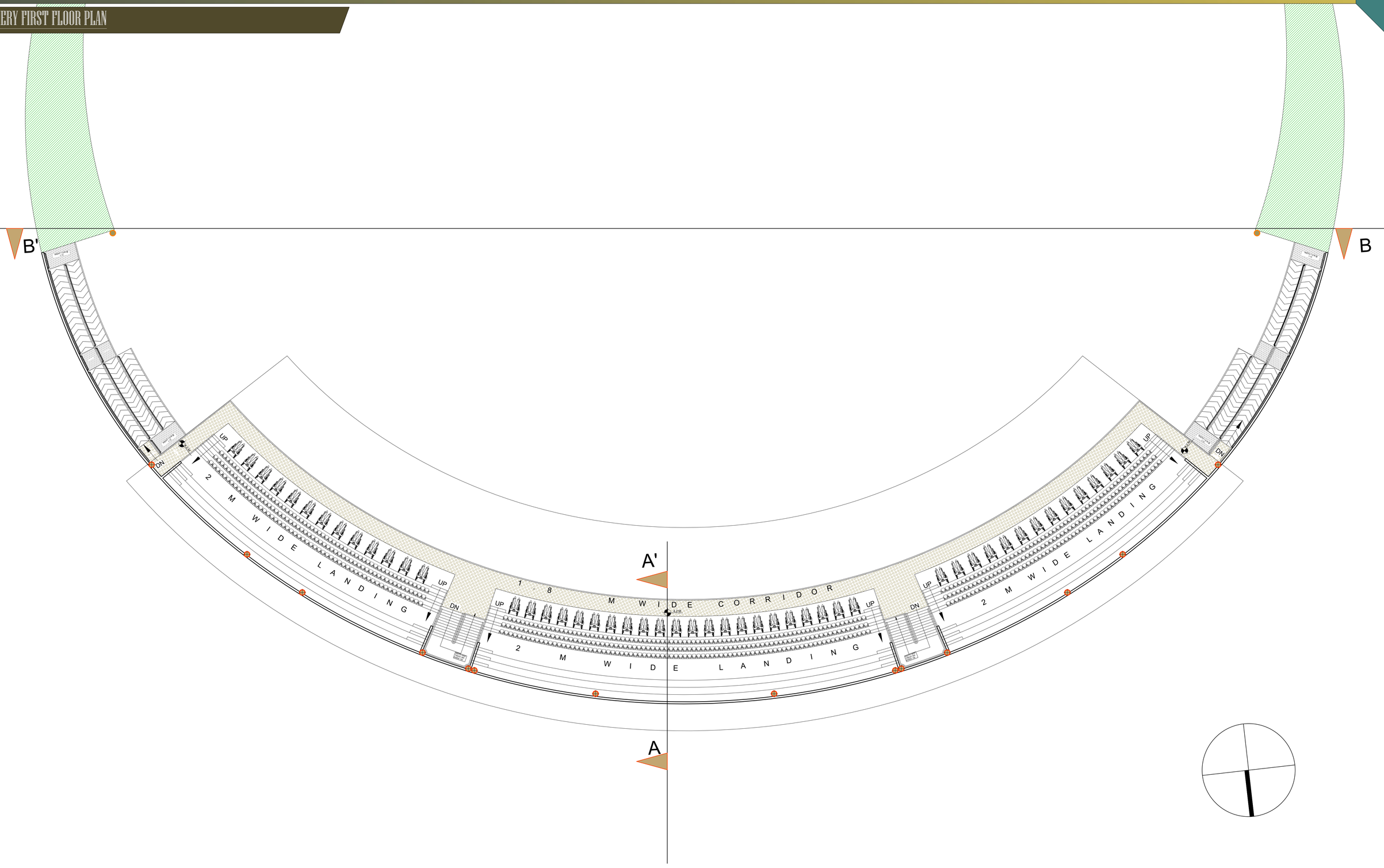
B.ARCH 10TH SEM
ROLL NO. 1170101002

UNDER GUIDANCE : AR. AANSHUL SINGH

SPORTS COMPLEX

ARCHERY FIRST FLOOR PLAN



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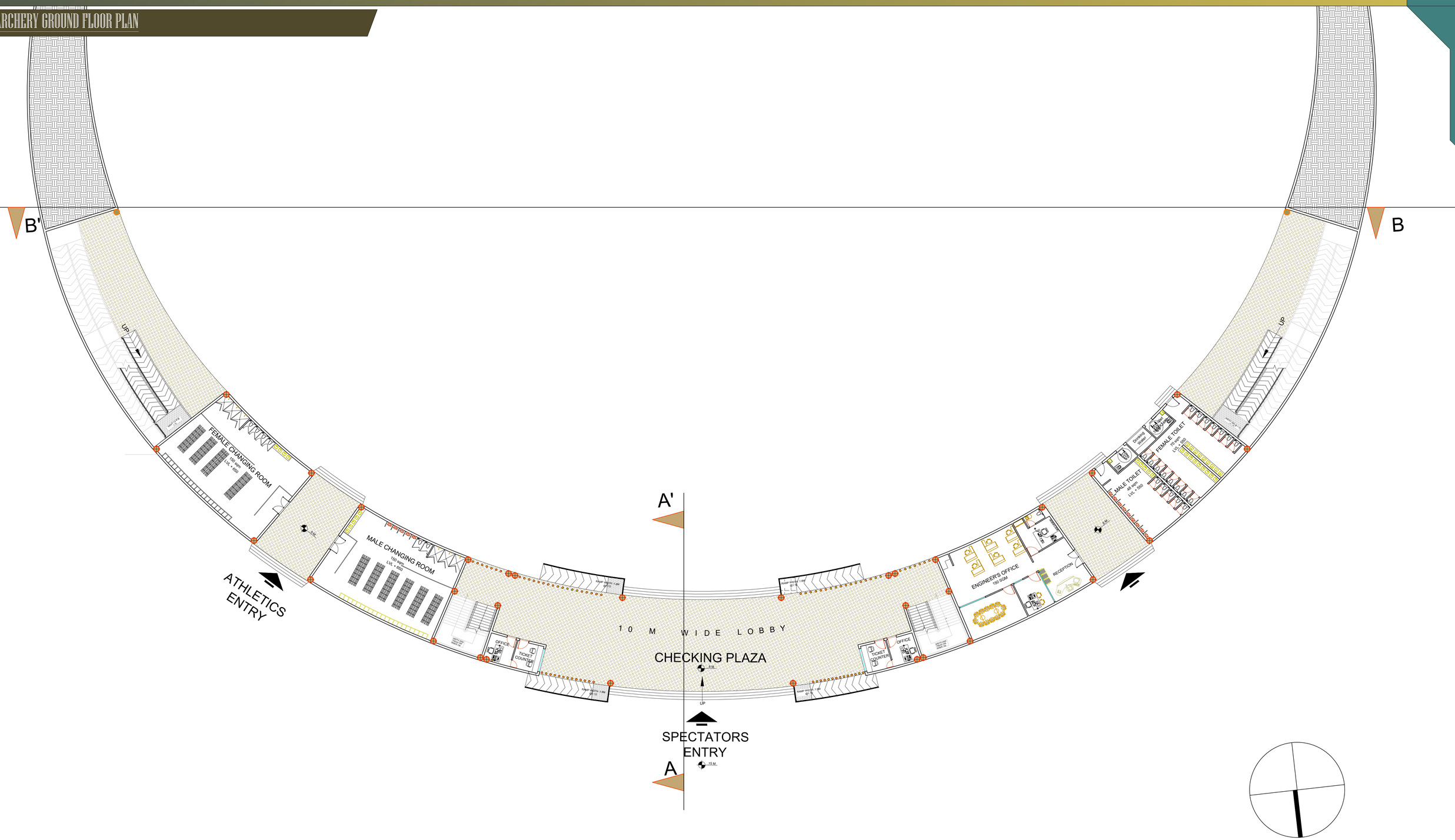
B.ARCH 10TH SEM
ROLL NO. 1170101002

UNDER GUIDANCE : AR. AANSHUL SINGH

SPORTS COMPLEX

ARCHERY GROUND FLOOR PLAN



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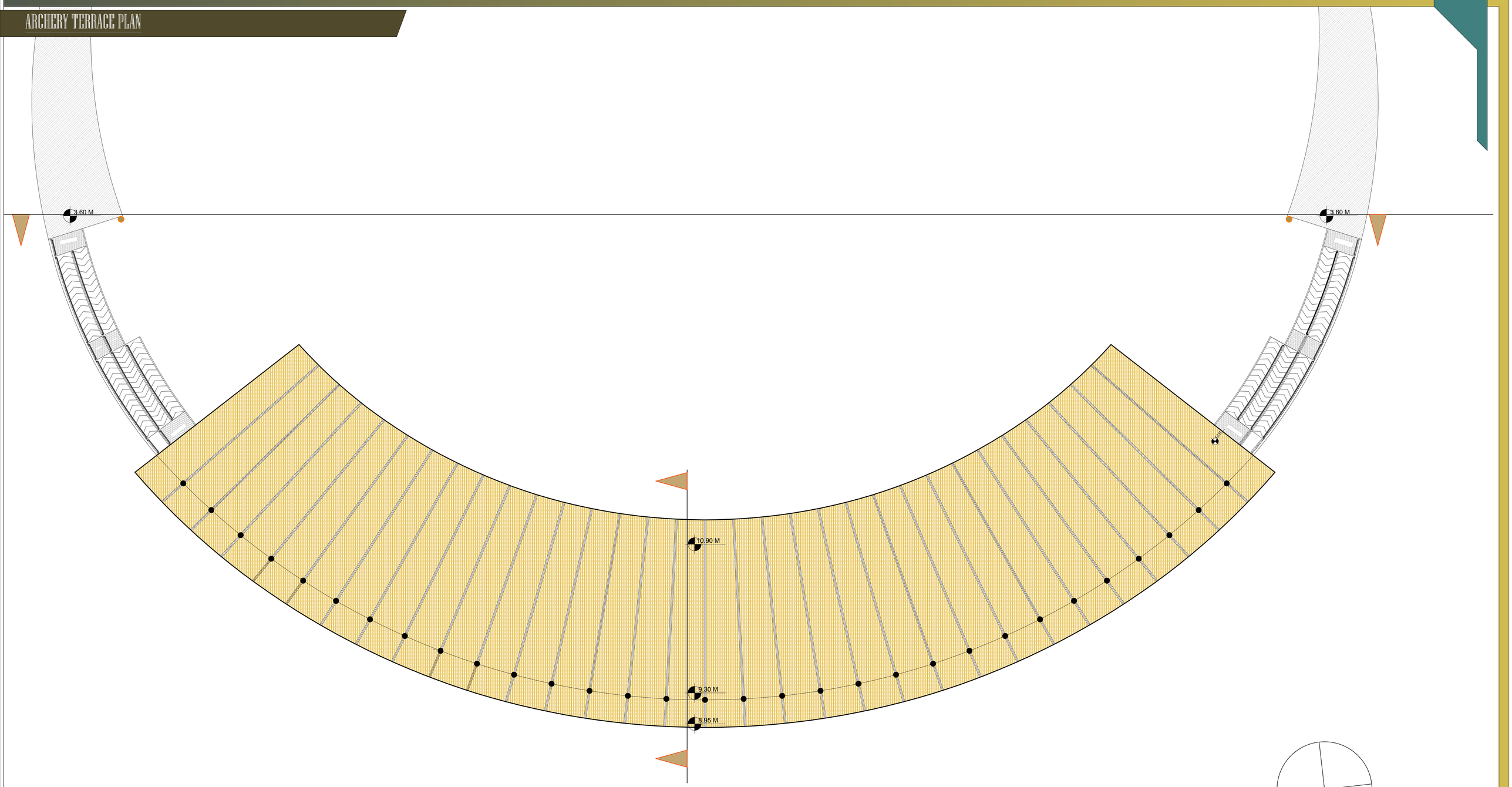
SPORTS COMPLEX

ARCHERY TERRACE PLAN



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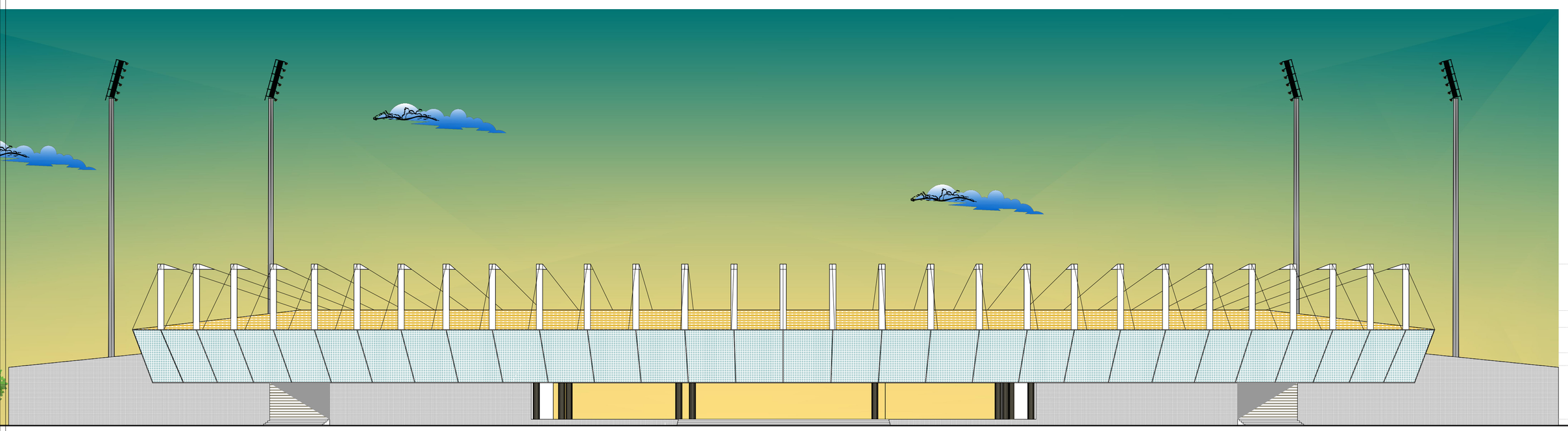
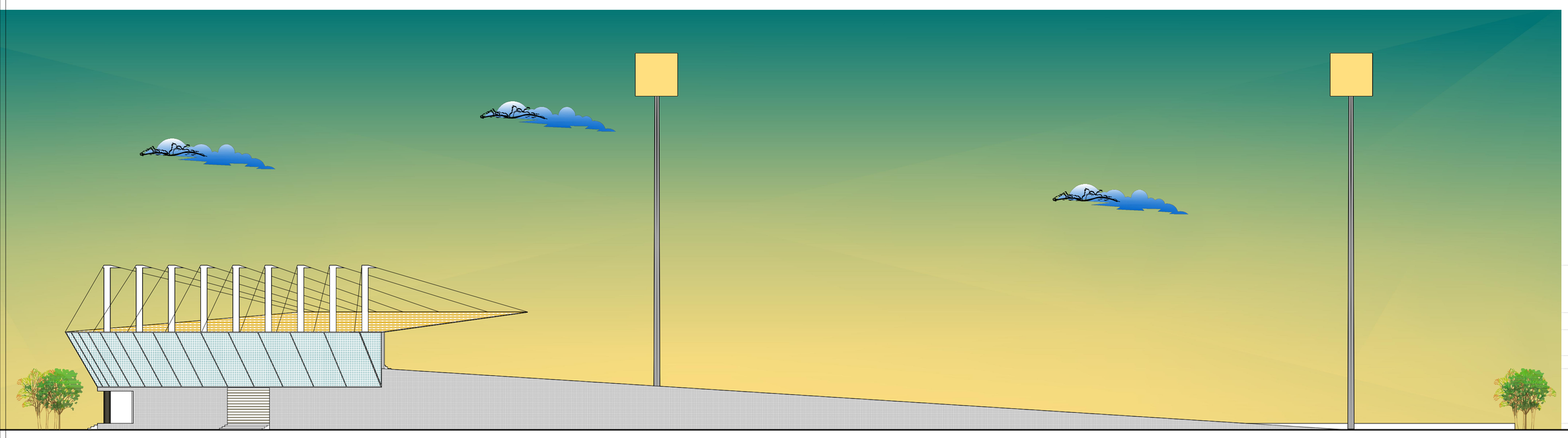
SPORTS COMPLEX

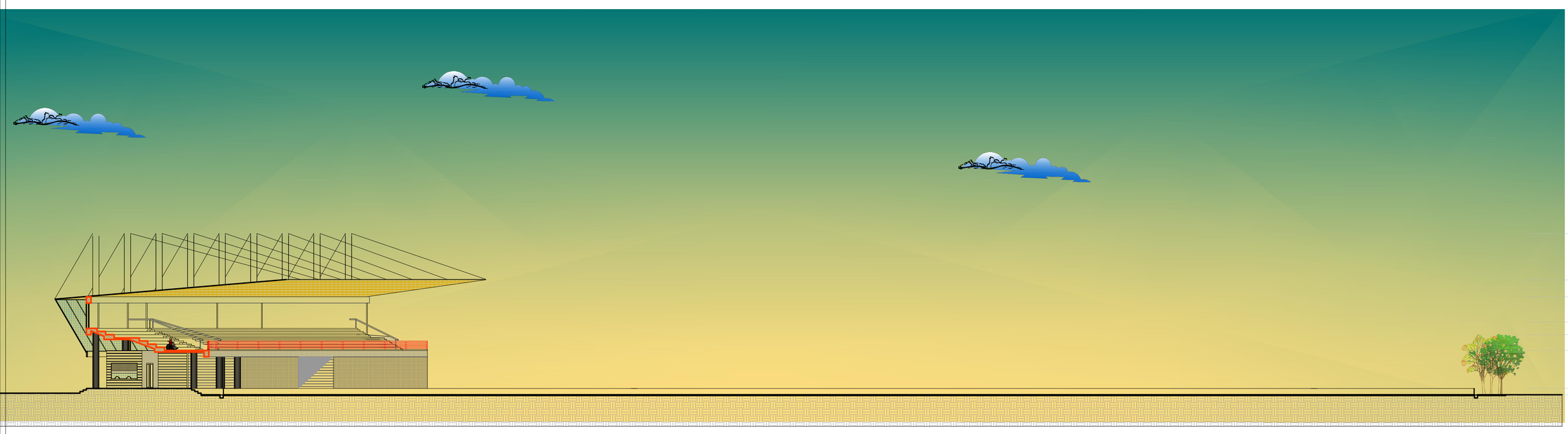
ARCHERY GROUND ELEVATION & SECTION



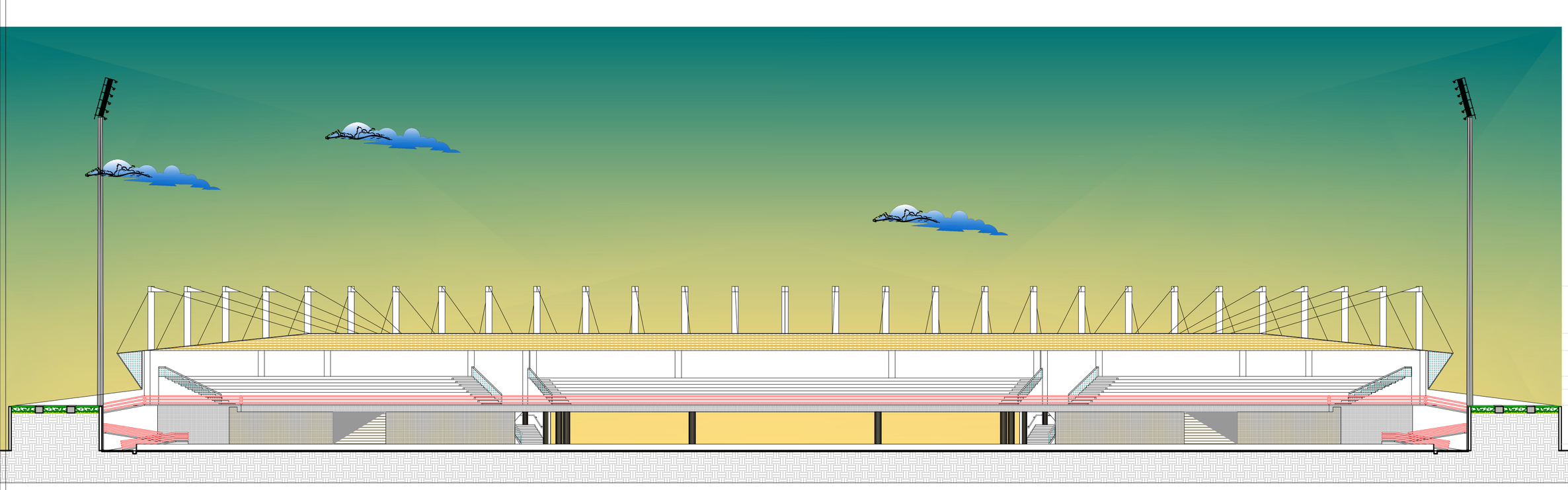
FRONT ELEVATION



SIDE ELEVATION



SECTION AT AA'



SECTION AT BB'

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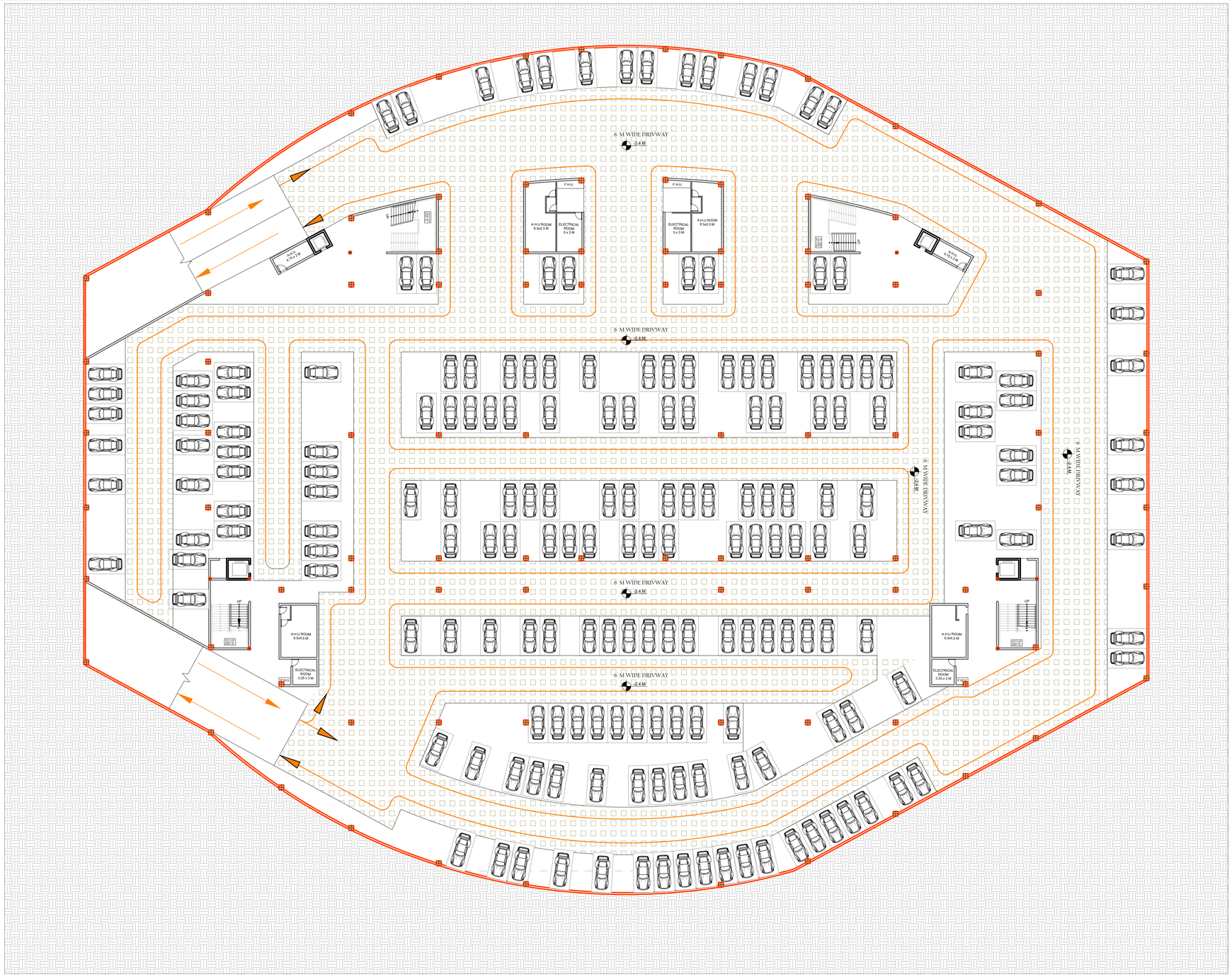
UNDER GUIDANCE : AR. AANSHUL SINGH

SPORTS COMPLEX

INDOOR STADIUM BASEMENT PLAN



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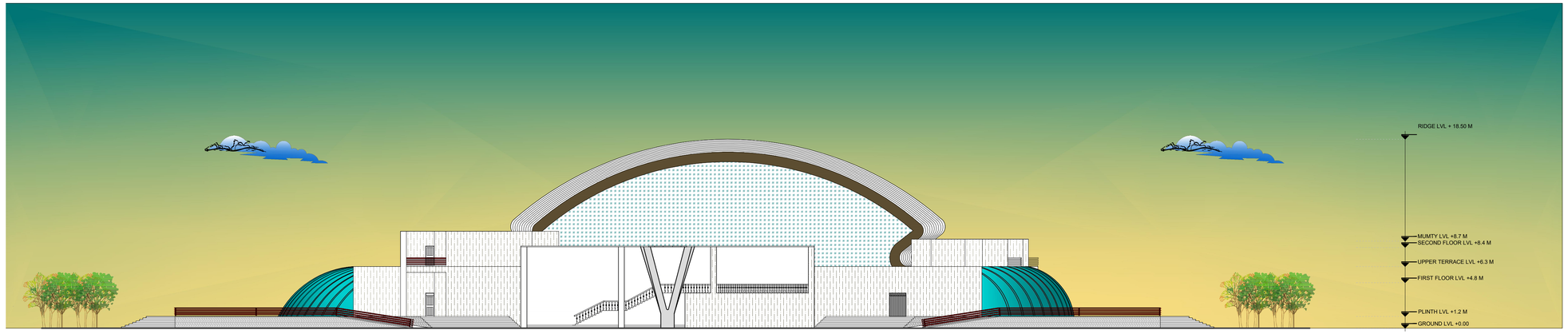
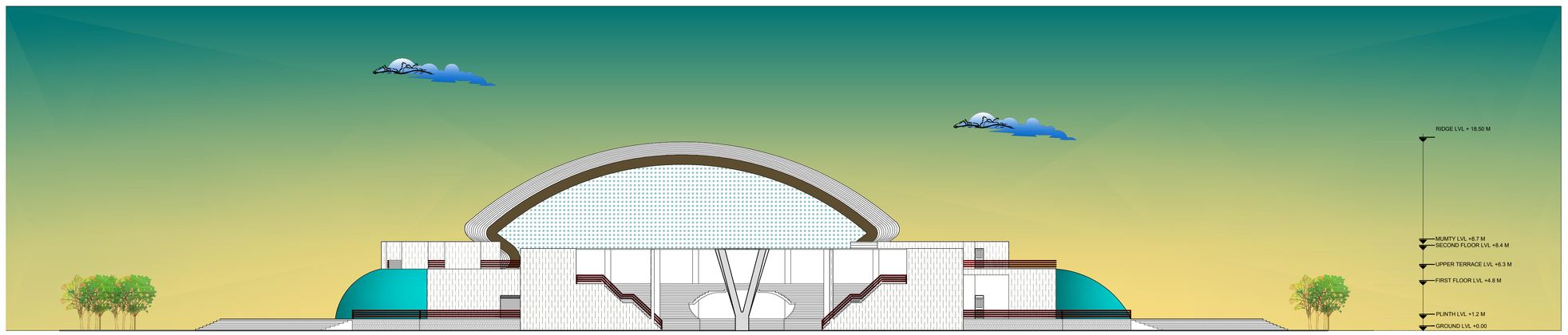
INDOOR STADIUM ELEVATION



BACK SIDE ELEVATION



FRONT SIDE ELEVATION

MAIN ELEVATION

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