CHAPTER 1

(1-1) Project Definition

A sport and training facility where Formula1,2,3 and Students competitions can take place and it's a facility to train young people to become F1,2,3 drivers and F1cars designer and engineers. all these support by administration and services .

(1-2) Project Major Field

(1-2-1) Field Definition

-Sport Definition Sport (British English) or sports (American English) includes all forms of competitive physical activity or games which, through casual or organised participation, aim to use, maintain or improve physical ability and skills while providing enjoyment to participants, and in some cases, entertainment for spectators.[2] Hundreds of sports exist, from those between single contestants, through to those with hundreds of simultaneous participants, either in teams or competing as individuals. In certain sports such as racing, many contestants may compete, simultaneously or consecutively, with one winner; in others, the contest (a match) is between two sides, each attempting to exceed the other. Some sports allow a tie game; others provide tie-breaking methods to ensure one winner and one loser. A number of contests may be arranged in a tournament producing a champion. Many sports leagues make an annual champion by arranging games in a regular sports season, followed in some cases by playoffs.

Sport is generally recognised as system of activities which are based in physical athleticism or physical dexterity, with the largest major competitions such as the Olympic Games admitting only sports meeting this definition, and other organisations such as the Council of Europe using definitions precluding activities without a physical

element from classification as sports. However, a number of competitive, but non-physical, activities claim recognition as mind sports. The International Olympic Committee (through ARISF) recognises both chess and bridge as bona fide sports, and Sport Accord, the international sports federation association, recognises five non-physical sports: bridge, chess, draughts (checkers), Go and xiangqi, and limits the number of mind games which can be admitted as sports.

Sport is usually governed by a set of rules or customs, which serve to ensure fair competition, and allow consistent adjudication of the winner. Winning can be determined by physical events such as scoring goals or crossing a line first. It can also be determined by judges who are scoring elements of the sporting performance, including objective or subjective measures such as technical performance or artistic impression.

Records of performance are often kept, and for popular sports, this information may be widely announced or reported in sport news. Sport is also a major source of entertainment for non-participants, with spectator sport drawing large crowds to sport venues, and reaching wider audiences through broadcasting. Sport betting is in some cases severely regulated, and in some cases is central to the sport.

According to A.T. Kearney, a consultancy, the global sporting industry is worth up to $620 billion as of 2013. The world's most accessible and practised sport is running, while association football is its most popular spectator sport.

-Track Racing Definition Track racing is a form of motorcycle racing where teams or individuals race opponents around an unpaved oval track. There are differing variants, with each variant racing on a different surface type.

The most common variant is Speedway which has many professional domestic and international competitions in a number of countries.

Administered internationally by the Fédération Internationale de Motocyclisme (FIM), the sport became popular in the 1920s and remains so today

-Formula One Definition Formula 1® is a sport where every millisecond matters. In such a highly competitive environment there can be no compromise on experiencing the race action, especially for the tens of millions of fans across the world. F1® races are held in some of the most diverse and challenging environments across the globe, from the streets of Singapore to the deserts of Bahrain. In such a situation, it becomes critical to have a reliable connectivity backbone to deliver the action in high quality without any disruption. Some of the main challenges are

- Diverse global locations with approximately 20 race locations in a single season. This means that every new race location comes with its separate set of complexities, be it connectivity routes or last miles delivery at remote locations.
- Formula 1® races are as much about driving skills, as it is about taking strategic decisions through real time data analytics. To deliver this big data across the globe, there has to be seamless connectivity through a robust and reliable global network which is able to transfer large amounts of data in real time across the globe.

-Formula One Management (FOM) needs to ensure it calls its most skilled resources at every race weekend to deliver richer seamless content to the sports' fans. To deliver the action from every race location requires multiple remote teams based in the UK to work and communicate seamlessly with on-site teams at global race locations.

-Delivering consistently at a global platform like F1® requires detailed planning, agility, speedy implementation, and a highly scalable and reliable infrastructure that delivers superior performance consistently. Working with a technology provider that could deliver a high performance solution customised to the F1® environment was key.

Formula One (also Formula 1 or F1) is the highest class of single- seater auto racing sanctioned by the Fédération Internationale de l'Automobile (FIA) and owned by the Formula One Group. The FIA Formula One World Championship has been one of the premier forms of racing around the world since its inaugural season in 1950. The "formula" in the name refers to the set of rules to which all participants' cars must

conform. A Formula One season consists of a series of races, known as Grands Prix (French for "grand prizes" or "great prizes"), which are held worldwide on purpose-built circuits and public roads.

The results of each race are evaluated using a points system to determine two annual World Championships: one for drivers, the other for constructors. Drivers must hold valid Super Licences, the highest class of racing licence issued by the FIA. The races are required to be held on tracks graded "1" (formerly "A"), the highest grade rating issued by the FIA. Most events are held in rural locations on purpose-built tracks, but there are several events in city centres throughout the world, with the Monaco Grand Prix being the most well-known.

Formula One cars are the fastest regulated road course racing cars in the world, owing to very high cornering speeds achieved through the generation of large amounts of aerodynamic down force. The cars underwent major changes in 2017, allowing wider front and rear wings, and wider tyres, resulting in cornering forces closing in on 6.5g and top speeds of up to approximately 375 km/h (235 mph). The hybrid engines are currently limited in performance to a maximum of 15,000 rpm and the cars are very dependent on electronics—although traction control and other driving aids have been banned since 2008—and also on aerodynamics, suspension, and tyres.

While Europe is the sport's traditional base, the championship is truly global, with 11 of the 21 races in the 2018 season taking place outside Europe. With the annual cost of running a mid-tier team—designing, building, and maintaining cars, pay, transport—being US$120 million, Formula One has a significant economic and job-creation effect, and its financial and political battles are widely reported. Its high profile and popularity have created a major merchandising environment, which has resulted in large investments from sponsors and budgets (in the hundreds of millions for the constructors). On 8 September 2016, it was announced that Liberty Media had agreed to buy Delta Topco, the company that controls Formula One, from private equity firm

CVC Capital Partners for $4.4 billion in cash, stock, and convertible debt. On 23 January 2017, it was confirmed that the acquisition had been completed, for $8 billion.

(1-2-2) Project Field Importance

-Sport Importance Sports play a great role in our life as it keeps us healthy, wealthy and active. We can have a healthy mind only when we have a healthy body. Great achievements come our way when we maintain our physical and mental well-being.

Formula One Importance For some, the beauty of Formula 1 is all about its sporting aspects. For others, it's all about technology, the incredible innovation behind the world's most technology-driven sport. But the reality is that you can't separate the two. Formula 1 is at once about sport, technology, and innovation. And what may seem like an expensive hobby for wealthy tinkerers and daring racers actually has a trickle-down effect on our everyday lives. Formula 1 is a massive research and development powerhouse. Technologies developed within the closed walls of F1 team factories find their way into other industries, making our lives simpler, safer and more efficient. Here are a few obvious (and some not-so-obvious) examples of Formula 1 technology that has made its way into our everyday lives:

Tyres Pirelli, the sole tyre supplier for all Formula 1 teams, has conducted an enormous amount of R&D over the years. The tyre technology developed for Formula 1 — soft tyres with more grip or hard tyres that last longer — is also used for road cars. If you have a set of Pirellis on your car outside, the Formula 1 technology has followed you home.

KERS Kinetic Energy Recovery System. The concept of transferring a car's kinetic energy using flywheel energy storage, originally developed by physicist Richard Feynman in the 1950s, found its way to Formula 1 in 2009. This system captures the energy created during braking and transforms it into electrical energy. Modern Formula 1 cars also capture the heat energy from both exhaust and brakes, converting it into

electricity. So the next time you drive your hybrid car, remember: whenever you brake, your battery gets an extra charge.

Engine efficiency With every change in technical regulations, the FIA, Formula 1's governing body, introduces new engine restrictions designed to make Formula 1 more environmentally sustainable. Only a few years ago, racing cars had 3.5-liter 12-cylinder engines and no limit on fuel consumption. Today, the engines are smaller and quieter. Every modern road car has directly benefited from developments in this area.

Carbon fibre One of the biggest advances in technology inspired by Formula 1 is the widespread use of carbon fibre material, known for its high strength-to-weight ratio. The carbon fibre revolution began in the early 1980s when McLaren designed the first carbon fibre monologue, the capsule that encloses the driver. The technology is now used across the board in automotive and numerous other industries. Carbon fibre is strong and lightweight, which helps to improve performance and fuel efficiency for road vehicles.

The use of data Formula 1 racing cars are equipped with over 200 telemetry sensors collecting thousands of data points, generating astronomical amounts of data every racing weekend and at the factory. Data collected during the race allows teams back in the factory and at the racetrack to make split-second decisions to assess the car's performance and adjust the driver's strategy accordingly.

This capacity to visualize and access real-time information has also benefited many other industries that have nothing to do with racing. McLaren Applied Technologies, the company behind the Advanced Telemetry Linked Acquisition System (ATLAS) used for processing real-time F1 telemetry data, is also helping hospitals to improve their response time in dealing with critically sick patients. Collecting telemetry data on patients helps to provide immediate medical help in the most efficient way.

Effective teamwork Earlier this year, Fox Sports published a story about the neonatal unit from the University Hospital of Wales that reached out to a Formula 1 team. The doctors asked the racers for advice on improving teamwork when delivering newborns in high-pressure situations. As a result, the hospital implemented Formula 1 techniques and processes to streamline medical management of babies born critically sick. The resulting improvements enabled the doctors to provide newborns with urgent medical care in the first few seconds of their lives as efficiently as a pit crew changing tyres during a pit stop in a Formula 1 race.

These are just a few examples of how the technology developed for Formula 1 races has made its way into other industries – and it's all data-driven. It takes enormous amounts of such data to enable research, engineering, and development of these products, and Acronis has the tools to store and protect that data into the future.

(1-3) The Reasons For Choosing This Field

-To reactivate sports field in Sudan by bringing international competitions to Sudan, which can carry our country to develop and give sports more attention.

-to develop cars engineering in Sudan .

-To bring car designing industry to Sudan .

(1-4) Project Field Problems

- Central services problem which make users cross long distances

-Giving training less attention

- Giving landscape less attention ,although the landscape is one of the important elements in this field.

(1-5) Project Objects

- Give young people training more attention driving skills, designing and engineering.

- Solve the service issue by dividing the service to be close to all users especially the spectators

- designing the landscape in some way to integrate with other buildings design .

(1-6) The Student Suggestions to solve the problems

-Designing some service within the grand stands to be close to the spectators

-Designing training centre include class rooms , simulators , labs ,workshops and studios .

(1-7) Abstract

CHAPTER 2

(2-1) References

-FIM **STANDARDS FOR ROAD RACING CIRCUITS (SRRC)2015**

-ERNST AND PETER NEUFERT **ARCHITECT'S DATA ,THIRD EDITION**

- JOSEPH DE CHIARA AND JOHN CALLENDER **TIME -SAVER STANDARDS FOR BUILDINGS TYPES, SECOND EDITION**

(2-1-1)Circuit conception

General

The considerations in this Article are intended to be of assistance in the basic conception of circuit projects for submission to the FIA in view of future licensing .
In those countries where the law demands it, those responsible for a course must ensure that the prescriptions laid down by the public authorities are complied with and must obtain their official approval.

Plan : The shape of the course in plan is not subject to restrictions, although the FIA may recommend changes in the interests of good competition and from practical necessity.

The maximum permitted length for straight sections of track is 2km. If the circuit is intended for FIA Championship, Trophy or Cup events, the length should be calculated to satisfy the minima stipulated in Supplement 2. It is recommended that the length of any new circuit should not exceed 7 km. The length of a circuit for the calculation of race distances, race records and classifications is considered to be that of the centre line of the track. Unless otherwise stated, all references to straights and curves in

these criteria concern the actual trajectory followed by the cars with the highest performance and not the geometrical form of the layout (The trajectory, when traced on the plan, will generally have the effect of reducing the straights and elongating the curves: when planning or modifying a course, the designer must base his calculations upon it).

Width : When planning new permanent circuits, the track width foreseen should be at least 12 m. Where the track width changes, the transition should be made as gradually as possible, at a rate not greater than 1 m in 20 m total width.

The width of the starting grid should be at least 15 m; this width must be maintained through to the exit of the first corner (as indicated by the racing line).

Existing circuits requesting international recognition but which are narrower, may be approved if national events have regularly been organised on them.

(2-1-2)Grand Stand:

To give spectators a clear view and ensure good acoustics, Vitruvius recommended a fixed gradient of 1:2 for both seating and standing areas. (If a public-address system is incorporated, then, of course, the view is the only determinant of the gradient.) In staggered seating rows, spectators in every row should be able to see over the heads of those in the corresponding two rows in front. This results in a parabolic curve. The best viewing conditions are to be found on the 'long side' of the segment. The arrival of spectators happens relatively slowly so the widths of entrances and stairways have to be calculated on the basis of the flow of spectators leaving the stadium. This is when the flow rate is at maximum. According to research in the Amsterdam stadium, every 5000 spectators needs 7 minutes or 420 seconds to leave via the 9.5m wide steps.

(Inequivalent stadiums the times are: Los Angeles, 12 minutes; Turin, 9 minutes.)

Therefore, one spectator uses1m of staircase width in

9.5*420/5000 =0.8 seconds

Or, in 1 second a 1m wide staircase accommodates

5000/9.5*4.20 = 1.25 spectators

The formula giving the staircase width necessary to allow a certain number of spectators to leave the stadium in a given time is: staircase width (m) = number of spectators emptying time (s) x 1.25

First aid rooms for the spectators should be provided close to the spectator area. First aid treatment for 20000 or more spectators requires a suite of rooms: treatment and recovery rooms 15m2, storeroom 2m2 and two toilets with ventilation. For sports grounds with 30000 capacity or greater, provide an additional room of 15m2 for the emergency services (police, fire brigade). Commentary boxes in the main stand must have a good view onto the field of play and each box should be at least 105m2 . Behind every five press boxes a control room of 4m2 is necessary. One car parking space should be provided for every four spectators and spaces should be allocated for coaches and buses.

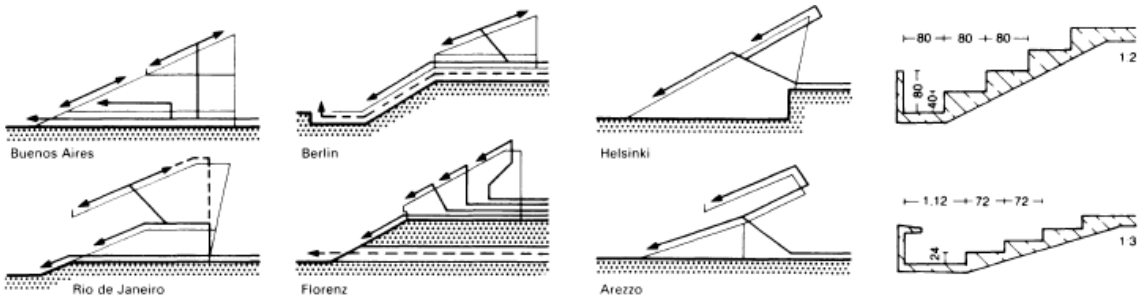


figure shows grand stands formats (2-1)

(2-1-3)Race Control

Definition

Race control is the centre of race supervision and direction and should provide the Clerk of the Course and his assistants, as well as the Race Director if appropriate, with all the facilities necessary to perform these duties in suitable working conditions. It should be a room with suitable sound attenuation and accessible only to the nominated staff. The Clerk of the Course or his nominee should remain in race control for the duration of all on-track activities.

Location

Race control should normally be located in a building as close to the start line as possible and no more than one floor above ground level and have an independent exit to the track or pit lane. In order to have maximum visibility over the track and the pit lane, the room should project from the line of the pit buildings. These conditions are generally met by locating the race control room at one end of the pit buildings.

Equipment

The race control post should be provided with:

a) a telephone or electronic communications system connected with the marshal posts, main emergency posts and general service network;

b) a telephone and fax connected with the public network;

c) an intercom connected with officials at track level;

d) a radio transceiver for communications with vehicles or posts so equipped;

e) a microphone connected with the pits and paddock loudspeakers and with access to the general public address systems;

f) TV monitors and a switching system, if the track is equipped with closed circuit TV;

g) a large plan of the circuit showing the location of all safety services.

NB: All communications systems used in an event must be centralised in this room.

(2-1-4) Media Centre

Studios :A television studio is any room where television cameras are used . Studios range in size from that of a regular office (with the camera shooting in through a window or open door) to large studios of 100 by 100 ft used for dramatic or variety programming . Because of its importance, a brief discussion of studio planning is contained in Section G .

Control Rooms :Control rooms contain electronic equipment for monitoring and controlling the studio output . They may have separate compartments for sound (audio), picture (video), and lighting control. An announcer's booth incorporated with the control room must be acoustically isolated, since it contains a live microphone . Control rooms must usually be accessible to the studio which they serve; direct visual contact may or may not be necessary, depending on operating practices Acoustical considerations are similar to those for radio control rooms. Lighting should be adjustable to permit observation of television .

Technical Facilities :Technical facilities house the extensive electronic equipment which supports broadcasting operations . Because of the space required and the fact that some of this equipment is noisy, only the smallest stations locate it in the control rooms. To facilitate maintenance, the technical facilities are often grouped together in a Central Technical Area (CTA). CTA need not be adjacent to the studios, provided good communications are available. A dust-free temperature-
controlled environment is essential. Following are the facilities that make up CTA:

a. Equipment (Rack) Rooms. The equipment room houses ancillary electronic equipment that does not require attendance or adjustment during programming, such as audio and video equipment, switching devices, transmission equipment, etc. A separate room facilitates maintenance and simplifies design of the control roots. The rack room need not be adjacent to the control room(s) but should be convenient to the maintenance

shop .

b. Videotape Recording (VTR). The usual medium for television recording is magnetic tape using a device called a videotape recorder (VTR), which resembles a very elaborate magnetic sound tape recorder . The VTR area for a local station may contain from two to six machines . Central network facilities will have more .

c . Telncine. Despite the advantages of magnetic tape, much television programming will continue to originate as motion picture film . In addition to the popularity of full-length feature filot as television fare, off-station news and special events are usually easier to record with portable motion picture cameras . As the
name implies (tele-television, cine-cinema), telecine contains assemblies that combine motion picture and slide projectors with a television camera . Size will depend on the number of machines to be housed .

d. Master Control. Larger stations with several studios may require a central or master control for final switching and monitoring of the on-air operation .

e . Maintenance Shop . This is an electronics workshop with considerable space
for spare parts . It must be as convenient as possible to the central technical area . Ideally, it should also be convenient to the control rooms, but this is not always possible .

f. Telephone Equipment Room . For large stations and network facilities, telephone equipment associated with transmission of television programming requires a substantial floor area which is usually close to or a part of the central technical area . (This equipment is distinct from that used for normal telephone communications .)

g . Film Recording . This area contains equipment for recording, on motion picture film, material originated electronically . Before the advent of magnetic tape, this was the only method for recording television programs . Some network installations and very large stations may still require a film recording facility
which can be adjacent to or part of rate-cine . Useful adjuncts to film recording are a darkroom and viewing room .

h . Video Cartridges . New methods available for recording television programming in cartridge or cassette form include film (Electronic
Video Recording), magnetic tape, plastic tape, and plastic disks . While most are not yet of broadcast quality, they may in time supplement videotape and film as program sources, much as tape cartridges now supplement
phonograph records in commercial radio studios . Possible facilities' needs cannot yet be predicted .

i . Program Control . This is a room resembling a control room without a studio where television signals from various sources---such as telecine, VTR, or live remotes are combined electronically to produce a complete program . It is useful where studios are heavily used and much off-premises work is anticipated
. A program control room is required only for the largest stations or network facilities .

4 . NOW$ Even the smallest station will have local news . The following facilities would be required for a large station or a central network facility :

a . Newsroom . This is similar to a newspaper "city room" with desk and telephone space for newsmen . It usually contains or is adjacent to wire service printers and is usually equipped with TV monitors .

b . Library and Archives. Just as a major newspaper will maintain a file of clippings, a large news operation will have a library of film and tape as well as reference books and other resources . This should be accessible to the newsroom .

c . Special News Studios . Since the live "action" in a news broadcast is usually limited to a man at a desk, larger stations may want a small studio opening directly off the newsroom from which news programs may originate without tying up one of the regular studios . When not in use as a studio, it serves as an office .

d. Graphic Arts . This is a facility for rapid production of charts, photos, and other visual materials . It is used extensively for news as well as other programming . It may vary from a single artist's desk in a small operation to a large room with many artists and facilities, such as a Stat master, for photo developing and printing .

5. Studio Support Facilities The following rooms
are basically similar to corresponding spaces
in legitimate theaters and will not be discussed
in detail . Need for them depends on the type of
programming .

a . Rehearsal halls (these are best kept away from the studio to minimize sound problems) .

b . Wardrobe rooms .

c . Dressing rooms (individual and group) .

d. Makeup rooms .

e . "Talent' ' lounge for performers (convenient to studios and dressing rooms) . This is often called a "green room" after a similar
green-painted room in a well-known concert hall .

f. Multipurpose rooms . These are rooms about the size of a chorus dressing room which can be used, as the occasion demands, for dressing rooms, rehearsal of small groups, lounge, music origination, etc .

g . Ready storage for scenery and props. This must be available as close as possible to the studios to minimize handling .

"'Talent" refers to the actors, announcers .
and other performers who appear or arc: heard

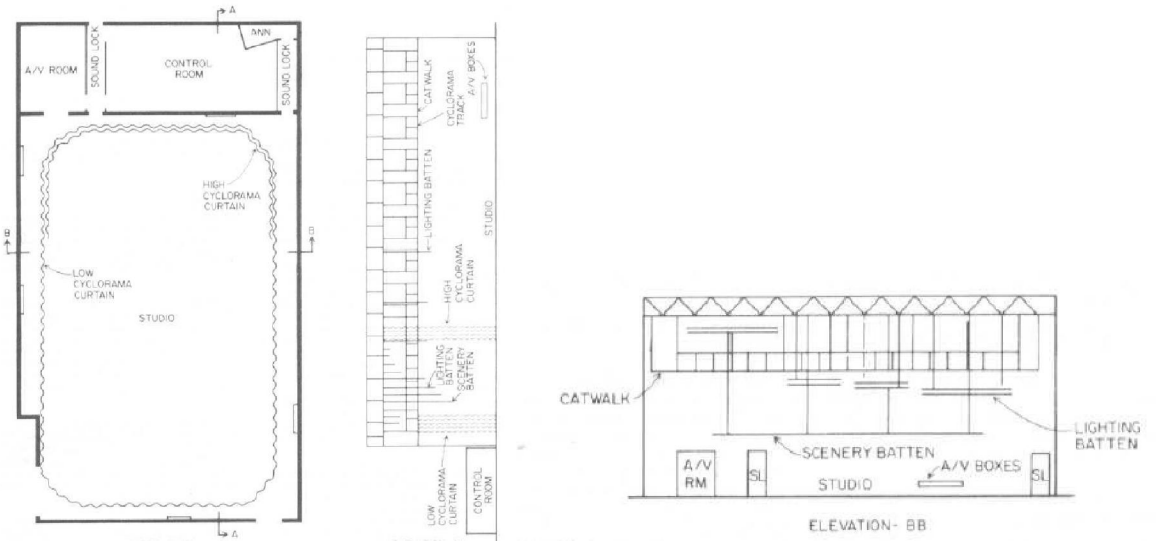


figure shows the studio layout (2-2)

(2-1-5) **Training Centre**

Drawing studio:

Basic equipment

Drawing table of dimensions suitable for AO size (92x 127 Cm); fixed or adjustable board. Drawings cabinet for storing drawings flat, of same height as drawing table, surface can also be used to put things on. A small cupboard on castors for drawing materials, possibly with filing cabinet, is desirable Adjustable-height swivel chair on castors. Drawing tables, upright board, adjustable height or usable as flat board when folded down Further accessories: table top for putting things on, drawing cabinets for hanging drawings or storing flat, suitable for AO at least .Each workplace should have a locker.

Drawing studios

Each space requires 3.5-4.5 m2 , depending on size of drawing table.

Natural lighting is preferable and so a north-facing studio is best to receive even daylight. For right-handed people it is best if illumination comes from the left .

Artificial light should be at 500 lx, with 1000 Ix (from mounted drawing lamps or linear lamps hung in variable positions above the long axis of the table) at the drawing surface. Rooms for life drawing, painting and modeling: Accommodated if possible in the attic facing north with large windows (1/3-'/4 of floor space) and, if necessary, additional top lights.

Rooms for sculptors and potters

Large space for technical equipment such as potters' wheels, kilns and pieces of work, also storeroom, plaster room, damp room, etc.

Classrooms

Classrooms: one classroom per class, square if possible, in exceptional cases rectangular, max. 32 pupils, min. of 65-70 m2 (approx. 2.00 m2 x 2.20 m2 per pupil) if possible day lit on two sides .Furniture either in rows or informally arranged.

Front of class: chalkboard with sliding panels, projection space, socket for TV, radio, tape recorder, etc., wash-basin near entrance. Provision for hanging maps. Facility to black out windows. Group rooms divided into separate workspaces to accommodate mixed ability classes only in special cases. Alternatives to individual classes and group rooms: 2-3 classrooms joined together to make teaching spaces for discussions between pupils and teachers, or lessons in larger groups; can also be divided by partitions. Draught excluding lobbies and entrance areas also connect to horizontal and vertical circulation (corridors, stairs, ramps) and can be used during breaks (0.50 m2jpupil). Multi-use area for parties, play or exhibitions . Room for teaching materials 12-15 m2: centrally positioned, part of the staff area or in a multi-purpose room.

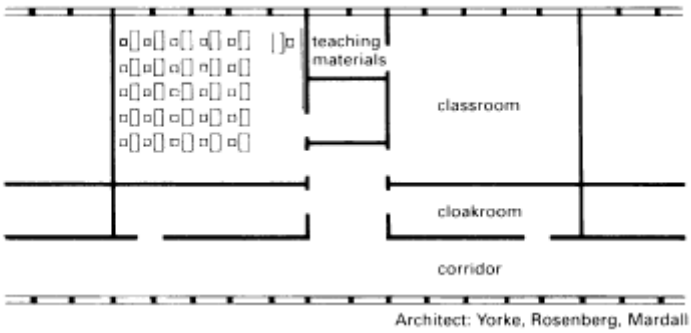


figure shows classroom layout (2-3)

Workshop

Design of premises: after space requirement has been established and a site chosen, planning the building can begin. The characteristics of the site, such as size, shape, vehicle access, road design etc., must be taken into consideration. Planning example Planning permits an efficient functioning design of all required spaces and facilities. The repair shop is designed to accommodate four 6.50m x 3.50 m workstations, and equipped with a four-column car lifting frame and wheel balancing equipment; nearby spare parts store.

Planning example First construction phase includes three work bays in the repair shop and a car wash. The finished scheme has an extra five workstations in the repair shop and a showroom. In a company working with commercial vehicles the choice of position for the gates depends primarily on the shape of the site. From both the fitters' and customers' points of view, the best design is one where entry to and exit from the repair bays are through separate gates, particularly for work on articulated vehicles. Ideally, the site depth or width should be 80 m but repair shops for light commercial vehicles are possible on sites with little depth (minimum 40m). for a company working with light commercial vehicles and buses. Plan examples show the smallest unit of an independent commercial vehicle repair service. Offices and social rooms on the first floor .

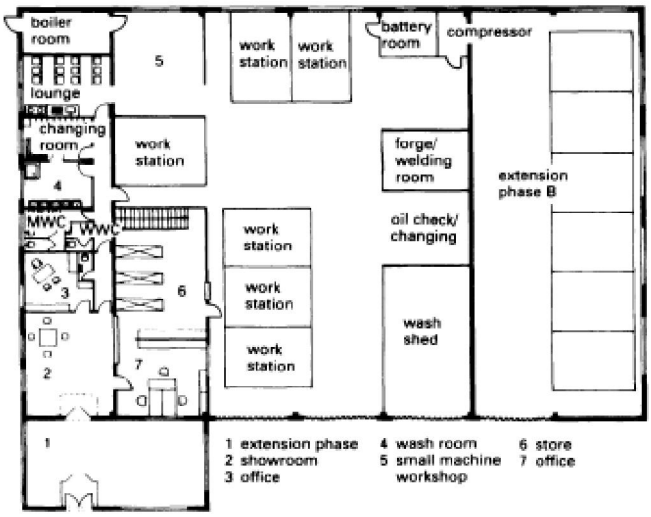
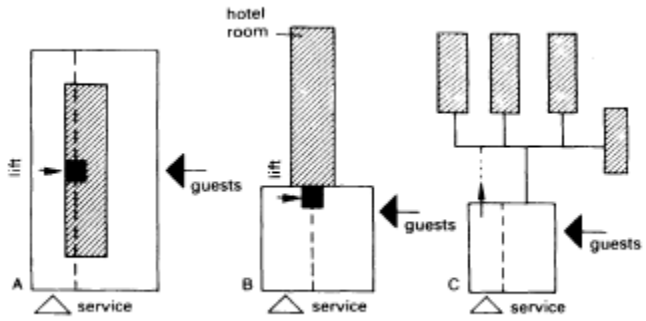


figure shows workshop layout (2-4)

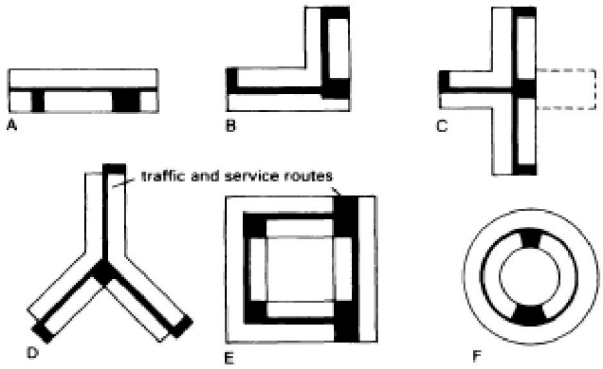
(2-1-6) **The Hotel**

Different types of hotel offer varying standards of quality and facilities. Hotels may be part of a chain or independent. Where hotels do form part of a chain, special design requirements may be imposed. Hotel types include town hotels, holiday hotels, clubs, hotels with apartments and motels. Accommodation facilities, including rooms, toilets, bathrooms, shower rooms, etc., hallways and floor service, should occupy 50-600/0 of the floor area. Public guest rooms, a reception area, hall and lounges require 4-70/0, and hospitality areas, restaurants, and bars for guests and visitors 4-80/0.
A banqueting area with meeting and conference rooms needs 4-120/0, domestic areas, kitchens, personnel rooms and stores 9-140/0, administration, management and secretarial 1-2%, maintenance and repair 4-70/0, and leisure, sport, shops and a hairdressing salon 2-100/0. Special areas for seminars, health centres and outdoor facilities, for which the space required can vary tremendously, may also be needed. National systems of classification, compulsory or voluntary, vary in range of categories and method of designation (letters, figures, stars, crowns etc.). Over 100 classification systems are in use, most based on the World Tourism Organisation (WTO)model but customised to suit local conditions.



) **Relationship between services and guest rooms**

figure shows the relationship between service and rooms (2-5)



Plan views of hotels

figure shows hotels layout (2-6)

(2-2) Similar Projects

-because it's a new project so there is no local similar project in SUDAN all the projects will be mentioned are international projects.

(2-2-1) Silverstone Circuit:

Silverstone Circuit is a motor racing circuit in England next to the Northamptonshire villages of Silverstone and Whittlebury. The circuit straddles the Northamptonshire and Buckinghamshire border, with the current main circuit entry on the Buckinghamshire side. The Northamptonshire towns of Towcester (5 miles) and Brackley (7 miles) and Buckinghamshire town of Buckingham (6 miles) are close by, and the nearest large towns are Northampton and Milton Keynes.

it's the first circuit build ever and the second circuit in the length . the circuit about 5.8km and it can divide to two circuits and this make the circuit suitable to many different types of competitions .

this project has been studied because it content the main activity in my project , and it has the second circuit in length that will help to give good image to how the circuit can be design

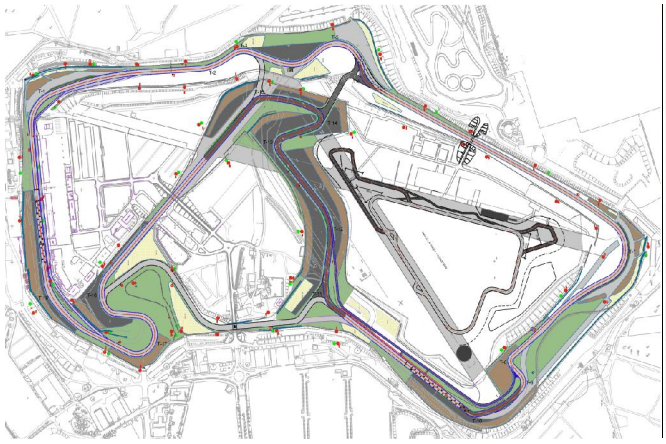


figure shows the circuit layout (2-7)

figure shows the project site (2-8)

The maximum capacity for the grand stand is 150 person

with different places for watching : the normal grand stand to especial suites and restaurants .

VIP Helicopter: Silverstone give the VIP visitors the chance to watch the races from helicopter.

Silverstone six: the luxury suites that give the visitor the best view point

Wood cote suite: open suites include restaurant and coffee shop .

the integration between the landscape , the circuit and the buildings

the way the project separate the vehicles movement and the users movement give has safety sides but it make the users walk for large distances .

figure shows silverstone six (2-9)

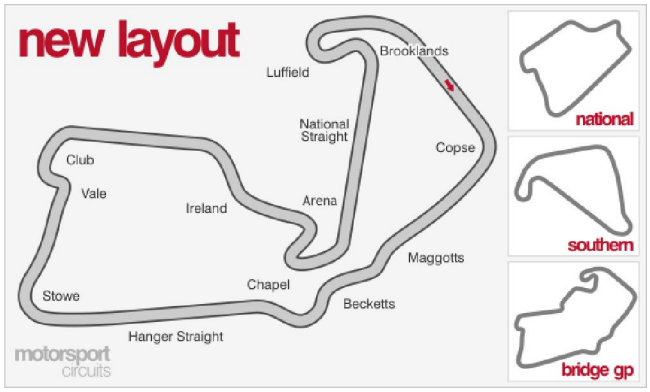


figure shows how circuit can divide (2-10)

figure shows the project facilities(2-11)

(2-2-2) Circuit Of The Americas:

Circuit of The Americas (COTA) is a grade 1 FIA specification 3.427-mile (5.515 km) motor racing facility located in Austin, Texas, on the southeastern periphery of Austin city limits, in Central Texas. COTA plays host to the Formula One United States Grand Prix and the Motorcycle Grand Prix of The Americas,[4] a round of the FIM Road Racing World Championship. It previously hosted the Australian V8 Supercars, the American Le Mans Series, the Rolex Sports Car Series,the FIA World Endurance Championship, and the IMSA Weather Tech Sports Car Championship.

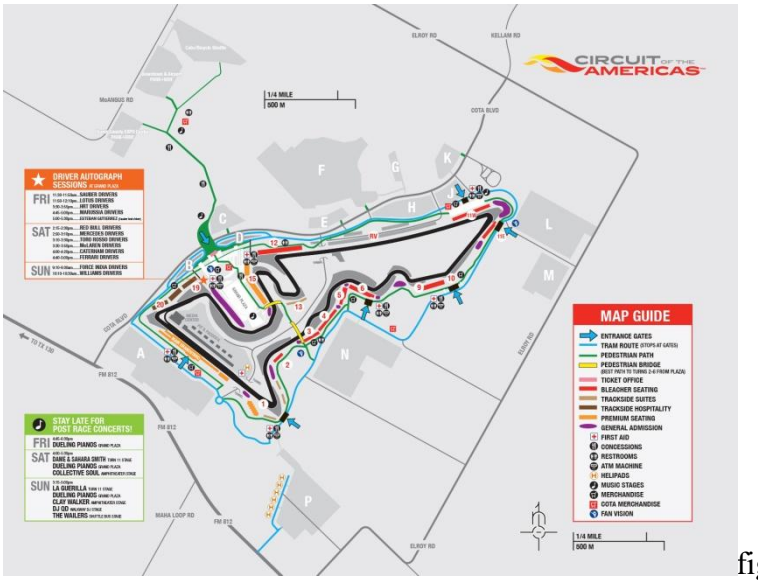


figure shows circuit of the Americas site(2-12)

Racetrack: In an episode of Speed TV's Wind Tunnel program broadcast on August 22, 2010, Tavo Hellmund revealed that the circuit would be 3.4 miles (5.5 km) long and would be made up of twenty turns with an elevation change of 133 feet (41 m). The final plan of the circuit was released on September 1, 2010, showing a design inspired by the European tradition of sculpting the circuit to the contours of the land. The design draws from several European Formula One circuits, including a recreation of Silverstone's Maggotts-Becketts-Chapel sequence, Hockenheim's arena bends, and a replica of Istanbul's Turn Eight.[45] Other corners were loosely inspired by the Senna 'S' at Interlagos and the Österreichring's Sebring-Auspuffkurve. A feature of the circuit is a deliberate widening of corners, to encourage drivers to follow multiple racing lines. A

similar feature was used at the Buddh International Circuit in India, where the circuit widens on the approach to certain corners.

The circuit was one of only a handful on the Formula One 2012 calendar to be run counter-clockwise, the others being Marina Bay, the Korea International Circuit, Yas Marina, and Interlagos. Because of this, the circuit contains more left-hand turns than right-hand ones, placing greater physical demands on the drivers whose bodies, particularly their necks, are more adapted to the lateral g-forces of clockwise circuits. From the start line, the drivers climb a gradient of over 11% to the first corner—the highest point of the circuit—with the apex of the corner positioned on the crest of the hill. They descend the hill to navigate a series of fast sweepers modeled on Silverstone's Maggotts-Becketts-Chapel complex and through a blind corner at Turn 10, taking them to the far end of the circuit and a hairpin at Turn 11. The drivers then follow a 0.62-mile (1.00 km) straight back towards the pit and paddock area before entering the final sector of the lap and weaving through a series of corners modeled on Hockenheim's stadium section. This is followed by a downhill, multi-apex corner with limited run-off before the final two corners of the circuit, a pair of left-hand bends that return the drivers to the main straight.

Reception: The reception from drivers ahead of the inaugural race was highly positive. Fernando Alonso and Lewis Hamilton both praised the circuit, suggesting that it would be considerably more difficult to learn than other recent additions to the Formula One calendar. Jenson Button described the first sector as "spectacular", but remarked that he felt that starting second would be better than starting first as the placement of pole position put it on a steeper incline than the rest of the grid. Kamui Kobayashi, on the other hand, was less complimentary, claiming that he did not feel intimidated by the steep climb to the first corner as it was no different from Eau Rouge at the Circuit de Spa-Francorchamps, and accusing the media of hyping it up without precedent. Mark Webber was also unimpressed, stating that while he enjoyed driving the first sector of the circuit, the second and third sectors were similar to other circuits on the calendar.

Grand Plaza: Bordered by the track on three sides, the Grand Plaza is a 20 acres (0.081 km2) space designed by Miró Rivera Architects of Austin, Texas that includes a large reflecting pool, lawn, and varying landscape zones. A promenade along the north side of the Grand Plaza hosts concessions, retail, restroom facilities, and entrances to spectator seating. From the southeast end of the Grand Plaza, two pedestrian bridges cross over turns 16 and 3 to provide access for visitors to other areas of the circuit complex.


figure shows Grand plaza (2-13)

Observation Tower: Circuit of the Americas features a 251 feet (77 m) observation tower designed by Miró Rivera Architects and built by Patriot Erectors as a landmark for the venue. The structure of the tower consists of an elevator hoist-way surrounded by a double helix staircase of 419 stairs, both of which lead to an observation platform 230 feet (70 m) above ground level. The platform provides a 360-degree panorama of the circuit, as well as views to downtown Austin, Texas. The observation platform, which is accessible to the public for an admission fee, can accommodate up to 70 visitors and features glass railings and a partial glass floor. In addition, a "veil" consisting of 18 bright red steel tubes runs nearly the full height of the tower, acting as a canopy for both the observation platform and the stage below. The design of the observation tower was inspired by the visual imagery of sports cars and movement, and the red color was selected to mimic the streaks of lights trailing racecars at night.

 figure shows Observation Tower (2-14)

Austin360 Amphitheater: On July 23, 2012, COTA announced a booking agreement with Live Nation to book major concerts at an open air amphitheater to be built at the base of the observation tower. Designed by Miró Rivera Architects, the venue opened in April 2013 with a concert by Kenny Chesney. The amphitheater will accommodate up to 14,000 people with 5,240 permanent reserved seats. Another 1,700 seats can be configured on the stage-front floor or there is standing room for 2,300. The remaining general admission spots are on a sloping grass area behind the reserved seats. The venue was originally going to be called Tower Amphitheater, but in March 2013, was renamed to Austin360 Amphitheater, with naming rights sold to the entertainment/events website associated with the Austin American-Statesman.

Main Grandstand: The primary permanent seating at Circuit of the Americas is located within the Main Grandstand, designed by Miró Rivera Architects.[55] Above-ground construction on the grandstand began in March 2012, and the "topping out" occurred in June 2012 with completion in time for the inaugural United States Grand Prix.

The Main Grandstand is 65 feet (20 m) tall, and has a total capacity of approximately 9,000 spectators. The seating is divided into three levels: lower level (capacity ~5400, including Loge Boxes), club level (capacity ~2900), and suite level (capacity ~750). The majority of seating is covered by a tensile fabric canopy. The primary structure is 500 feet (150 m) long, while the lower risers extend an additional 500 feet. The

grandstand also contains concessions, restrooms, offices, and two lounge spaces located at the second and third levels. The Velocity Lounge on the second level is approximately 7,100 square feet (660 m2), and contains a 36-screen video wall and the acrylic painting "Velocity" by Dallas-based artist Christopher Martin measuring 120 feet (37 m) in length.

Both the Main Grandstand and the concessions buildings in the Grand Plaza were conceived as a modular system consisting of several components that can be arranged according to need. The concessions, with banners and deep canopies, can be expanded with restrooms, permanent seating or suites. Inherent to this “kit-of-parts” construction system is flexibility allowing the site to grow and change.

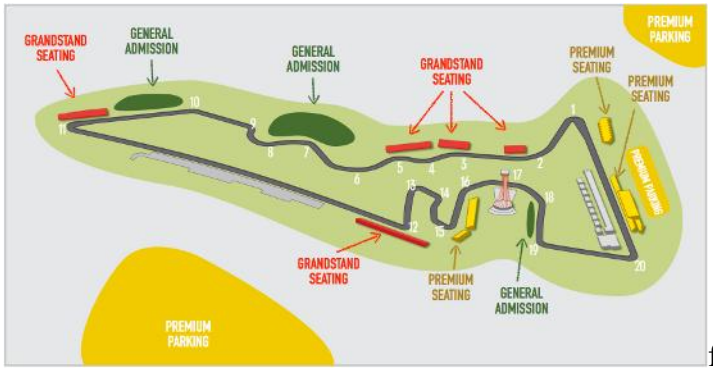


figure shows Grandstand (2-15)

Soccer stadium : In August 2017, a new soccer-specific stadium was announced to be built between the Amphitheater and the Grand Plaza. A professional soccer team known as Austin Bold FC will start playing in the United Soccer League in 2019.

(2-3) Site Selection

figure shows Africa (2-16)

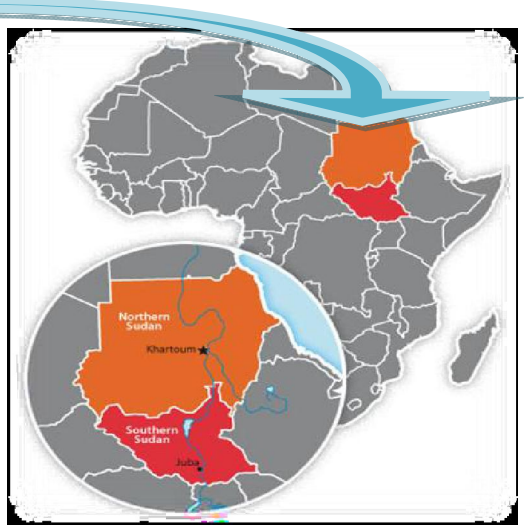


figure shows Sudan map (2-17)

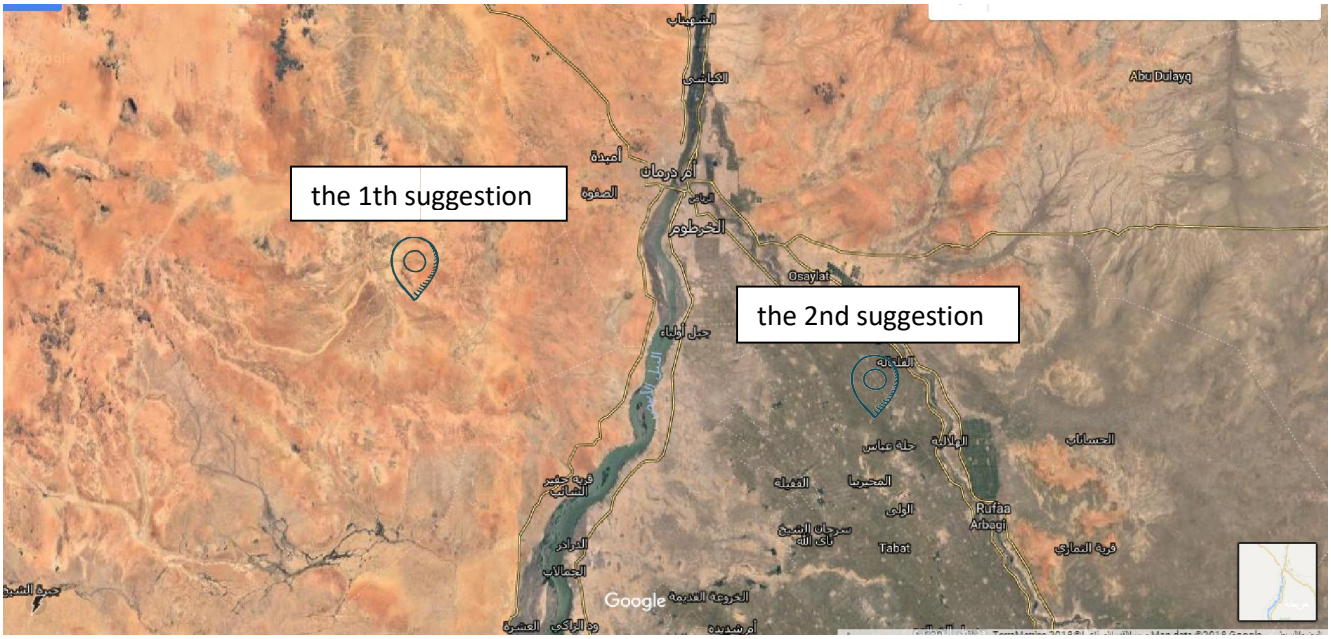


figure shows sites suggestions (2-18)

(2-3-1) suggestion 1

located in the region of Soba in area around 230 ha.

figure shows Soba map (2-19)

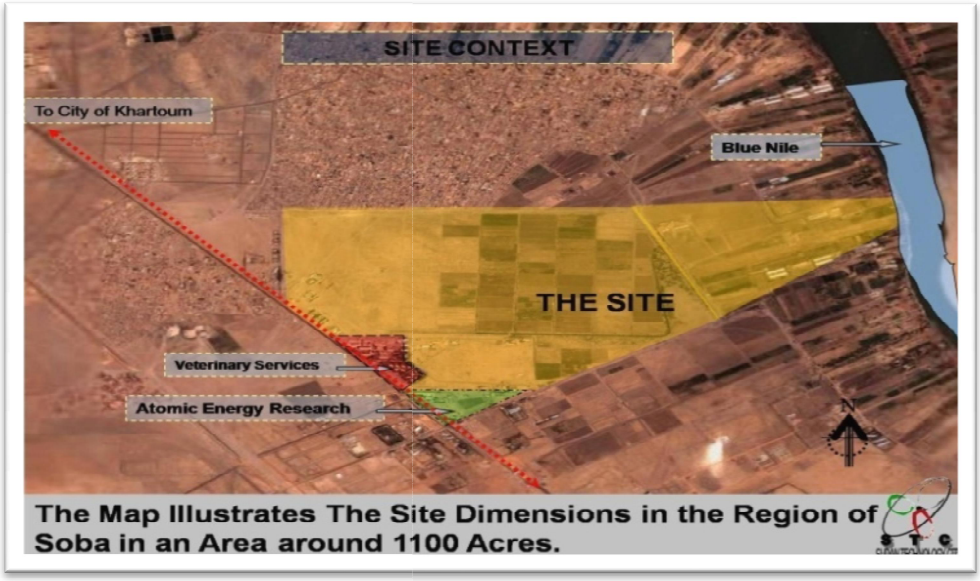


figure shows the 1th suggestion location (2-20)

(2-3-2) suggestion 2

located in Omdurman to the north from Khartoum international airport

with area around 238.5 ha

figure shows Omdurman map (2-21)

figure shows suggestion 2 location (2-22)

(2-3-3) comparing between the suggestions

comparing	Suggestion 1	Suggestion 2
Location 30%	18%	28%
Area 20%	18%	19%
Geometric shape 10%	5%	10%
Services 10%	5%	5%
Transportation 20%	18%	18%
Topography 10%	5%	9%
Total	69%	89%

RESULT:

From the comparing we can see both of sites are good but the location is very important factor here so the suggestion 2 is the best for the project because it's away from residential areas .

(2-4) The Historical Scrap

sport history:-

Artifacts and structures suggest sport in China as early as 2000 BC. Gymnastics appears to have been popular in China's ancient past. Monuments to the Pharaohs indicate that a number of sports, including swimming and fishing, were well-developed and regulated several thousands of years ago in ancient Egypt. Other Egyptian sports included javelin throwing, high jump, and wrestling. Ancient Persian sports such as the traditional Iranian martial art of Zourkhaneh had a close connection to warfare skills. Among other sports that originated in ancient Persia are polo and jousting. Motorised sports have appeared since the advent of the modern age. Electronic sports are a recent development.

A wide range of sports were already established by the time of Ancient Greece and the military culture and the development of sport in Greece influenced one another considerably. Sport became such a prominent part of their culture that the Greeks created the Olympic Games, which in ancient times were held every four years in a small village in the Peloponnesus called Olympia.

Sports have been increasingly organised and regulated from the time of the ancient Olympics up to the present century. Industrialisation has brought increased leisure time, letting people attend and follow spectator sports and participate in athletic activities. These trends continued with the advent of mass media and global communication. Professionalism became prevalent, further adding to the increase in sport's popularity, as sports fans followed the exploits of professional athletes – all while enjoying the exercise and competition associated with amateur participation in sports. Since the turn of the 21st century, there has been increasing debate about whether transgender sport persons should be able to participate in sport events that conform with their post-transition gender identity.

The Formula One series originated with the European Grand Prix Motor Racing (q.v. for pre-1947 history) of the 1920s and 1930s. The formula is a set of rules that all participants' cars must meet. Formula One was a new formula agreed upon after World War II during 1946, with the first non-championship races being held that year. A number of Grand Prix racing organisations had laid out rules for a world championship before the war, but due to the suspension of racing during the conflict, the World Drivers' Championship was not formalised until 1947. The first world championship race was held at Silverstone, United Kingdom in 1950. A championship for constructors followed in 1958. National championships existed in South Africa and the UK in the 1960s and 1970s. Non-championship Formula One events were held for many years, but due to the increasing cost of competition, the last of these occurred in 1983. On 26 November 2017, Formula One unveiled its new logo, following the 2017 season finale in Abu Dhabi during the Abu Dhabi Grand Prix at Yas Marina Circuit. The new logo replaces F1's iconic 'flying one', which has been the sport's trademark since 1993.

The first World Championship for Drivers was won by Italian Giuseppe Farina in his Alfa Romeo in 1950, narrowly defeating his Argentine teammate Juan Manuel Fangio. However, Fangio won the title in 1951, 1954, 1955, 1956, and 1957 (His record of five World Championship titles stood for 45 years until German driver Michael Schumacher took his sixth title in 2003), his streak interrupted (after an injury) by two-time champion Alberto Ascari of Ferrari. Although the UK's Stirling Moss was able to compete regularly, he was never able to win the world championship, and is now widely considered to be the greatest driver never to have won the title. Fangio, however, is remembered for dominating Formula One's first decade and has long been considered the "Grand Master" of Formula One.

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This period featured teams managed by road car manufacturers Alfa Romeo, Ferrari, Mercedes-Benz, and Maserati; all of whom had competed before the war. The first seasons were run using pre-war cars like Alfa's 158. They were front-engined, with narrow tyres and 1.5-litre supercharged or 4.5-litre normally aspirated engines. The 1952 and 1953 World Championships were run to Formula Two regulations, for smaller, less powerful cars, due to concerns over the paucity of Formula One cars available.[13] When a new Formula One, for engines limited to 2.5 litres, was reinstated to the world championship for 1954, Mercedes-Benz introduced the advanced W196, which featured innovations such as desmodromic valves and fuel injection as well as enclosed streamlined bodywork. Mercedes drivers won the championship for two years, before the team withdrew from all motorsport in the wake of the 1955 Le Mans disaster.

British dominance

An era of British dominance was ushered in by Mike Hawthorn and Vanwall's championship wins in 1958, although Stirling Moss had been at the forefront of the sport without ever securing the world title. Between Hawthorn, Jim Clark, Jackie Stewart, John Surtees and Graham Hill, British drivers won nine Drivers' Championships and British teams won fourteen Constructors' Championship titles between 1958 and 1974. The iconic British Racing Green Lotus, with a revolutionary aluminium-sheet monocoque chassis instead of the traditional space-frame design, was

the dominant car, and in 1968, the team broke new boundaries, when they were the first to carry advertising on their cars.

Technological developments:-

The first major technological development, Bugatti's re-introduction of mid-engined cars (following Ferdinand Porsche's pioneering Auto Unions of the 1930s), occurred with the Type 251, which was unsuccessful. Australian Jack Brabham, world champion during 1959, 1960, and 1966, soon proved the mid-engined design's superiority. By 1961, all regular competitors had switched to mid-engined cars. The Ferguson P99, a four-wheel drive design, was the last front-engined F1 car to enter a world championship race. It was entered in the 1961 British Grand Prix, the only front-engined car to compete that year.

During 1962, Lotus introduced a car with an aluminium-sheet monocoque chassis instead of the traditional space-frame design. This proved to be the greatest technological breakthrough since the introduction of mid-engined cars. During 1968, Lotus painted an Imperial Tobacco livery on their cars, thus introducing sponsorship to the sport.

Aerodynamic downforce slowly gained importance in car design from the appearance of aerofoils during the late 1960s. During the late 1970s, Lotus introduced ground-effect aerodynamics (previously used on Jim Hall's Chaparral 2J during 1970) that provided enormous downforce and greatly increased cornering speeds. So great were the aerodynamic forces pressing the cars to the track (up to five times the car's weight), extremely stiff springs were needed to maintain a constant ride height, leaving the suspension virtually solid, depending entirely on the tyres for any small amount of cushioning of the car and driver from irregularities of the road surface.

Big business

Beginning in the 1970s, Bernie Ecclestone rearranged the management of Formula One's commercial rights; he is widely credited with transforming the sport into the multibillion-dollar business it now is. When Ecclestone bought the Brabham team during 1971, he gained a seat on the Formula One Constructors' Association and during 1978 he became its president. Previously, the circuit owners controlled the income of the teams and negotiated with each individually; however Ecclestone persuaded the teams to "hunt as a pack" through FOCA. He offered Formula One to circuit owners as a package, which they could take or leave. In return for the package, almost all that was required was to surrender trackside advertising.

The formation of the Fédération Internationale du Sport Automobile (FISA) during 1979 set off the FISA–FOCA controversy, during which FISA and its president Jean-Marie Balestre disputed repeatedly with FOCA over television revenues and technical regulations. The Guardian said of FOCA that Ecclestone and Max Mosley "used it to wage a guerrilla war with a very long-term aim in view". FOCA threatened to establish a rival series, boycotted a Grand Prix and FISA withdrew its sanction from races. The result was the 1981 Concorde Agreement, which guaranteed technical stability, as teams were to be given reasonable notice of new regulations. Although FISA asserted its right to the TV revenues, it handed the administration of those rights to FOCA.

FISA imposed a ban on ground-effect aerodynamics during 1983. By then, however, turbocharged engines, which Renault had pioneered in 1977, were producing over 700 bhp (520 kW) and were essential to be competitive. By 1986, a BMW turbocharged engine achieved a flash reading of 5.5 bar pressure, estimated to be over 1,300 bhp (970 kW) in qualifying for the Italian Grand Prix. The next year, power in race trim reached around 1,100 bhp (820 kW), with boost pressure limited to only 4.0 bar. These cars were the most powerful open-wheel circuit racing cars ever. To reduce engine power

output and thus speeds, the FIA limited fuel tank capacity in 1984, and boost pressures in 1988, before banning turbocharged engines completely in 1989.

The development of electronic driver aids began during the 1980s. Lotus began to develop a system of active suspension, which first appeared during 1982 on the 91. By 1987, this system had been perfected and was driven to victory by Ayrton Senna in the Monaco Grand Prix that year. In the early 1990s other teams followed suit and semi-automatic gearboxes and traction control were a natural progression. The FIA, due to complaints that technology was determining the outcome of races more than driver skill, banned many such aids for 1994. This resulted in cars that were previously dependent on electronic aids becoming very "twitchy" and difficult to drive (particularly the Williams FW16). Many observers felt the ban on driver aids was in name only as they "proved difficult to police effectively".

The teams signed a second Concorde Agreement during 1992 and a third in 1997, which expired on the last day of 2007.

On the track, the McLaren and Williams teams dominated the 1980s and 1990s, with Brabham also being competitive during the early part of the 1980s, winning two Drivers' Championships with Nelson Piquet. Powered by Porsche, Honda, and Mercedes-Benz, McLaren won sixteen championships (seven constructors' and nine drivers') in that period, while Williams used engines from Ford, Honda, and Renault to also win sixteen titles (nine constructors' and seven drivers'). The rivalry between racers Ayrton Senna and Alain Prost became F1's central focus during 1988, and continued until Prost retired at the end of 1993. Senna died at the 1994 San Marino Grand Prix after crashing into a wall on the exit of the notorious curve Tamburello, having taken over Prost's lead drive at Williams that year. The FIA worked to improve the sport's safety standards since that weekend, during which Roland Ratzenberger also lost his life in an accident during Saturday qualifying. No driver had died of injuries sustained on the track at the wheel of a Formula One car for 20 years, until the 2014 Japanese Grand

Prix where Jules Bianchi collided with a recovery vehicle after aquaplaning off the circuit. Since 1994, three track marshals have lost their lives, one at the 2000 Italian Grand Prix, the second at the 2001 Australian Grand Prix and the third at the 2013 Canadian Grand Prix.

Since the deaths of Senna and Ratzenberger, the FIA has used safety as a reason to impose rule changes that otherwise, under the Concorde Agreement, would have had to be agreed upon by all the teams – most notably the changes introduced for 1998. This so-called 'narrow track' era resulted in cars with smaller rear tyres, a narrower track overall, and the introduction of grooved tyres to reduce mechanical grip. There were to be four grooves on the front (three in the first year) and rear that ran through the entire circumference of the tyre. The objective was to reduce cornering speeds and to produce racing similar to rainy conditions by enforcing a smaller contact patch between tyre and track. This, according to the FIA, was to promote driver skill and provide a better spectacle.

Results have been mixed as the lack of mechanical grip has resulted in the more ingenious designers clawing back the deficit with aerodynamic grip – pushing more force onto the tyres through wings and aerodynamic devices, which in turn has resulted in less overtaking as these devices tend to make the wake behind the car 'dirty' (turbulent), preventing other cars from following closely due to their dependence on 'clean' air to make the car stick to the track. The grooved tyres also had the unfortunate side effect of initially being of a harder compound to be able to hold the grooved tread blocks, which resulted in spectacular accidents in times of aerodynamic grip failure as the harder compound could not grip the track as well.

Drivers from McLaren, Williams, Renault (formerly Benetton), and Ferrari, dubbed the "Big Four", won every World Championship from 1984 to 2008. The teams won every Constructors' Championship from 1979 to 2008 as well as placing themselves as the top

four teams in the Constructors' Championship in every season between 1989 and 1997, and winning every race but one (the 1996 Monaco Grand Prix) between 1988 and 1997. Due to the technological advances of the 1990s, the cost of competing in Formula One increased dramatically. This increased financial burdens, combined with the dominance of four teams (largely funded by big car manufacturers such as Mercedes-Benz), caused the poorer independent teams to struggle not only to remain competitive, but to stay in business, and forced several teams to withdraw. Since 1990, twenty-eight teams have withdrawn from Formula One. This has prompted former Jordan owner Eddie Jordan to say that the days of competitive privateers are over.

Manufacturers' return

Michael Schumacher won five consecutive titles with Ferrari

Michael Schumacher and Ferrari won five consecutive Drivers' Championships (2000–2004) and six consecutive Constructors' Championships (1999–2004). Schumacher set many new records, including those for Grand Prix wins (91), wins in a season (thirteen of eighteen), and most Drivers' Championships (seven). Schumacher's championship streak ended on 25 September 2005, when Renault driver Fernando Alonso became Formula One's youngest champion at that time, until Lewis Hamilton in 2008. During 2006, Renault and Alonso won both titles again. Schumacher retired at the end of 2006 after sixteen years in Formula One, but came out of retirement for the 2010 season, racing for the newly formed Mercedes works team, following the rebrand of Brawn GP.

During this period, the championship rules were changed frequently by the FIA with the intention of improving the on-track action and cutting costs. Team orders, legal since the championship started during 1950, were banned during 2002, after several incidents, in which teams openly manipulated race results, generating negative publicity, most famously by Ferrari at the 2002 Austrian Grand Prix. Other changes included the qualifying format, the points scoring system, the technical regulations, and rules specifying how long engines and tyres must last. A "tyre war" between suppliers

Michelin and Bridgestone saw lap times fall, although at the 2005 United States Grand Prix at Indianapolis, seven out of ten teams did not race when their Michelin tyres were deemed unsafe for use, leading to Bridgestone becoming the sole tyre supplier to Formula One for the 2007 season. During 2006, Max Mosley outlined a "green" future for Formula One, in which efficient use of energy would become an important factor.

Since 1983, Formula One had been dominated by specialist race teams like Williams, McLaren, and Benetton, using engines supplied by large car manufacturers like Mercedes-Benz, Honda, Renault, and Ford. Starting in 2000, with Ford's creation of the largely unsuccessful Jaguar team, new manufacturer-owned teams entered Formula One for the first time since the departure of Alfa Romeo and Renault at the end of 1985. By 2006, the manufacturer teams—Renault, BMW, Toyota, Honda, and Ferrari—dominated the championship, taking five of the first six places in the Constructors' Championship. The sole exception was McLaren, which at the time was part-owned by Mercedes Benz. Through the Grand Prix Manufacturers Association (GPMA), they negotiated a larger share of Formula One's commercial profit and a greater say in the running of the sport.

Formula One in 2010

In 2008 and 2009, Honda, BMW, and Toyota all withdrew from Formula One racing within the space of a year, blaming the economic recession. This resulted in the end of manufacturer dominance within the sport. The Honda F1 team went through a management buyout to become Brawn GP with the notable F1 designer Ross Brawn and Nick Fry running and owning the majority of the organisation. Brawn GP went through a painful size reduction, laying off hundreds of employees, but eventually won the year's world championships with Jenson Button and Rubens Barrichello. BMW F1 was bought out by the original founder of the team, Peter Sauber. The Lotus F1 Team[36] were another, formerly manufacturer-owned team that has reverted to "privateer" ownership, together with the buy-out of the Renault team by Genii Capital investors in recent years.

A link with their previous owners still survived however, with their car continuing to be powered by a Renault Power Unit until 2014.

McLaren also announced that it was to reacquire the shares in its team from Mercedes Benz (McLaren's partnership with Mercedes was reported to have started to sour with the McLaren Mercedes SLR road car project and tough F1 championships which included McLaren being found guilty of spying on Ferrari). Hence, during the 2010 season, Mercedes Benz re-entered the sport as a manufacturer after its purchase of Brawn GP, and split with McLaren after 15 seasons with the team. This left Mercedes, McLaren, and Ferrari as the only car manufacturers in the sport, although both McLaren and Ferrari began as racing teams rather than manufacturers.

The three teams that debuted in 2010 (HRT, Lotus/Caterham and Virgin/Marussia/Manor) all disappeared within seven years of their debuts

To compensate for the loss of manufacturer teams, four new teams were accepted entry into the 2010 season ahead of a much anticipated 'cost-cap' (see below). Entrants included a reborn Team Lotus – which was led by a Malaysian consortium including Tony Fernandes, the boss of Air Asia; Hispania Racing – the first Spanish Formula One team; as well as Virgin Racing – Richard Branson's entry into the series following a successful partnership with Brawn the year before. They were also joined by the US F1 Team, which planned to run out of the United States as the only non-European based team in the sport. Financial issues befell the squad before they even made the grid. Despite the entry of these new teams, the proposed cost-cap was repealed and these teams – who did not have the budgets of the midfield and top-order teams – ran around at the back of the field until they inevitably collapsed; HRT in 2012, Caterham (formerly Lotus) in 2014 and Manor (formerly Virgin then Marussia), having survived falling into administration in 2014, went under at the end of 2016.

A rule shake-up in 2014, meant Mercedes emerged as the dominant force, with Lewis Hamilton winning the championship closely followed by his main rival and teammate,

Nico Rosberg, with the team winning 16 out of the 19 races that season (all other victories coming from Daniel Ricciardo of Red Bull). 2014 also saw a financial crisis which resulted in the backmarker Marussia and Caterham teams being put into administration, alongside the uncertain futures of Force India and Sauber. Marussia returned under the Manor name in 2015, a season in which Ferrari were the only challenger to Mercedes, with Vettel taking victory in the three Grands Prix Mercedes did not win.

The 2016 season began in dominant fashion for Nico Rosberg, winning the first 4 Grands Prix. His charge was halted by Max Verstappen, who took his maiden win in Spain in his debut race for Red Bull. After that, the reigning champion Lewis Hamilton decreased the point gap between him and Rosberg to only one point, before taking the championship lead heading into the summer break. Following the break, the 1–2 positioning remained constant until an engine failure for Hamilton in Malaysia left Rosberg in a commanding lead that he would not relinquish in the 5 remaining races. Having won the title by a mere 5 points, Rosberg retired from Formula One at season's end. The final team remaining from the 2010 new entries process, Manor Racing, withdrew from the sport following the 2016 season, having lost 10th in the Constructors' Championship to Sauber with one race remaining, leaving the grid at 20 cars as Liberty Media took control of the series in the off-season.

In 2016, Renault came back to the sport after buying back the Lotus F1 team and in 2018, Aston Martin became Red Bull's title sponsor, indicating that the manufacturers are starting to come back to the sport.[citation needed]

Political disputes

FISA–FOCA war

Main article: FISA–FOCA war

The battle for control of Formula One was contested between the Fédération Internationale du Sport Automobile (FISA), at the time an autonomous subcommittee of the FIA, and FOCA (the Formula One Constructors' Association).

The beginnings of the dispute are numerous, and many of the underlying reasons may be lost in history. The teams (excepting Ferrari and the other major manufacturers – Renault and Alfa Romeo in particular) were of the opinion that their rights and ability to compete against the larger and better funded teams were being negatively affected by a perceived bias on the part of the controlling organisation (FISA) toward the major manufacturers.

In addition, the battle revolved around the commercial aspects of the sport (the FOCA teams were unhappy with the disbursement of proceeds from the races) and the technical regulations which, in FOCA's opinion, tended to be malleable according to the nature of the transgressor more than the nature of the transgression.

The war culminated in a FOCA boycott of the 1982 San Marino Grand Prix months later. In theory, all FOCA teams were supposed to boycott the Grand Prix as a sign of solidarity and complaint at the handling of the regulations and financial compensation (and extreme opposition to the accession of Balestre to the position of FISA president: both Colin Chapman of Lotus and Frank Williams of Williams stated clearly that they would not continue in Formula One with Balestre as its governor).[original research?] In practice, several of the FOCA teams backed out of the boycott, citing "sponsor obligations". Notable among these were the Tyrrell and Toleman teams.

FIA–FOTA dispute

Main article: FIA–FOTA dispute

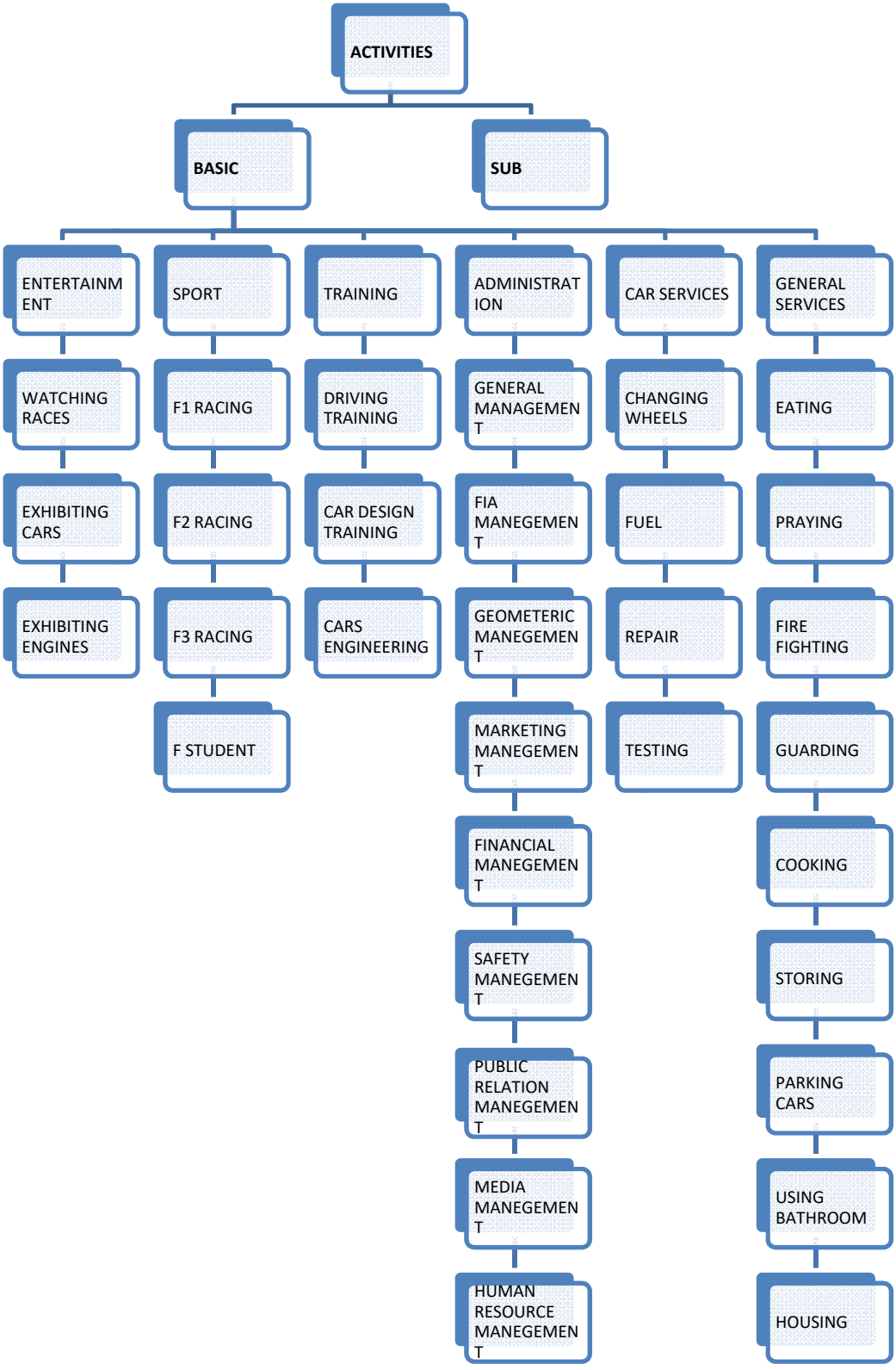
During the 2009 season of Formula One, the sport was gripped in a governance crisis. The FIA President Max Mosley proposed numerous cost cutting measures for the following season, including an optional budget cap for the teams;[38] teams electing to take the budget cap would be granted greater technical freedom, adjustable front and rear wings and an engine not subject to a rev limiter.[38] The Formula One Teams Association (FOTA) believed that allowing some teams to have such technical freedom would have created a 'two-tier' championship, and thus requested urgent talks with the FIA. However, talks broke down and FOTA teams announced, with the exception of Williams and Force India, that 'they had no choice' but to form a breakaway championship series.

Bernie Ecclestone, the former Chief Executive of the Formula One Group

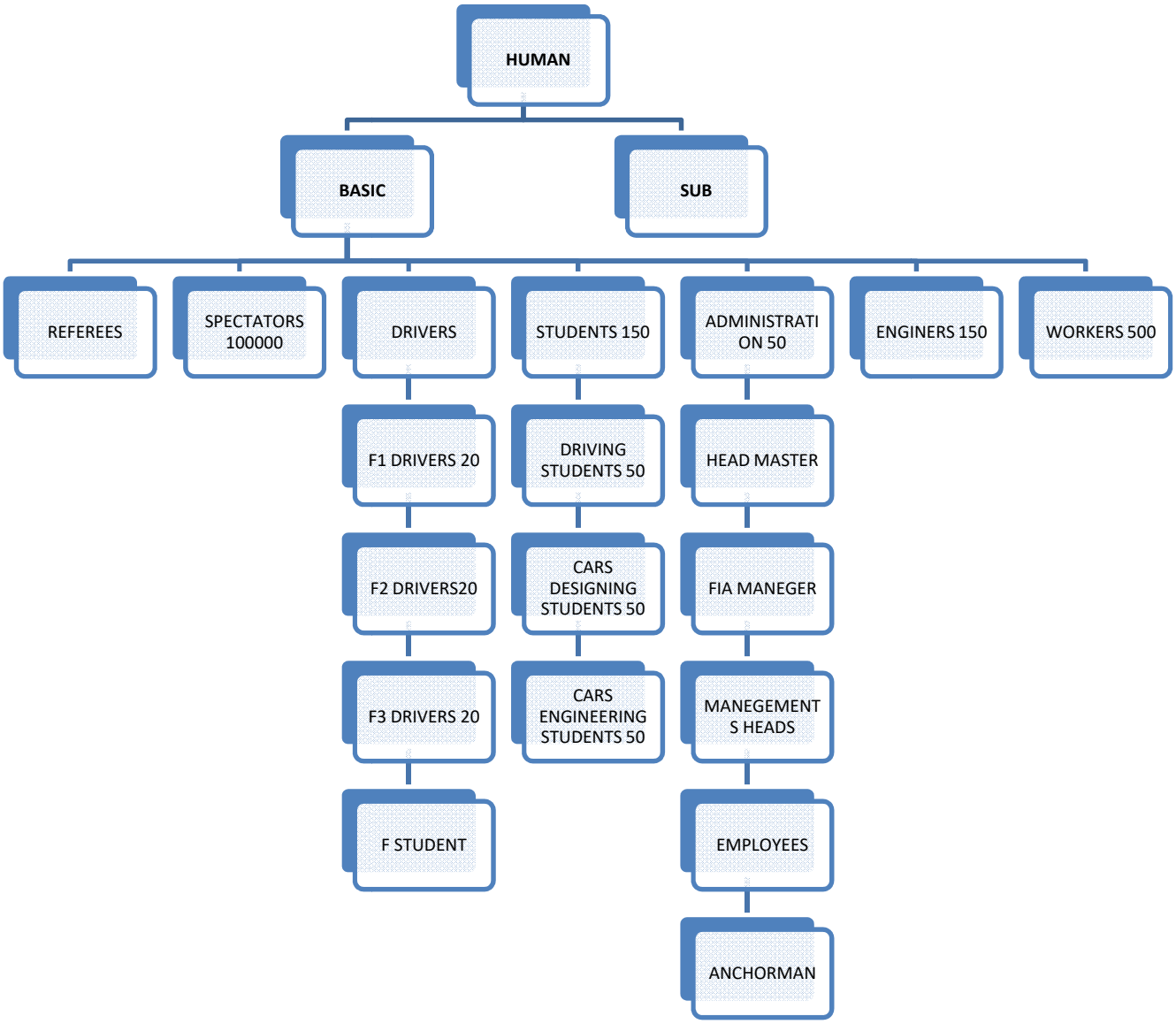
On 24 June, an agreement was reached between Formula One's governing body and the teams to prevent a breakaway series. It was agreed teams must cut spending to the level of the early 1990s within two years; exact figures were not specified, and Max Mosley agreed he would not stand for re-election to the FIA presidency in October. Following further disagreements, after Max Mosley suggested he would stand for re-election, FOTA made it clear that breakaway plans were still being pursued. On 8 July, FOTA issued a press release stating they had been informed they were not entered for the 2010 season, and an FIA press release said the FOTA representatives had walked out of the meeting. On 1 August, it was announced FIA and FOTA had signed a new Concorde Agreement, bringing an end to the crisis and securing the sport's future until 2012.

CHAPTER 3

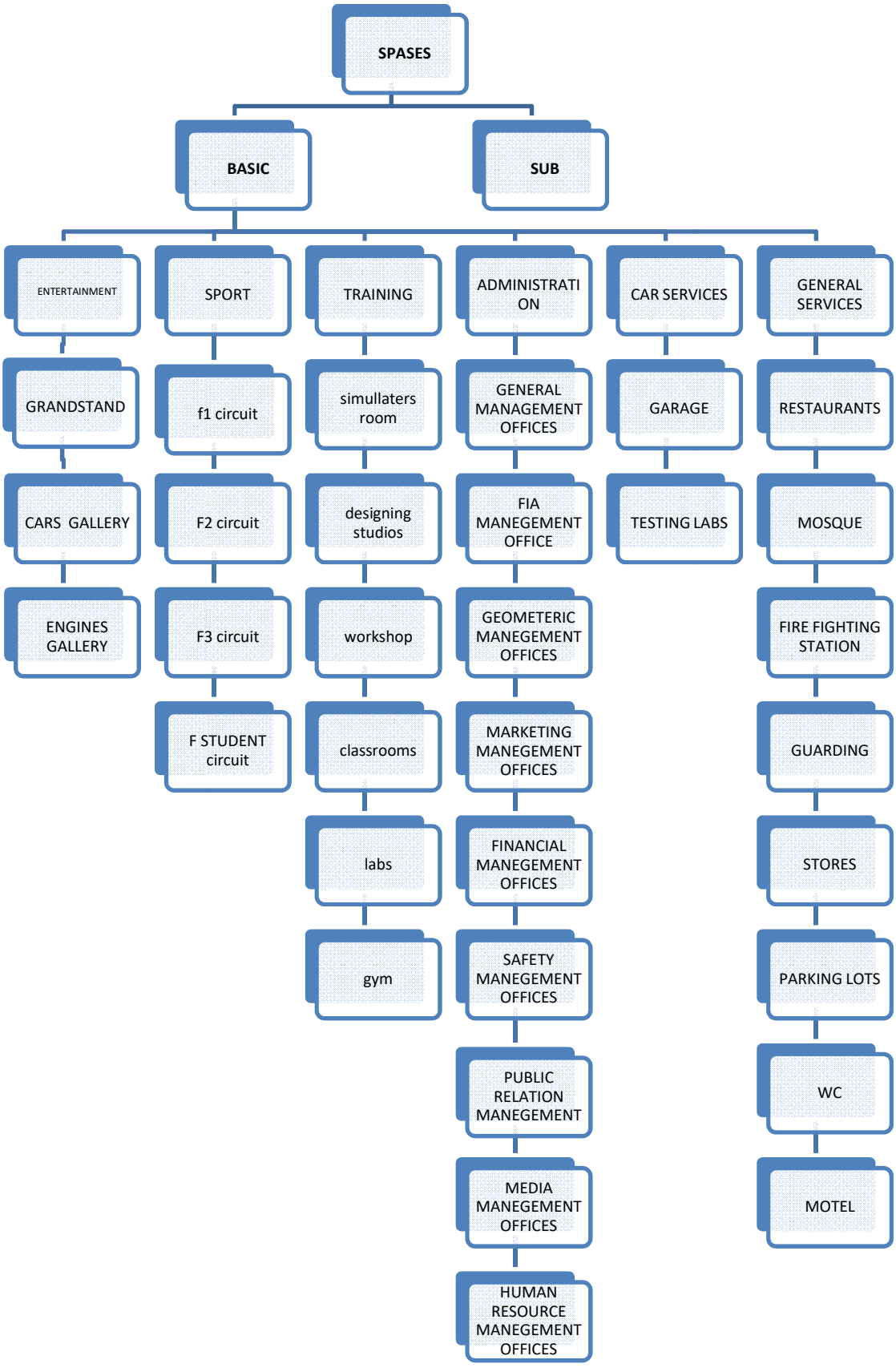
(3-1) Activities Component



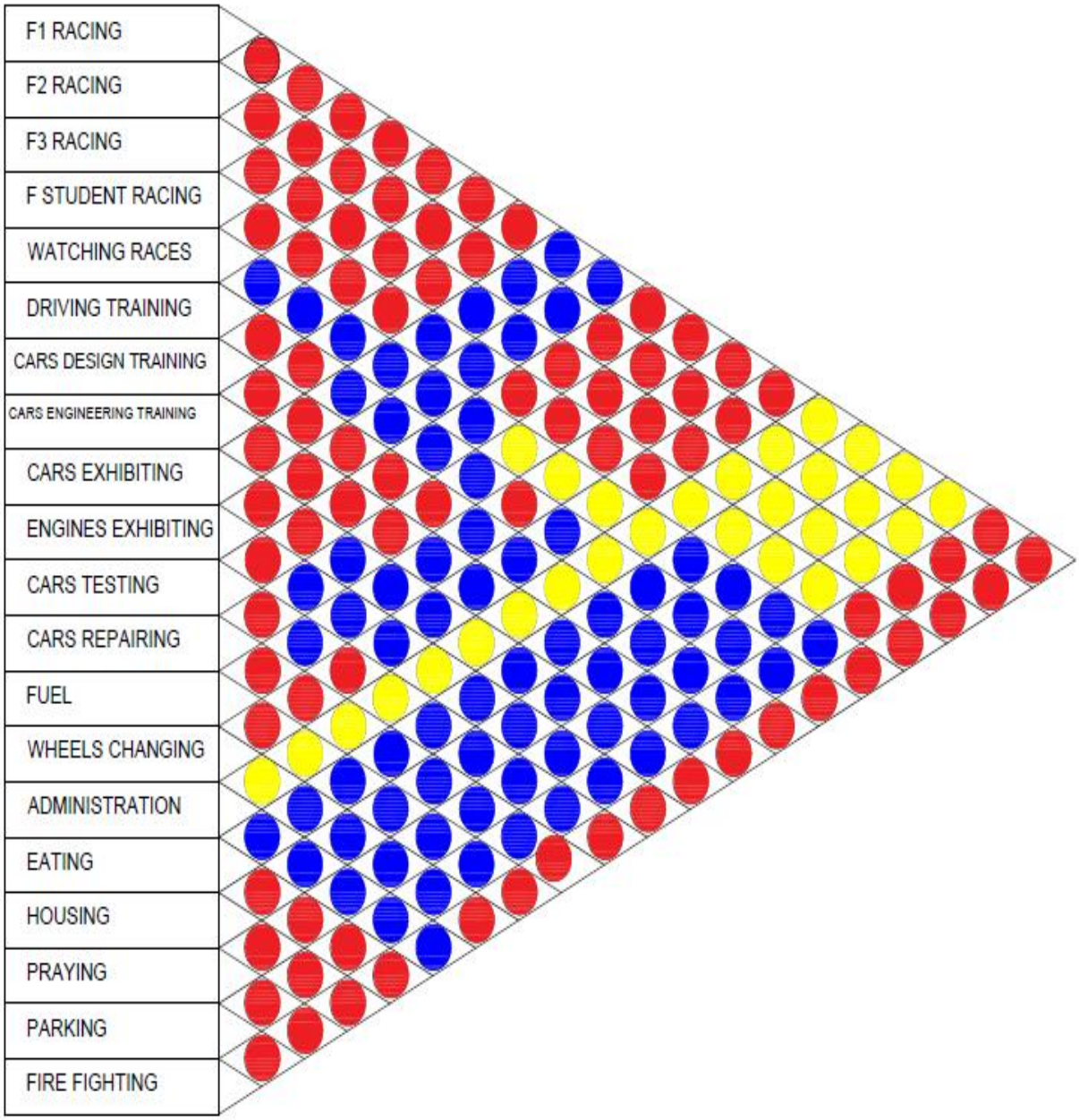
(3-2) Human Component



(3-3) Space Component



(3-4) Function pyramidal diagram

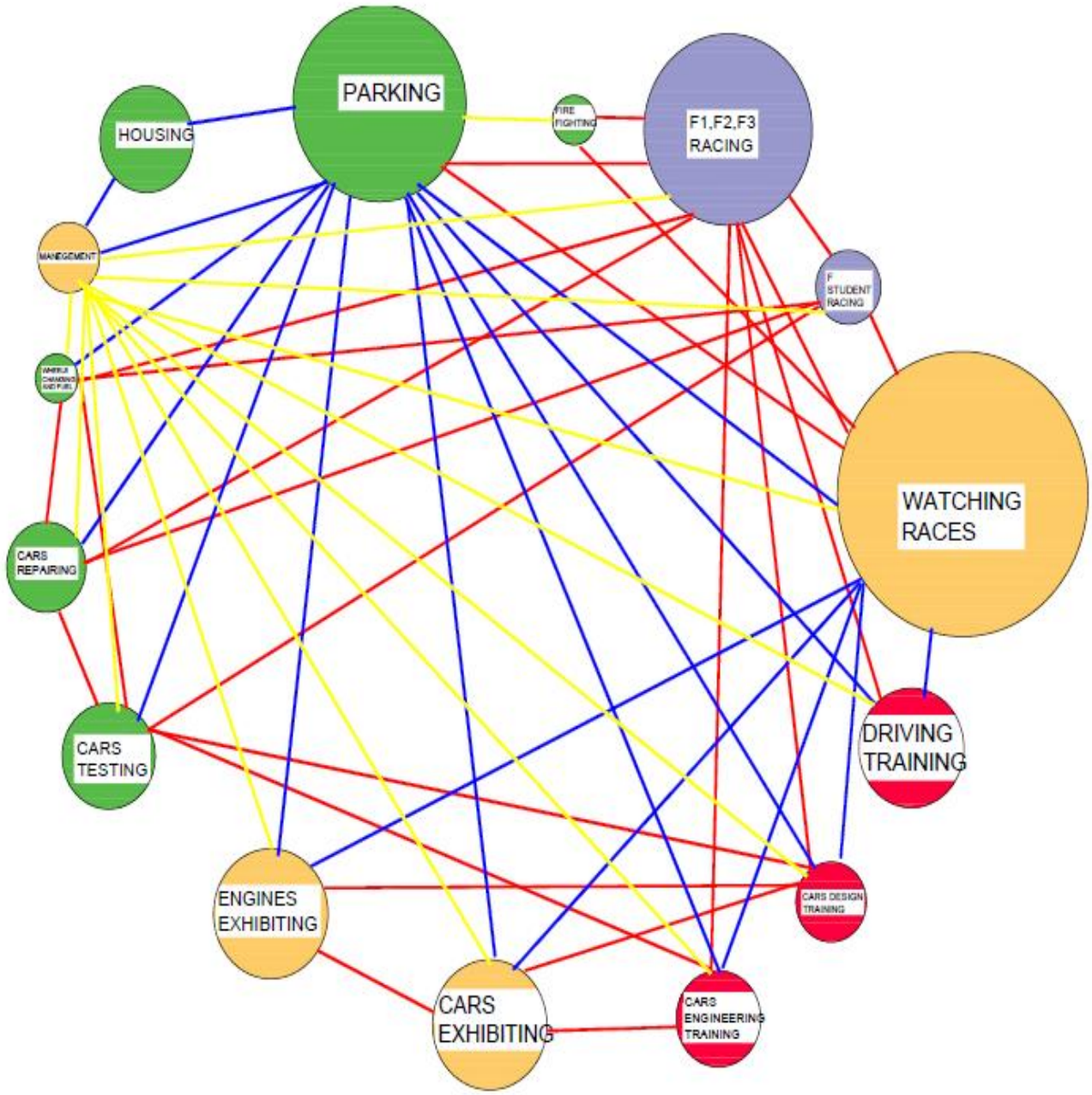


STRONG RELATIONSHIP	
MEDIUM RELATIONSHIP	
WEAK RELATIONSHIP	

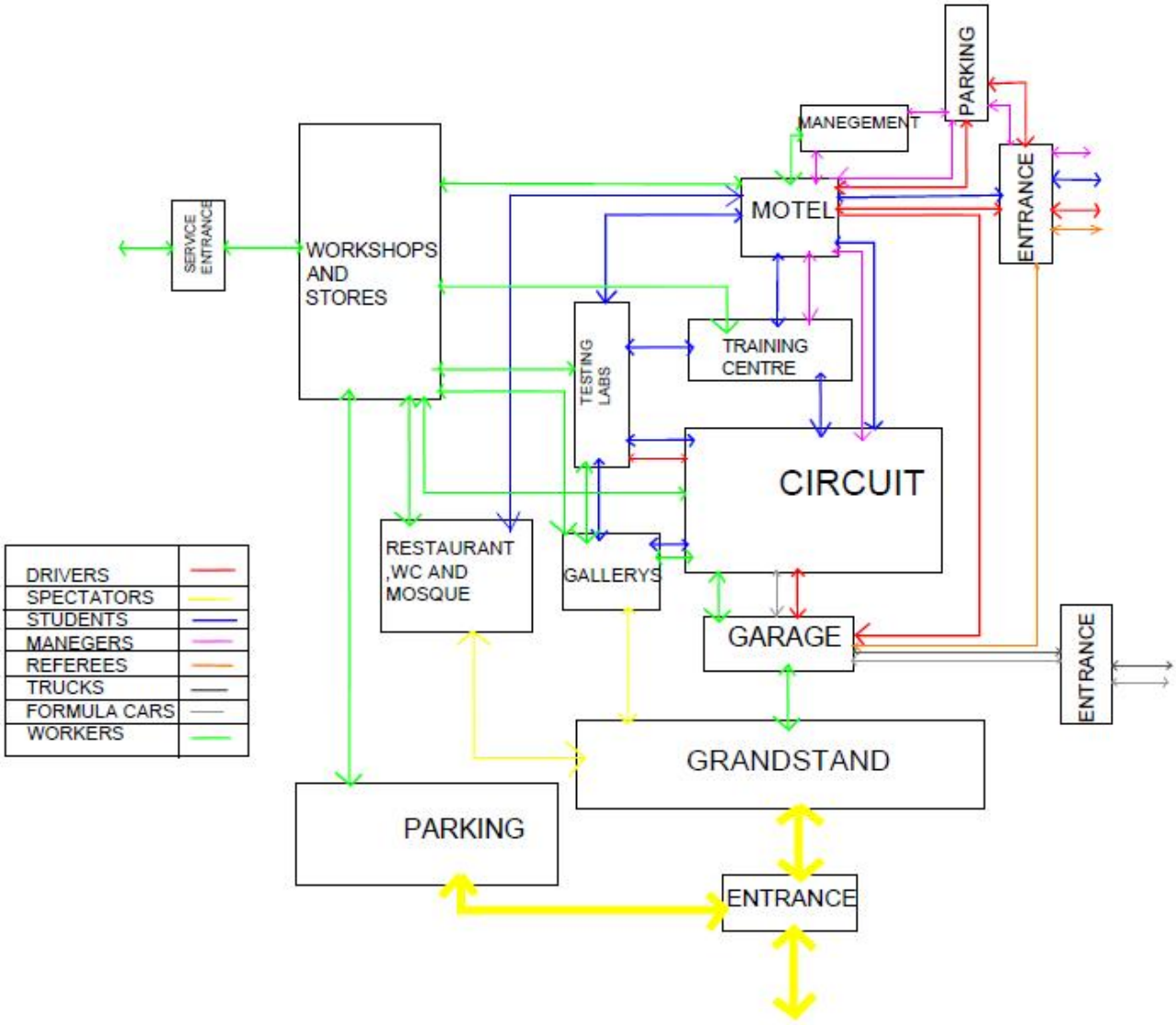
figure shows function diagram key (3-5)

(3-5) Function bubbles diagram

STRONG RELATIONSHIP	
MEDIUM RELATIONSHIP	
WEAK RELATIONSHIP	



(3-6) Movement diagram



(3-7) Environment study

The site is located in Omdurman to the north from Khartoum international airport not surrounded by any buildings .the nearest building is 5km away from it

figure shows site location

result :- the entrances can be in any direction

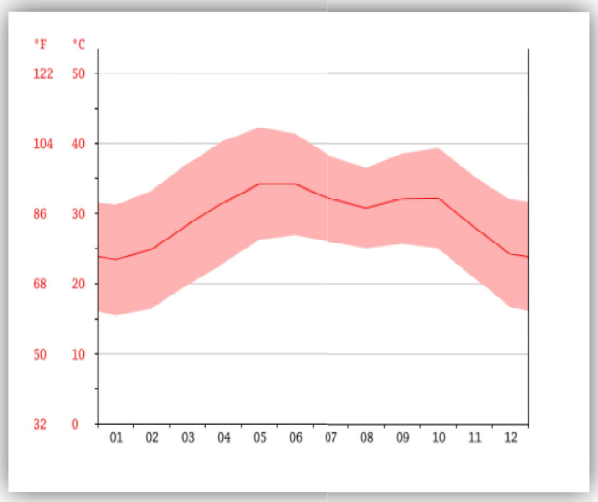
(3-7-1) Temperature diagram::-

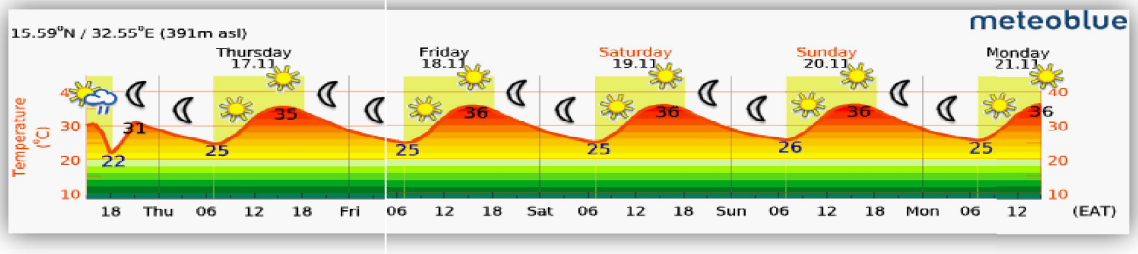
the mix temperature record is 43 in may and the lowest temperature record in December is 6c the average is 30.9c .

result : to avoid the heat :-

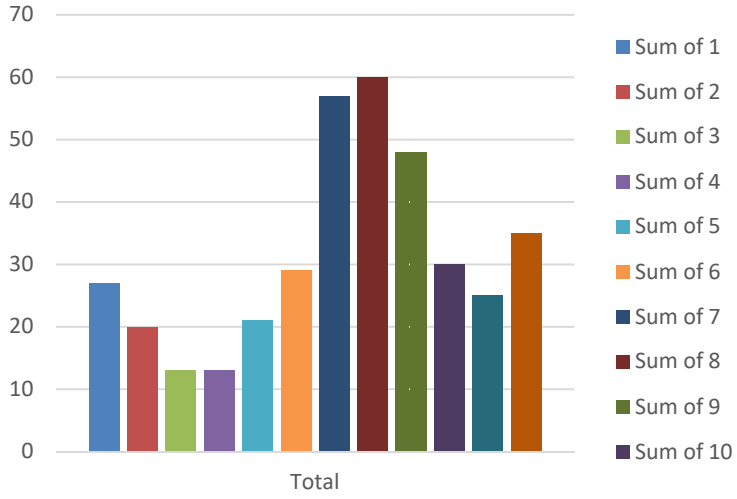
use heat resist materials in the roofs and wall

user semi shaded cavers between buildings

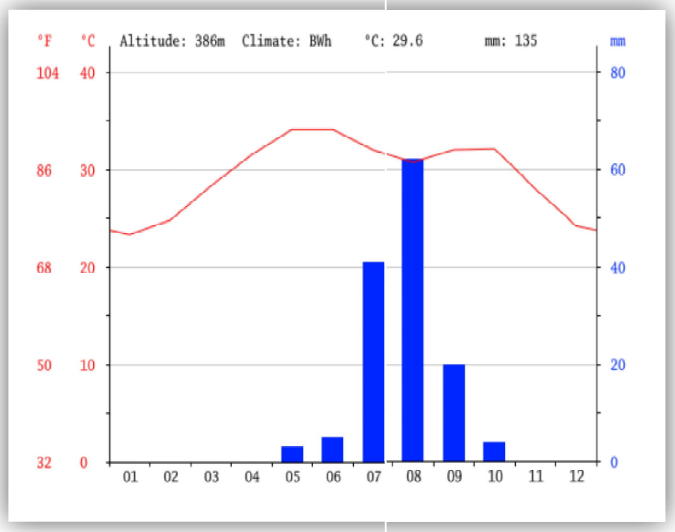




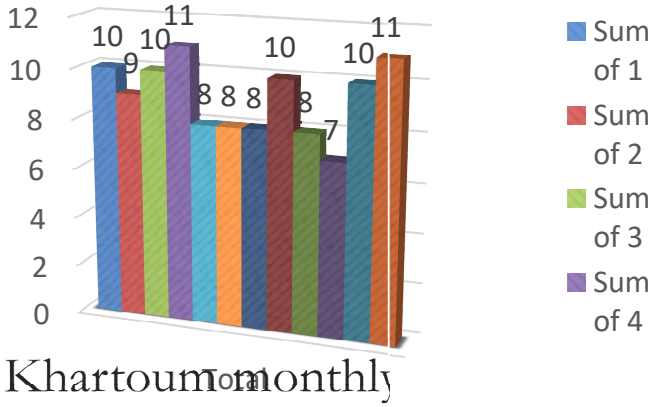
(3-7-2) RELATIVE HUMIDITY:-

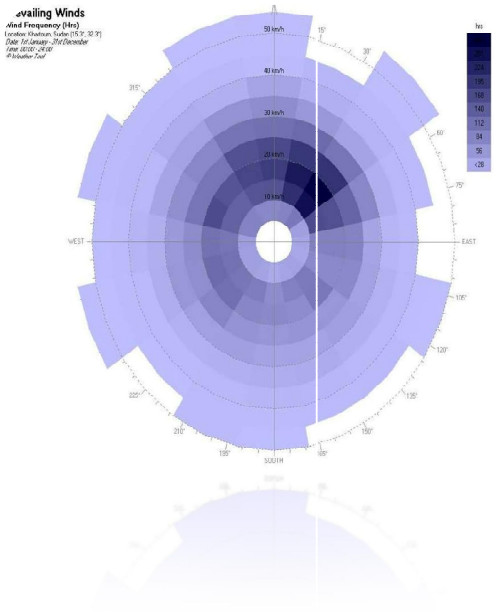


(3-7-3) Rain table and diagram

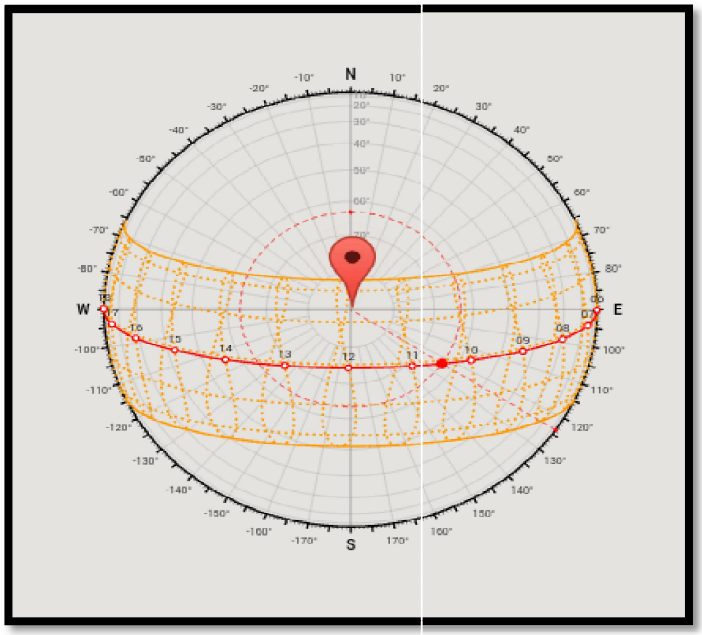


(3-7-4) **Wind diagram**





(3-7-5) **Sun diagram:**



(3-8) Space Study

SPECTATOR FACILITIES

All planning must be done in accordance with national 'regulations for the construction and management of meeting places', in which the requirements for access ways, stairways, ramps and spectator accommodation are set out.

Depending upon the planned capacity, seating is provided either along the long side of the ground (to take advantage of the shortest viewing distance) or, for capacities above 10000, around the whole ground. As most events take place in the afternoon, the best position for spectators is on the west side so that the sun is at their backs. To improve viewing conditions in the multi-row layout, there has

to be sufficient super-elevation. In smaller grounds with up to 20 rows of terracing or 10 rows of seats, a linear gradient of 1:2 can be taken as a basis. In all other grounds the linear gradient should ideally be replaced with one which is parabolic. In this case the gradient for seating and standing places is to be set using a construction based on the spectators' line of sight. In terracing stands the super-elevation should be 12cm and in rows of seating it should be 15cm.

Seating Areas

The necessary space for seating areas is calculated as follows:

width of seat 0.5 m

overall depth 0.8 m

of which:

seat depth 0.35 m

circulation 0.45 m

Rows of seats (benches) as well as single seats can be planned. Seats with back rests offer greater comfort. Depending on the arrangement of entrances and exits, each row can comprise:

on each side of a passage

in shallow rising rows 48 places

in steeply rising rows 36 places

Seating and standing areas must be separated by fences. For every 750 seats an escape route (stairway, ramp, flat surface) with a minimum width of 1.00 m must be provided.

Standing Areas

The necessary space for standing spaces is calculated as follows:

width of standing space 0.5 m

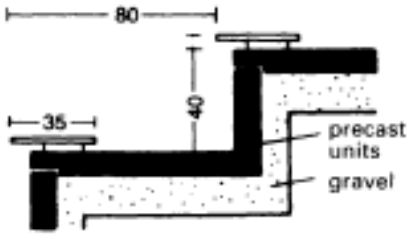
depth of standing space 0.4 m

Again, for every 750 spaces an escape route (stairway, ramp, flat surface) with a minimum width of 1.00m must be provided. To allow standing areas to fill and empty evenly, and to prevent dangerous overcrowding, they should be divided into groups or blocks of around 2500 places. Each block should have its own entry/exit points and should be separated from the others by fences. Inside the blocks of standing places, a staggered arrangement of crush barriers will be necessary to prevent diagonal crowd surges. It must also be ensured that there is a suitably strong barrier, with a height of around 1.10m, between every ten rows of standing spaces.

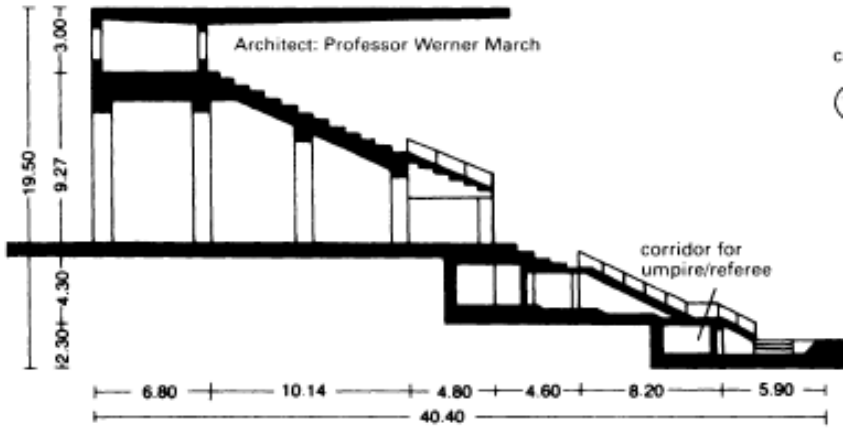
The building industry produces pre-cast concrete steps for the construction of spectator areas

Guests of honour: In larger stadiums an enclosed 'Royal box' with movable furniture may be needed.

Roofing of stands: Covering as many places as possible should be the aim. By designing overlapping stands the number of covered seats can be increased.



0) **Seating on precast concrete units**

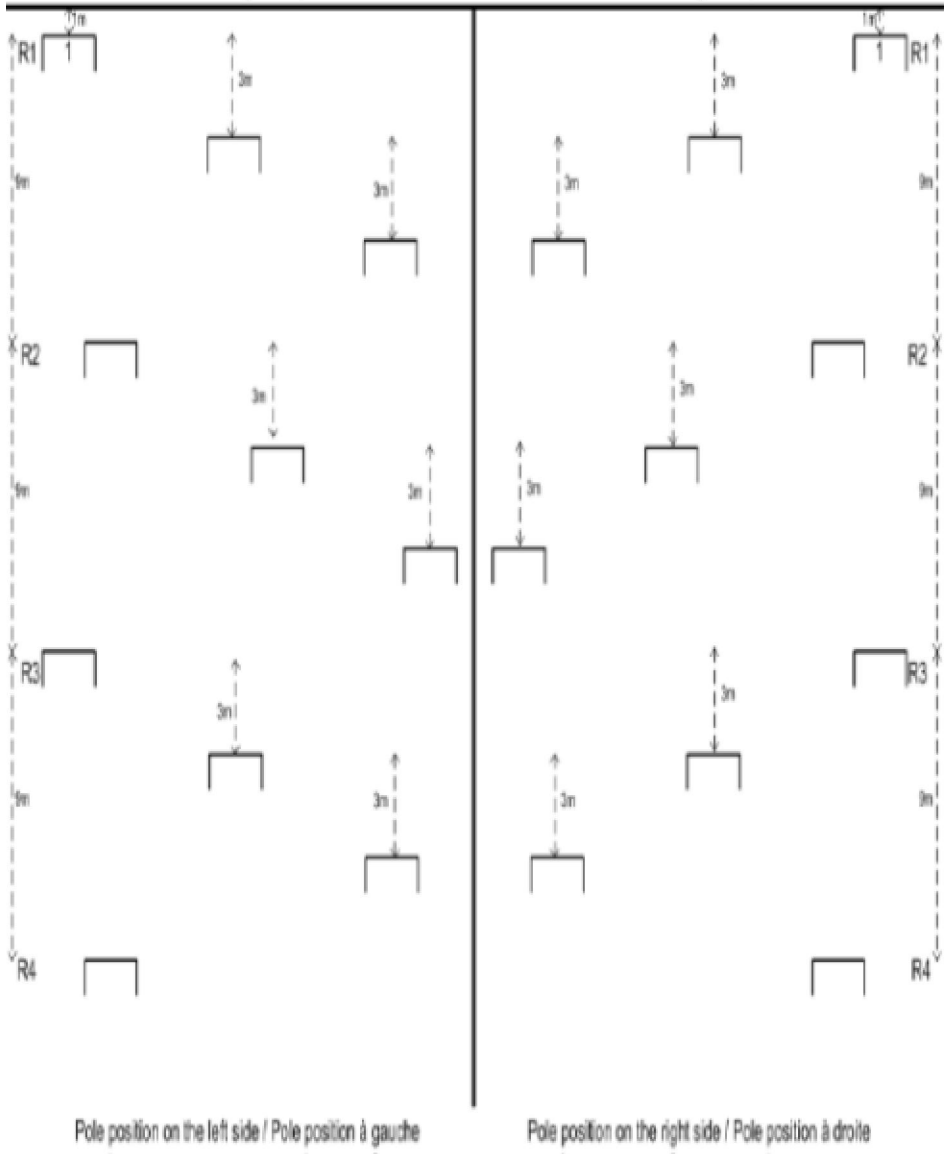


CIRCUIT : There are no restrictions to the form of the course in plan. However, the FIM may recommend alterations in the interests of good competition, practical necessity and safety.
For the purposes of planning new permanent circuits, the track width should be at least 12 m excluding the starting grid straight where the minimum width required will be 14 m.
The transition between the different widths of the track should be made as gradually as possible. The recommended transition is 1 m difference for every 20 m section.

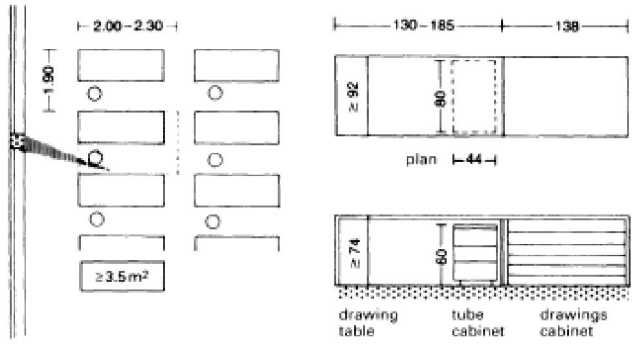
SOLO (3-3-3-3)

STARTING GRID / GRILLE DE DEPART

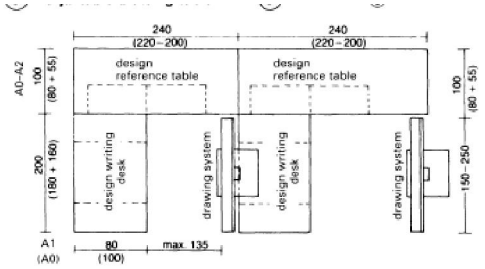
Dimensions in meters / Dimensions en mètres



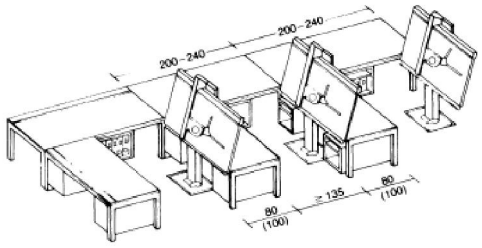
TRAINING CENTRE:



① Workplace in drawing room ② Work surface



⑦ Work space plan → ⑧



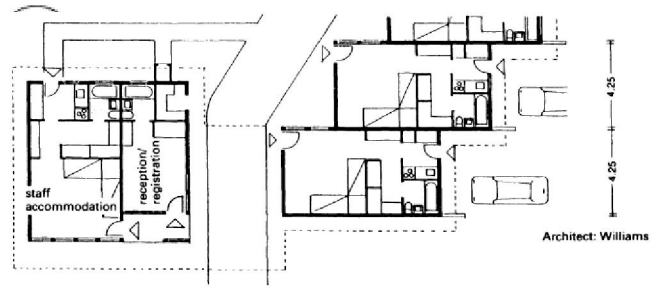
⑧ Drawing office

CUSTOMER AREA		approx. m²
	Sales area	**270.0**
1	entrance	20.0
2	free-flow incl. shop	120.0
3	customer area 80 places	130.0
	customer rooms	**70.2**
4	WC female	20.0
5	WC male	17.0
6	disabled toilets	6.0
7	shower room	5.0
8	baby changing room	4.0
9	cleaners' room 1 customer area	2.0
10	corridors of customer area, 30% of areas 4–9	16.2
SERVICE AREA		
	Storage area	**68.0**
11	washing-up area	15.0
12	food preparation	15.0
13	chilled vegetable store	4.0
14	dairy and delicatessen refrigerators	1.0
15	meat cold store /or delicatessen refrigerators	2.0
16	chilling room	2.0
17	deep freeze rooms	5.0
18	drinks cold store	6.0
19/20/21	dry stores	18.0
	Services	**58.0**
22	services/heating	15.0
23	ventilation plant (or in roof space or on flat roof)	30.0
24	electrics	5.0
25	switchgear and meters	8.0
	Administration/staff	**134.7**
26	staff rest room	6.0
27/28	changing room male/female	22.0
29/30	staff wash room male/female	8.0
31/32	staff toilets male/female	3.0
33	office	30.0
34	files	4.0
35	cleaners' room 2 service area	1.5
36	corridors of service area, 30% of areas 11–35	60.2
	Net floor area	**600.9**
37	terrace 40 seating places	80.0

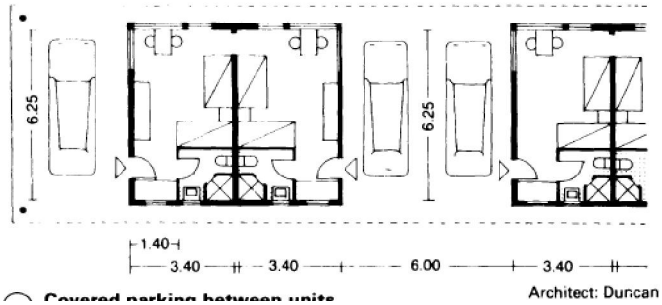
MOTEL:

room	area (m²)	comments
entrance hall	14	with bench and shoe rack
office/reception/shop	11	hatch to entrance hall; close to warden's kitchen
drying room	14	preferably accessed via entrance hall without passing through principal rooms; with racks or hangers; heated
luggage room	14	if combined with drying room, laundry and WC, 14–18.5 m² each
common room	18.5–23	
dining room	46.5	or 0.7 m²/person
members' kitchen	16	direct access to dining room
warden's kitchen	16–23	if possible with combined door and hatch for direct service to dining room; sink in kitchen preferred to separate scullery; access to dustbins
larder	9.3	each
wash-up	11	with 1 or 2 sinks; table space for dirty crockery; easy access from dining room and to warden's kitchen (for crockery return) if possible
warden's lounge	14	layout of these will usually depend
warden's bedroom 1	11	on balance of convenience,
warden's bedroom 2	9.3	privacy, aspect
warden's bathroom	3.25	
dormitories	158–167	i.e. 3.16 m²/person
WCs		for hostellers not less than 5; 1 for warden
washing facilities		for each sex 1 washroom with bath (partitioned off) or shower, footbath and basins to DES standards
airing cupboard	1	for warden's use
blanket store	3.75	warmed
cycle store	28	for about 30 cycles, preferably in racks

note: floor areas are intended as minimum desirable but in alterations much will depend on the existing building

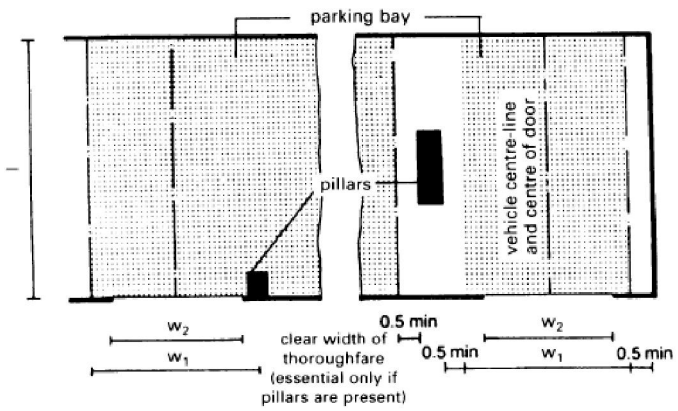


Architect: Williams



Architect: Duncan

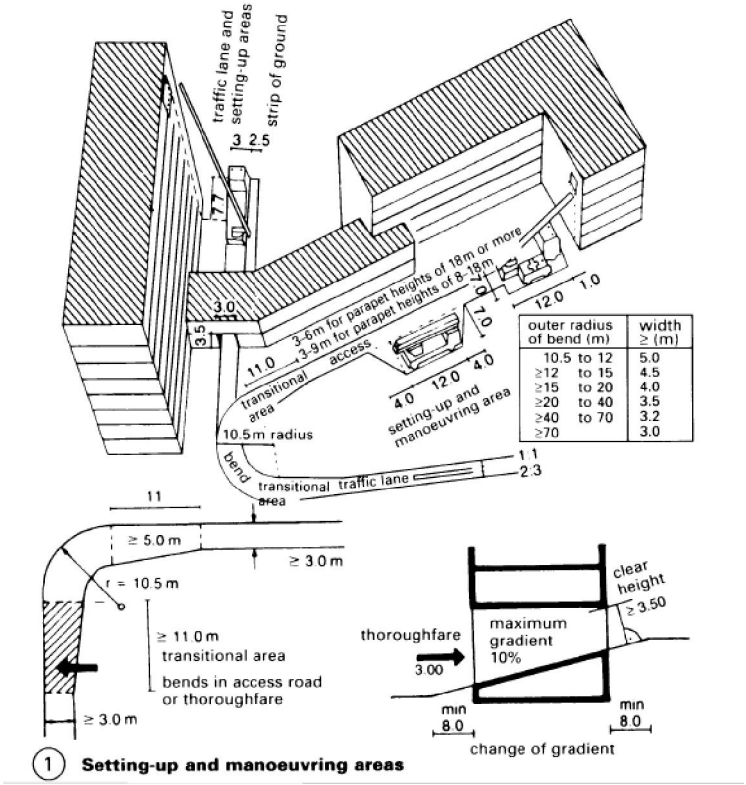
FIRE STATION



(2) **Parking bays and doors**

parking bay size	width w^1 min.	length l min.	door (passage width w^2 × passage height)
1 to be avoided whenever possible	4.5	8	3.5 × 3.5
2	4.5	10	3.5 × 3.5
3	4.5	12.5	3.5 × 3.5
4	4.5	12.5	3.5 × 4
note: there are some very large new appliances in use: these might require larger bay areas and door widths			

(3) **Dimensions of parking bay** → (2)



outer radius of bend (m)	width ≥ (m)
10.5 to 12	5.0
≥12 to 15	4.5
≥15 to 20	4.0
≥20 to 40	3.5
≥40 to 70	3.2
≥70	3.0

(1) **Setting-up and manoeuvring areas**

RESTAURANT

type	chair occupancy per meal	kitchen area required (m^2/cover)	dining area required (m^2/seat)
exclusive restaurant	1	0.7	1.8–2.0
restaurant with high seat turnover	2–3	0.5–0.6	1.4–1.6
normal restaurant	1.5	0.4–0.5	1.6–1.8
inn/ guesthouse	1	0.3–0.4	1.6–1.8

approx. 80% supplement is added for storage rooms, personnel rooms etc.
cover = seat × no. of seat changeovers

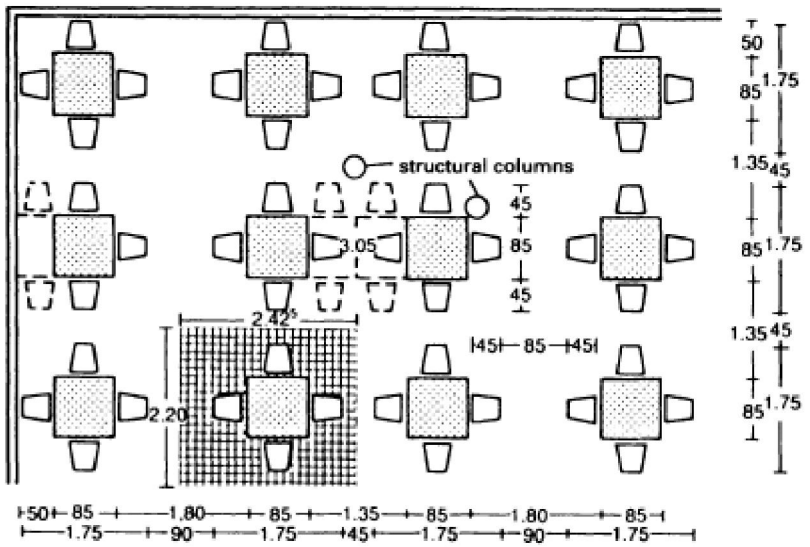
(10) **Floor area requirements**

tables	seats	waiter service (m^2/seat)	self-service (m^2/seat)
square	4	1.25	1.25
rectangular	4	1.10	1.20
rectangular	6	1.05	1.10
rectangular	8	1.05	1.05

(11) **Total space requirements for dining rooms: 1.4–1.6 m^2/place**

main aisles	min 2.00 m wide
intermediate aisles	min 0.90 m wide
side aisles	min 1.20 m wide

(12) **Aisle widths**



(3-9) Activities table

	Activity	Users	Time	Environment		Space name	area	Total area
sport	F 1 races	20	10-9			Circuit	60000 m2	60000m2
	F 2 races	20	10-9					
	F 3 races	20	10-9					
	F student	20	10-9					
Entertainment	Watching races	100000	10-9	√	√	grandstand	52000 m2	52000
	Cars Exhibiting	50	10-5	√	√	Gallery	1250 m2	1250
	Engines exhibiting	50	10-5	√	√	Gallery	1250 m2	1250
Training	Cars designing	50	10-4	√	√	Training centre	285m2	285
	Cars engineering	50	10-4	√	√		300m2	300
	Drive training	50	10-4	√	√		150m2	150

	Activity	Users	Time	Environment		Space name	area	Total area
Management	General management	50	9-4	√	√	office	500	500
	FIA management			√	√			
	Geometric management			√	√			
	Marketing management			√	√			
	Financial management			√	√			
	Safety management			√	√			
	Media management			√	√			
	Human resource			√	√			
	Public relations			√	√			
Cars services	Cars Repairing	150	10-9	√	√	garage	64	832
	Wheels changing	150	10-9	√	√			
	Fuel	150	10-9					
	Cars testing	50	10-9			lab	500	500
services	Eating	500	10-9	√	√	Restaurant	720	720
	Parking cars	10000	10-9			Parking lot	12.5	31250
	Fire fighting	5	-	√	√	Fire station	100	100
	Storing		--	√	√	store	200	200

	Relaxing		-	√	√	landsca pe	16687 7.8	166877 .8
	Total							238.4 ha

(3-10) Directors ,specifies and solutions

directors:	**specifies**
show the structure elements	the environment
movement flow	the cars and trucks
max number of users	safety

solutions

show the structure elements indoor and use heat resist material

divide the trucks movement and human

divide the grandstand to many parts to have max users number

(3-11)ZONING:- FIGURE SHOWS ZONING PLAN

CIRCUIT

GARAGE

TRAINING CENTRE

TEST LABS

CHAPTER 4

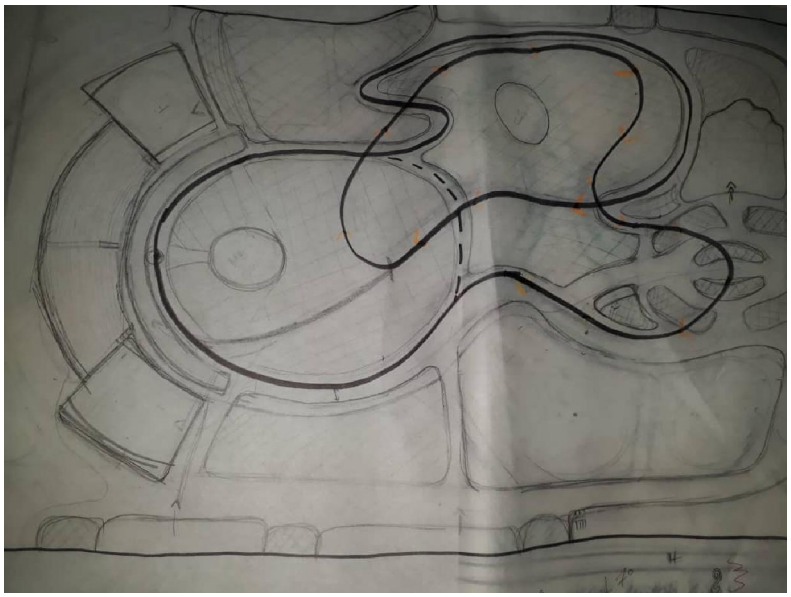
(4-1) CONCEPT

For some, the beauty of Formula 1 is all about its sporting aspects. For others, it's all about technology, the incredible innovation behind the world's most technology-driven sport. But the reality is that you can't separate the two. Formula 1 is at once about sport, technology, and innovation. And what may seem like an expensive hobby for wealthy tinkerers and daring racers actually has a trickle-down effect on our everyday lives. Formula 1 is a massive research and development powerhouse. Technologies developed within the closed walls of F1 team factories find their way into other industries, making our lives simpler, safer and more efficient.

TO show the unseen beauty of cars industry ,the engine beauty the rough beauty.

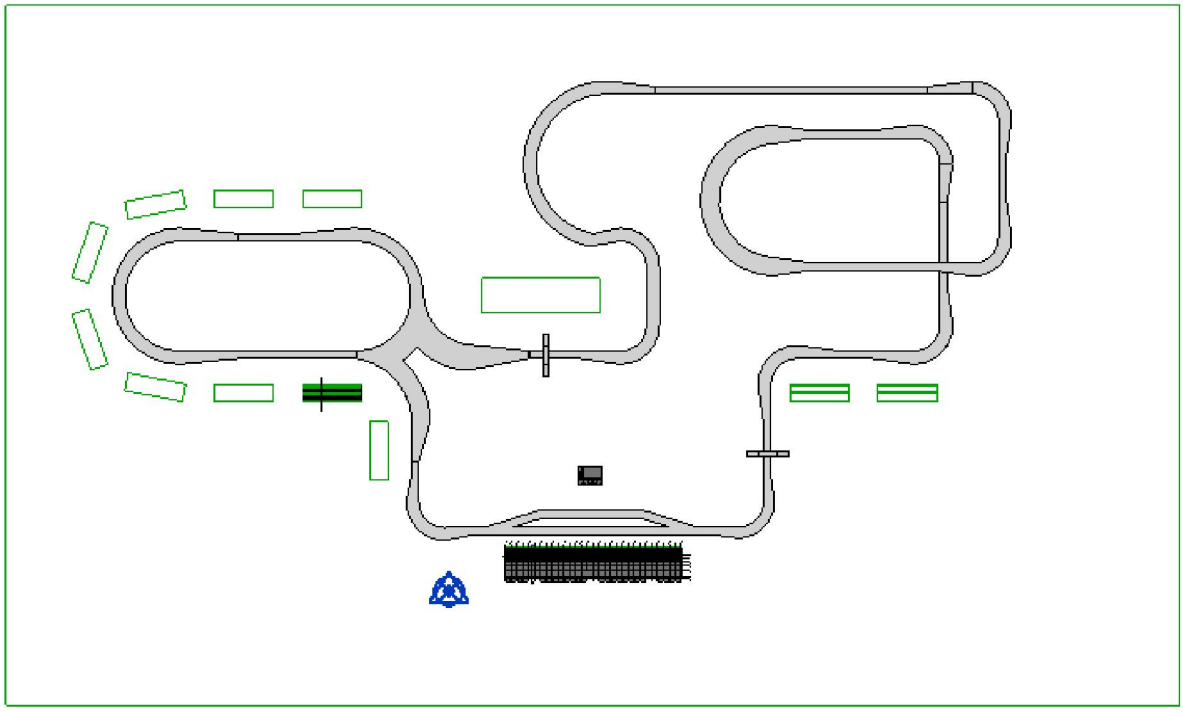
the design must show the rough elements .the structure , services and technical solutions

to have one of the longest circuits in the world

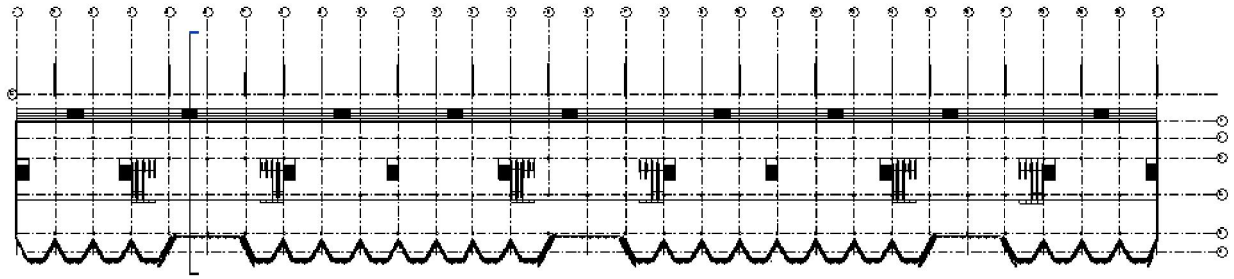


SITE PLAN (4-1)

(4-2) **Preliminary idea stage**

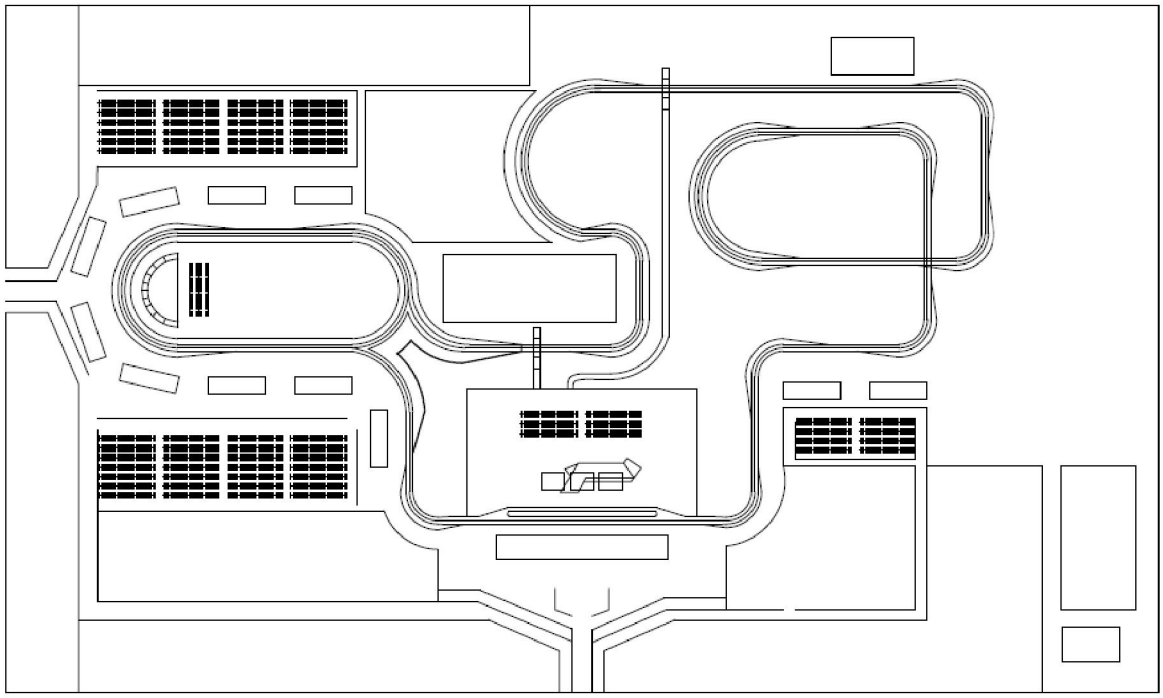


SITE PLAN (4-2)

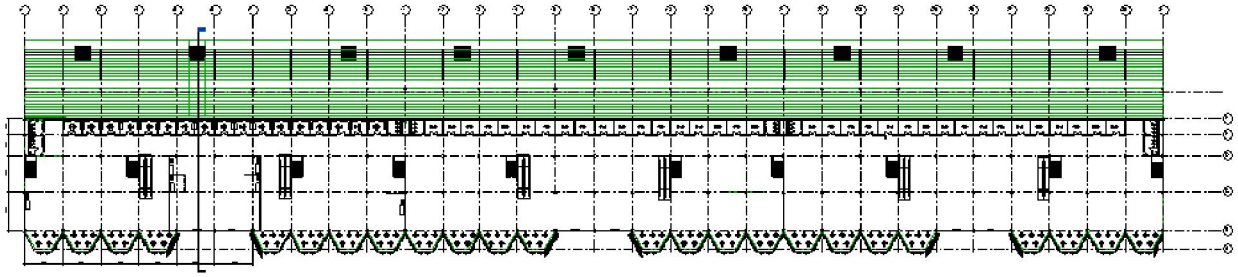


GROUND FLOOR PLAN (4-3)

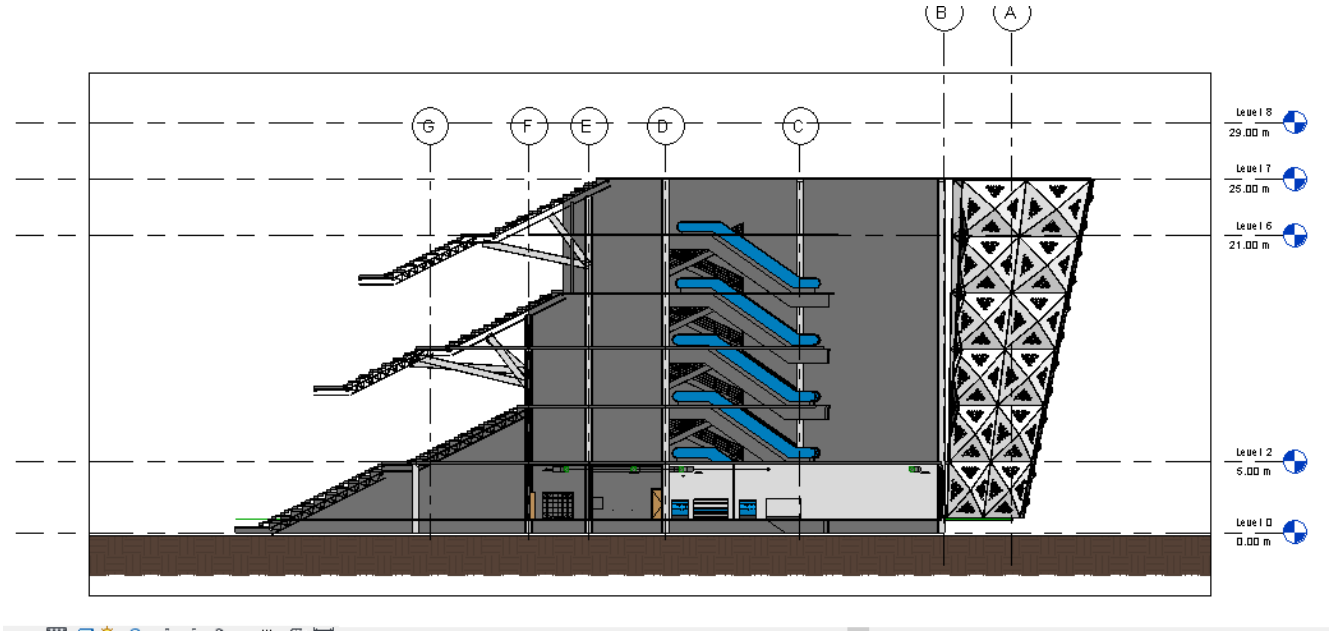
(4-3) **Developed stage**



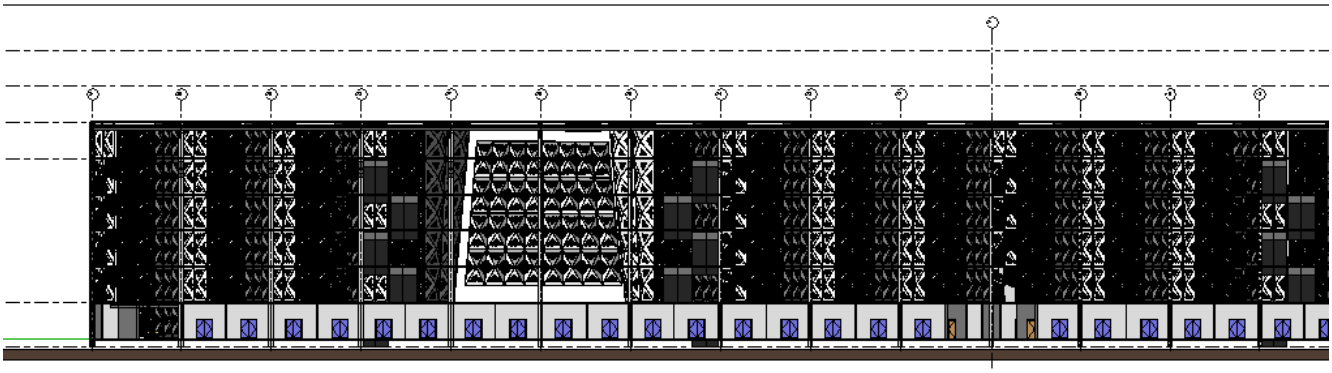
SITE PLAN (4-4)



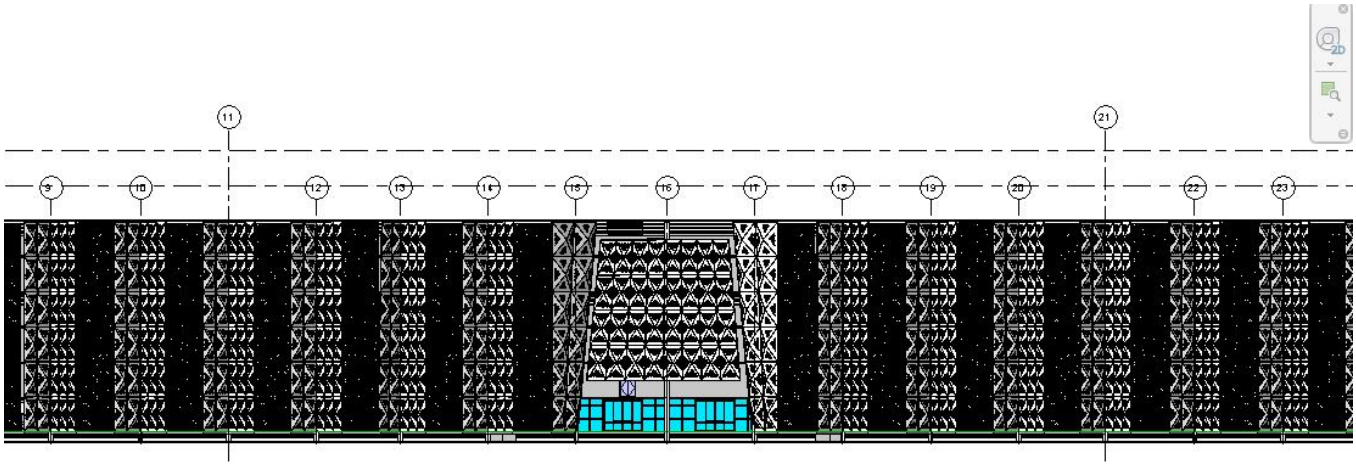
GROUND FLOOR PLAN (4-5)



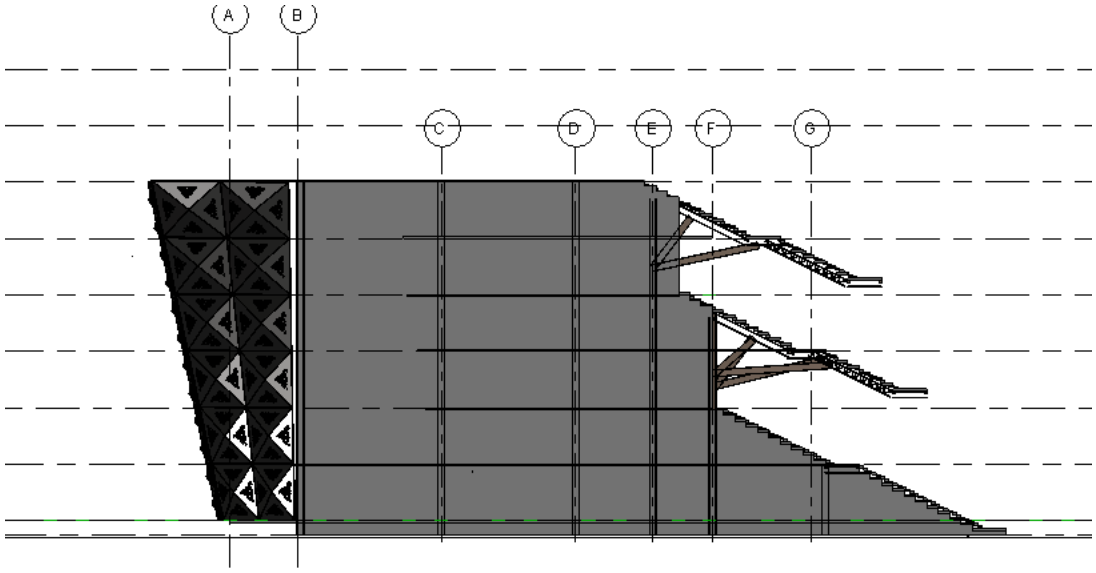
SECTION B-B (4-6)



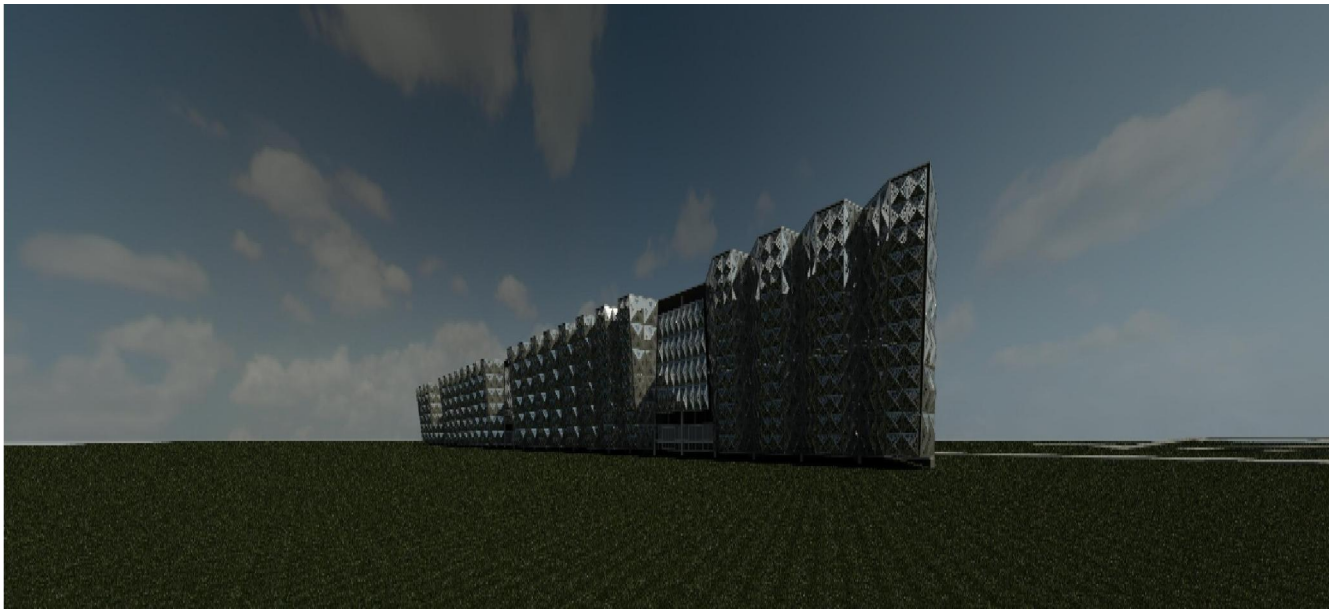
SECTION A-A (4-7)



SOUTH ELEVATION (4-8)



EAST ELEVATION (4-9)



(4-4) TECHNICAL SOLUTIONS: