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## CHAPTER I : INTRODUCTION

- *Project's description*
- *Project's purpose*
- *Project's objectives*
- *Reasons behind the selection of the project*
- *The importance of the project*
- *The different aspects of the project*

## INTRODUCTION

### **1.1 PROJECT DESCRIPTION:**

Media (a plural of medium) is the collective communications outlets or tools that are used to store and deliver information or data, such as radios, televisions, newspapers, magazines and the internet, that reach or influence the people widely.

The media center is an integrated media-cultural investment project, providing an environment with all the modern techniques and means to produce media materials, going through the whole stages from photography and editing up to the of final show to raise the level of media production (television and radio) in Sudan.

### **1.2 PROJECT'S PURPOSE:**

The center is acting as an inspiration environment for the creative and professionals in the multimedia field to display their work and participations, creating a creative business and social environment which would provide recognition and importance the media production in the country. In addition to providing professional training facilities being a pioneer in this field in the country.

### **1.3 PROJECT'S OBJECTIVES:**

- Improve the reputation of Sudan in the field within the region.
- Create a central location which brings all the customer's needs and demands to a single and unified address.
- Create a connectional interface for Sudan culturally and historically and change the viewpoint of societies on Sudanese multimedia
- Dissemination of Sudanese culture.
- Contribute to increasing the national income by attracting investors and marketing media materials.
- Provide more jobs and improve employment within the industry.

### **1.4 REASONS BEHIND THE SELCTION OF THE PROJECT:**

Creating such an integrated media center in Sudan will make a difference to the country throughout the huge impact it will have on the region as a whole. In addition, the pressing needs in our country to such a facility equipped with modern means to promote the level of local multimedia.

Media is considered one of the ever growing fields, through its growth along history, with that being said having such a project in Sudan will help it put its mark on the map and will help all media related professionals in Sudan grow and exchange information with the whole world.

## **1.5 THE IMPORTANCE OF THE PROJECT:**

The importance of the project comes from the importance of the media in general, it is the most important factor in the dissemination of cultures and thoughts and the promotion of nations. In addition to raising awareness, exploration, shortening distances between countries and learning.

## **1.6 THE DIFFERENT ASPECTS OF THE PROJECT:**

### **1.6.1 Media Aspect:**

The dissemination of Sudanese culture and interacting with different cultures.

Making Sudan a recognized center of media within the Arab world and Africa.

### **1.6.2 functional aspect:**

Designing the project to be functional, safe, welcoming and to achieve the best connection between the different a number of different activities and functions that usually exist in separate projects.

### **1.6.3 Structural Aspect:**

Designing, achieving and using a structural system that can solve all of the structural problems of the design.

### **1.6.4 Financial Aspect:**

designing a project that achieves the best connection between the multi activities in the complex and improves the working environment.

As well as finding a way to make the project financially stable throughout the years.

### **1.6.5 Aesthetic Aspect:**

Making the project and all of its components reflect the image of creativity and uniqueness.

## **CHAPTER II: Data Collection**

- Definition of Media, its Literature and History.
- Similar projects



## Data collection

### 2.1 Project introduction:

#### 2.1.1 The importance of Media:

Now in the 21<sup>st</sup> century, people are living within a technological world of inventions, day by day a new invention appears, which should be announced and marketed so everyone can be aware of. The best way to do so is to use the “Media” with its different sectors. It is also used to announce the presence of any problem or important event that is happening in the world.

*“Media is the new language of the world”.*

Media became a universal language which everyone can reach in any place in the world even in the poorest countries in the world media is there. Media became the most effective tool all over the world, it can build and destroy whatever it discusses. As it is considered the fastest and the most important tool in this world, these facts make the media the people’s first concern, from this point we reach a critical issue to be tested in Sudan trying to give Media in Khartoum a special environment to produce and broadcast from.

#### 2.1.2 What is media?

When we say media, we are talking about everything that has a message with a specific goal to deliver and communicate with people. This includes Print media (journals, newspapers, magazines, business cards, post cards, brochures, etc..), internet (websites, email marketing, etc..), videos (DVDs, TV, Movies, Series< Web videos, etc..), Radios and the 3D mass production.



Figure 1 What is Media?

### 2.1.3 Project definition:

“Media” is everything that has a message with a specific goal to be delivered to the audience, produced by an artist. Mainly Media is about TV productions, Radio, Newspapers and Internet.



Figure 2 Media related pic

### 2.1.4 The history of media in Sudan

Sudan has a large number of local and national stations.

Sudan Television broadcasts sixty hours of programming a week. The Sudan National Broadcasting Corporation airs radio programming in Arabic, English and Swahili. Radio and television stations are state-controlled entities and served as outlets for the government viewpoint.

#### 2.3.4.1 Radio & Television:

Radio and television broadcasting are operated by the government. In 1990, there were an estimated 250,000 television sets (now there are about a million) in the country and about six million radio receivers. Sudan television operated three stations located in Omdurman, Al Jazirah and Atbara. The major radio station of the Sudan National Broadcasting Corporation was in Omdurman, with a regional station in Juba for the south. Following the 1989 coup, the RCC-Ns dismissed several broadcasters from Sudan Television because their loyalty to the new government and its policies was considered suspicious.



Figure 3 Radio recording

In opposition to the official broadcast network, the SPLM operated its own clandestine radio station, Radio SPLA, from secret transmitters within the country and facilities in Ethiopia. Radio SPLA broadcasts were in Arabic, English and various other languages.

Another clandestine radio station, Radio Dabanga, began broadcasting in December 2008 using shortwave transmitters of Radio Netherlands Worldwide. Government-run Radio Omdurman ran jamming signals to attempt to interfere with the reception during Radio Dabanga broadcast times, but these jamming efforts were ineffective, because Radio Dabanga used two shortwave frequencies.

#### 2.1.4.2 list of media outlets in Sudan:

##### Television:

- Sudan National Broadcasting Corporation (SNBC) - a government-run television station.

##### Radio:

- Sudan National Radio Corporation - a government-run radio station.
- Mango 96 FM – a private music radio station, Khartoum.



Figure 4 Media outlets

## 2.2 Similar projects:

### 2.2.1 local examples

#### TV & broadcasting buildings

location: Khartoum, Omdurman

site area: 9.5 hectares

Project components:

- Administration building
- Sudan national television
- Blue Nile television
- Sudan national radio
- National theater
- Offices



Figure 5 TV building, Omdurman site



#### 1. Components of the national television:

- Studios:
  - Virtual studio
  - General studio
  - Small studio (news and talk shows)
- Studio facilities:
  - Makeup and dressing rooms
  - Workshops and storage places
- Main control panel
- Administration offices
- Production offices
- Technical facilities

## 2. Components of Blue Nile TV:

- Studios:
  - General studio
  - News studio
- 2 main control panels
- Administration offices
- Technical facilities
- News offices

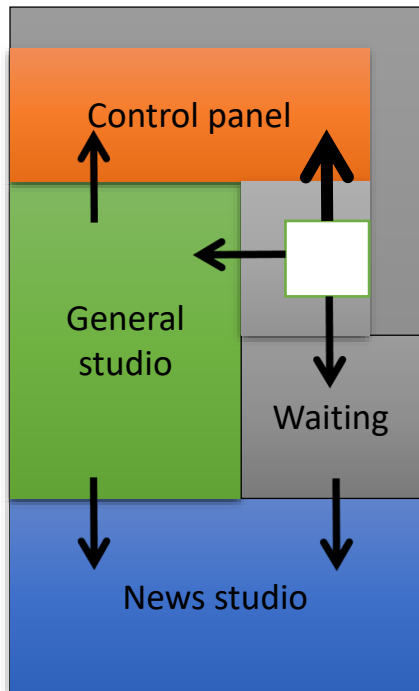


Figure 7 BNTV, Ground floor plan

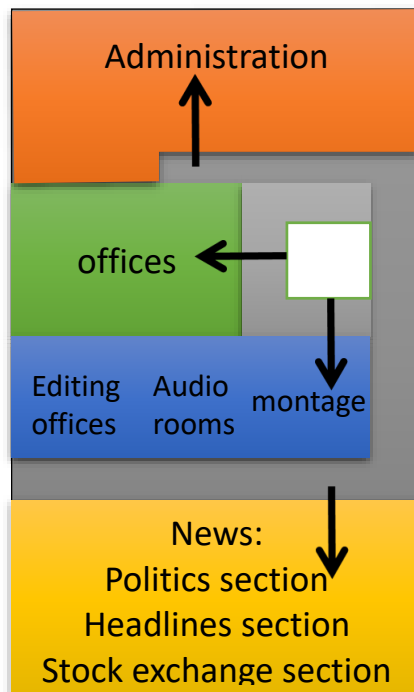


Figure 8 BNTV, First floor plan

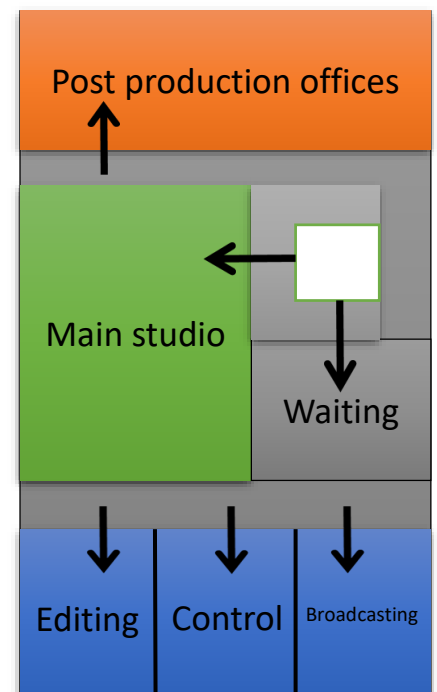


Figure 6 BNTV, Second floor plan

Table 1 advantages and disadvantages of TV building

Advantages	Disadvantages
Provide technical services for each channel, TV production and radio station.	Lack of variety in studios (type and size).
The site location takes full advantage of the views and distinctive for photography.	There is no dedicated area for outdoor shooting.
Providing cultural recreational art spaces work on external public interaction with the project such as the theater.	

Results of the study:

- Provide diversity of studios in both type and size.
- Create an efficiently linked service area for broadcasting zone.
- Taking into consideration the good views for shooting.

2.2.2. international projects

**1. Media Complex - by CAAT Studio Architecture**

**Nature of the project:**

Media, cultural and educational

**Location:** Iran, Tehran.

**designed by :** Caat studio architecture

**Architects:** Mahdi Kamboozia, Helena Ghanbari

**SITE AREA :** 23,000 m<sup>2</sup>

**Concept and philosophy:**

The main concept of the project is to show that the human itself, acts as a media in the project. During the day, the presence of humans makes the project alive itself by moving towards different parts of it such as the Amphitheater on the roof and other spaces.

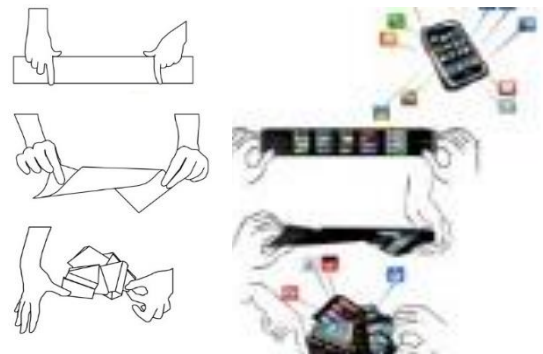
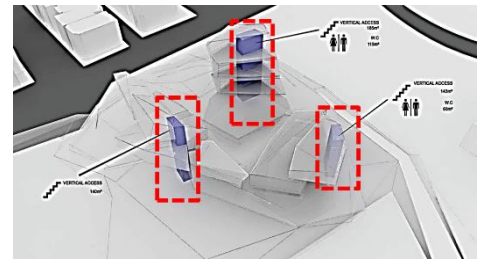
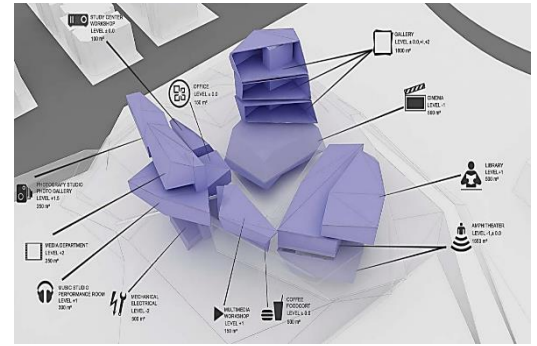


Figure 9 Caat Media building concep

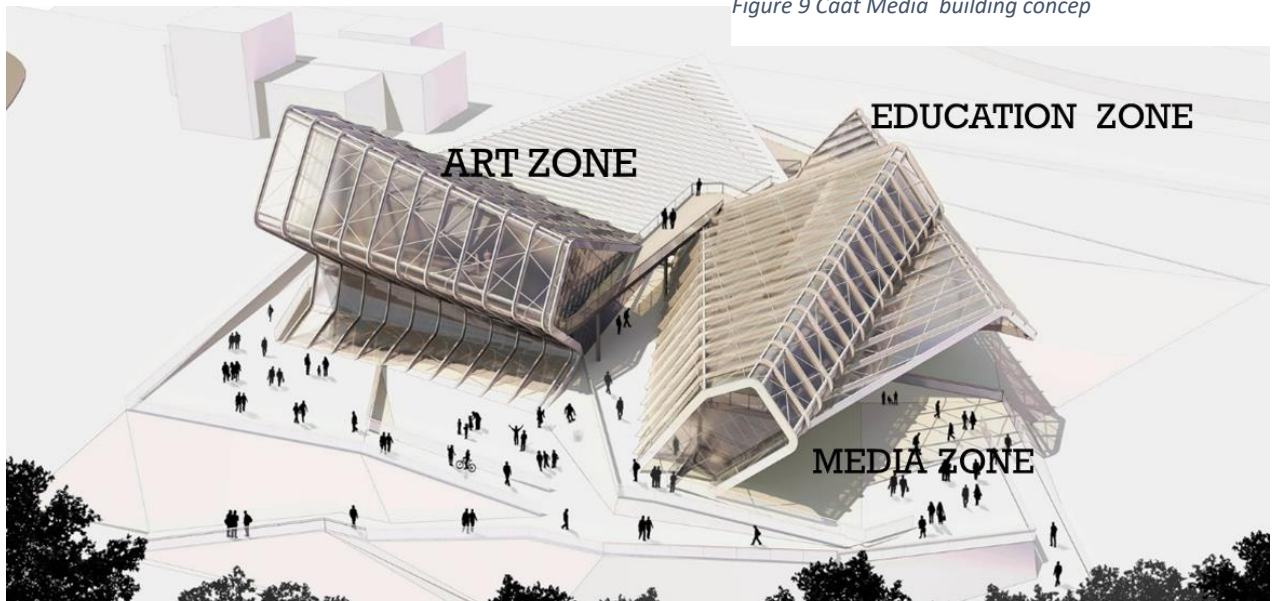


Figure 10 parts of the building

**Project components:**

**1. Media zone:**

- Broadcasting studios
- Workshops
- Photography studios
- Technical facilities

**2. Art zone**

- Galleries
- Theater
- Cinema
- Training workshops
- Educational center
- Library

**3. Administration offices**

**4. Services**

Zone	percentage
Media zone	33%
Art zone	30%
Educational zone	20%
Administration zone	7%
Service zone	10%

*Table 2 percentages of zones*

*Advantages Disadvantages*

<ul style="list-style-type: none"> <li>• The interaction with the public in the building.</li> <li>• The unique concept of the project and the use of the fold structure to link the different zones of the project.</li> <li>• Providing workshops and training facilities.</li> </ul>	<ul style="list-style-type: none"> <li>• There is no variety of spaces in photography and broadcasting studios.</li> <li>• There isn't enough spaces to create furniture and decorations for the studios.</li> <li>• The absence of outdoor shooting and lack of activities which are linked to the external environment.</li> </ul>
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**Results of the study:**

- Taking into consideration the existence of service spaces in a middle area.
- Choosing a structure that is able to link the different zones of the project efficiently.
- Taking account of the volume of the activity relative to the importance of the project.



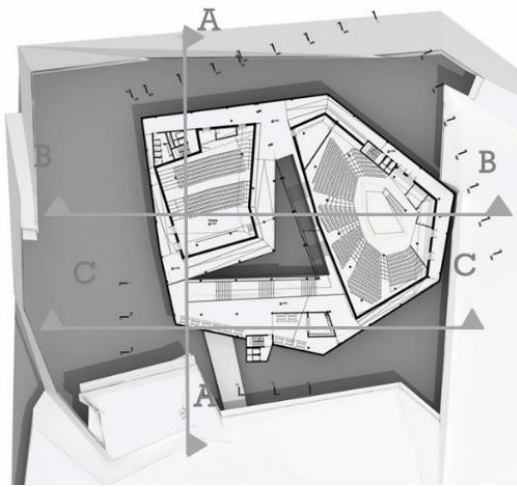


Figure 11 CAAT, ground floor plan

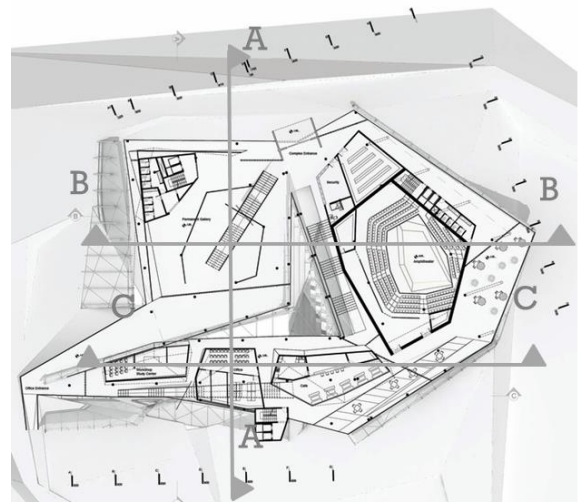


Figure 12 CAAT, first floor plan

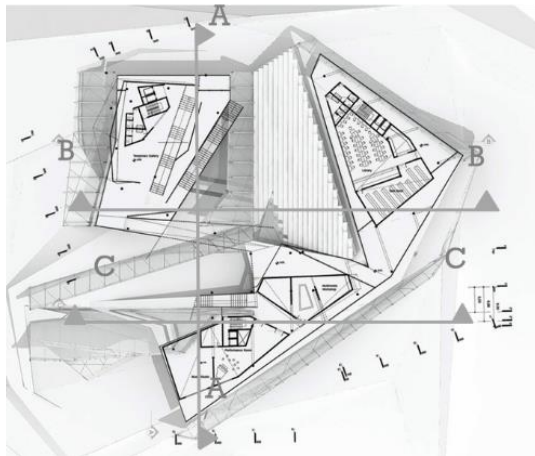


Figure 13 CAAT, second floor plan

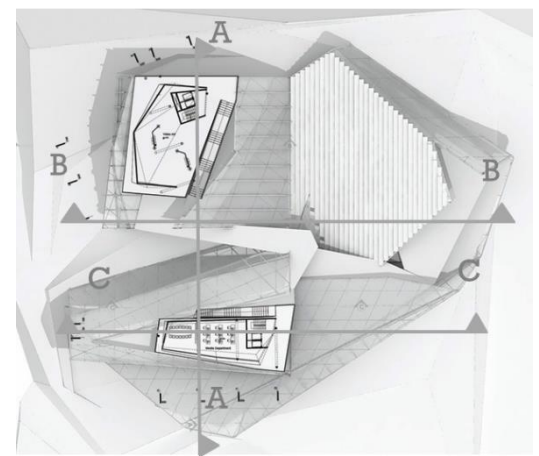


Figure 14 CAAT, Third floor plan

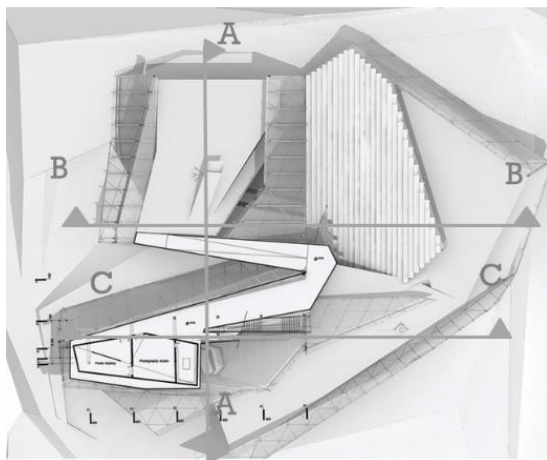


Figure 15 CAAT Forth floor plan

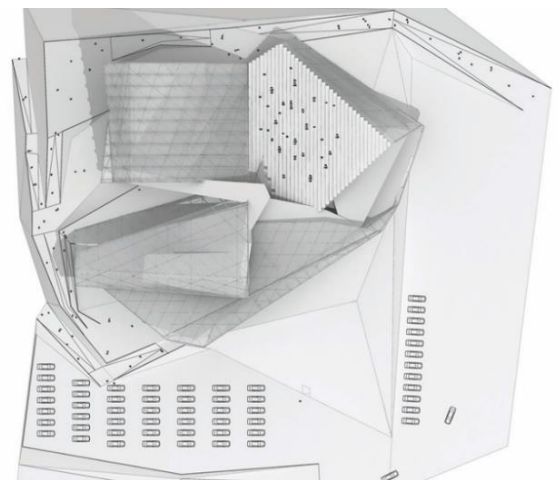


Figure 16 CAAT, Site plan

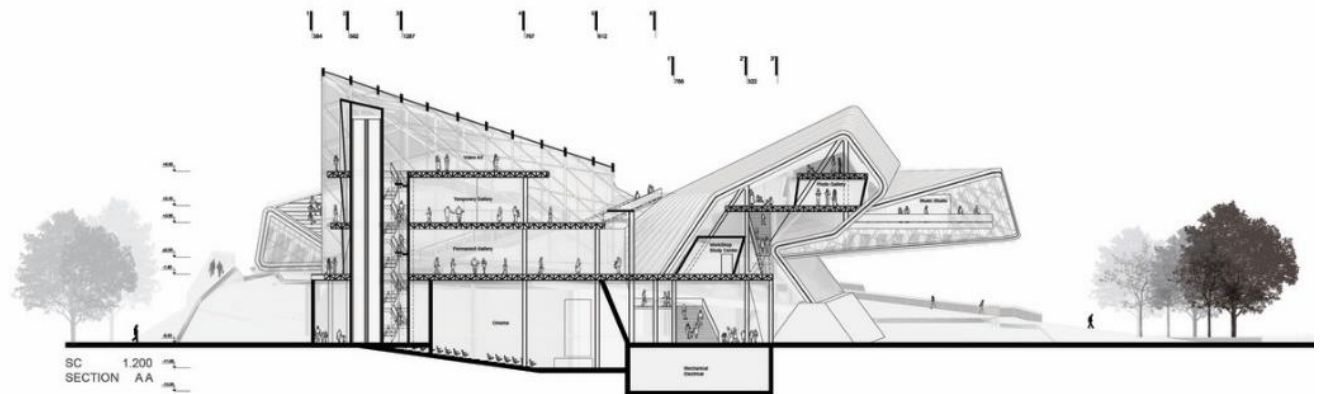


Figure 17 Dugan section A-A

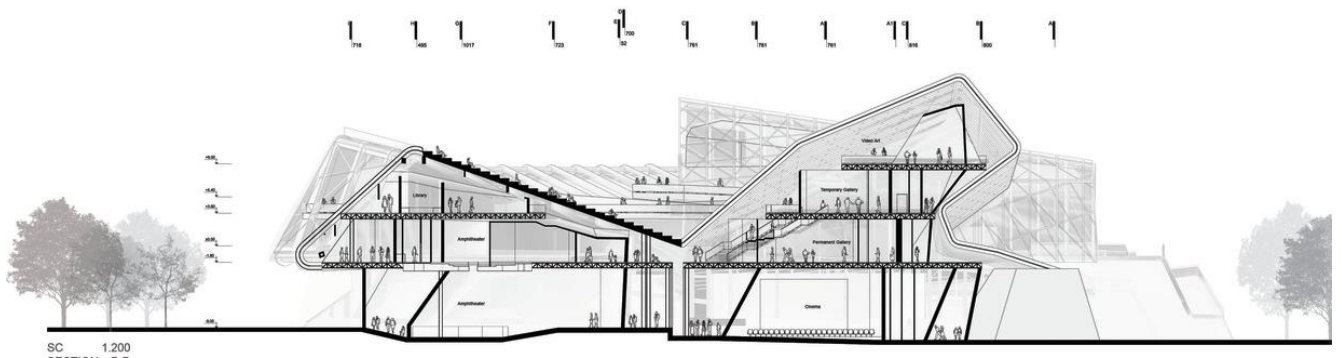


Figure 18 Dugan, section B-B

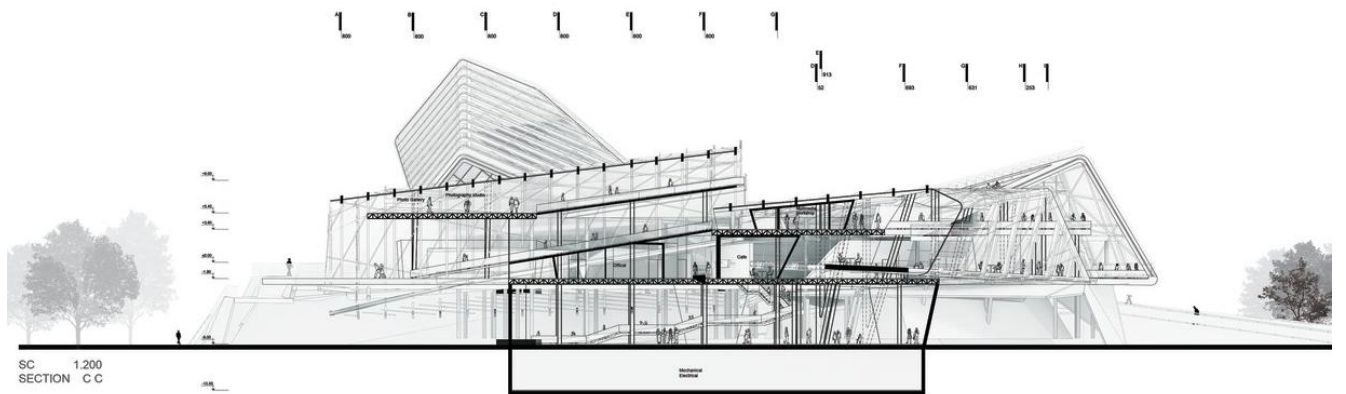


Figure 19 Dugan, section C-C

## 2. Dogan Media center

Location: turkey, Ankara

Designed by: tabanlıoğlu architects

Site area : 4.299m<sup>2</sup>

Built area: 11.475 m<sup>2</sup>

Media production:

4 channels, 8 newspapers, 25 magazines

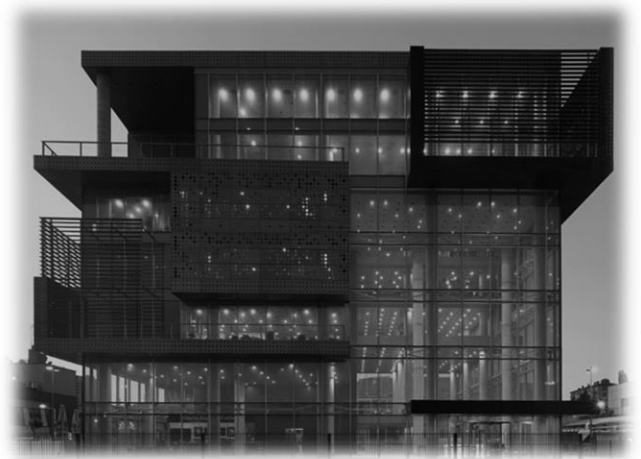


Figure 20 Dogan, elevation



Figure 21 Dogan, elevation

### Concept and philosophy:

The building is consequently perceived as a sculptural grouping of related boxes of the same genus but with a variety of sizes. The building is perceived from afar and in diverse prospects at various angles, due to perforated shield resembling Braille alphabet at a range of sizes, symbolizing “communication for all”.

### Advantages Disadvantages

<ul style="list-style-type: none"> <li>• Efficient use of the area.</li> <li>• Clarity of the building's function.</li> </ul>	<ul style="list-style-type: none"> <li>• There is no interaction with the public in the building.</li> <li>• The inflexibility of shooting due to the lack of studios and photography environment.</li> <li>• The absence of outdoor shooting and lack of activities which are linked to the external environment.</li> </ul>
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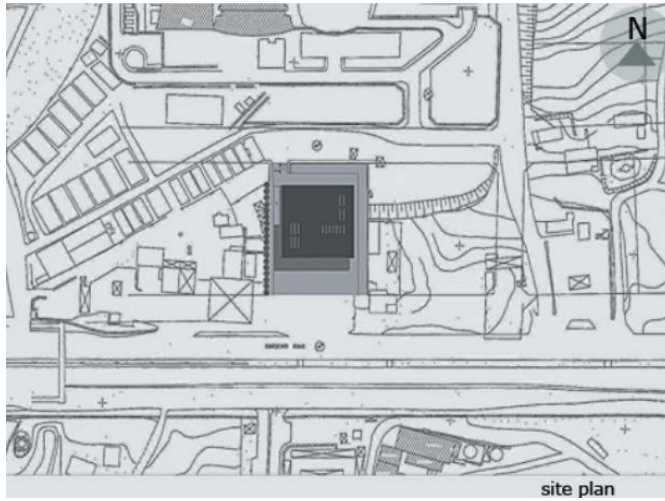


Figure 25 Dogan, site plan

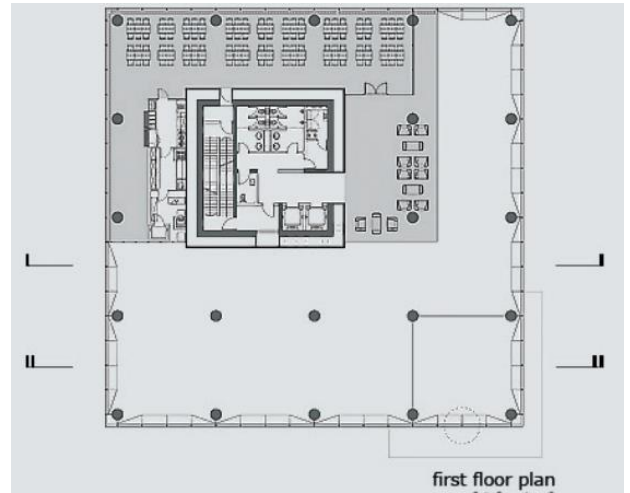


Figure 24 Dogan, first floor plan

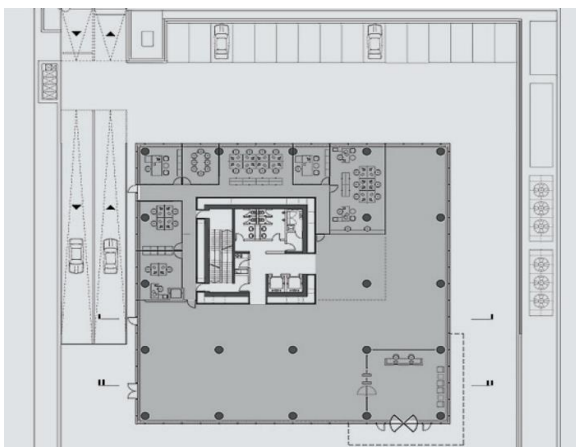


Figure 23 Dogan second floor plan

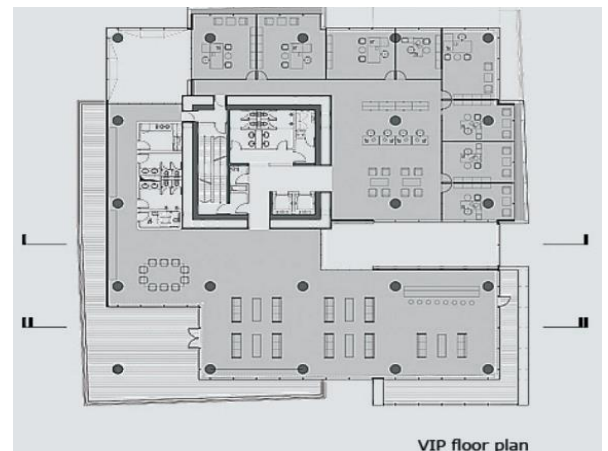


Figure 22 Dogan VIP floor plan

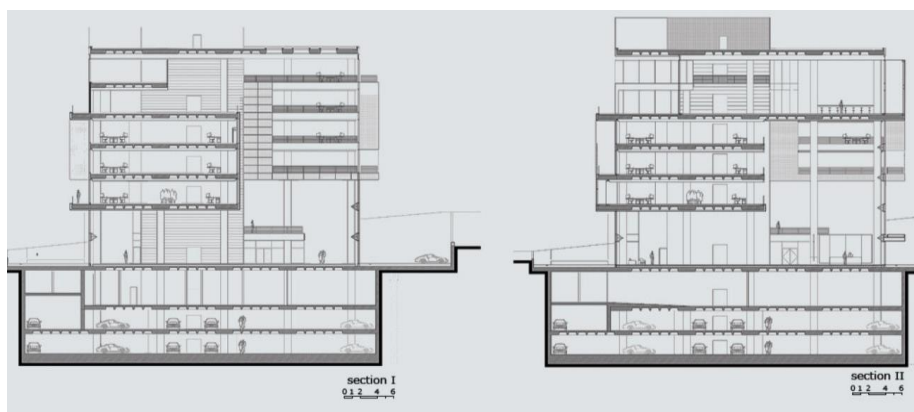


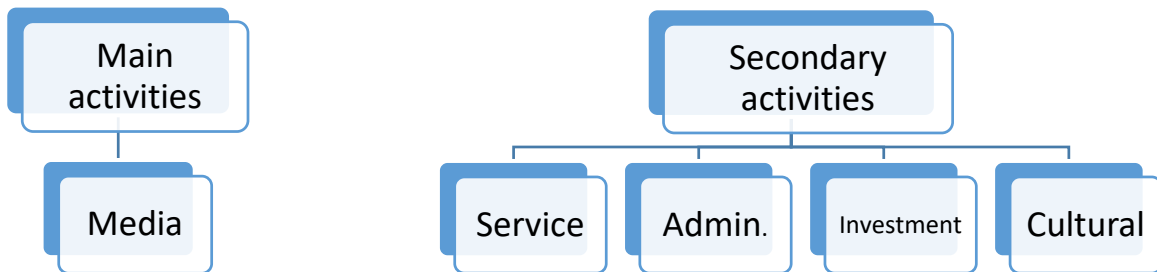
Figure 26 Dogan, Sections

## CHAPTER III: Project Study and Analysis

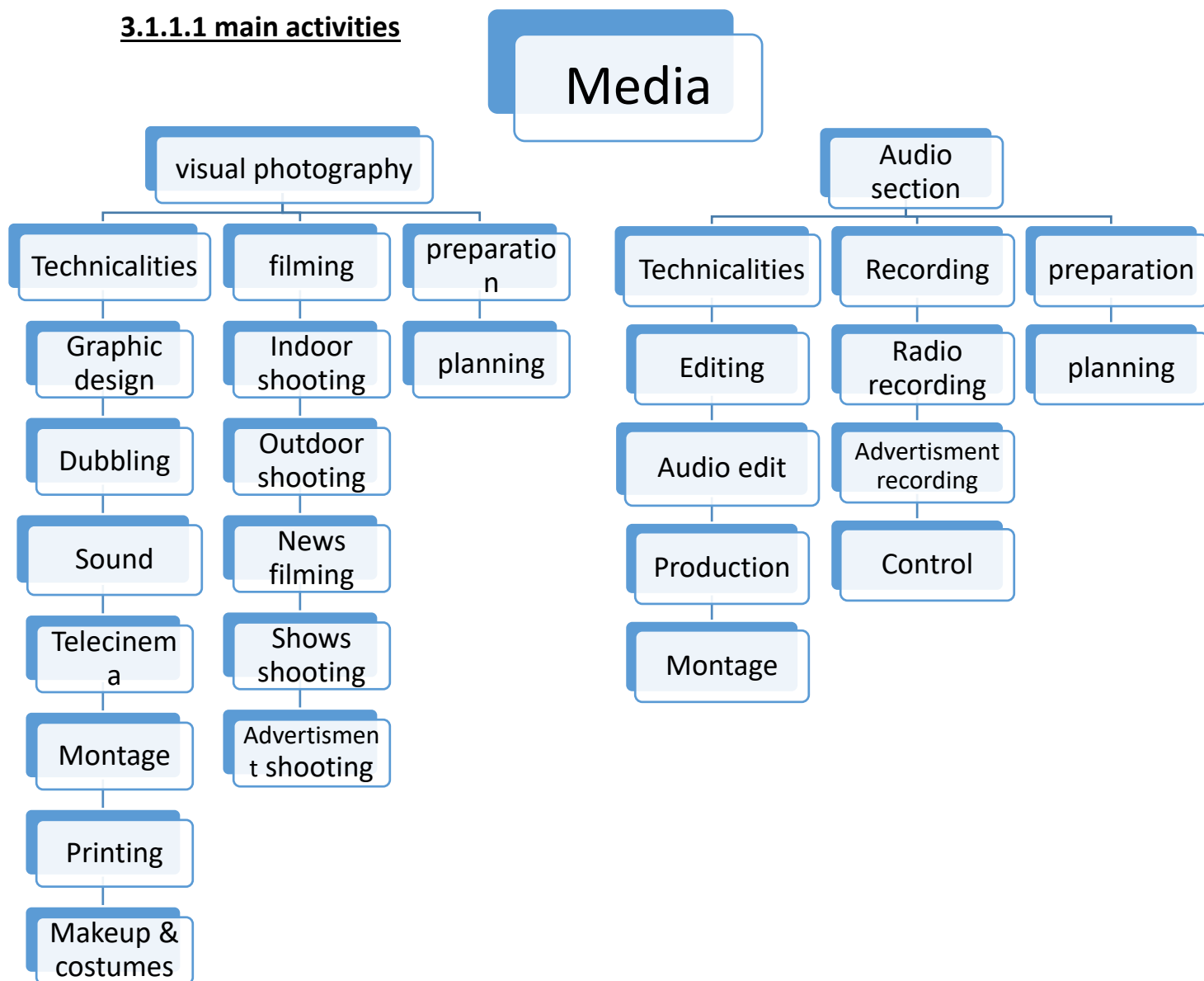
- Activities Component
- Human Component
- Spatial Component
- Spaces Study
- Tables Of Areas
- Functional Relations
- Circulation Diagrams
- Site Selection
- Indicators and Guidelines
- Zoning

### 3.1. Data analysis

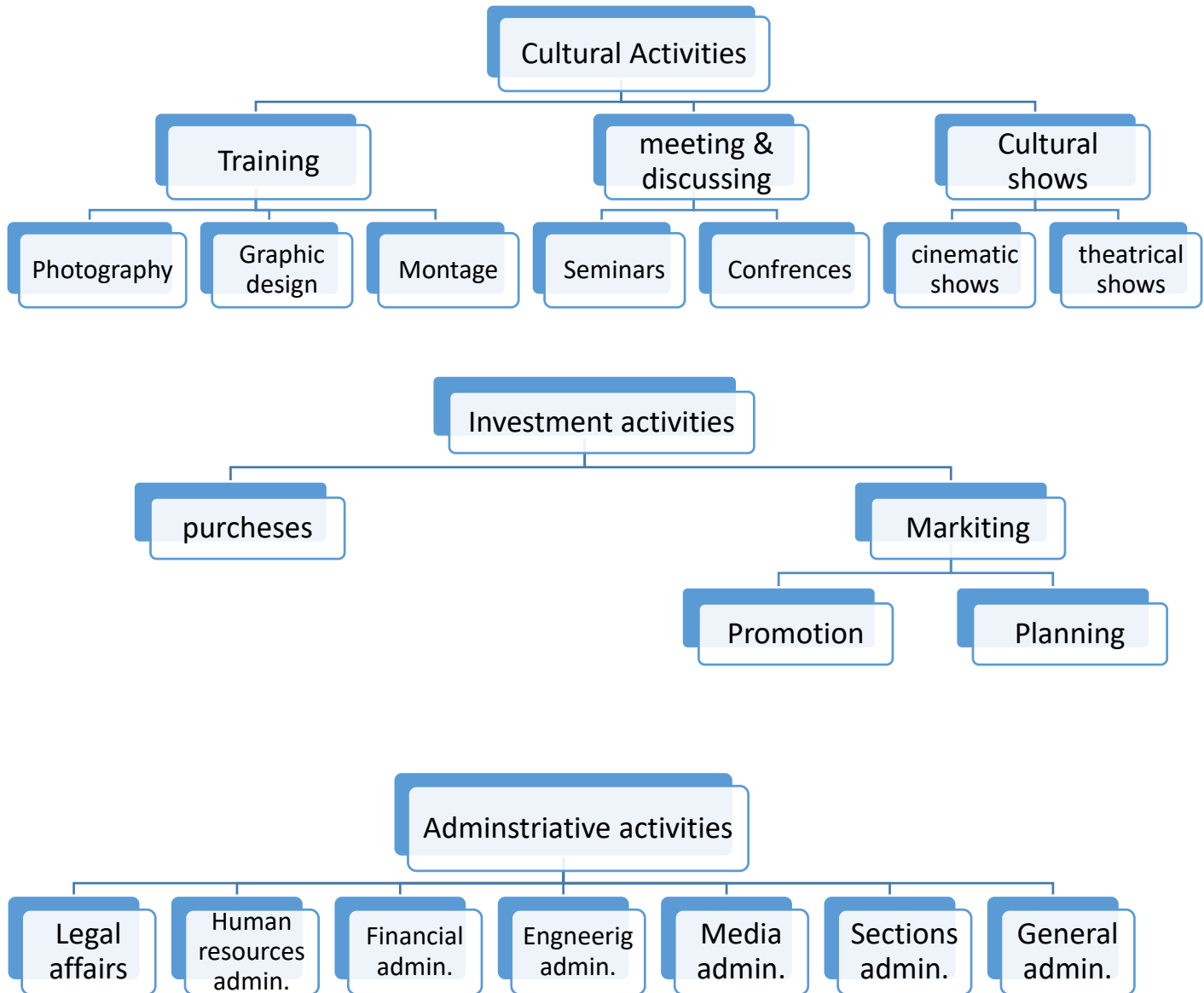
#### 3.1.1 Activities

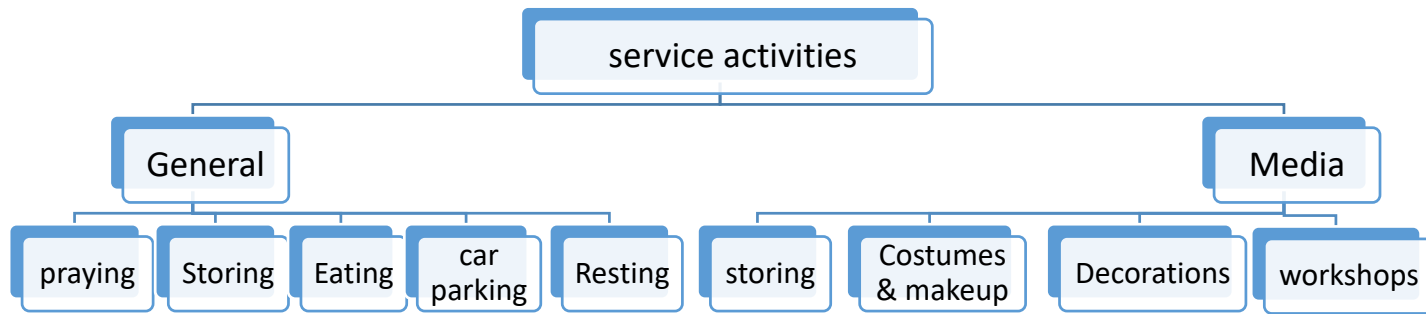


#### 3.1.1.1 main activities

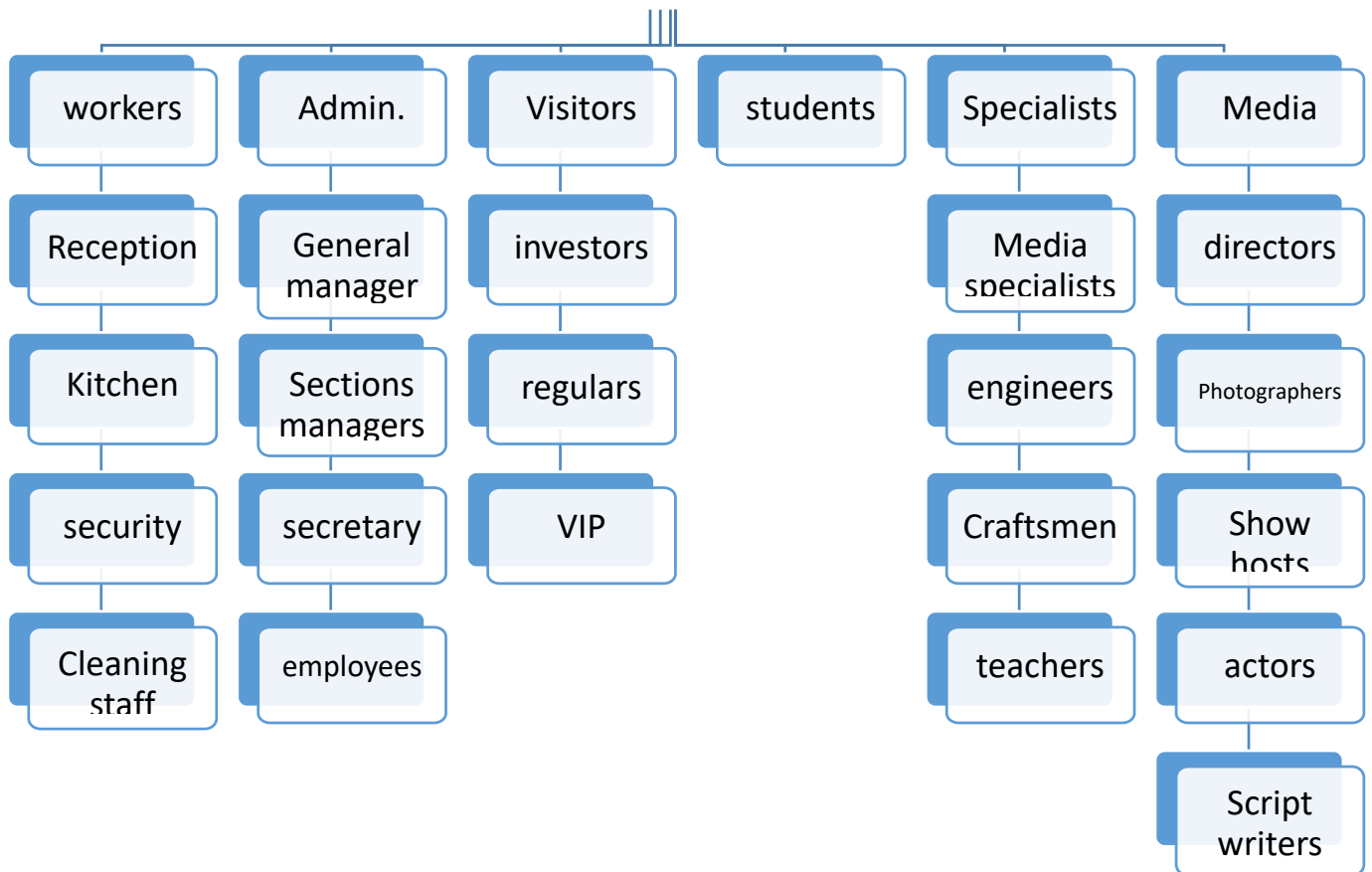


**3.1.1.2 secondary activities:**



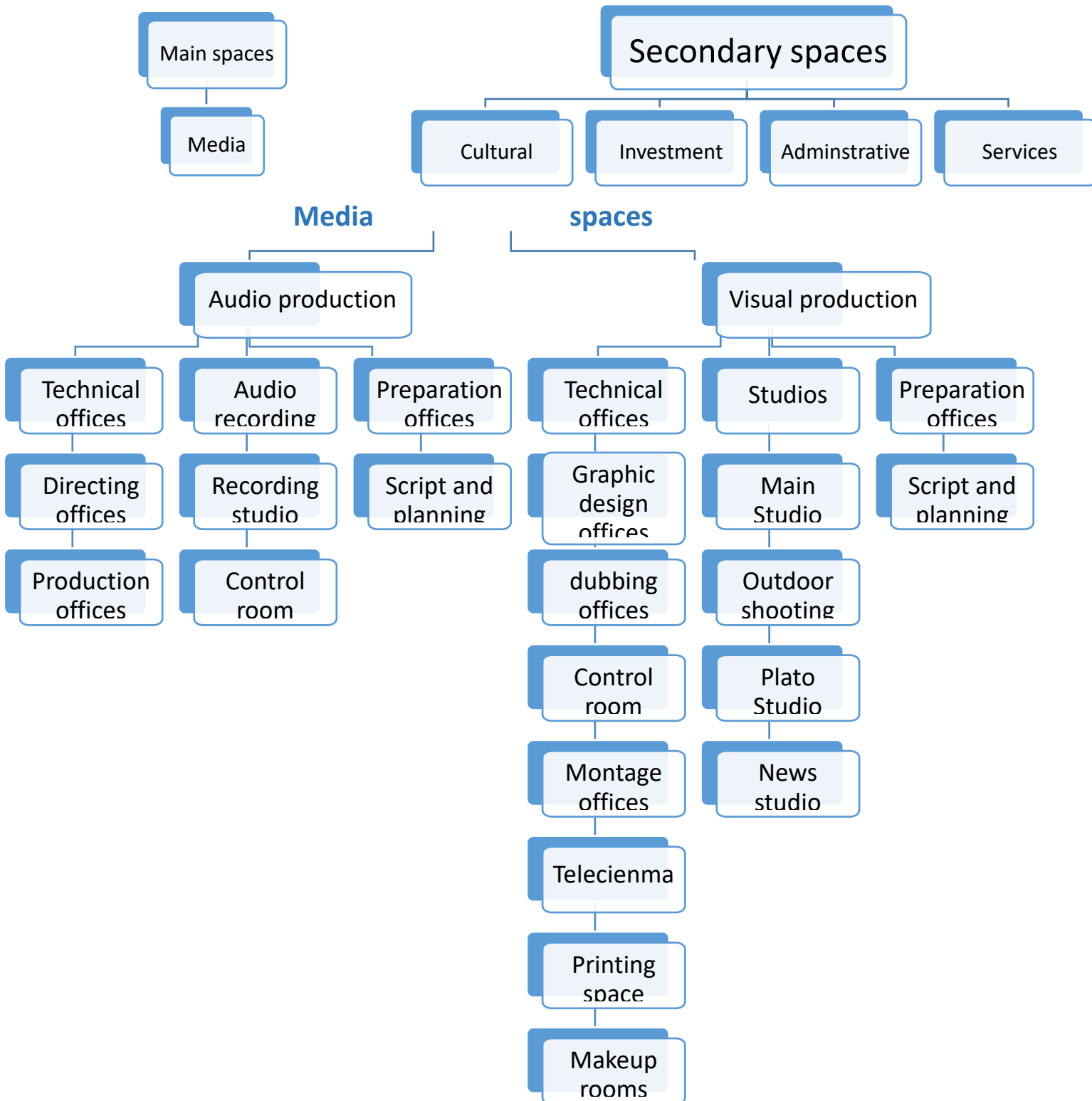


### 3.1.2 Human Component:

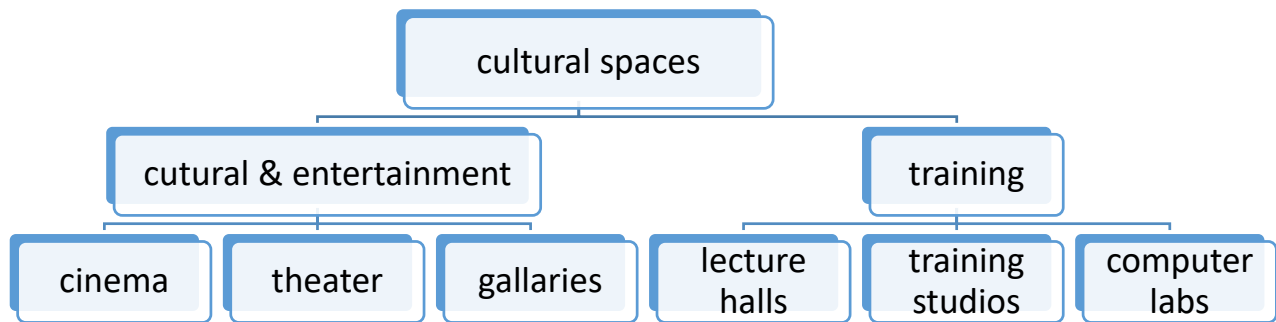




3.1.3 spatial components:



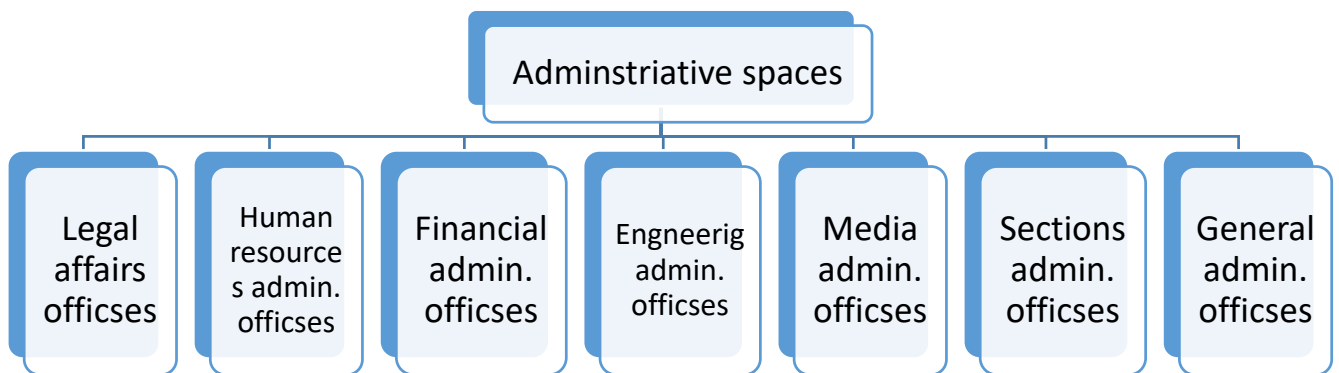
Cultural spaces



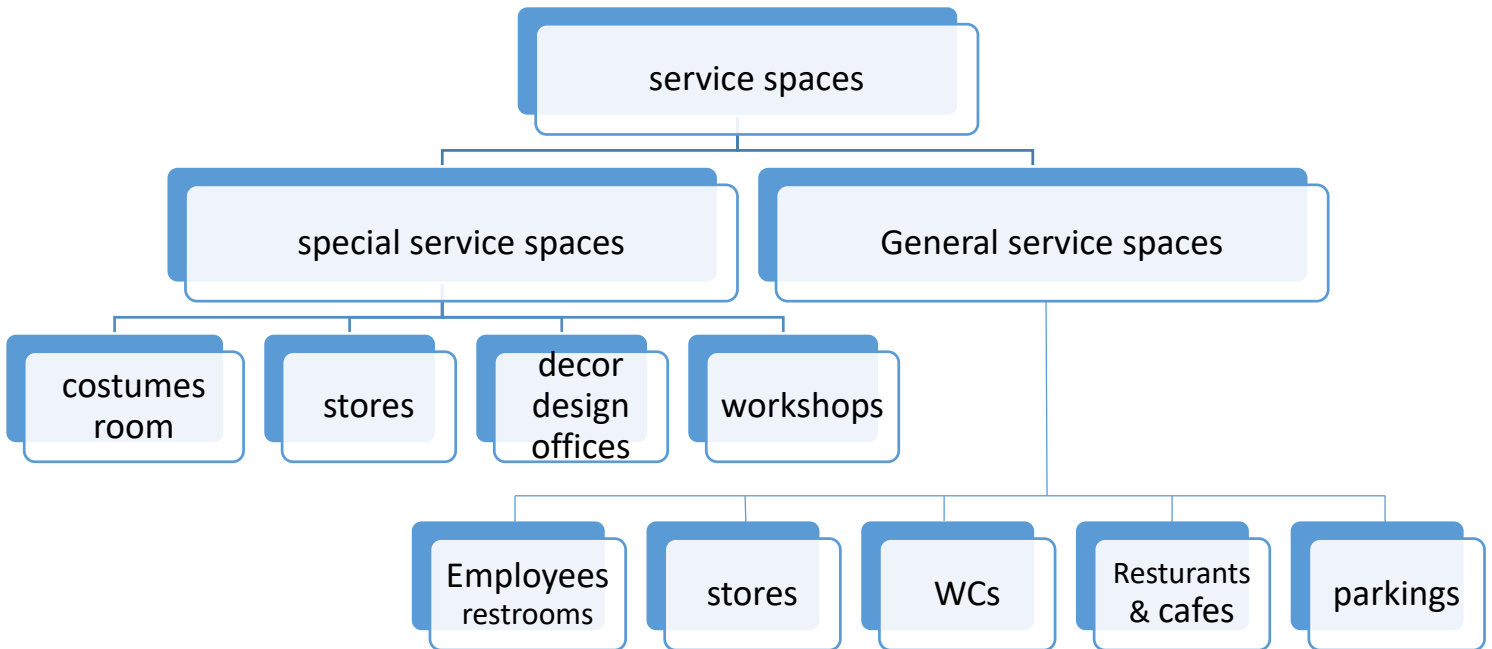
Investment spaces



Administration



Services



### 3.1.4 Spaces Study:

#### 3.1.4.1 TV Production:

##### - Scenario & Planning Office:

It's a space for art work planning and for writing the scripts.

equipment: tables (2m), Sofa, Desk, Clip board, Chairs, Lockers

Appropriate space = 35 m<sup>2</sup>

##### - Filming Studios:

A television studio is any room where television cameras are used.

There will be different types of studios to accommodate different needs:

##### 1. **Plato studio:**

It's a multi-purpose studio and it does not contain fixed furniture. The decorations are installed depending on the desired activity.

The appropriate space:

The studio: 130 – 250 m<sup>2</sup>

The control room: 35 – 45 m<sup>2</sup>

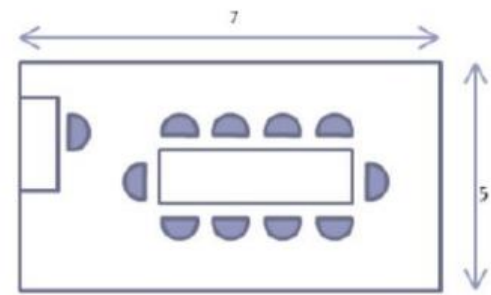


Figure 27 office plan

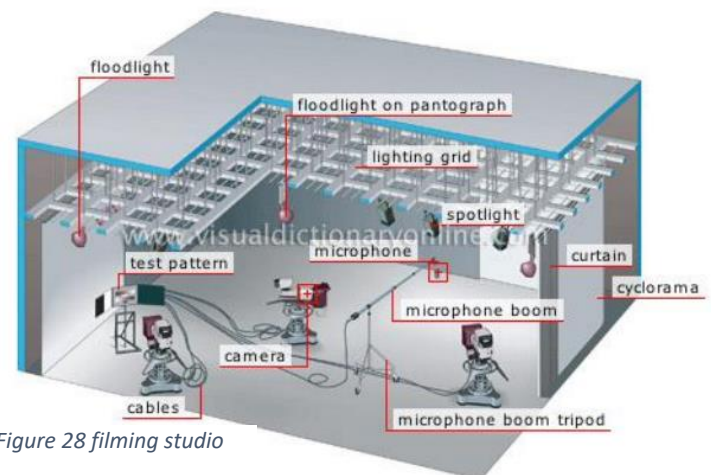
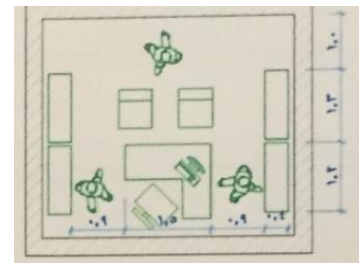
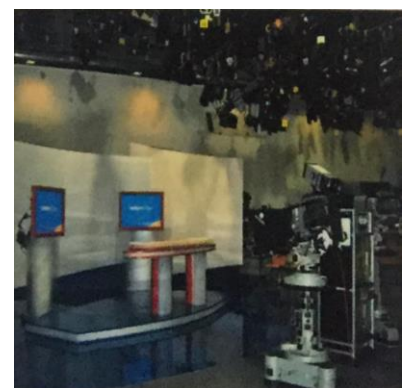


Figure 28 filming studio



Figure 29 plato studio



**2. News studio:**

A studio for news programs that are between two or more.

Requirements are usually quite simple.

equipment:



- chairs:  $2.13 \times 1.82 = 4 \text{ m}^2$   
(6chairs = 24m2)
- Tables: 3 m2
- Control room 45m2 (for 10) "2.20 m2 per person
- Guest hall = 50 m2
- Storage = 45 m2
- +70% (for circulation, Lighting, Cameras & decoration)



Figure 30 News studio

**Total area: 272 m2 (for 25 person)**

**3. Chroma Key Studio (Visual Studio):**

It's a television studio which have a special effect / post-production technique for compositing (layering) two images or video streams together based on color hues (Chroma range).

-10 users (5 m2 per person)

- 70% circulation and other.

**The appropriate total area = 85 m2**

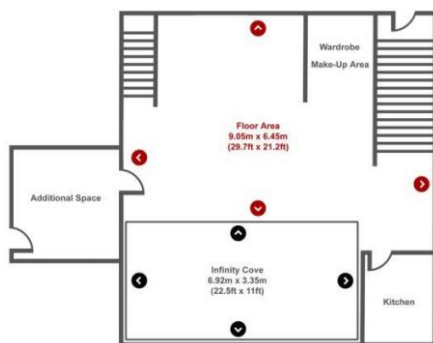


Figure 31 Chroma Key Studio

#### 4. Main Studio:

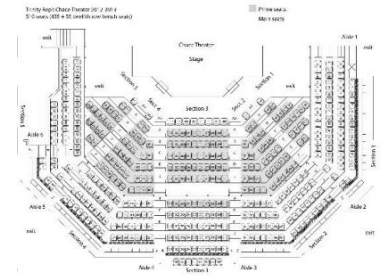
A large studio for TV programs that's has Audience.

This studio is a cross between theater & a studio, with the usual theater consideration of sight lines, audience acoustics, & public safety complicated by the requirements for camera operations and lightning.

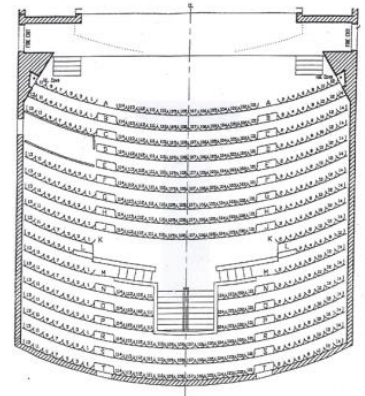
equipment:

- Seating area (1 m2 per person) "400 persons"
- production area 85 m2
- backstage area 150 m2
- foyer (studio lobby) area = 100 m2
- 70% for circulation, lightning, cameras & decoration

Apparently total area = 950 m2



U shape TV theatre



#### 5. Outdoor shooting area:

An expansive outdoor space, suitable for all types of programmers.

Area = 3 m2 per person



### 3.1.4.2 Radio Production

#### - Radio Studio:

A radio studio is a room in which a radio program or show is produced, either for live broadcast or for recording for a late broadcast.

Appropriate total area: 50 - 75 m<sup>2</sup>

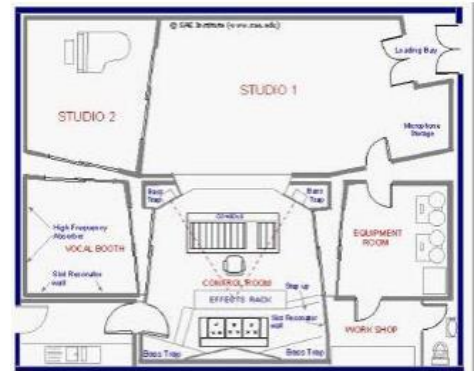


Figure 32 radio recording

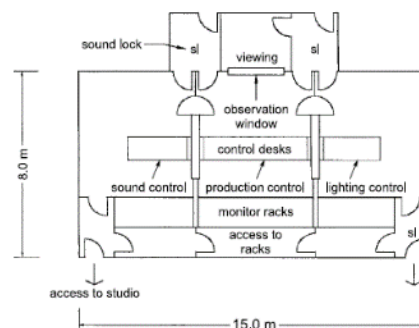


#### -Recording Studios:

A recording studio is a facility for sound recording which generally consists of at least two rooms:

The studio or live room, control room where the sound recorded is manipulated.

Appropriate total area 65 – 80 m<sup>2</sup>



### 3.1.4.3 Technical Facilities:

#### 1. Graphic Design offices:

This is where rapid production of chart photos and other visual materials take place.

One of the most important spaces due to the importance of graphic design process in the media production.

-Working for a single designer is 2.4 square meters, total working area is 19.2 square meters.

-Cabinets' area is 6 square meters, the circulation area around the

cabinets are 9 square meters.

-1m paths around the working area.

**Appropriate Total area = 40-50 m<sup>2</sup>.**

#### 2. Montage offices:

Also called the video editing room, its where rapid editing, special effects and music are done to present compressed narrative information.

**Total appropriate are = 45 m<sup>2</sup>**

#### 3. Screening room:

Its used for watching the progress of an animation movie or something being worked on to see the progress of the work.

- Number of users: 12
- 0.8 m<sup>2</sup> per person with minimum distance from the screen = 1.2m

**Total appropriate area = 20 m<sup>2</sup>**

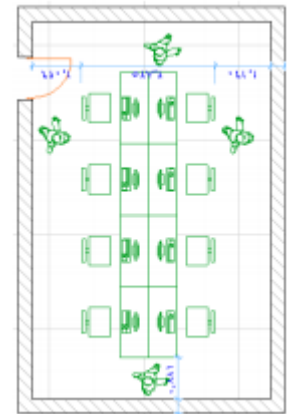
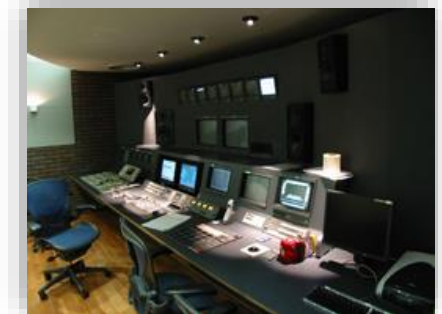


Figure 33 Graphic Design offices





**4. Printing room:**

The space where the printing of the media production takes place, whether its banners, posters, etc.

Total appropriate area = 80 m<sup>2</sup> (4 machines) + 5 m<sup>2</sup> (storage) = 85 m<sup>2</sup>



Figure 34 printing room

**5. The dubbing & Mixer unit:**



dubbing is a post-production process used in film making and video production in which additional or supplementary recordings are mixed with original production sound to create the finished soundtrack. Audio mixing, it's the process of summing a multitrack recording down to mono stereo or surround sound print.

Total appropriate area = 85 m<sup>2</sup> (0.95 m<sup>2</sup> per person)

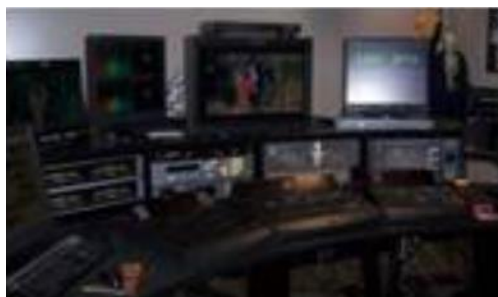
**6. Telecine room:**

Despite the advantages of magnetic tape, much TV programming will continue to originate as motion picture film.

The size of the machine 1.2\*1.2\*1.5

0.95 m<sup>2</sup> per person

Total appropriate area = 30 m<sup>2</sup>



**7. Master control:**

It's a place in which controlling all the previously mentioned production stages take place.

Includes a group of screens in addition to visual and audio devices.

1 m<sup>2</sup> per person

Appropriate total area = 70 – 85 m<sup>2</sup>

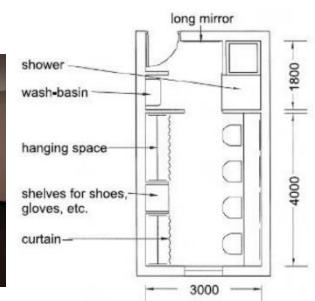
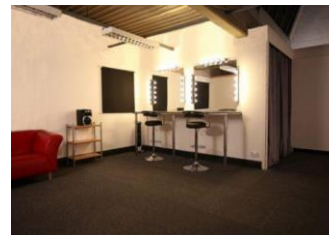


**8. Dressing & makeup room:**

a space that is designed for the hosts, reporters or guest to get ready.

1.6 m<sup>2</sup> per person

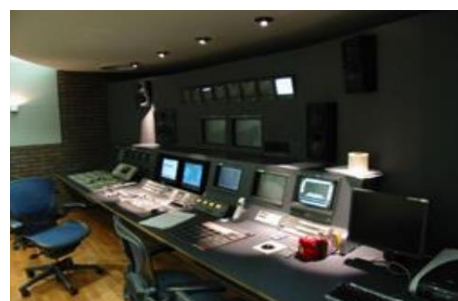
appropriate total area "4 people" = 18 m<sup>2</sup>



**9. Montage room:**

Also called Video editing room, which is the main stage of any production. Where the video is edited, the shots taken get ordered and removal of the undesired footage as well as adding visual and sound effects.

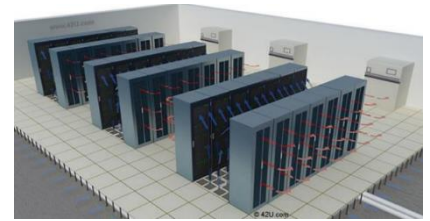
appropriate total area = 50 m<sup>2</sup>



**10.Main storage unit:**

It is a space where special computers are used for storage of data.

Works as a store for production materials,  
appropriate total area "4 units" = 25 m<sup>2</sup>



### 3.1.5 Areas and activities table:

#### 3.1.5.1 Media:

		Space name	Num of users	Area per person	Space area	Num of spaces	Total area
Media	Filming	Main studio	650	1.00 m2	1350 m2	1	1350 m2
		Plato studio	20	5.00 m2	180 m2	6	1080 m2
		News studio	20	3.50 m2	272 m2	5	1360 m2
		Chroma key studio	20	3.50 m2	170 m2	6	1020 m2
		Audio recording	10	2.00 m2	180 m2	5	900 m2
		Outdoor shooting	50	5.00 m2	560 m2	-	-
	Preparation	Planning & script	15	2.50 m2	50 m2	6	300 m2
		Décor offices	6	2.50 m2	70 m2	2	140 m2
		workshops	10	5.00 m2	1850 m2	1	

		Space name	Num of users	Area per person	Space area	Num of spaces	Total area
Media	Technicallities	Printing	6	2.50 m2	85m2	3	255 m2
		Telecinme	3	2.50 m	35 m2	4	140 m2
		Graphic design offices	15	1.50 m2	47 m2	3	141 m2
		Dubbing	17	1.50 m2	92 m2	5	460 m2
		Montage offices	10	1.50 m2	64 m2	5	320 m2
		Main store	-	-	70 m2	1	70 m2
		Control room	10	1.50 m2	64 m2	1	64 m2
		Makeup room	5	1.50 m2	30 m2	7	210 m2
		Costumes	5	1.50 m2	30 m2	7	210 m2
		<b>Total</b>		<b>1789</b>			

### 3.1.5.2 Cultural:

		Space name	Num of users	Area per person	Space area	Num of spaces	Total area
Cultural	Educational	Training facility	200	5.00 m2	1000 m2	1	1000 m2
		workshop	100	2.50 m2	850 m2	2	850 m2
	Cultural	Indoor theater	250	1.00 m2	450 m2	1	450 m2
		Outdoor theater	300	1.00 m2	600 m2	1	600 m2
		cinema	300	1.00 m2	550 m2	1	550 m2
		Hall	300	0.6 m2	250 m2	1	250 m2
		Galleries	50		100 m2	3	300 m2
	Total		1360				4000 m2

		Space name	Num of users	Area per person	Space area	Num of spaces	Total area
admin.	Admin offices	General manger office	1	1.50 m2	42 m2	1	42 m2
		Section managers offices	1	1.50 m2	36 m2	7	252 m2
		Secretary offices	1	1.50 m2	25 m2	8	200 m2
		Employees offices	37	1.50 m2	120 m2	3	360 m2
		Archive	1	1.50 m2	25 m2	1	25 m2
		waiting	10	1.50 m2	30 m2	2	60 m2
		Reception	25	1.50 m2	43 m2	1	43 m2
		Meeting hall	12		80 m2	2	160 m2
	<b>Total</b>		<b>1360</b>				<b><u>1142 m2</u></b>

### 3.1.5.3 Investment:

		Space name	Num of users	Area per person	Space area	Num of spaces	Total area
Investment	Investment offices	Marketing office	15	1.50 m2	250 m2	2	500 m2
		Distribution office	15	2.0 m2	250 m2	2	500 m2
		<b>Total</b>		<b>30</b>			

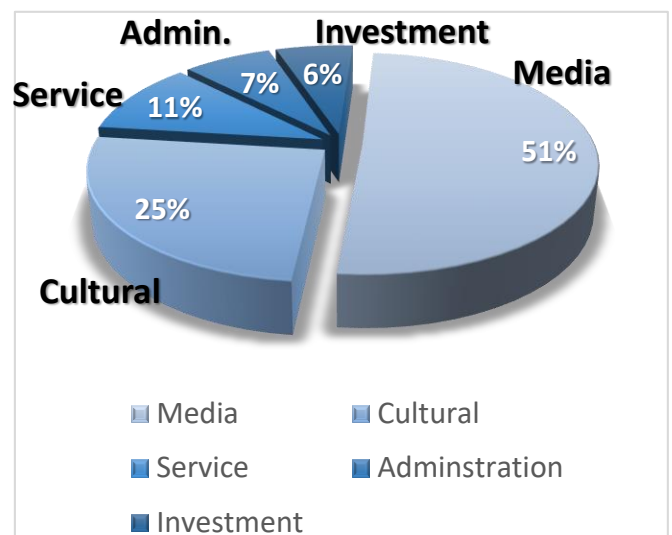
### 3.1.5.3 Services:

		Space name	Num of users	Area per person	Space area	Num of spaces	Total area
service	Service spaces	Restaurant	100	1.00 m2	170 m2	3	510 m2
		Café	50	1.00 m2	95 m2	4	380 m2
		Praying space	200	0.90 m2	250 m2	1	250 m2
		Clinic	15	3.00 m2	50 m2	1	50 m2
		Stores	20	1	45 m2	2	90 m2
		Employees resting rooms	15	1.50 m2	50 m2	3	150 m2
		workers resting rooms	20	1.50 m2	50 m2	3	150 m2
		WCs	10	-	16 m2	7	112 m2
	Parking		-				
	<b>Total</b>					<b>1692 m2</b>	

**Results:**

Total built area = 15,854 m2  
 + 35% circulation area = 5,560 m2  
 + 60% outdoor area = 9,600 m2

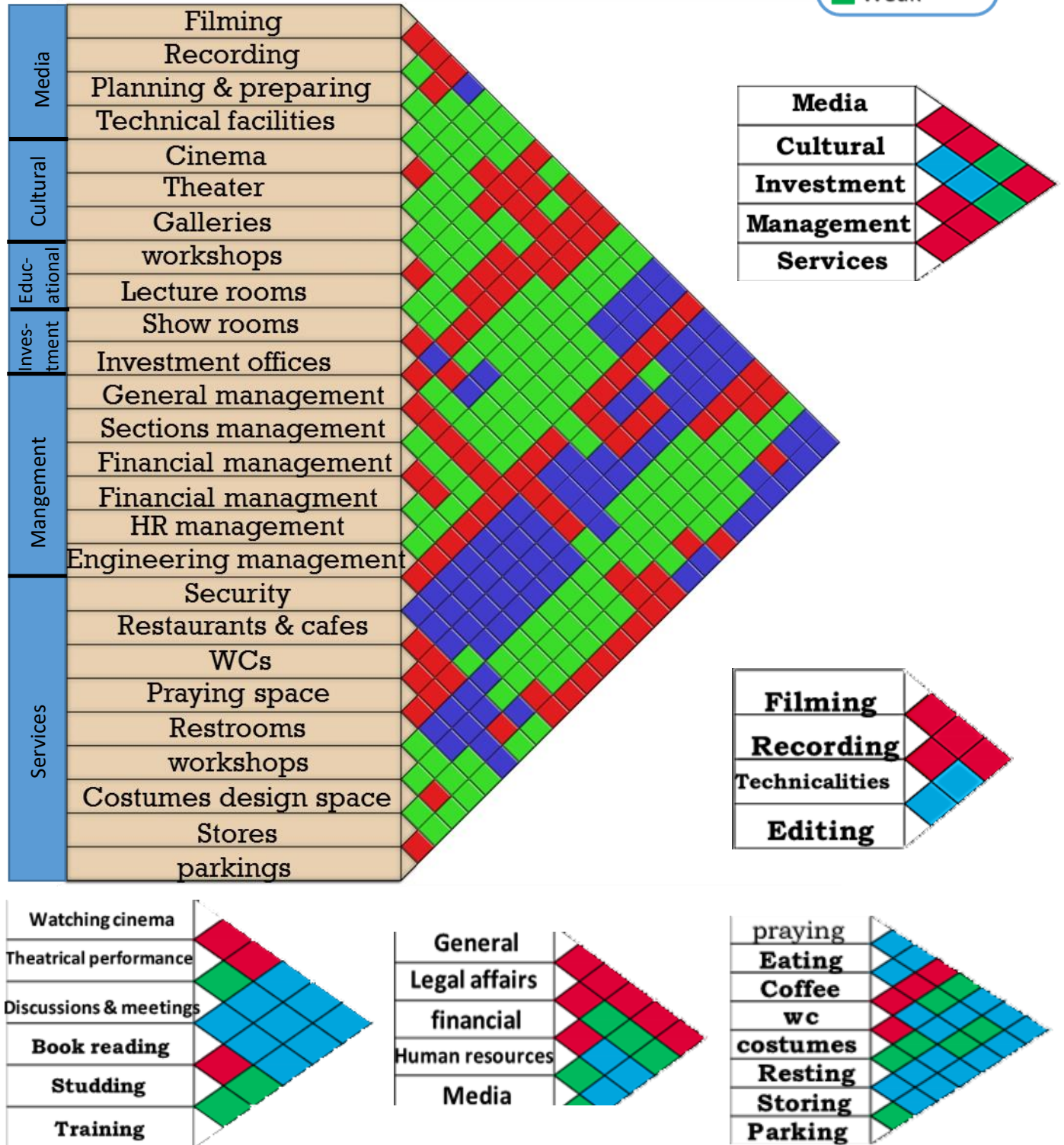
**Total area = 31,014 m2**



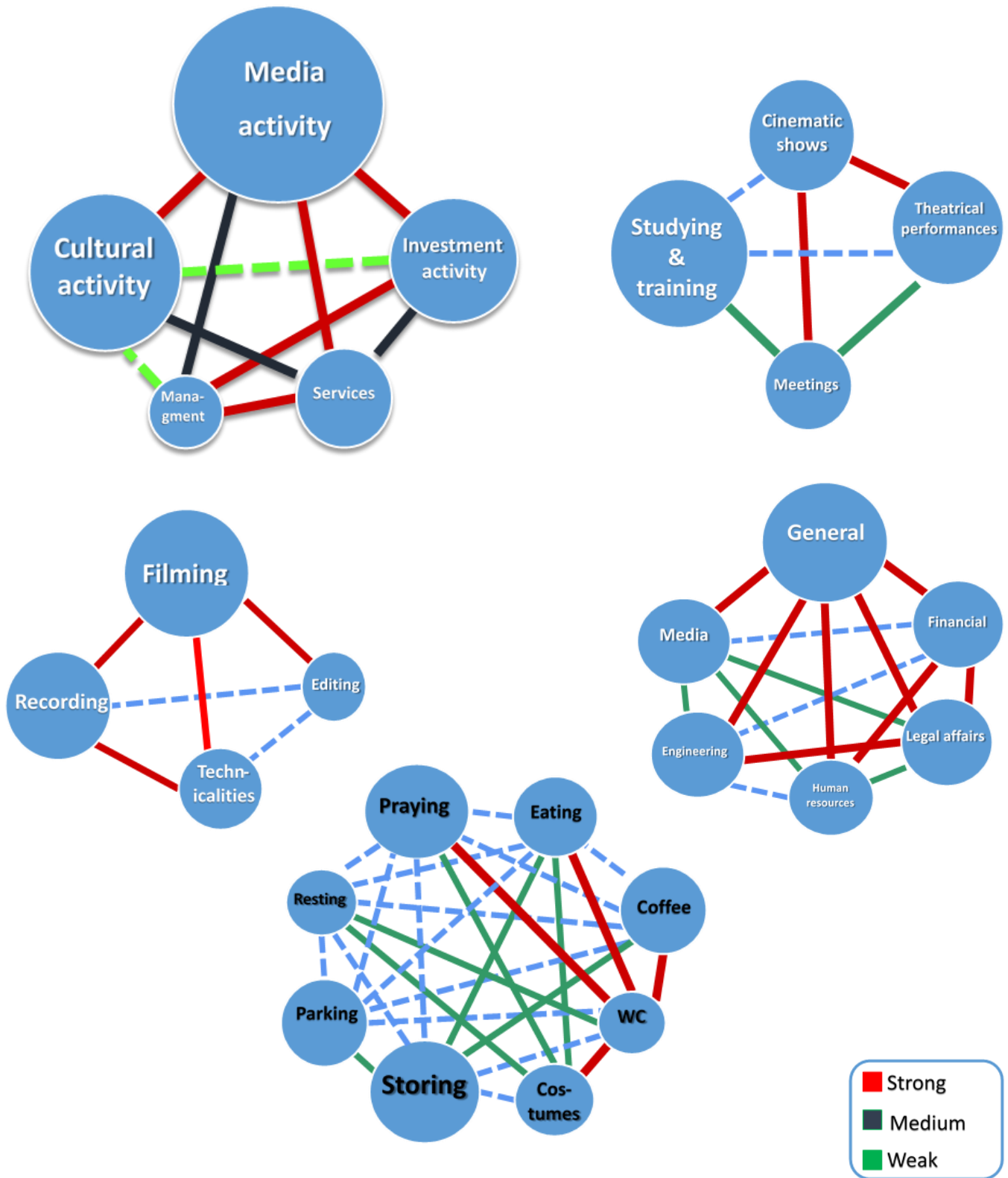


### 3.1.6 Functional relations:

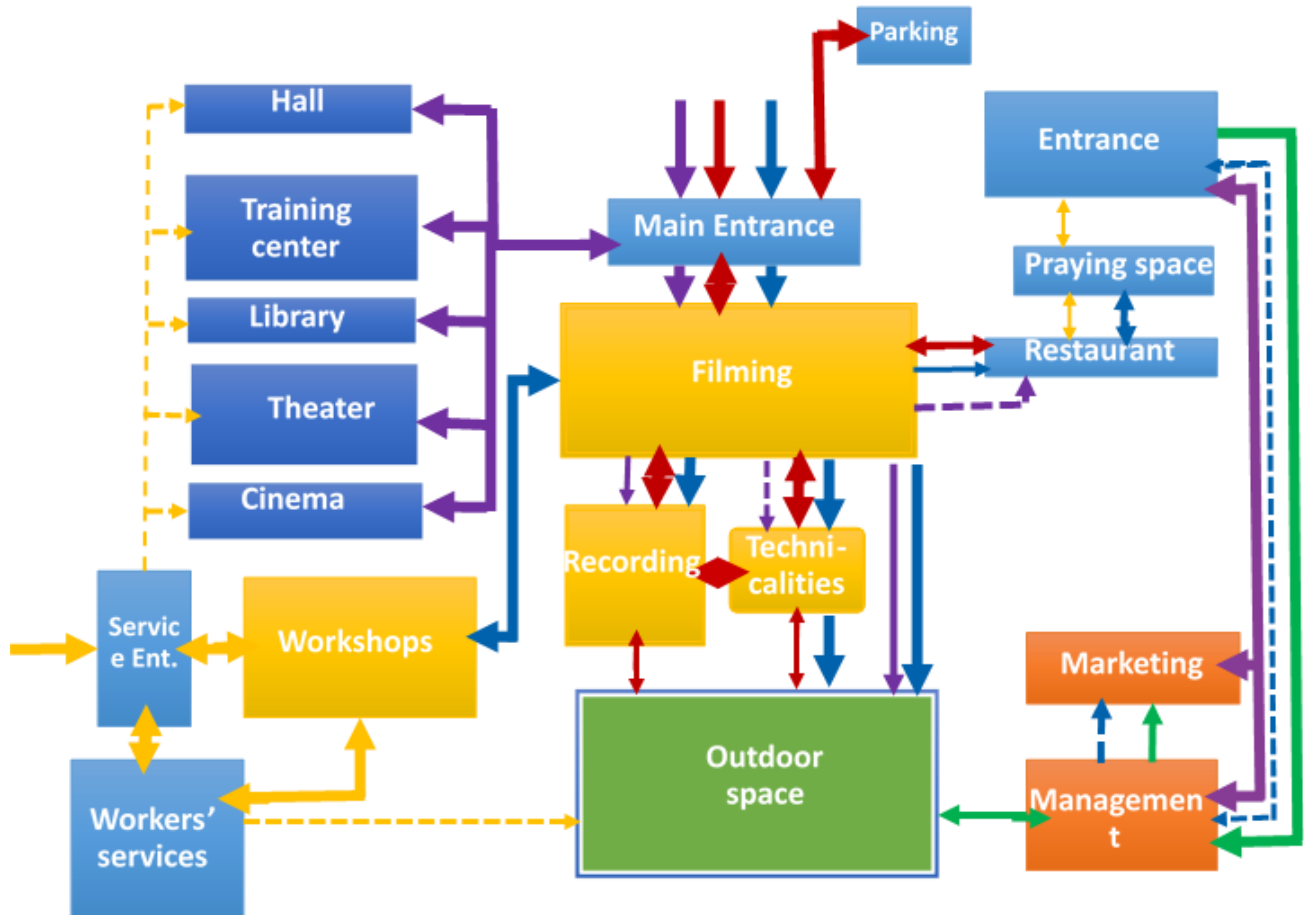
#### 3.1.6.1 Matrix Diagram:



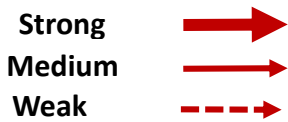
### 3.1.6.2 Bubble Diagram



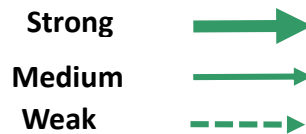
### 3.1.7 Circulation diagrams



#### Media men circulation



#### Mangers



#### Specialists circulation

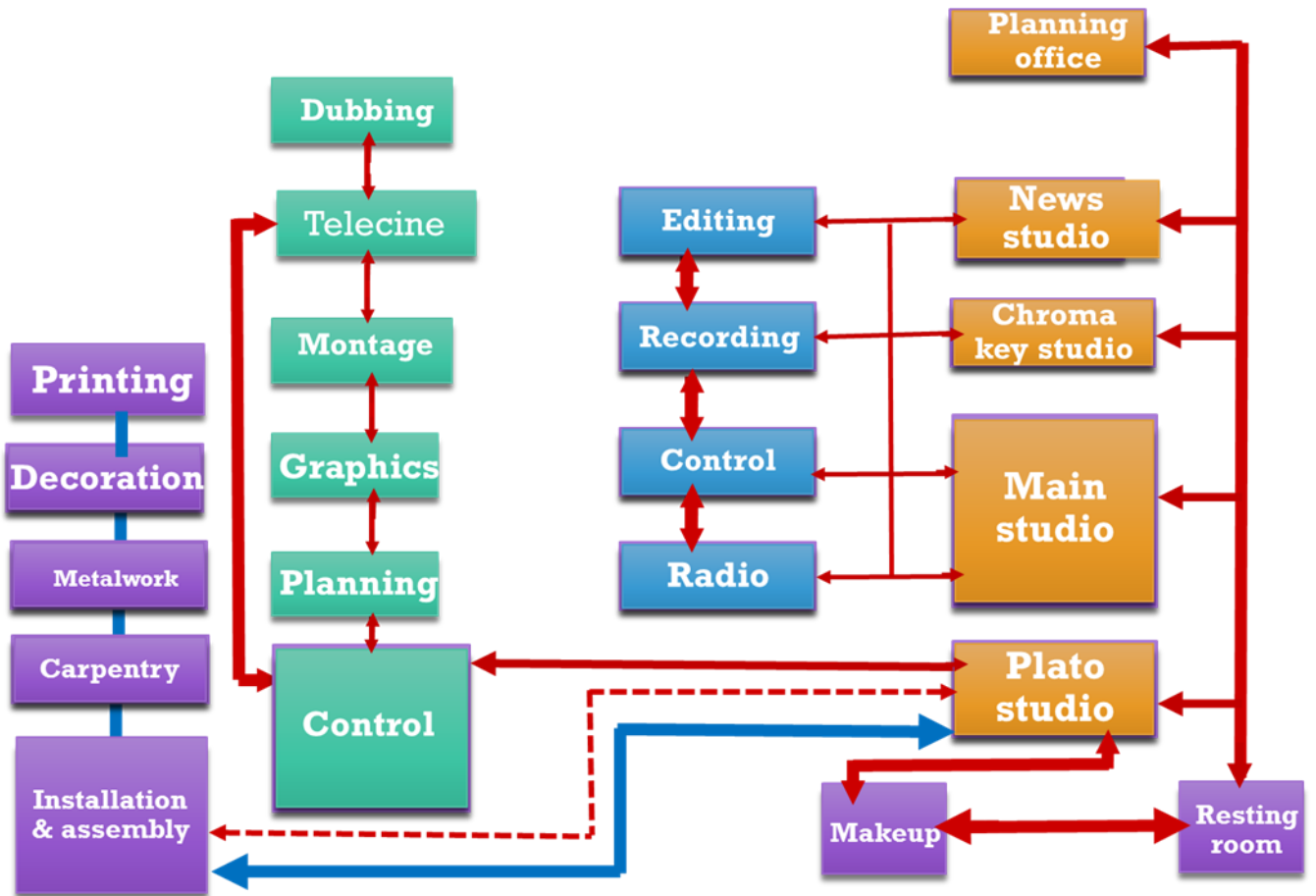


#### Workers



#### Visitors





**Media men circulation**

- Strong →
- Medium →
- Weak - - -

**Specialists circulation**

- Strong →
- Medium →
- Weak - - -

## 3.2. Site selection

### 3.2.1 introduction

Site selection is the most crucial part of the design process. It involves a detailed analysis and study of the impacts the project would have on its surroundings on the short and long terms. It considers the macro-climate, accessibility, geography, history, and land uses to locate a suitable and feasible site that would benefit the client and user.

Media in Sudan is centered in Khartoum and Portsudan.

Comparison face	Portsudan	Khartoum
Easy access		✓
Economic importance	✓	✓
Political importance		✓
Media project need	✓	✓
Annual festival	✓	

Table 3comparison (khartoum/portsudan)

Considering the general location requirements for the Complex, it is apparent that it must be located in Khartoum.

Khartoum is the capital and second largest city of the Republic of Sudan and of Khartoum State. It is located at the confluence of the White Nile, flowing north from Lake Victoria, and the Blue Nile, flowing west from Ethiopia. The location where the two Niles meet is known as the "al-Morgan", meaning the Confluence. It is situated on latitude 15.50 N, and longitude 31 32 E, and it is 1253 ft. above sea level.

Divided by the Niles, Khartoum is a tripartite metropolis with an estimated overall population of over five million people, consisting of Khartoum, and linked by bridges to Khartoum North and Omdurman to the west.



Figure 35 Map data @2015 Google; demonstrating an approximation of the current CBD in Khartoum to narrow down a suitable site that meets the given criteria

#### Additional requirements exclusive to the project include:

1. Mixture of sizes of unit can be achieved by variable location of cross-walls in the terrace or by providing two or more groups of buildings of increasing size.
2. Office and amenity accommodation can be either integral within the volume of building (where site area is restricted) or as an attached block (where the developer requires the maximum rental from production/storage area).
3. Goods access sufficient heavy goods vehicle maneuvering and parking areas must be allowed
4. Security is important - both physical (mainly theft of high-technology equipment) and intellectual (loss of staff to neighboring firms).
5. Car parking required for occupants and visitors

**3.2.2 proposed sites:**

**3.2.2.1 First proposal:**

The site is located in the state of Khartoum on the Nile street, north of Garden city university.

It has a rectangular shape.

Site dimensions:

270 \* 219 m

Total area = 5.9 hectares



Figure 36 first site proposal

Neighborhoods			
South	West	East	North
Residential area	Suggested investment land	Suggested investment land	Blue Nile

*Site advantages:*    *Site disadvantages:*

1. Availability of onsite services
2. Nile view
3. The area is relatively quite
4. Proper rotation of the site
5. It is considered an investment area
6. Close cultural attractions

1. Humidity
2. Flood of the Nile
3. The need for soil treatment before construction
4. Difficulty of accessing using public transportation

### 3.2.2.2 Second proposal:

The site is located in the state of Khartoum on the Nile street, in the southern part of the island Tutti.

It has a rectangular shape.

Site dimensions:

247 \* 284 m

Total area = 7.1 hectares



Figure 37 Second site proposal

Neighborhoods			
South	West	East	North
Nile	Suggested investment land	Suggested investment land	Residential area

*Site advantages:*    *Site disadvantages:*

<ol style="list-style-type: none"> <li>1. Availability of onsite services</li> <li>2. Nile view</li> <li>3. The area is relatively quite</li> <li>4. Proper rotation of the site</li> <li>5. Easy accessibility</li> <li>6. Close cultural attractions</li> </ol>	<ol style="list-style-type: none"> <li>1. Humidity</li> <li>2. Flood of the Nile</li> <li>3. The need for soil treatment before construction</li> </ol>
---	---



### 3.2.2.3 Third proposal:

The site is located in the state of Khartoum on the Nile street, east of Madani street

It has a rectangular shape.

Site dimensions:

300 \* 250 m

Total area = 6.25 hectares



Figure 38 Third site proposal

Neighborhoods			
South	West	East	North
Suggested investment land	Jasmine residential complex	Nile	Suggested investment land

#### Site advantages: Site disadvantages:

1. Availability of onsite services
2. Nile view
3. The area is relatively quite
4. Proper rotation of the site

1. Humidity
2. Flood of the Nile
3. The need for soil treatment before construction
4. Difficulty of accessing using public transportation
5. No close cultural attractions

### 3.2.3 Evaluation and comparison of proposed sites:



**Soba site**



**Tutti site**



**Nile street site**

Comparison face	%	Site 1	Site 2	Site 3
Site area	20%	18%	12%	16%
Site function	20%	14%	12%	10%
Onsite services	15%	15%	15%	9%
View	15%	14%	15%	10%
Accessibility	15%	10%	12%	8%
Cultural attractions	10%	8%	9%	0%
Distance from city center	5%	4%	4%	2%
	100%	83%	79%	55%

As a result of the evaluation process, site 1 “Nile street” is selected for the project

### 3.2.4 Selected site information

- The area is relatively quite
- The view is strong on the north due to the presence of the Nile.



Neighborhood name	Al Shate neighborhood			
Area	5.9 hectares			
Neighbors	West	East	South	North
	Investment area	Investment area	Residential area	Blue Nile
Streets	South : Nile street			
Infrastructure services	Electricity, Water and communication lines			
Earth topography	Clay soil and the site descends slightly towards the Nile			
Site shape	Semi-rectangular			

#### Result:

Setting up the activities that don't require good view in the southern part, whereas the studios and the investment section on the Nile interface.

### 3.2.5 reaching the site

The following figures will show how the site is connected to the main transportation Areas in the city of Khartoum.

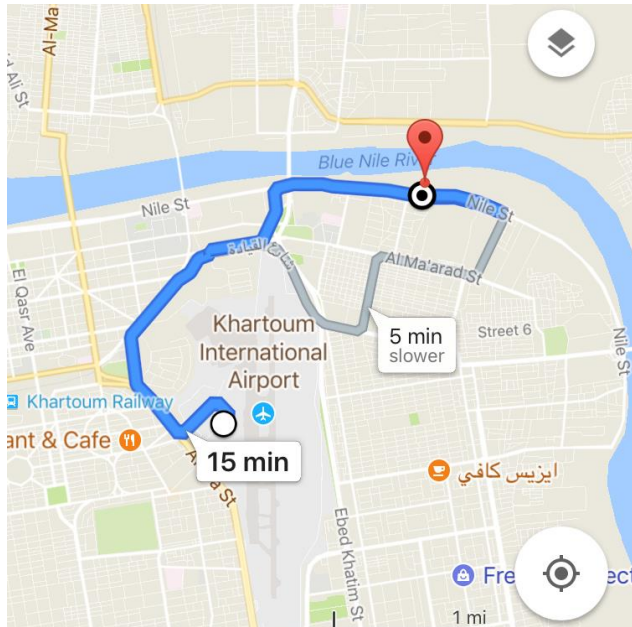


Figure 40 Map Data @2015 Google; showing the possible roads to Khartoum International Airport, the shortest route is marked in Blue with the distance of 8.1KM

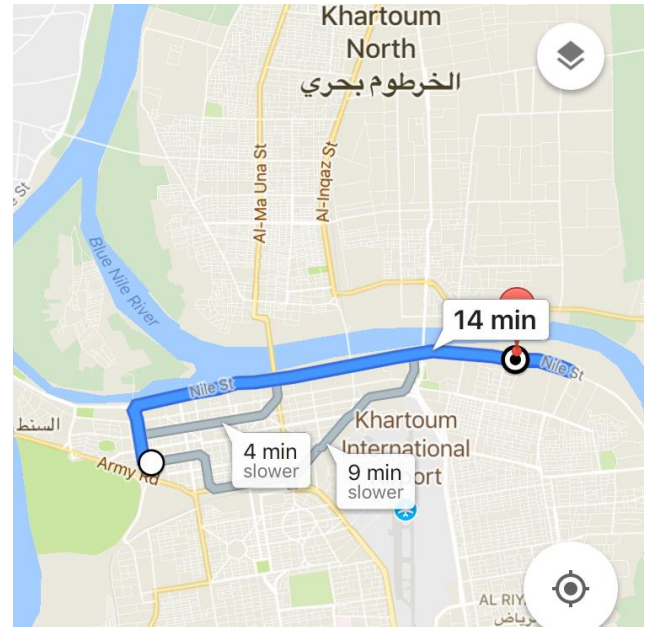


Figure 41: Map Data @2015 Google; showing the possible roads to Khartoum Bus Station (Stadium Station), the shortest route is marked in Blue with the distance of 9KM

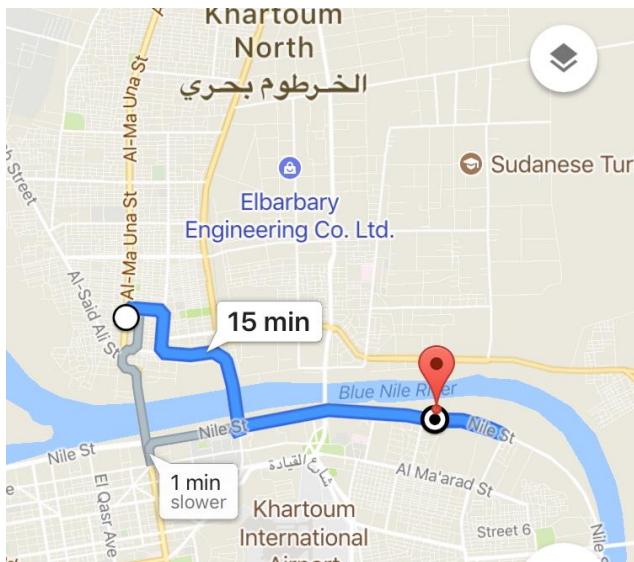


Figure 39: Map Data @2015 Google; showing the possible roads to Al-Busta Station in Omdurman, the shortest route is marked in Blue with the distance of 7.7KM.

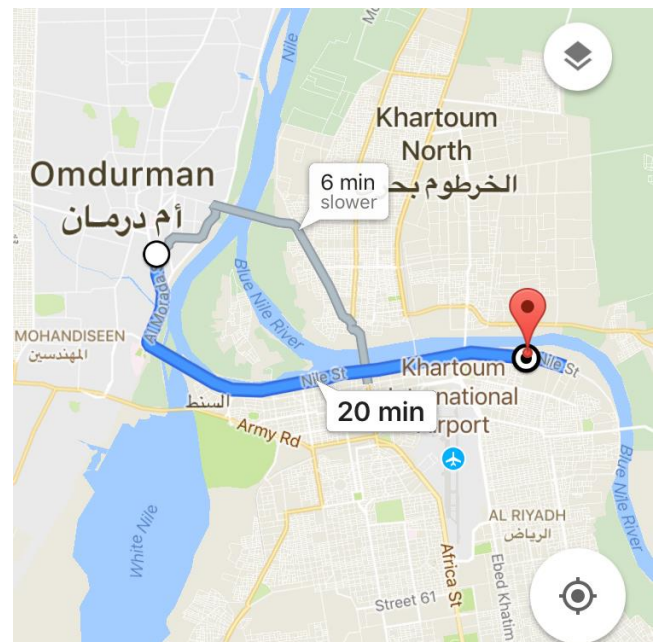


Figure 42 figure 36: Map Data @2015 Google; showing the possible roads to Bahri Central (Al-Wosta Station), the shortest route is marked in Blue with the distance of 14K

### 3.2.6 Natural environment:

#### 3.2.6.1 Temperature:

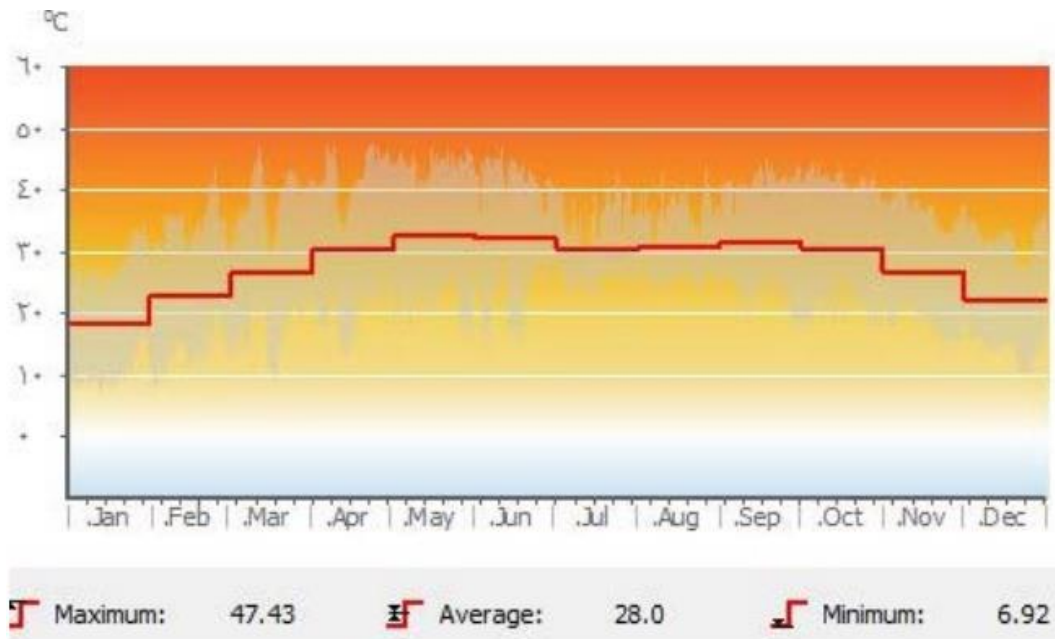


Figure 37: Weather data, showing the variations of temperature in the site throughout the year

- The maximum average Temperature of a month is in May 33°.
- The Minimum average Temperature of a month is in January 19°.

#### 3.2.6.2 Relative Humidity:

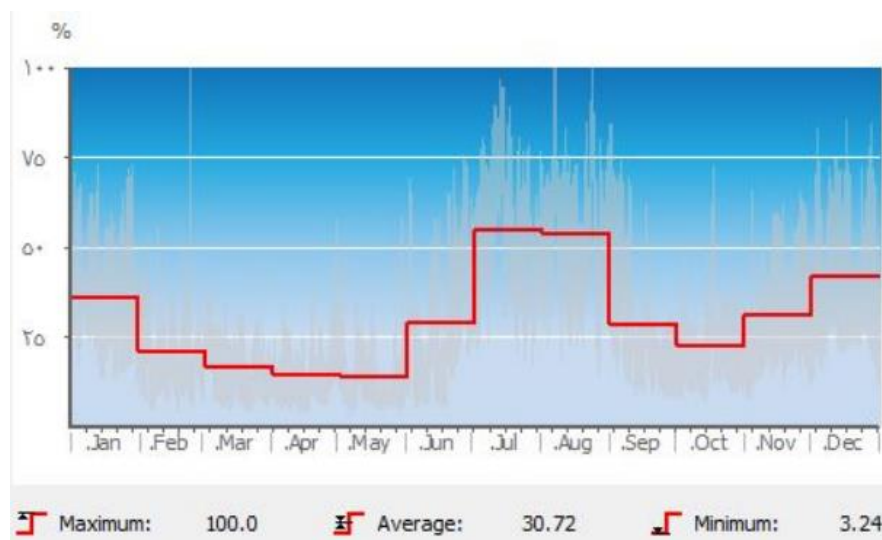


Figure 38: Weather data, showing the variations of Relative Humidity throughout the year

- The maximum average relative humidity of a month is in July 57%.
- The Minimum average relative humidity of a month is in May 14%.

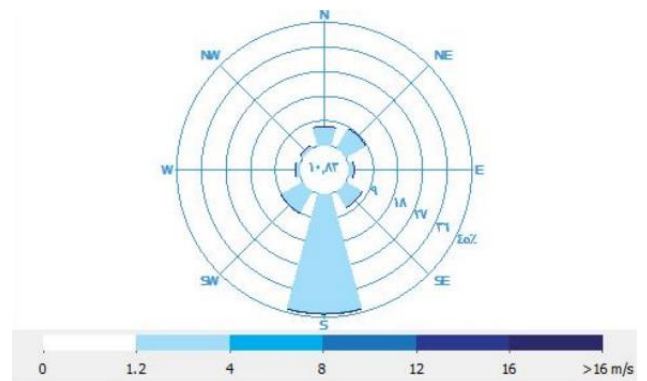
### 3.2.6.3 Solar Radiation:



**Figure 38:** Weather data, showing the variations of Solar Radiation throughout the year

- The maximum average solar radiation of a month is in April 300 Wh/m<sup>2</sup>.
- The Minimum average solar radiation of a month is in July and December 200 Wh/m<sup>2</sup>

### 3.2.6.4 Wind speed:



**Figure 39 and 40:** Weather data, showing the variations of wind speed throughout the year in Khartoum

### 3.2.6.5 Rain:

- Rain falls in the months of July and August (winter season)
- Khartoum receives an average of 14mm of precipitation per month in winter.

### 3.2.6.6 Terrain and Topography:

Clay soil and the site descends slightly towards the Nile.

### 3.2.6.7 Hydrology:

The Nile is close to the site which can affect the buildings and the foundations of it.

### 3.2.7 Indicators and Guidelines:

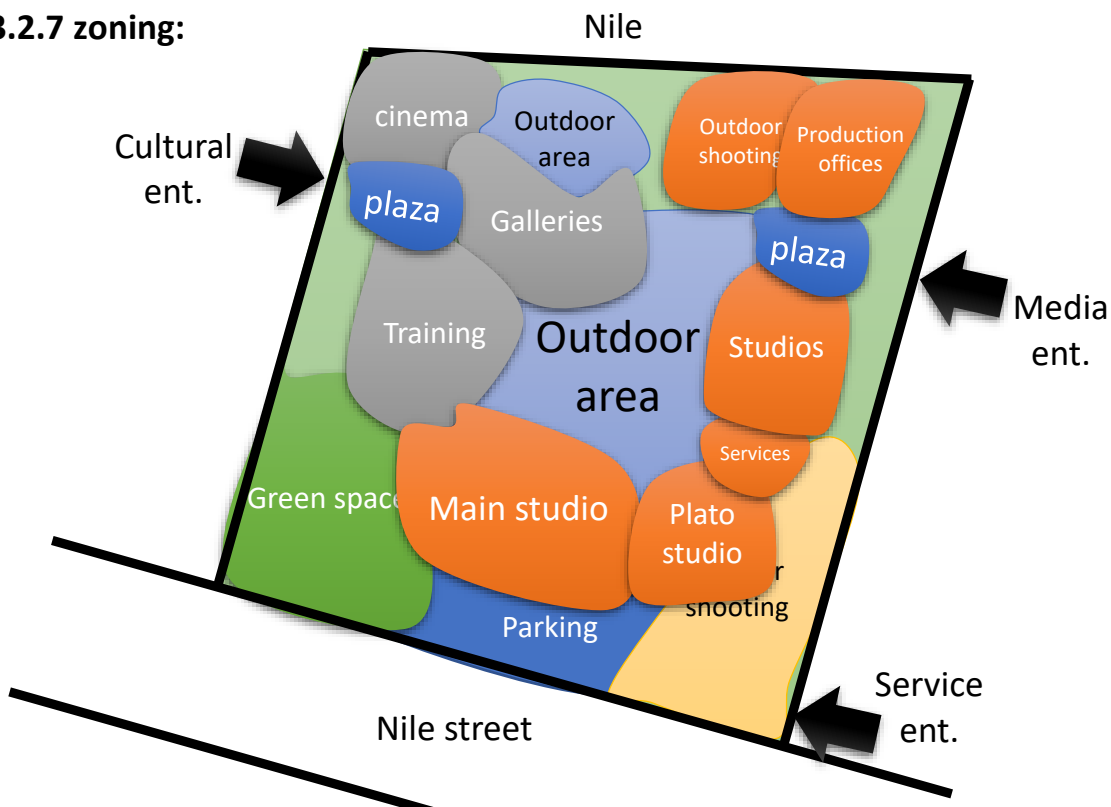
#### 3.2.7.1 Indicators:

- The site is overlooking the Nile in the northern side
- The main street (The Nile street) is located south of the site.
- The soil is clay and the site is relatively sloping towards the Nile.

#### 3.2.7.2 Guidelines:

- placing the activities that don't need views in the southern part of the site, and placing the studios and investment section on the northern part
- The Nile street is a busy street with traffic therefore the entrances are from the eastern and western side.
- The main entrance (Media and investment) will be located at the eastern side along with the sub-entrance (service & employees) and providing another entrance on the western side (cultural section visitors & training center)
- placing the media section on the east and the cultural on the west.
- Placing some trees around the sides of the project to protect it from the different types of pollution.
- taking into consideration the construction of the building and use of foundations

#### 3.2.7 zoning:

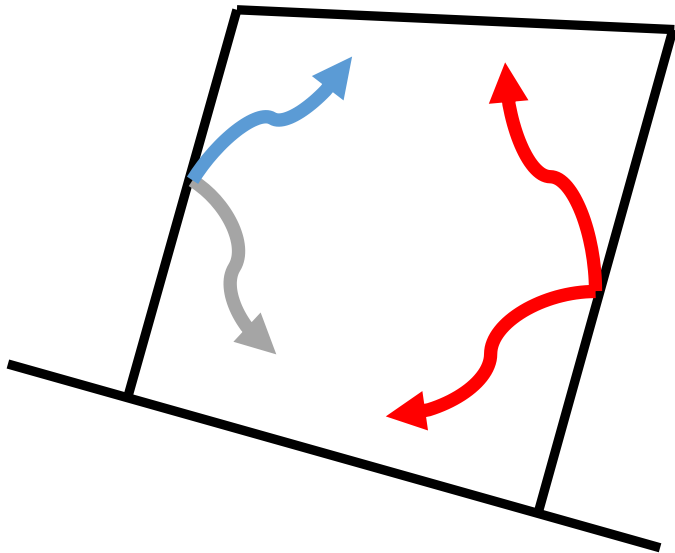


## CHAPTER IV: Design Process

- Design Concept
- Design progress and development
- Final Design

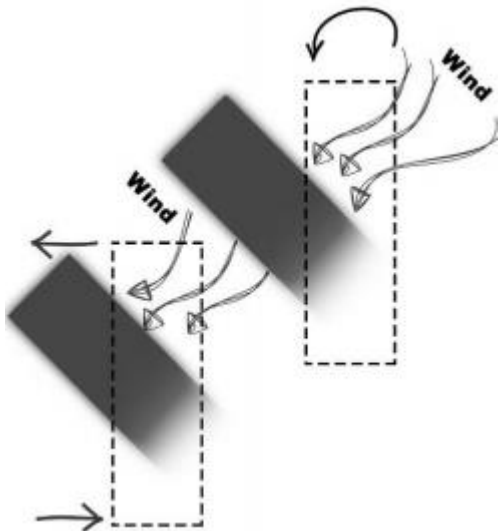
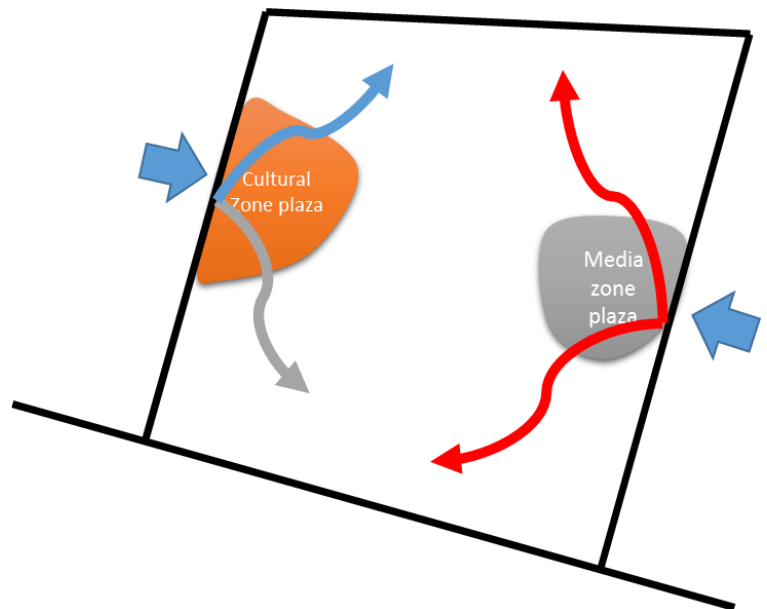


### 4.1 Design Concept

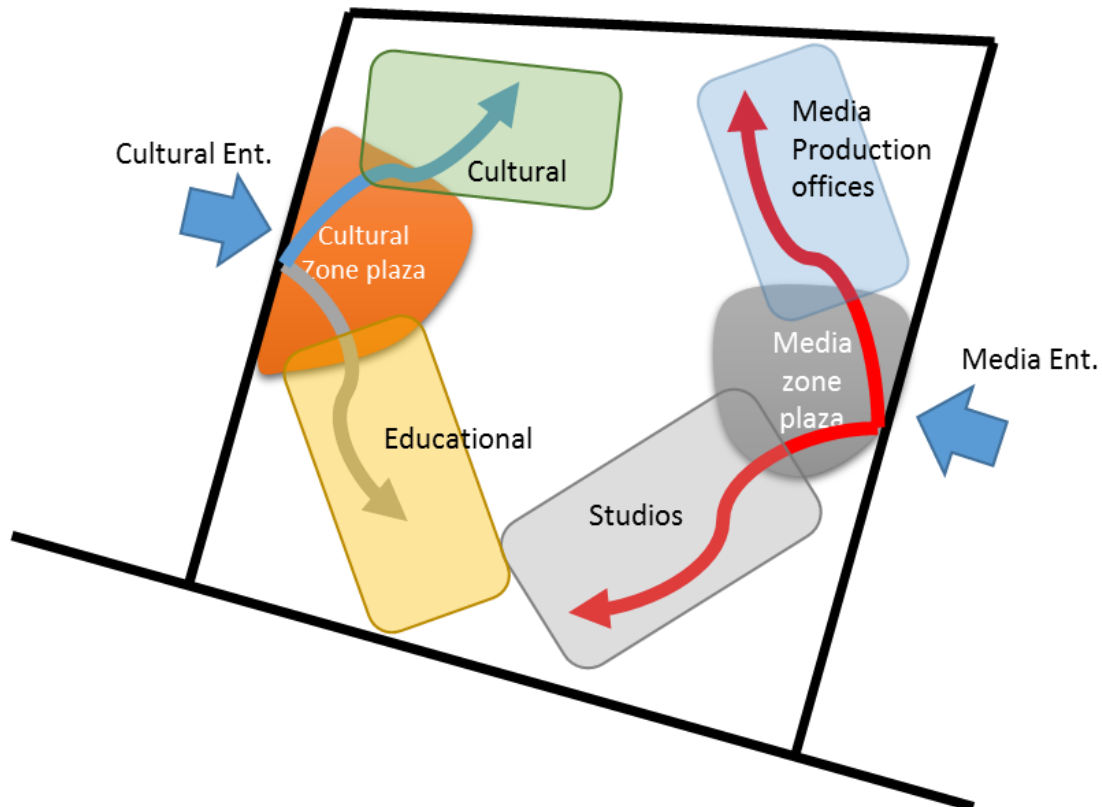


The basic shapes of the blocks are inspired by the movement of the users and their behavior. The shape of the building takes the shape of the circulation paths. There are two paths one for the media men and one for the public, from which subways branch giving the full movement.

The basic idea of the formation of the project blocks is the idea of internal annihilation and limiting the



mass inside to define the main entrances and taking into consideration the direction of the wind and the Nile view.



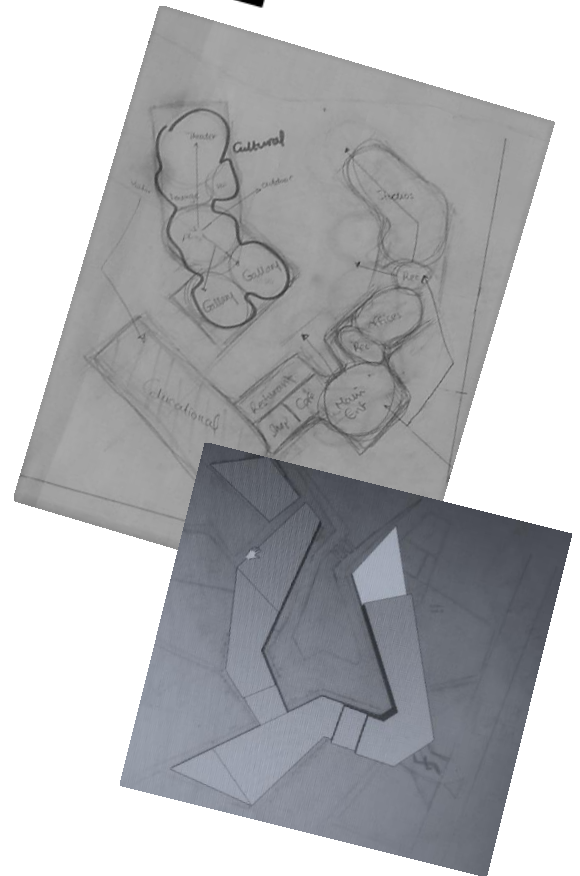
Shaping the buildings around the lines of circulation by using acute angles in the project resenting simplicity.

Some changes have been made to complete the design:

Entrances stand out from the rest of the building.

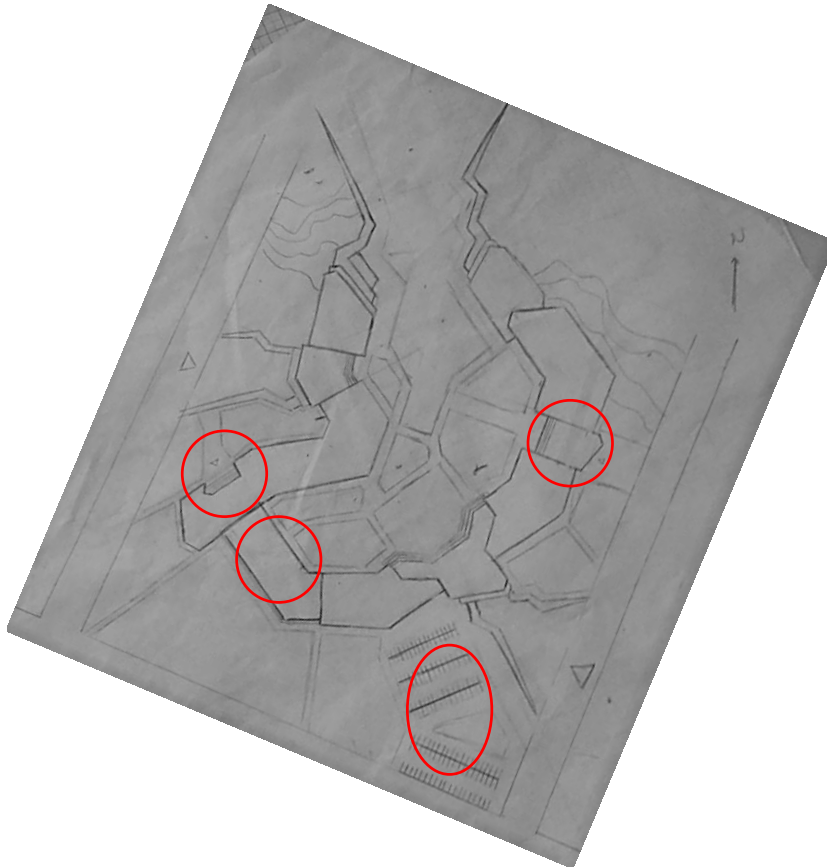
The building is more containing.

Creating shadow areas and making good use of it.



## 4.2 design progress and development:

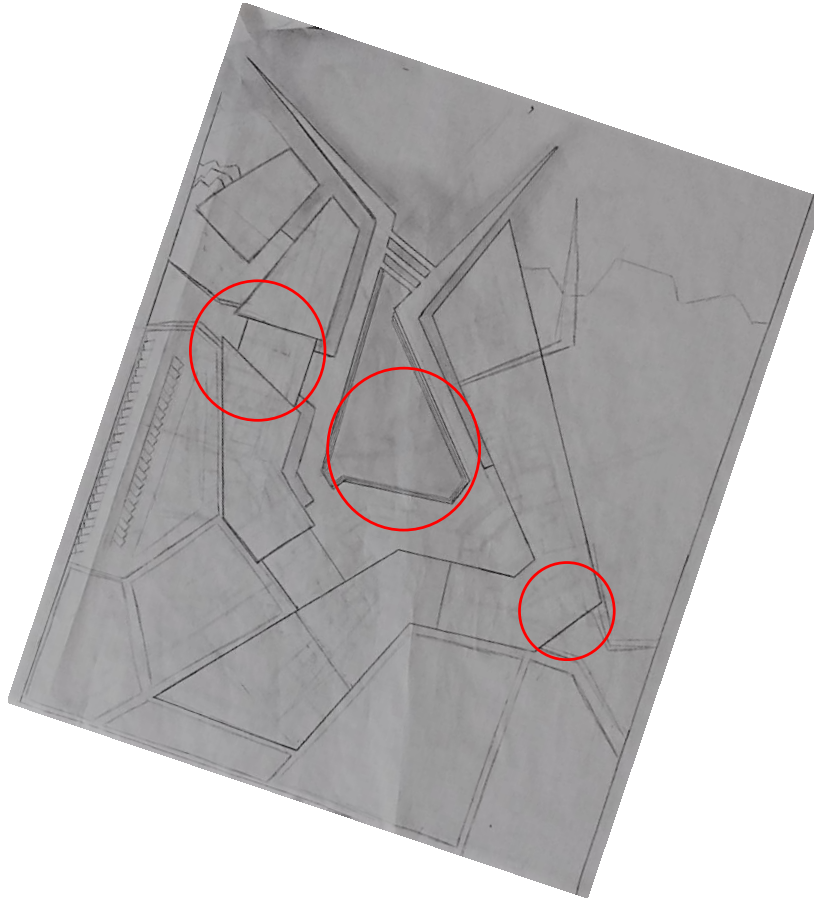
### 4.2.1 initial idea phase



The flaws in the design (marked on the site with red):

- Too many entrances.
- The parking spaces are not divided to show exactly how many cars the parking space can take.
- long and narrow masses.
- There is a gap between the buildings which causes confusion to the users, it breaks the separation between the service area and the main part of the project plus it causes visual penetration for the viewer

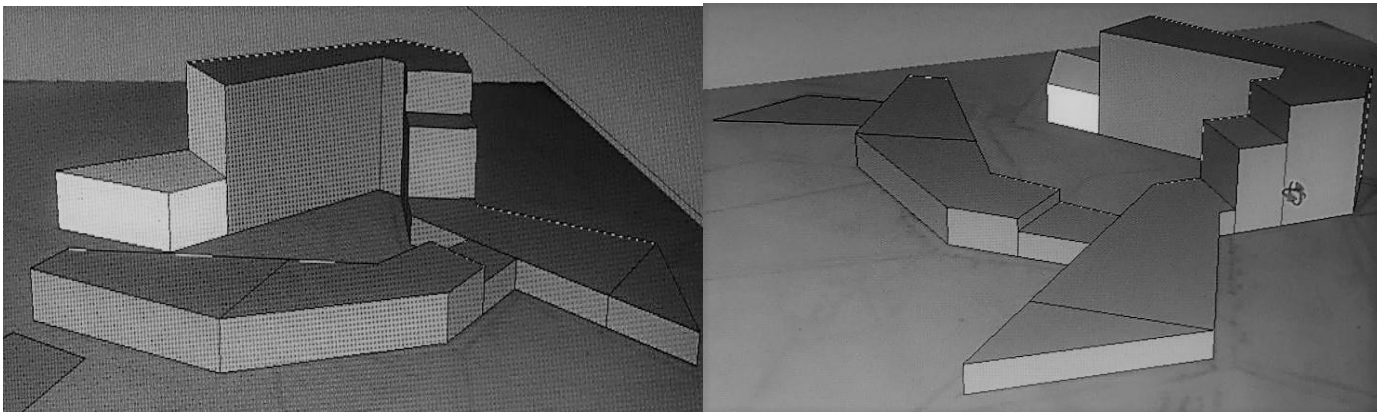
#### 4.2.2 Developed idea phase:



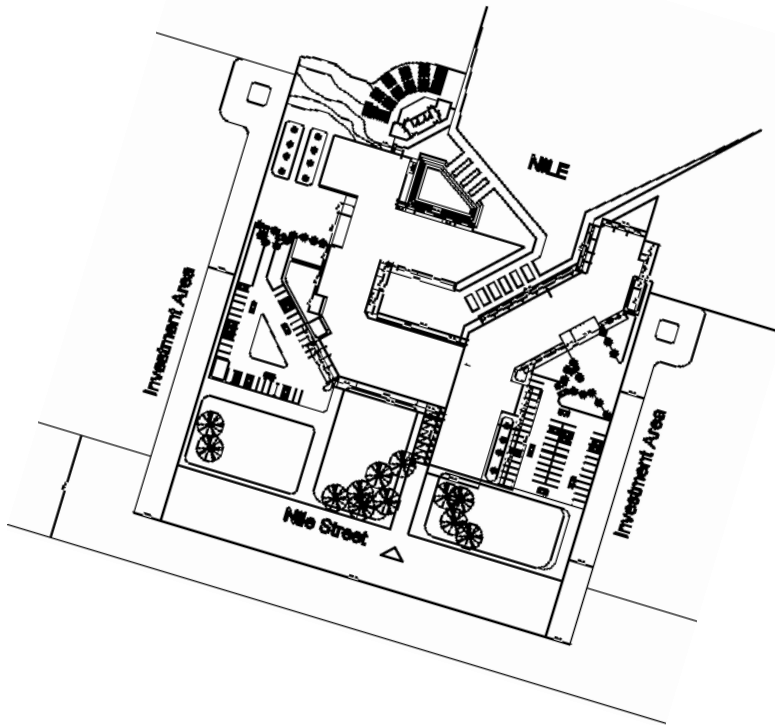
**The difference from the older site (Shown in red circles):**

- Fixed the problem of the gap between the buildings.
- created a middle space connecting the building with an outside activity.
- reduce the number of entrances to 3.

- giving access to the educational section from inside the building
- Detailing the cultural building.



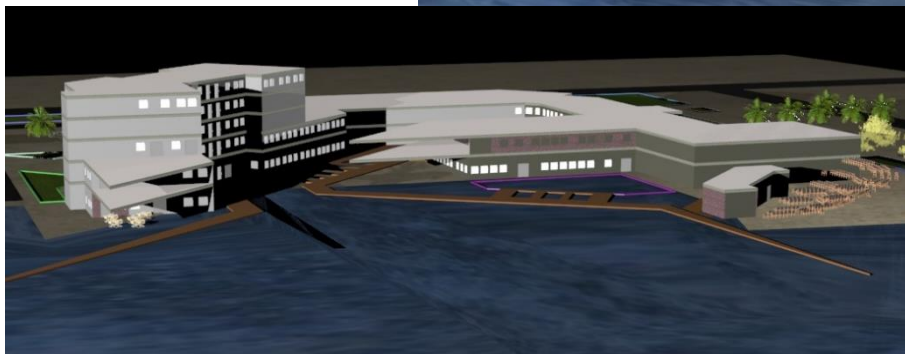
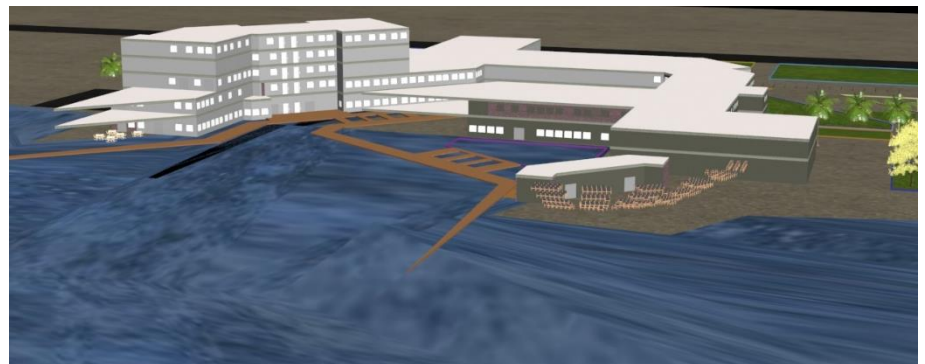
### 4.2.3 Semifinal phase:



The difference from the older site (Shown in red circles):

- Changed the way the building is detailed.
- Adding ramp that leads to the basement to expand the parking area.

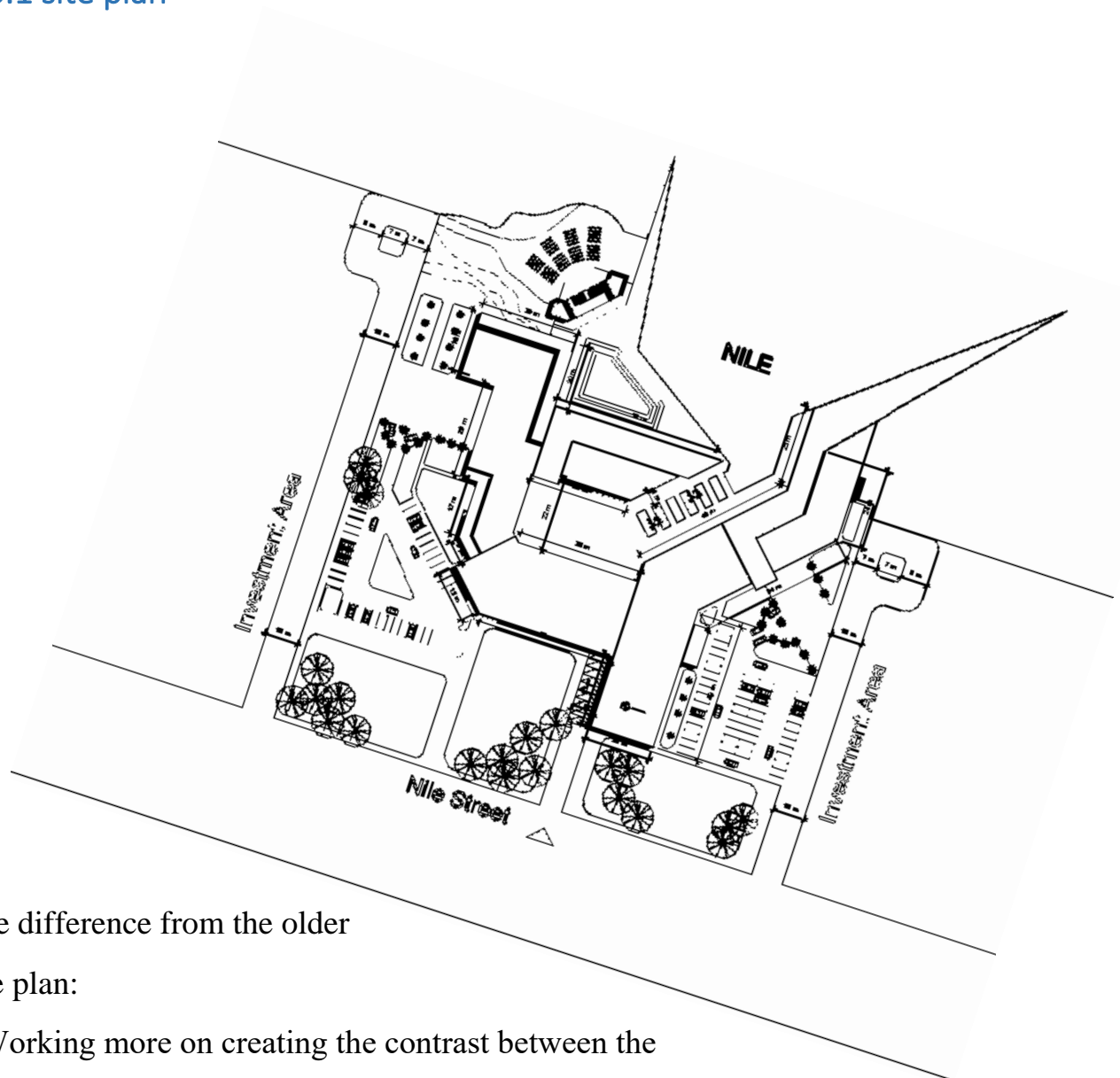
- Changed the building's orientation.



- entrances have been modified and the distribution of spaces up to the final form.

## 4.3 Final Design

### 4.3.1 site plan



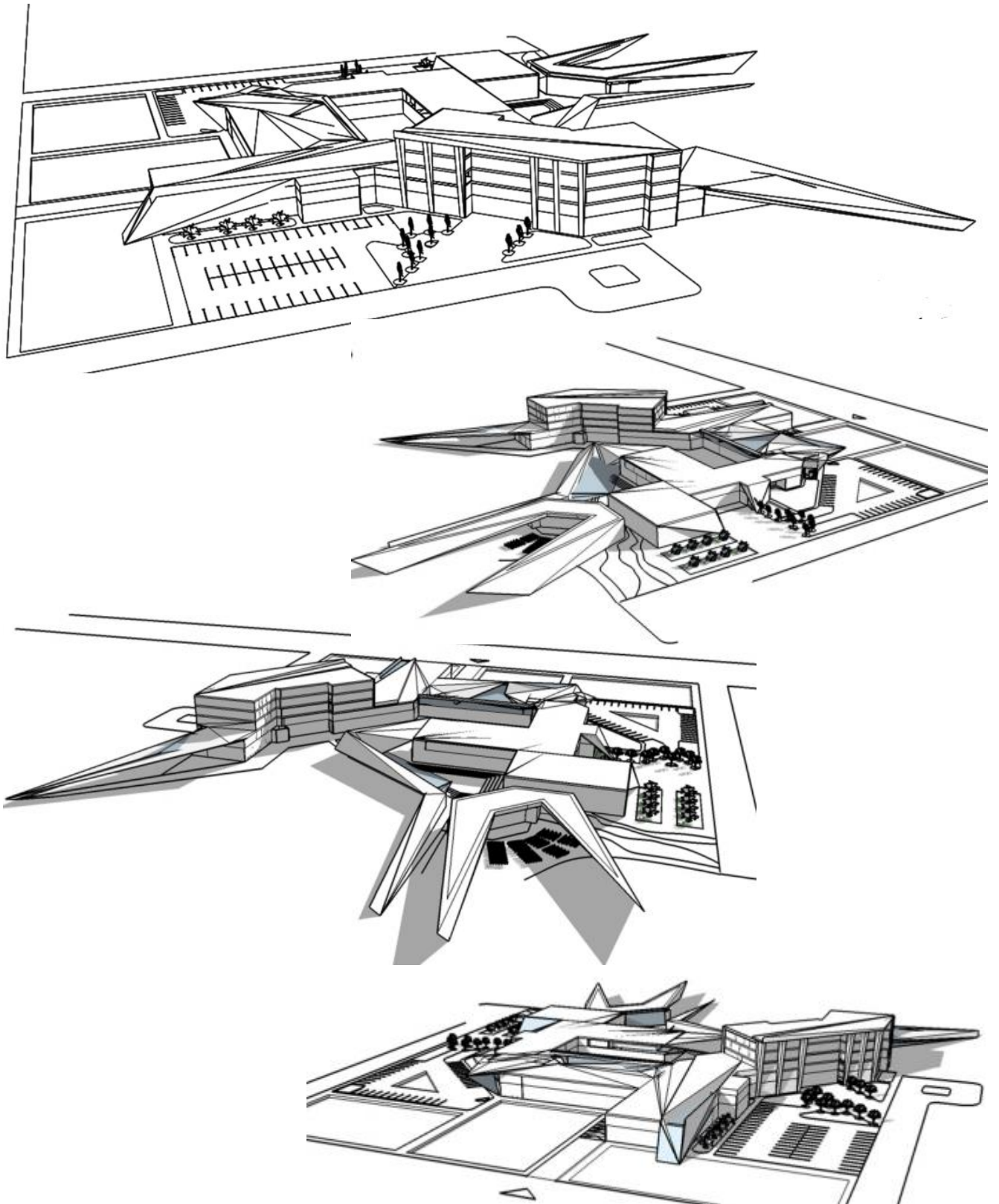
The difference from the older site plan:

- Working more on creating the contrast between the landscape and the built areas.

### 4.3.2 ground floor plan



### 4.3.3 Prospectives:





## CHAPTER V: Technical Solutions

- Structural solutions
- Finishing solutions
- Water supply, drainage and sewage solutions
- Electricity solutions
- HVAC solutions

## 5.1 STRUCTURAL SOLUTIONS:

### 5.1.1 The Types of structural systems used in the project:

#### 5.1.1.1 Post & Beam structure "Multi Story"

The choice of steel frames instead of concrete is due to the large spans of the buildings which cannot be achieved by concrete frames.

#### 5.1.1.2 Steel frames "Portal frames":

Portal frames are used in this project in the cultural building where no columns are wanted in the middle of a space so it gives me the desired span in the most effective way. Portal frames are cost effective and using them gives enough clearance and height to place the lights and the speakers in the desired areas.

### 5.1.2 Detailing the different parts of the structural systems:

#### 5.1.2.1 Foundations

Deep piles foundations, because the project is located in a place where the ground is muddy at the top, so deep foundations are required to be able to reach the solid grounds.

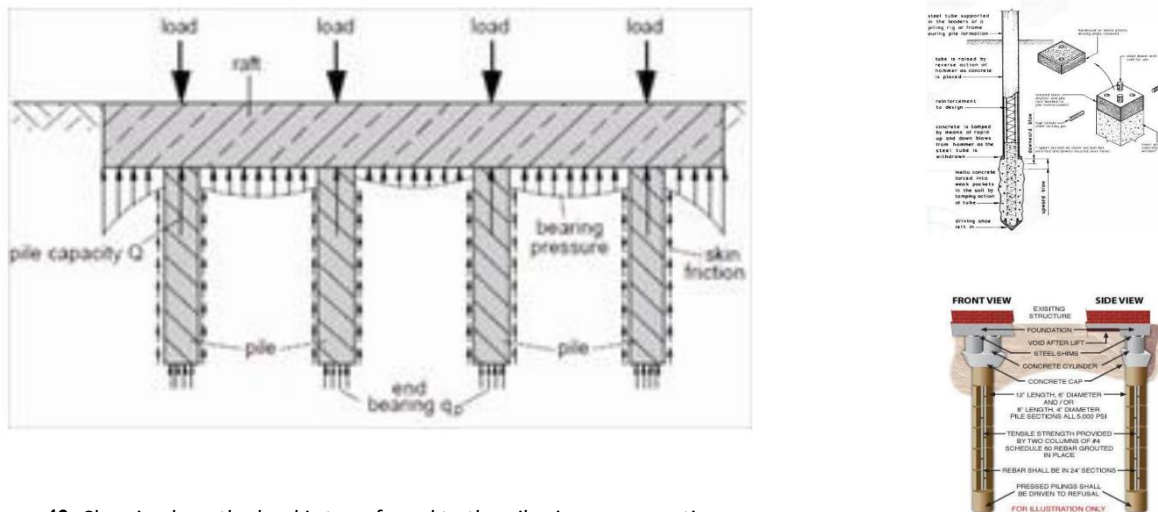
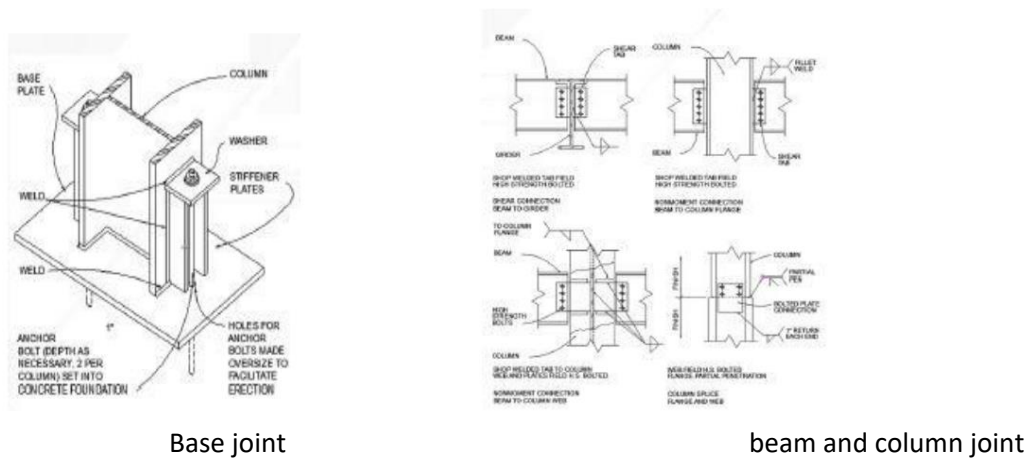


Figure 42: Showing how the load is transferred to the piles in a cross section

### 5.1.2.2 Columns:

The columns in the projects are all I-section universal steel columns



### 5.1.2.3 Beams

The project has steel I-Section beams that connect the columns together to achieve more stability.

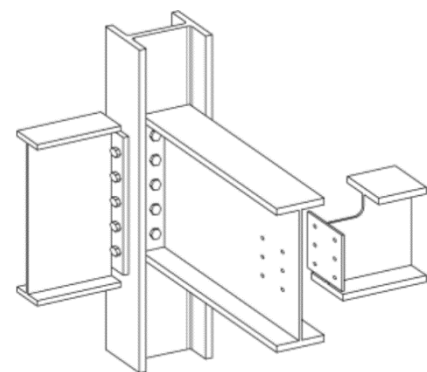
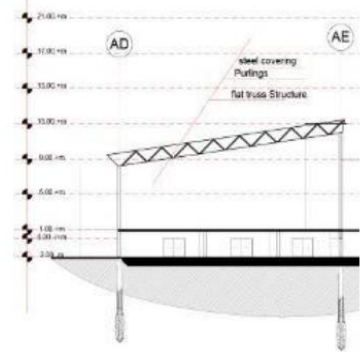
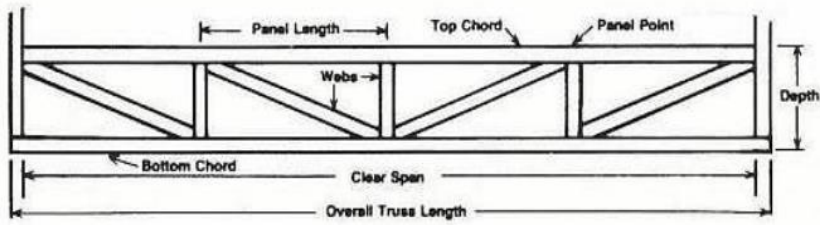


Figure 44: Detail that shows how the beam is connected to the column

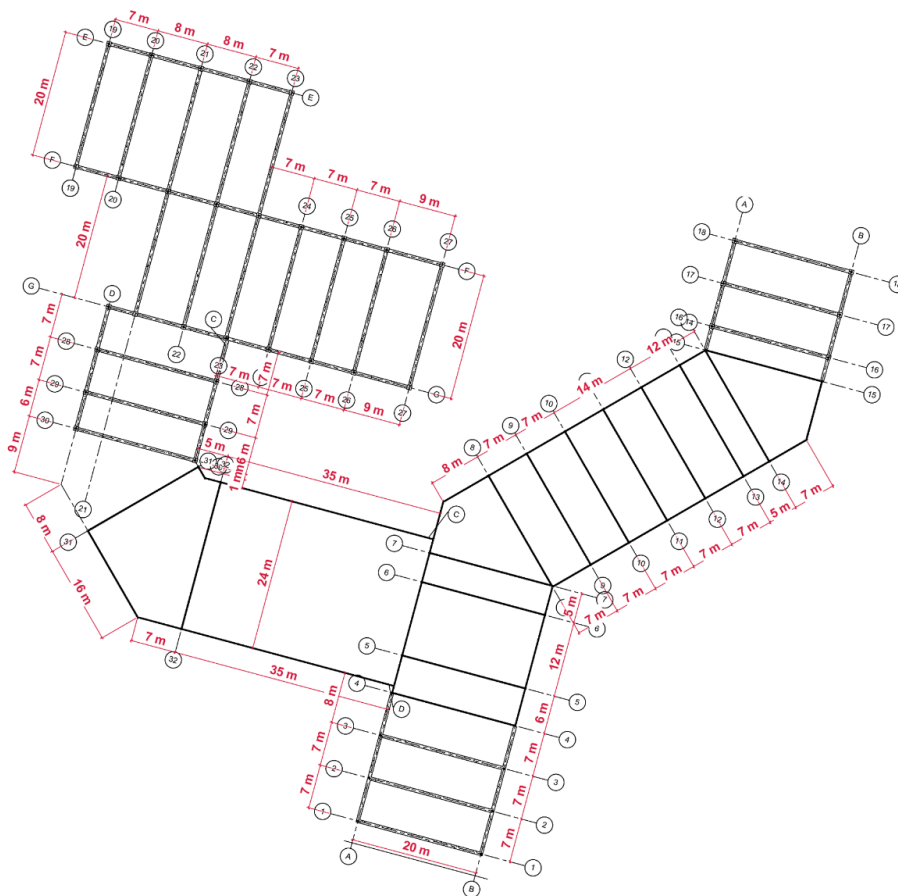
### 5.1.2.4 Roofs and Slabs

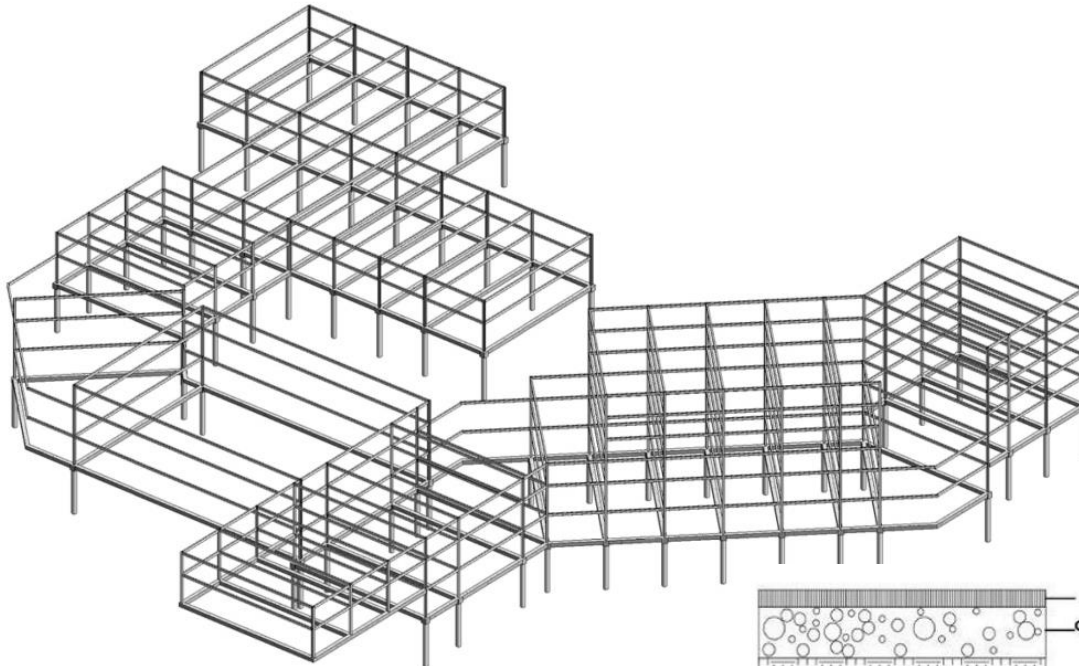
- Flat Truss Structure (used in the studios)



- Open web Joist

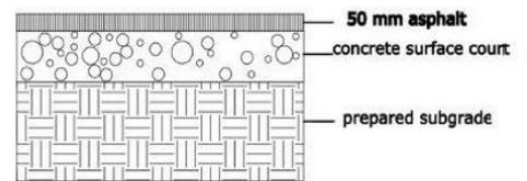
### 5.1.3 Building structure:





**Figure 51:** A 3D Illustration of the structure

Drop and expansion joints were used between different structure systems



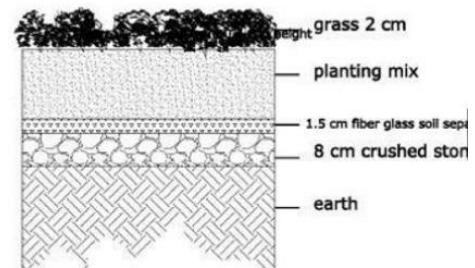
## 5.2 FINISHING'S SOLUTIONS:

### 5.2.1 Site finishing and treatments:

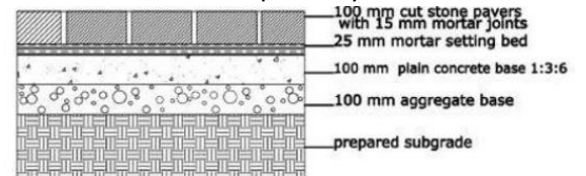
The site plan has different types of finishes on it which are:

- Asphalt (for the parking).
- Brick pavement (in the pathways and corridors). Brick was chosen because it can handle the different weather elements and the friction caused by the high number of users in the project.
- Cement tiles (in the slab around the buildings).
- Grass.
- Trees, to supply the needed shade and shadow for the project.
- Fountains and water elements.
- Composite slabs (in the buildings of the project) which consists of: White concrete layer, c/s

Parking and internal Streets



pathways



mortar, 3 insulation layers of D.P.C., zinc sheet, steel beams.

- Aluminum sheets (in the cultural building) which has the following layers beneath it:  
Insulation layer, Air space, Insulation layer, steel purlins, steel beams, portal frame girder,  
steel purlins and beams, aluminum frame for the false ceiling, false ceiling elements



**Figure 59:** Site Plan showcasing the finishing materials used in the site

## 5.2.2 Interior finishing:

### 5.2.2.1 Floors:

- Porcelain tiles 90cmx90cm in the main corridors and in the receptions.
- Carpet floor in the offices to reduce the noise in these spaces
- Wooden floors in the meeting rooms to give the luxurious look.

### 5.2.2.2 Walls:

- White paint with some stripes of other colors to motivate the designers and inspire them more.

### 5.2.2.3 Ceilings:

- Gipsen board false ceiling 60cmx60cm.
- White paint with some colored stripes.

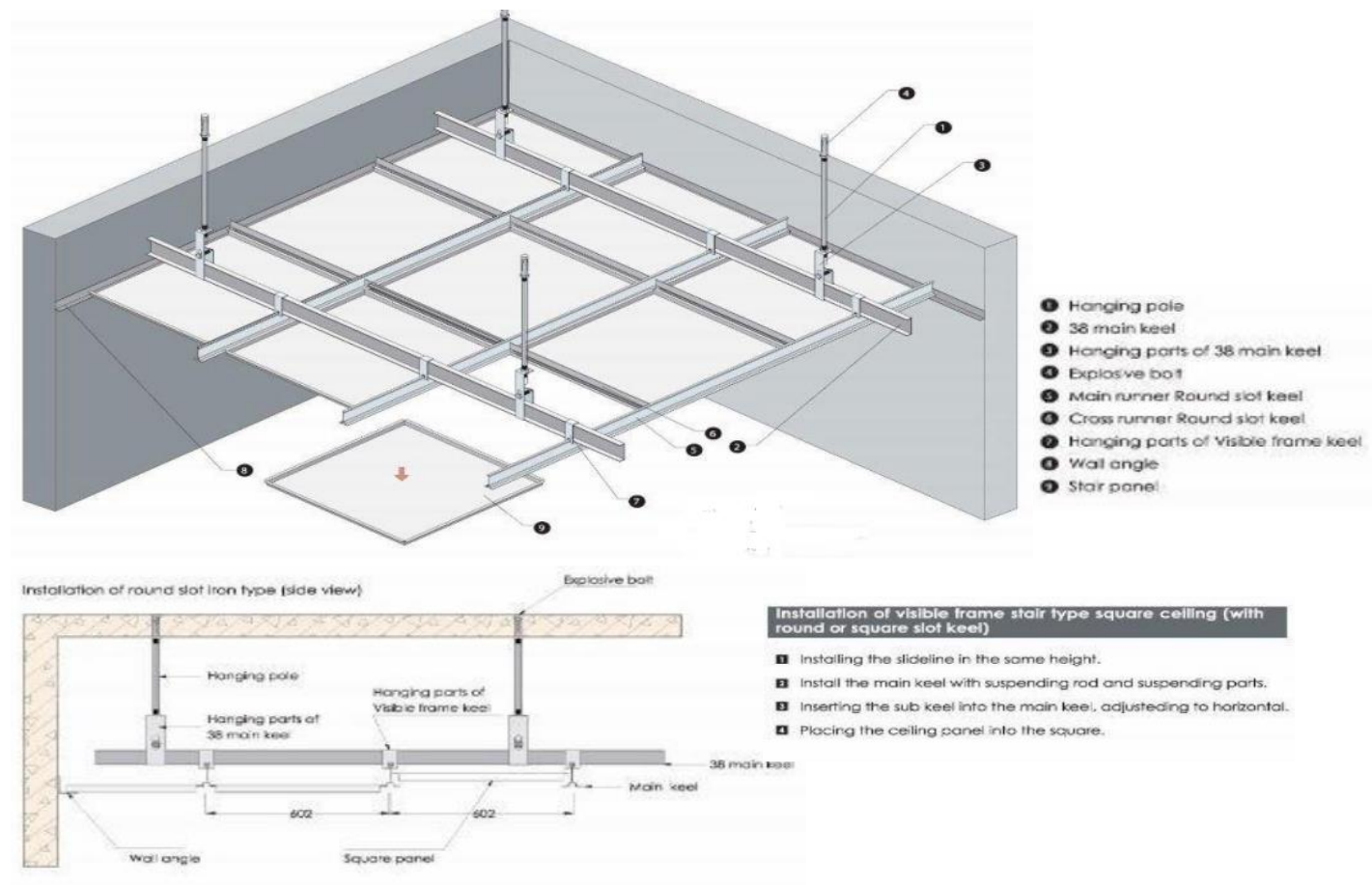
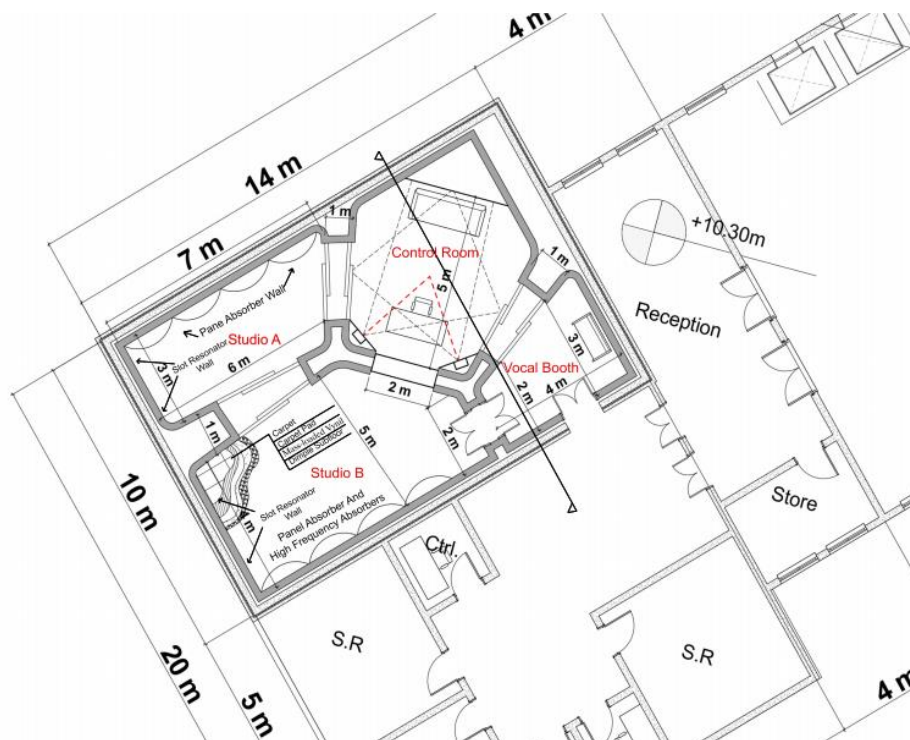


Figure 59: False ceiling installation details

### 5.2.2.4 The Effect of Acoustics:

Calculating the acoustics for this project is a main thing, because most of the spaces in this project has to be quite and get no noise from the outside nor from the other spaces such as the drawing studios or the recording studios since they will disrupt the designers or the audio engineers while in work.



- floor Finishing:
  - carpet
  - carpet pad
  - Mass-loaded Vinyl
  - Dimple Subfloor
- Wall Finishing:
  - Gypsum Wallboard
  - Mass Loaded Vinyl
  - Sound deeding board
  - Closed cell acoustical foam mat
- Doors:
  - D1
    - H:2.25m
    - W: 2.1 0m
  - D2
    - H:2.25m
    - W: 2.60m

Figure 62: Part plan of the Sound Recording room showcasing the finishing and the audio fixes



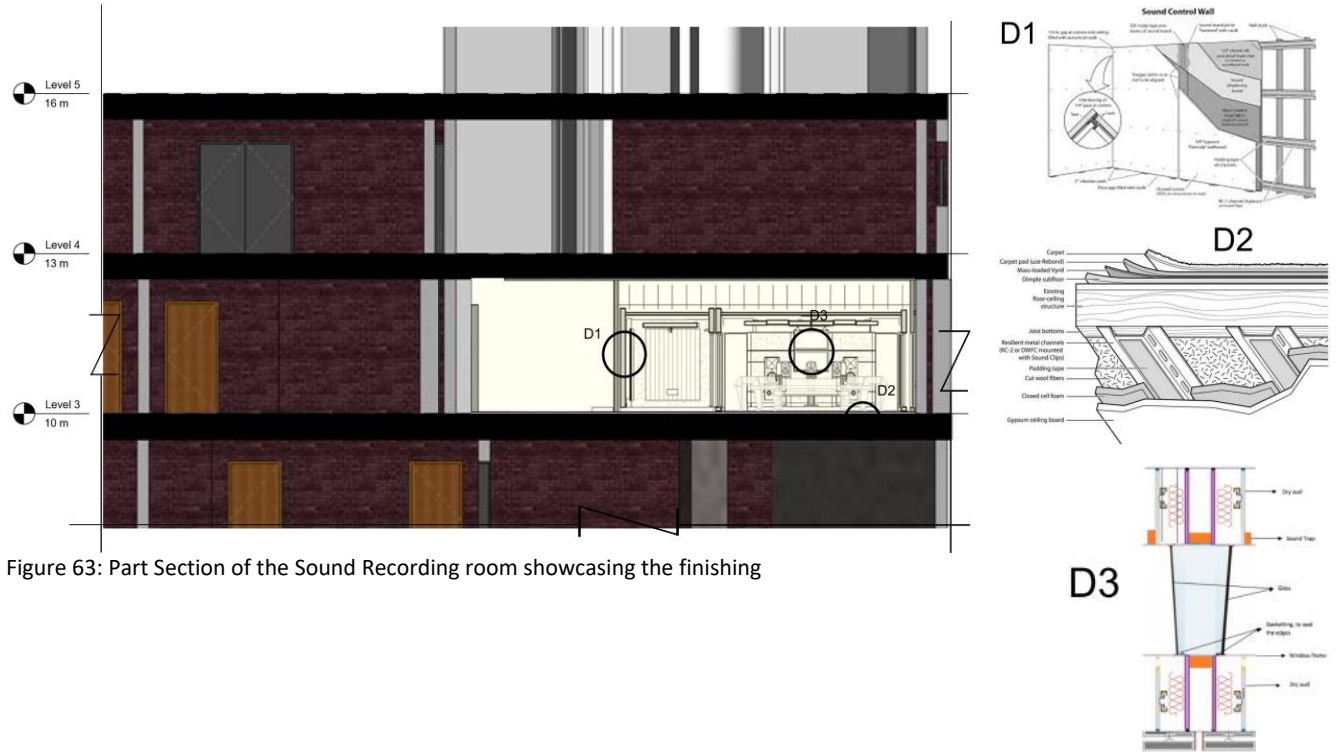
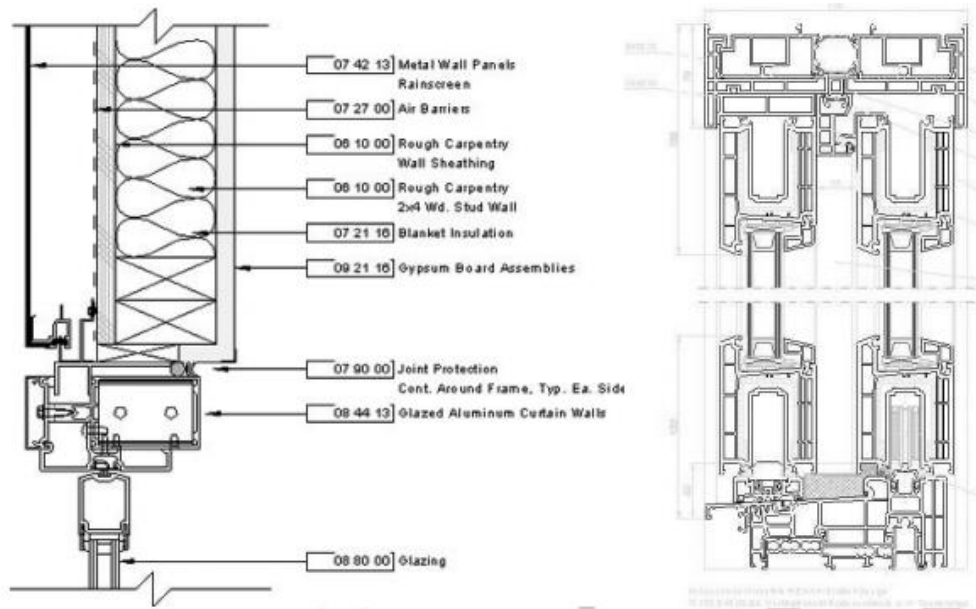


Figure 63: Part Section of the Sound Recording room showcasing the finishing

### 5.2.2.5 Doors:

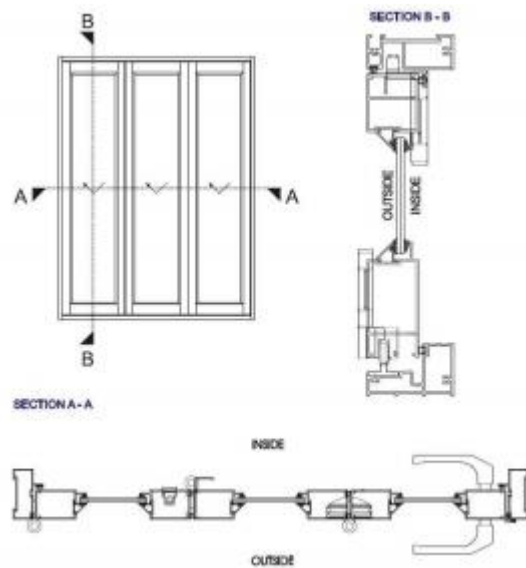
1. Main lobby doors are made of glass.
2. offices' doors and rooms are made of aluminum

3. studio doors have special treatments of audio isolation as well as the cinema doors.



**5.2.2.6 Windows:**

All project windows with its various dimensions are made of aluminum with double sided glass.



**5.2.2.7 Lighting finishes:**

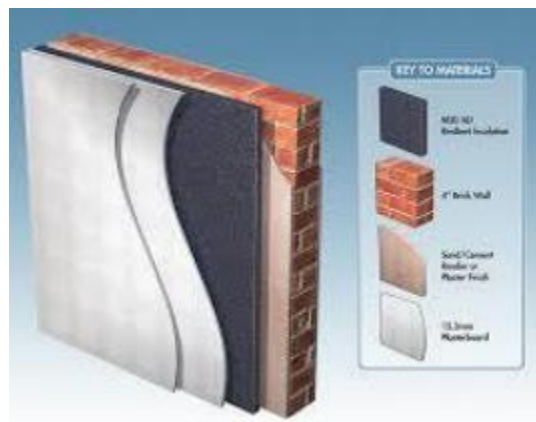
- Flood lights are used on the sides of the studios
- Spot lights are used in the middle
- Florescent lights are used in the offices and corridors

- Spotlights are used in the cinemas and the main studio at the bottom part of the pathways to give a beautiful touch and ease the circulation, and the same lightning is used in the ceiling.



### 5.2.2.8 insulators

Sound insulators type E.P.P on studio walls and other materials on cinemas.



## 5.3 WATER SUPPLY, DRAINAGE AND SEWAGE SOLUTIONS:

### 5.3.1 Water Supply:

Water is supplied to the buildings with the use of a pump and an upper water tank to keep the

water pressure stable for all of the floors of the buildings, that with the help of another water tank that will be at the middle of each tower to help supply the higher tank and the lower floors too. Two tanks are used to fix the issue of the pressure of the farthest floors from the tank plus to keep the tanks full and make sure the water doesn't run out of the buildings. The water tanks will be located on top of the bathrooms' duct being the place needing most water supply

### 5.3.2 Sewage:

The two pipes system is used for the sewage of the bathrooms to get rid of the smell and to make sure that the pipes don't get close, by helping to maintain the air pressure inside of the pipes, then the waste is transferred into the lines where it goes through the manholes till it reaches the main sewage line that is surrounding the site.

### 5.3.3 Drainage:

Draining the water from the roofs of the buildings from the rain is done by slope of 1:100 directing the water towards the down pipes placed inside the ducts of the buildings to prevent the water from running down the elevations of the buildings which will affect the elevations and so on. The water will then be drained towards the landscape of the project then the angle of the landscape will take it outside of the project.

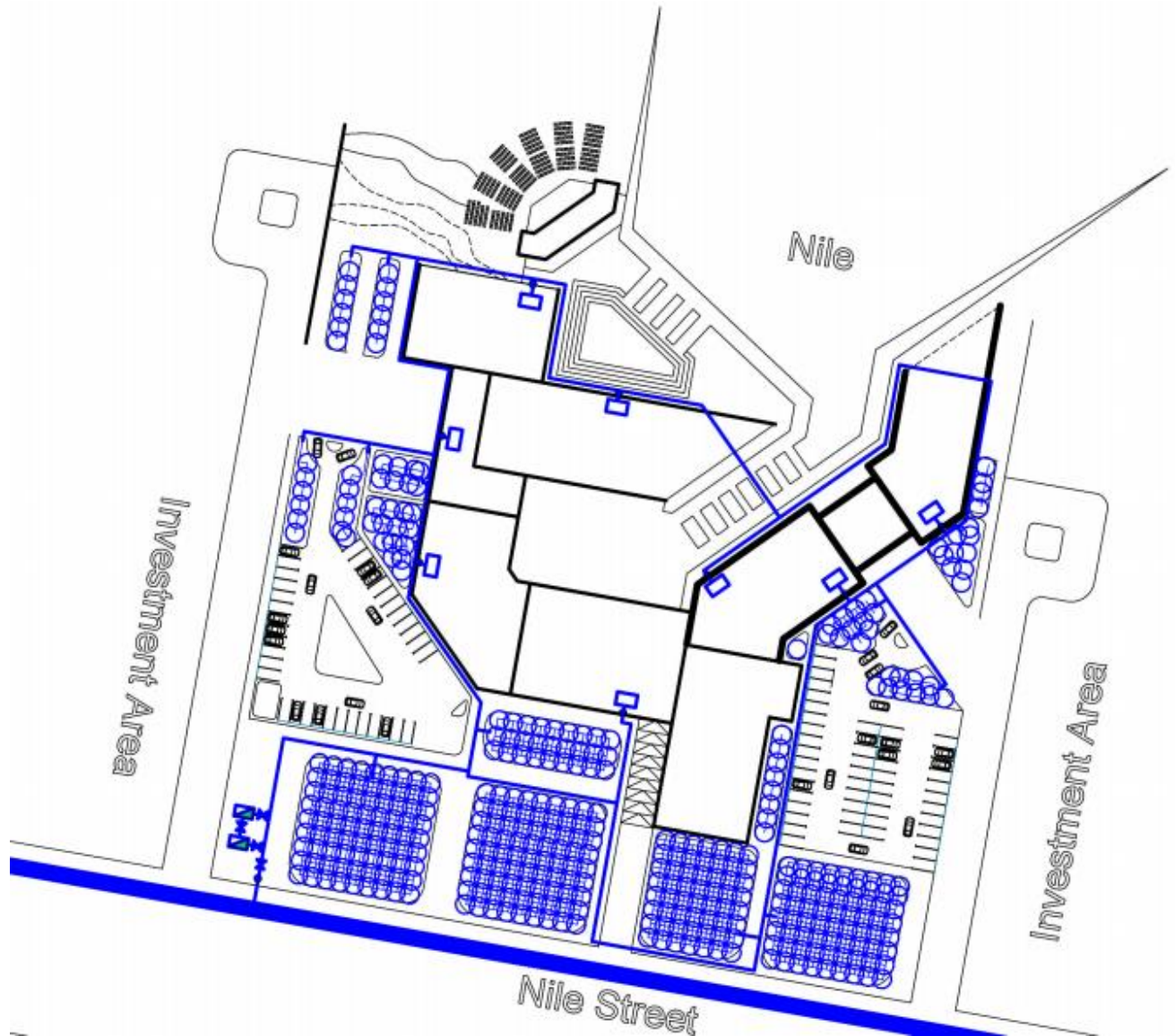
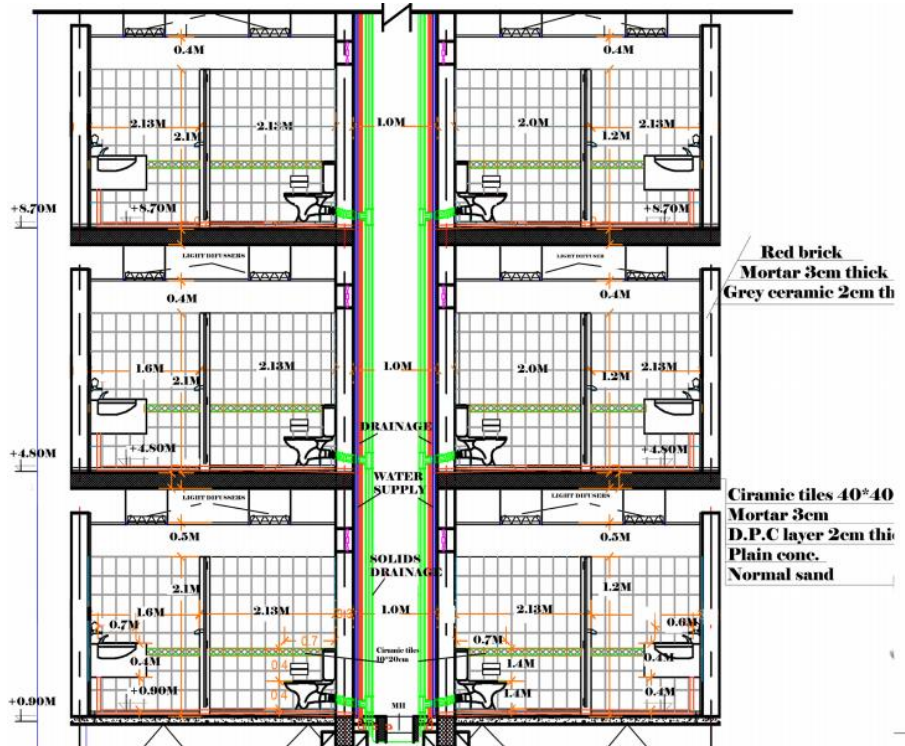


Figure 64: Site Plan showcasing how the water is supplied to the building and to the landscape



Figure 65: Site Plan showcasing how the sewage system and the drainage system are working



**Figure 66:** Section in the bathrooms to showcase how the water supply system is providing water through the two water tanks method.

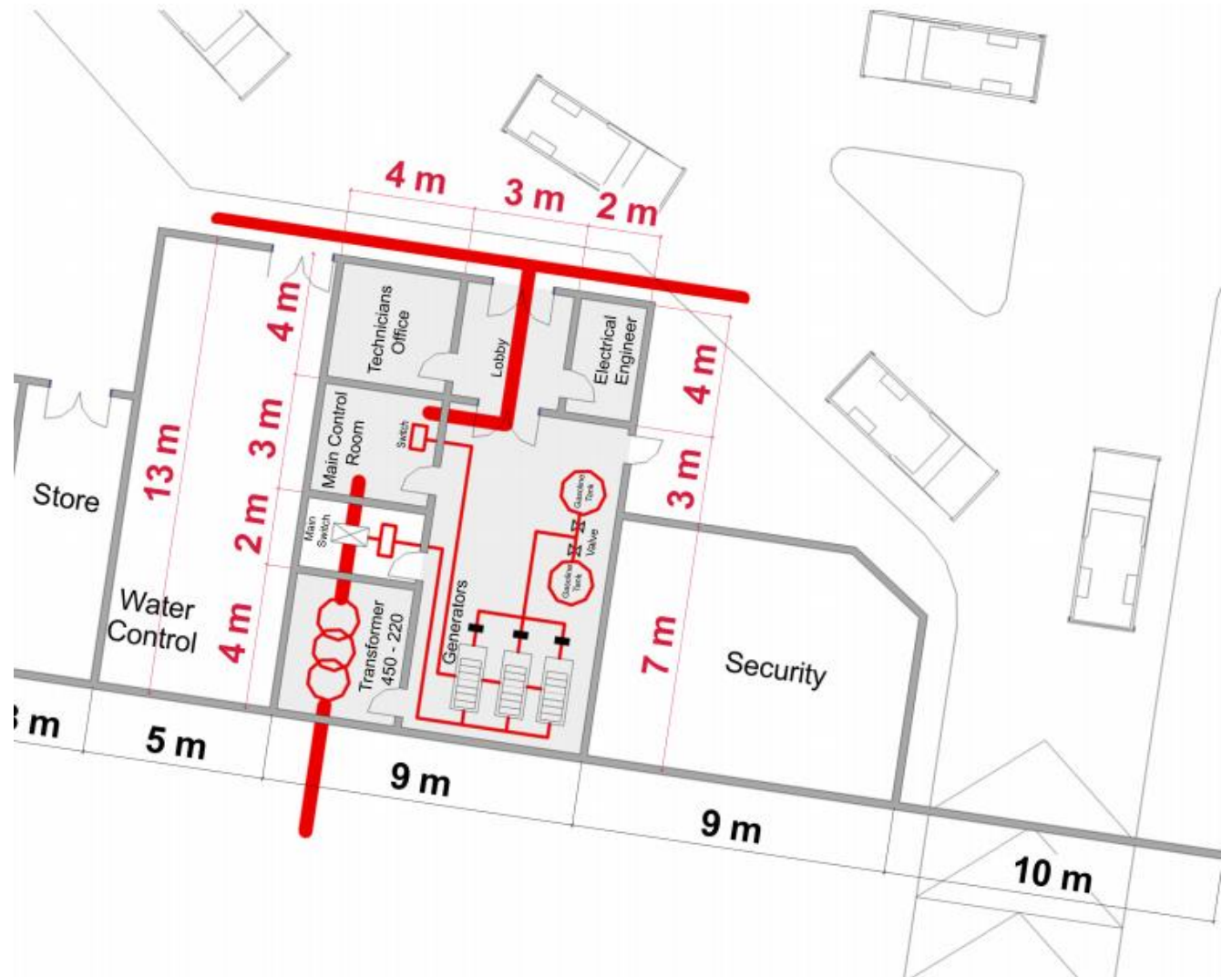
## 5.4 ELECTRICITY SOLUTIONS:

### 5.4.1 Electricity:

There is a main electricity rooms in the project, one on the south of the project. The electricity room is needed from the project because of the function need of the building the buildings, the rooms will supply electricity to the building and the site's lamps.







## 5.5 HVAC AND FIREFIGHTING SOLUTIONS:

### 5.5.1 HVAC system:

Choosing the right HVAC system depends on many factors and major points which lead to

choosing "The all water system".

The main factors are:

- The project consists of many spaces.
- The HVAC system needed for this project should be able heat or cool the spaces.
- The most important things for the HVAC system to supply are: keeping the temperature stable

whether by heating or cooling, renewing the air and using a quite HVAC system.

- The least important things are: sterilizing the air and controlling the humidity of the air.
- The HVAC system should be controllable from all of the spaces.
- It should be more suitable from smaller spaces than larger ones.

The above points were the reason of choice for the "All water system" because it supplies the

needed things for the projects and the buildings.

### 5.5.2 Firefighting system:

Is project as a whole has some major points that affected the choice of the right firefighting system,

and these points are:

- The project consists of main buildings with some scattered unites.
- It has an "Ordinary" level of hazard.
- Spaces are divided into: storage, offices, kitchens and parking spaces.
- In case a fire took place the materials that would catch fire are divided into: carbonic solid materials, electrical equipment, metals and chemicals.

- The buildings go higher than 5 floors.

After keeping the above points in mind, the firefighting system should have the following stuff in it:

- Having fire blankets in the kitchens.
- Using CO2 and dry powder to put down the fire so it doesn't affect the electrical

equipment.

- The use of sprinkles is a must because of the height of the building plus putting hand held fire

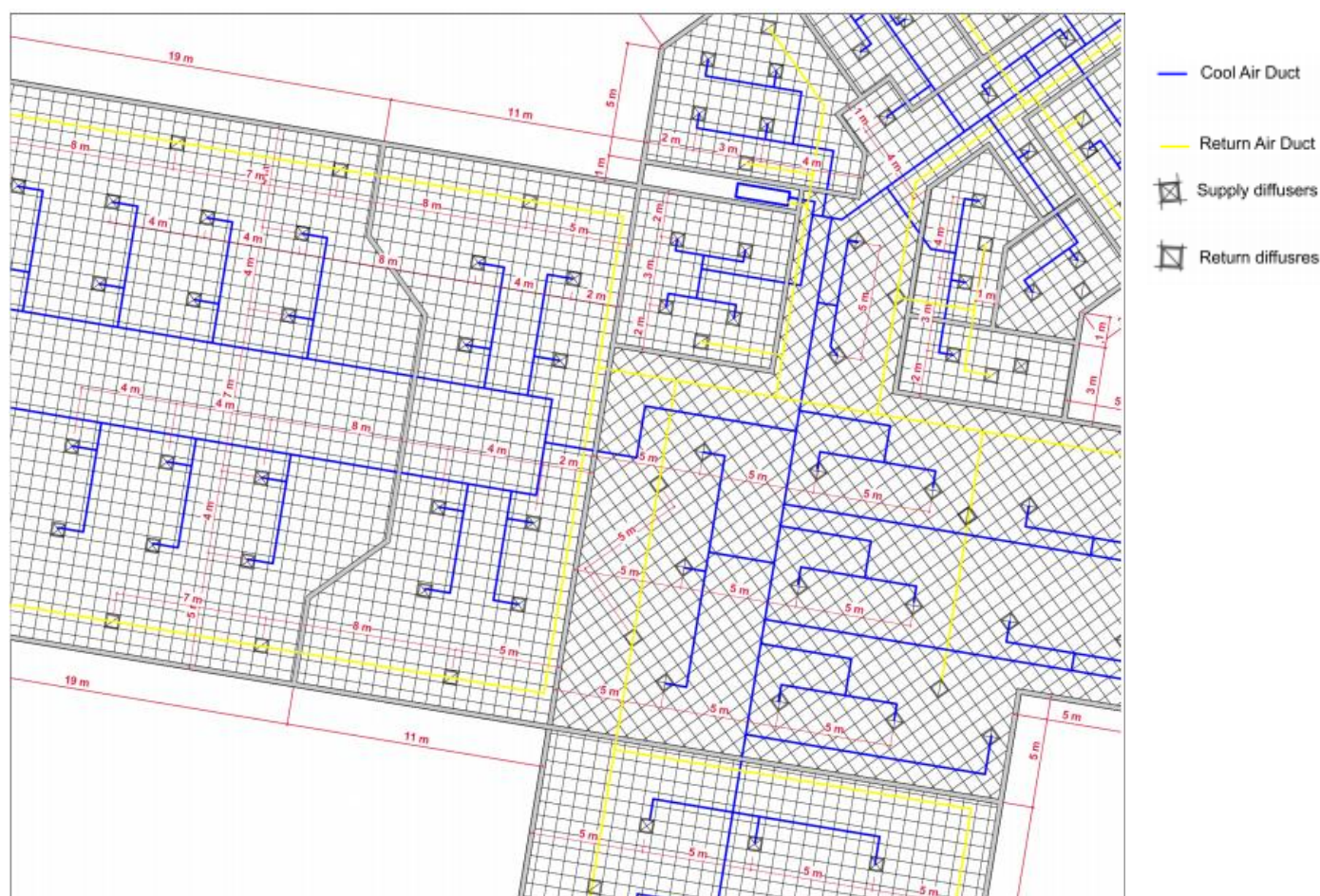
extinguisher inside of the spaces too where they are put beside of the door of each space.

- Each sprinkle will cover 12 square meters.

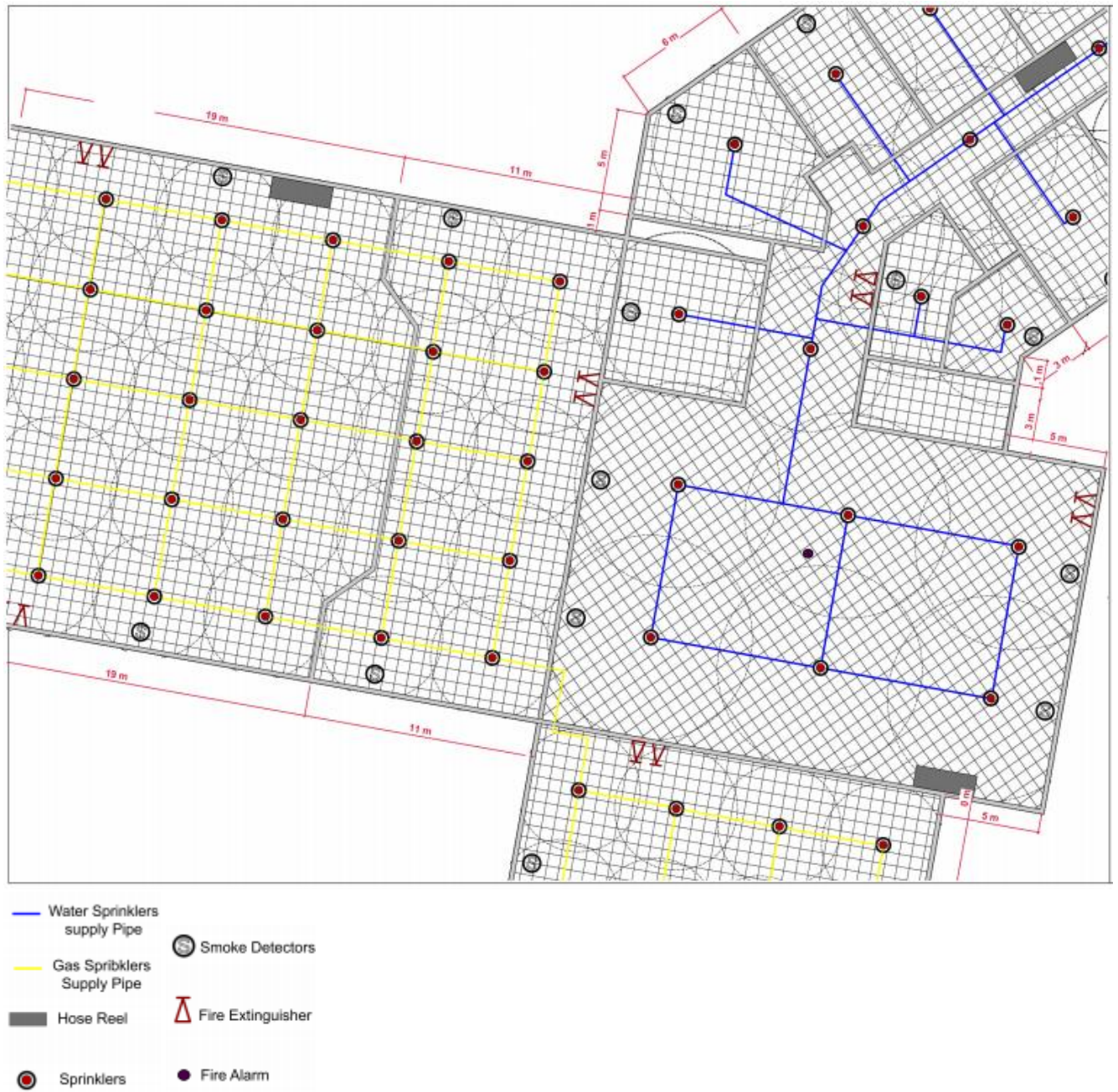
For the fire detecting, an ionic detector is put in the storage areas to detect the smallest sigh of fire in

them. In the food court and the offices a smoke detector is needed, in the kitchen an extra heat

detector is put and in the cultural building smoke detectors are put there too.



**Figure 73:** One of the office building's plan to demonstrate how the all water system is installed.



**Figure 76:** Part plan of one of the Commercial towers that showcases the firefighting system used in the project

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