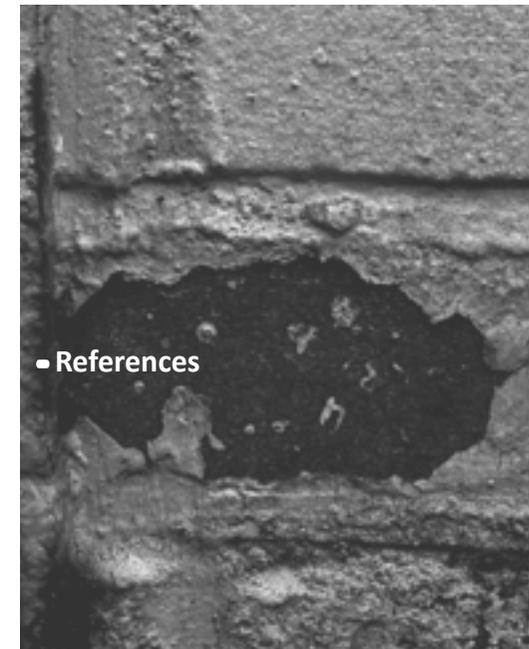
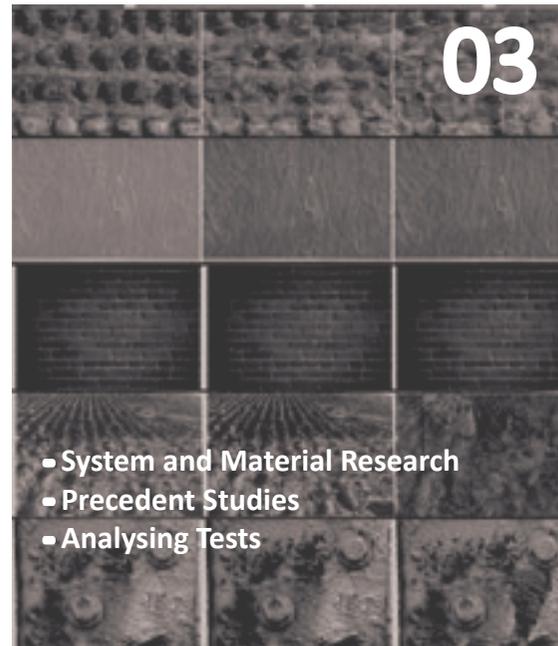
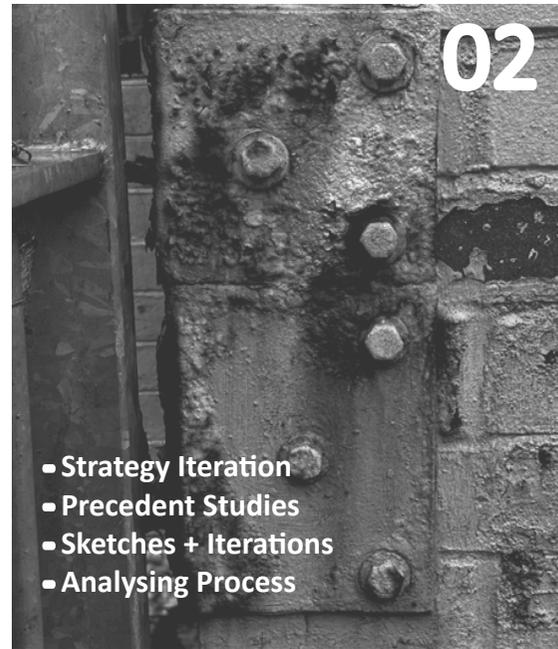
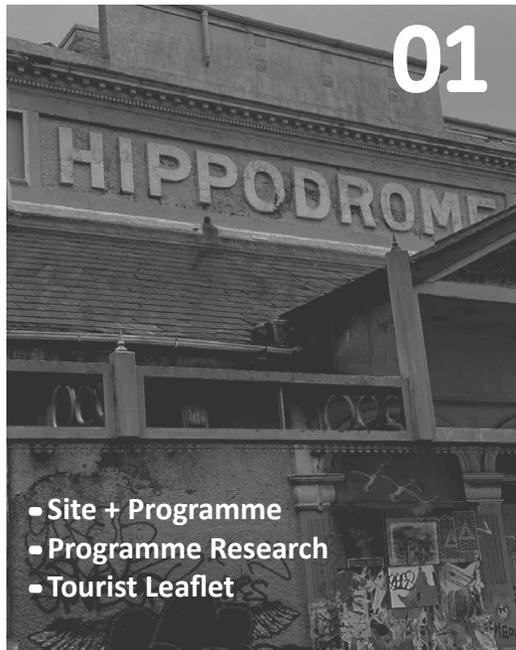


# BRIGHTON ARCHIVES

Almanac  
Interior Architecture  
AD 676  
Level 6

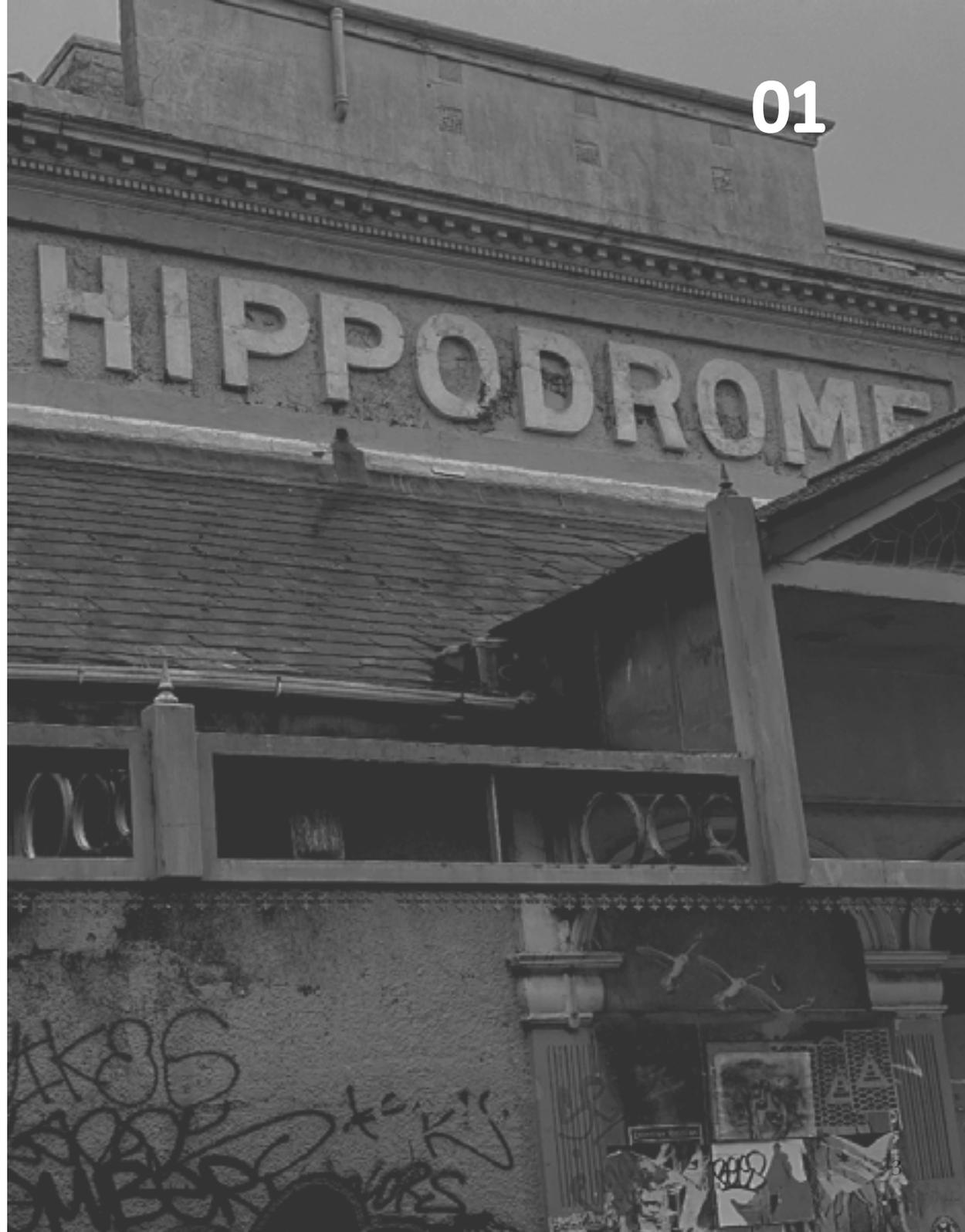
**Mohammed Abel**



*Chapter 1 includes my research into the new site:*

- *showing the link between my old site and the current one*
- *detailed description of the Hippodrome*
  - *historical information about it*
  - *photographic survey*
  - *technical drawings*
  - *introduction of a new HQ*

*This chapter also includes my research into programme HQ and explains why I have chosen the Brighton Archive to be built inside.*



## My Old Site

Proposition. Design Idea.

Moving to the next semester I decided to expand more with the idea of capturing the **decaying buildings**.

I spared the pinhole camera around Brighton especially around the **Hippodrome** area because its full of historic buildings.

Therefore, for my design proposal I decided that there will be photos from **2020 till 2040**. And all the photos will be transformed to the new site which is the **Brighton's archives centre**.

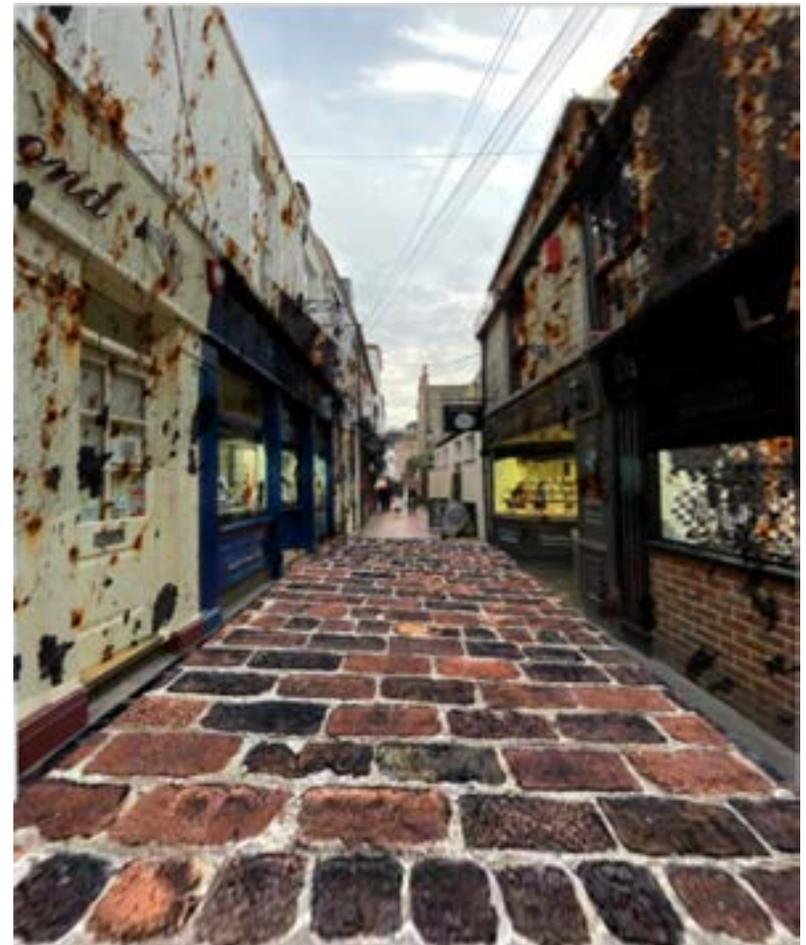
Its going to be an archive for all the images that are going to show a decaying **process** in historical buildings.

There is also going to be an exhibition every **2 years** to show the people how we are losing our historic buildings.



Model of my pinhole camera. Mohammed Abel.

The opposite side of the pinhole camera, and the decaying of Brighton. Mohammed Abel.



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## My Old Site

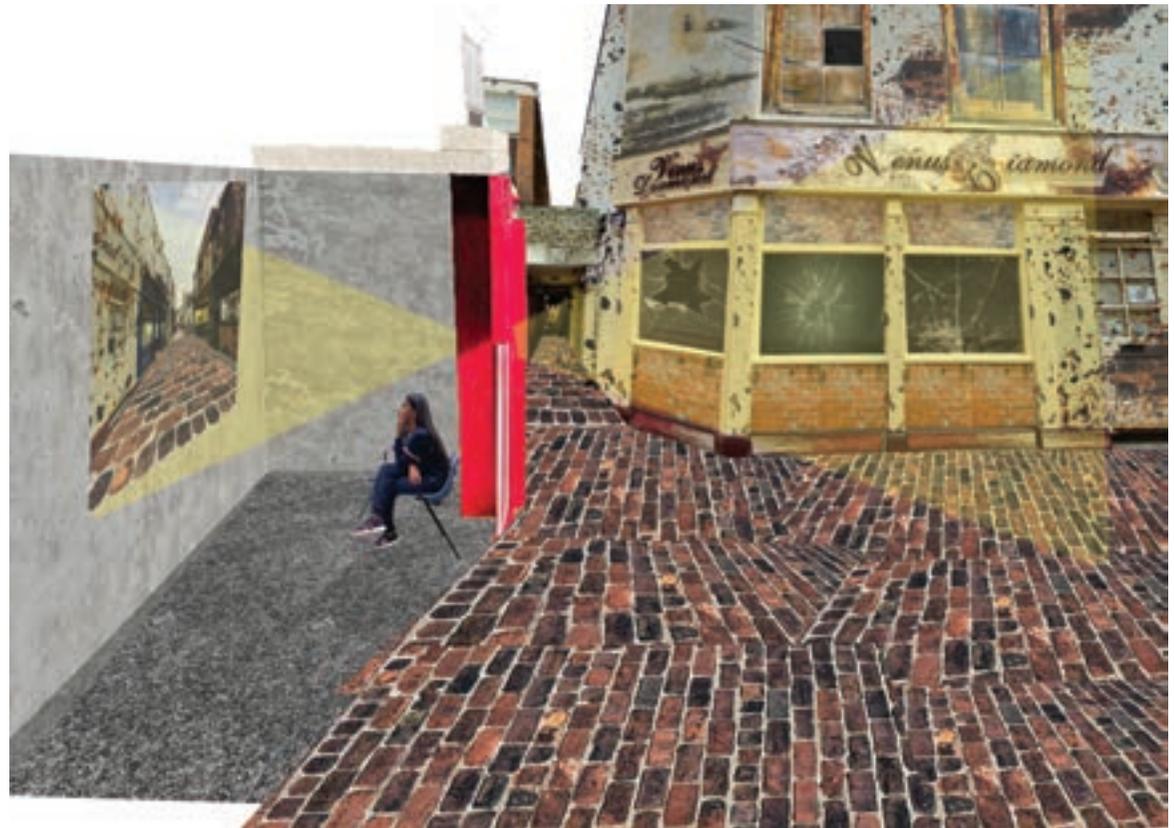
Proposition. Design Idea.

This is my **hybrid drawing** that I drew during the first semester to represent the system of my **pinhole camera** and how the audience **interact** with it.

This proposal from the first semester led me into the second one and encouraged to **develop** it further.

This time I want to focus on designing a space where people will not only be able to play with the camera but also see what photos it produces.

This way, they will be able to witness the affects of climate change on historical buildings. Photos taken over a **certain period of time** are going to be displayed in Hippodrome and presented to the audience on a **certain days of the year**.



Collage. Hybrid drawing. Mohammed Abel.

---

## Where is my new site?

Name. Location. Description.

For the second semester, our site is the derelict **Hippodrome** that is located on **Middle Street** in Brighton. It is going to act as a HQ for my programme, which is about bringing awareness about **climate change** and its affect on **historical buildings**.

Before deciding what Hippodrome can be, I decided to have a closer look at its history, location and details of the building. As all these factors contribute towards forming one history (one head quarter) that brings all aspects **together** and acts as a powerful source to a modern day.



▲ Photo of Brighton Hippodrome - interior, design details and overview.  
(Theatres Trust. 2020. Brighton Hippodrome.)

▼ Photo of the facade of Hippodrome.  
(Mohammed Abel)



---

## Where is my new site?

Name. Location. Description.

Hippodrome is a **grade 2** listed building, which means that this is a building of special interest, warranting every effort to **preserve** it.

Originally back in 1897, it was an **ice rink** but then in 1901 Frank Matcham converted it into a **circus**. After some period of time, it was then acting as a **theatre**.<sup>1</sup>

This is quite interesting as in all three cases this building was **bringing people together** to enjoy spending time together whether it is skating or enjoying the play/show. It acted as a magnet in **attracting all types of audience**.

This is very similar to my idea of **informing** people about climate change and how negatively it is affecting all of us. I want more and more people to realise that it is time to **act now**. Therefore, I see a direct link between this site and my project idea.

▼ Facade of Hippodrome.  
(Mohammed Abel)



▲▲ Brightonandhoveindependent.co.uk. 2020. Hippodrome 'Most At-Risk' Theatre In The Country.

▲▲ Hippodrome's facade sign. (Mohammed Abel)

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1 - My Brighton and Hove. 2020. A Short History, 1901-1965.

---

## Where is my new site?

Name. Location. Description.

Unfortunately, this building is at **risk** because since 2007 it remained empty and sadly fallen into **disrepair**. It happened because Brighton and Hove Council approved to convert the Hippodrome into a “**multiplex cinema**” but the proposed cinema operator pulled out.<sup>2</sup>

Current owner of the building has released initial propositions to the change of this grade 2 listed building and public is not happy about it. It is going to be “**a new hotel and spa complex and serviced apartments**”.<sup>3</sup>

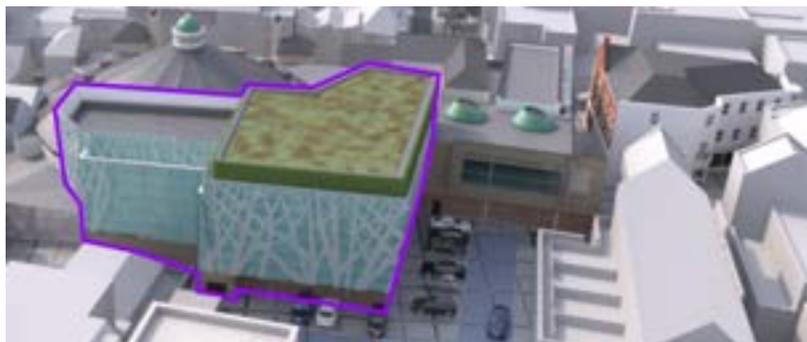
This is inappropriate to the building’s heritage **significance** and therefore the need of a performance venue needs to be **retained**.



 In 2006 they hosted a bingo club night at Hippodrome. Another example of how this beautiful building is losing its history. (My Brighton & Hove)

---

2 - Hippodrome cinema plans approved, 2020  
3 - Theatres Trust. 2020. Brighton Hippodrome.




 "VP were commissioned by Alaska Developments to produce this animation of proposals to regenerate the Brighton Hippodrome". Vimeo.


 "Working alongside Russ Drage Architects we detail modelled the interior of the dome and added in the new Vue Cinema extension". Vimeo.


 "This exciting development will help restore and promote this fantastic part of Brighton." "Vimeo."


 Developers want to turn the Grade II-listed theatre into a £35m eight-screen Vue cinema and four restaurants BBC News. 2020. Hippodrome Cinema Plans Approved.

---

## History Of My Site

Facts. Research.

Researching into the building's past **history** has led me to new findings about it, which I thought were quite interesting and can be useful for my **future design solutions**.

According to the article, the **seating area** inside the Hippodrome can accommodate over **3,000** people. However, "the greatest number of people to witness one performance has been over **4,500**."<sup>4</sup> This is a very crucial fact that helps me to understand the volume of the building. It also allows me to plan future activities that will be happening at Brighton Hippodrome in regards to the amount of people who will be able to attend them and therefore, ensure that the design solution will take it into account.



▲ "The Brighton Hippodrome during the run of Can-Can on the 24th of September 1956 - Courtesy Gerry Atkins"

▲ "The Brighton Hippodrome Exterior - From a Variety Programme for the Theatre in 1910."

▶ "The Brighton Hippodrome - From the Moss Empires Jubilee Brochure of 1949."

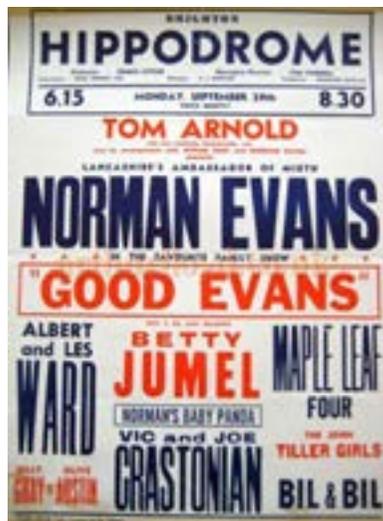
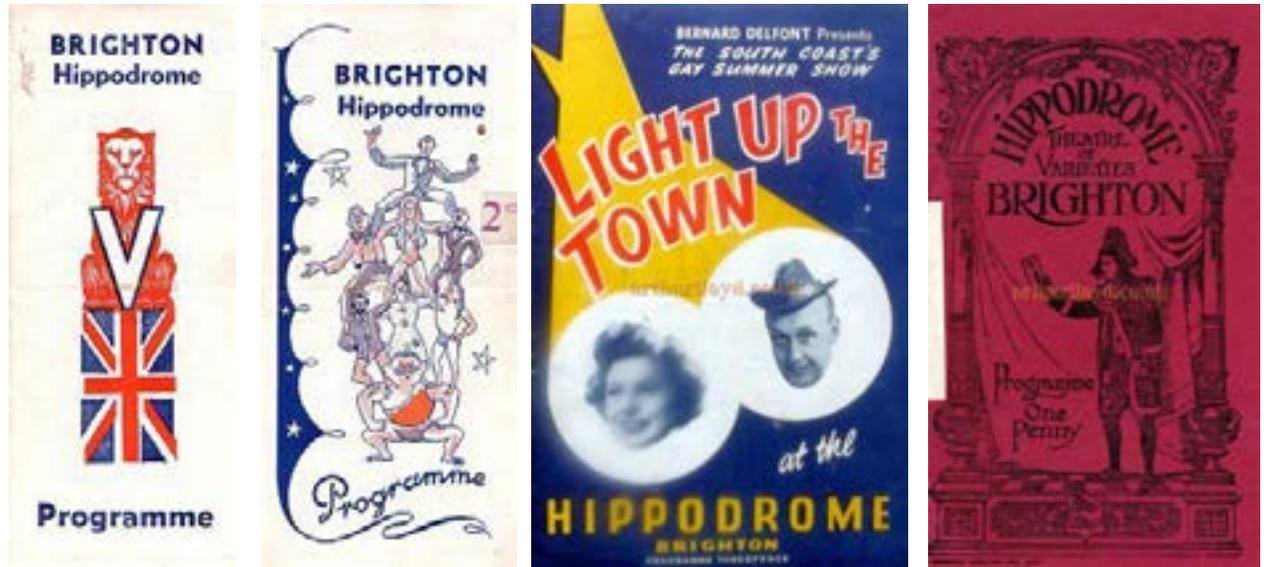


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4 - The Brighton Hippodrome, Middle Street, Brighton, 2020

## History Of My Site Facts. Research.

I have also found some programme leaflets that were used since 1910. It is very helpful to see how various shows/performances were advertised. Designing a leaflet for my Brighton Archive centre can also be a good idea in order to keep up with building's history and encourage more and more people to attend the venue.

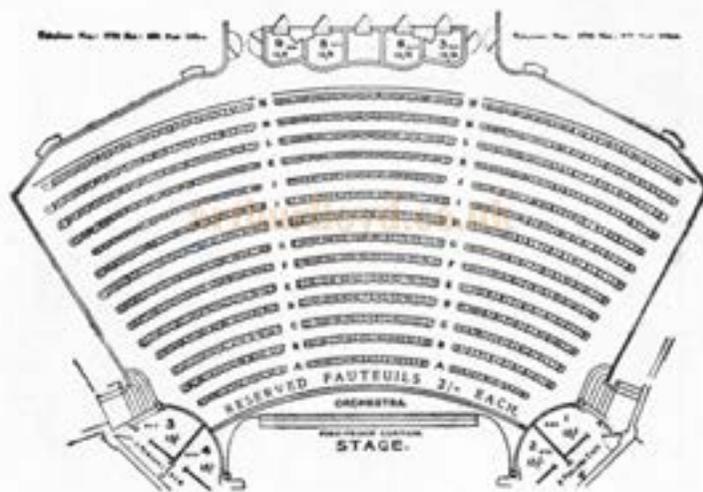


▲ "The Brighton Hippodrome Exterior - From a Variety Programme for the Theatre in 1910."

▲ "The Brighton Hippodrome - From the Moss Empires Jubilee Brochure of 1949."



**PLAN OF SEATS.** Box Office open 10 to 5 & 7 to 8.



▲ "The Auditorium and Stage of the Brighton Hippodrome before the 1916 Alterations - From a Variety Programme for the Theatre in 1910."

▲ "A Seating Plan for the Brighton Hippodrome before the 1916 Alterations - From a Variety Programme for the Theatre in 1910."

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## Photographic Survey

Photos. Details.

During my **site visits**, I tried to capture the building as much as I possibly could.

I wanted to show its **devastating condition**. Over time it started falling apart:

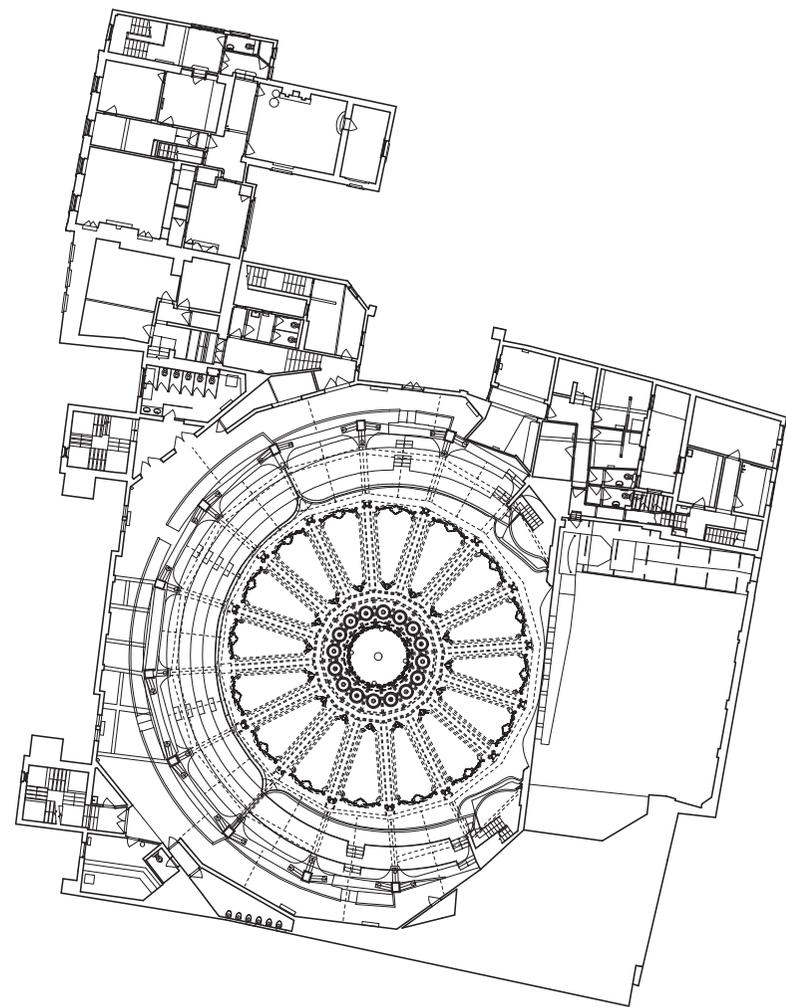
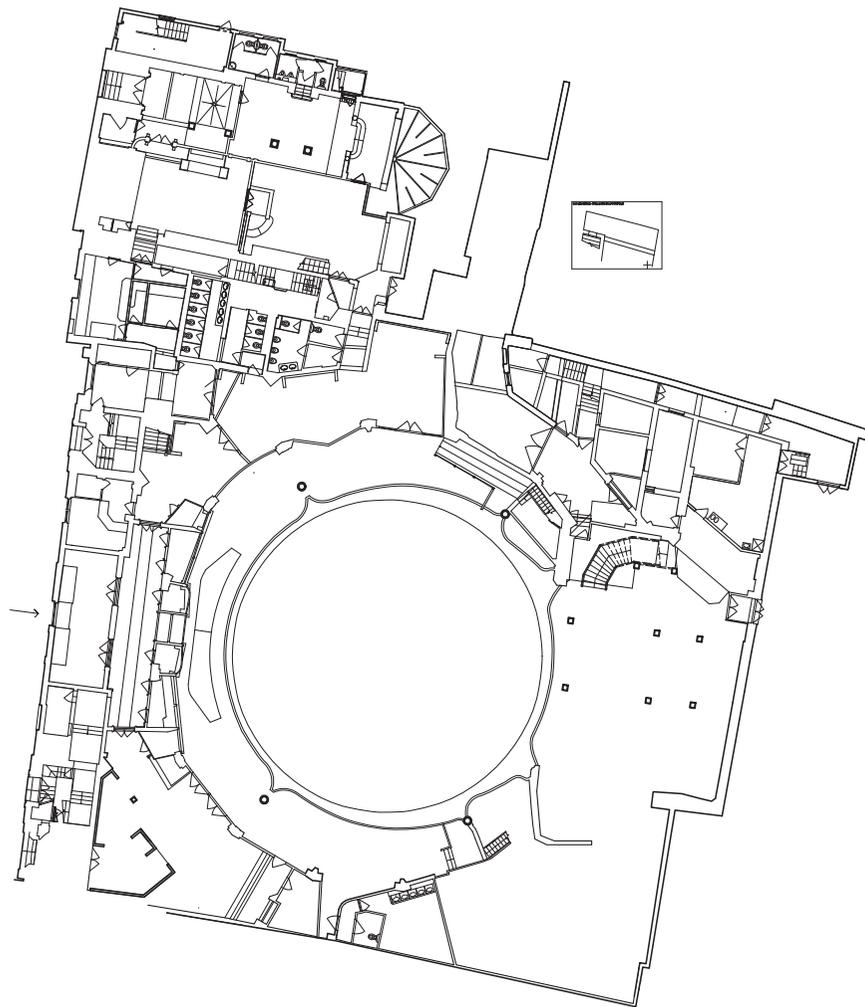
- metal framing is covered in rust,
- paint is chipping,
- stone is cracking,
- mould growing on the building,
- graffiti on the walls.

It is very sad to see how such building with rich history is being treated and **left to be overtaken by nature**.

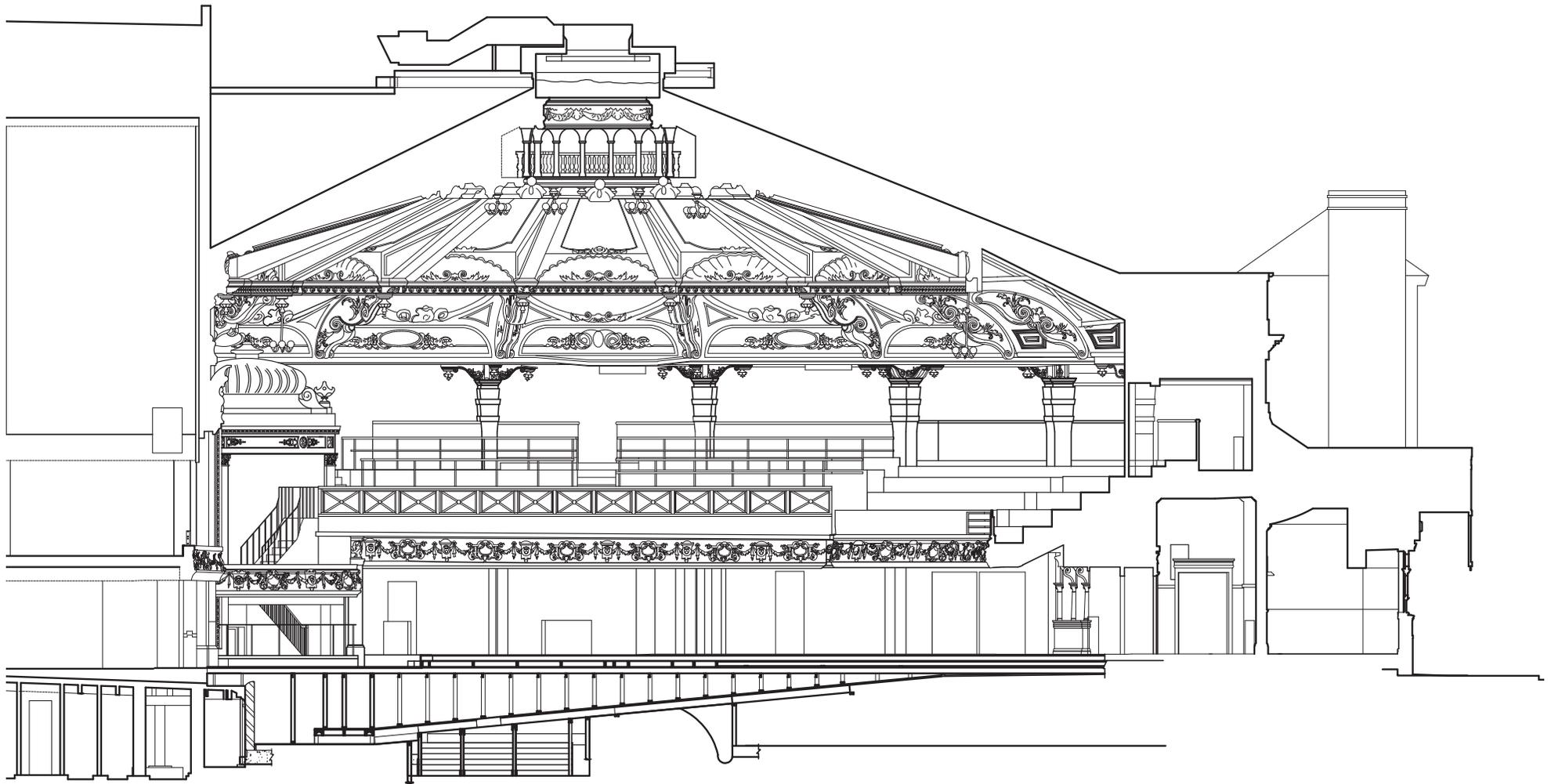


Photographs of Brighton Hippodrome. Details. Mohammed Abel

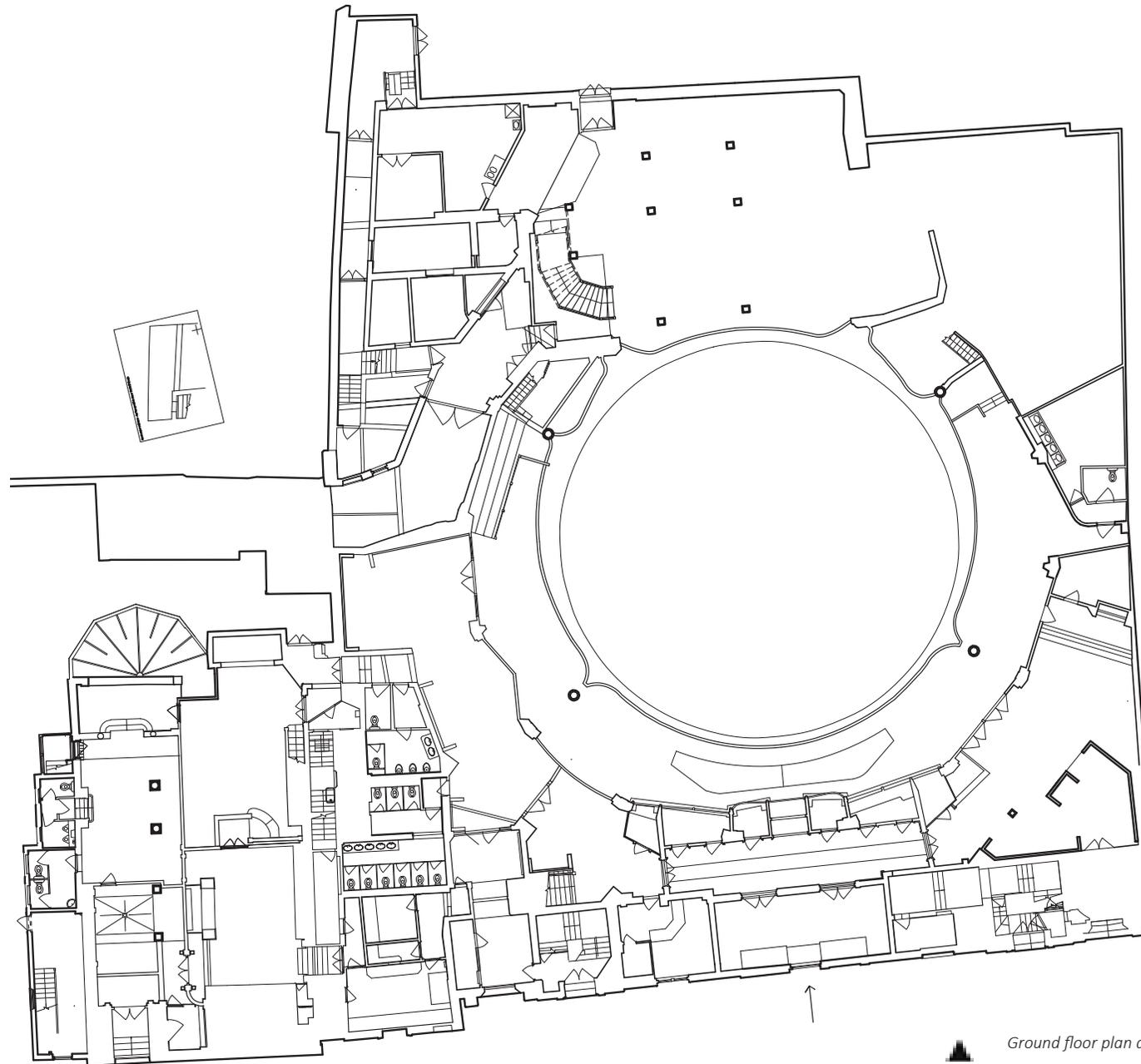




Ground and First floor plan



Section drawing of Brighton Hippodrome



Ground floor plan drawing

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## Programme HQ Research.

When it came to deciding the programme for the Brighton Hippodrome, I knew I wanted to create people's awareness to the crisis, I also knew that I wanted to **bring all of them together** (i.e. a cafe, a cinema, a tea room) and most importantly I wanted to demonstrate the issue that we are all facing today.

Therefore, I started looking into archive centres.



Sketches. Mohammed Abel.

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## Research

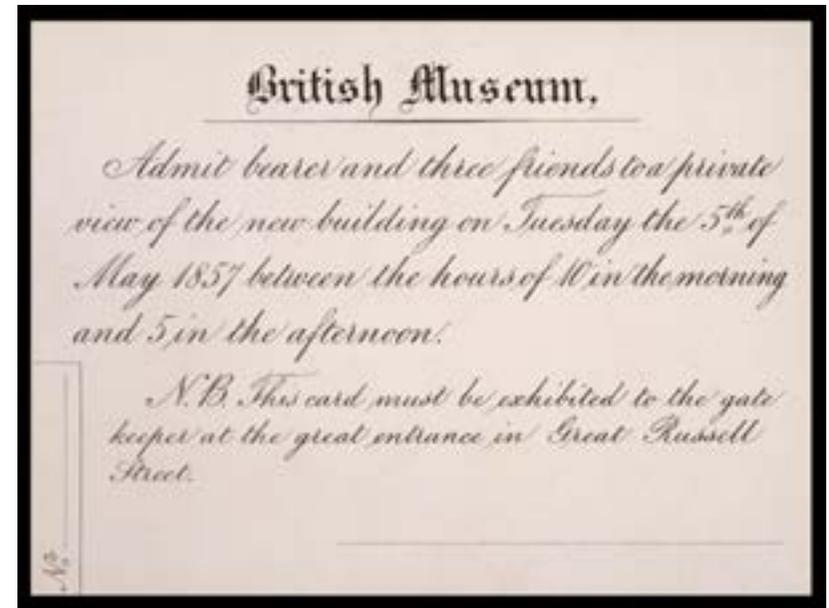
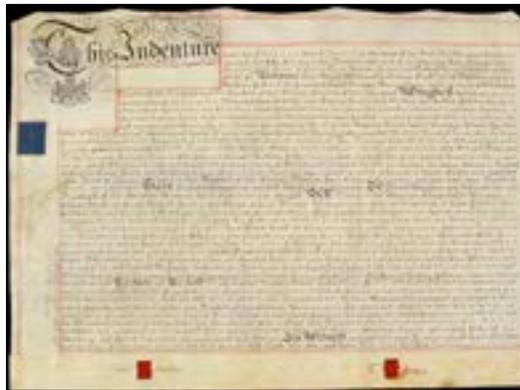
### The British Museum Archive.

**The British Museum Archive** is a unique record of the Museum's activities since it was founded in **1753**. "It preserves the story of the Museum, the history of the collection, its collectors and the people who worked here. The Archive is a resource for researchers, academics and members of the public."<sup>6</sup>

In order to support the ongoing research of the Museum and the wider research community The Archive is an **essential element**.

"The archive also holds many readers' applications which include records for important literary figures like Oscar Wilde, Mark Twain and Bram Stoker."<sup>7</sup>

What I found the most interesting about The British Museum is that all these records are available for public and even online. It is something that I am aiming to do with The Brighton Archives.



- ▲ Invitation to the opening of the new Reading Room, 5 May 1857. The reverse of the ticket had a plan of the new space.
- ▲ Deed of bargain and sale of Montagu House, 5 April 1755.
- ▲ Sandbagging of objects in the Egyptian Sculpture Gallery to protect against the threat of air raids during the First World War

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6 - Museum libraries and archives, 2020

7 - Behind the scenes in the Museum's archives, 2020

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## Research

The British Museum Archive.

I decided to have a look at the way that documents and other resources were **stored** back in the past.

This has helped me to start thinking of the way that I am going to **display** photographs of historical buildings.

The majority of documents are just in **piles** as you can see it from the photos on the right. I find this type of storage is uncomfortable for public to view and does not allow a full access to all the documents.

Therefore, I want to make something modern, even, considering using **technology** to allow everyone to see and access all the photos and documents.



*Books drying out in what is now Room 33 after water damage from putting out the fires caused by bombs in 1941.*

*Storage of objects in Aldwych Tube Station, 1939.*







▲ *Natural History Museum of Los Angeles County  
Dockweiler, CA*

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## Programme HQ

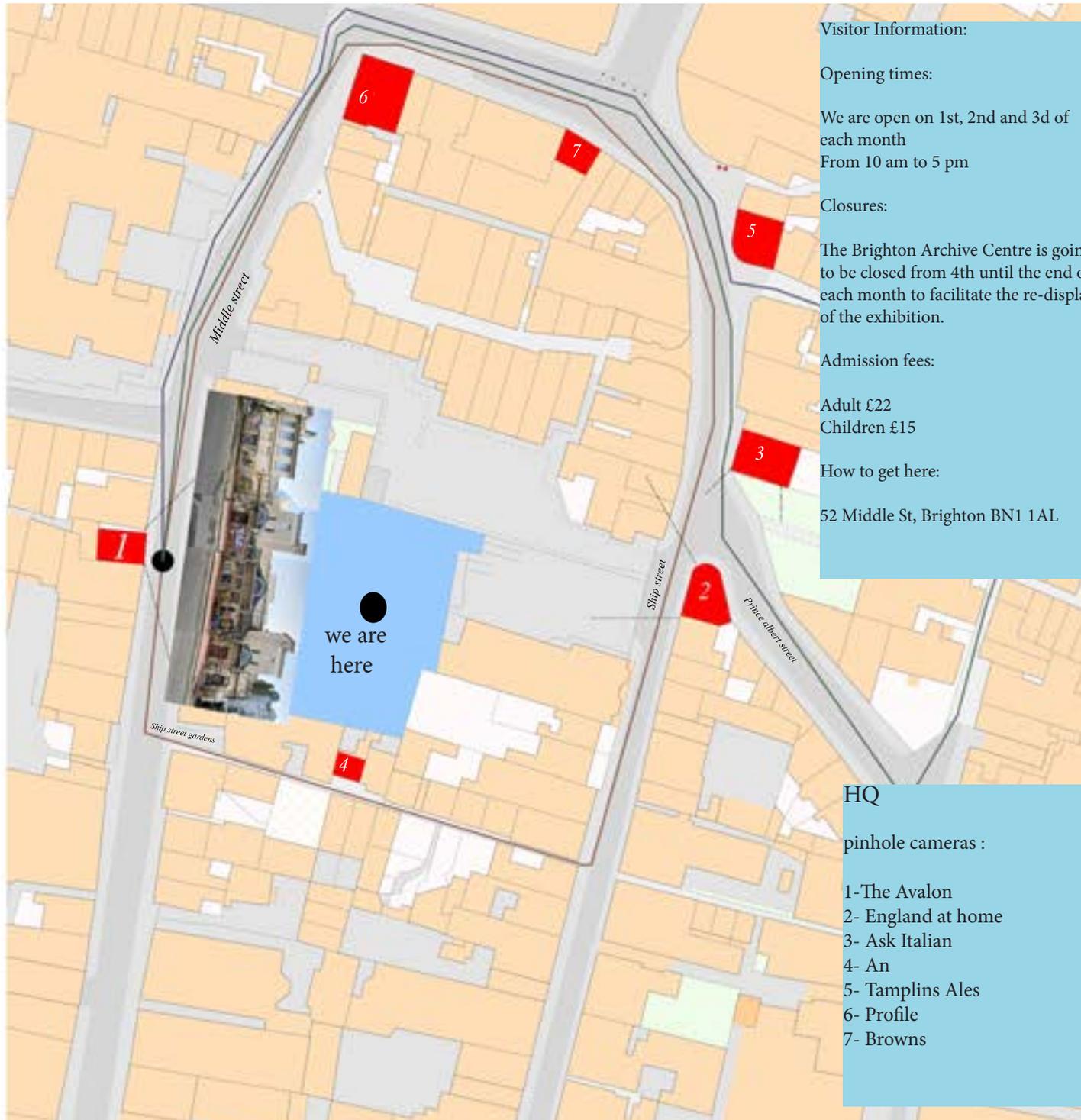
### Research.

Having a space for just the archive centre is not going to be enough and it is not going to bring people together, therefore I decided to look into **exhibitions and galleries** and see how I can include these two events at the same time.

Having an exhibition inside the Hippodrome is going to help to **eliminate the problem of access the photos.**

Another advantage of having an exhibition is that audience is going to **engage with each other**, resulting in discussion about the crisis and how to potentially stop it.





Visitor Information:

Opening times:  
 We are open on 1st, 2nd and 3d of each month  
 From 10 am to 5 pm

Closures:  
 The Brighton Archive Centre is going to be closed from 4th until the end of each month to facilitate the re-display of the exhibition.

Admission fees:  
 Adult £22  
 Children £15

How to get here:  
 52 Middle St, Brighton BN1 1AL

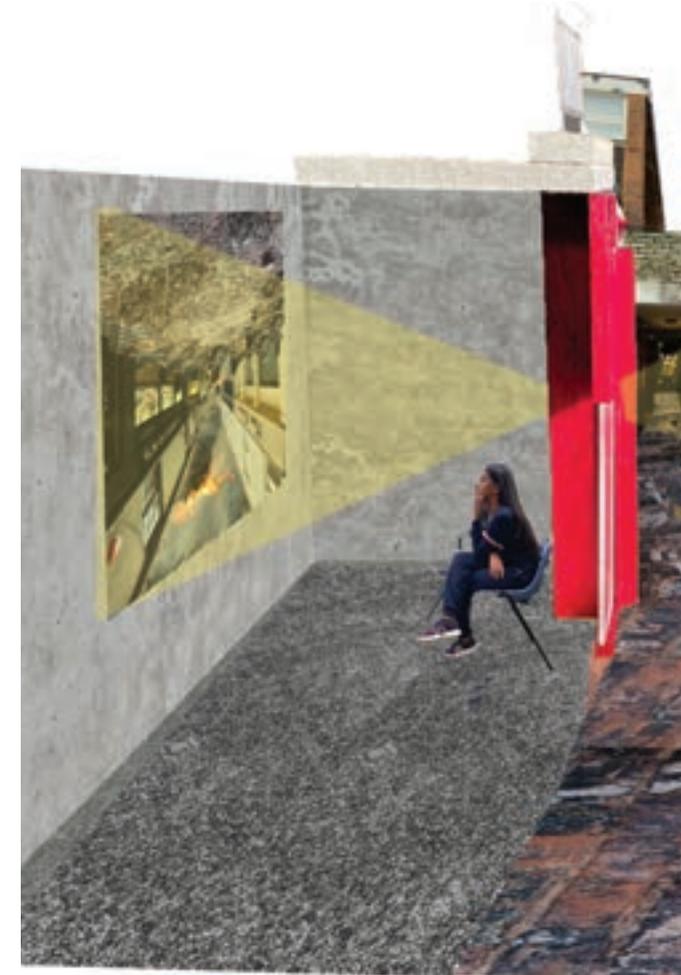
HQ

pinhole cameras :

- 1- The Avalon
- 2- England at home
- 3- Ask Italian
- 4- An
- 5- Tamplins Ales
- 6- Profile
- 7- Browns

# Brighton Archives

The long exposures of Brighton's decay





The Brighton Archives is a historical building that is currently being used as an exhibition place to demonstrate the affects of climate change that we are facing today. Here you will be able to find photographs of 7 buildings that are located in Brighton and the way that climate change is affecting them, i.e. materiality and structure. We welcome everyone at our place as we want to ensure that more and more people are becoming aware of the problem that we are facing in a modern day. If we do not tackle it, then it can lead to detrimental consequences..

Global climate change has already had effects on the environment, such as loss of sea ice, accelerated sea level rise and longer, more intense heat waves. All these factors contribute towards a dramatic change in architecture and the way they are being built. As some of them are no longer suitable for cold temperatures.

For instance, we notice a lot more cracks in buildings built out of stone, which is the most popular material in the UK. This is due to the rapid change of temperatures as it causes the material to expand and contract. If these cracks are left untreated (especially historical buildings), they can affect the integrity, safety and stability of the structure.

This is why we created this exhibition. We want people to realise what we have done to our planet and understand that immediate actions need to be taken. As climate change is not only affecting the environmental but also places that we call our home.

**Archive Centre:**

- A storage place for long exposure photographs that have been taken from 7 locations (using a pin-hole camera) around Brighton. This place is going to preserve these photos and collect more evidence that will show the affect of climate change through the years.

**Exhibition:**

- Then selected material will be chosen and displayed for public. These photographs are available to view only once a year. This process should raise the awareness and ensure that people are noticing all these changes in buildings.

**Pinhole camera:**

- A dedicated place to show how these photos are being taken and the process behind it. Public may also try and take their own photos using the pinhole camera themselves. It is a dark room that accounts for a specific distance that needs to be between a pinhole camera and the wall. This distance is going to result in a specific time needed for the experience. Meanwhile, other visitors will be able to observe this process by standing on each side of the room.

**Coffee Room:**

- Public will also have access to catering facilities. We are offering hot drinks like tea or coffee with various dessert choices like Victorian sponge cake or brownies. It's a perfect way to take a break from the exhibition and process all the information!

**Gift shop:**

- A wide range of beautiful and exclusive gifts are available for purchase, from vintage pinhole cameras to other equipments that is needed for the photography process.



Ground floor only

*Chapter 2 is about strategy intervention. To ensure that the final design is resolved and developed thoroughly, research and iterations must be made. This chapter includes various precedents that I was looking at and that inspired my projects, as well as sketches and sketch models that were made during this process.*



## Historical Buildings

Preserve. Design ideas.

As you can see from my leaflet above, I decided to turn Brighton Hippodrome into **the Brighton Archive Centre** with a cafe that is going to be opened during **exhibition**.

As my camera is going to be capturing lots of decaying building images, I needed a place to **store** them. It is also one of the ways that can clearly demonstrate a **direct link** between climate change and historical buildings' decay process.

Having an exhibition will help to create public **awareness** about this problem and potentially lead to some actions that will prevent it from getting worse.

On the right you can see some examples of archive centres that I found **interesting**. Based on these photographs I would like to create my own centre.



*Display of Biennale of Sydney Archive material gifted to the National Art Archive at the Art Gallery of NSW.*



*Archives Now Expand To Infinity. Angus Kidman*



*East Of England Regional Archive Council.*

*Staff photographed in the records treasury of the PROI in 1914, eight years before its destruction in 1922.*



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## Historical Buildings

Preserve. Design ideas.

The National Archives History Office preserves and promotes **the history of the National Archives.**

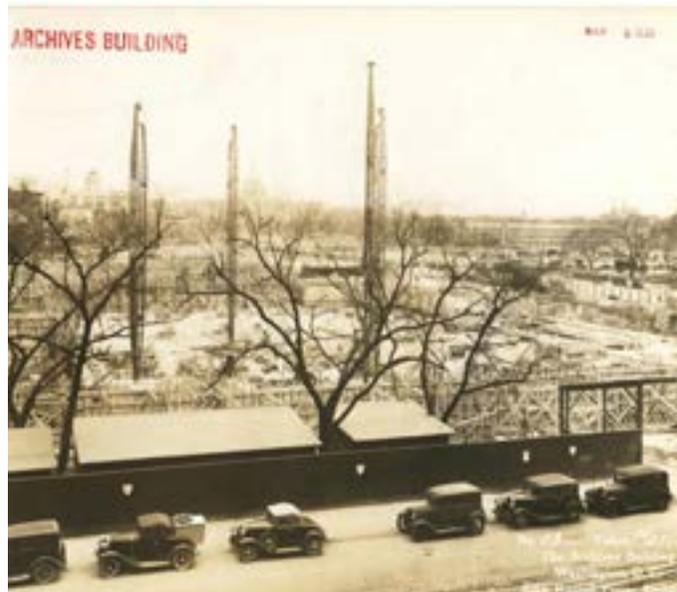
It was first design to preserve Federal Government records. “Staff found records in basements, attics, carriage houses, abandoned buildings, and alcoves. The records had suffered from neglect, infestations, water damage, and theft.”<sup>5</sup>

**This reminds me the current situation with the historical buildings in the UK. Most of them are in disrepair and falling apart, causing health issues.**

This idea of having The Brighton Archives should bring more awareness and make people care about our history and start taking care of everything that surrounds us.

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5 -National Archives History and Mission, 2020.



◀ Construction of the National Archives Building, 3/2/1933. National Archives History and Mission, 2020



▲ National Archives staff cleaning pension records with compressed air, 6/12/1936. National Archives History and Mission, 2020.



◀ Federal Records Center, Lanexa, KS, Cold Storage Caves, 8/25/2005. National Archives History and Mission, 2020.

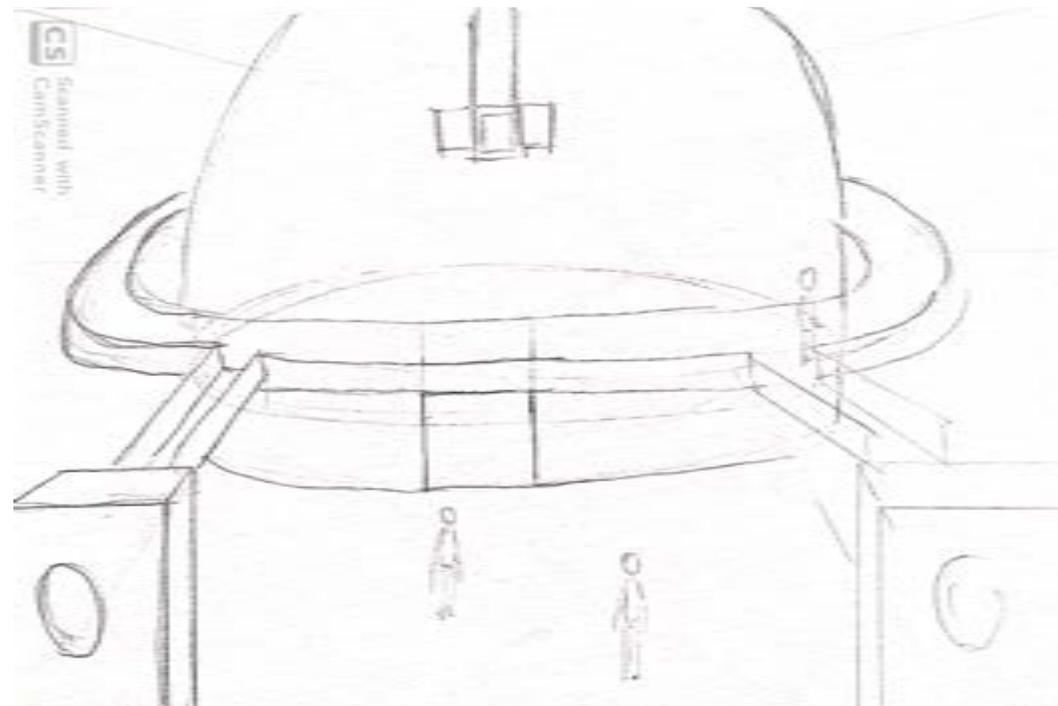
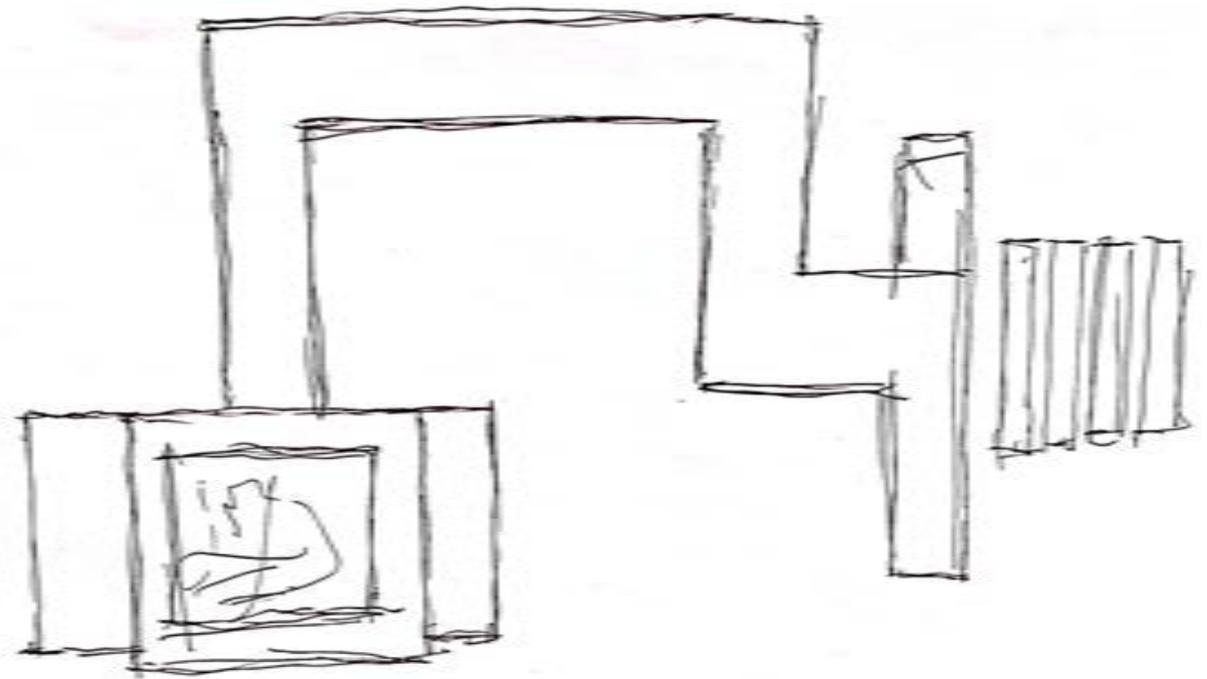
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## Design Process

From the sketch at the top you can see a **projector** that will be showing images of decaying buildings.

I was planning to install the projector on the **ceiling** so it would come down from the first floor to the ground floor. I was also looking at various techniques that could **fold/hide** the projector when not in use.

However, I decided not to proceed with this idea as there were some complications like changing photos, ensuring that all audience members would be able to see the images etc.



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## Precedent 1

### Institut du Monde Arabe

*Project name: Institut du Monde Arabe*

*Location: Paris, France*

*Architect: Jean Nouvel, Architecture-Studio*

*Year: 1987*

The IMA was produced through collaboration with the countries of the Arab League and the French government.<sup>8</sup> Once it was built (1987), it quickly became a popular **destination for the local citizens as well as tourists.**

I love the attention to **façade detailing**, and the entire design of the building, such as **metallic brise soleil** on the south façade. Another feature of the building that I found quite interesting is “reinforcement of an archetypal element of Arabic architecture the mashrabiyya. Inspiration that from the traditional lattice work that has been used for centuries in the Middle East to protect the occupants from the sun and provide privacy.”<sup>8</sup>



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8 - Winstanley, Tim. "AD Classics: Institut Du Monde Arabe



Visual Arts Center. Paris, France.

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## Precedent 1

### Institut du Monde Arabe

“The system incorporates several hundred light sensitive diaphragms that regulate the amount of light that is allowed to enter the building. During the various phases of the lens, a shifting geometric pattern is formed and showcased as both light and void. Squares, circles, and octagonal shapes are produced in a fluid motion as light is modulated in parallel. Interior spaces are dramatically modified, along with the exterior appearance.”<sup>8</sup>



◀ Visual Arts Center. Paris, France.



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8 - Winstanley, Tim. "AD Classics: Institut Du Monde Arabe"

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## Design Process

What I found the most interesting about this precedent is that it **reminded me of my pinhole camera**. The details are quite similar to the design of this building. For instance, the hole in the middle (central).

I am planning to add this design idea to my project. I have 2 reasons to use it:

1. **To hide pinhole cameras from the outside of the building**. However, the lens of the camera is going to remain open and untouched so images can be taken at any time.
2. **To create a natural light** inside the Brighton Archives. This will result in atmospheric place with natural lighting coming in.

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## Precedent 2

### Hamar Museum

*Project name: Hedmark Museum*

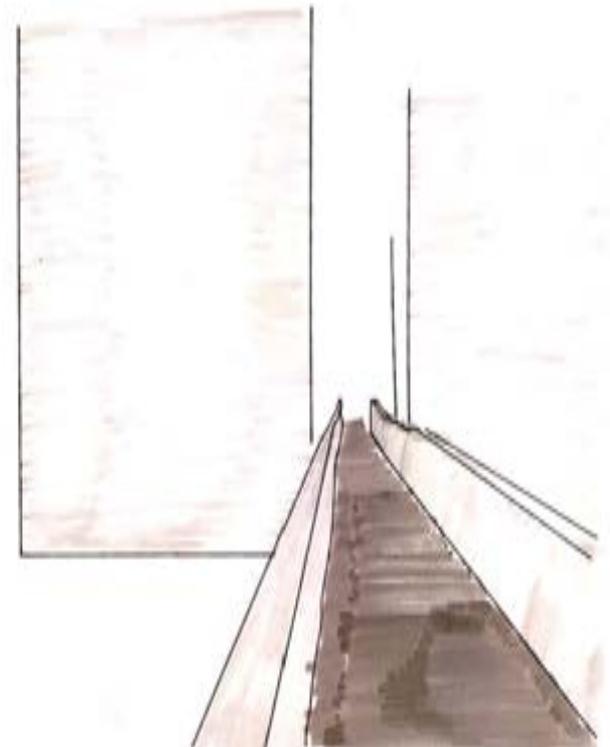
*Location: Oslo, Norway*

*Architect: Sverre Fehn*

*Year: 1973*

I am very interested in concrete material. I am particularly excited about the effect that this material creates, such as **creating a contrast within the space**. This also results in a very **atmospheric feeling** inside of the building.

This means that I am following my thesis by keeping the history of the Brighton Hippodrome and making sure it is kept in a modern day.



▲ Hedmark Museum, Hamar, by Sverre Fehn. 1967-2005. Ramp through the west wing. Photo: Helene Binet

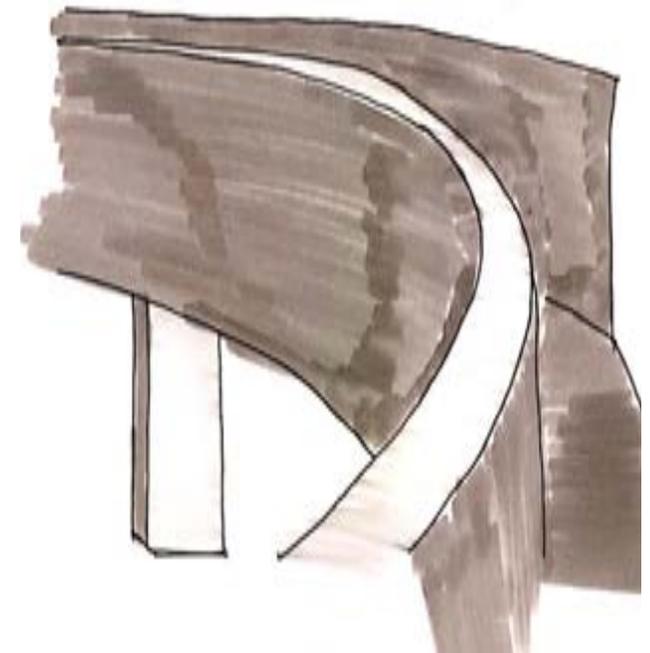
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## Precedent 2

### Hamar Museum

This museum has influenced my design idea by creating **concrete walk ways** inside of the Brighton Archives. This will allow the audience to move freely inside of the building and participate in the exhibition, including the pinhole camera experience.

It will also allow them to move between floors, i.e. from first to ground.



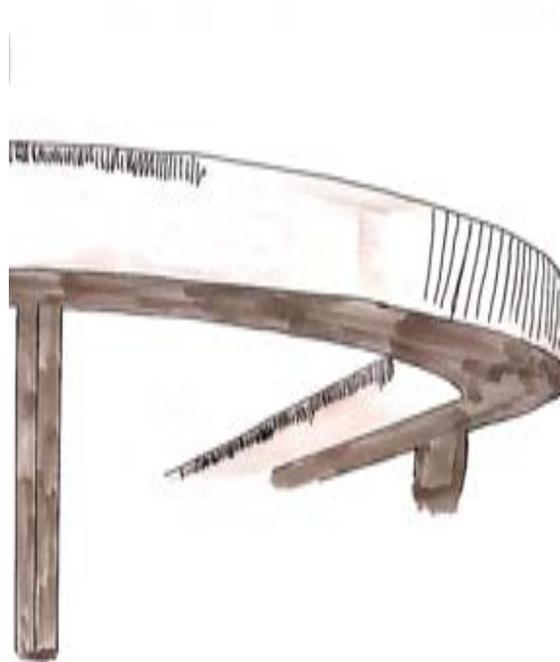
*Hedmark Museum, Hamar, by Sverre Fehn. 1967-2005. Ramp across the courtyard. Photo: Helene Binet*

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**Precedent 2**  
Hamar Museum



▲ Hedmark Museum, Hamar, by Sverre Fehn. Ramp across the castle court. 1967-2005. Photo: Helene Binet



Hedmark Museum, Hamar, by Sverre Fehn. 1967-2005. Ramp through the west wing. Photo: Helene Binet ▲

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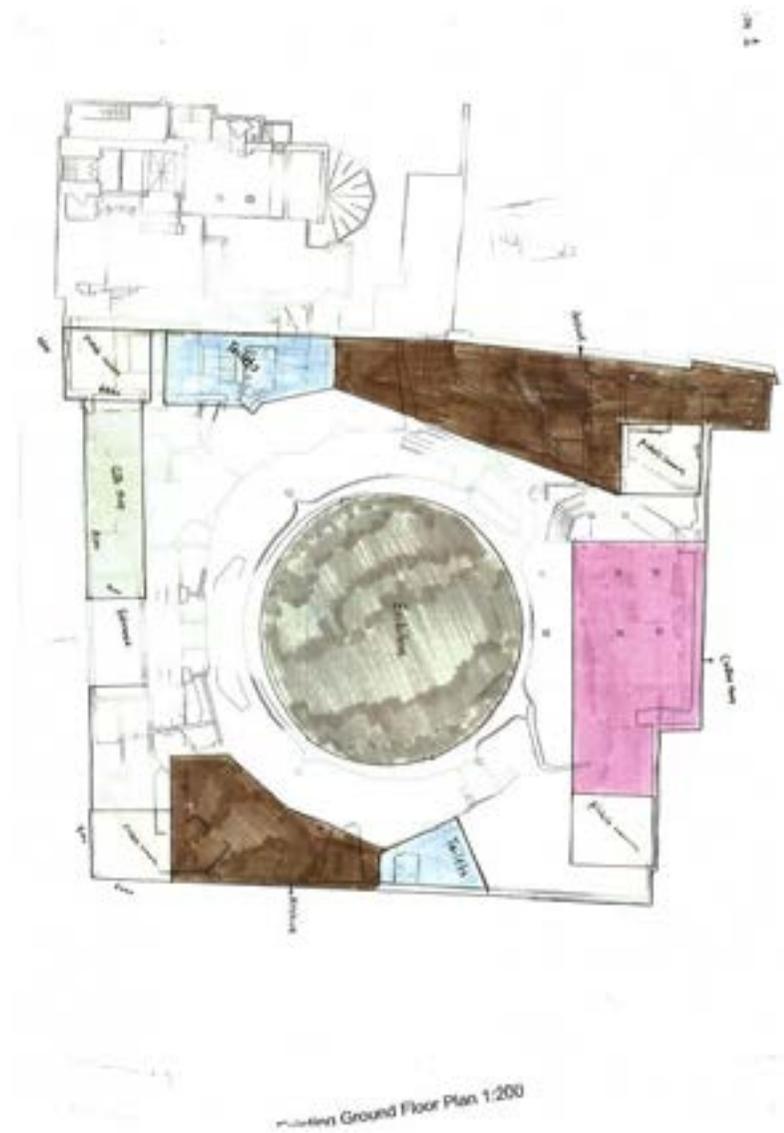
## Design process

### Iteration 1.

On the first iteration sketch, it can be seen that all planned activities are placed on the ground floor.

There are also 2 additional spaces that are going to be used for storing all the images taken by the camera – The Brighton Archive. In order to host an exhibition event, it was decided to place it in the middle area – **centre of the attention**, with the coffee room at the back of that area.

However, it was decided that this arrangement is not ideal as the coffee shop **would not be able to fit a bigger audience.**



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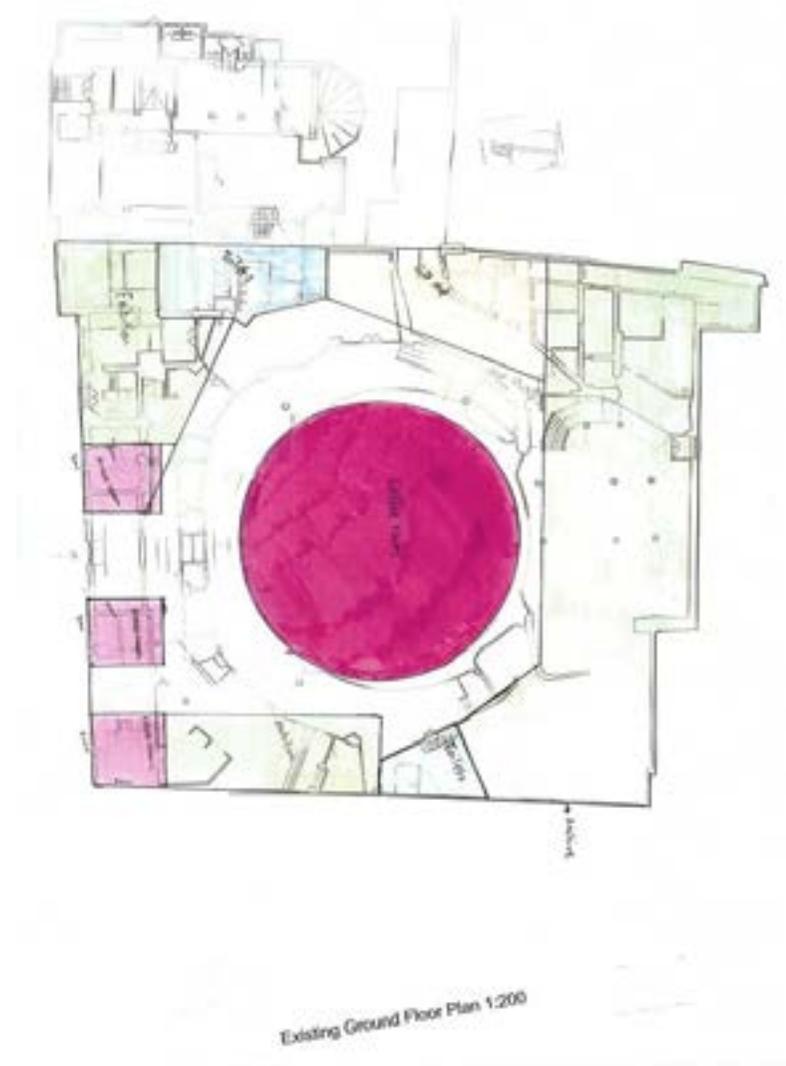
## Design process

### Iteration 2.

This has led to the second iteration as a bigger place needed to be designed for the archive place.

It was decided to use the **back side** of the exhibition place. In order to create a bigger space, everything inside of the existing building has been **removed** except toilets, the dome and the stage.

3 pinhole cameras have been added to the front to capture the building's decay process and ensure that the audience can interact with them.



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## Design process

### Iteration 3.

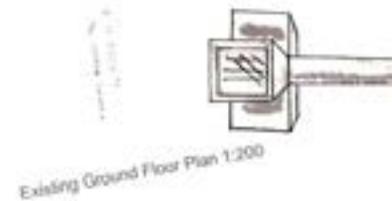
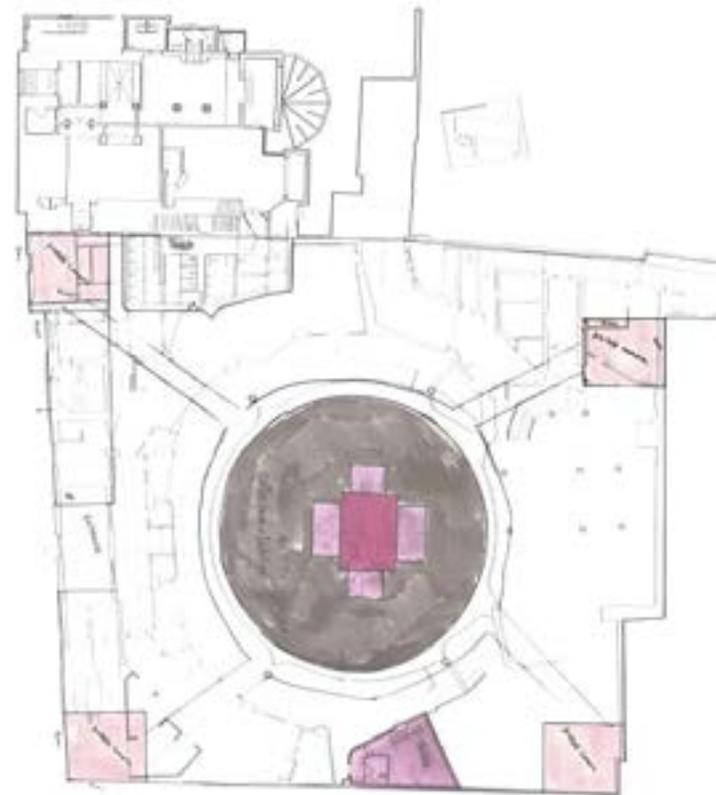
The last iteration has been influenced by the precedent found on one of the architectural websites (Hamar Museum).

The idea of having **concrete walkways** is great, especially considering the personal interest towards this material. Therefore, it was decided to apply this precedent to the current design idea.

This has led to moving the archive space onto the first floor as it is much bigger and is going to allow to store the big images of the decaying buildings.

This resulted in removing everything from the existing building, including even the stage to **allow to host the exhibition** and ensure that the audience can freely go into the coffee room.

There will be walkways on **different levels**, connecting the exhibition, pinhole cameras and going around the Brighton Archive.



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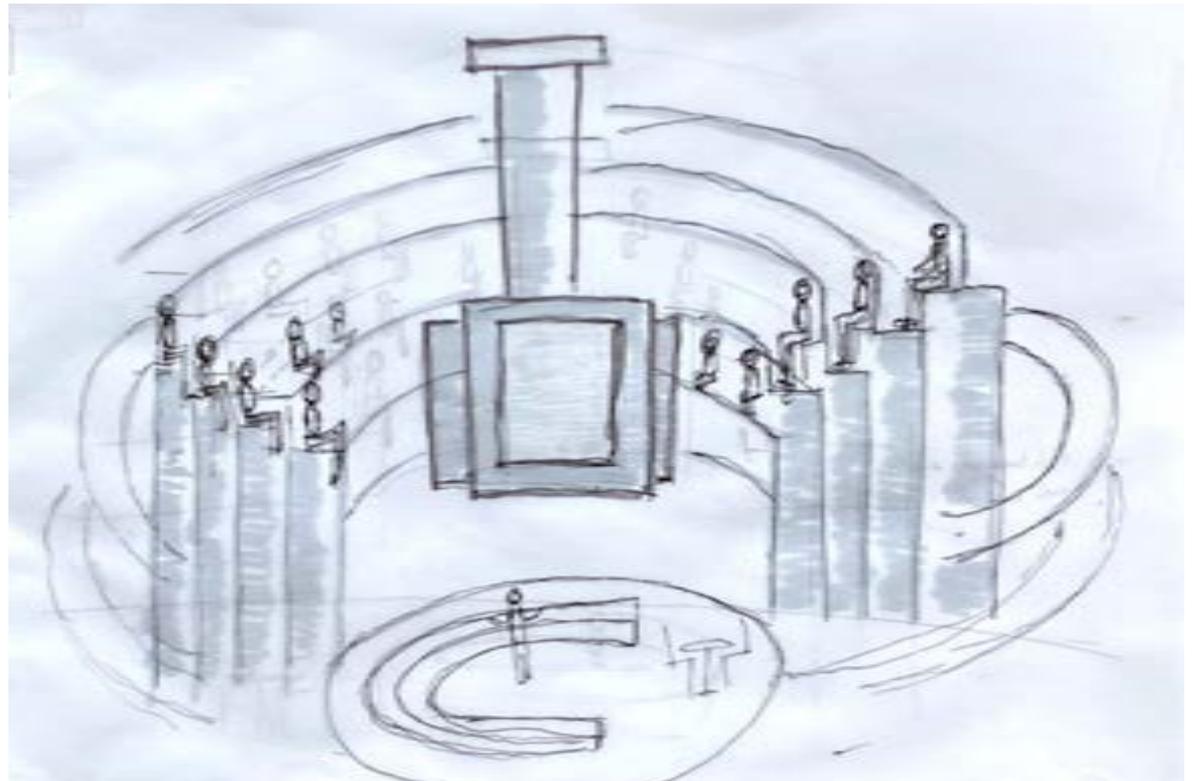
## Design process

Iterations.



In this sketch I am using the existing stage for the audience and **adding the walkways around the exhibition** to let people enter the stage on a different level.

And as we can see in the middle part I am designing a **projector coming up from the ceiling** that will be showing the images that show the decay of buildings, and at the bottom part is the coffee area.



---

### Precedent 3

#### Serpentine Gallery Pavilion

*Project name: Serpentine Gallery Pavilion*  
*Location: Kensington Gardens, London, UK*  
*Architect: Olafur Eliasson*  
*Year: 2007*

During my research into walkways I found this project that inspired me the most.

The project was “based on the principle of a winding ramp that linked the interior of the pavilion with the park”.<sup>9</sup> **The main focus was on the movement of the visitors, thus a complex geometric structure that changed in appearance with each step was designed.**

“The spiralling ramp, 140 metres in length and screened in part by twisted cord louvres, generated the form of the enclosed space.”<sup>9</sup>

This is very similar to my current project and having a look at something similar is very inspiring and helps to understand it in detail.



◀ Serpentine Gallery Pavilion 2007, 2007  
Serpentine Gallery, Kensington Gardens, London,  
2007.

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9 - Serpentine Gallery Pa... Artwork. Studio Olafur Eliasson.  
Studio Olafur Eliasson

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### Precedent 3

#### Serpentine Gallery Pavilion

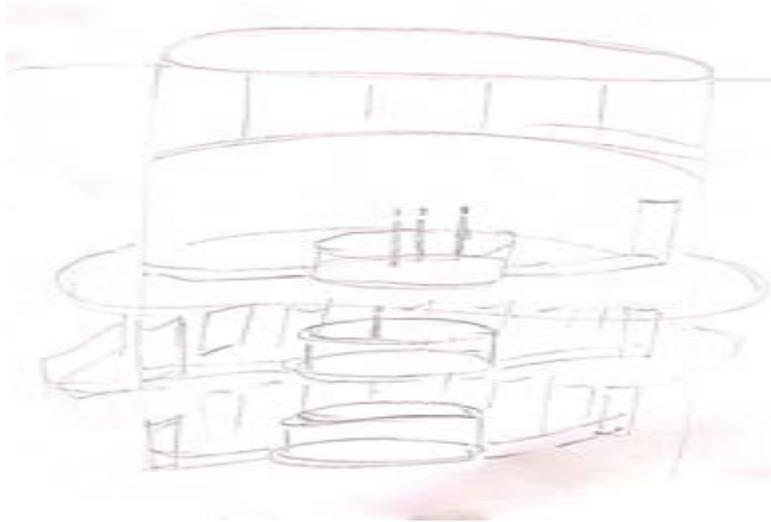


*Serpentine Gallery Pavilion 2007, 2007  
Serpentine Gallery, Kensington Gardens, London  
Photo: Olafur Eliasson*

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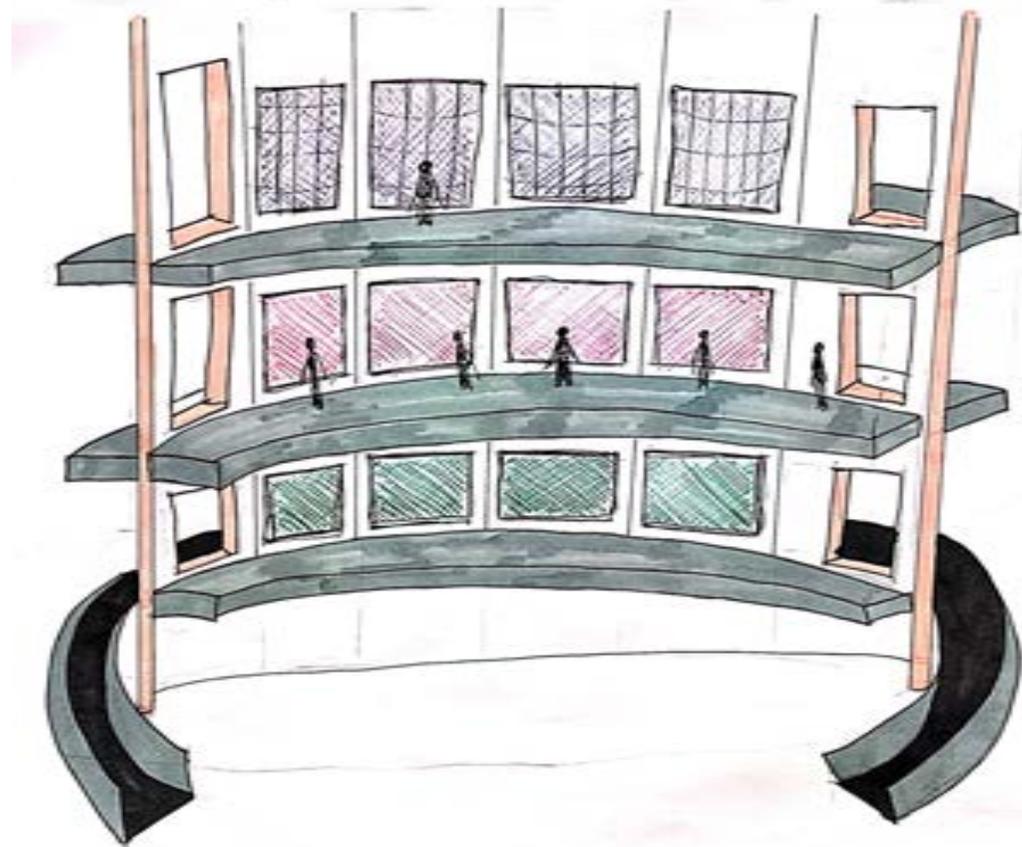
## Design process

Iterations.



Previous idea seemed too simple for me, therefore in this sketch I improved the idea by **removing the stage benches** and instead **installed the walkways inside** the exhibition.

In terms of the displaying images that is a **crucial part** of the exhibition, I decided to present them on the wall and extend them all the way up to the ceiling. I have also decided to **add doors** on each side of the exhibition to ensure the smooth flow of the audience between floors and exhibition areas.



---

## Design process

Iterations.

In this sketch I am showing **the centre part** of the exhibition. It can be seen that at the very centre of it there is a **circular area**, where people can stand and look at the images that show the decay in buildings.

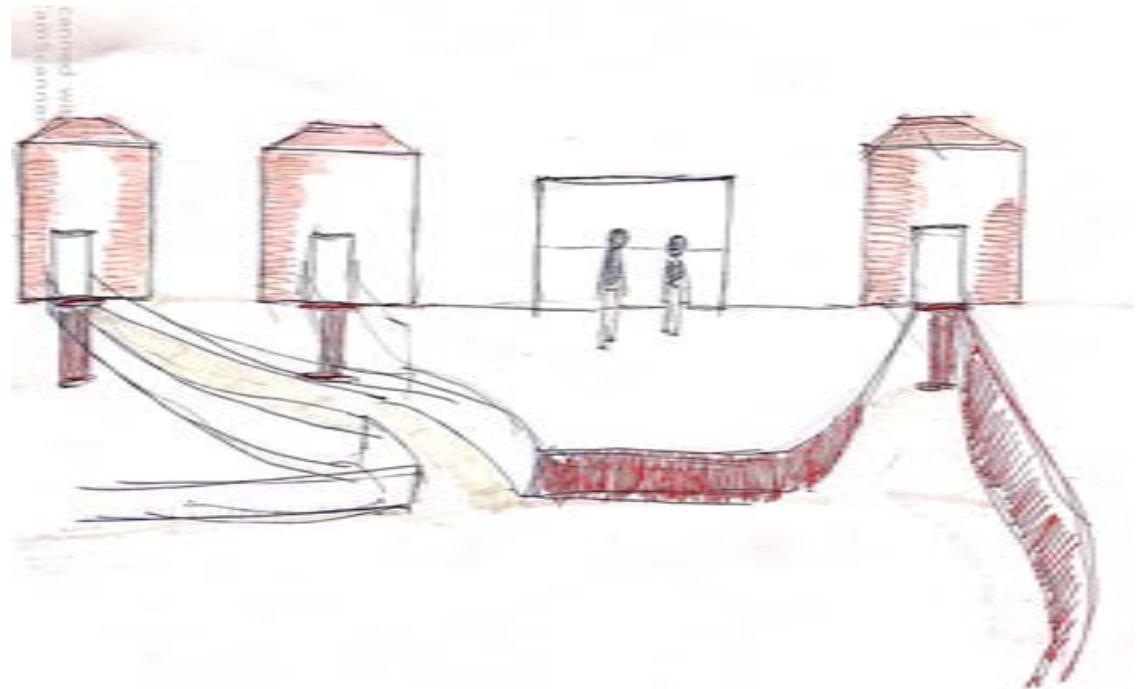
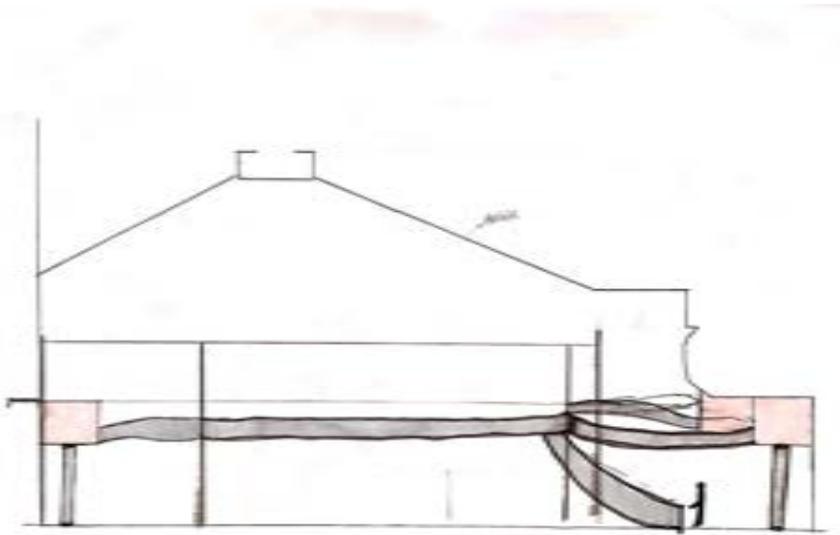
Also on the first floor I was aiming to use the whole space for the archives centre where we can store any additional documents, photographs and images.



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## Design process

Key Moment.

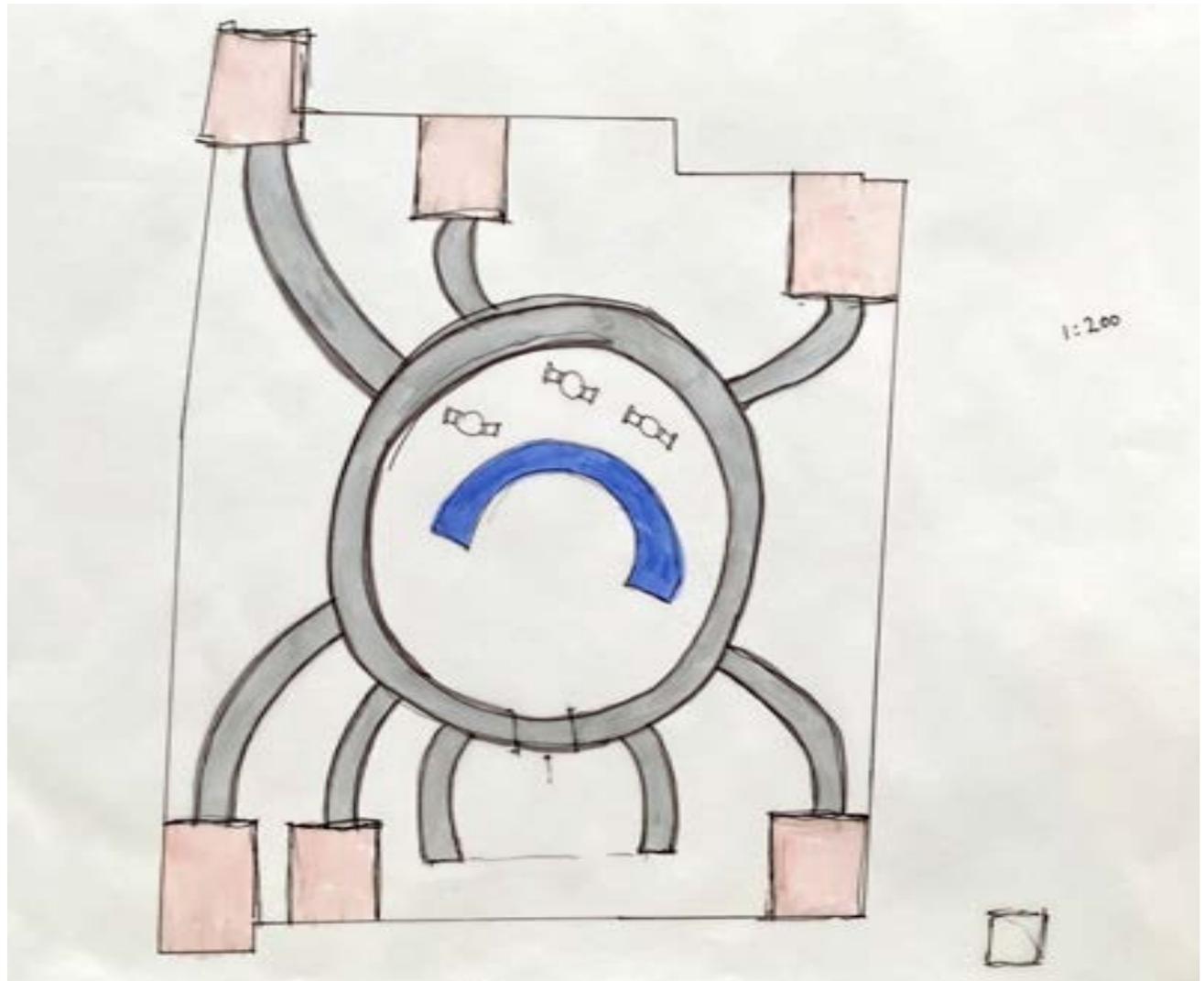


In these sketches you can see some key moments happening inside the exhibition, i.e. walkways that are looking to the entrance and the pinhole cameras.

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**Design process**  
Iterations.

I have also decided to use a plan drawing to demonstrate how these walkways are connected to and from the exhibition and to the pinhole cameras. So people should enter the exhibition first then they can access these pinholes.



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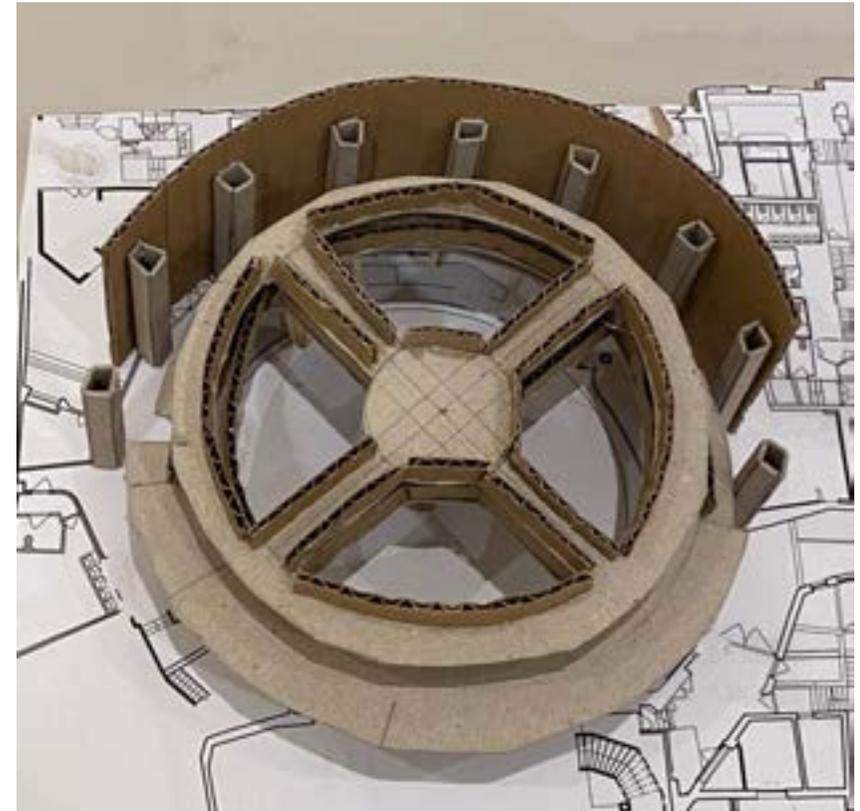
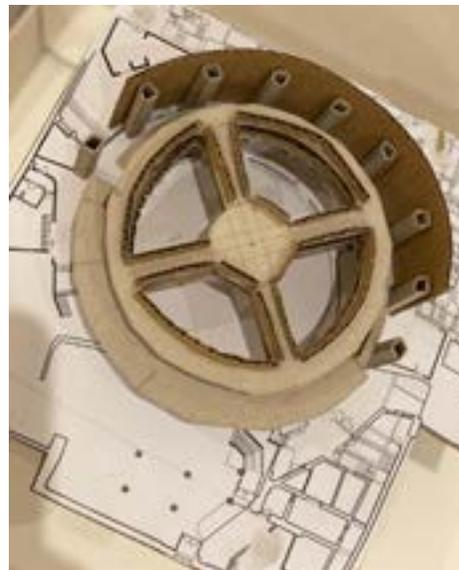
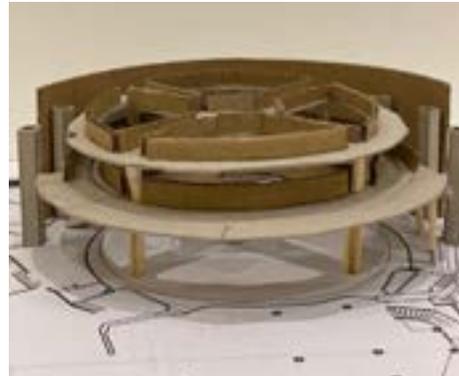
## Design process

Model. Final Design.

During the design process, some changes have been made in order to ensure that the audience can have the best experience in the Brighton Archive Centre, such as I was going to have concrete walkways internally and externally. However, there would not be enough space for the audience and the whole space becomes **very limited** in terms of movement as additional support would be required.

There are going to be **3 levels**:

- Ground floor: used as a gallery space and coffee area, gift shop. There will also be a cinema place available for the audience.
- First platform: gallery, archive place and toilets, pinhole camera spaces.
- Second platform: gallery.

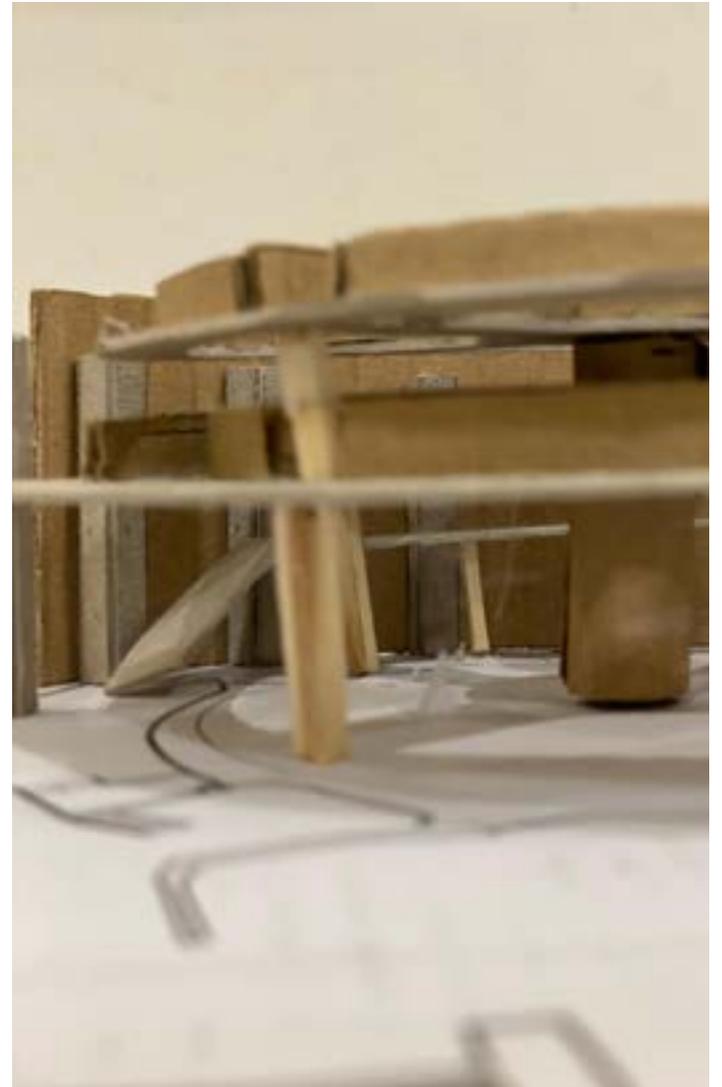
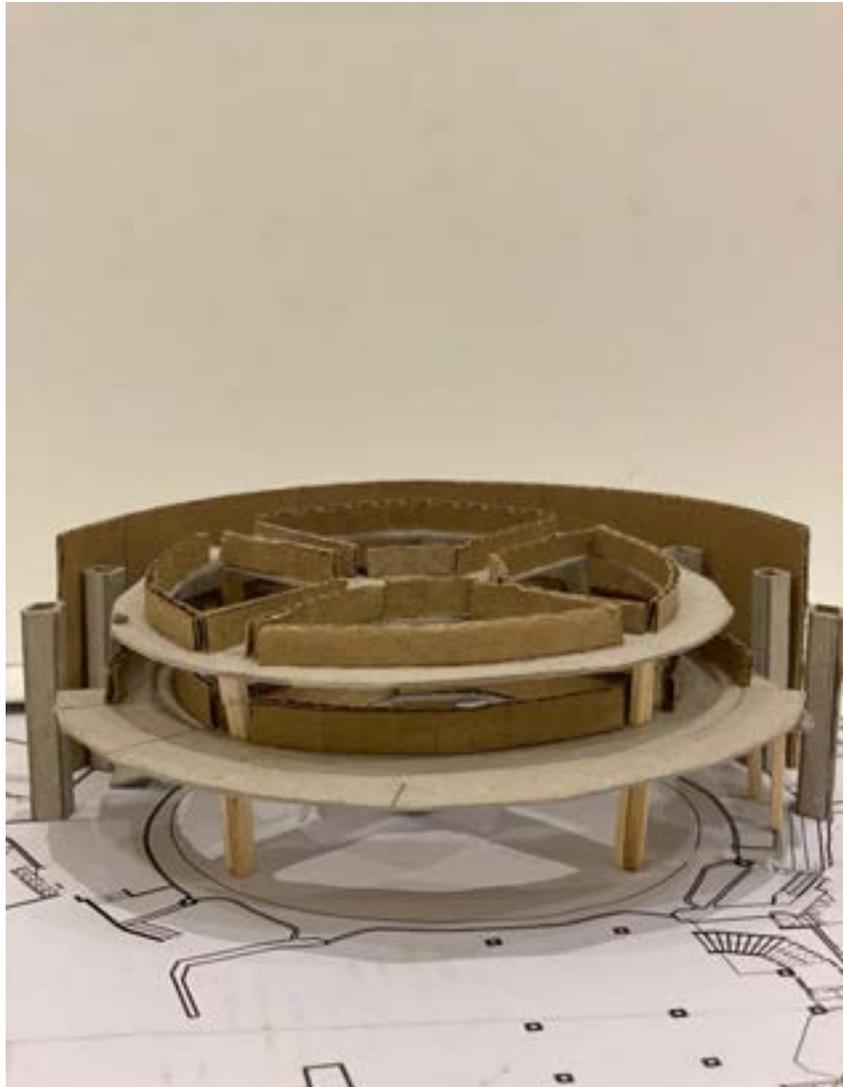


Sketch models of my final proposal. Mohammed Abel.

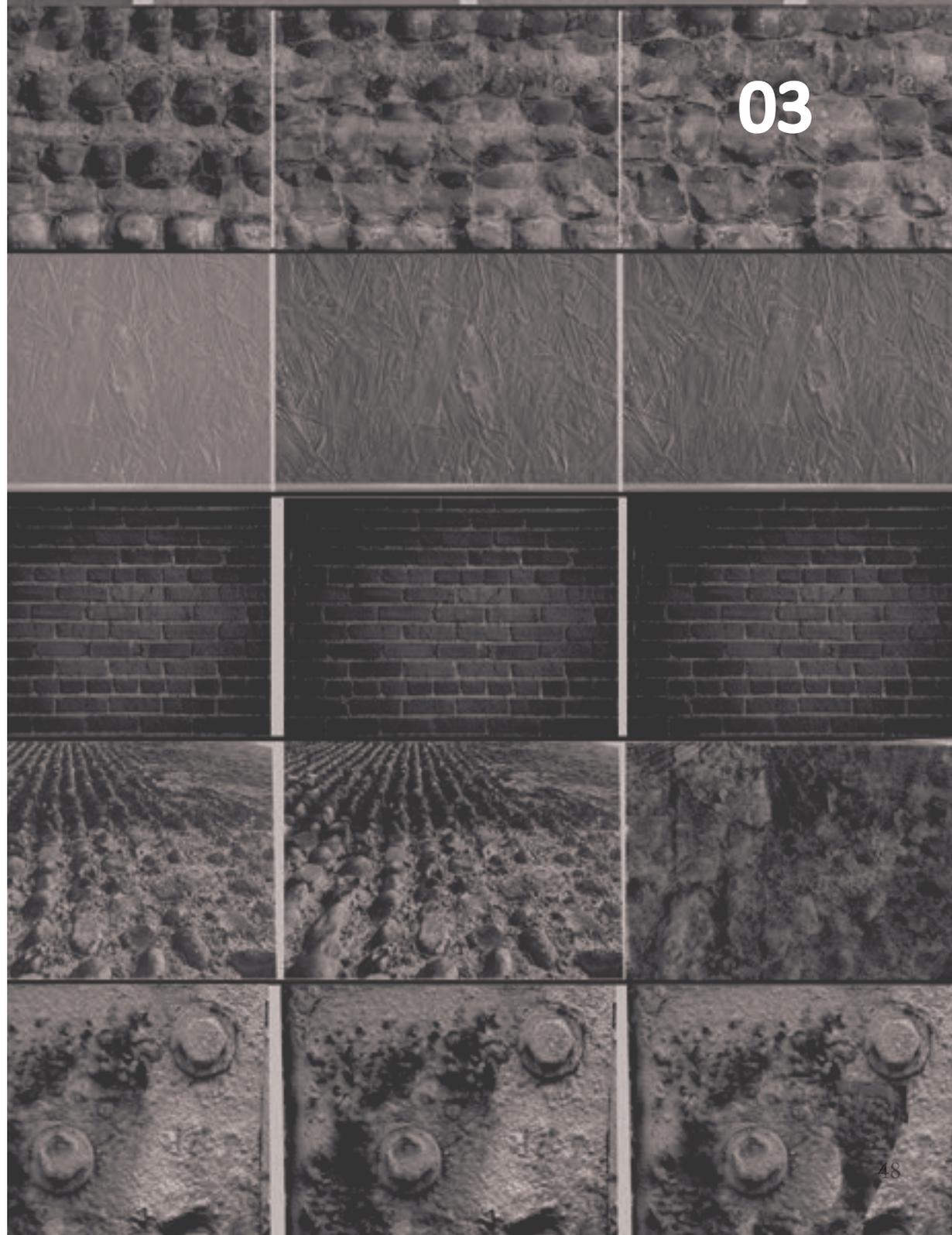
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**Design process**

Model. Final Design.



*Chapter 3 includes further development into my project. It demonstrates all the research that was conducted to ensure that the materials that were chosen for the design are properly understood as well as complications that may occur during the process.*

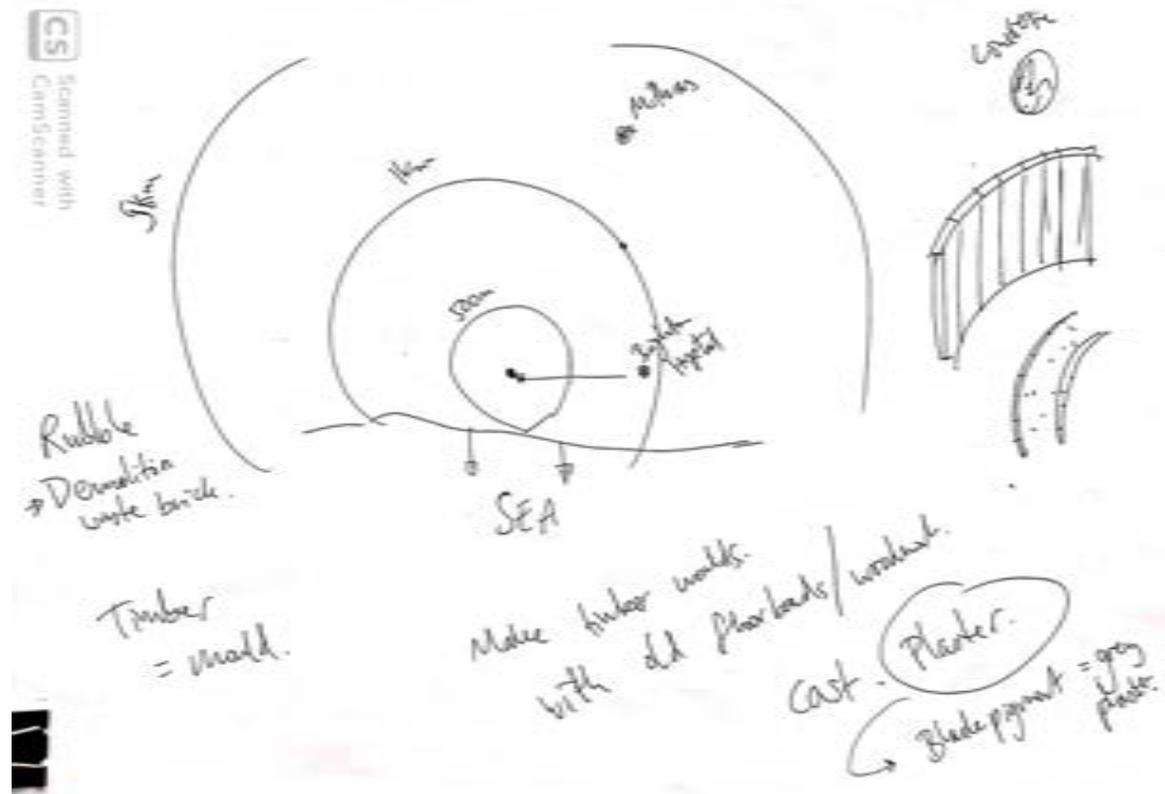


## SYSMAT Research.

My further research has been influenced by **Ben Bosense**, who is principal consultant and conservator. He works at the practice that offers specialist advice, research and exemplar repairs of stone masonry, plasters, mortars, terracotta, earth and lime. **They also focus on the repair of historic buildings.**

I found his presentation very useful and insightful. It motivated even more to ensure that historical buildings need to be preserved and looked after.

After the presentation I managed to speak to him and tell him about my project. I have also received a feedback that encouraged me to look even further into concrete and how these walk ways can be constructed **using plywood and other materials that are easily available, i.e timber.**



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## **SYSMAT**

Research.

For my walk ways I am planning to use concrete as the main material. There are several reasons for that choice:

1. **Recycle concrete.**
2. **Cost effective.**
3. Create **contrast** to the old structure (similar to the Hamar Museum precedent) because of its heavy appearance which is in contrast to the fleeting images I am going to be collecting over the time.
4. Trying to use it in an **environmentally friendly manner.**

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## SYSMAT

### Research. Concrete Recycling.

“When structures made of concrete are demolished or renovated, **concrete recycling** is an increasingly common method of utilizing the rubble.”<sup>10</sup>

Once concrete is aggregated from demolished buildings, it is put through the **crushing machine**. However, this concrete has to be without any trash, wood and other materials.

Depending on the size of the concrete obtained, it can be then **reused** for various purposes, such as gravel for new construction projects, riprap revetments and retaining walls.<sup>10</sup>

It also has been argued that due to the fact that concrete is being recycled, the **durability level** of that substance is not going to be that high. However, in order to avoid such problem, it can be fixed by **“mixing it with special materials** such as fly ash to produce high strength and durable concrete.”<sup>10</sup>

There are also **advantages and disadvantages** of using recycled concrete.

Advantages:

- “Save landfill space;
- Conserve natural resources by reducing the need for gravel mining, water, coal, oil and gas;
- When used as the base material for roadways, reduces pollution from waste transport to landfills and dumps;
- Drags down material and waste transport expenses;
- Recycling one ton of cement could save 1,360 gallons water, 900 kg of CO<sub>2</sub>.”<sup>10</sup>



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<sup>10</sup> - Concrete Recycling. Wikipedia.



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## SYSMAT

### Research. Concrete Recycling.

#### Disadvantages:

- “There have been concerns about the recycling of **painted concrete** due to possible lead content. The Army Corps of Engineers’ Construction Engineering Research Laboratory (CERL) and others have conducted studies to see if **lead-based paint** in crushed concrete actually poses a hazard. It was concluded that concrete with lead-based paint would be able to be used as clean fill without impervious cover but with some type of soil cover”<sup>10</sup>



◀ *Silverstein, Ken. Manufacturers Get New Standard for Recycling Concrete. Environment Energy Leader.*

▼ *King, Junk. 5 Benefits When You Recycle Concrete. 5 Benefits When You Recycle Concrete.*



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10 - Concrete Recycling. Wikipedia.

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## SYSMAT Research.

“Concrete is essentially a combination of water, cement, and a stone aggregate cement which when combined form a wet workable paste until it hardens through hydration. The components required in order to create it are located in most places around the world allowing it to be one of the most regularly used materials.”<sup>11</sup>

As it is very **easy to make**, therefore I will be able to produce the required amount of concrete in the **short period of time**. As concrete is available for use locally, this will **reduce costs for transportation and waiting time**.

One of the difficulties with using concrete as my main material is that it takes a **long period of time to dry** for it to be safe to walk on.

It takes 24 to 28 hours for concrete to dry for people to more or less walk or drive on it. However, concrete drying is a continuous event, and usually reaches its full effective strength after about 28 days.<sup>12</sup>

Therefore, building those walk ways can take quite a while to construct. Part of the solution can be that I will have to **make the walk ways in several parts and then put them together**.

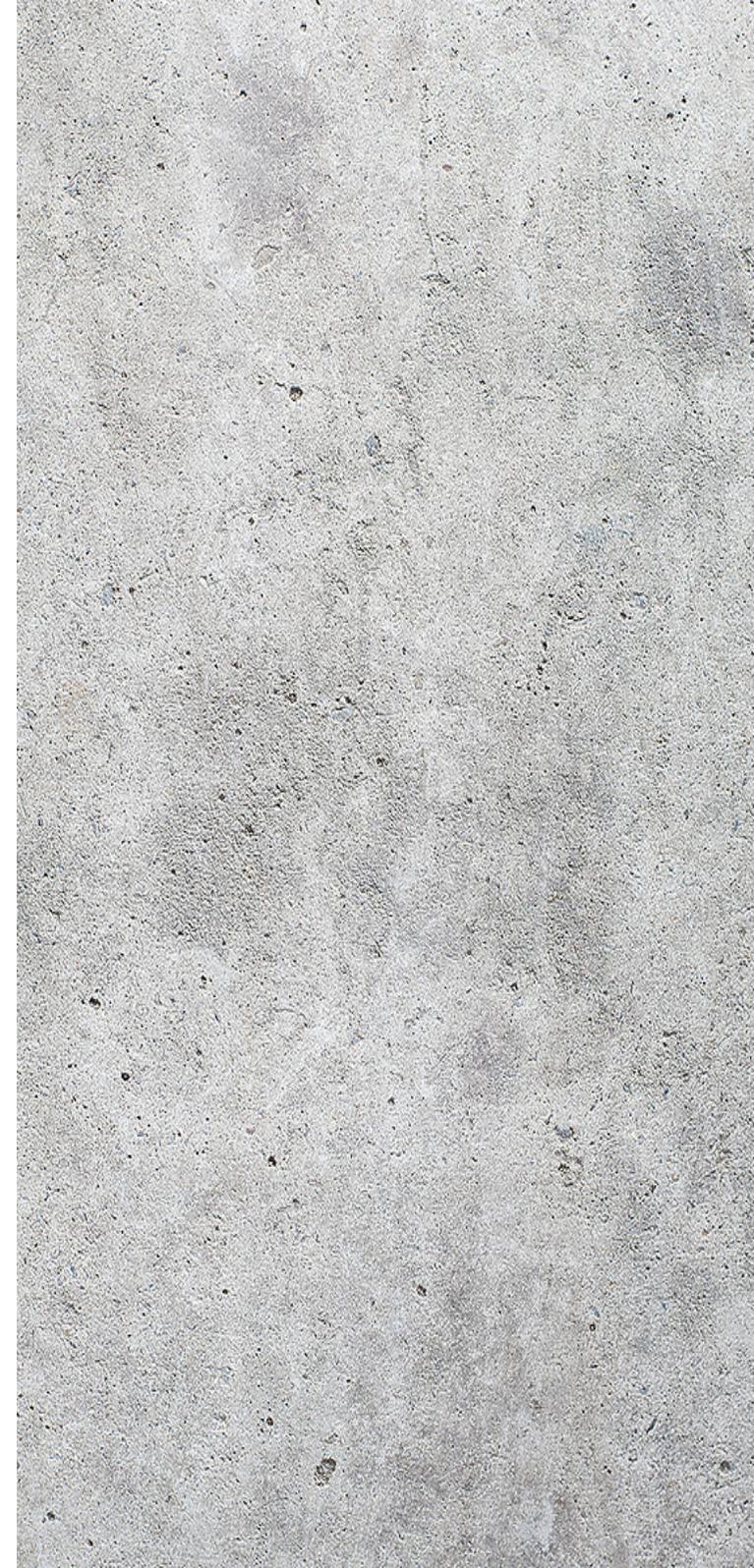
Concrete and Cement Walls. Textures.com



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11 - .Concrete in Architecture: A Material Both Stigmatised and Celebrated

12 - How Long Does Concrete Take to Dry? Dynamic Concrete Pumping



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**SYSMAT**  
Research.

There are several factors that can contribute to the amount of time needed for concrete to be fully solid and safe to walk on:

**Moisture:** If there is less water, the concrete will cure more quickly. If there is too much water, it will take longer to cure and you may see flaking on the top layer of concrete.

**Temperature:** When it is hotter, moisture evaporates faster, meaning your concrete will cure faster. You can cover your concrete with a specially designed concrete blanket to make it hotter so that it will cure faster. This can be especially useful when trying to cure concrete in cold weather conditions.

**Mix Design:** If you need your concrete to cure faster, you can add an accelerant to the mix. While this speeds-up the setting time, your full-strength concrete may not be quite as strong as concrete allowed to cure to full strength normally.<sup>12</sup>



*Concrete Dark Grey. Tile Village.*

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**SYSMAT**

Research. History Of Concrete.



# The History of Concrete



*A Brief History of Concrete: How Concrete Has Changed Over the Years. Dynamic Concrete Pumping.*

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## SYSMAT

Research. History Of Concrete.

“The precursor to concrete was invented in about **1300 BC** when Middle Eastern builders found that when they coated the outsides of their pounded-clay fortresses and home walls with a thin, damp coating of burned limestone, it reacted chemically with gases in the air to form a hard, protective surface.”<sup>13</sup>

This is interesting as this reminds me to concrete but it was not it but something **very similar**. I have also found out that “the first concrete-like structures were built by the Nabataea traders who occupied and controlled a series of oases and developed a small empire in the regions of southern Syria and northern Jordan in around **6500 BC**.”<sup>13</sup>

After some period of time they discovered the **benefits** it like cement hardens underwater “and by 700 BC, they were building kilns to supply mortar for **the construction of rubble-wall houses, concrete floors, and underground waterproof cisterns**.”<sup>13</sup>

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13 - The History of Concrete. InterNACHI.

Over the years, concrete turned into a more efficient material. As technology advanced, so did our methods of producing concrete and cement.

Today, we have a standard formula for Portland cement that was created in 1917 by the American Society for Testing and Materials along with the National Bureau of Standards.

“As we worked with concrete, we made it a stronger and more resistant building material. We discovered easier ways to make it, transport it and use it. Along with those discoveries, builders and architects constructed buildings in different styles.”<sup>13</sup>

## The Earliest Uses of Concrete

-  Buildings
-  Floors
-  Bridges
-  Roads
-  Sculptural structures



▲ The Earliest Uses of Concrete. How Concrete Has Changed Over the Years. Dynamic Concrete Pumping.

◀ Famous Structures Made Possible Due To Concrete. How Concrete Has Changed Over the Years. Dynamic Concrete Pumping.

# SYSMAT

Research. History Of Concrete.

## A history of concrete by Ever Readymix

### Early history 6500 BC - 476 AD

**Babylonia**

4300 - 300 BC  
Babylonian traders use cement to build underground irrigation and other structures and later spread to the desert.

**Egypt**

3000 BC  
The Egyptians use a mixture of mud, straw, gypsum and lime to create concrete which is used to build the pyramids.

**China**

3000 - 476 BC  
Chinese soldiers use cement to build boats and the Great Wall of China.

**Rome**

500 BC - 476 AD  
The Romans build the Colosseum and the Pantheon using Roman concrete.

### 1824 - 1891 Modern history

1824  
Joseph Aspdin invents Portland cement and names it after the rock found at his local quarry.

1881  
Alvarado Lake Bridge is the first reinforced concrete bridge, built in San Francisco, USA.

1913  
The first ready-mix concrete is delivered to a site in Baltimore, USA.

### 1900s - Present 1903 - 2018

1913  
The first ready-mix concrete is delivered to a site in Baltimore, USA.

### 1900s - Present 1903 - 2018

1913  
The first ready-mix concrete is delivered to a site in Maryland, Baltimore, USA.

1930  
Six entraining agents are successfully used to prevent freeze-thaw damage.

1934  
The Penguin Pool at London Zoo opens featuring two heated concrete tanks.

1970  
Fibre reinforcement is used commercially to build taller, stronger and more ambitious buildings, bridges and dams.

2018  
The University of Zurich creates the first 3D printed "moss slab". It's half the weight of a traditional slab and 10W at its thinnest point.

From the team of Ever Readymix

▲ A History of Concrete Infographic. Ever Readymix Concrete Ltd.

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## **SYSMAT**

Testing.

I really wanted to experiment with concrete and see what textures and finishes could be obtained by **sand-blasting** the concrete or **shutter it** with different materials that leave their **imprints**. I also wanted to **polish it** and see the affect of it as well as **adding pigments** and **printing into it**.

**Unfortunately**, because of the current situation around the world (Covid-19), I am no longer capable of conducting such experiments and play with concrete.

**Therefore**, I made a decision to conduct a detailed research into various finishes and textures of concrete.

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## SYSMAT

Research. Textures. Finishes.

After looking at the concrete's history I decided to look into **various textures and finishes** that you can achieve by using this material.

"Concrete carries its strength on the inside, but its beauty on the outside: this exterior appearance can be modified by use of various materials and techniques which will be described below."<sup>14</sup>

### Concrete Finishes:

- Troweling or Floating
- Edging
- Broom Finish

### Concrete Texture:

- Exposed Aggregate Finish
- Salt Finish
- Stamped Concrete

### Concrete Colouring:

- Pigments
- Concrete Stain

### Polished Concrete

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14 - Concrete Finishing Techniques. Archtoolbox.com.



Concrete Texture: Concrete Finish. Specialized.

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## SYSMAT

Research. Textures. Finishes.

### Concrete Finishes:

The most basic type of concrete finish is a **smooth surface**, which is created through the use of screeds and trowels. Smooth surfaces are not recommended for external as add water, a little mold and an extremely dangerous situation is going to be created.<sup>14</sup>

“**Power floated concrete** results in a hard wearing finished surface, suitable for high trafficked areas both foot and fork lift dependent on depth. Power float machines are fitted with circular pans to help smooth the concrete before metal blades are rotated over the surface adjusting the tilt to achieve a hardened surface.”<sup>15</sup>

Power floating is much better than hand **trowelling** as it eliminates the time and materials needed to apply a finishing screed and is quicker and less labour-intensive.



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15 - *DIY Concrete Guide: How to Finish Concrete, Concrete Floats, Concrete Edge.* Carroll's Building Materials .



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## SYSMAT

Research. Textures. Finishes.

In order to start the power floating process, the concrete must be left to **partially set first**, after it was **levelled and tamped**.

As it was mentioned earlier in this chapter the amount of time needed for concrete to **dry** depends on:

- air temperature,
- humidity,
- the specification of the mix.

To find out when the power floating process can take place is by “walking on the surface leaves indentations of **3-4 mm**. If the concrete is too wet the machine will tear up the surface, and if it is too dry, it will not be possible to trim high spots or fill low spots effectively.”<sup>15</sup>

Floating usually starts at one end of the slab and moves to the other. The operator must move **slowly** (speed should be consistent) **backwards** so that the float removes their footprints.

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15 - *DIY Concrete Guide: How to Finish Concrete, Concrete Floats, Concrete Edge.* Carroll's Building Materials .

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## SYSMAT

Research. Textures. Finishes.

**Edging** is a different finish and it should not be done on floors that will be covered with tile, as well as slabs. “Edging will compact the concrete next to the form where floating and troweling are less effective.”<sup>15</sup>

This results in **more durability** of the concrete and it is **less likely to chip** over time.

Before you start the edging process, for better results, you should run “a pointed trowel along the forms to dislodge the aggregate away from the forms. Edging may be required after each finishing operation.”<sup>15</sup>

**Brooming** the concrete before it hardens will produce a **slip-resistant surface**. It can be achieved by using a concrete broom that are specially designed for this purpose.

**Stiff bristle** brooms produce a coarse texture, while a **soft bristle** brooms will produce a medium to fine texture.

To achieve a texture that is **sharp and uniform**, keep the bristles clean removing excess concrete as you go.



▲ *Brush Texture. Concrete. Textures.com*



▲ *Edging Texture. Concrete. Textures.com*

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15 - *DIY Concrete Guide: How to Finish Concrete, Concrete Floats, Concrete Edge.* Carroll's Building Materials .

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## SYSMAT

Research. Textures. Finishes.

“Exposed aggregate concrete can be compared to a piece of granite or marble transformed by polishing.”<sup>16</sup>

It has a **plain surface** with no marks that has been stripped away to reveal the beauty lying beneath, which is either natural or manufactured.

Since 1900s this decorative process of exposing aggregate has been around and there is no plan for it to be leaving its trendy feature.

“An exposed aggregate finish offers numerous advantages. And many of today’s decorative concrete contractors are finding **creative** ways to take exposed aggregate to a new level”<sup>16</sup>

This type of finish is obtained by placing concrete and “then removing the outer ‘skin’ of cement paste to uncover decorative coarse aggregate (either batched into the concrete mix or seeded onto the surface).<sup>16</sup>

*Broker, Concrete. Exposed Aggregate Is Back in Vogue.*



*Exposed Aggregate Concrete Wellington NZ: Driveways Paths Patios.*



Here’s some **advantages of having exposed aggregate concrete:**

- **beautiful** results at **low cost**
- **simple** process
- the surface is **resistant** to heavy traffic and weather extremes
- **contrasts** beautifully with plain concrete or other decorative treatments such as stamping, stenciling, staining, and integral coloring.
- **Little maintenance** is required.

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<sup>16</sup> - Concrete Network. “Exposed Aggregate Concrete - Decorative Pebble Finish.

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## SYSMAT

Research. Textures. Finishes.

I have also found different ways on how to add the aggregate to the concrete:

### Seed the aggregate onto the surface

The most common method. The decorative aggregate needs to be seeded onto the slab surface right after “the concrete has been placed, struck off, and bull floated. This involves sprinkling the aggregate by hand or shovel uniformly onto the surface and then embedding it with a bull float or darby until it’s completely covered by a thin layer of cement paste.”<sup>16</sup>

### Mix the aggregate into the concrete

You can also have the ready-mix producer put the decorative aggregate right into the concrete mix during batching, eliminating the step of seeding it onto the surface after concrete placement.

### Put the aggregate into a thin topping

The last alternative way is to place a thin topping course of concrete containing the “decorative aggregate over a base slab of conventional concrete. This method generally works best when smaller decorative aggregates are specified.”<sup>16</sup>

[concreteconstruction.net](http://concreteconstruction.net)



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16 - Concrete Network. “Exposed Aggregate Concrete - Decorative Pebble Finish.

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## SYSMAT

Research. Textures. Finishes.

A **salt finish** is a simple and inexpensive way to bring to life the concrete's texture. This finish is achieved by pressing "coarse rock salt into the surface of fresh concrete, allowing the concrete to set, and then washing the salt away with a stream of water."<sup>17</sup>

After washing the concrete with a stream of water, **small indentations** can be found on concrete. It adds more **character and beauty** to the plain material.

Salt finishes are attractive alone, but are particularly stunning when used in combination with coloured concrete and other decorative finishes.<sup>18</sup>

Omaha Media Group LLC. Blog - What Is a Rock Salt Finish? ▶



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17 - On the Job: Salt-Finished Concrete. JLC Online.

18 - Concrete Network. Rock Salt Finish - Textured Concrete.

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## SYSMAT

Research. Textures. Finishes.

**Stamped concrete**, that has another name like textured or imprinted concrete, replicates stones, such as slate and flagstone, tile, brick and even wood.

“The wide variety of pattern and colour choices make it popular for beautifying patios, pool decks, driveways and more. Additionally, it’s an affordable paving option that requires less maintenance than other materials.”<sup>19</sup>

It is also possible to **add colour to concrete**, which is done by adding a colour hardener (a powder pigment used to dye the concrete) to the concrete. It can be applied by either **integral colour** (by adding the colour hardener to the concrete truck) or **cast-on colour** (the surface of the concrete is coloured by spreading the colour hardener onto the surface of the wet concrete and floating the powder into the top layer of the wet concrete).

“The process of integrally colouring the concrete offers the advantage of the entire volume being coloured”.<sup>20</sup>

The pattern is made by **imprinting** the concrete straight after it was poured. Stamps are usually made of polyurethane or various metals, forming natural **stone texture**.

Concrete stamps are placed on the concrete after the colour release has been applied. The concrete stamps are **pushed into** the concrete and then removed to leave the pattern.

“In most cases concrete stamping is made to look like ordinary building products such as flagstone, brick, natural stone, etc.”<sup>20</sup>

*Stamped Concrete Patterns.” Guevara Masonry*



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19 - Concrete Network. Stamped Concrete - Photos, Designs, Pros & Cons. The Concrete Network.

20 - Stamped Concrete. Wikipedia.

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## SYSMAT

Research. Textures. Finishes.

After a detailed research into the textures and finishes of concrete, I decided to look into different **precedents** to see how some of these features have been used in real life.

*Project name: Curved concrete walkway leading to a small pavilion in Marston Hills*

*Location: Hillcrest (San Diego, California)*

*Architect: Unknown*

*Year: 1924*

It can be seen how even back in 1924, concrete was used to make those beautiful **curved walkways**. From the top image you can also notice that some sort of **pattern** was imprinted on the walk way, creating some sort texture and adding some character.<sup>21</sup>

It is something that I would like to incorporate into my design too.



◀ *Curved Concrete Walkway Leading to a Small Pavilion in Marston Hills. Calisphere. San Diego History Center.*

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21- *Curved Concrete Walkway Leading to a Small Pavilion in Marston Hills. Calisphere. San Diego History Center.*

---

## SYSMAT

Research. Textures. Finishes.

Another project that I found the most interesting is the “Dorpshuis Heerde” community centre.

*Project name: The “Dorpshuis Heerde” community centre*

*Location: Amsterdam*

*Architect: DAT Architects*

*Year: 1975*

Traditional **brush finish** has been created in order to provide the required slip resistance surface. Not only that it has multiple advantages, it also looks unique and neat.

It is one of the textures that I have considered using for my own design.<sup>22</sup>

In order to ensure the **health and safety** of my audience in the Brighton Archive Centre, the brush texture is going to be created for the same reasons that it has been done for the community centre shown in this precedent.

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22- Brushed Finish for Precast Concrete Units. NOEplast..



Merford. “MFA De Heerd.”

Omroep Gelderland. “Politie Krijgt Weer Eigen Post in Heerde.”



Brushed finish for precast concrete units.



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## SYSMAT

Research. Textures. Finishes.

In order to **build** a concrete walkways, I would have to start with building a **base** for the walkways. This would be done by using a **wooden structure** (timber or plywood).

That base has to be **secured properly** in place and follow the shape of the walkway. If additional frame/support is required, it is possible to achieve it with building it with a steel.

After that the concrete has to be prepared and **mixed** so it is wet enough to be poured into the required shape, at the same time using a float to pat and smooth the concrete, working from the bottom up. I would have to use a shovel to settle the concrete, and rap the form sides to help create a smooth finish on the sides of the ramp.

Before the concrete mixture is going to dry, I should create a **brush texture** by using the required tools.

---

## SYSMAT Research.

I found the research into concrete's history and finishes and textures quite useful as it gave me a deeper understanding of the material. I have also realised how much of this material is being used today and that it has become **one of the most used materials** in the majority of constructions.

I have no regrets in choosing this material for my **walkways** in The Brighton Archives. However, after this research I realised how **heavy** this material is and therefore, it affected my design project.

Instead of making all walkways out of concrete, I decided to make the central platforms out of **glass** and make my exhibition wall out of **corten steel**.

This helps to reduce the unwanted heavy weight and add more character to the space.

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**SYSMAT**

Research. Corten Steel.



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## **SYSMAT**

Research. Corten Steel.

As I mentioned it in previous pages, that in order to **reduce the usage of concrete** for my design, I decided to make my exhibition wall out of **corten steel**.

One of the main reasons for choosing this material is that it is going to give the space an **atmospheric feeling**. It will remind the audience about historical buildings (as well as emphasising the fact that The Brighton Archive Centre is one of them too).

It should remind all designers and architects that when we redesign spaces, we should not forget building's **identity and character**.

Another reason for choosing this material is that I like the **texture** of the corten steel and I believe that using a combination of materials like concrete and corten steel and glass will give the exhibition an impression of a **unique space**.

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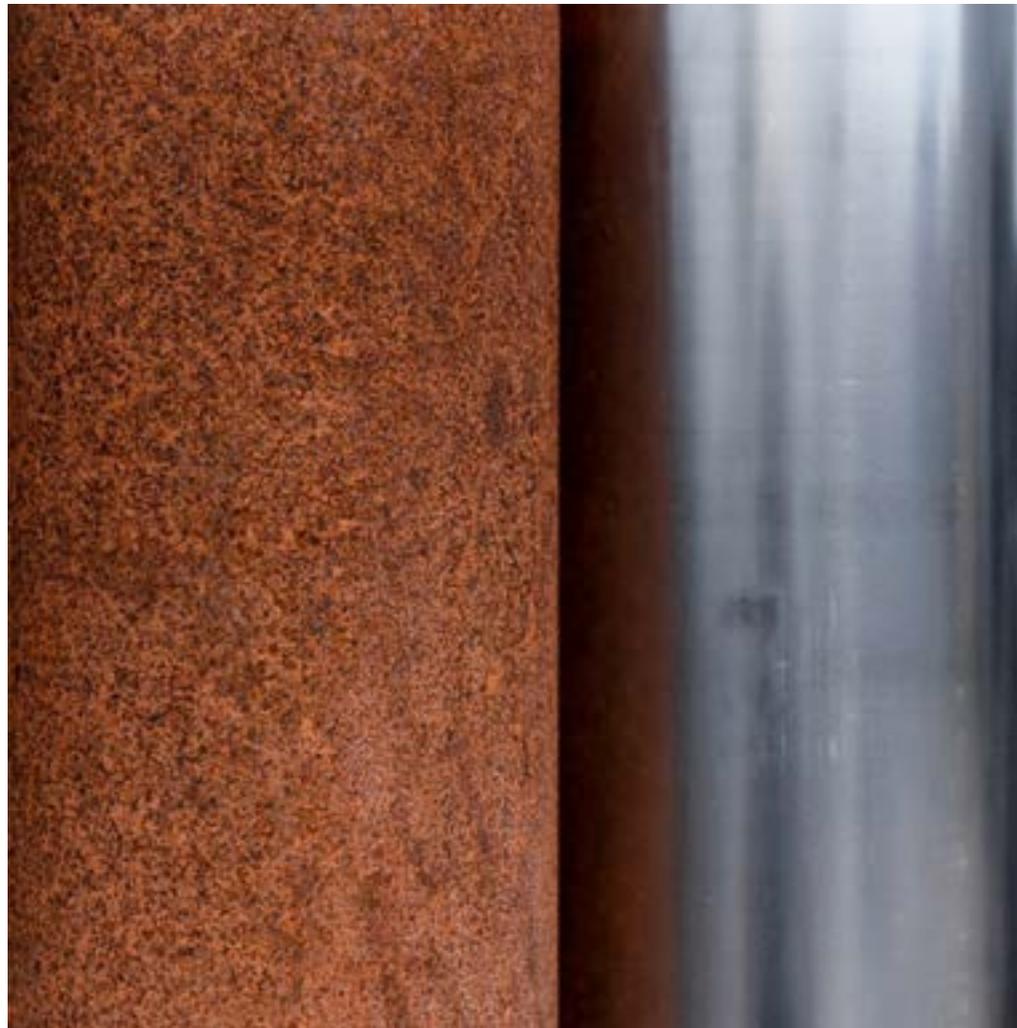
## SYSMAT

### Research. Corten Steel.

Corten steel can be found in our Outdoorovens, as you may have noticed that they are covered with a thick layer of rust. The main reason for that is this layer protects the objects against all types of weather.

“Corten steel, also known as COR-TEN steel or weathering steel, is a group of steel alloys which were developed to eliminate the need for painting and form a stable rust-like appearance, even after several years of exposure to weather influences. COR (corrosion resistant) and TEN (tensile strength).”<sup>23</sup>

Corten steel products come without a layer of rust. In order to get that rust layer, the product needs to be placed outside and after a few weeks to months it is going to start to appear. Every product will form a different rust layer, depending on the surroundings.



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## SYSMAT

Research. Corten Steel.

When it came to looking at the design of the **exhibition walls**, I found **Richard Serra's** work very inspiring.

His **minimalist constructions** from large rolls and sheets of metal (the material is called corten steel)<sup>24</sup> 12 have reminded me of my exhibition and it is something that can be included in my design.

The shape of each sheet resembles **the shape** of the concrete walkways for my audience and therefore, incorporating two of these structures is going to bring my exhibition into one.

There will be a noticeable **connection** between the display of the images and the walkways, thus resulting in the message portraying about the connection between the climate change and the decay in buildings!



▲ Photo courtesy of the Doris and Donald Fisher Collection at the San Francisco Museum of Modern Art.



▲ "The Brighton Hippodrome during the run of Can-Can on the 24th of September 1956 - Courtesy Gerry Atkins".

▲ Richard Serra. The Matter of Time. Guugenheim.

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24 - Richard Serra - Alchetron, The Free Social Encyclopedia.

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## SYSMAT

Research. Corten Steel.

▼ *Richard Serra, Intersection II, 1992 Cor-Ten steel 4 plates: 157 1/2 x 669 1/4 x 2 inches each (400 x 1700 x 5 cm) (photo courtesy of: <http://www.gagosian.com>)*



▲ *Photo courtesy of the Doris and Donald Fisher Collection at the San Francisco Museum of Modern Art.*

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## SYSMAT

Research. Corten Steel.

As the corten steel is going to act as an exhibition wall for the gallery, we will have to **put images on it**.

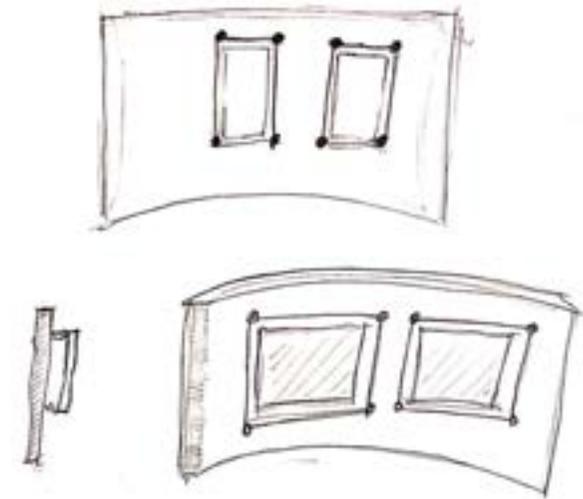
Drilling is unfortunately not one of the options as I would not want to have holes on my steel sheets. Therefore, another option is to use a **magnetic tool** that is going to hold those images in place, meaning **no damage** is going to be done and they easily can be **replaced**.



Universal to 8mm Rod Magnetic Base Digital Level Tool Stand Dial Gage Holder.



Sketch. Mohammed Abel.



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## SYSMAT

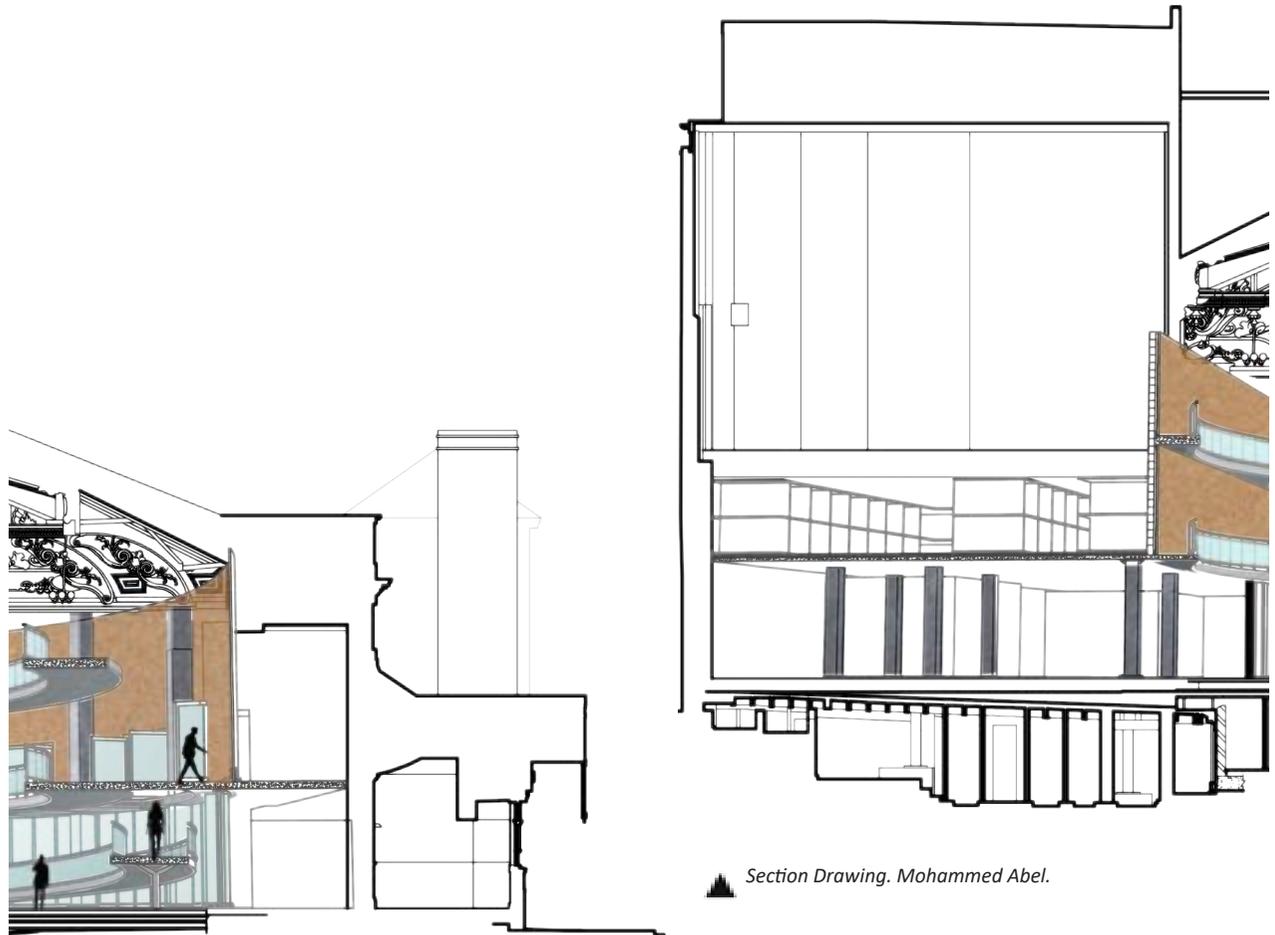
Research. Corten Steel.

The concrete floor slab will be supported by a **concrete column**. The base and the head of the column will have a **steel base plate**.

The right side of the section will be a single panel of corten steel supported by steel **brackets** connected to the **floor slab**.

Material construction of the **wall**:

- plasterboard
- concrete block
- rigid insulation
- DPM (waterproof)
- corten steel cladding



Section Drawing. Mohammed Abel.

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