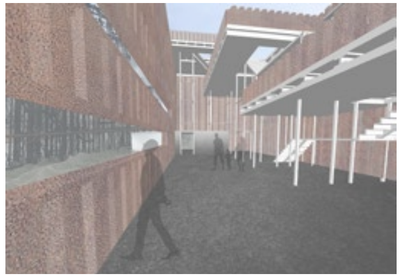
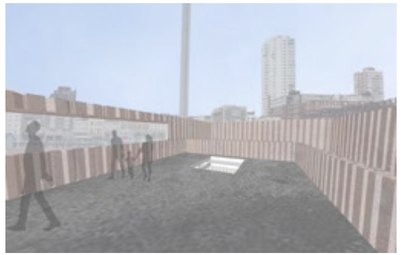
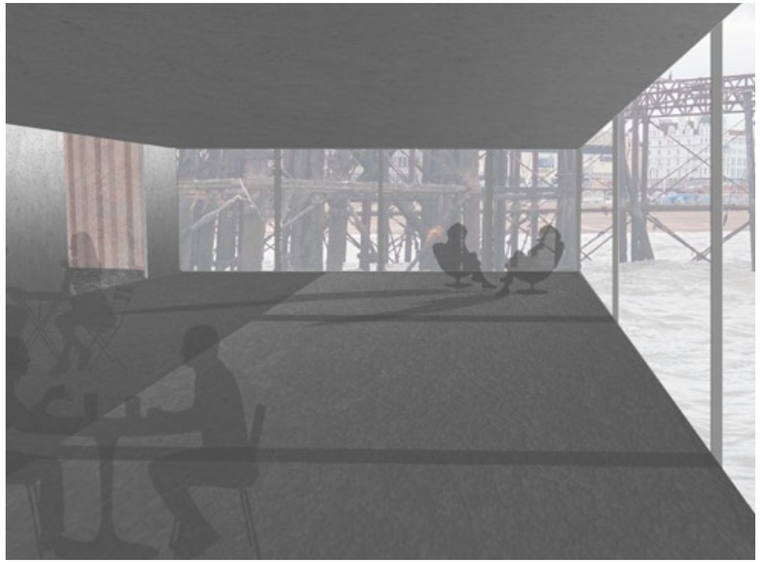
Fiona - Aina Quartermaine

AD676 - Design 4: Experience and Systems

Almanac Supporting Document







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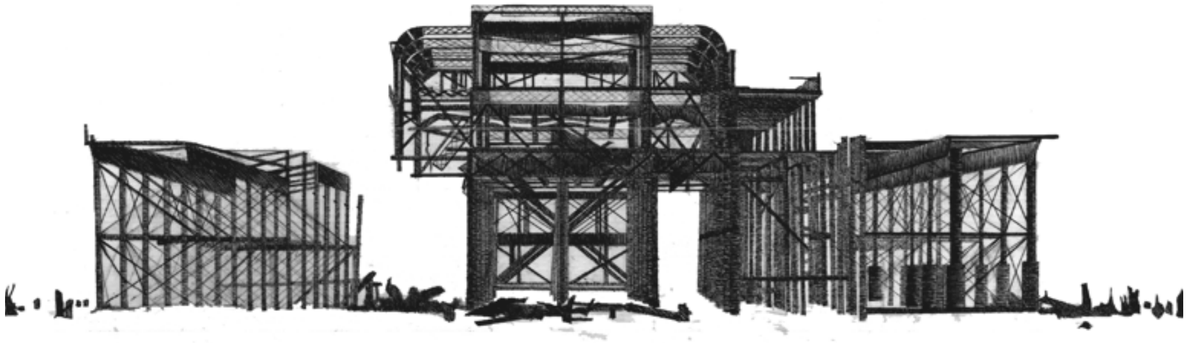


A01

Programme Research

The Festival of Britain 2022

A01 - Introduction

The Festival of Britain 2022

For the Semester 2 Module – AD676 – we as a studio will be developing upon our Semester 1 projects around the topic of The Festival of Britain 2022. We will individually be developing on our own programmes, experimenting into spatial and experiential propositions, to create a pavilion that celebrates our ideas of 'British' culture. There will also be infrastructure elements such as ticket booths, access, and resting points which will need to be designed through groupwork. During the first semester I established what aspect of British culture I wanted to celebrate, and draw attention to. Within this first task I plan to curate the activities that will happen within my pavilion and decide upon the programmatic elements.

Initially the theme I wanted to go with was Seaside Entertainment, and what it was that brought people/tourists to English Seafront. I believe this is 'Britishness' as it's an aspect I noticed coming to the UK. It's a place which draws people in, with exotic entertainment, leisure for all ages, as well as beautiful views when the weather is pleasant.

As modern British families jet off on holidays to Europe, America and even further afield, they leave behind the traditional domestic seaside holiday. In the mid-20 Century, fun fairs, Butlin's camps and packed shores were the archetypal image of the summer months. Now, that has all been left in the wake of package vacations overseas, but for those who call these former-havens home, the dearth in footfall has had a profound effect on their economies.

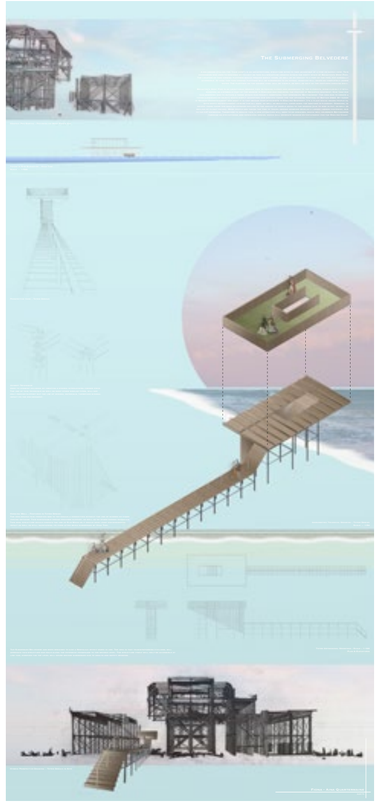
In most cases - entire theme parks have been raised to the ground, previously popular attractions lie dormant, boarded up and covered in graffiti, while cafes and hotels have closed their doors in large numbers.

This Welsh seaside town was another popular tourist spot for those in Wales and the west of England who fancied a trip to the seaside. In Victorian times it was considered an elegant resort, tourists used to flock to the seafront from as far afield as Manchester and Liverpool. One of the most popular attractions throughout much of the 20th Century was the Ocean Beach fun fair, but its 2007 closure after 53 years typifies the town's struggles in more recent times.

As well as researching into the history of British culture, I was able to define a theme in which celebrates Britishness, as well as drawing attention to current issues facing our world today. There has been an extreme decline in the amount of people going to the seaside (due to rise in pay, as well as decline of fight prices). More people are taking the time to travel abroad however develop a larger carbon footprint, due to the CO 2 emissions. This could be dramatically reduced if more people stayed within the UK during holiday seasons, and visit locations such as the coast. New attractions will need to be developed in order to attract people/tourists in, through advertisement of exciting new structures.

Through this stage I started researching into what possible attractions could be used, the idea will need to be futuristic however not too far absurd it would see impossible. Using historic facts and past events I managed to come up with a few ideas which could potentially be extremely eye catching. The idea was to create some kind of NOSTALGIA and celebrate Britishness through an eye-catching and intriguing design, which recreates seaside entertainment for the English Coast.

Many various attractions could be designed and installed which would benefit the British Seafront, by tourism, as well as help from the surrounding community. Using the British Seafront as a holiday destination will not only cut down CO2 emissions, therefore reducing your carbon footprint, but also provide a luxurious holiday. The idea to come up with an alternative to traveling abroad could be a promising idea, however, will need to go into further detail about restrictions to define what realistically could be built and included on the seafront. The attractions will be a way to draw people in, and it will allow the people to have a unique experience within a place they might not normally consider to be the perfect luxurious holiday destination.



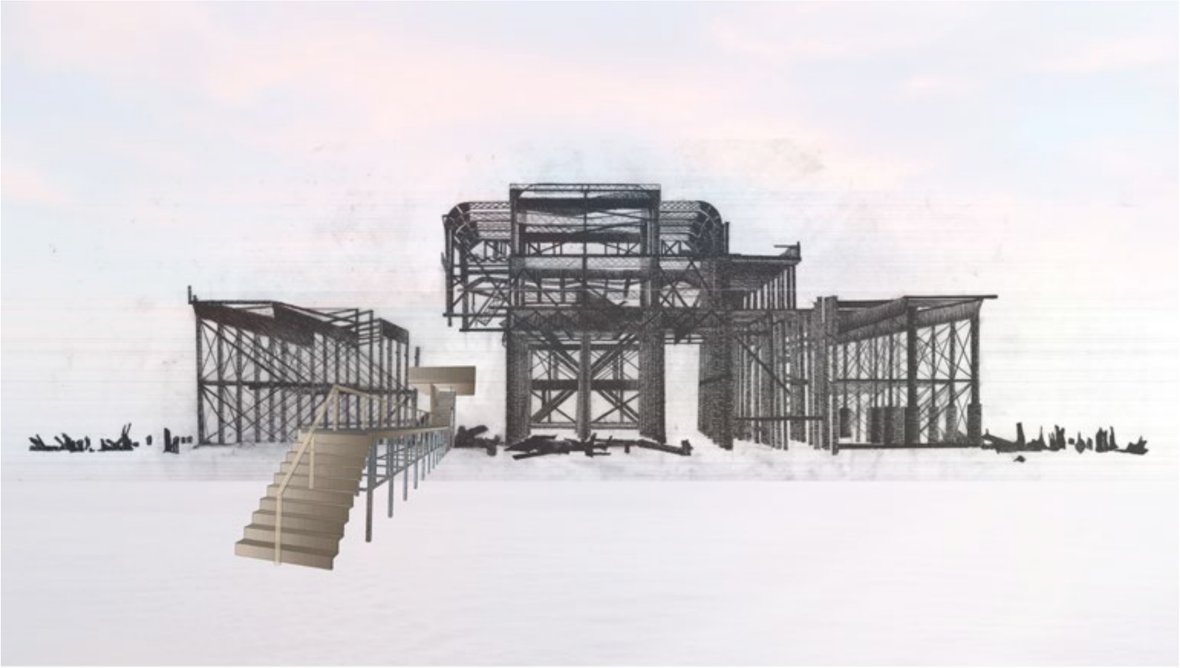
Critical Analysis - Framework - Semester 1

The Submerged Belvedere has been designed to give a nostalgic effect when in use. The idea is that tourists/passing civilians, will approach this structure and walk along the extensive promenade to the second level. The structure itself will only be accessible at low tide, however the top level will never become submerged due to health and safety reasons. The programme in the surrounding context may develop at a later date, providing what will be a new attraction which will celebrate Britishness through an eye-catching and intriguing design. Which will, in result, recreate seaside entertainment for the English Coast.

I believe this particular design will target more than one specific age group, allowing more people to interact with Brighton's Seafront, within an area which is not normally accessible. The future development plans will involve a programme at a much larger scale, as well as being located within the surrounding context. A festival of a large scale will require eye-catching attractions and exotic events, therefore potential designs will need to incorporate the leisure aspect of this catalyst.

The Totem design will be used as a foundation point to develop on, as I believe the size of this intervention will be large due to my chosen catalyst. The theme will remain the same, as reducing $C0^2$ emissions is an extremely important issue which needs to be addressed. This will take place through sustainable design within the chosen programme of Seaside Entertainment. The festival will be accessible through similar designs (submerging structures or interactive/passive designs) which will allow local residents as well as tourists to involve themselves with the seaside and newly designed attractions.

In terms of what would best communicate my project, I believe this would be a series of technical drawings, taken from a 3D cad model. However, the use of rendering and 3D visualisation allows one to get a sense of experience/materiality and inhabitation, therefore an atmosphere may be created through a drawing. For the temporary aspect of this programme, I believe a series of models and drawings will be created. Overall last semester I extremely enjoyed visually communicating particular information/designs through drawings, and will continue to do so for future proposals.



TASK A - Curate

Programme Research - Timeline

For the first section of this chapter, I will be compiling and documenting the critical research; regarding my chosen programme. It will include sub-chapters for each of the programme requirements. These sub-chapters will be a combination of written analysis, sketch / visual documentation of my iterations, annotations and precedent study. This chapter will also include the infrastructure critical research.

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The Victorian Era

Eccentric and Bizarre Attractions

Before the invention of radio, television, video games, cell phones, the Internet, and pictures of cats with funny captions, nineteenth century people were actually forced to find their own entertainment.

Divination

Tea leaves, palm reading, the good old crystal ball … the Victorians used all these methods and more while attempting to catch a glimpse of the future. What else did they try, you ask? Dice, apples, nuts, mirrors, candles and wax, playing cards, seeds, dreams, coins, fruit cake, moles and warts, dead people (communication with the dead through spiritual mediums was more popular than Hot Pockets at a nerd convention), all played a role in divination – and the list goes on. Many forms of divination were practiced by young women trying to find out more information about their future husbands. Seems more romantic, if less accurate, than Googling your potential spouse.

The late nineteenth and early twentieth centuries were the heyday of spiritualism. Séances at which mediums produced phenomena like table rapping, ghost materialization, and ectoplasm were very popular. At home, people tried automatic writing and Ouija boards. Many mediums were women, as it was thought that "sensitive" females were well suited to opening themselves up to spiritual possession. And if that's not a metaphor for something Freudian … but I digress. Of course, as soon as mediumship became a lucrative business, deliberate frauds got into the act. The escape artist and magician, Harry Houdini, exposed many fraudulent mediums.

Mummy "Unrolling"

The nineteenth-century craze for all things Egyptian led naturally to an unwrapping or "unrolling" of mummies. Contrary to a popular urban legend, people didn't do this at home. Instead, the public attended lectures and exhibitions, where self-titled experts cut into the mummies they'd purchased at auctions. Travelers also liked to bring mummies home from their Egyptian vacations.

Cabinet of Curiosities

Many Victorians were avid collectors. Most specialized in one subject or another, but a select few were indiscriminate to a ridiculous degree. Their collections contained various "curiosities" such as zoological, botanical, archaeological and geological specimens, shrunken heads, seashells, antique weapons, clockwork automata, etc. Some created a "cabinet of curiosities"—in this case, cabinet meaning a room where such accumulated oddities were displayed. Far from being a new idea, such collections had been around since the seventeenth century. One of the most famous was P.T. Barnum's American Museum in New York, where 15,000 patrons a day could gawk at the Feejee Mermaid, and living whales, between 1841 and 1865.

Anthropomorphic Taxidermy

Victorians didn't necessarily like to practice the art of taxidermy itself, but many did collect and appreciate animals of the stuffed variety. Consider the work of Walter Potter, for example, whose highly detailed anthropomorphic taxidermy tableaux included guinea pigs playing cricket, as well as cute little kittens in cute little frilly costumes getting married. Sweet, except for the fact they're all dead, dead, dead. Allegedly of natural causes – but I have my doubts. Nevertheless, Potter's museum in Bramber, Sussex (England) was a popular tourist attraction. Stuffed hedgehogs had delighted Victorian audiences at the Great Exhibition of 1851, and this had helped to popularize the unsavoury craze.

Seaweed Scrapbooking

You can add seaweed to the list of plants Victorians were obsessed with. After collecting the specimens, scrapbookers would paste the multi-coloured strands onto sheets of construction paper. The designs were more aesthetic than educational, with the seaweed sometimes arranged to spell out words or form images.

Strange British Sports

Current sports which take place throughout the UK

We all know football was developed and codified in England but here is a selection of somewhat wackier sporting pastimes Britain has produced.

Tin Bath Racing
The World Tin Bath Championships take place each year at Castletown on the Isle of Man. Participants from as far away as the Antipodes take to the water to race their baths over a 400m course. The winner is the first to finish – or, often, the competitor who just gets the furthest without sinking! The 44th annual event takes place in July 2016. Soap and back scrubbers optional.

Cheese Chasing
On the second bank holiday in May each year, contestants from all over the world gather at the top of Cooper's Hill in Brockworth, Gloucestershire, for its famous cheese-rolling race. Their goal is the madcap pursuit of a Double Gloucester cheese sent hurtling down a precipitous 200-metre slope – the gradient is 1:1 in parts! The winner gets the cheese. Others get bruises and breaks.

World Worm Charming Championship
The World Worm Charming Championship is an unusual event, during which people of all ages try to extract as many worms out from soil as possible. The event dates back to 1980. Each participant gets three-metre square plots of land. Participants use different techniques, like vibrating the ground by sticking implements into it, playing music, or patting the soil. Prizes are awarded for the single heaviest specimen and the largest quantity of warms. After the competition, all the worms are released into the wild

The Kinema in the Woods, Woodhall Spa
The Kinema is a traditional 20s cinema showing all the latest films. It is a fantastic place with intermissions, old-fashioned paper cinema tickets, a Compton organ (that plays during the interval!) and a sweetie counter.

Hen Racing
For over a century, the Derbyshire village of Bonsall has staged World Championship Hen Races outside the Barley Mow pub. Local villages compete, racing chickens over a 15-metre track – with the birds given three minutes each heat to cross the finish line and any fighting between hens resulting in disqualification. And any spectator who makes jokes about runny eggs may be asked to leave.

Conkers
The very nutty World Conker Championships has taken place every October since 1965 near the ancient Northants market town of Oundle. Thousands gather to watch modern-day gladiators battle for glory armed only with a nut and 12 inches of string. There are separate events for men, women and juniors, with the winner in each category led to the Conker Throne and crowned with conkers.

Mappleton Boat Race and Bridge Jump
This is held annually on New Year's Day. Twenty teams of two people paddle down the River Dove for a quarter of a mile, climb out of their boats and jump 30 feet off the bridge into the river. They then swim to the edge and run across the field to the finish line – the Okeover Arms, Mappleton. Crowds gather and there is food, hot drinks, as well as copious amounts of alcohol on offer! A great way to start the New Year.

Bog Snorkelling
The World Bog Snorkelling Championships are staged each August in a bog on the edge of the Welsh town of Llanwrtyd Wells. Contestants from around the globe battle to negotiate 60-yard-long trenches filled with gloopy mud and water. Some add fancy dress as an extra handicap. The current world record was set in 2014 by a Surrey woman, who did the course in 82.56 seconds. Impressive.

Longleat Hedge Maze
Added to the historic grounds of the stately home of Longleat in 1975, the Longleat Hedge Maze in England is the largest of several mazes on the property. The maze is constructed of more than 16,000 English yews and is the longest (but not the largest) hedge maze in the world, covering 1.48 acres and 1.69 miles of pathway. It is a full-scale maze, with several dead ends and multiple paths punctuated by six raised bridges, all of which surround a central tower.

Cutting Carbon Emissions

Reducing Emissions through simple techniques, and Calculating what Impact flying has on the Climate

As the aviation industry is usually keen to point out, planes account for only around 1.5%–2% of global CO2 emissions. For one thing, most fights are taken by the wealthy, so in developed countries the slice of CO2 emissions caused by flying is higher – around 6.3% in the UK, according to Department for Transport figures for 2005.

First, the total global warming impact of each flight is thought to be around twice as high as the CO2 emissions alone (see 'What's an aviation multiplier?', below). Second, the figures are skewed in favour of British travellers. e standard way to account for the emissions for an international fight is to allocate half to the country of departure and half to the country of arrival. But UK residents take up two-thirds of the seats on the average plane landing at or taking o from a British airport. is means the official statistics are effectively offloading the emissions of British holidaymakers and businesspeople on to the countries they're visiting. Third, the aviation industry causes emissions over and above those of the planes themselves. e processing and transportation of the aviation fuel, and the manufacture and maintenance of planes, airports and support vehicles all create extra carbon dioxide.

For anyone concerned about their contribution to global warming, cutting back on air travel is an obvious goal. This might mean giving up flying altogether or it might mean taking fewer fights and picking destinations that are closer to home. It's true that short fights tend to be more harmful to the climate per mile travelled than long-haul flights are (because they have more empty seats, and because taking off and landing burns more fuel than cruising) but this doesn't change the fact that the further you travel, the greater the emissions that will result.

Bamboo

Sustainable Material Study

Bamboo products have increased in popularity with many brands promoting their eco-friendly benefits and sustainability. In an effort to promote an eco-friendly home, I discovered the exact details behind this sustainable material. So why is bamboo a sustainable material? Bamboo is a fast-growing, renewable, and easy-to-grow material that requires zero chemicals and pesticides. It can be grown all throughout the world and has countless uses both in and outside the home.

Renewable Resource

Bamboo can be harvested in one to five years depending on the species. In comparison, hardwoods like oak trees take at least forty years before they can be harvested. According to World Wildlife Fund, 18.7 million acres of forests are lost to deforestation annually. As a substitute for hardwoods, bamboo offers a versatile solution to drastically reduce this number and protect our forests.

Fast Growth Rate

Some species of bamboo will grow as much as three feet (1 meter) per day! Labelled the fastest growing plant on earth, bamboo does not require replanting. When harvested, it will grow a new shoot as a result of its extensive root system and help protect soil from erosion.

Grows Everywhere

Bamboo is a tough and durable plant that can be grown throughout the world and thrives even in harsh conditions from low wetlands to higher elevations in the mountains. With over 1000 species, bamboo can be found in nearly every region in the world.

Economic Development

Bamboo production and manufacturing provides job opportunities in less developed countries that need social and economic sustainability. China, the world's largest bamboo producer, was valued at over 19.5 billion USD in 2012 employing over 7.5 million people. This serves as a model for other countries looking to develop a sustainable bamboo industry.

Roads and Bridges

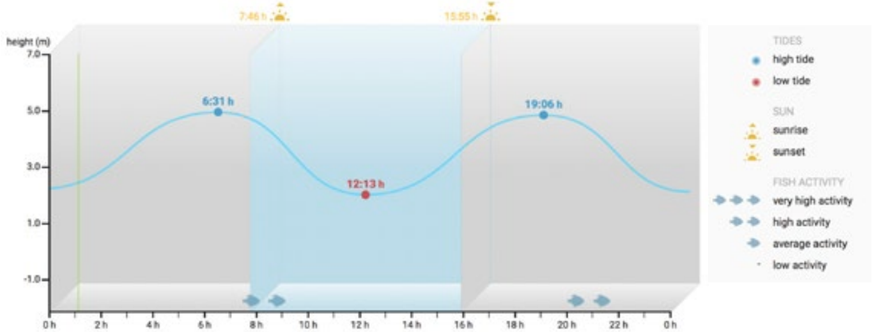
Bamboo has been used for road barriers in India. A bamboo bridge built in China can support a truck weighing 16 tons (32,000 lbs or 14,515 kg).

Is bamboo flooring sustainable?
Since bamboo is naturally anti-bacterial it will be more resistant to infestation, rotting, and warping than hardwood. Bamboo is also more water-resistant, which makes it a better choice than many other hardwood floors that can stain or deteriorate when any kind of moisture gets in contact with it.

Is bamboo sustainable building material?
Bamboo can be utilized as a building material for scaffolding, bridges, buildings, and houses. Bamboo, like hardwood, is a natural composite material with a high strength-to-weight ratio useful for structures.

What are some other sustainable materials?
Bamboo is not alone. Other sustainable materials include recycled rubber, adobe, hemp, cork, straw, clay, and coconut palm.

Similar plant includes; The Kiri tree
- Can help us fight climate change
- Grows as fast as bamboo
- Also known as Paulownia or Japanese Empress Tree
- Produces oxygen 10x faster than average
- Reduce CO2 10x faster than average

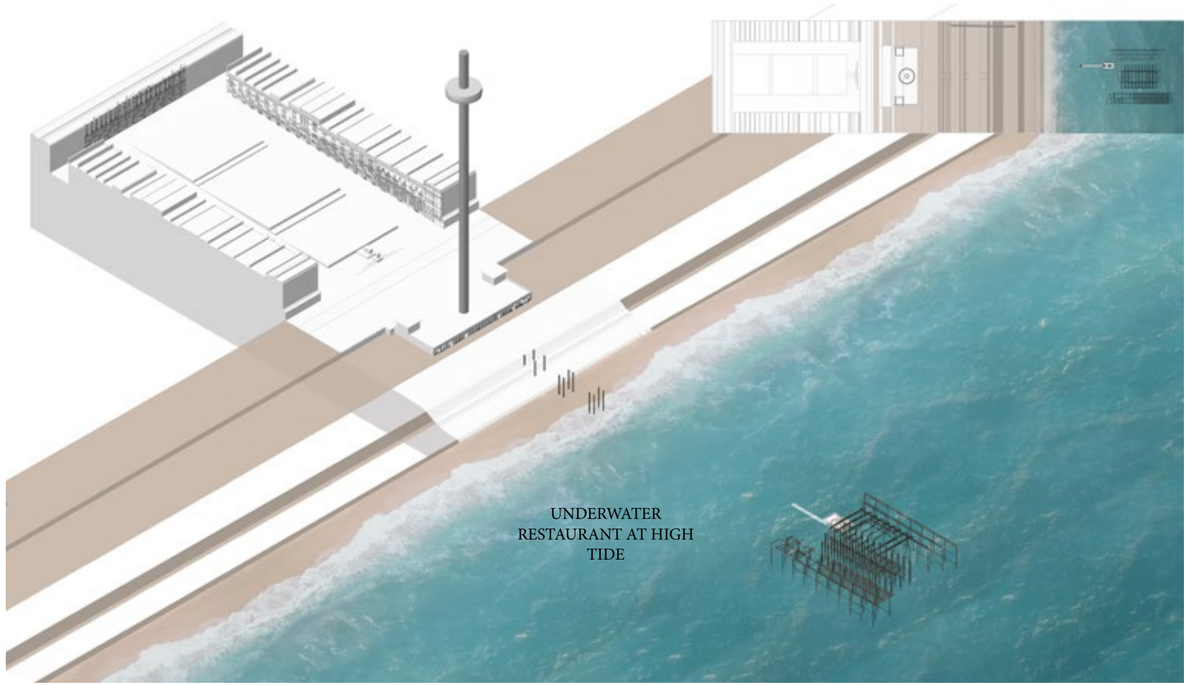


Brighton Marina

Tide Times

The totem and other various structures will only be accessible at low tide, therefore research into tide timings will need to be addressed. Therefore, stating when events will take place, such as the physical obstacle challenge (which uses the water at high tide as a factor). Brighton Marina tide times are listed beside, including sunrise and sunset times, moon rise and moonset times, and the current moon phase. Simply use the tide calendar to view tide times up to 6 days in advance.

The tidal prediction for Brighton - Marina is just that, a well-educated guess based on years of observed data. Many factors will affect the tide tables at Brighton - Marina including local winds and pressure systems. A margin of error of at least 10 minutes is to be expected with any forecast and it's this level of accuracy we aim to achieve. Data quality varies by port and country: large western commercial ports will be very accurate, small Asian fishing villages are probably going to be somewhat less accurate.



Brighton's West Pier is an exceptional seaside pier. Although closed and abandoned to the elements, miraculously it still survives as a symbolic part of the seaside in England and enduring the feature of Brighton seafront. Our task for this semester was to initiate a theme within our project, something that resembles 'Britishness'. The idea was to create a pavilion which simply advertises our specific theme for the upcoming Festival of Britain 2022.

My theme is 'Seaside Entertainment' and what it is that brings people/tourists to English Seafront. It's a place which draws people in, with exotic entertainment leisure for all ages, as well as beautiful views when the weather is pleasant. However, in recent years there has been an extreme decline to the amount of people going to the seaside (due to rise in pay, as well as decline of fight prices). More people are taking the time to travel abroad however develop a larger carbon footprint, due to the C02 emissions. Therefore to reduce this, a new attraction will need to be designed, which will celebrate Britishness through an eye-catching and intriguing design, which will recreate seaside entertainment for the English Coast.

Underwater Restaurant

A New Dining Experience

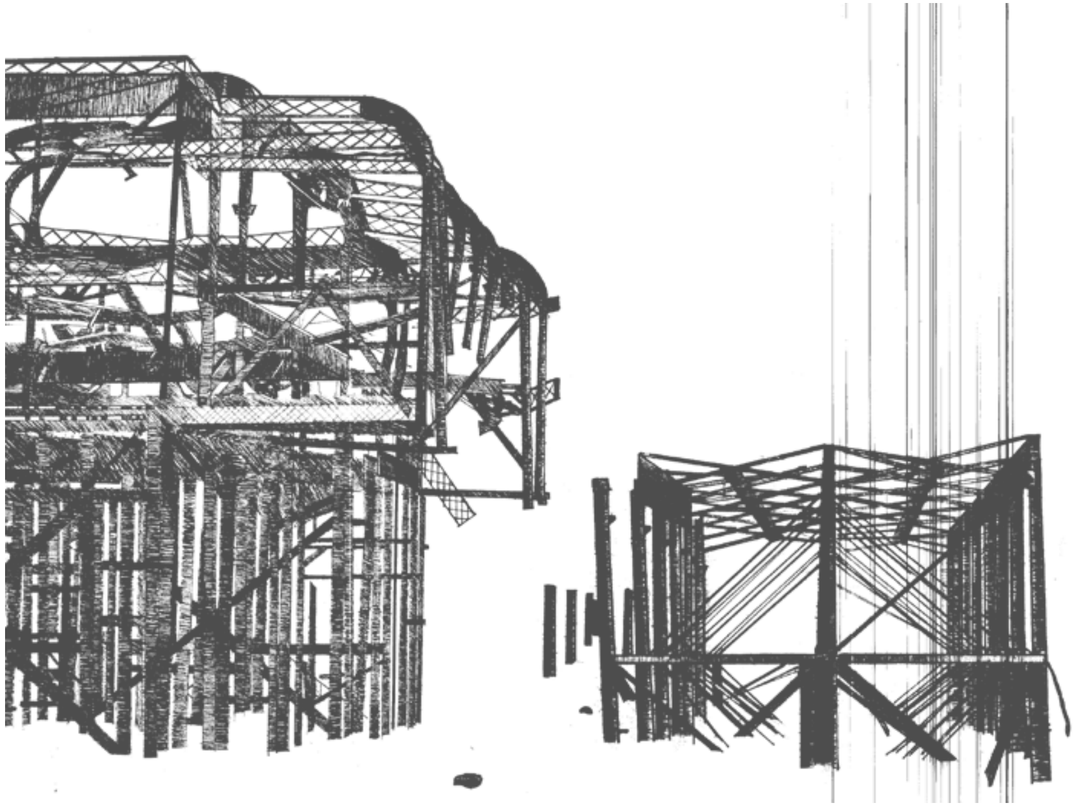
The activity which will take place within my programme is an underwater restaurant. The passing tourists and users will be able to stroll down a promenade / tunnel which will then lead them to a restaurant completely air-tight and underwater. The whole structure will be submerged through high tide, however at low tide the structure will be revealed to the surrounding community. Therefore, a unique and beautiful design could be sued to create a totem or landmark of sorts, to symbolise the new activities.
People using this space will be able to dine in a way not normally experienced. Another similar example to this activity is the Norway's Underwater Restaurant, opened in March 2019. The atmosphere created within these spaces would be astonishing and provide a beautiful setting for enjoying a meal. Although due to the surrounding marine life, and condition of Brighton seafront, the image might not be as clear as one would hope. The water will be more of a murky colour; however, the experience would still be incredible. This design could factor these elements into the design; therefore, some kind of lighting could be developed to created silhouettes or shadows, or a frosted glass could be installed so that the users dining would see more of a translucent image.

The restaurant "Under" is built out in the sometimes-harsh waters at Spangereid in Lindesnes municipality, Norway's southern tip. The underwater restaurant and tourist attraction opened in March 2019. In fact, Under is the world's largest underwater restaurant with seating capacity for 100 guests. On normal nights it will serve 40 guests. This wonder at Lindesnes is also the first underwater restaurant in Europe. Several research environments that are focused on the development of knowledge within marine biology are involved so as to provide guests with an enhanced experience.

Half-sunken into the sea, the building's 34-meter long monolithic form breaks the surface of the water to rest directly on the seabed five meters below. The structure is designed to fully integrate into its marine environment over time, as the roughness of the concrete shell will function as an artificial reef, welcoming limpets and kelp to inhabit it. With the thick concrete walls lying against the craggy shoreline, the structure is built to withstand pressure and shock from the rugged sea conditions. Like a sunken periscope, the restaurant's massive window offers a view of the seabed as it changes throughout the seasons and varying weather conditions.

When you step into the restaurant, your unique undersea journey begins. Here you can descend all the way to a depth of five metres without a diving suit. Just walk down the stairs. At the mesanin there is a bar with a relax area where guest can sit before and after the meal. Down in the restaurant, the notion of an "ocean view" takes on a whole new meaning. There, a huge glass wall will give you a unique insight into the bustling life in the sea (Skagerrak) outside. You will get to watch all sorts of fish species swim by, depending on the time of year. Normal fish species in this area is pollack and cod, colourful wrasses, urchins, crabs, lobsters in gladiator battles, spiny dogfish (i.e. mini sharks) and distinctive seaweed and kelp in the changing seasons... And you can see a live performance of the roaring, stormy sea when nature is in turmoil. Seals have also been observed outside the window, but marine researcher Trond Rafoss hope it will not visit very often, as it scares the other fishes away.

UNDERWATER RESTAURANT AT HIGH TIDE



Initial Developments

Developing on the Programme...

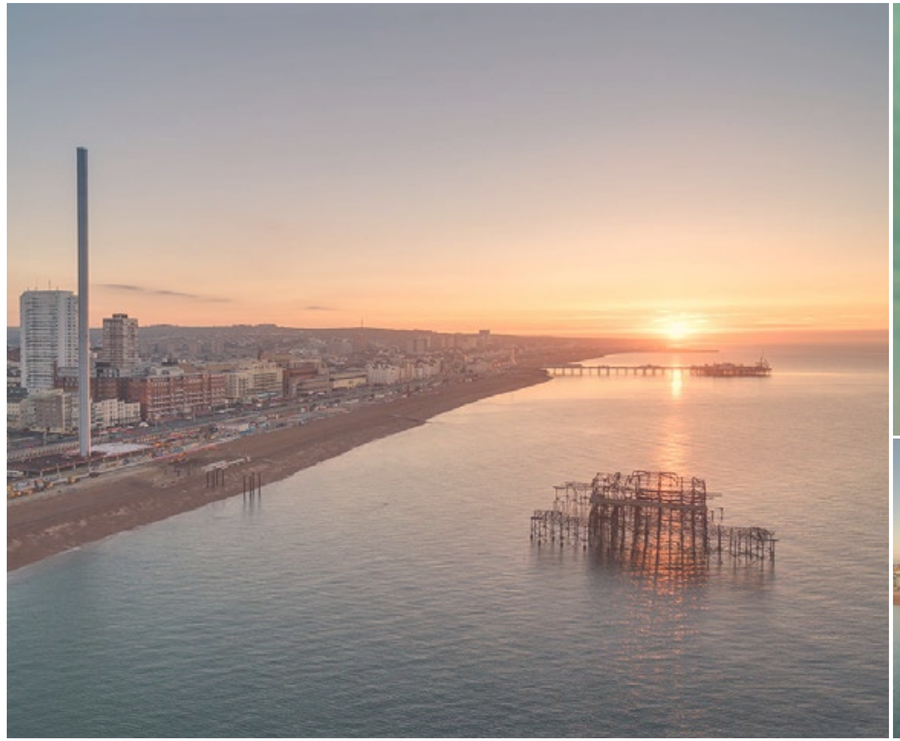
Underwater Restaurant

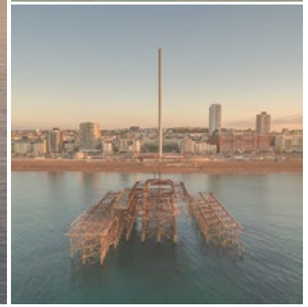
A New Dining Experience

After further researching into potential activities to be allocated on site, I decided that it would be better to focus on one activity in particular. To develop this particular activity to a higher more detailed level. Researching into each specific room and what would be used within each space. After careful consideration I decided that the Underwater Restaurant, only accessible via tunnel or from the remains of the pier itself, would be the best option. There is potential to design many different features for this structure, as when the tide is high it will be mostly submerged. The tunnel which will run from the shore will be made out of a transparent material as it would allow visitors and customers to enjoy an underwater walking experience without getting wet. The viewers will be able to see the neighbouring activity developed by another member within the studio. (This activity involves a swimming lane being placed right beside the tunnel; therefore, viewers may see people swimming above. However, the promenading experience viewers will obtain while walking down his tunnel, will be an extremely new and exciting experience for many. This also feeds back into my last semester's project. I created a structure which highlighted promenading as an experience and was designed around that factor. Taking this design further and developing it into an Underwater Restaurant may be extremely challenging however could become a unique and eccentric design.

The top floor (total of 3 floors) will be the only floor constantly visible as high tide would only submerge half of the second floor. Once the tide is pulled out a beautiful structure will appear, not completely visible as the bottom floor will always be submerged. However, the start of the tunnel will be visible therefore considerate thought into the design of how this structure will look is very important.

I plan to research into eccentric and traditional British food and restaurant styles. As well as typical English pubs, as this would also be included within the structure. I will also need to do critical research into possible materiality and further designing underwater; I.e. how to build within the ocean, what process is required, as well as what happens to the structure over time, or if need to be developed upon.





UNDERWATER RESTAURANT

Traditional British Restaurants

From traditional pub grub classics and Sunday roasts to restaurants specialising in old-school service.

Baked goods are popular all over the UK. In the Lake District, Cartmel is famous for its sticky toffee pudding and Bakewell for its pudding: a pastry base filled with jam and a layer of almond cake. Cornwall and Devon both serve cream teas with scones, the difference being that the Cornish serve the cream on top of the jam, rather than underneath it. Meat pies (cold pork pies and hot steak and kidney pies) are a good lunchtime choice, and fish and chips are essential eating near the seaside. Curry is now British through and through, with restaurants such as Dishoom in London and Edinburgh serving particularly good Indian food.

From traditional pub grub classics and Sunday roasts to restaurants specialising in old-school service, the UK has a lot to offer when it comes to British food. Here's a round up of the best quintessentially British restaurants;

Simpson's in the Strand

Being one of London's oldest English restaurants, Simpson's in the Strandticks all the boxes when it comes to being quintessentially British. The menu boasts ingredients from all over the UK, from the Scottish scallops and Welsh lamb rump to the salt-baked Lincolnshire beets.

Rules

Donning the title of the oldest restaurant in London, Rules is the epitome of British food and service with a menu specialising in classic game cookery, oysters, pies and puddings. Since its establishment in 1798, many famous British writers have graced the tables at Rules, including the likes of Charles Dickens and H G Wells. It's also appeared in a number of novels over the years.

Poppie's Fish & Chips

It doesn't get more quintessentially British than fish and chips, does it? If it's a generous portion of fish with crunchy batter and chips you're after, Poppie's certainly won't disappoint. With branches dotted all over the capital (in Spitalfields, Soho and Camden) you'll be able to satisfy your fishy cravings.

The Dining Room at The Goring

Rub shoulders with royalty and politicians, who have been known to frequent this Victoria restaurant. Featuring a stunning room with Swarovski chandeliers, The Dining Room at The Goring serves up traditional fare – expect superbly cooked dishes such as beef wellington and eccles cake.

Roast

Borough's Roast is an ode to all things British, from farmers to ingredients. You can enjoy three courses on the Sunday Lunch Market menu for a very reasonable £37.50, featuring chorizo scotch eggs to start, before moving onto your roast of choice for main. Finish with a traditional British pud, such as an apple and plum crumble or a date sticky toffee pudding.

Claridge's

Afternoon tea at Claridge's honours both British tradition and food, with dainty finger sandwiches, fluffy scones and intricate bakes. Sip on some tea (or bubbles if you're feeling extra indulgent) and take in the elegance of the famous London hotel.

Malt House

A gastropub with real flair, Malt House takes on the British classics with gusto. It is set in an 18th-century building and the period touches add to the transportive dining experience, which takes you back to a former era in British gastronomy. The food is determinedly seasonal fare, featuring dishes like Rhug Estate venison, celeriac taggliatelle, pink fir potato and chocolate and orange jus. These high-class takes on the British larder will amaze anyone who thought British food began and ended with fish and chips

The Great British Pub

The History of the British Pub

Renowned the world over, the great British pub is not just a place to drink beer, wine, cider or even something a little bit stronger. It is also a unique social centre, very often the focus of community life in villages, towns and cities throughout the length and breadth of the country. Yet it appears that the great British pub actually started life as a great Italian wine bar, and dates back almost 2,000 years. It was an invading Roman army that first brought Roman roads, Roman towns and Roman pubs known as tabernae to these shores in 43 AD. Such tabernae, or shops that sold wine, were quickly built alongside Roman roads and in towns to help quench the thirst of the legionary troops.

It was ale, however, that was the native British brew, and it appears that these tabernae quickly adapted to provide the locals with their favourite tipple, with the word eventually being corrupted to tavern. Taverns and alehouses provided food and drink to their guests, whilst inns offered accommodation for weary travellers. These could include merchants, court officials or pilgrims travelling to and from religious shrines, as immortalised by Geoffrey Chaucer in his Canterbury Tales.

Inns also served military purposes; one of the oldest dating from 1189 AD is Ye Olde Trip to Jerusalem in Nottingham, and is said to have acted as a recruitment centre for volunteers to accompany King Richard I (The Lionheart) on his crusade to the Holy Lands.

Alehouses, inns and taverns collectively became known as public houses and then simply as pubs around the reign of King Henry VII. A little later, in 1552, an Act was passed that required innkeepers to have a licence in order to run a pub.

By 1577 it is estimated that there were some 17,000 alehouses, 2,000 inns and 400 taverns throughout England and Wales. Taking into account the population of the period, that would equate to around one pub for every 200 persons. To put that into context, that same ratio today would be approximately one pub for every 1,000 persons.

Throughout history, ale and beer have always formed a part of the staple British diet, the brewing process itself making it a much safer option than drinking the water of the times. Like the railways that operated a First, Second and even Third Class service, so the pubs evolved in a similar manner. Pubs of that time, even relatively small ones, would typically be split into several rooms and bars in order to cater for differing types and classes of customer. In today's 'open-plan' society such walls have been removed, and now anyone and everyone is welcome in the great British pub.

The Clachan Inn, Drymen (Scotland)

The Clachan Inn, located a stone's throw from Loch Lommond and just under 20 miles from Glasgow. Owned by the Strang family, The Clachann claims to have the longest-running license in the UK, dating back to 1734.

The Prospect of Whitby, London

First established in Wapping in 1520, The Prospect of Whitby comfortably takes the title of the country's "oldest riverside pub." In its hey-day it served scholars such as Charles Dickens and Samuel Pepys. Now owned by Greene King, the Tudor tavern still retains many of its original features, including its very valuable location, a flagstone floor and a rare, pewter-topped bar.

The Bell Inn, Nottingham

The Bell Inn, housed in a Grade II-listed building which officially dates to 1437, but it is served by a brewery which may have been around since the 12th century. The Bell started out life as a friary guesthouse, but became a secular alehouse in the 16th Century following the dissolution of the monasteries under Henry VIII, taking its name from the church bell that hung outside the monks' refectory

White Hart Inn, London

Established in the 13th Century, The White Hart Inn on Drury Lane claims to be London's oldest pub. Historical records show its first license was granted as early as 1216, and its place in the capital's history makes it a hit with tourists.

Building Underwater

How will this structure will be constructed?

Underwater foundations, also known as subaqueous foundations, may be used in situations where the use of a cofferdam or caisson is prohibitively expensive or unfeasible.

A cofferdam (also called a coffer) is an enclosure built within, or in pairs across, a body of water to allow the enclosed area to be pumped out. This pumping creates a dry work environment so that the work can be carried out safely. Enclosed coffers are commonly used for construction or repair of permanent dams, oil platforms, bridge piers, etc., built within or over water.

The aim of a cofferdam is to be as watertight as possible to create a dry area in which to complete the required building works, or at least to limit water ingress to a safe level that can be pumped away. Cofferdams must be able to withstand very high pressures and can create a hazardous situation if they are installed incorrectly. They are usually constructed using steel sheet pilesdriven into the ground and supported by internal braces and cross braces. Timber sheet piles, concrete or a combination of materials can also be used. A cofferdam can be any shape. Its design will be depend on the depth required, the required working area, soil conditions, fluctuations in the water level, and so on.

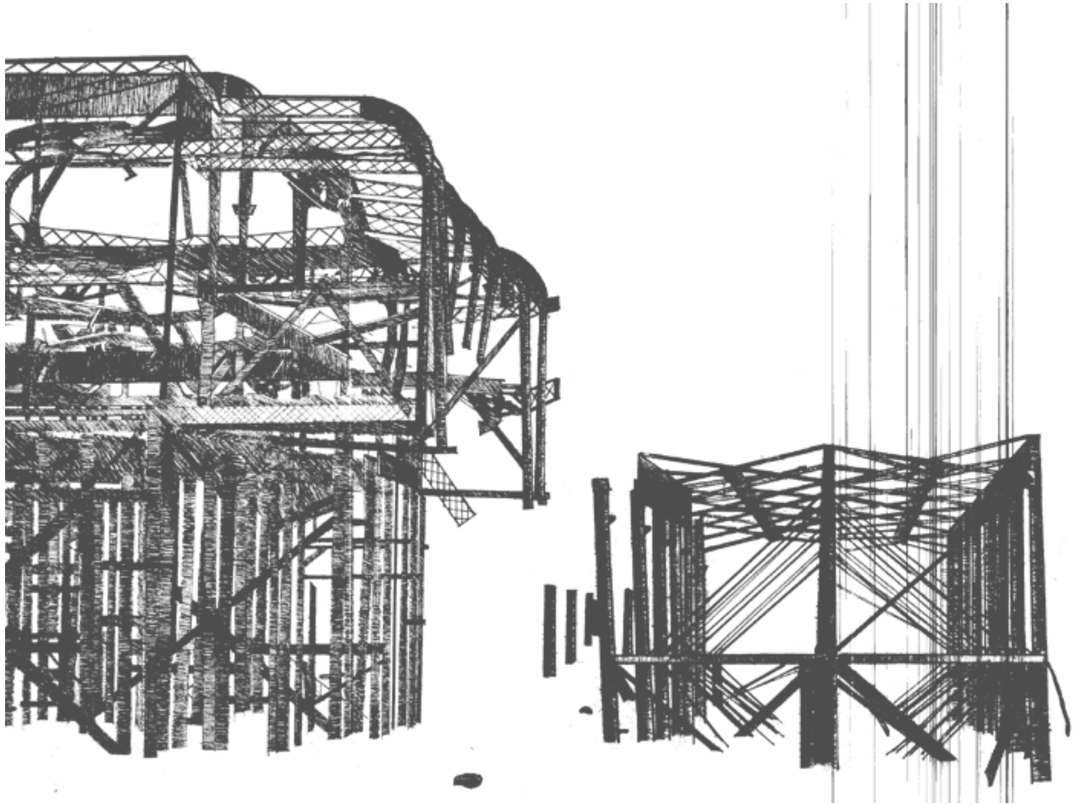
Typical piled cofferdam
The construction sequence for a typical piled cofferdam is as follows:

1. Pre-dredge the proposed area of the cofferdam.
2. Drive temporary support piles into place.
3. Install bracing frames to support piles.
4. Drive sheet piles into place.
5. Pump out water from the inside of the cofferdam.
6. Progressively install internal bracing as required.
7. Excavate ditch to allow leakage to run to one place.
8. Place rock fill as a leveling and support course.

As early as 1818, a French engineer named Marc Brunel invented a device that allowed workers to tunnel under rivers without worrying about water and mud ruining their work. Brunel's "tunnel shield" was a big rectangular iron wall with lots of small shutters in it.

Another new method of creating underwater tunnels is the cut-and-cover method. To use this method, builders dig a trench in the riverbed or ocean floor. They then sink pre-made steel or concrete tubes in the trench. After the tubes are covered with a thick layer of rock, workers connect the sections of tubes and pump out any remaining water. This method was used to create the Ted Williams Tunnel, which connects the southern part of Boston with Logan Airport. The 12 giant steel tubes that were sunk in the trench were each 325 feet long and already contained fully-constructed roads.

Oceanarium, Bournemouth, has designed an underwater tunnel as part of their main feature within the attraction. People are provided the opportunity to explore and travel through a tunnel, enjoying the underwater sights not normally seen. As well as staying completely dry, this experience would be very exciting and enjoyable for many ages. The use of this feature within my own design could really benefit my programme.



Function Requirements

Required Spaces for the Programme

Function Requirements

How will this structure will be constructed?

Throughout this chapter I will identify all the spaces that I will require for my programme to function. For example, whether I would need storage areas, kitchens, toilets etc. By defining these spaces from an early stage, it will help with the designing process. For my particular structure, the following spaces will need to be thoroughly sketched-out in plan. This will help me get a better understanding of what the overall structure will look like.

The following spaces I need to include will be;

Under Water Tunnel – Airtight Walkway (Promenade)

Toilets & Access Points

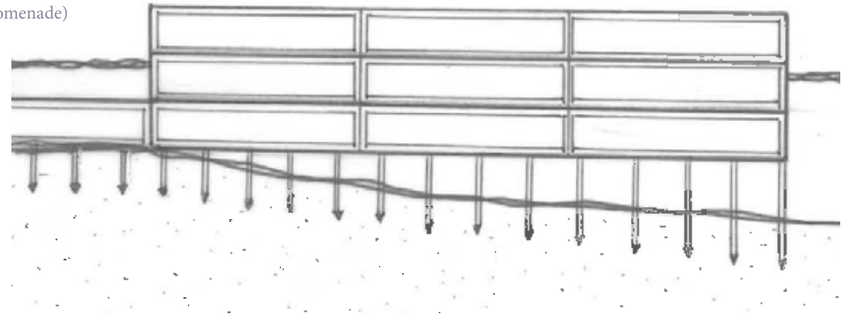
Bar / Pub

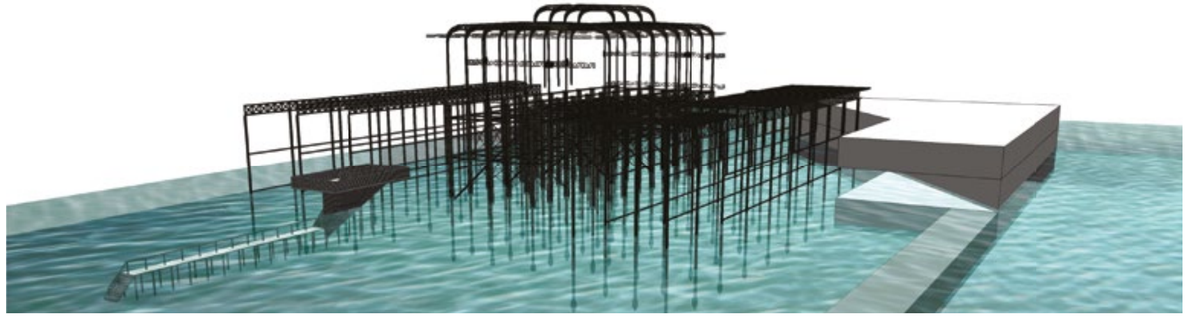
Restaurant Seating Area

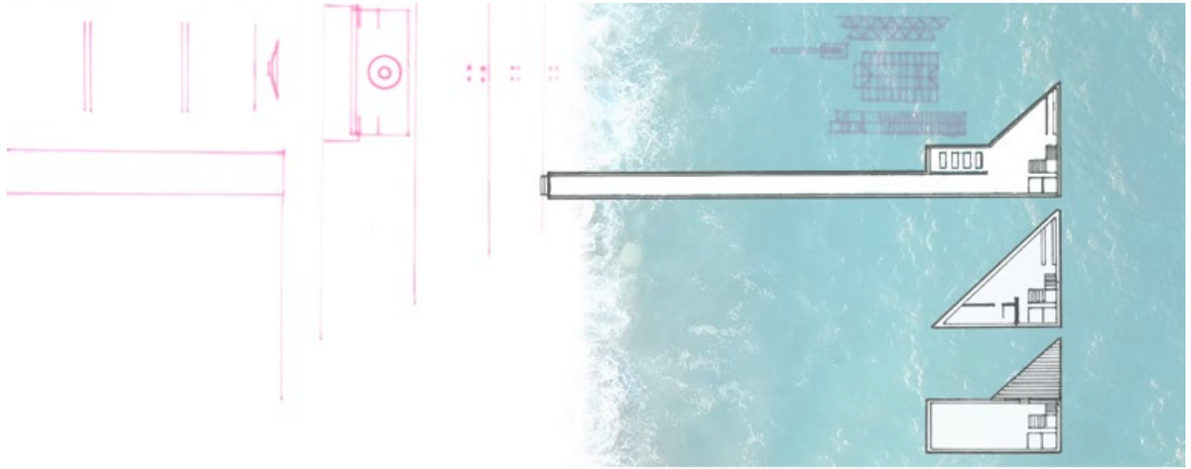
Kitchen & Staff Areas (Toilets/Change)

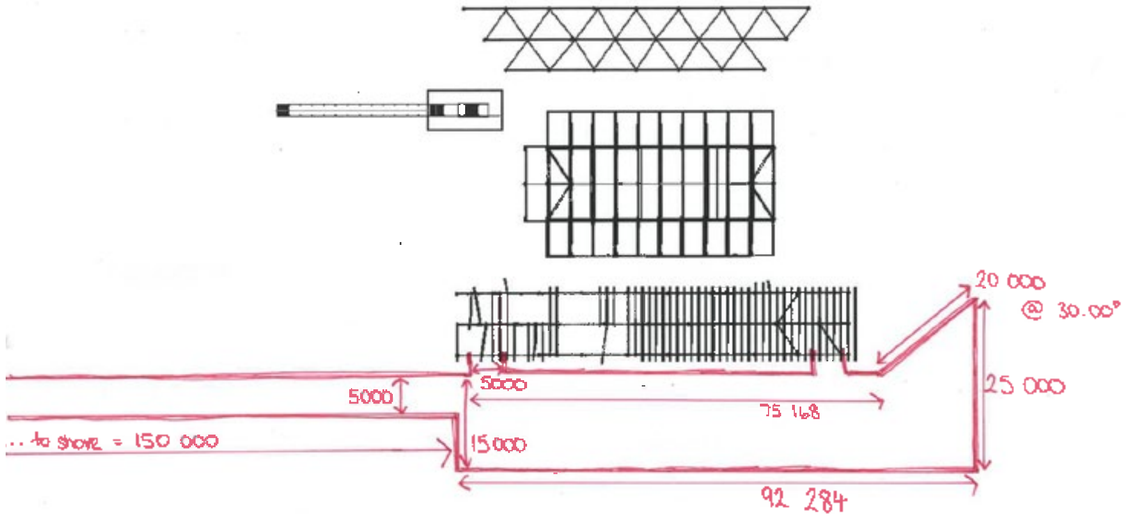
View-Points – Lookout Areas

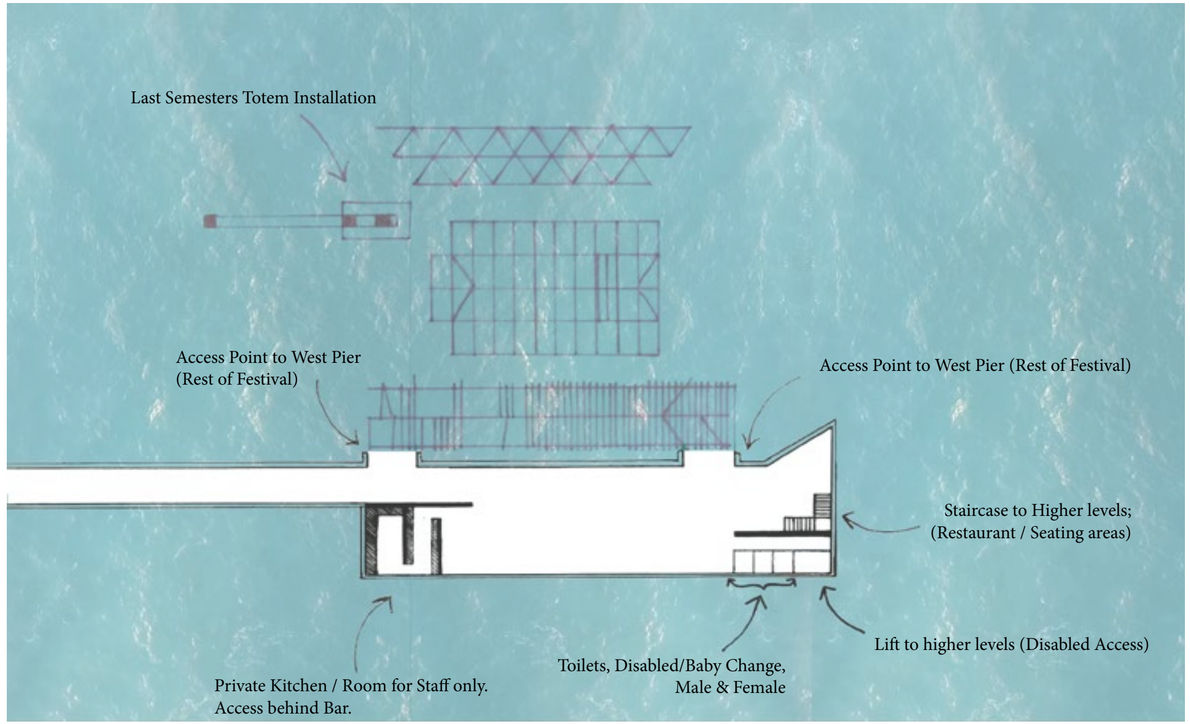
Rooftop Balcony / Garden



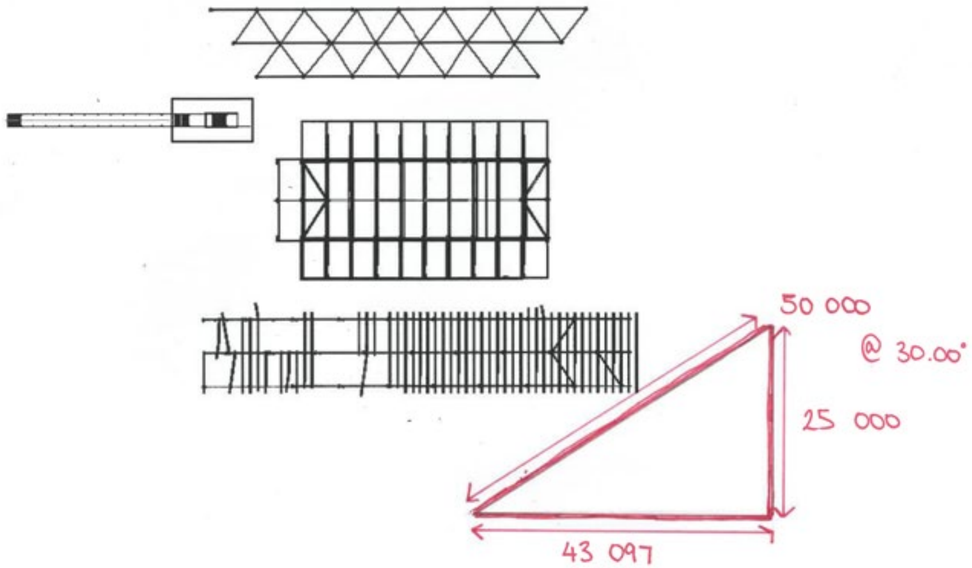


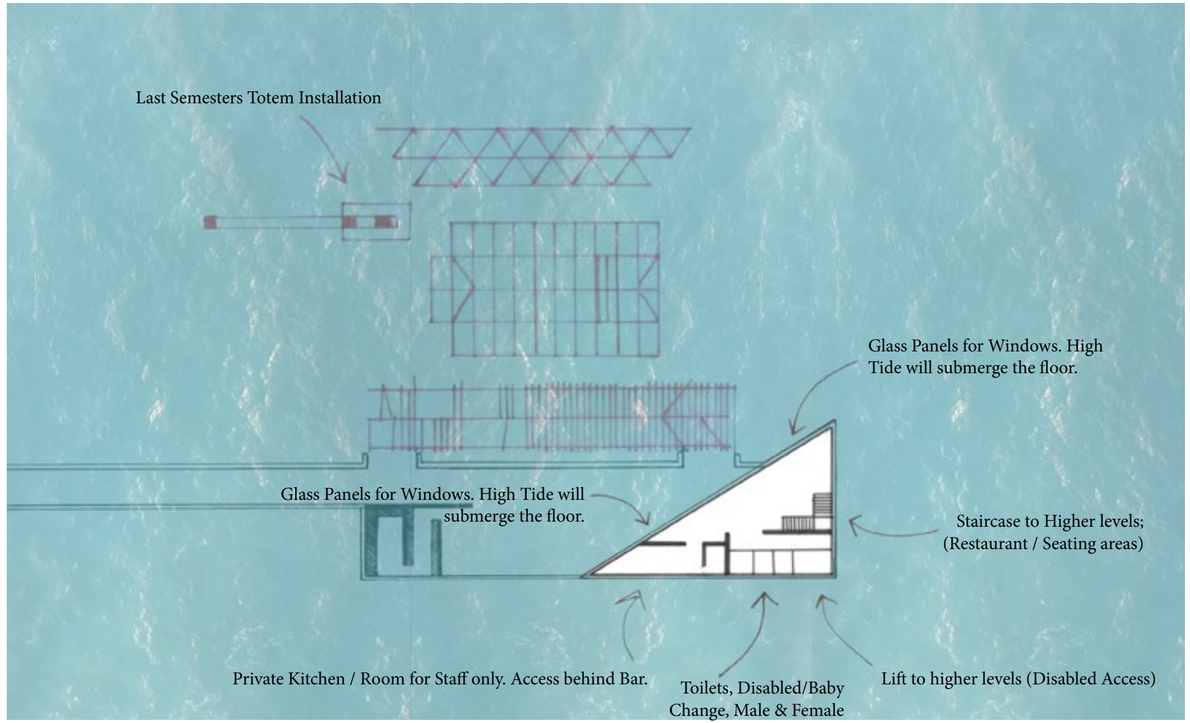




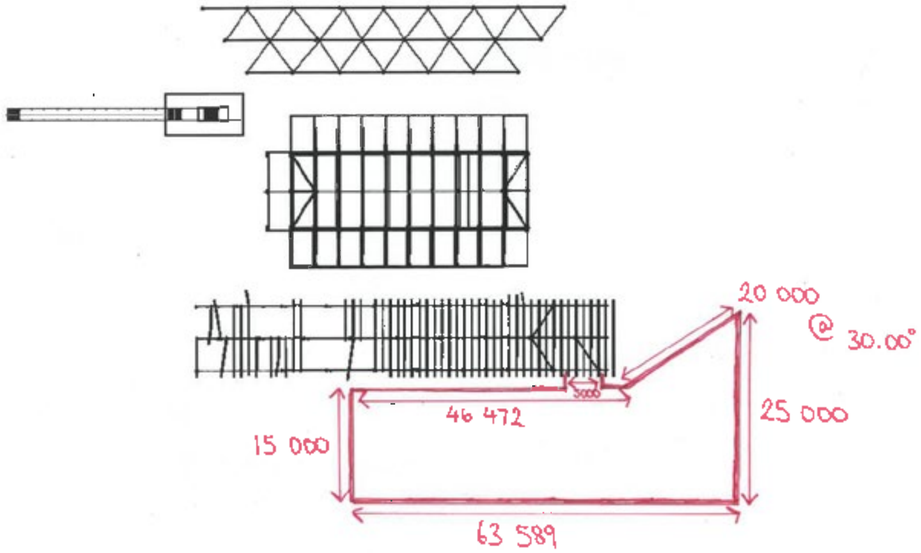


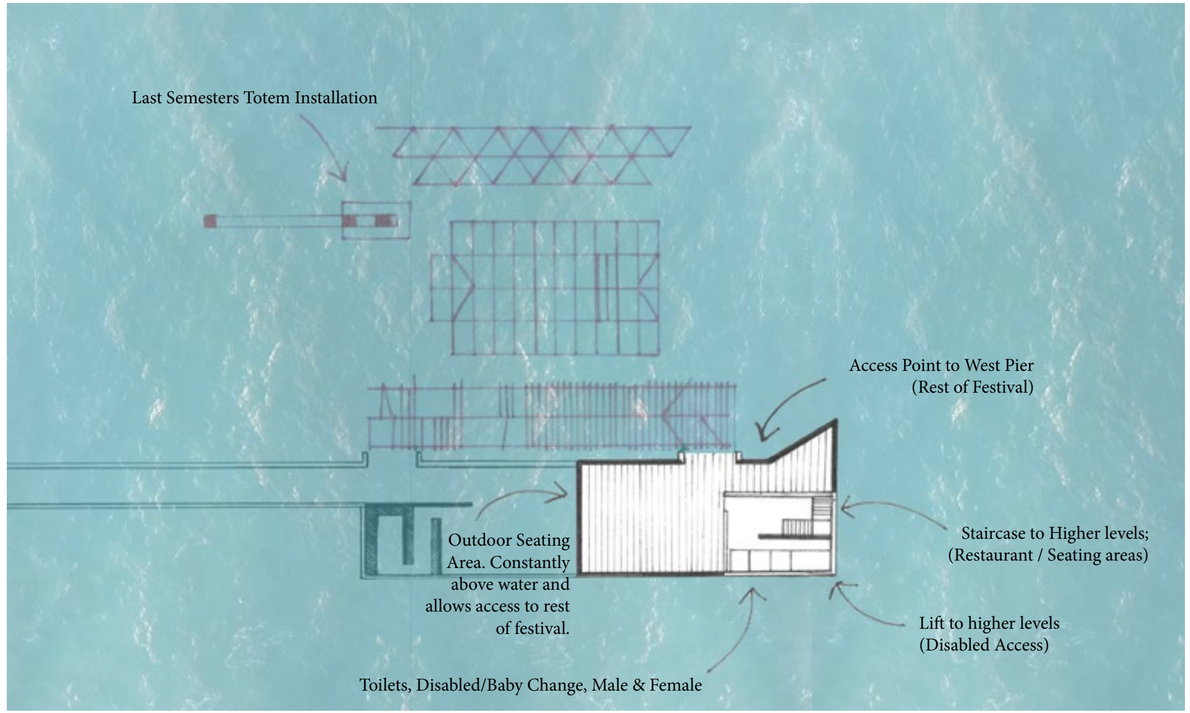
GROUND FLOOR - SUBMERGED



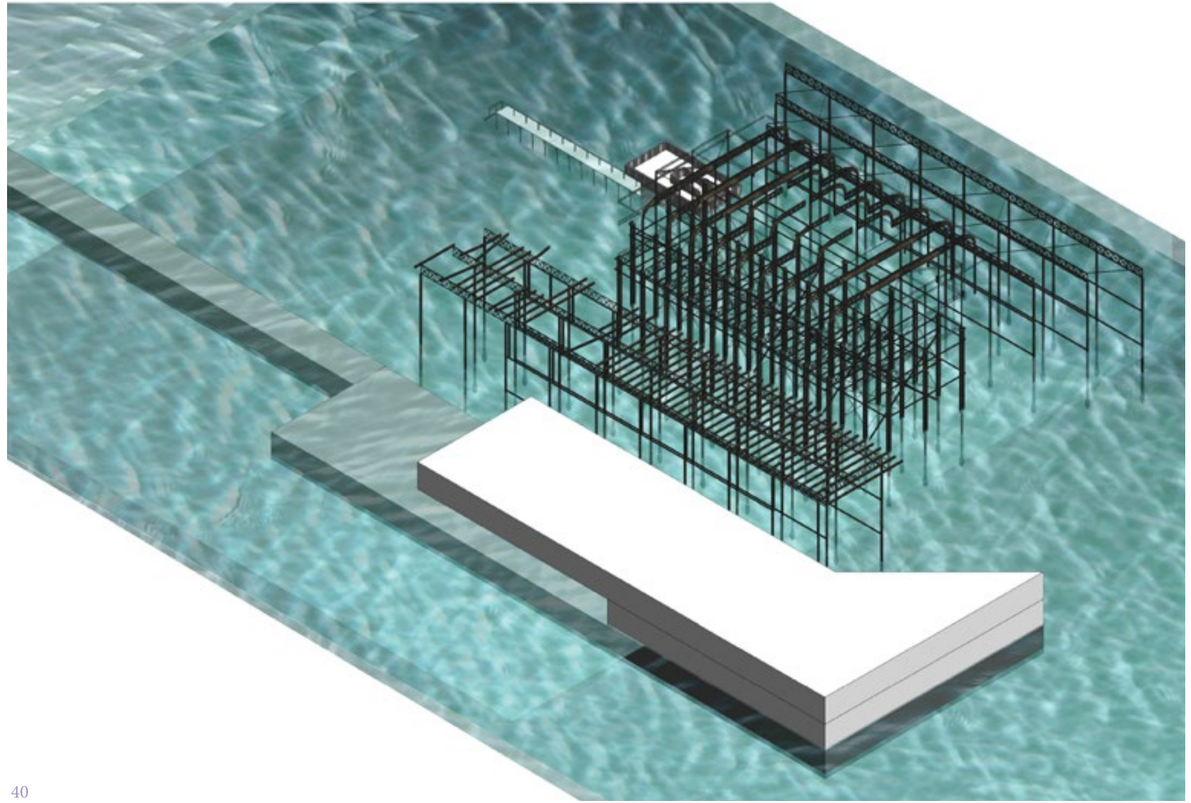


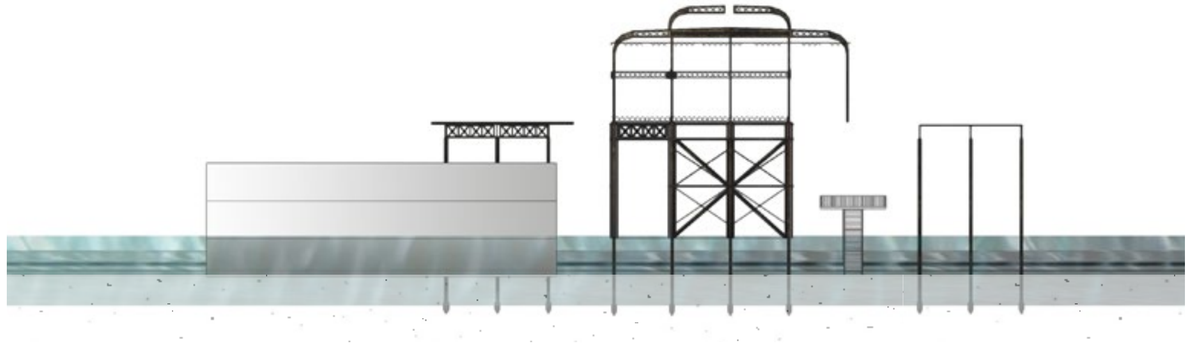
FIRST FLOOR - SUBMERGED AT HIGH TIDE





SECOND FLOOR - ABOVE WATER

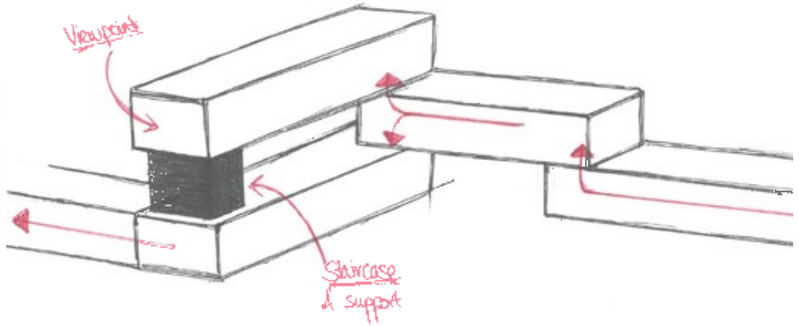


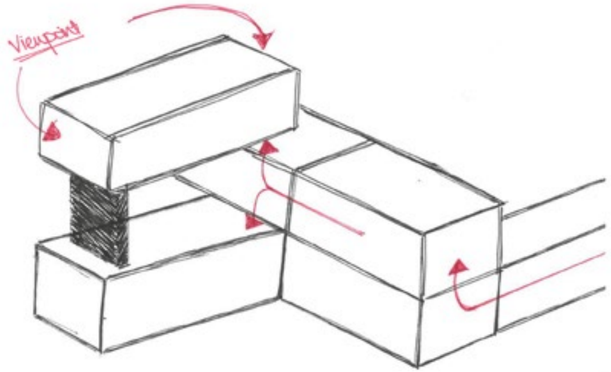


The shape of this structure has varied and developed as multiple factors have come into consideration. For example, the tide will be rising and submerge half of the structure, therefore an element of suspense and thought could go into the design. The hanging element adds mystery and excitement into this building. From shore it would appear as though a building is just floating 200m off land. However, accessible by the underwater tunnel, this particular structure could be a popular attraction. Although the design is considering factors, the overall size to it is much too big, and I believe will be too big of a design to focus on in detail. Therefore, further designing will need to be in place, to figure out the sizing of this structure. All function requirements have been established; therefore, my next step is to further my research into the spatial qualities and potential access points or positions.

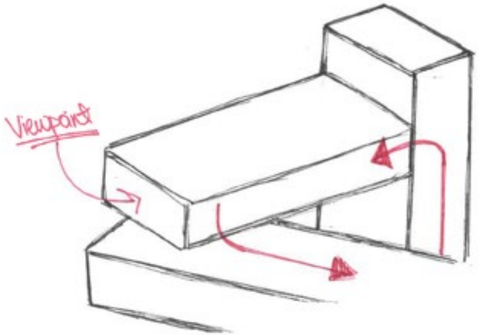
CRITICAL ANALYSIS

Diagrams display potential viewpoints, as well as access routes through possible container structures.

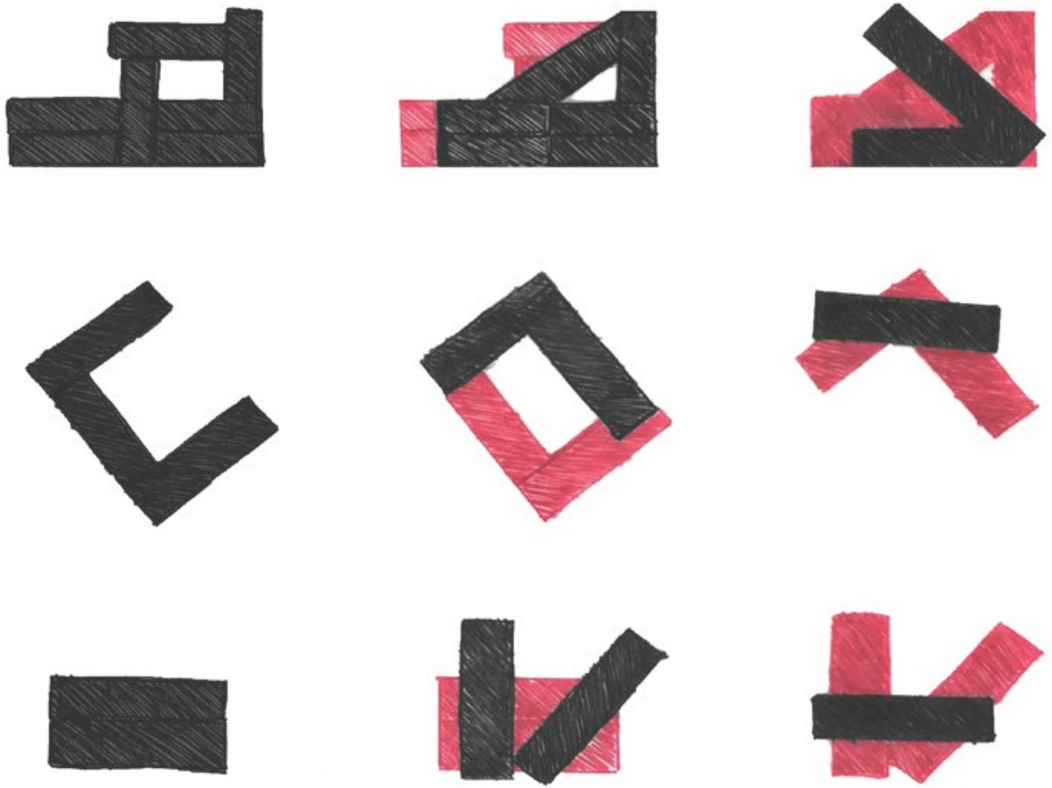


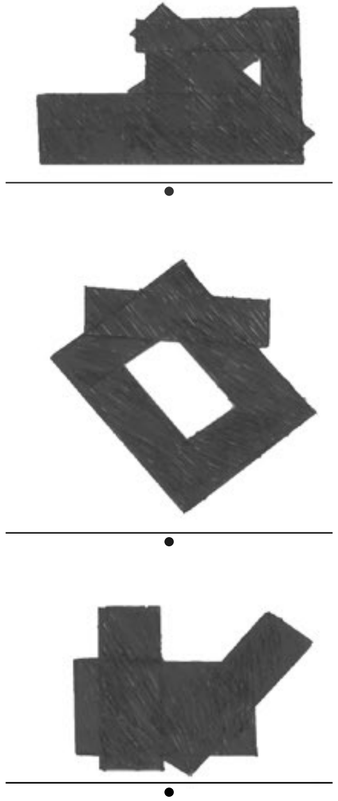


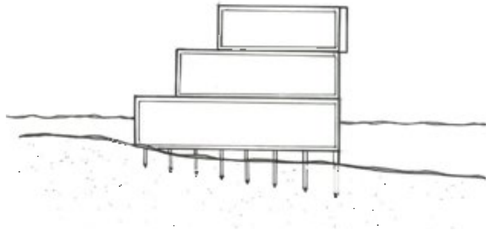
The Mill Junction student apartments in Johannesburg, South Africa uses containers placed on top of old grain silos.

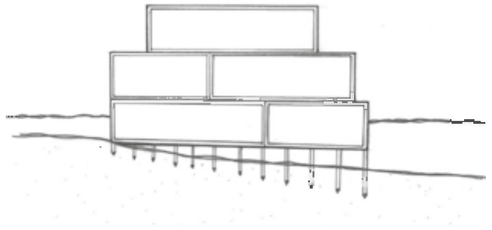


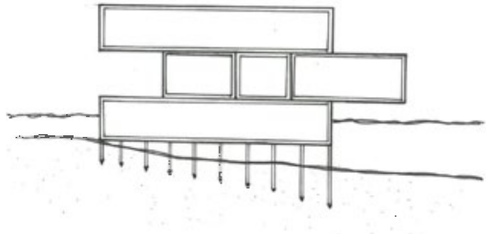
It's incredible to think that something as pervasive and integral to the world economy as shipping containers didn't even exist just a few decades ago. And then to think that, thanks to the ingenuity of a few forward-thinking individuals, we now see containers in a whole new light as building materials. There are all manner of container hybrid buildings that blend containers with traditional construction including traditional buildings built on top of containers, containers assembled on top of traditional buildings, traditional buildings with containers inside of them, and traditional buildings with containers jutting out through them. When people think of being 'green', 'eco-friendly' or 'sustainable', one word usually pops in their minds: recycling. But 'Recycle' is actually the last step in the hierarchy of waste management as expressed in the 3 R's (Reduce, Reuse, Recycle). Shipping container construction is a great example of 'Reuse'. It introduces a second useful lifecycle for used shipping containers that are no longer suitable for their intended purpose of carrying goods. In addition, when coupled with the ideas of minimalism and tiny houses, containers can also address 'Reduce' through decreased usage of building materials and natural resources.

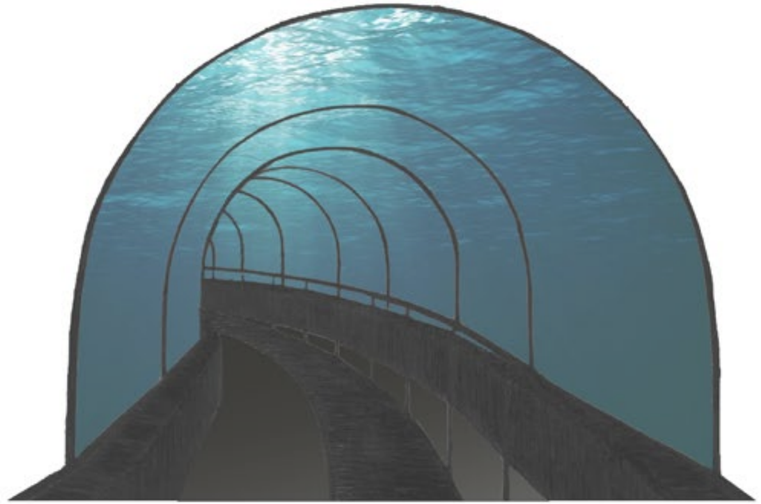








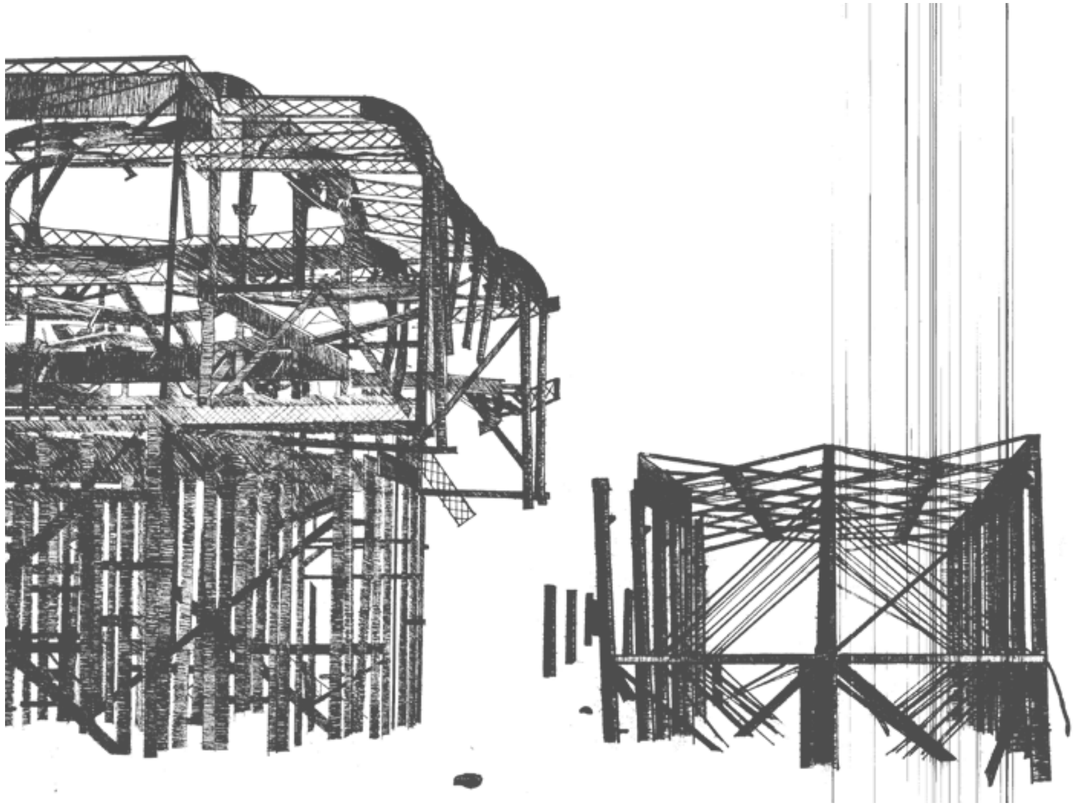




Realistically the idea of using shipment containers as a structural material may be sustainable and useful in terms of assembling and de assembling. However, I believe in terms of visual attraction it may be much nicer to use a different material source. The tunnels will be a round tube shape, created out of a transparent material. This will allow participants to view the surroundings around them, although due to Brighton's water conditions, it may not always be so clear.

The neighbouring activity created by another member of the studio will allow people to view swimmers above on the surface partaking in that activity. The tunnel will need to be thick enough and supportive due to forces and pressure within the ocean. The tunnels will also require some sort of ventilation system to ensure enough oxygen is passing through the tunnels.

There will be access points halfway allowing an escape-route to the surface walkway for people who may be claustrophobic. I believe this design would be appealing and attractive once visible at low tide, as well as providing a promenading experience for the participants using the space.

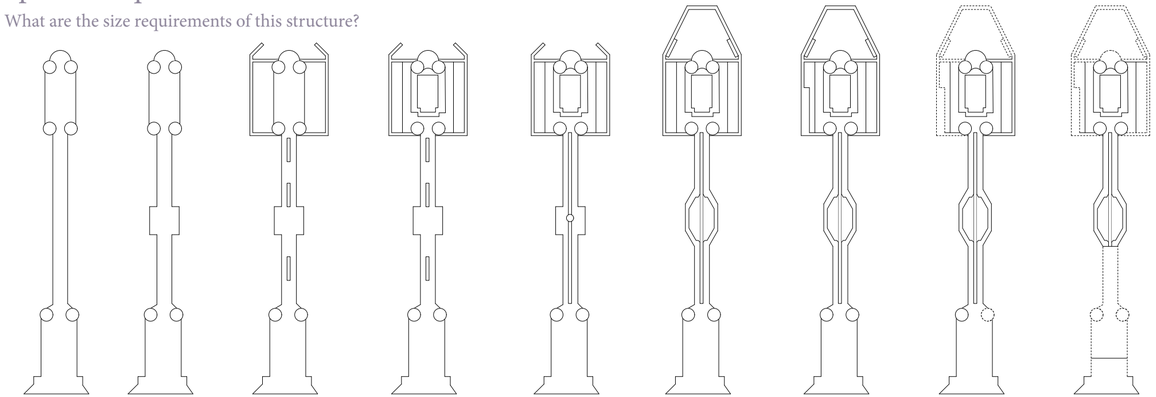


Spatial Requirements

Required Space for the Programme to Function

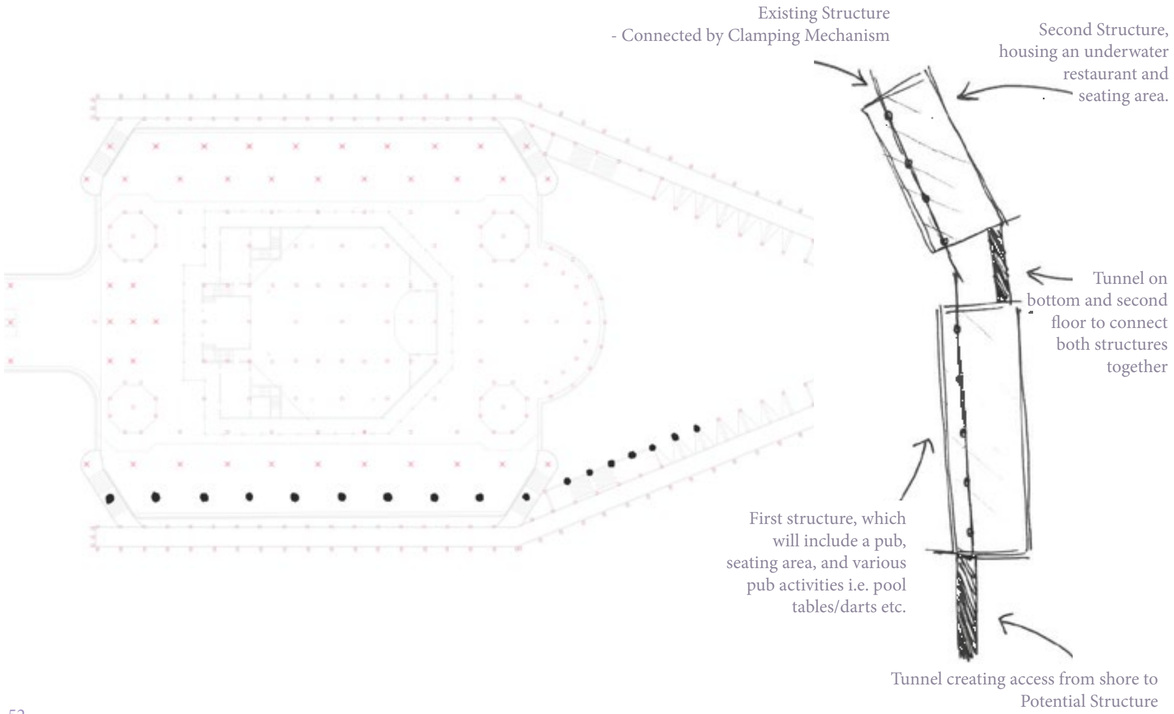
Spatial Requirements

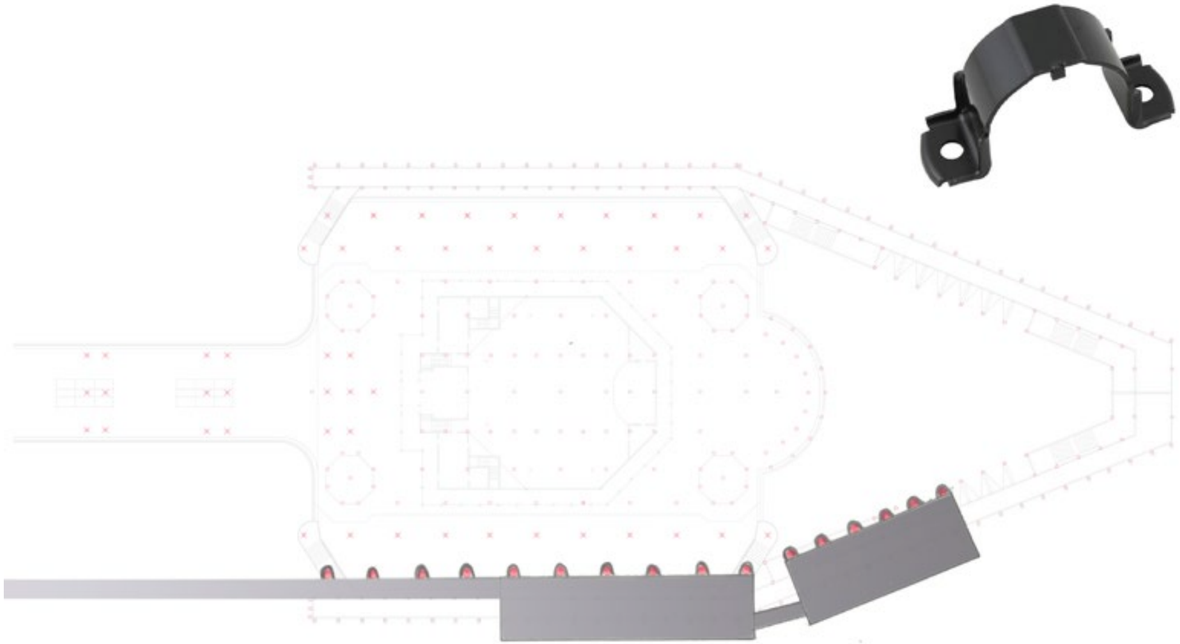
What are the size requirements of this structure?



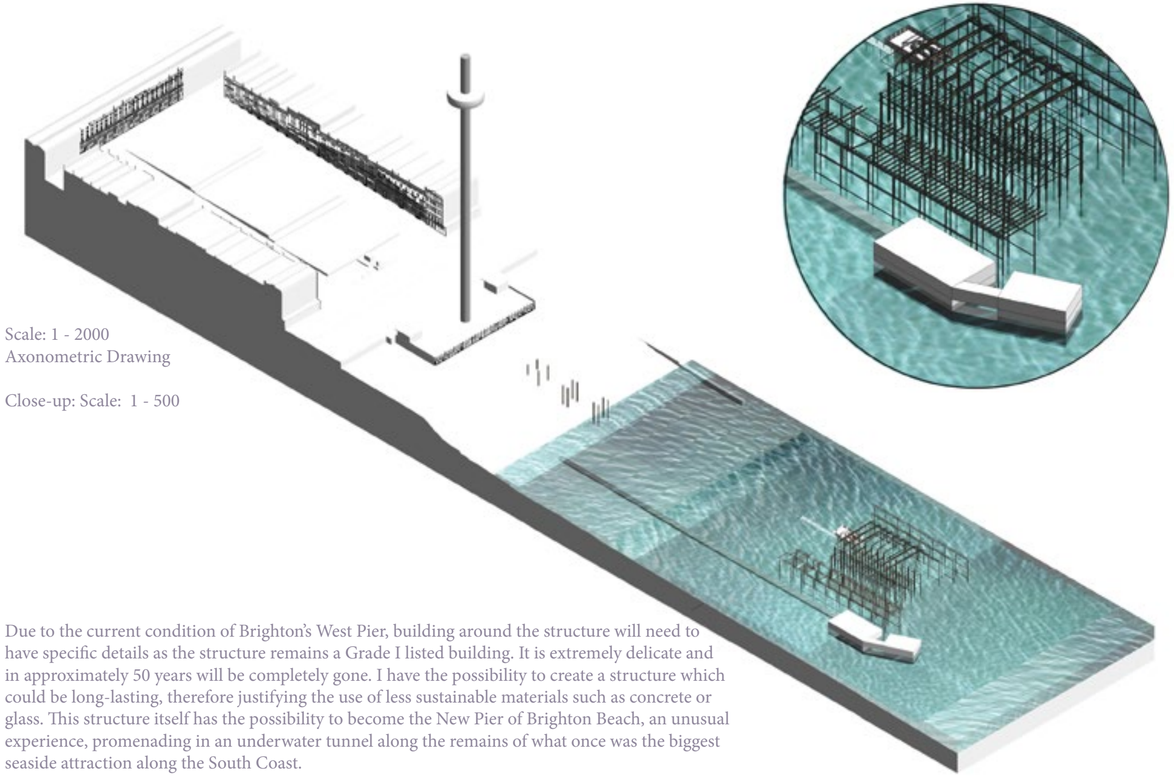
Throughout this chapter I will identify all different the spaces that I will require for my programme to function, in detail. For example, whether I will need large or small spaces, tall or short, over multiple levels, raised off the ground etc. This designing space will encourage me to get a better understanding, in terms of space, what my structure will look like. Due to the current condition of Brighton's West Pier, building around the structure will need to have specific details as the structure remains a Grade I listed building. It is extremely delicate and in approximately 50 years will be completely gone. I have the possibility to create a structure which could be long-lasting, therefore justifying the use of less sustainable materials such as concrete or glass. This structure itself has the possibility to become the New Pier of Brighton Beach, an unusual experience, promenading in an underwater tunnel along the remains of what once was the biggest seaside attraction along the South Coast.

I believe in terms of size; I need to ensure it's of a realistic proportion. I.e. a building 70m long seems a bit unrealistic, therefore one of much smaller size may be have the opportunity to be more detailed. I have decided to work along the west side of the Pier, running along the original structure itself. This area in particular is extremely delicate however much is still left intact. As this is the case, I believe I have the chance to design something around the remains and once the structure itself collapses over time, my new design will still stand, once supported by the West Pier. However now, with a section removed, a metaphor displaying a chunk of history demolished, the history/story of the West Pier.





I have decided to work along the west side of the Pier, running along the original structure itself. This area in particular is extremely delicate however much is still left intact. As this is the case, I believe I have the chance to design something around the remains and once the structure itself collapses over time, my new design will still stand, once supported by the West Pier. However now, with a section removed, a metaphor displaying a chunk of history demolished, the history/story of the West Pier. The connection will be made via clamps which will be connected to the original structure.



Scale: 1 - 2000
Axonometric Drawing

Close-up: Scale: 1 - 500

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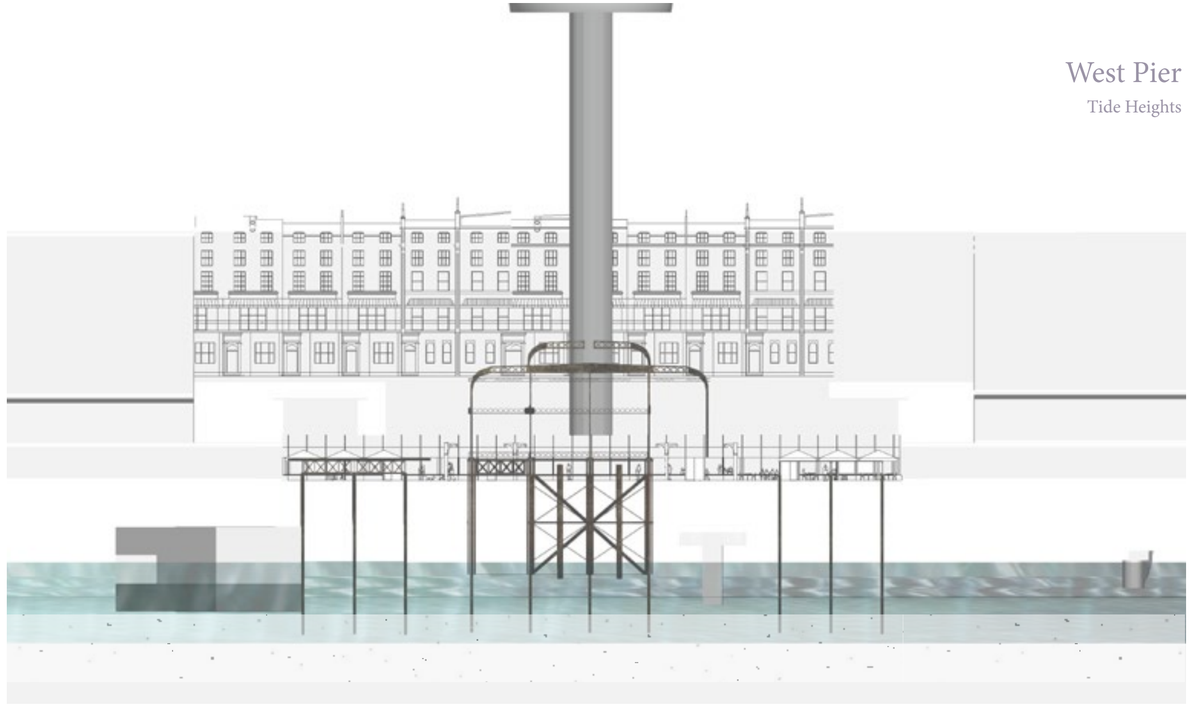
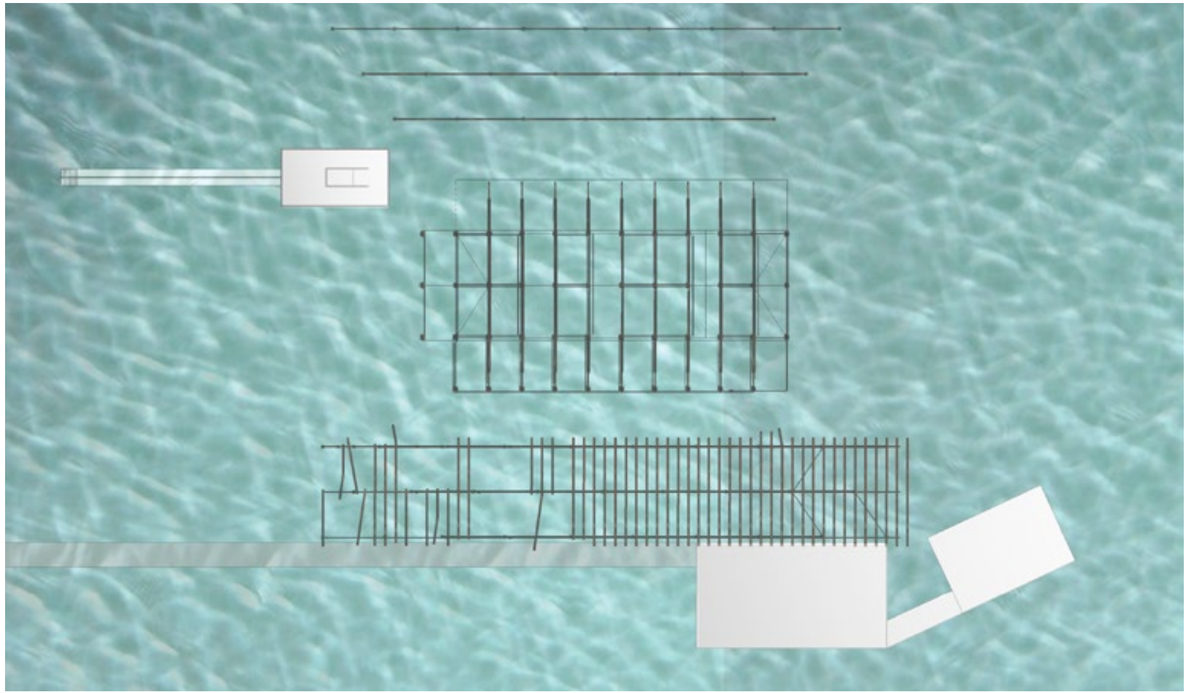
West Pier

Tide Heights

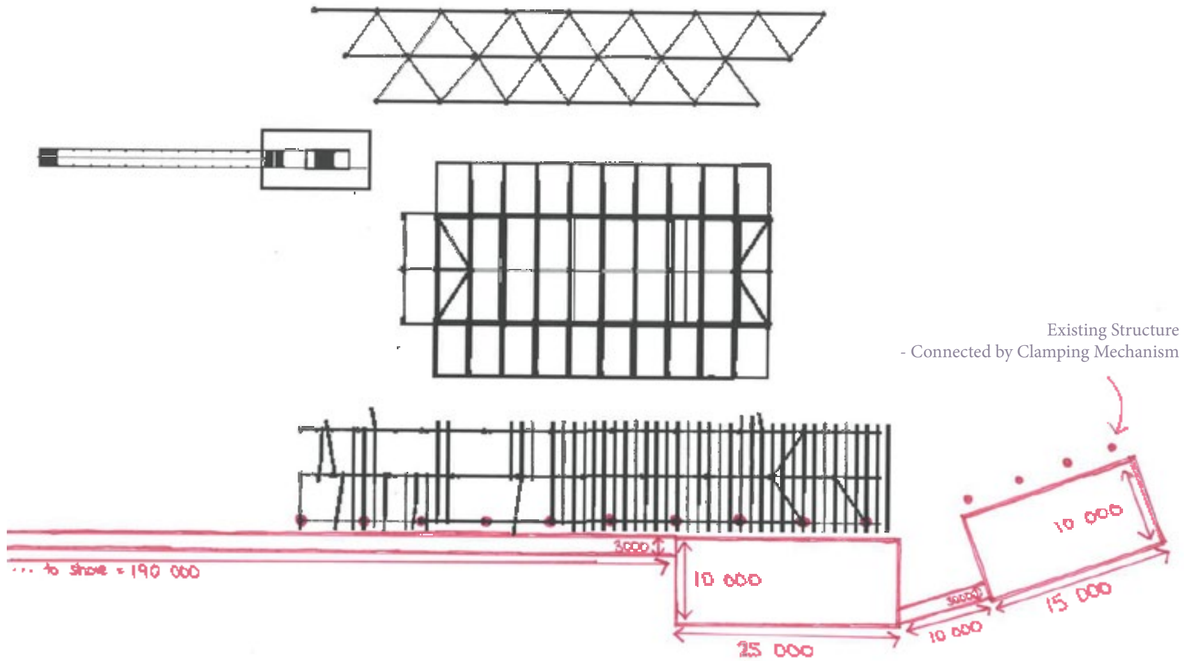


The totem will only be accessible at low tide (0.48m). The Underwater Restaurant will be accessible at all times due to the tunnel entrance being on shore. The Highest Tide point (7.1m) means that the underwater restaurant will be mostly submerged; this includes the ground and first floor. Simply use the tide calendar to view tide times up to 6 days in advance.



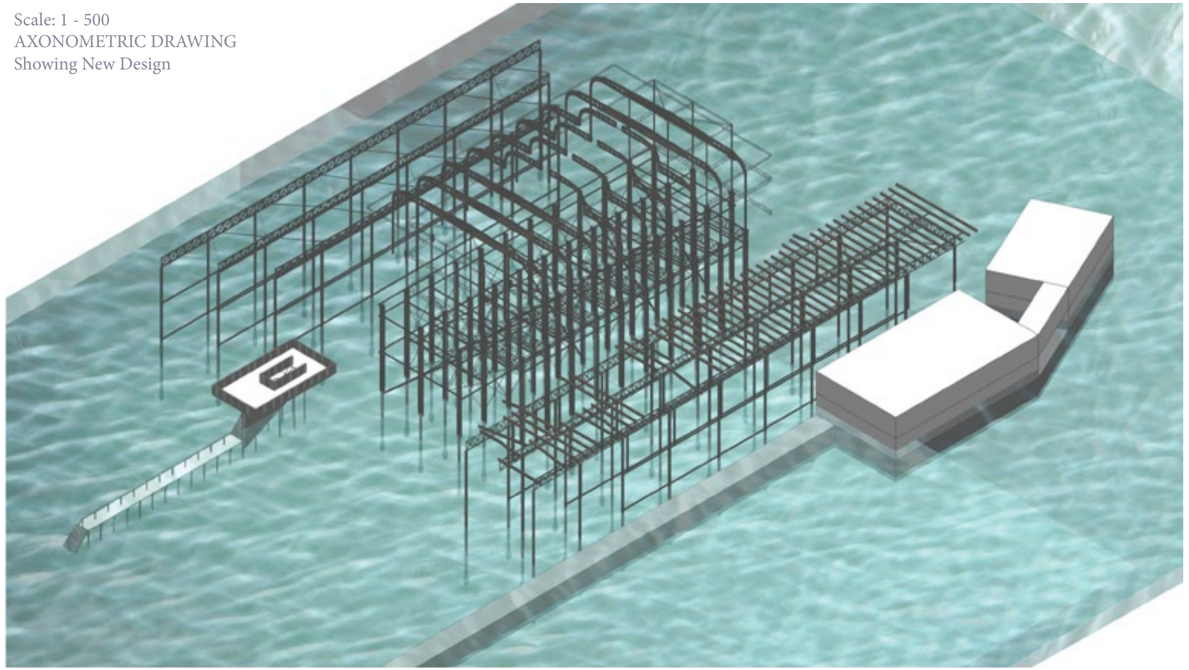
The structure itself will need to be able to be big enough to house the particular rooms for the programme, however still realistic in size. The ground floor shows the tunnel (3000 x 190 000) which connects to the first section; Pub, Seating Area. This then connects to the second section which is accessible via the second tunnel. This floor will be constantly submerged as it will run along the seabed until point of levelling.

Scale: 1 - 500
PLAN VIEW - Showing New Design

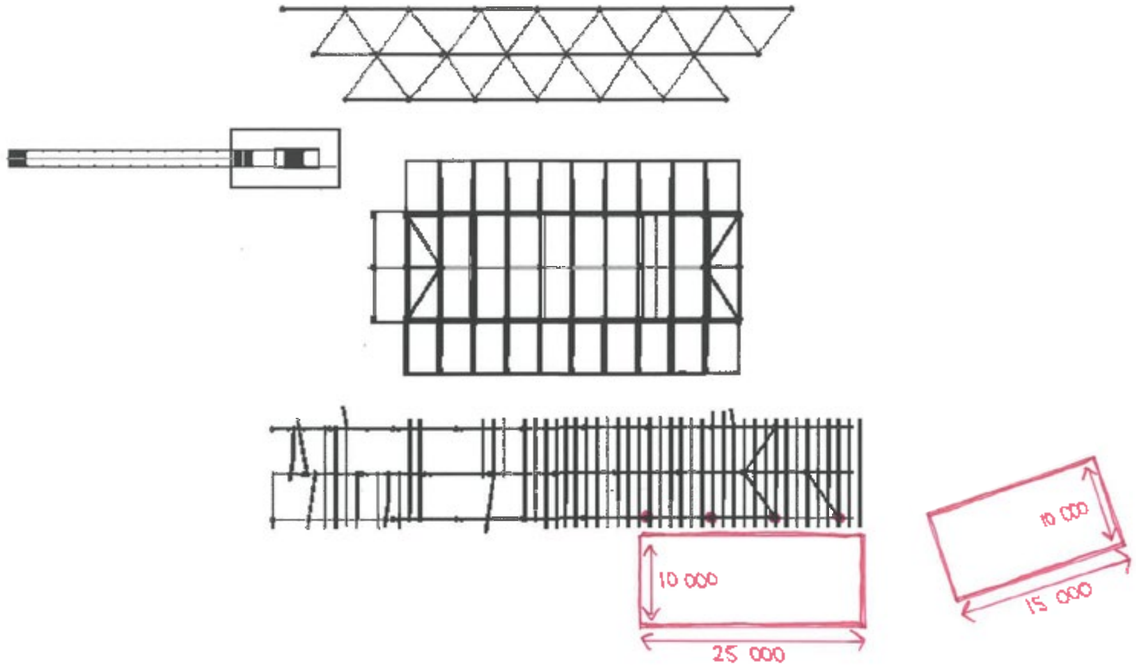


GROUND FLOOR - SUBMERGED

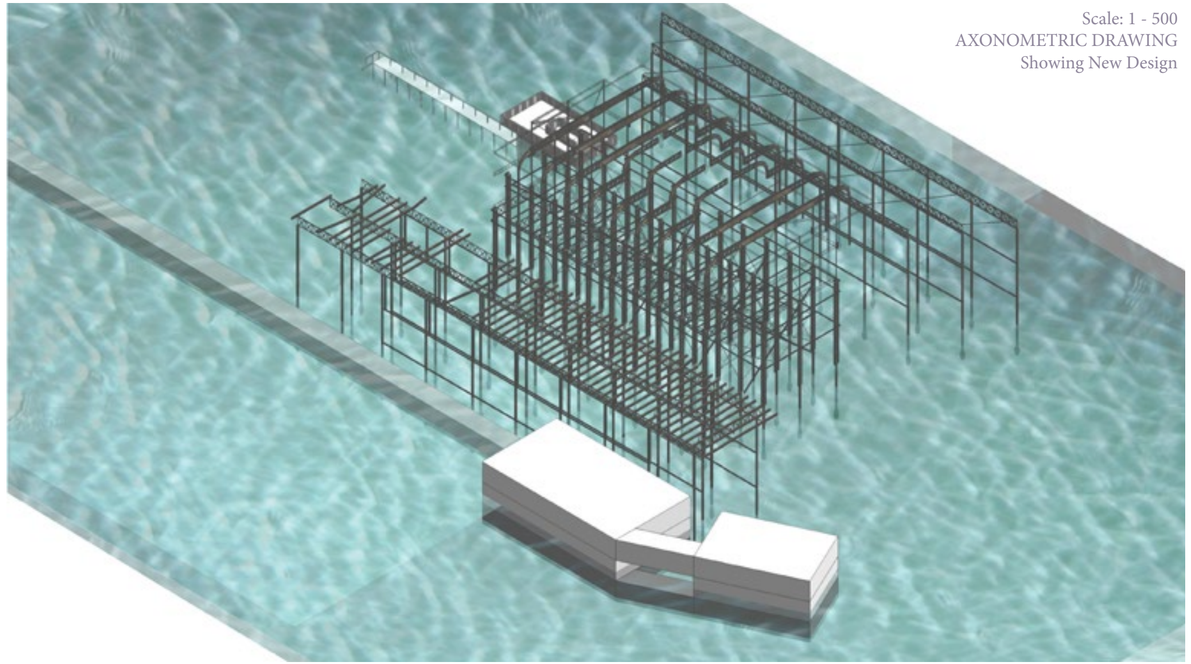
Scale: 1 - 500
AXONOMETRIC DRAWING
Showing New Design



The first floor will be partially submerged. At low tide the this floor will be visible, however at high tide it will be mostly covered. The first floor, however, does not have a connecting tunnel joining the two sections together. Therefore, the user will have to either go up one floor (pushing a direction of travel) or down one floor. Located on this floor will be viewing points within the first section and a larger seating area in the second section, used by the restaurant itself. From shore it would appear as though a building is just floating 200m off land. However, accessible by the underwater tunnel, this particular structure could be a popular attraction.

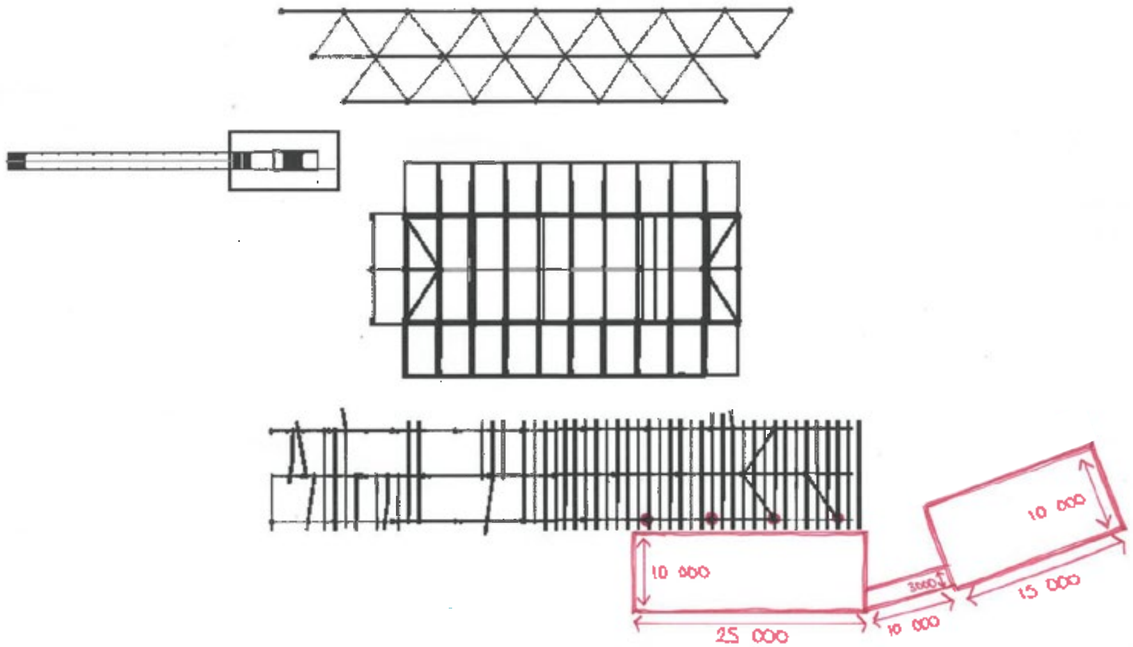


FIRST FLOOR - SUBMERGED AT HIGH TIDE



Scale: 1 - 500
AXONOMETRIC DRAWING
Showing New Design

The second floor will be completely above the water. It will be accessible by the West Pier itself, or through the other access points within the structure. The Building's Total Height is 9000, giving 3000 for each floor. This floor also has a joining tunnel connecting the two sections together. The Second Floor will be used as a balcony, outdoor seating area, for the participants using this activity or the festival in general. From shore it would appear as though a building is just floating 200m off land. However, accessible by the under water tunnel, this particular structure could be a popular attraction.



SECOND FLOOR - ABOVE WATER

Ergonomics and Stairway Developments

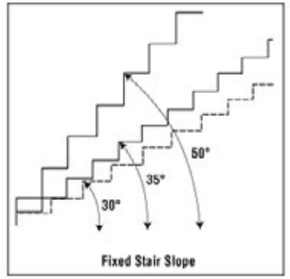
Potential designs for staircases within structure, to separate levels. Ergonomic Research.

Because stairway accidents can cause severe injury and even death, building codes for stairs and ramps are justifiably very rigorous. Good design can substantially reduce the potential for mis-stepping by providing us with the means to retrieve our balance, but even the best design cannot eliminate falling hazards entirely. The need for proper design also applies to ramps. The best approach to minimize the hazard of falling downstairs is to encourage the building of well-designed stairways, combined with training focused on raising our awareness of the potential for disaster. Within a staircase, treads shall have a uniform run and tread depth that does not vary more than 0.5 to 1 cm*.

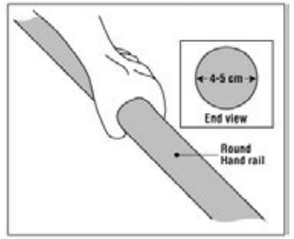
The maximum range for a stair slope is 20º-50º. However, because the majority of people prefer a slope of 30º-35º, this is the recommended range. Steeper stairs change the way you climb them because the steeper they are the more effort you exert. The ratio of riser height and tread depth has to be adjusted accordingly.

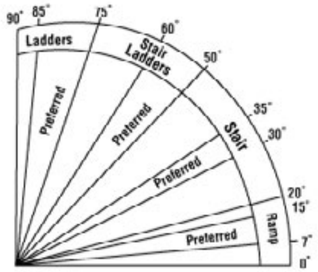
The dimension of risers or treads in a stairway should not vary more than 1 cm. When doors open directly into the stairwell, a 50 cm-wide platform should be provided beyond the swing of the door. The recommended maximum number of steps between landings is 18, with no more than two flights without a change of direction. The depth of any landing should be at least equal to the width of the stairs. To reduce the risk of slipping on stairs, non-slippery surface on the whole steps or at least on the leading edges is crucial. Such a surface can be made of rubber, or metal or painted with special slip-resistant paint. Regular maintenance of the stairs in good repair plus good housekeeping can reduce hazards for tripping.

Attempts to design aesthetically pleasing stairways including handrails must not compromise functionality. The prime function of the handrail is for holding as support while going up or down stairs. Handrails must be "graspable". It is therefore crucial to be able to grasp it quickly, easily and firmly if you should start losing your balance.

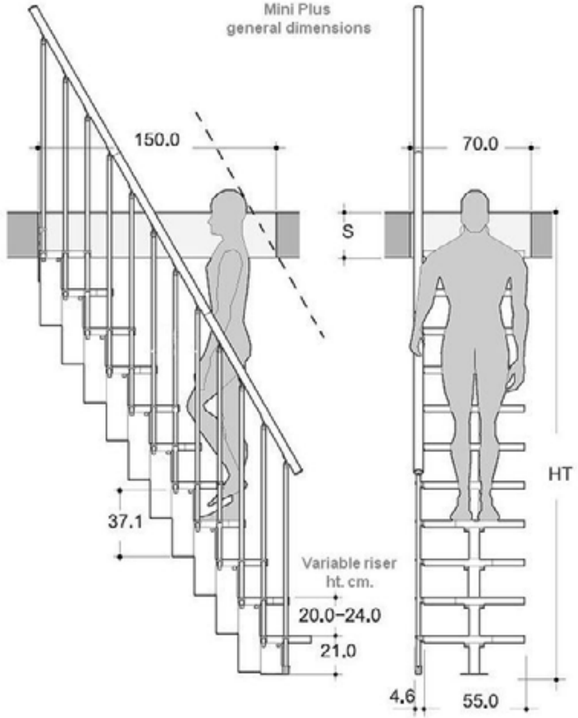


Fixed Stair Slope

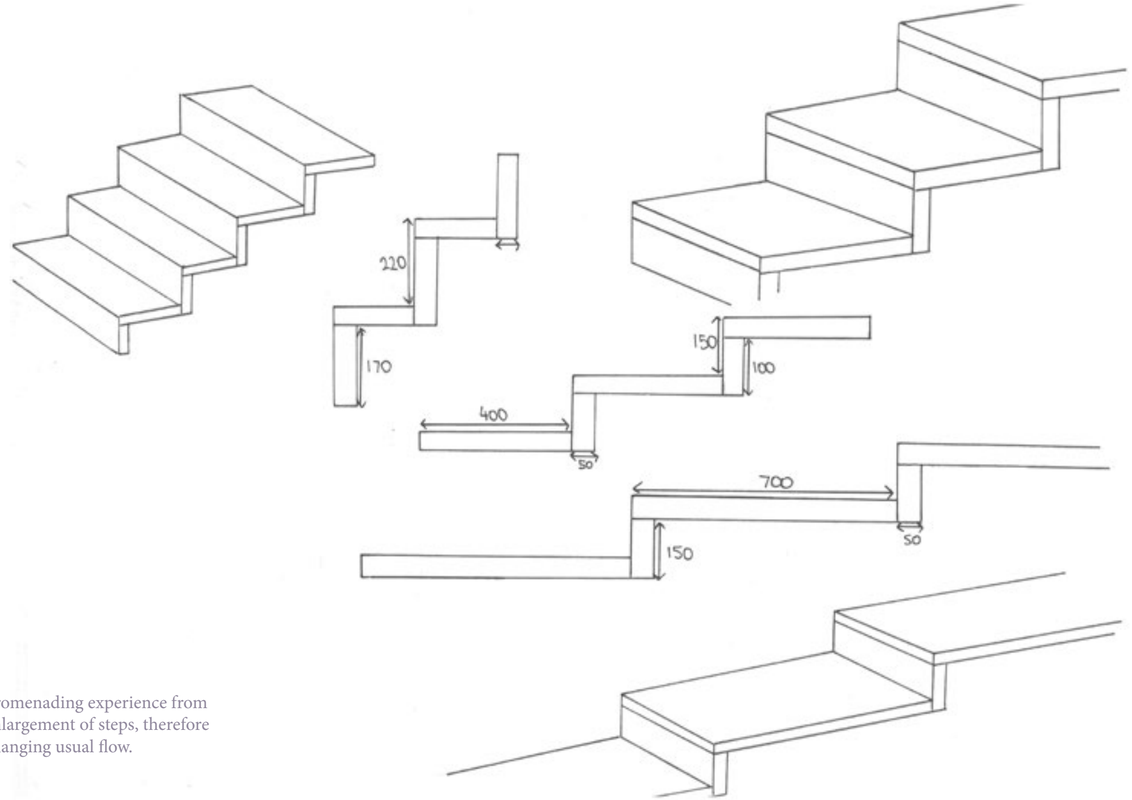




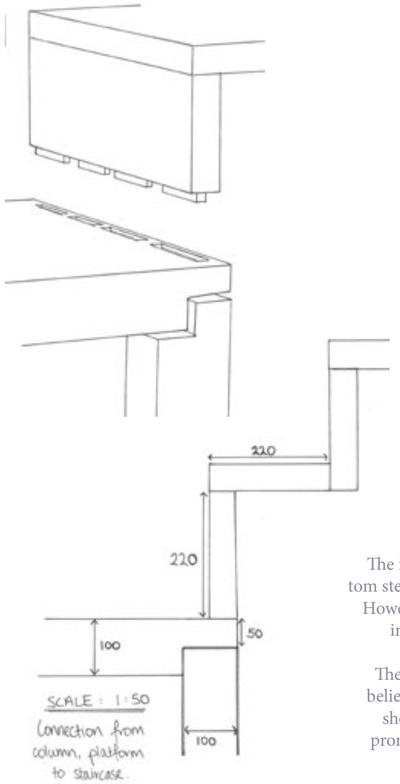
Slope and Type of Structure

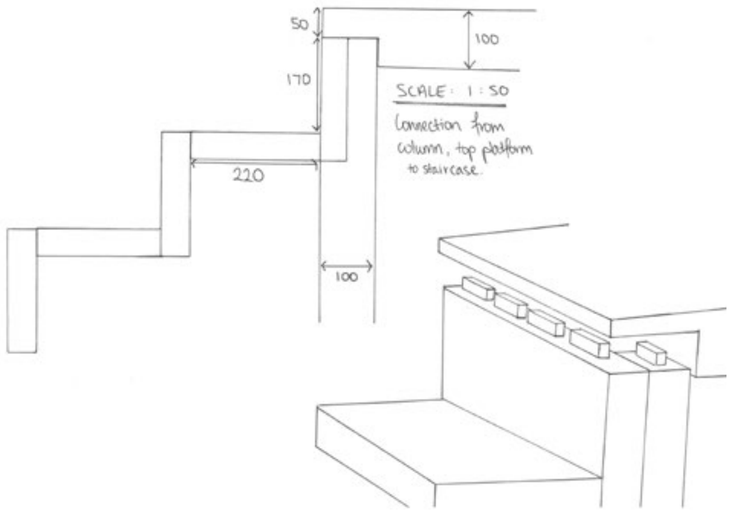


ERGONOMICS & STAIRWAY DEVELOPMENTS



Promenading experience from enlargement of steps, therefore changing usual flow.



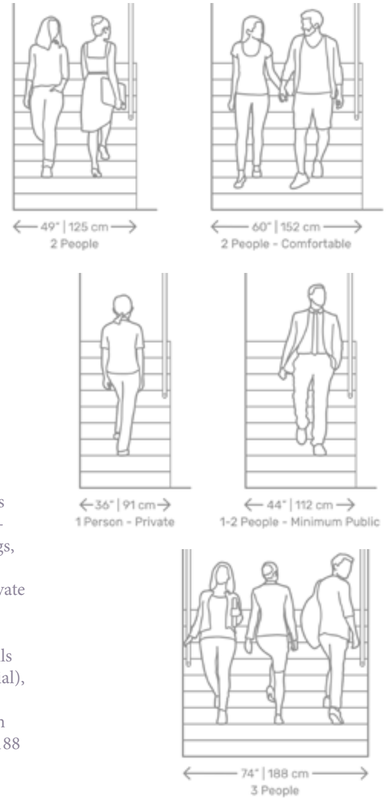


The idea behind this iteration was to also design a connection with minimal environmental impact. The bottom step will connect directly onto the column using another type of joinery technique called the 'Rabbit Joint'. However, the top step is slightly different as it contains a section attached to the columns which feeds directly into the top platform. Providing extra support to this structure. is technique is called 'Mortise and Tenon'.

The design, currently in place displays a staircase of usual ergonomics/ measurements (220x220) however, I believe the idea of promenading involves longer strides and steps as people 'Stroll'. Therefore, maybe the idea should be to enlarge the steps, to require the user to take 2 steps landing before rise, rather than 1 – 1. This promenading experience may change the design and overall appeal to the totem, however, might change the concept of how people walk within this space.

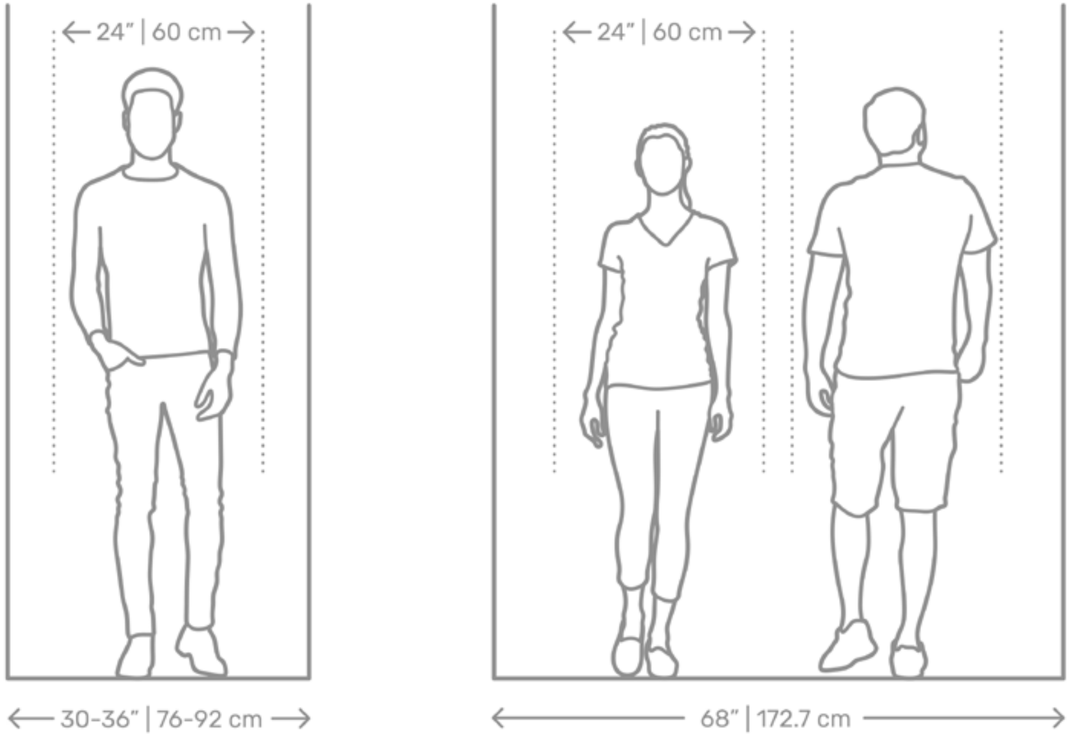
Ergonomics – Tunnel

Walkway connecting my activity to Mainland. Underwater Feature. Covered at High Tide.

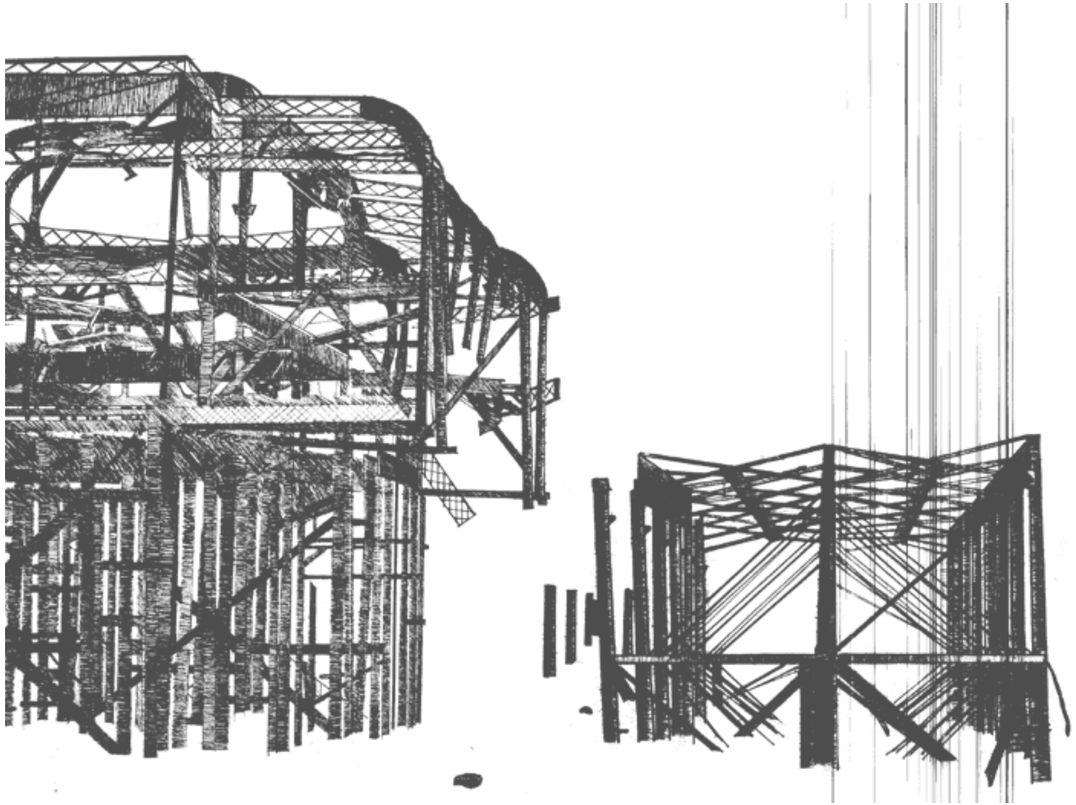


Tunnels are used as long passages from building-to-building with doors on one (single-loaded) or both sides (double-loaded). Most commonly used in residential and hotel projects. These tunnels provide the most efficient horizontal means of access and egress to a large amount of rooms. For high density apartment buildings, tunnels are shared between many residential units and connect back to vertical modes of circulation in the form of stair cores and elevator lifts. Tunnel widths vary to service diverse demands from single users in private homes to large groups of people in public facilities such as schools and hospitals.

Stair widths are based on the use and occupancy loads of adjacent spaces and must be serviced with handrails on one or both sides depending on the stair width. For stairs serving a single user (typically private residential), a minimum of 36" | 91 cm is required. In general, public spaces a minimum of 44" | 112 cm must be met—providing ample space for one person and allowing the tight passage of two people. Comfortable two-person stair widths range between 49" | 125 cm to 60" | 152 cm. For three simultaneous users, a minimum of 74" | 188 cm is recommended. Handrails must be placed every 60" | 152 cm.

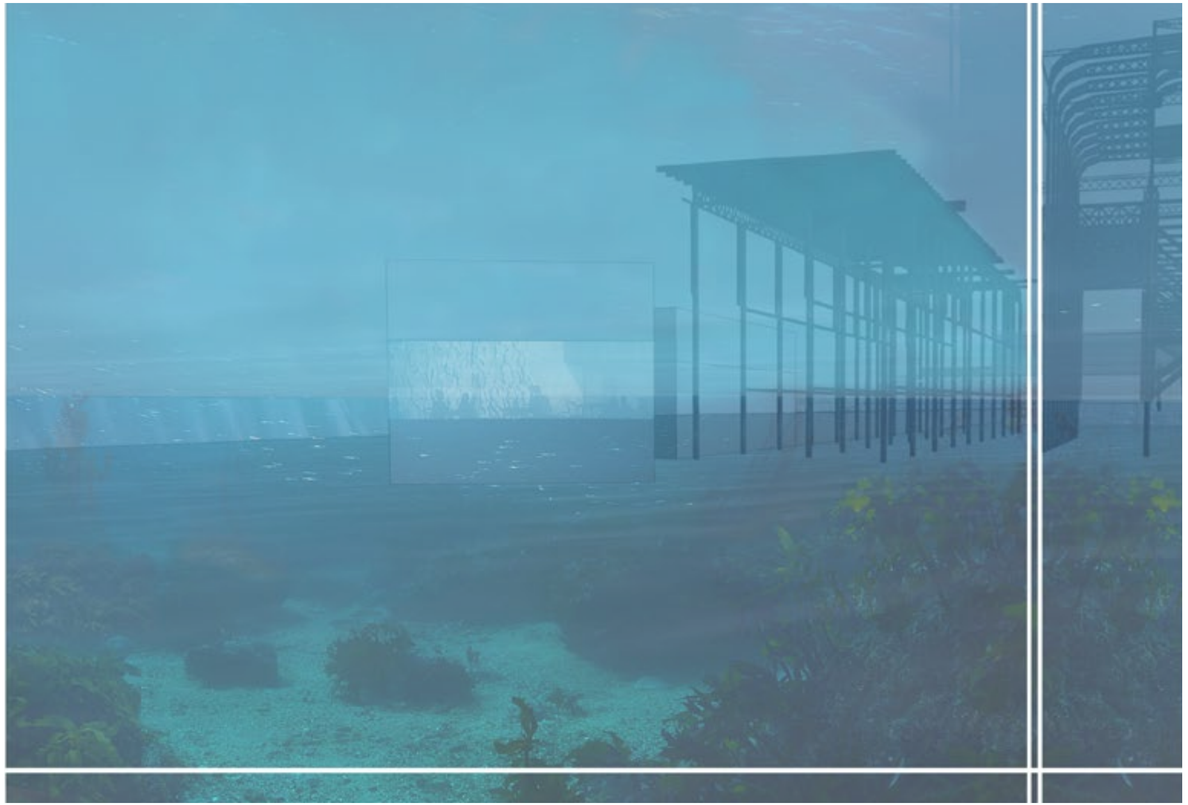


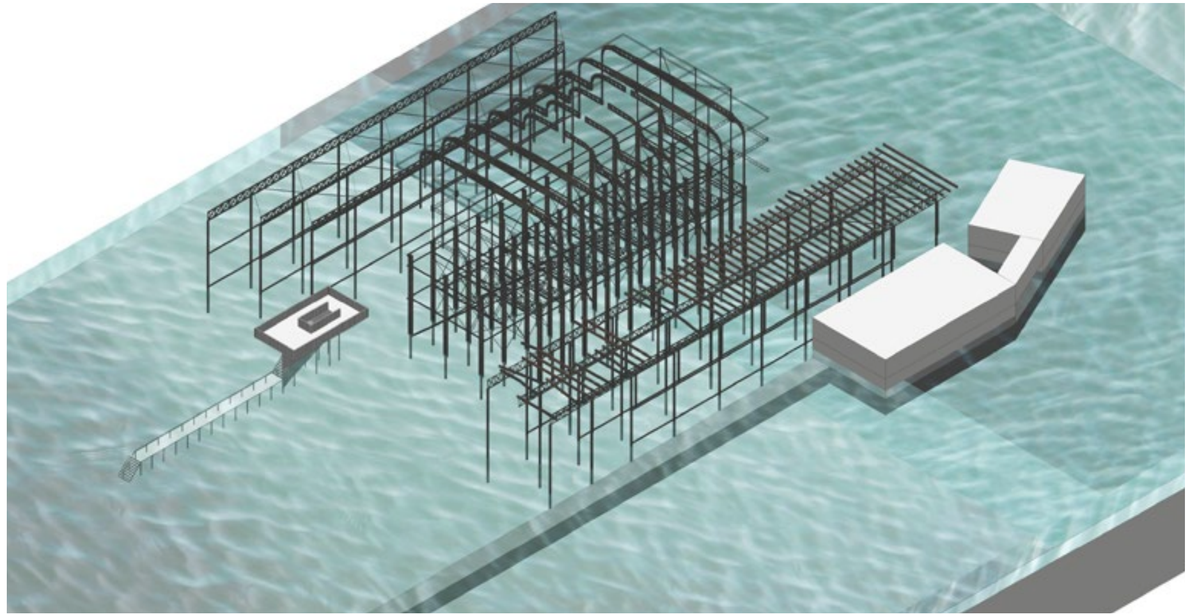
ERGONOMICS - UNDERWATER TUNNEL



Environmental Requirements

Internal and External Spaces

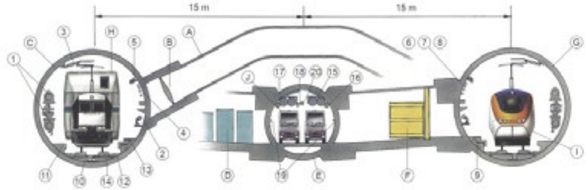




For the Environmental Requirements many factors need to be considered, these being whether the spaces require natural light or need to be in darkness. Will these spaces require ventilation, or will they need to be heated or cooled to an extent? Will these spaces be external or internal? In terms of the Underwater Restaurant majority of the spaces will need to be ventilated for obvious reasons, as well as be completely secure and airtight to prevent any water leaking through. Access point will need to be able created through the tunnel for and emergency exit, and to the connecting walkway directly above. Natural lighting will be available as the materials used to create most of the structure will be transparent. However, the use of lighting will also be designed into this structure as the building will also be accessible at night. Therefore, clearly lighting needs to be designed into this to ensure safety and visibility of the surroundings.

Ventilation – Tunnel

Walkway connecting my activity to Mainland. Underwater Feature.
Covered at High Tide.

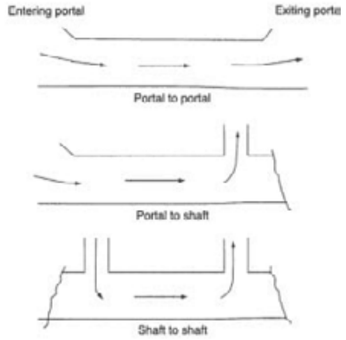


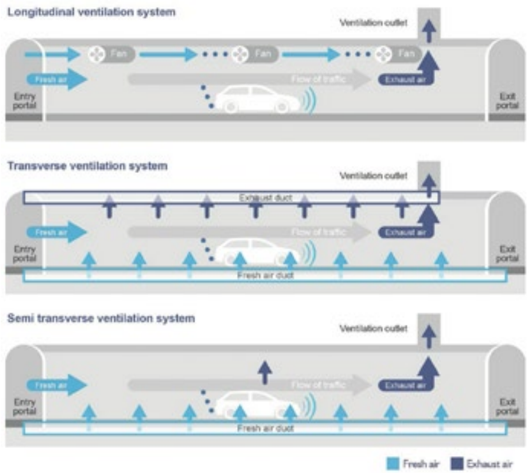
A	Piston relief duct at 250 m intervals	Running tunnels		6	2 × 20 kV cables	Service tunnel	
B	Piston relief damper	1	Cooling water pipes flow and return	7	1 × 3.3 kV cables	15	Drainage pipes 400 NB (3 No + 1 future)
C	Running tunnel	2	Firemain 100 NB (125 m each side of cross-passage)	8	Low voltage cables	16	Firemain
D	Typical technical room	3	Catenary equipment (every 27 m)	9	Signalling cables	17	Firemain 250 NB (future)
E	Service tunnel	4	Leaky feeders	10	Phase 1 track concrete and drainage	18	Leaky feeders
F	Typical cross-passage with bulkhead door	5	Main lighting	11	Maintenance walkway concrete	19	Main lighting push buttons
G	Running tunnel			12	Phase 2 trackbase concrete	20	Main lighting
H	Eurotunnel Le Shuttle			13	Evacuation walkway precast units		
I	British Rail train			14	Track support		
J	Service tunnel transport system						

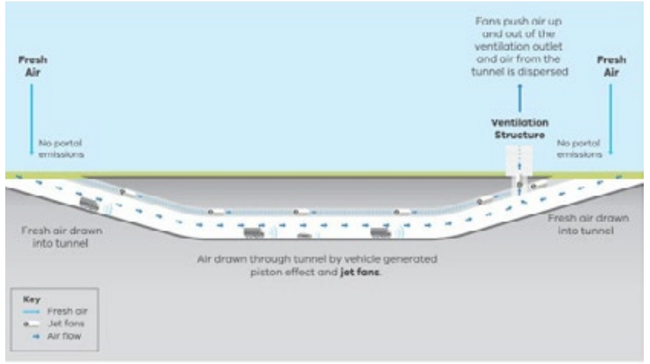
Fires and accidents pose dire threats in underwater tunnels, due to the higher gradient, limited and difficult access, and egress. The issue of fire safety in road tunnels, especially in cold climate is exacerbated due to icy/slippery road conditions. At low temperatures, for instance, leaks forms ice that will affect traction and, can be an underlying cause of accidents. This requires a holistic approach to fire safety by considering the peculiar characteristics of cold operating environment.

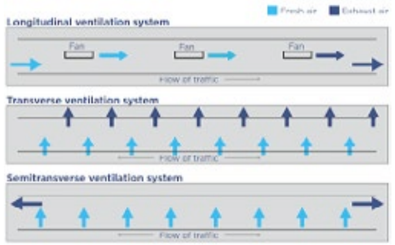
The most important factor to this design is to examine the current fire safety regulations and, requirements for underwater tunnels, by means of a case study. The goal is to assess the impact of cold operating environment, while also accounting for both foreseen and unforeseen uncertainties in the long term. The case study results demonstrate that implementing security systems and, equipment that have a better resistance to cold climate proves to be very important factor in reducing the casualties and lengthy disruptions of the transport system. Further, the results from the case study can serve as a guide in developing cost-effective and efficient evacuation plans that determines the best way to undertake evacuation activity in cold environment.

Many studies have shown that, many victims of tunnel fire are suffocated to death rather than directly burned by fire. This shows the importance of emergency evacuation. The longitudinal size of tunnel is much bigger than the lateral size of tunnel. It needs relatively long time for flames and smokes to spread along the longitudinal. So people in the accident have time for an emergency escape.







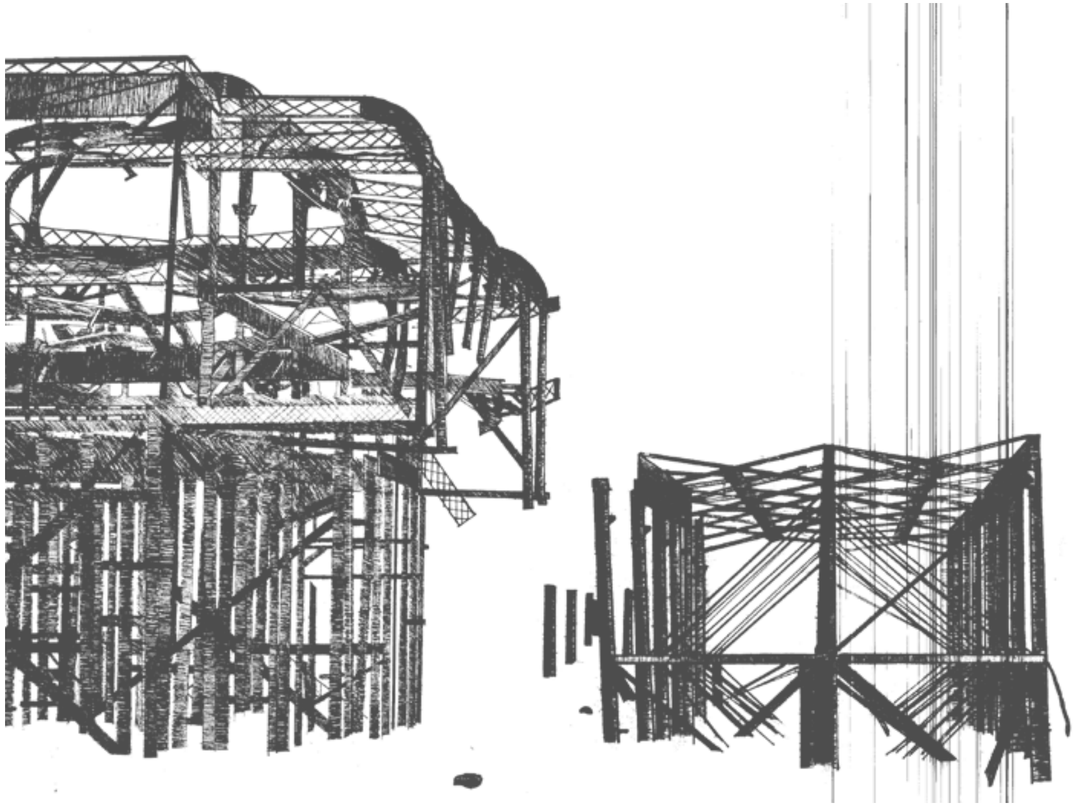


The main objectives of providing ventilation systems in tunnel are:

- To provide the working crew an environment of fresh air.
- To exhaust out fumes and gasses, that is injurious to health and explosive in nature.
- To remove the drilling, mucking and blasting gasses emitted.

Ventilation during construction and after completion of tunnel construction is an essential feature that a tunnel should own to facilitate functional, comfortable and a safe tunnel environment for both the road and railway tunnels.

Here the direction of airflow is longitudinal in nature. At the beginning of the tunnel or the tunnel section starting, these moves the pollutant gasses and effluents, that is followed by the fresh air. Then at the end of the tunnel portal or at the tunnel section end, the polluted air is discharged. The configuration of longitudinal ventilation can be either portal to portal, shaft to shaft or from portal to shaft. For transit and railway tunnel, the longitudinal airflow system is used.



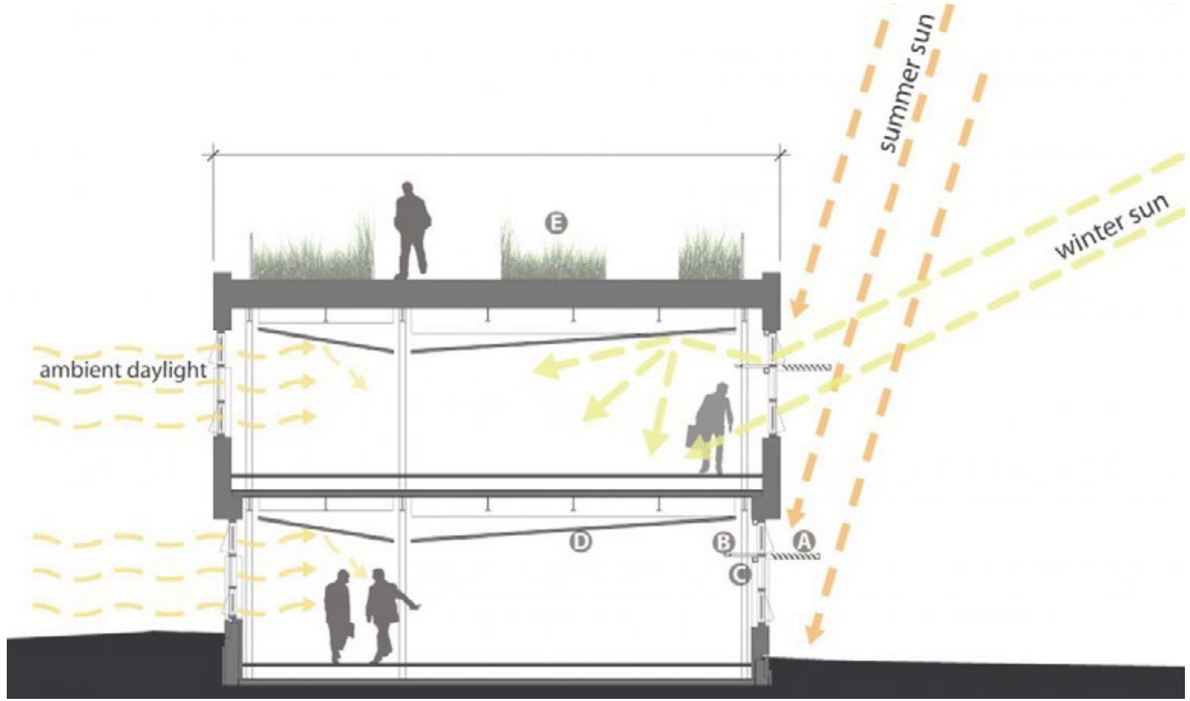
User Requirements

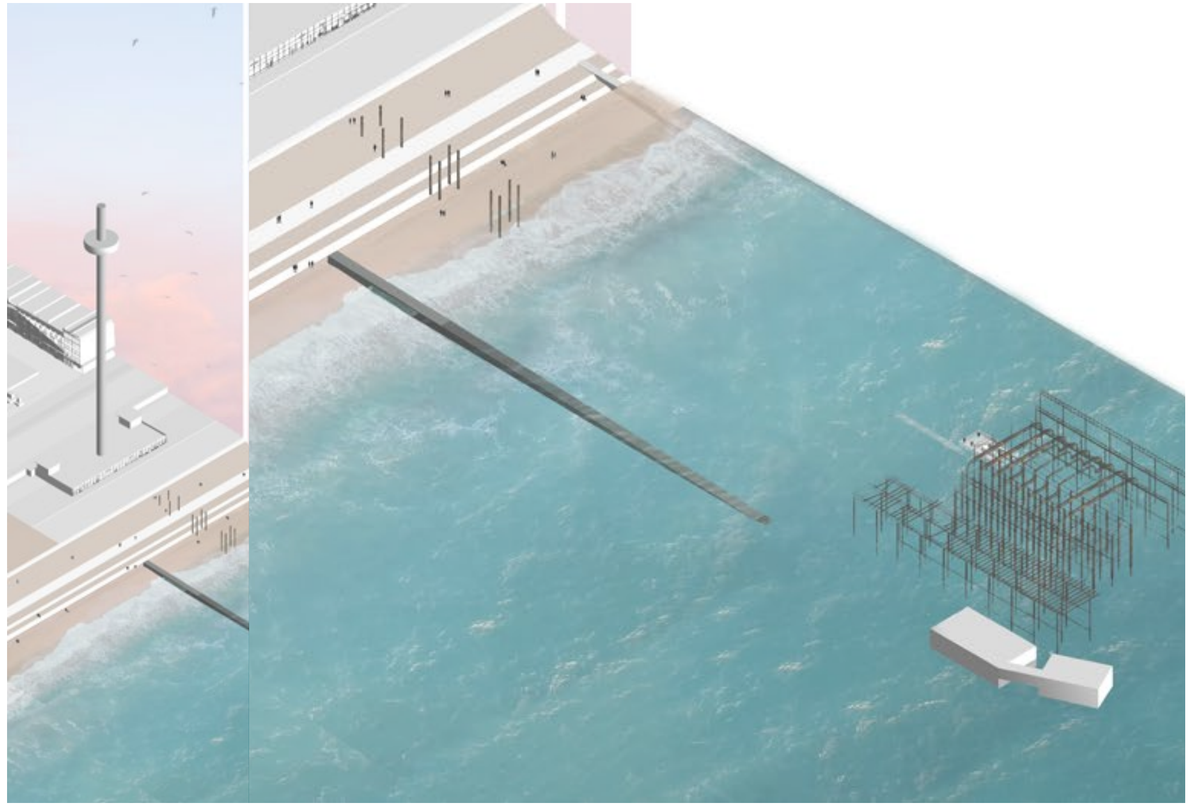
Analysing the Users which will Inhabit the Programme / space

User Requirements

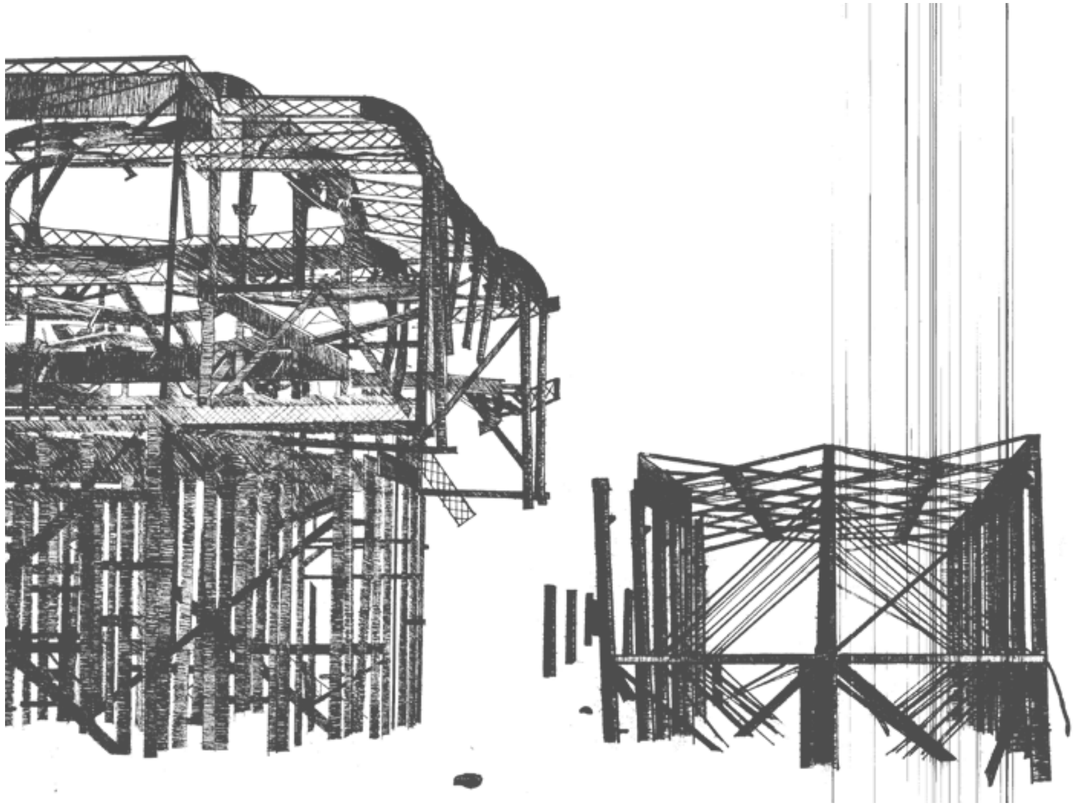
Defining which users will occupy the spaces within programme.

Throughout this chapter I will address which users intend to inhabit the spaces provided. As this programme runs within the Festival of Britain it, my programme will have the potential to be experienced by all ages. A large variety in age groups will attend The Festival of Britain 2022. In particular I will be addressing ages above 18 for the Pub section to this structure. For the Underwater Restaurant, all ages will be allowed entry to enjoy and participate. As my age group is both young and mature, they will all require different needs. I.e. Wheelchair access, ramps, resting/seating points, toilets. This topic also falls very similar towards another section further in the almanac, referred to as Infrastructure Studies.





UNDERWATER RESTAURANT



Other Requirements

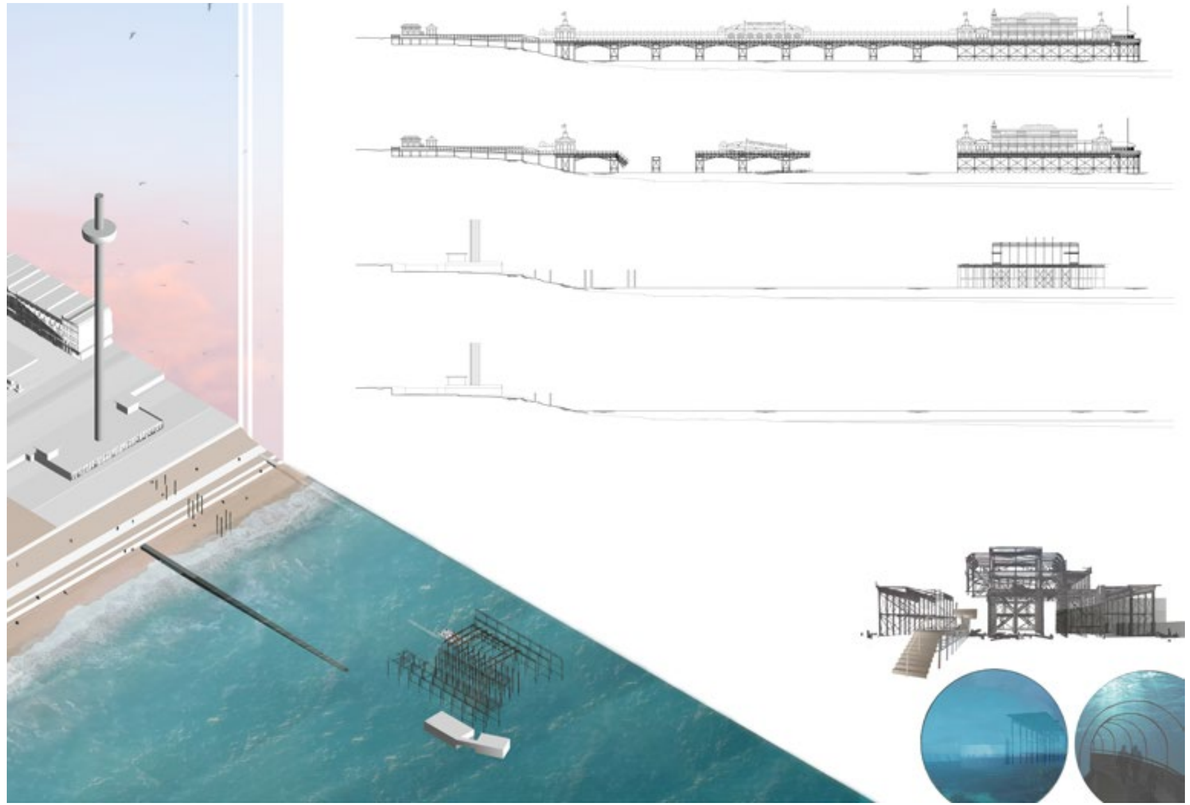
Accessibility, Structural Requirements, SysMAT

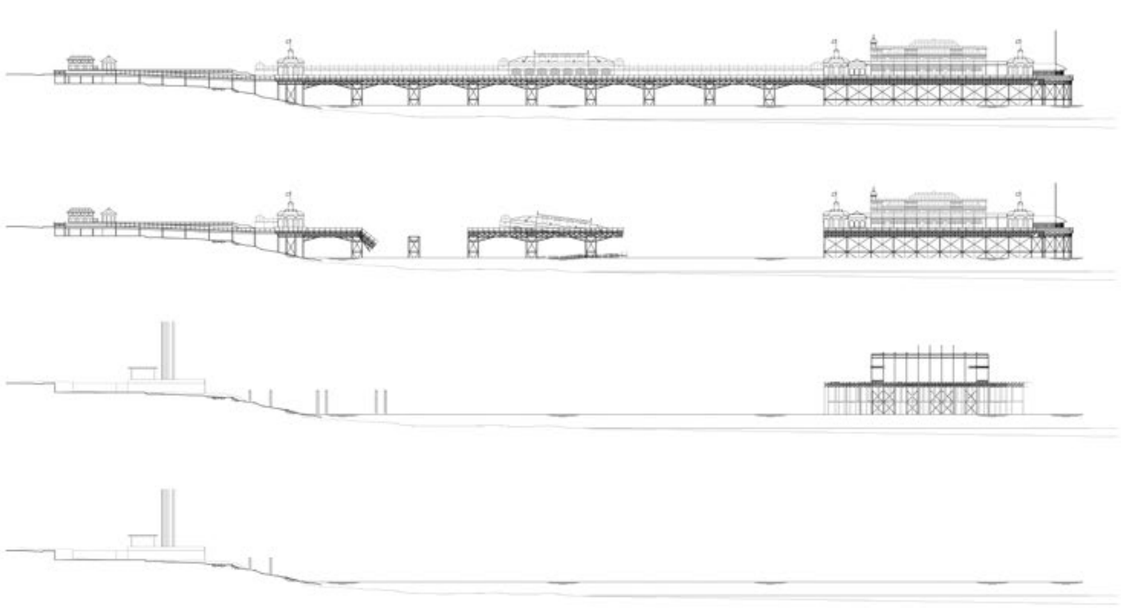
Sustainability?

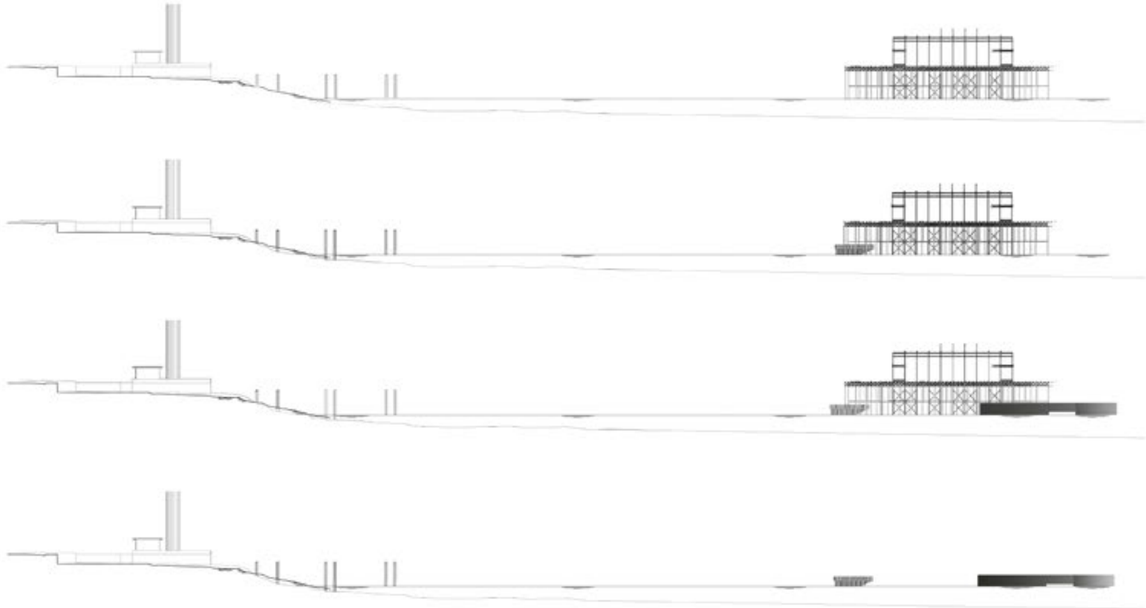
What will happen to the structure once the festival finishes? and to the remains of the West Pier?

Due to the current condition of Brighton's West Pier, building around the structure will need to have specific details as the structure remains a Grade I listed building. It is extremely delicate and in approximately 50 years will be completely gone. I have the possibility to create a structure which could be long-lasting, therefore justifying the use of less sustainable materials such as concrete or glass. This structure itself has the possibility to become the New Pier of Brighton Beach, an unusual experience, promenading in an underwater tunnel along the remains of what once was the biggest seaside attraction along the South Coast.

As this is the case, this allows my design to be extremely sustainable. The reuse of the new structure will replace the existing West Pier, and in years to come when the last remains collapse the Underwater Restaurant will take its place. The tunnel can be created out of a more dense and long-lasting material, such as concrete, iron, or metal / steel. The building will be made out of a similar material, however, will have large reinforced glass panels, to allow participants to view their surroundings, and experience the crashing waves. The tunnel and end structure will remain open long after the Festival of Britain 2022 has finished.



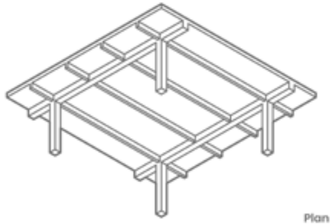


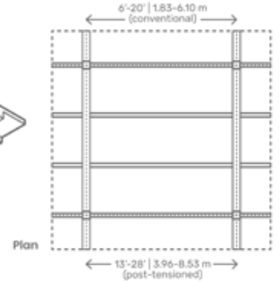


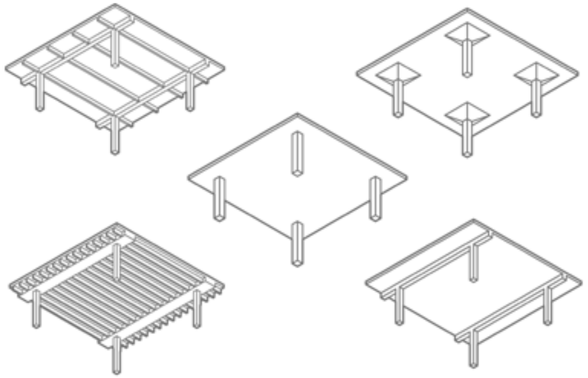
WEST PIER TIMELINE

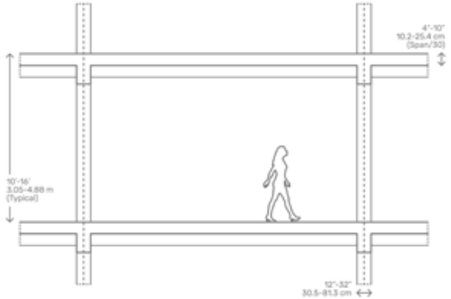
Material & Systems Studies

Researching into potential materials types and systems for the structure.

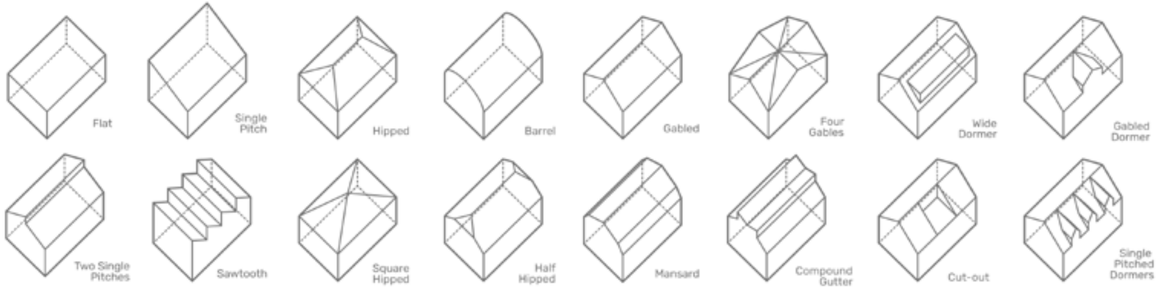


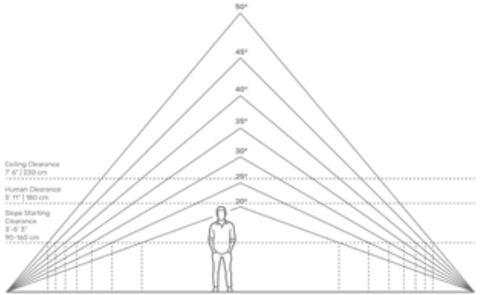






Concrete floor systems are reinforced slab structures designed to satisfy a range of loading and span conditions in a building. Designed to span in either one direction (one-way) or both directions (two-way) of a structural bay, the range of concrete floor systems available are created to economically and efficiently account for the numerous and specific demands of each building project. During the design process, especially the initial planning stages of a project, the inherent expenses of concrete (30% cost), reinforcement (15% cost), and formwork (55% cost) should be considered and evaluated when choosing the appropriate concrete floor system for the building.



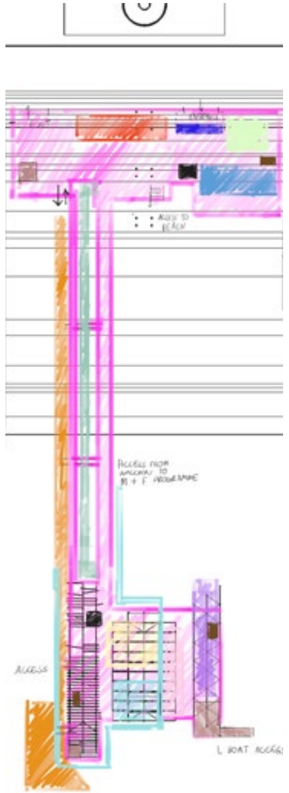


Roofs are one of the primary components of a building envelope and are understood as the uppermost part of a building that gives protection from the environment, climate, and animals. They are often designed uniquely for each region and building typology based on architectural traditions responding to specific materials, styles, and functions. Roofs generally function in two parts: a supporting structure and an outer skin for weather proofing. Their shapes are greatly influenced by the varied properties of specific climates, regions, materials, and architectural styles. Because of the variety of design strategies, roof terminology is flexible and can range from flat roofs to steep pitches, domes, arches, or complex combinations of angles.

Interior clearances for roof slopes provide guides for functional human spaces under angled roofs. It is advised that ceilings be set at a minimum of 7'6" | 230 cm with human clearances of 5'11" | 180 cm. Heights of 3'-5'3" | 90-160 cm should be provided at the base to allow for low furniture.

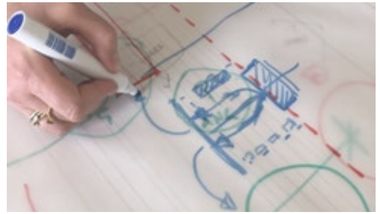
Infrastructure Critical Research

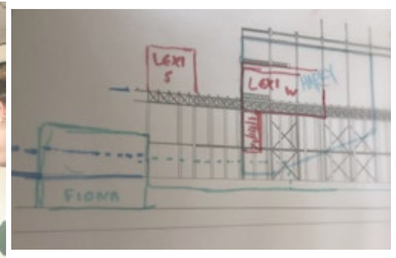
Basic Infrastructural Elements to support a large-scale event – Festival of Britain 2022

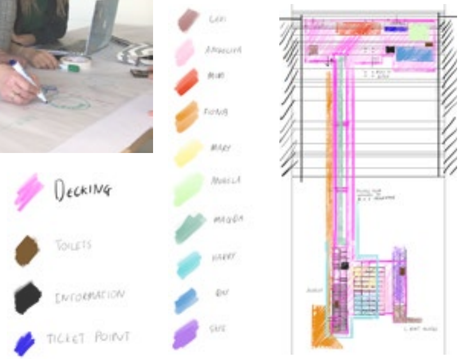


In its current condition, Brighton's West Pier cannot host a festival as it lacks basic infrastructural elements to support such a large-scale event. Therefore, the additional infrastructure elements we will design will consist of; Tickets, Information Points, Access, Rest Points, Toilets, and Welfare Facilities.

These various infrastructure elements will need to be suited in place alongside the other festival activities. Location is extremely important for some of these elements due to the Users who will be occupying the spaces. Throughout this section, I will be further researching into Tickets & Information points, researching into precedents and particular designs for inspiration. This will then lead into further designing which will allow particular elements to be added to the much larger Group Master Plan. This will mean every other activity will be fitted around these particular elements. As mentioned, locations are an important factor, as well as quantity, and the design itself. Much consideration will need to go into the design process to ensure a sustainable and appealing outcome.







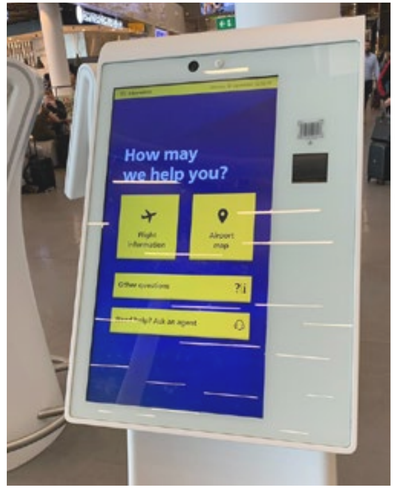
The first process of this design was to meet as a group and initiate a conversation about where everyone planned to be located. We managed to create a Group Master Plan which roughly suggest the location of where other team members wish to be placed. Overall working within a group has been beneficial in terms of sharing resources however, it comes at a disadvantage when members aren't present or contributing.

TASK A - INFRASTRUCTURE

As my particular infrastructure role to design the information points, I will be looking into different variations and examples in which I can display important festival info. The information points are KEY in ensuring the festival 'runs' comfortably. This would be due to the fact visitors may need direction or wish to learn about the history of the West Pier. As a group we started looking into materials we could use, some sustainable element which would have a minimal impact on the environment. Therefore, reusing old structure or found material, to develop a unique palette for the whole studio.

There are different ways information points can be designed or displayed, this would be ranging from face-to-face encounters with people or a self-used sign display which could display key information points or directions etc. The chance here is that we could get creative as designers and build a point which would not only be eye catching but also informative, in a minimalistic and sustainable way.

Initially I wanted to get some precedent research or other examples of different signs/information points and compare the differences between them. In hope that I would get a better understanding of what would work better and be suited most to our festival as a studio.



Face to Face encounters;

Personally, I believe speaking to a human would be much preferred to reading a sign, however many other people enjoy the curiosity and excitement in figuring out themselves. To design something with a face to face encounter, will require come kind of building or shelter, with staff working at all open hours. This may be a better option, as I can get creative with particular shapes and styles of shelter or housing designs.

Self-Used Information Posts/Signs;

This particular type of displaying information can be very effective. In terms of the typical signs one would see (around a shopping mall etc), it can be of a reasonably large size. More modern designs will include touch screen features with multiple options, however regular signs are also just as effective and commonly used (parks etc). This method of displaying information is effective because it gives the passing use the option to interact, and this is where it could get creative. Many ideas have come into mind when thinking about how I could use this opportunity to design something ideally unique and new method of displaying important information. Getting the user to interact with the sign/object may be a fun and exciting opportunity which itself may benefit the festival as a whole.

INFRASTRUCTURE - INFORMATION POINTS

Critical Analysis - Precedent Study

Precedent Research - Canary Wharf Kiosk

Make are the designers who installed this retail kiosk within Canary Wharf Estate. The structures themselves can be described as Urban Origami. They consist of a simple folding geometric form that are easily distinguishable. It is expressed as simple compact form of folded panels made of steel. The opening mechanism works via a counterweight system operated by an electric winch. Once open it forms a canopy.

The structure is 1.95m deep x 3m wide comprising steel framing and plywood-stressed interior lining. Rain-skin cladding panels create an insulative air gap that helps to reduce solar gain. Externally, powder-coated aluminium cladding panels make the kiosk highly resilient and durable requiring minimal maintenance. As lightweight as they are, they were prefabricated and tested off-site and assembled on site.

This structure itself is not only a unique design, but something that many visitors will remember. It is a very eye-catchy structure which draws attention to it, within the surrounding context, as it is of much different shape and material. The atmosphere it would provide would be changing compared to how the space would normally be occupied. Therefore, fills that void, and provides an area in which passing civilians can go to if they need direction or have any curiosities.

I chose this precedent as a study to look into as it was most unusual, yet intriguing, however not seen before. Therefore, in terms of my particular design, I aim to create some kind of space whether that be face – to – face interactions or a self-used interacting sign I do not yet know. However, I plan to keep that undecided to not rule off any potential designs. I plan to sketch and create some different methods and ways of people interacting within the space of the West Pier, and seafront. In terms of our festival, we have decided that 2 – 3 information points will be designed, all even distributed among the festival.

TASK B - Critical Focus

Burning Man – Festival

Glastonbury Festival

For the second section of this chapter, I will be exploring and critically researching into the Burning Man Festival and Glastonbury Festival. Looking at how these festivals are constructed, managed and put together. The critical focus will be on the lifespan of the festival itself, the sustainability aspect, as well as what happens after the festival concludes; i.e. what remains and what is the process for removal.

Burning Man

A city in the desert. A culture of possibility. A network of dreamers and doers.

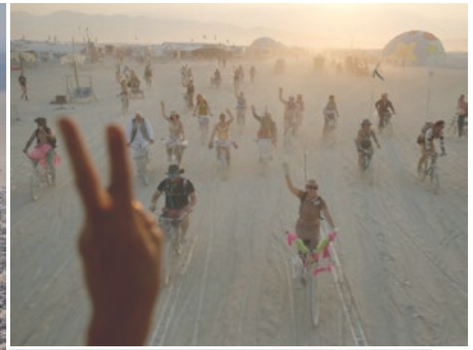
Burning Man is an annual, nine-day gathering in the Nevada desert, Organized by a non-profit organization called the Burning Man Project.

These seven days of planning, surveying, and assembly are ultimately what makes the Man festival possible. Every August, the festival sees 70,000 participants come to Black Rock City from all walks of life, assuming the role of architects and construction workers to use the desert to build all sorts of shelters in a fast, sustainable way. More than 70,000 people went to Burning Man in 2017.

Burning Man 2020 will take place August 30 – September 7 in Black Rock Desert in Nevada. Participants join in the effort to co-create Black Rock City, a temporary metropolis dedicated to art and community. Burning Man is not a festival. It's a city wherein almost everything that happens is created entirely by its citizens, who are active participants in the experience. A temporary city. A global cultural movement based on 10 practical principles.

Most tickets sell for $425, according to the event's official website, and you'll also have to purchase a $100 vehicle pass for each car you drive in. Approximately 4,000 pre-sale tickets are available starting in mid-March, at $1,400 each.

Burning Man is the sum total of the activities of its participants, and the ways to participate are as unlimited as one's imagination. Leaving No Trace and care for the environment are fundamental values of the Burning Man community. We have always believed deeply in leaving a place in better condition than we found it in. No money is exchanged at Burning Man, so participants are expected to bring food, supplies, shelter, and anything else they might need. The only things you can buy there are coffee and ice. The nine-day gathering of more than 70,000 people includes wild costumes, art installations, spontaneous musical performances, and lots of partying.



BURNING MAN

Burning Man 2018 closed with the burning of the Temple Galaxia, a 65-foot wooden structure that symbolizes how the fabric of the universe connects all living beings. For the burning of the temple, people created memorials for deceased loved ones and past relationships, according to the Reno Gazette Journal. Burning Man participants bring everything they need with them — and then pack it out with them afterward. That means attendees must bring their own shelter, food, water, sunscreen, and whatever else you might want or need. The website suggests participants bring a bicycle to get around and "toys or costumes with which you can express your creative spirit." The nearest large city to Black Rock City is Reno, about a 2.5-hour drive away, according to Google Maps.

"Most cities they grow gradually. We have the advantage of being able to enact an entire city plan and make it consistent. A lot of cities that you would be more familiar with have developed slowly over time, so they don't make a whole lot of sense. This city is planned to be temporary so we can make it a lot more organized than a regular city."
–Professor Plague, Surveyor

What Happens Afterwards? - Clean Up

Each year in an atmosphere of awe and respect, the Department of Public Works (DPW) revisits the vacuum of the Nevada high desert with a circus train of a city locked and loaded into the chambers ready to be shot onto the playa. The feeling is equally as awesome to reduce it all to nothing more than a memory less than three months later. This is the satisfaction that comes from setting up and tearing down Black Rock City, located on the Black Rock Desert in northwestern Nevada. This whirlwind project encompasses massive construction, deconstruction, and playa restoration techniques that span the entire year, including work weekends through the winter and spring and full production summer through October. This achievement requires the collective efforts of a solid management staff and a crew of skilled labor and volunteers numbering about 120. The crew has committed their summer to mastering challenging workloads in the extreme conditions of remote high desert within a short window of time. The complexity of the job and the schedule leave little room for setbacks.

Debris Removal; Despite well-documented, collective efforts to pack out everything that participants bring in, an element of debris remains. The clean-up crew still finds random sofas, bicycles, or an abandoned camp now and then. Teams also remove things that escaped the attention of some participants like oil drips from vehicles, or bark and wood splinters from wood piles.

Burning Man Seeks a Sustainable Future

Burning Man has long been engaged in environmental stewardship through initiatives like Earth Guardians and the 2007 Green Man theme, and through partnerships with Black Rock Labs, Black Rock Solar, and Friends of Black Rock High Rock.

To that end, today Burning Man Project is setting three broad goals to be achieved over the next 10 years:

1. No Matter Out of Place. Handle waste ecologically.
2. Be Regenerative. Create a net positive ecological and environmental impact.
3. Be Carbon Negative. Remove more carbon from the environment than we put into it.

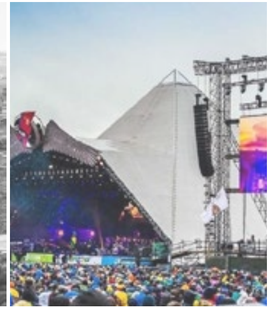
Glastonbury Festival

People travel from around the world to watch some of the biggest music superstars take to Pyramid Stage and utter those famous words - “Hello Glastonbury”.

When it comes to British music festivals (or worldwide music festivals for that matter) nothing quite lives up to the phenomenon that is Glastonbury. People travel from around the world to watch some of the biggest music superstars take to Pyramid Stage and utter those famous words - “Hello Glastonbury”. The relaxed atmosphere, vast size and incredible line up makes it a highlight of the entertainment calendar every year and the 2019 event - which kicks off today - is set to be no different. But unlike many new festivals it didn’t start off a huge mainstream event, and it has slowly grown from a small local fair which cost just £1 a ticket including free milk. The first Glastonbury Festival was held the day after Jimi Hendrix died in September 1970.

Glastonbury Festival is a five-day festival of contemporary performing arts that takes place in Pilton, Somerset, England. In addition to contemporary music, the festival hosts dance, comedy, theatre, circus, cabaret, and other arts. Leading pop and rock artists have headlined, alongside thousands of others appearing on smaller stages and performance areas. Films and albums recorded at Glastonbury have been released, and the festival receives extensive television and news-paper coverage. Glastonbury is now attended by around 200,000 people, requiring extensive infrastructure in terms of security, transport, water, and electricity supply. The majority of staff are volunteers, helping the festival to raise millions of pounds for charity organisations.

Regarded as a major event in British culture, the festival is inspired by the ethos of the hippie, counterculture, and free festival movements. It retains vestiges of these traditions, such as the Green Fields area, which includes sections known as the Green Futures and Healing Fields. After the 1970s, the festival took place almost every year and grew in size, with the number of attendees sometimes being swollen by gate-crashers.



GLASTONBURY FESTIVAL

Michael Eavis hosted the first festival, then called Pilton Festival, after seeing an open-air Led Zeppelin concert at the 1970 Bath Festival of Blues and Progressive Music. The festival's record crowd is 300,000 people; this record was set at the 1994 festival, when headliners the Levellers performed a set on The Pyramid Stage. Glastonbury Festival was held intermittently from 1970 until 1981. Since then, it has been held every year, except for "fallow years" taken mostly at five-year intervals, intended to give the land, local population, and organisers a break. 2018 was a "fallow year" and the following festival took place from 26 – 30 June 2019.

Accommodation; Most people who stay at Glastonbury Festival camp in a tent. There are different camping areas, each with its own atmosphere. Limekilns and Hitchin Hill Ground are quieter camping areas, whereas Pennard Hill Ground is a lively campsite. Campsite accommodation is provided in the cost of a standard entry ticket but festival-goers must bring their own tents. Tipis have been at the festival for many years. A limited number of fixed tipis are available for hire at the tipi field near the stone circle. Up to six adults can stay in each tipi and each one comes with a groundsheet and rain-catcher. Internal bedding and camping equipment is not provided. Tipi Park also offers solar showers and a log-fired yurt sauna to cap off the experience.

Green Policy; For a few days in June, the farmland which plays host to Glastonbury Festival is transformed into a fully-functioning, makeshift city. The scale of the Festival is so vast that it is easy to forget that, for the rest of the year, these pastures, streams and woodlands are home to roaming herds of cows and thriving local wildlife. For Glastonbury Festival to be sustainable, we all have a duty to make sure the land on which it stands is looked after. With over 200,000 people visiting and working across this sprawling site, reducing the impact Glastonbury Festival has on its general environment is a huge task. And it is one which we are fiercely devoted to. There are many ways in which you can help us to protect our environment and the future of the Festival.

Please use our recycling bins. It is not okay to drop litter on the ground. Help us by placing your waste into the correct recycling bins. Please only use what you need. If every Festival-goer used four napkins instead of one, there would be an extra 450,000 napkins wasted unnecessarily. Take your tent and equipment home with you. Nothing should be considered disposable so please only bring equipment that is built to last. Please use public transport, cycle or car-share to Glastonbury Festival. Car exhaust is still the greatest contributor to global climate change. Join the 40 percent of Festival-goers that travel to the Festival by public transport and help to reduce our carbon footprint. Please bring a reusable water bottle. These can be filled for free at all of our taps and WaterAid kiosks across the Festival site. Please use water responsibly. Turn off taps and help us use water efficiently. Please do not bring in glass bottles or other prohibited items such as paper lanterns. They cause fires and harm the cattle that live on the land.

Abergavenny Food Festival

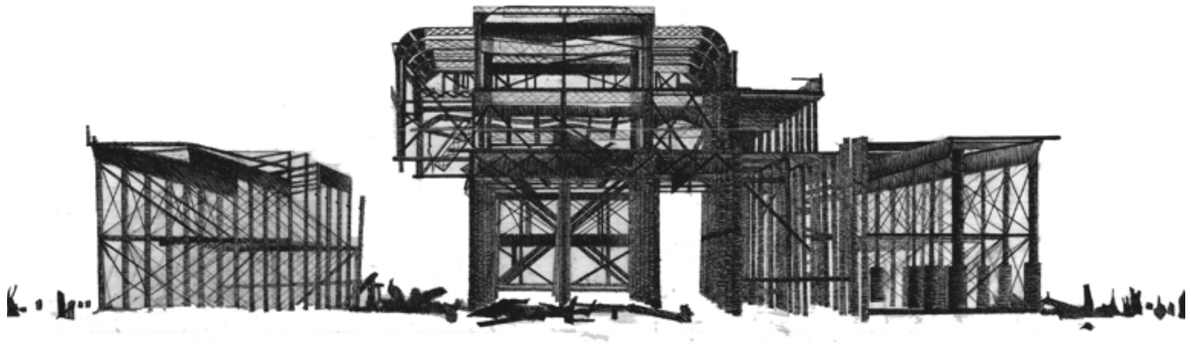
19th -20th September

Abergavenny Food Festival is a staple on the summer festival calendar. It's known for bringing together chefs, food businesses, journalists, farmers and food producers who flock to the Welsh town to enjoy talks, demonstrations and, of course, lots of delicious food. From tutored tastings, demos from top chefs, tours and forages as well as big parties, there's something to tickle everyone's taste buds.

In relation to my programme, the Abergavenny Food Festival is the perfect example of how people use food to bring others together. The relation is that the underwater restaurant will be the highlight/main feature of this structure and bring together many others. It will be a restaurant of casual form, therefore open to all, with a dining experience, waiters will distribute food. The difference here is that the food festival operates more as stalls and people walking to collect their different variety of food. Whereas in the pavilion beside the West Pier, may only hold particular food types, I.e. fish & chips caught from the neighbouring waters.

Overall, I believe this festival is a perfect example of how food is used in a festival setting to bring together multiple people. Our studio festival will need to portray these same settings to engage the passing civilians and allow a space for interaction.

ABERGAVENNY FOOD FESTIVAL



A02

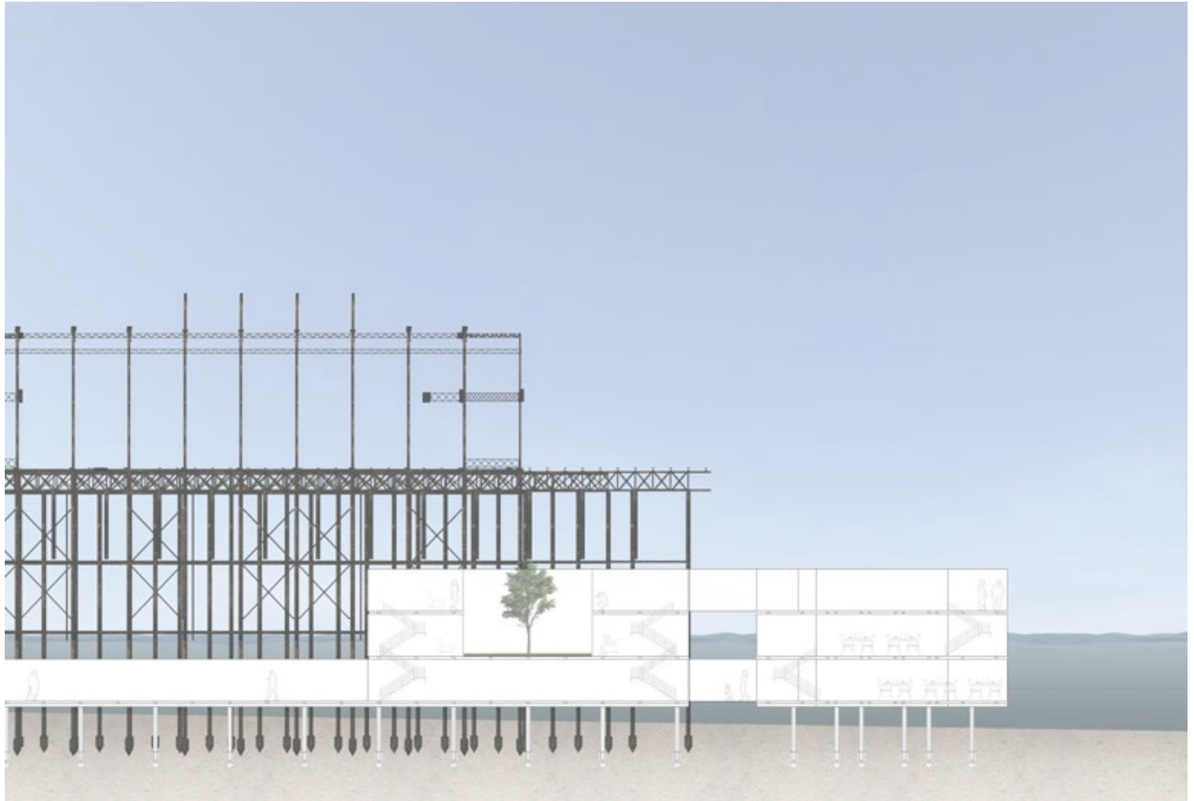
Spatial Agency

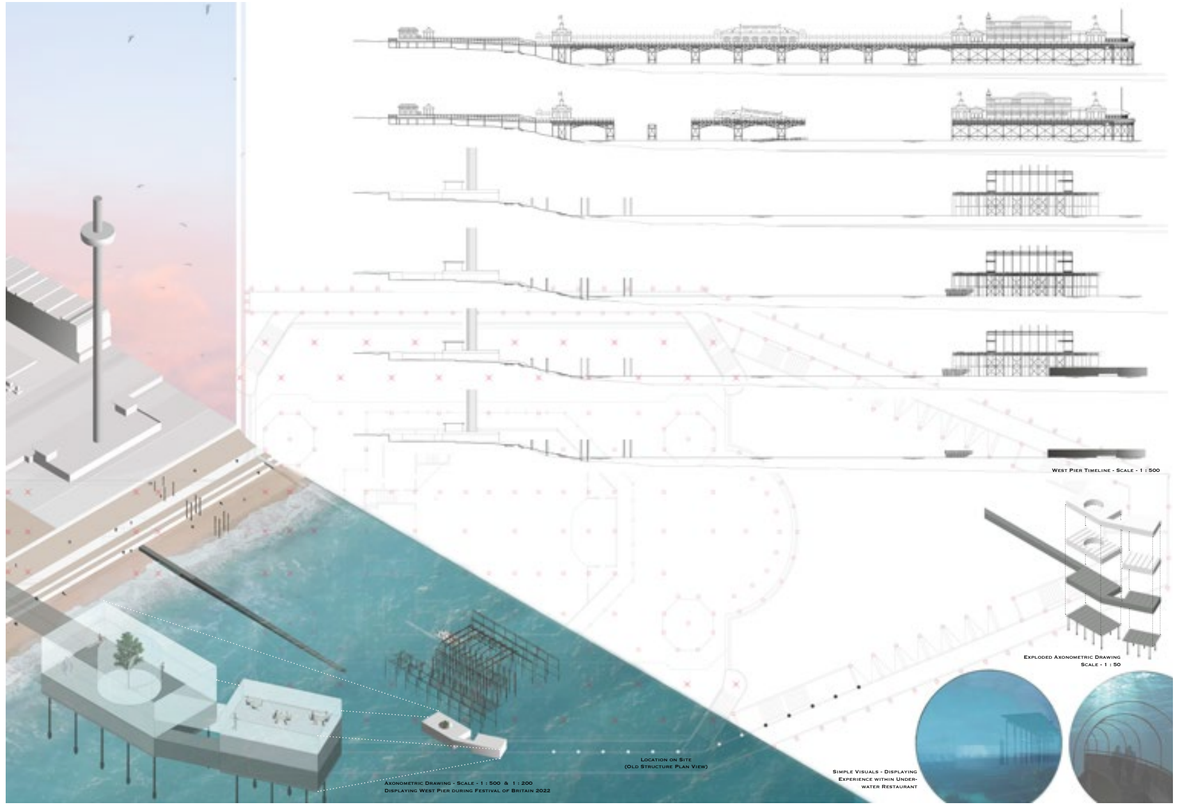
Design Development...

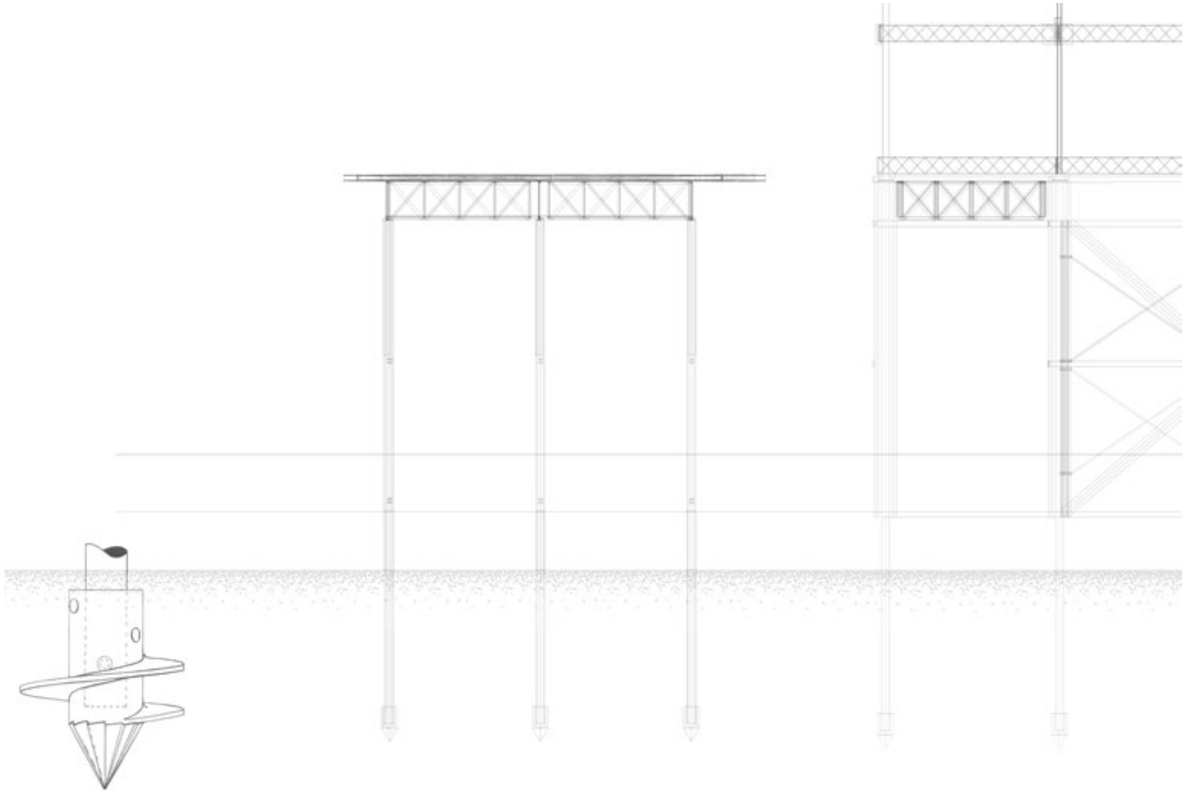
Task A – Spatial Agency

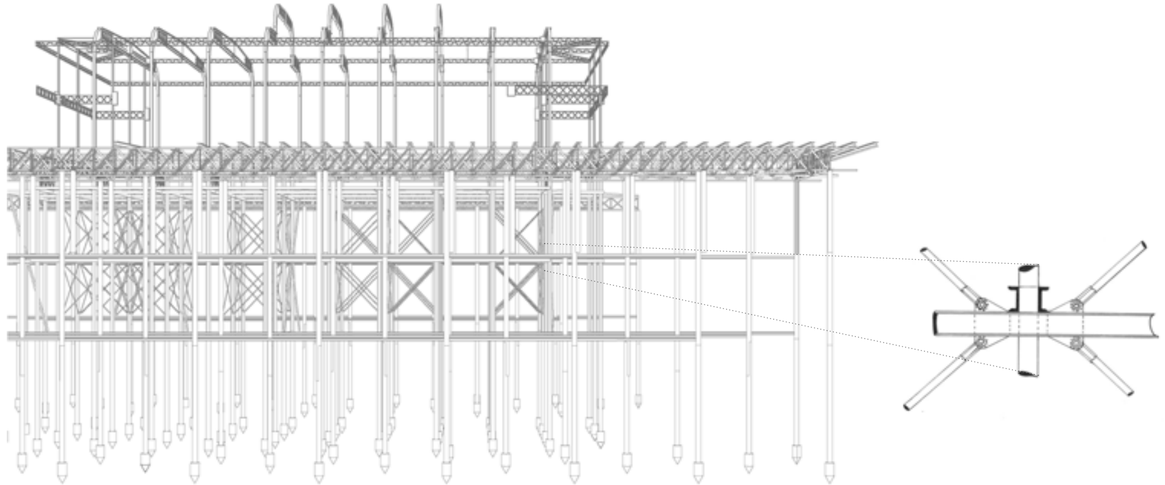
Design Development, Critical Analysis, as research into various precedents.

The second chapter to this almanac will include the Spatial Agency and SysMat Investigations. This chapter will follow on from the programmatic research, as I plan to critically comment on the design process, as well as relevant design precedents, and system/material investigations. I will be compiling the design development sketches from my other work, as these varied iterations need to not only show the development, but also how precedents have informed my work. I plan to also research into various infrastructure elements related to my programme and tasks.



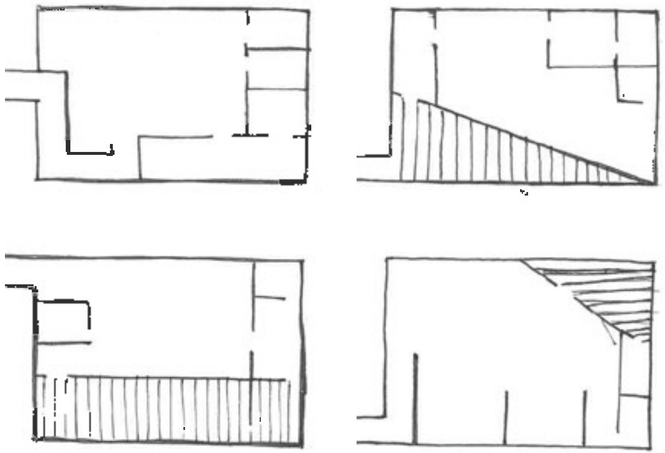

West Pier Timeline - Scale - 1 : 500
Exploded Axonometric Drawing
Scale - 1 : 50
Location on Site
(Old Structure Plan View)
Axonometric Drawing - Scale - 1 : 500 & 1 : 200
Displaying West Pier during Festival of Britain 2022
Simple Visuals - Displaying
Experience within Under-
water Restaurant

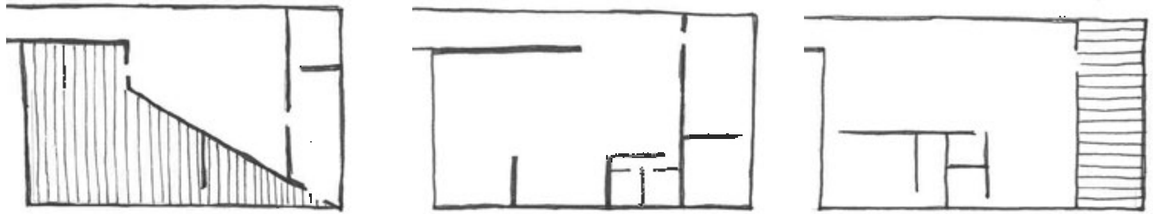




RESTAURANT REQUIREMENTS:

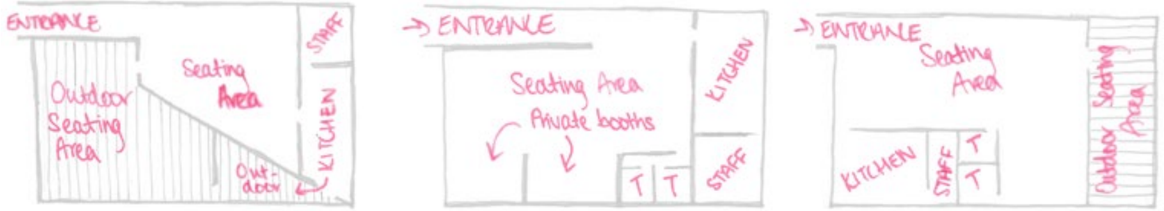
- KITCHEN
- STAFF TOILETS/AREA
- EATING AREA FOR CUSTOMERS
- ENTRANCE/EXIT
- FLOW (CIRCULATION)
- WAITING AREA (BEFORE SEATED)
- PUBLIC/PRIVATE
- PUBLIC/CUSTOMER BATHROOM

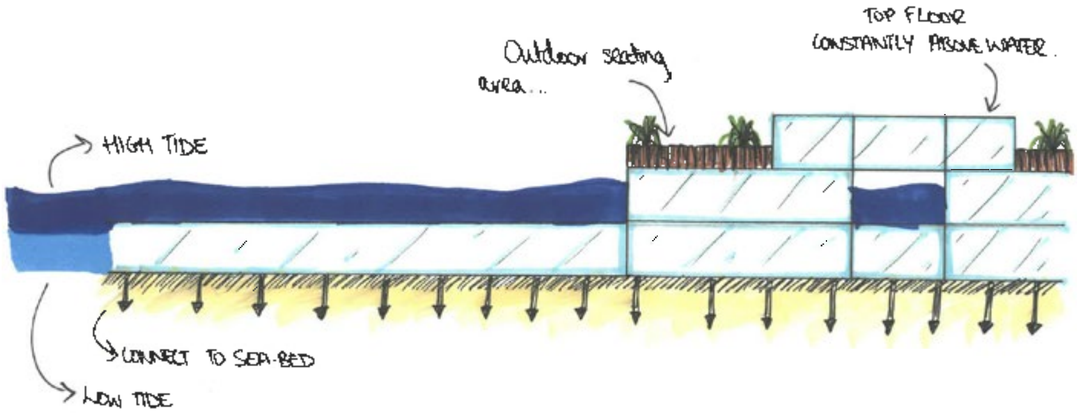




Restaurant Requirements

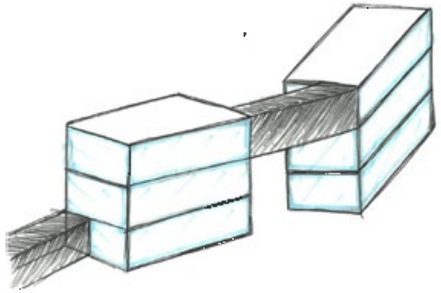
When designing this space, many requirements will need to be considered, including how big certain areas will be. I.e. size of kitchen, of eating area etc. These areas will need to be thoroughly designed and researched in terms of space which will make the user feel most comfortable. Areas which will also be important to include will be infrastructure or private elements i.e. staff area for the restaurant to properly function. The diagrams scattered around the page show a basic plan of the same space, and how it could be altered to house particular designs. This is not the final design of my structure, but I wanted to get an idea in terms of what spaces would need most priority etc.

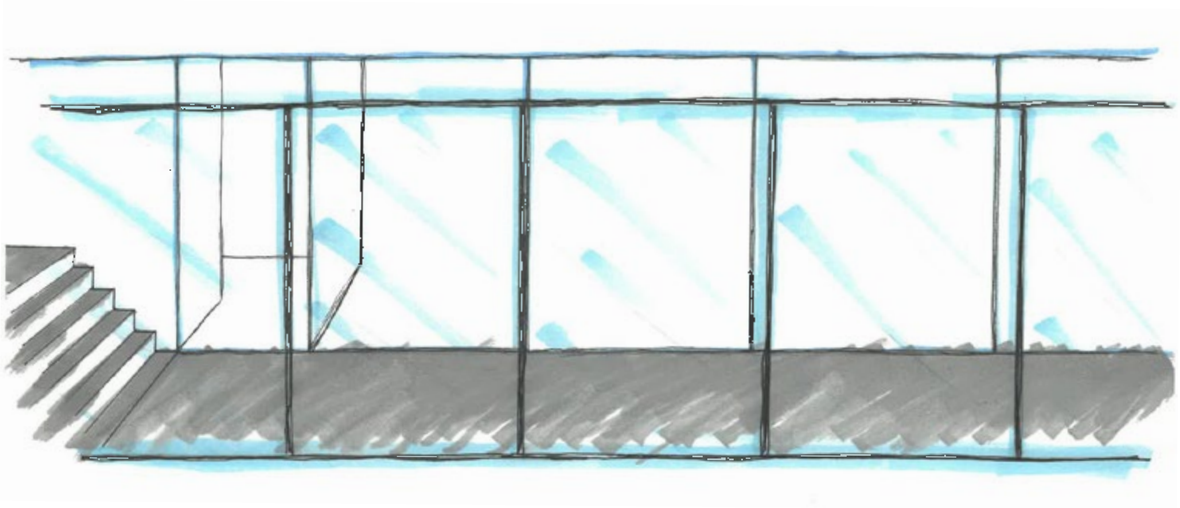




Initially the design of this building was to be shaped based on the location of the remains surrounding the West Pier.

The important factors which will also need to be considered when designing this shape will be; Tide, Light Travel, Connection to existing site materials, as well as other neighbouring programmes. Public / Private areas also need to be addressed to get a better understanding of the spaces which will be required/ designed.





This drawing is displaying the idea of how I could incorporate different materials into the tunnel, to provide a different experience. For this building to function a tunnel will need to be created to enable safe travel for the visitors occupying the space. The design for this tunnel could be creative and unique, providing a different experience for whoever walks through it. The main factors and elements will be that this tunnel will be running from shore and end up at some underwater feature. The use of the waves, I.e. incorporating that into the design, could be have a significant outcome, and create a unique journey for the user. I extremely like the idea of using glass or some kind of transparent material to allow the user to know what surrounds them, this could be achieved by creating windows or off cut spaces which could be viewing areas for the user to stop at (for a break) down the 150m journey.

Precedent Research

SMART Tunnel - Kuala Lumpur, Malaysia

The Stormwater Management And Road Tunnel (SMART Tunnel), E38, is a storm drainage and road structure in Kuala Lumpur, Malaysia, and a major national project in the country. The 9.7 km (6.0 mi) tunnel is the longest stormwater drainage tunnel in South East Asia and second longest in Asia. SMART is an acronym for Stormwater Management and Road Tunnel, a project under the Federal Government initiated to alleviate the flooding problem in the city centre of Kuala Lumpur. The project is implemented through a joint venture pact between MMC Corp Berhad and Gamuda Berhad with the Department of Irrigation And Drainage Malaysia and the Malaysian Highway Authority as the executing government agencies. Studies had indicated that the critical stretch of Sungai Klang between Sg Klang /Sg Ampang confluence and Sg Gombak/ Sg Klang confluence to be flood prone areas and the fact that the river is further constrained by the Jalan Tun Perak Bridge (near Masjid Jamek) which is low, has resulted in the surrounding areas to experience floods. The SMART system will be able to divert large volumes of flood water from entering this critical stretch via a holding pond, bypass tunnel and storage reservoir. This will reduce the flood water level at the Jalan Tun Perak Bridge, preventing spillover.

SMART is a combined road and flood relief tunnel," explains Thomas at Ramboll. "It can be completely flooded to get rid of storm water and turned back into a road in a few hours." The tunnel, the longest in Malaysia, was built to solve the problem of flash flooding in Kuala Lumpur.

SMART can operate in three ways:

1. When there's no flooding, it serves purely as a road tunnel.
2. When there are floods, rainwater can be diverted into a lower channel, and the upper level will remain open to traffic.
3. When exceptionally heavy floods occur, the tunnel closes to all traffic and watertight gates open to allow floodwater to flow through.

Length: 9.7 kilometers (6.02 miles)

Fast fact: The tunnel is expected to prevent billions of dollars of possible flood damage and costs from traffic congestion. Since it opened in 2007, flood-prone areas such as Masjid Jamek, Dataran Merdeka, Leboh Ampang and Jalan Melaka have been spared inundation.

SMART TUNNEL

Precedent Research

St Anna's Tunnel – Antwerp

A pedestrian tunnel was excavated over 31 metres deep below the Scheldt between 28 June 1931 and 14 August 1933 to connect both banks of the Scheldt in Antwerp. In 1810, Napoleon had designed a new district for the town of Antwerp, but the lack of a connecting road meant that his urbanisation plan for the Left Bank could not continue. All manner of plans for a bridge later disappeared into a drawer and were never put into action. Before the tunnel, pedestrians had to manage with a ferry service, the St Anneke's Boat, which departed from Steenplein. In 1931, a never-before-seen technical tour de force was constructed. At 572m long and 4.3m wide, it was a broad cylindrical shaft of cast iron segments, which connected two access shafts of reinforced concrete with one another. The walls of the tunnel tube are lined to head height with little yellow ceramic tiles. In each shaft of around 35m depth, a metal lift with simple art decorations provides space for a maximum of 80 people. Many authentic components have been preserved: the wooden escalators standing at over 31 metres high, old controls and warning signs and the two access buildings. The latter were erected in the New Objectivity architectural style which strives towards functionality.

Majestic wooden escalators lead you deep down into a tunnel that stretches beneath the Scheldt River. They're the highlight of the otherwise staggeringly monotonous 1,876 feet of ceramic tiles that backdrop your walk from shore to shore. The escalators were made in the 1930s. They were a novelty then and still are now, thanks to the rarity of wooden escalators. The beautiful woodwork is remarkably preserved, making this a real treat for anyone tired of the modern, more unsightly escalators that dominate pretty much everywhere else. St. Anna's Tunnel was built to connect the newer parts of Antwerp with the older portion of the city so locals wouldn't have to rely on ferry service alone. Originally, plans were made to build a bridge over the river. But this would've gotten in the way of the many ships that cruise the waterway, so officials decided to build under rather than over it. As with many European structures, the tunnel was badly damaged during World War II. The passage has since been repaired, and it and its unusual escalators are still frequently used by pedestrians and cyclists as they go about their daily commutes.

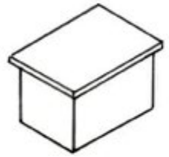
ST. ANNA'S TUNNEL - ANTWERP

Tunnel Design

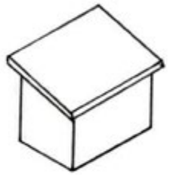
Critical Reflection of Precedent Research

After researching into these precedents, it gave me an understanding of experience, and how I should design and think about how I want the occupant to feel while walking through this space. The way St Anna's tunnel was designed it has created an atmosphere which only seems like an illusion when viewing it from images. The constant repetitiveness gives off a particular effect which is very intriguing for the occupant. It looks as though it is never ending, much like how I imagine my tunnel to look. The contrast of materials used within this space is also very appealing and used extremely well, therefore this point could also be considered. When looking into materials for my tunnel, are particular element of it could be completely contrasted to the rest of material palette.

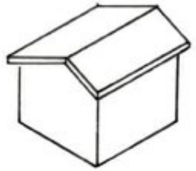
The structure I plan to design will be submerged at high tide, therefore this tunnel will need to be designed to be completely watertight, however have lighting, ventilation and other basic necessities. I could use these to an advantage, i.e. rest areas, for people who need to take a break through the travel, and design areas which could be used as viewing ports (or raised platforms). The use of the waves, I.e. incorporating that into the design, could be have a significant outcome, and create a unique journey for the user. The fact that this tunnel will be appearing throughout the day and disappearing, could also really be an interesting feature to look at when designing. The effect of the waves washing in over your head really creates an atmospheric image in my mind, therefore I believe I will be designing in this direction. The promenading experience will be achieved if people have something to look at and experience while promenading, therefore without creating a sea-life centre effect, I plan to design a roof that will have particular sections which will show the waves rolling above you as you walk below. The idea will be that the user will start on shore, stroll down a long (never ending) tunnel, which goes under the waves, and ends up in an underwater structure, which has access to a viewing platform, all accessible without getting wet.



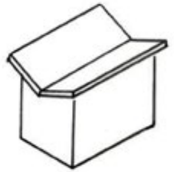
FLAT



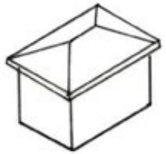
SHED



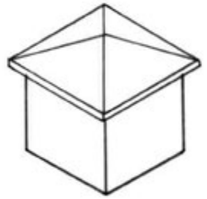
SALT BOX



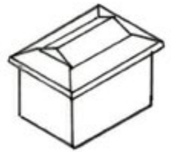
BUTTERFLY



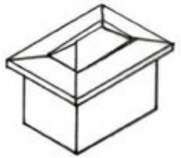
HIP



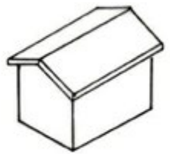
PYRAMID HIP



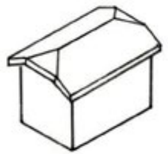
DUTCH GABLE
(HALF HIP)



DICKEY
(GULLWING,
POLYNESIAN)

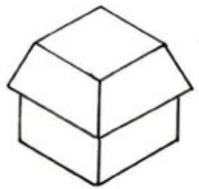


GABLE

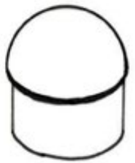


JERKINHEAD

GAMBREL
(DUTCH COLONIAL)



MANSARD



DOME

BARREL VAULT

GROIN VAULT

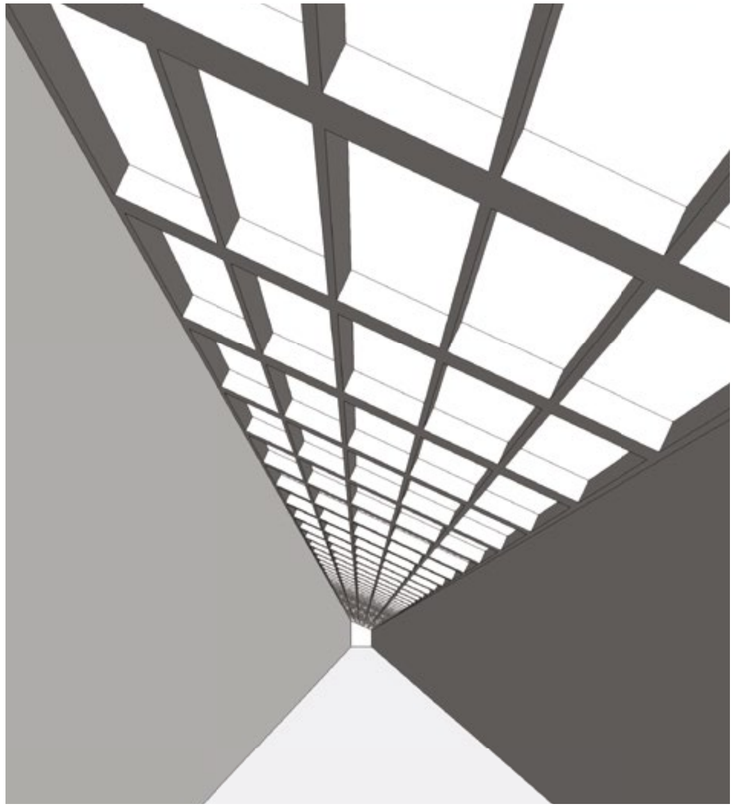
DOMED VAULT

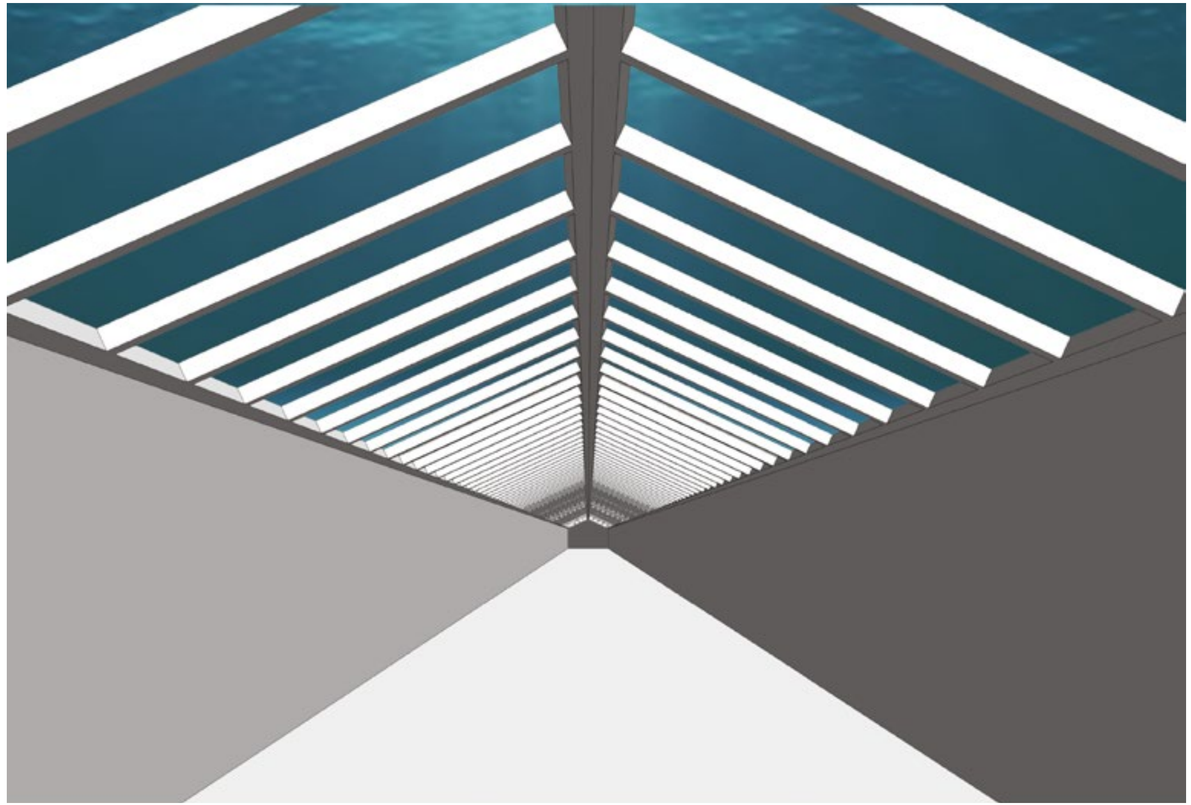
3D CAD Modelling

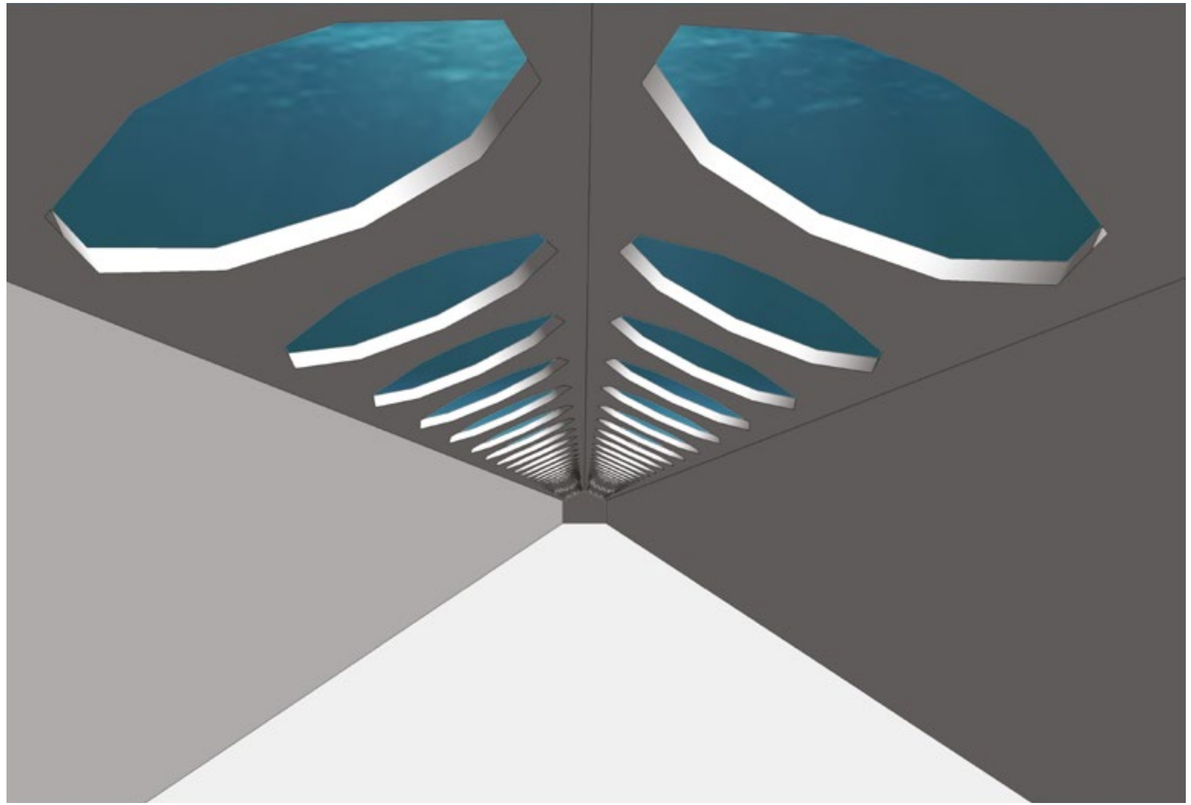
Tunnel Roof Design

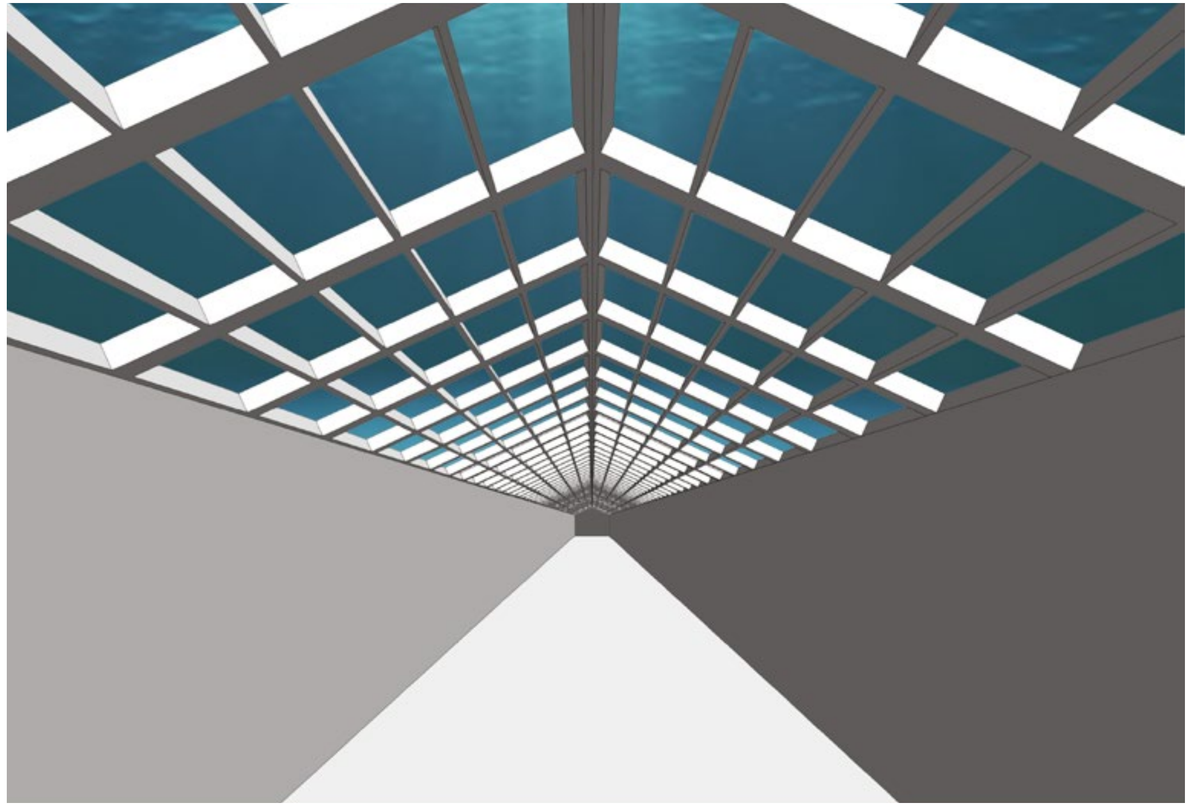
My next step was to create a series of CAD model Designs, showing different roof alterations. From the designs I've sketched out the standard Gable technique was of most interest to me. The first model you can see is a Shed style roof, where the roof is angled in one particular direction. Various windows have been shown which will allow the user to see the oncoming waves which will submerge the tunnel.

The next series of images show how I have altered the design slightly of a Gable styled roof, changing the type of windows used, which will alter how much the user will see. When the tide is low, the sun will create shadows patterns which will be able to be seen while walking through this space. This idea I believe will be interesting in terms of how much the light will change the experience of the space, at different times of the day. Ventilation, and other elements will also need to be included, which may change the look of the space slightly. The use of materials has not yet been decided. I plan to use an element of Corten Steel to match with the surroundings (cofferdam and Cast Iron from West Pier). But also, a transparent material (possibly something different to glass) to allow one to view the oncoming waves, which will roll over the tunnel.









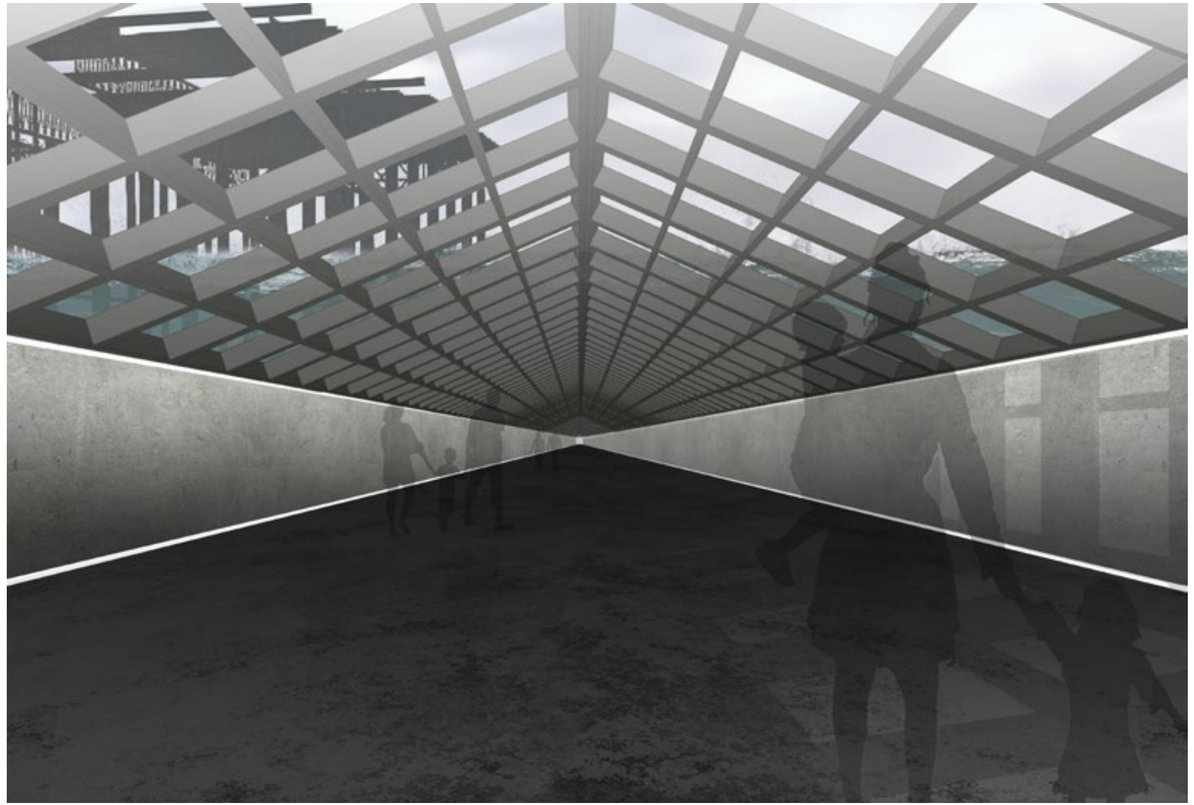
Collage 01

Critical Reflection of Design to Date.

We were asked to create a series of collages which would better visualise, and show our space, the pavilion we wish to create. This first collage shows a better understanding of how I visualise this space to look. The tunnel will seem long and possibly never ending, (however only approx. 150m long). The tunnel will also include the aspect of having a Gable style roof, with window panels which will allow the user to walk through the space and visually see the waves rolling over their heads.

This feature really appeals to me as I believe it will be a structure and journey not normally experienced. The tunnel will need to be wide enough to allow both directions of travel. As shown in the collage, the West Pier will be visible through the roof panels as the tunnel will be placed to the west hand side of the pier. At some point the structure will become submerged, due to the changing tide, therefore this will be constantly changing. Keeping that in mind, lighting will need to be installed to ensure the occupants will be able to see where they are walking. This light element will be installed in some kind of floor lighting to minimize the distraction from the surroundings and overall promenading experience.

When the tide is low, the sun will create shadows patterns which will be able to be seen while walking through this space. This idea I believe will be interesting in terms of how much the light will change the experience of the space, at different times of the day. The tunnel itself will be made out of a stronger more long-lasting material such as concrete, however I have recently decided to look into Corten steel, in relation to the potential cofferdam, therefore this material could also be used instead. The roof will be made into a Gable style frame, to support the structure and withstand oncoming waves. Potentially I could contrast the material palette against what already exists (cast iron). Or use a similar palette which goes with it, however that has not yet been decided.



Collage 02

Critical Reflection of Design to Date.

The second collage shows a clearer understanding of what I imagine one of the interior spaces to look like. This would be one of the higher areas, potentially could be used as a seating area, or viewing platform. This collage is showing the experience in terms of atmospheric quality. The location provides a very close connection to the west pier, and extremely close views to areas not normally focused on.

The area itself seems quite large within the collage, however I might potentially make the structure slightly smaller. Or remove certain elements, such as in-between floors, therefore create one underwater structure and one or a few higher viewing platforms. This element of changing the design in terms of taking away middle floors, will therefore create a collective of separate mini structures or pavilions. These areas could all house different features, or collectively all house the same feature, i.e. a restaurant with many different seating areas. I plan to create an open space which allows a lot of light travel throughout the day, as there is only the west pier obstructing the view, the shadow paths will be extremely interesting within this space. Another factor which hasn't been decided is whether this pace will be indoors or outdoors. I plan to look into designing both at this stage, and whatever suits the surroundings, or my later design will be the final plan. If the underwater feature is enough in itself, maybe these viewing platforms could be seen as a series of outdoor spaces connected via stairs or pathways, which lead to the underwater restaurant, as well as the rest of the festival (west pier structure).

The tide element is also an important factor to note, as high tide can reach to approx. 9m a tall platform will need to be created, avoiding the risk of becoming submerged. Unless this is another feature I could include into my designs. In terms of material, I am still slightly unsure of what I plan to use. I like the idea of contrasting the material palette to the West Pier, i.e. using concrete / glass. However, the use of a similar material to its surroundings could also be appealing and interesting.

Collage 03

Critical Reflection of Design to Date.

The third collage shows more of an understanding of the spatial qualities within the underwater restaurant itself. This design is of a dome roof feature, as this underwater restaurant will be sectioned off from the rest of the building. As the position of the restaurant will go around the remains of the west side of the West Pier, it will provide a perfect location for a transparent structure. The idea behind this design came from a previous precedent researched, displaying an underwater restaurant, however only revealing one wall to the ocean. The users who occupy the space will either get to dine at the restaurant or stroll around the open space, taking in views (when the water is clear). The water itself may not be as clear at Brighton beach, therefore meaning the view may differ at particular times. However, when the water gets clearer at times the user will be able to see the west pier remains due to how close it's located.

This feature really appealed to me as I believed it gave the design an element which may not be normally experienced. The experience someone would get arriving on shore, promenading down under the waves, and arriving within a completely submerged space would be extremely appealing. The dome or roof would need to also be created out of a material which is strong as well as transparent. The frame itself could be made out of a material contrasting with the west piers Cast Iron structure. I.e. Corten Steel.

The tide itself is also an important element to consider as at low tide this structure will become mostly revealed. Therefore, a design which will be revealed needs to be carefully considered in terms of what it might look like from the exterior. I plan to design this structure and allow it to 'blend' in with the west pier, and not draw too much attention away from what already exists. But however, to highlight what is left, and what is interesting in my opinion.

Critical Analysis

Infrastructure Elements - Information Points

These various precedents show different examples of what I aim to achieve within the infrastructure design. The design itself needs to be able to be understood by people of all ages, as well as by tourists who may be visiting the area from foreign countries. The Kiosk or Booth will need to be of a creative design, therefore allowing people to spot from a distance if they get lost or are in need of information about such events. The chance here is to get creative and design something unique however in realti9on to the West Pier, this could be either from using a similar material palette or by replicating it's old form etc.

The spaces could be used in an interactive way engaging the passing civilians, i.e. something that involves them touching or doing something to seek answers. This could be via a touch screen device, or something completely bizarre and different. This could also link into the Victorian era where bizarre attractions and things would draw the attention of the UK's residents. This could be re invented into a new design displaying info as well as providing another fun experience for the passing visitor.

INFRASTRUCTURE - INFORMATION POINTS

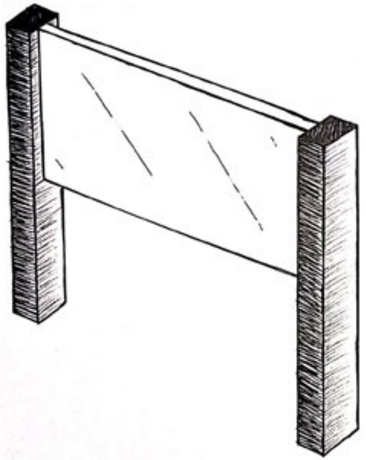
The use of different materials in this precedent really stood out to me, in this case it was the glass and steel contrast. The difference between the two materials is dramatic, one being light and translucent allowing a lot of light and reflection etc, the other being an extremely dark and heavy material. This contrast works extremely well as shown in the following examples. This could be used within my design of the information points, might not necessarily be glass and steel, however the contrast between two materials really draws in the eye of someone passing by.

This example was used for an information point within a shopping centre. It is a kiosk made out of glass and steel, and the design itself is simple and somewhat blends in with the surroundings. This design isn't liked so much in my opinion, due to the idea that it doesn't stand out as much as one would've hoped. The point of an information area is to be noticeable and easy to access for whoever may need the services. Therefore, in relation to the West Pier the use of Glass and Steel could be an extreme contrast from what is already existing. This could be better and more appealing, however might be an eyesore compared to the material palette for the rest of the festival. Overall this decision will again need to be further looked into when a material palette is established for the rest of the festival structures. Therefore, a better understanding can be made to contrast and design an appealing information point.

GLASS & STEEL STRUCTURES

Critical Analysis

Infrastructure Elements - Information Points



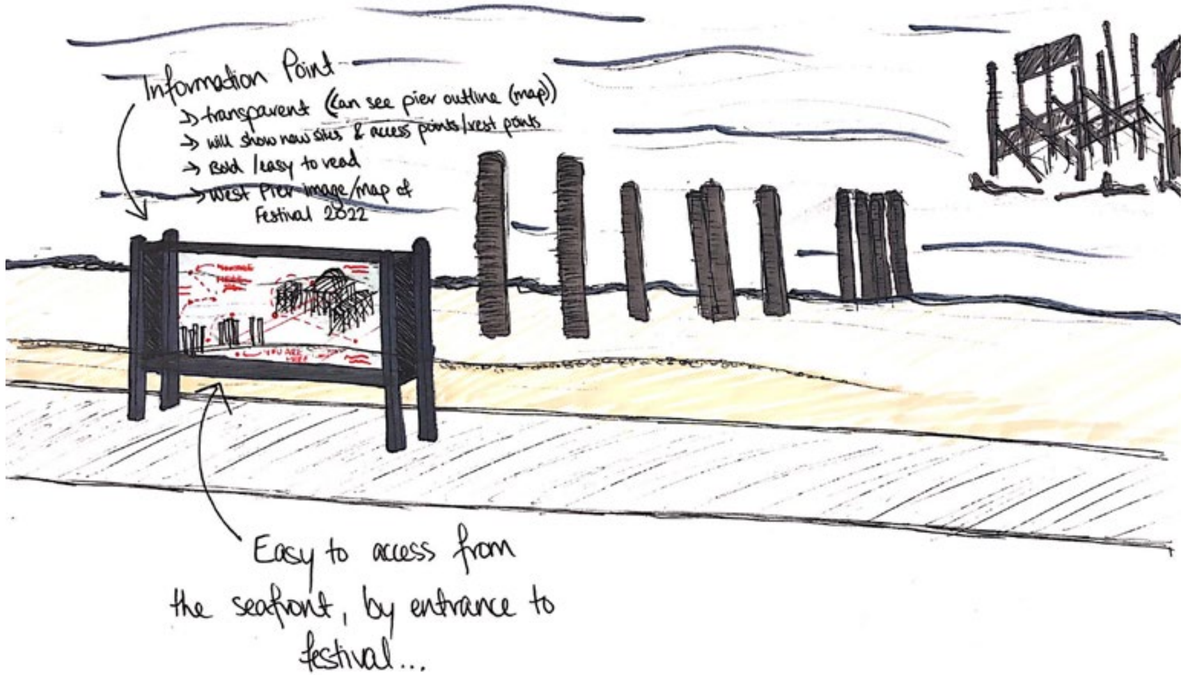
INFRASTRUCTURE → INFO

→ Simple stand which will contain a glass panel/sheet with a line drawing of map.
↳ will be able to see MAP in 3D aspect with WEST PIER in background + festival.

→ STAND - could be created out of cast iron, old west pier elements to link together.
↳ contrast with glass panel although connection of materials will need to be researched.

This design has taken a simple post/sign design and transformed it into a new way to display the information. This example is showing a design which is created out of steel and glass. The glass of which however is positioned in a particular point on the beach in view of the West Pier. The image someone would see on the glass is a map engraved into the material, which will visually allow the person to see where certain events are taking place. There will be a 3D element to this map, as you will only be able to view it correctly from standing in a particular position. These signs could be placed throughout the festival, allowing the people to engage and stand in a particular point, and watch the map focus into detail.

Unless one is looking from the viewpoint, the map won't make a lot of sense, therefore it provides a sense of engagement allowing passing occupants to get involved. Although when stressed and lost this could seem like a confusing aspect, therefore further designing into various information points will be continued. The use of a staff member or Kiosk may also be a potential route in designing; therefore this needs to be considered.



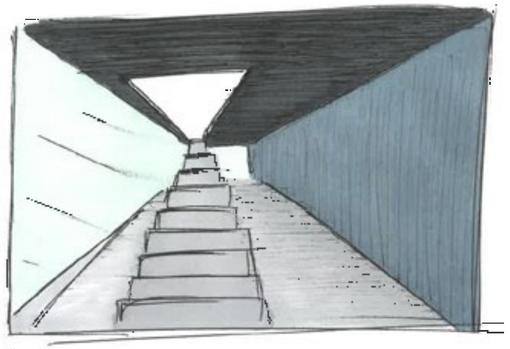
Precedent Research

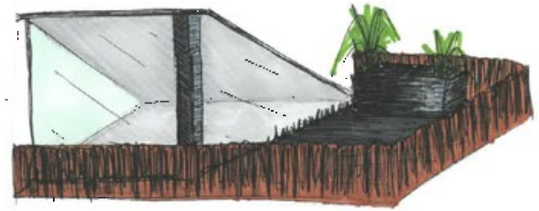
Scheveningen Pier - The Hague

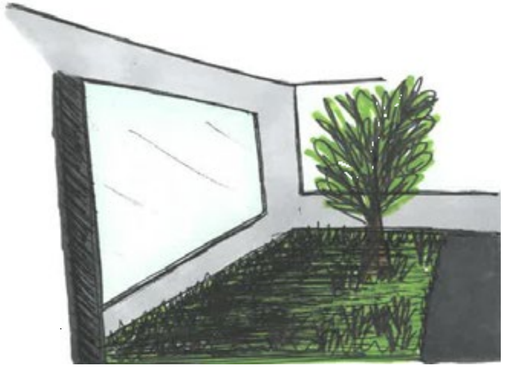
The famous Pier in Scheveningen is an icon on the Dutch coast. Visitors can fully enjoy a comprehensive range of food, drinks and shopping concepts on offer at the beach resort of Scheveningen's attraction, combined with the sun, sea and beach. With its light, broad thoroughfares, industrial décor, traditional food trucks, a Ferris wheel, a zip line, hotel suites and relaxed beach atmosphere, The Pier offers visitors a unique experience in a historical location. The Pier is open daily and all year round from 10.00. Admission to The Pier is free of charge. The Pier in Scheveningen extending 400 meters into the sea with its islands was built around 1900 as a wooden promenade above the sea. It burned down in 1943, but in 1961 the Pier was rebuilt out of cement and officially reopened. Nowadays the Pier offers shops, restaurants a picnic area and sun decks, amongst others.

Throughout the year the Pier offers festivals, cultural events, markets, kids' afternoons, educational activities and musical performances. Moreover, several events take place around The Pier, like the Fireworks Festival and the Scheveningen Kite Festival. Food & drinks, shopping, sports & adventure, culture & music and inspiration & education make The Pier a unique attraction for young and old alike during all four seasons.

SCHEVENINGEN PIER

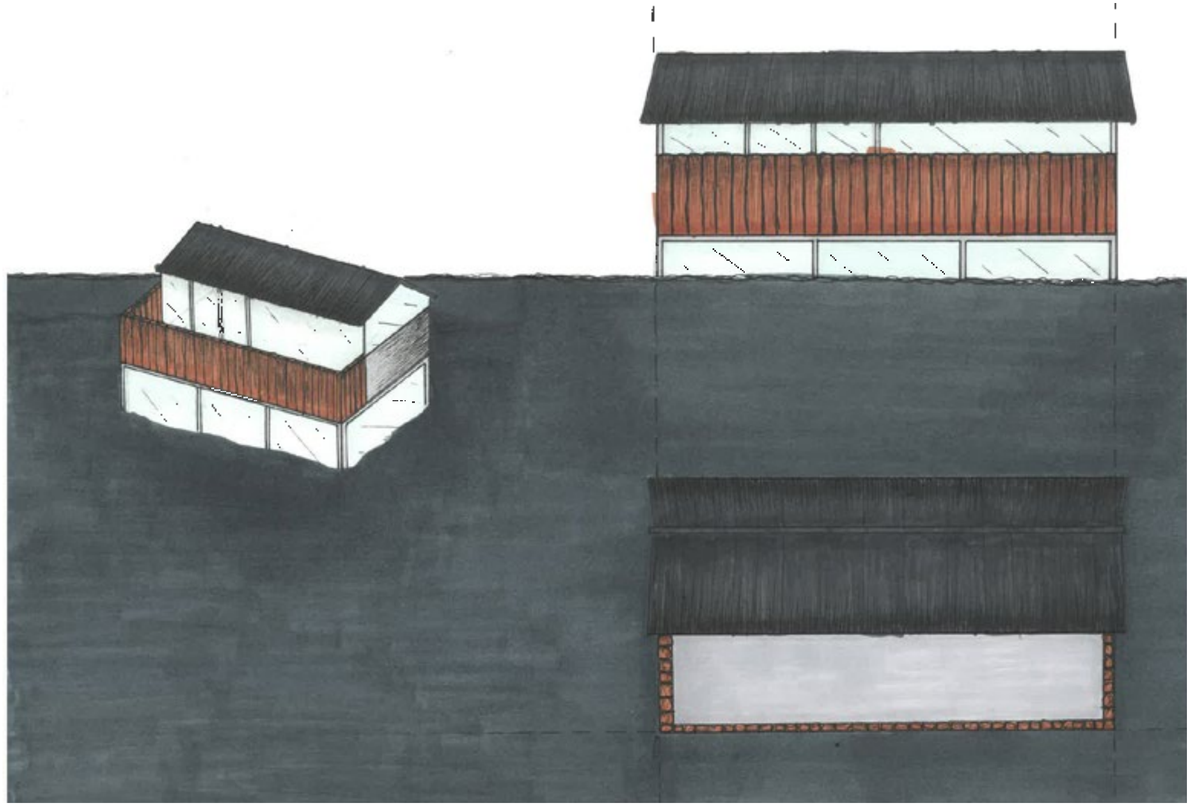




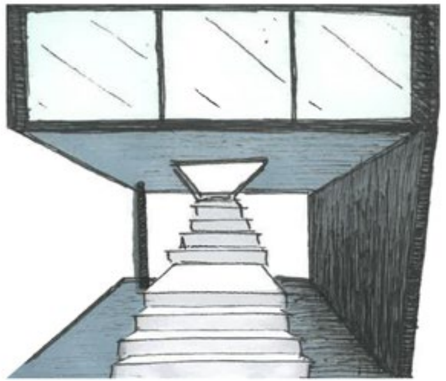


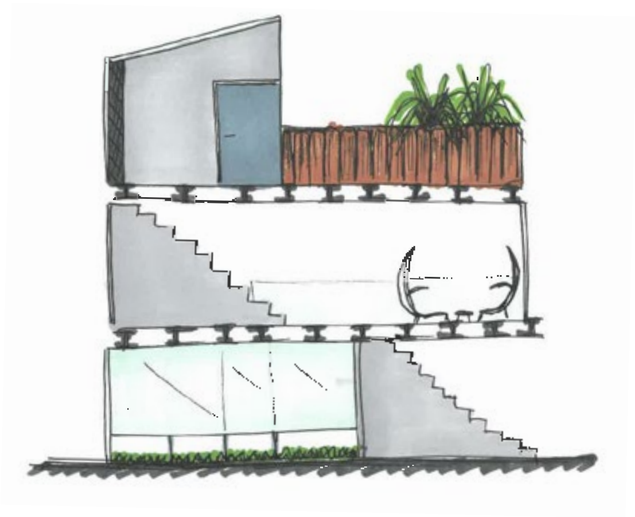
Sketching out various designs and visuals (what the space will feel like within). On the right shows another example of a potential structure.

The sketches displayed visually show what I could imagine this space looking like. In terms of materials, I am extremely interested in creating an outdoor space, or areas which have a lot of open space, allowing a lot of light travel. The idea is that these spaces will be inviting and seem open and bright, compared to the lower levels below the sea which will be contrasted, much darker and artificially lit.

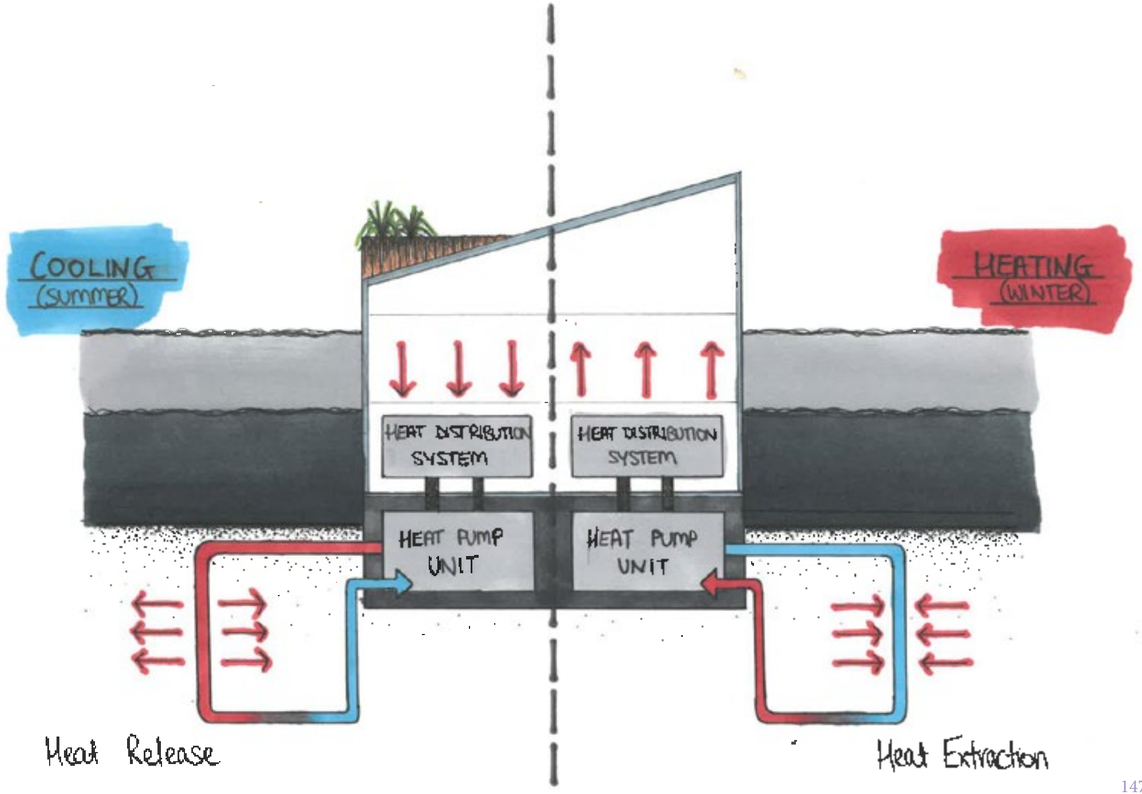


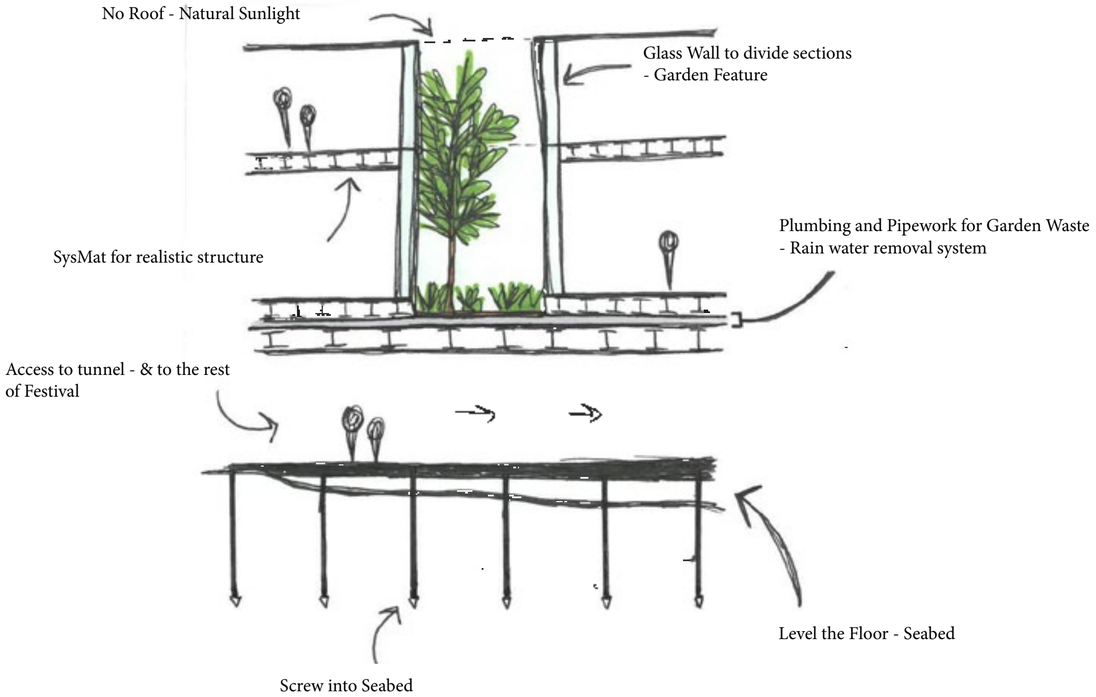
Sustainability?

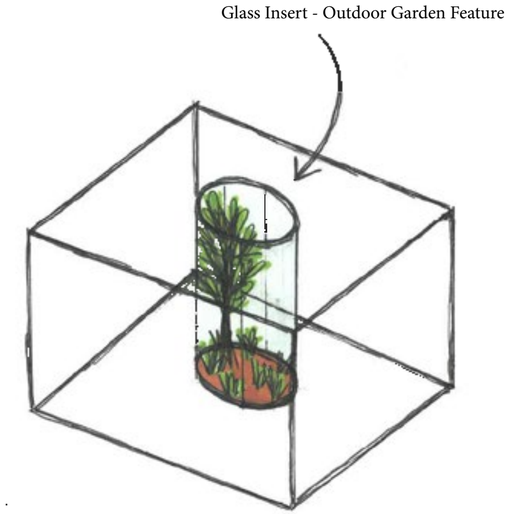


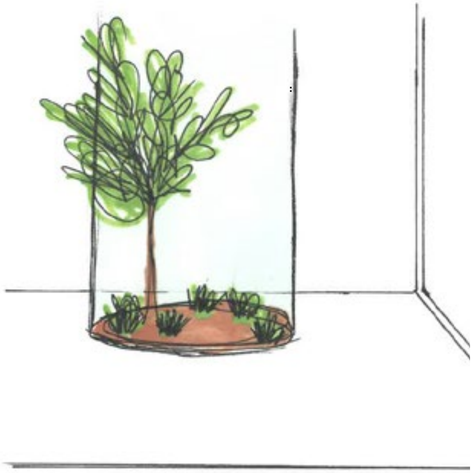


The sketches displayed visually show what I could imagine this space looking like. In terms of SysMat design, I have researched into various ways of making this design sustainable. One way this could be achieved is by installing Heat Distribution Systems into the structure, which will extract heat from the ground during winter, keeping the spaces inside warm, and release heat into the ground during summer, keeping the spaces inside cool. Using this type of method to release and absorb heat, will not only save money, but essentially be much better for the environment (less co2 emissions). The diagram on the following page shows how this sustainable method of heat exchange works.









These sketches show a different feature which could possibly be included within the structure. Landscape and trees are not normally found on a beach, especially not on Brighton Beach, therefore the thought occurred to create some kind of outdoor feature which would be inside the structure. If a garden feature would be included, many issues will need to be addressed and considered such as piping and drainage, as well as access etc. These sketches are showing an area which will be open to the sunlight at all times, and have a specific area under the floor which will be used as drainage for rainwater etc. The tunnel will then be below this floor.

Cofferdam Research

Construction within water, and how it takes place.

The basic needs of human being are food, air, water, shelter and transport. To fulfil the basic needs of shelter and transport every inch of the earth land is being used for the construction of roads, building or other structures. Nowadays even structure on water are being constructed. But the construction in water is a very tedious job. As the structure is hard to build in water as concrete doesn't set in water. Many methods are being used to overcome this problem. One the methods used for this purpose are Cofferdams.

Cofferdam can be defined as the temporary structure that is built to keep the water away from the execution site, so that the structure can be built on the dry surface. The cofferdams should have walls that exclude water from building site. For this the walls must be waterproof, and the height of the wall must be more than the maximum water level. These types of cofferdams are preferred where the area of building site is large, and the dry soil bed is at reasonable depth. The aim of a cofferdam is to be as watertight as possible to create a dry area in which to complete the required building works, or at least to limit water ingress to a safe level that can be pumped away.

Cofferdams must be able to withstand very high pressures and can create a hazardous situation if they are installed incorrectly. They are usually constructed using piles driven into the ground and supported by internal braces and cross braces. Timber sheet piles, concrete or a combination of materials can also be used. A cofferdam can be any shape. Its design will be depend on the depth required, the required working area, soil conditions, fluctuations in the water level, and so on.

There are several different types of cofferdam. Considering the material used in their construction, cofferdams may be divided into the following categories.

Types of Cofferdams:
Earthen cofferdam
Rockfill cofferdam
Single-walled cofferdam
Double-walled cofferdam
Braced cofferdam
Cellular cofferdam (Circular or diaphragm type)

COFFERDAMS

Earthen Cofferdam

Earthen cofferdams are constructed at the place where the height of the water is less say 3m and the current velocity is low. These dams are built using the local available material such as clay, fine sand or even soil. The height of the dam is kept 1m more than that of max water level. Freeboard of the dam or the top of the dam is kept 1m so that the water doesn't enter the other side even when waves arise. The slope is usually given but 1:1 or 1:2. The slope of the water side is pitched with rubble stones, so the water action doesn't score the embankment. Even sheet piles are driven in the centre of the dam to resist water seepage. After the construction of earthen cofferdam, the water from the other site is pumped out and construction is executed.

Rockfill Cofferdam

Rock-fill cofferdams are better than that of earthen dams. These dams are preferred when the rock is available easily at the construction site. These dams are very pervious, to prevent water from seeping an impervious membrane of soil is provided in the dam. The height of the dam is can be up to 3m. The slope can be maintained at 1:1.5 to 1:125. The slope on the water side is pitched so as to protect dam from wave action.

Single-Walled Cofferdam

This type of cofferdam is preferred when the depth of the water is more than 6m and area of construction is less. Usually this is used in construction of bridges. Wooden or timber sheets are driven into the riverbed on the perimeter of the area of construction. On the inside steel or iron sheets are driven into the riverbed. This inside sheet are placed at equal distance with the help of wales which are bolted to both sheets for either sides. To improve the stability of this types of dam, half-filled bags of sand are placed on the both side of the walls. The water from the inside is pumped out and the construction process is undertaken.

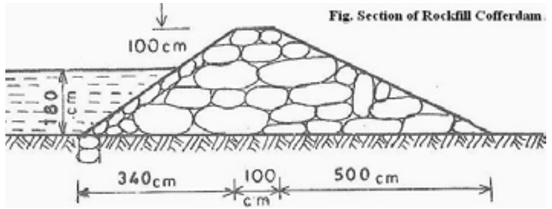


Fig. Section of Rockfill Cofferdam

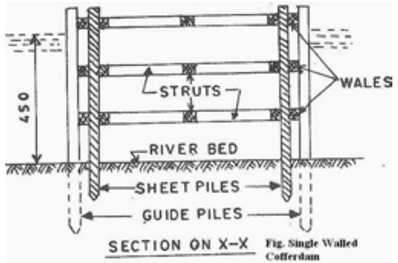
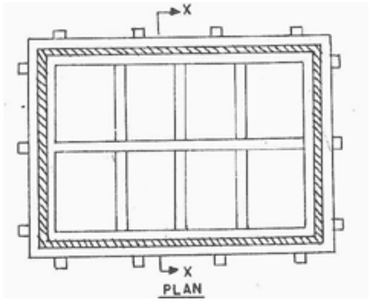


Fig. Single Walled Cofferdam



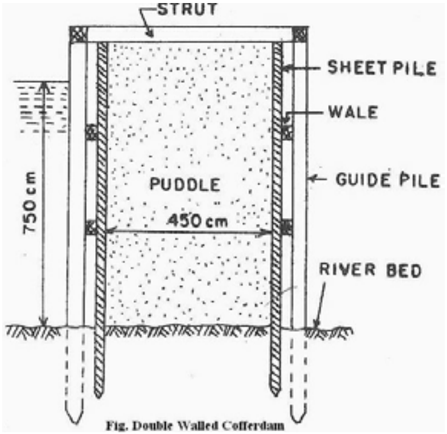
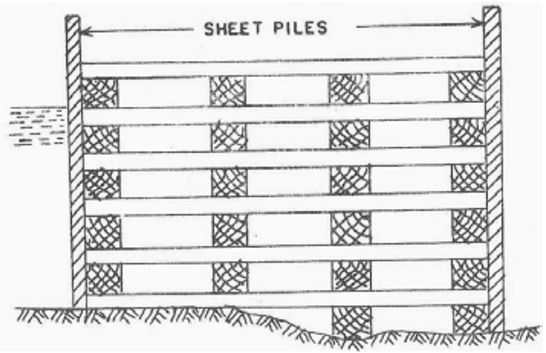


Fig. Double Walled Cofferdam



Double-Walled Cofferdam

Double-walled types of cofferdams are used when the area of construction site is large, and depth of water is high. In this place use of single walled cofferdam becomes uneconomical as the supports are to be increased. So double walled cofferdam is used. The difference in one wall and double wall dam is that her it has two walls instead of walls for extra stability. This type of dams can hold water up to 12m high.

Two piles are driven inside the waterbed with a space in between and attached each other with wales with bolted connection. As the water depth increases the space between the walls increases.

The space between the walls are filled with soil. To prevent the leakage from the ground below, the sheet piles are driven to a good depth in the bed.

Braced Cofferdam

When it's difficult to drive piles inside the bed in the water, then this type of cofferdam is used. In braced cofferdam two piles are driven into the bed and they are laterally supported with the help of wooden cribs installed in alternate courses to form pockets.

The empty pockets here are filled with stone and earth. The framework of the cofferdam (made from, logs of wood) is prepared on ground and then floated to the site where the cofferdam is to be constructed.

The layers of sand and the other loose material overlying the impervious hard bed is dredged out. Crib is then sunk to the position; the bottom of each crib is given a shape to fit in the variation in the surface of bedrock. After the pit is dewatered, the structure is concreted. When concreting has been completed above the water level, the cofferdam is removed.

Cellular Cofferdam

When the water layer is more than 20m, common types of cofferdams are uneconomical to use. In this situation cellular cofferdams are used. This type of dam is used in construction of dams, locks, weirs etc. Cellular cofferdam is made by driving straight web steel sheet piles, arranged to form a series of interconnected cells. The cells are constructed in various shapes and styles to suit the requirements of site.
Finally, the cells are filled with clay, sand or gravel to make them stable against the various forces to which they are likely to be subjected to.

The two common shapes of the cellular cofferdam are,

(i) Circular type cellular cofferdam.
(ii) Diaphragm type cellular cofferdam.

(i) Circular Type Cellular Cofferdam

This type of cellular cofferdam consists of circular arcs on the inner and outer sides which are connected by straight diaphragm walls. The connection between the curved parts and the diaphragms are made by means of a specially fabricated Y-element.
The cofferdam is thus made from interconnected steel sheet piles. The empty spaces are filled with non-pervious materials like clay or sand. Due to the filling material the self-weight of the membrane increases, and leakage is reduced.
One advantage of the diaphragm type is that the effective length of the cofferdam may be increased easily by lengthening the diaphragm. Hence in case, from design consideration it is necessary to have effective width of the cofferdam more than 21-meter, diaphragm type of cofferdam must be used.

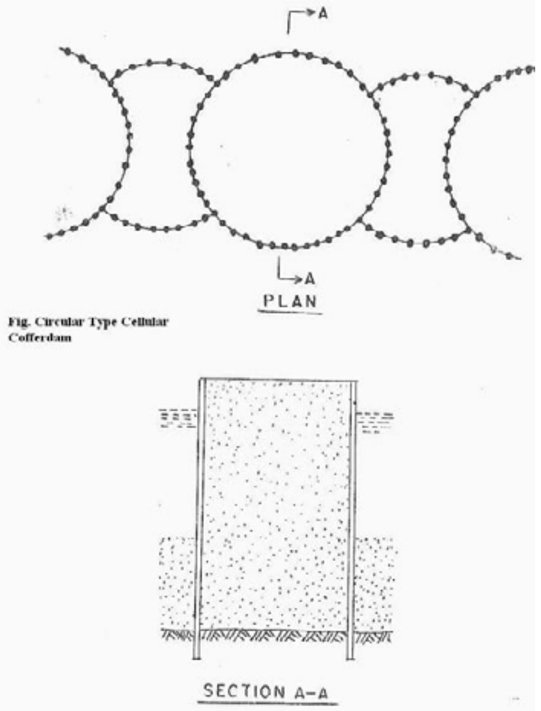


Fig. Circular Type Cellular Cofferdam

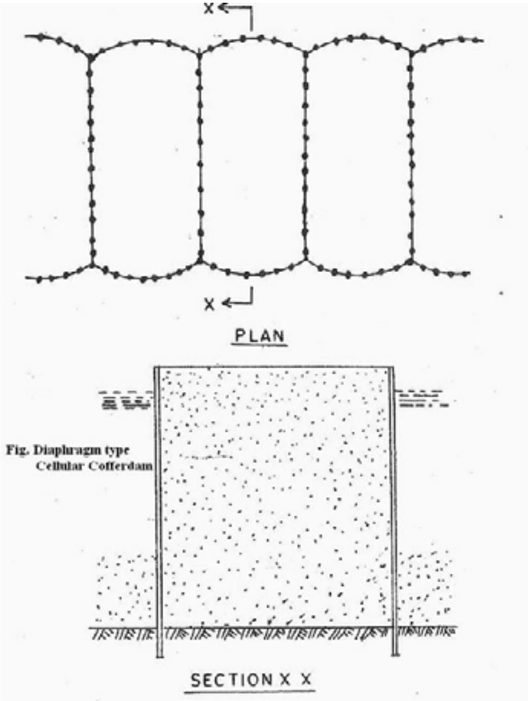
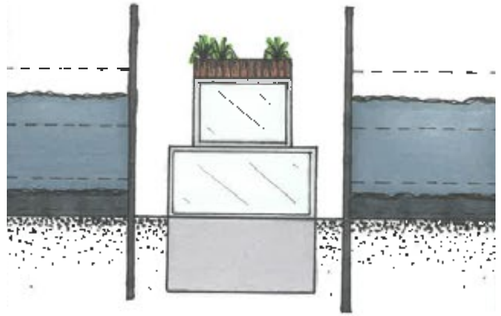
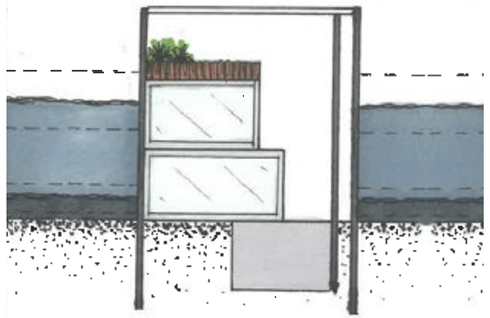


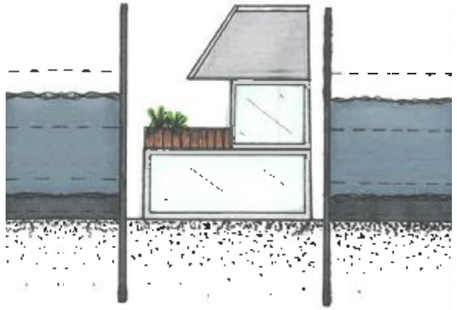
Fig. Diaphragm type Cellular Cofferdam

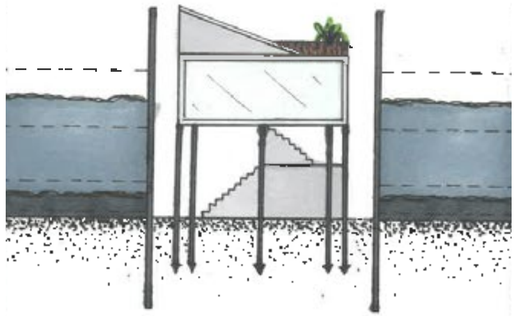
(ii) Diaphragm Type Cellular Cofferdam

It consists of a set of large diameter main circular cells interconnected by arcs of smaller cells. The walls of the connecting cells are perpendicular to the walls of the main circular cells of large diameter.
The segmental arcs are joined by special T-piles to the main cells. The circular type cellular cofferdams are self-sustaining, and therefore independent of the adjacent circular cells. Each cell can be filled independently.
The stability of such cells is much greater as compared with that of the diaphragm type. However, the circular cells are more expensive than the diaphragm type, as these require more sheet piles and greater skill in setting and driving the piles.
Because the diameter of circular cells is limited by interlock tension, their ability to resist lateral pressure due to high heads is limited.

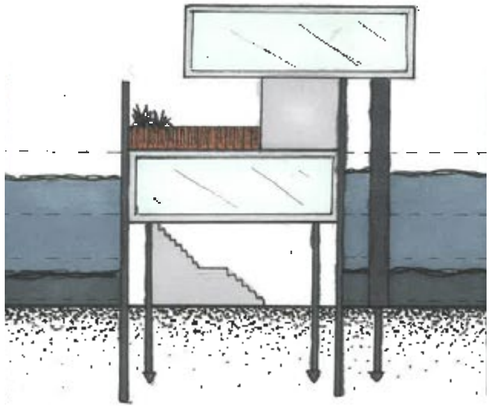


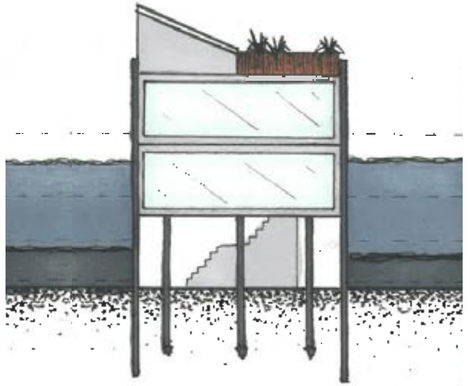


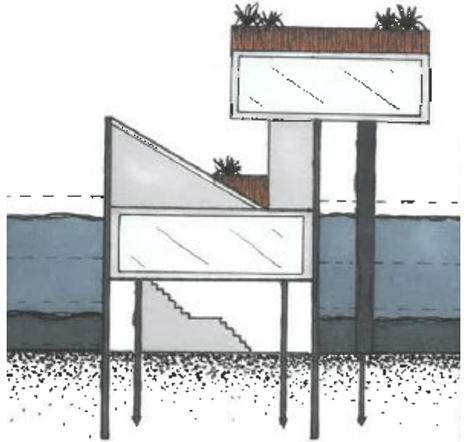


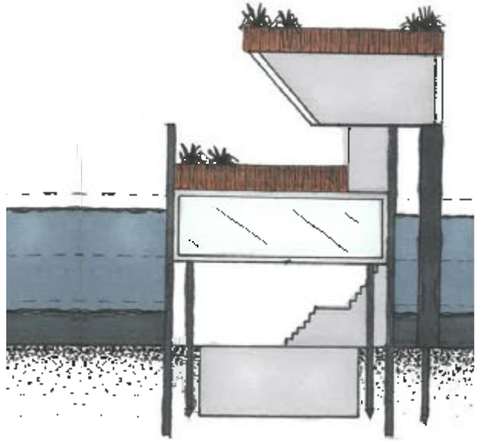


The following diagrams show the solid and void between the cofferdam space. The following views are looking north (towards shore), therefore the west pier would be on the right-hand side as shown in further diagrams. However, these drawings are showing more of an understanding of developments of space in terms of within the cofferdam, and how my structure could be altered in different ways. These developments have further progressed, which will eventually lead to the Parti Diagram sketches.



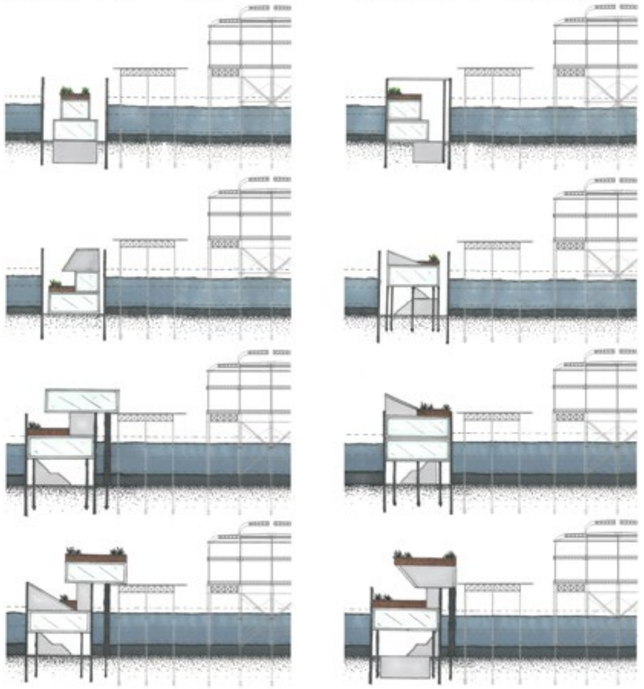






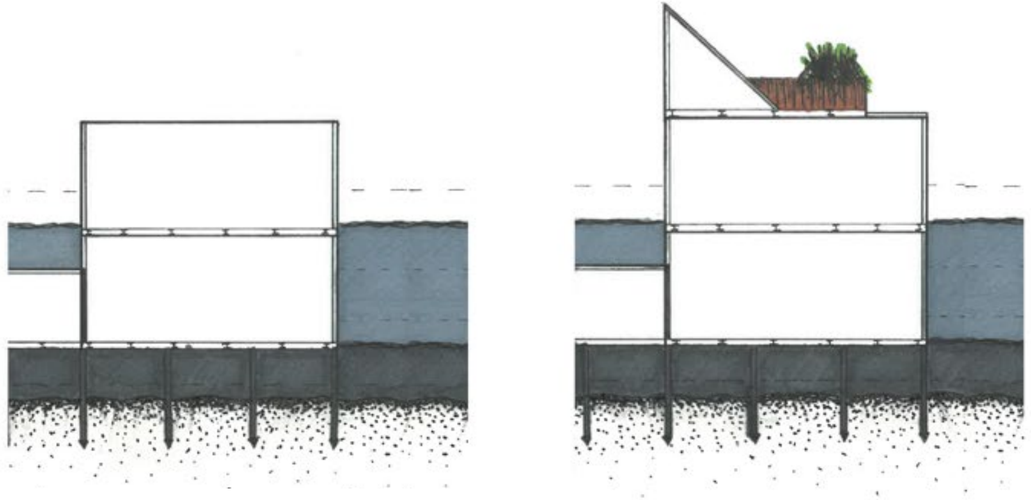
Parti Diagrams

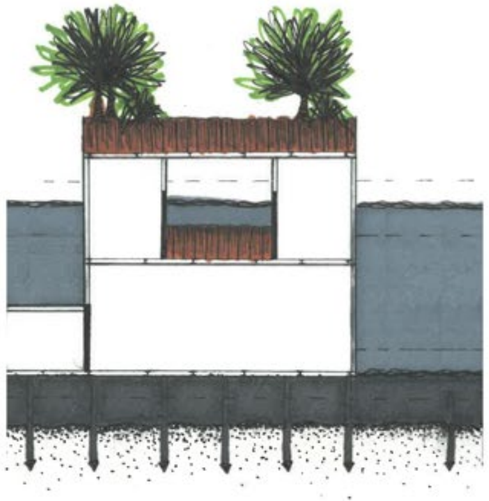
Development of Final Design

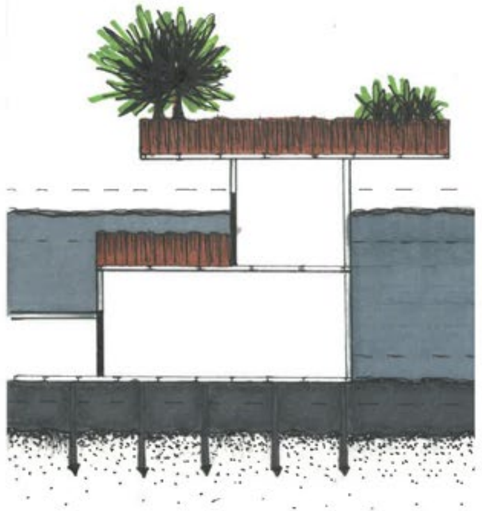


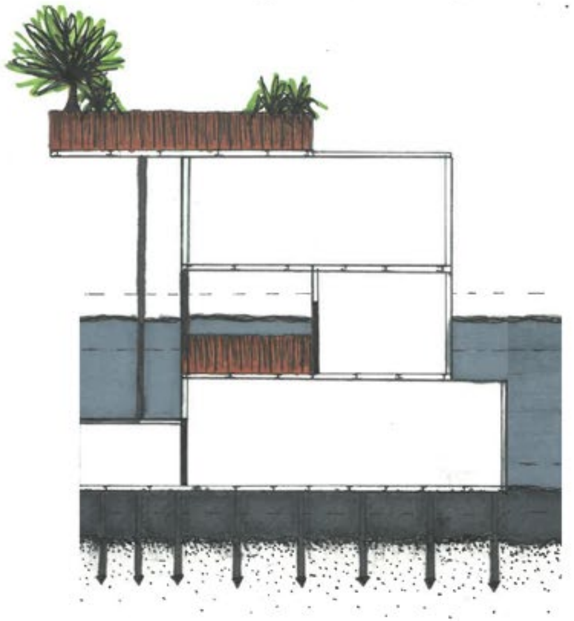
These drawings were used in the first Parti Diagram showing the developments of this particular underwater structure. The cofferdam in these diagrams have been used as a main feature which will separate the water from the building. The developments and alterations have included design a roof, building outside of the cofferdam walls, and building below the seabed. All showing how the same space cold be altered or differently designed.

The following diagrams will show a particular set of buildings which won't have the cofferdam wall; therefore, these structures will get completely submerged at high tide. As shown in the Parti Diagram the following sketches will be looking at the pier from the west side.

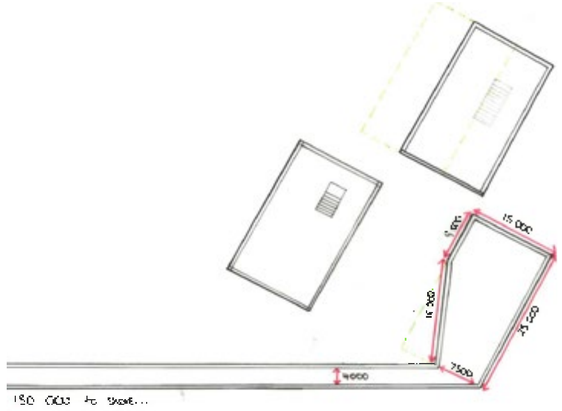


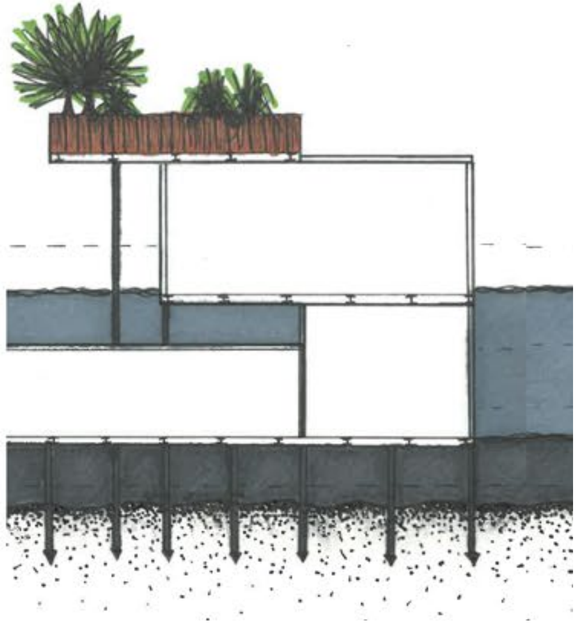






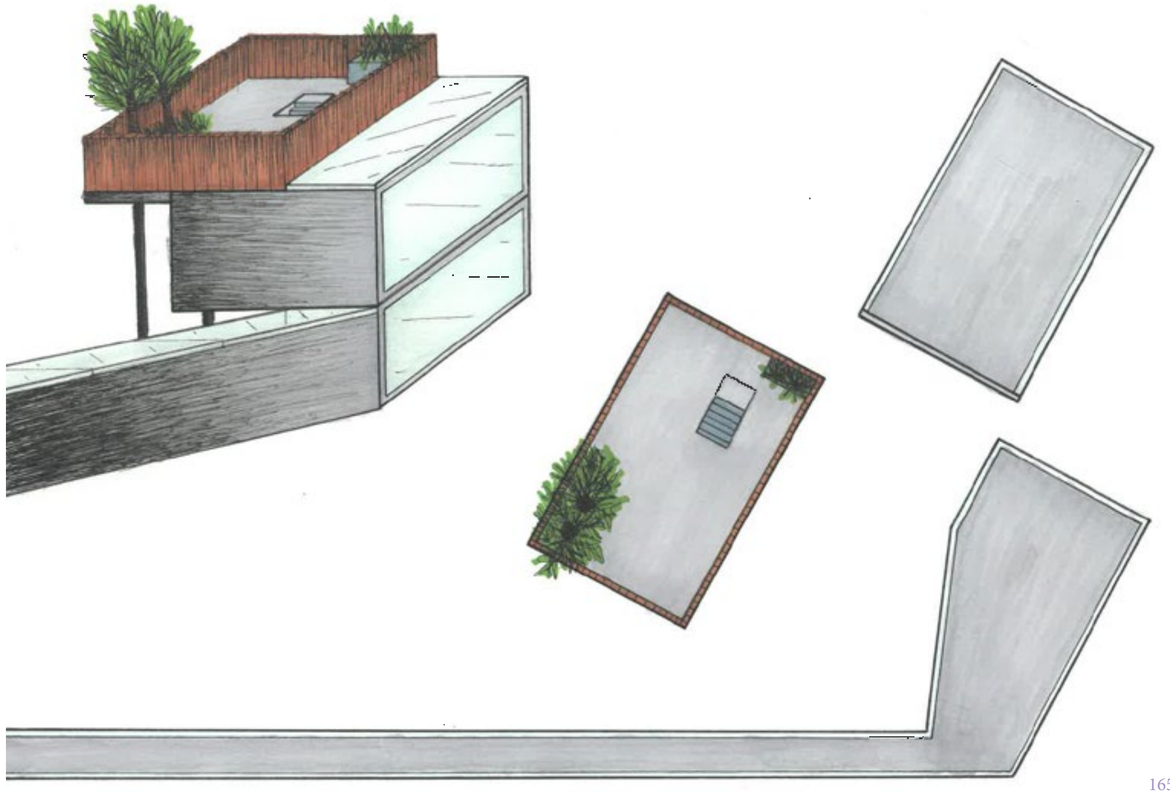
These different variations have shown a how the structure could be altered in particular ways. The areas which have drawn into be submerged at high tide will only be accessible when the tide is low. The structure itself will need to be constructed out of a stronger material to withstand the pressure and the oncoming waves as the tide goes in and out. These diagrams also show that the floor will be supported through a connection within the seabed. This will be by screw in technique.





This was one of the developments variations which stood out to me, therefore I decided to draw the structure from different perspectives to get a better understanding of what the structure would look like as a whole. However overall, I believe this design is not practical enough. The structure would be too big in relation to the west pier, as well as it would cost a fortune to construct and to maintain. The outdoor area also needs to be removed as after much consideration, the idea of creating an outdoor space is as simple as removing the roof. There is no need for a garden landscape, as it draws attention away from other materials and the structure itself.

I plan to take a more creative approach to this design, removing the other levels meaning one would have to travel to each separate structure. However, each individual structure will work collectively as a whole. I could use the idea of design various viewing platforms, which will in result be outdoor spaces. These will then be connected to the underwater restaurant.



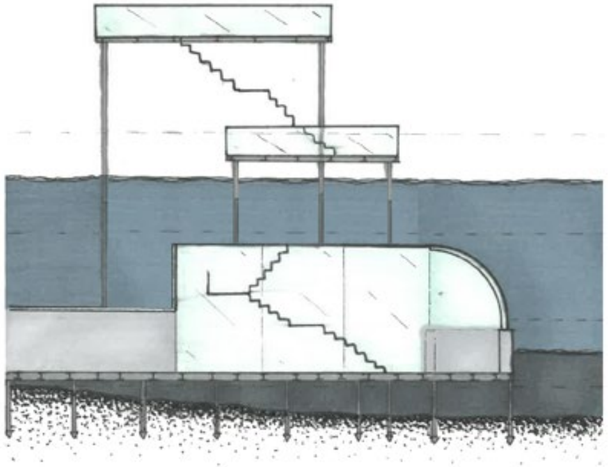
Critical Analysis

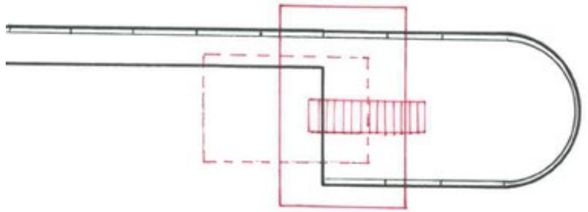
Reflection on the Final Design Developments

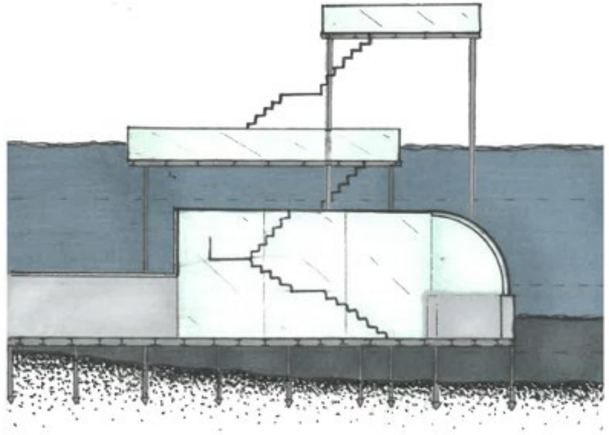
The New Design will include a structure which will have 2 or 3 raised platforms disconnected yet will still collectively go together and will connect at some point to allow travel. These platforms will be accessible through the underwater tunnel and will lead to the underwater restaurant. The sketches which will follow show the design inside elevation/section looking from the west side of the pier. Therefore, the pier would be behind this structure.

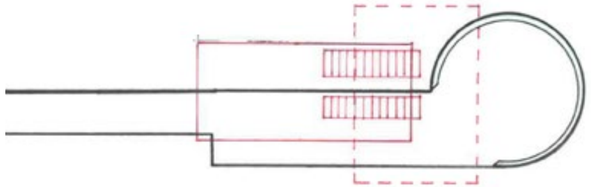
The idea behind the design came from the original totem structure. I designed the totem to be a raised platform which was above the sea level at high tide. These platforms I have designed will only allow access when the tide is low, therefore one might get stuck when the tide rises. As this could be the case, a temporary bridge may be designed to connect to the west pier (remaining festival activities). The floating effect will also provide an illusion when viewing the structure from shore. The narrow frame holding the platforms up could be disregarded and when viewed at the viewers' attention would be at the raised platforms and to whoever may be occupying that space at that particular point.

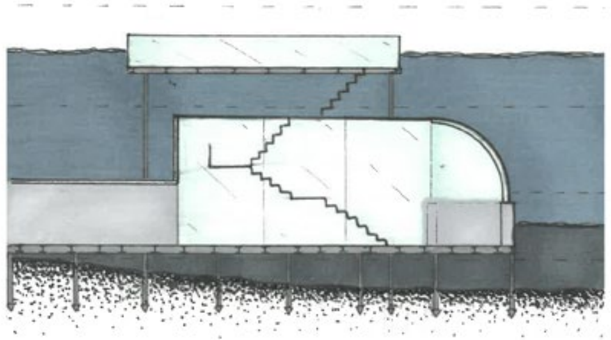
I wanted to play around with a different shape for the ground floor. Something which would fit around the west pier at a 'comfortable' angle. The underwater restaurant feature needs to have some attraction at the end. What are the viewers looking at? Therefore, the angle of this particular design, or position on where it stands is extremely important.

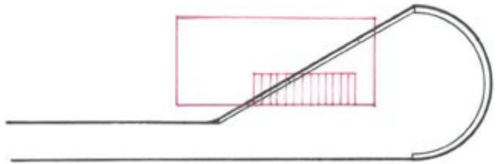










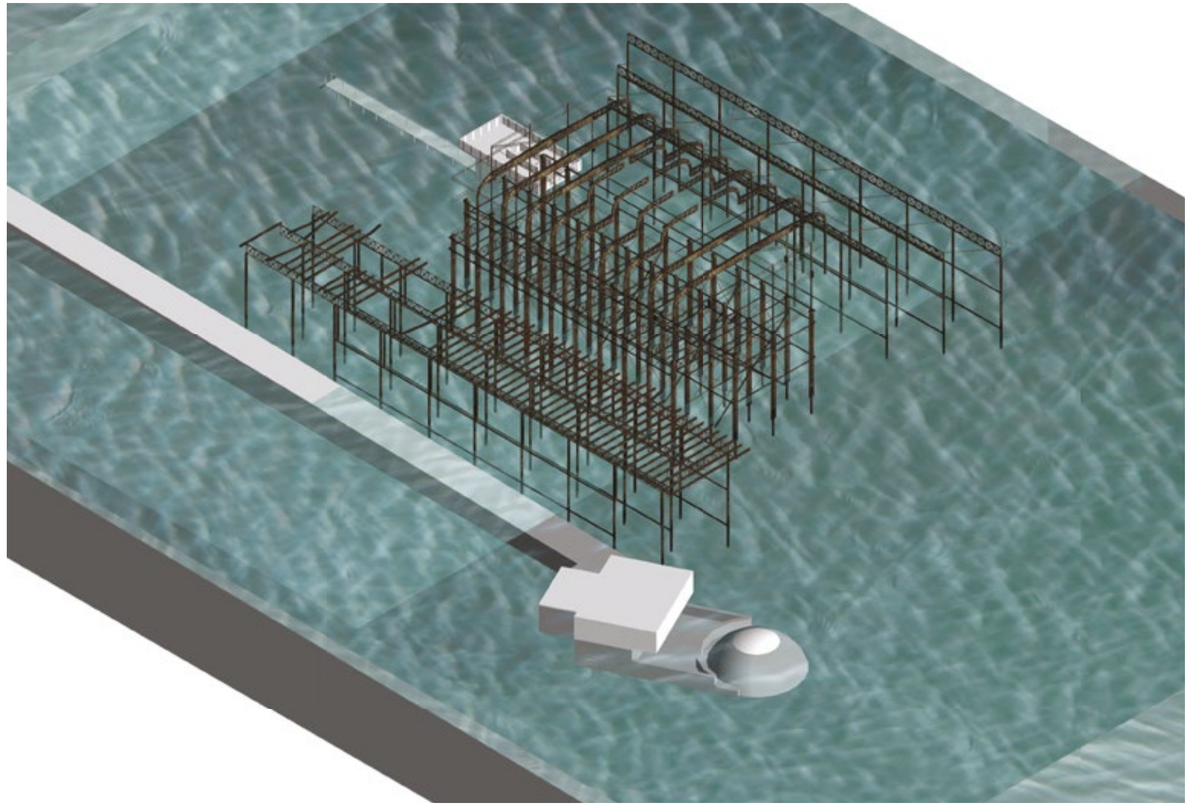


3D CAD Modelling

Final Design Developments

The next thing I did was start to look at these designs in a 3D concept. I drew them up in basic formation on Vector-works to get more of an understanding in terms of size. This also was much easier to look at my building within context, therefore making it that much more realistic or non-realistic. In the background of these images you are able to see the Totem Design I constructed last term which gets submerged at high tide (current state shown).

The design development on this structure has been slightly different in terms of that this building is connected as a whole. There is no separation in terms of different platforms or raised floating elements. From shore the dome feature would be hidden unless viewing from the East. Overall this structure is just not that appealing, and still much too big in terms of size. The overall engineering and designing which will need to go into this to make it legitimate would be huge. The pricing would be crazy amounts to construct something of this size, therefore unneeded space could be removed and redesigned into something more sustainable and better equipped to suit the surroundings. The tunnel feature is also flat which will need to be changed since the tunnel has also changed design. The balcony feature which gets submerged, shown in this image is also at an extremely irritating height, therefore meaning it would only be partially accessible. As this is the case, a higher platform will need to be created to have a better viewpoint for the occupant to experience.



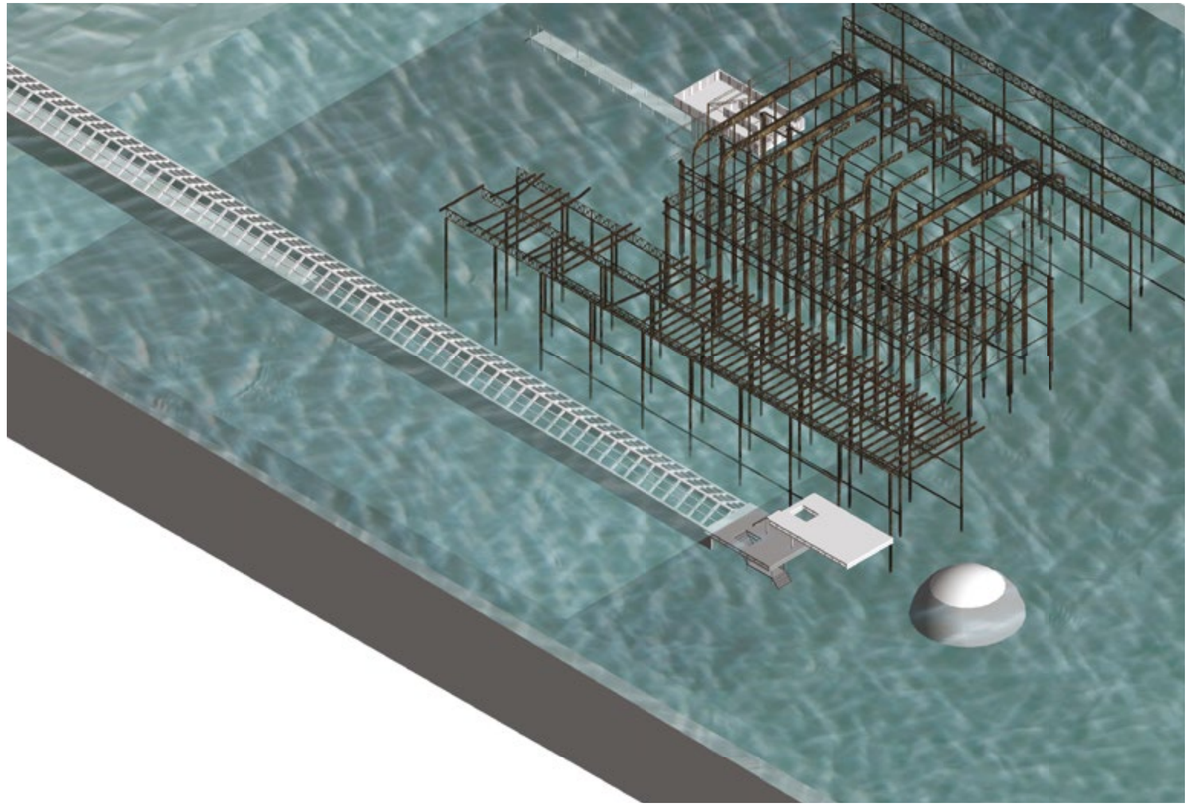
3D CAD Modelling

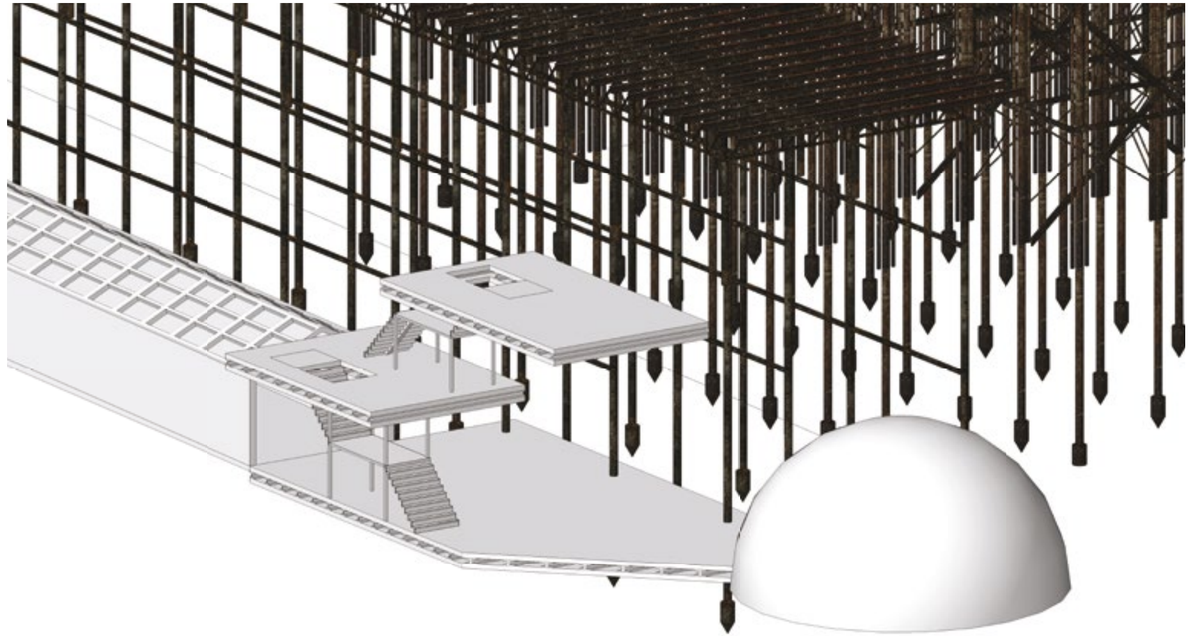
Further Final Design Developments

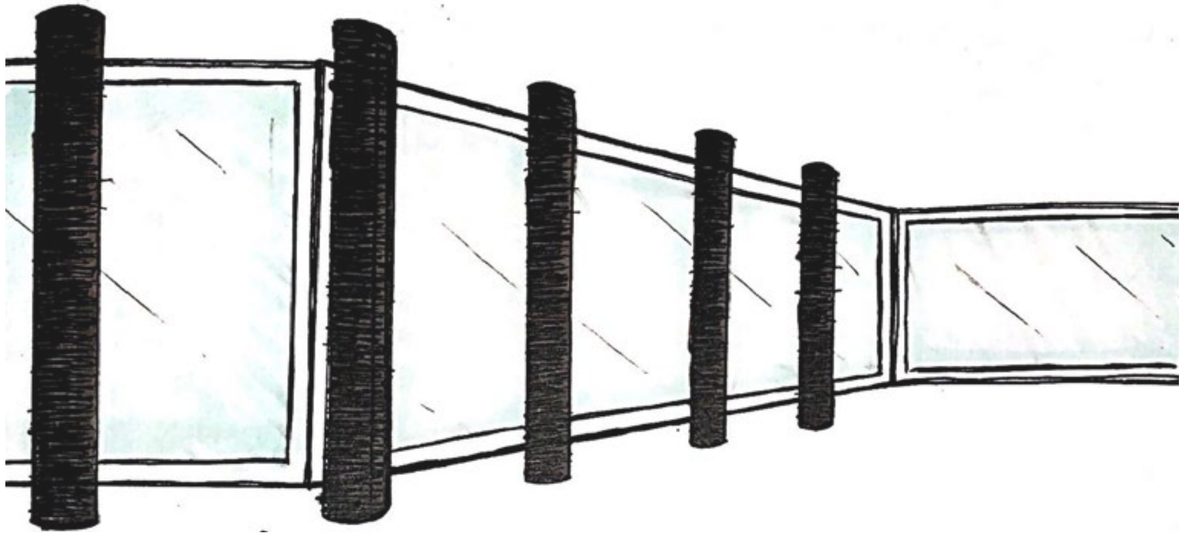
The next design I created on this 3D model was slightly developed, the underwater structure would be submerged at high tide, as well as one of the viewing platforms. The higher platform will always be above tide. The different in this design is that the overall structure looks much more of a collection of smaller individual structures. The use of less materials definitely makes the building easier to look at. Before it was much heavier, whereas this approach seems a lot lighter in terms of atmospheric quality. The light will be able to travel through the spaces a lot better, and all the pavilions will be visible from sure at low tide.

The tunnel has now included the Gable Roof feature, which will allow the oncoming waves to roll over the roof, giving the occupant an unreal promenading experience. The dome feature however is slightly irritating to look at in relation to the rest of the structure, as it is of different shape and contrast. Therefore, this might be removed and replaced during further developments. Overall this design is a lot more appealing as it provides more of a floating element to the design. From shore I could imagine this structure looking rather intriguing. Materials also are extremely important to look into. Originally, I was looking at using a heavy material such as concrete to contrast with the existing Cast Iron from the West Pier, however this isn't a very sustainable material and it could be very expensive to construct and install. The use of a different material could be incorporated here, which would provide a chance to design a beautiful skin to the structure.

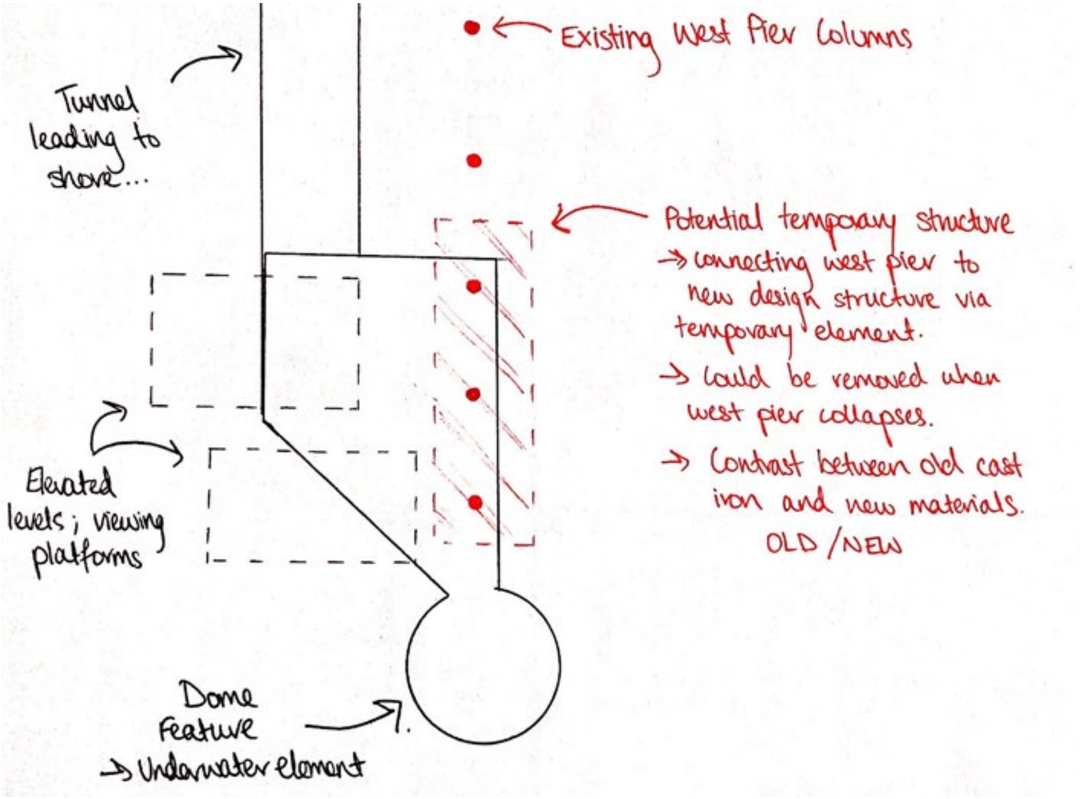
The next stage of the design will to be to look at what elements will be connected to the West Pier (and how that would work), or whether the structure itself just be designed to go around the remains (which also circulate around the back, on the sea bed).

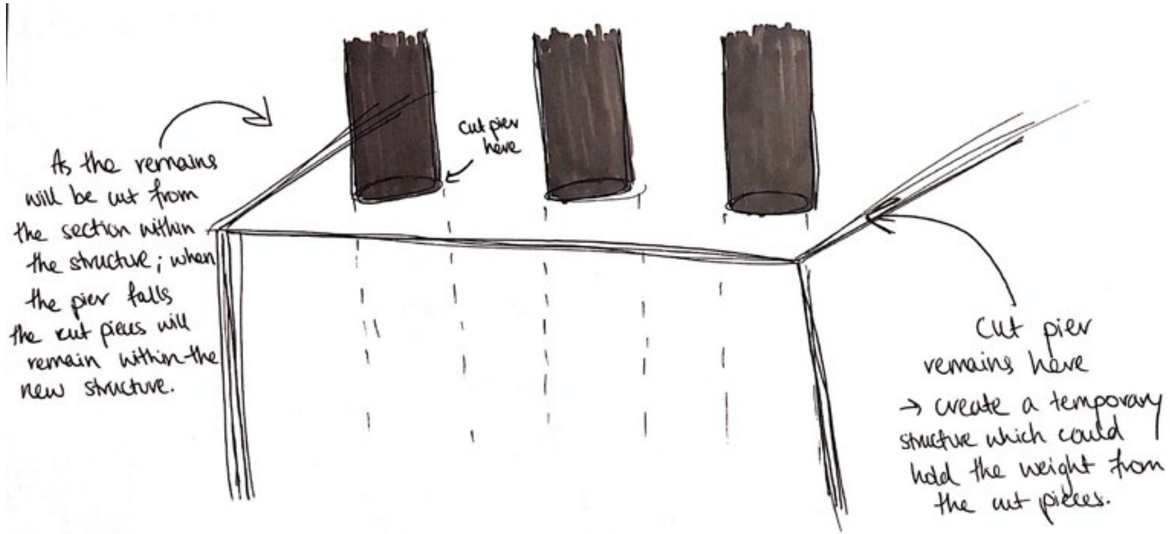




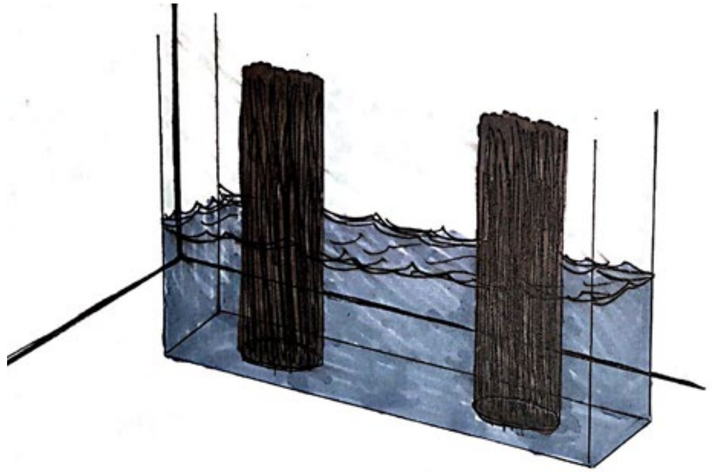


The drawing to the left shows how the structure will be going through the space. I did not yet draw in how this structure would connect to the seabed; however, this CAD drawing shows an understanding of how I particular west pier elements to go through this space. The ground floor will be used as the connection space to the raised platforms. I have not yet drawn in the roof or the walls of this space, however the ground floor will be completely covered and watertight. It will be the space connecting the tunnel to the underwater restaurant. The raised platforms will be open spaces, therefore will have no roof or walls. This also means particular balcony or barriers will need to be designed and decided on in terms of material palette, as this is the main feature people would see from shore (above water). The sketch above shows a quick initial visual of how I imagined this space would first look. The columns are going directly through the space (underwater restaurant) meaning occupants would be able to touch the structure of view it in detail up close. This element could be an interesting feature, definitely attracting customers, however how this would work also needs to be considered. Whether this part of the structure would be 'cut off' and disconnected from the rest of the Pier? Whether this part will be a temporary aspect which will be removed when the festival leaves? All these points will need to be addressed and looked into in further developments.



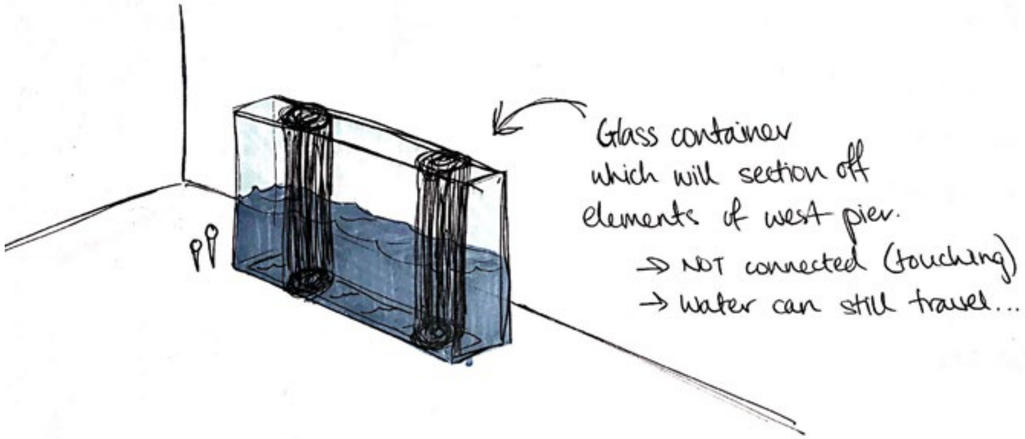


This sketch is showing how the remains will be cut above the floor, a temporary structure or 'hold' will need to be built to ensure it is stable and held in place. The structure will have a lot of weight therefore may not even be able to be cut, due to not being able to withstand. As well as how much it would cost to alter and change the current condition of the west pier. This will need to be further researched, or re designed to fit around this. Therefore, the pavilion may need to be built around the West Pier remains to avoid damage and removal of any elements.

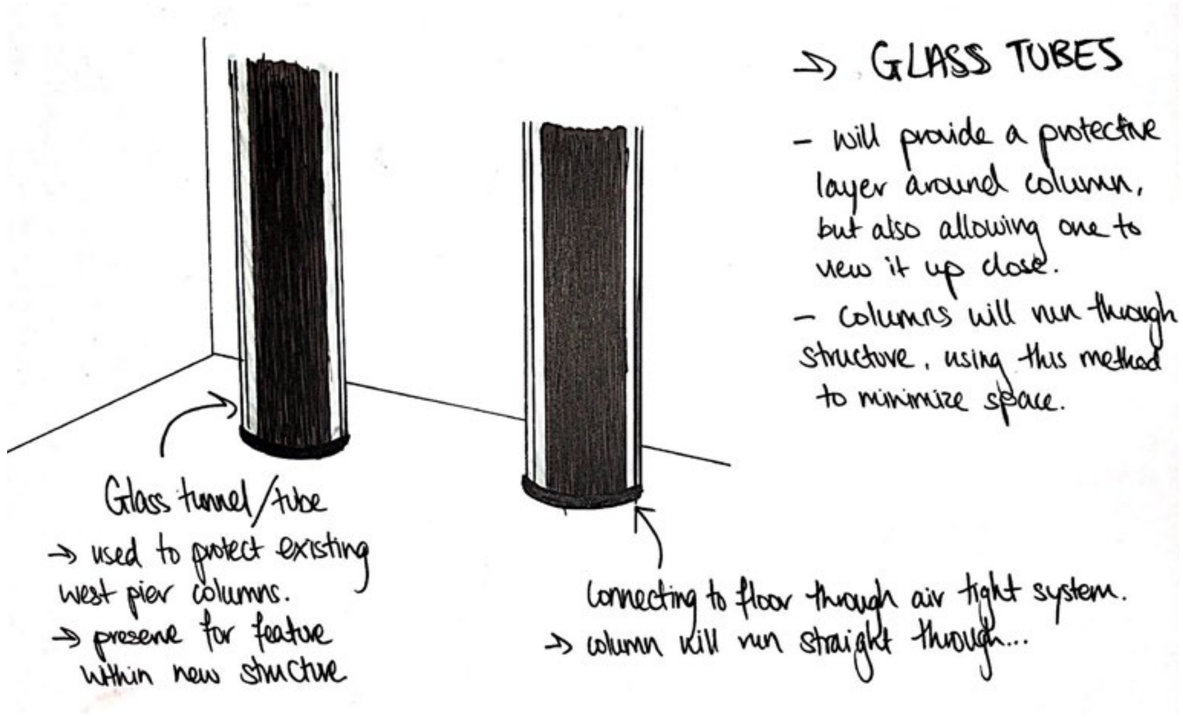


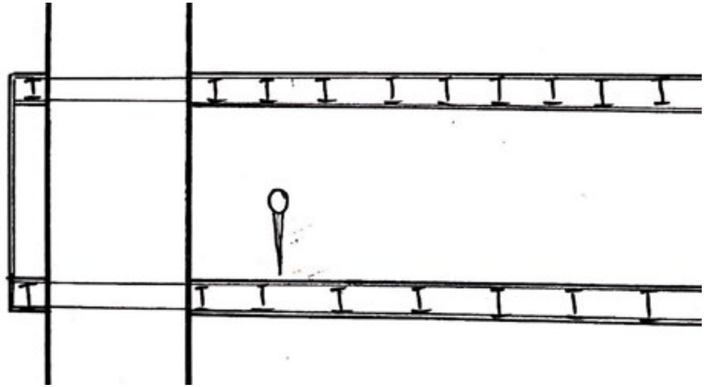
→ GLASS BOX

- Building will be built around existing column structure.
- Will not touch the west pier structure (water can still travel through)
- Will allow visitors to see pier details up close.

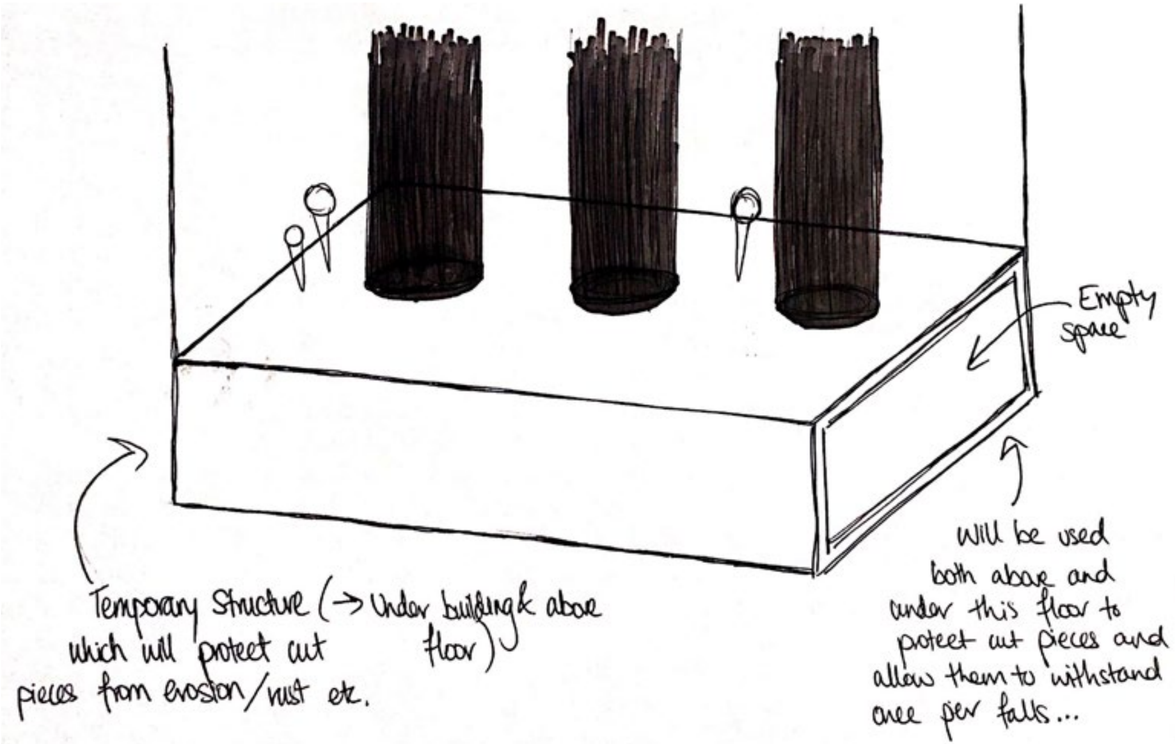


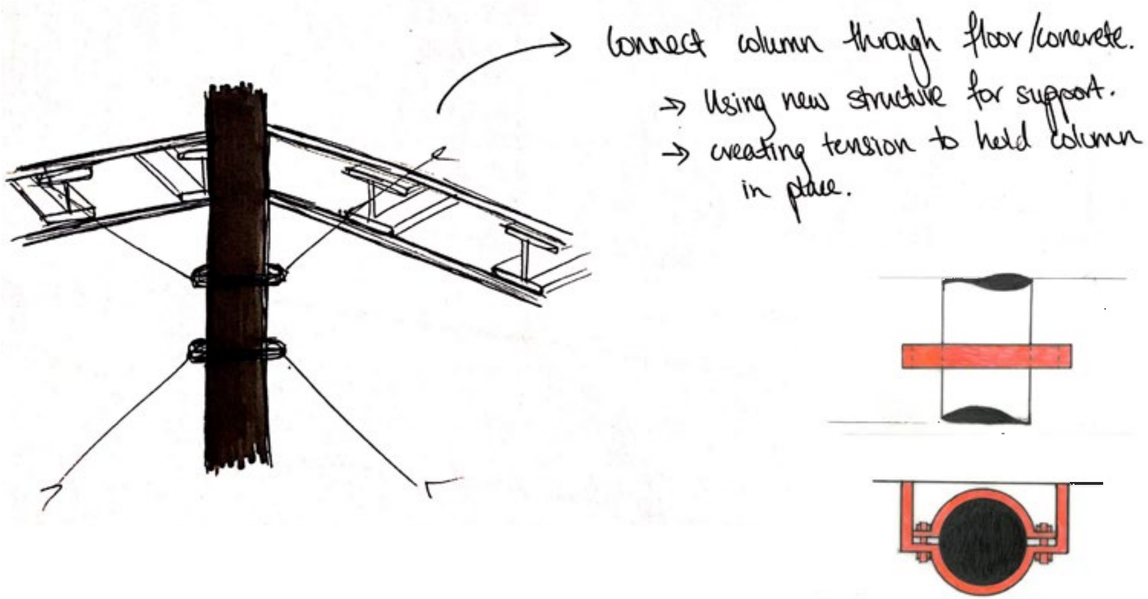
This sketch is showing how the west pier could be sectioned off within a glass or transparent structure. Therefore, the Pier itself may not even need to touch the new pavilion. It could physically be built around the structure, therefore still allowing the flow of water and tide to continue as it travels throughout the day. The Pier will still be able to be seen up-close and in detail however will not be close enough to touch.



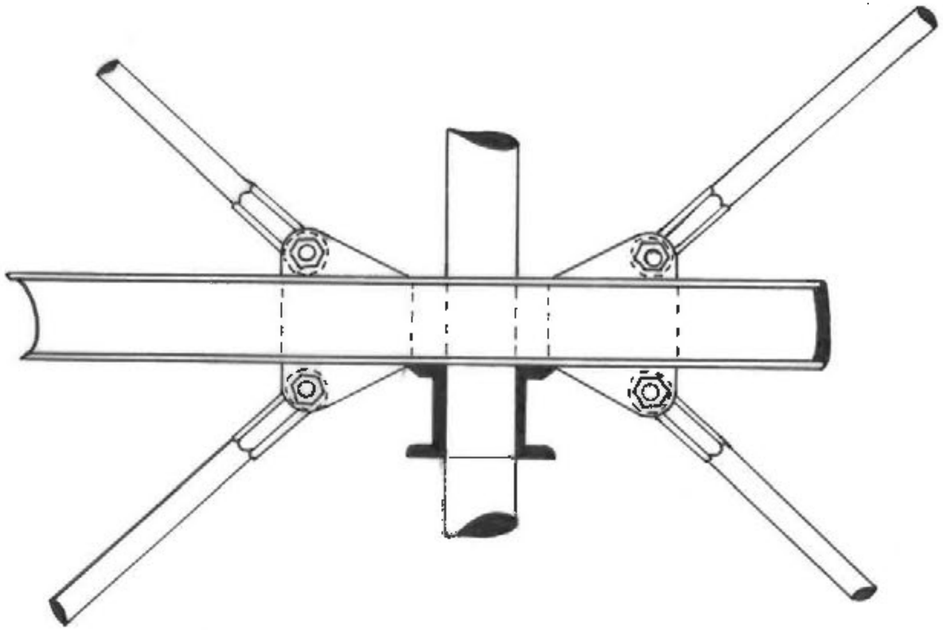


These sketches are showing another variation of how the pier could travel through the space, the use of a glass tube, may be more individual, allowing a closer detailed view for the occupant. Water will still be able to travel through the space as the pier will yet again not actually be touching the structure. When looking at this design above, a temporary holding system could be connected to allow support, and a temporary hold to the west pier.

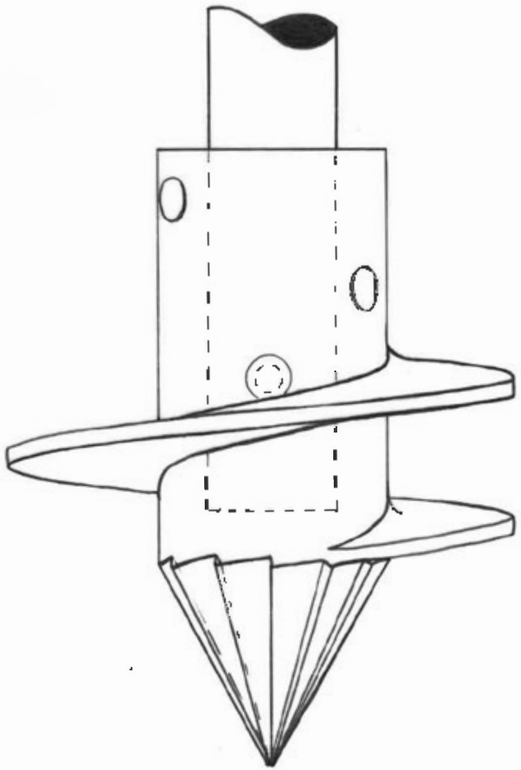




These sketches are showing how the column could temporary be connected to the west pier. In terms of protection of the remaining parts, the area showed will be used to protect the pieces inside the space, therefore if the pier fell, the pieces cut would not collapse with it. The sketches above are showing other different connection details of how the column could be connected to the new pavilion. Working with different materials can be extremely hard to deal with, therefore it will need to be thoroughly researched once I have decided on a material palette to figure out how it would connect to the existing site remains. This will be better explained at a further development. Once I figure out what material I'm connecting the cast iron column to it will make it much easier to figure out how it will be connected.



These detail drawings are showing the existing connections around the column to the surroundings. Providing a tension between the two gives a strong connection, therefore I could potentially use this in my designs. Either connect my structure to these particular elements, and design using them, or create a structure using this technique which will sit beside the remains (possibly use old pieces of the west pier?).



The Cast Iron aesthetic could be used to my advantage, as the cofferdam which will be used within this design will be made out of a similar material (Corten Steel). After speaking to various mentors and tutors, I was given a suggestion of using elements of the west pier within my design. Not to contrast against it but to work with what I have.

Therefore, I came to the conclusion I plan to use a similar palette, not necessarily reusing the old remains but working with Corten Steel and incorporating the repetitive aspect (from the cofferdam) into my designs. The sustainable aspect with this design will mean I will not be altering the space or changing anything, but however just inserting a cofferdam feature and making use of what already there.

To give the building within support I plan to use screws which will connect into the seabed at particular points to provide an even support to the above viewing platforms. These platforms will need to be able to withstand waves and the tide therefore will need to be completely secure.

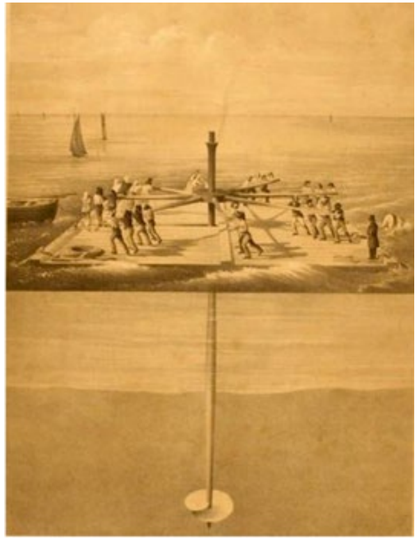
Critical Analysis - SysMat Research

Final Design Developments

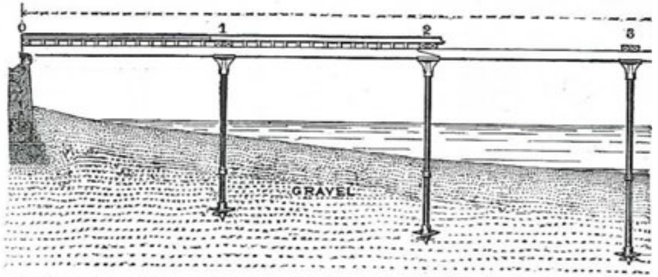
Screw-Pile and Screw-Cylinder foundations were used extensively to construct ocean front iron piers throughout the mid to late 19th Century. The size of central shaft and screw blades used varied widely and depended in local site conditions, bay spacing and anticipated loading. Shortly after the beginning of the 20th Century, there was a decline in the use of Screw-Piles and Screw-Cylinders as other modern pile materials became available and, perhaps more importantly, the steam powered pile hammer was developed. For nearly 80 years this technology was largely dormant but since the late 1980s and early 1990s it has seen a resurgence in use for a variety of projects.

A wide variety of Screw-Pile and Screw-Cylinder ocean front shipping piers were constructed at various ports around the world. The geometry, length, and height of the pier depended on the local conditions and the tidal fluctuations. The primary usage of these structures was for the loading and unloading of both raw materials and finished trade goods as well as for the convenience of passengers traveling to/from various ports.

The most likely reason for this is the development of large hydraulic torque heads capable of performing rapid installation when attached to conventional construction equipment, such as a track mounted excavator. This trend is likely to continue as engineers once again become familiar with this technology and take advantage of the capability of developing substantial load capacity and rapid installation.



Engraving of Workers using a Capstan to Install Screw Pile from a Raft.



Partial Drawing of Pier at Lewes, Delaware

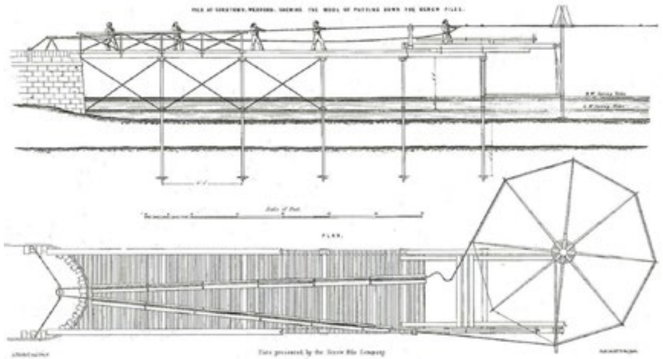


Diagram of Construction of the Pier at Courtown

Using screw piles as a source for stability and to build a foundation upon may be seen as the better option. It provides a strong support system, as well as will be continuing the same technique that was used within the original West Pier Structure.

This method will be used for my structure as well to provide a stable foundation for the tunnel to be built on. As the seabed will be descending, a floor levelling system will also need to be designed to ensure that the ground will be flat, and not at a particular angle along the seabed. This could've been used as a feature of designing (actually walking along the seabed), however in my opinion I plan to use a floor levelling system as it is much simpler and will be an even weight distributing system.

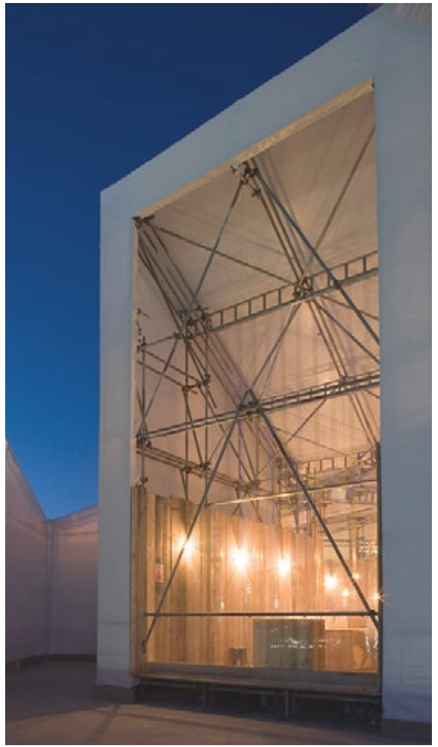
Another factor which is important to reference would be to use the existing structure or what remains are left. As we plan to insert instead of disrupting, this method of screwing into the ground will not change or alter much of the elements that are existing. In terms of sustainable aspect, these screws can be removed over time whereas other elements such as concrete (poured into the seabed) will have permanent changes much more harmful to the surrounding environment / context.

Precedent Research

Carmody Groarke

Carmody Groarke has completed this low-cost, 'pop-up' restaurant on top of the partially built Westfield Stratford City development in east London. The temporary structure, which overlooks Zaha Hadid's Aquatics Centre and Populous' Olympic Stadium, is made from materials borrowed from the construction site, including 2,000 scaffolding boards, 3,500 scaffolding poles and reclaimed timber.

Located on top of the 35 metre-high Westfield Stratford City development, the pavilion is called Studio East and houses Studio East Dining by Bistrotheque. The cladding material which encases the roof, is a semi-translucent membrane, using industrial grade heat retractable polyethylene which is 100% recycled after use; as with the other materials, all will be returned to the site afterwards and recycled without any waste. By night, the whole structure will glow, forming shadows and silhouettes of the events held within, creating a compelling jewel on London's skyline at sunset.



This precedent was chosen as I believe it is an inspiring piece of pop-up architecture. The design itself used its structure and frame as the main appeal and attraction (I.e; it's not shying away or hiding aspects of its frame). This structure reveals the elements and how it is built as that's what makes it unique and appealing.

In relation to my pavilion, I plan to use cofferdam walls to construct my building. At first, I wasn't set on the idea of keeping them as a permanent feature, however the idea of using what will remain (construction wise) and taking that to my advantage to design something within. For example, an outdoor space will be created due to the cofferdam walls, the rust and aesthetic from the Corten steel sheet piles could be used in my designing methods. The repetitiveness in sheet piles could also be taken into account and used when designing.

All these aspect and methods of construction are extremely beneficial to this precedent study. As a restaurant, I could imagine the dining experience to be unique and completely different due to the surroundings and the way this structure was put together, therefore the same effect could be used within my own pavilion. Material wise I could use other lighter elements to my advantage and play around with different contrasts in palettes.

CRITICAL ANALYSIS

TASK B - SYSMAT Investigations

Final Design Developments

For this chapter I plan to research into many different techniques of SysMat within my new design developments. As I plan to use the same methods for particular areas within my design (stairs and joinery techniques), I have used the same previous examples as these techniques will still apply. I've decided to look into steel and concrete connections, as well as using a lighter material such as Elm wood (used to create the Piers) or Plywood, as the outdoor spaces will not need to be as water resistant. This will be due to the fact that the cofferdam wall will be remaining. This is because I plan to use them to my advantage and to a sustainable element. As no water will be entering this space, the use of a lighter material will not only be much more cost efficient (compared to concrete etc.), but also of different style and could be in complete contrast to the remains of the West Pier (Cast Iron), or surrounding context. It will also provide a lighter experience for the occupants walking through the space. I also plan to look into how the cofferdam will have glazed elements (i.e how glass windows can be supported and how they will still provide a strong frame and tension for the remaining workload.

Task B - SYSMAT INVESTIGATIONS

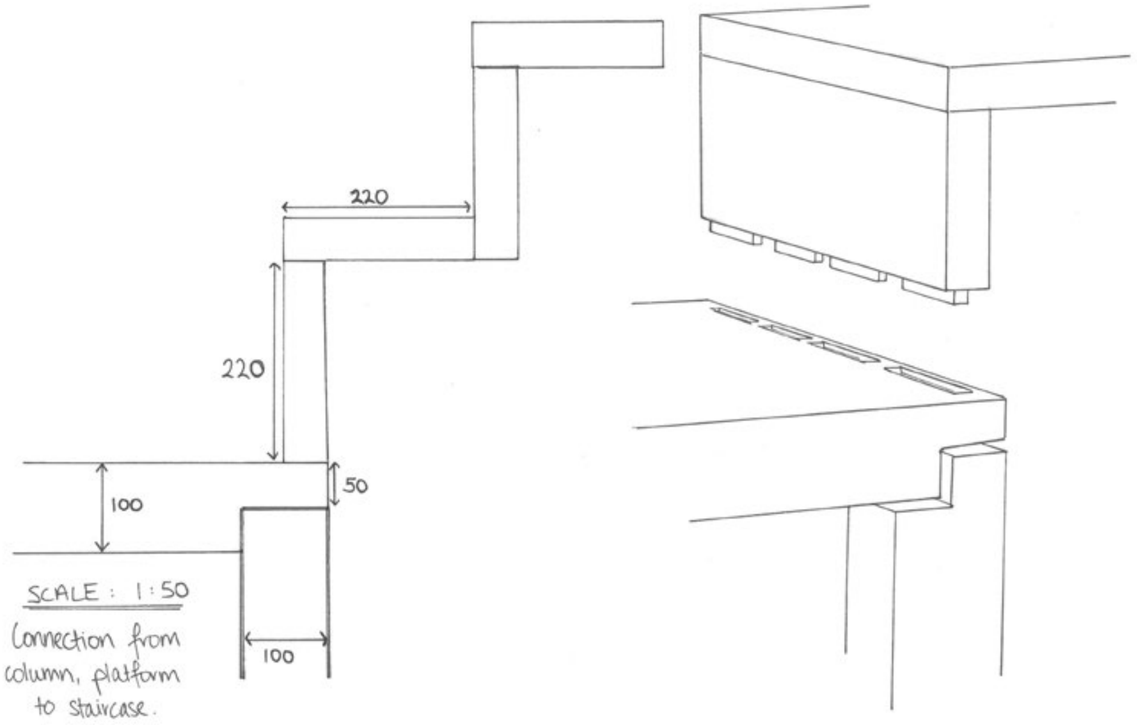
Environmental impact is a wide topic that more people and sectors of the economy are paying attention to when making daily living and business decisions. Information on the issue is particularly coming to light in the construction industry, which traditionally is known for its harsh impacts on natural resources and environments. Numerous eco-friendly building materials have emerged in the marketplace to reduce the environmental impact of building construction and operations. But identifying the world's most eco-friendly building materials can be a bit tricky because different people have different definitions of sustainability. Some, for example, solely look at whether a material is locally sourced. They seek out "things that are available, that don't have to travel far, that are using local resources and what is easily available in the construction market," Eric Mackres, manager of building sustainability at the World Resources Institute Ross Center for Sustainable Cities, told Smart Cities Dive. "That's one definition of eco. Another one would be around the embodied energy of the materials."

Bamboo:
Sustainability experts nearly universally agree bamboo is one of the best eco-friendly building materials on the planet. Its rate of self-generation is incredibly high, with some species growing up to three feet in 24 hours. Bamboo technically is a perennial grass, not a wood, and it continues spreading and growing without having to be replanted after harvest. It is prevalent around the world and can be found on every continent except Europe and Antarctica.
Bamboo has a high strength-to-weight ratio and exceptional durability — even greater compressive strength than brick or concrete — so it can take a beating without being replaced very often, which is not necessarily the case with other fast-growing, sustainable items such as hemp. That makes bamboo a viable choice for flooring and cabinetry. Because it is lightweight, bamboo is less energy intensive to transport than many other materials of comparable durability.

Reclaimed or recycled wood and metal:
Aluminium and steel are high embodied energy materials due to the energy required to produce them, such as mining the ore, heating and shaping products, and transporting a relatively heavy material. But each time the metal is properly and efficiently reused or recycled into new products, its embodied energy lowers and makes the material more sustainable. Recycled metal is a long-lasting material that does not need frequent replacement. It tends not to burn or warp, making it a viable option for roofing, structural supports and building façades. It's also water and pest resistant. Reclaimed metals, such as plumbing components, sometimes can be used in their existing forms instead of having to be recycled and manufactured into a new product.

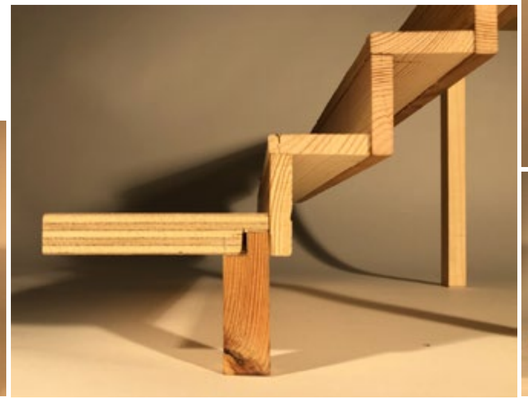
Elm Wood:
Elm wood is valued for its interlocking grain, and consequent resistance to splitting, with significant uses in wagon wheel hubs, chair seats and coffins. The bodies of Japanese Taikodrums are often cut from the wood of old elm trees, as the wood's resistance to splitting is highly desired for nailing the skins to them, and a set of three or more is often cut from the same tree. The elm's wood bends well and distorts easily making it quite pliant. The often long, straight, trunks were favoured as a source of timber for keels in ship construction. Elm is also prized by bowyers; of the ancient bows found in Europe, a large portion are elm. During the Middle Ages elm was also used to make longbows if yew was unavailable. The density of elm wood varies between species, but averages around 560 kg per cubic metre. Elm wood is also resistant to decay when permanently wet, and hollowed trunks were widely used as water pipes during the medieval period in Europe. Elm was also used as piers in the construction of the original London Bridge. However this resistance to decay in water does not extend to ground contact.

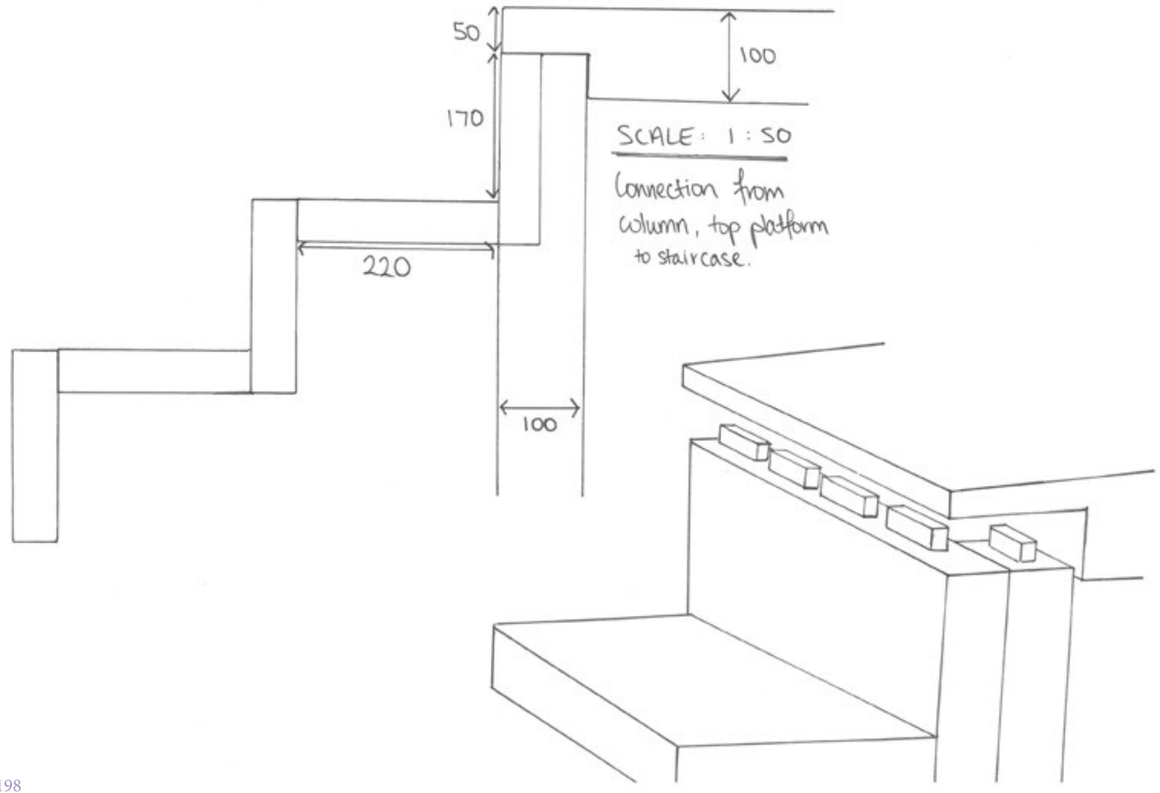
Material Study - SYSMAT Investigations - Flat-Lay



Stair Case – Featured in Final Design - Scale – 1:50

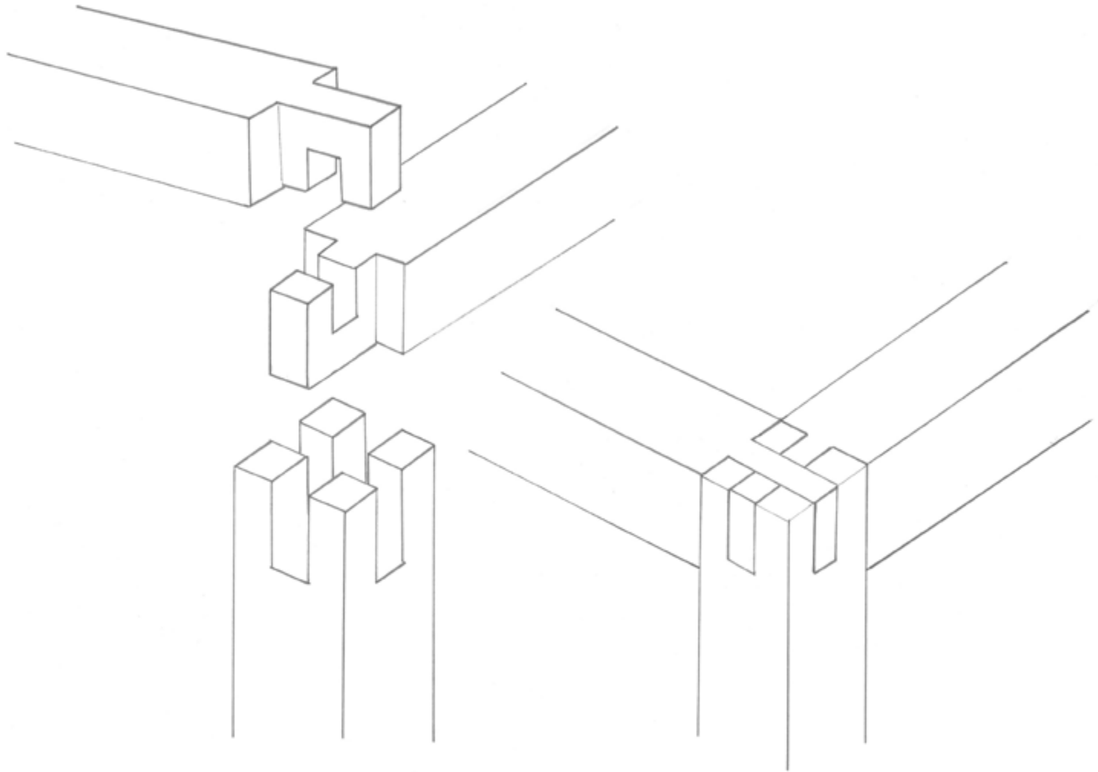
Displaying a smaller section of the staircase. The idea behind this iteration was to also design a connection with minimal environmental impact. The bottom step will connect directly onto the column using another type of joinery technique called the 'Rabbet Joint'. However, the top step is slightly different as it contains a section attached to the columns which feeds directly into the top platform. Providing extra support to this structure. This technique is called 'Mortise and Tenon'.





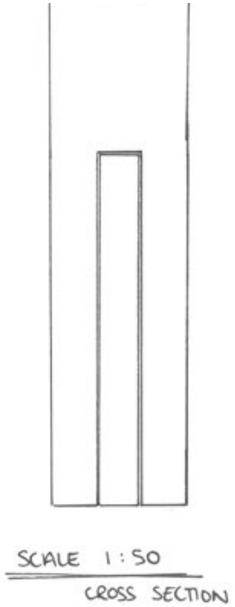
Joinery Techniques – Material & Systems Testing

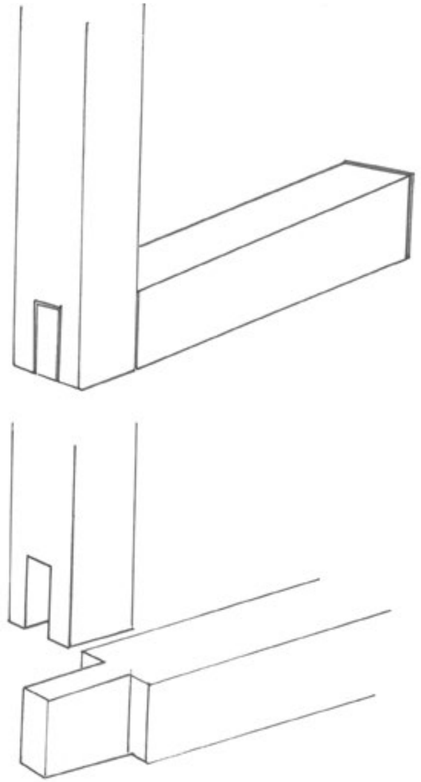
This iteration was designed to allow a connection to be made with minimal impact to the environment in terms of materials. This sustainable design provides support, as well as no other needed materials. This real structure would contain the use of Elm Wood as it would have least environmental impact as well as still maintaining its form after a long period of time. As this structure will not get submerged it will have a longer lifespan.



Joining Technique – Test 2 – Material & Systems Testing

The second testing of this detail in systems was extremely successful, as this piece can individually come apart into 3 pieces (the prototype is very delicate), however once combined together it provides a strong interlocking corner piece. This detail will be included to create the joints within the final design.
This piece was extremely fun and enjoyable to create as it allowed me to develop on skills, I wouldn't normally get the chance to progress on. Such as hand filing the pieces to perfectly fit into a 3 Piece Corner Design. The overall outcome was great and I will be including this detail within my further designing, as it will provide stability.





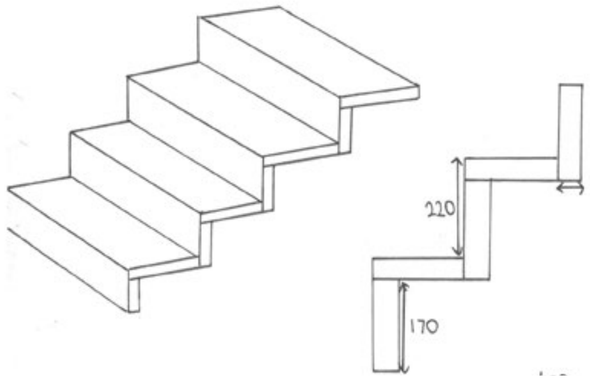
Joining Technique – Test 3

This test is showing how 2 objects can be joined together using a sustainable design. The name of this technique is 'Tongue and Groove', and this detail will be included within the column structure within the final design. The use of these techniques provides support as well as the use of minimal materials. This iteration was also designed to allow a connection to be made with minimal impact to the environment in terms of materials. This sustainable design provides support, as well as no other needed materials. This real structure would contain the use of Elm Wood as it would have least environmental impact as well as still maintaining its form after a long period of time. As this structure will not get submerged it will have a longer lifespan.

Critical Analysis

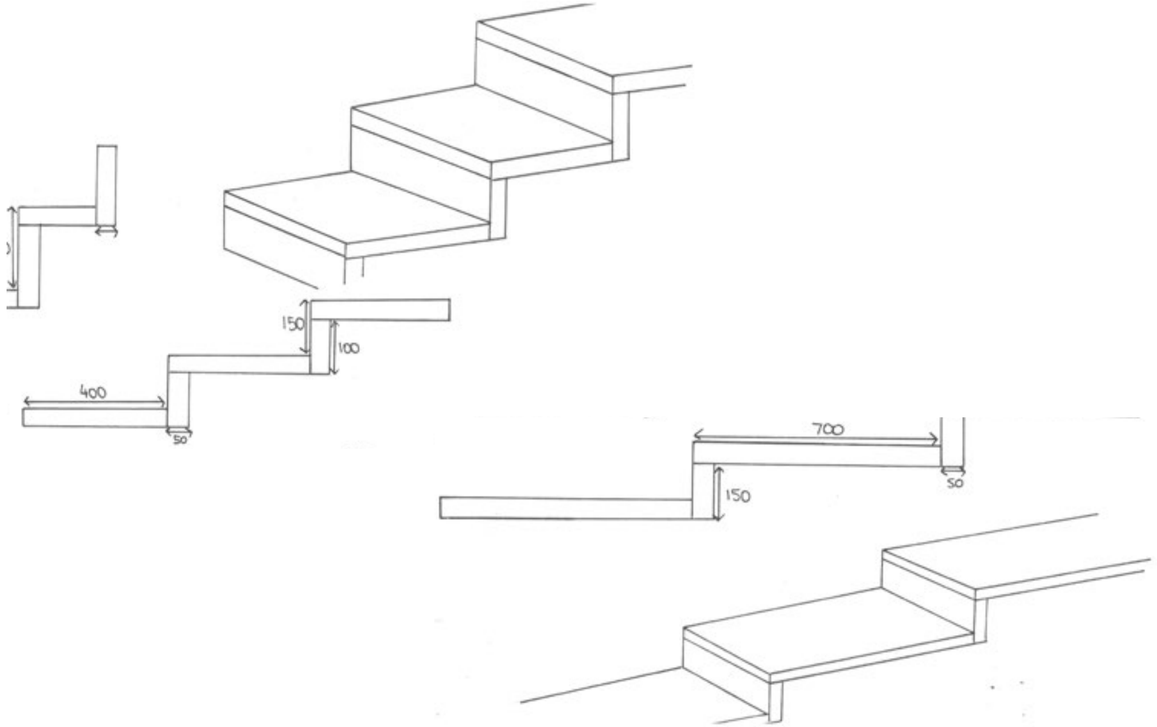
Further Developments

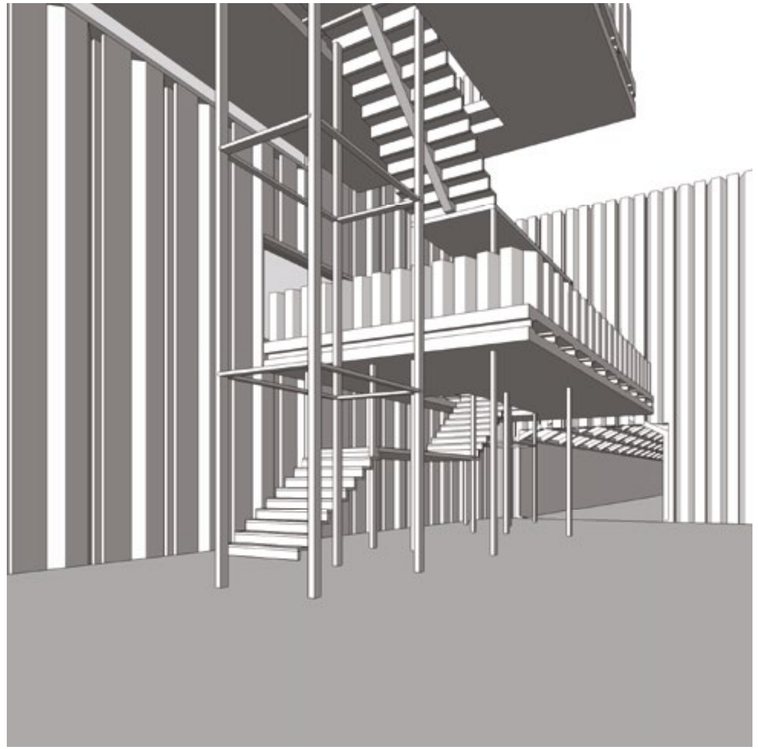
Overall this development stage has been lacking slightly. I believe I was set on a firm idea and had yet to develop it much further. I researched into materials and sustainable design; however I believe I could make this project more sustainable, and have minimal impact environmentally. The idea to recreate a nostalgic structure within a particular area of Brighton's West Pier which seemed to have dramatic impact on society and the surrounding community when collapsed. To re-use this space, and re-create a similar interactive structure, providing people the chance to promenade I believe will bring back tourism and seaside attraction on Brighton's Coast. This landmark will signify the upcoming festival of Britain 2022, and resemble what leisure activities are to come to the English Coast.



Further Development

To take this design into further development, I'm looking at other options to try highlight the Catalyst within my pavilion. The design, currently in place displays a staircase of usual ergonomics/ measurements (220x220) however, I believe the idea of promenading involves longer strides and steps as people 'Stroll'. Therefore, maybe the idea should be to enlarging the steps, to require the user to take 2 steps landing before rise, rather than 1 – 1. This promenading experience may change the design and overall appeal to the totem, however, might change the concept of how people walk within this space.





Critical Analysis

Reflection on the Final Design Developments

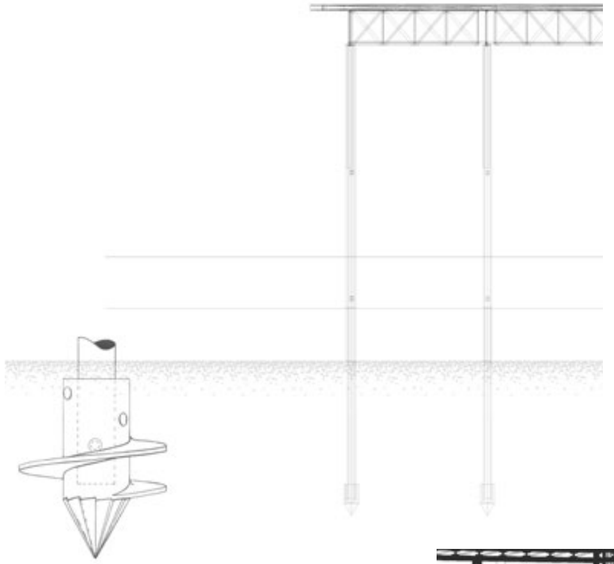
After the research and testing done using the joinery methods, I believe this will be used within my final model. The frame/support structure used to hold up the viewing platforms will be created out of a lighter wood material (potentially Elm Wood). And will use minimal to no screws, therefore providing a more sustainable and cost-effective approach. By keeping the cofferdam walls, it will be using the sheet piles to my advantage and working with the existing construction methods. This approach (leaving the construction details), will allow the visitors to view the structure for its frame, and that will be the main feature to this pavilion.

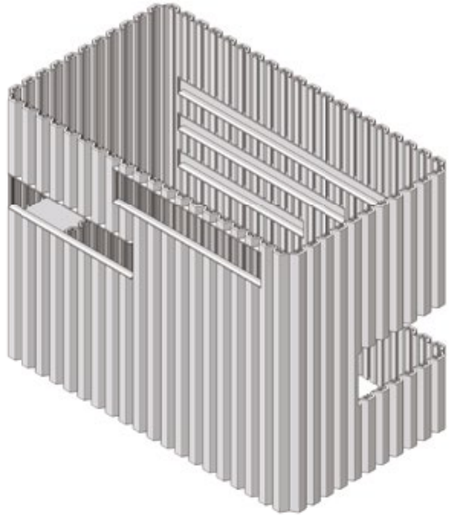
Critical Analysis

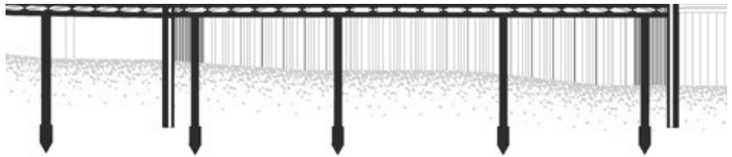
Further Developments - Cofferdam Wall

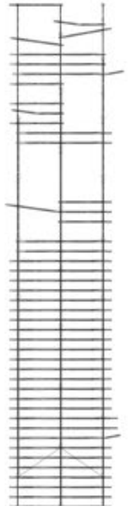
I decided to look into steel and concrete connections, as well as using a lighter material such as Elm wood (used to create the Piers) or Plywood, as the outdoor spaces will not need to be as water resistant. This will be due to the fact that the cofferdam wall will be remaining. This is because I plan to use them to my advantage and to a sustainable element. As no water will be entering this space, the use of a lighter material will not only be much more cost efficient (compared to concrete etc.), but also of different style and could be in complete contrast to the remains of the West Pier (Cast Iron), or surrounding context. I also plan to look into how the cofferdam will have glazed elements (i.e how glass windows can be supported and how they will still provide a strong frame and tension for the remaining workload.

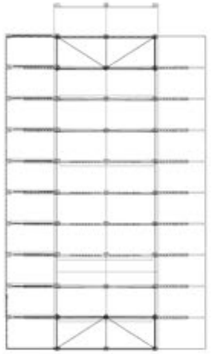
As the cofferdam itself will be used to hold out the water, a strong supporting system inside will need to be required, to remain frame and shape, withstanding tide etc. The sheet piles will go within the seabed and will hold up the other elements with steel joists spanning across the cofferdam. The images below show what the sheet piles and screw piles will look in section, showing that they will be below the seabed by approx. 5m, to ensure stability.

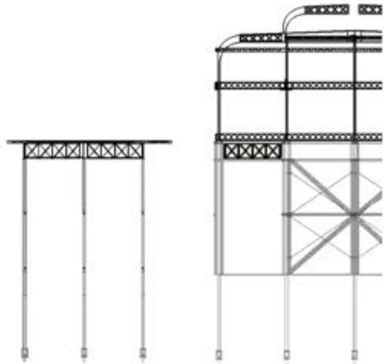


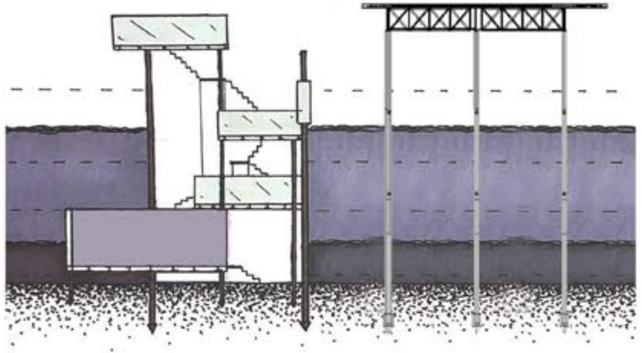


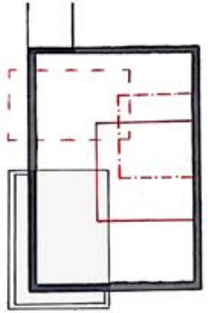


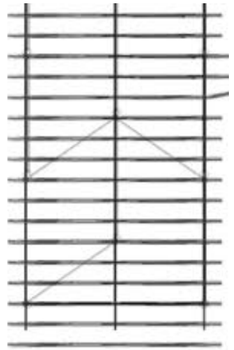




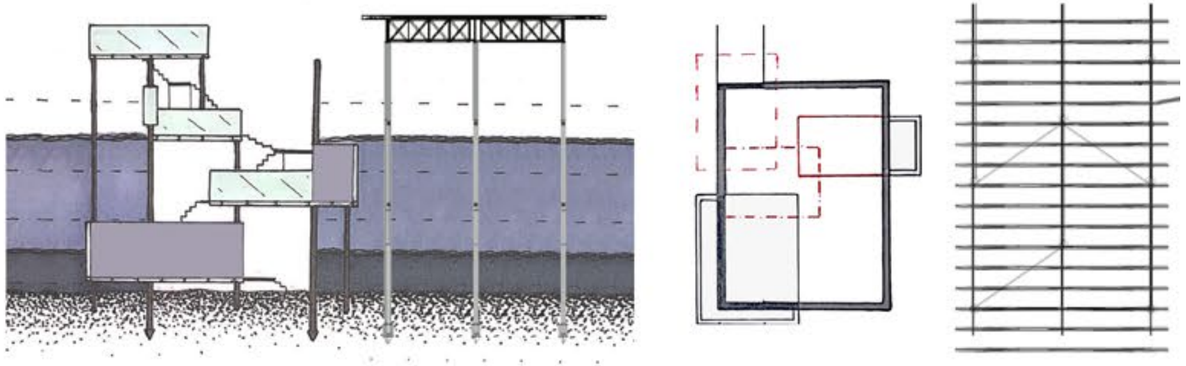


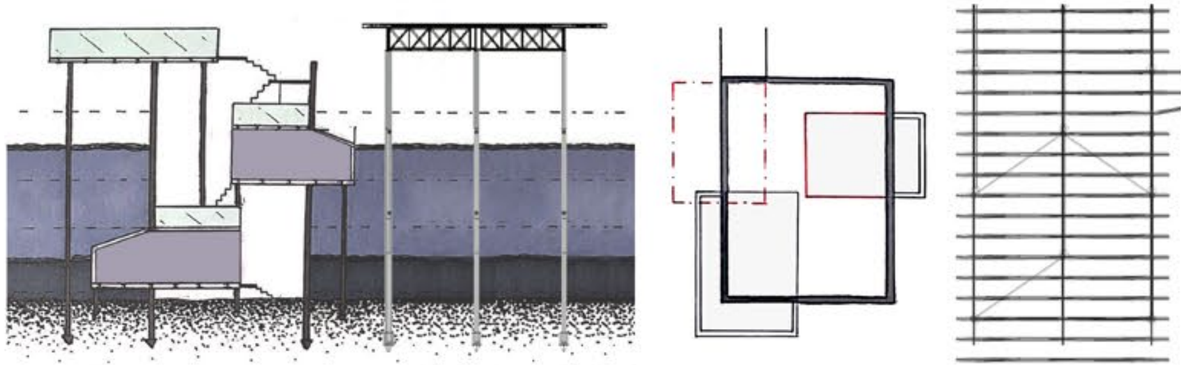


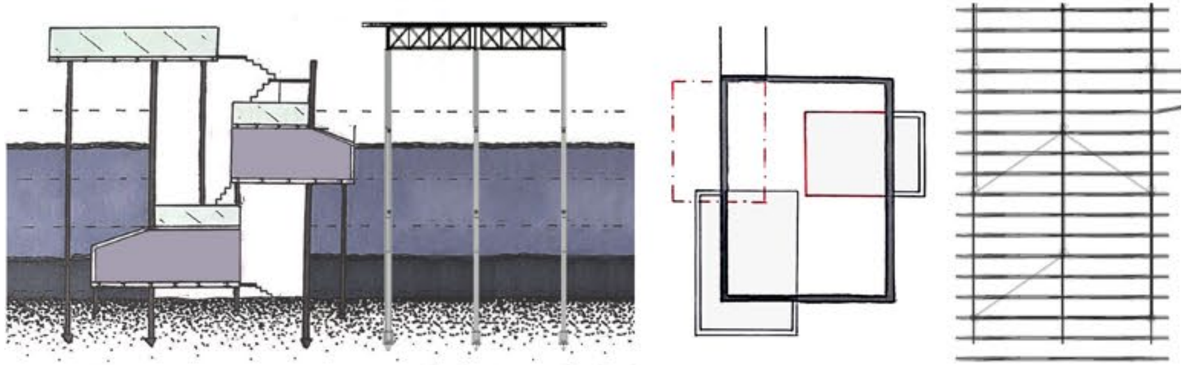


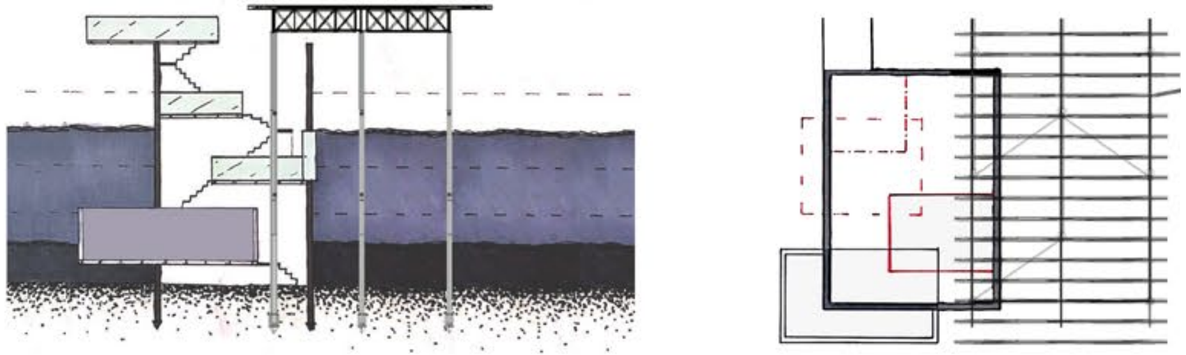


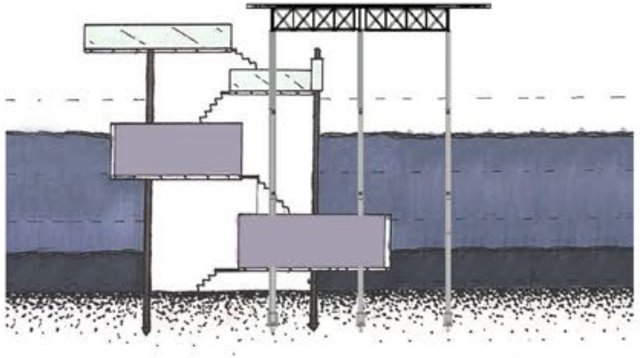
The following drawings will show the new developments in Plan View and Section from the South looking North (towards shore). These designs have been constructed to fit either around the pier remains or allow them to actually travel through the cofferdam itself. The idea to keep the cofferdam as a long-lasting feature makes the designing much easier, in terms of material palettes, as well as designing a structure which will withstand elements such as pressure, erosion, the tide etc. The following developments will show how the same cofferdam space can be altered to house an underwater restaurant (which will go outside of the cofferdam itself), as well as how the viewing platforms could differ. I could incorporate the West Pier Columns into the structure, however the idea of building a pavilion which is so close yet does not touch the West Pier at all really fascinates me.

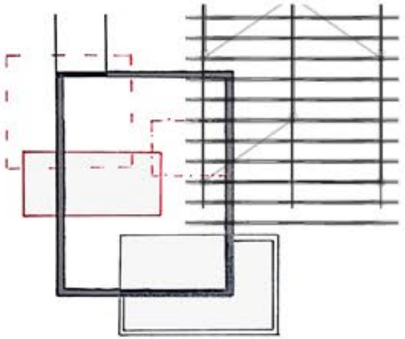


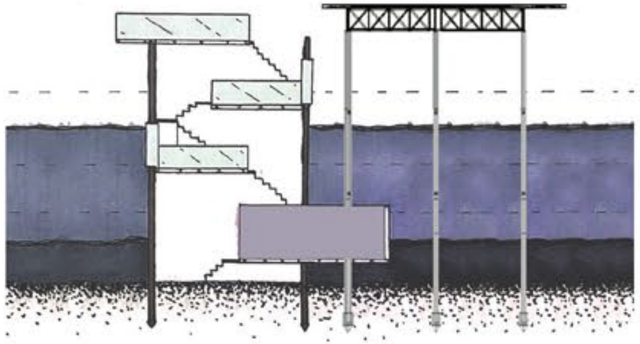


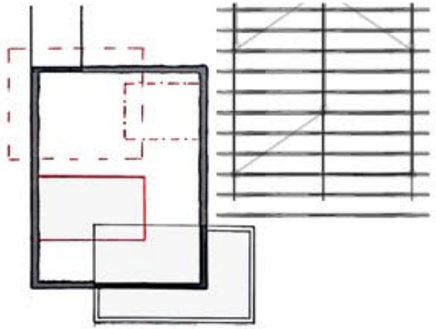


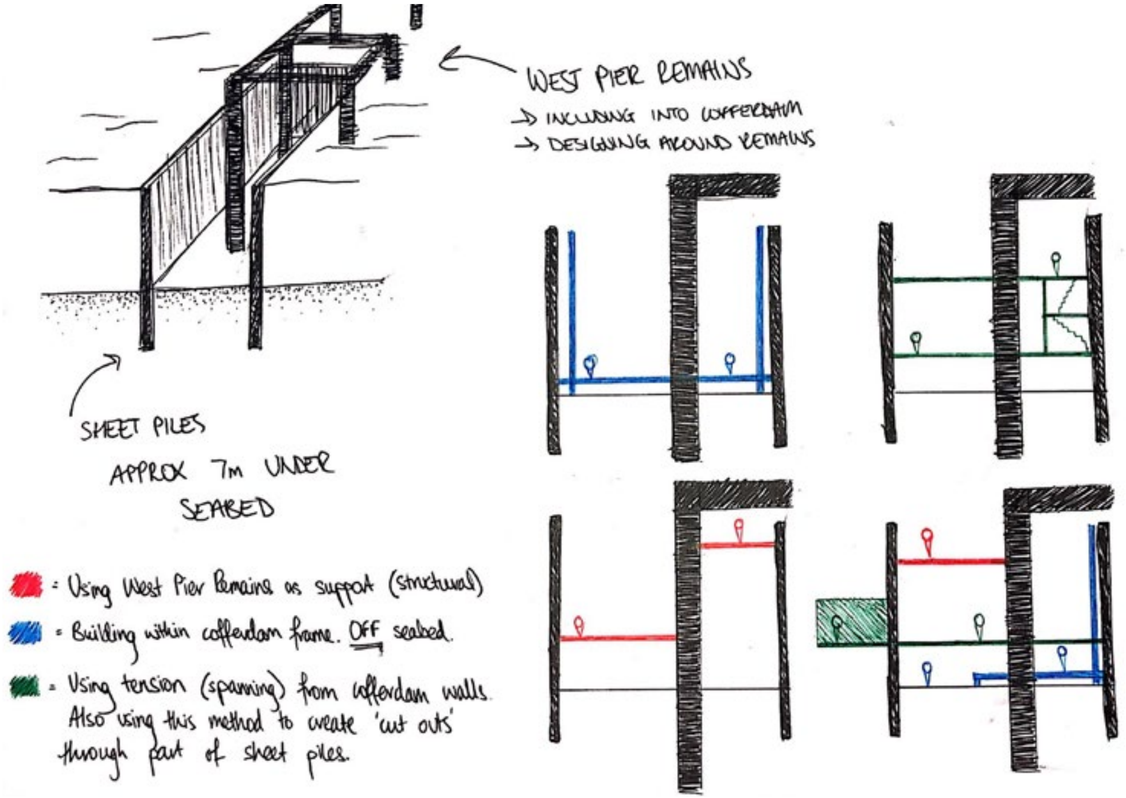






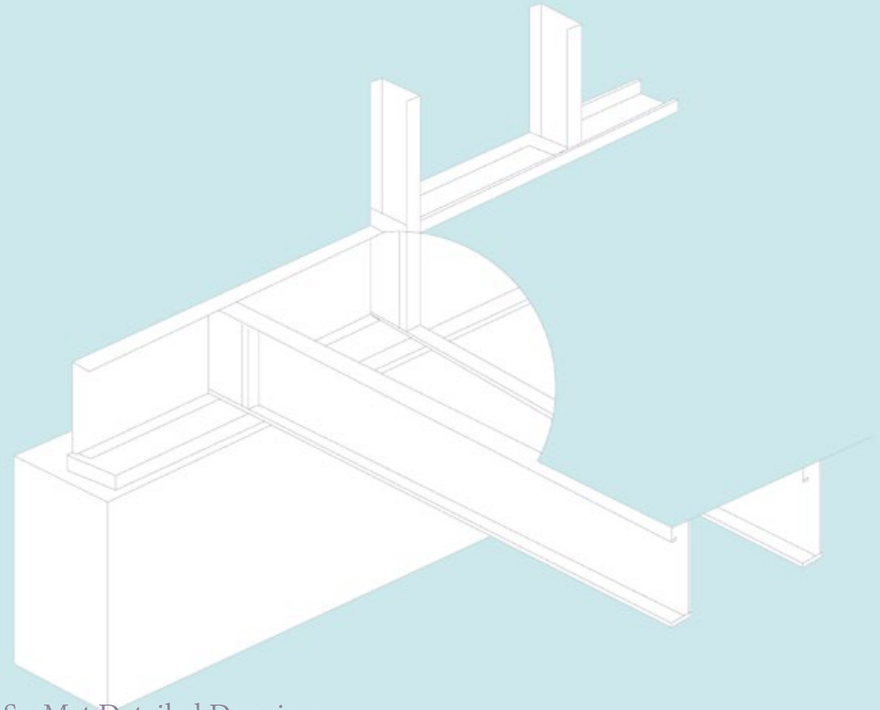






1:100 Scaled SysMat Detailed Drawing

Plan of Cofferdam Sheet Piles, used to stop any water from entering the space by becoming a barrier.
(This example shows the glazed window elements which will be used as window ports for the passing visitor to look out from. These elements will need to be reinforced to ensure stability and strength to the remaining load).

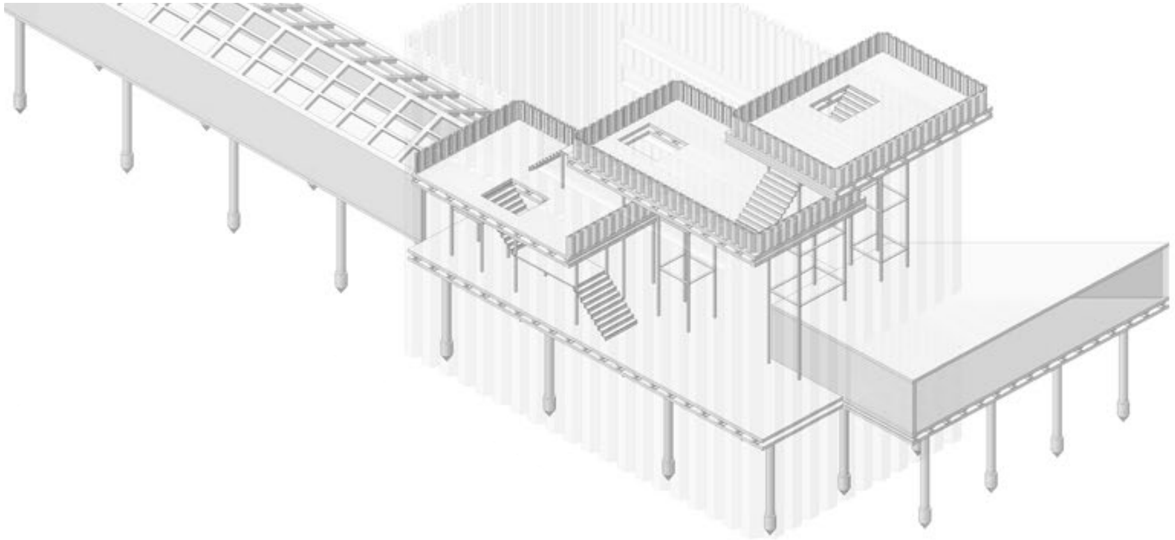


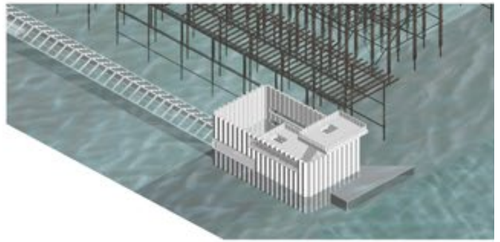
1:10 Scaled SysMat Detailed Drawing

Steel Joist to Concrete Details

1:10 Scaled SysMat Detailed Drawing

Steel to Concrete Connection

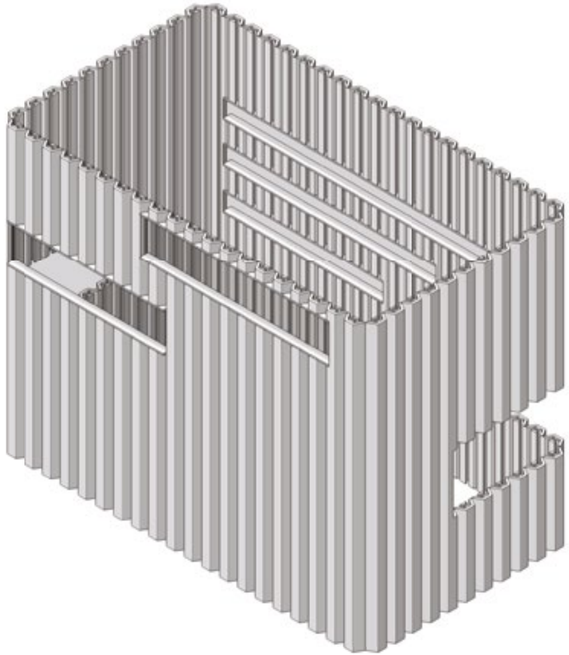




SysMat Detailed Drawing

Cofferdam Wall - Final Design - Axonometric Drawing

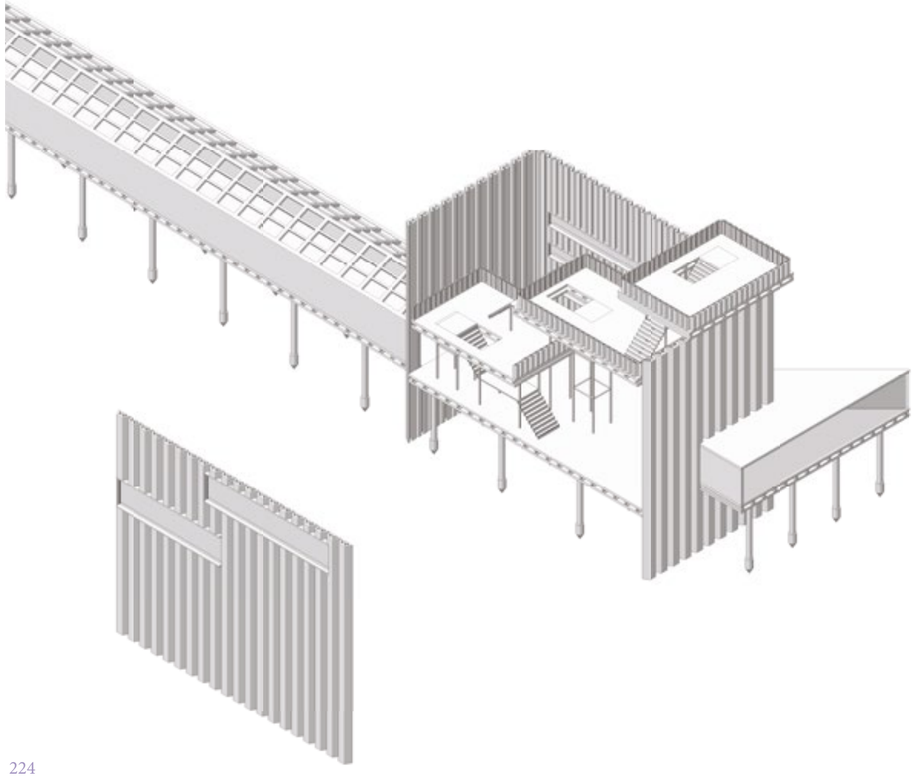
Lower image shows pavilion within context & position next to the south of the West Pier

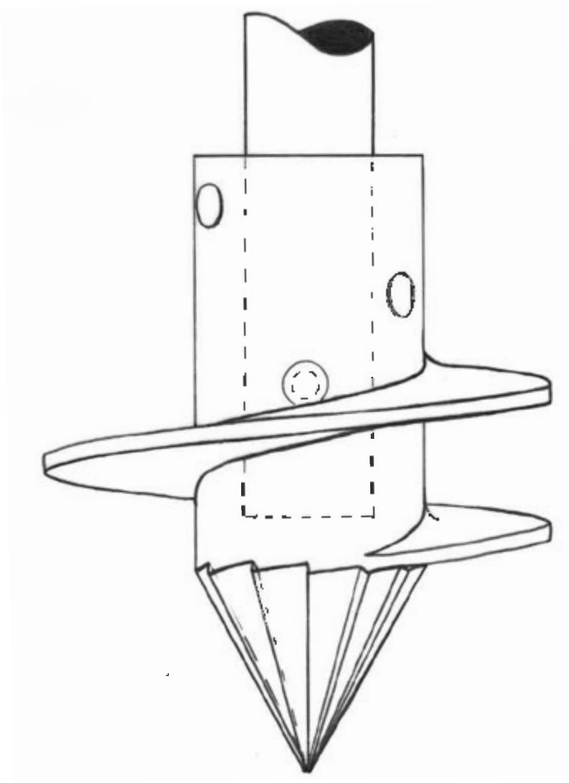


1:200 Scaled SysMat Detailed Drawing

Cofferdam Wall - Final Design - Axonometric Drawing

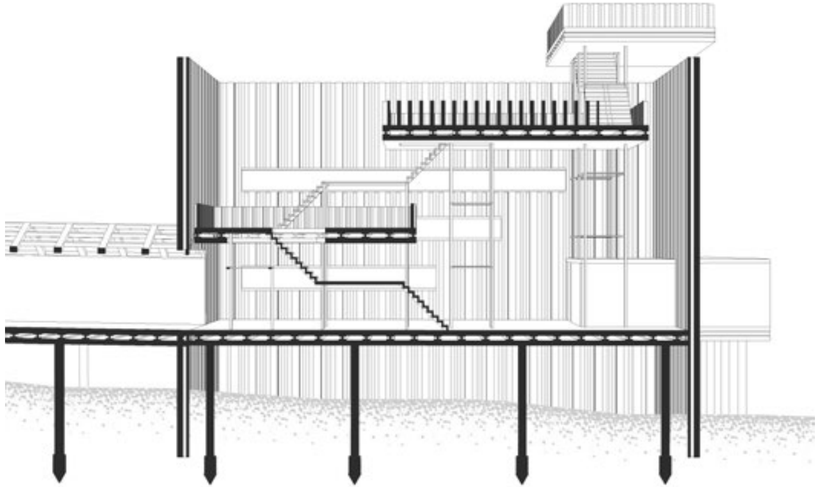
Scale 1:200

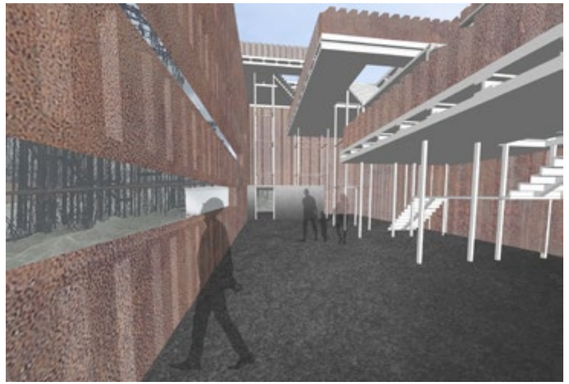


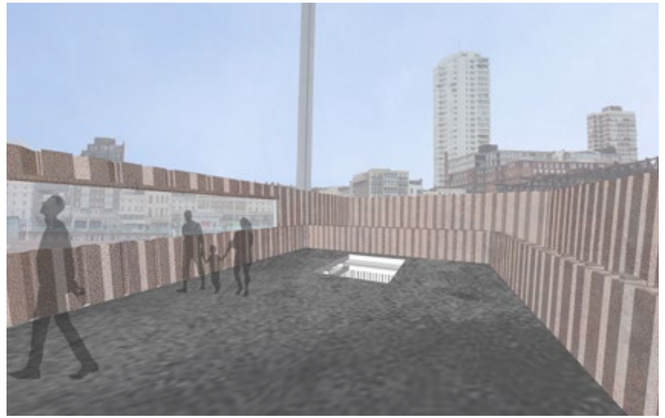


1 : 5 Scaled SysMat Detailed Drawing

Screw Pile Details

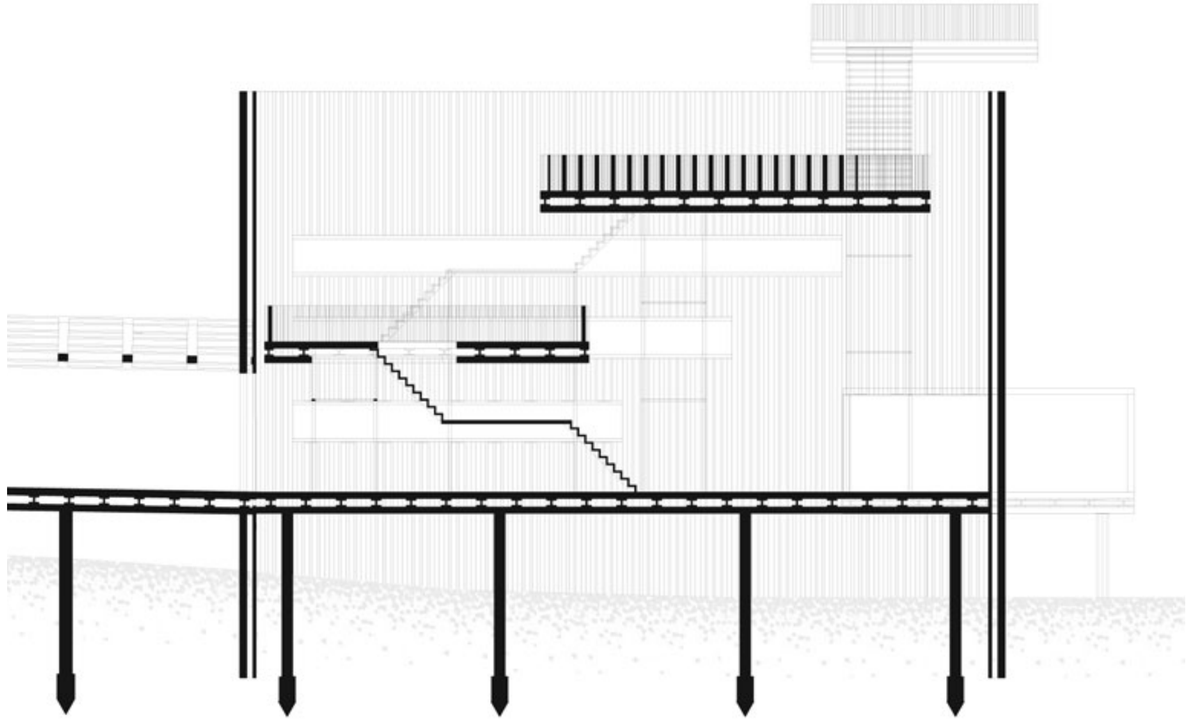


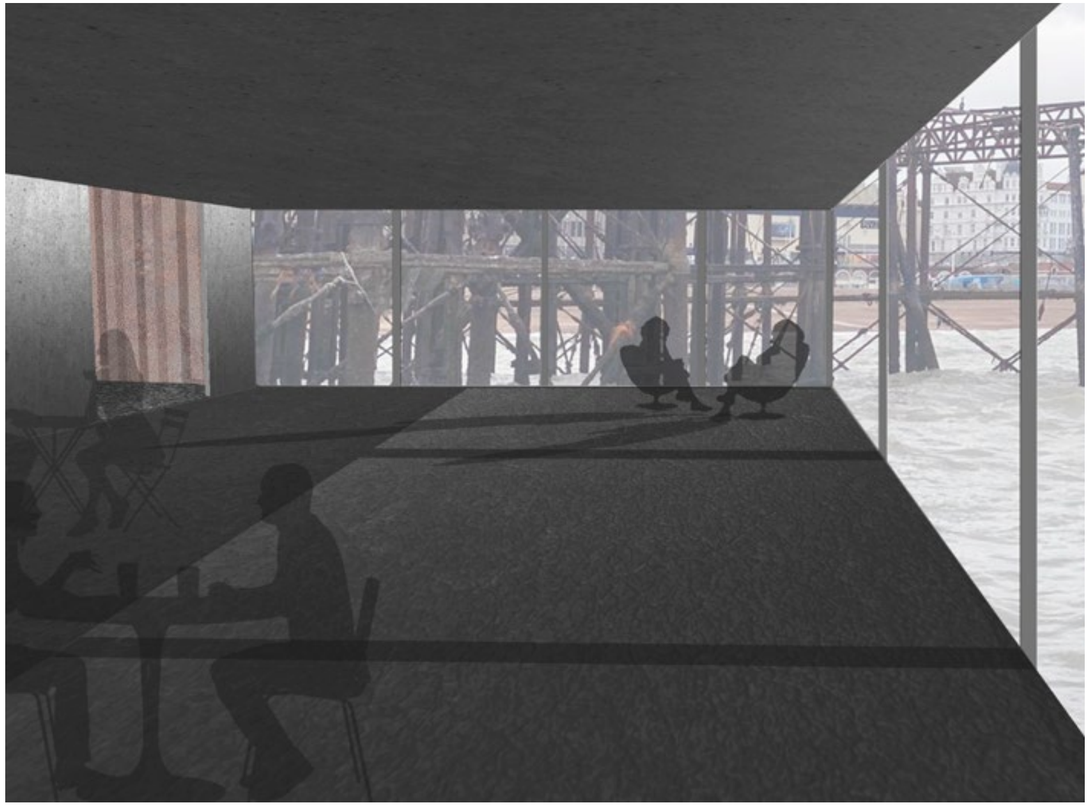




The perspective section above, shows how this space will look. The collages to the side give a better understanding in terms of materials and what the aesthetic and experience of the space will include. These collages are a bit more detailed in terms of context and surroundings, however, does not provide much detail into systems and materials.

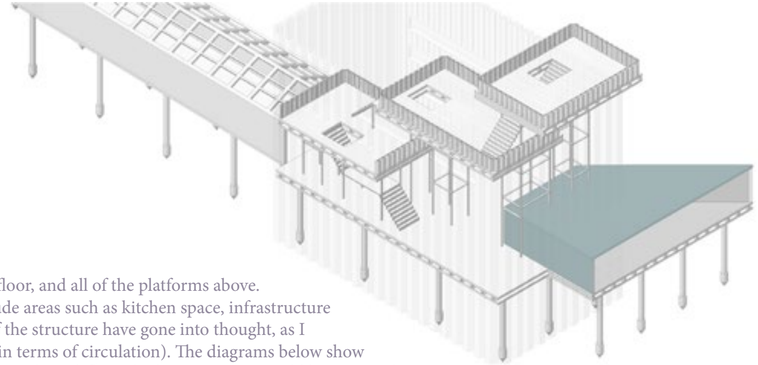
The underwater restaurant will be inside the space on the ground floor shown within the perspective section, the size of this restaurant is about 10m x 7m, therefore will not be that big in size, but will seat approx. 20 – 30 people. The other remaining floors will be used as viewing platforms, which will allow visitors to view the surroundings from a different perspective. As the tide will be rising, certain elements (windows) may become submerged, therefore will be hard to view anything. However, this tide rising element could also be seen as intriguing. As sense of being underwater (however still within an open space). The West Pier will be behind the structure (in the image shown) and will be at a height where a temporary bridge or access point could be created onto my pavilion, connecting it to the neighbouring activities and festival. Providing an alternative journey/route for the visitors occupying the space.



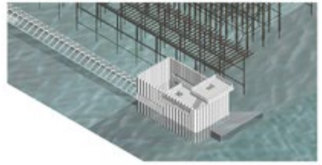


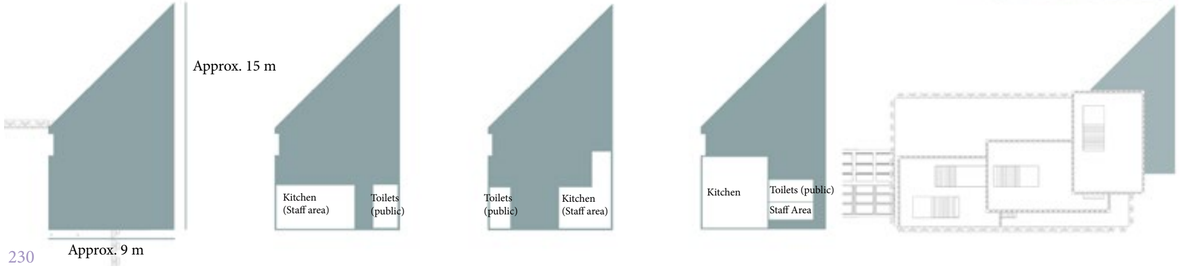
Public & Private Spaces

Further Developments



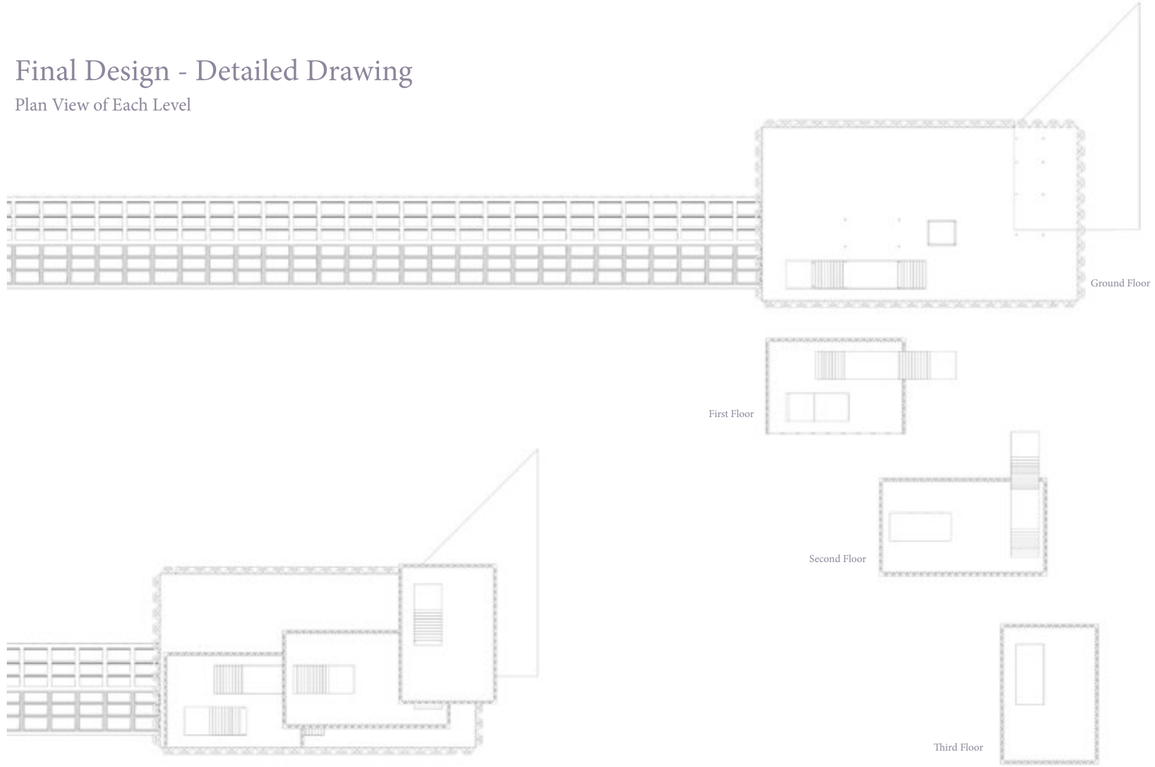
The Public Spaces will include majority of the ground floor, and all of the platforms above. The areas which will need to be made private will include areas such as kitchen space, infrastructure (toilets etc) and staff areas. These particular sections of the structure have gone into thought, as I wanted to figure out where they would be best suited (in terms of circulation). The diagrams below show the underwater restaurant in different formations, showing how differently the same space could be occupied, to better suit the programme and the required spaces. The next steps I had planned were to draw out in plan a few different circulation diagrams, displaying what areas would be used more, (due to particular viewpoints etc), and what areas will be used least. This can be seen on the following page. This will help me get a better understanding of how the spaces will be occupied (circulation/flow).





Final Design - Detailed Drawing

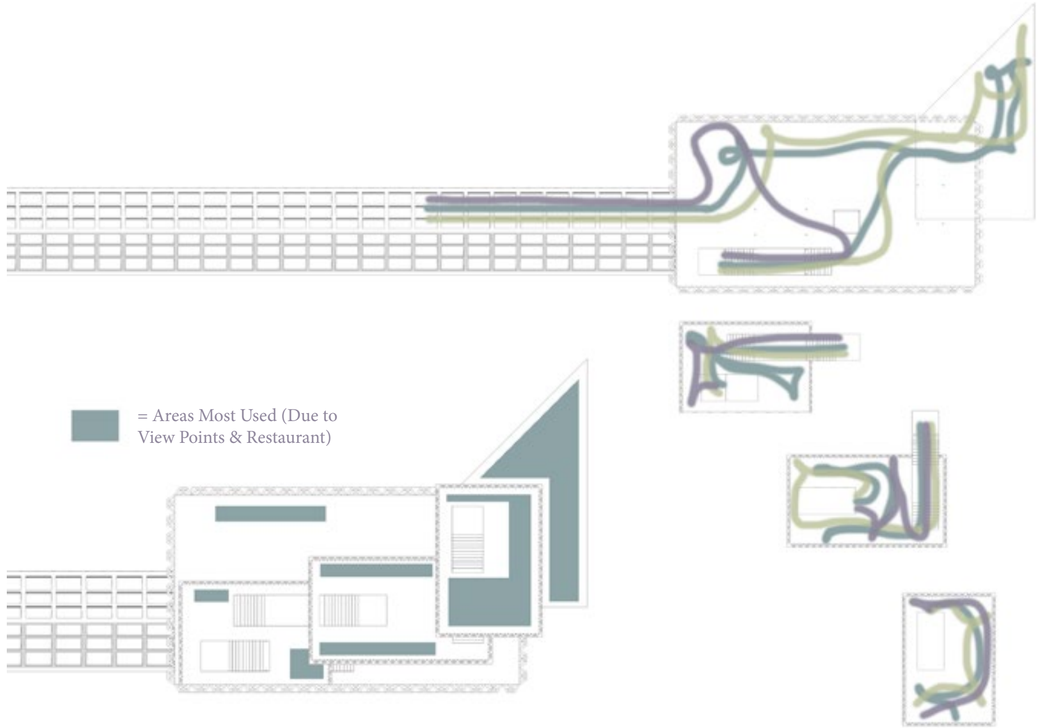
Plan View of Each Level



Spatial Sequence

Further Developments - Circulation (Flow) & Threshold Diagrams

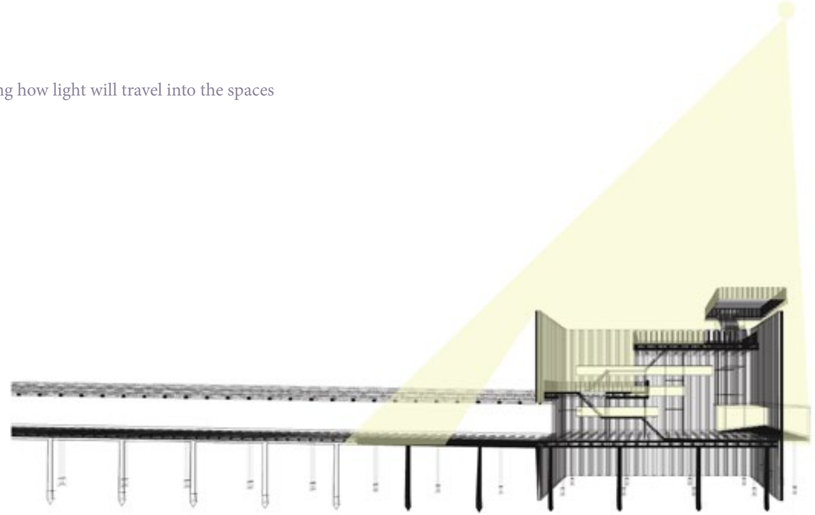
The Spatial Sequence / Circulation diagrams shown on the following page give a better understanding on how these spaces will be occupied. The coloured lines represent movement throughout these spaces and show in particular the areas which will be used most (due to nearby viewpoints, or the underwater restaurant. Overall these diagrams are extremely useful to create as they allow me to get a better understanding of how the space will be used, as well as whether all particular elements are in their most suited positions. From my design I believe the restaurant is positioned in an area where that would be one of the first areas which a visitor would notice/see. Therefore, the appeal and aesthetic to this part of the structure will need to be eye catchy or inviting. The viewing platforms above have provided areas which can be used to get a better look at the surrounding context (Brighton West Pier & Promenade). These viewing platforms are positioned in a particular way to take the visitor on a journey / route around the cofferdam, and view it (as well as the surrounding context) from all aspects. The next steps I have planned to do are to research into light travel, therefore figuring out how light will be travelling into these particular spaces.



SPATIAL SEQUENCE - CIRCULATION

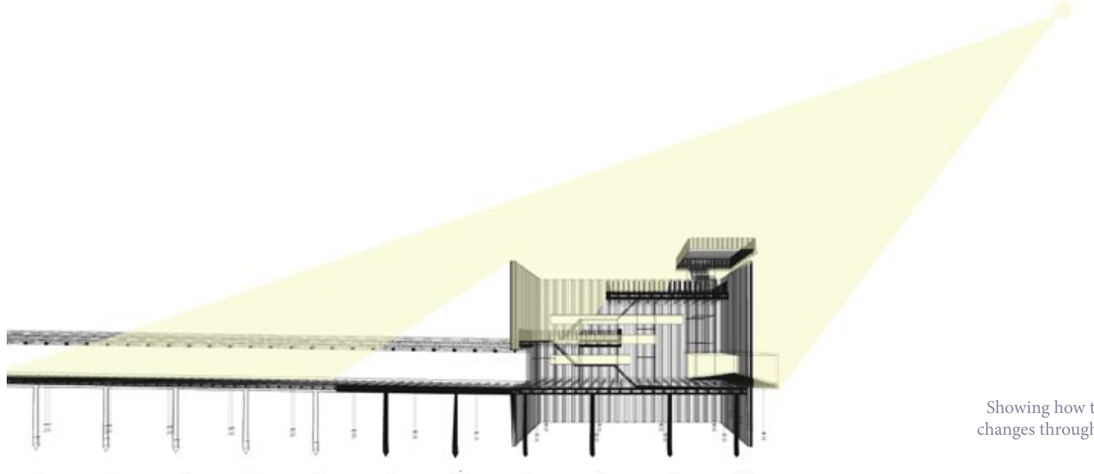
Light Travel

Further Developments - Diagrams displaying how light will travel into the spaces



Highest Point in the Day

The light travel diagrams shown below are displaying how the sun path will travel through these various spaces. As there is no immediate obstruction (other than West Pier remains) there is a lot of direct sunlight which will naturally light up each space. I planned to make use of this element when deciding to keep the cofferdam (sheet piles) in place. The fact is no roof is also providing a lot more natural sunlight, however the raised platforms will obstruct certain parts within this structure at particular hours during the day, as shown in these diagrams.

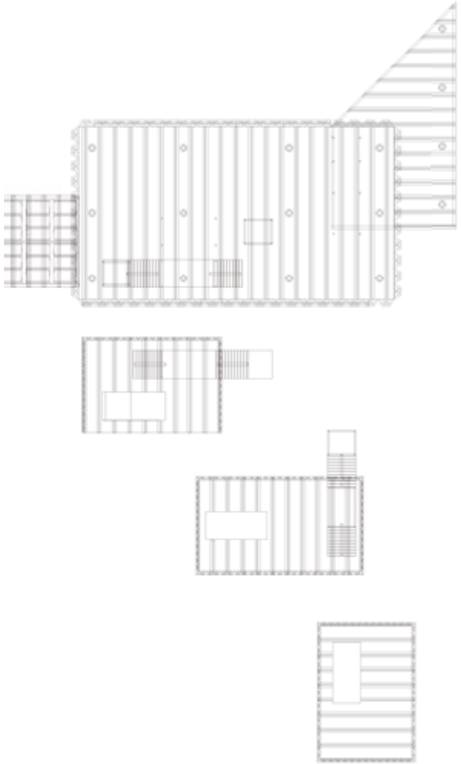


Showing how the sun path changes throughout the day

LIGHT TRAVEL

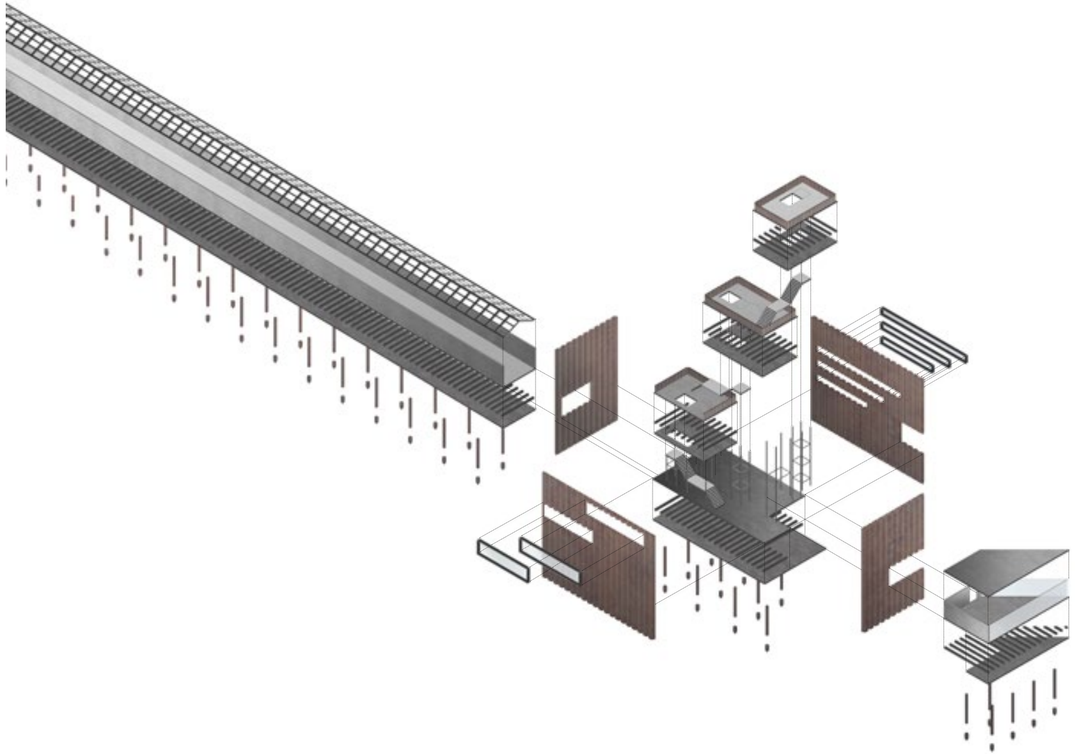
Organisation & Layout

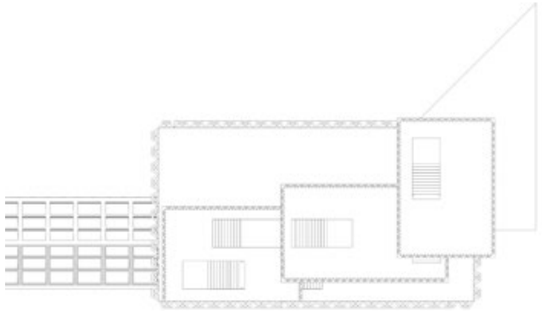
Further Developments - SYSMAT MATRIX - EXPLODED AXO

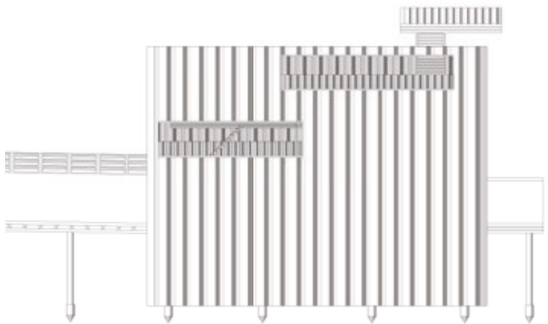


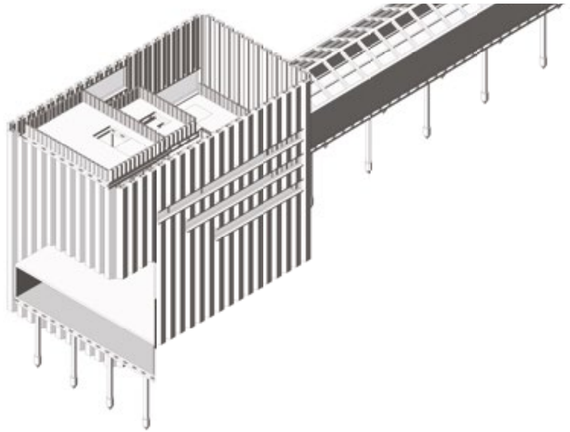
These various diagrams (plan view) show the structures frame. This is displaying how I plan to use steel joists spanning across each raised platform (the ground floor using the sheet piles as support). This method of support will be the most suitable, as well as providing a stable foundation to walk upon. The diagram also shows where the columns (connected to the screw piles) will be positioned among the ground floor. This is to ensure the floor is levelled and to add more support by screwing into the seabed. After tutorials with various SYSMAT lecturers I believe it would be a better decision to remove some of the columns within the cofferdam as it would be much easier (and cheaper) to use the sheet piles as a support mechanism. Spanning across each floor was a method used to give the most support to this structure. The underwater restaurant will extend out (of the cofferdam wall), to allow an up-close and personal viewpoint to the West Pier. This part of the structure will become submerged and create an underwater experience.

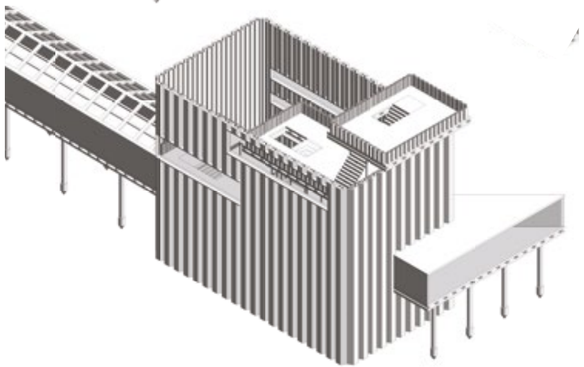
The exploded drawing to the right-hand side forms part of my SYSMAT MATRIX task, which involves pulling the structure apart and seeing what exactly it is that creates it. This drawing gave me a better understanding into what particular parts and elements hold up my pavilion, in terms of frame, structure and skin. The Corten steel material palette from the sheet piles became an important aspect to this design, as it is one of the larger features. It draws most of the attention, therefore I decided to work with it and not against it. Overall, I enjoyed this SYSMAT task as it allowed me to research further into how my pavilion would actually be constructed. Although there are small changes to be made to this design, I am pleased with the outcome of the exploded axo task.

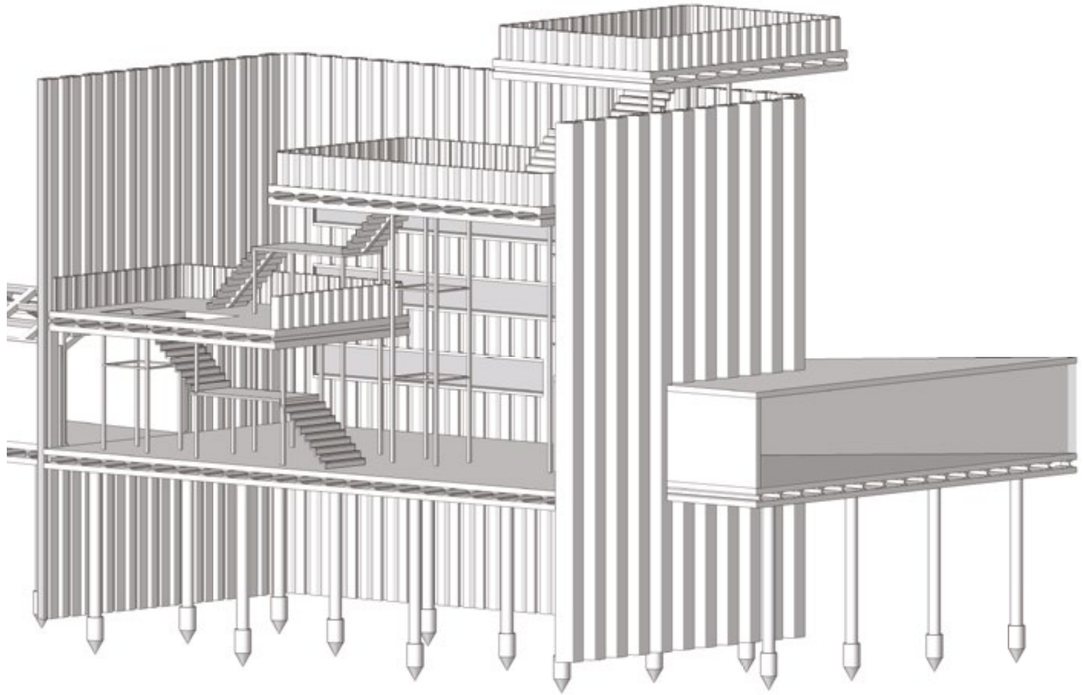












FINAL DESIGN DEVELOPMENTS

Critical Analysis

Final Conclusion of Project as a whole

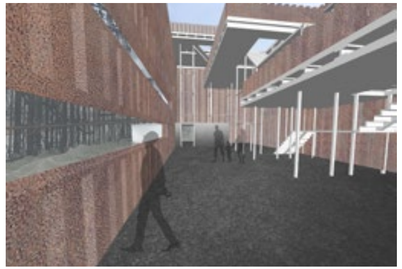
Brighton's West Pier is an exceptional seaside pier. Although closed and abandoned to the elements, miraculously it still survives as a symbolic part of the seaside in England and enduring the feature of Brighton seafront. Our task for this semester was to initiate a theme within our project, something that resembles 'Britishness'. The idea was to create a pavilion which simply advertises our specific theme for the upcoming Festival of Britain 2022.

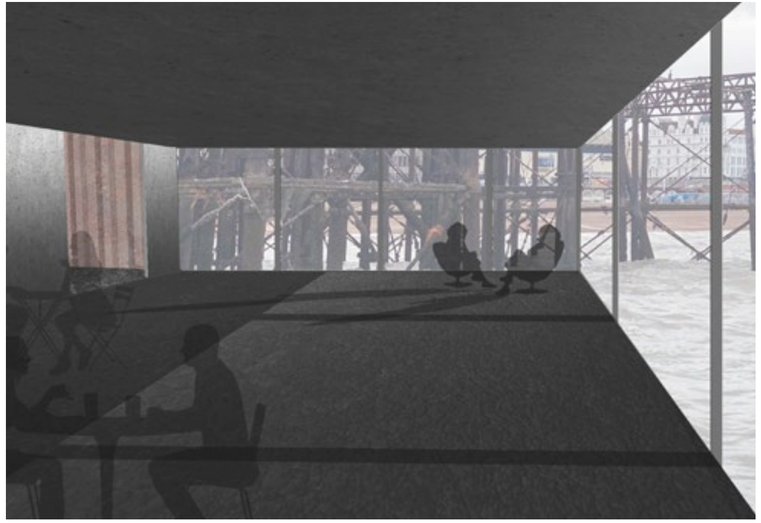
My theme is 'Seaside Entertainment' and what it is that brings people/tourists to English Seafront. It's a place which draws people in, with exotic entertainment leisure for all ages, as well as beautiful views, when the weather is pleasant. However, in recent years there has been an extreme decline to the amount of people going to the seaside (due to rise in pay, as well as decline of fight prices). More people are taking the time to travel abroad however develop a larger carbon footprint, due to the C02 emissions. Therefore, to reduce this, a new attraction needed to be designed. This would celebrate Britishness through an eye-catching and unique design, which would recreate seaside entertainment for the English Coast, as well as provide an intriguing pavilion within the upcoming Festival of Britain 2022. The attractions will be a way to draw people in, and it will allow the people to have a unique experience within a place they might not normally consider to be the perfect luxurious holiday destination.

I decided to design an Underwater Restaurant as I believed this would be the perfect opportunity to bring people together. The festival as a whole (studio) has many activities and an Underwater Restaurant provided a new dining experience, one which would not normally be experienced. The opportunity to design something eccentric and nostalgic was exciting to me. I decided to design the underwater tunnel to provide a nostalgic effect, an experience where the visitor would walk down a long tunnel (leading to the cofferdam), which would re-create the promenading experience from the original West Pier. The idea that the waves would roll over one's head (due to tide) seemed extremely exciting and appealing to me therefore that feature was included into the final designs.

I decided to look into steel and concrete connections, as well as using a lighter material such as Elm wood (used to create previously built Piers) or Plywood, as the outdoor spaces will not need to be as water resistant. This will be due to the fact that the cofferdam wall (sheet piles) will remain. This design was lately decided, however I planned to use them to my advantage and to a sustainable element. The design itself uses its structure and frame as the main appeal and attraction (I.e; it's not shying away or hiding aspects of its frame). This structure reveals the elements and how it is built as that's what makes it unique and appealing.

As no water will be entering this space, the use of a lighter material will not only be much more cost efficient (compared to concrete etc.), but also of different style, and could be in complete contrast to the remains of the West Pier (Cast Iron), or surrounding context.





As the cofferdam itself will be used to hold out the water, a strong supporting system inside needed to be required, to remain frame and shape, withstanding the tide etc. The sheet piles will go within the seabed and will hold up the other elements with steel joists spanning across the cofferdam. This method of tension provides a lot of support and stability, meaning the structure would remain form.

The idea of using what will remain (construction wise) and taking that to my advantage to design something within was one of the better design decisions. The rust and aesthetic from the Corten steel sheet piles were used in my designing methods as well (other elements to the pavilion). The repetitiveness in sheet piles were taken into account and used again for the balcony pieces.

As a restaurant, I could imagine the dining experience to be unique and completely different due to the surroundings and the way this structure was put together, therefore material wise if I had to change anything else, I would contrast slightly more with the materials. I used a lot of glass within the restaurant (not shown in this drawing), however this could be altered to reduce costs or to be more sustainable and efficient.

The next step I plan to do after this will be to create and finalise the drawings, best showing the particular spaces. Through hybrid drawings, perspective sections, and exploded axos, I plan to get a few more detailed drawings produced, which will better explain the programme, context, various construction details and inhabitation.

Overall, I am pleased with the outcome of this pavilion. I believe I managed to learn, and get a better understanding of how exactly it would be constructed. The pavilion itself will be a suitable fit within the Festival of Britain 2022 and will run alongside the other attractions. If I were given a chance to redesign some aspects, I would look into changing the tunnel style and creating little off ports (viewing rooms etc), to provide another rest point, and opportunity for visitors / tourists to explore. I would also look into designing a temporary bridge structure to connect the west pier to the cofferdam, allowing the visitors occupying the space to travel between. Another element I would research into would be designing around the west pier itself. As I planned to keep this structure for longer than the estimated time (end of festival), it would eventually outlive the West Pier remains, (approx. 50 years), therefore possibly becoming the New Pier experience for Brighton Beach. I believe this pavilion would benefit the seafront and Festival of Britain 2022 immensely and would bring back tourism and more visitors to the English Coast, therefore in result reducing C02 emissions.

The opportunity to work as a collective studio during this task was greatly enjoyed, and although corona may have ended this experience shortly, I am extremely pleased with the outcome of my pavilion and the Festival of Britain 2022 studio (BI) as a whole.

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