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10/04/2018

Swansea Foreshore Ice-Cream Parlour desk top study



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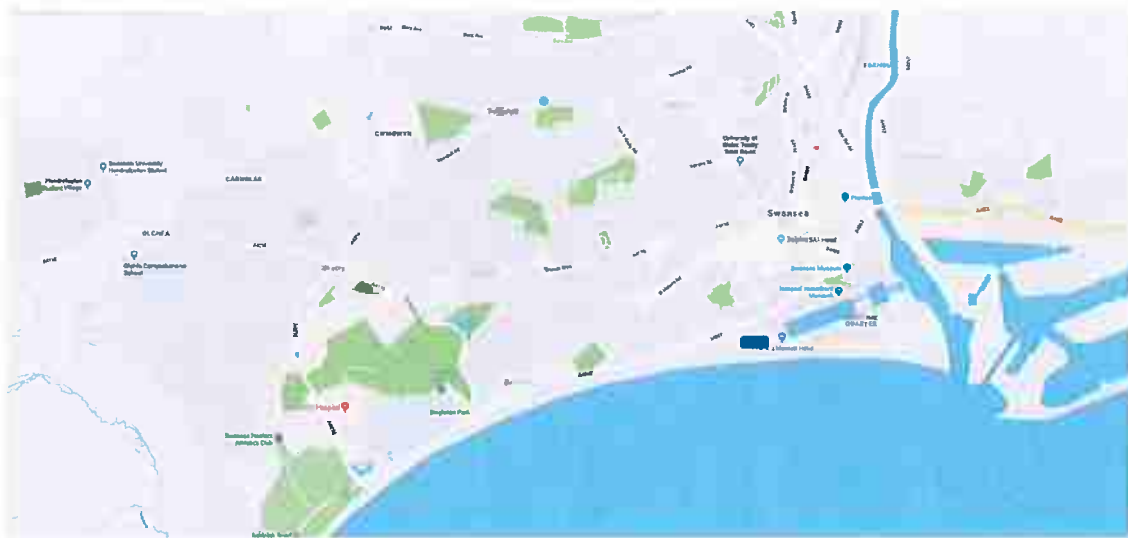
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1) INTRODUCTION

This desk top report is for the new ice-cream parlour / restaurant in between the Civic Centre and the Marriott Hotel on Swansea seafront. This project will be extremely difficult to manage as it will be based alongside the Swansea seafront promenade which is highly populated during the summer months. The promenade is aprox. 4m in width which and we are 1m in from the edge of the promenade as shown in pictures later on in part 3 of the report.

2) Maps



This map of the Swansea seafront is taken from google maps. The compound will be located on the blue square. This is ideal location for an ice cream parlour / restaurant as there are many hotels and other very popular places in this area. It is also a walking distance from the Civic Centre which is ideal as the civic centre has a library and chambers, Once the ice cream

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parlour and the restaurant is built we would get increased foot traffic from the public over lunch and after work.

This map is what Swansea seashore looks like today. Below are maps taken from past years to how the land used to be used and if we were to expect to find any unusual findings when carrying out our site survey.



There are minimal differences between the map now and this one from 1902.

Sea level has risen significantly, this is worrying factor as the project is located so close to the sea.

View: Sheet 27 - Swansea - Bartholomew's 'Half Inch to the Mile Maps' of England and Wales, 1902-1906

This is more detailed map of the infrastructure that was in place in 1952. There are trams and stations all around the south docks. This has always been a populated area in Swansea as the docks have only closed in 1971 when it was stopped for trading and is now used as a private dock yard.



View: Sheet 153, Swansea - Ordnance Survey One-inch to the mile maps of Great Britain, Seventh Series, 1952-1961

3) Aerial photographs



This aerial view of the site and its surrounding clearly shows that it is located between to extremely busy sites; Civic Centre and Marriott Hotel. The car parks will need to be controlled as the compound takes up a significant amount of both the civic centres and the Marriott's. Another issue which will need to be addressed is the public footpaths, the compound is going to eliminate usage of 2 footpaths.

4) Previous development / Planning in place

BBC Wales online reports that there is to be re-development on the Civic Centre.



These blocks of houses will be replacing the civic centre on Swansea seafront. The civic centre has been Swansea's headquarters since the 1980's according to wales online.

It is reported that a "sky path" will link the bay to the city centre. This will be influential in creating Swansea into a tourist attraction.

This new development is next to the project we are hoping to run. It may affect certain aspects of our build. However, switching the Civic Centre with high rise flats and a Sky path connecting the city and the bay will only populate and improve the area. This is exactly what we are looking for when building the new ice-cream parlour.

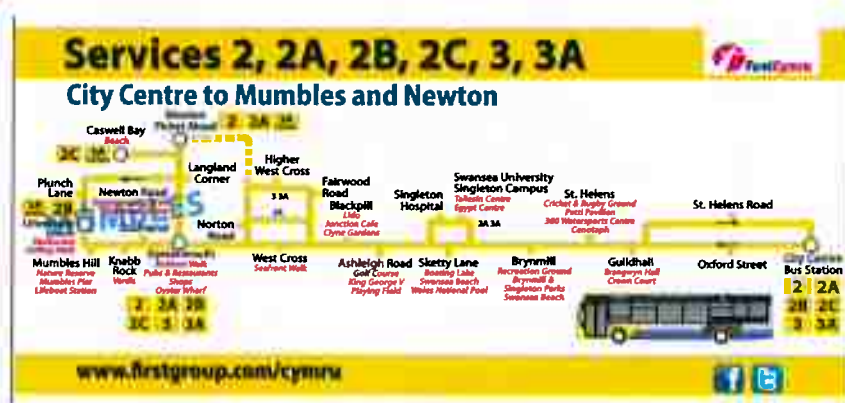
The last construction activity on these lands are the Marriott Hotel which we are connected with and the Civic centre which we have had permission to build on their car park.

5) Services



This map is taken from Swansea county councils website of attractions down the Bay. This shows exactly what is surrounding our potential new building. Oystermouth road is one of the busiest roads in Swansea as it links Swansea and Mumbles. The Mumbles has really become an attraction for an excellent evening to have good quality food and drinks alongside the sea. We are trying to create a similar vibe by building this restaurant on the edge of Swansea Bay.

SA1 has also recently created the same atmosphere amongst people. It is the new place for tourist and locals to enjoy music and drinks along with quality food. Evidently the market for this type of building is definitely there.



This image is taken from the first group website. This is where the buses stop across Swansea. As you can see it stops right outside of the marina on Oystermouth bay. This is a positive aspect for the new project.

6) Location / Access

Civic Centre

- The Civic Centre is the principle administrative centre for Swansea council.
- Inside the building is not only the council chambers and offices it also has a public café and library.
- This building is used constantly all year round.
- The building has a modern shape however looks quite run down and old fashioned.



Access to the site will be obtained via these entrances. The one on the left will be for all the plant, welfare and contractors to access site and the one on the right will be for the Marriott hotel for their car parking.

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- 1) <https://www.walesonline.co.uk/news/wales-news/swanseas-seafront-regeneration-development-moves-10609785>
- 2) Swansea county council - pocket map of attractions.
- 3) <https://www.firstgroup.com/uploads/maps/2-3web.pdf>
Bus stop locations across Swansea

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Swansea Foreshore Ice-cream Parlor Onsite Report



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Summary

An in-depth survey report on the following area in between the Civic Centre and the Marriott Hotel. Due to resources the survey was limited and further investigation will be needed across all of site. The car parks and the promenade are the main issues which will need addressing before work commences.

Above Ground Findings

Topography

- In all 3 of the site photos the majority of the site location is covered in vegetation and has slight mounds as shown in image 1.0.
- This will all need to be removed and flattened before any works can be started.
- When clearing the land, a professional survey will need to be carried out for assistance on the best ways to clear the land.



Image 1.0

Image 1.1



Image 1.2



- In image 1.2 there is a picnic area on a flat tiled area which is an example of hard landscaping on the site. A professional company will then come in and flatten all the land out ready for a more detailed site investigation ready for works to start.
- Throughout the site there are both soft and hard landscapes that will need to be cleared. This information will be relayed back to the contractor who will be doing the job.

Hazards

- As shown in image 2.0 there are street lights all along the promenade and lighting up both the Civic Centre and the Marriott car parks.
- There are 16 street lights inside the compound which have live underground wiring. To remove these, we will need specialists to survey them and advise the best way to disconnect them from the main underground connections.



Image 2.1



- Image 2.2 shows a public footpath through the middle of our site. This will have to be barricaded off and an alternative route must be located so that people still have access from the main road to the beach front promenade.
- The beachfront promenade shown in image 2.1 runs parallel to both our site and Swansea beach. This is a heavily used walkway as this stretch of beach is extremely popular especially in the summer months. If possible building during the winter will create a lot less issues with the general public.
- On the day of this survey It was noted there was a homeless woman sleeping just behind the vegetation in image 1.0. this will need to be dealt with before the clearing goes ahead. It looked like she had been there a while as there was food rubbish and clothes around her. When walking on the promenade she was hidden. Therefore, a request that a further detailed survey to be done on the designated compound area before any works are actioned.

Location

Access

- The access to the site is from the main road into Swansea, as the Marriott hotel are joint in this project we will be using their car park as access to the site. This allows the site to be accessed by all lorry / plant size as there are no restrictions.
- As this is the bigger car park of the 2 welfare and general site set up would be more suitable. This is the Marriott Hotel car park as well so they should be more lenient than the Civic Center as that is a council run building and is extremely busy on an everyday basis.



Image 3.0



Image 3.1

- There are various objects which are located on the perimeter of the Marriott Hotel Car Park, these will also need to be cleared before works started.

Car Parks

- The Civic Center and the Marriott Hotel both have sections of their car parks in the designated site compound for the new ice-cream parlor / restaurant. To make sure both car parks are still accessible to the public. The recommendation is that both car parks are divided in half.
- This is feasible as show in image 4.0 the island in the Civic Center car park will have to be pushed back creating a shorter car park.
- An overflow car park might need to be temporarily arranged as the car park is usual extremely busy.



Image 4.0

- There are two entrances to the Marriott Hotel, the one on the right can be used for public access to the hotel and the one on the left can be used for machinery, plant and general site access. As shown below in image 4.1.



Image 4.1

Promenade



Image 5.0

- The promenade is an extremely busy walkway as it runs parallel to Swansea beach.
- The promenade will have to remain open throughout the works.
- There should be no access from the promenade to the site.
- The promenade should be boarded out to stop anyone gaining access to the site.
- The original walkway has an opening of 6m aprox. This will need to be diverted around the site.

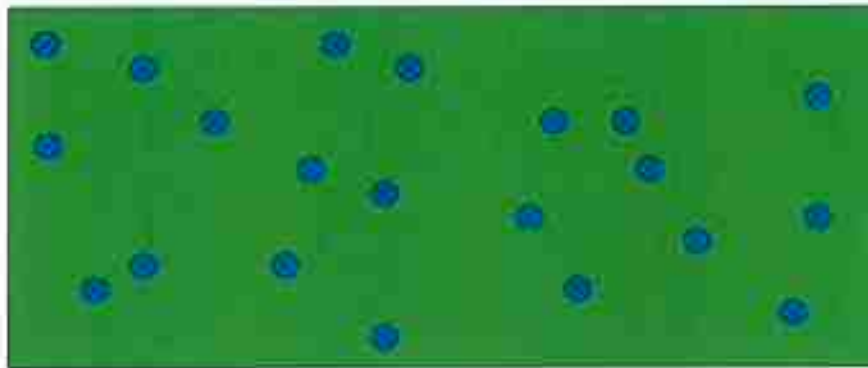
Conclusions

The site should be enclosed to maintain full safety of public as foot traffic in this area is high. Car parks should also be re-arranged and should be in talks with the Marriott Hotel to assist with this. There should be one route in and out for access to the site, this will stop any confusion and will also minimise risk of the site. All trees, bushes and street lights should be surveyed by a professional and removed before the start. The site should be checked for any homeless people camping on site, if any are there they will need to be removed by a professional as it could arise issues when trying to re-house them.

Extensive site survey

Soil sampling

The Soil survey – a soil survey will need to be done to confirm what type of soil is under the site. This will determine the substructure and how it is built. A sample of disturbed and undisturbed soil will need to be taken. These samples will be taken by a soil scientist, they should take samples of the sub soil and top soil as both this information will be crucial when deciding the foundations of the building. They will need to record the soil boundaries on a map to ensure the foundations are correct and are efficient. 2) A random test should be carried out as shown below.



Samples should be 0-15cm deep and 30-60cm at the same location to get an accurate account of what top/ sub soil is on site. When taken to the lab they will test the quality of the soil, permeability, shear strength and compressibility.

Penetration testing

3) the university of CPT released a document describing the different types of penetration testing that should or could be done pre-construction to determine the correct foundations. SPT (standard penetration test) is a test where a 140lb slide hammer is dropped onto the top soil repeatedly from 30 inches above. The sample tube is recorded on how many times it takes for it to be driven 6 inches into the ground at a time. This test should also be taken at random. This standard penetration test will be able to decipher what type of soil it is, if there is any sand or silt in the ground and how far down it is. This test will be very important for this site as there is a beach 8m away from the nearest site boundary.

A cone penetration test will also be extremely beneficial for this site as it is cheap and quick to turn around the results of the subsoil. This will also aid the decision of what foundations need to be used for this project.

Trial Pitting

4) In the geotechnical and environmental consultants review on trial pitting it tells us that they are inexpensive and very reliable. Trial pitting is when a bit of plant will strip back thin layers of the soil until a trench has been created. Each layer is examined and samples are taken for further laboratory testing. The advantage of this is that a large surface area can be tested each day meaning for our site it shouldn't take more than a couple of days to complete a full check according to the environmental consultants. Soak testing can also be done when using this type of testing. Clean water is poured into the hole allowing water volume tests to be taken to see how permeable the soil will be.

An ecological survey would need to be done to as there is a lot of forestry and plants which may contain inhabitants. A professional would need to be brought in to carry this out. If in the case that there is an area that will need to be removed by specialists, this should be priced and carried out professionally.

A flood risk report will need to take place as the beach is only 5m approx. from the site boundary. We cannot rule out that the sea could rise above the promenade walls and potentially flood the site. Therefore, there should be the appropriate precautions in place in case this arose. This is important due to the increase rise in sea level over the last 50 years. There should be a procedure in place for the possibility that there is a flood.

A boundary survey may need to be done to outline where the building is set to be placed and where the site compound will be. This could be detrimental when planning the layout of the superstructure.

A utility survey will need to be done to investigate for any gas pipes, cables and any underground utilities. This will also need to be passed and over seen by a qualified surveyor.

A pre-constriction sewer/ drain survey will be necessary, to firstly not only to find out what is under the ground on site and also to see if they are in full working condition. This will also determine whether we can tap into the Marriott's current utility supplies or if it is limited on site.

5) The site area will need to be checked over by ground and site and investigation services. They will determine whether any of the land is contaminated or has the potential to be contaminated in the future.

References

- 1) https://www.designingbuildings.co.uk/wiki/Soil_survey
1st march 2018 - design building soil survey reports.
- 2) [http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/agdex1341](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex1341)
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- 3) <http://www.vertkcpt.com/blog/in-situ-soil-testing-101#.WtjPXGbMyCR>
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- 4) <http://www.soilslimited.co.uk/files/soils-limited-trail-pitting.pdf>
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- 5) <https://www.southerntesting.co.uk/services/environmental-consultancy/contaminated-land-investigation/>
southern contaminated land investigations

Foundations & substructure for the ice cream parlour

Foundation definition

To safely transmit a load of a structure to the soil – taken from lecture notes

Foundation and footings depend on

- Strength = ability to carry a load
- Stability = the ability to resist excessive movement
- Durability = the ability to last over time: if foundations fail everything fails.

The choice of pile will depend on these three main factors;

- Location and type of structure
- Ground conditions
- durability

Piles

Displacement piles – a displacement pile is when a pile is driven into the ground pushing its way through the soil creating friction on the way down. The advantages of this would be not liable to squeezing or necking, the construction operation is not affected by ground water, it can be driven in long length. The disadvantages of this; they might break during driving, may suffer unseen damage, noise and vibration due to driving may not be suitable for the location and cannot be driven in condition of low headroom.

Replacement piles - this is where the soil is removed prior to installing the pile. Advantages are that lengths can easily be adjusted, enlarging the base is possible and material of the pile is not governed by testing. The disadvantages of replacement piles are that they cannot be used in river or marine structures, cannot be driven with large diameters and concrete cannot be inspected after installation.

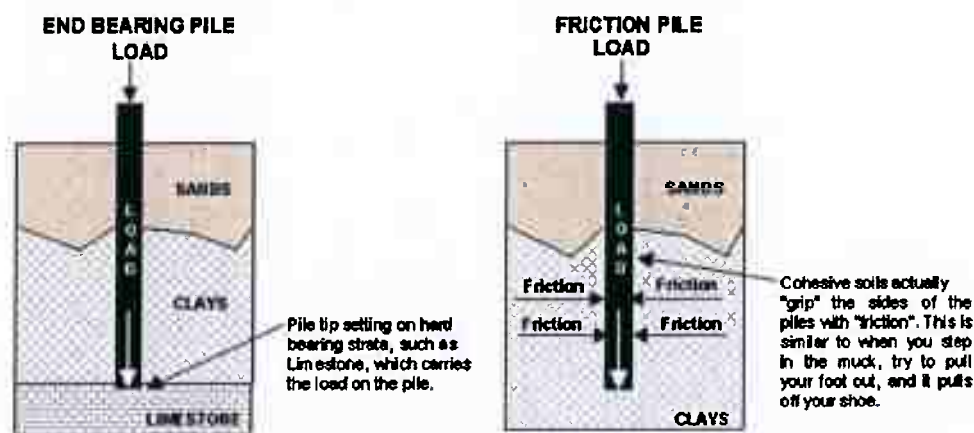
1)for this project a displaced driven pile foundation will be ideal as there will be a lot of weight and downward force needed to create a stable base. Steel is the best option due to the location of the structure being built. A steel pile foundation is used to transfer large superstructure loads through weak, unstable ground. This is the case with this site as it is near the beach, the results of the soil testing and in-situ tests are likely to come back with a large percentage as sand. It is often used for larger structures which this one will be as it will be a total of 3 stories.

Steel tube piles will be ideal for this project. They are used on soft subsoils and are bottom driven with a drop-hammer.

Driven steel piles will be the most suitable for this project. The pile is driven into the soil by a large hammer as machinery. As shown in the picture below taken from the Liebherr website. Liebherr are a qualified contractor of installing pile foundations.



One option would be to use a friction styled pile. This will develop the bearing capacity by the shear stress against the sides of the pile. This is also a reliable method when substructure is weak and unstable.



Common Pile Types

Image taken from the constructor website – the civil engineers home.

An end bearing pile develops most of its load bearing capacity at the toe of the pile. According to design build wiki an end bearing pile transmits its load from the soft strata straight onto firm, dense strata. This therefore acts in the same way as a column. This decision would have to be made after analysing the results of the soil test.

This detail drawing (1.0) has been influenced by data taken from the Design building wiki. Design building wiki are an approved data base of CIOB, CIAT etc. all of these are well respected institutes. This drawing is what would be required on this project.

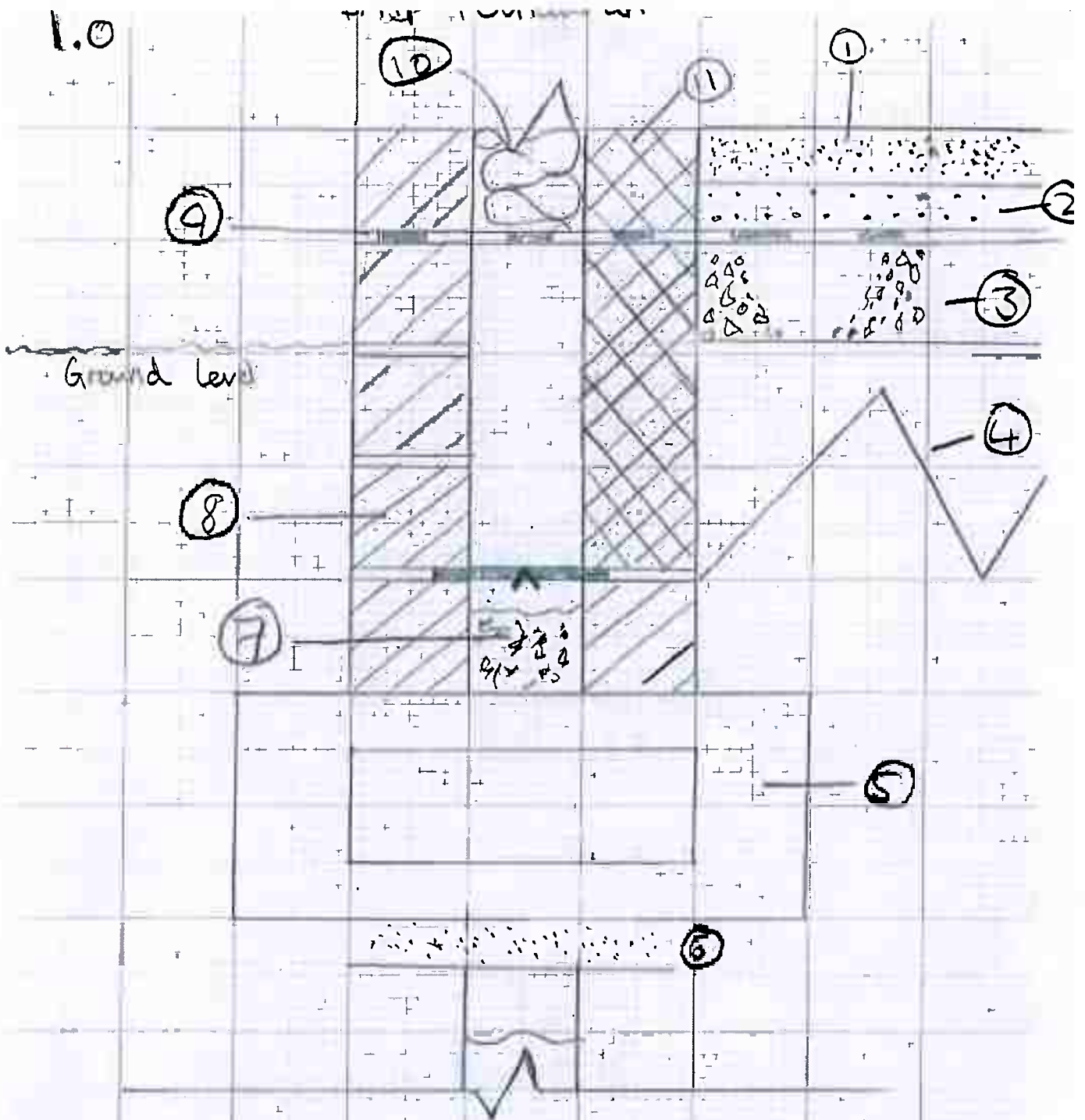
Sketch diagram 1.0. this detail is what the foundation for the superstructure will look like if a steel pile is used.

Drawing 2.0 is the shape of the building that is aprox 300m² with the first and second floor being 150m².

The cost of pile foundations is expensive as they will need to be load tested, cost of the material, construction plan and the cost of an engineer to oversee the construction process.

Other foundations and substructures such as a strip foundation see detail drawing 3.0 maybe possible if they are on a tight budget, there are cheaper options. However, it would depend on what the results are from the soil testing etc. this could only be decided on results and costings of the project.

1.0



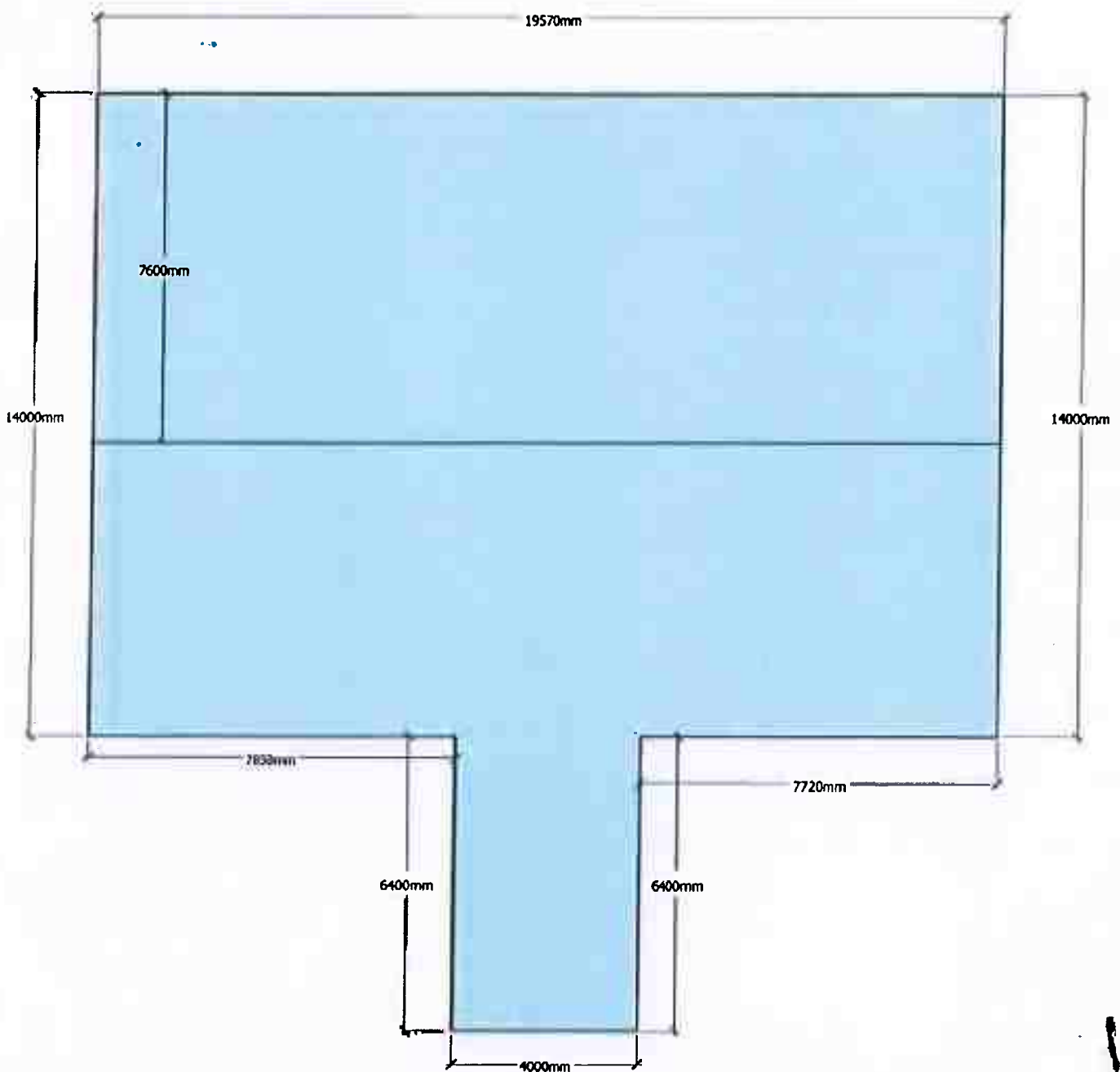
- | | |
|-------------------------------|-------------------------|
| 1) Floor Screed | 6) 40 mm thick Sand |
| 2) rigid insulation | 7) Cavity Filling |
| 3) mass concrete ground floor | 8) External wall |
| 4) Compacted hardcore | 9) Damp proof Course |
| 5) reinforced concrete | 10) Insulation - cavity |
| | 11) Internal wall |

2.0

Layout of the building

300m² ground floor

150m² 1st/2nd floor.



Promenade

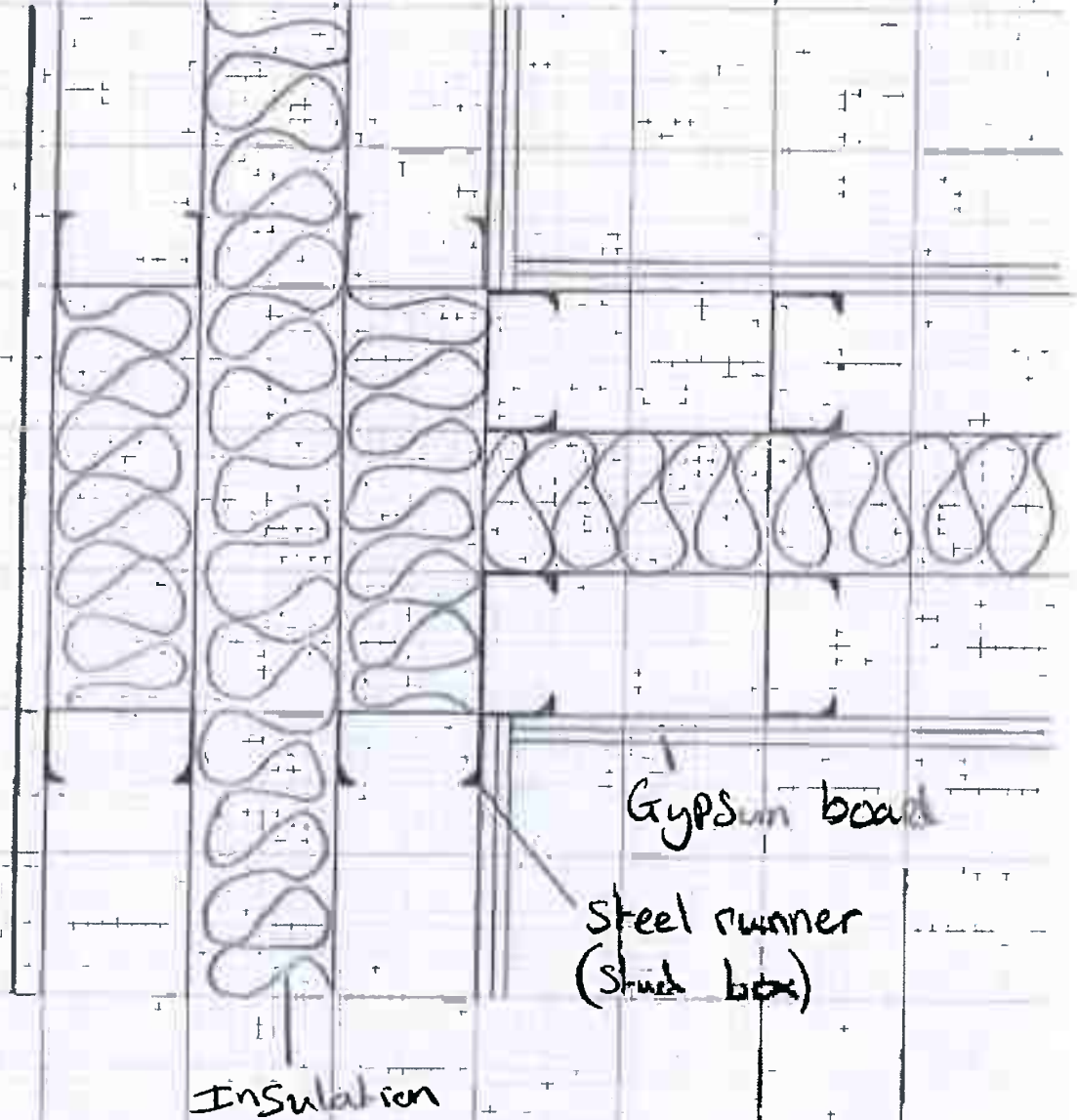
Beach

References

- 1 https://www.designingbuildings.co.uk/wiki/Friction_piles
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- 2) https://www.designingbuildings.co.uk/wiki/End-bearing_piles
design building wiki – end bearing piles – 17th april 2018
- 3 https://www.designingbuildings.co.uk/wiki/Driven_piles
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- 4) <https://theconstructor.org/geotechnical/pile-foundation-selection-based-on-soil-conditions/9461/>
image – pile foundation

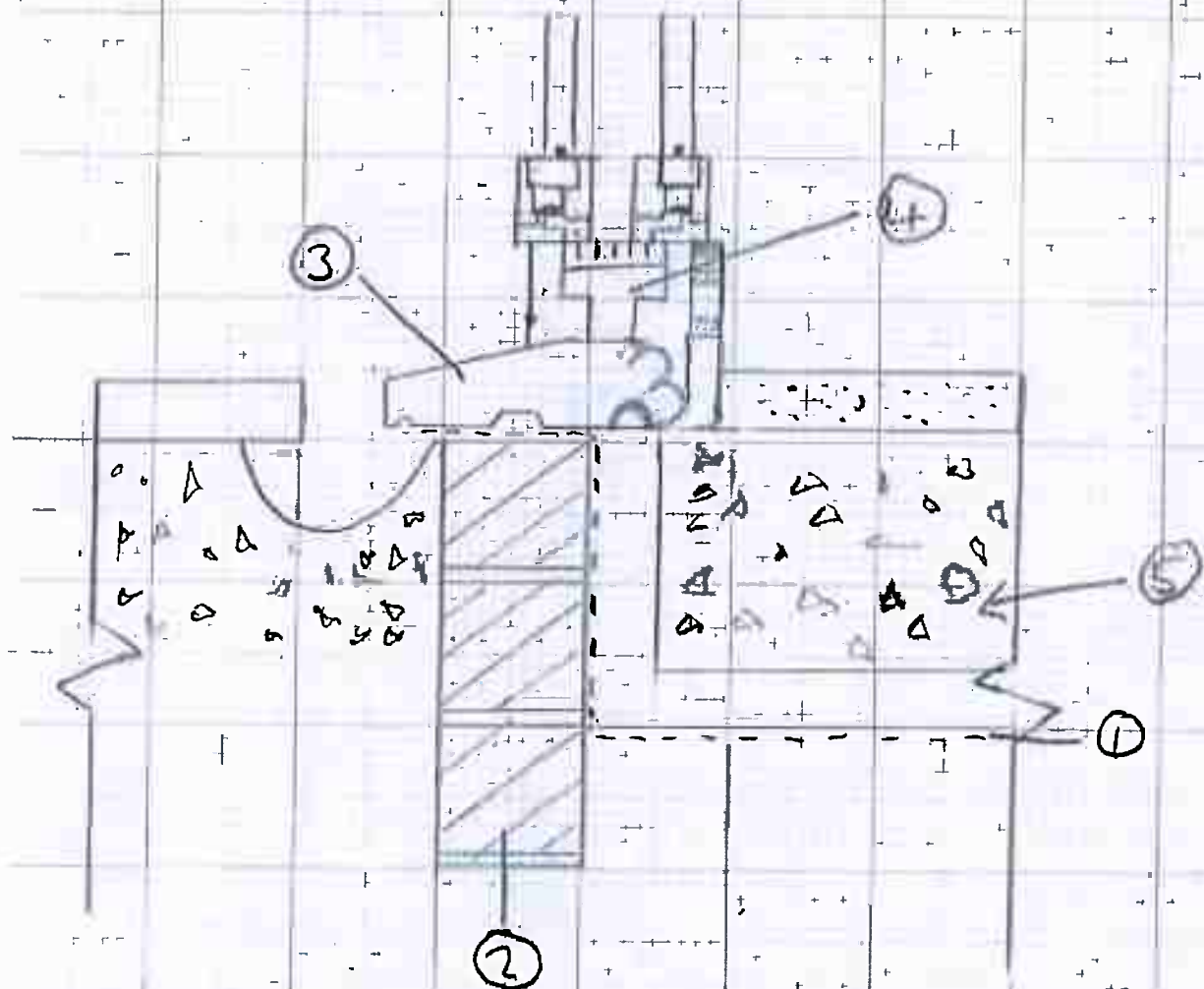
4)i)

External wall to Ice Cream Parlour



4)i

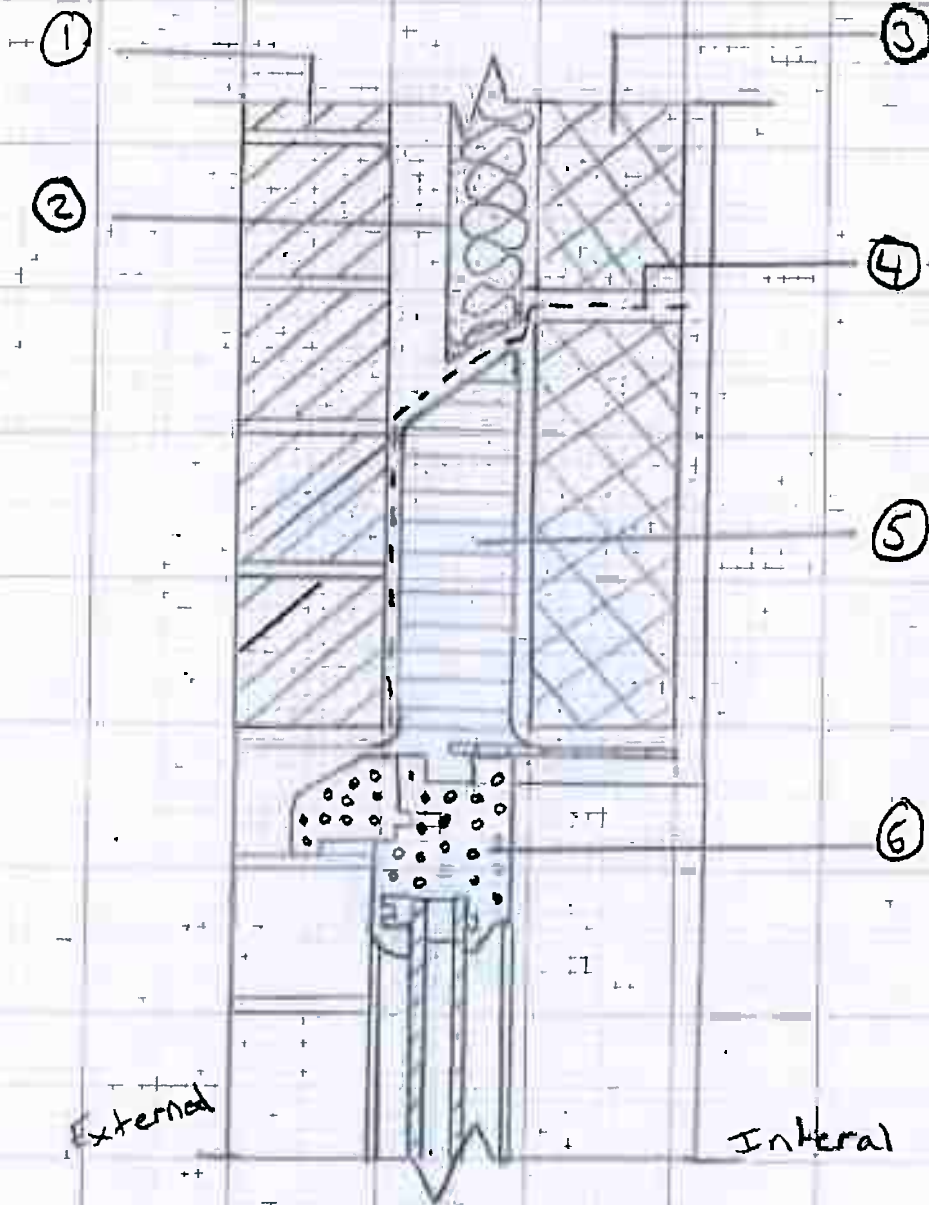
Twin track on Sill Sliding doors



- 1) Damp Proof Course
- 2) Brickwork
- 3) Sub-Sill
- 4) twin track mechanism
- 5) Soil

4i)

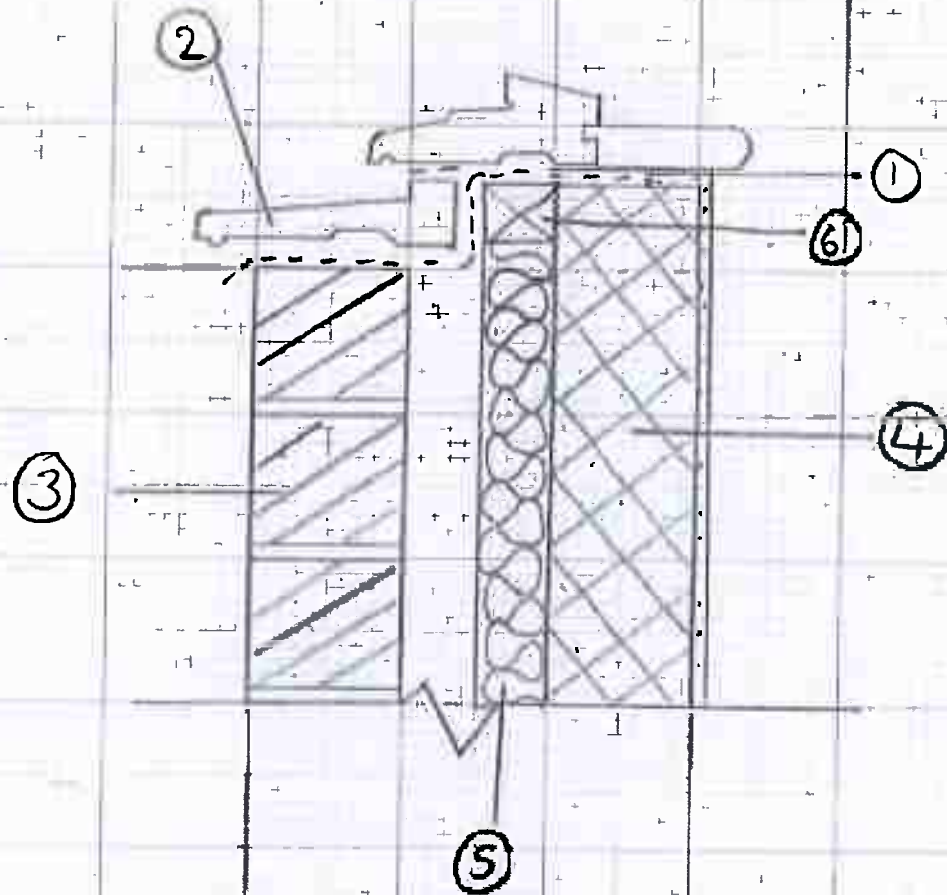
Window Detail:



- 1) Brickwork
- 2) Insulation
- 3) Blockwork
- 4) Damp proof course
- 5) Steel lintel
- 6) Window frame.

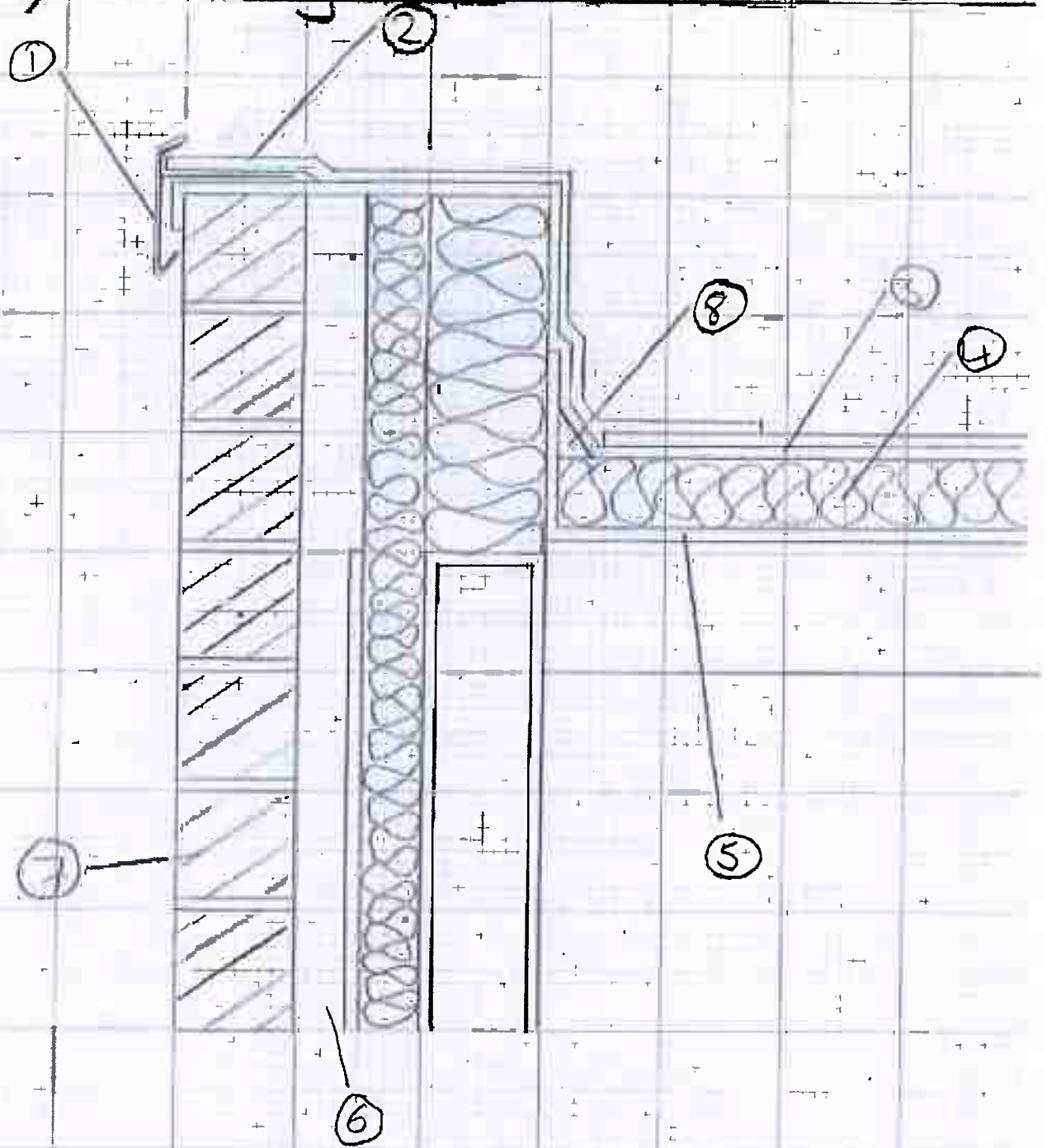
4i)

Window Sill detail



- 1) Damp proof Course
- 2) Sub-sill
- 3) Brickwork
- 4) Blockwork
- 5) Insulation
- 6) Cavity closer

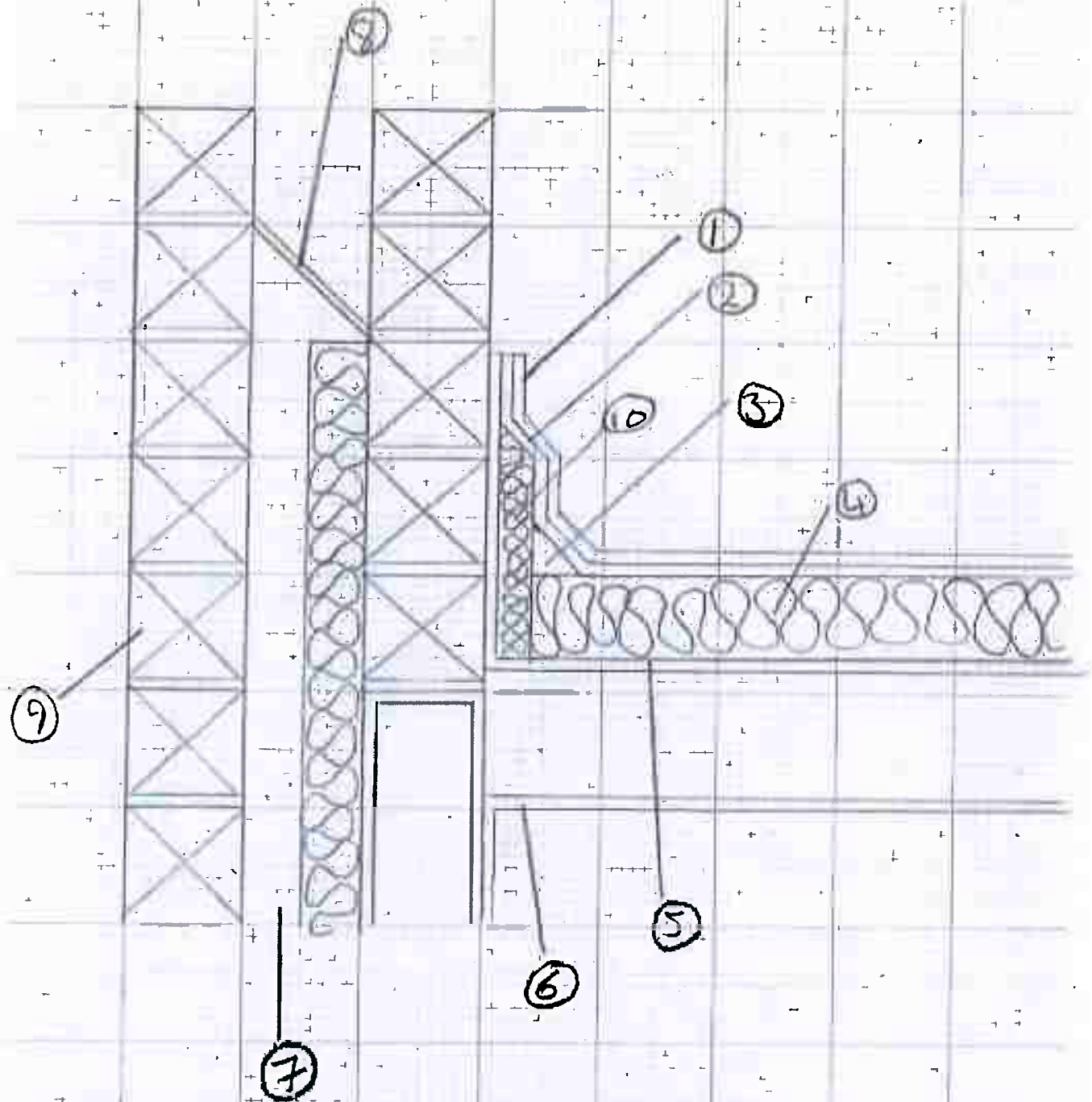
4) ii) Weathering and Structure of Exterior roofs



- 1) GFRP trim
- 2) Bituminous cap layer
- 3) Bituminous underlayer
- 4) 130mm PIR insulation
- 5) Vapour control layer and primer
- 6) Cavity wall
- 7) Brickwork
- 8) Angle fillet

4) iii)

Insulated Up Stencil - Warm roof.



1) Bituminous cap sheet

2) Bituminous underlayer

3) angle fillet

4) 130mm PIR Insulation

5) Primer and vapour control layer

6) Air barrier

7) Cavity wall

8) Cavity tray

9) Brickwork

10) 30mm PIR Insulation

4) iv)

Site set up and plant that may be required

The site will have to be securely cordoned off from all public, however fencing will not be sufficient. Scaffold boarding will need to be carried out all the way around the perimeter of the site. The same day as this is being erected the site welfare should have arrived. No works can be carried out without welfare facilities. The welfare and storage containers will be located on the right hand side of the Marriott hotel car park. This way it is on the corner of the compound and will have no restrictions on the construction of the building. It is also important that we stay close to the Marriott as they will be interested to how works are progressing as they are part of the agreement.

Once the site compound and welfare is in place, delivery times and access routes can be put in place. Due to the Civic Centre being so busy there will be specific timings where deliveries will be able to unload. In the welfare facilities there should be an office area for this size of project. That will require health and safety posters, law posters, accident help line number, etc. all of these things are crucial for having no issues on site.

All the Health and safety documents would have all be approved and signed off prior to works starting. These should then be shown to the site manager once on site so they can then be signed and have a site induction. Every morning there should be a short briefing. All the correct PPE must be worn at all times or they will be asked to leave site. All site rules should be obeyed and any who doesn't will also be asked to leave.

Once works is ready to begin it is then down to sub-contractors to take some responsibility in making sure of their own safety.

The plant required will have to come through the right hand access route as previously stated in the desk top study. We will need a drop hammer machine for the pile smashing. Testing the piles will also require machinery, this will also be needed shortly after the piles have been fully hammered in. a JCB will be required for the site survey. However, this may be carried out before the site set up is in motion depending on contractors and the location.

Further on in the construction process a crane will be needed and various sub-contractor machines such as JCB, cement mixers, etc. all of these are a crucial cog in the construction wheel.