

Research 1

Zaha Hadid

- Curves that run around in random directions, but are actually meaningful to the design and use.
- Light entrance ways and shelters, also cracks that allow for breeze flow.
- Buildings swirl around and resemble forms to material.



- Structure
- Glass used tends to be straight while buildings and frames are curvy and flowing
- Glass used is usually covered or enveloped by the steel structure.
- buildings look to be made of white stone with metal frames. Glass for windows. The white materials used seem to be made of stone/ceramic.

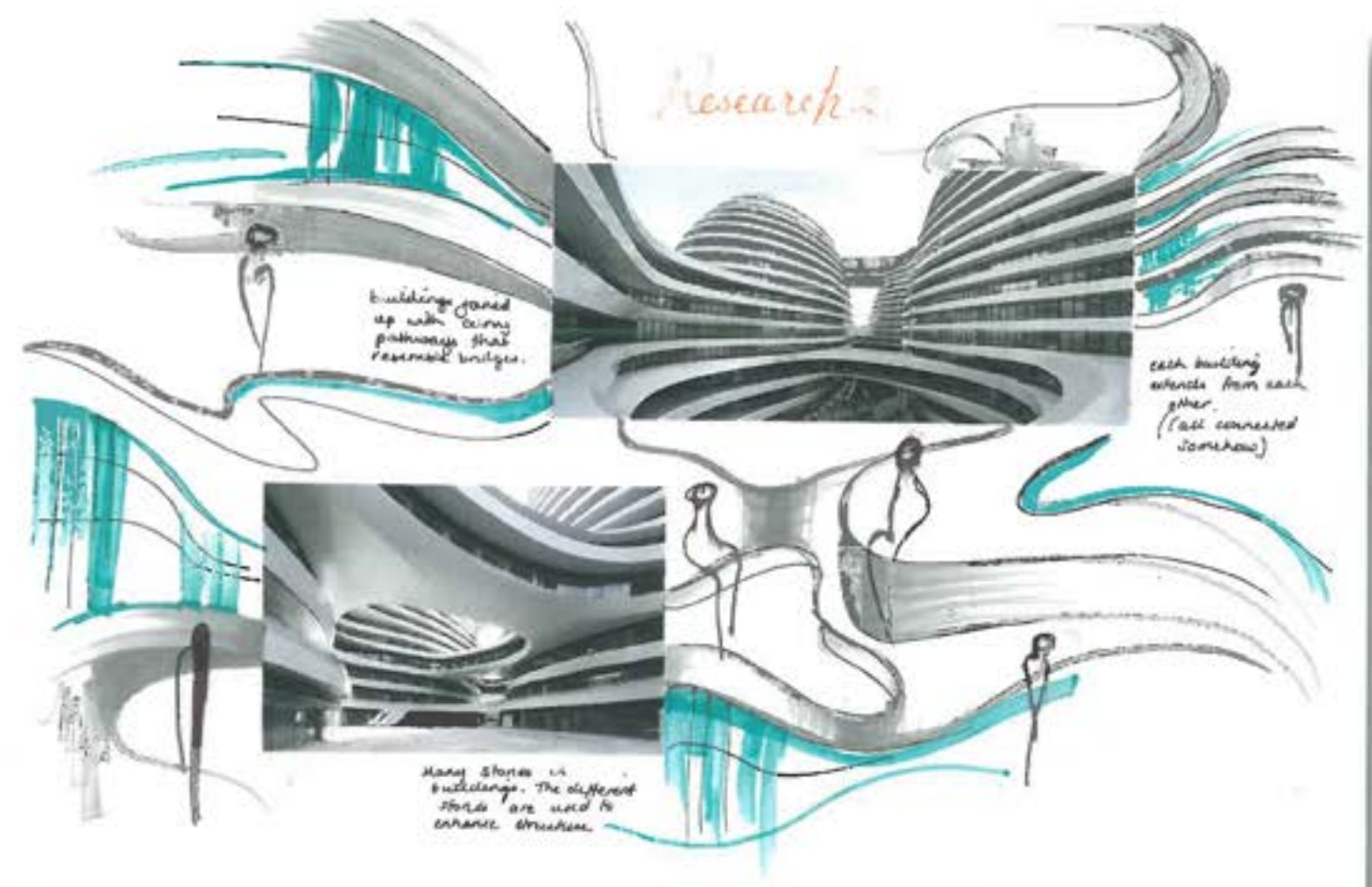


- Some buildings look as though they are covered by a blanket.



- unusual building that don't blend in with others.
- unusual form that extends off the ground in a non-linear angle.

Research 2



buildings joined up with curvy pathways that resemble bridges.

each building extends from each other. (all connected somehow)

Many stories in buildings. The different stories are used to enhance structure.



Idea Generation 2



Idea Generation 3

Research / Ideation

Exploring
Blanketing
Roof over
straight metal
frames.

eg →



sun is setting
behind building.

- roofs are all
as-symmetrical
& curvy.

folds
allow
to natural
light.

roof overlays the
straight structure
to create the
finished swirly look.

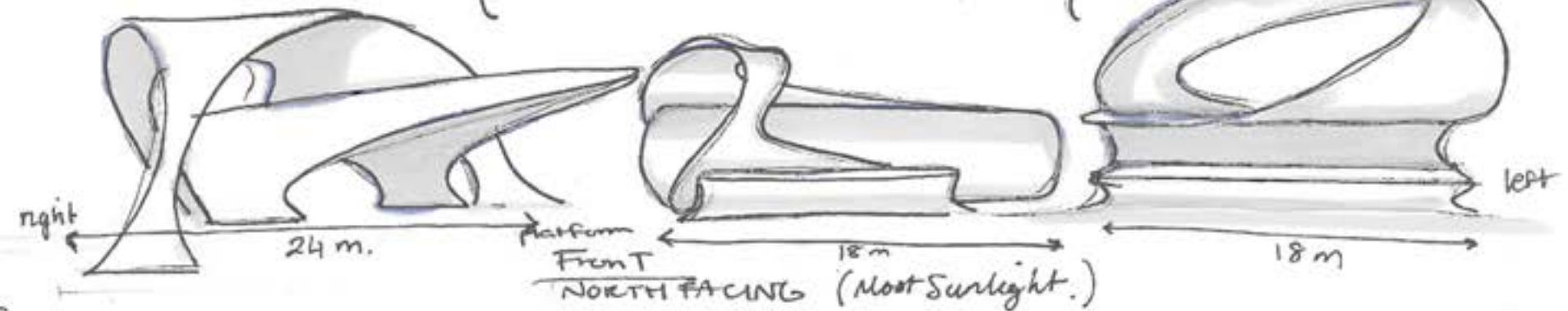
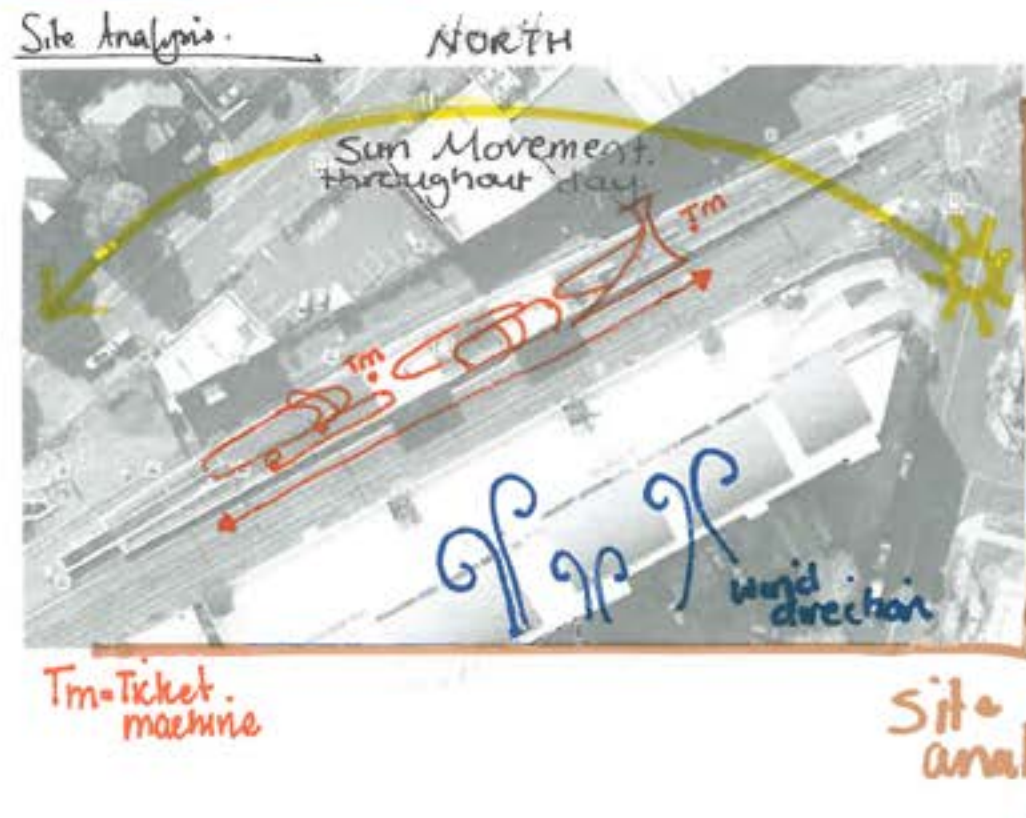
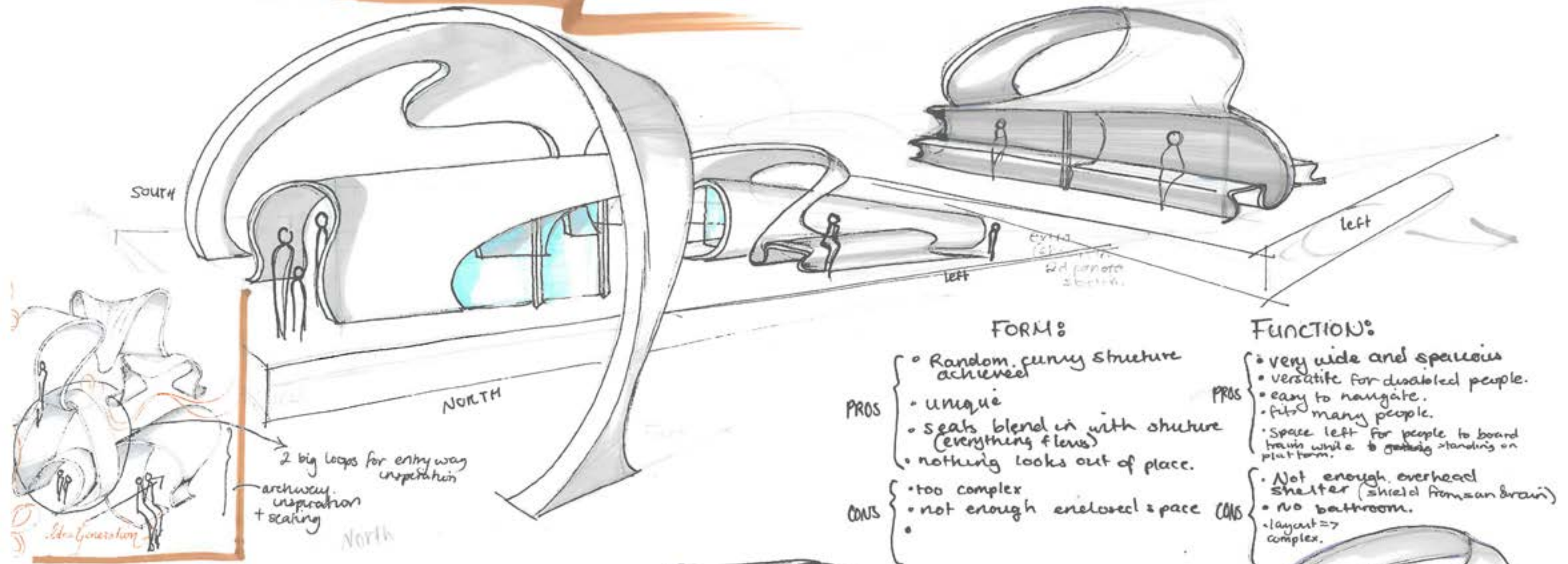
complicated structure
but because
of roof
sometimes.

Folds where
roof does not
touch ground is where
windows are placed to allow
sunlight.



Idea Generation 1.

Possible Approach 1



- Materials
 - white stone (primarily)
 - glass.
 - steel poles.

- placing of power lines not specified ... ?
- bathroom needs to be included (children) ... ?
- more overhead shelter ... ?

Possible Approach 2

FORM:

pros →

- The building has a curved frame that reflects aspects of Zaha Hadid's style and work.
- Heights of curved building arches alternate between short and tall.
- no stairs = no stairs for disabled people to have to endure.

CONS →

- building seems to be too symmetrical, although it is reflecting aspects of Zaha arch the idea of randomness still needs to be implemented in design.

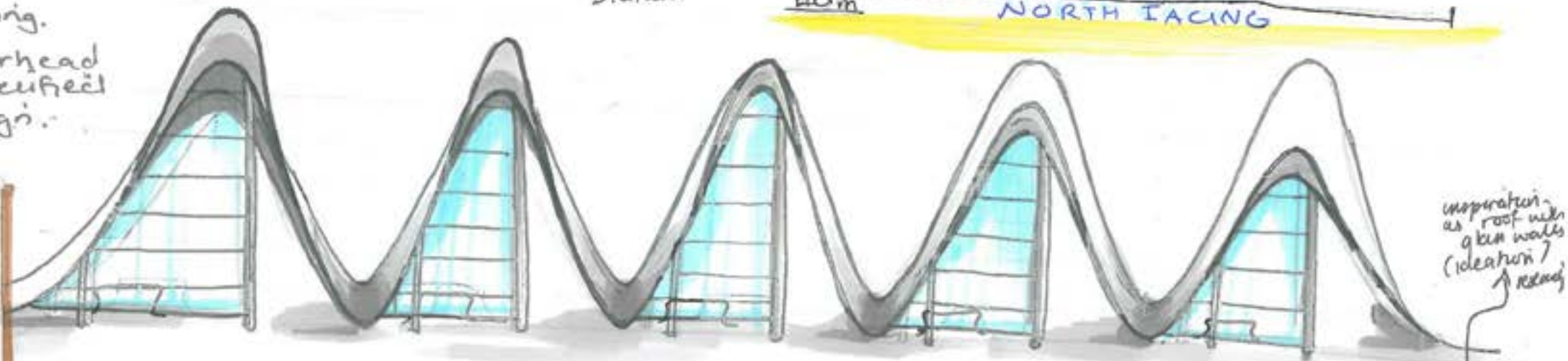
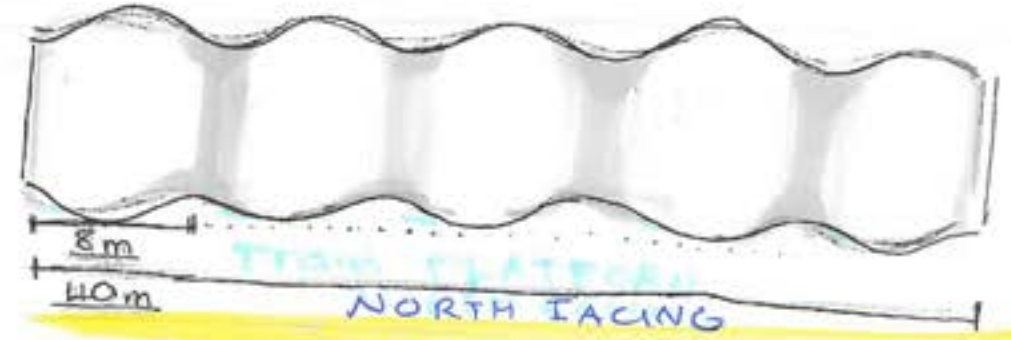
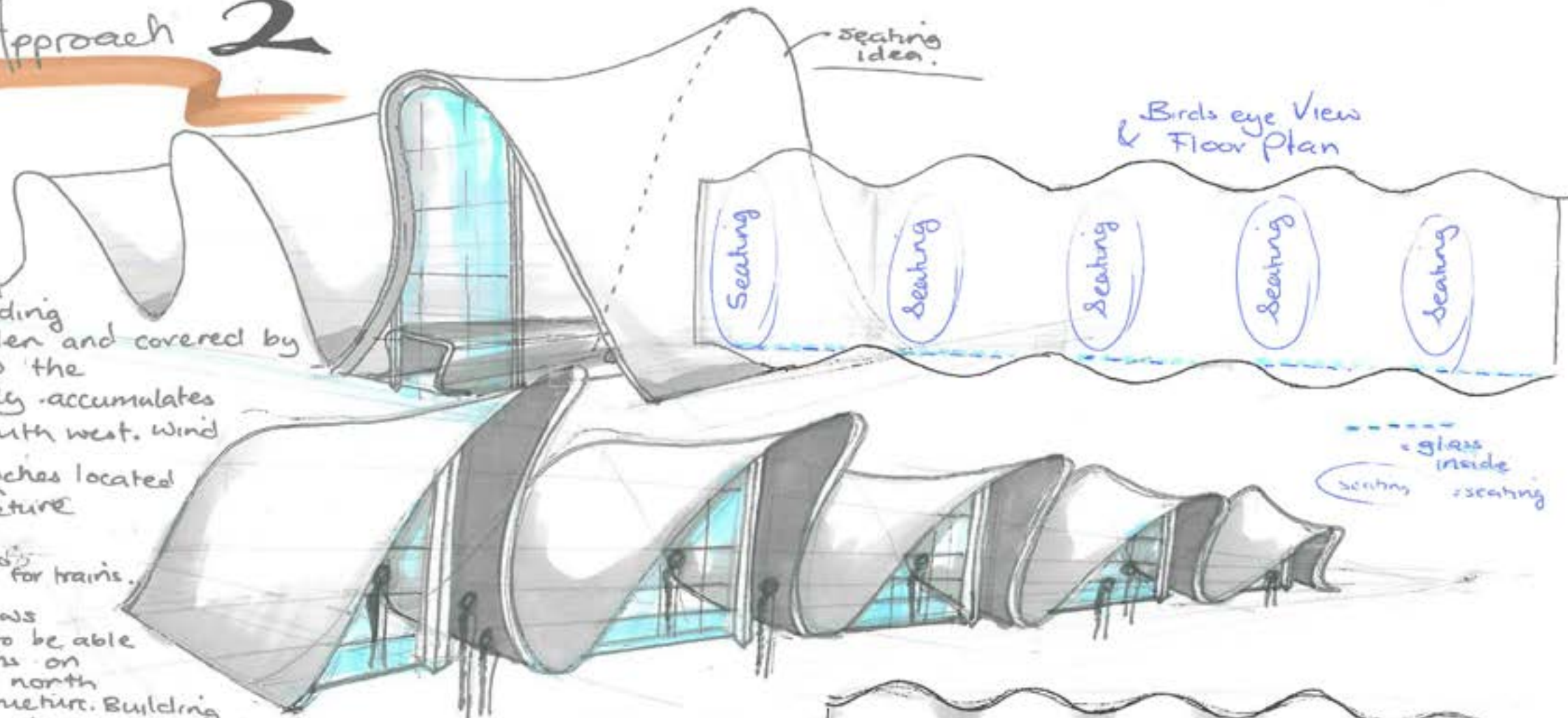
FUNCTION:

pros →

- South facing side of building is not hidden and covered by glass walls as the wind usually accumulates from the south west. Wind not blocked.
- seating / benches located inside each curved structure for people who want to sit and wait for trains.
- Spacing allows for people to be able to board trains on South and north side of structure. Building does not block access to trains.

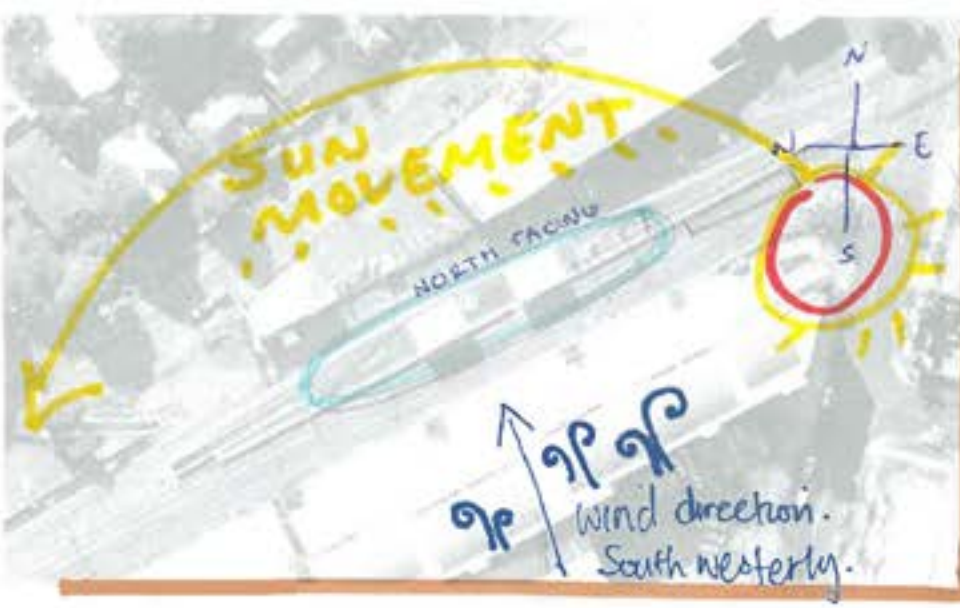
CONS →

- completely shielded from rainfall - people do not need umbrellas.
- No bathroom / toilet. e.g. children who need it. etc.
- no outdoor seating.
- power lines overhead the station not specified of place in design. need to specify.



Materials:

- white concrete for cover
- uv protection glass for glass walls.
- metal poles for support (frames).
- white cement / cladding for seats?



Site analysis

Possible Approach 3



Seating
close up.

FORM

PROS:

- Reflects Zaha Hadid's style.
- spacious feel and look
- white concrete to convey flow (flexibility)
- glass walls add diversity in material choice.
- space is very open to make people feel as though they are still in the outdoors.

CONS:

- Seats could be improved to match natural flow of overarching frame.
- extra/different materials could be included

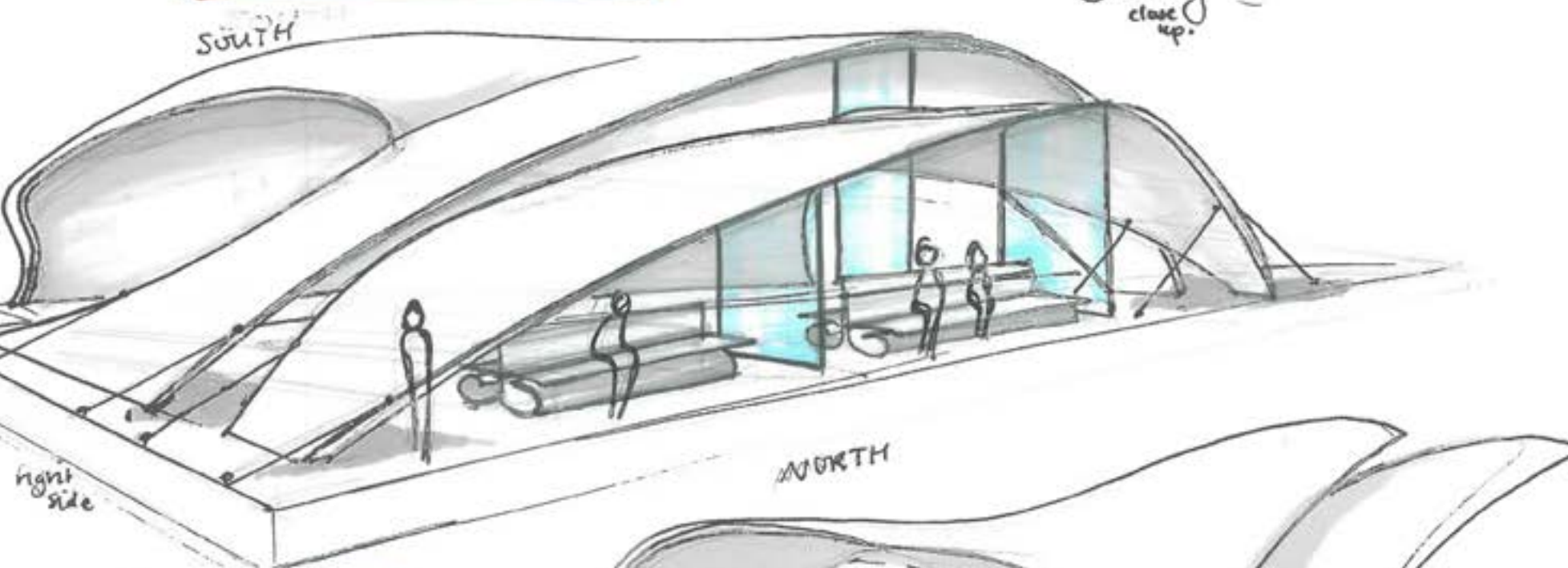
FUNCTION:

PROS:

- No floors (stories)
- shelter protects from direct damaging sunlight and rainfall
- space in front of parts where shelter meets ground so people can board trains from anywhere on the platform.
- easy to use and move around in
- people can easily sight trains.
- layout simple

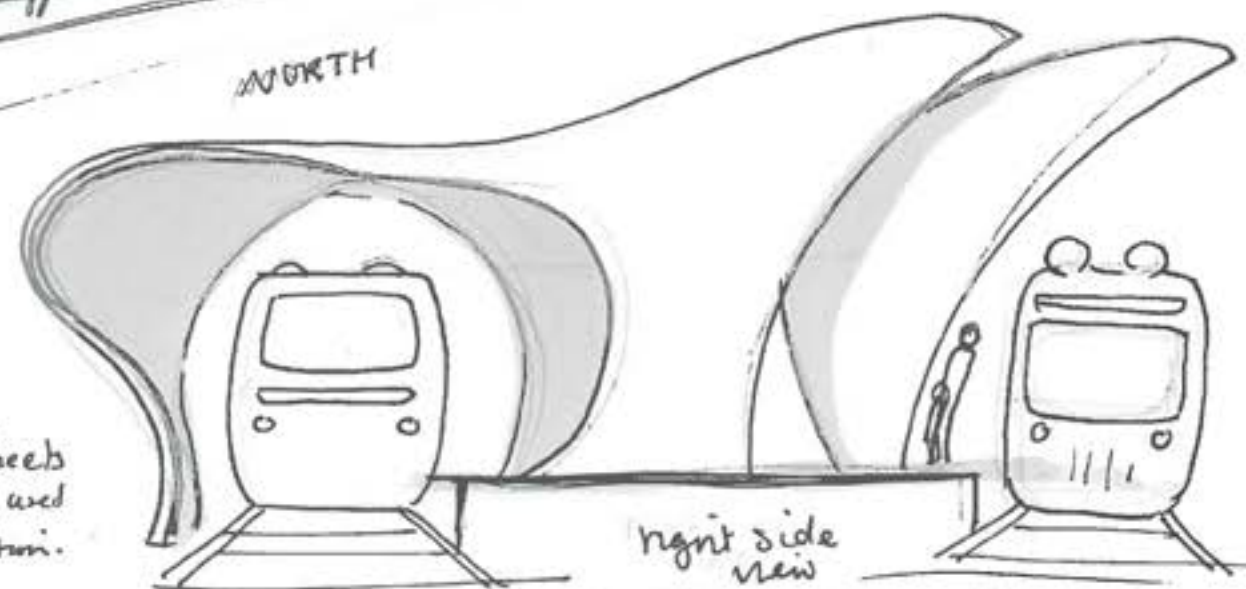
CONS:

- corners of shelter are too close to the ground so people cannot stand under them. This is a waste of space.

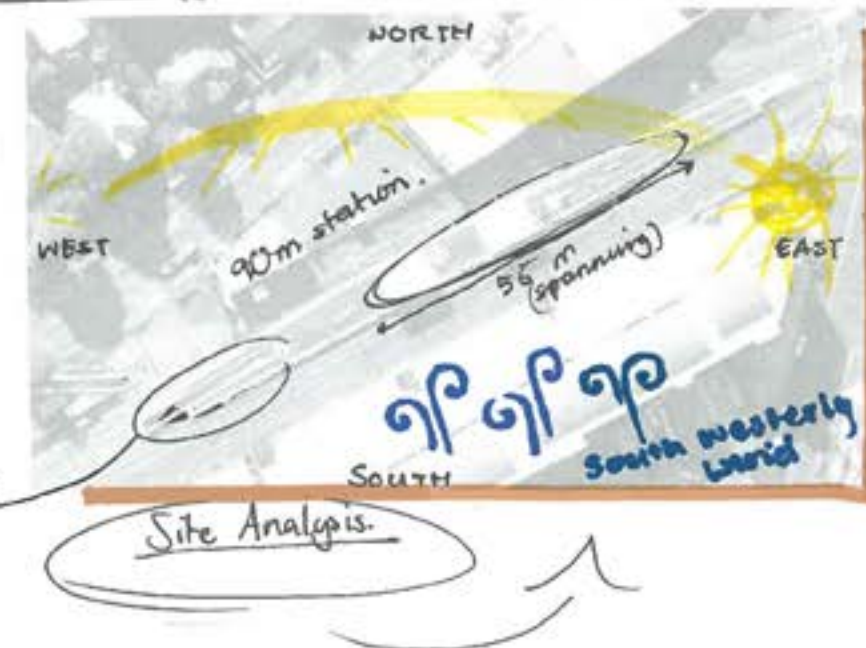


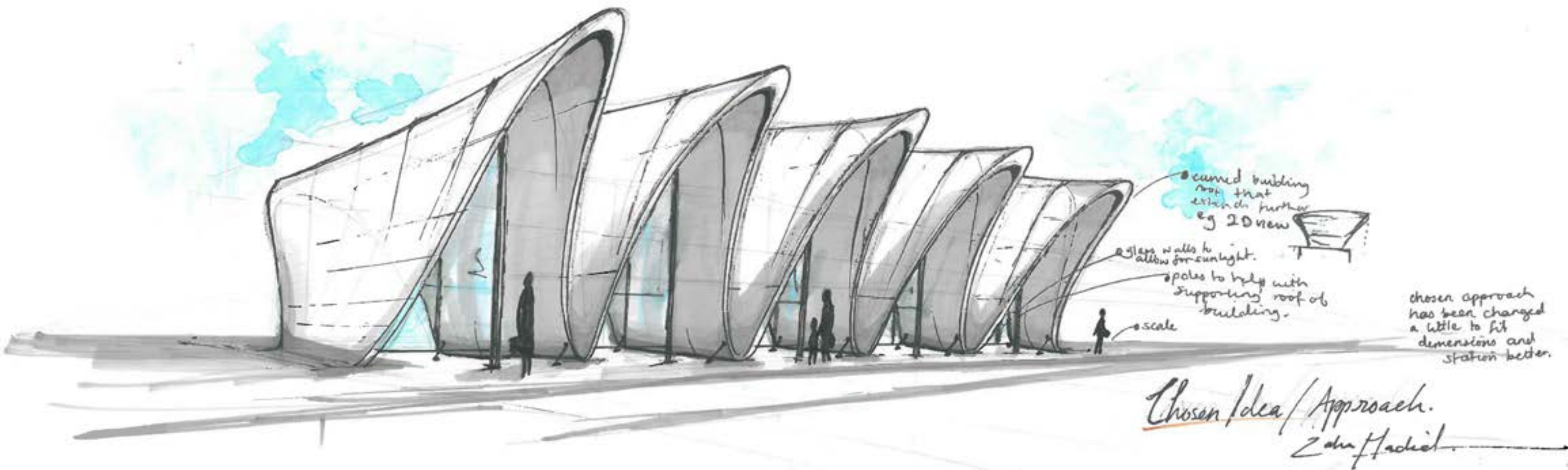
Possible Materials

- white concrete
- glass sheets (walls) used for separation.



- Things that need to be fixed or included
- bathroom
 - more support
 - placing of power lines over head.
 - exit to carpark.





My design intent is to create a train station that is practical and useful for people. As well as this I want the station to fit the sight well and be meaningful to what it has to offer. Overall, it must be user friendly (i.e. people should be able to enter, exit, move around and find ticket machines easily) on top of this they must be comfortable which means seats must be provided and toilets should be considered. It is also important to utilise all natural aspects that the sight already provides (i.e. natural light, sun exposure, space, wind exposure) this also includes minimising the negative components the sight provides such as which are inevitable such as rainfall and extreme amounts of sun light. The train platform itself is very small and narrow and on the architect Zaha Hadid's style consists mostly of grand designs. This means that I will also be creating the illusion of a larger station via building forms.

STRENGTHS:
(why I chose this idea):

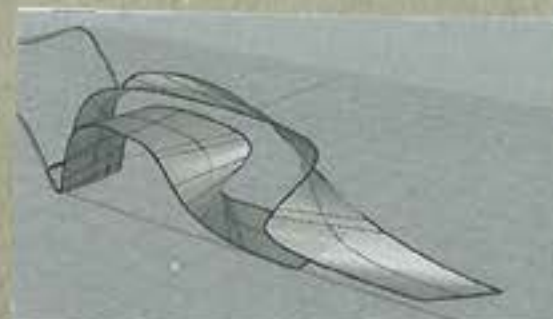
- The station is tall and large which initiates the grand design idea.
- The station has glass walls which could allow for some light.
- It holds and shows to be reflected of Zaha Hadid's style.
- It fits the station well, and space has been allowed for people to board trains.
- the poles help to hold building up.

NEEDS
FURTHER DEVELOPMENT/
WEAKNESSES:

- Seating needs to be considered to ensure comfort of people.
- the movement around the station seems to be hindered by walls that touch the ground.
- potentially more windows/cutouts for big natural light.
- decreasing symmetry of building.
- selecting materials and defining structure.
- fits sight physically in the best way (scale to people as well). (measurements)

1 Refinement.

{How can I improve the form of the structure to? (decrease Symmetry in roof to appear more like Zaha Hadid's Style?)}



adding another shelter over the top of the existing one, to continue with the height flow of the building



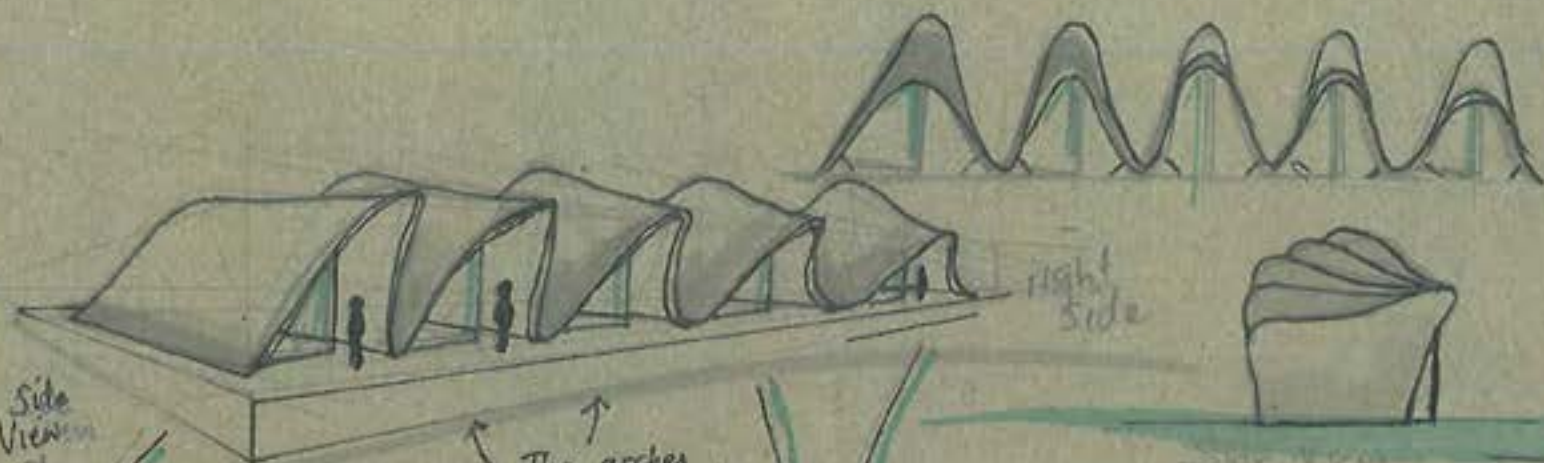
back

This is an arch of the building

front



2d view of building below



right side

Side View left

The arches have been made to have a deeper band

leaving 2 arches as two enclaves in roof which act as a bigger/longer shelter which does not touch ground.

SHOWN ON SITE ON REFINEMENT 3 (Trace paper)

overall is less symmetrical & "flowy"



lifting left side upward & curling in

Side View



made unusual looking curve but style of the rest of the building. (entry way = easy access to come on station)



This is too complicated and needs to be simplified.

How?

keeping the extensions on the platform instead of extending them off

needs to be difference in width to add some change and strength (less flowy).

options:
• splitting shelter.
• adding a double shelter.
• support.

from right side

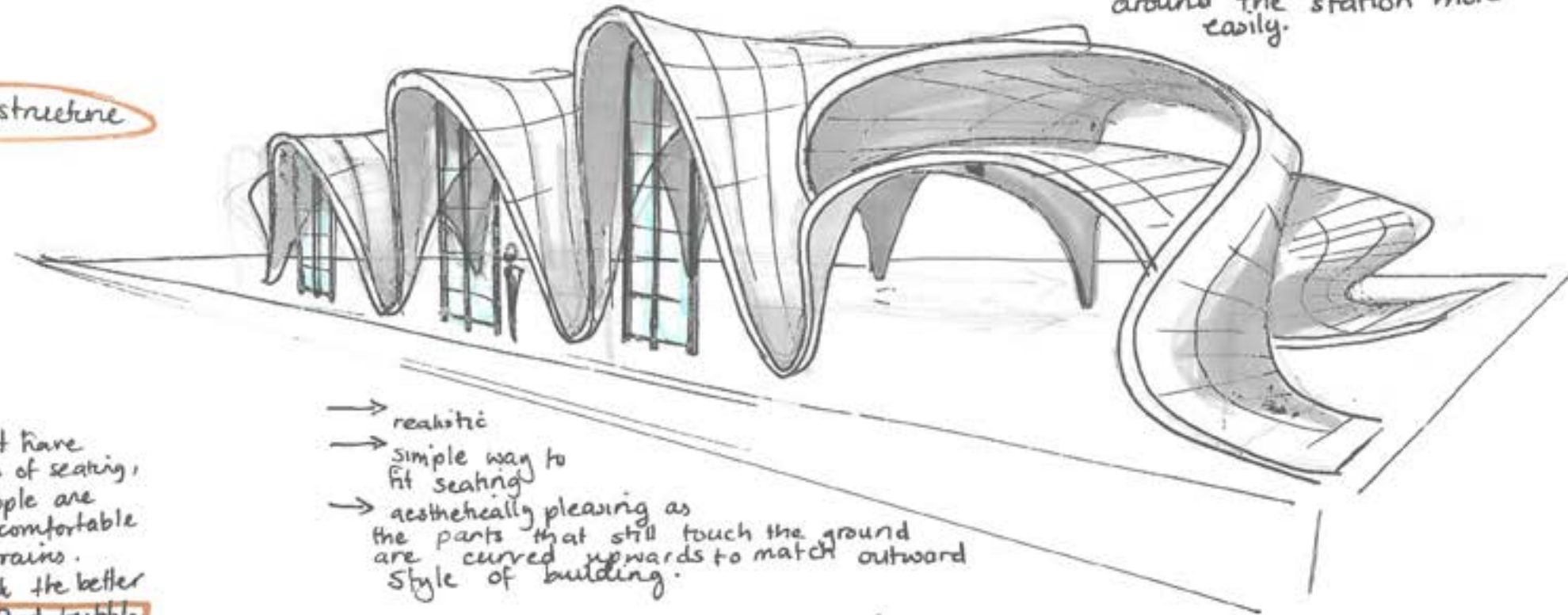
3. Refinement

How can I ensure that the people who use the station are comfortable with moving around it and staying on it.

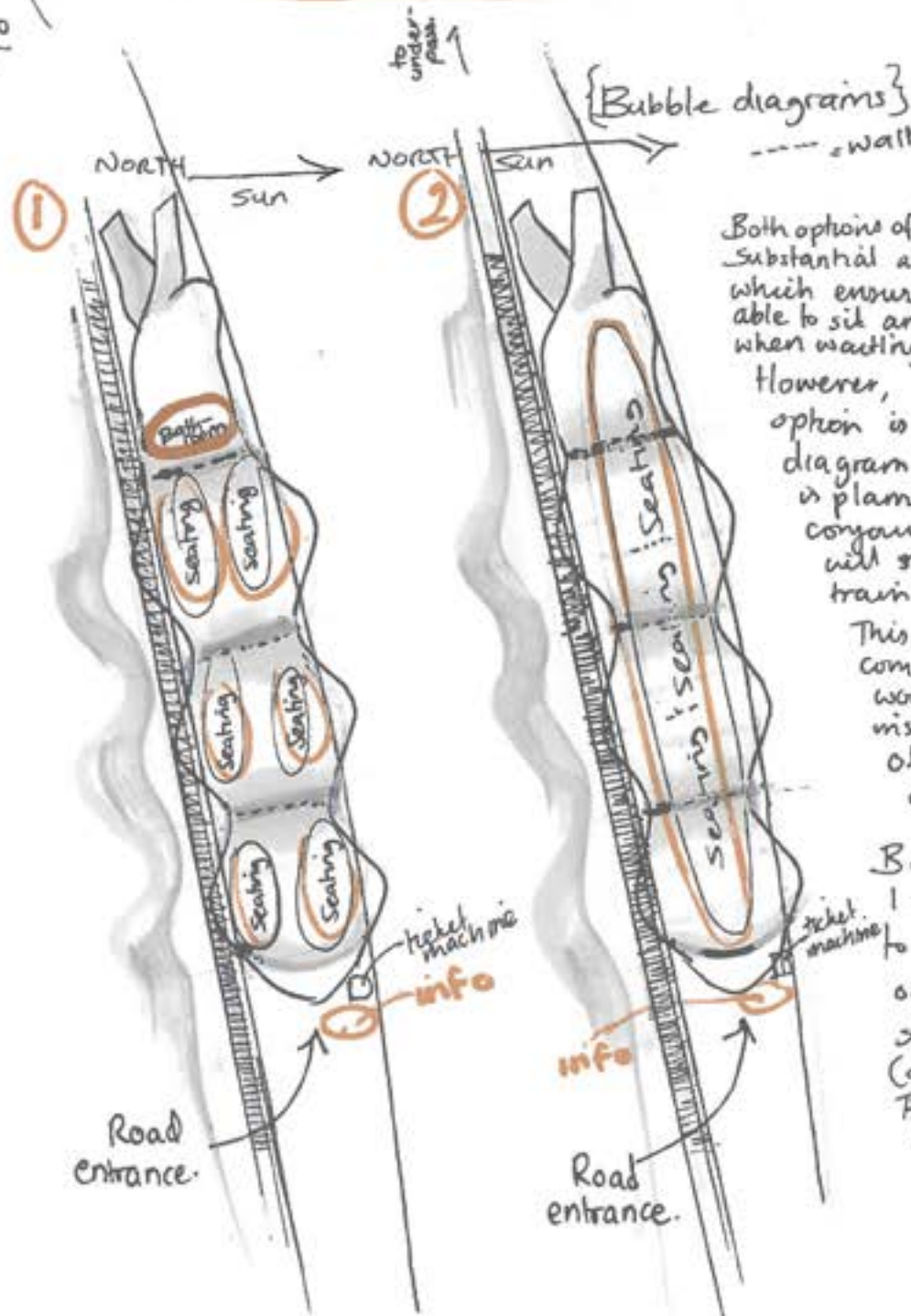
What to Explore?

- Seating
- decreasing limitations created by walls of structure
- Lighting during night time
- Bathrooms (potentially)

In this design the walls touching the ground have been lifted up so people can walk around the station more easily.

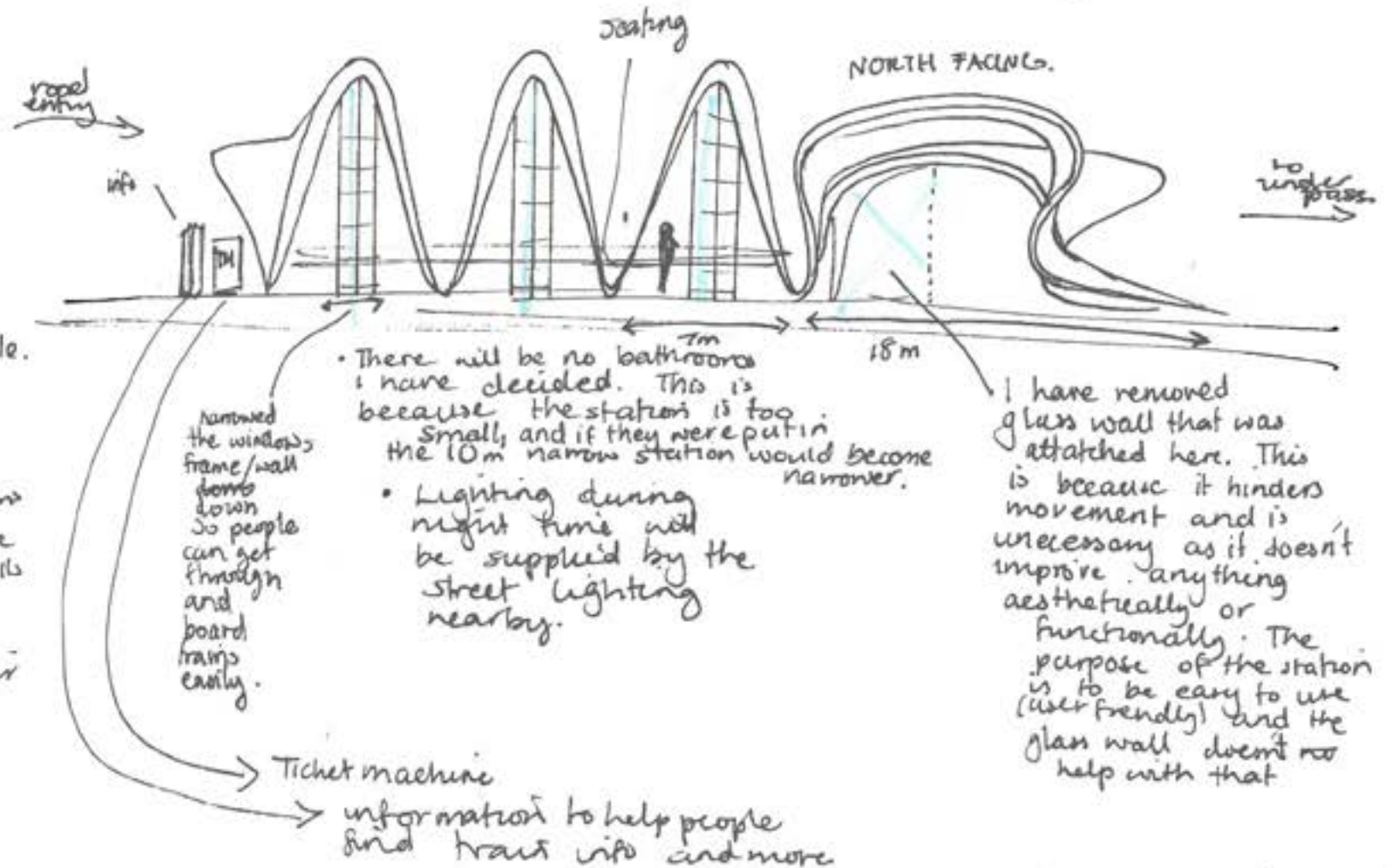


- realistic
- simple way to fit seating
- aesthetically pleasing as the parts that still touch the ground are curved upwards to match outward style of building.



Both options of layout have substantial amount of seating, which ensures people are able to sit and be comfortable when waiting for trains. However, I think the better option is the 2nd bubble diagram as the seating is planned to be a long contained seat which will resemble traditional train station seating. This would decrease complexity as the seat would be a long bench instead of an array of tiny benches that would not fit many people.

Before, I explore seating, I need to explore how to decrease the limitations on movement around the station due to the walls (as shown in diagram). This is therefore, less walls → more easier movement around station → more practical and user friendly.



- There will be no bathrooms I have decided. This is because the station is too small, and if they were put in the 10m narrow station would become narrower.
- Lighting during night time will be supplied by the street lighting nearby.

I have removed glass wall that was attached here. This is because it hinders movement and is unnecessary as it doesn't improve anything aesthetically or functionally. The purpose of the station is to be easy to use (user friendly) and the glass wall doesn't help with that.

Ticket machine
→ information to help people find train info and more

4. Refinement

How can I ensure that the people who use the station are comfortable with moving around it and staying on it?

Exploring:

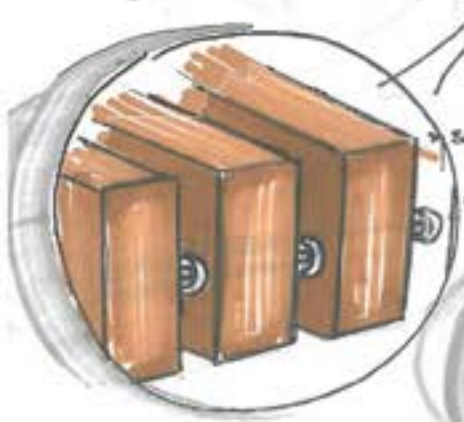
- seating
- decreasing limitations created by walls of structure.
- Lighting during night time.
- Bathrooms/toilets (potentially).

PROS: Each person gets own seat which is good, also the separation to make 4 individual seats helps to create a private area for each person.

CONS: The back seat is quite low so it will cut into the backs of people.

{Material}
White moulded concrete

2.



separated with a washer a bolt on each side.



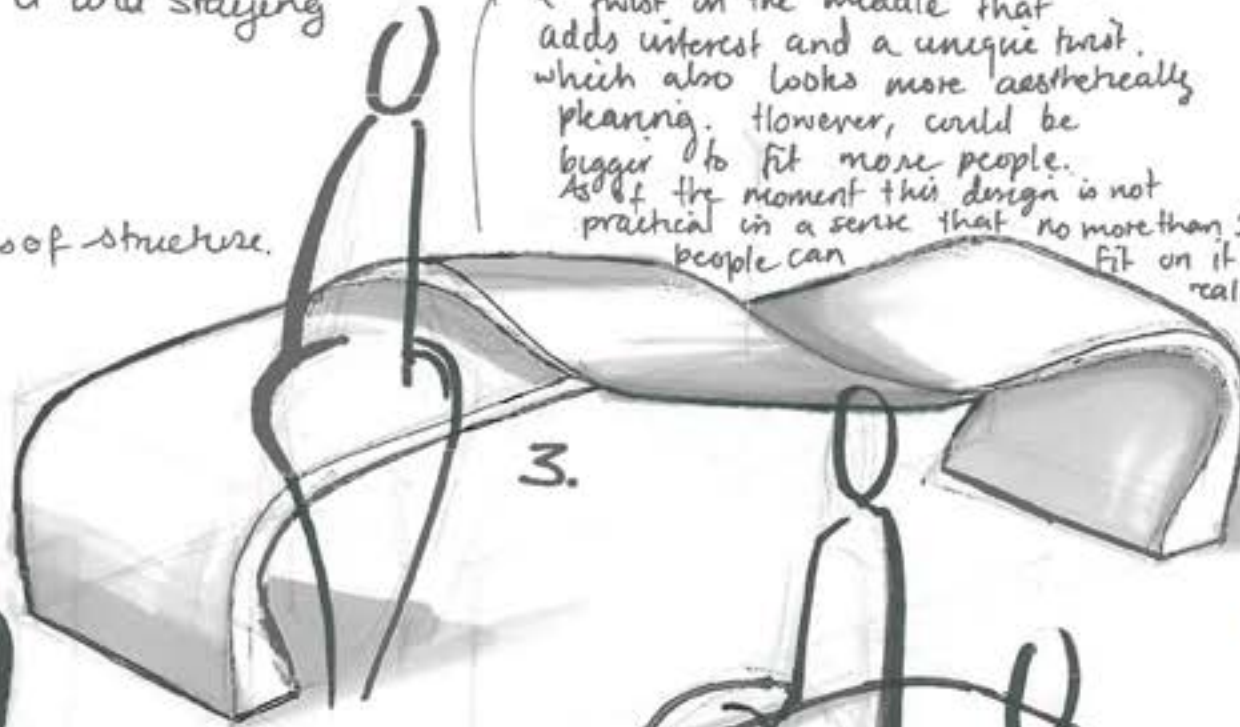
each slab of wood is bolted to each other.

curved/moulded white concrete to hold and withstand seat and people (weight).

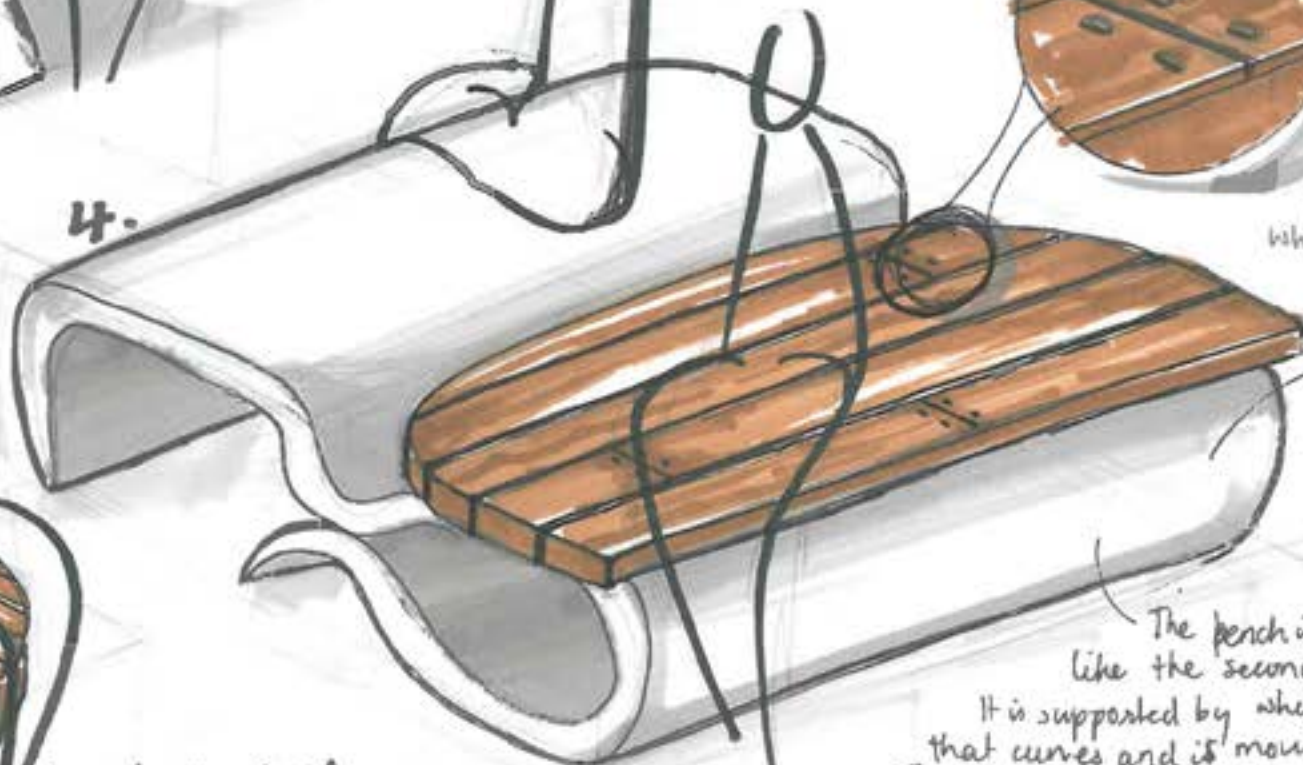
The seat comprises of slabs of wood connected vertically instead of horizontally this means this bench is very strong/sturdy. However, the bench could be bigger and longer to fit the station in one huge connected seat. wood is also very comfortable to sit on.

This seat comprises of only/completely moulded white concrete. there is a twist in the middle that adds interest and a unique twist which also looks more aesthetically pleasing. However, could be bigger to fit more people. As of the moment this design is not practical in a sense that no more than 2 people can fit on it realistically.

3.



4.



Bolted to white concrete underneath.

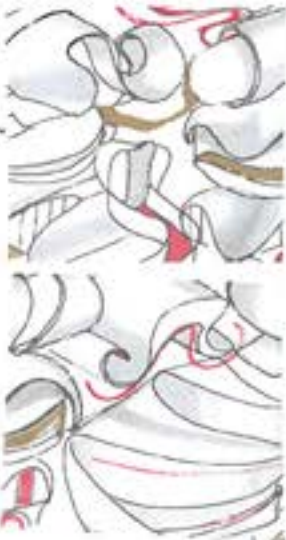
Material → white concrete.

The bench is supported like the second bench. It is supported by white concrete that curves and is moulded to be the shape as drawn.

The mixture of 2 materials in one bench is aesthetically pleasing as it creates change and adds the wood adds warmth to the harsh concrete. The wood would also be more comfortable to sit on.

CHOSEN BENCH/SEATING

The second bench will be my final seating as it is fully made of wood where people sit → more comfortable. Also the wood will add a different material in my final building which is mostly made of white material.

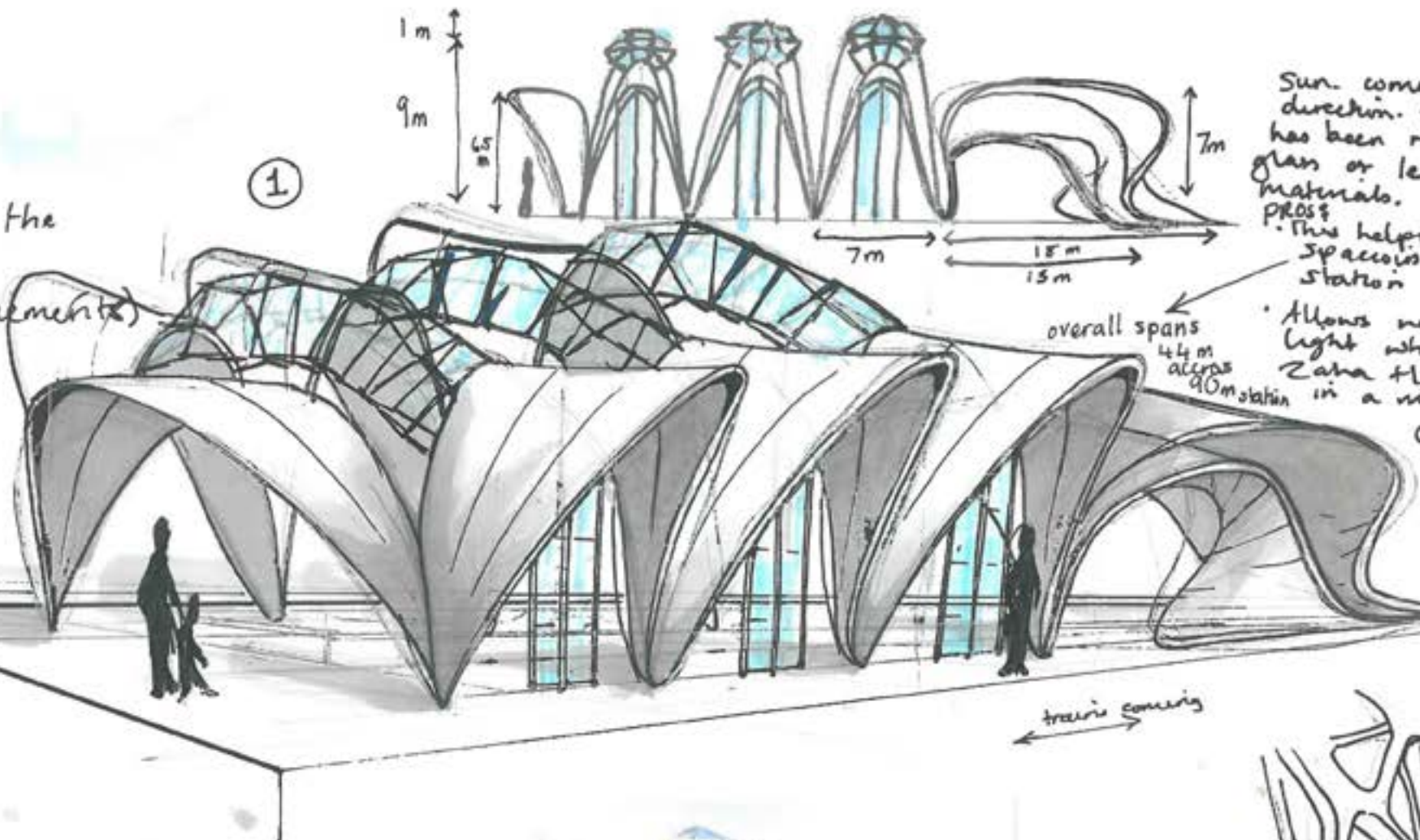


5. Refinement

How Can I make the station fit the Site more practically?
(eg Sunlight, wind exposure, measurements)

The building so far is facing North which is toward the sun. Even though this is the case, the roof of the previous design ~~is~~ does not comply with my intent to utilise the sun to create natural light. The previous design's roof was a complete cover and proved to be impractical and useless when the roof could have a 'cut out' or window for light to pass through. These are some suggestions on ideas for the cut-out on the roof.

← train coming →



Sun coming from this direction. Most of the roof has been replaced with glass or left bare with no materials.

PROS:
• This helps achieve the open, spacious feel a train station must have.
• Allows natural flow of light while still reflecting Zaha Hadid's style. station in a more practical way.

CONS:
• does not fully cover building.

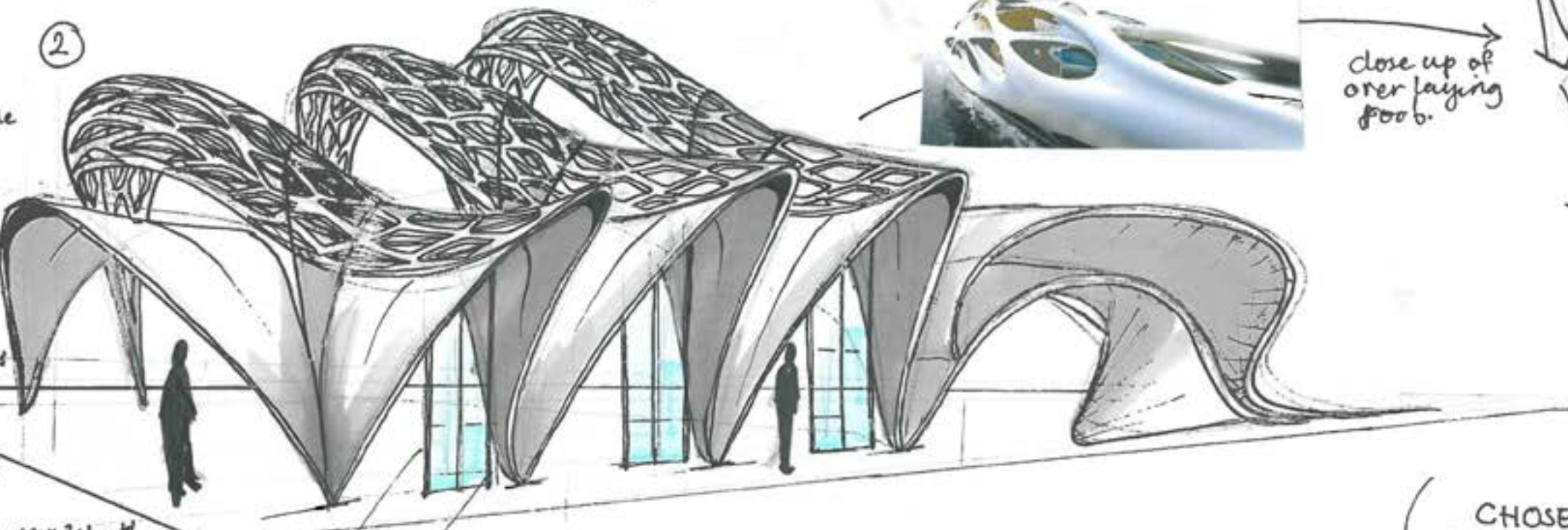


②

In this design the whole back of the building has been taken away and in place of it an extension from the front of the building has been used to create the over-arching roof. The new cover has cutouts that could be filled with glass.

PROS:
• unique and spacious

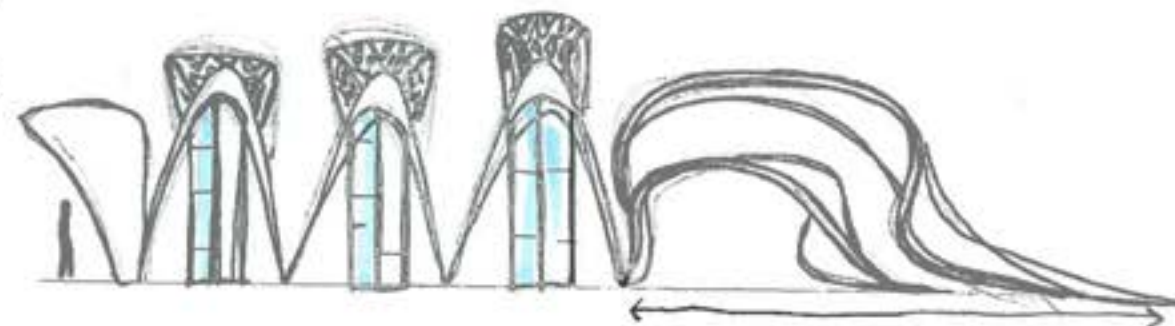
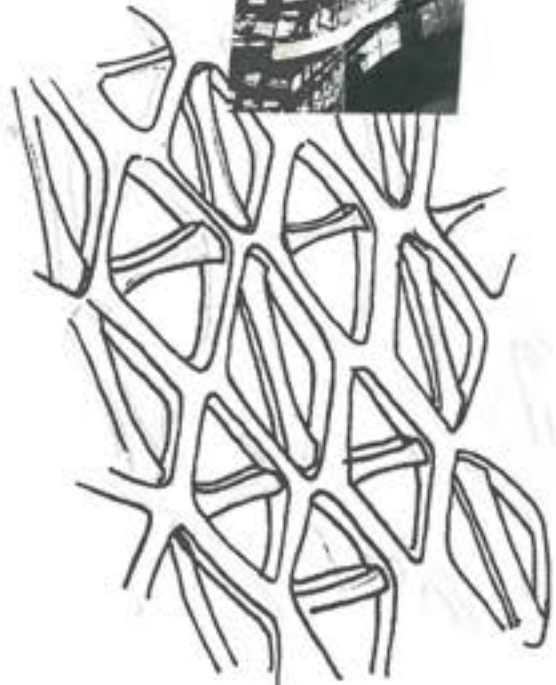
CONS:
• complicated and not very Zaha Hadid.
• not very realistic aesthetically.
• holes will not prevent rain fall.



2 poles to touch ground and support.



close up of over-arching roof.



CHOSEN IDEA:

① I have chosen the first idea because it is more simple and practical. It is also more realistic in terms of structure. It also reflects Zaha Hadid's in a more organised way.

1. function

How can my form have a supporting structure to make sure that it is sturdy and maintains the curvy aesthetic?

This page will focus on the frame of the building arches.

I am exploring the spaceframe which is made of steel to help keep the curvy shape. I am exploring the 2D and 3D spaceframe for different parts of the building.



space frame is made of steel.

beams connect to space frame.

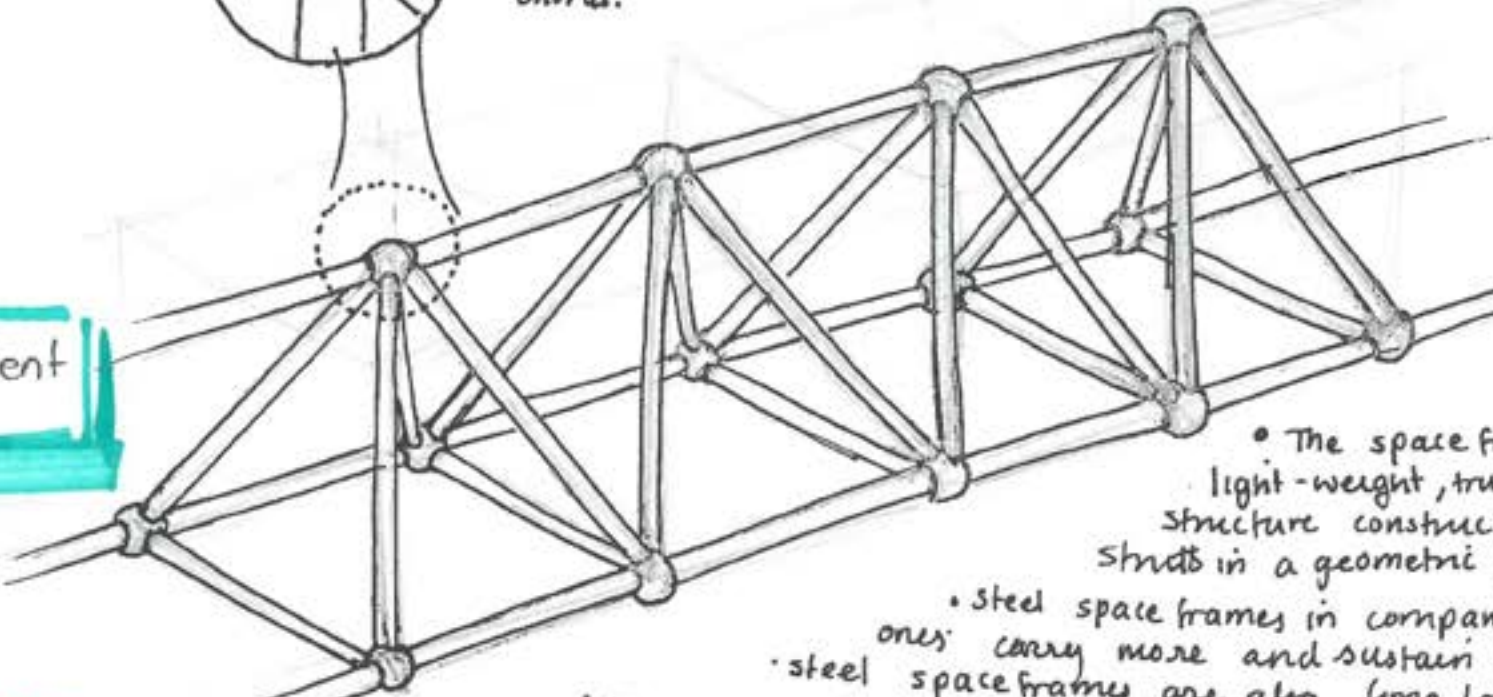
I have changed the structure to make the back arches (roof curves) same size and opposite to the ones facing north. Same height and same length.



{NODUS CONNECTOR}

• They are fixed directly onto the chords.

3D spaceframe:



NEXT STEPS:

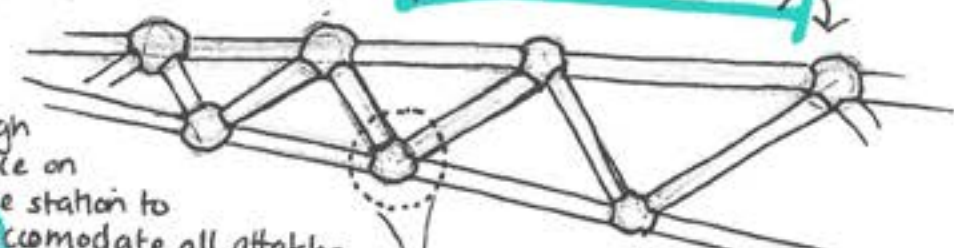
• to explore the framing of structure through solid frames and not a spaceframe.

• The space frame is light-weight, truss-like, structure constructed from interlocking struts in a geometric pattern.

• steel space frames in comparison to timber ones: carry more and sustain much more weight. • steel spaceframes are also long lasting.

• The space frame is a good choice to use as the structure of my building because it can be very sturdy in the case of a curvy buildings. Therefore, my form can have a sturdy structure if I use a space frame. Also, a structure using beams was looked at, however there is not enough space on the station to accommodate all attachments the beams would have to the ground.

2D space frame:



2D space frame next page

NODUS CONNECTOR

• They are fixed directly onto the chords.

steel beam.

Steel pole

bolt

steel plate

Spaceframe in 2 sections.



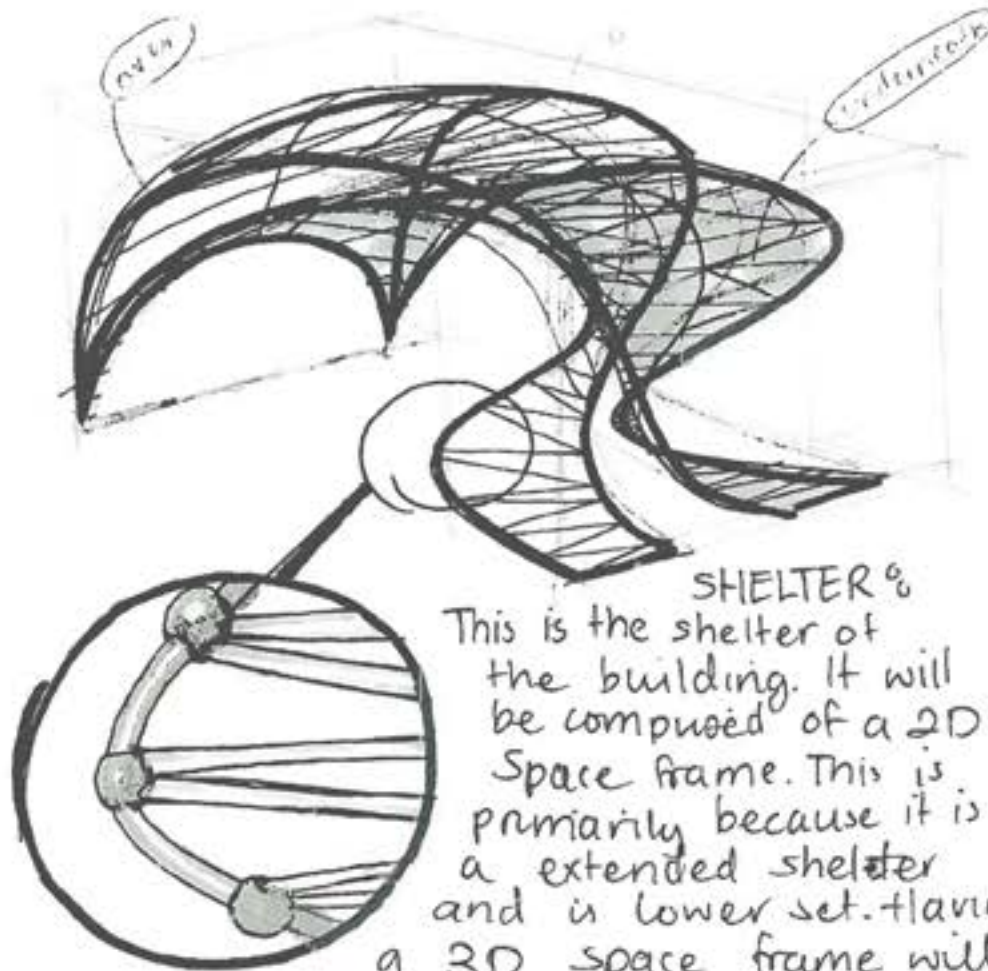
beams to support the spaceframe structure.

The beams that hold up the spaceframe in the middle of the curve are

2. function

How can my form have a supporting structure to make sure that it is sturdy and maintains the curvy aesthetic?

This page will explore the frame of the building more extensively.

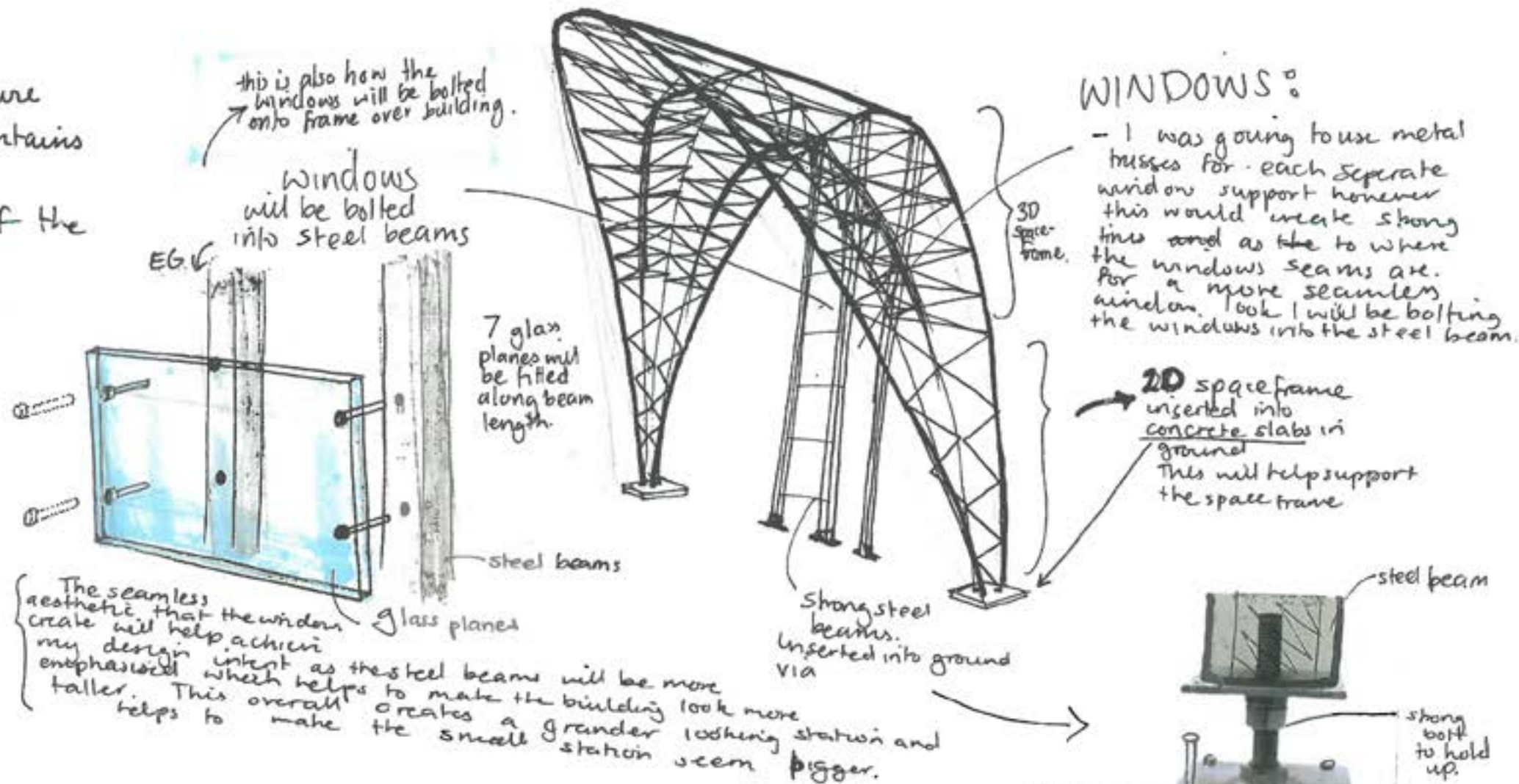


SHELTER%

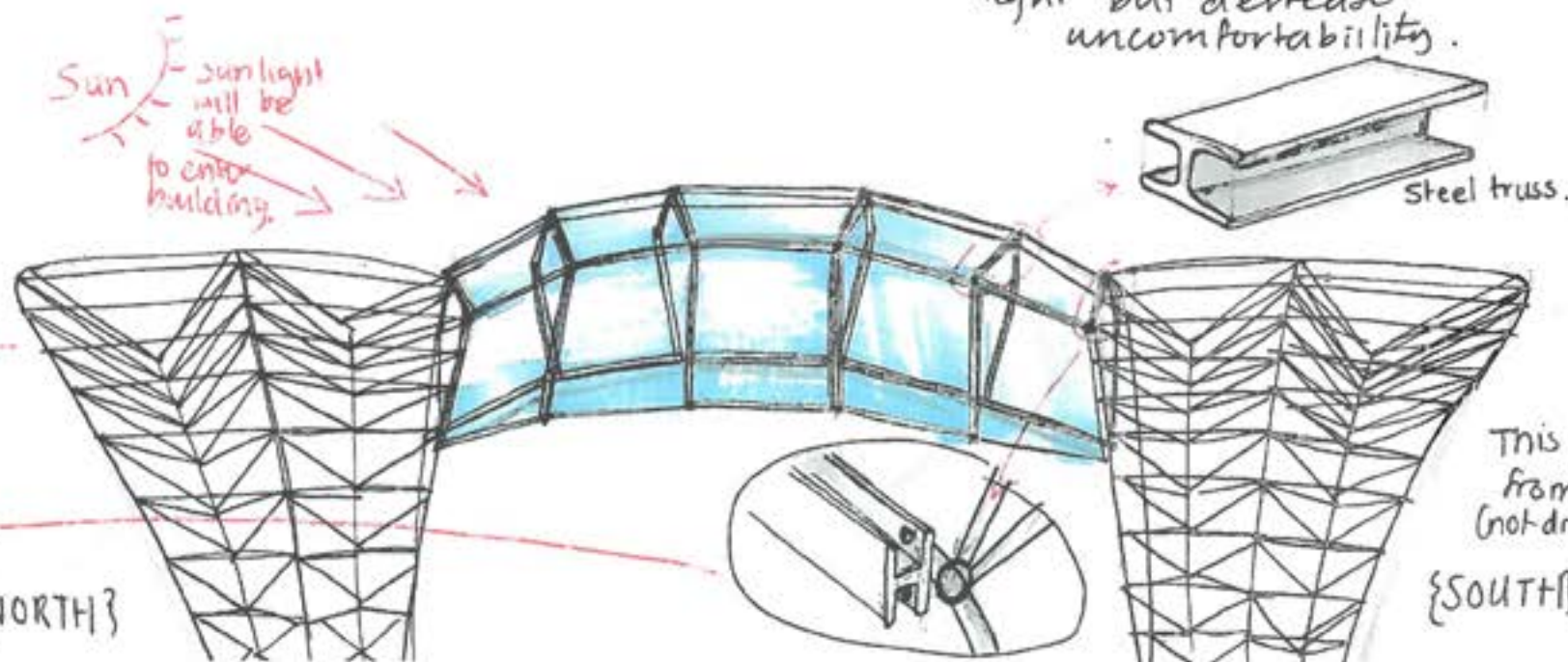
This is the shelter of the building. It will be composed of a 2D Space frame. This is primarily because it is a extended shelter and is lower set. Having a 3D space frame will only cause the interior to get lower and potentially be too close to a person's head as the stand or walk under it.

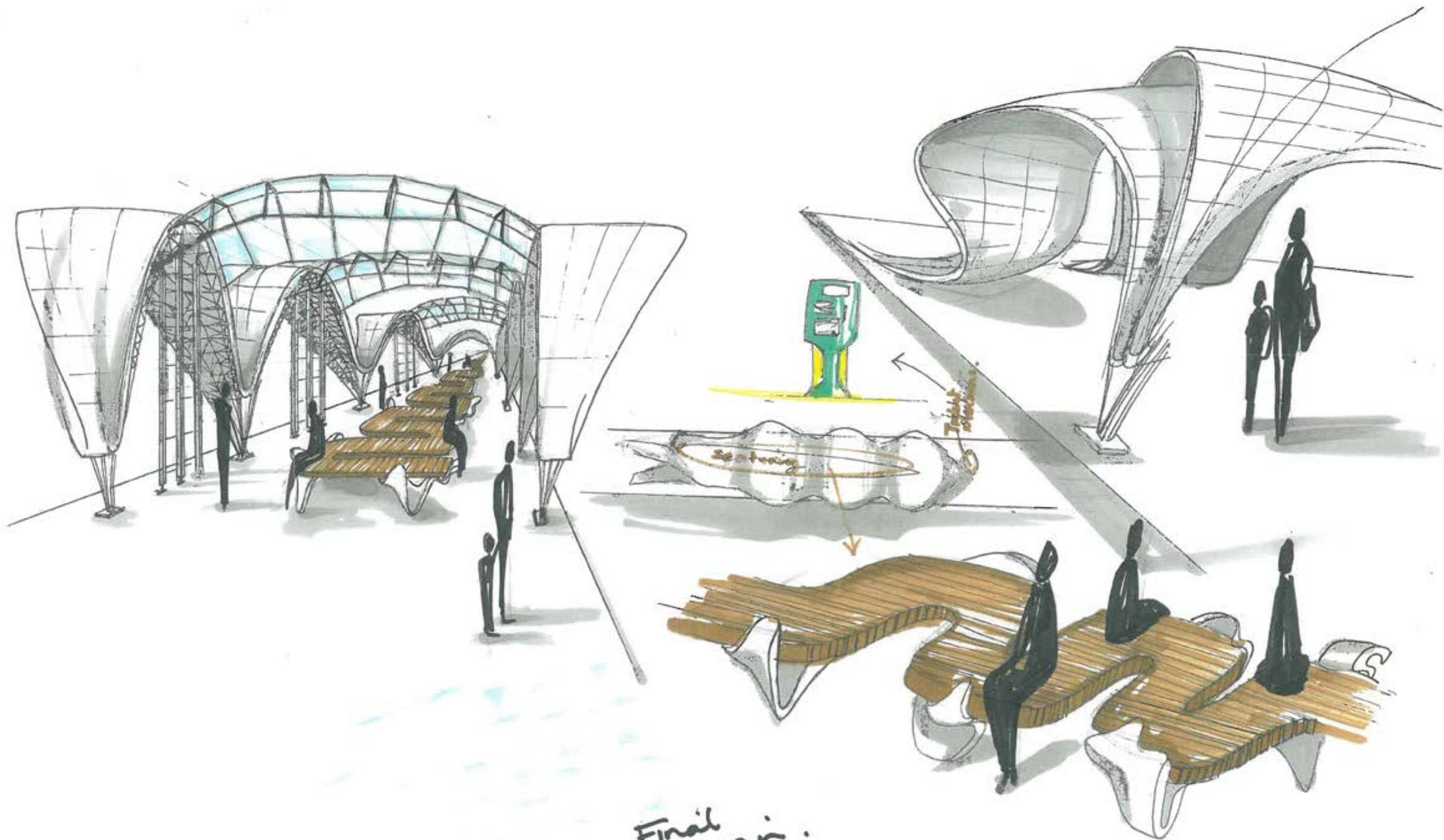


Similar to this the steel trusses will be bolted to form the above picture shown. This will create the frame for the glass shelter.



glass SHELTER that was chosen on refinement page. This will allow sun light and protect people from rainfall at the same time. This subsequently also achieves my design intent to utilize the natural light but decrease uncomfortability.





Final
Design.



MORNINGSIDE TRAIN STATION



Train Station

AS 91337 (2.30): Use visual communication techniques to generate design ideas (3 credits).

Achievement	Achievement with Merit	Achievement with Excellence	Overall level of attainment for 91337
Use visual communication techniques to generate design ideas.	Use visual communication techniques skilfully to generate design ideas.	Use visual communication techniques effectively to generate design ideas.	
<ul style="list-style-type: none"> Visual communication techniques are used to generate ideas to show design qualities. 	<ul style="list-style-type: none"> Visual communication techniques are used skilfully to generate ideas to show design qualities with clarity through well-articulated visual means. 	<ul style="list-style-type: none"> Visual communication techniques are used effectively to generate ideas to show design qualities with clarity and refined detailing. 	E
<ul style="list-style-type: none"> Design ideas are produced that explore simple alternatives. 	<ul style="list-style-type: none"> Divergent design ideas are produced that explore challenging, creative or unusual alternatives. 	<ul style="list-style-type: none"> Divergent design ideas are produced that are explored and extended. 	

Commentary:

Vis Com – E
Des Ideas – E

An Excellence exemplar where the strength of the Visual Communication is exemplified through freehand sketching and rendering.

Initial generation of ideas comes from exploration of shapes and forms seen in existing structures. This exploration continues through the conceptual stages of the design work and is then extended and refined as the work evolves through addition of forms and merging of ideas.

When the design work moves into project situation the initial shapes and forms are given architectural context through the use of figures, scale, rendering and a series of 2D and 3D sketched to effectively explain the ideas. The use of elevations and details support the 3D design work and this results in visual communication that attains the highest grade.