

**Technical Design Study** for *Soundsape Archive; pleasure and silence*

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DES3B. 6ARCH010W

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*studio tutors: Constance Lau, Stephen Harty*

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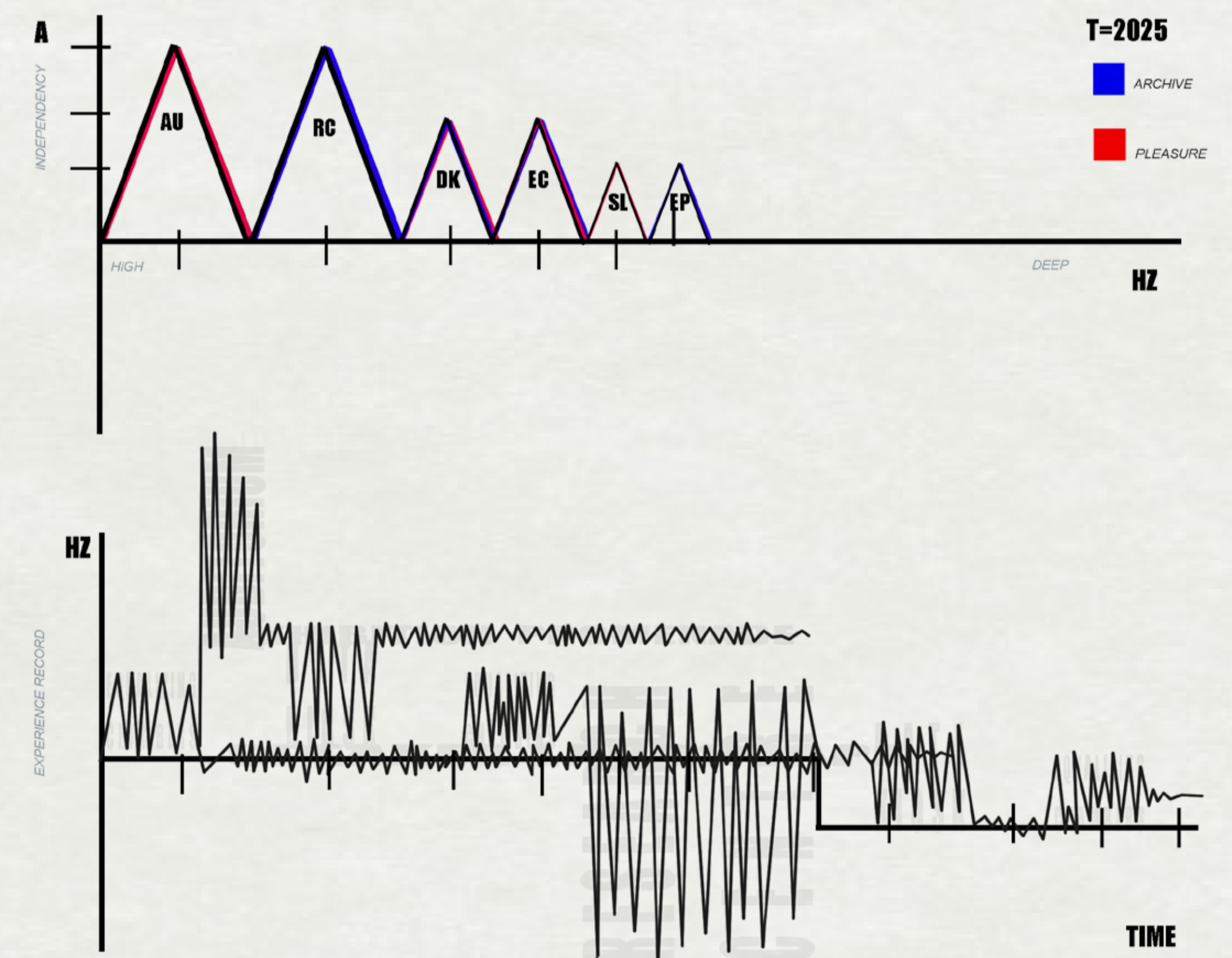
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*Soundscape archive ; Pleasure and silence*



*Initial diagram of the spaces the proposal will include*

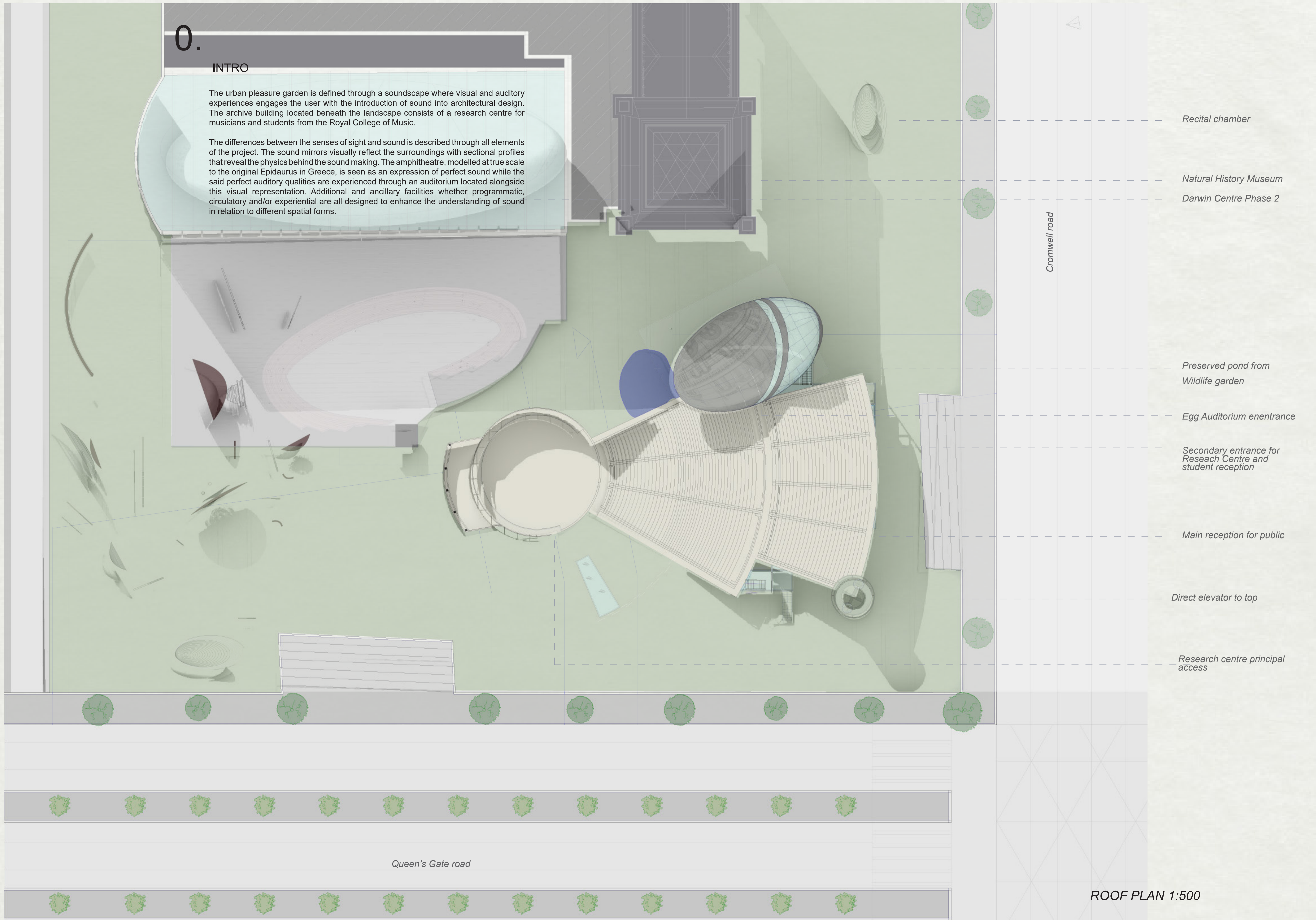


# 0.

## INTRO

The urban pleasure garden is defined through a soundscape where visual and auditory experiences engages the user with the introduction of sound into architectural design. The archive building located beneath the landscape consists of a research centre for musicians and students from the Royal College of Music.

The differences between the senses of sight and sound is described through all elements of the project. The sound mirrors visually reflect the surroundings with sectional profiles that reveal the physics behind the sound making. The amphitheatre, modelled at true scale to the original Epidaurus in Greece, is seen as an expression of perfect sound while the said perfect auditory qualities are experienced through an auditorium located alongside this visual representation. Additional and ancillary facilities whether programmatic, circulatory and/or experiential are all designed to enhance the understanding of sound in relation to different spatial forms.



*Recital chamber*

*Natural History Museum*

*Darwin Centre Phase 2*

*Preserved pond from Wildlife garden*

*Egg Auditorium enentrance*

*Secondary entrance for Reseach Centre and student reception*

*Main reception for public*

*Direct elevator to top*

*Research centre principal access*

*Queen's Gate road*

*Cromwell road*

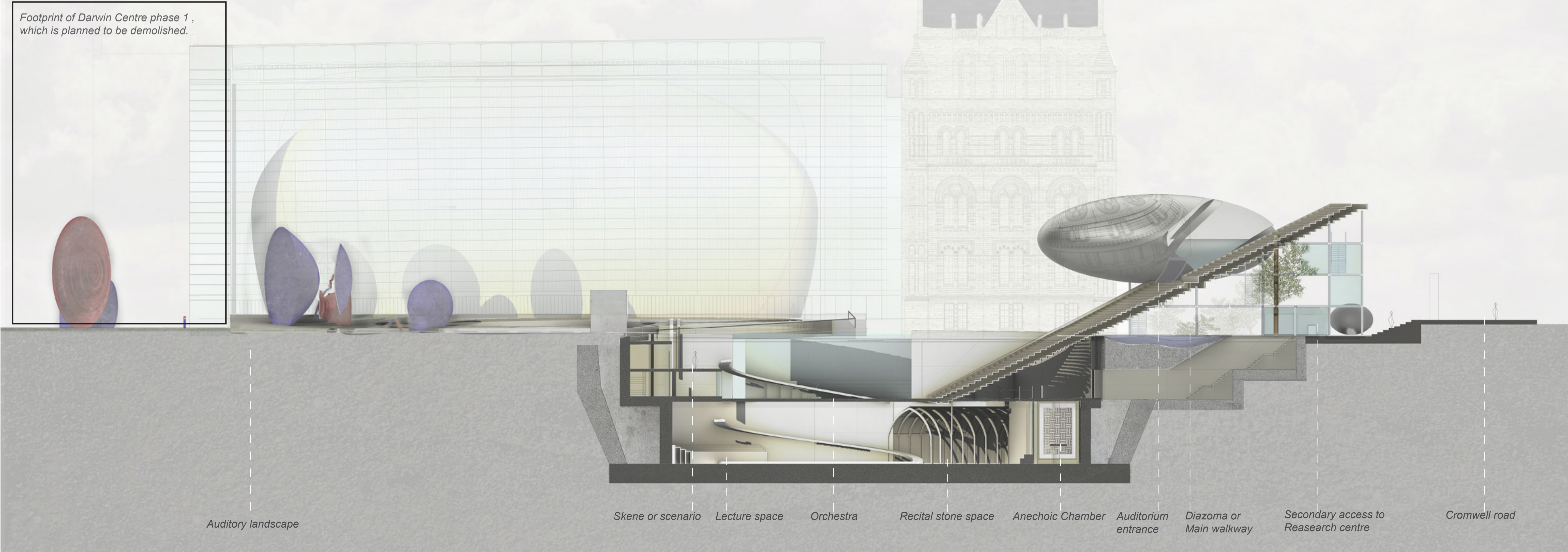
**ROOF PLAN 1:500**



0.



Footprint of Darwin Centre phase 1, which is planned to be demolished.



Auditory landscape

Skene or scenario

Lecture space

Orchestra

Recital stone space

Anechoic Chamber

Auditorium entrance

Diazoma or Main walkway

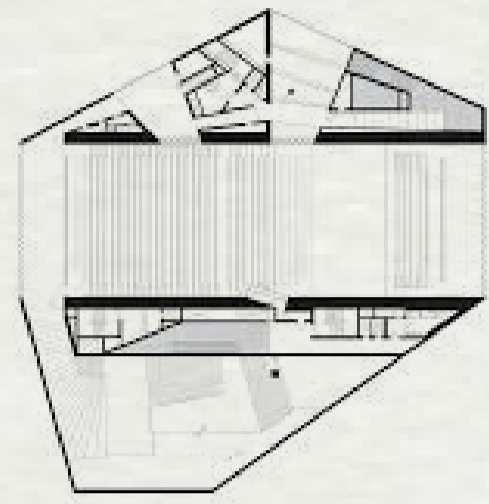
Secondary access to Reasearch centre

Cromwell road

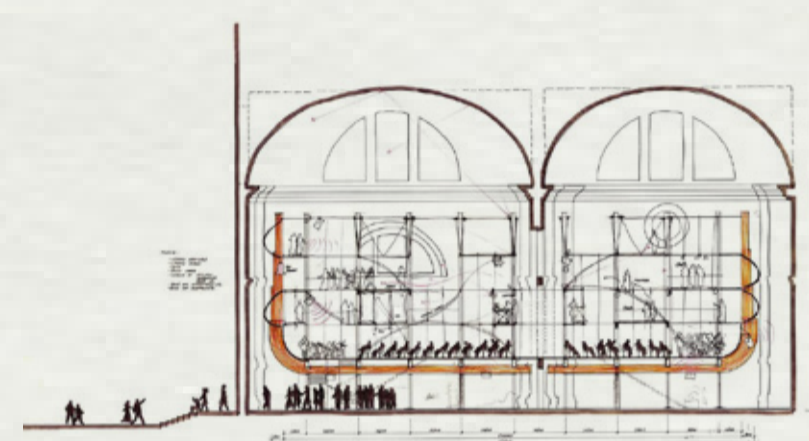


# 1. STRUCTURAL STRATEGY : PRECEDENTS

PERFORMANCE BUILDINGS or spaces where the music (sound) is broadcast / played.



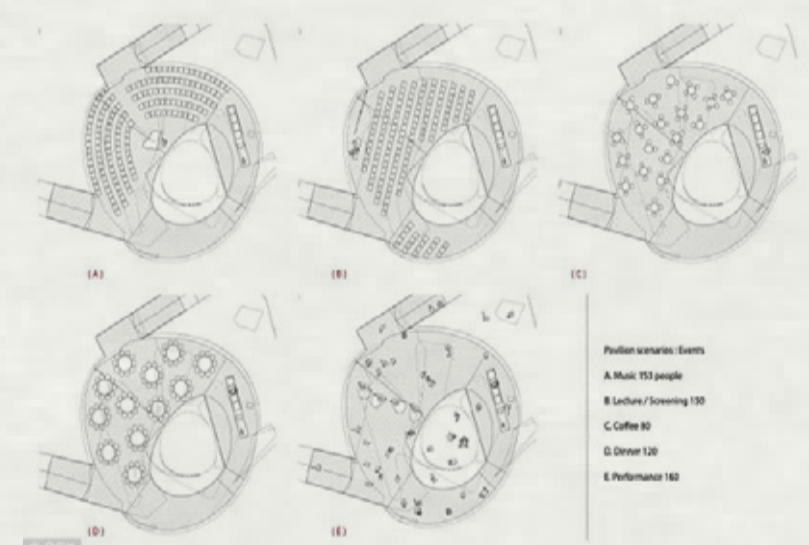
Casa da Musica by OMA, Porto



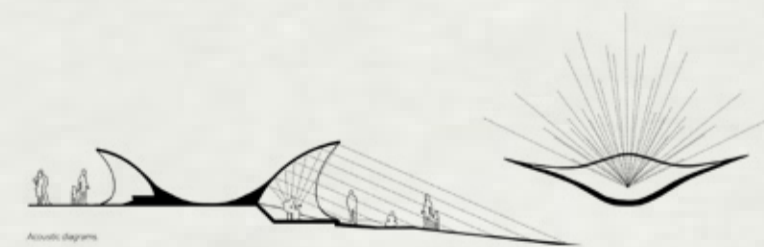
Prometeo by Renzo Piano, Venice (Portable)



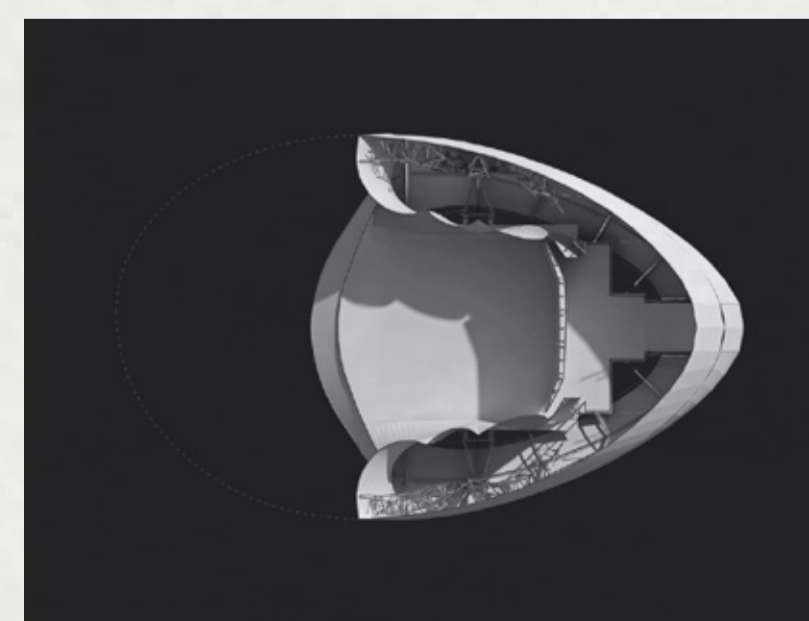
SOUND INTERACTIVE BUILDINGS where environmental sounds take part of the performance/ experience.



Radic pavillion by Smiljan Radić, London



Acoustic Shells by Flanagan Lawrence, Littlehampton



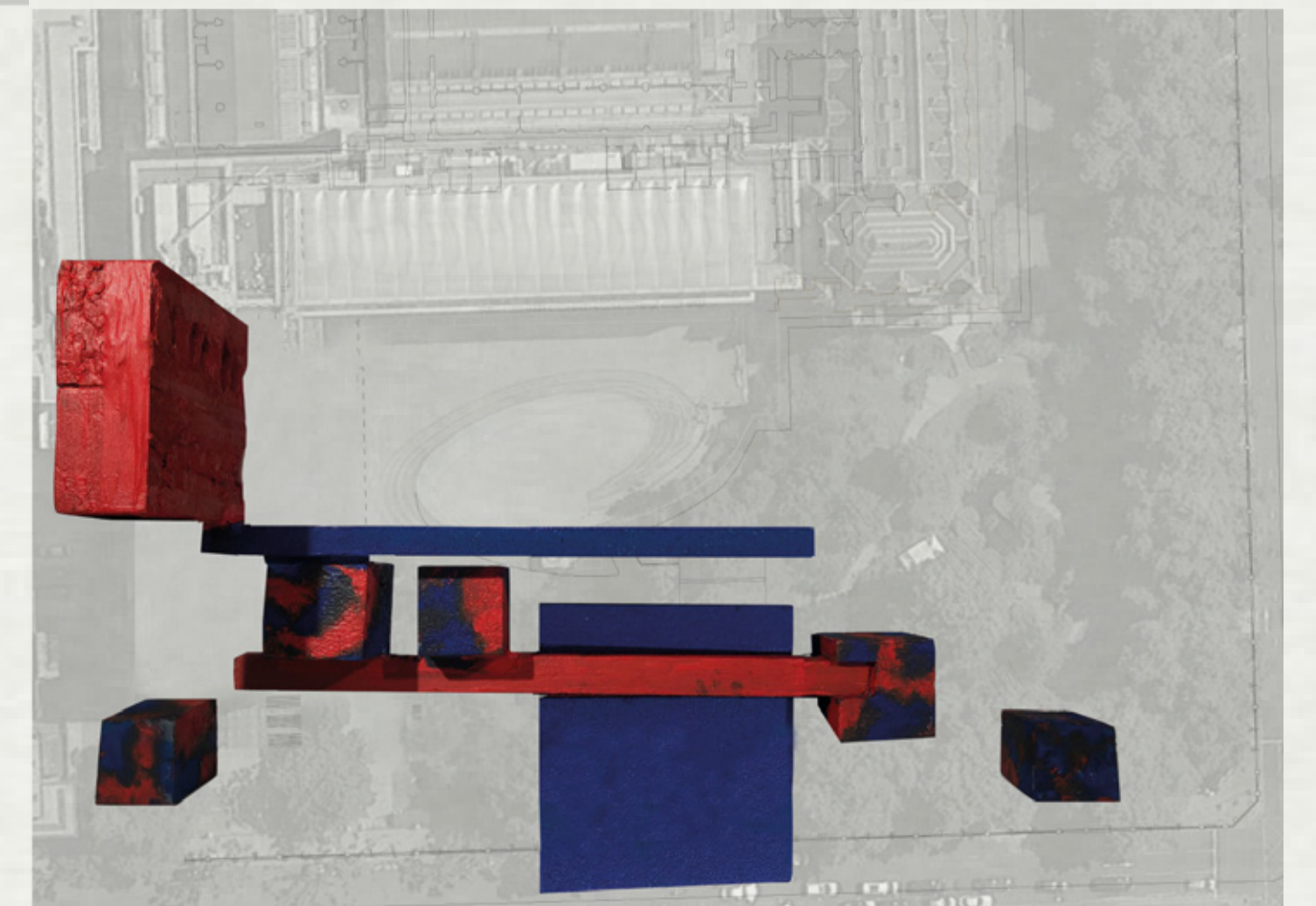
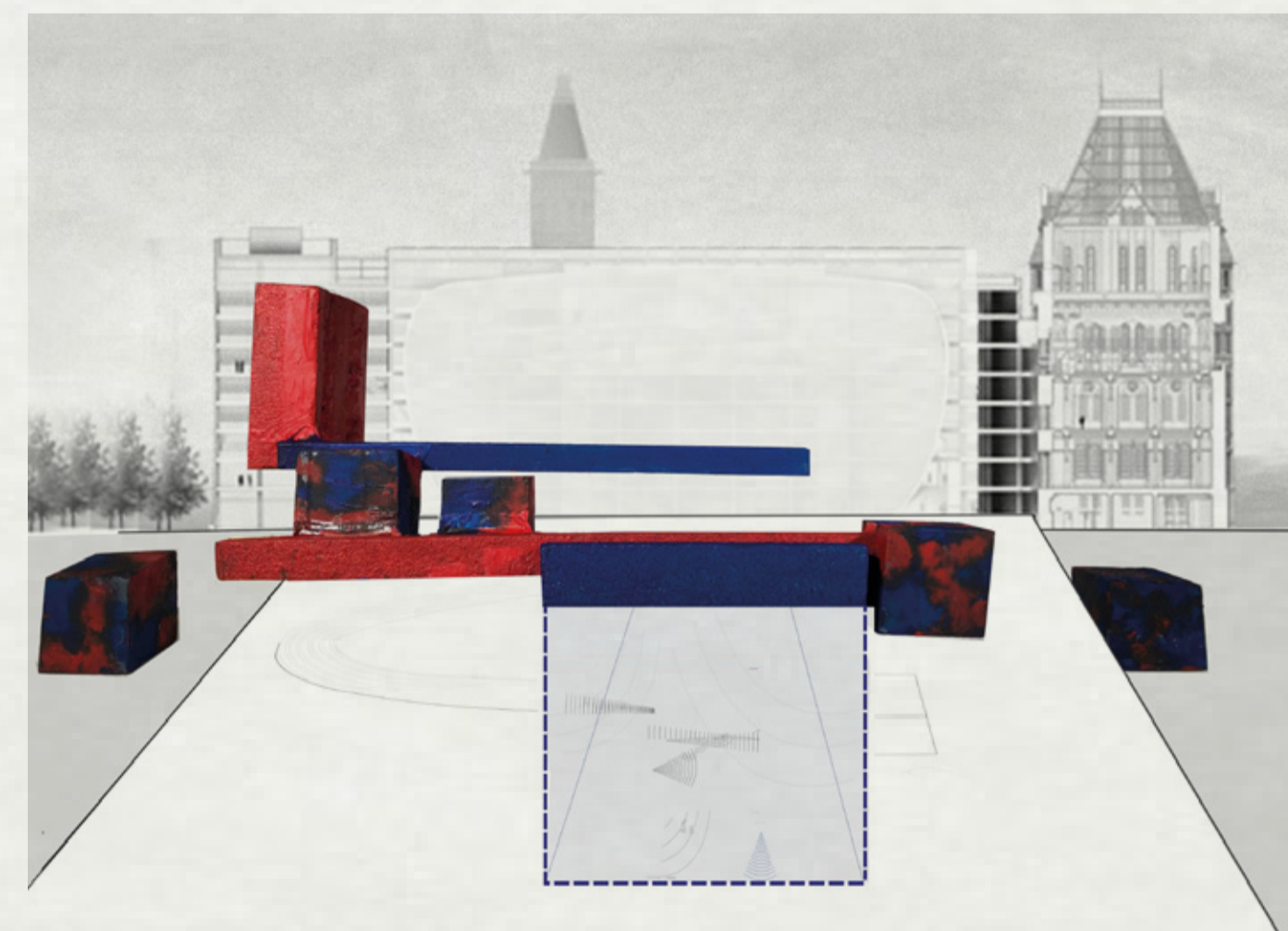
Soundforms by Flanagan Lawrence, Portable



INSTITUTE BUILDING where music and sound are studied.



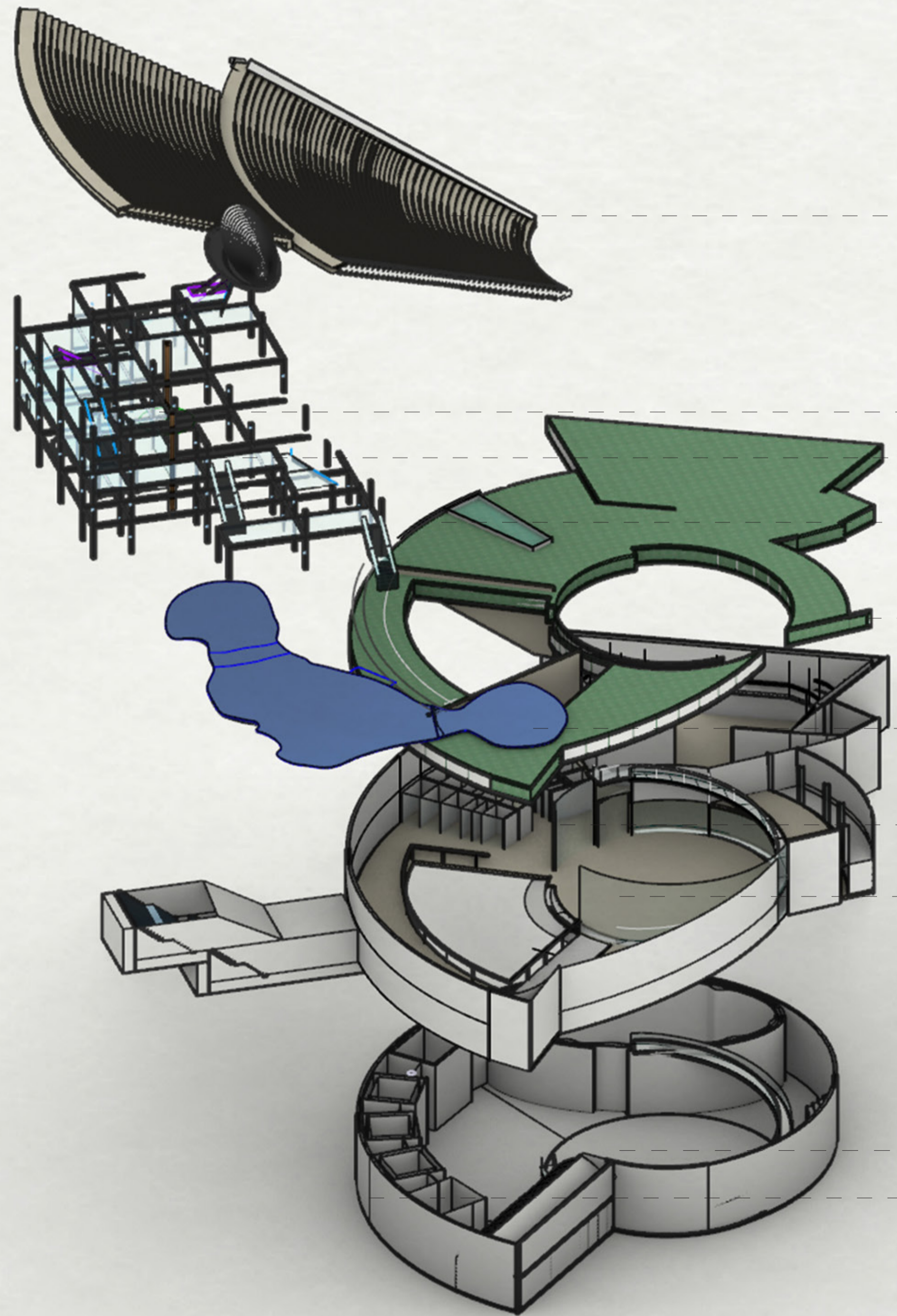
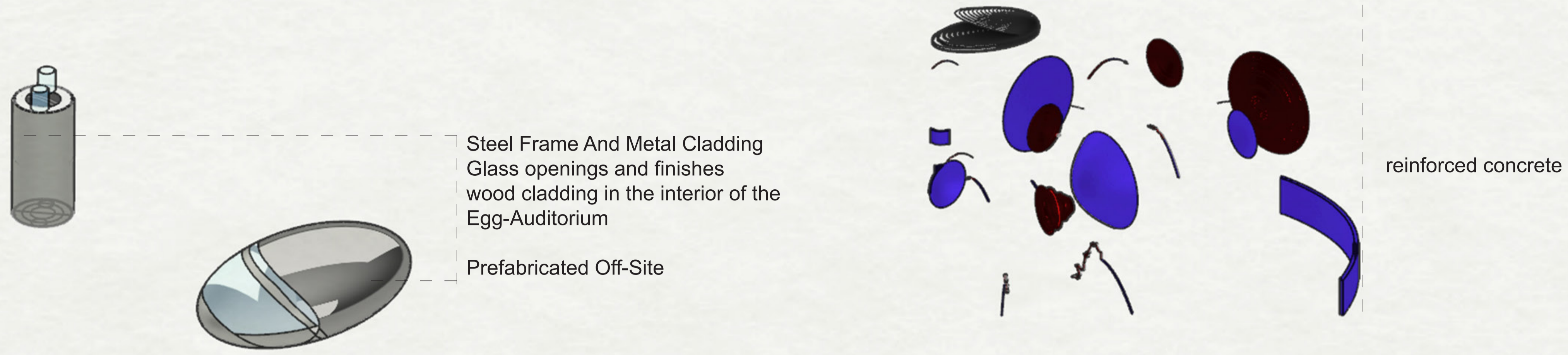
IRCAM by Renzo Piano, Paris

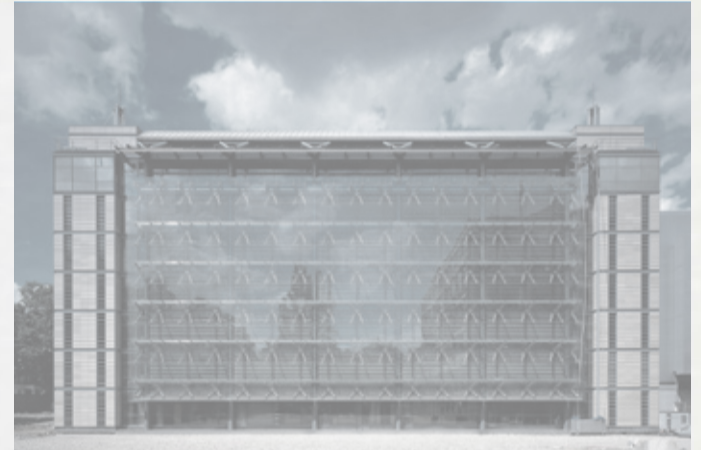


Acrylic painted on foam model. 3D exploration of the programme diagramme following auditorium and music principles.



# 1. STRUCTURAL STRATEGY : 3D EXPLODED DIAGRAM



FOUNDATIONS	SUPERSTRUCTURE	PRIMARY/SECONDARY	Source
	Limestone		Import
	Steel Box-truss Glass Flooring		Recycled steel frame and glass facade from the demolition of Darwin centre phase one
	Green Roof		 MATERIAL PASSPORT There is currently The wildlife garden on site, the soil would be kept the same.
		Glass walls and openings	
Reinforced Concrete Foundations			Acoustic isolation materials , treatment of the rooms
Concrete And Stone Retaining Walls			

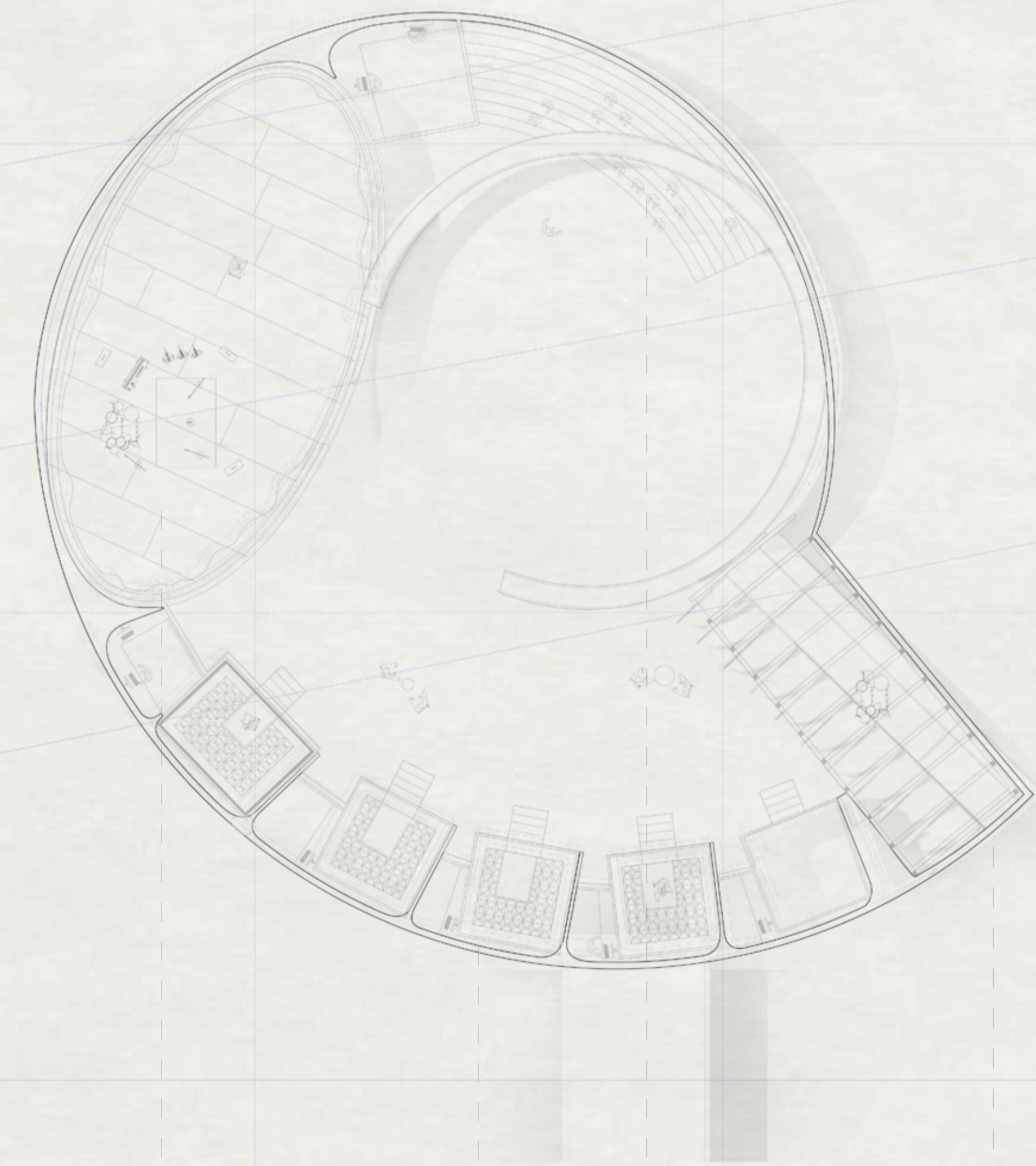
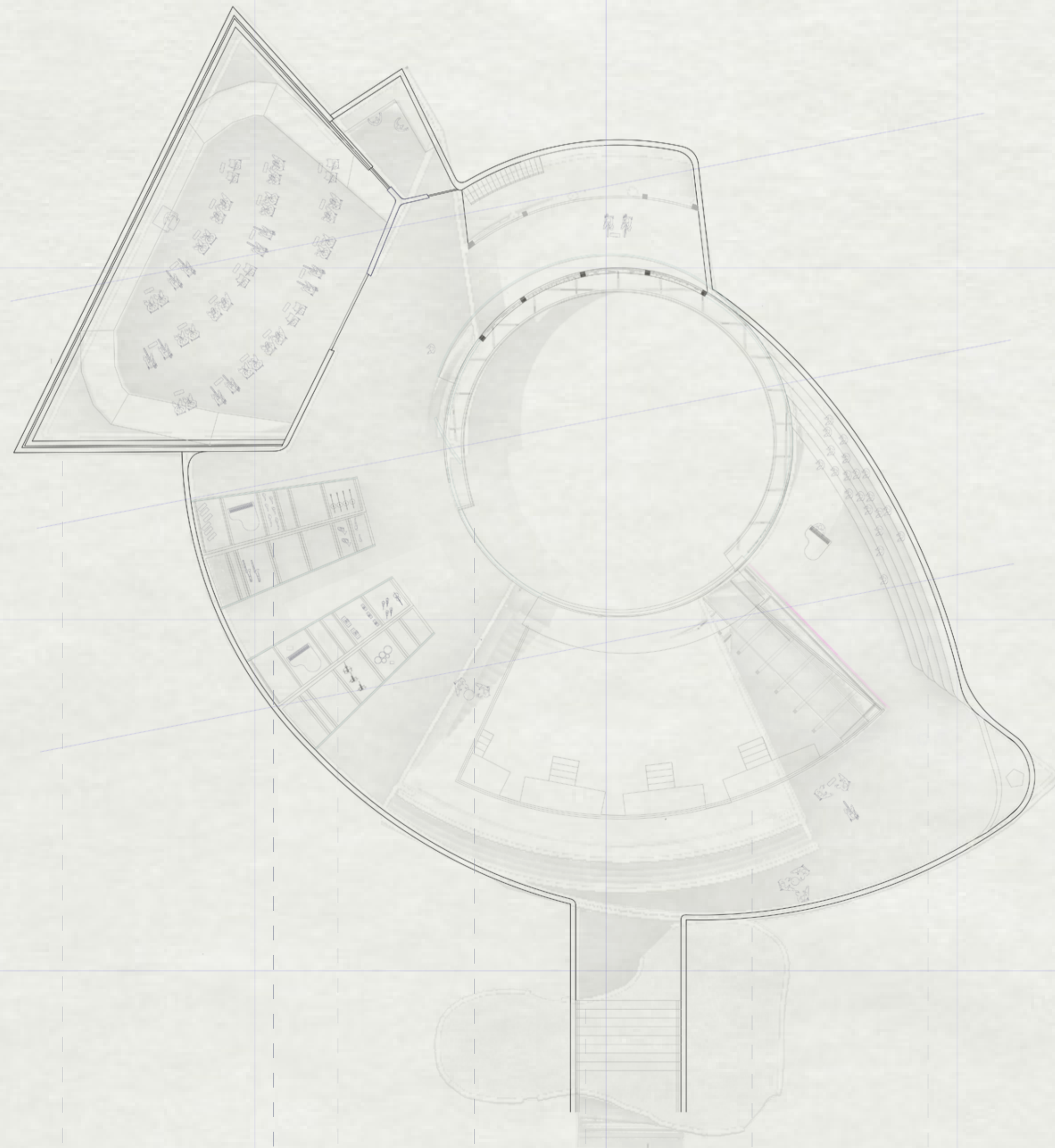


1. . STRUCTURAL STRATEGY : BASEMENT AND LOWER BASEMENT PLANS 1:200

Research centre.

basement

lower basement



Reharsal room

Instrument storage

Main door

Tunnel entrance

Reception balcony

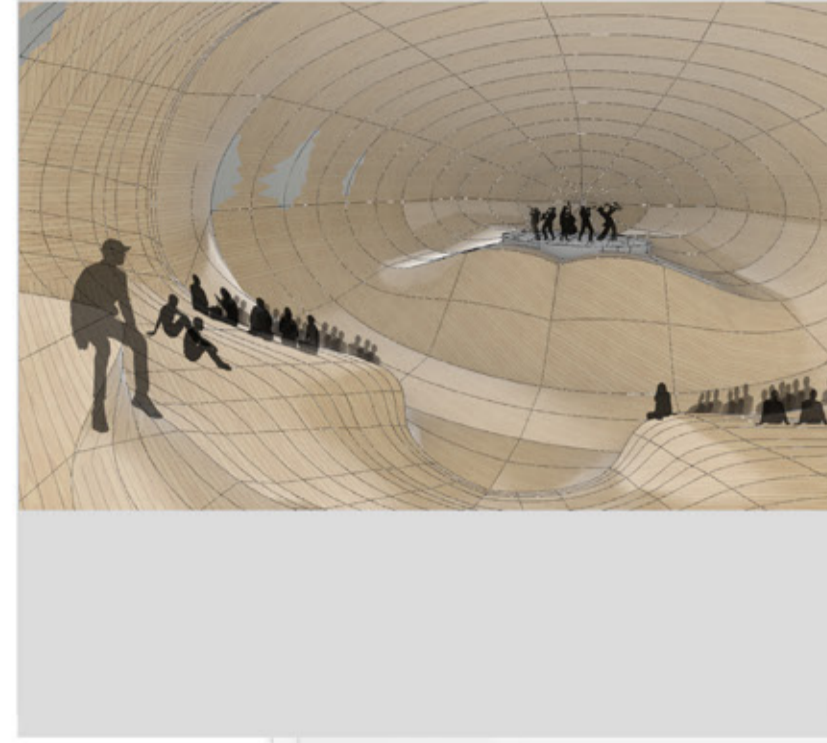
Lecture space/ miscellaneous

Anechoic chamber and corresponding monitor rooms

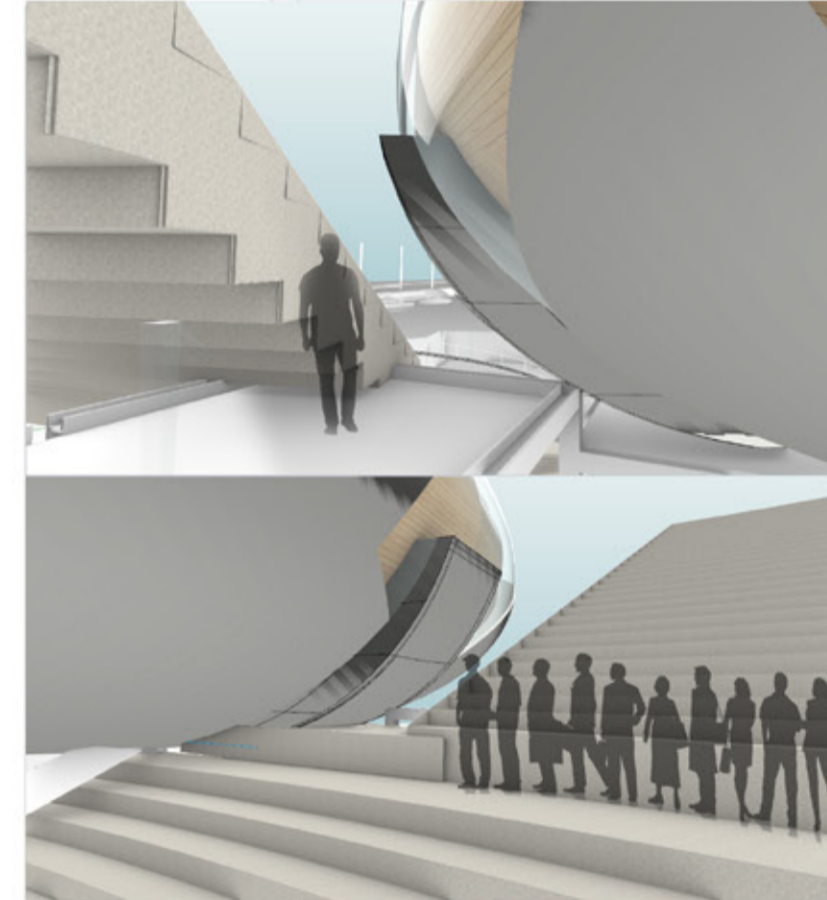
Lecture space/ miscellaneous

Recital stone space



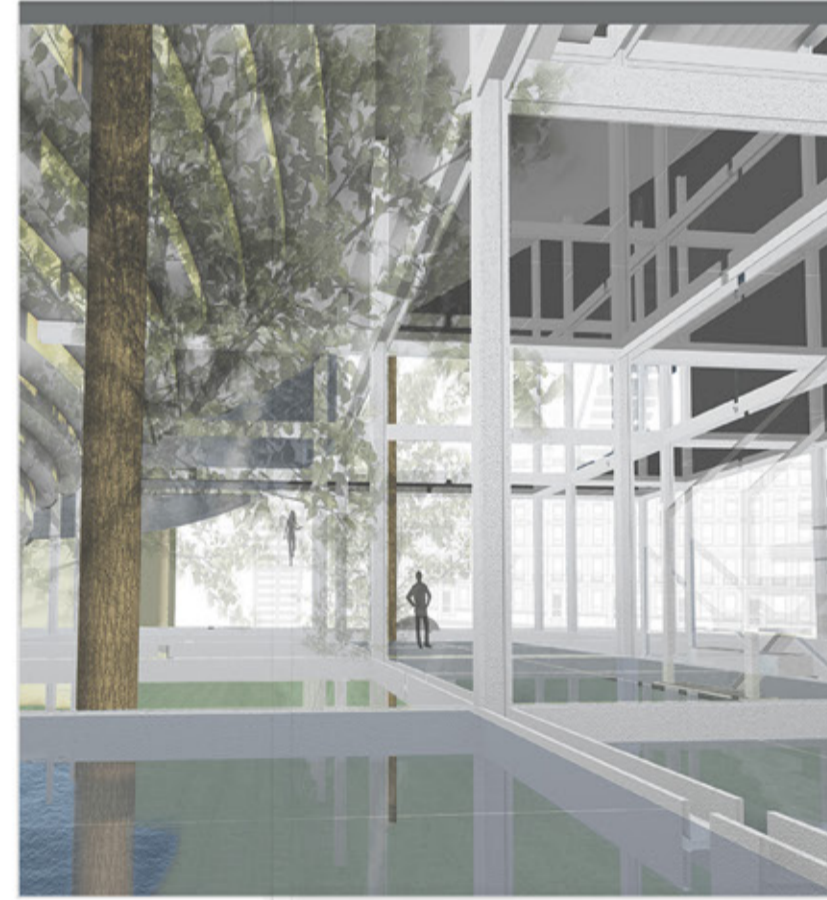


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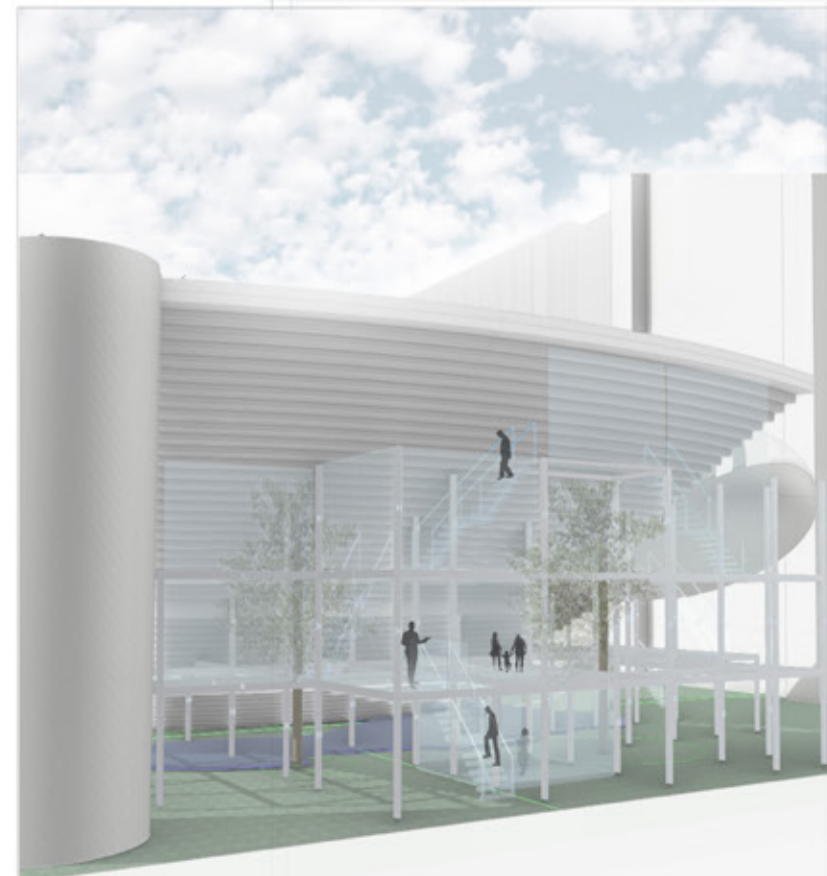


3'

3

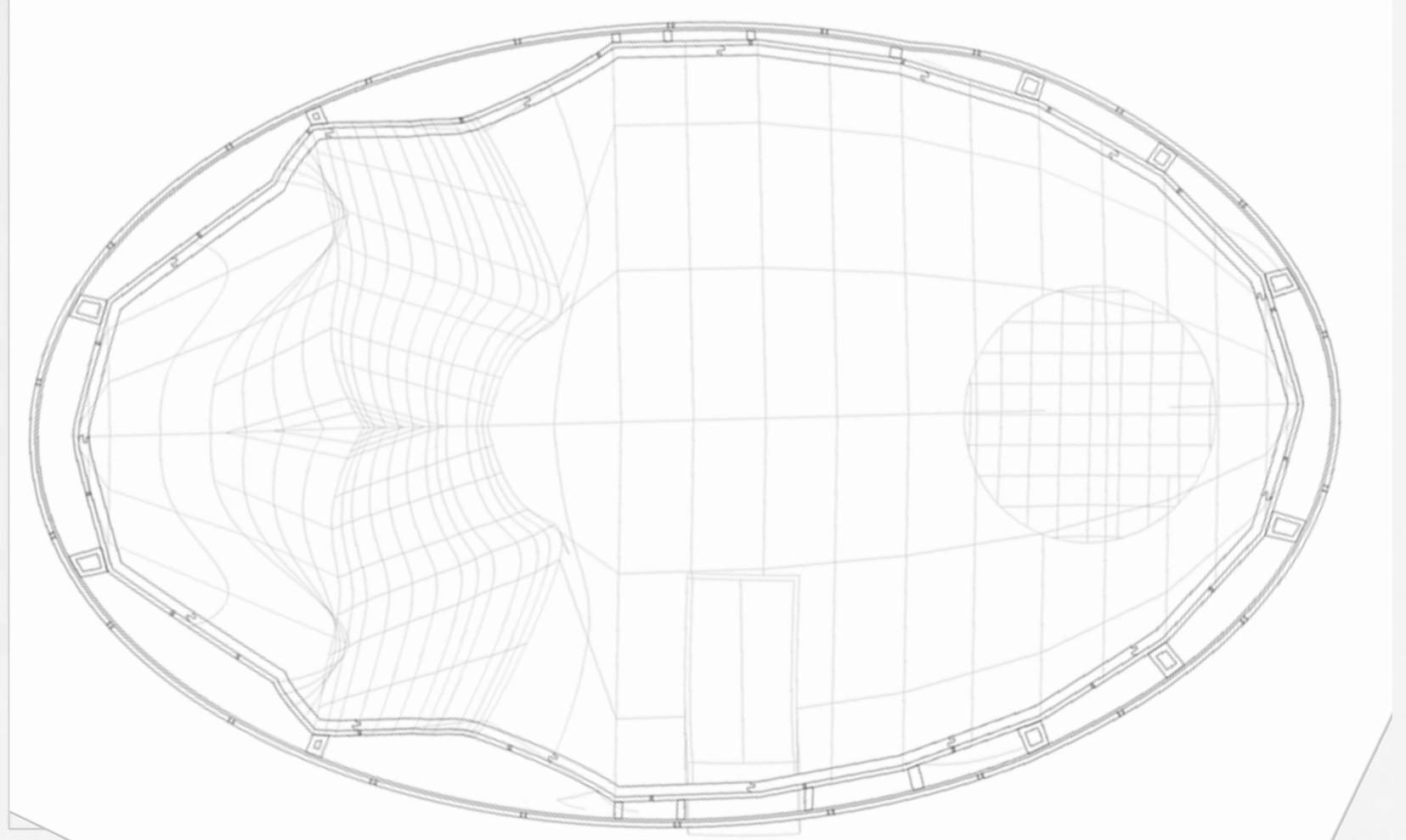
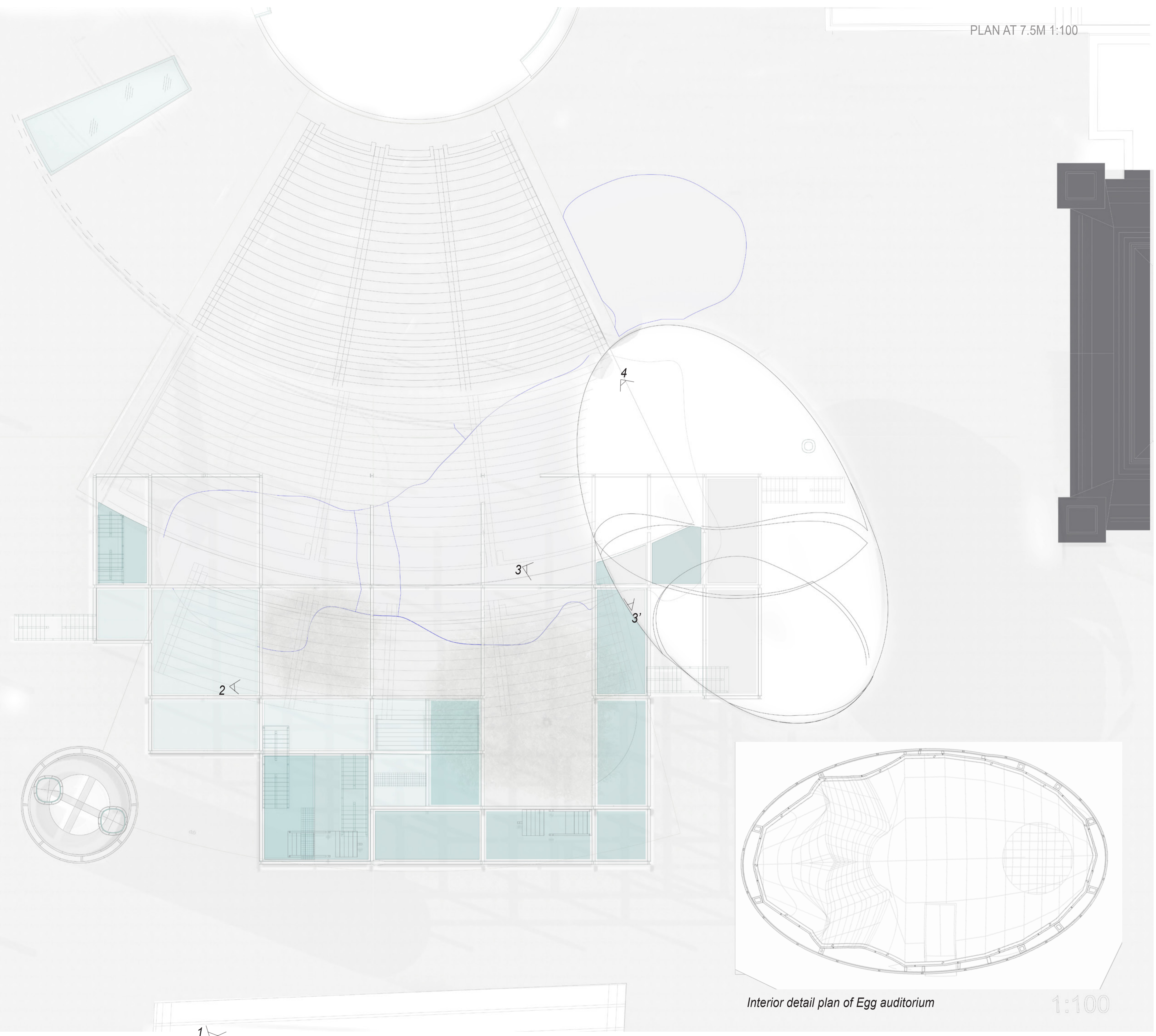


2



1

"Attending a show at the Egg auditorium Journey"

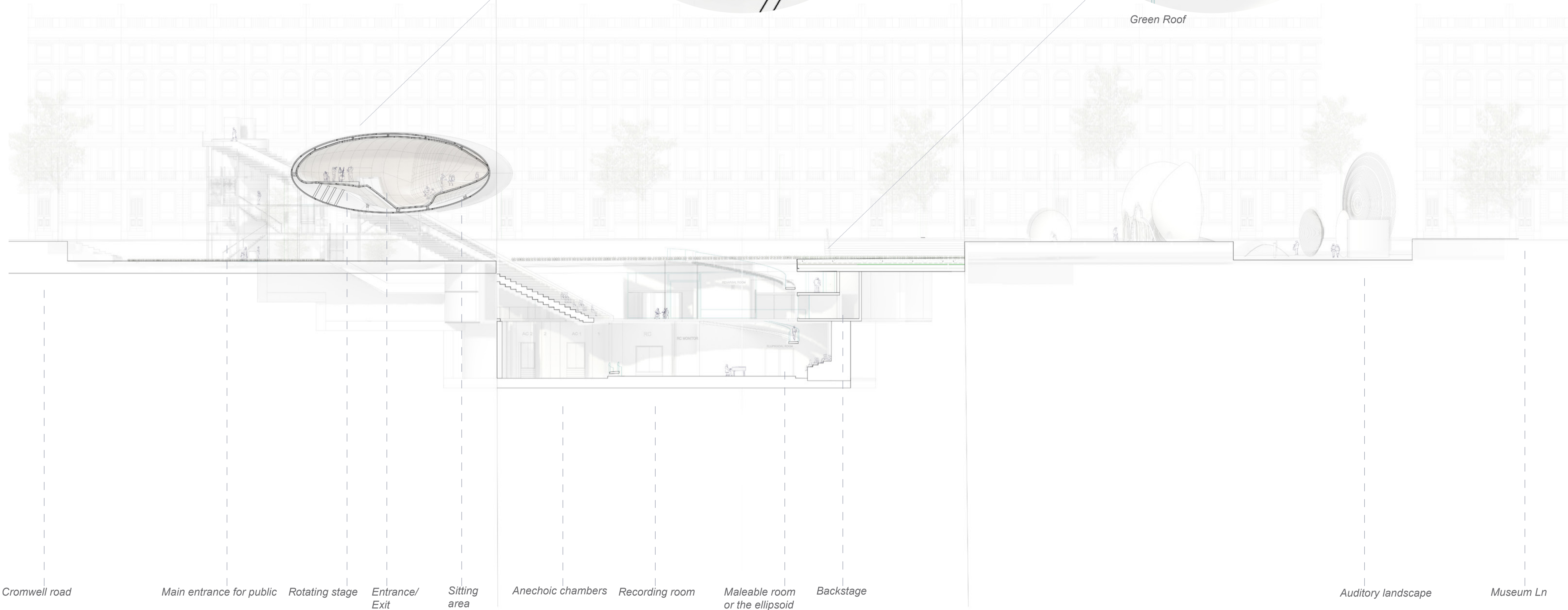
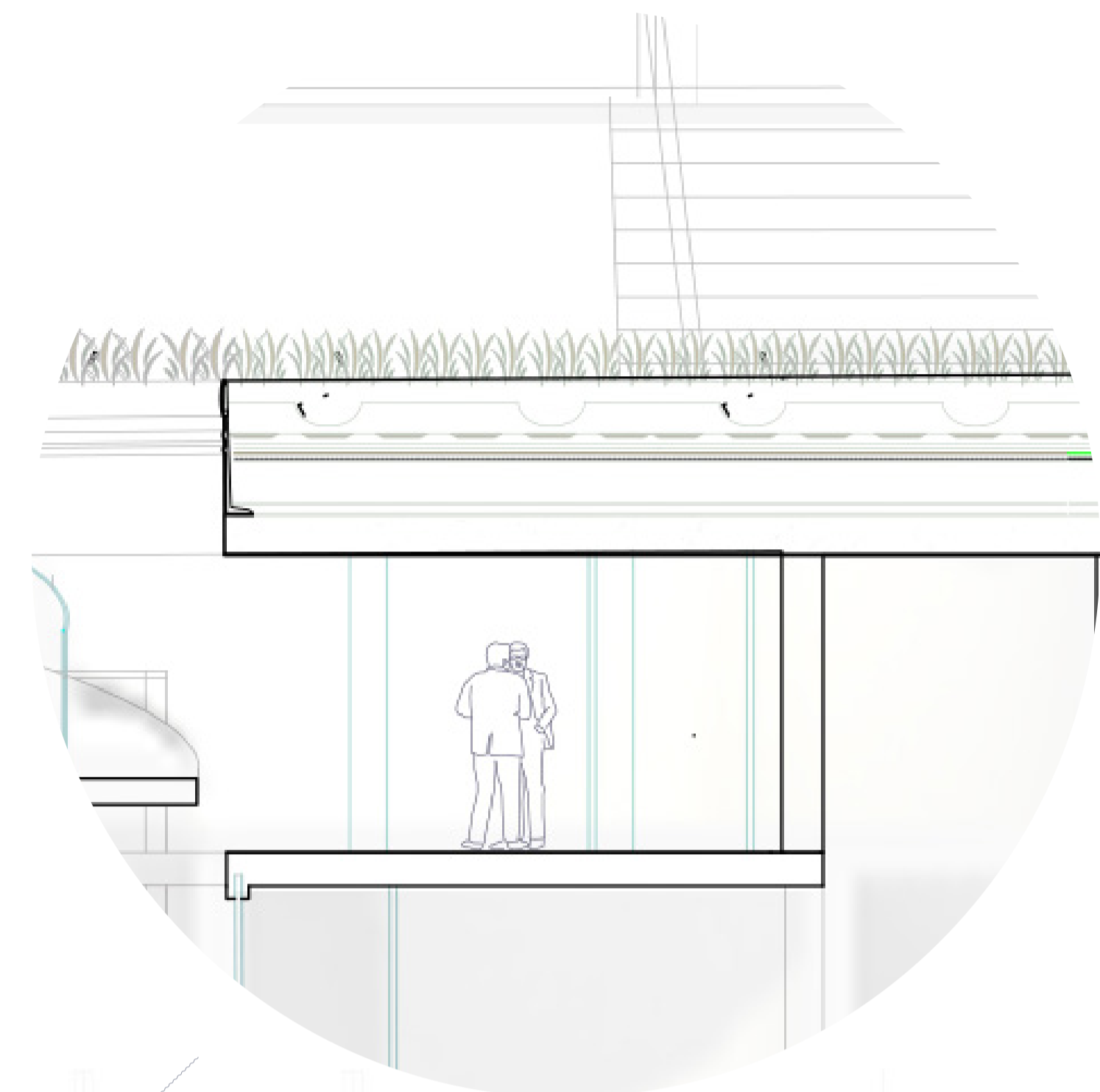
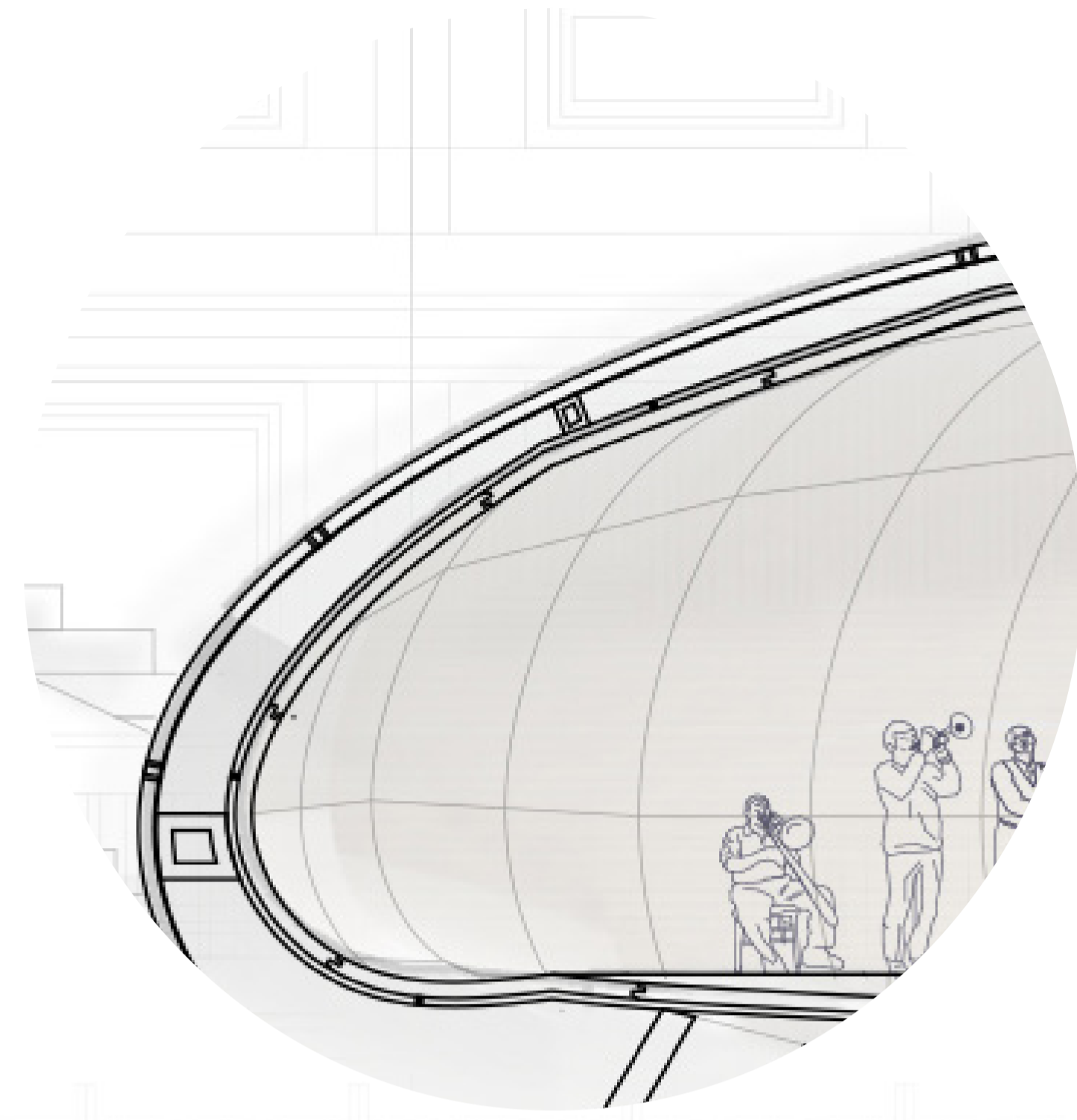
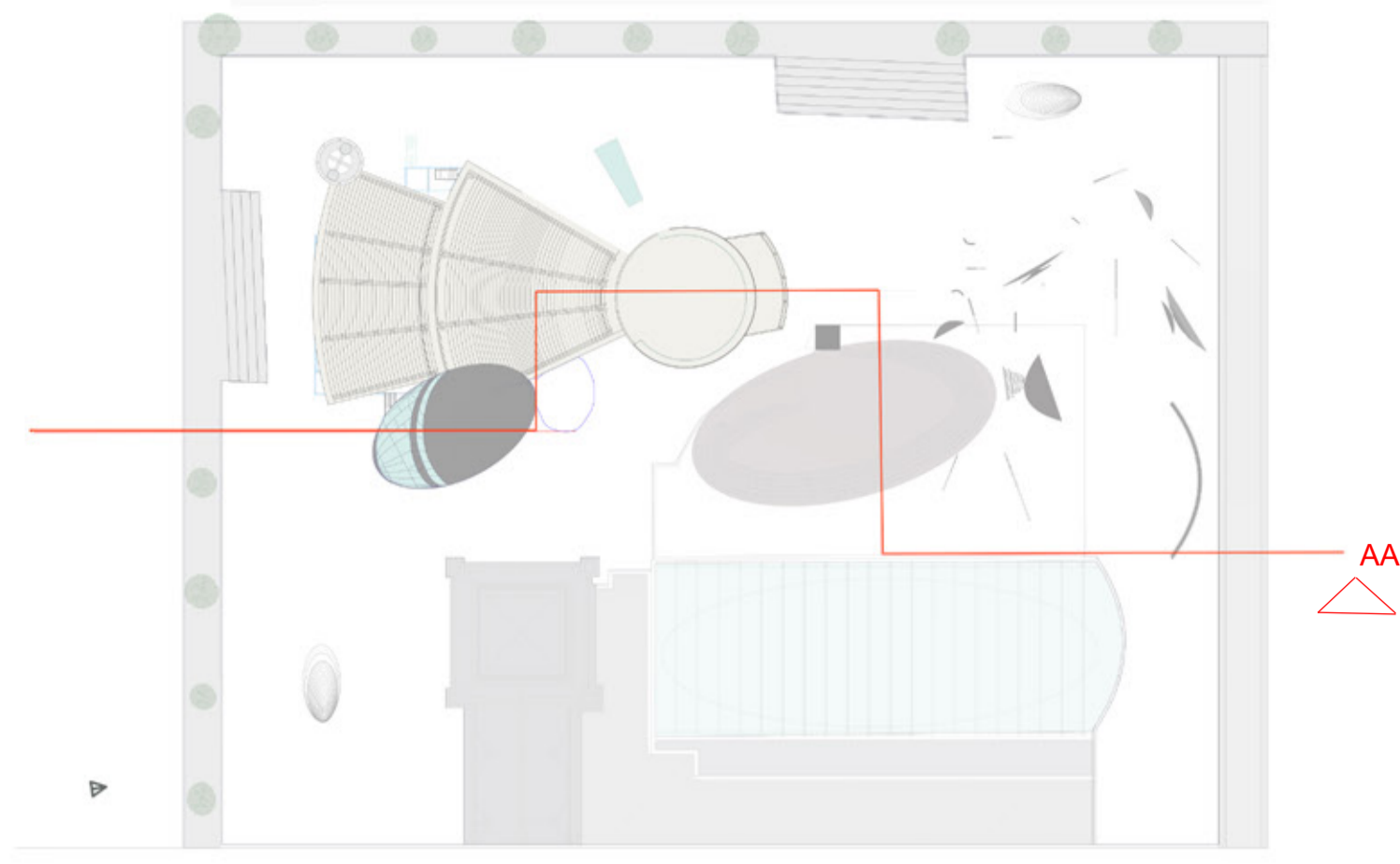


Interior detail plan of Egg auditorium

1:100

1

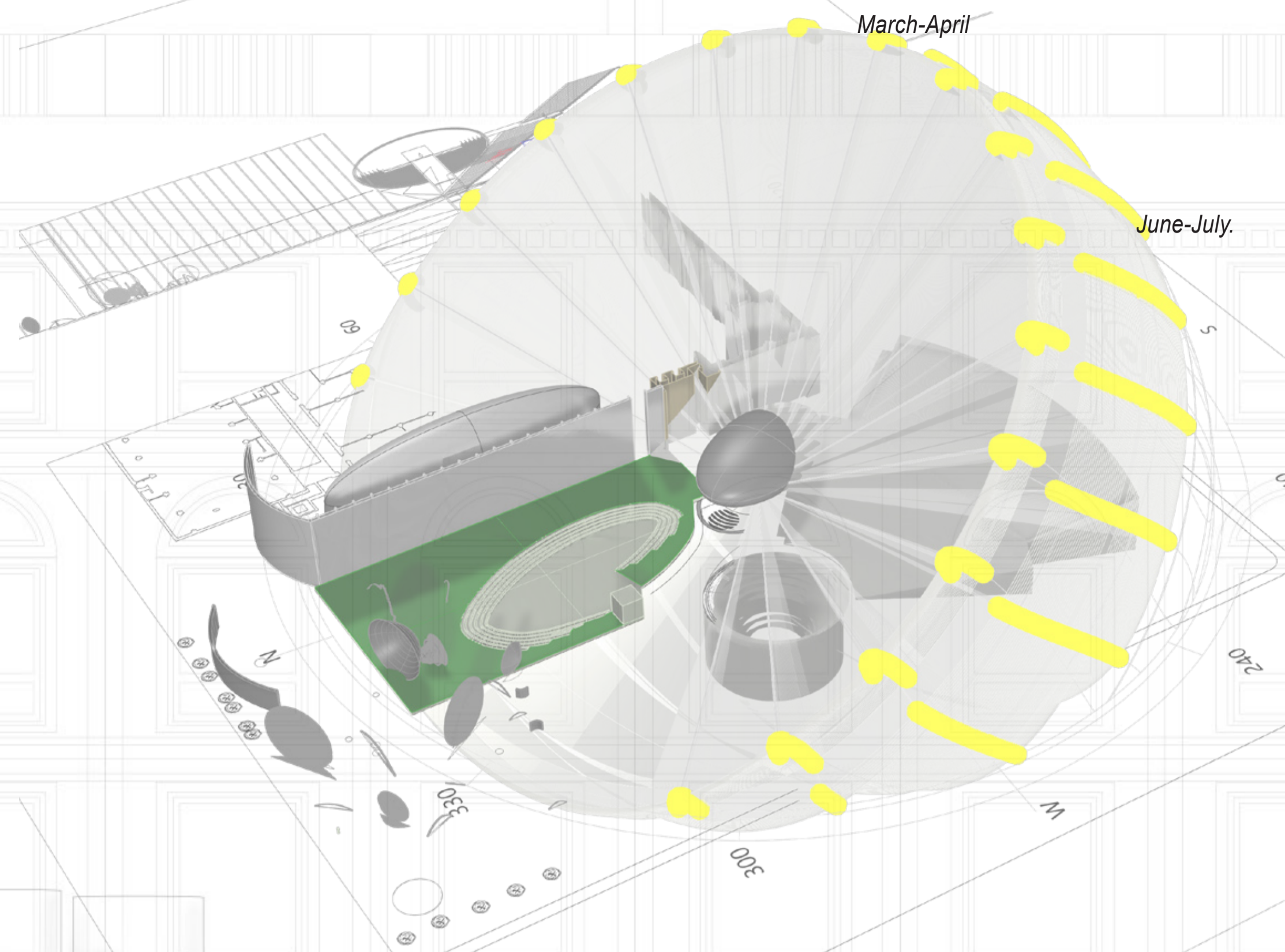




Green Roof

Cromwell road    Main entrance for public    Rotating stage    Entrance/Exit    Sitting area    Anechoic chambers    Recording room    Maleable room or the ellipsoid    Backstage    Auditory landscape    Museum Ln

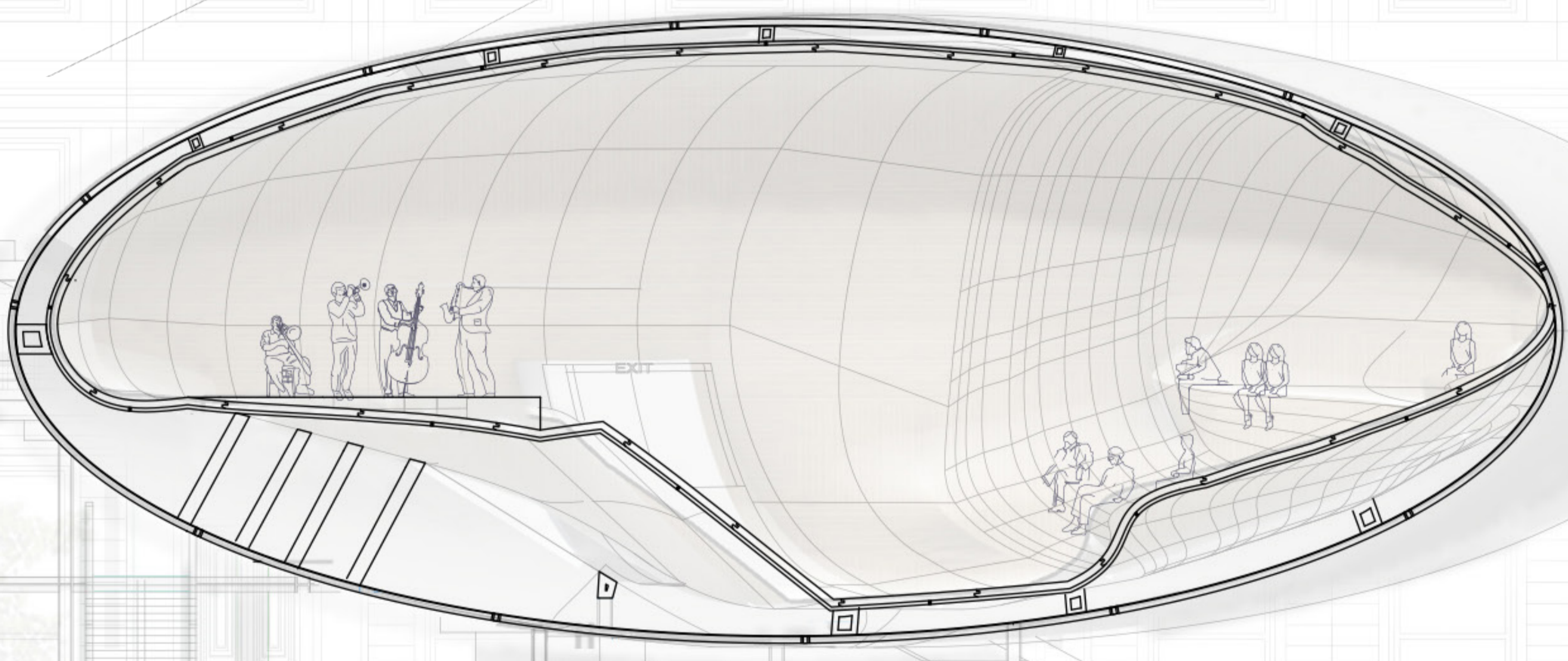
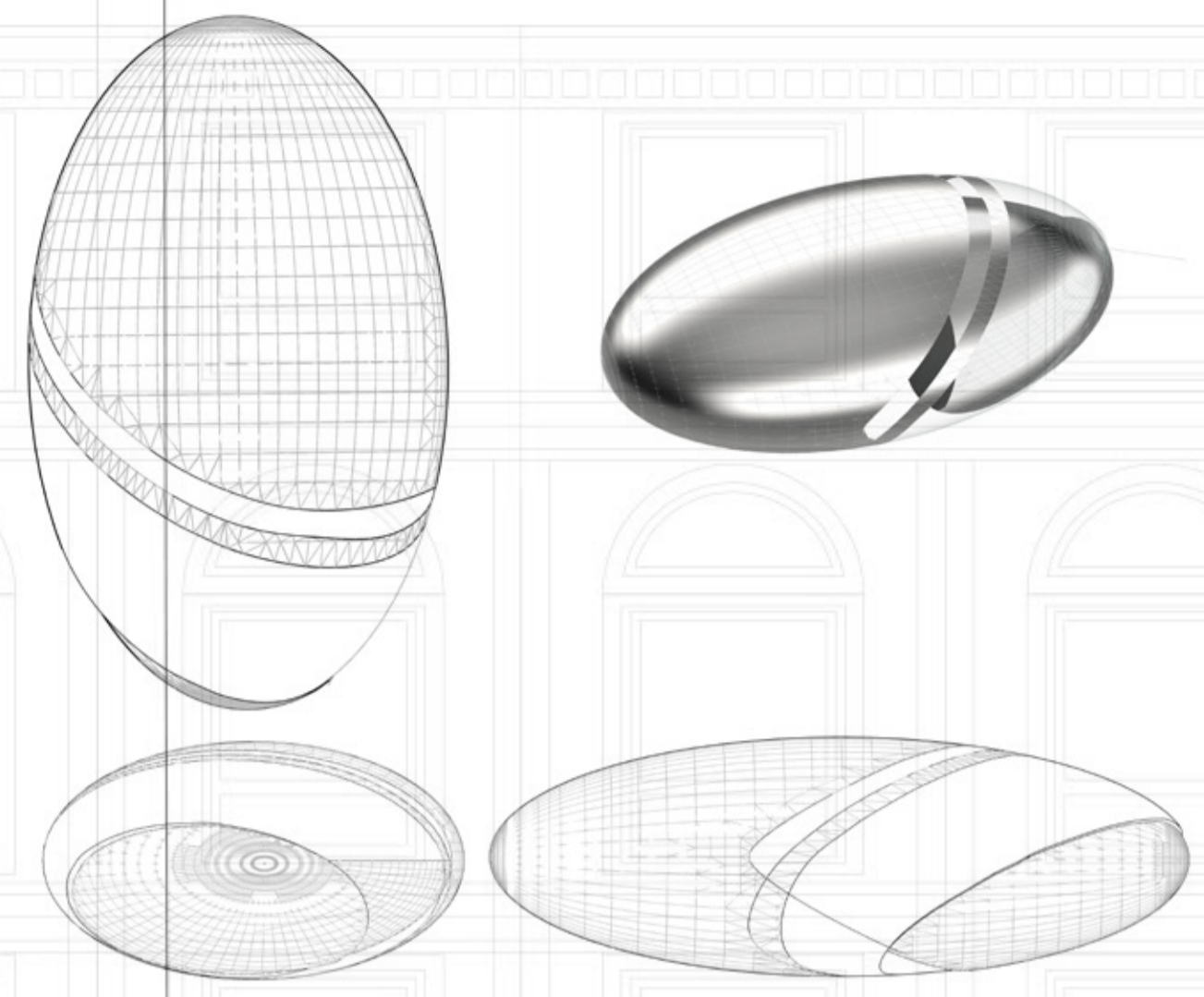




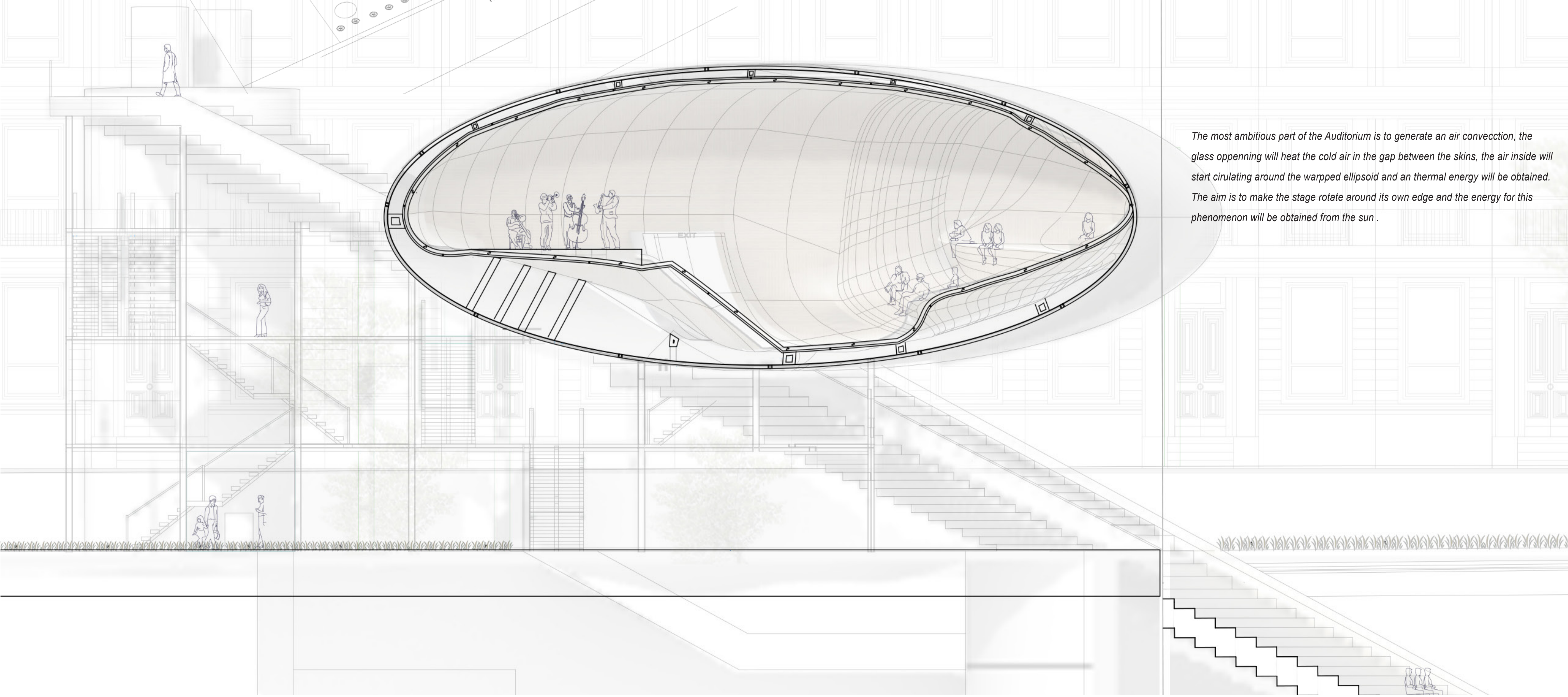
The external cladding is made of Aluminium and glass, its shape is give by the sun-path, as it replicates the impact of the degrees on the periods : march-April June-July. The reason behind this is following the narrative between the contrast of the visual and the auditory, the see versus the hear. In my proposal an Slice 1:1 scale of Epidaurus Amphitheatre inspires the perfect sound, whilst this idea is experienced aurally through the Auditorium.

The geometry of the interior gladding attempts to follow the ellipsoidal which will give the space a focusing effect, although the pure doubled curved structure becomes distorted and warped in order to dissipate this effect slightly so the experience is more comfortable.

The interior cladding is constructed of wood, the material helps absorb the most extreme frequencies to clear the sound.

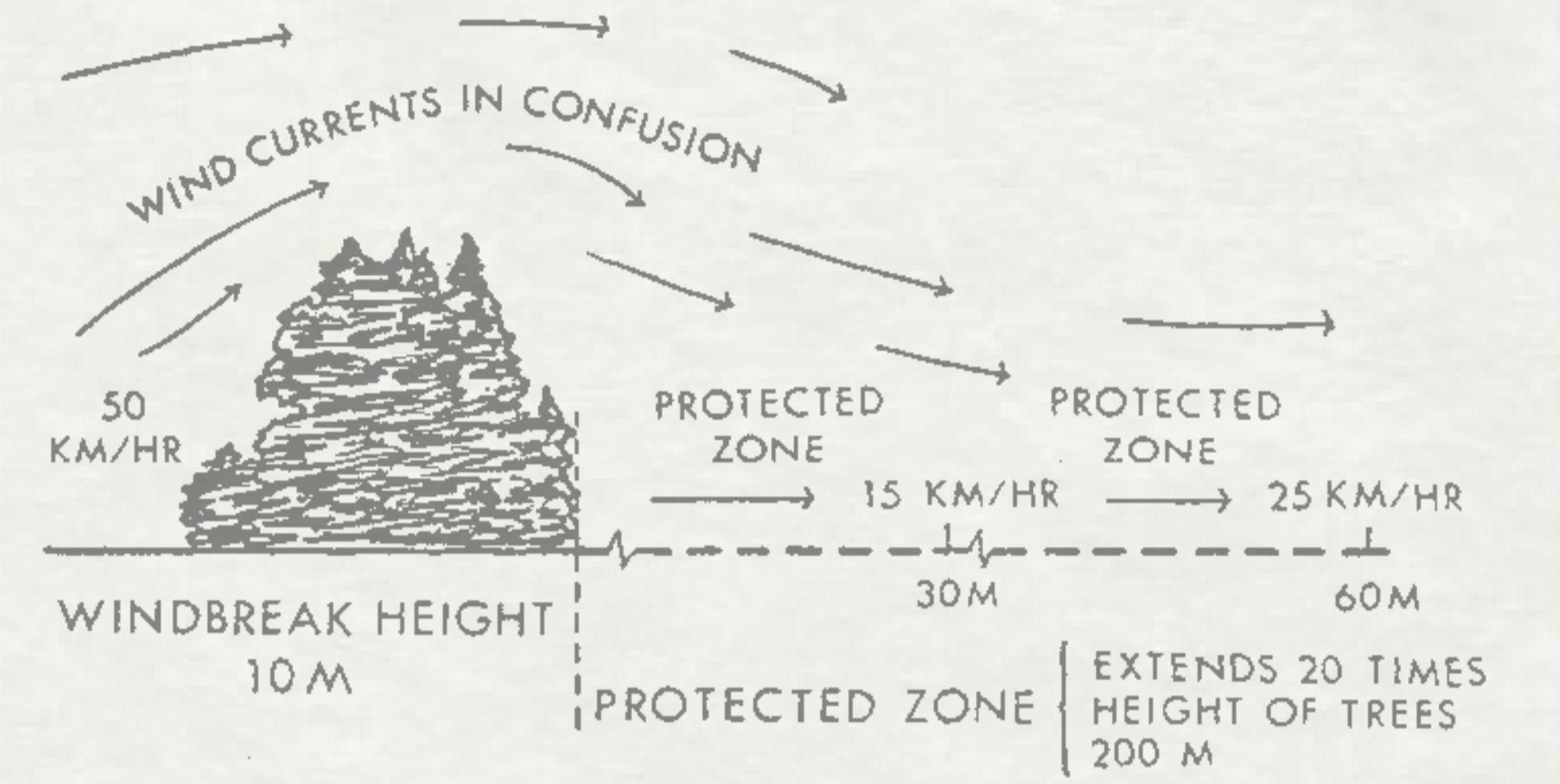
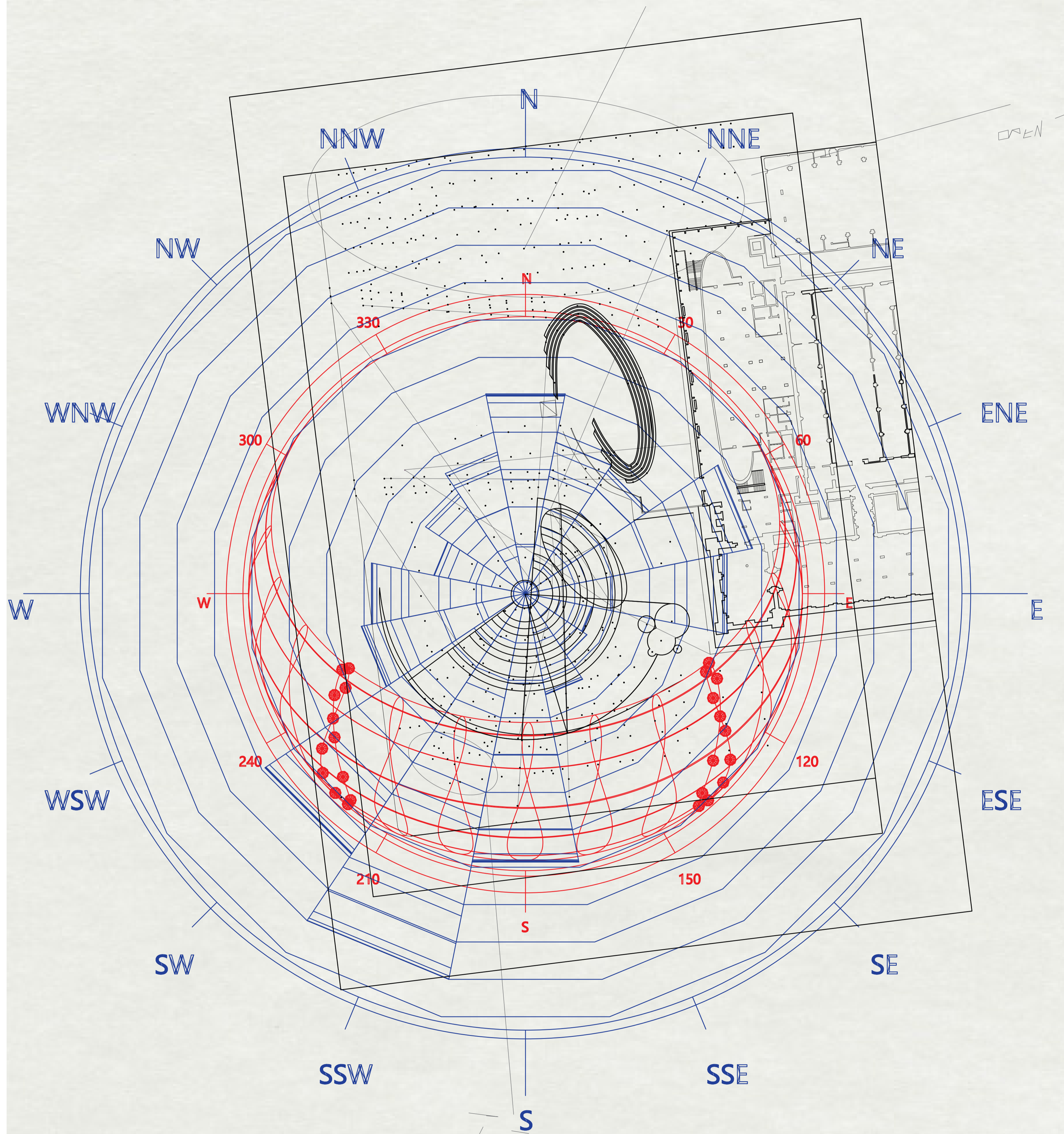


The most ambitious part of the Auditorium is to generate an air convection, the glass oppenning will heat the cold air in the gap between the skins, the air inside will start cirulating around the warpped ellipsoid and an thermal energy will be obtained. The aim is to make the stage rotate around its own edge and the energy for this phenomenon will be obtained from the sun .

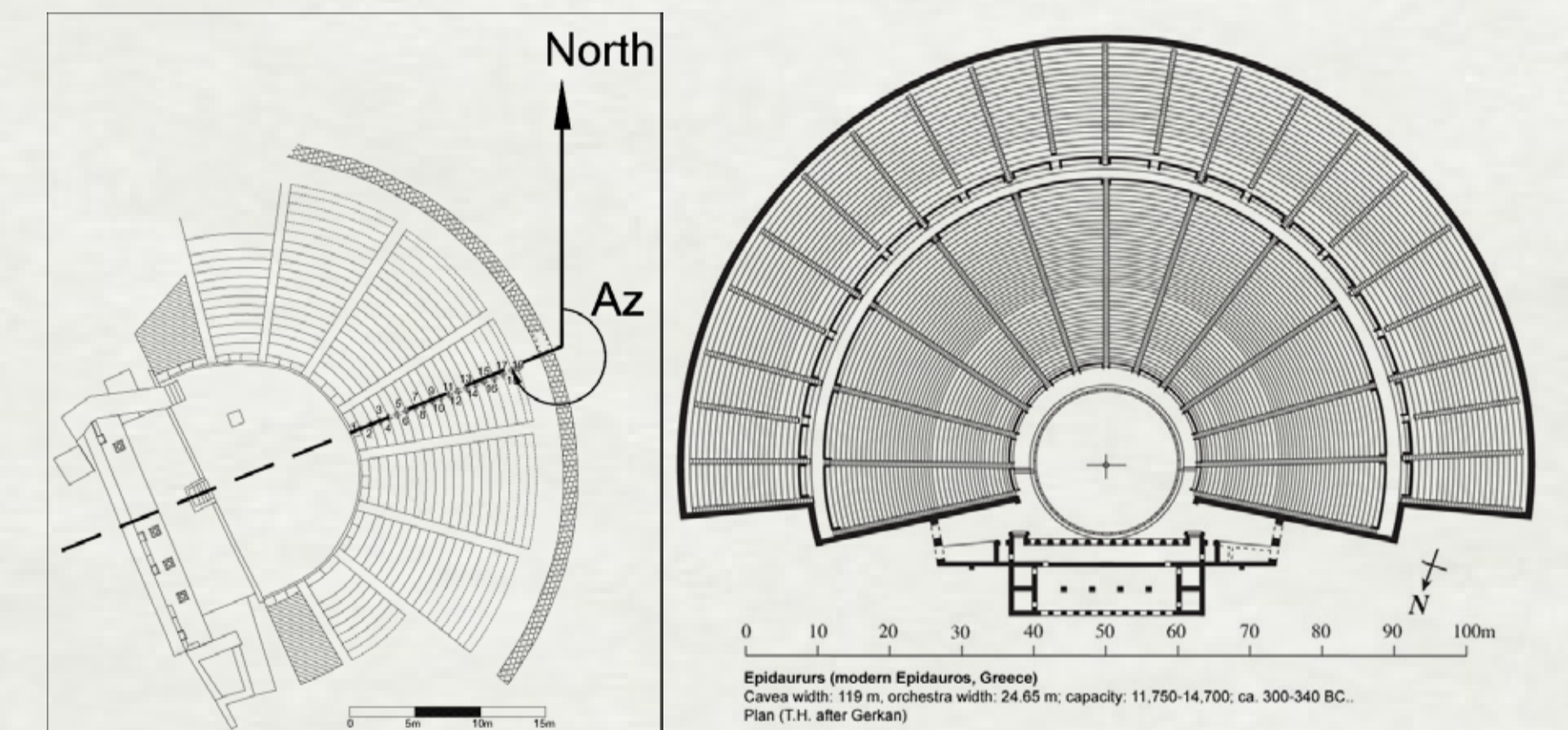




WIND ROSE AND SUN PATH



Strategy used to protect the soundscape from wind distortion, also the amphitheatre acting as a sound wall to provide coverage for the entire proposal.

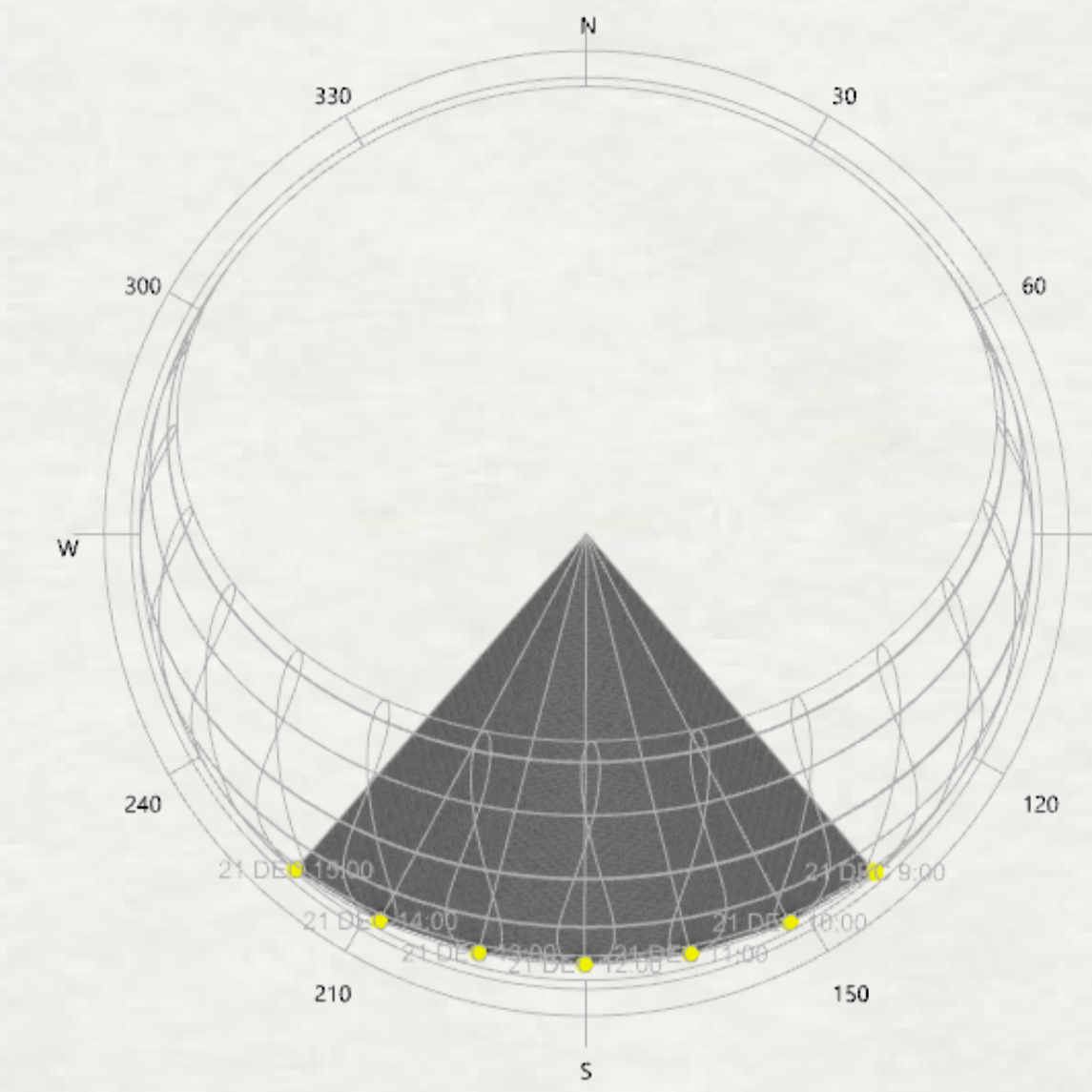
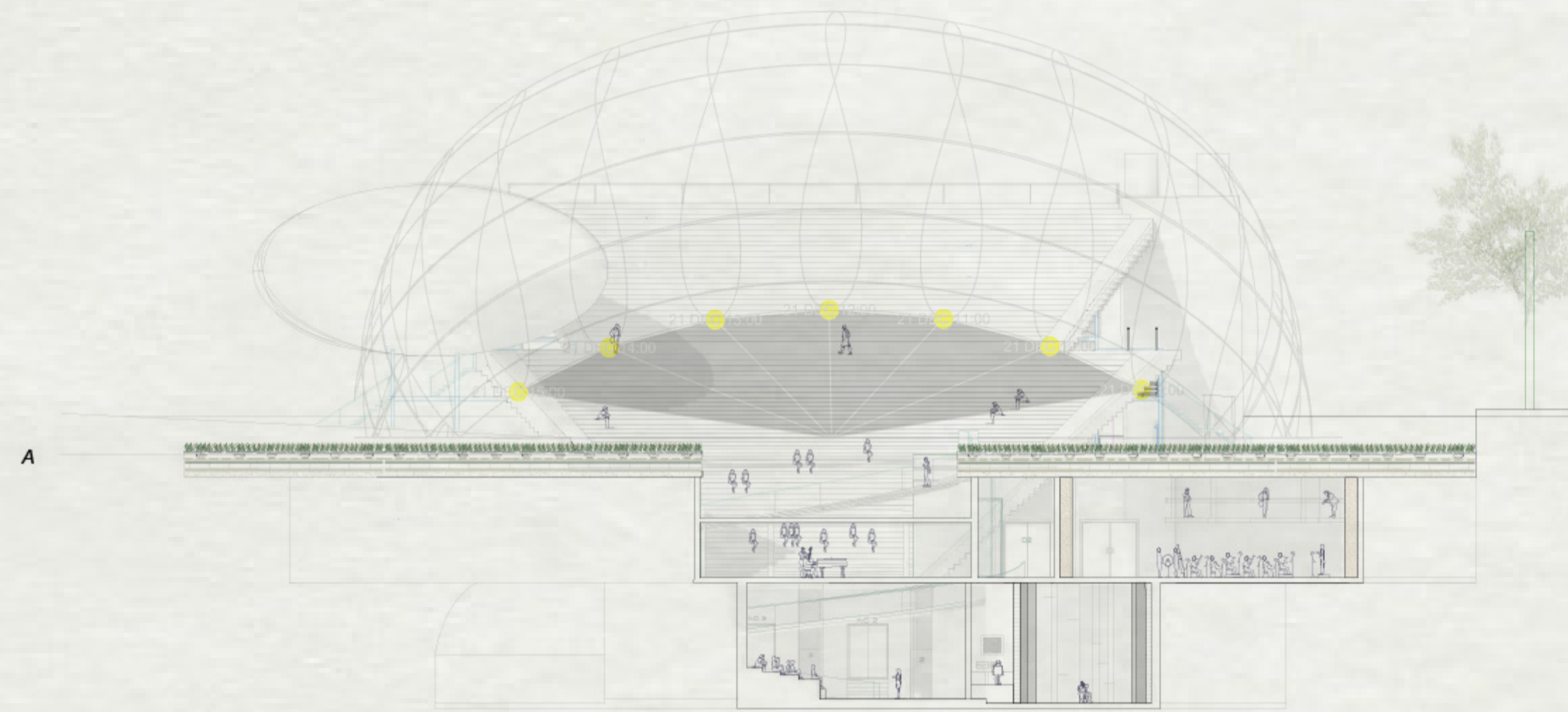


The amphitheatre orientation respects the original alignment with the north

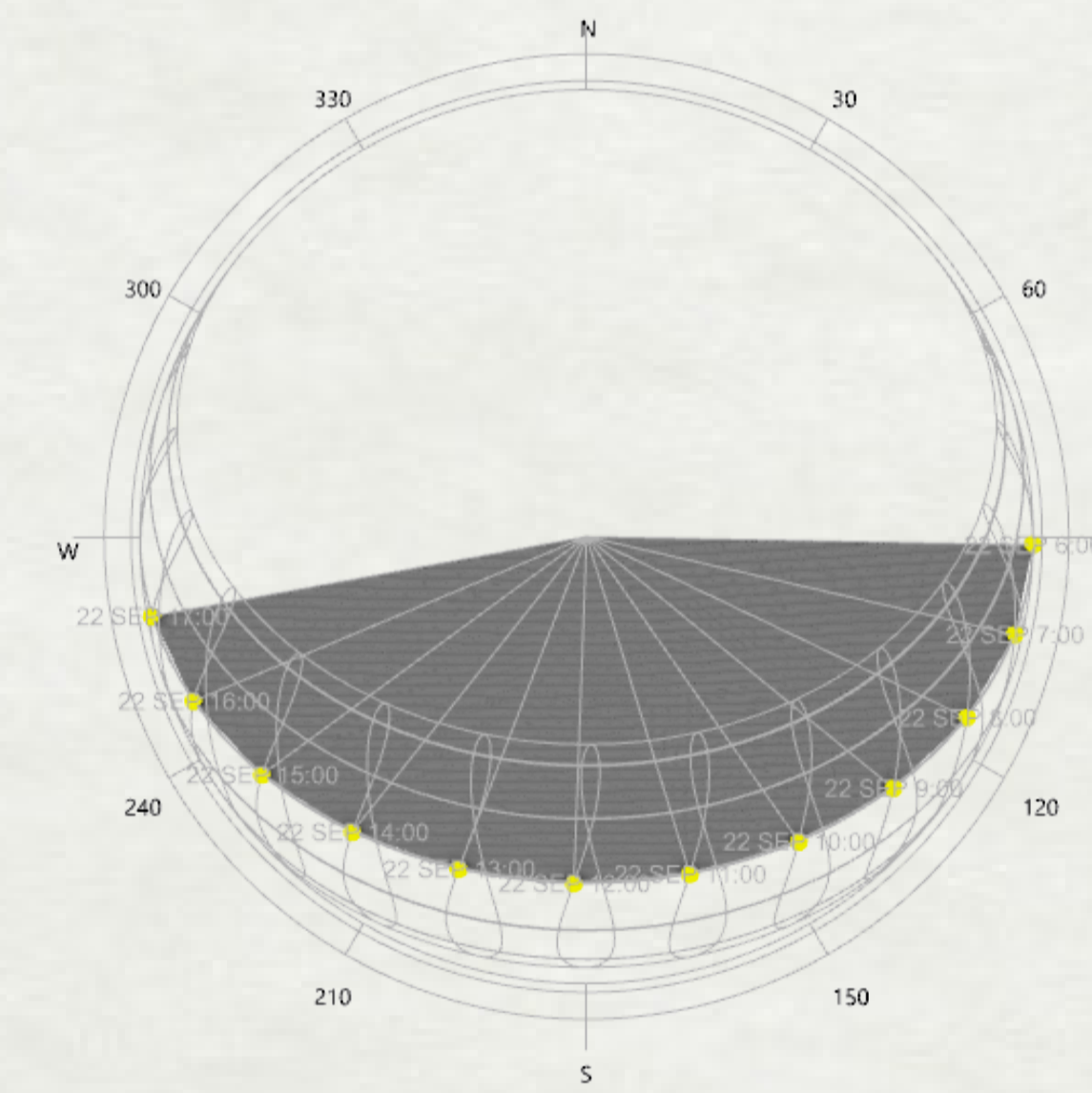


# SEASONAL MODES OF THE BUILDING

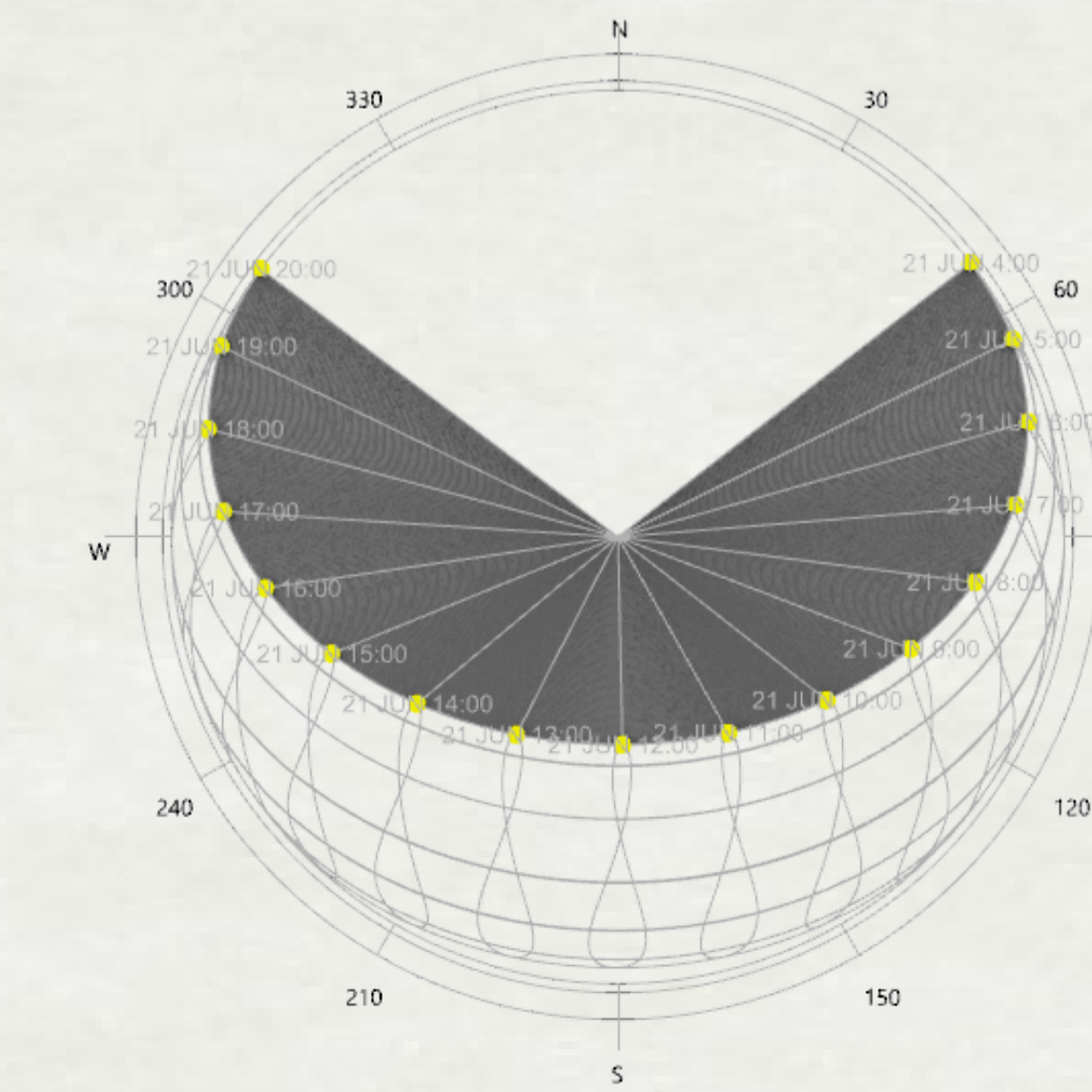
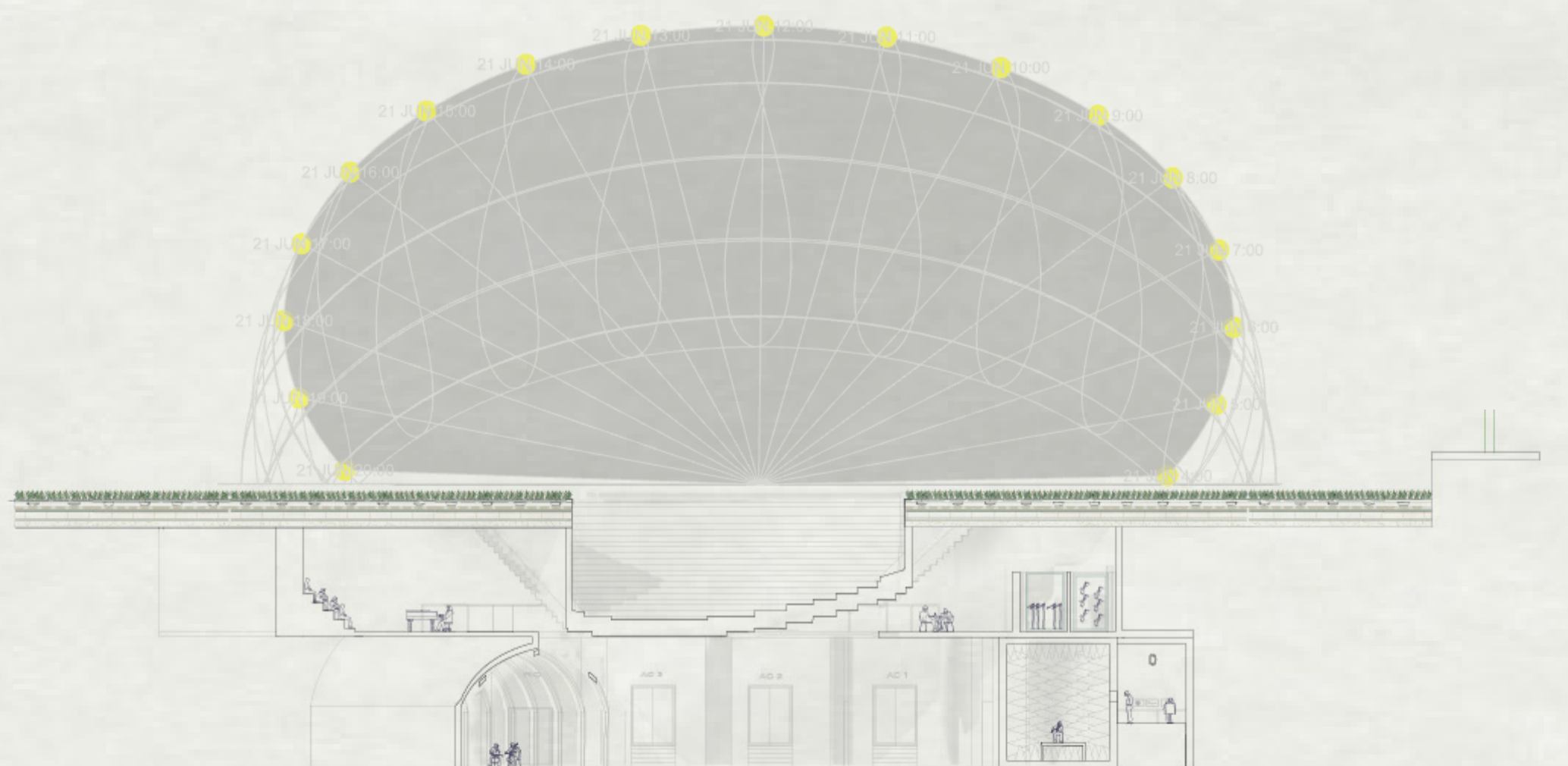
21st December, Winter Solstice



22nd September/March, Autumn / Spring Equinox



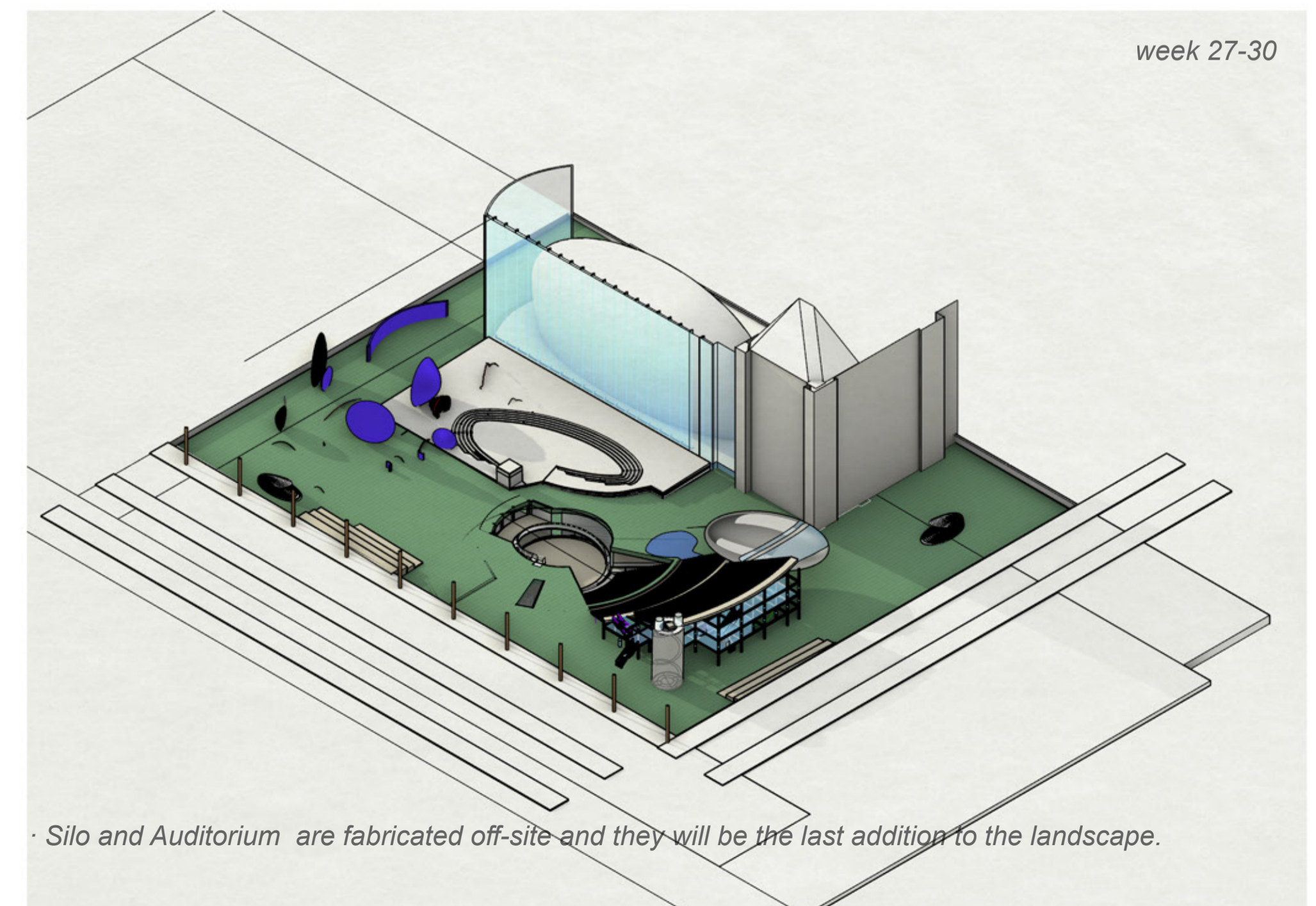
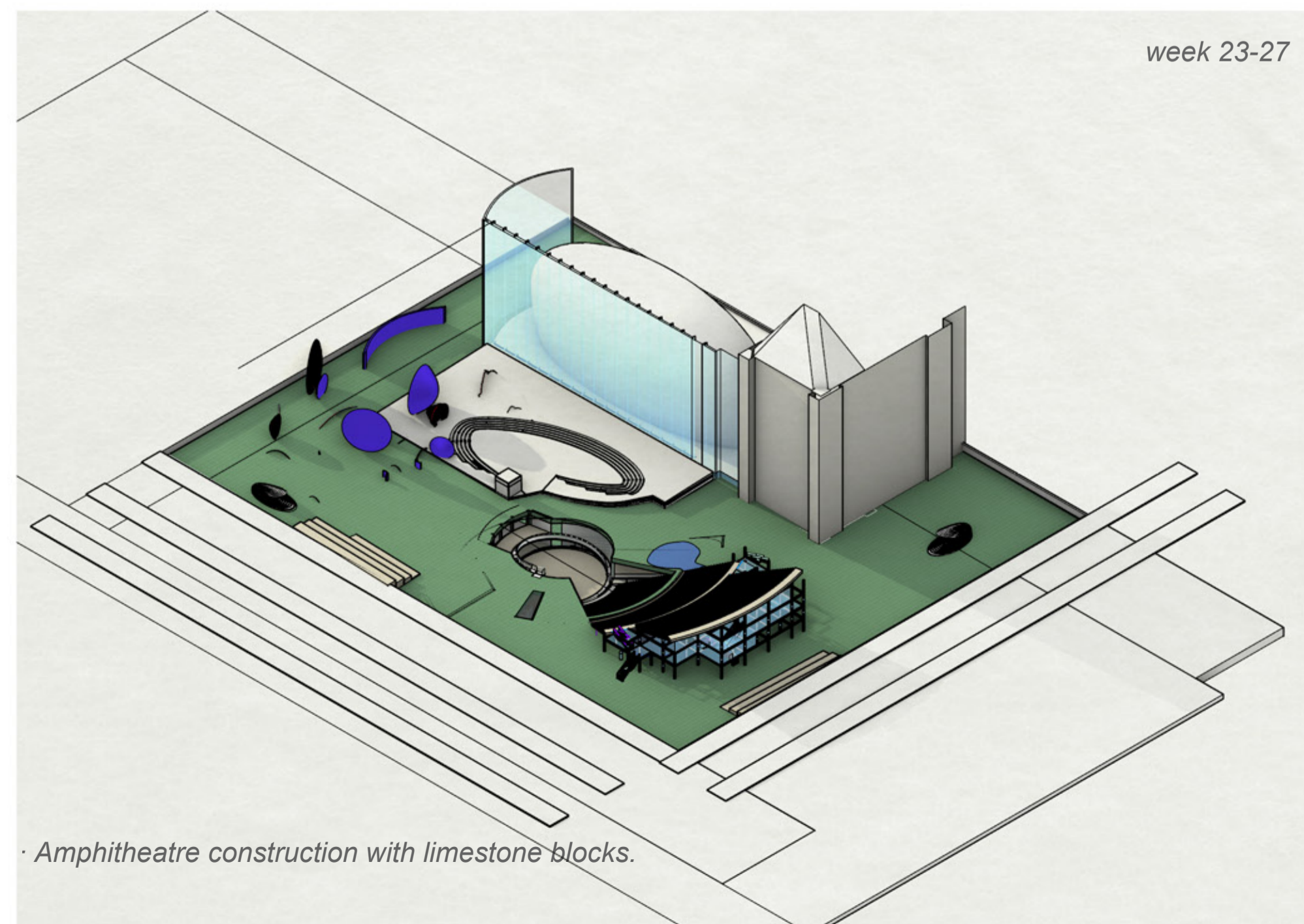
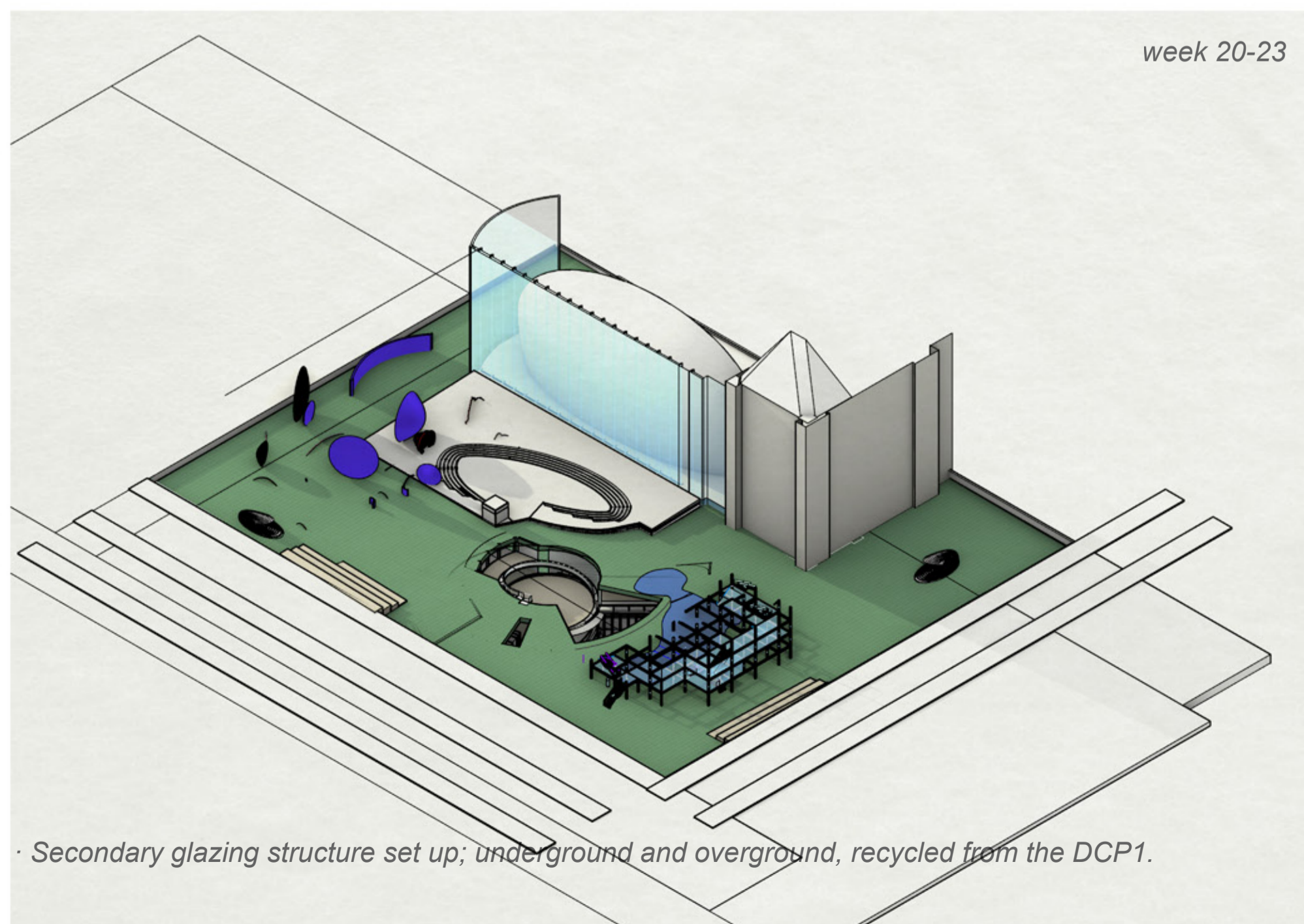
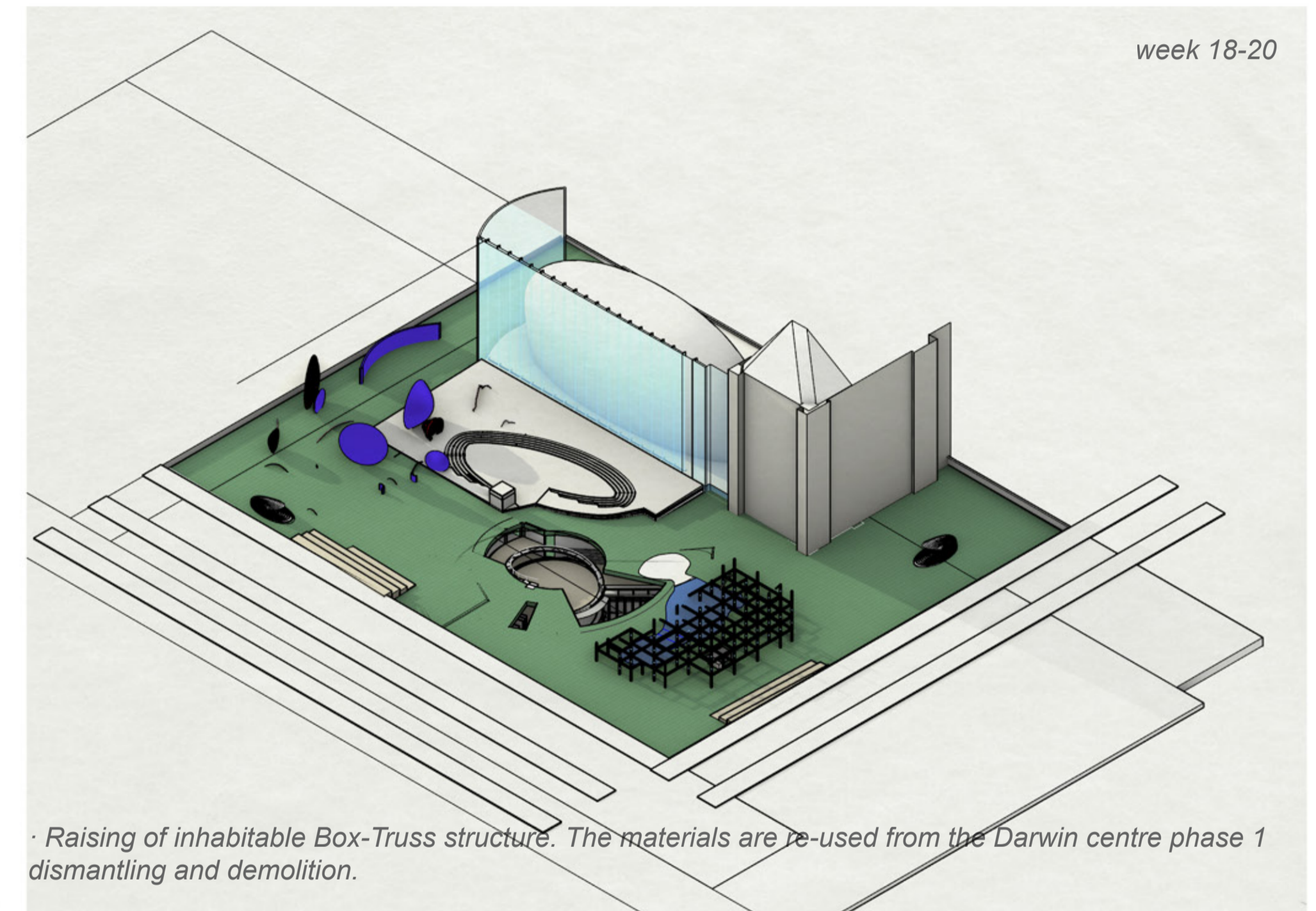
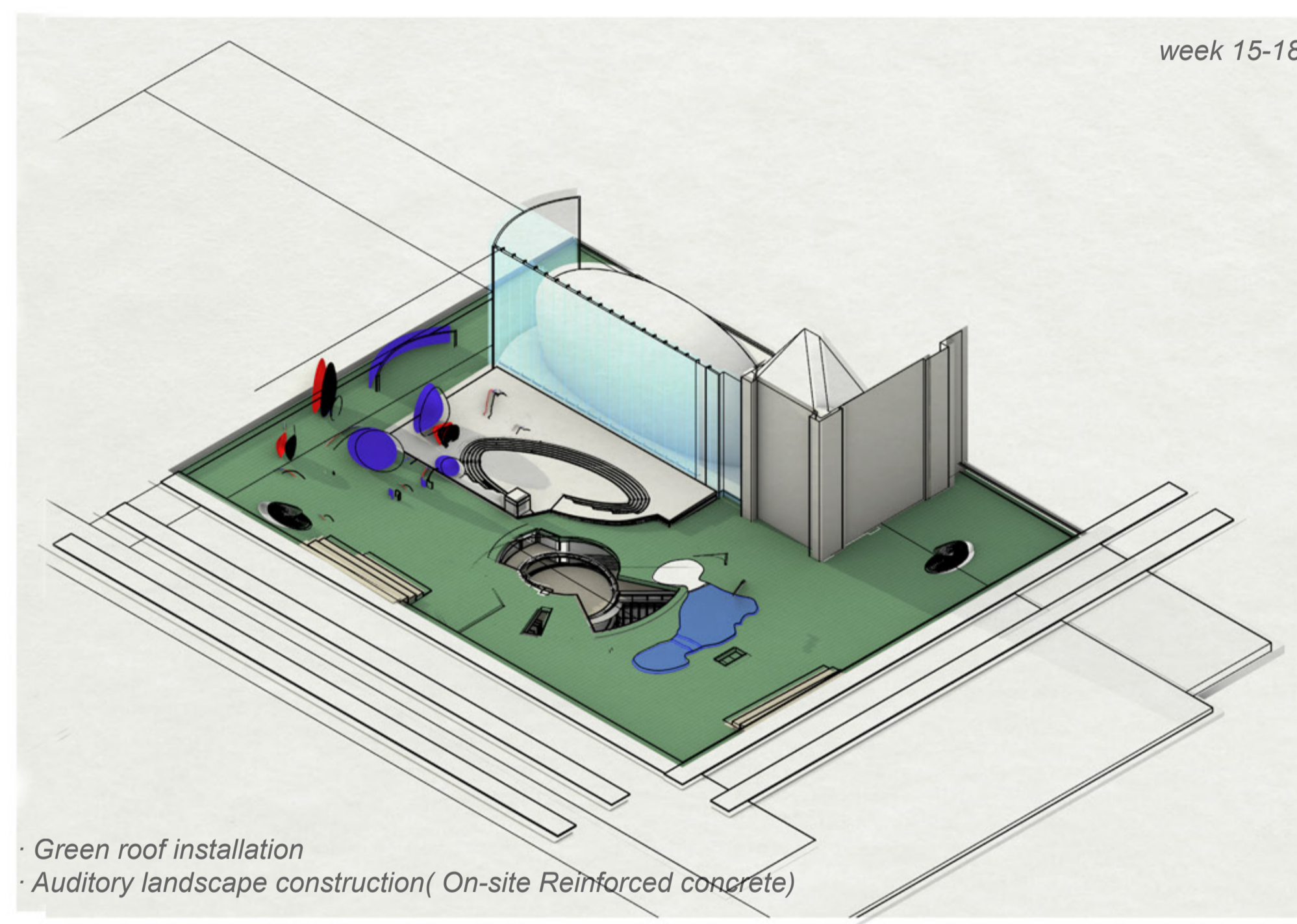
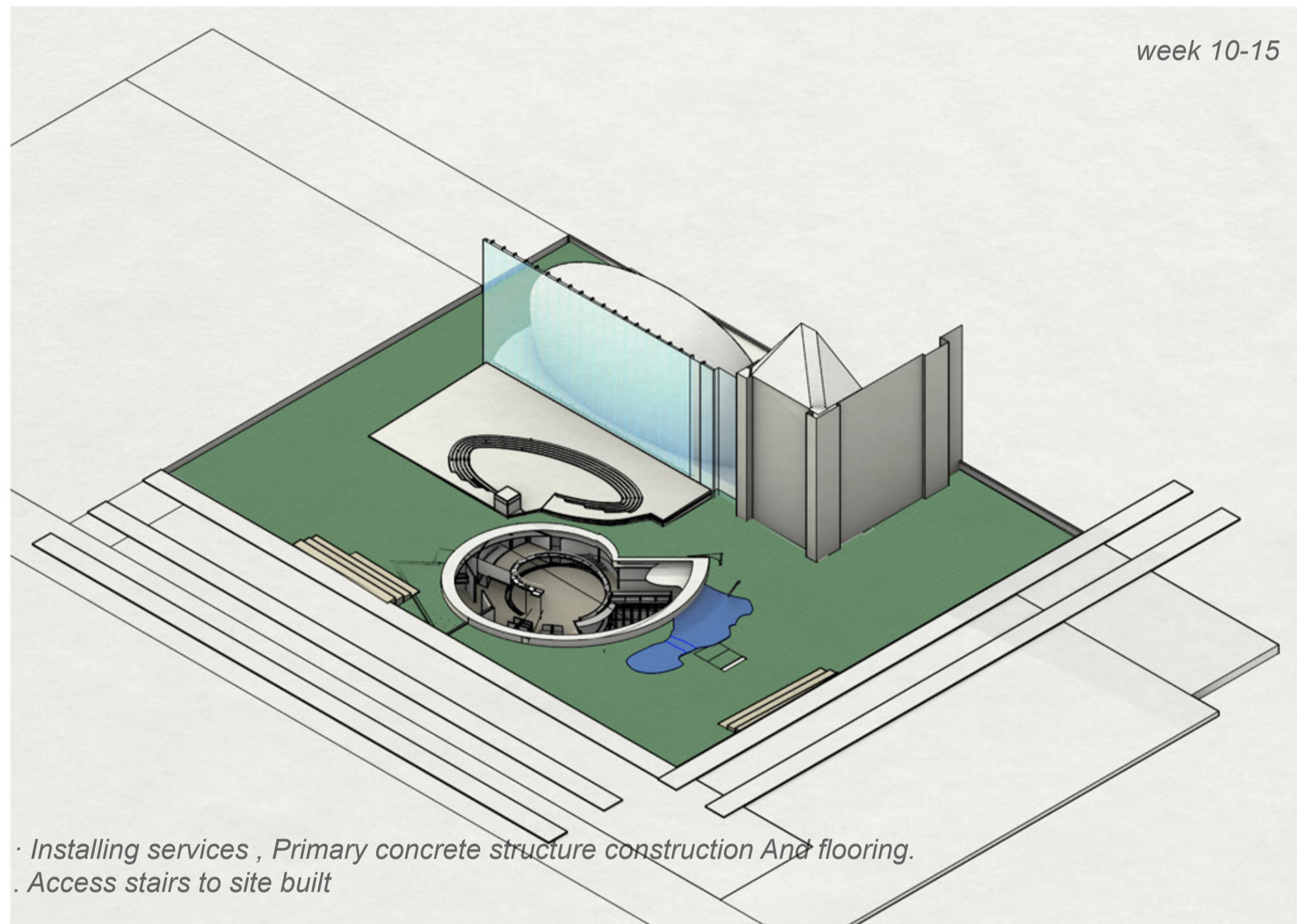
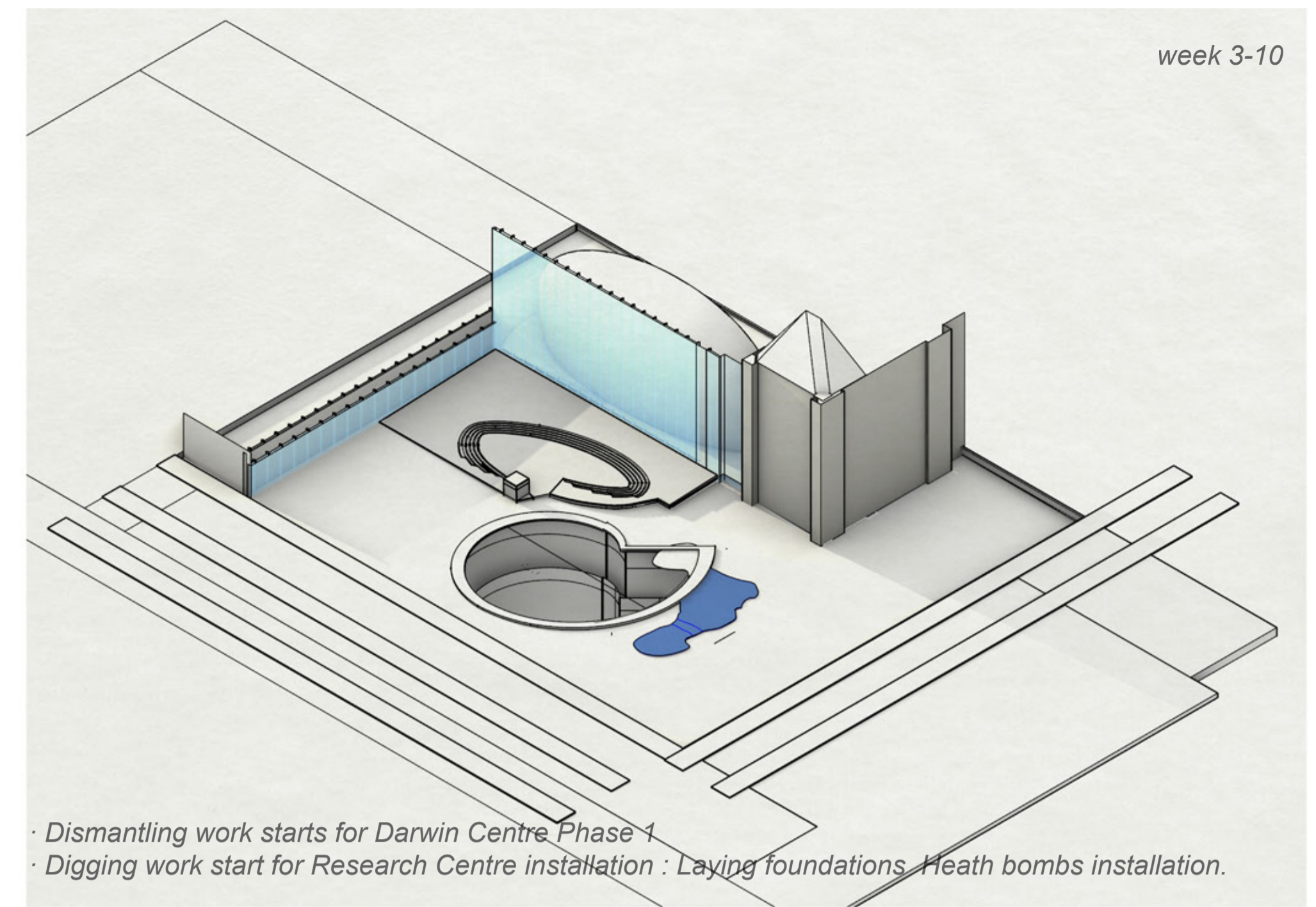
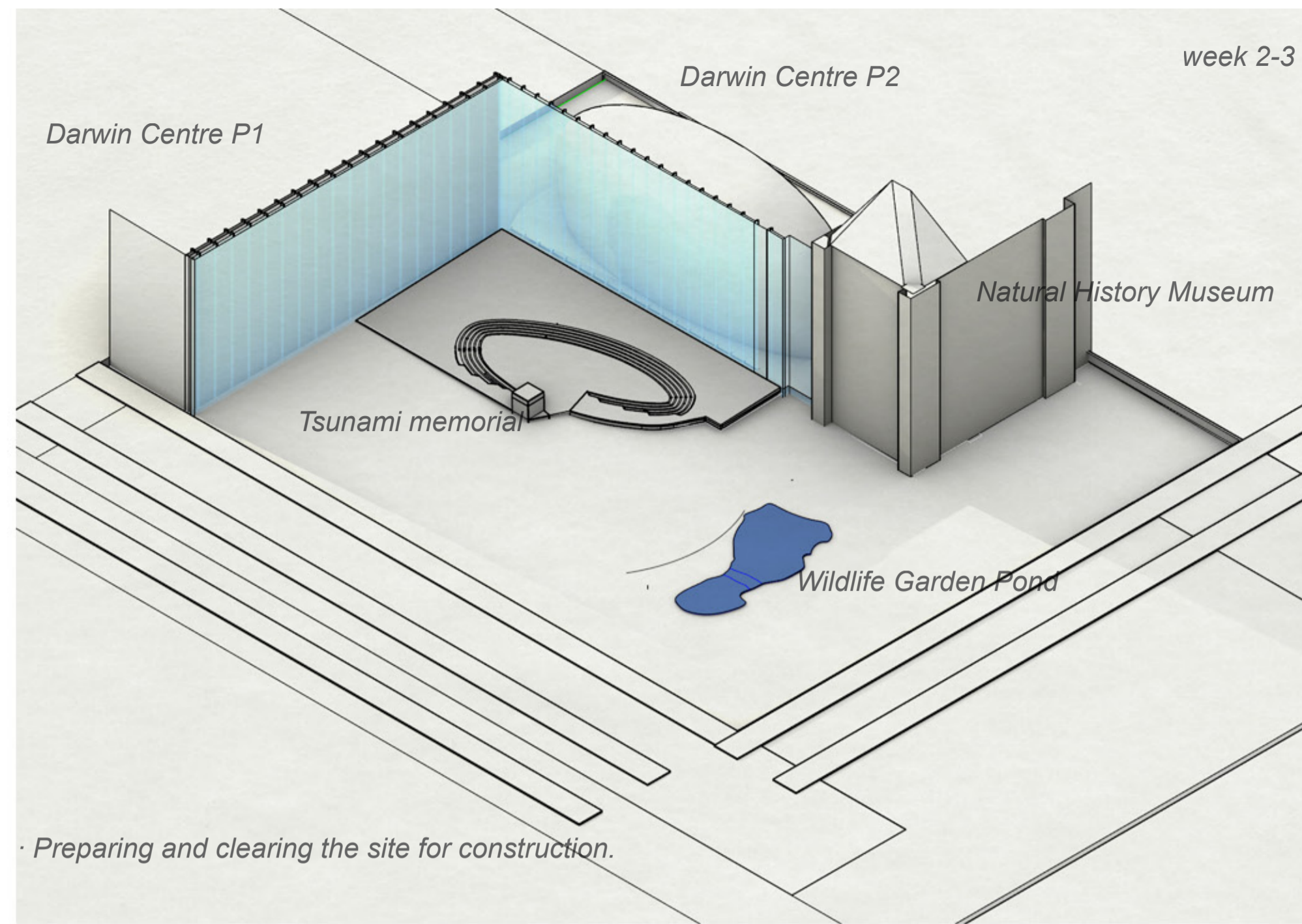
21st June, Summer Solstice





# 3.

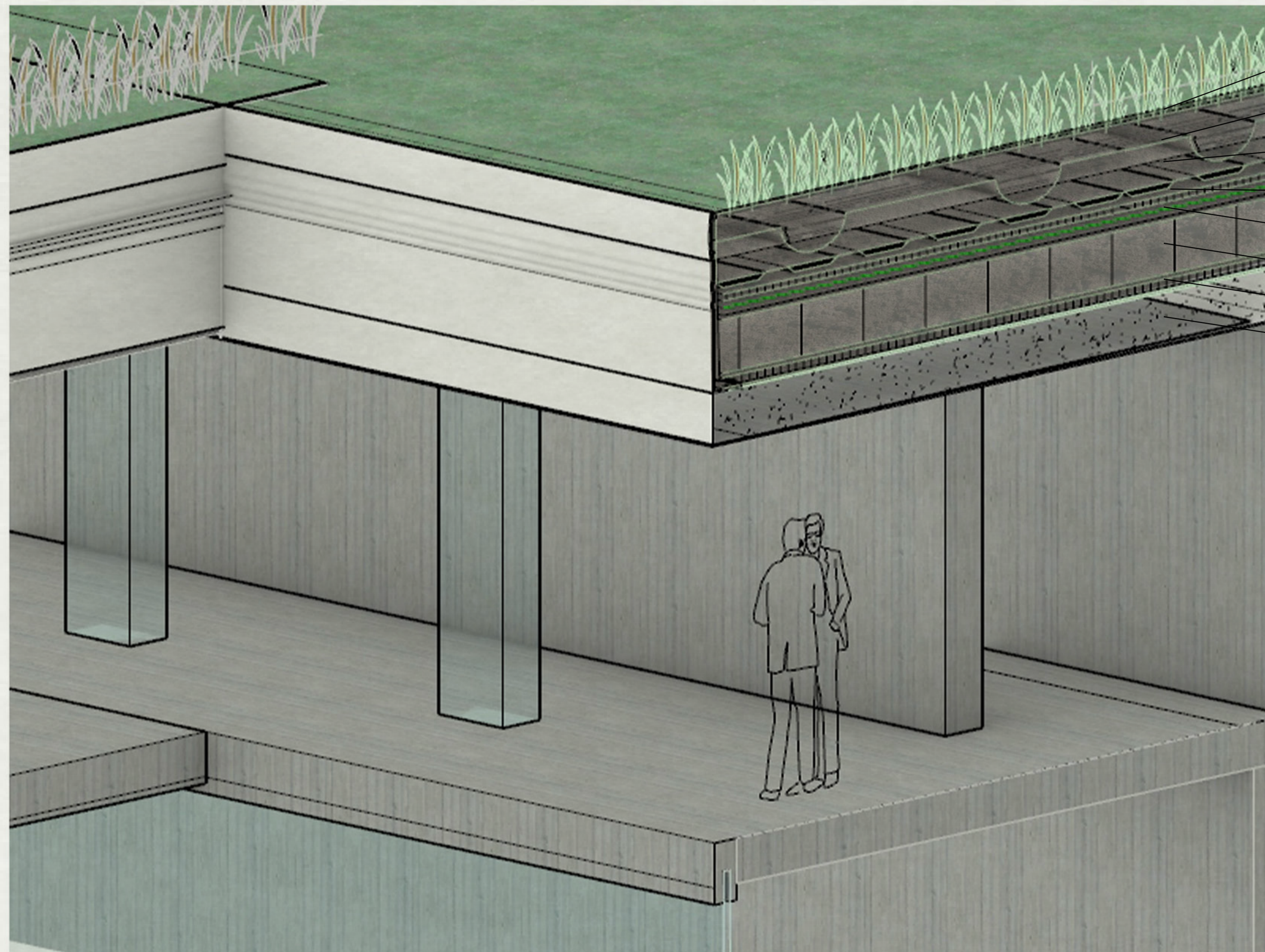
## . PROJECT LIFESPAN SEQUENCE





# 4.1

## . ENVELOPE DETAILS : Green Roof



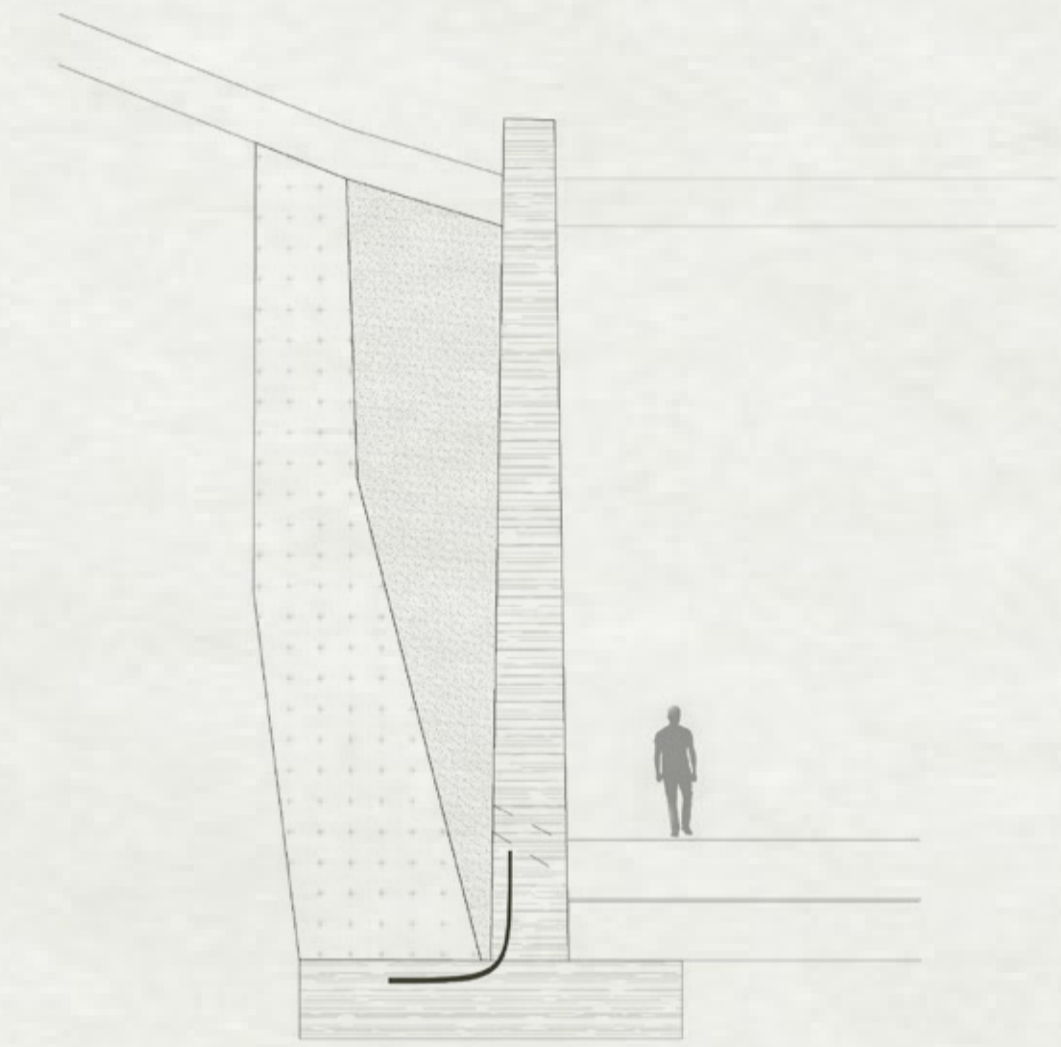
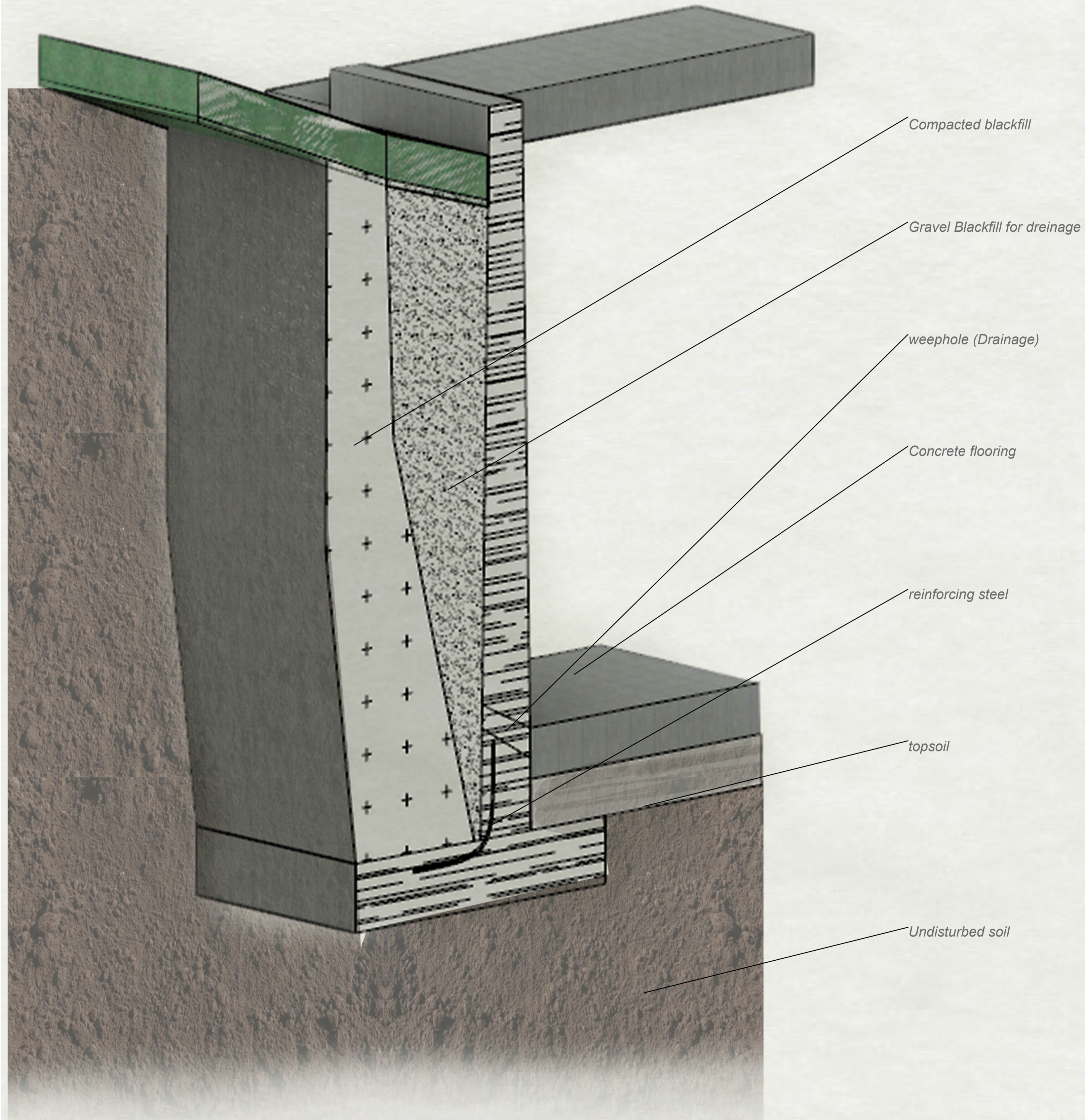
- Substrate
- Filter Layer
- Drainage Layer
- Protection Mat
- Water proof membrane
- Insulation
- Vapour Control Layer
- Roof deck

1:20



# 4.2

## . ENVELOPE DETAIALS : Retaining wall



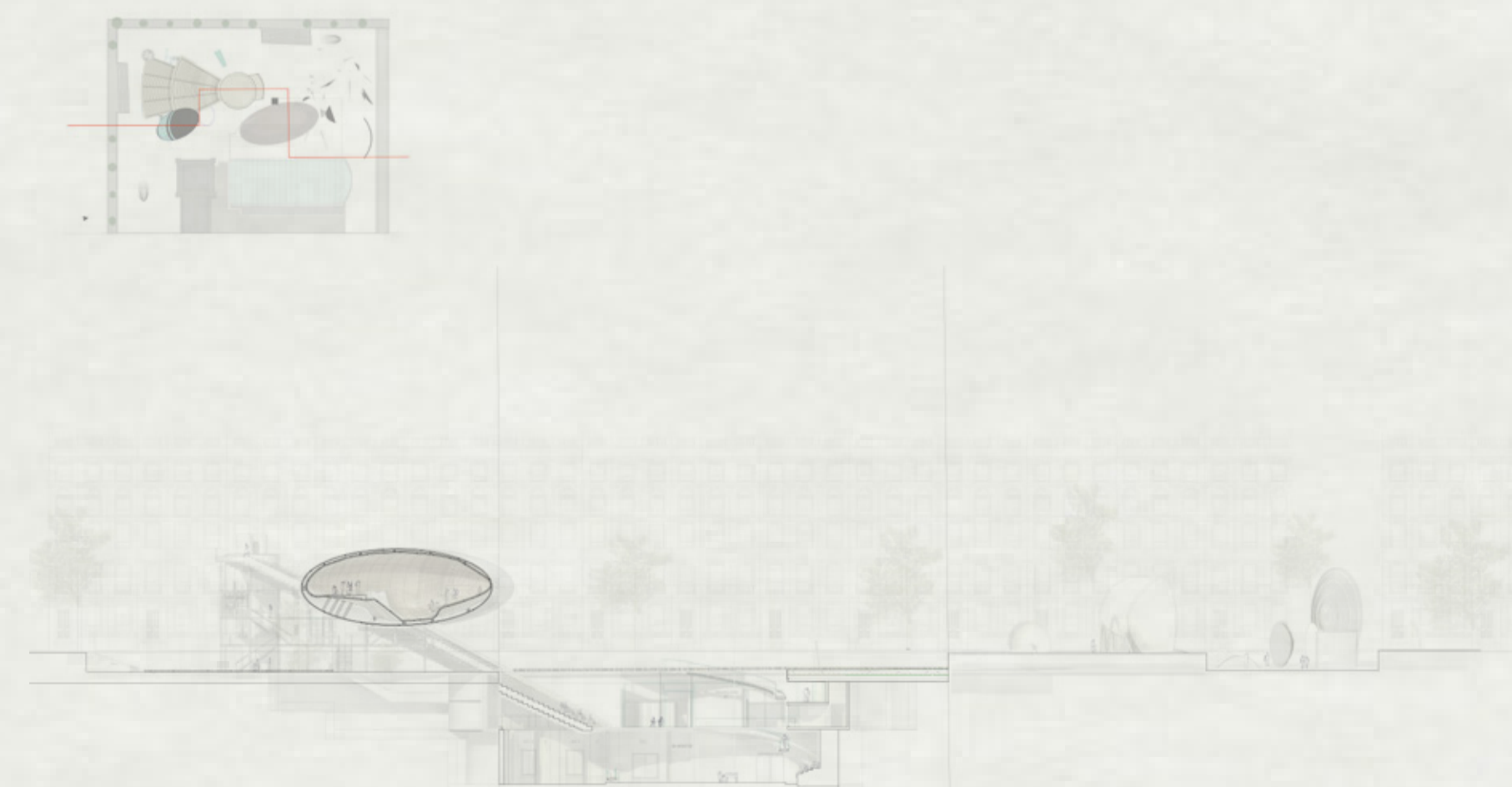
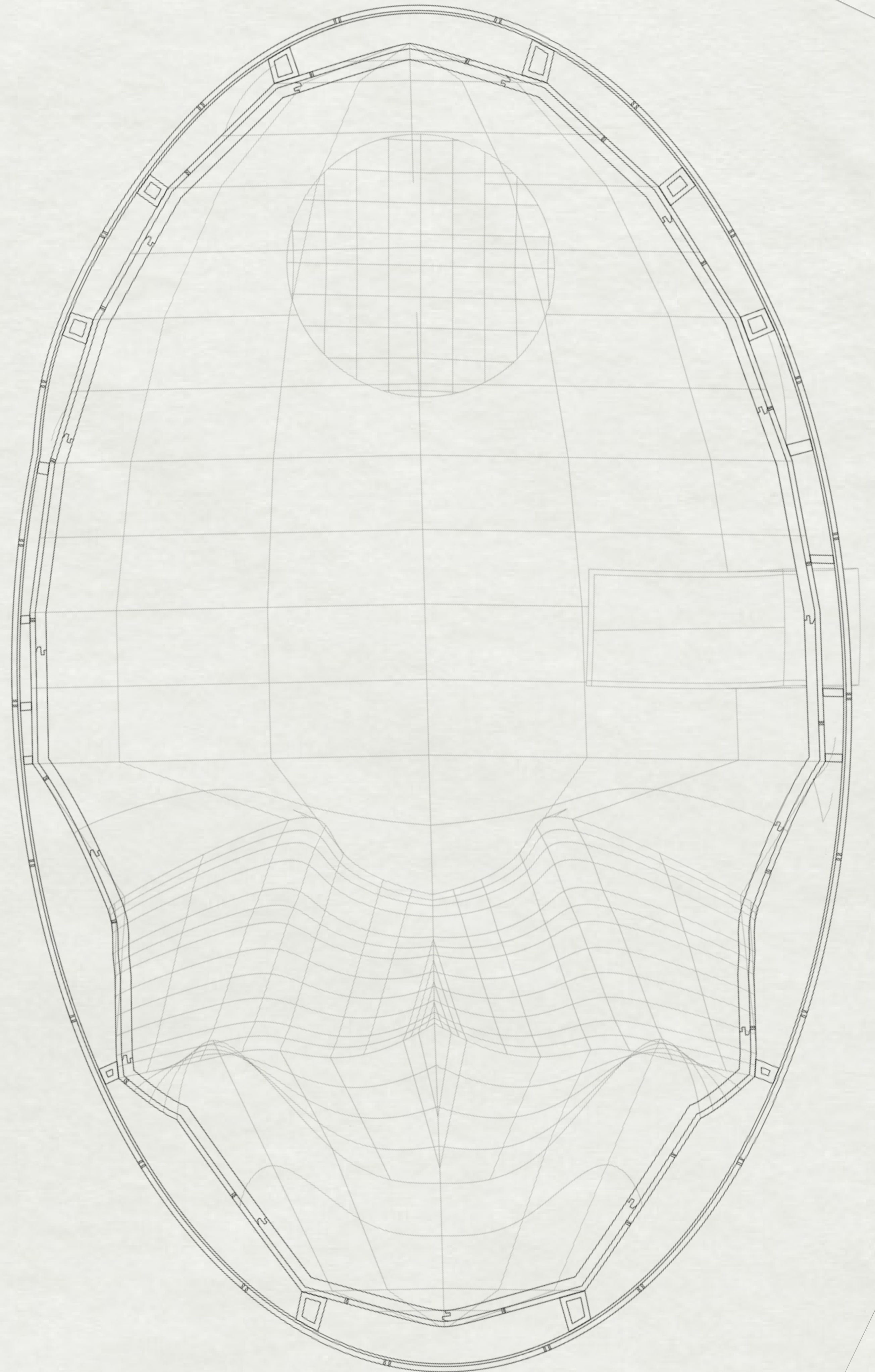
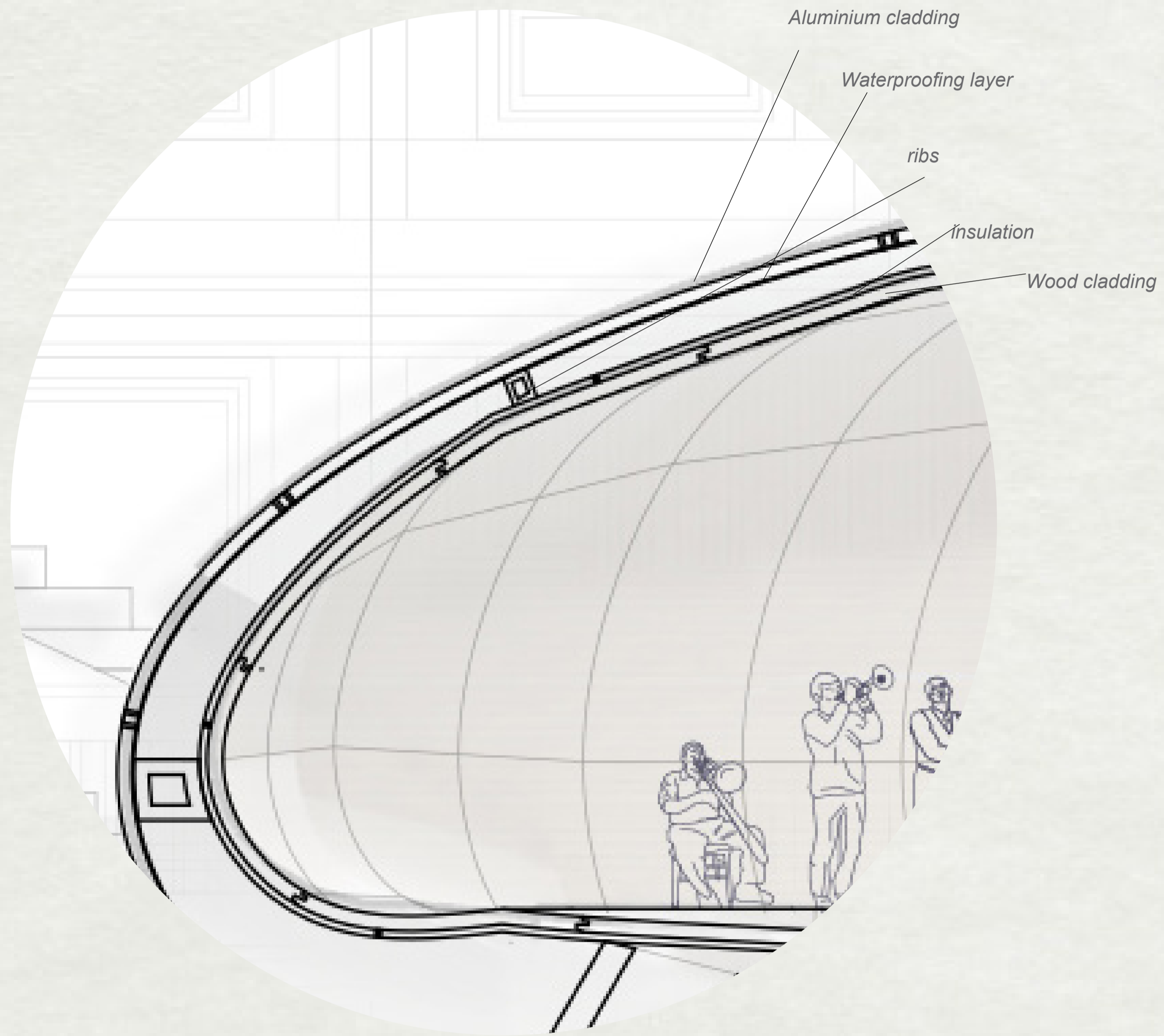
1:10

*Retaining wall, prevent from aucoustic contamination and improves the efficiency of energy use, as due to the climatic conditions it will be harder to lose heat in winter*



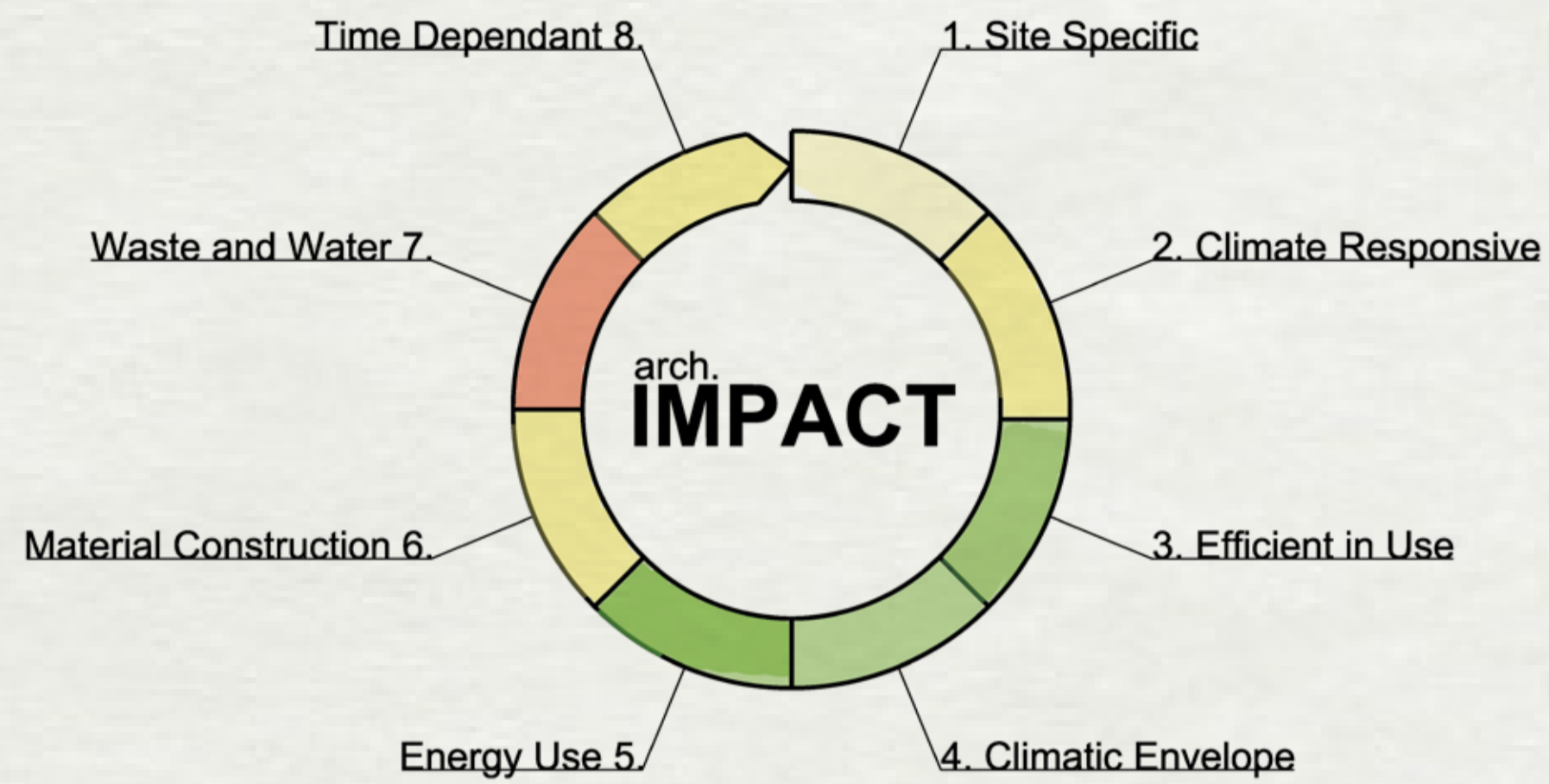
# 4.3

## . ENVELOPE DETAILS : AUDITORIUM RIB STRUCTURE





# 5. SUSTAINABILITY DESIGN PRINCIPLES ASSESSMENT



## 5.1 SITE SPECIFIC

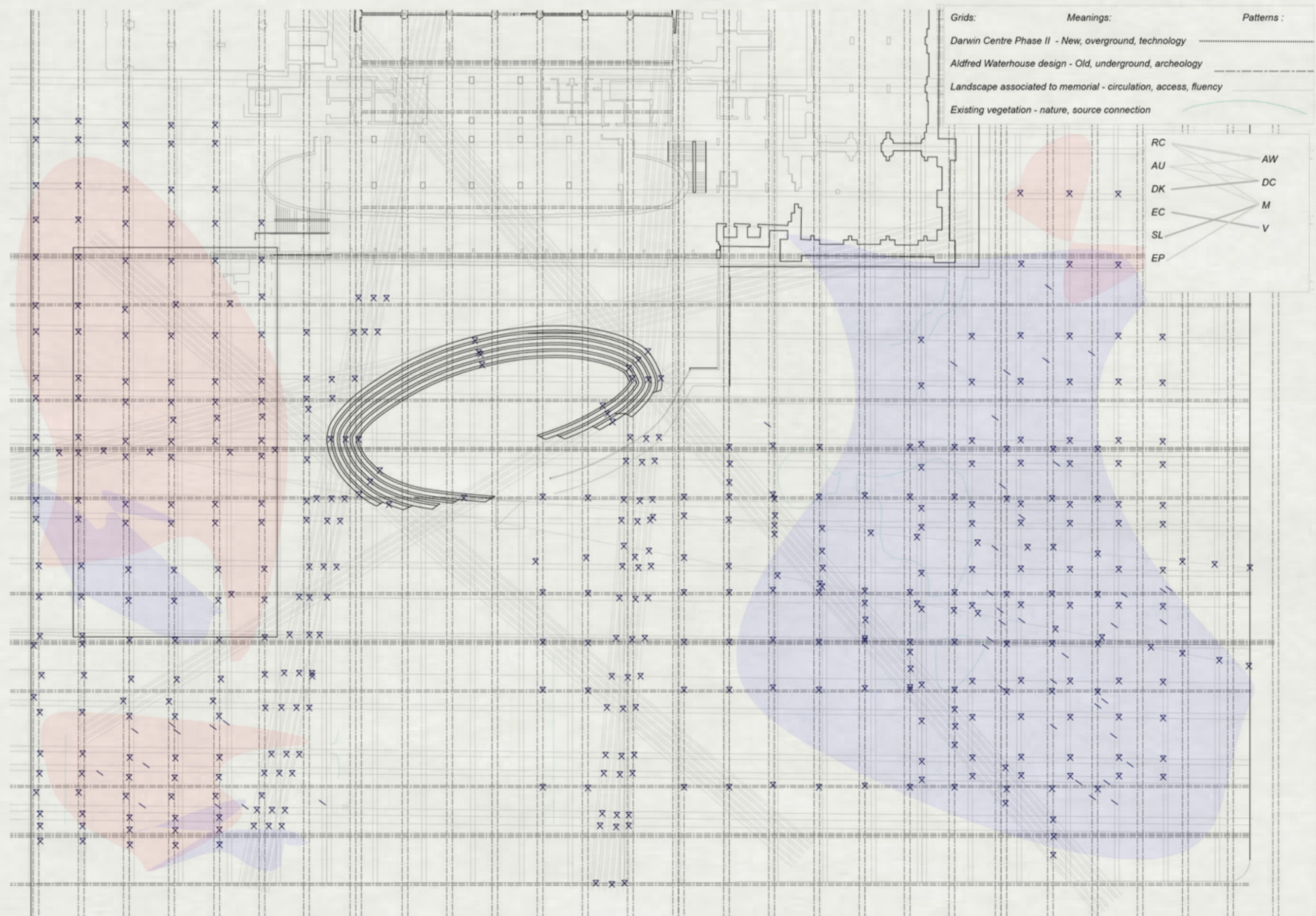
I have give the proposal a yellow in site specific principle due to:

### Pros:

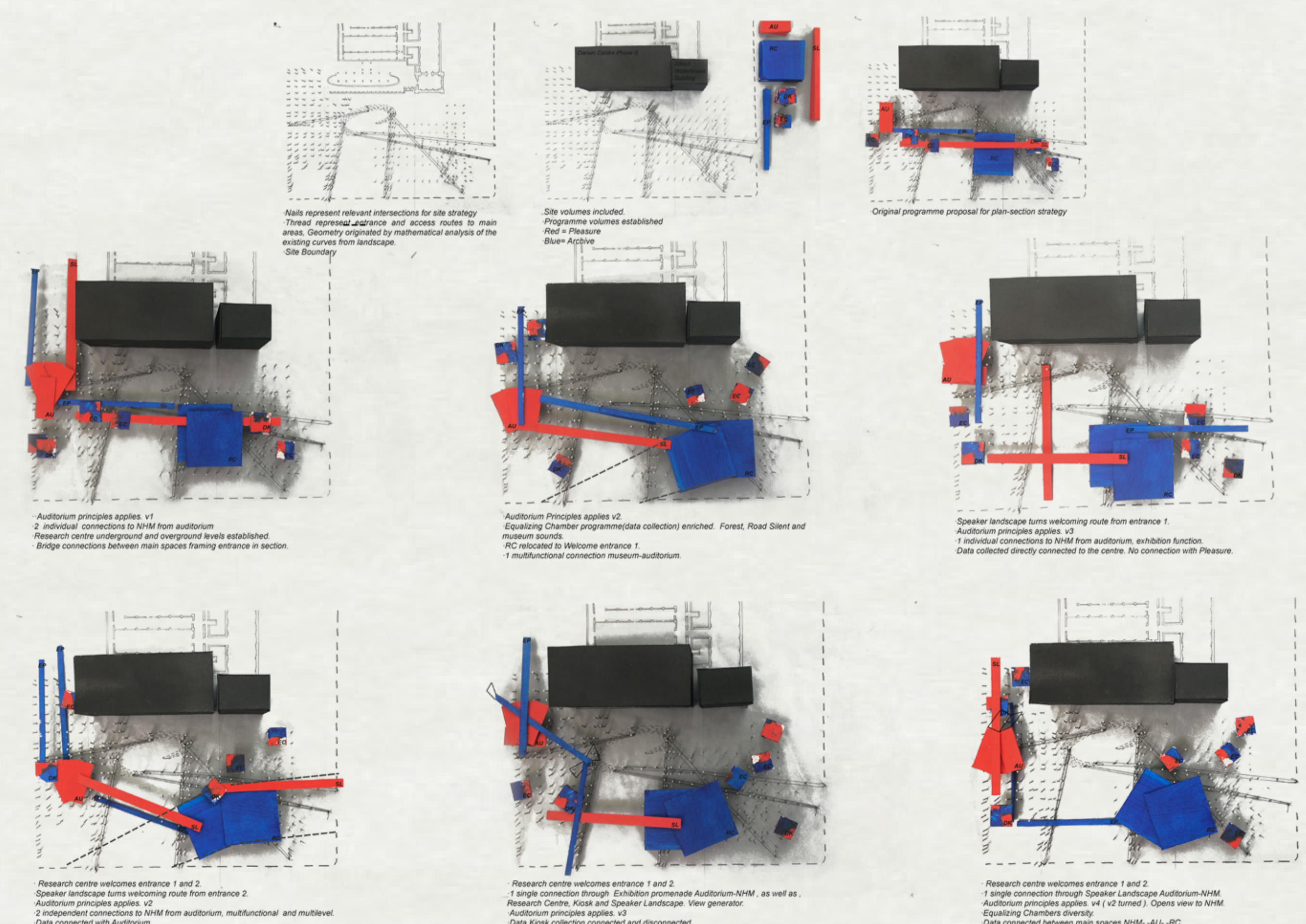
- . All the dismantled materials from the Darwin Centre will be reused to build the inhabited box-truss structure that supports the Amphitheatre.
- . Existing landscape is integrated and taking into consideration; The tsunami memorial together with a historic site grid leads the proposal arrangement and the Wildlife garden oldest oak trees and pond are kept.
- . The orientation of the Amphitheatre protects the Soundscape from the wind and road noise.

### Cons:

- . The positioning of the many elements is primarily lead by theory and narrative, circulation could become more efficient.



Site plan division



Acrylic painted on wood, following the established division experimenting the possibilities for the design



## 5.2 CLIMATE RESPONSIVE

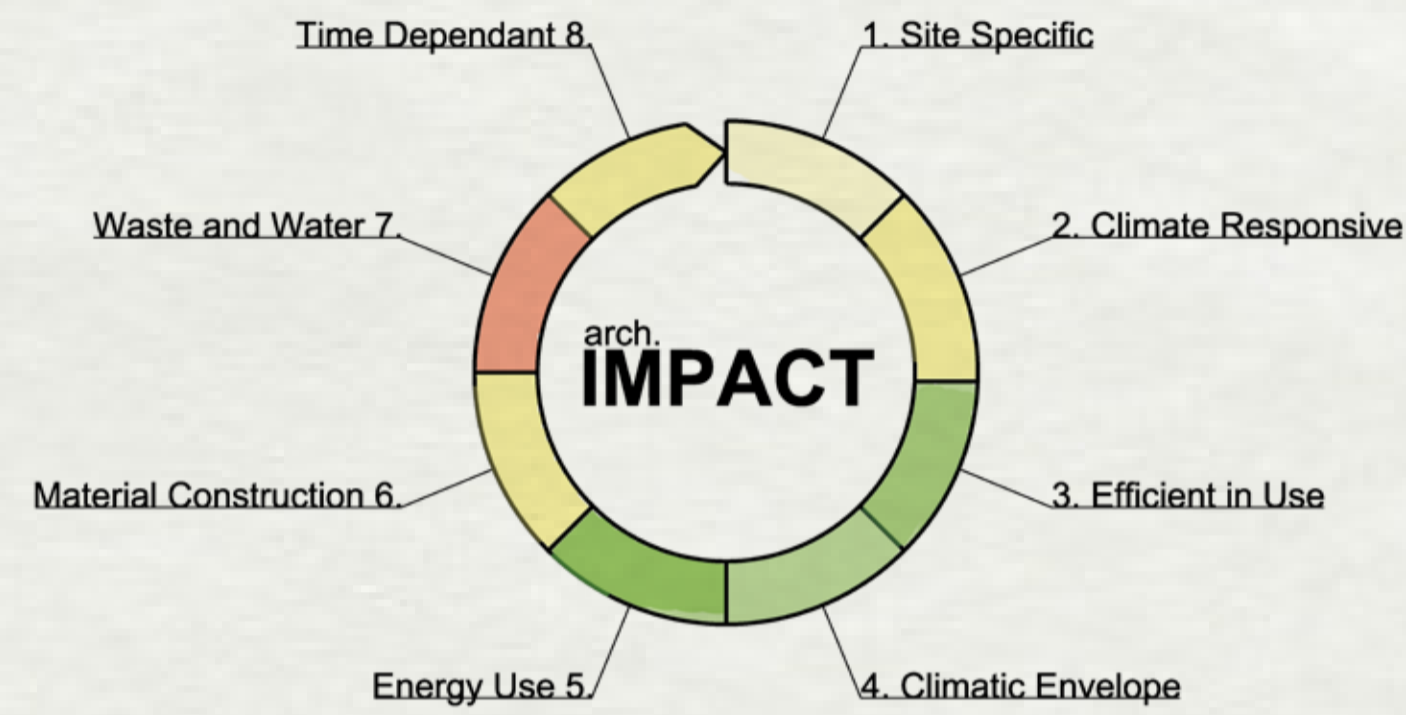
I have give the proposal a yellow in climate responsive principle due to:

Pros:

. The Auditorium form and structure has been developed according to its climate conditions

Cons:

. A significant part of the proposal is based on outdoors experience, therefore they will be limited by raining and any weather condition.



## 5.3 EFFICIENT IN USE

I have give the proposal a green in efficient in use principle due to:

Pros:

.The underground strategy helps the research centre to be properly insulated from noise pollution and allows it to be a comfortable work space, give the fact that the site is in the middle of one of the busiest roads of South Kensington.

Cons:

There is a possibility of the metal claddings becoming deteriorated early in time, although this will not interpose between the purpose and the use.

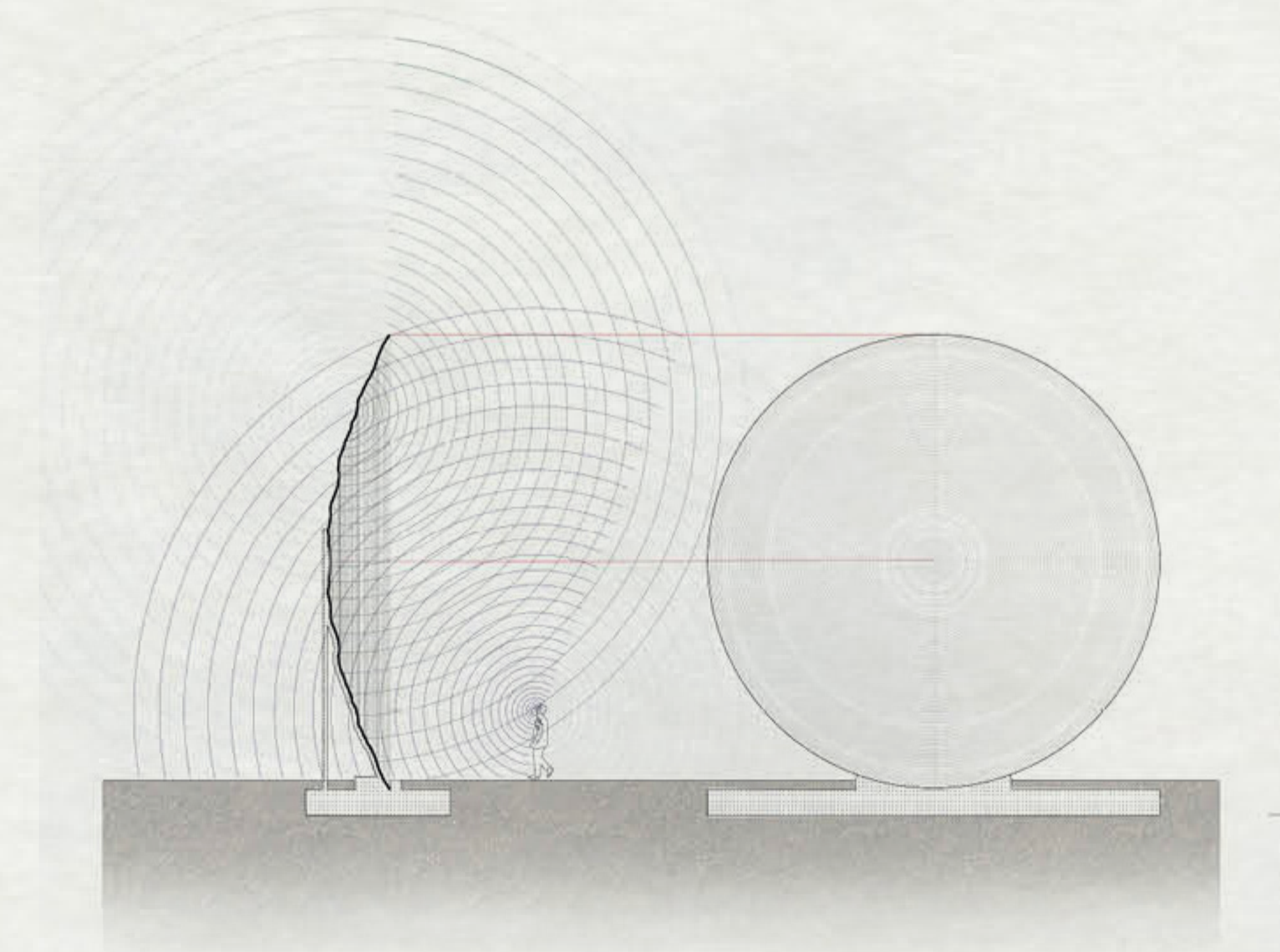
## 5.4 CLIMATIC ENVELOPE

I have give the proposal a green in climatic envelope principle due to:

Pros:

.It is highly linked in this proposal with the use efficiency, a as the underground strategy also directs the climatic envelope  
Light-wells are strategically placed along the green roof to lilluminate the most frecuated places on the underground area

Cons:



*Detail of a Sound mirror*

## 5.5 ENERGY USE

I have give the proposal a green in ENERY USE principle due to:

Pros:

.The underground strategy will make the heating and cooling more efficient as the noise insulation will also help to maintain temperatures in the building much better.

Cons:

If the requested weather condition for the air to flow through the Auditorium doest happen, the totality of the experience of this part of the building will not be achieved.



## 5.6 MATERIAL CONSTRUCTION

I have give the proposal a yellow in material construction principle due to:

Pros:

. The material passport of DCP1 and the recycling of its structure will help make the building more environmentally friendly. This way no steel aluminium or glass will need to be resourced

Cons:

The cost of the recycling could be really high  
The limestone will have to be imported and to find pieces high enough to fit the design requirements probably will take time and money

## 5.7 WASTE AND WATER

I have give the proposal a red in waste and water principle due to:

Cons:

I have not considered the possiblity of recycling waste

Pros:

A lot could be done after construction, water drainage from green roof could be used to water indoor plans,

## 5.8 TIME DEPENDENT

I have give the proposal a yellow in material construction principle due to:

Pros:

The building can be used 365 days in the year and will offer very different experience depending on the season. Performances and studies can be happening simultaneously during night and day.

Cons:

It will require a lot of maintenance due to the high affluence of people and weather conditions.

