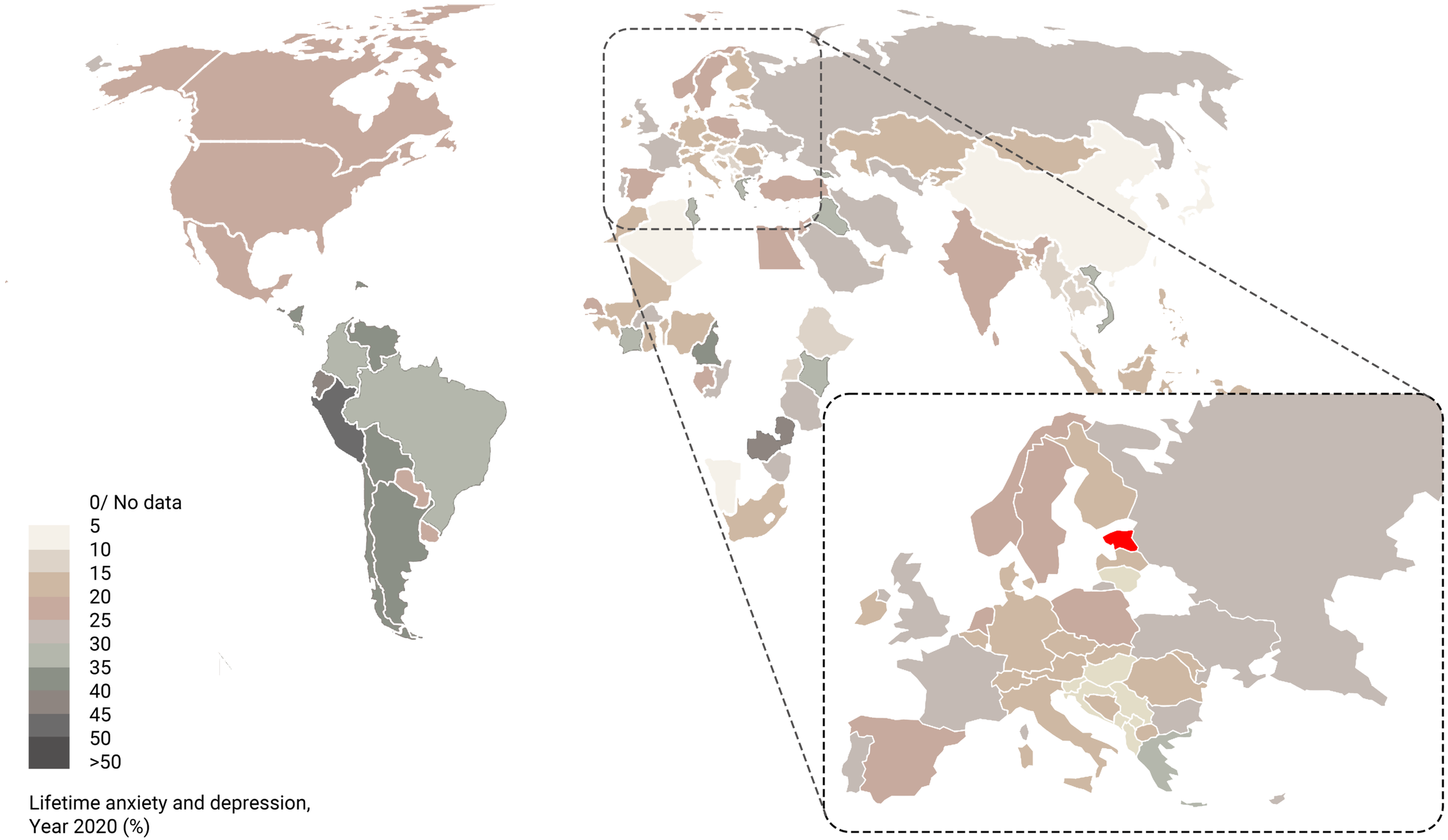
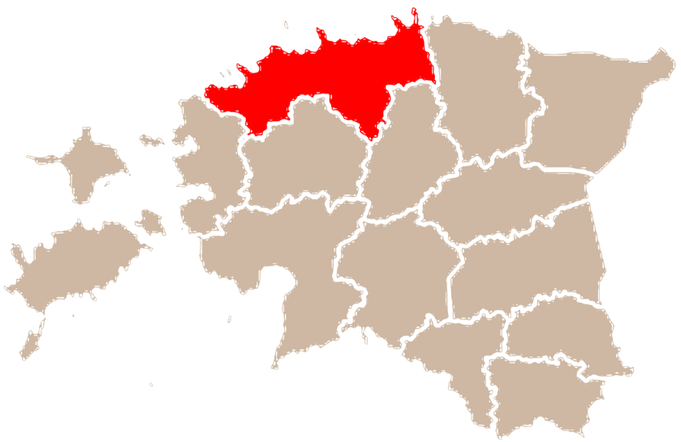
MUSTAKIVI ART MUSEUM:
THE ATMOSPHERE OF SILENCE

KE LING NEOH
5764734
P5 Presentation
Methods of Analysis and Imagination:



Lifetime anxiety and depression,
Year 2020 (%)



ANXIETY

an uncomfortable feeling of nervousness or worry about something that is happening or might happen in the future.

20%

DEPRESSION

the state of feeling very unhappy and without hope for the future.

28%

MISOPHONIA

a condition in which certain sounds cause a strong negative reaction in someone.

18%







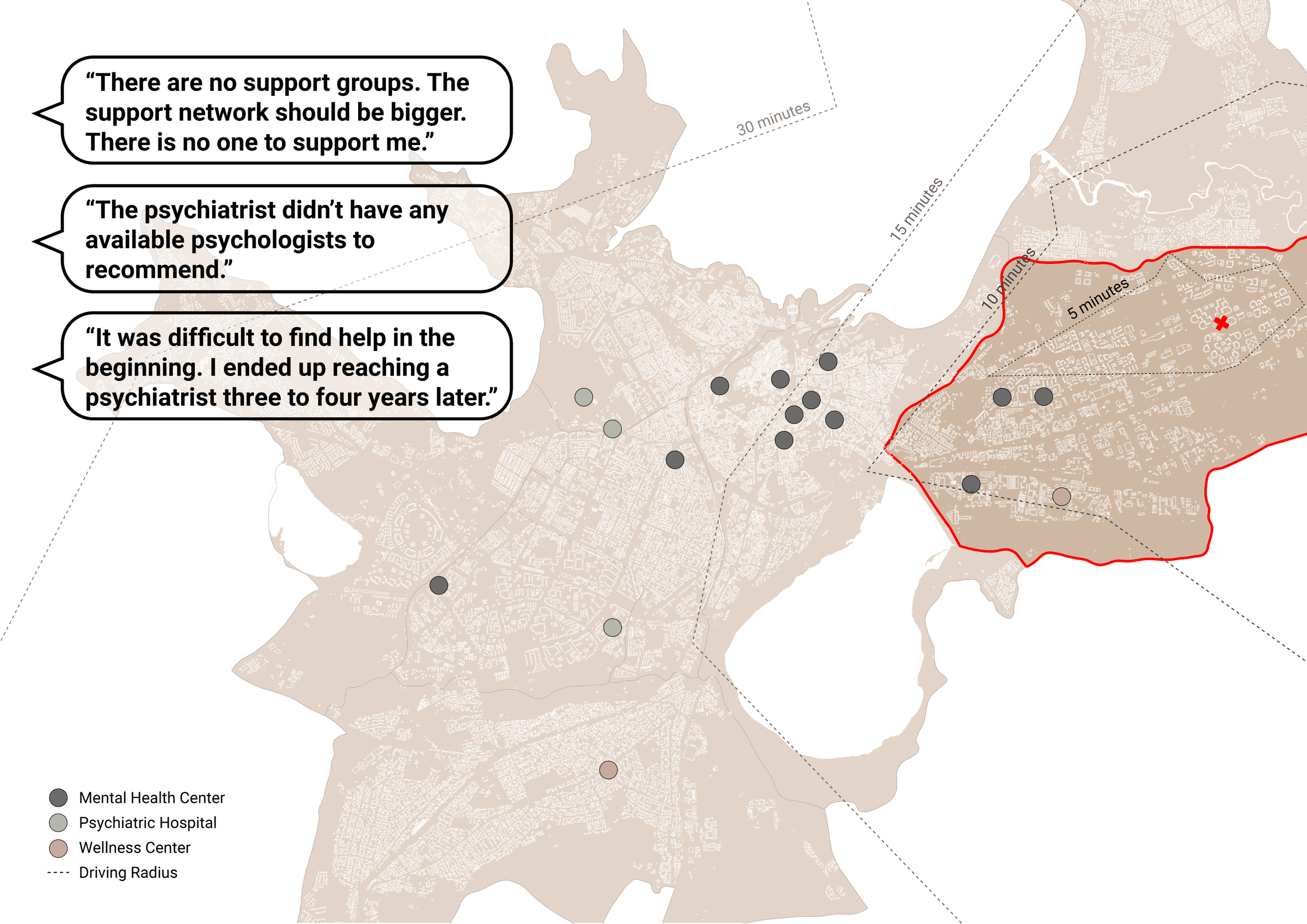




“There are no support groups. The support network should be bigger. There is no one to support me.”

“The psychiatrist didn’t have any available psychologists to recommend.”

“It was difficult to find help in the beginning. I ended up reaching a psychiatrist three to four years later.”



x 10,000

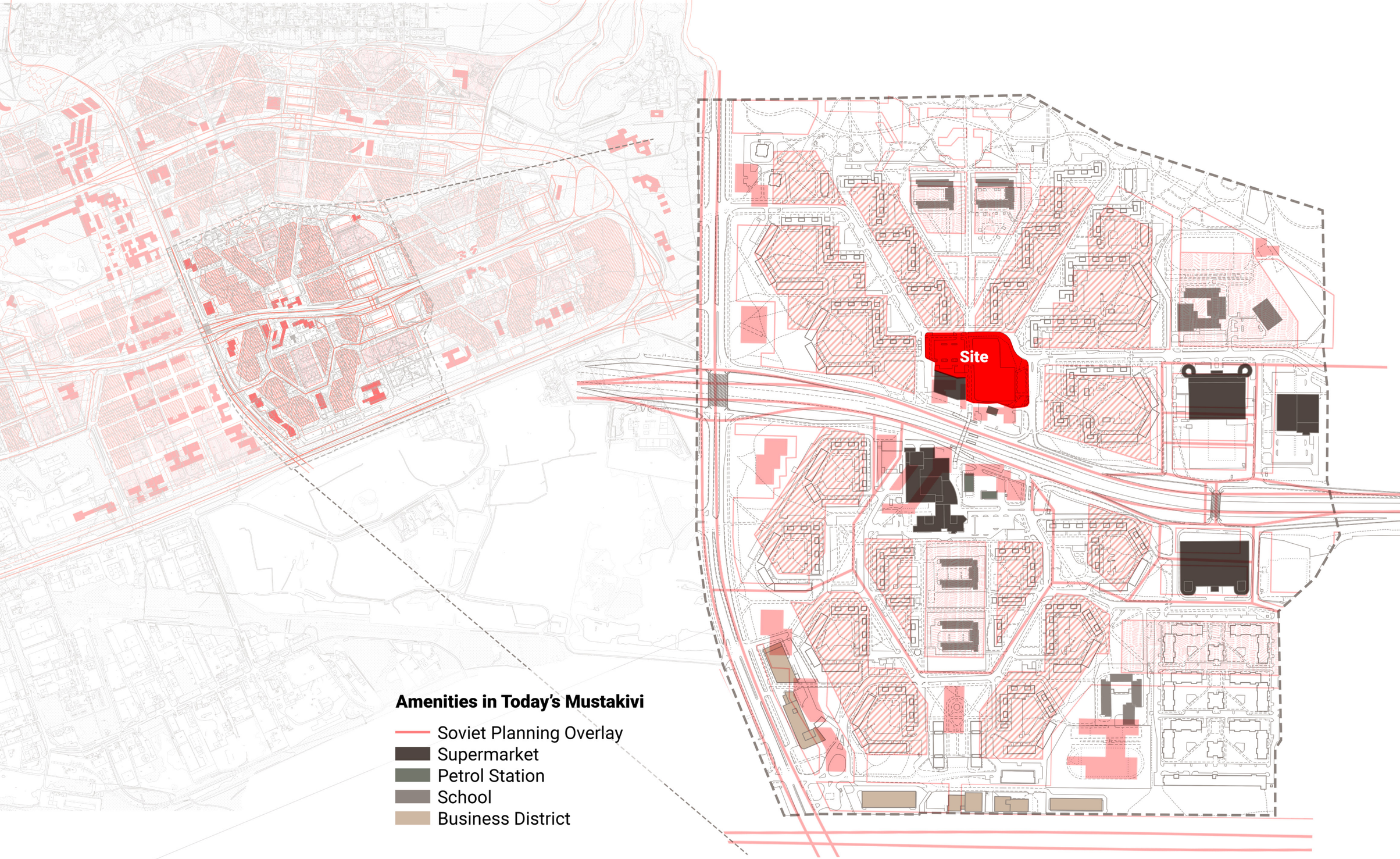
Density Comparison

Tallinn	Lasnamae	Mustakivi
2852/km²	3989/km²	17017/km²

Saarinen Masterplan: 1913
An unrealised masterplan designed by Finnish architect, Eliel Saarinen for Tallinn's upper middle class.

Soviet Masterplan: 1970-1991
Provide mass housing during the period of a rapid urbanisation in the Soviet Union to house working class people.

Today's Masterplan: 1991-now
The goal future Lasnamae is to address both the legacy of its Soviet past and needs of modern urban living such as communal spaces to enhance social integration and transform Lasnamae into a more livable neighbourhood.

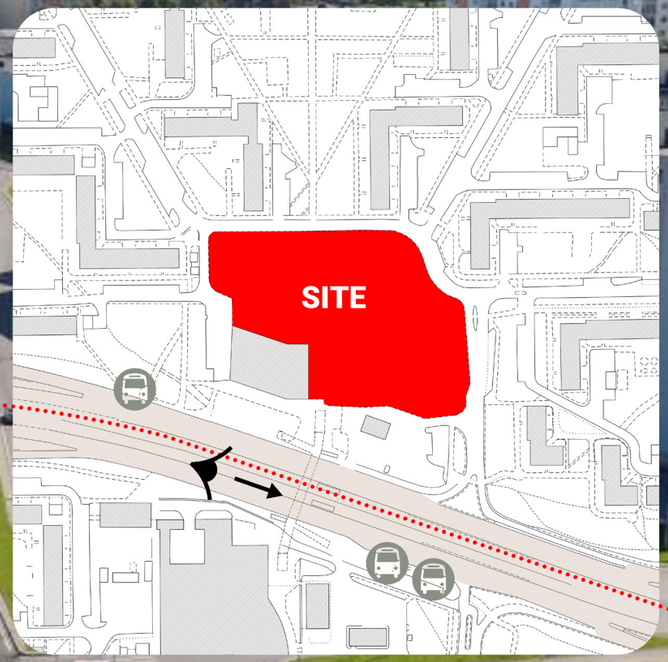


Amenities in Today's Mustakivi

- Soviet Planning Overlay
- Supermarket
- Petrol Station
- School
- Business District



Source: Image by Tõnu Tunnel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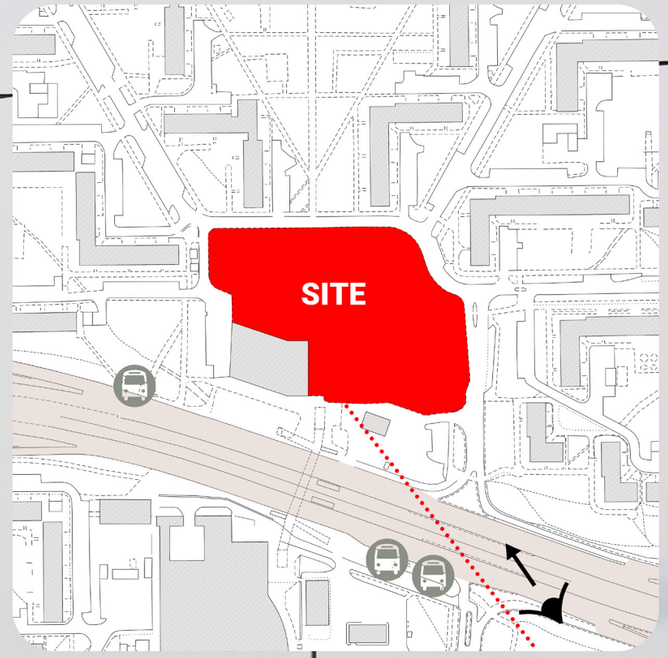
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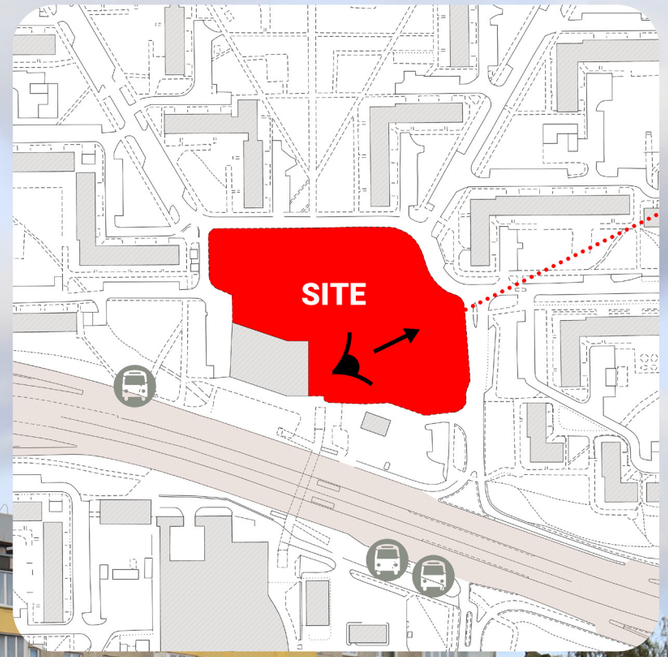
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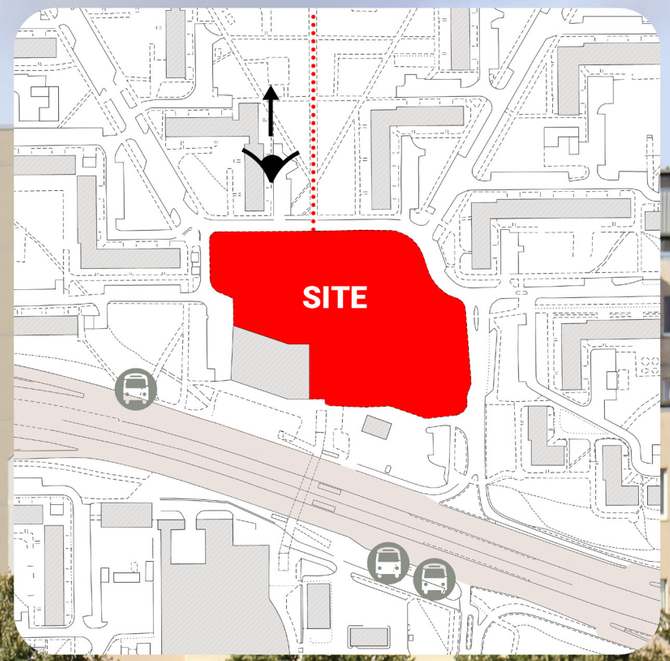
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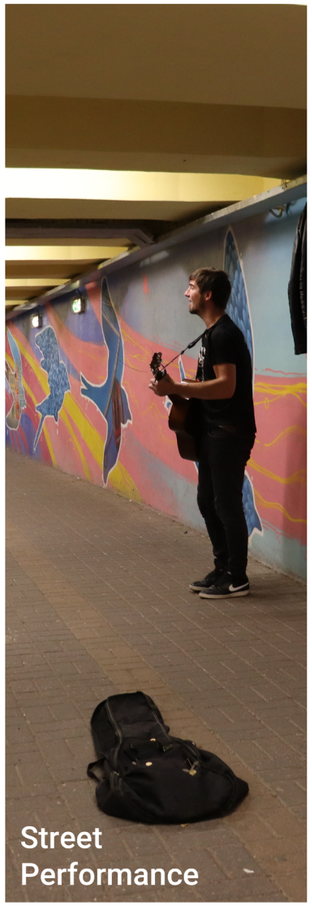
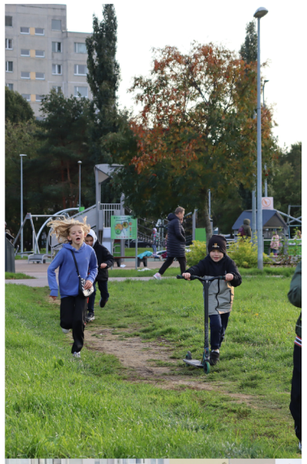


Street
Performance





Cars
Traffic
Buses
Honking

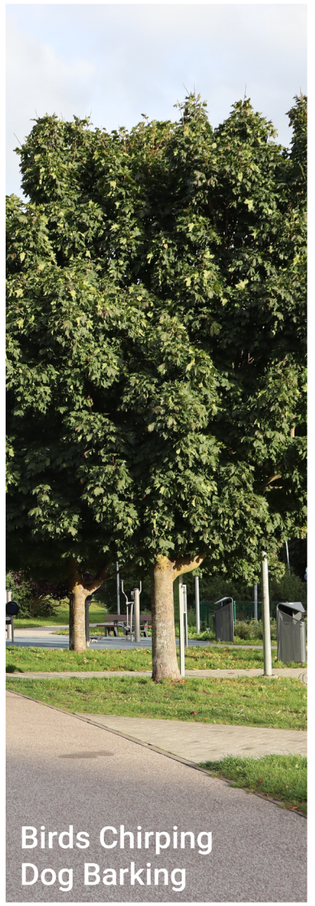




Pedestrian Chatter
Children Playing



Radio
Cash Register



Birds Chirping
Dog Barking

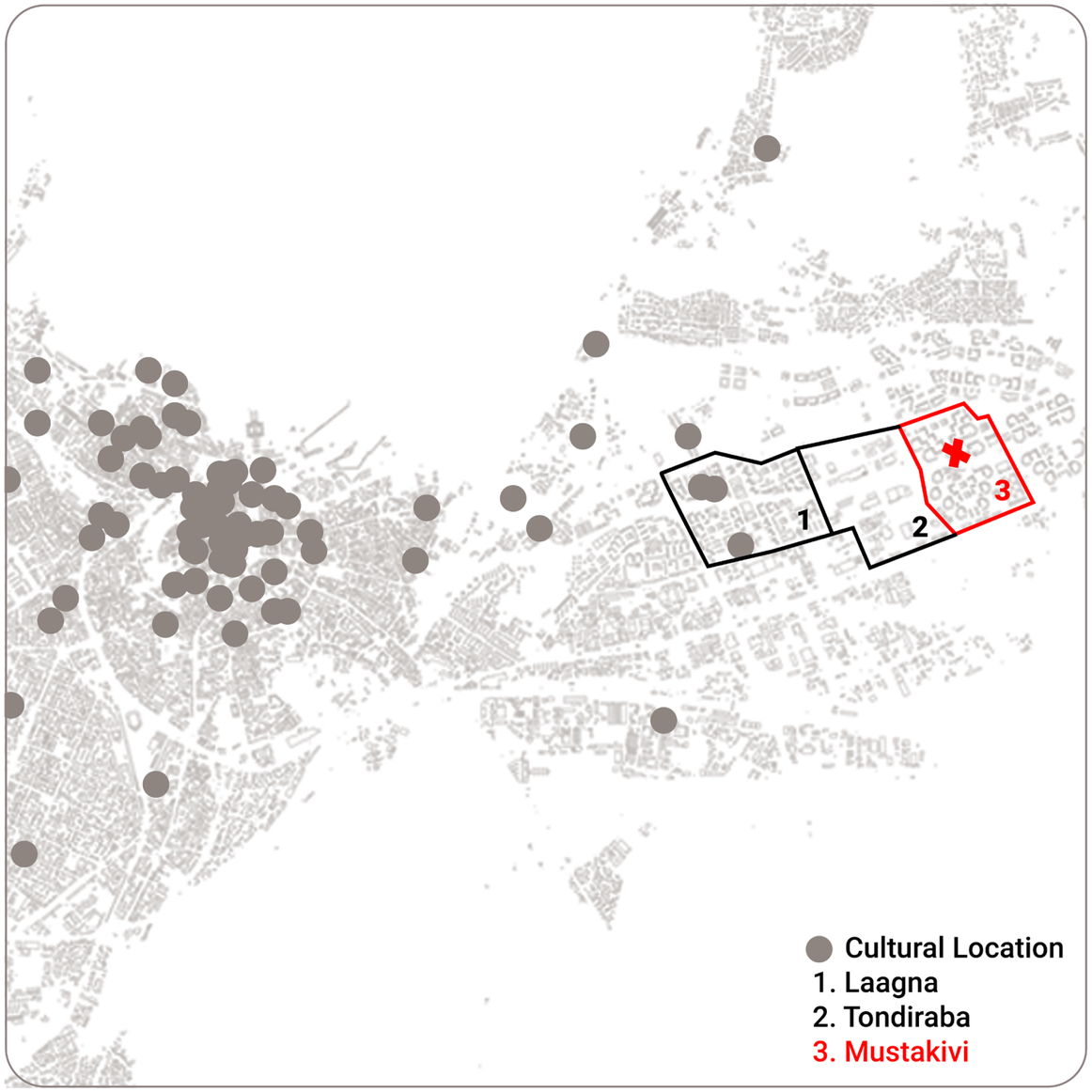


Blowing Wind
Rustling Leaves

Anthropogenic Sound | **Biology Sound** | **Geophysical Sound**

Art Gallery
Library
Museum
Opera House
Theatre
Concert Halls
Performing Arts Center
Community Center
Youth Center
Religious Facilities
Memorials
Monuments

MUSEUM



ATMOPSHERE OF SILENCE

Silence is not about the emptiness and absence of sound, but a fullness of mindful presence. It is the ability to listen inwards, to experience inner peacefulness and relish meaningful moments in the present.

Jean-Luc Nancy

“Silence not only leads us to listen attentively for the arrival of sound but also forces us to listen to the body as resonance chamber - to listen-to ourselves listen.”

Mark Dorrian
Christos Kakalis

“Silence... is experienced as something you ‘hear’ but as something you participate in, maintain, and even produce - for it affects the way you move.”

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A Study on the Effects of Depression Using the Weighting White Noise

[1]Myung-Jin Bae and [2]Seong-Geon Bae
[1]Department of Information and Telecommunication, Soongsil University, Seoul, South Korea
[2]School of Software Application, Kangnam University, Gyeonggi-do, South Korea

Abstract: In general, depression is a disease that appears negative emotions and changes negative emotions in brain function. About 15% of the population suffers from depressions and depression at least once during a lifetime. Delta waves are often found to increase in depressed patients than in the general population which cause negative emotions. The alpha waves increases in the left frontal lobe and the beta waves increases in the right frontal lobe. Depending on the brain waves, patients with depression have such characteristics. In this study we used a white noise for the symptoms of depression. Analysis of depression in a white noise is advantageous than the using EEG features. White noise weight has an effect on depression English.

Key words: Brainwaves, depression, closed eyes, alpha-wave, theta-wave, delta-wave

International Journal of *Environmental Research and Public Health*

MDPI

Article

Effect of Traffic Noise and Relaxations Sounds on Pedestrian Walking Speed

Marek Franěk *, Lukáš Režný, Denis Šefara and Jiří Cabal

Faculty of Informatics and Management, University of Hradec Králové, Rokitanského 62, 500 03 Hradec Králové, Czech Republic; lukas.rezny@uhk.cz (L.R.); denis.sefara@uhk.cz (D.Š.); jiri.cabal@uhk.cz (J.C.)
* Correspondence: marek.franek@uhk.cz; Tel.: +420-49-333-2374

International Journal of *Environmental Research and Public Health*

MDPI

Article

Physiological and Psychological Effects of Forest and Urban Sounds Using High-Resolution Sound Sources

Hyunju Jo [1,†], Chorong Song [1,†], Harumi Ikei [2], Seiya Enomoto [3], Hiromitsu Kobayashi [4] and Yoshifumi Miyazaki [1,*]

1 Center for Environment, Health and Field Sciences, Chiba University, 6-2-1 Kashiwa-no-ha, Kashiwa, Chiba 277-0882, Japan
2 Department of Wood Engineering, Forestry and Forest Products Research Institute, 1 Matsunosato, Tsukuba, Ibaraki 305-8687, Japan
3 JVCKENWOOD Victor Entertainment Corporation, 1-2-20 Higashi, Shibuya-ku, Tokyo 150-0011, Japan
4 Department of Nursing, Ishikawa Prefectural Nursing University, 1-1 Gakuendai, Kahoku, Ishikawa 929-1210, Japan
* Correspondence: ymiyazaki@faculty.chiba-u.jp; Tel.: +81-4-7137-8184
† These authors contributed equally to this work.

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journal homepage: www.elsevier.com/locate/jep

The effect of water sound level in virtual reality: A study of restorative benefits in young adults through immersive natural environments

Chung-Heng Hsieh [a], Ju-Yuan Yang [a,b], Chun-Wei Huang [c], Wei Chien Benny Chin [d,*]

[a] Department of Landscape Architecture, Fu Jen Catholic University, New Taipei City, 24205, Taiwan
[b] Department of Horticulture and Landscape Architecture, National Taiwan University, Taipei City, 10617, Taiwan
[c] General Education Center, Ming Chi University of Technology, New Taipei City, 24301, Taiwan
[d] Department of Geography, National University of Singapore, Queenstown, 117570, Singapore

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Handling Editor: Giulia D'Aurizio

Keywords:
Water soundscape
Virtual reality
Restorative environment
Sound levels

ABSTRACT

Virtual Reality (VR) can bring a person to a restorative natural environment—an immersive experience containing elements from blue and green space that help reduce stress and anxiety. However, the effect of different water sound levels on psychological and physiological health remains unclear. This study used a VR natural environment—combining forest scene and waterfall sounds—to compare the low and high water sound levels' effects on individuals' psychological (affective quality of place and state anxiety relief) and physiological benefits (heart rate variability). We focused on two comparisons in each of the two dimensions: (1) a before-and-after comparison that analyzes the effectiveness of the water sounds, and (2) a low-and-high comparison that investigates the differences between the two sound levels. A total of 45 university students (aged between 19 and 23) participated in the experiment. The results show that both low- and high-decibel levels improved in psychological dimension, and decrease individuals' heart rates from anxiety status. More importantly, while the high-decibel served to awaken emotions, the low-decibel was more effective at calming emotions and relieving anxiety. Overall, we found that natural waterscape sounds relieve transient anxiety states and promote healthy autonomic nervous activity. This study provides evidence for the planning of healthy environmental interaction patterns and the design of urban soundscapes.

Applied Acoustics 189 (2022) 108600

Contents lists available at ScienceDirect

Applied Acoustics

journal homepage: www.elsevier.com/locate/apacoust

Relationships between landscape characteristics and the restorative quality of soundscapes in urban blue spaces

Fangfang Liu [a,*], Peiye Liu [a,1], Jian Kang [b,*], Qi Meng [a,*], Yue Wu [a], Da Yang [a]

[a] Heilongjiang Cold Region Architectural Science Key Laboratory, School of Architecture, Harbin Institute of Technology, Harbin 150006, PR China
[b] UCL Institute for Environmental Design and Engineering, University College London, London WC1E 6BT, United Kingdom

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Blue spaces
Landscape characteristics
Restorative quality
Soundscape
Audio-visual combinations

ABSTRACT

This study aims to explore the specific effects of audio-visual combinations on the restorative quality of soundscapes in blue spaces. In the experiments, 6 types of blue space were combined with 14 sounds, and the Short-version Revised Restoration scale (SRRS) was utilized by 65 volunteers to measure the restorative quality of the audio-visual combinations. On a scale from 1 to 9, the following results were obtained: (1) the water sound with the highest restorative quality is river sound (6.94), followed by fountain sound (6.59) and stream sound (6.41), and the sound of sea waves (5.85) has the lowest restorative quality; (2) in blue spaces with a high degree of urbanization (2.25), 9 types of sounds can improve restorative quality; (3) improving the visual quality of water, increasing the number of boats and reducing the number of paved areas can improve the restorative quality of audio-visual combinations; (4) it is appropriate to reduce plant diversity to improve the restorative effect in highly urbanized shore areas; and (5) footsteps are not appropriate in blue spaces with good natural surroundings. These results indicate that the restorative quality of soundscapes in blue spaces can be improved through landscape design, which provides implications for sustainable environment design.

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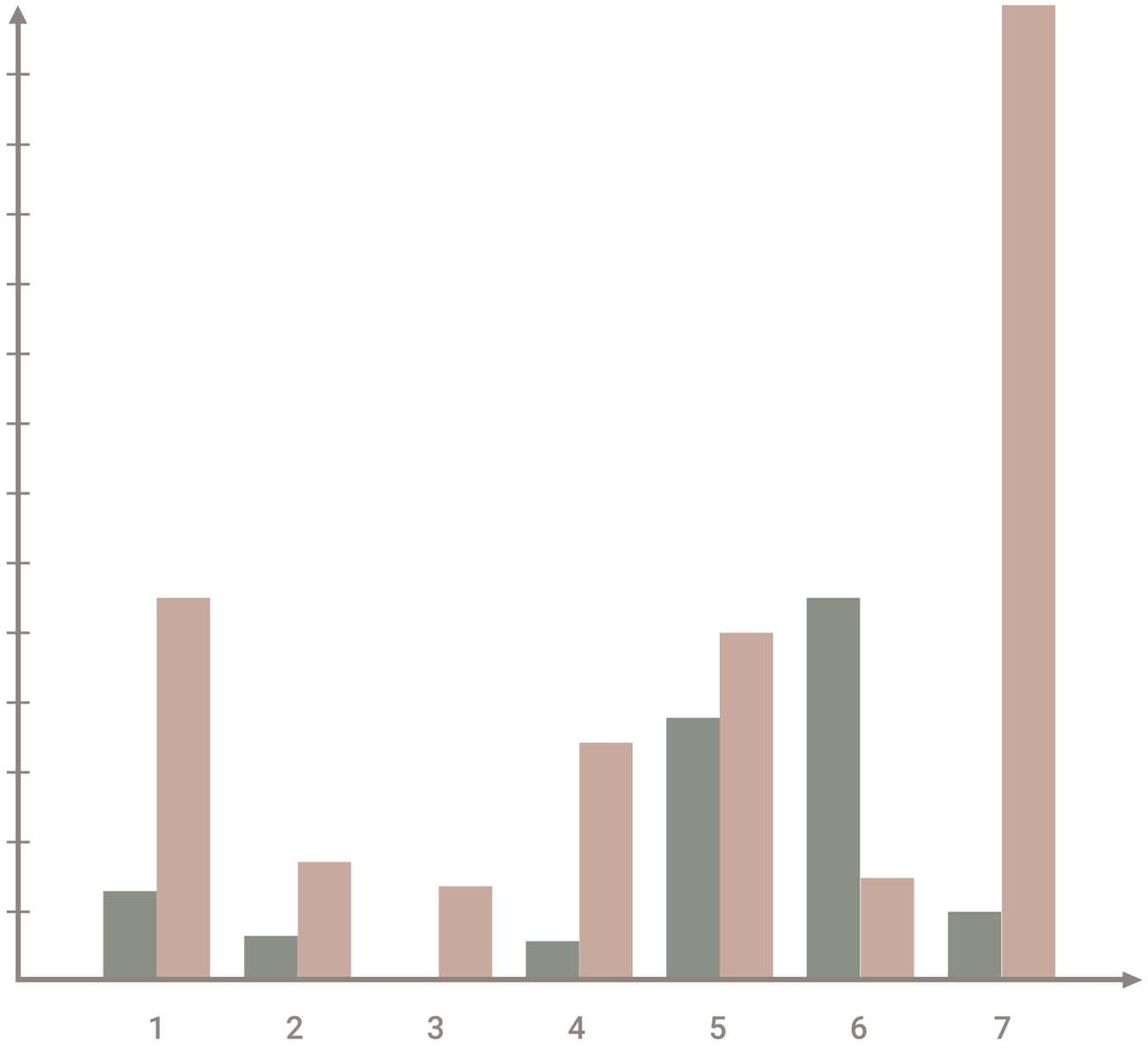


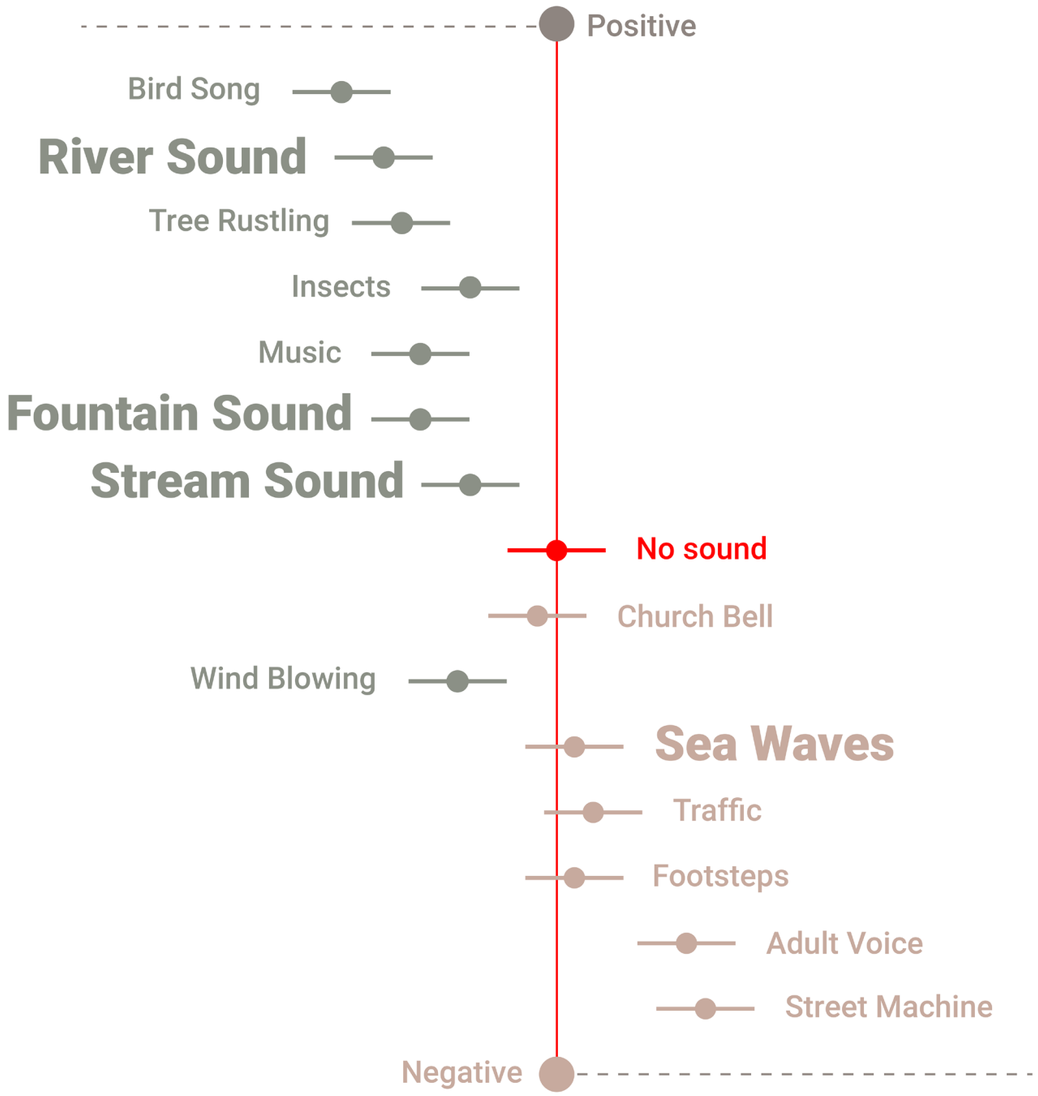
Profile of Mood State related to Prefrontal Cortex and Autonomic Nervous Activities

- Forest Sound
- City Sound

1. Tension & Anxiety
2. Depression
3. Anger & Hostility
4. Fatigue
5. Confusion
6. Vigor (Physical & Mental Energy)
7. Total Mood Disturbance

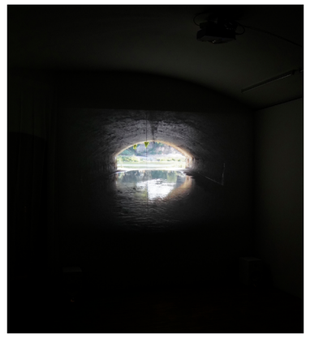
Sound

Scientific Research



Visual

Artistic Expression - ‘The Notion of Silence’ Exhibition



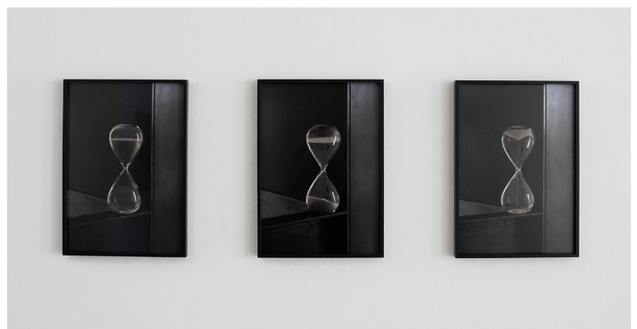








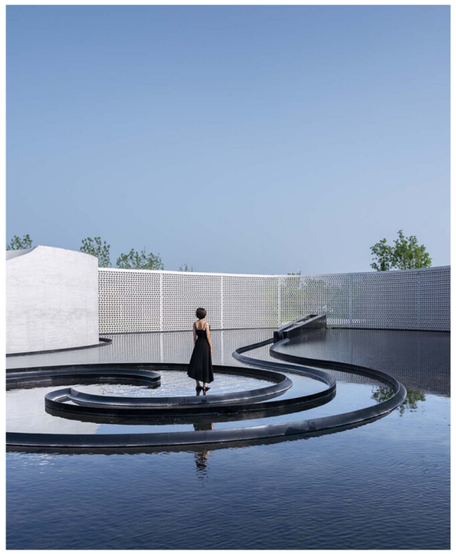




Programme Precedent

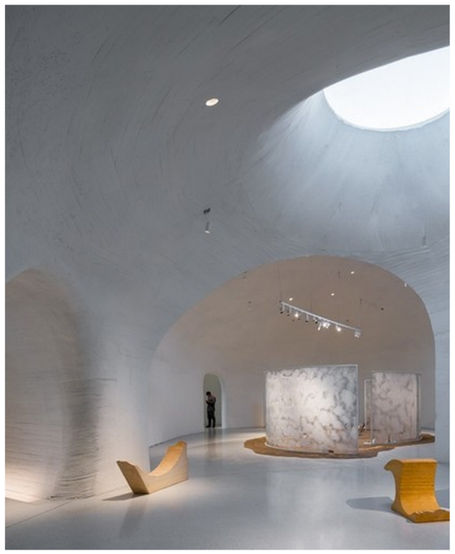
MONOLOGUE ART MUSEUM
by Wutopia Lab

Area: 1272m2



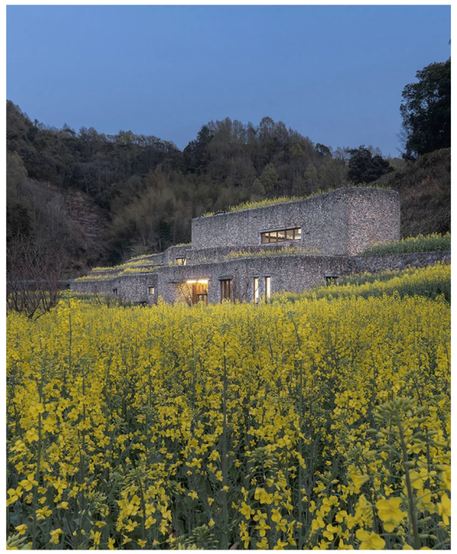
UCCA DUNE ART MUSEUM
by OPEN Architecture

Area: 930m2



QINGXI CULTURE & HISTORY MUSEUM
by UAD

Area: 1691m2



ALIEN ART CENTER
by CT Design, PU Architecture Association and Ya-Yuan Design

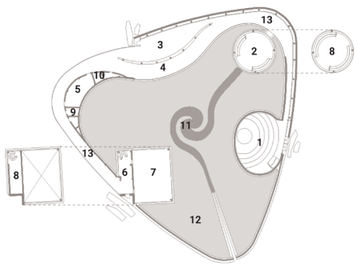
Area: 2800m2



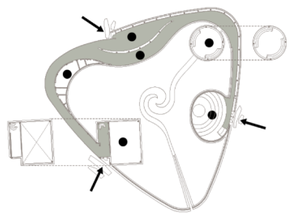
Monologue Art Museum

by Wutopia Lab

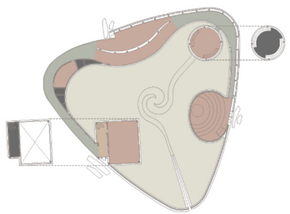
Ground Floor Plan



Circulation



Zoning



Construction Year: 2022
Area: 1272m^2

Located at the centre of a park within the Seatopia resort in the Beidaihe area, the complex comprises an art gallery, a dance studio, a yoga room and a theatre. The museum's name refers to its role as a quiet island within the bustling residential district.

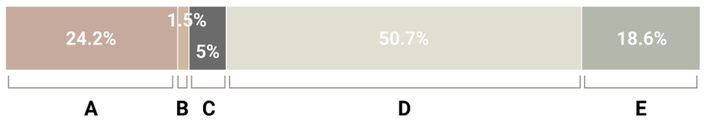
The Monologue Art Museum encourages solitary and creative recharging in an increasingly loudmouth world that seems to prefer extroversion. The creative process of this project deliberates the inquiries and beliefs where introversion is not perceived as a liability, but rather, a soft power that yields cognizant, considerate and inspired outcomes.

Function



1. Theatre
2. Yoga Room
3. Atelier
4. Art Gallery
5. Tearoom
6. Reception
7. Dancing Room
8. Locker Room
9. Lavoratory
10. Switch Room
11. Flow Water Pool
12. Shallow Pool
13. Circulation

Zoning Distribution



A. Artistic Space
B. Administration
C. Utilities
D. Landscape
E. Circulation

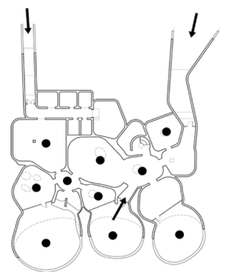
UCCA Dune Art Museum

by OPEN Architecture

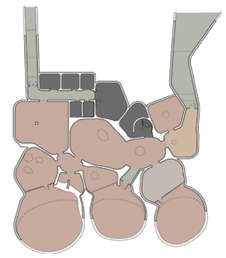
Ground Floor Plan



Circulation



Zoning



Construction Year: 2018
Area: 930m^2

On a quiet beach along the coast of northern China's Bohai Bay, the UCCA Dune Art Museum is carved into the sand, where it gently disappears. Hidden between the sea and the sand, the museum emerges as a hidden shelter, intimate to the body and soul—a place to thoughtfully contemplate both nature and art.

The museum's concrete shell was shaped by hand by local workers, using formwork made from small linear strips of wood and other materials. The architect retained the imperfect texture left by the formwork, allowing traces of the manual construction to be felt and seen.

Function



1. Main Entrance
2. Lobby
3. Gallery
4. Cafe
5. Outdoor Exhibition
6. Toilet/Storage
7. Secondary Entrance
8. Service Entrance
9. Geothermal Plant
10. Low Voltage Room
11. Electrical
12. Spare Room

Zoning Distribution

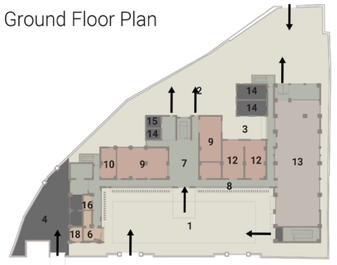


A. Artistic Space
B. Public Gathering Space
C. Administrative
D. Utilities
E. Circulation

Alien Art Center

by CT Design, PU Architecture Association and Ya-Yuan Design

Ground Floor Plan



First Floor Plan



Second Floor Plan



Construction Year: 2018
Area: 2800m^2

The Alien Art Center is located at the former military facilities in Taiwan built during the cold war. As a private contemporary art museum, the permanent exhibitions acts as a contemplative space, inviting audiences to reflect quietly on the instability of the past. At the same time, appreciating contemporary art from various angles.

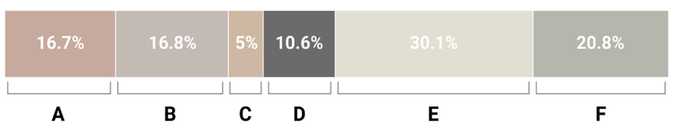
The musuem also houses James Turrell's light installation - Diamond relating back to his earliest experiments using projected light, which cast sharp shapes of light to form bodies of color that seemed to float in space. Turrell's art prompts greater self-awareness through a similar discipline of silent contemplation, patience and meditation.

Function



1. Front Yard
2. Back Yard
3. Courtyard
4. Delivery Area
5. Kitchen
6. Ticketing
7. Lobby
8. Corridor
9. P. Exhibition
10. Archive
11. VIP Room
12. Gallery
13. Activity Area
14. Toilet
15. Stock Room
16. Pantry
17. Lounge
18. Office
19. Meeting Room
20. Rest Area
21. Cafe
22. Terrace
23. Machine Room

Zoning Distribution



A. Artistic Space
B. Public Gathering Space
C. Administration
D. Utillities
E. Landscape
F. Circulation

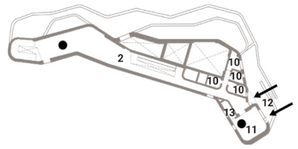
Qingxi Culture and History Museum

By UAD

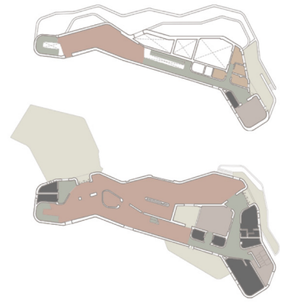
Ground Floor Plan



First Floor Plan



Zoning



Construction Year: 2022
Area: 1691m^2

The architecture features a volume that dissolves into the environment and delicate spaces crafted by appropriate techniques.

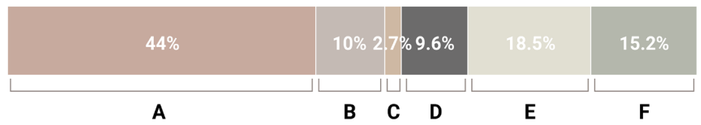
The building dialogues with the surroundings such as terraced fields, creek, bridge, and paths. Walking through the bridge above the stream, and approaching the building nestling under mountains, visitors will continuously encounter unexpected surprises along the way. For this project, the designers created a small cultural destination that reflects local and site features in a low-profile gesture and a vernacular form.

Function

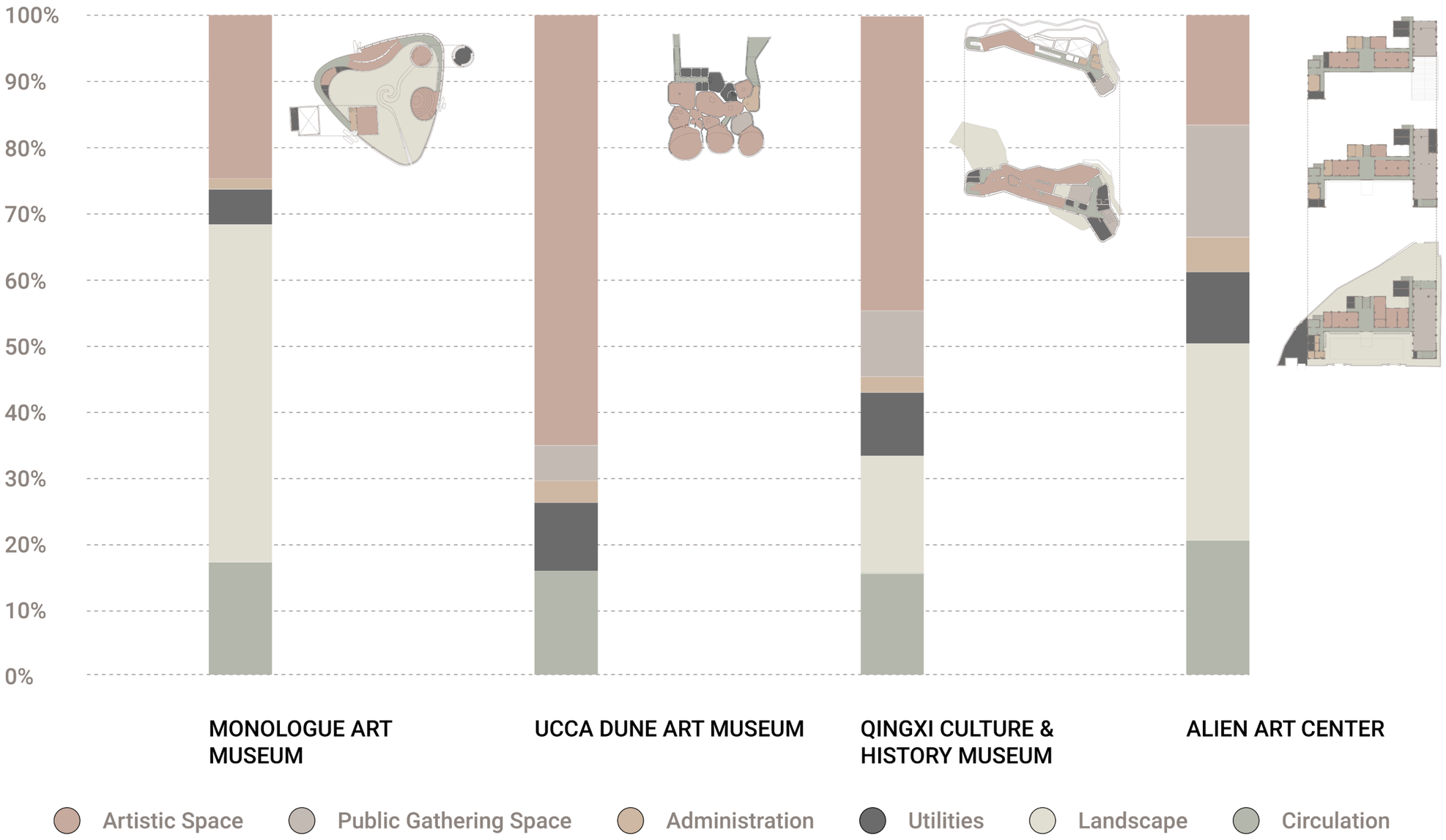


1. Front Square
2. Exhibition Hall
3. Video Room
4. Courtyard
5. Lecture Hall
6. Lounge
7. Sunken Yard
8. Inner Yard
9. Gallery
10. Office
11. Tearoom
12. Outdoor Platform
13. Utilities

Zoning Distribution



A. Artistic Space
B. Public Gathering Space
C. Administrative
D. Utilities
E. Landscape
F. Circulation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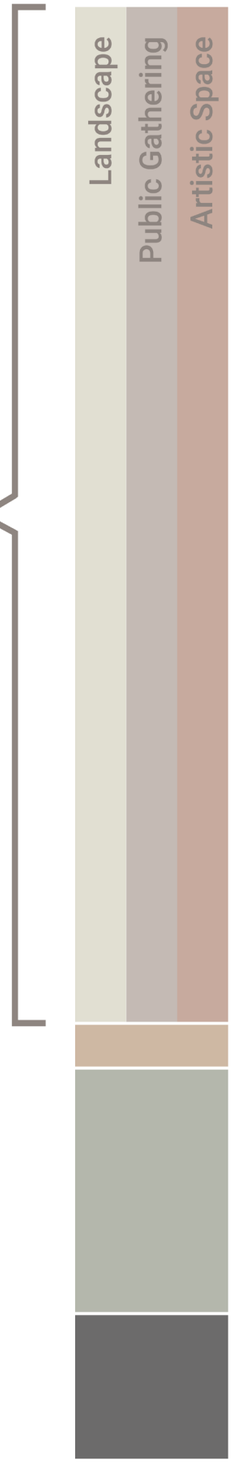
MONOLOGUE ART MUSEUM
UCCA DUNE ART MUSEUM
QINGXI CULTURE & HISTORY MUSEUM
ALIEN ART CENTER
Artistic Space
Public Gathering Space
Administration
Utilities
Landscape
Circulation

Benchmark

Visitor centered Space:
Artistic Space + Public Gathering + Landscape = 70%



Admin Space = 3%

Circulation = 17%

Utilities = 10%

Minimum Area

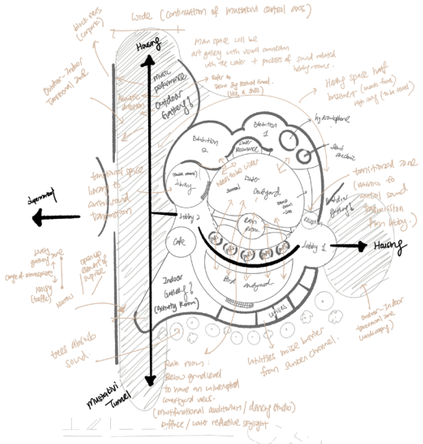
Artistic Space: Exhibition Area and Sound Healing Chamber

Public Gathering Space

Landscape: Water related Courtyard

Administration Utilities

1.5m²/person Sqm based on precedent	1.5m²/person x 20	1.5m²/person x 5	1.5m²/person x 5	1.5m²/person x 100
800m²	30m²	7.5m²	7.5m²	150m²
ART GALLERY	WATER RESONANCE CHAMBER	HYDRAULOPHONE REVERBERATION CHAMBER	SEMI ANECHOIC CHAMBER	RAIN ROOM/ MULTIFUNCTIONAL HALL
1.5m²/person x 20	Stack: 10m²/person x 38 Reading: 5m²/person	1.5m²/person x 4 x 10	1.5m²/person	Stage: 1.5m²/person
30m²	380m²	60m²	TBC: Outdoor	
COFFEE HOUSE	LIBRARY	COURTYARD AMPLIFIER	EXHIBITION SPACE	PERFORMANCE SPACE
Non simultaneous	3m²/person x 6	3m²/person x 50	10m²/person X 10	1.5m²/person x 20
40%	6m²	150m²	100m²	30m²
COURTYARD	RECEPTION	LOBBY	OFFICE	MEETING ROOM
5m²/person x 5 x2	Non simultaneous	30m²/person	30m²/person	3m²/person
50m²	UTILITIES: Approximately 10%			
ARTIST STUDIO	TOILET	MECHANICAL PLANT ROOM	STORAGE AREA	LOCKER/ CHANGING ROOM


Hearing
Movement
Hearing
Makutano Tunnel
Indoor Garden (Planting Pattern)
Cafe
Exhibition
Lobby
Outdoor Amphitheatre
Main space, will be art gallery with sound simulation, also the start + process of sound related hobby rooms.
Hobby spaces have between (sound free) and (noise allowed)
Outdoor - indoor transitional zone
Outdoor Amphitheatre (seating for performance, sound exhibition, film hearing)
Outdoor - indoor transitional zone (landscaping)
Water inlet (water from Sewer Channel).
Hobby rooms (Below ground level to have no interrupted conveyance voice. (multifunctional auditorium / dance studio) diffuse / voice reflective segment
Hobby rooms (Below ground level to have no interrupted conveyance voice. (multifunctional auditorium / dance studio) diffuse / voice reflective segment
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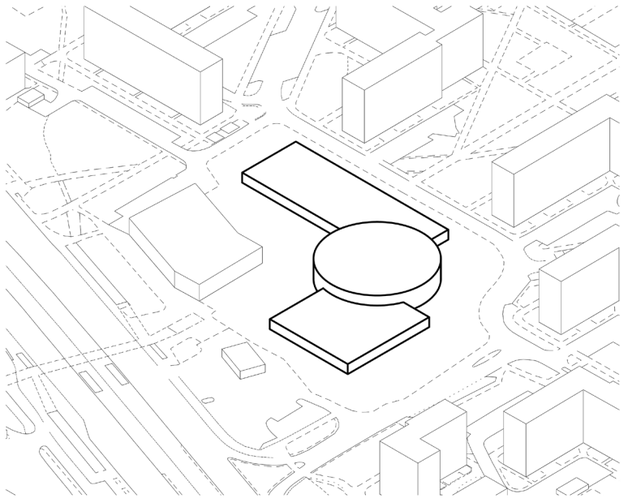
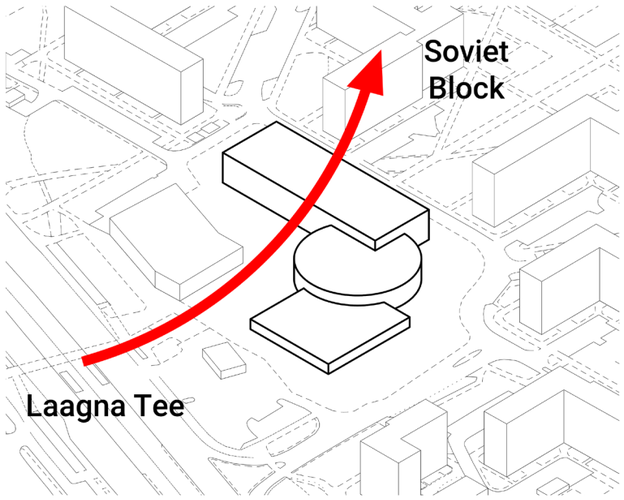
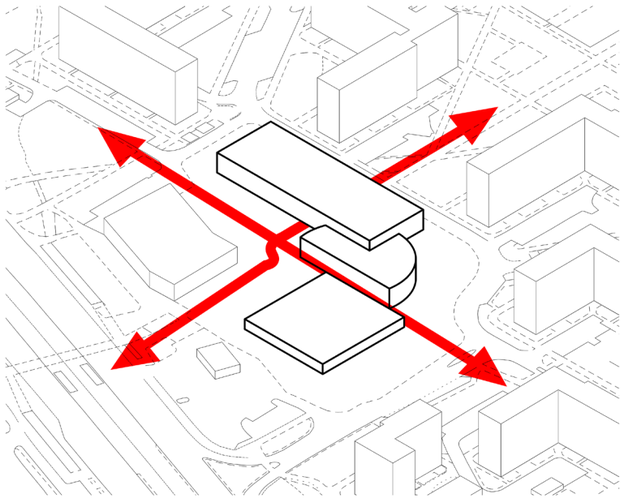


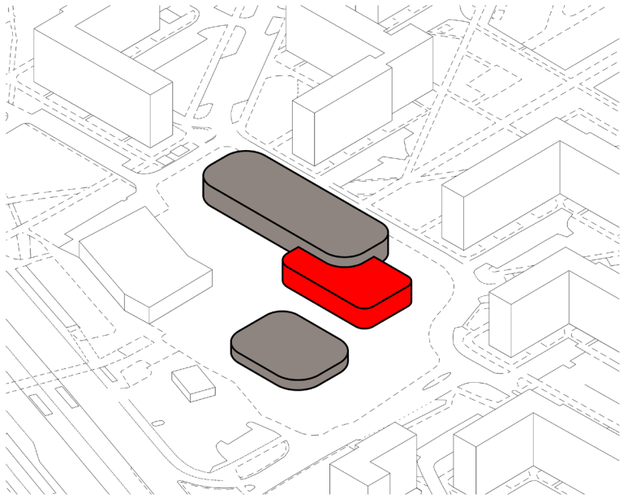
Extrude Base



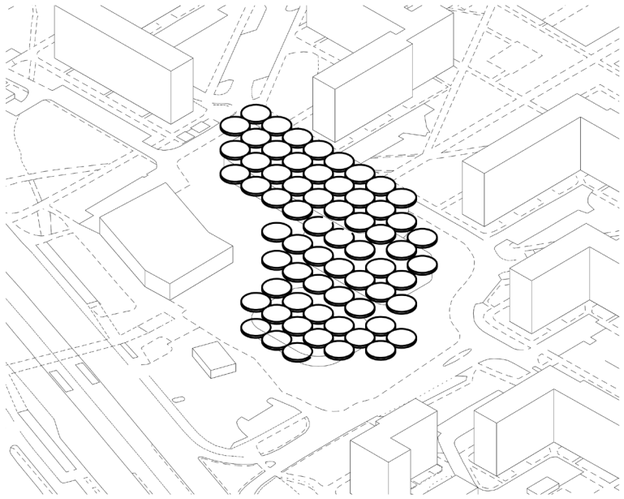
Scale



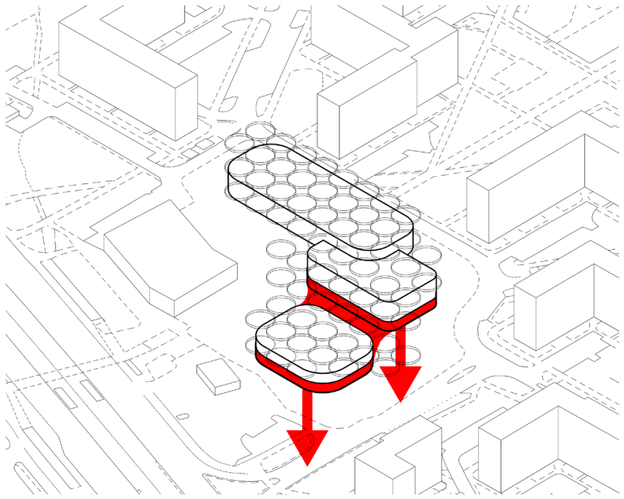
Site Transparency



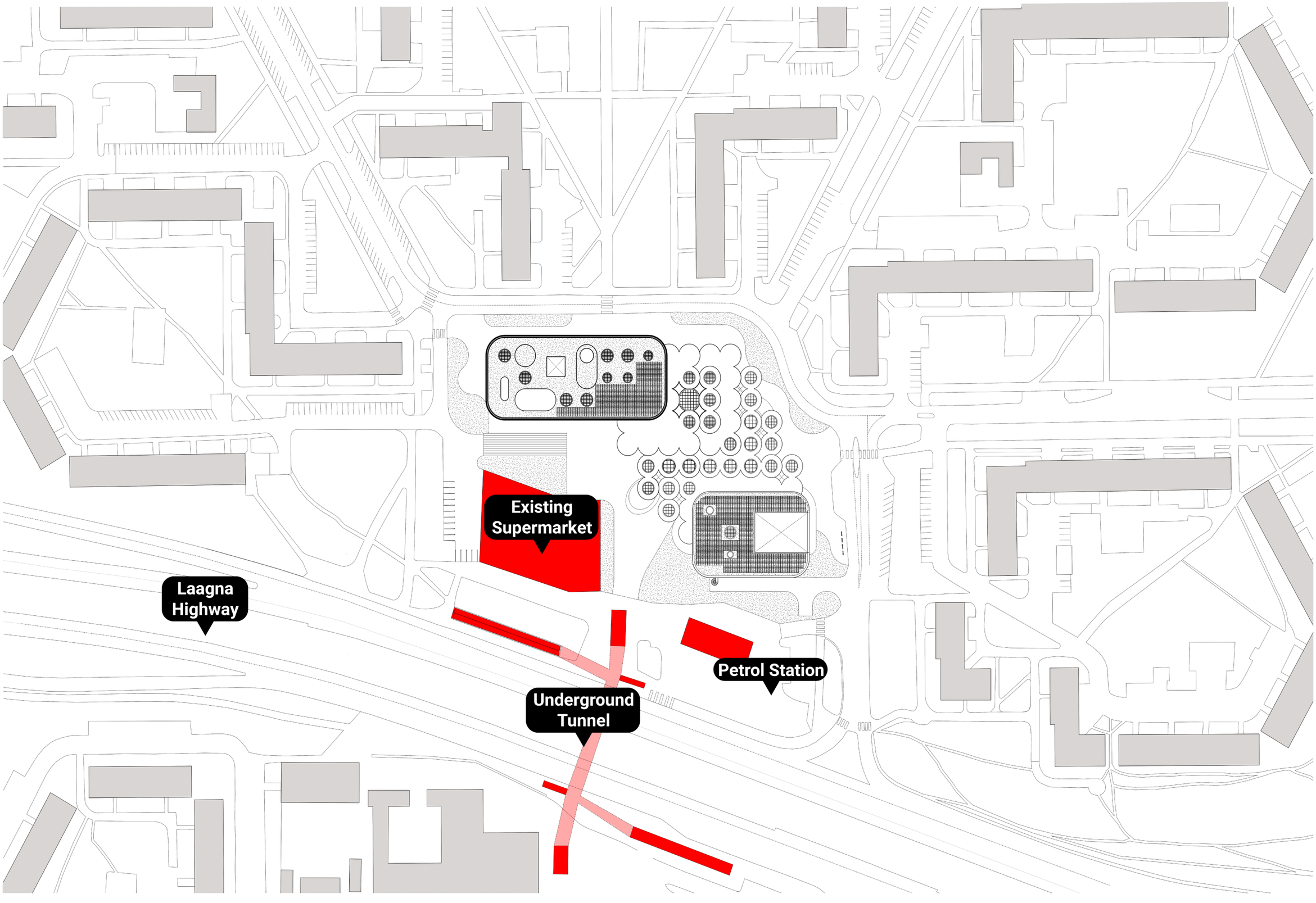
Curve Edges

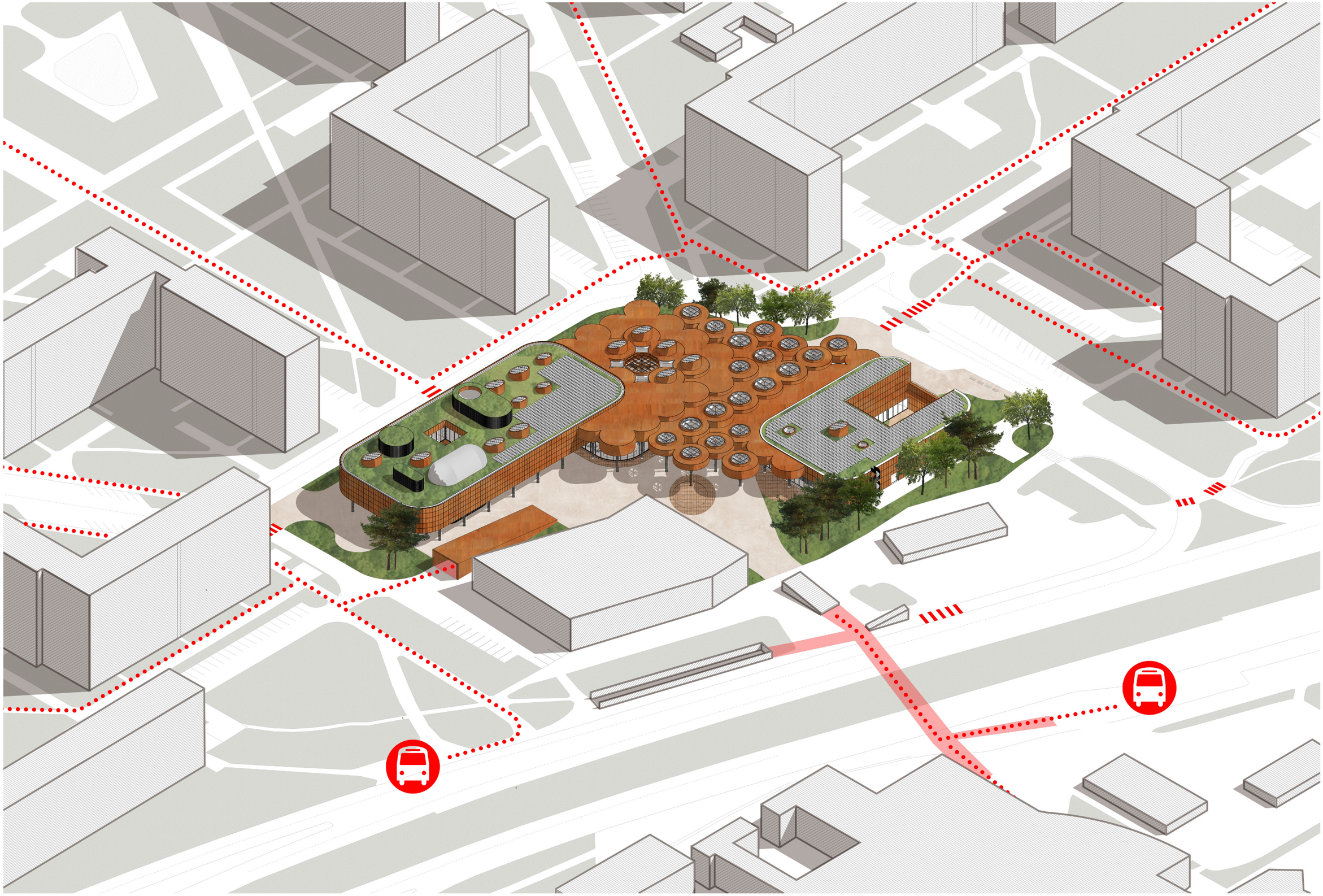


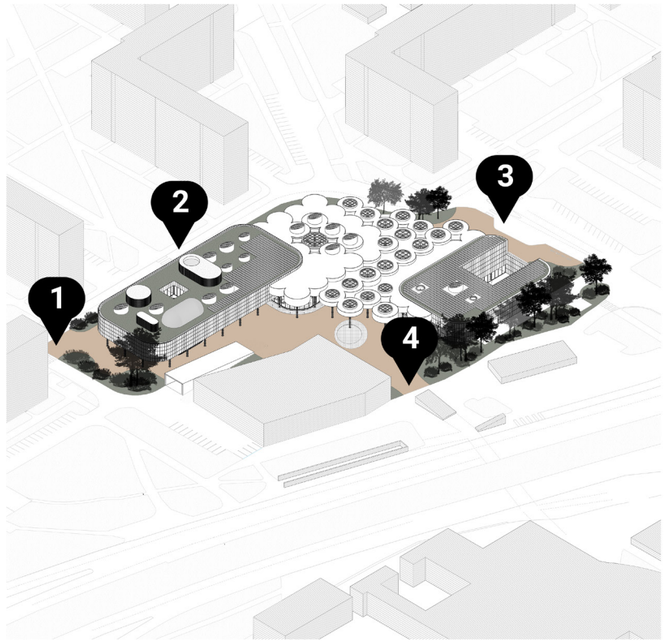
Tree Structure



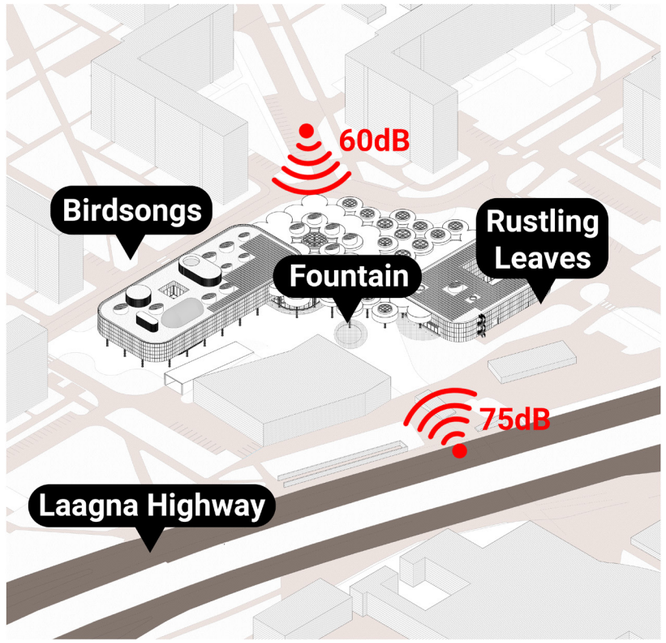
Underground Connection


Existing Supermarket
Laagna Highway
Underground Tunnel
Petrol Station

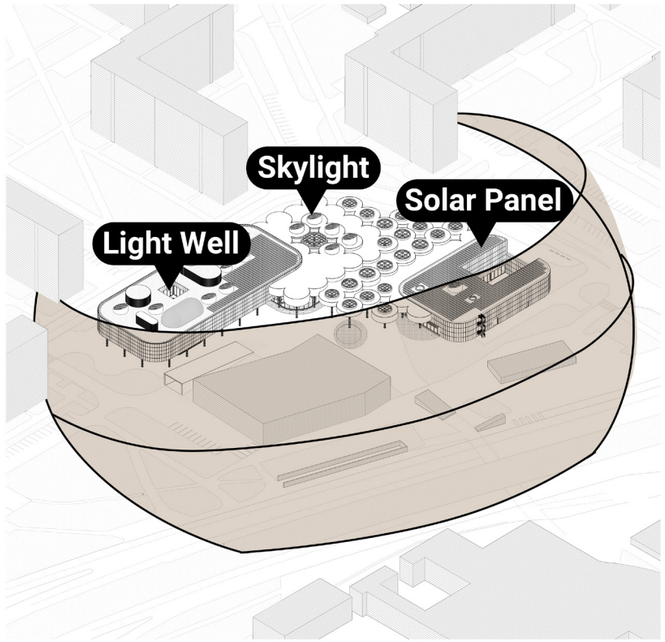




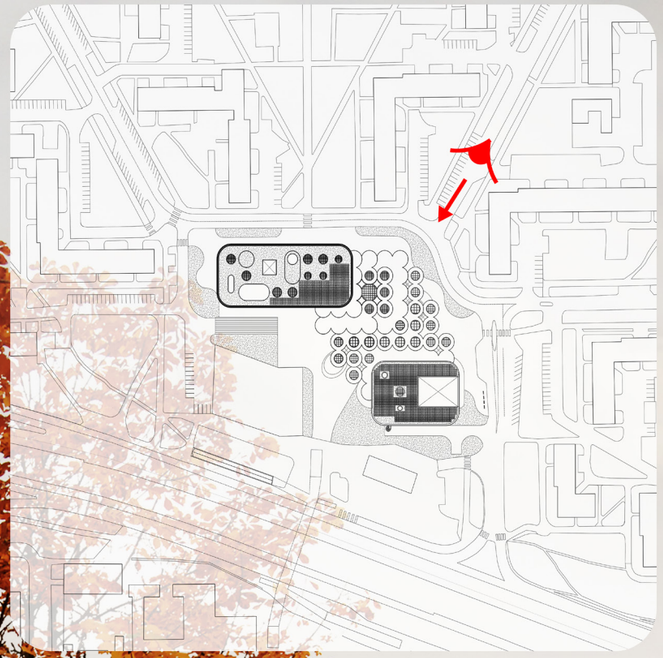
Vegetation and Threshold



Site Sound Strategy

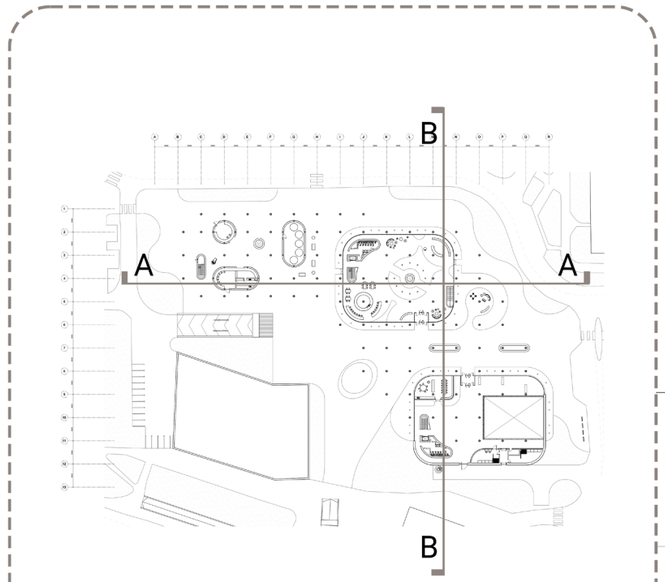


Building Orientation add Solar Strategy



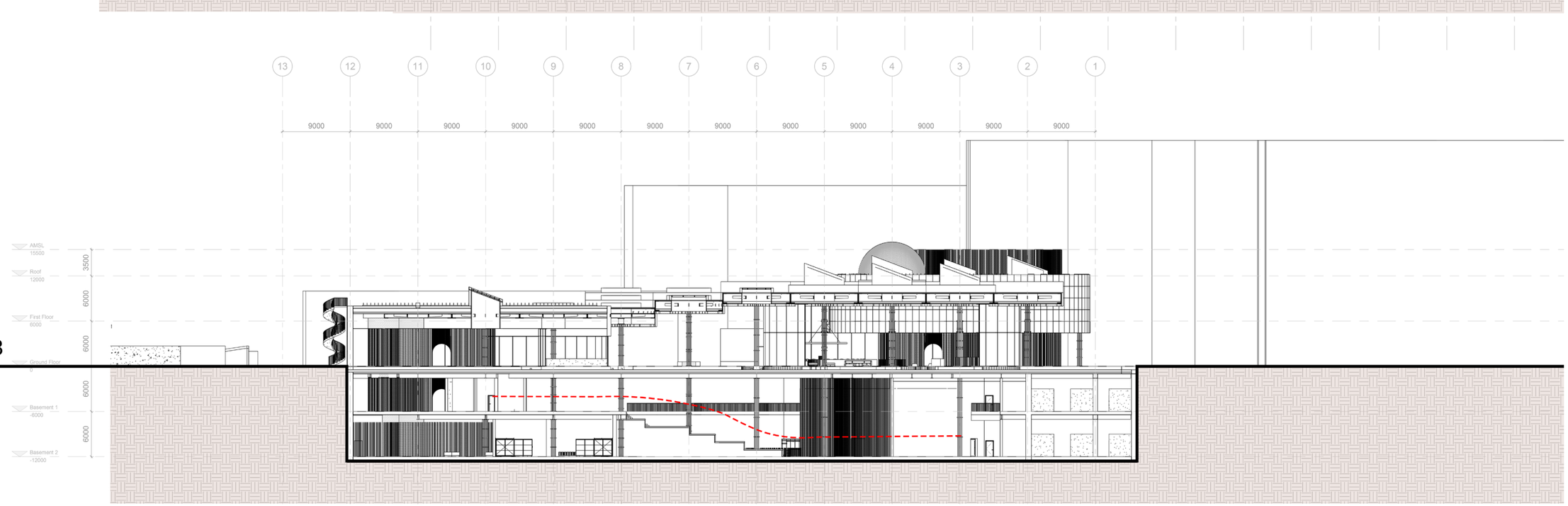


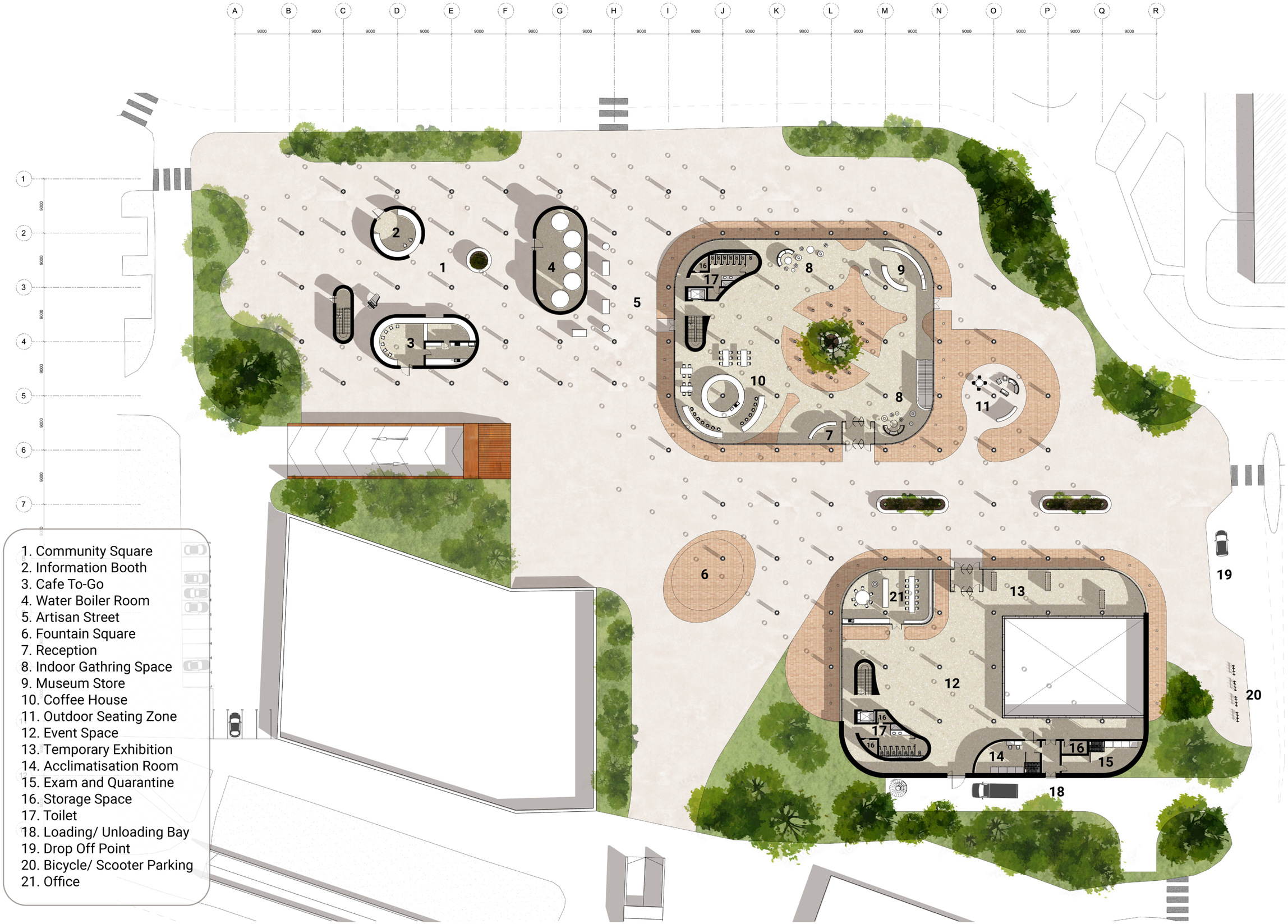




Section A

Section B




A B C D E F G H I J K L M N O P Q R
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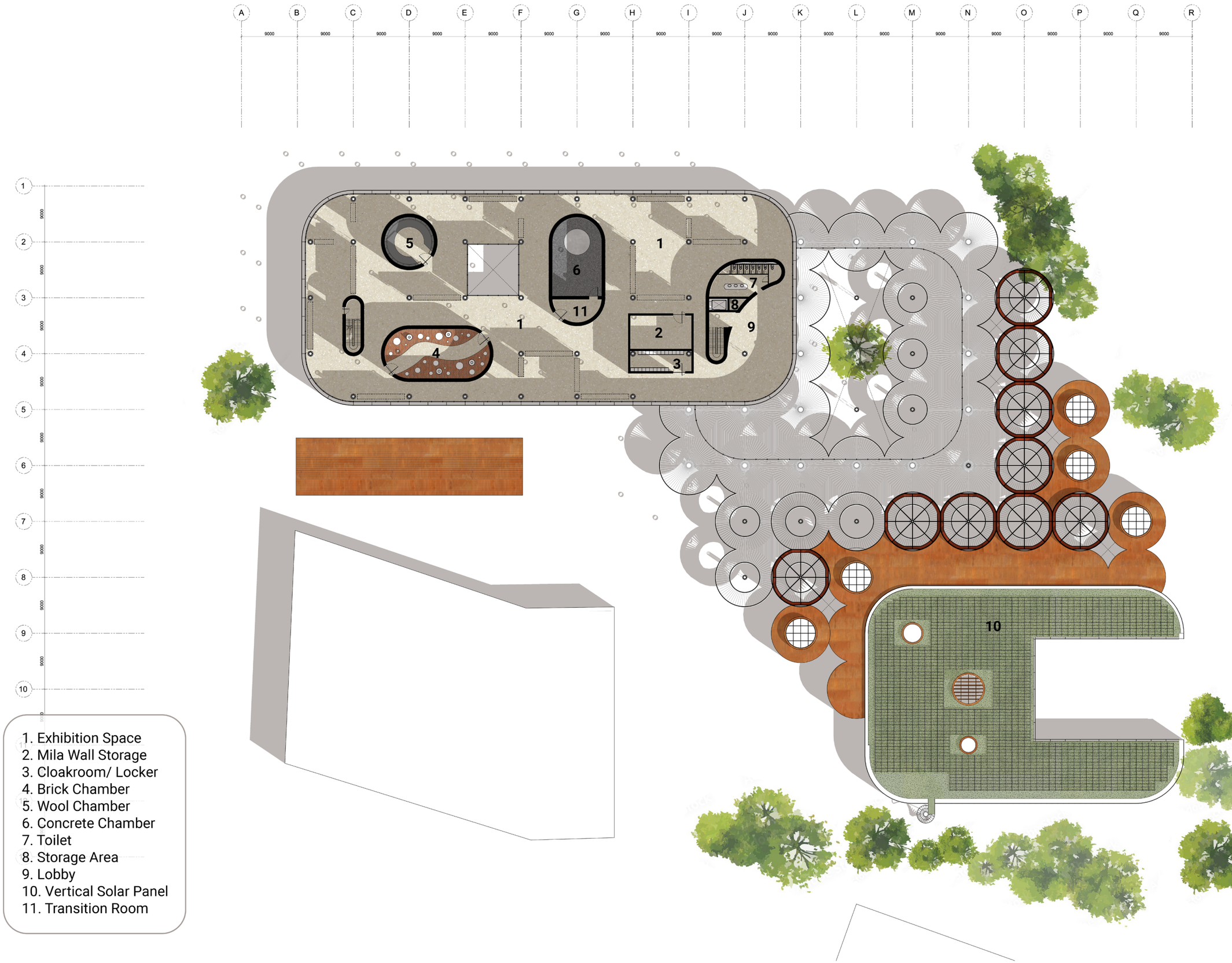
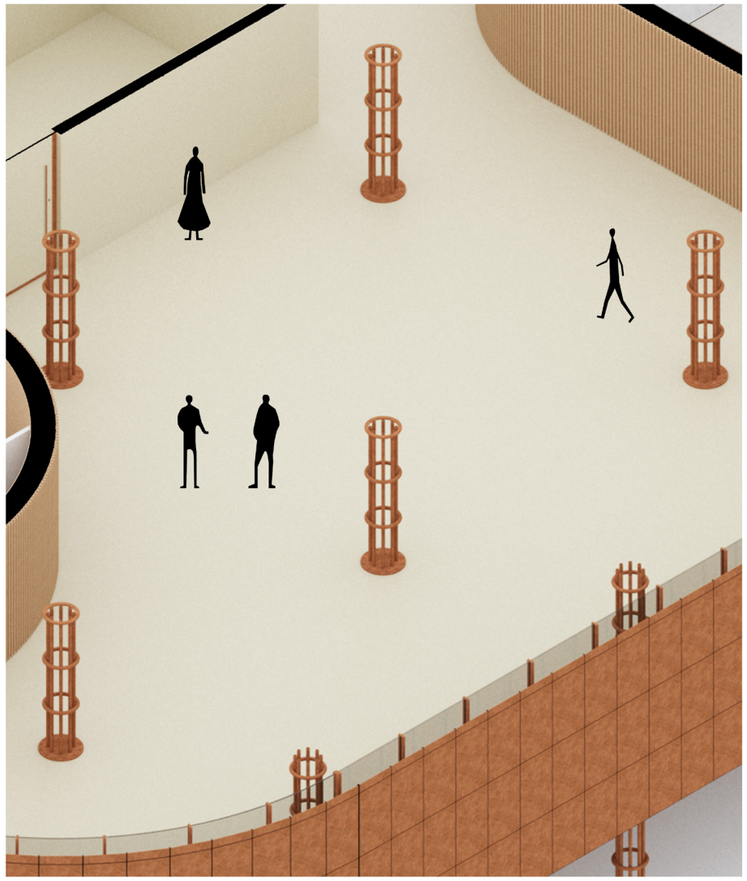
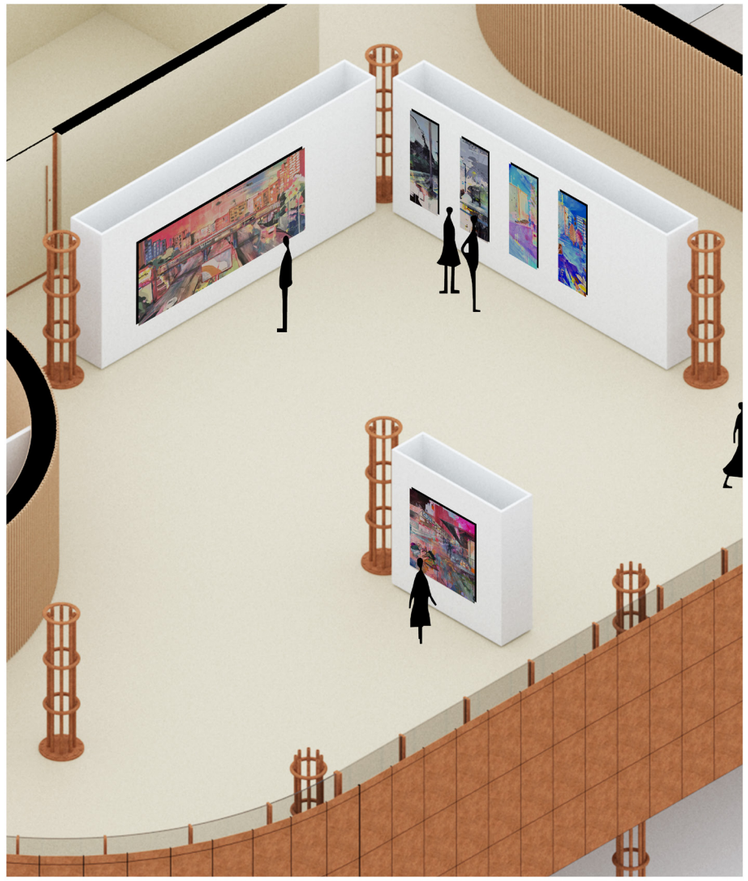
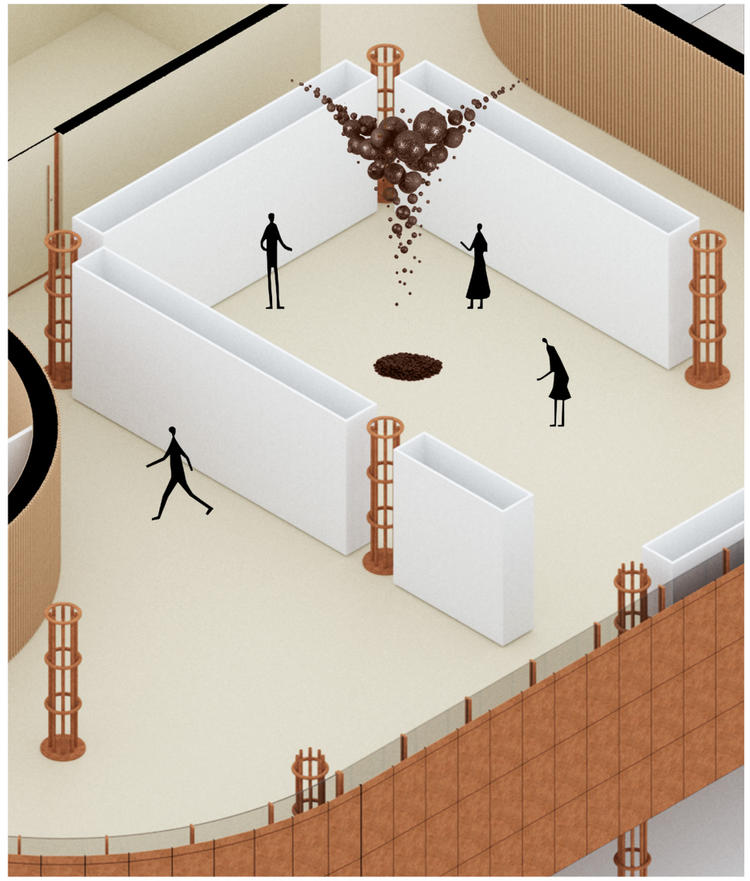
1 2 3 4 5 6 7
1. Community Square
2. Information Booth
3. Cafe To-Go
4. Water Boiler Room
5. Artisan Street
6. Fountain Square
7. Reception
8. Indoor Gathring Space
9. Museum Store
10. Coffee House
11. Outdoor Seating Zone
12. Event Space
13. Temporary Exhibition
14. Acclimatisation Room
15. Exam and Quarantine
16. Storage Space
17. Toilet
18. Loading/ Unloading Bay
19. Drop Off Point
20. Bicycle/ Scooter Parking
21. Office

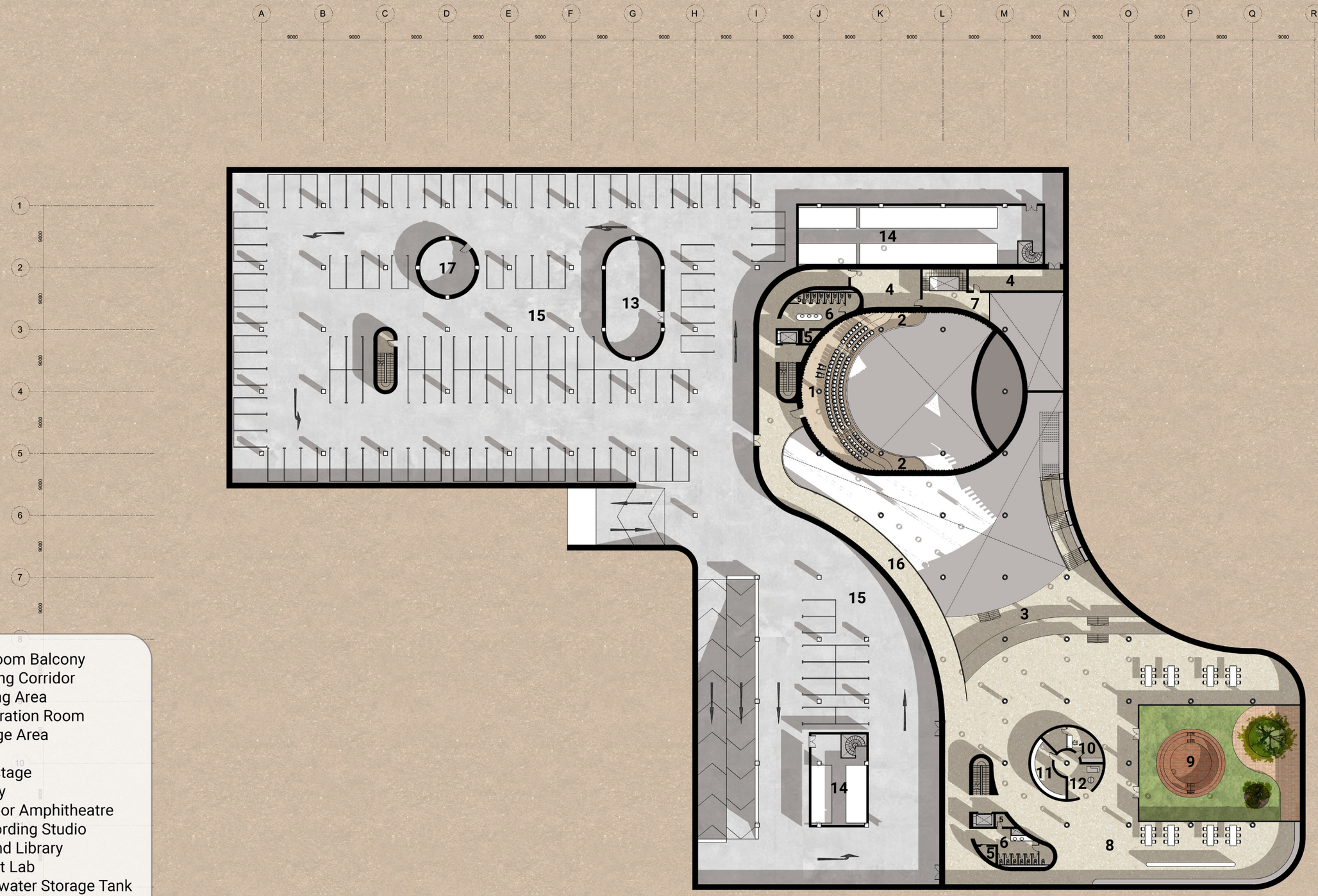


1. Exhibition Space
2. Mila Wall Storage
3. Cloakroom/ Locker
4. Brick Chamber
5. Wool Chamber
6. Concrete Chamber
7. Toilet
8. Storage Area
9. Lobby
10. Vertical Solar Panel
11. Transition Room

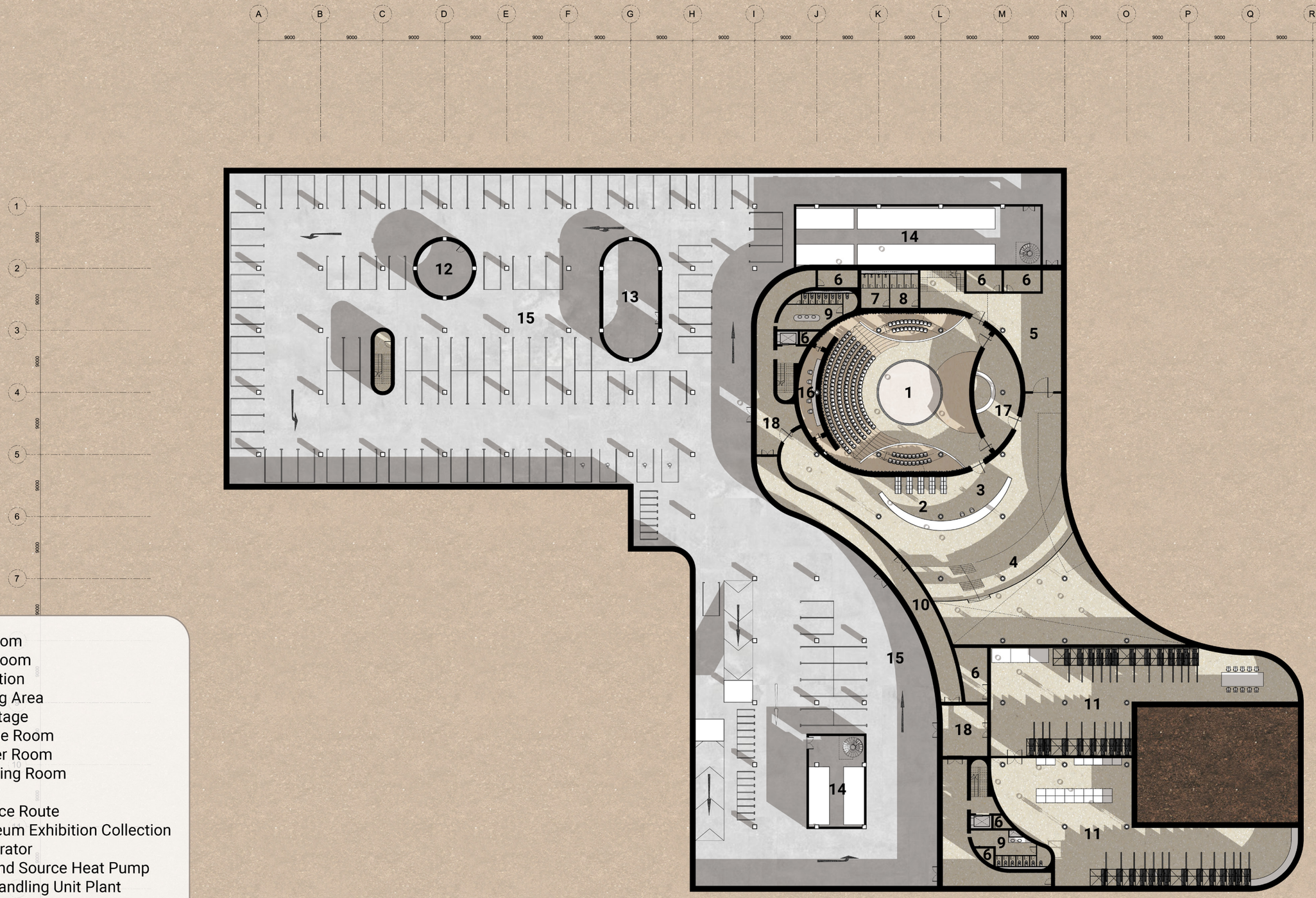




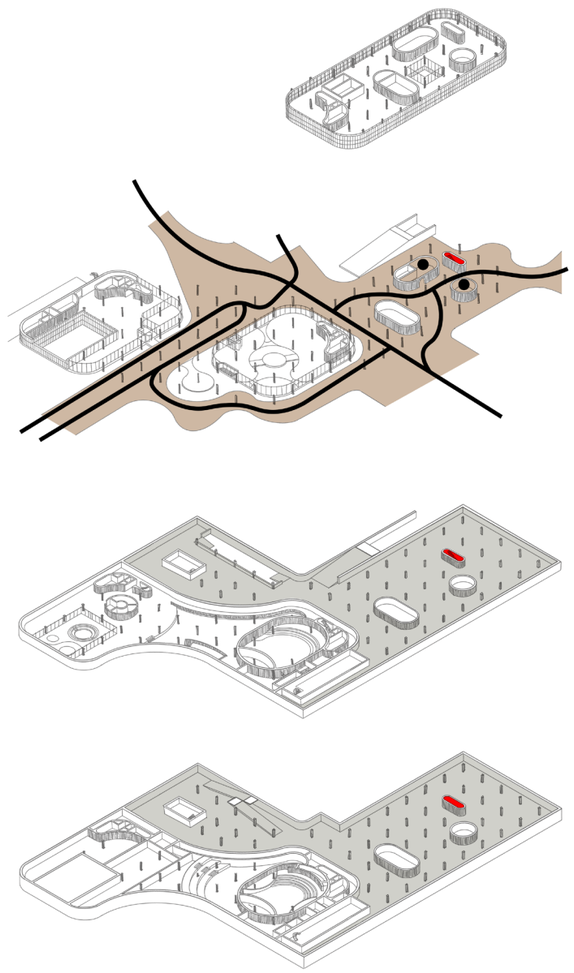




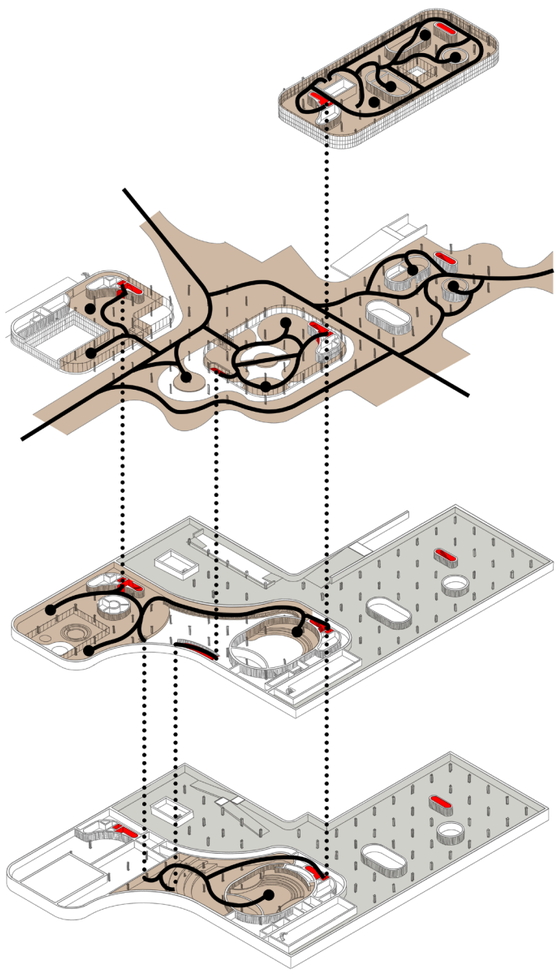
1. Rainroom Balcony
2. Lighting Corridor
3. Waiting Area
4. Preparation Room
5. Storage Area
6. Toilet
7. Backstage
8. Library
9. Outdoor Amphitheatre
10. Recording Studio
11. Sound Library
12. Artist Lab
13. Rainwater Storage Tank
14. Air Handling Unit
15. Carpark
16. First Floor Connection
17. Additional Plant Room



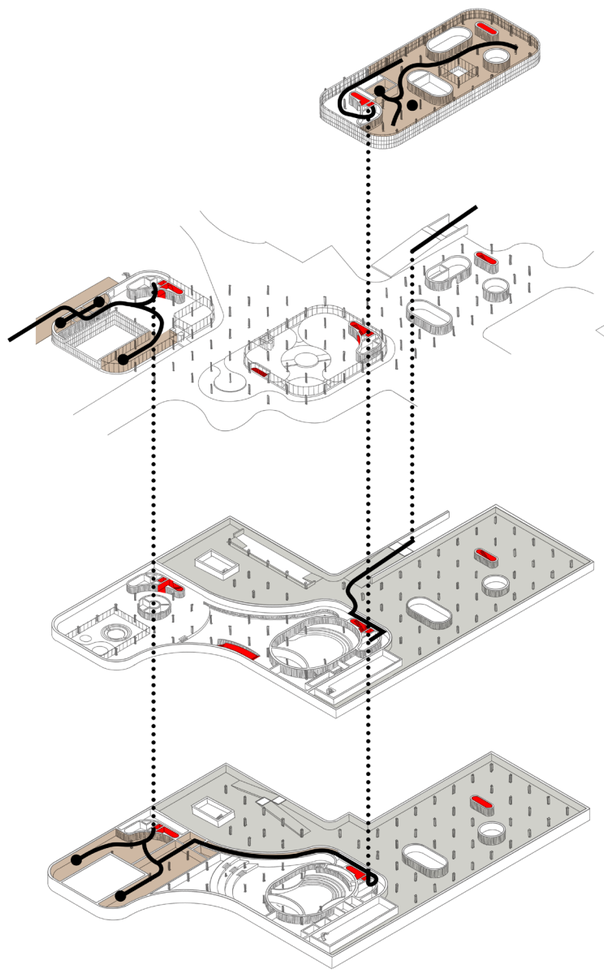
1. Rainroom
2. Cloakroom
3. Reception
4. Waiting Area
5. Backstage
6. Storage Room
7. Shower Room
8. Changing Room
9. Toilet
10. Service Route
11. Museum Exhibition Collection
12. Generator
13. Ground Source Heat Pump
14. Air Handling Unit Plant
15. Carpark
16. Control Room
17. Bar
18. Lobby



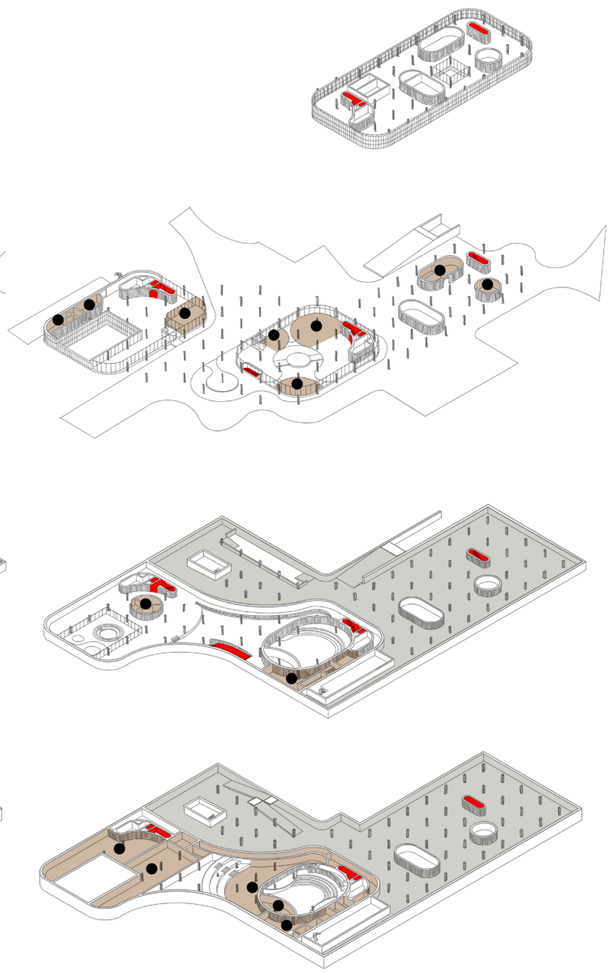
Local Residents: Passerby



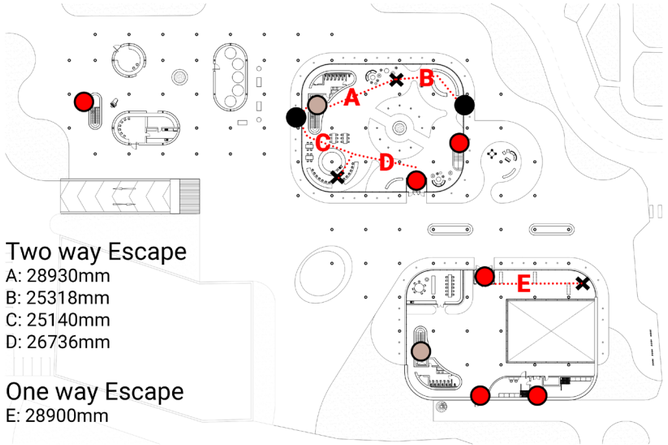
Visitor



Art Route & Exhibition Builder



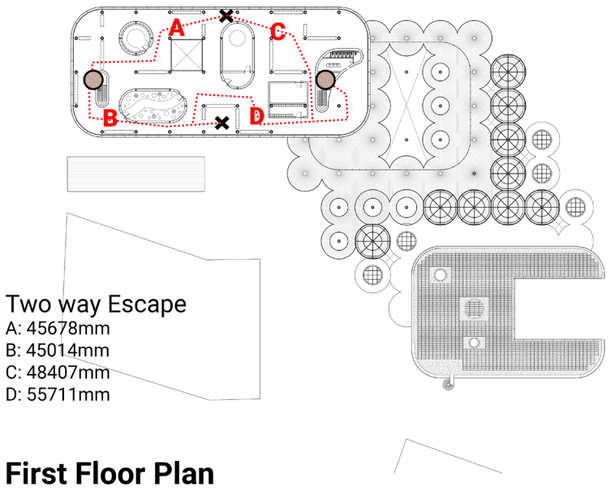
Museum Staff & Artists



Two way Escape
A: 28930mm
B: 25318mm
C: 25140mm
D: 26736mm

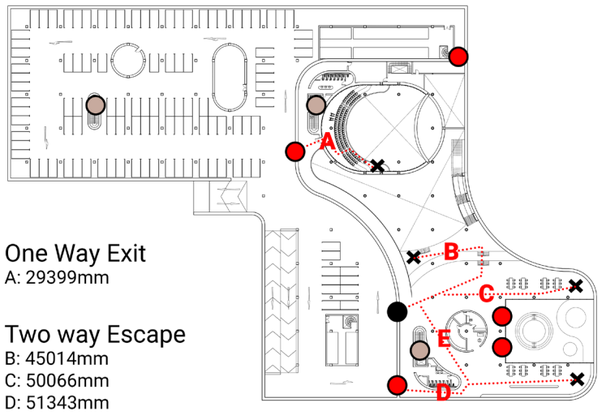
One way Escape
E: 28900mm

Ground Floor Plan



Two way Escape
A: 45678mm
B: 45014mm
C: 48407mm
D: 55711mm

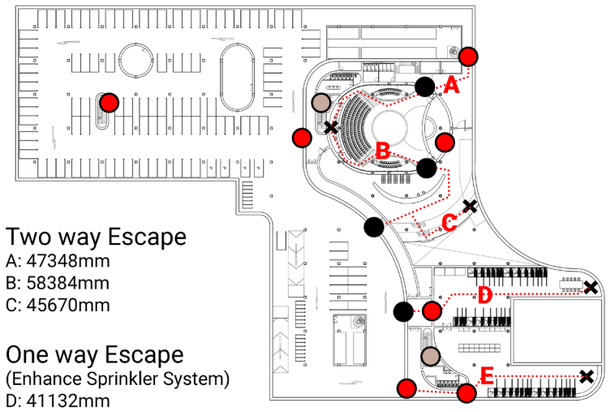
First Floor Plan



One Way Exit
A: 29399mm

Two way Escape
B: 45014mm
C: 50066mm
D: 51343mm
E: 57650mm

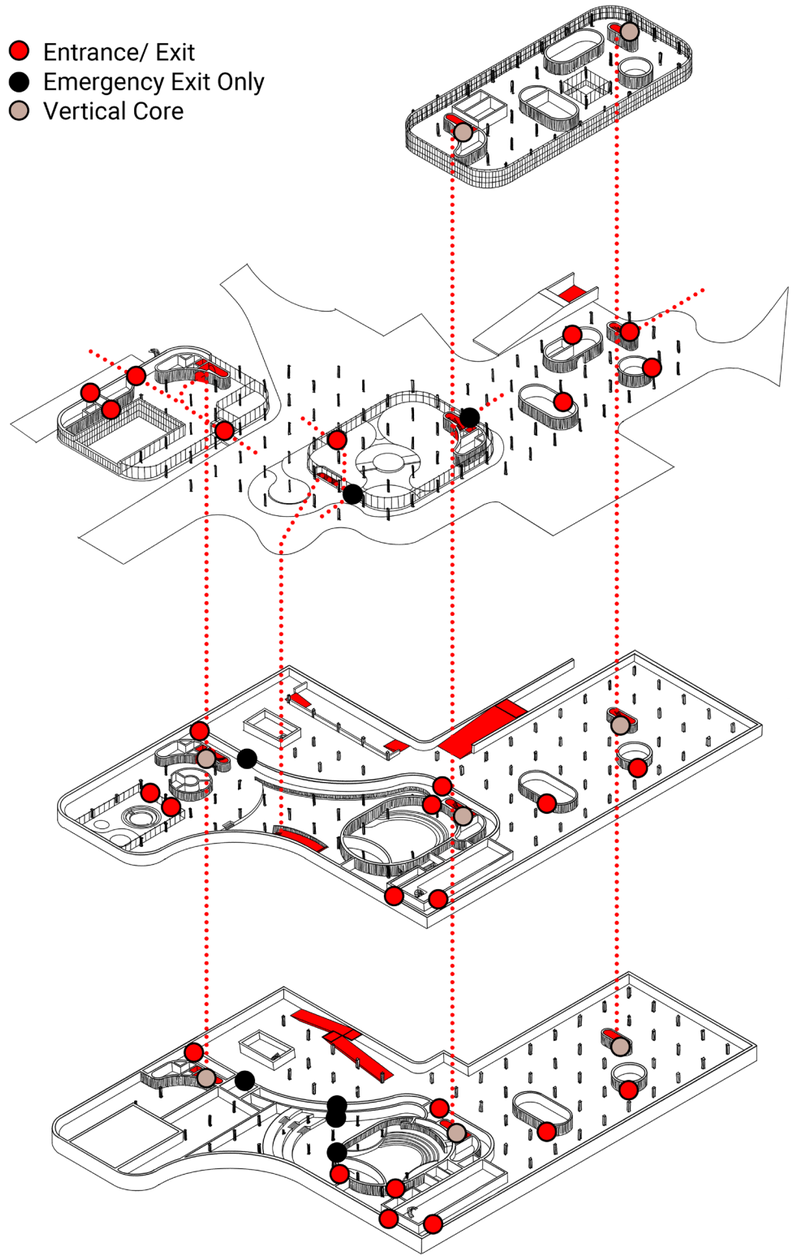
Basement 1 Plan

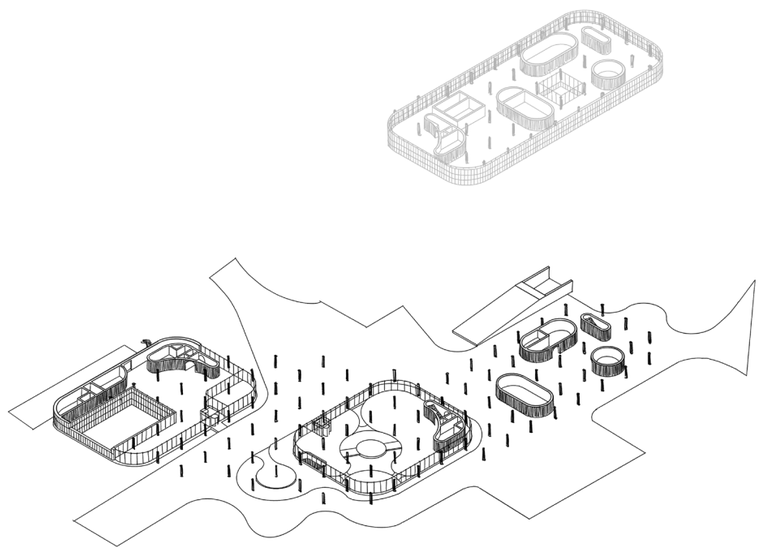


Two way Escape
A: 47348mm
B: 58384mm
C: 45670mm

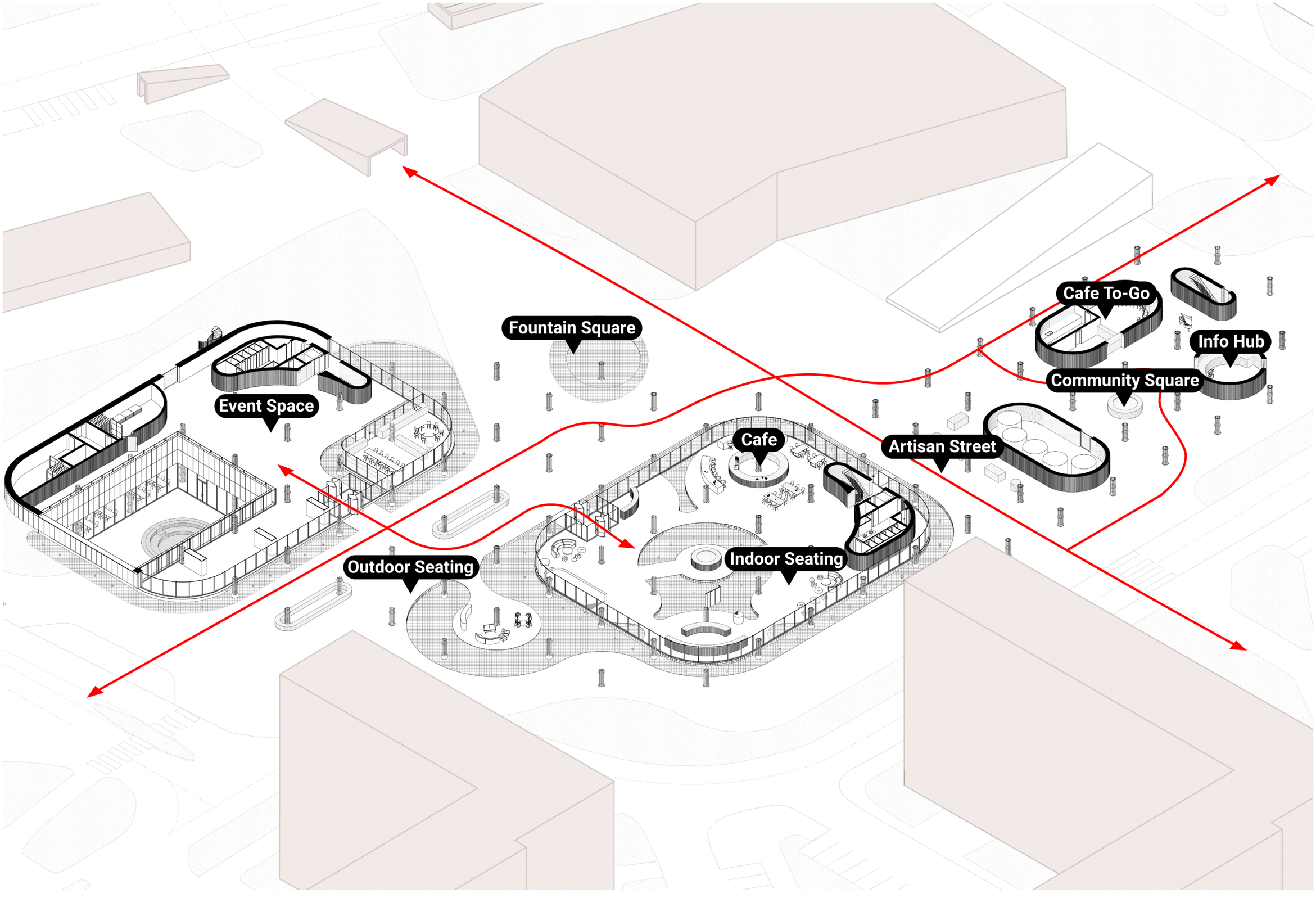
One way Escape
(Enhance Sprinkler System)
D: 41132mm
E: 31806mm

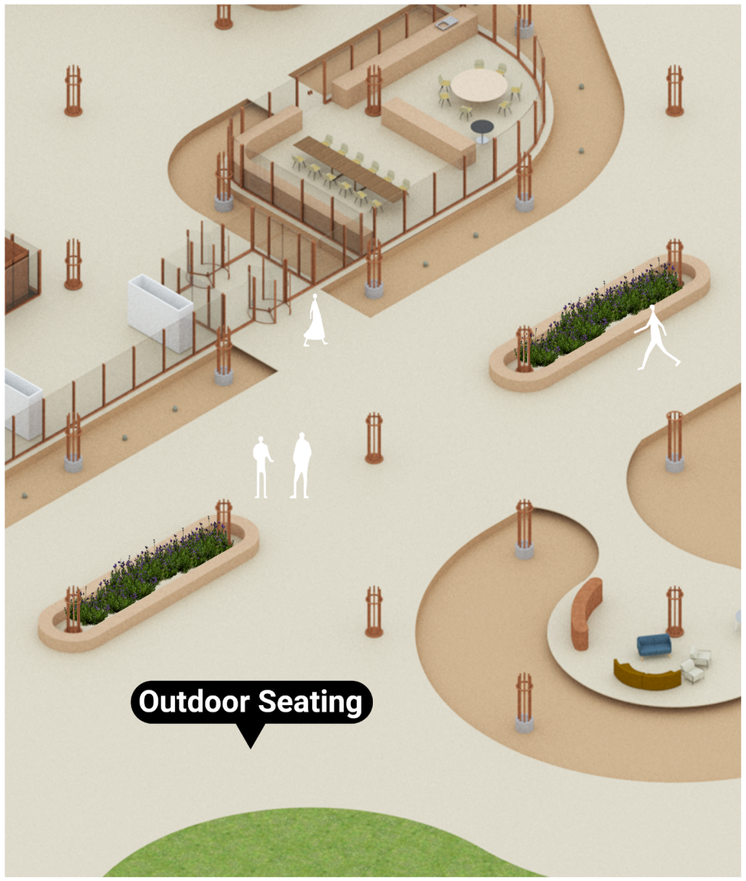
Basement 2 Plan



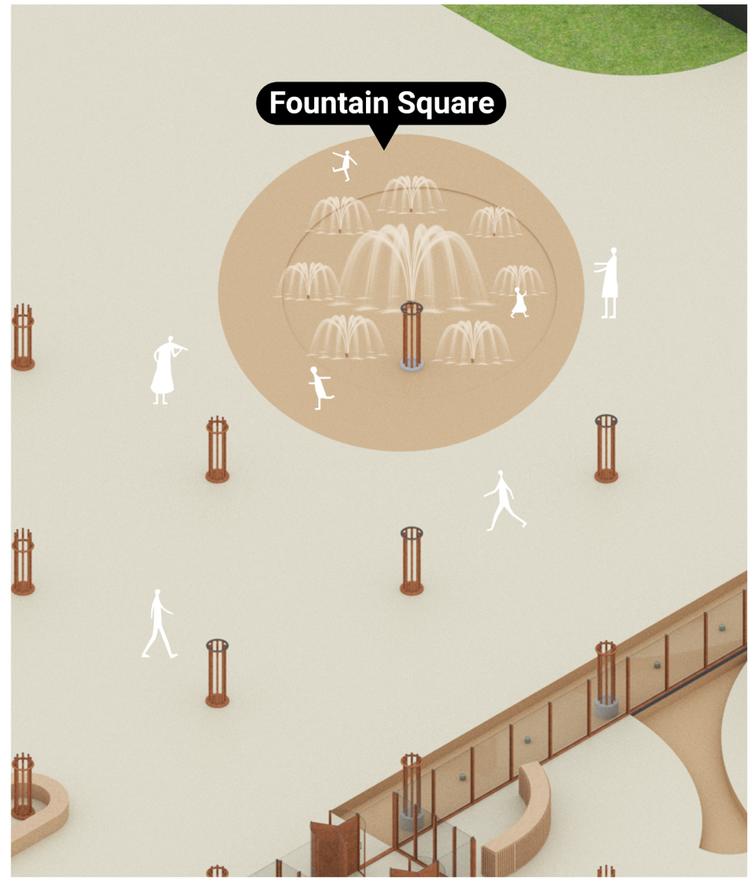


GROUND FLOOR

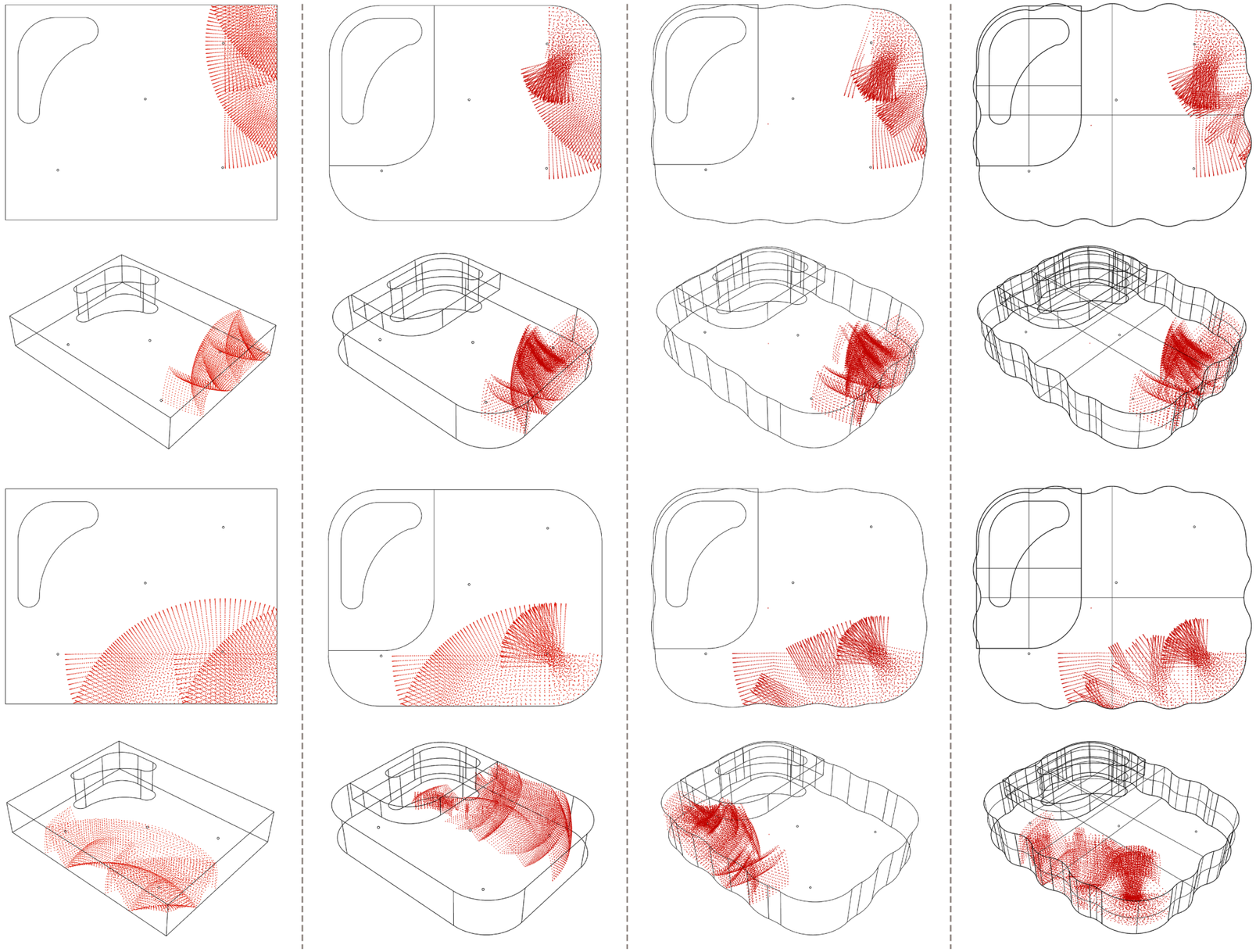

Event Space
Fountain Square
Cafe To-Go
Info Hub
Community Square
Artisan Street
Cafe
Outdoor Seating
Indoor Seating

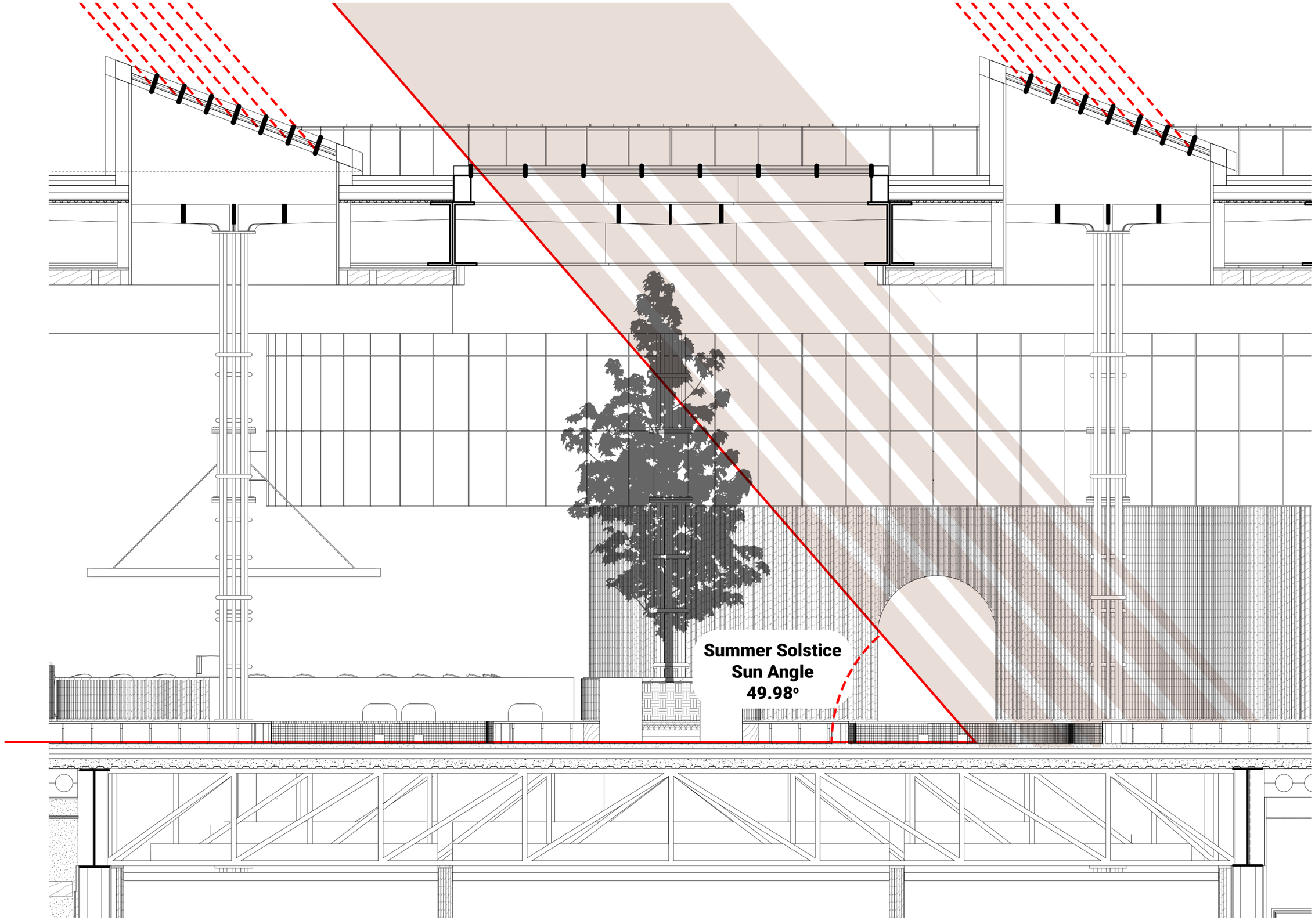

Outdoor Seating

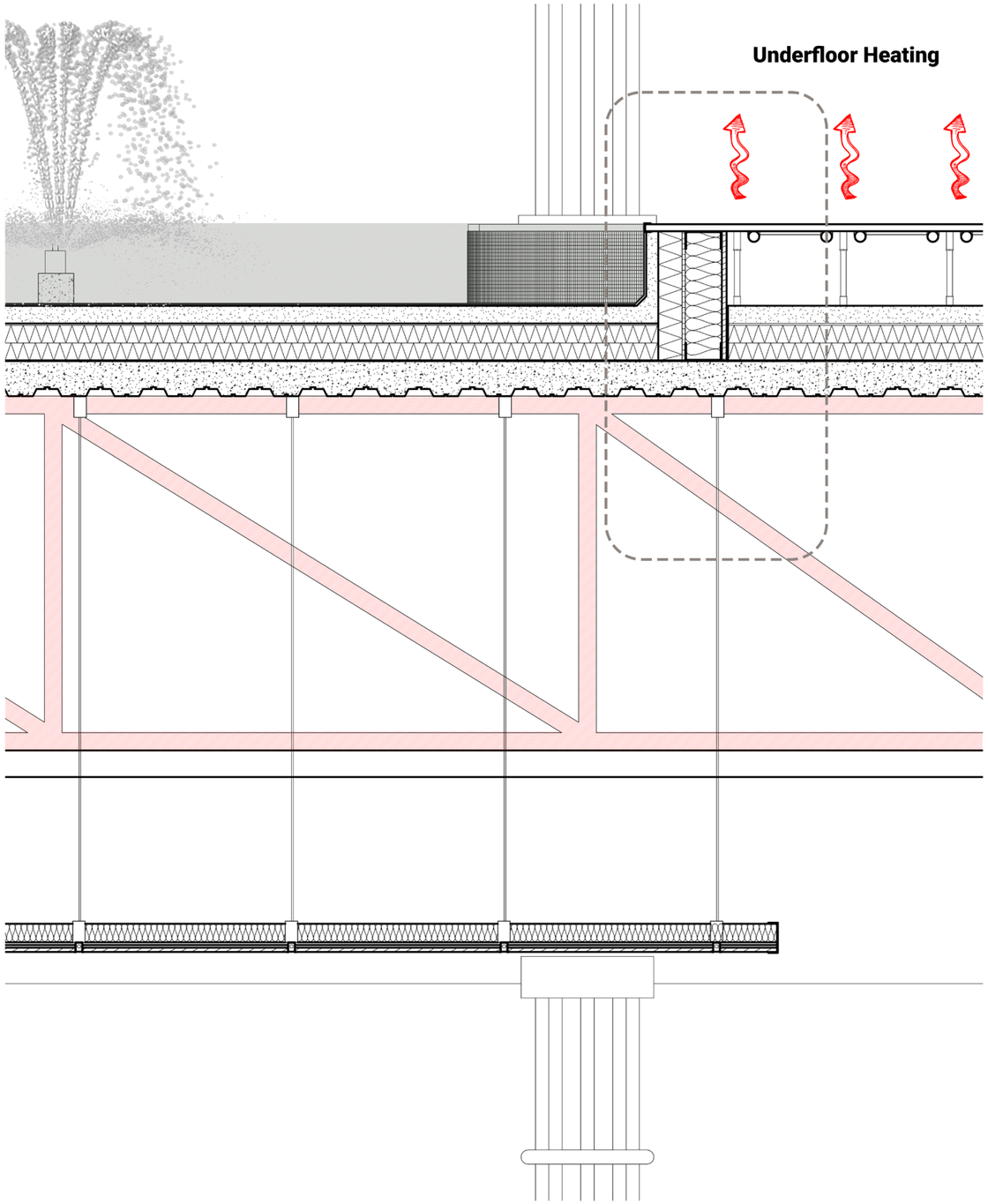

Cafe To-Go
Community Square
Artisan Street

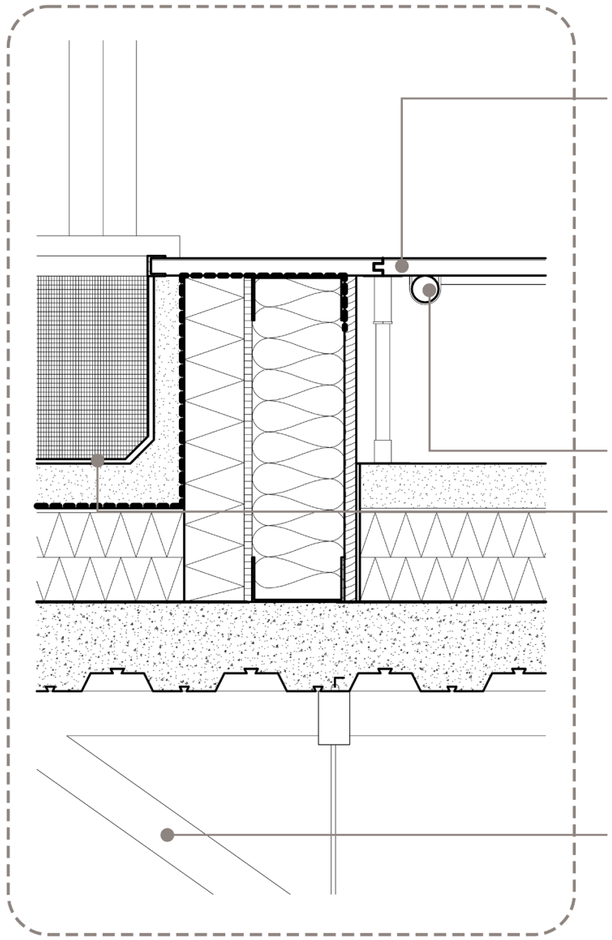

Fountain Square






Summer Solstice
Sun Angle
49.98º





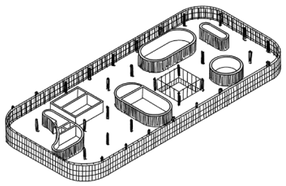
Raised Ground Floor
Breathable Microporous Claystone Coating
35mm Calcium Sulphate with Tongue and Groove Edge Connection
20mm depth Steel Stringer
Raised Floor Pedestal
100mm thick Cement Screed
10mm Impact Noise Rubber Insulation
2x100mm layer Foamglass Insulation
200mm Cast-In-Situ Concrete on Bondek Floor

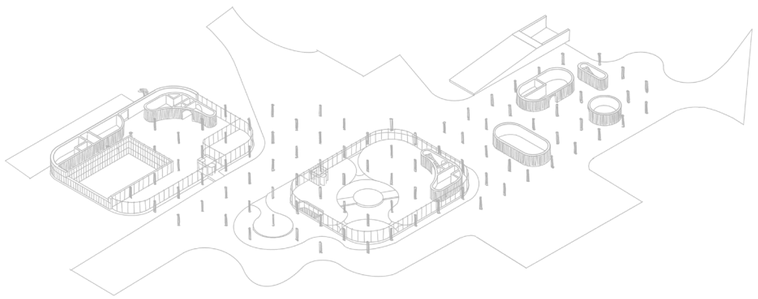
Underfloor Heating Pipe

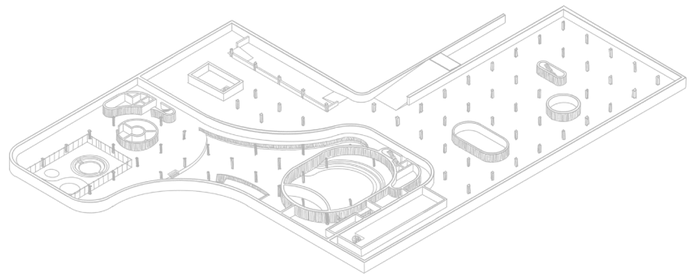
Water Feature + Supporting Stud Wall
10mm, 50x50mm Glass Mosaic Tiles
50mm Cement Screed
Water Proofing Membrane
100mm FoamGlass Insulation
12mm Cement Particle Sheathing Board
150mm Cellulose Fibre Insulation infilling Metsec
18mm Plywood
8mm Strip Perimeter with Compressible Filler

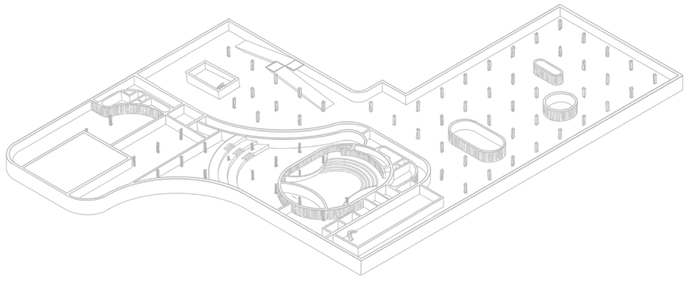
2m depth Structural Weathering Steel Truss





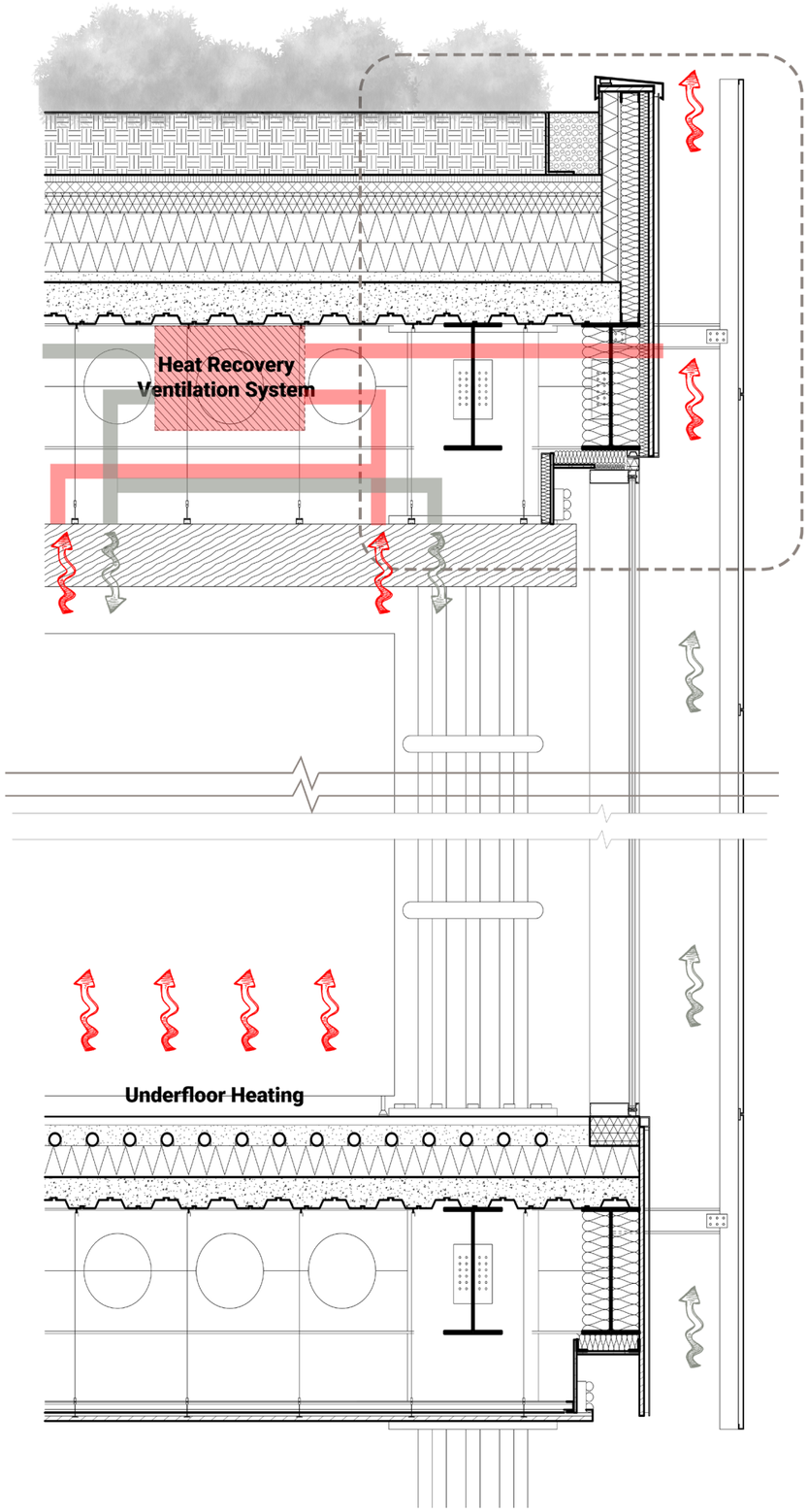


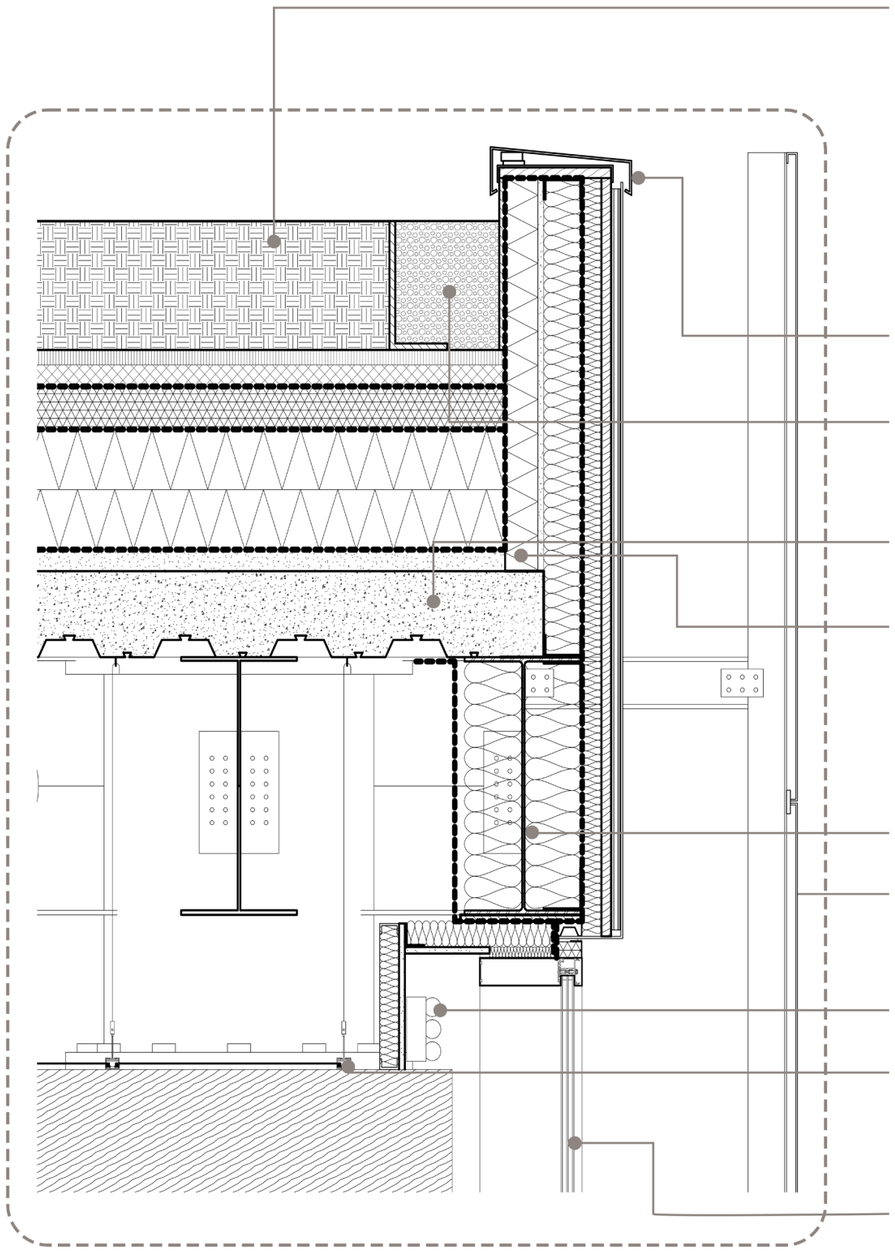




FIRST FLOOR







Extensive Green Roof
300mm Growing Medium
35m Drainage Board with Filter Fleece
Drainage Layer
Vapour Permaeble, Waterproofing Membrane
100mm Thermal Insulation Extruded Polystrene
Waterproofing Membrane for Root Resistance
2 x 140mm Foamglass Rigid Insulation
Vapous Control Layer
50mm Cement Screed to Fall

Corten Flashing on
18mm Water Resistance Plywood

Roof Edge Drainage
Gravel separated from Green Roof with
Perforated Metal Bent Plate

200mm Cast-In-Situ
Concrete Bondek Flooring

Roof Parapet
140mm Foamglass Rigid Insulation
Cement Particle Sheathing Board
100mm Cellulose Fibre Insulation
4mm Corten Panels supported by Vertical
Railing

300x600mm Weathering Steel Cellular I Beam

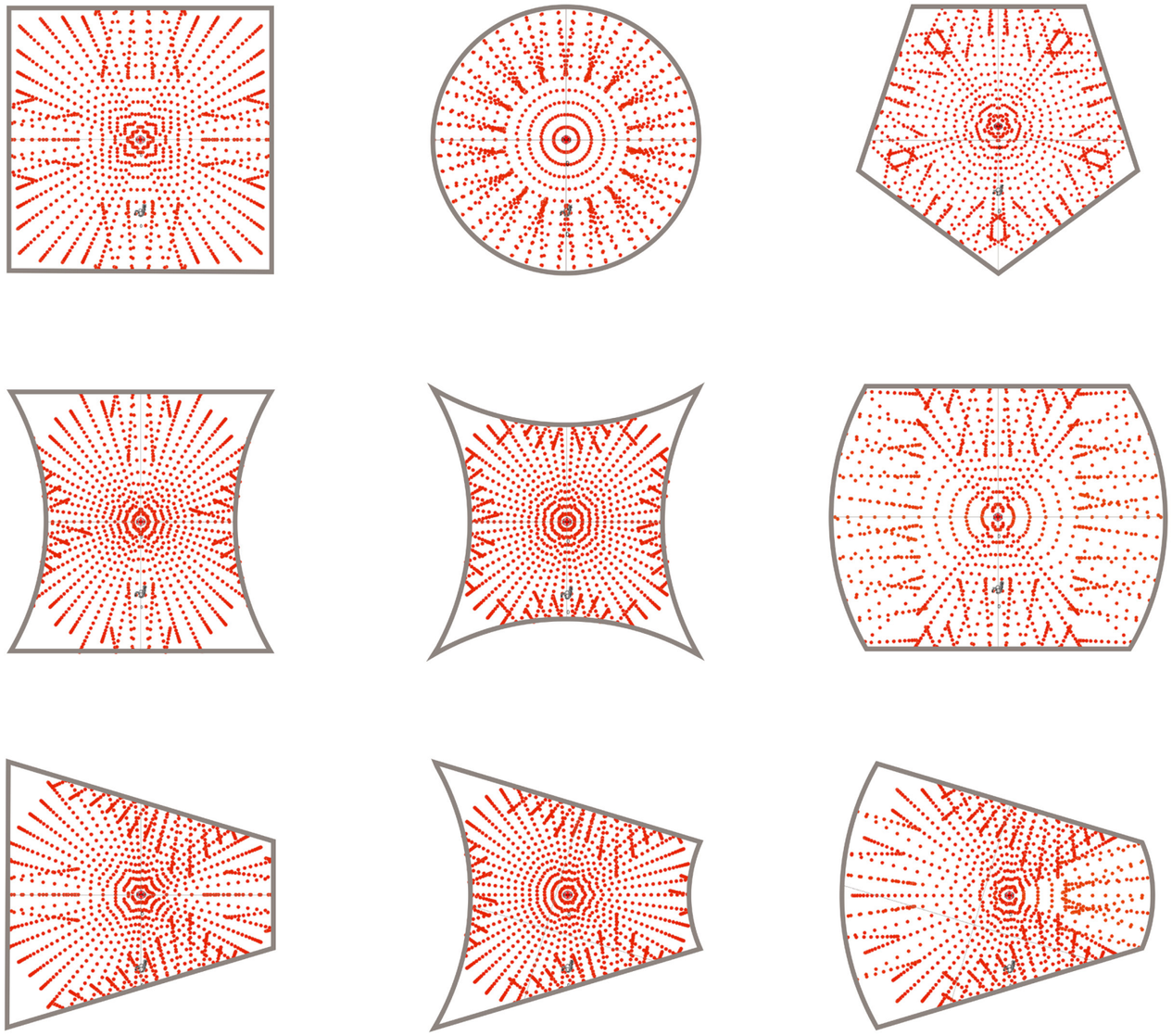
Perforated Corten Facade
4mm Perforated Corten Panel fixed to
Lightweight Cladding Panels

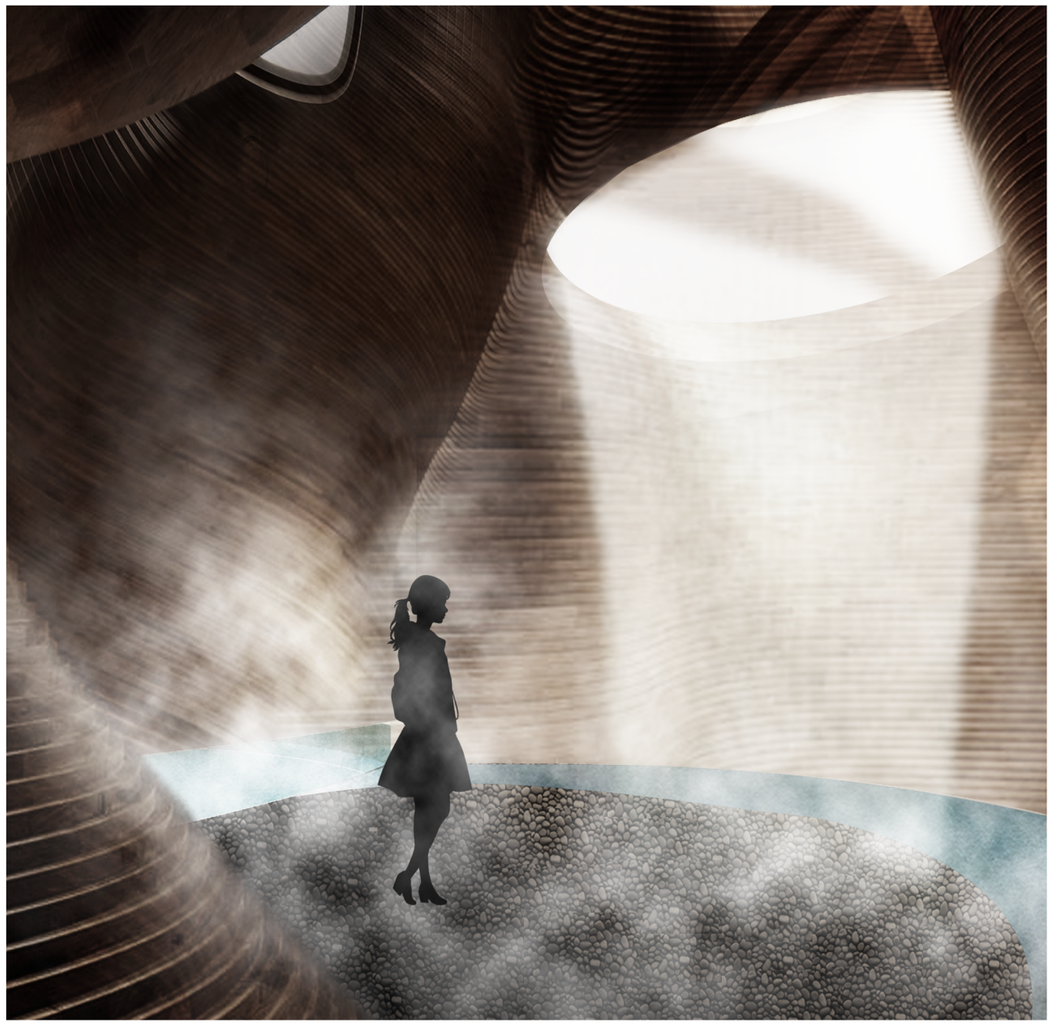
Cove LED Lighting

T Bar Suspended Baffle Ceiling
Strut Channel screwed to,
24mm Birch Plywood
Birch Acoustic Panels

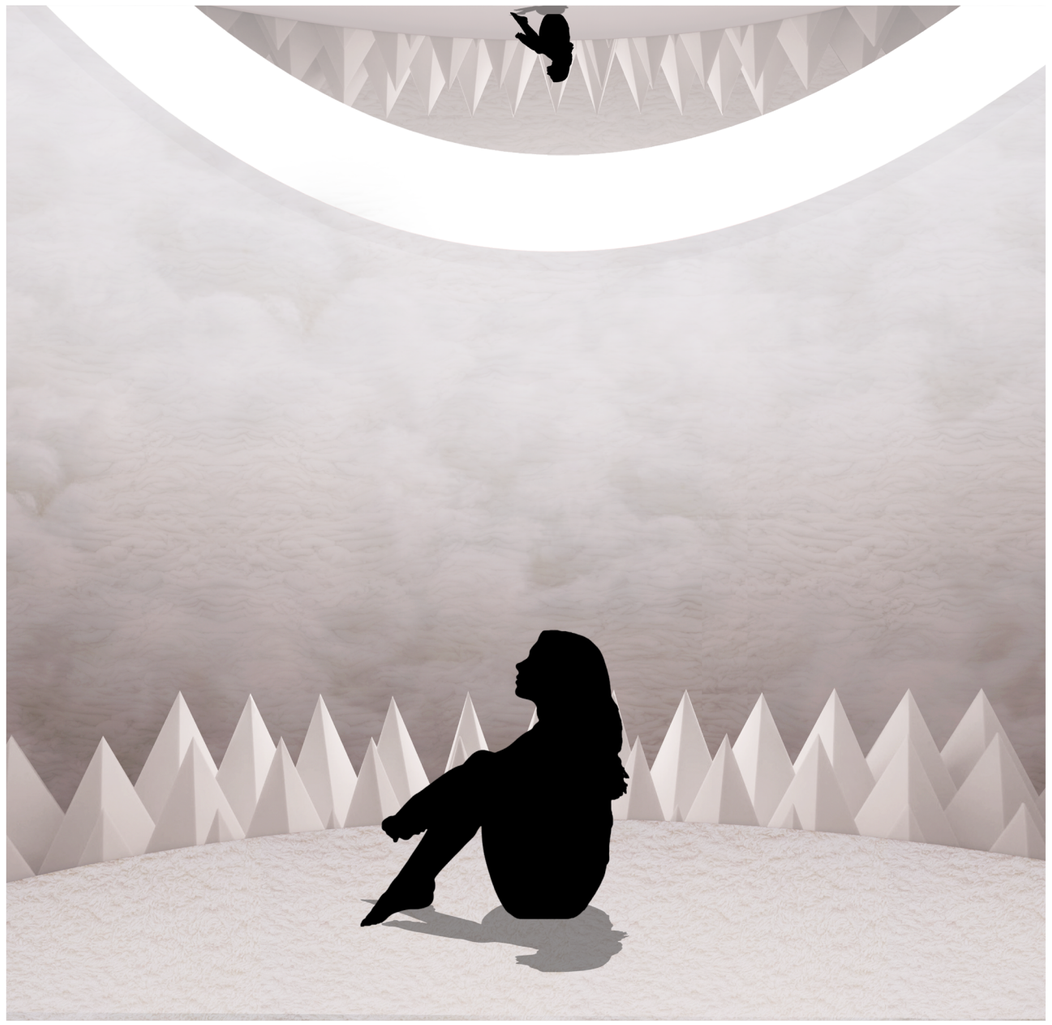
Window Wall
Argon fillled Triple Glazed Glazing
Supported by Corten Framing







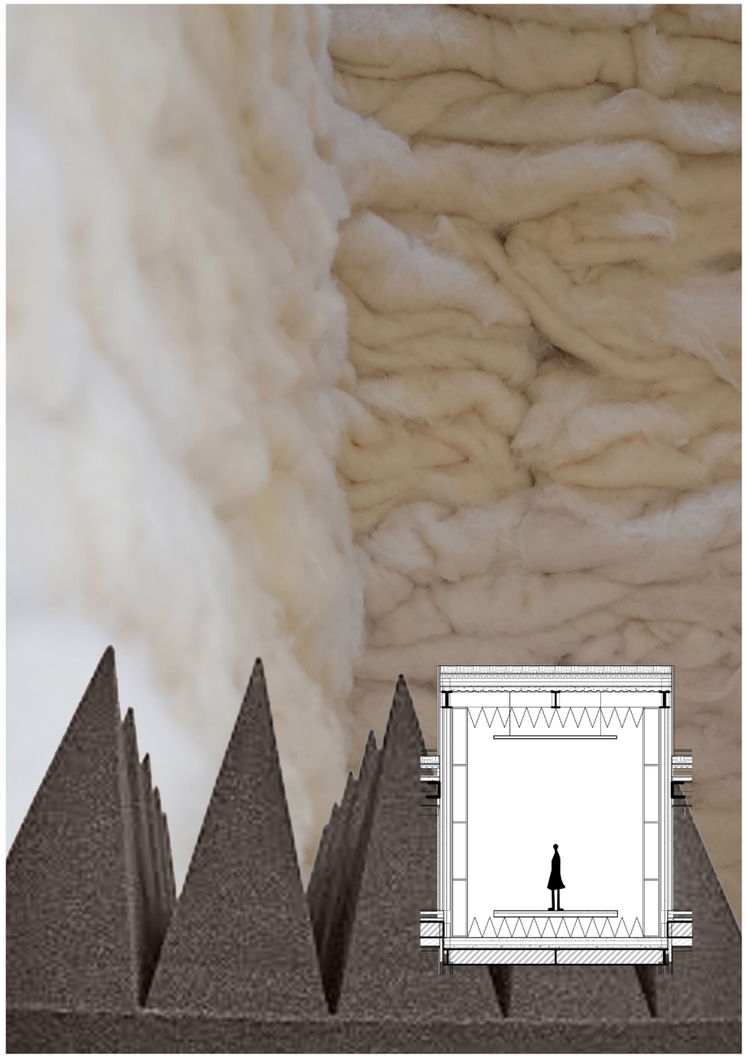
CONCRETE CHAMBER:
WATER REVEBERATION CHAMBER



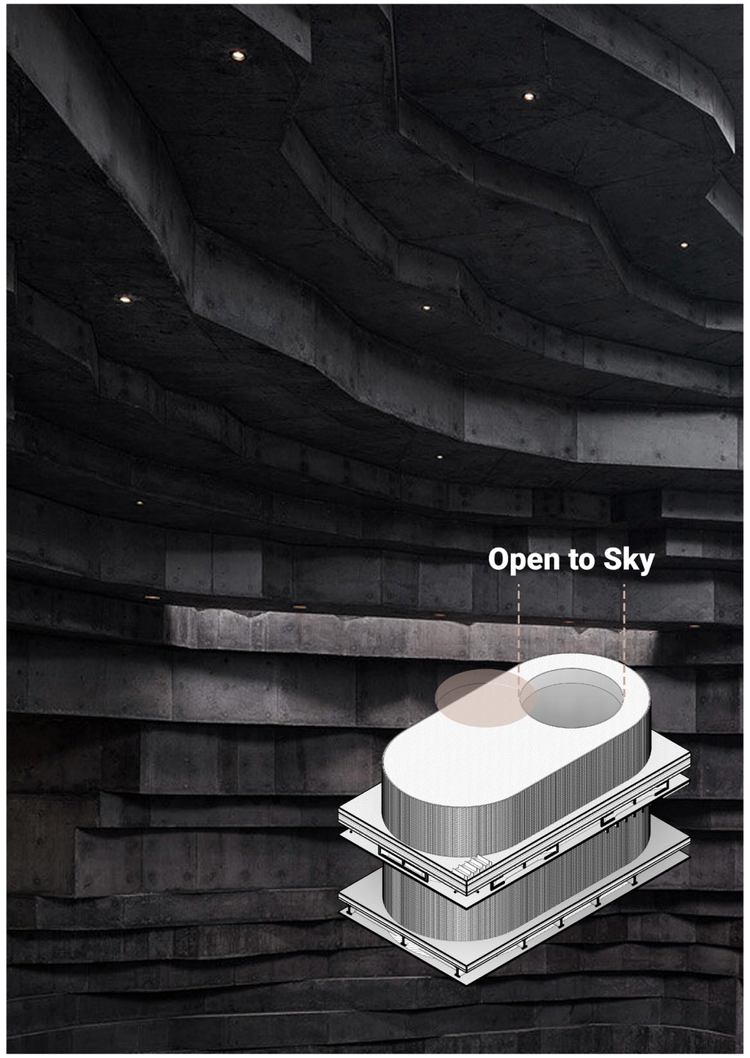
WOOL CHAMBER:
SEMI ANECHOIC CHAMBER



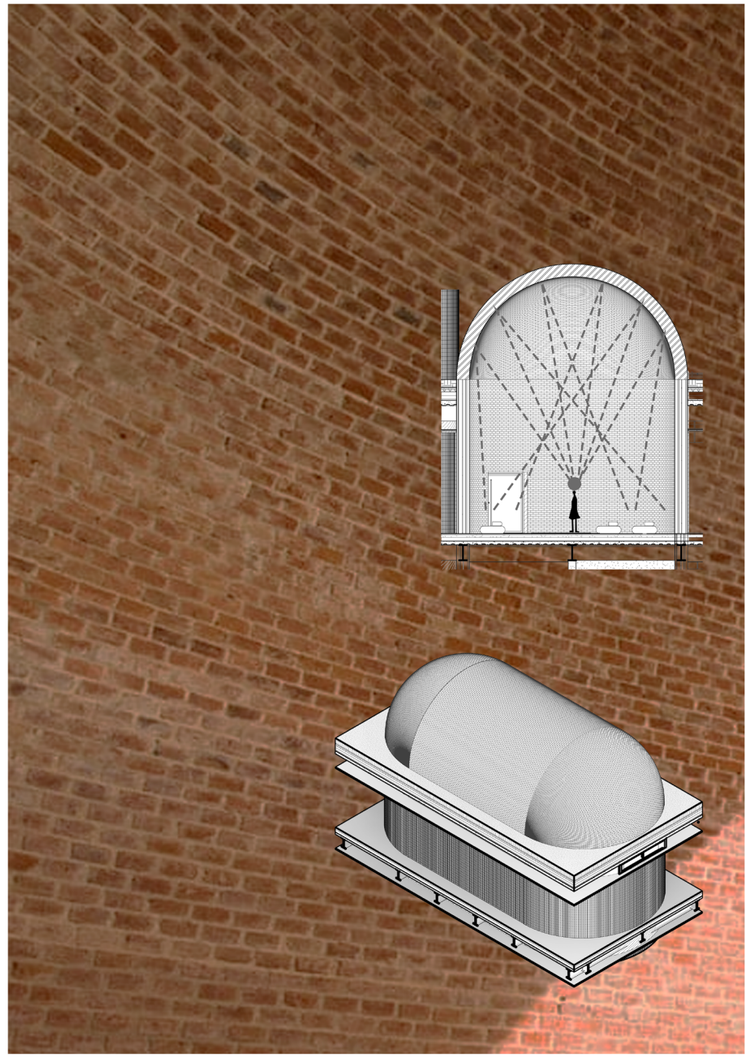
BRICK CHAMBER:
SOUND GENERATING GLASS CHAMBER



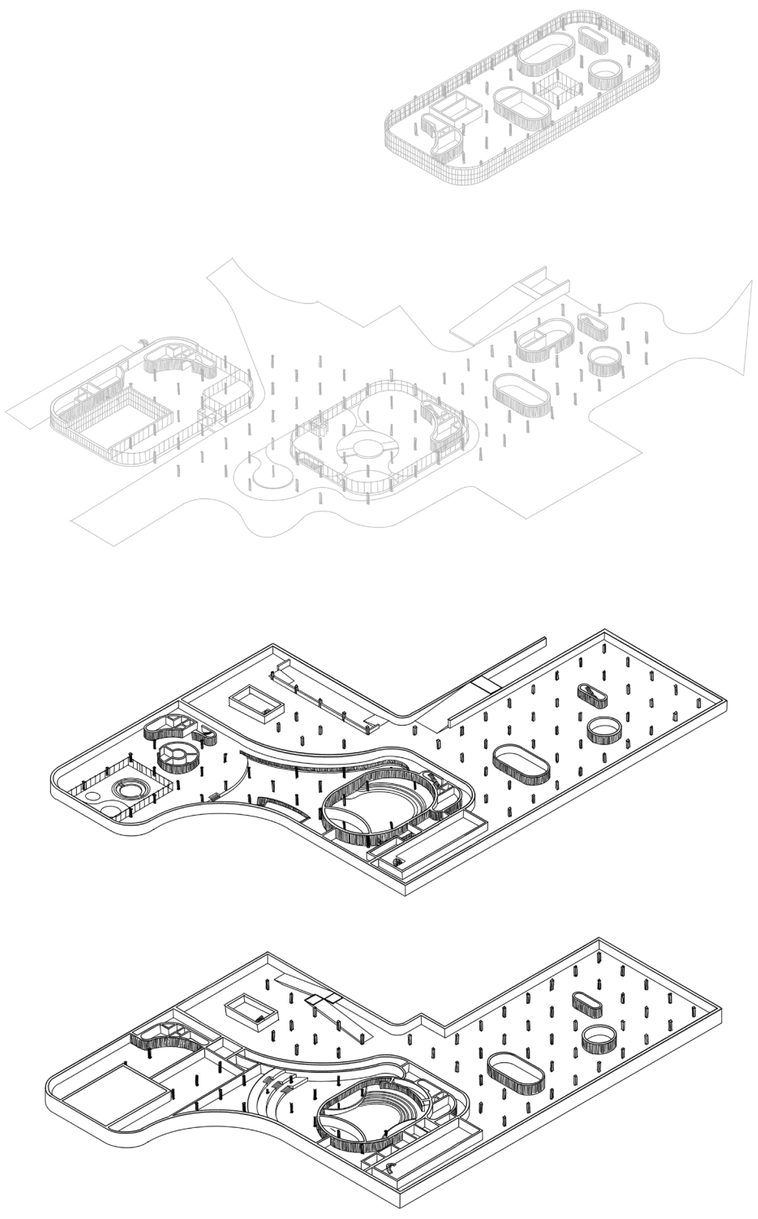
Wool Chamber



Concrete Chamber

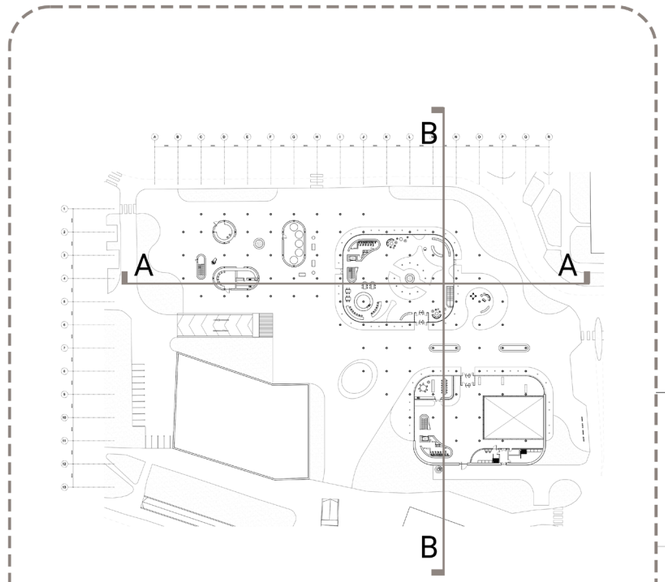


Brick Chamber



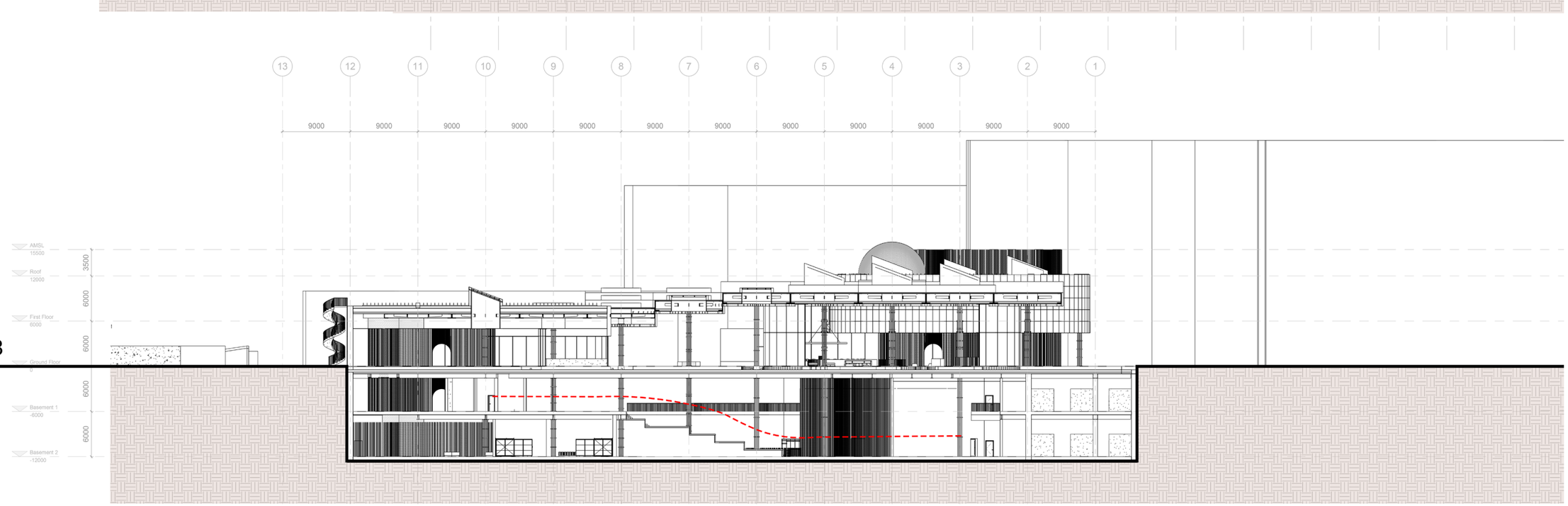
BASEMENT FLOORS

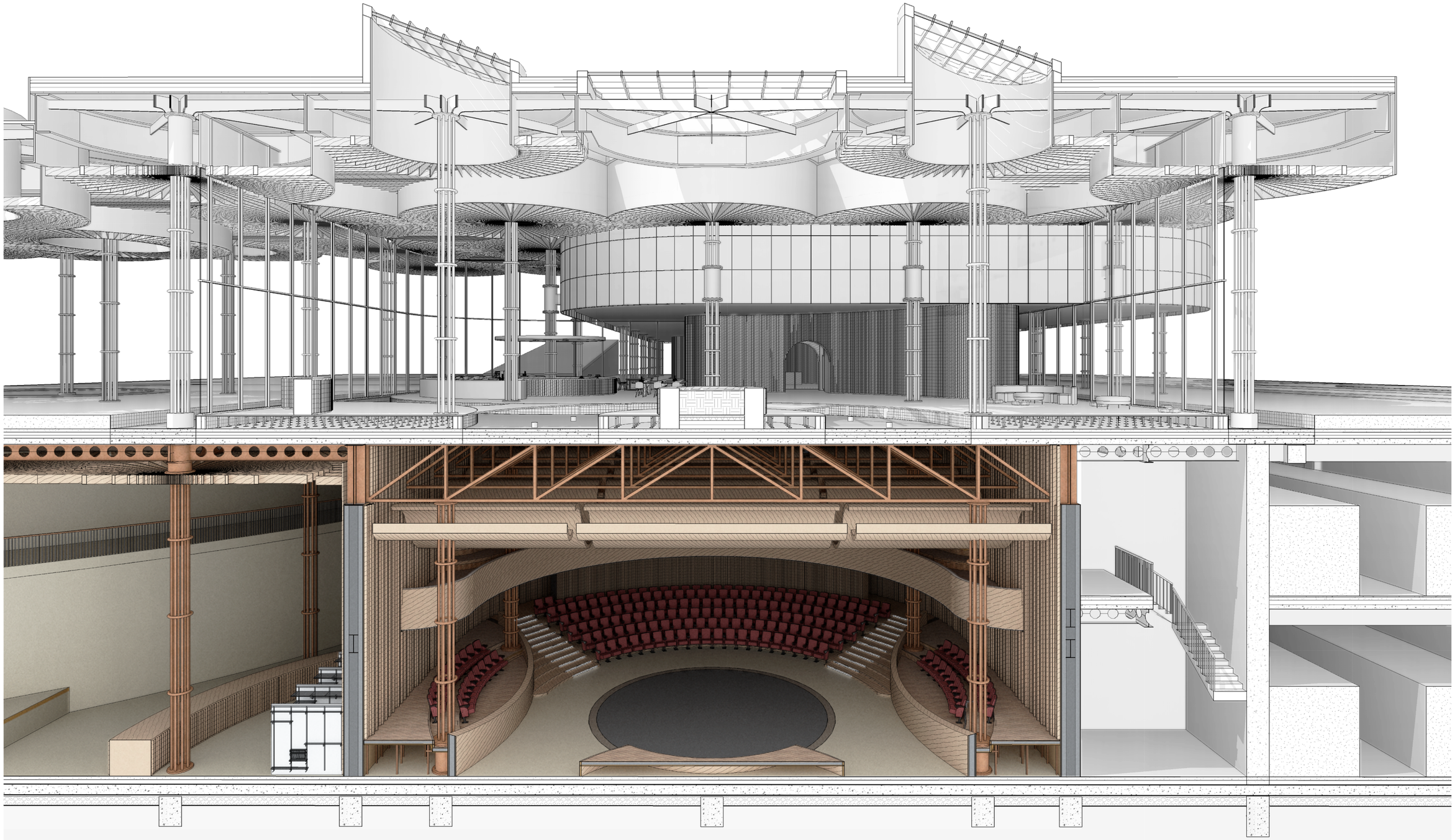


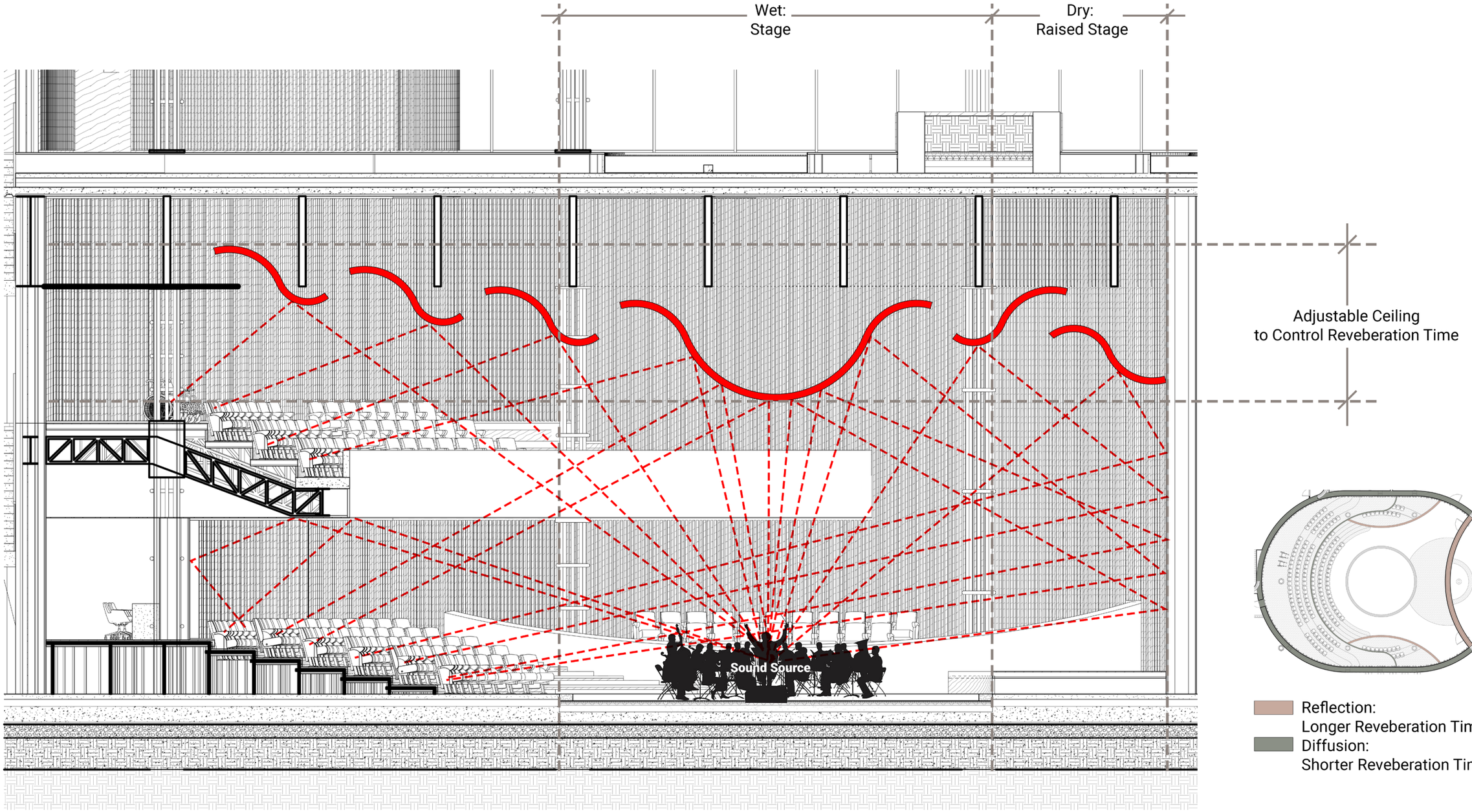


Section A

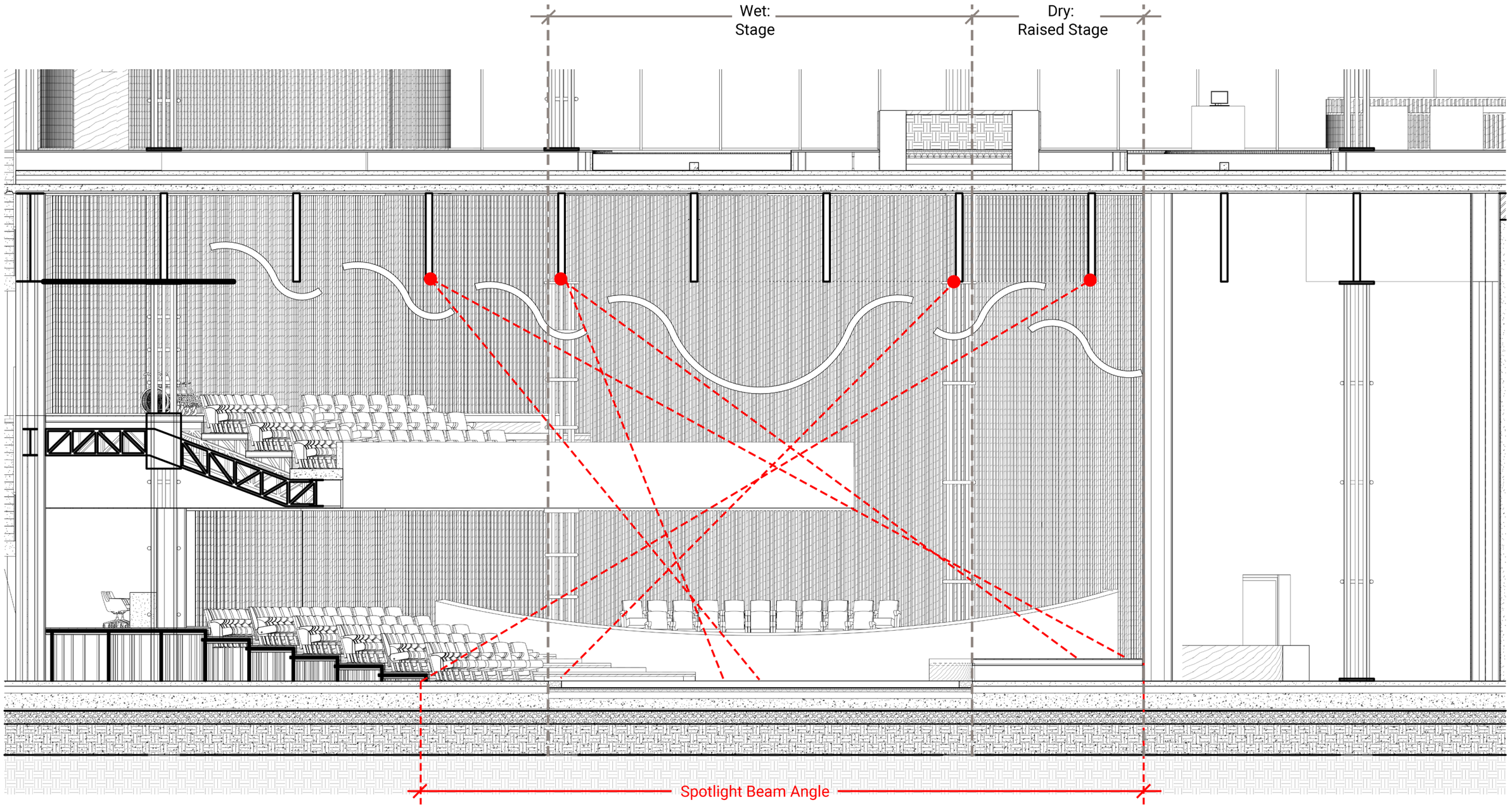
Section B



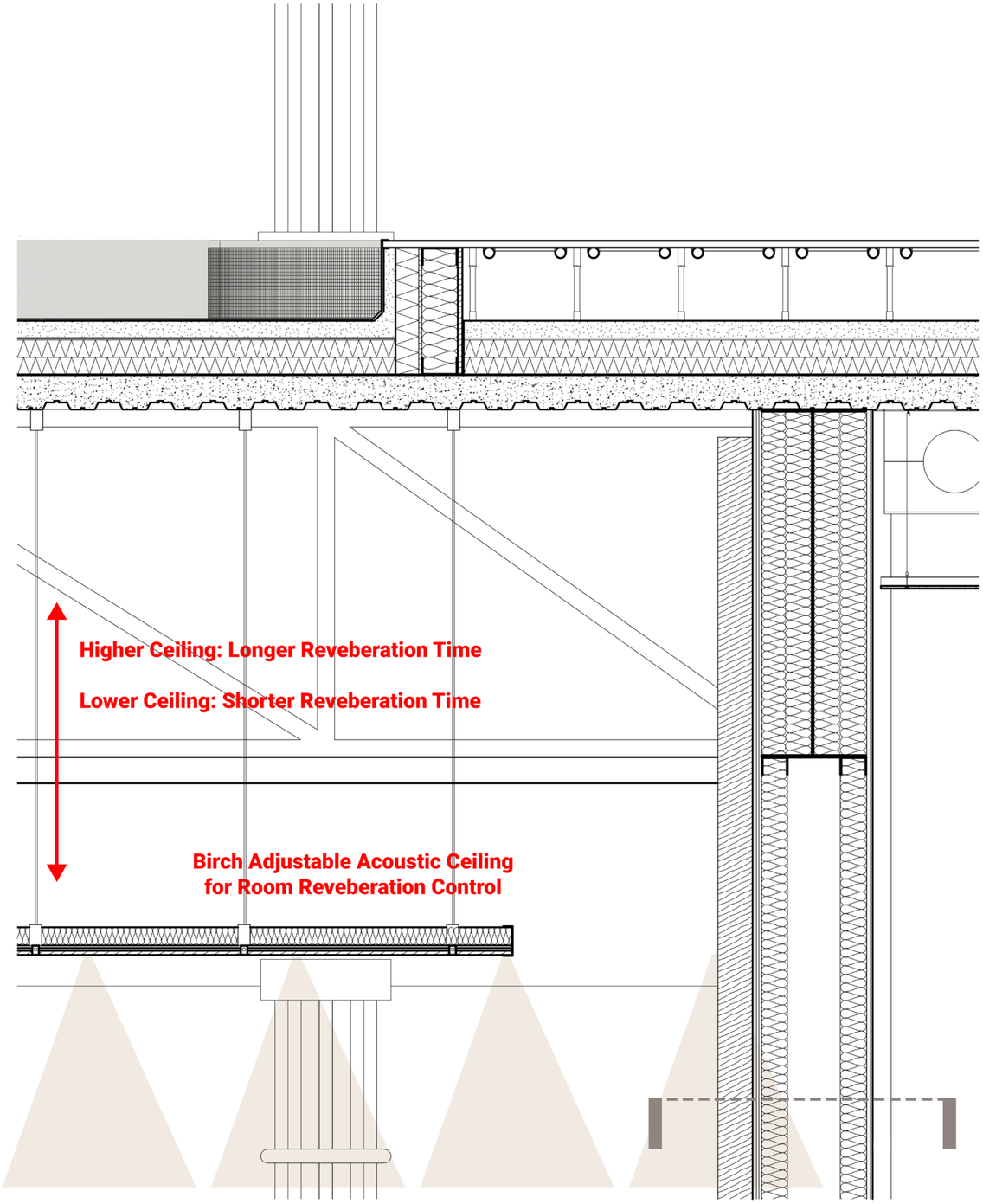


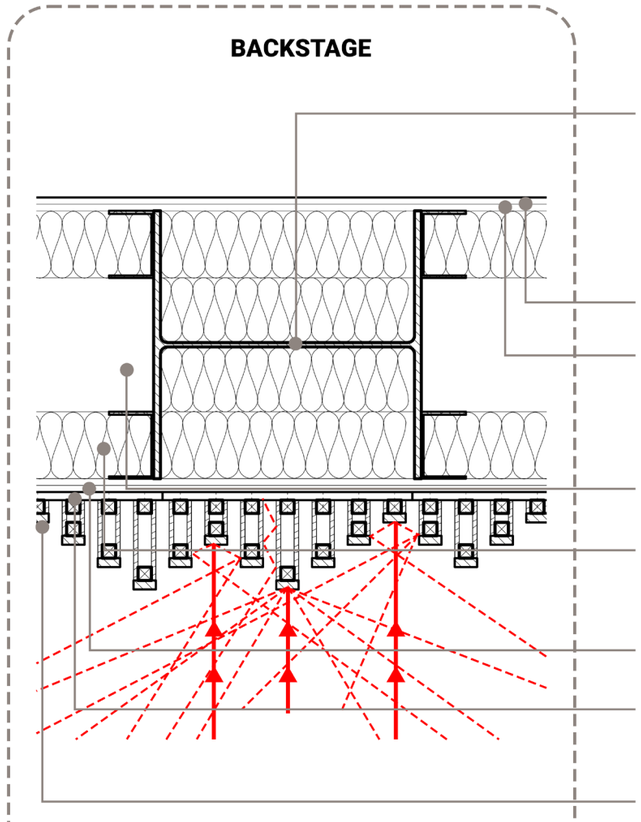


RAINROOM/ MULTIPURPOSE AUDITORIUM SOUND STUDY



RAINROOM/ MULTIPURPOSE AUDITORIUM POTENTIAL SPOTLIGHT POSITION





600x600mm I Beam (Column)
packed with Cellulose Fibre Insulation

RAINWALL ACOUSTIC WALL

Breathable Microporous Claystone Coating

2x15mm Soundblock Plasterboard

150mm Cellulose Fibre Insulation,
infilling Metsec

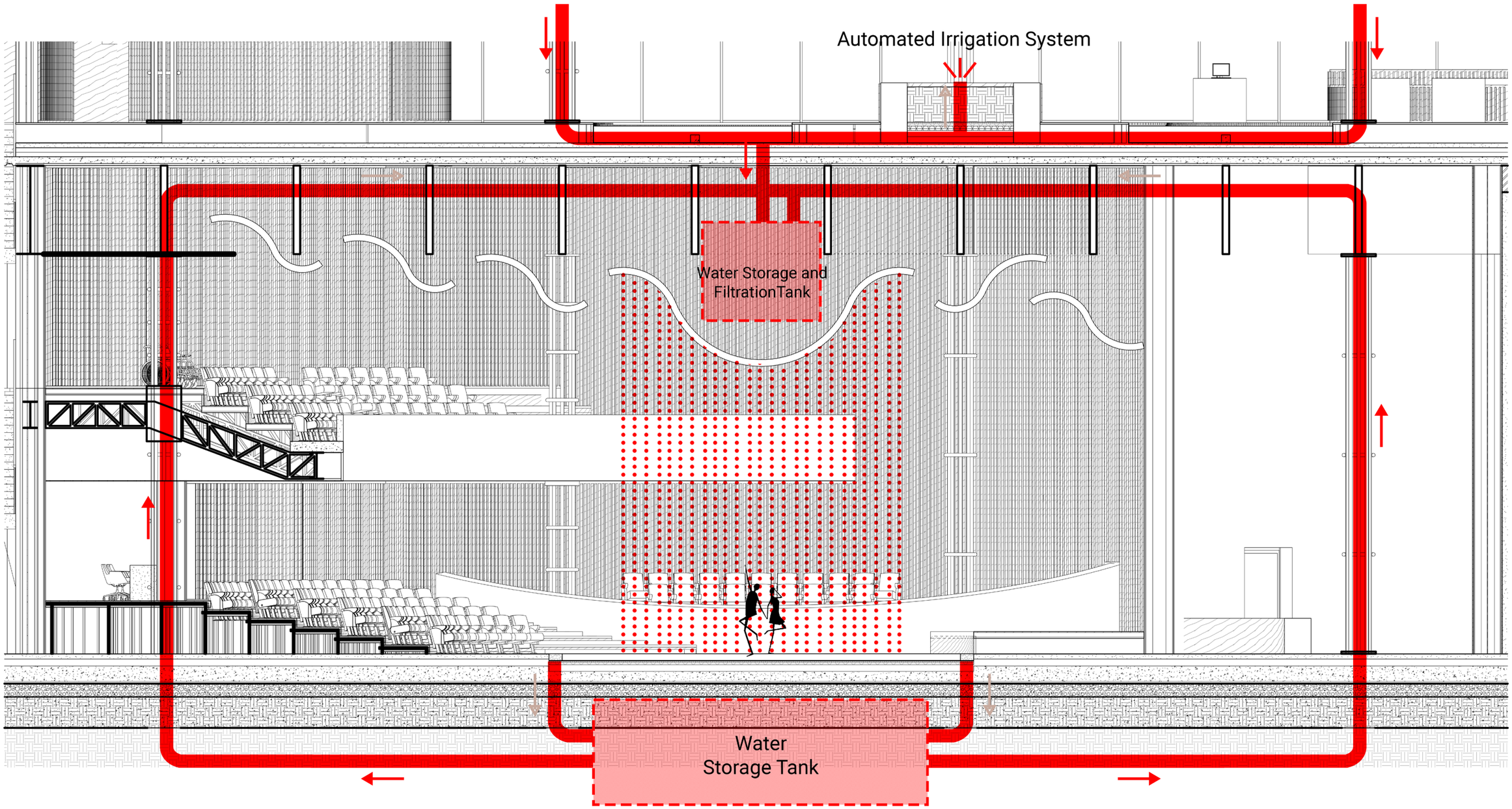
Air Gap

150mm Cellulose Fibre Insulation,
infilling Metsec

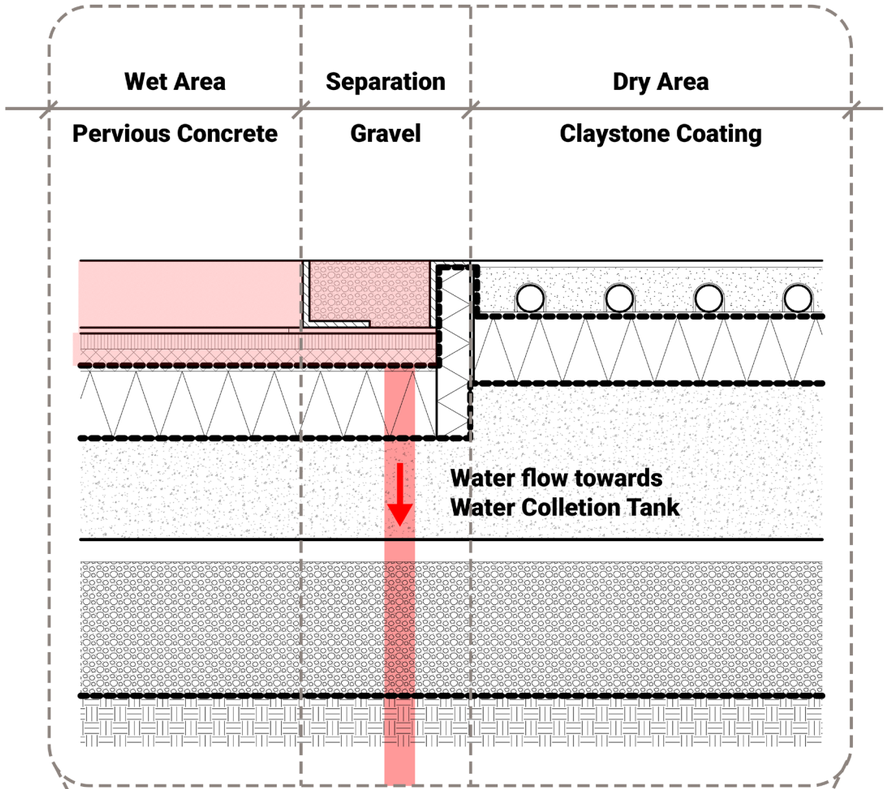
2x15mm Soundblock Plasterboard

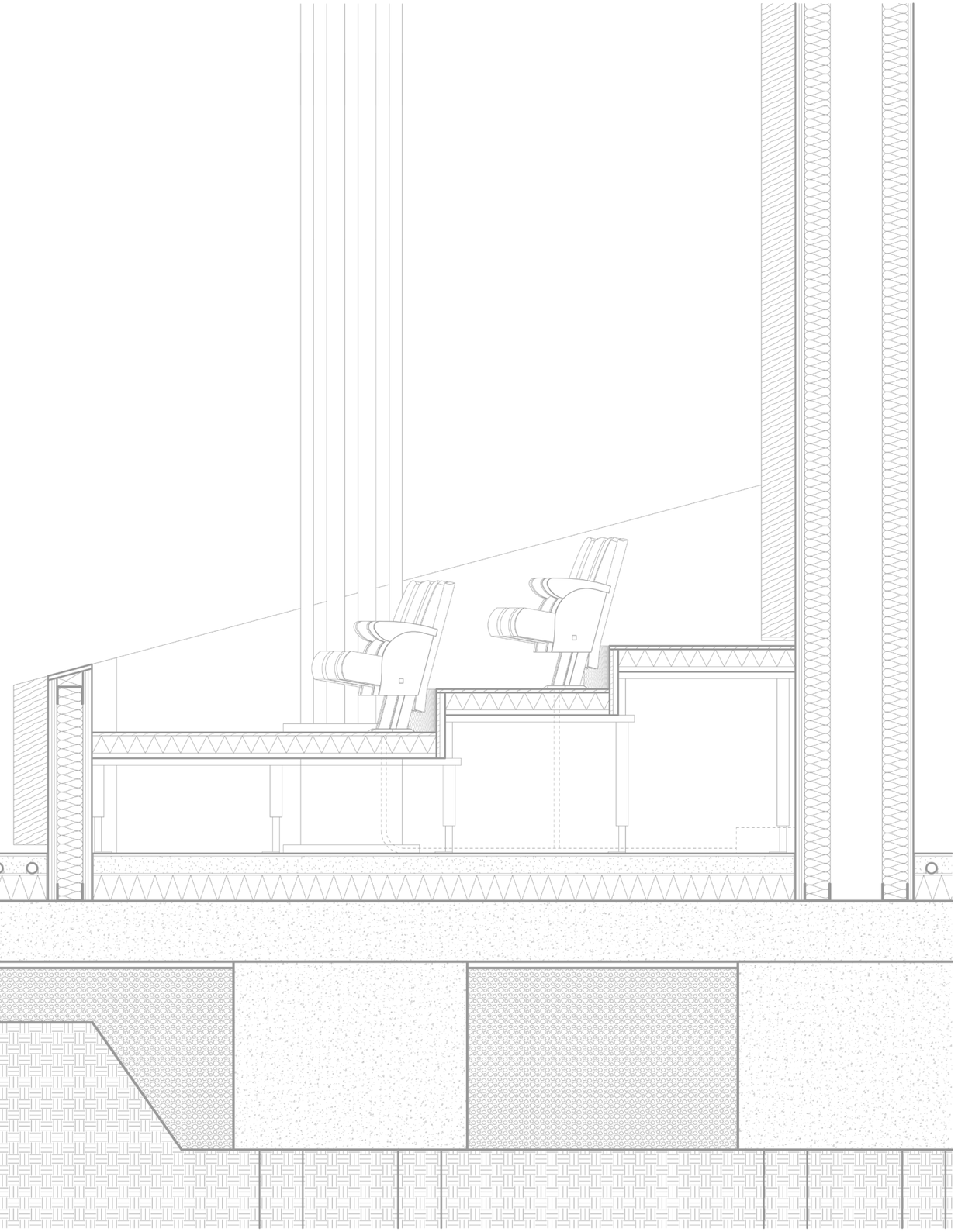
18mm MDF Board prefabricated in
sections

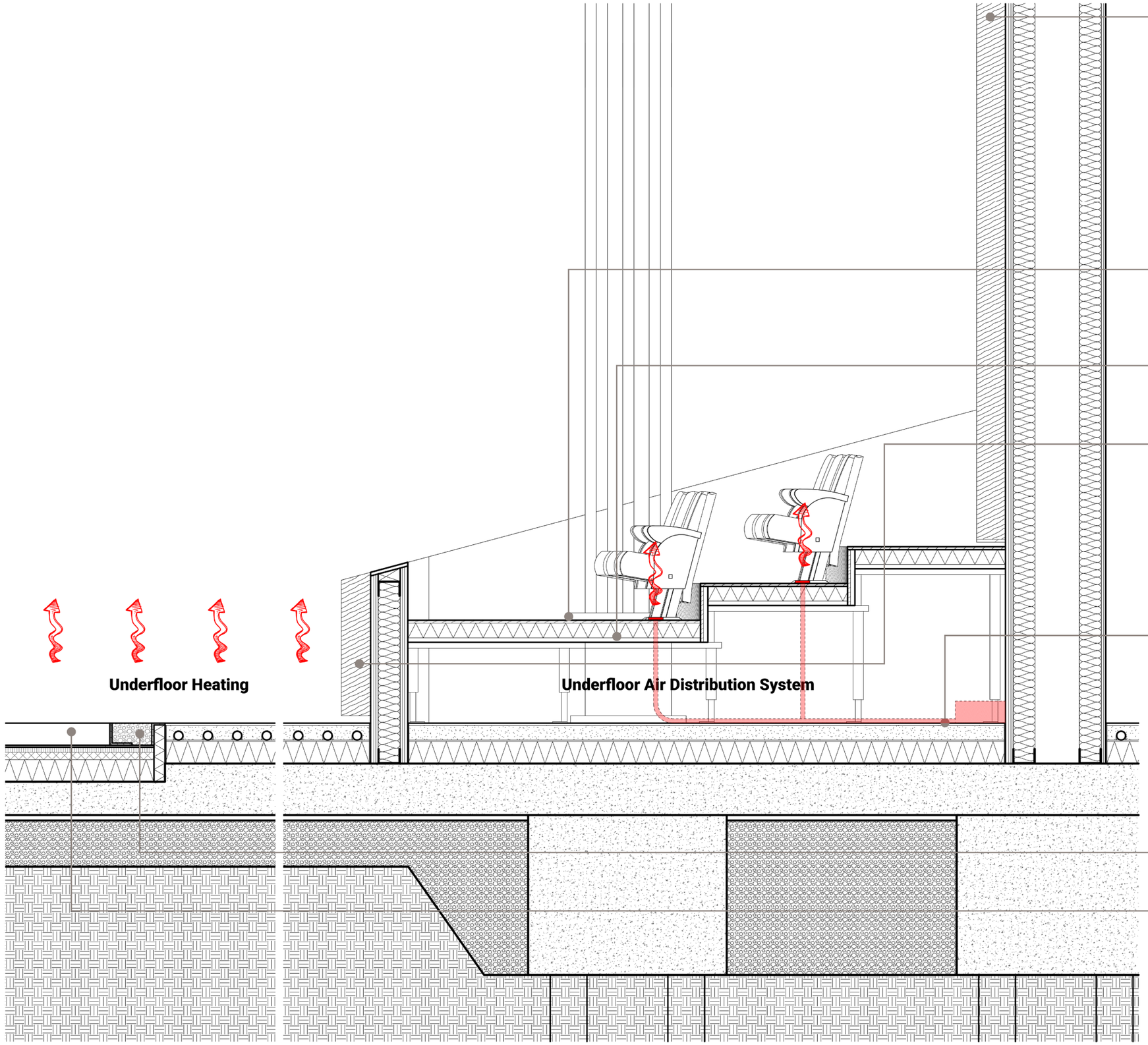
Diffusing timber (Birch) cladding



RAINROOM/ MULTIPURPOSE AUDITORIUM WATER FLOW


Wet Area
Separation
Dry Area
Pervious Concrete
Gravel
Claystone Coating
Water flow towards
Water Colletion Tank





Double Stud Wall (from rainroom to backstage)
50-200mm depth Acoustic Difuser Timber (Birch) Cladding
18mm MDF Board, painted black
2x15mm Soundblock Plasterboard
150mm Cellulose Fibre Insulation infilling
Metsec
300mm Air Gap
150mm Cellulose Fibre Insulation infilling
Metsec
2x15mm Soundblock Plasterboard
Claystone Coating

Raised Seating Area
20mm Birch Wood Flooring sitting on,
100mm Foamglass Rigid Insulation
30mm Oriented Strand Board (OSB) subflooring

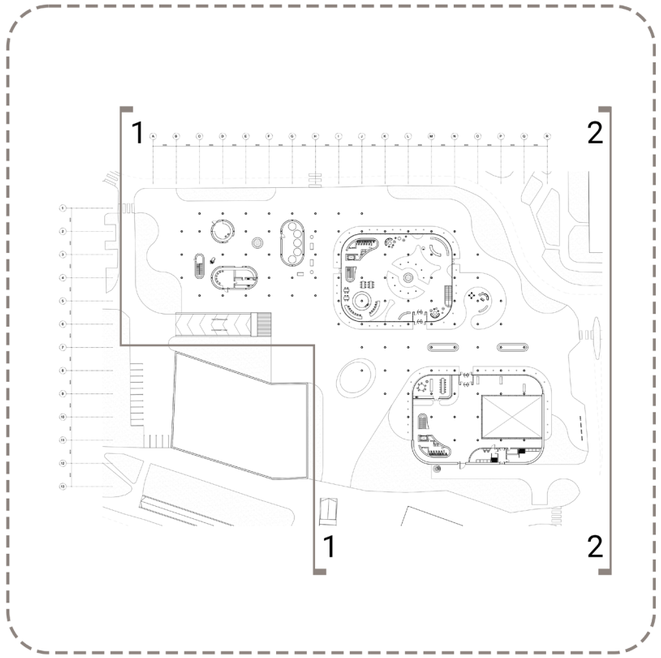
Raised Seating Area Support System
Steel frame placed 610mm c/c with Adjustable Foot

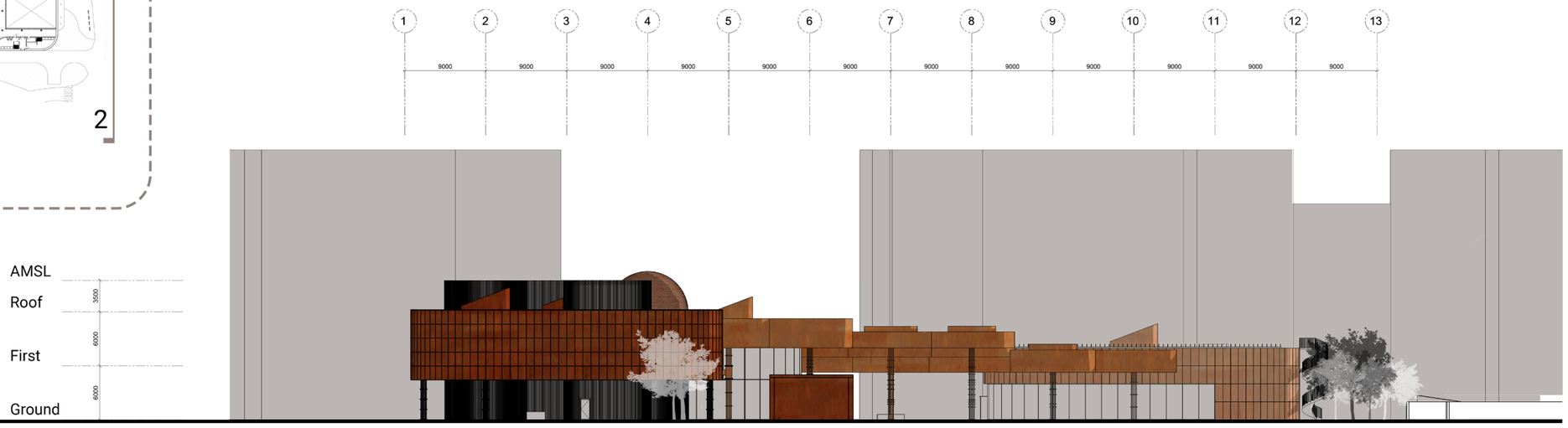
Single Stud Wall (from stage to seating)
50-200mm depth Acoustic Difuser Timber (Birch) Cladding
18mm MDF Board, painted black
2x15mm Soundblock Plasterboard
150mm Cellulose Fibre Insulation infilling
Metsec
2x15mm Soundblock Plasterboard
18mm Birch Plywood

Dry Area Flooring
Claystone Coating
15mm Moisture Resistance Plasterboard
10mm Impact Insulation Rubber
150mm Foamglass Insulation
Damp Proofing Membrane
Cast-in-situ Concrete Slab
50mm Sand Binding
300mm Hardcore
Geotextile Layer

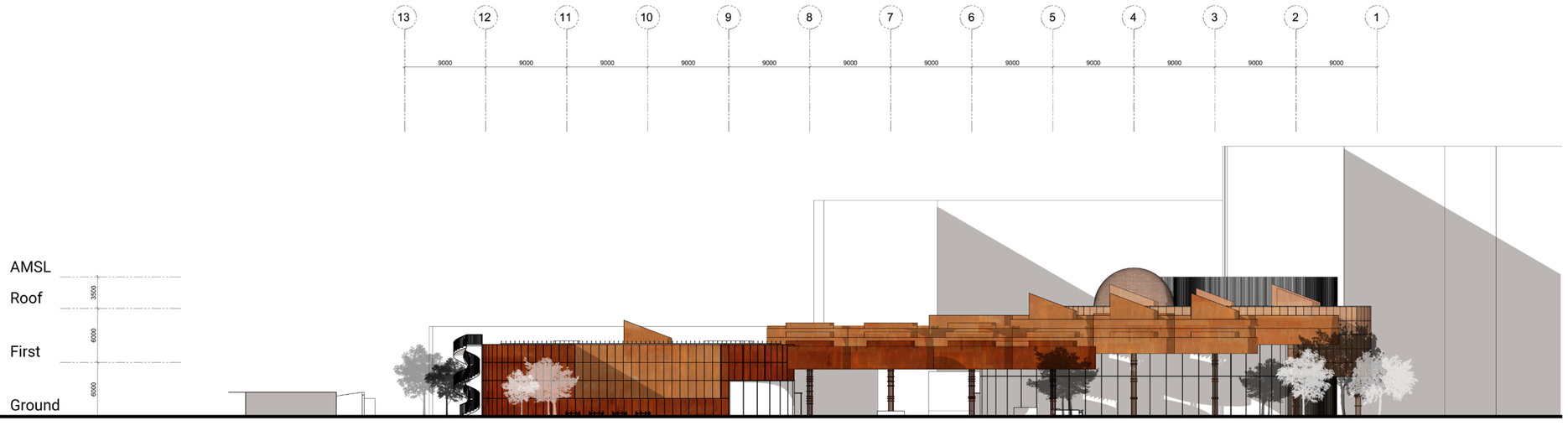
Edge Separation
Gravel surrounded by Metal Bent Plate

Wet Area Flooring
150mm Permaeble Pervious Concrete
35mm Drainage Board with Filter Fleece
50mm Drainage Board
Water Proofing Membrane for Quick Drainage
150mm Foamglass Insulation
Damp Proofing Membrane

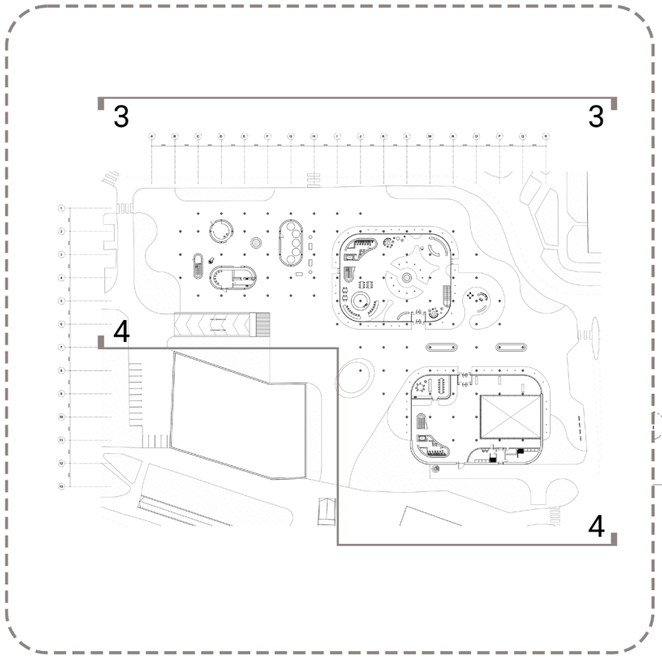


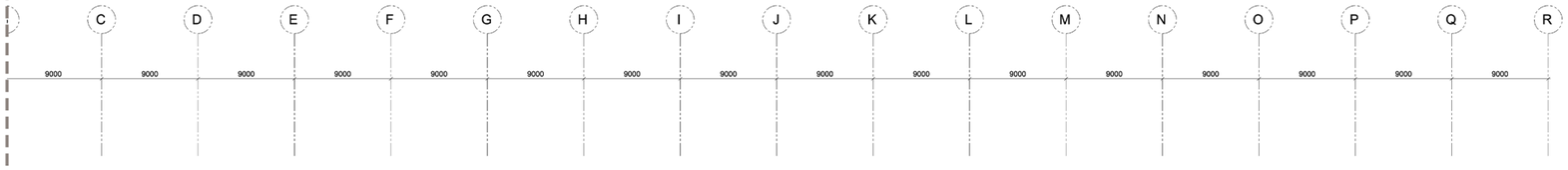


Elevation 1

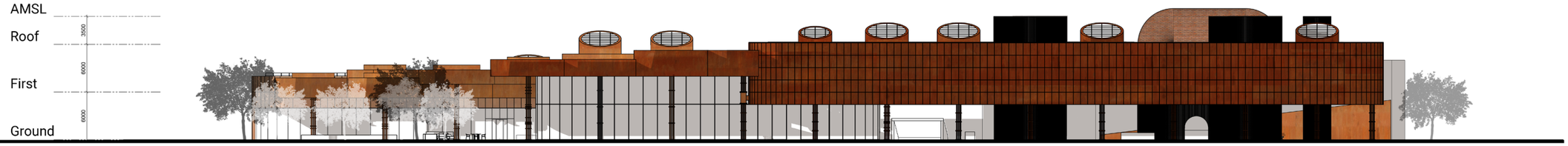


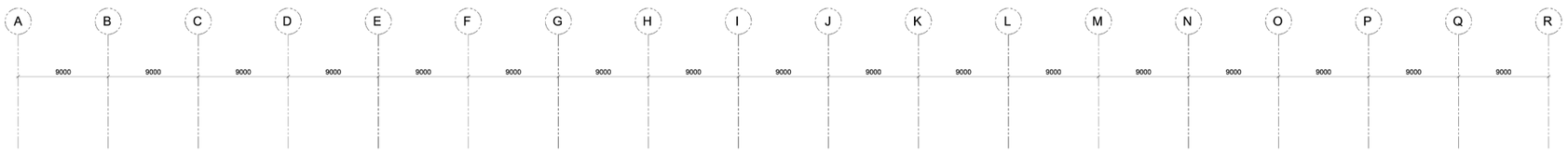
Elevation 2



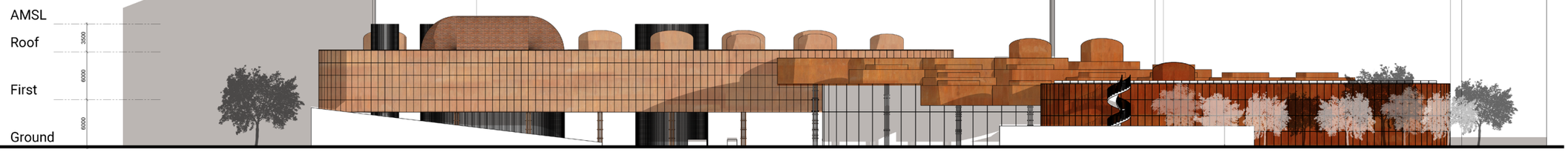


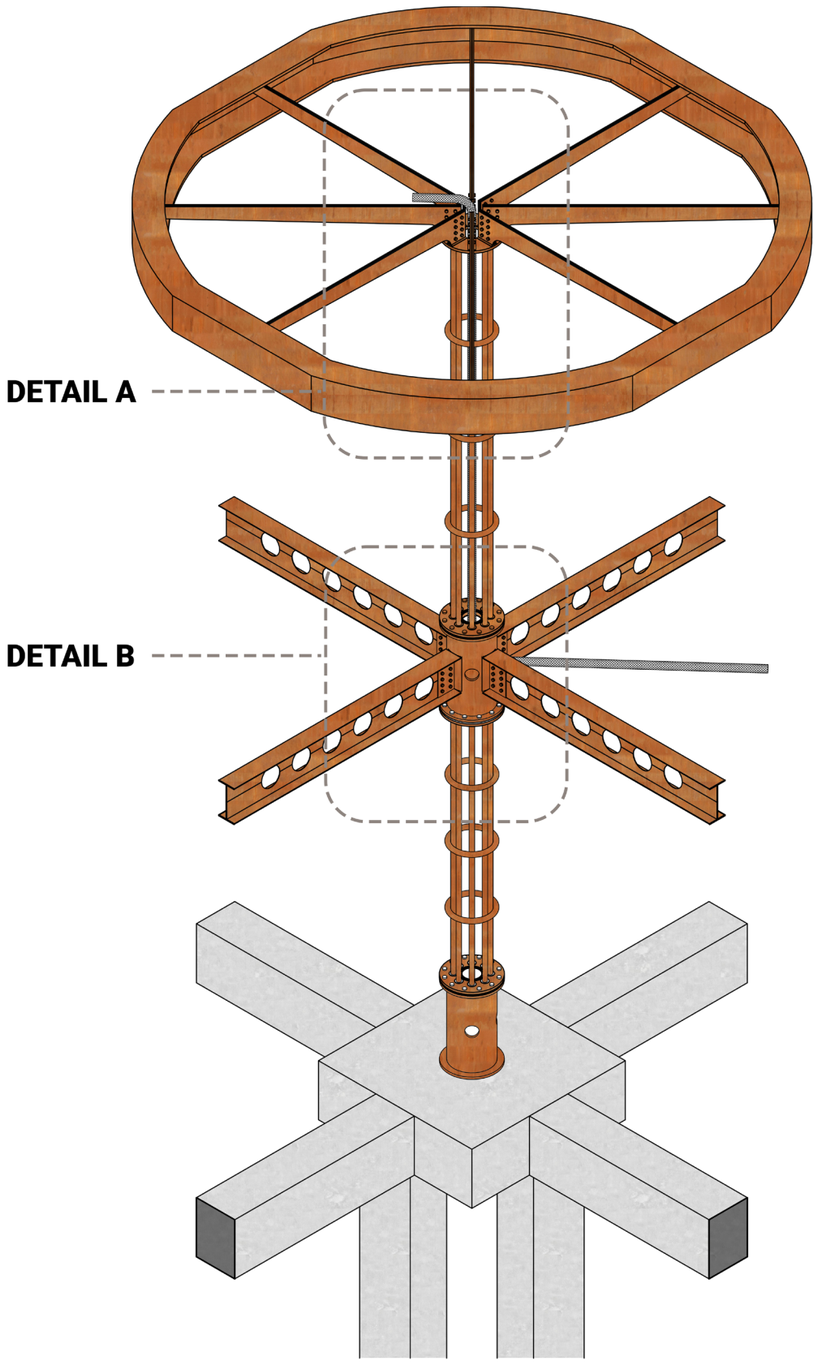
Elevation 3

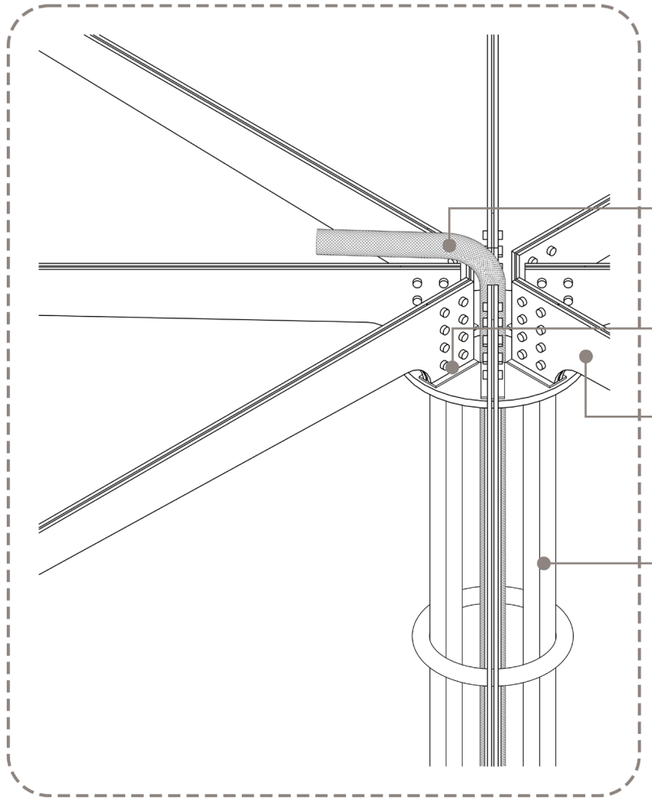




Elevation 4







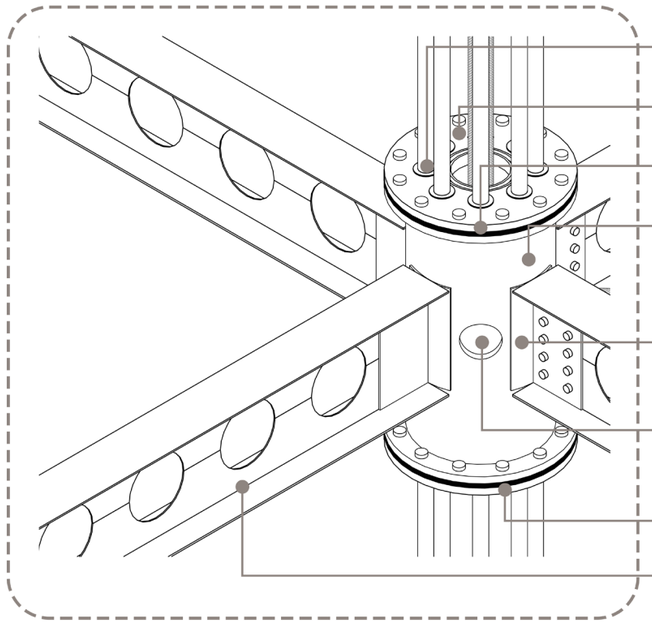
DETAIL A

Polythylene Rainwater Downpipe,
120mm Diameter,
with Self regulated Heating Cable

T Bar Metal,
welded to Slip-on Flange

Corten Double Plate,
bolted to T Bar Metal,
connected to both Slip-on Flange
and Corten C Channel

HSS Tube Corten Column, 76mm Diameter



DETAIL B

Splice Connection welded to HSS Column

40mm Corten Slip-on Flange

Neopreen Rubber Thermal Break

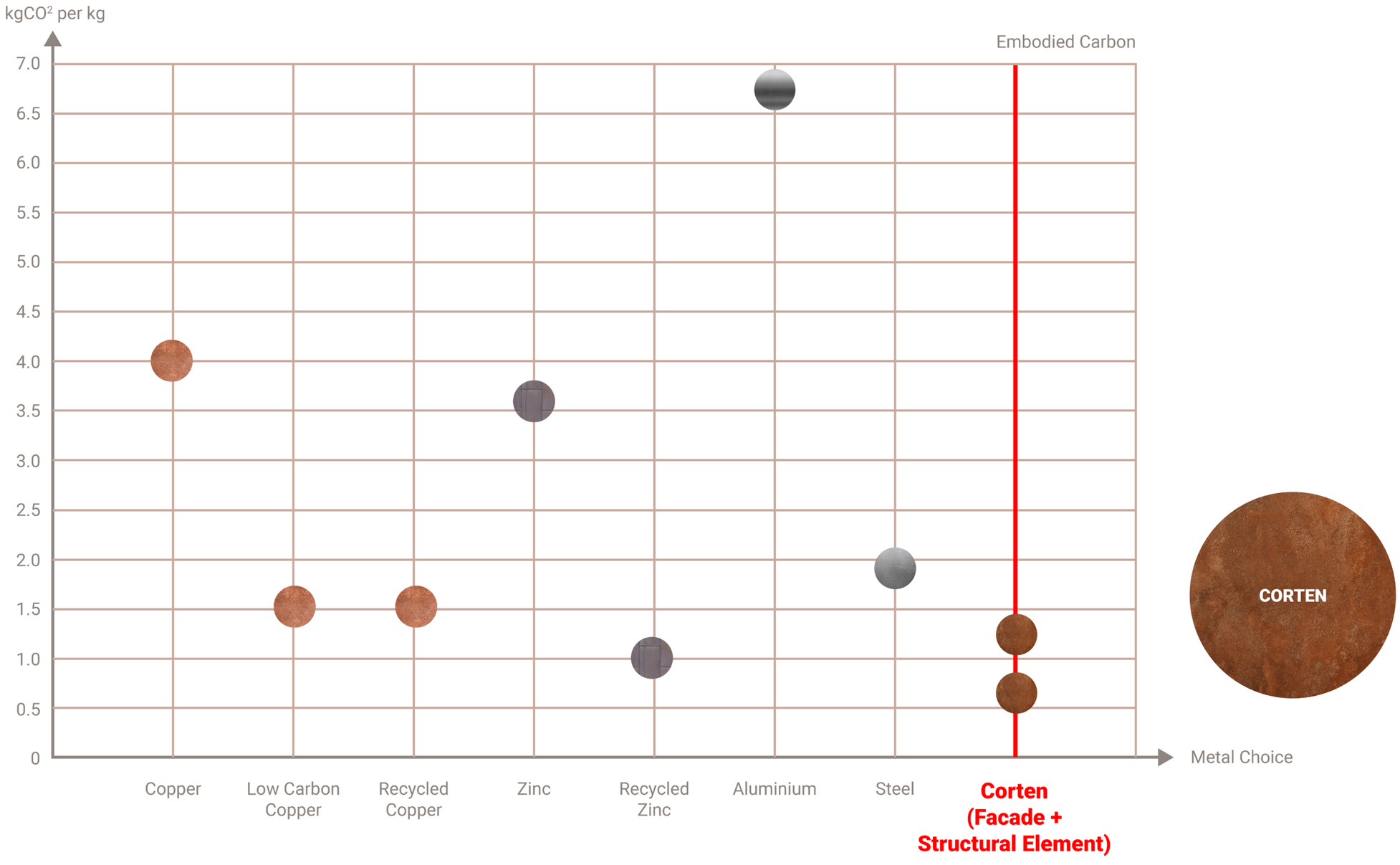
Corten HSS Short Column,
Column Height depending on Floor to
Ceiling Height

Double Angle Shear Connection
welded to Short Column

Through Holes for Rainwater Downpipe
and Electrical Wire to pass through

Neopreen Rubber Thermal Break

300x600mm Corten Cellular I Beam


kgCO² per kg
Embodied Carbon
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0
Copper
Low Carbon Copper
Recycled Copper
Zinc
Recycled Zinc
Aluminium
Steel
Corten (Facade + Structural Element)
Metal Choice
CORTEN



