

Between Water and Land: Wetland Research and Interpretation Centre
ARC 305 Small And Medium Scale Buildings BEng Architecture Level 3, 2014/2015

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Chapter 1: Design Brief

The Studio Brief
Expanded Design Programme

The Studio Brief (Given by Dr. Anuradha Chatterjee)

ARC305
Brief: Between Water and Land: Wetlands Research and Interpretation Centre

ARC305

Small and Medium Scale Buildings
BEng Architecture Level 3
2014/2015 2nd Semester

Module Credit: 10
Brief: 1/5

Brief: Between Water and Land: Wetlands Research and Interpretation Centre

Teaching team: Dr Anuradha Chatterjee, Ganna Andrianova (module coordinator), Claudia Westermann, Nancy V.M. Diniz, Theodoros Dounas
Studio/coursework venues: Room EB265
Studio/coursework times: Tuesdays 2pm-5pm, Thursdays 2pm-5pm
Studio/coursework times: Tuesdays 2pm-5pm, Thursdays 2pm-5pm

The aim of the brief is to design a Wetlands Research and Interpretation Centre, which will have spaces for Research and Teaching, Information Storage and Exchange, and Communal Use. The brief expects students to develop a clear stance on how the building can foster education, curiosity, awareness, through architectural legibility + circulation; incite emotional responses to the mythical and poetic qualities and perceptions of wetlands and water; and propose ways in which their building touches the ground or extends into the surroundings through a careful consideration of wetland ecology and construction methods. The design moves must be evidence based and driven by a demonstrable study and synthesis/application of 'deep' study of precedents. The building would be instrumental in connecting research (expert knowledge) and experience and education (democratization of knowledge). The project demands a clear and unambiguous solution to the functional programme, but it also expects an appropriate level of abstraction and translation of the context (wetlands/water) in architectural atmosphere through the manipulation of light and materials.



Brief

Students design a Wetlands Research and Interpretation Centre.

The stages of design are

- 1) Write the Quantitative and Qualitative Programme **Week 1**
- 2) Precedent Anatomical Studies **Week 2**
 - a) Select two precedents as a group and generate 1:100 models
 - b) Select one precedent each (Wetlands Research Centre) and unpick the brief, design concept, parti, structure, material, contextual response: **Only original self-generated drawings are accepted**
- 3) *Assessed Interim Review 1. See Schedule* : Sketch/Concept Design (Project Description/Functional/Circulation/Contextual or Ground Plane Proposition) 1:200 Diagrams and 1:200 Plans/Sections
- 4) *Assessed Interim Review 2. Preliminary architectural design. See Schedule:* Architectural Design (Formal/Material/Structural/Interior) 1:200 1:50
- 5) *Assessed Interim Review 3. Final architectural design. See Schedule:* Resolution (Skins/Passages/Entries Exits/Elevations/Consolidating Programmed spaces/Vertical circulation) 1:200
- 6) Site analysis is not be presented but synthesized into each stage of the design studio. Hence, an acute awareness and engagement with the site and a considered and deliberate response will be constantly evaluated as essential criteria in all assessments and stages.

Aims

The aim of the brief is to design a Wetlands Research and Interpretation Centre. The typology is institutional, with some community functions. The centre should have spaces for 1) Research and Teaching Spaces (laboratories, workshops, seminar rooms, lecture theatres); 2) Information (Gallery, Archive, Resource Centre or Library) 3) Communal Use (Restaurant, Conference Room, Short Term Accommodation).

It is not enough to fulfil the brief only. The theoretical position in this brief can be informed by a number of things, pertaining to awareness and experience of ecology and landscape:

- 1) First, students can think of how the design of the building can foster education, curiosity, awareness, through architectural legibility + circulation (as journey or encounter) across the various spaces as well as the various activities made possible within/by the building and its function.
- 2) Second, the wetlands are not only beneficial and utilitarian, but also evoke an emotional response of openness, mystery, and fear. Hence, students can start to think of qualities of water—poetic, aesthetic and philosophical connotations of stillness, murkiness, dampness, fluidity, overflow, mystery, fear, and so on. Water and aquatic life is not merely the subject of research but it must also inform the experience of the researchers, and regular and casual visitors. Water nurtures and threatens. It protects but it also corrodes. It connects yet separates. It is surface and depth. Transparent and opaque. It is one and it is both. Think of Venice as the perfect example where water exists in a sympathetic yet paradoxical relationship with architecture.

It cannot be the literal introduction of pools into your spaces. Qualities of water should be interpreted as qualities of spaces or materials in encounter with light,

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shade, air, and so on. The building has an educational purpose also and these experiences will work in concert with such aims.

- 3) Third, students can think of how and to what extent the building touches the ground and extends into the surroundings, and whether the articulation of connection and/or disconnection can be articulated to inform the experience and understanding of the wetlands.

In summary, students will be expected to

- Demonstrate a solid understand of the ecology of wetlands and construction systems appropriate to wetlands
- Demonstrate a very clear and unambiguous solution to the functional programme (clear parti and organization)
- Demonstrate sensitive uptake, abstraction, and translation of poetic/mythical qualities of water and wetlands
- Demonstrate a clear and consistent attitude to materials/materiality
- Design the main building but also design extensions that connect to the broader landscape
- Optimize on the built area to build less rather than more, by thinking of versatile and flexible spaces

Programmatic Requirements

- Plot size *TBC*
- Construction ratio *See Master Brief*
- Total gross floor area *See Master Brief*
- Typology: Institutional
- Programme: Research and Teaching Spaces (laboratories, workshops, seminar rooms, lecture theatres); 2) Information (Gallery, Archive, Resource Centre or Library) 3) Communal Use (Restaurant, Conference Room, Short Term Accommodation).
- Number of target users, target market etc. Researchers, academics, visitors from research and industry; casual visitors

Site Description

- Specific site boundaries *TBC Anuradha Chatterjee*

Learning Outcomes

You are expected to:

- 1) Identify and analyse research resources that are adequate for the development of the project.
- 2) Acknowledge theoretical issues in order to develop a critical posture in relation to the design project.
- 3) Acknowledge the needs of inhabitants and translate them into a creative and sensible proposal

- 4) Consider and negotiate structural, material, functional, interior and exterior space aspects as well as all urban issues that concern the building simultaneously.
- 5) Demonstrate recognition of environmental, health & safety and disability issues that are relevant to contemporary architectural agendas
- 6) Demonstrate advanced knowledge in representing architecture according to conventions
- 7) Represent idea(s) appropriately using effective means of presentation, including digital tools
- 8) Defend creative proposals in reference to various contextual issues informing architectural design

Deliverables (Anuradha Chatterjee's Group)

You are expected to produce the following deliverables on a Weekly basis (see Schedule below for submission deadlines):

1. Brief Week 1/ Self Study Wetlands Ecology + Site
2. Precedent models (group) Week 2
3. Precedent studies (individual) Week 2
4. Well-crafted Site Model Week 3/4
5. Sketch Design Plans and Working models Week 4
6. 1:200 Architectural Plans and Sections and Models All Weeks
7. 1:50 Working Models and Final Models exploring interior spaces and thresholds and occupation All weeks

Schedule

See Above + Master Brief

Assessment Components and Criteria

See Master Brief

Assessment Rules

See Master Brief

Tutorials

Tutorials take place on Tuesdays and Fridays and/or as individually negotiated with your tutor. The tutorial venue will be communicated to you separately by your tutor.

Additional formalities

TBC Anuradha Chatterjee

References

Readings: Architectural Design/Theory Readings:

Note: Could be provided by tutor, if unavailable at the XJTLU library

BELTRAMINI, G., ITALO, Z. & SCARPA, C. (eds.) (2007): *Architecture and Design*. New York: Rizzoli.

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Brief: Between Water and Land: Wetlands Research and Interpretation Centre

- FRASCARI, M. (1988) The Lume Material in the Architecture of Venice. *Perspecta* 24: p.136-145.
- HOLEHOUSE, M., (2013) *Conditional Grounds: Architecture for the Whangamarino Wetland*. Masters Thesis. Unitec Institute of Technology.
- PALLASMAA, J. (2000) "Hapticity and Time: Notes on Fragile Architecture," *The Architectural Review*. May 2000: p. 78-84.
- PALLASMAA, J. (2005) *The Eyes of the Skin: Architecture and the Senses*. Chichester: Wiley.
- SAVOY, D. (2012) *Venice from the Water: Architecture and Myth in an Early Modern City*. New Haven; London: Yale University Press.
- ZUMTHOR, P. (2006) *Atmospheres*. Basel; Boston: Birkhäuser.

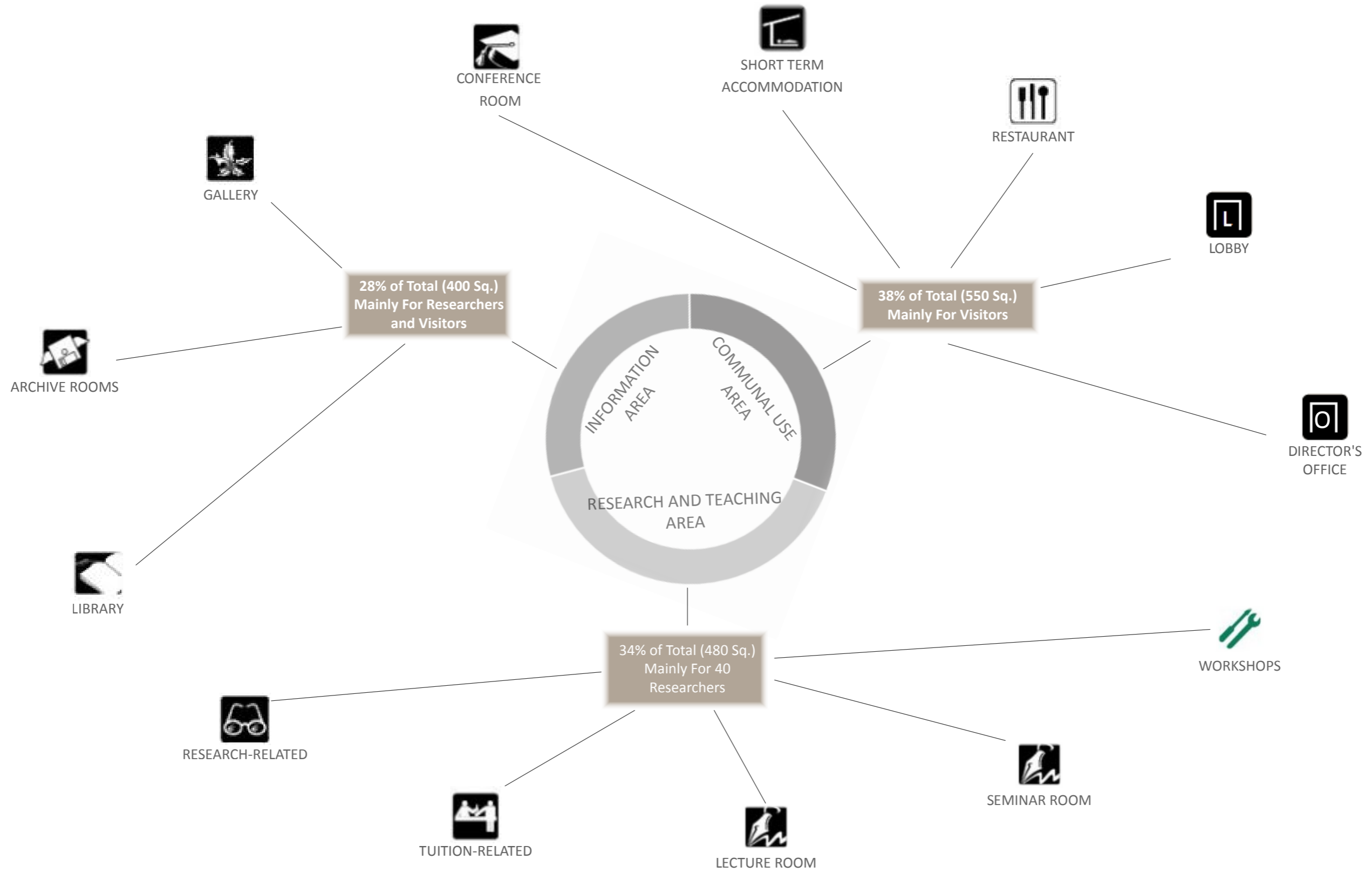
Readings: Wetlands:

Note: Please see XJTLU *Library*. Students are expected to select some out of the many books on this topic in the library. Hence a list is not necessary.





Important Links:







- ARCHDAILY. (2014) *Xixi Wetland Art Village / Wang Weijen Architecture*. [Online] Available from: <http://www.archdaily.com/334677/xixi-wetland-art-village-wang-weijen-architecture/> [Accessed: 28 August 2014]
- LYONS ARCHITECTS. (2014) *Marine Fresh Water Design Institute*. [Online] Available from: <http://www.lyonsarch.com.au/marine-freshwater-research-institute-2/> [Accessed: 28 August 2014]
- MINIFIE VAN SCHAİK ARCHITECTS. (2014) *Edithvale Seaford Wetlands Discovery Centre*. [Online] Available from: http://www.mvsarchitects.com.au/doku.php?id=home:projects:edithvale_wetlands_centre [Accessed: 28 August 2014]
- MINIFIE VAN SCHAİK ARCHITECTS. (2014) *The Wetlands Discovery Centre Masterplan*. [Online] Available from: http://www.mvsarchitects.com.au/doku.php?id=home:projects:edithvale_masterplan [Accessed: 28 August 2014]
- TROPPO ARCHITECTS. (2014) *Tyto Cultural Precinct, Ingham, North Qld, 2010*. [Online] Available from: <http://www.tropo.com.au/tyto-wetlands/> [Accessed: 28 August 2014]
- WATER+ARCHITECTURE. (2014) [Online] Available from: <http://ced.berkeley.edu/research/water-and-architecture/> [Accessed: 28 August 2014]

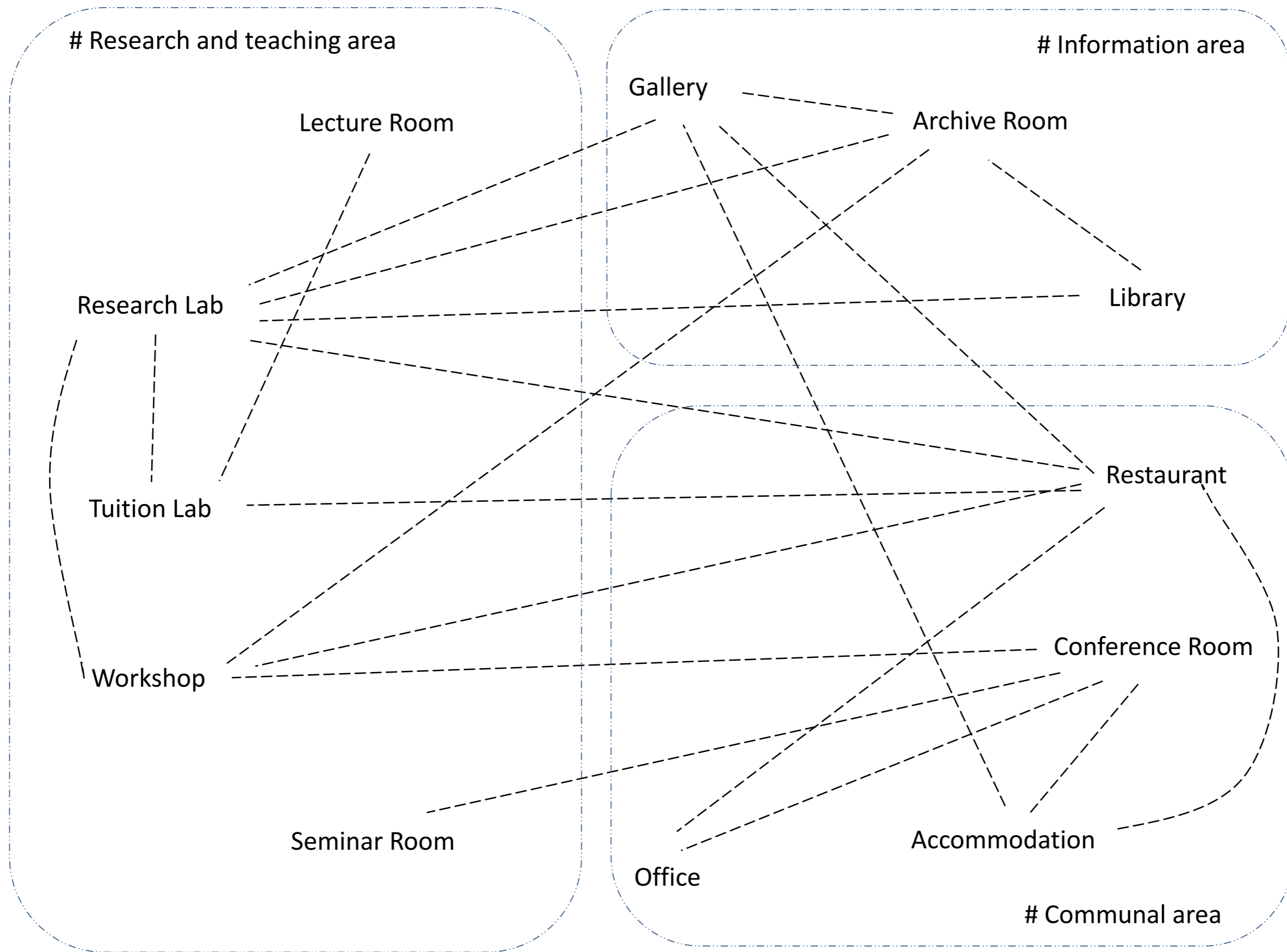
Expanded Design Programme



"The expanded design programme mainly classifies this project into three main parts, including research and teaching area, information area and communal area. The main target users of this project are researchers and visitors. The diagram above shows the main functional rooms each part includes. The detailed information of each functional room will be introduced in this folio then."

Functional divisions	Room function	Narrative	Proximate Areas (sq.) Per room	Quantity of rooms	Areas (functional room)(sq.)	Frequency (A,B,C from higher to lower)	Areas (total) (sq.)
Research and teaching area	Research-related (smaller lab) 	Function: there are two kind of research lab, including biological and informative laboratory. The biological laboratory is mainly to conduct the biological experiments, such as wetland soil research, creation research and pollution testing. The informative space is mainly to conduct the wetland resources investigation and dynamic statistics monitoring. Each research lab has a writing space for preparing publication and articles. Main Users: post-graduate students and experts (about 8/lab) Special Settings: biological workstations and machines in biological lab; computers in informative lab.	50 sq.	2 bio. lab + 1 info. lab	150 sq.	A	480 sq.
	Tuition-related (larger lab) 	Function: experts can show the latest experimental research findings and do biological demonstrative experiments to post-graduates. The experimental courses will be conducted in here. Main Users: post-graduate students and experts (about 25/lab) Special Settings: experimental workstations, projectors and screen.	80 sq.	1	80 sq.	B	
	Workshops 	Function: a brief intensive course will be conducted in workshop for a small group to emphasize problem solving of wetland. There is a shared storage for storing experimental apparatus. Main Users: post-graduate students, experts, guest experts and exchanged post-graduate students. (about 5/workshop) Special Settings: experimental workstation, computers.	25 sq.	2	50 sq.	C	
	Seminar rooms	Main Users: post-graduate students and experts (about 12-15/room) Special Settings: projector and screen.	40 sq.	3	120 sq.	B	
	Lecture rooms 	Function: theoretical courses will be delivered in lecture rooms. Also can be a place where experts give reports of wetland condition. Main Users: post-graduate students, experts, guest experts and exchanged post-graduate students. (about 25/room) Special Settings: projectors and screen	80 sq.	1	80 sq.	B	

Information area	Gallery 	Function: there are two types of gallery in this center, including permanent gallery (in 1 st floor; immersive gallery; for giving a general context of wetland to visitors from three thematic, such as wetland geography, wetland creature and wetland protection) And temporary gallery (in 2 nd floor; exhibition hall; mainly for exhibiting the latest findings of wetland; including several observatory rooms) Main Users: tourists	200 sq.	3 permanent galleries + 1 temporary gallery	200 sq.	A	400 sq.
	Archive room 	Function: archive room is located in the end of function sequence of library and gallery. Archive room will archive valuable volumes or precious findings of research. Main Users: archivist Special Settings: bookshelves and cabinets, archivist workstation	40 sq.	1	40 sq.	C	
	Library 	Function: mainly containing information counter, stacks and reading areas Main Users: librarian, post-graduates, experts and tourists Special Settings: bookshelves, librarian workstation	160 sq.	1	160 sq.	B	
Communal use area	Restaurant 	Function: with kitchen, dining area, food storage and queuing area Main Users: all the staff, visitors and researchers (can contain about 50 people in the same time) Special Settings: kitchenware	230 sq.	1	230 sq.	B	550 sq.
	Conference room 	Function: for academic exchange with guest experts and for regular meeting among staff and directors. Main Users: director, staffs, experts, guest experts. (15-20 people/room)	60 sq.	1	60 sq.	C	
	Short term accommodation 	Function: including rooms for one people and two people, all rooms contains separated bathrooms, laundries and simple kitchenware. Main Users: guest experts and tourists	25 sq. (Single) 40 sq. (Double)	5 (single) + 2 (double)	205 sq.	C	
	Director's office Foyer	In low frequent functional area; close to conference Function: With reception counters for checking in and out. Main users: receptionists	15 sq.	1	15 sq.	C	
			40 sq.	1	40 sq.	A	



"The diagram above shows the relationships among functional rooms in this project in the respects of relevancy of room function and proximity."

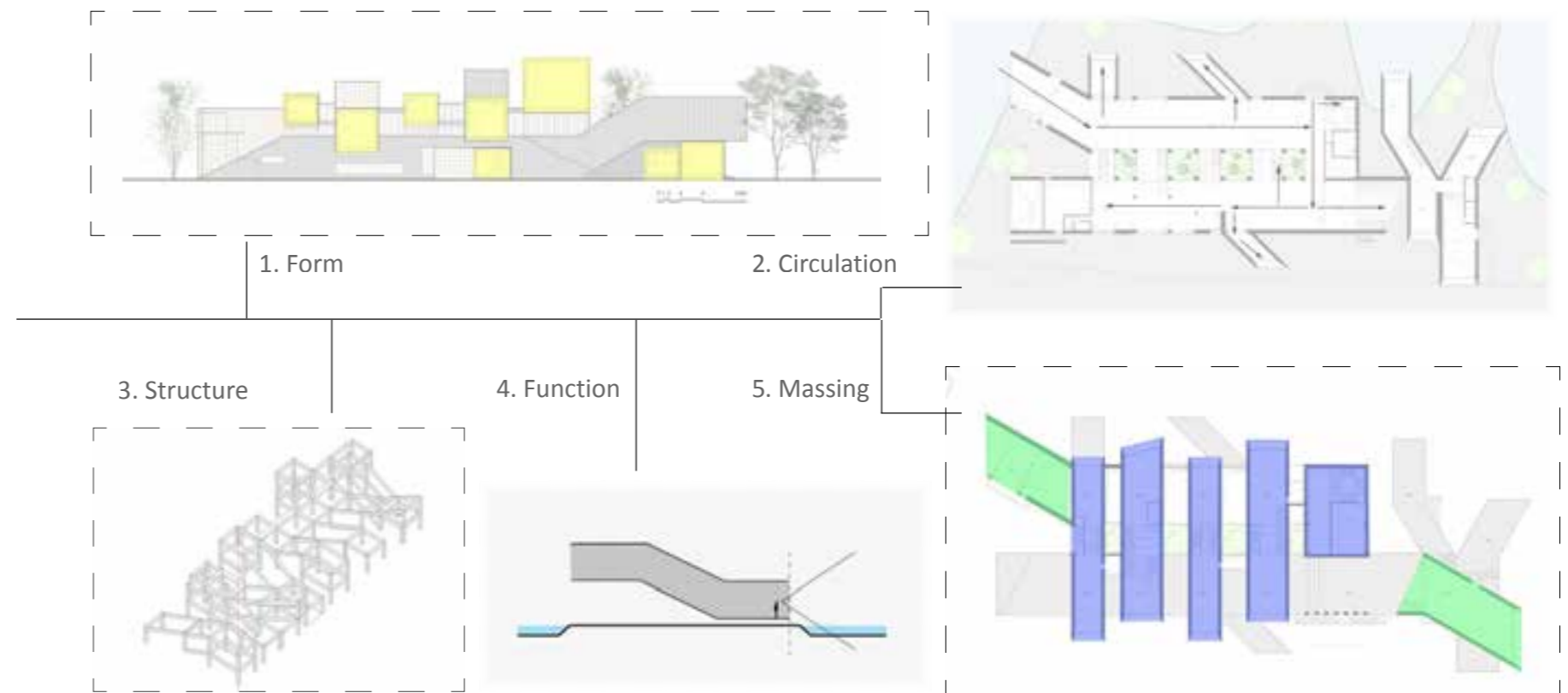
Chapter 2: Design Research

Research on Typological Precedent Studies
Research on Non-Typological Precedent Studies
Site Analysis: Research on Wetland

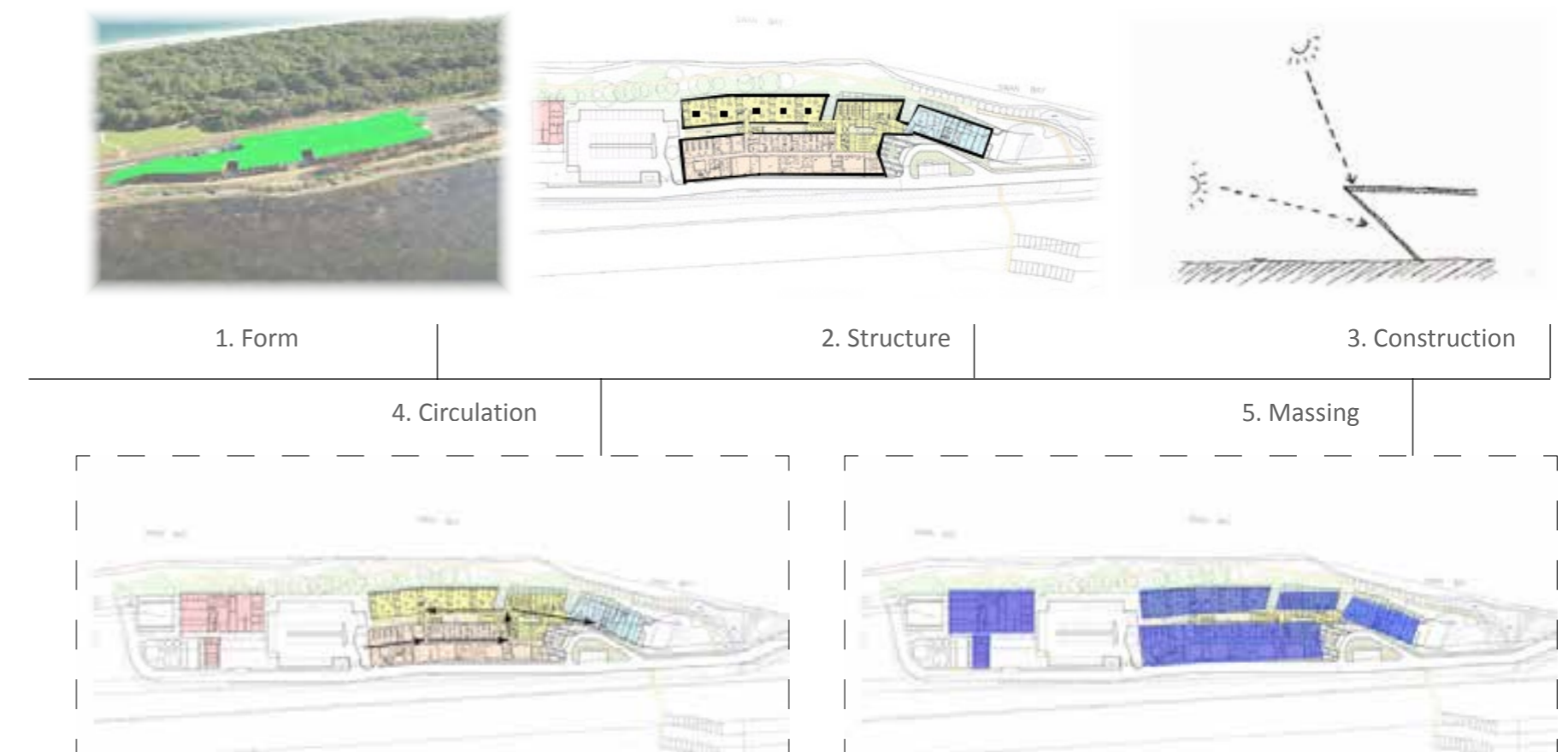
Research on Typological Precedent Studies



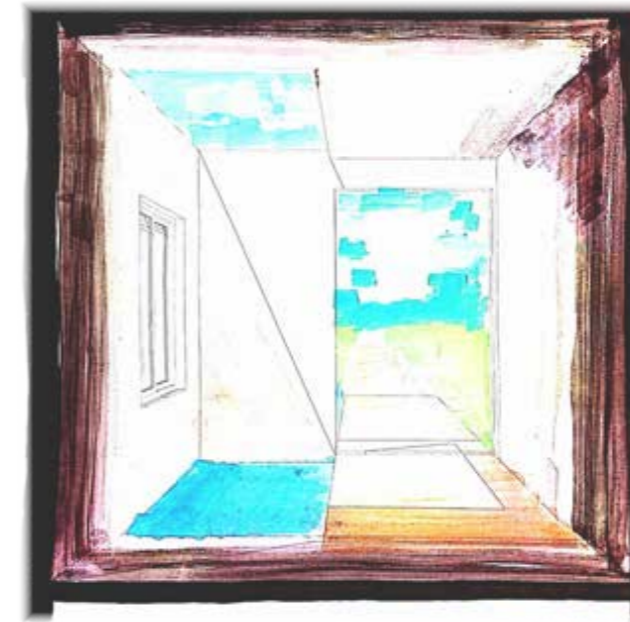
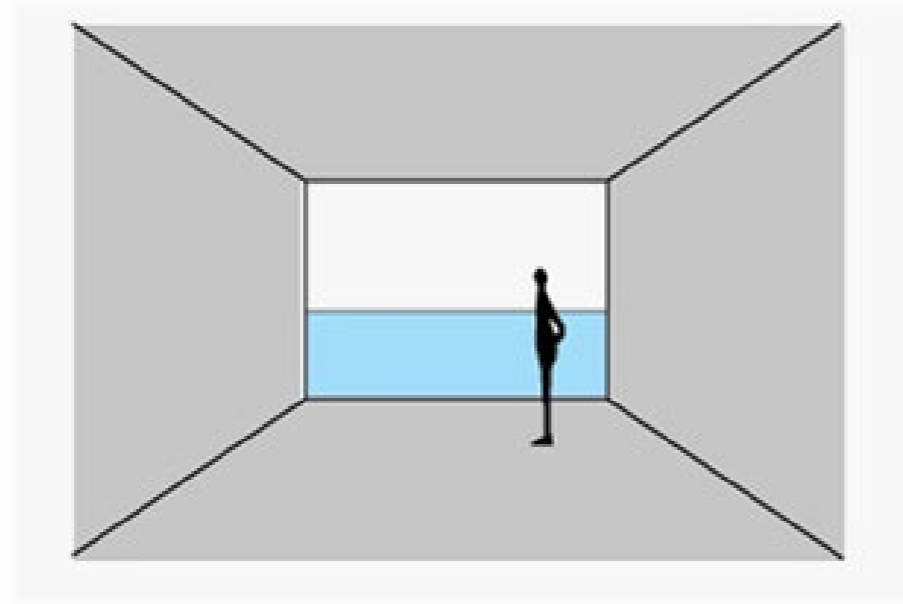
Typological precedent study #1
 Xixi wetland art village / Wang weijen architecture
 (1.Projecting linear form / 2. "U" shape main circulation / 3. Reinforced concrete frame construction / 4. Function: various viewing frame / 5. Relationship of linear building massing)



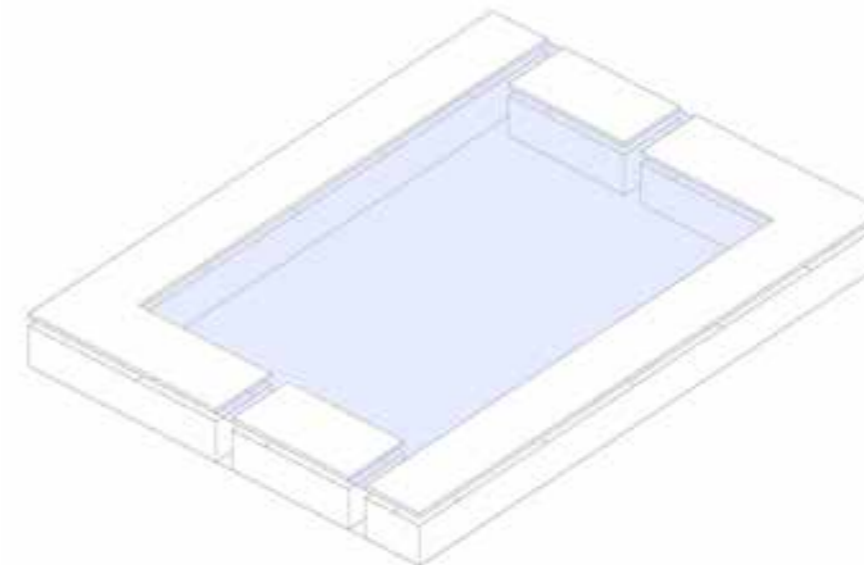
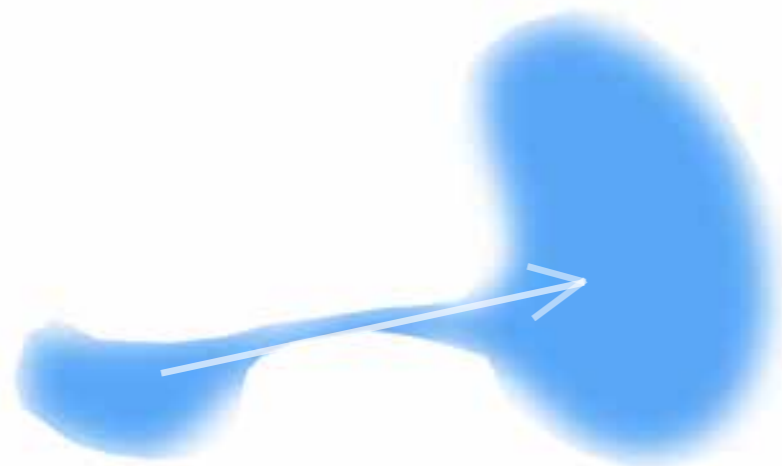
Typological precedent study #2
 Marine and fresh water resource institute / Lyons architects
 (1.Linear form for fitting to the narrow site / 2. Concrete & steel structure / 3. Special construction for sustainable design (inclined wall as sunlight controller) / 4. Main circulation in main building block / 5. Relationship of rectangular building massing)



Research on Typological Precedent Studies



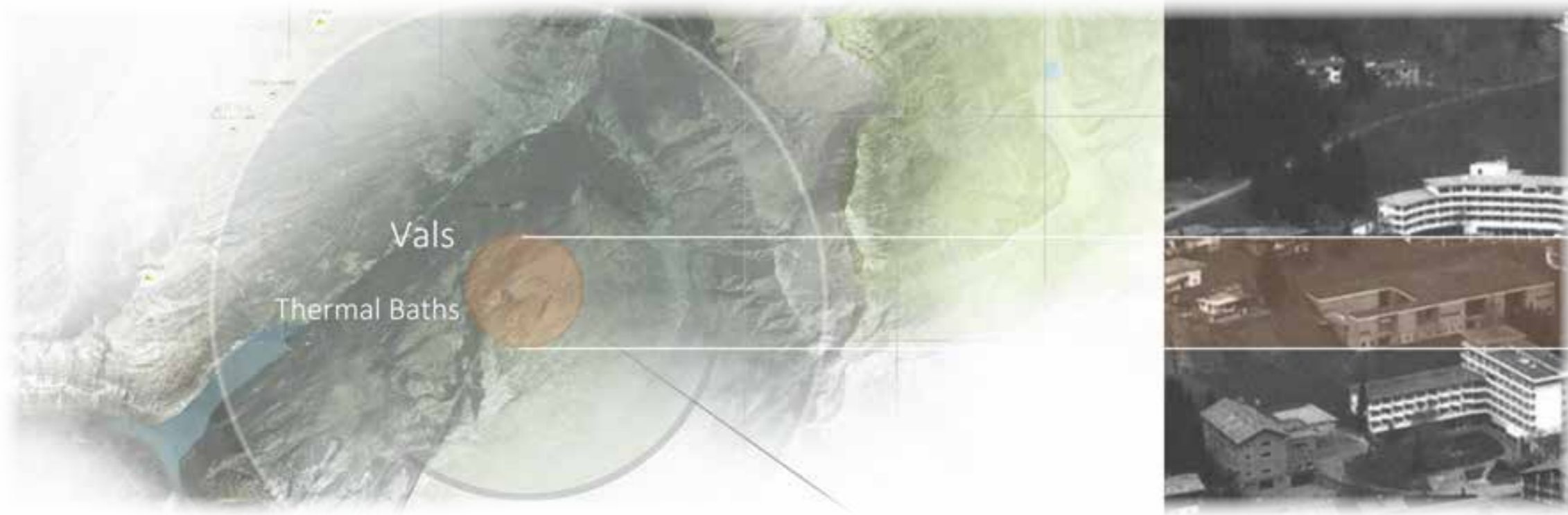
"Typological Precedent Study: Xixi Wetland Art Village / Wang Weijen Architecture
The Wetland Scenery Need To Be Captured Or Framed By The Opening On The Façade.
(The Diagram Left Shows The Feature Of Case Study; The Diagram Right Shows How Is That Feature Involved In My Design)"



"Typological Precedent Study: Marine and Fresh Water Resource Institute / Lyons Architects
The Additional Reservoir Can Be Designed Not Only For Preventing Waterlogging But Also For Creating Special Experience.
(The Diagram Left Shows The Feature Of Case Study; The Diagram Right Shows How Is That Feature Involved In My Design)"

Research on Non-Typological Precedent Studies---The Therme Vals: Peter Zumthor

Contextual Responding (Groupwork)



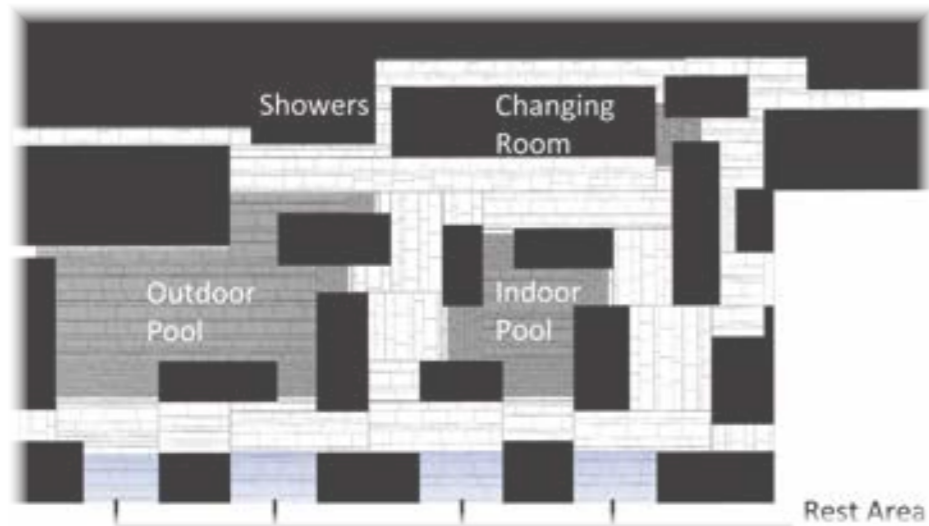
"Around the premise of keeping original topography and physiognomy, this building wants to simultaneously provide necessary privacy and viewing point to the users. With expanding of space size, people's sight can be through the construction to produce a directly conversation with nature."



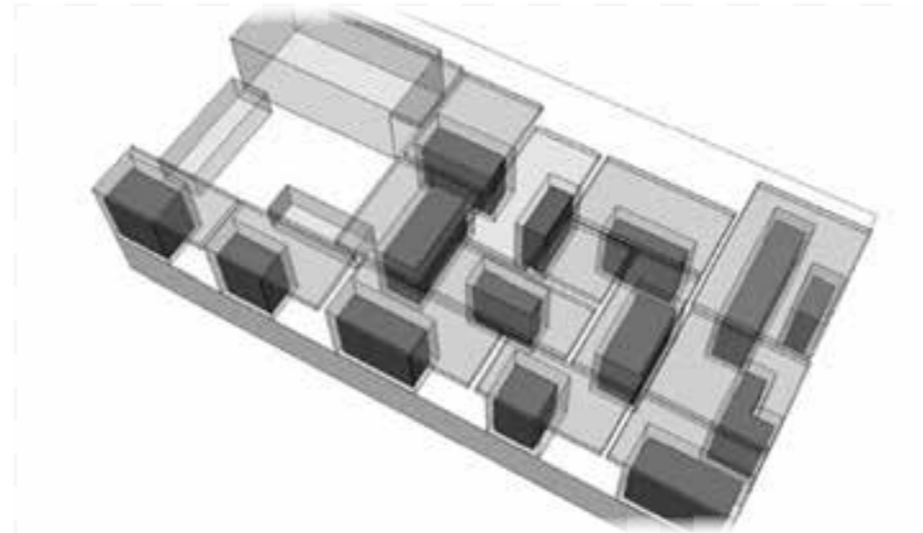
"The section left: An independent structure setting into the slopping. Special relationship with landscape: blending in site nature. The section right: Semi-open type could make the bathing place have a sufficient contact with environment."

Research on Non-Typological Precedent Studies---The Therme Vals: Peter Zumthor

Parti (Groupwork)



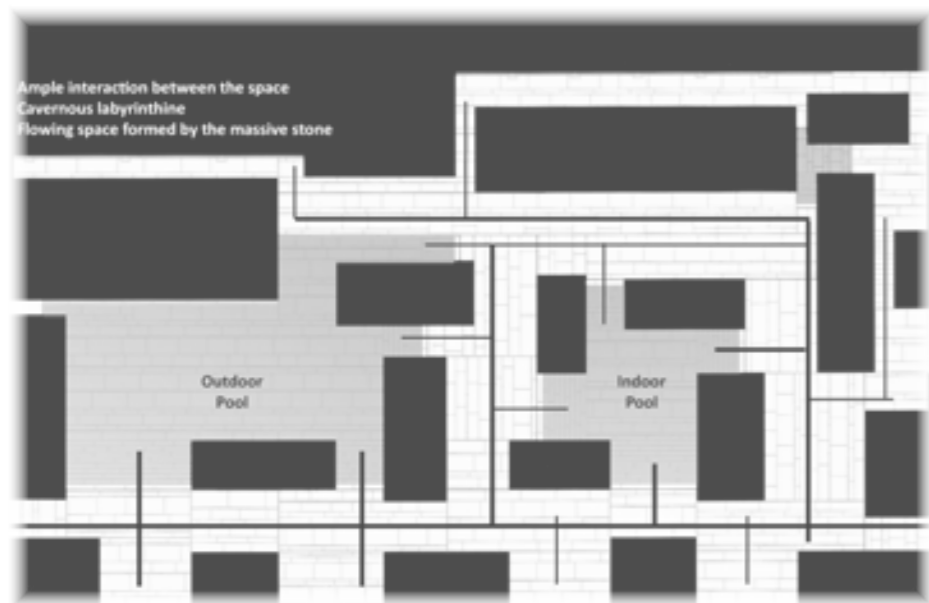
“Functional Grouping”



“Building Massing”



“Lighting and Atmosphere”



“Main and Secondary Circulation”



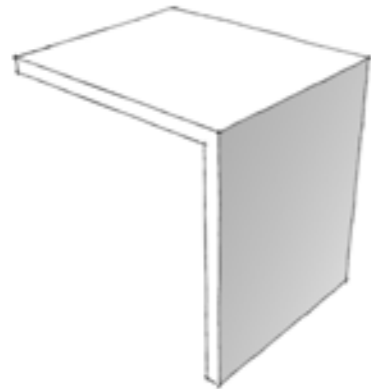
“Temperature”



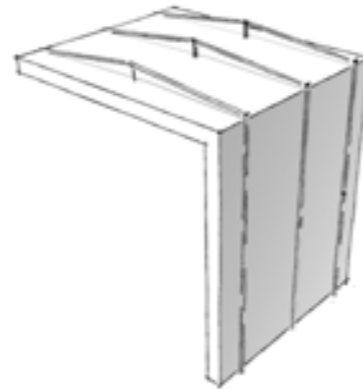
“Humidity”

Research on Non-Typological Precedent Studies---The Therme Vals: Peter Zumthor

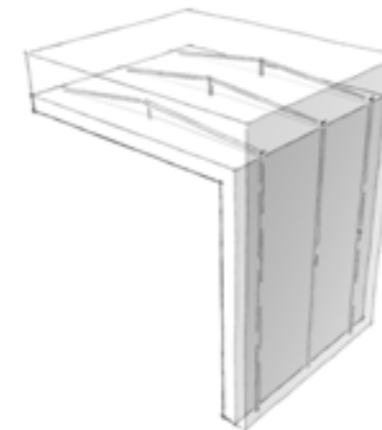
Structure Analysis: Structural Formation and Relationships Between Elements



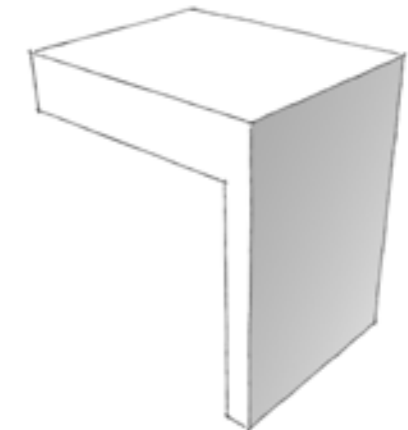
1. Stabilizing the load-bearing element into ground



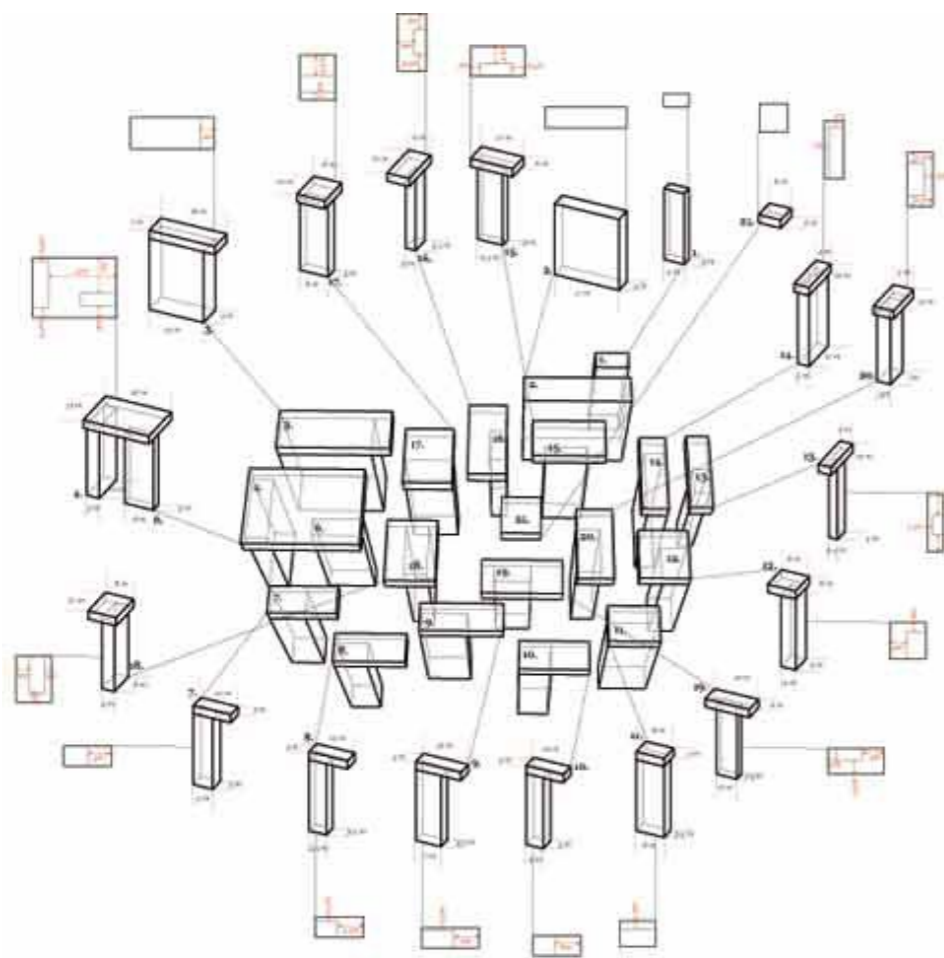
2. The roof is suspended by reinforcing steel bars to form a cantilever concrete roof unit



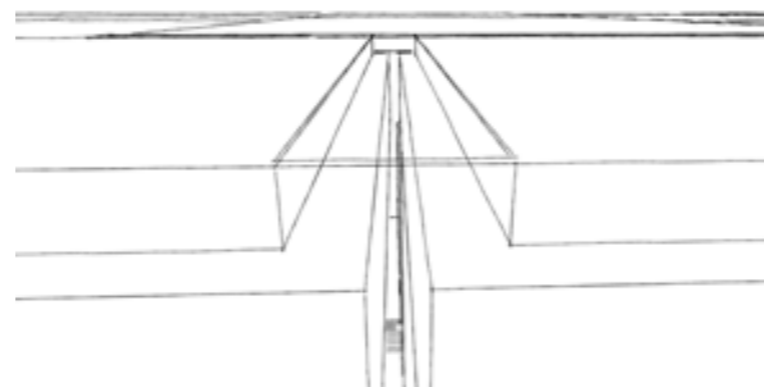
3. Casting in situ concrete with roof units and accommodating gneisses cladding



4. Achieving table-like load-bearing units



5. There are 19 table-like units and the average height is about 5 meter.



6. There are some 8cm gaps covered by striped glass panels between roofs for daylighting and connecting units



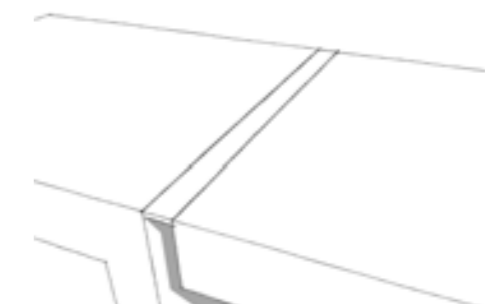
7. Those table-like units are pieced together to forming the jigsaw puzzle pattern



cantilever roof is projected from wall



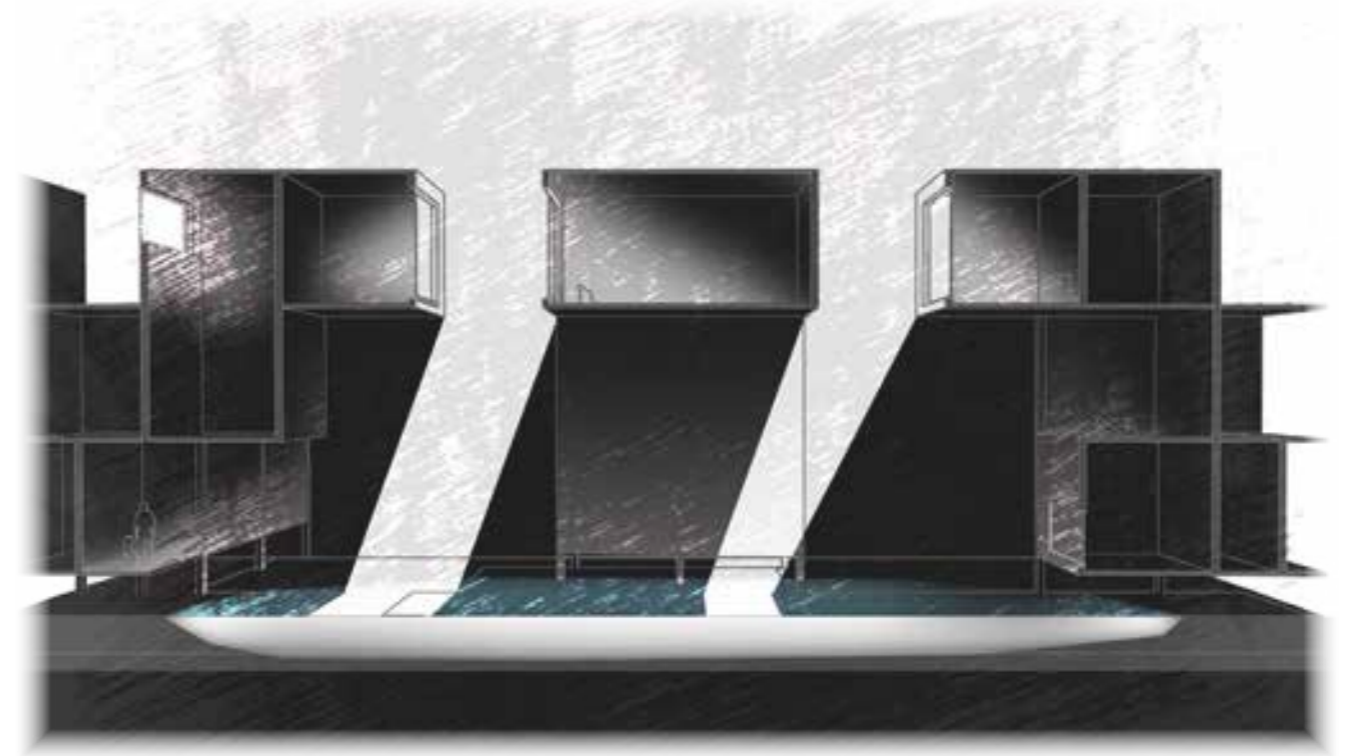
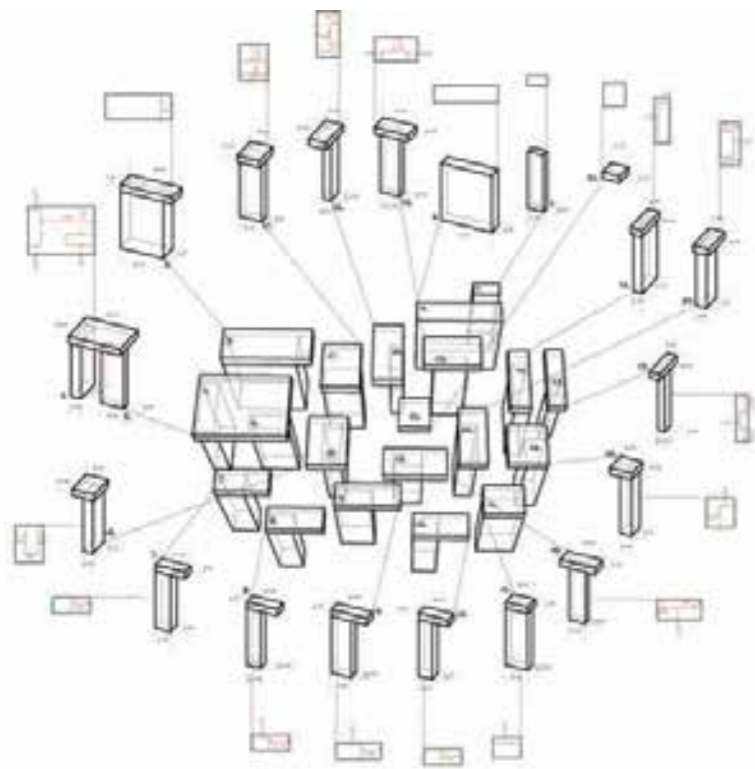
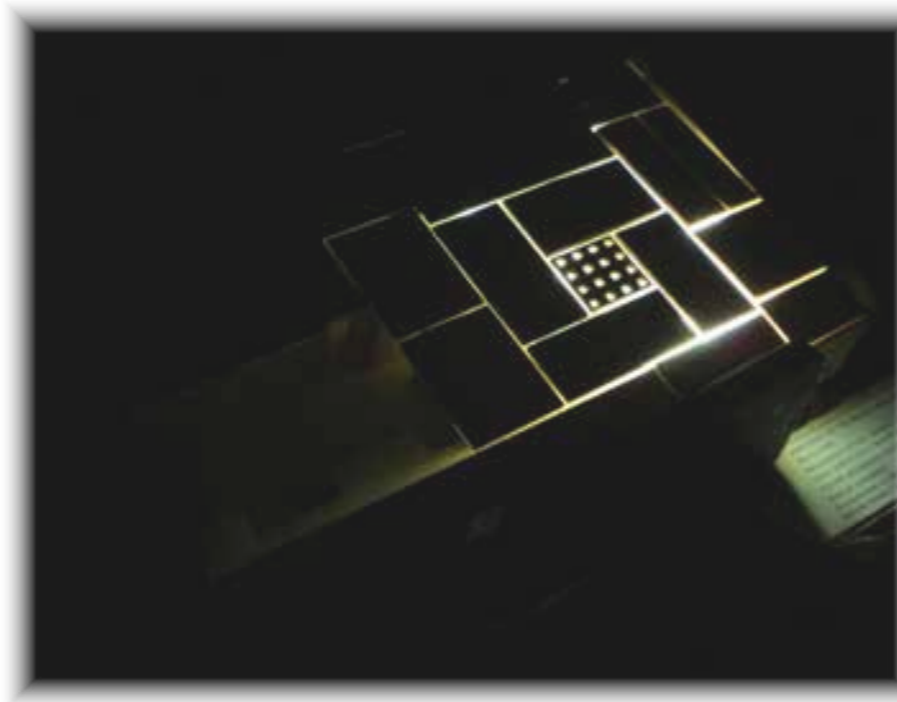
independent from others



gaps are used for skylight and strengthening concept

Research on Non-Typological Precedent Studies---The Therme Vals: Peter Zumthor

The Aspects Of Precedent Study Involved In Studio Design Project

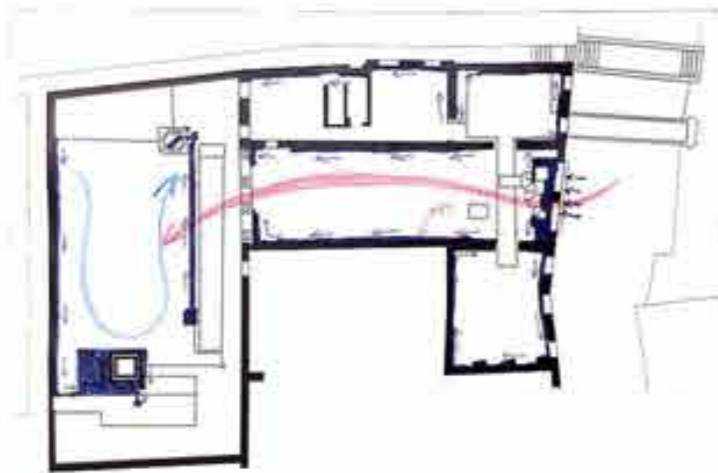


"Modular System Can Be Referred As the 'Coordinate System' (Framework) In Design"

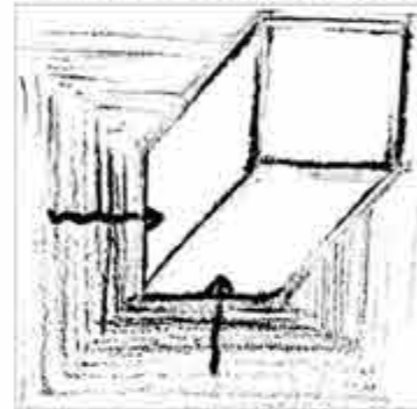
"The Atmosphere of Gradation between Light and Dark (Created By Skylight and Opening): Atmospheric Sections from Case Study Embed the Special Quality into Design Proposal."

Research on Non-Typological Precedent Studies---Fondazione Querini Stampalia: Carlo Scarpa

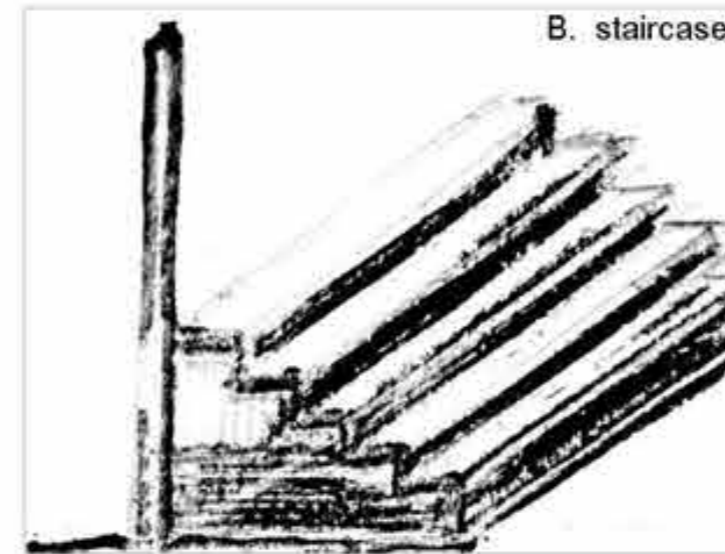
The Strategies of Integrating Water with Design (Referenced Work)



Building is enclosed by water



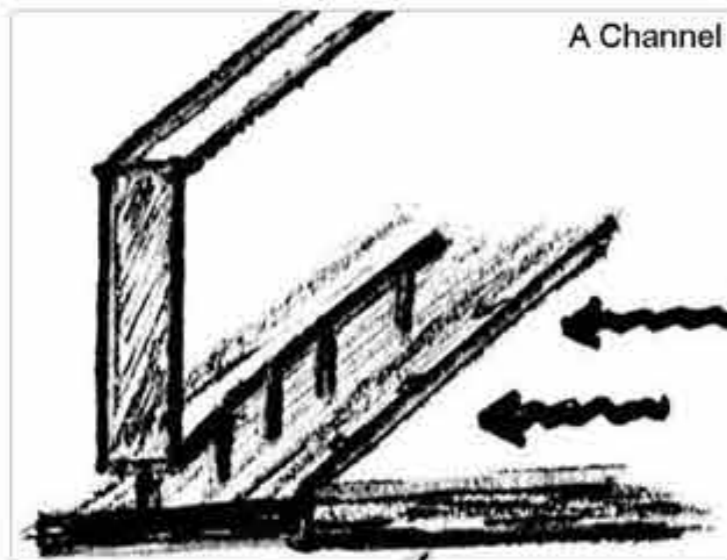
Allow water going into the building



Hollow spaces below stairs allow flood going through



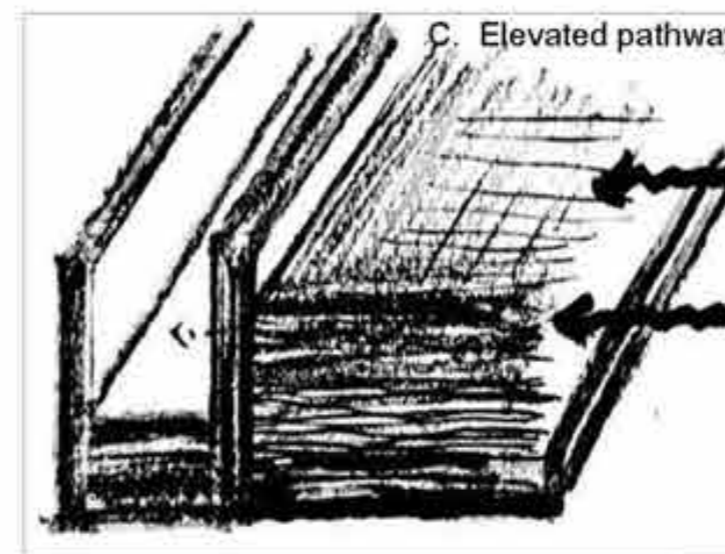
How to deal with flood within building



Water flows into channels that surround the elevated walkway



Channels separate walkway from walls

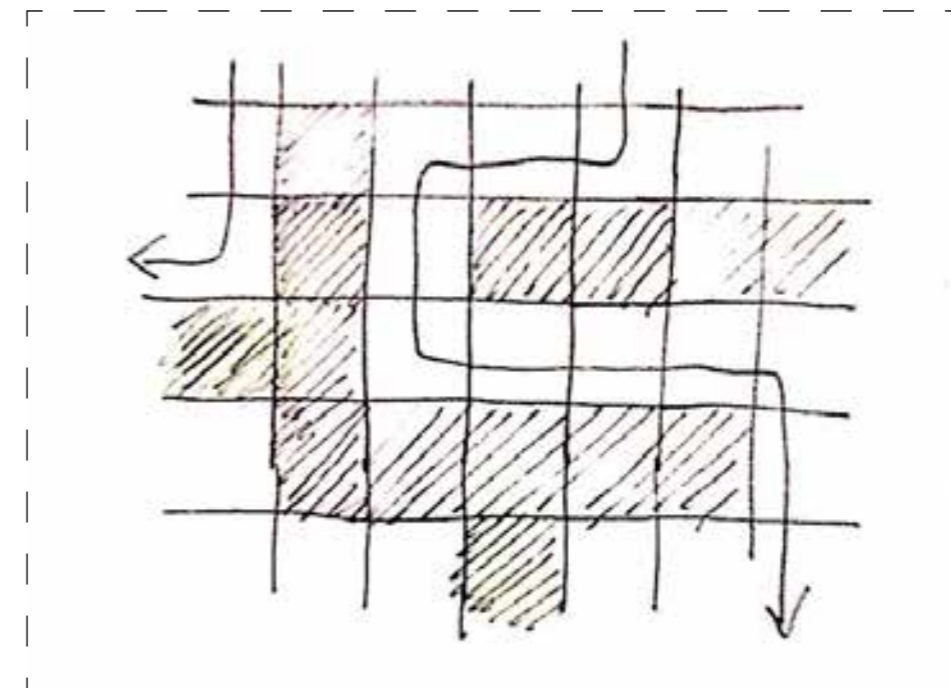
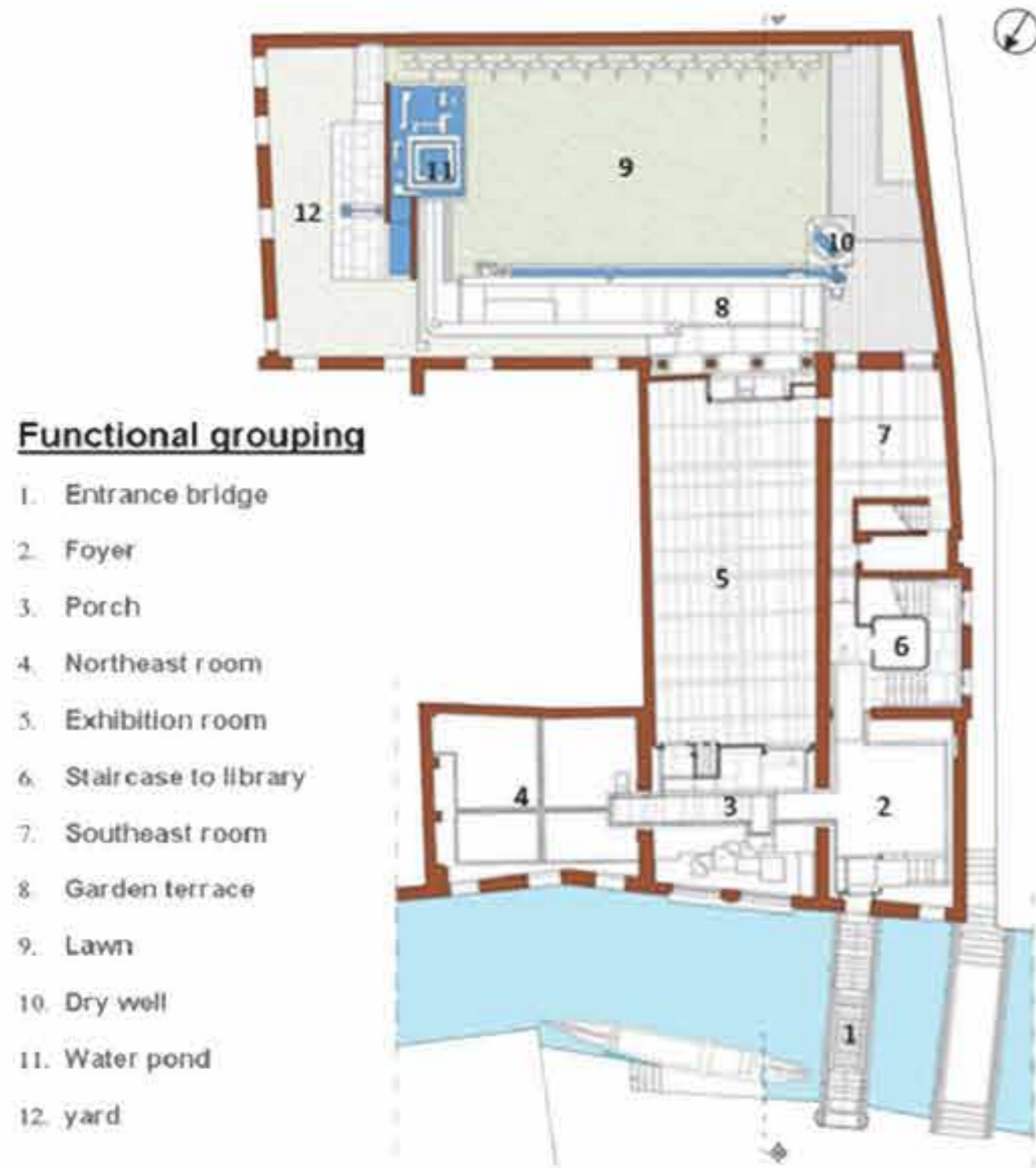


Water from canal is allowed to pass under the water gates into recess where a cascade of steps rise up to an elevated walkway.

Research on Non-Typological Precedent Studies---Fondazione Querini Stampalia: Carlo Scarpa

Basic Functional Grouping (Referenced Work)

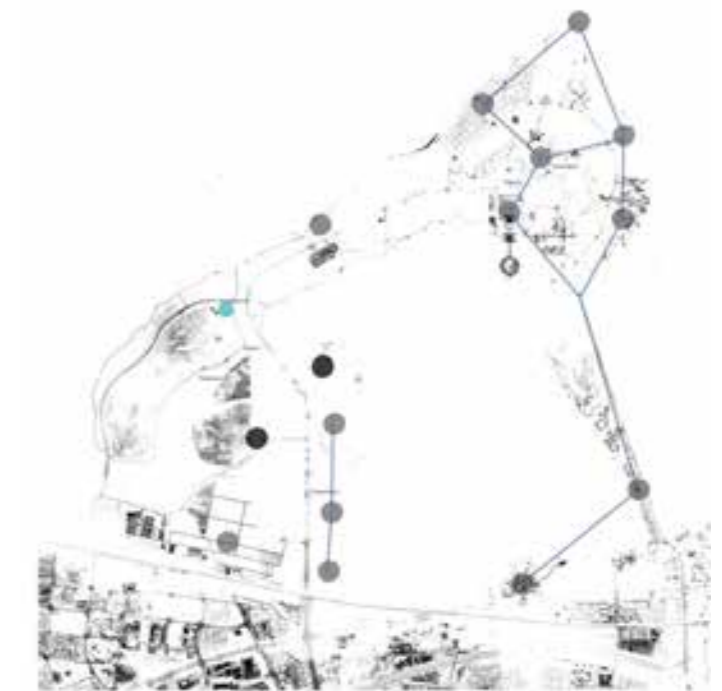
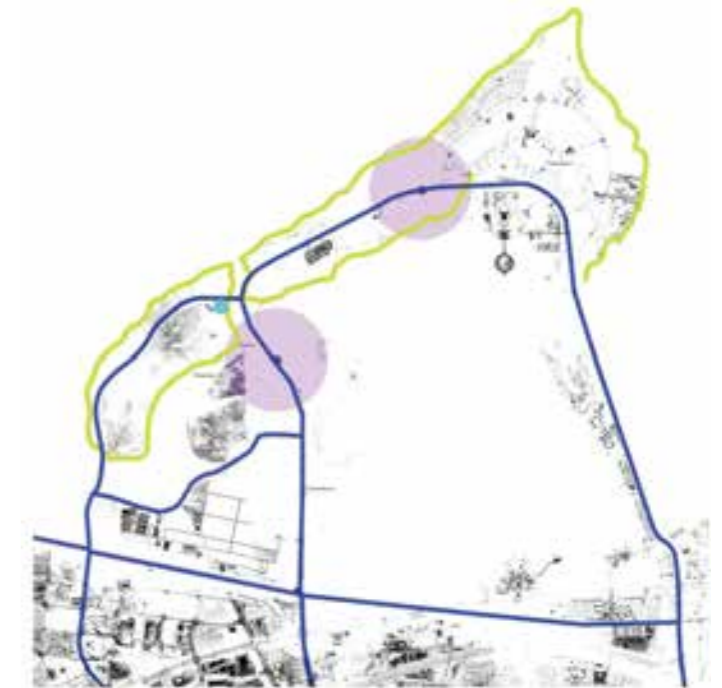
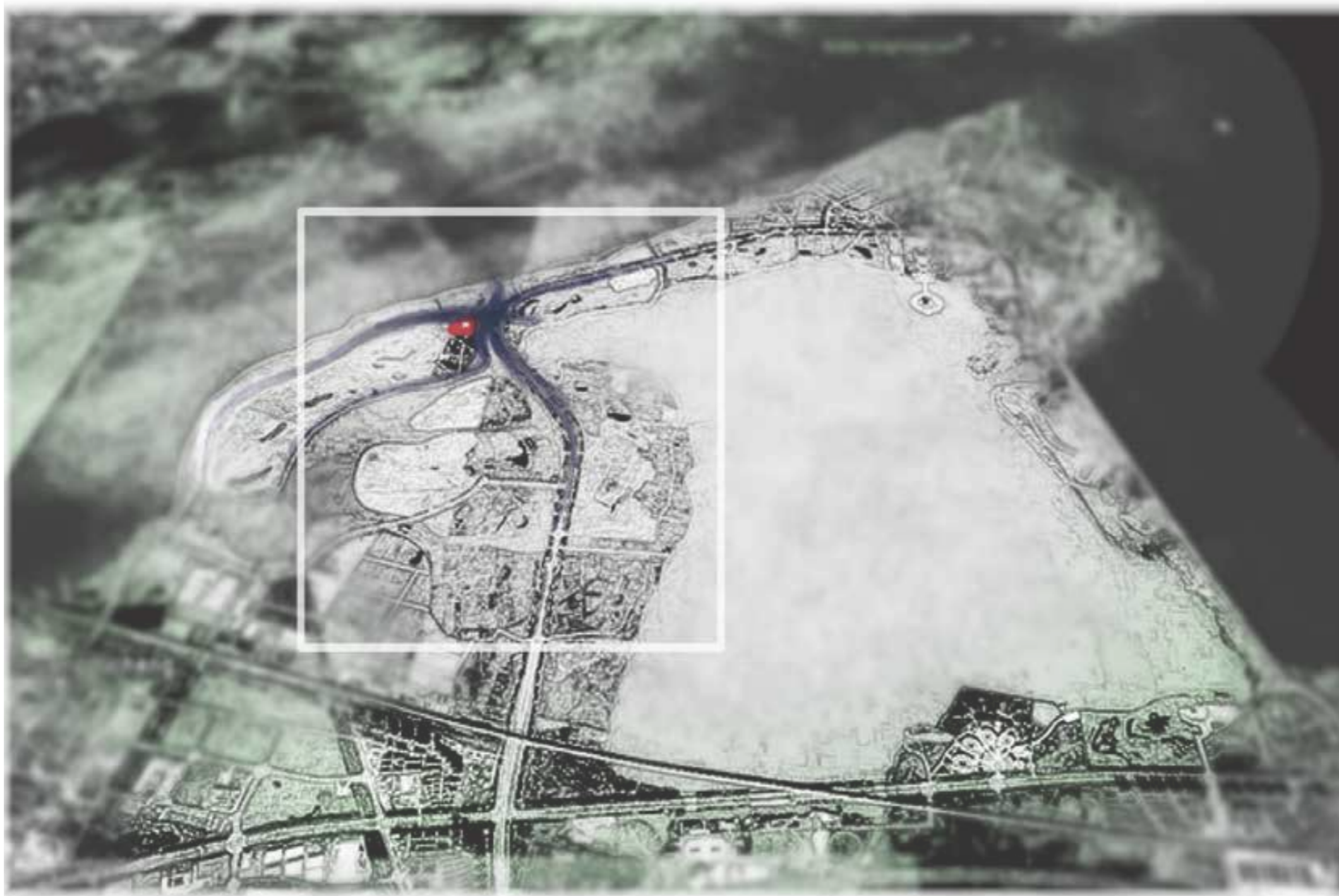
The Aspects Of Precedent Study Involved In Design Project



"Non-Typological Precedent Study:
Fondazione Querini Stampalia / Carlo Scarpa
Integrating the Feature of Site with Design Concept:
Considering and Emphasizing the Dropping of Rain into Design Proposal. "

Site Analysis: Research on Wetland

Basic Information of Site (Groupwork)



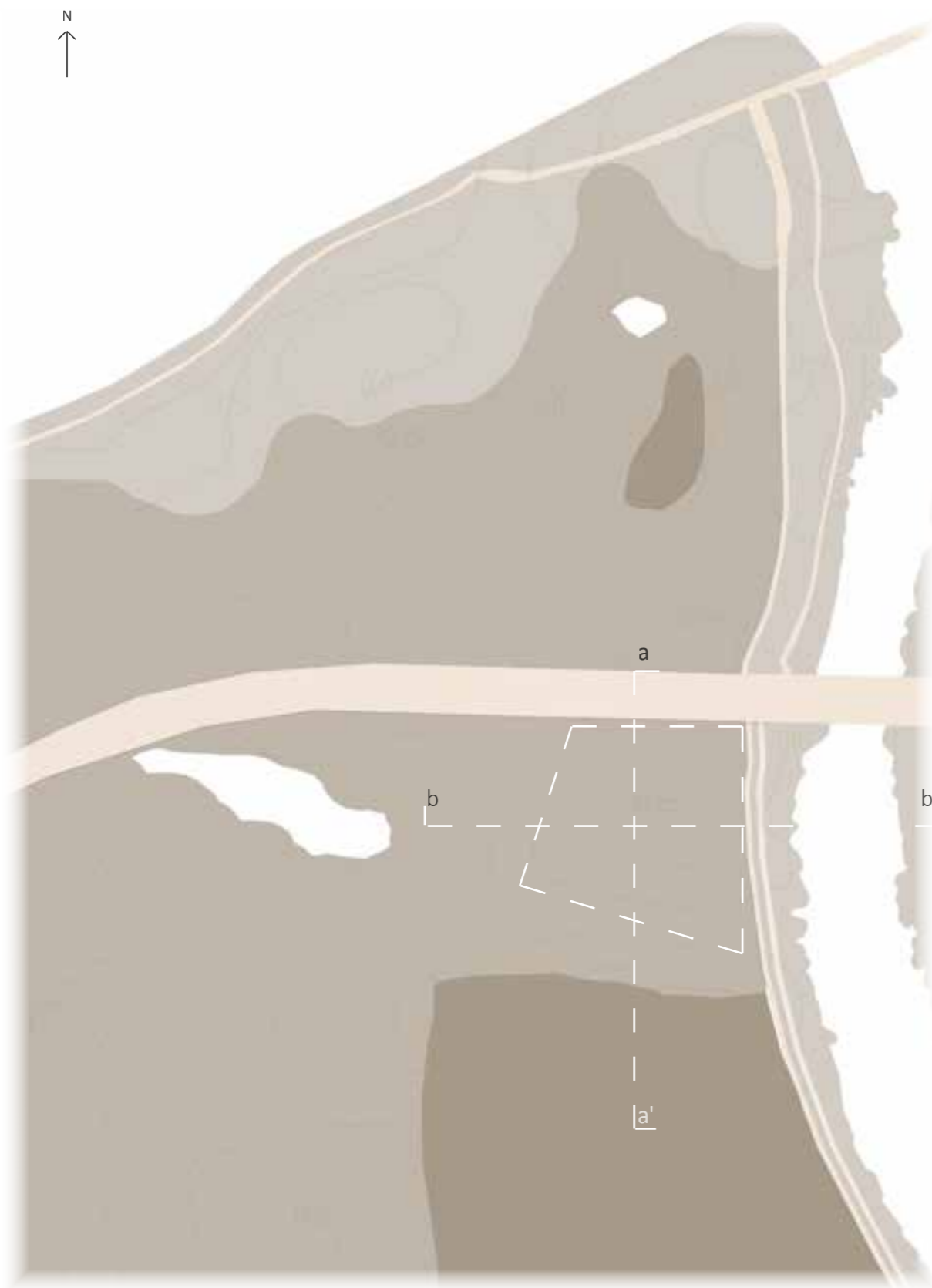
“# The Satellite Photo Of Yangcheng Lake Peninsula and Introduction from Design Brief:

Yangcheng Lake Peninsula Is Located In The Northeast Of The Suzhou Industrial Park (SIP). With Over 30 Kilometers Of Shoreline, It Has The Features Of A Typical Water Landscape In South Jiangsu Province. The Peninsula Is Home To More Than 80 Kinds Of Birds, 40 Planktons And 30 Benthos. It Has Over 200 Kinds Of Wild Plants, 200 Types Of Cultivated Plants And 30 Aquatic Plants.

The Diagram In Right Top: The Main Traffic Line In Yangcheng Lake Peninsula (Yellow Line Shows The Bike Lines And Blue Line Shows The Main Road)

The Diagram In Right Bottom: The Main Or Future Possible Commercial, Tourist, Social And Service Spots In Yangcheng Lake Peninsula”

Site Analysis: Research on Wetland



- woodland
- herbage/shrub
- helophyte
- road/lane

Existing Site Plan (1:3000)



"Flat Terrain"



"River with Stagnant Water"



"Tour Line along Shore"



"Ditch in Site"



Existing Site Section a-a' (1:1200)

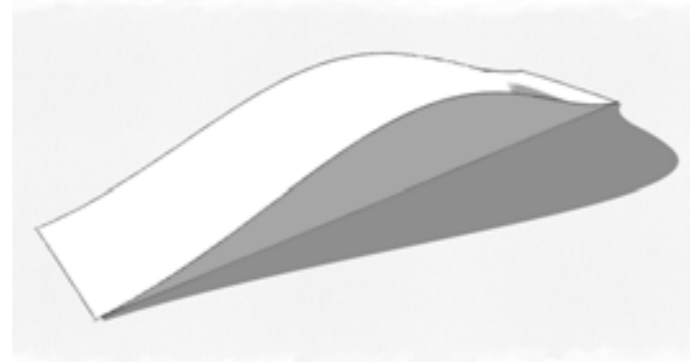


Existing Site Section b-b' (1:1200)

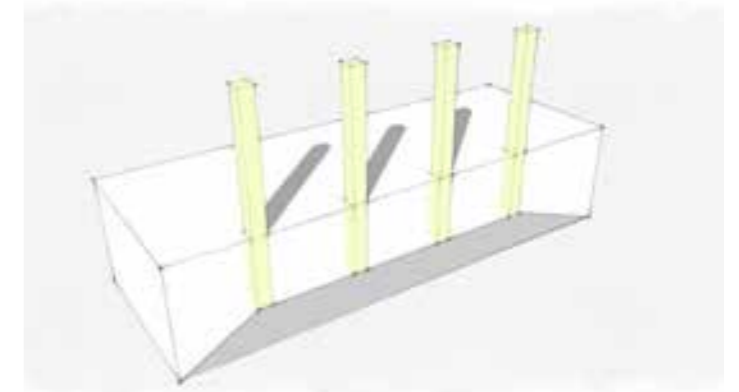
"The existed site plan and sections show the basic contextual condition of site and surrounding environment. The plan shows the accessibility of site (basic traffic lines around the site), the physiognomy of site (the location of different type of wetland vegetation) and the required boundary of site (white dash line). The sections show the relationships among different part of site in terms of height and physiognomy."

Site Analysis: Research on Wetland

Site Condition and Relevant Strategies



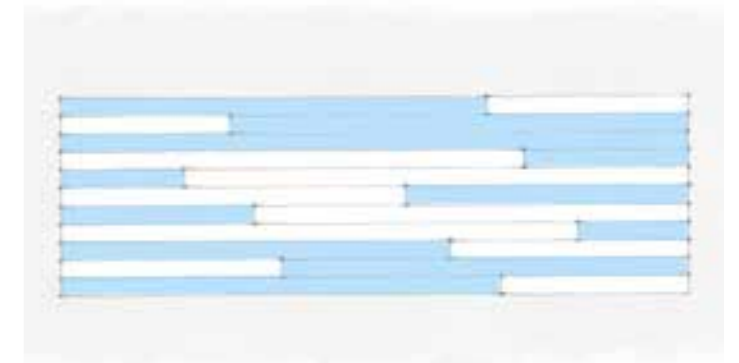
"Typography: Gentle slope and generally even topography with various vegetation
Strategy: Wetlands can be combined with architectural design, such as gradually combining wetland surfaces with roof"



"Physiognomy: The wetland physiognomy need to be protected during the foundation construction period
Strategy: Foundation construction method: the piles foundation can be used in wetland site. The depth of piles need to touch rocks"



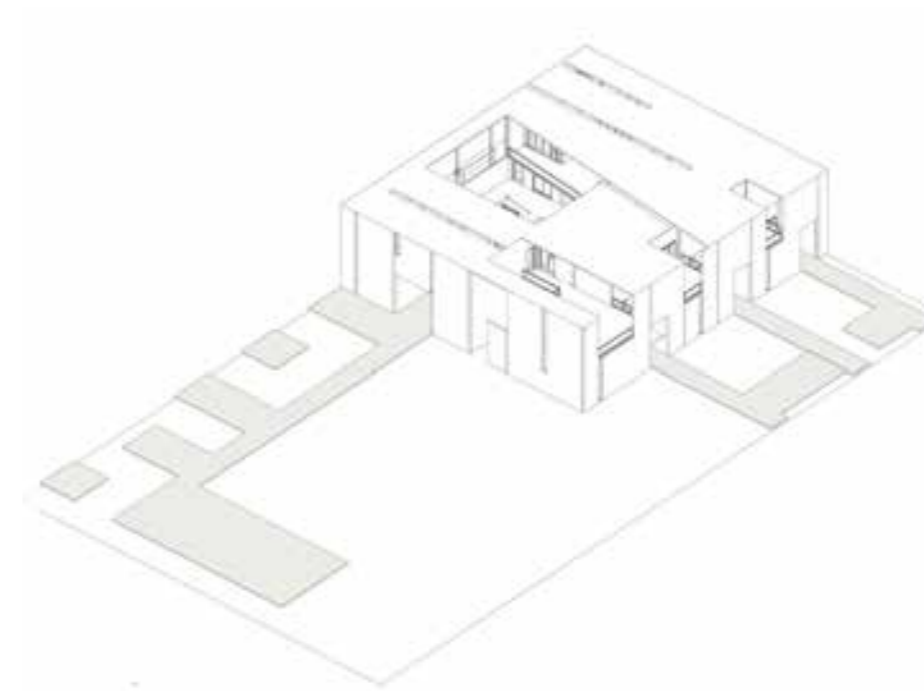
"Local birds: Protecting local egrets from external lighting reflections which leads birds to confusion
Strategy: The envelope materials and glazing areas should be designed carefully for avoiding external reflection light"



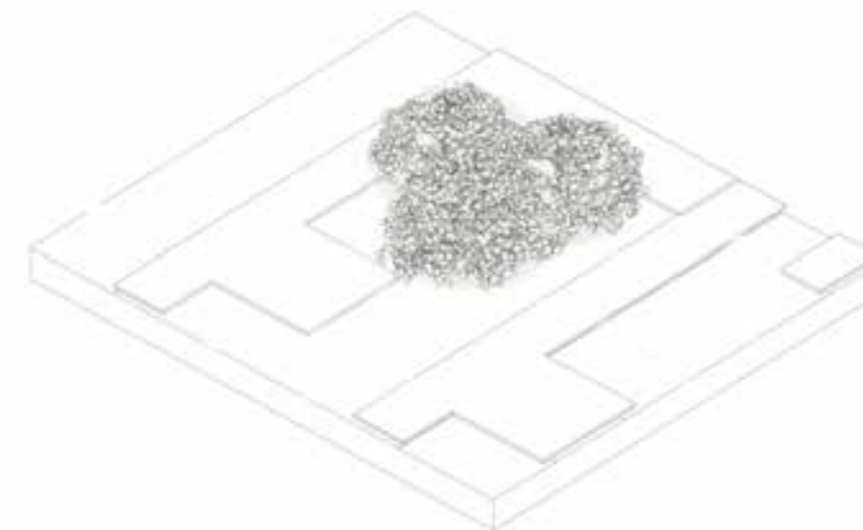
"Special location: The actual site is located between water and land
Strategy: The interpenetrative spaces of water and land can be created for blurring the boundary between river and architecture"

Site Analysis: Research on Wetland

Site Condition and Relevant Strategies



"Strategy: Responding To Proximity Of Site: Boardwalks Can Not Only Protect Wetland But Also Can Connect Architecture With Surrounding Scenery Or Facilities."

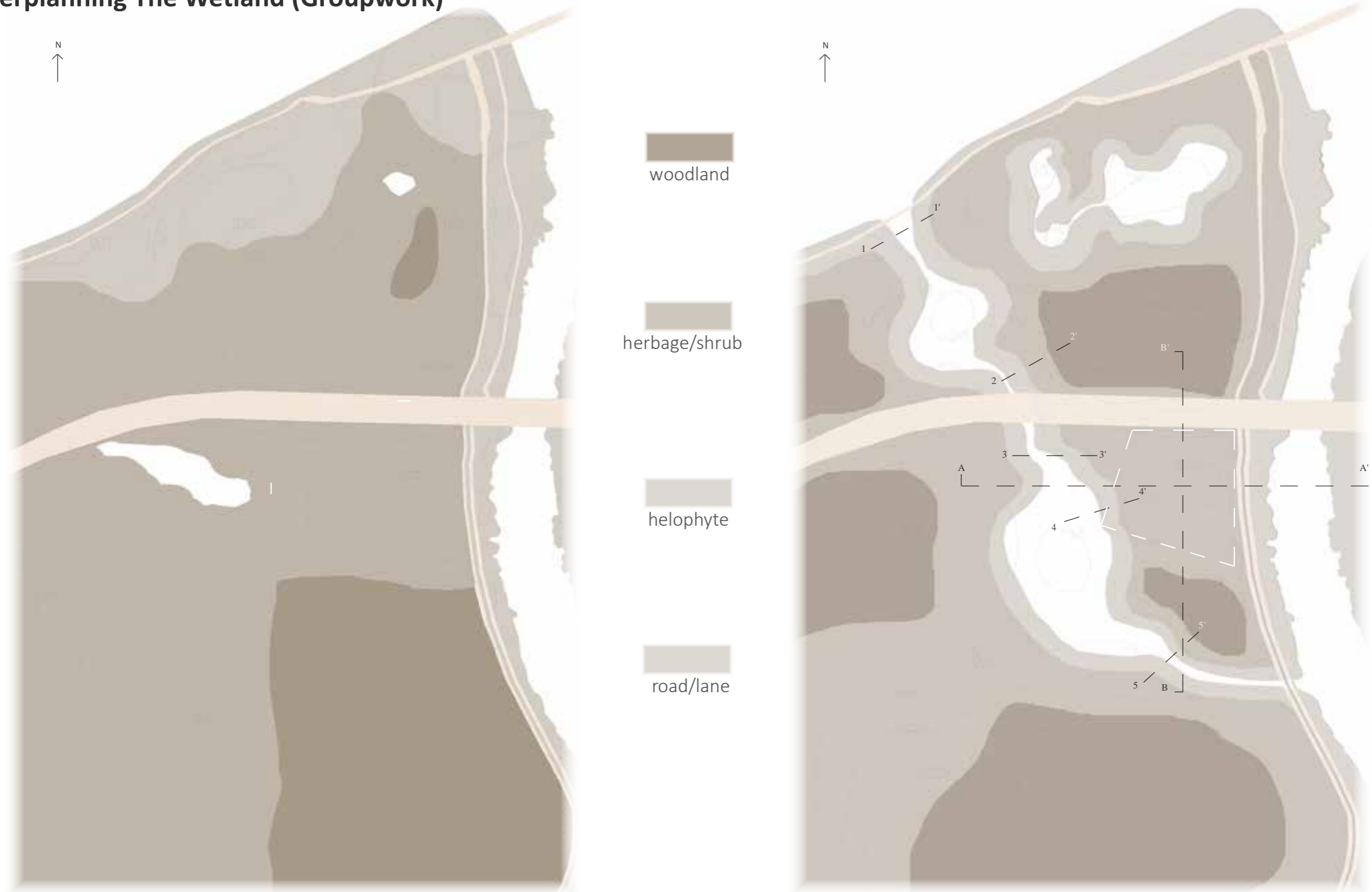


"Strategy: Responding To The Vegetation Of Site:
The Unique Wetland Vegetation Can Be Highlighted And Involved With The Programme Of Design Proposal."

Chapter 3: Design Process

Preliminary Design Stage (Crit 1)
Explorative Design Stage (Crit 2)
Design Resolution Stage (Final Crit)

Preliminary Design Stage (Crit 1)
Masterplanning The Wetland (Groupwork)



“The plans above show the existed site plan (the plan left; scale 1: 3500) and designed site plan (the plan right; scale 1:3500). The masterplanning of wetland has been done for introducing diverse variation of wetland vegetation, which will enrich the contextual environment of site and the deliberate site responding of design project will be considered correspondently. The sections of designed site (cross sections and fragment sections) will be mentioned in this folio then.”



"Fragement Section 1-1' (1:400) This fragement section shows the relationship among river, helophyte and herbage plants"



"Fragement Section 2-2' (1:400) This fragement section shows the relationship among river, helophyte, herbage and arbor plants"



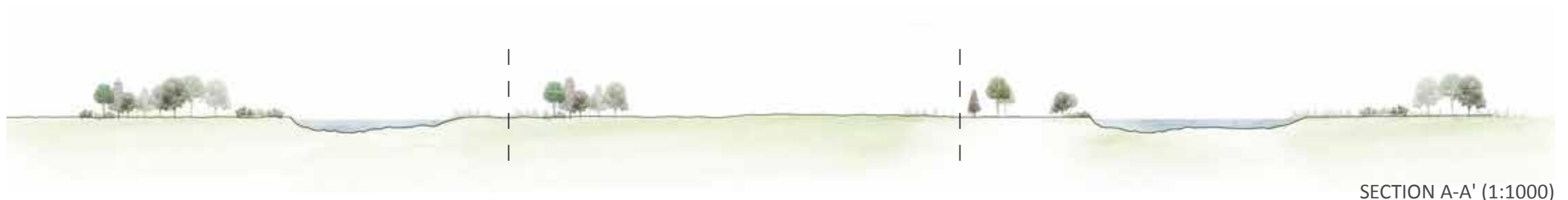
"Fragement Section 3-3' (1:400) This fragement section shows the relationship among river, helophyte and herbage plants"



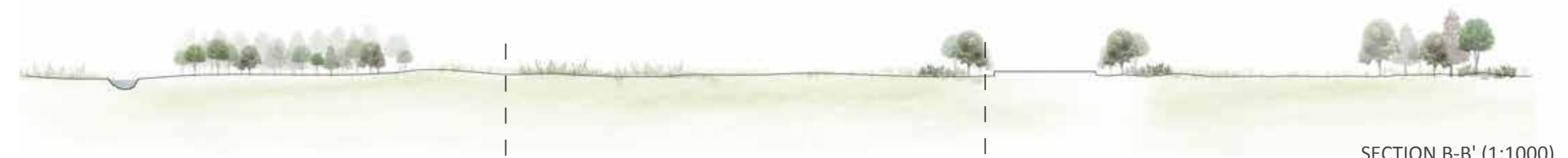
"Fragement Section 4-4' (1:400) This fragement section shows the relationship between lake and actual site"



"Fragement Section 5-5' (1:400) This fragement section shows the relationship among river, helophyte, herbage and arbor plants"



SECTION A-A' (1:1000)



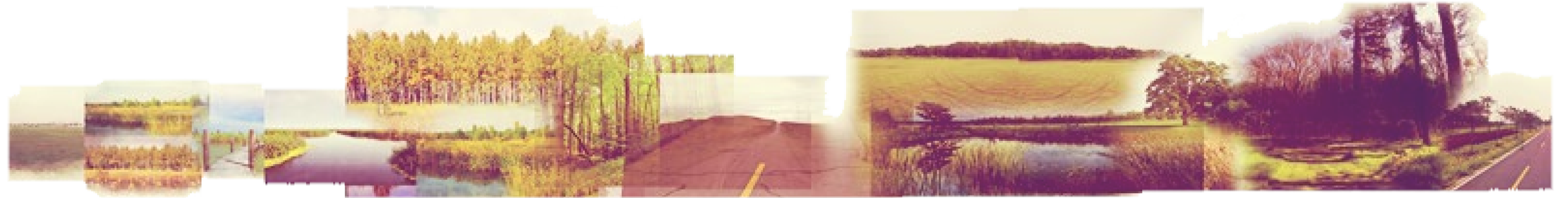
SECTION B-B' (1:1000)

Preliminary Design Stage (Crit 1)

Site Montage As Designed (Groupwork)



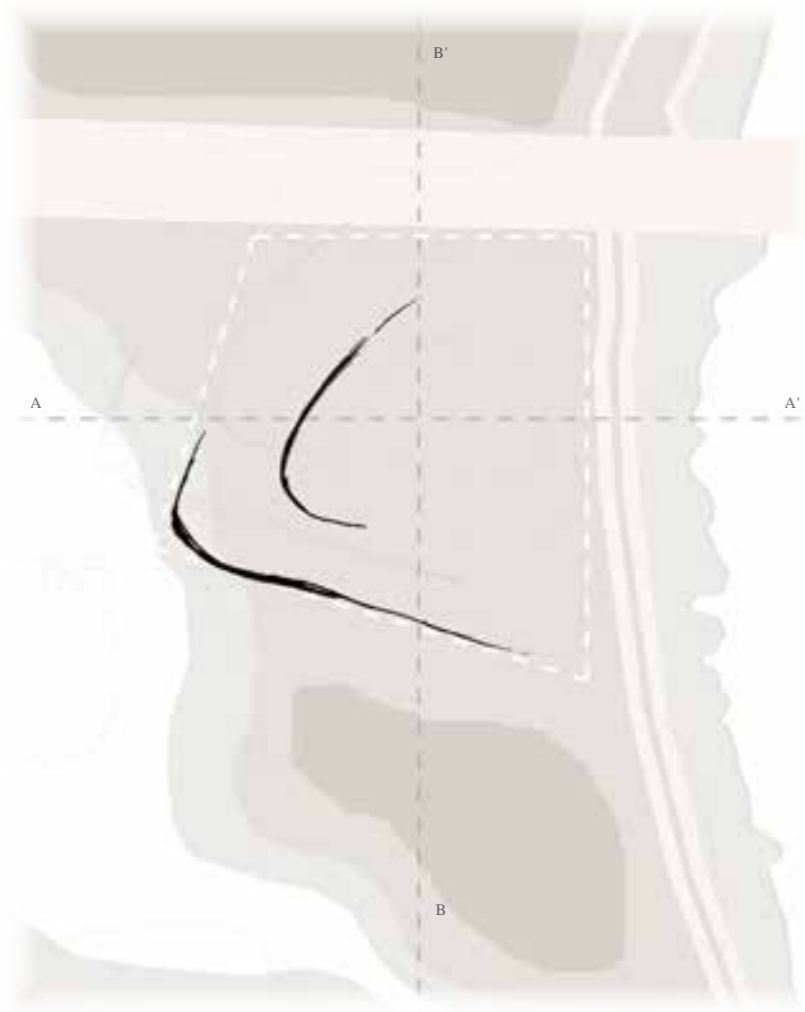
"Photo Montage of West Side of Proposed Site"



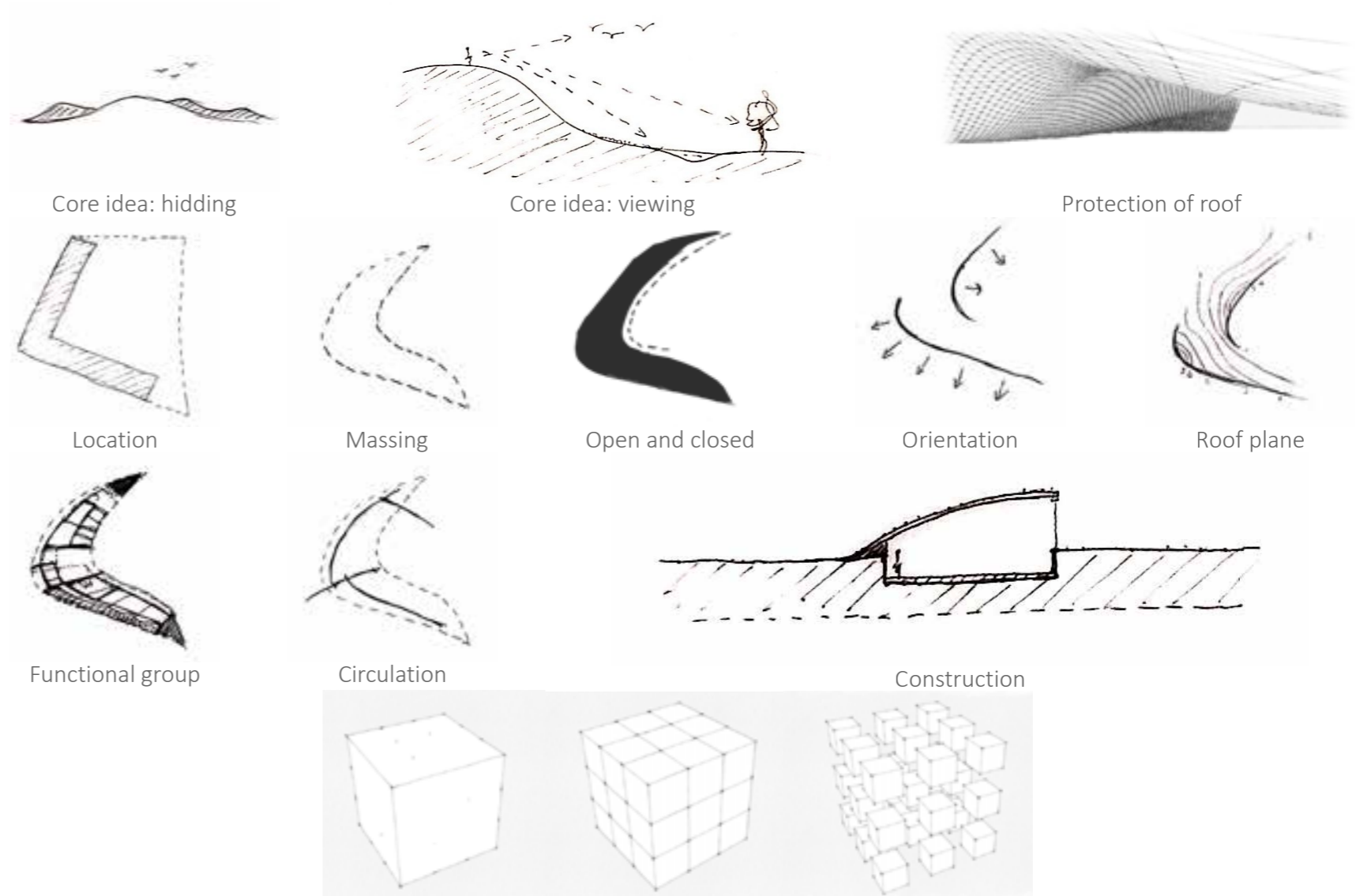
"Photo Montage of East Side of Proposed Site"

Preliminary Design Stage (Crit 1)

Siting Options And Relevant Architectural Concepts



Schematic Plan Option #1 (1:2000)



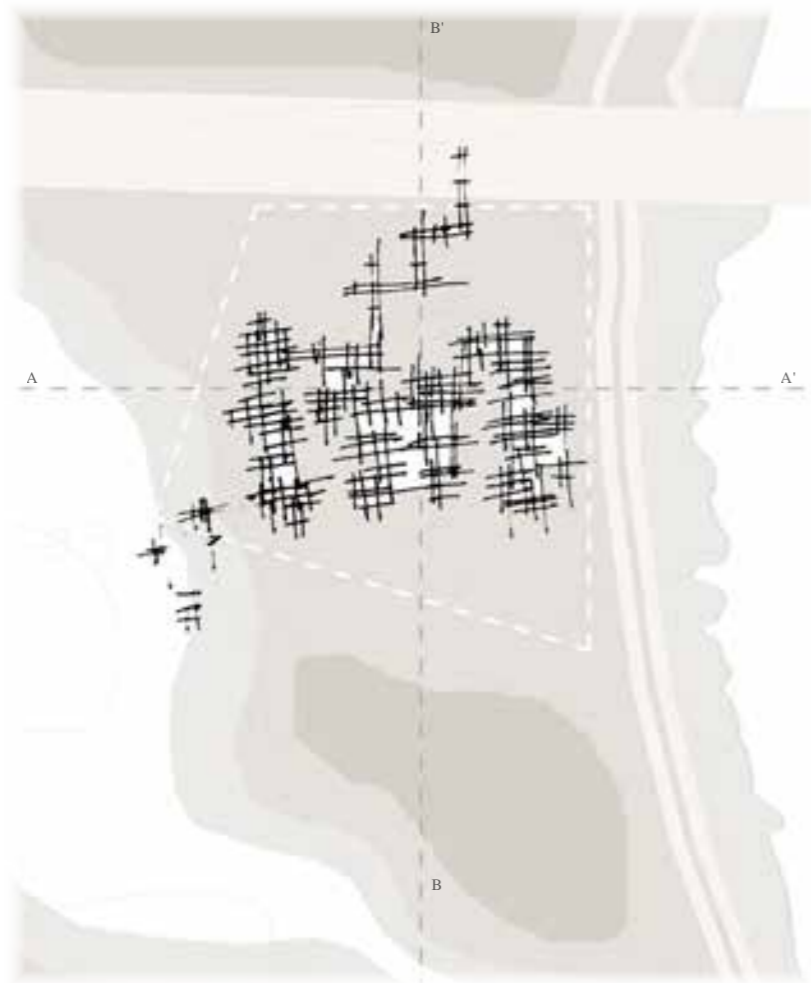
Design method: from whole to part



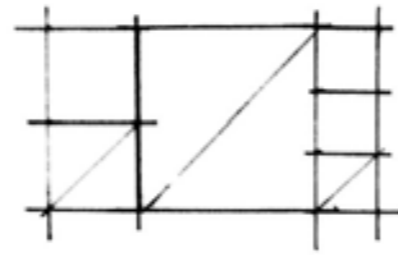
Schematic Section A-A' (1:1000)



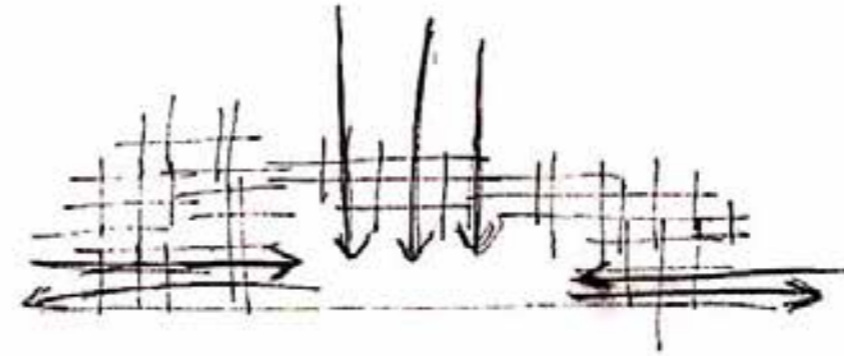
Schematic Section B-B' (1:1000)



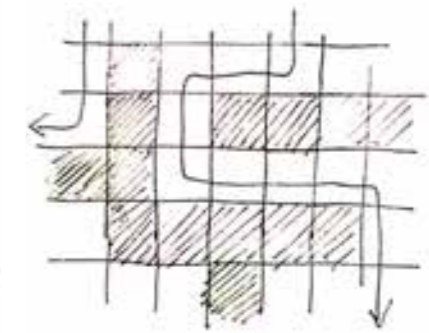
Schematic Plan Option #2 (1:2000)



Core idea: module



Core idea: water through architecture



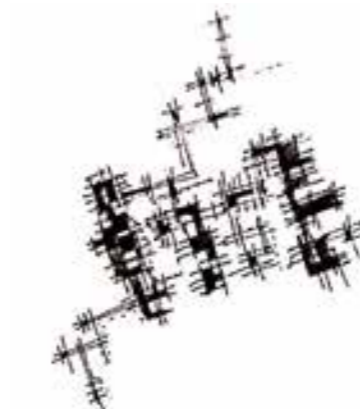
Circulation and functional groups



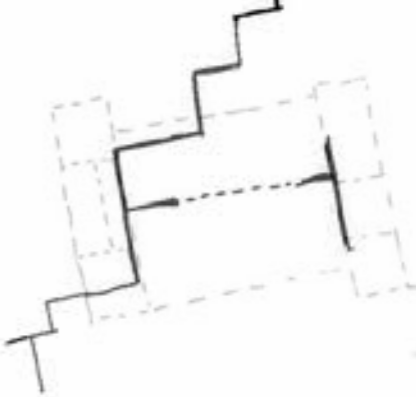
Location: between the water and land



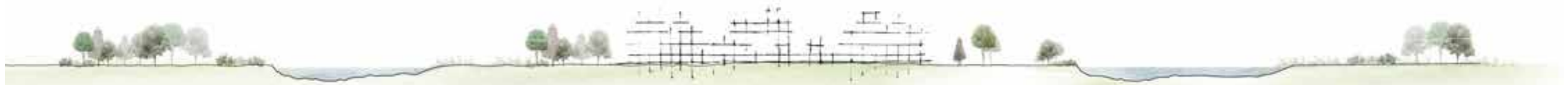
Core idea: fostering awareness



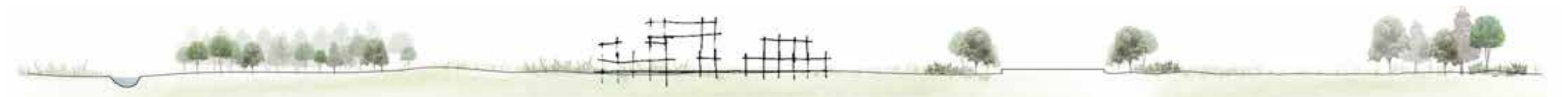
Open and closed space



Construction



Schematic Section A-A' (1:1000)



Schematic Section B-B' (1:1000)

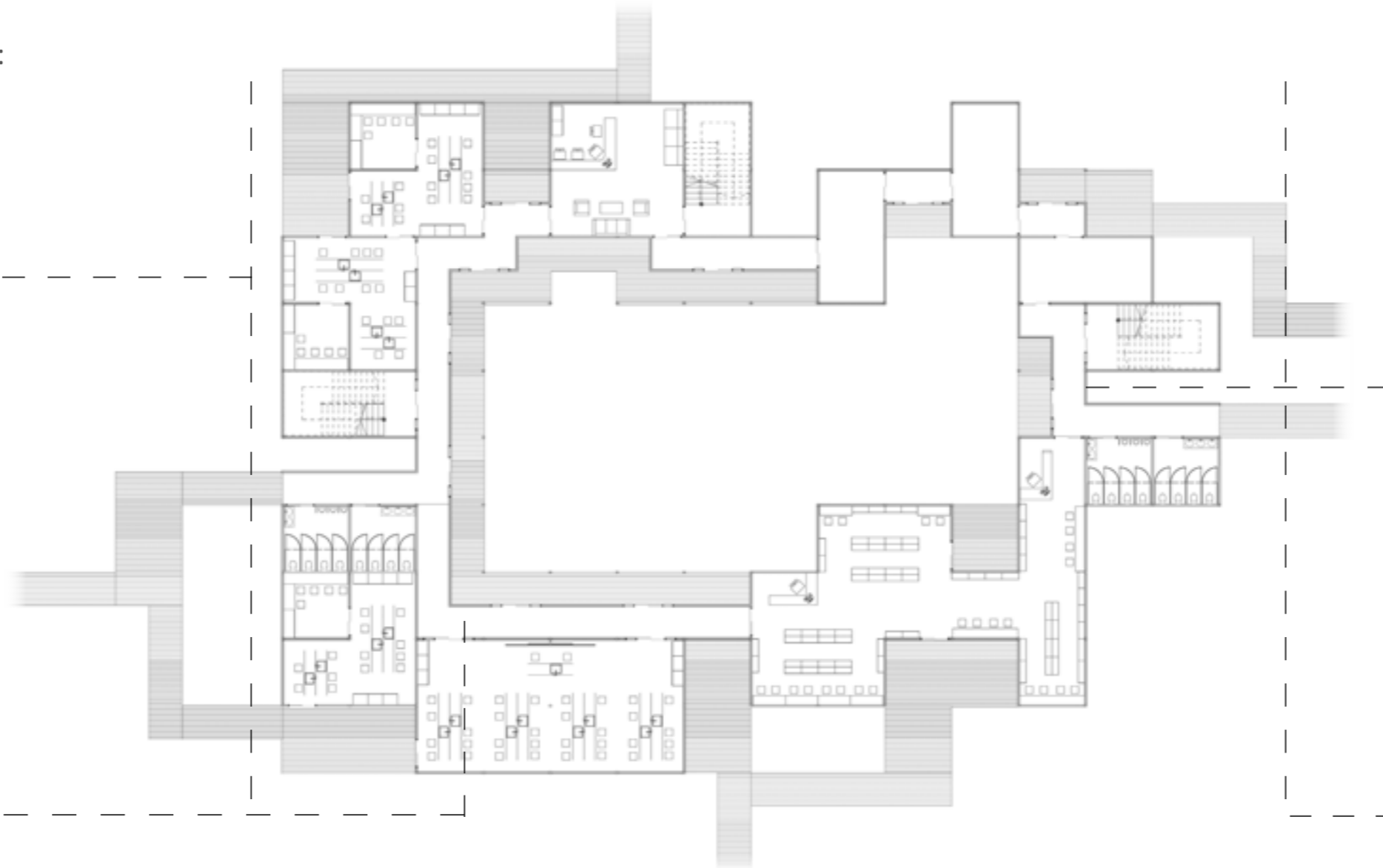
Explorative Design Stage (Crit 2)

Design Exploration 1 (labelled with the aspects which can be improved)



Creating rhythm to building: considering elevations

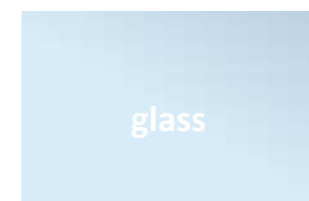
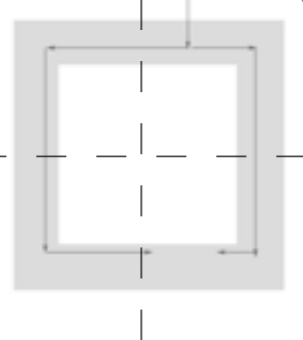
Different scenery: looking inward and outward



Simplifying and strengthening the "loop" circulation

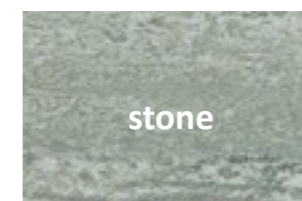
Various cladding materials for strengthening the rhythm in cladding

"Design Exploration 1: Ground Floor Plan (1:300)"



glass

+



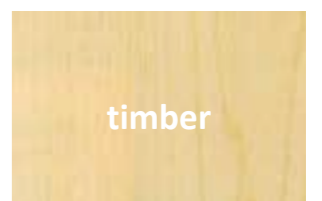
stone

or



concrete

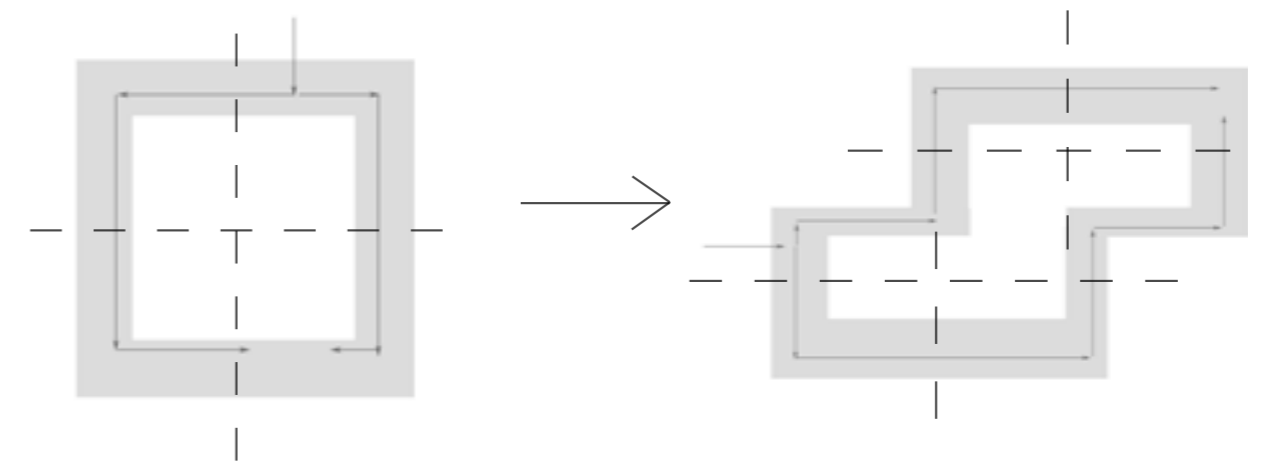
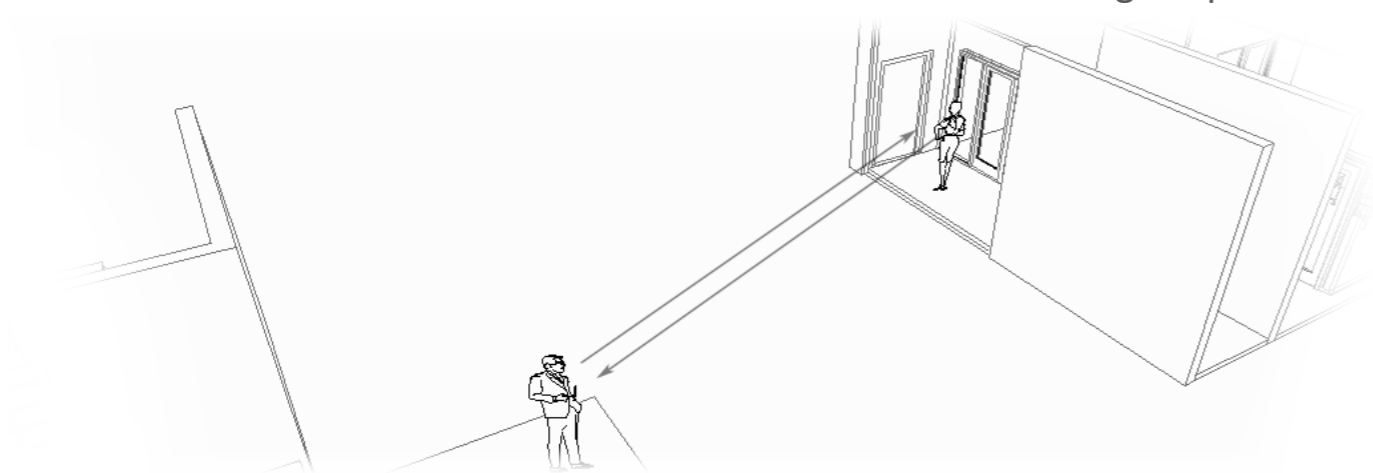
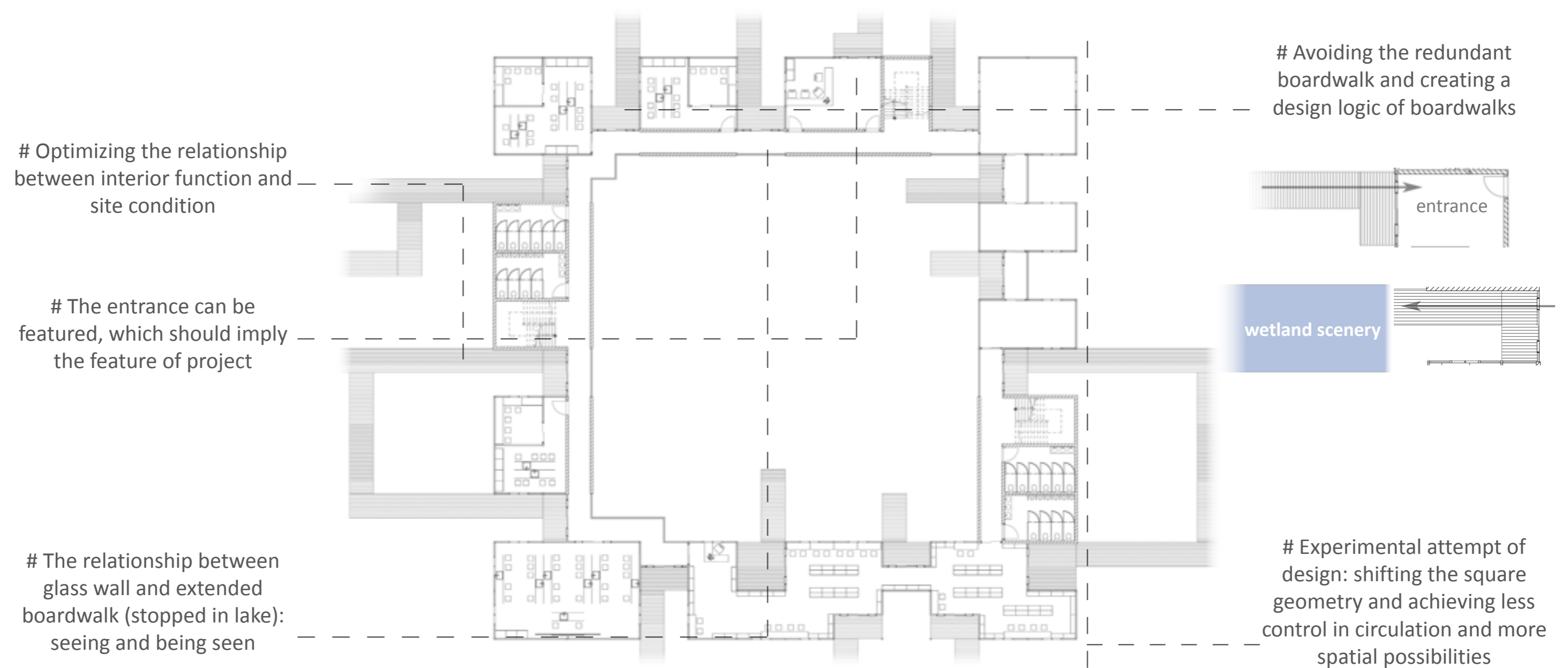
or



timber

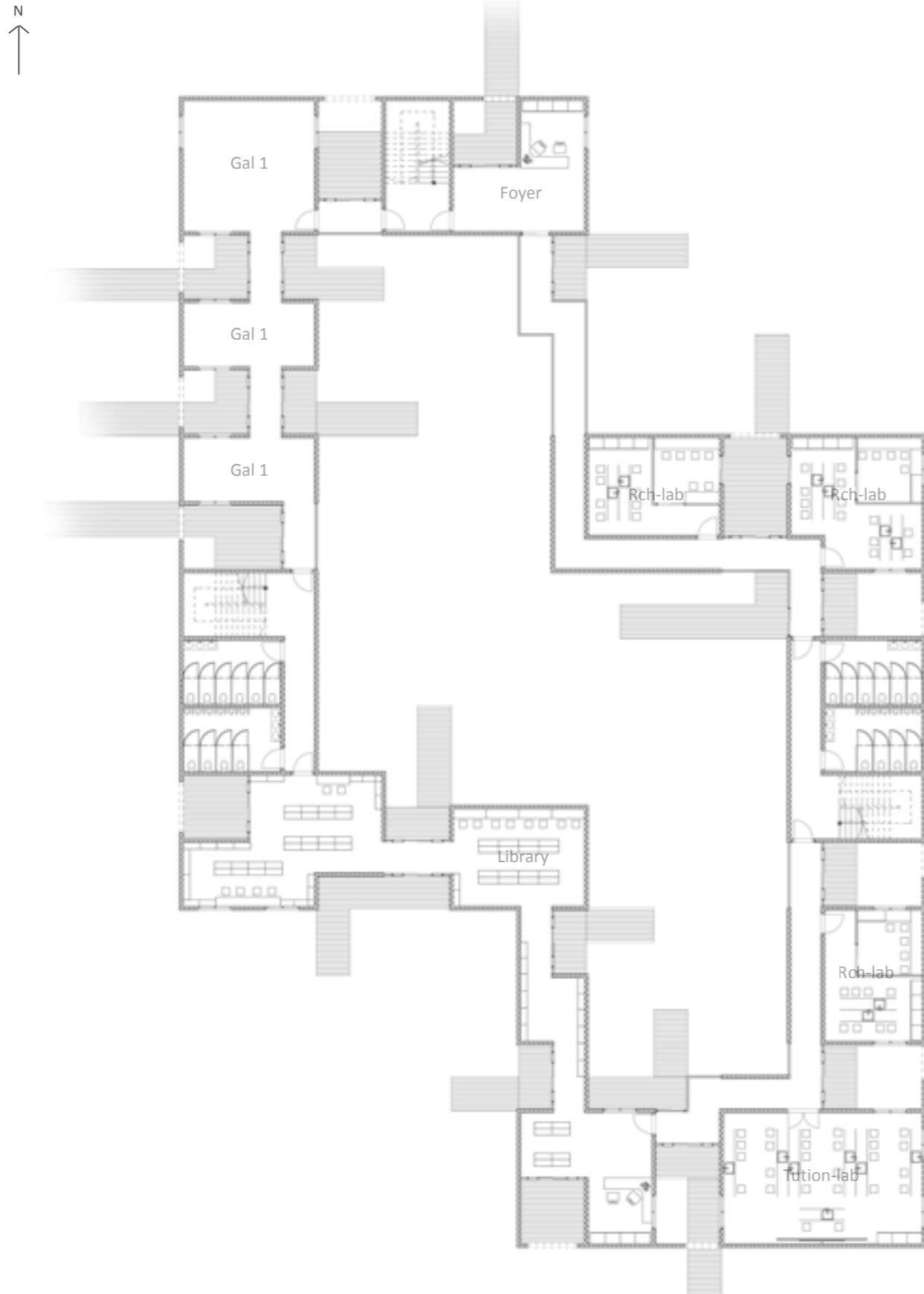
Explorative Design Stage (Crit 2)

Design Exploration 2 (labelled with the aspects which can be improved)

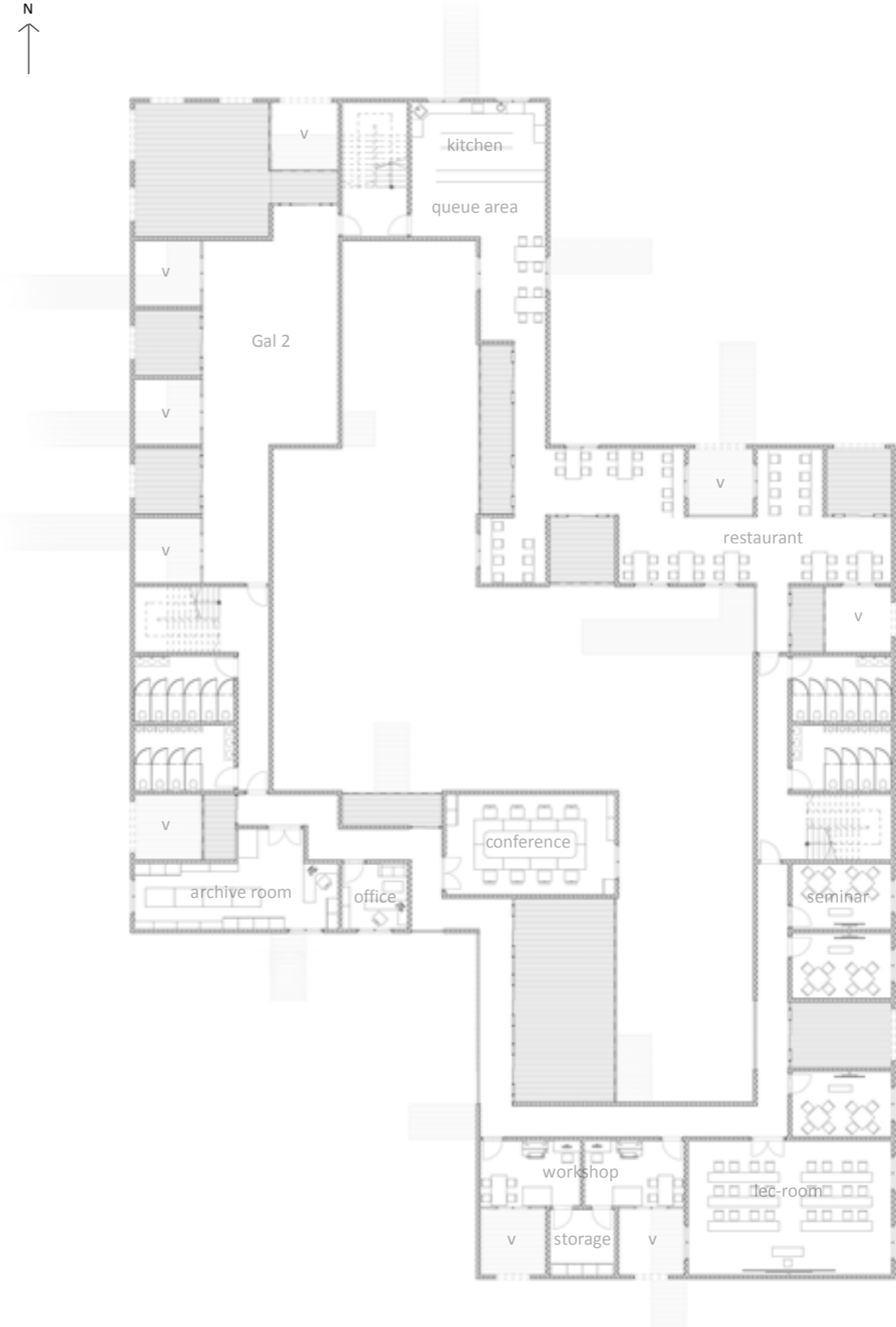


Explorative Design Stage (Crit 2)

Design Exploration 3



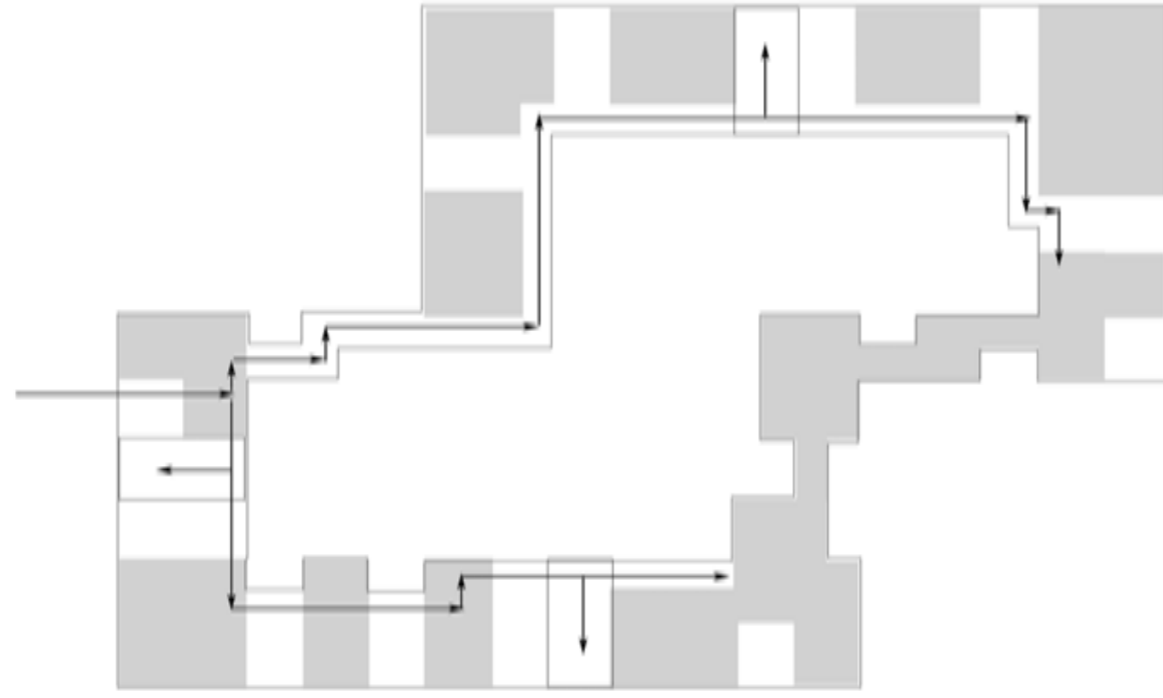
Ground Floor Plan (1:300)



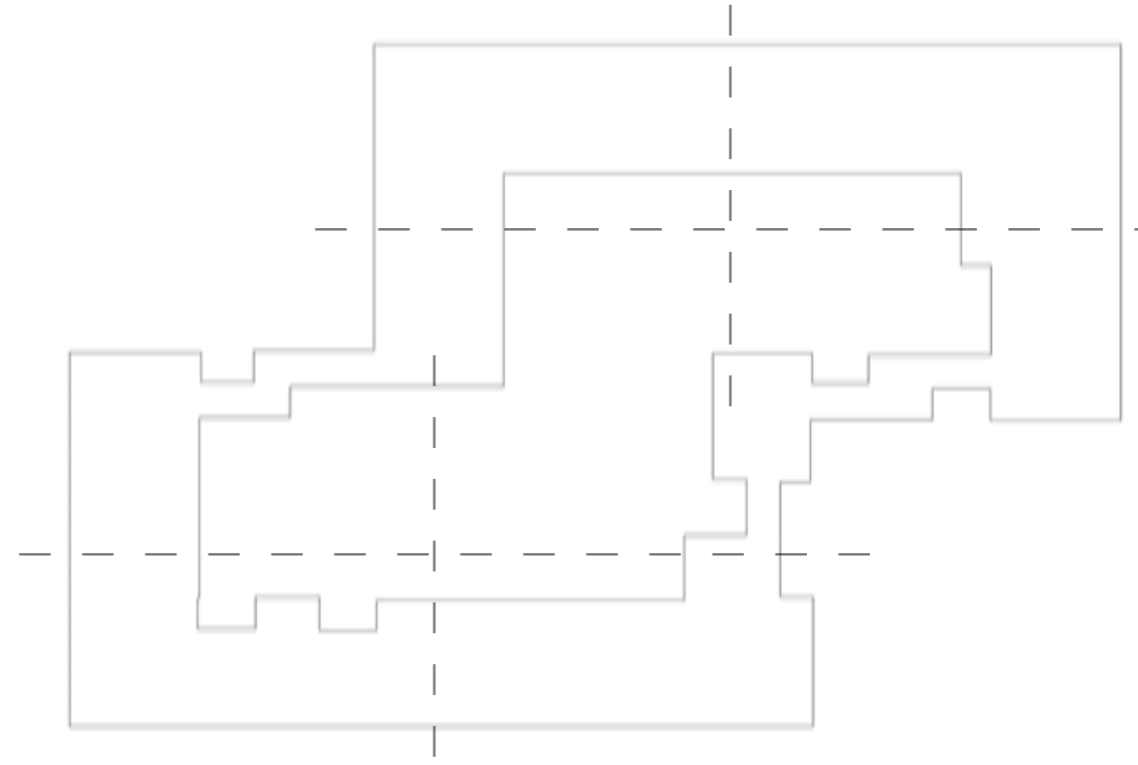
2nd Floor Plan (1:300)

Explorative Design Stage (Crit 2)

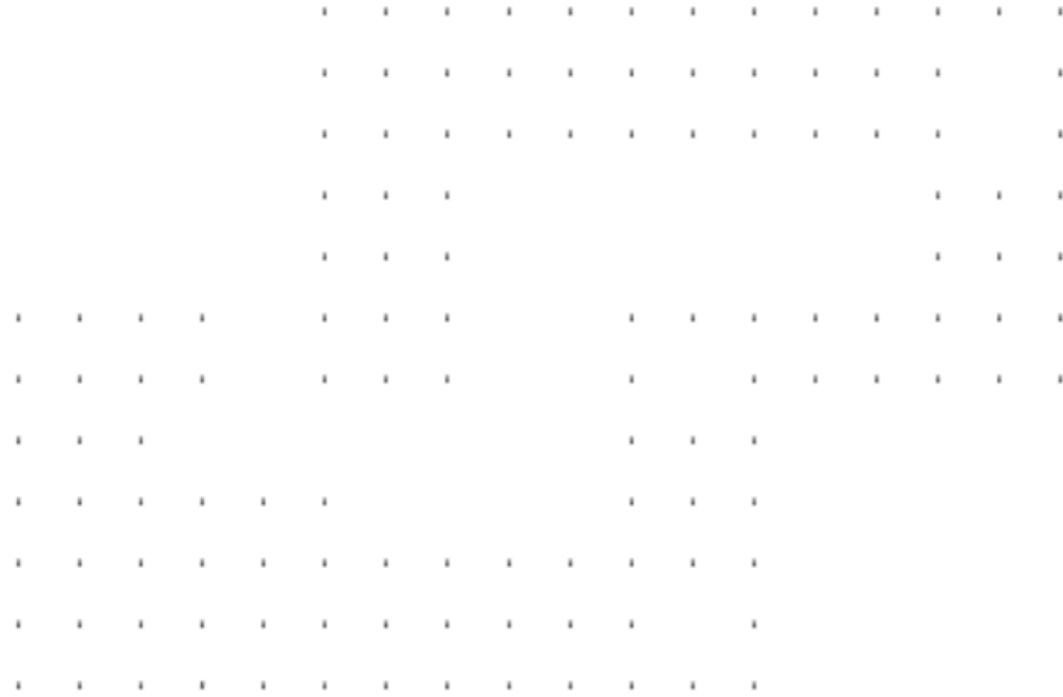
Design Exploration 3: Parti



Circulation To Use



Symmetry And Balance



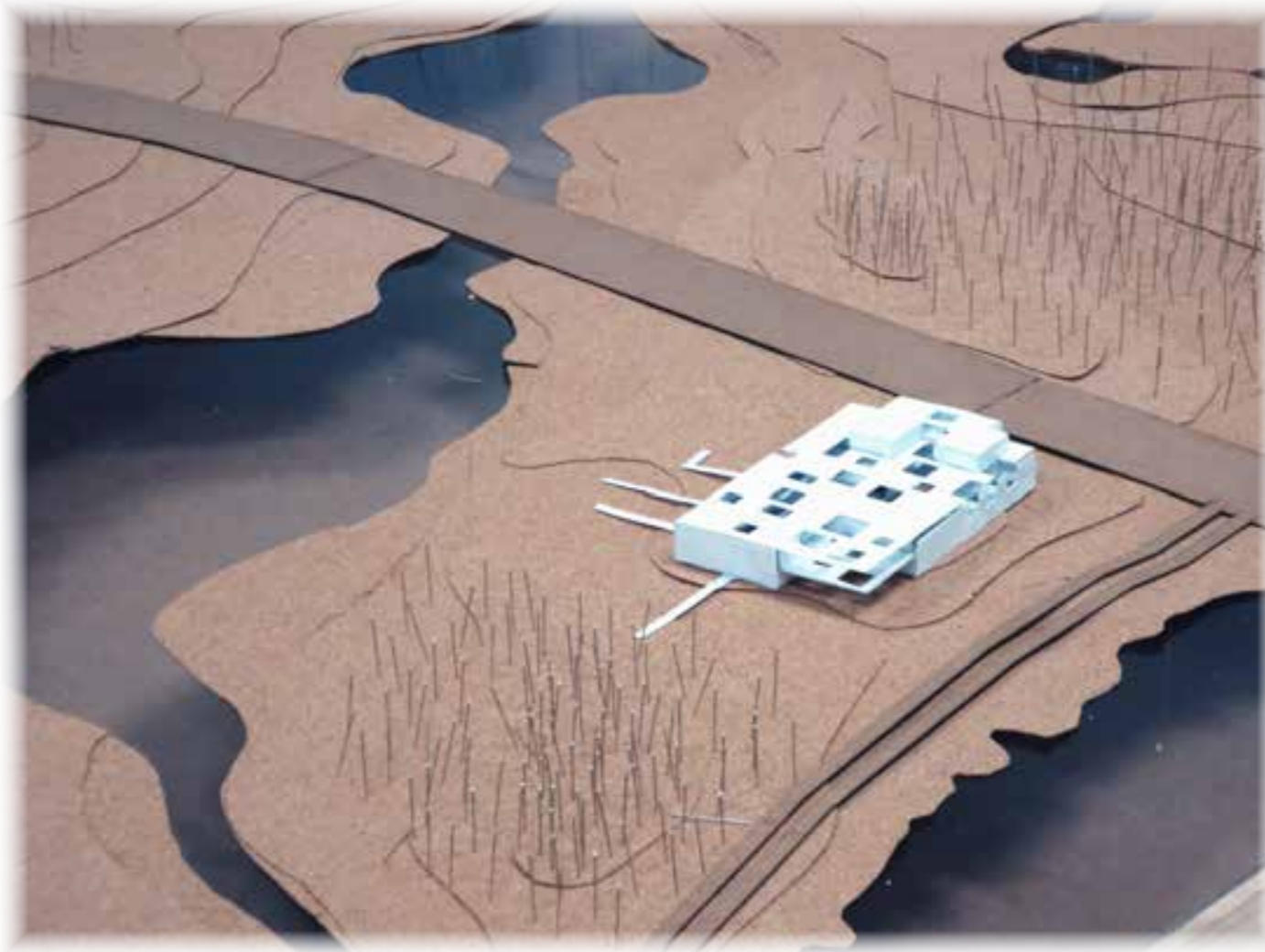
Structure



Additive And Subtractive

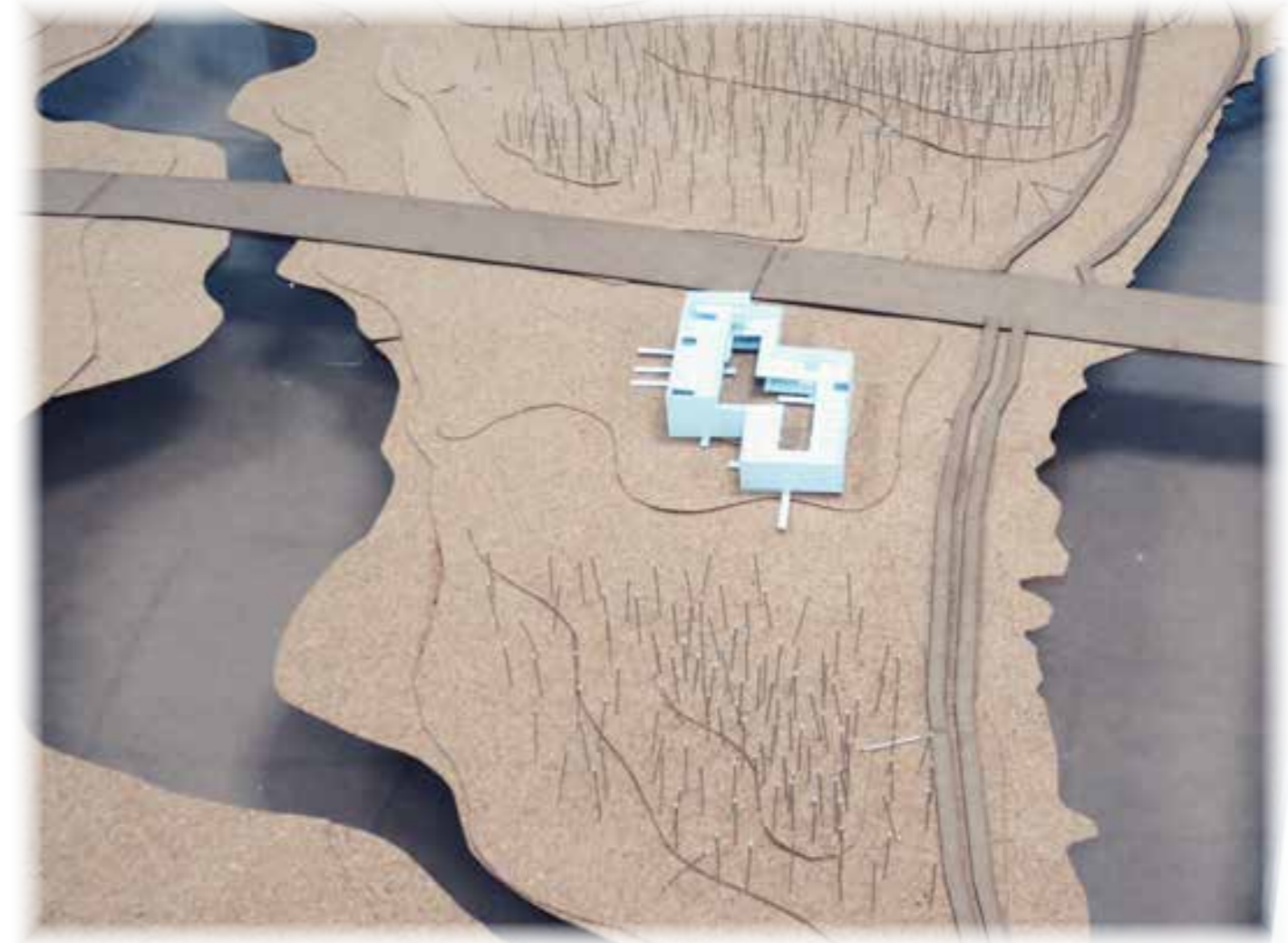
Explorative Design Stage (Crit 2)

Design Exploration 3: Site Model with Project Sitting Testing Model (1:500)



“Project sitting test model #1 (1:500):

there are two main things I learned from this model, including the consistency of design thinking and the importance of building envelope design. At the beginning of design exploration 3, there are two large-scale cantilevers in the two corners of project for filling the empty space in the two corners of project. However, the empty spaces in corners of project were the development of result of design exploration 2, which reminded me that I should follow the consistency of design thinking. The design was explored through plan mainly in this stage, so the building envelope design need to be considered more in later stage.”

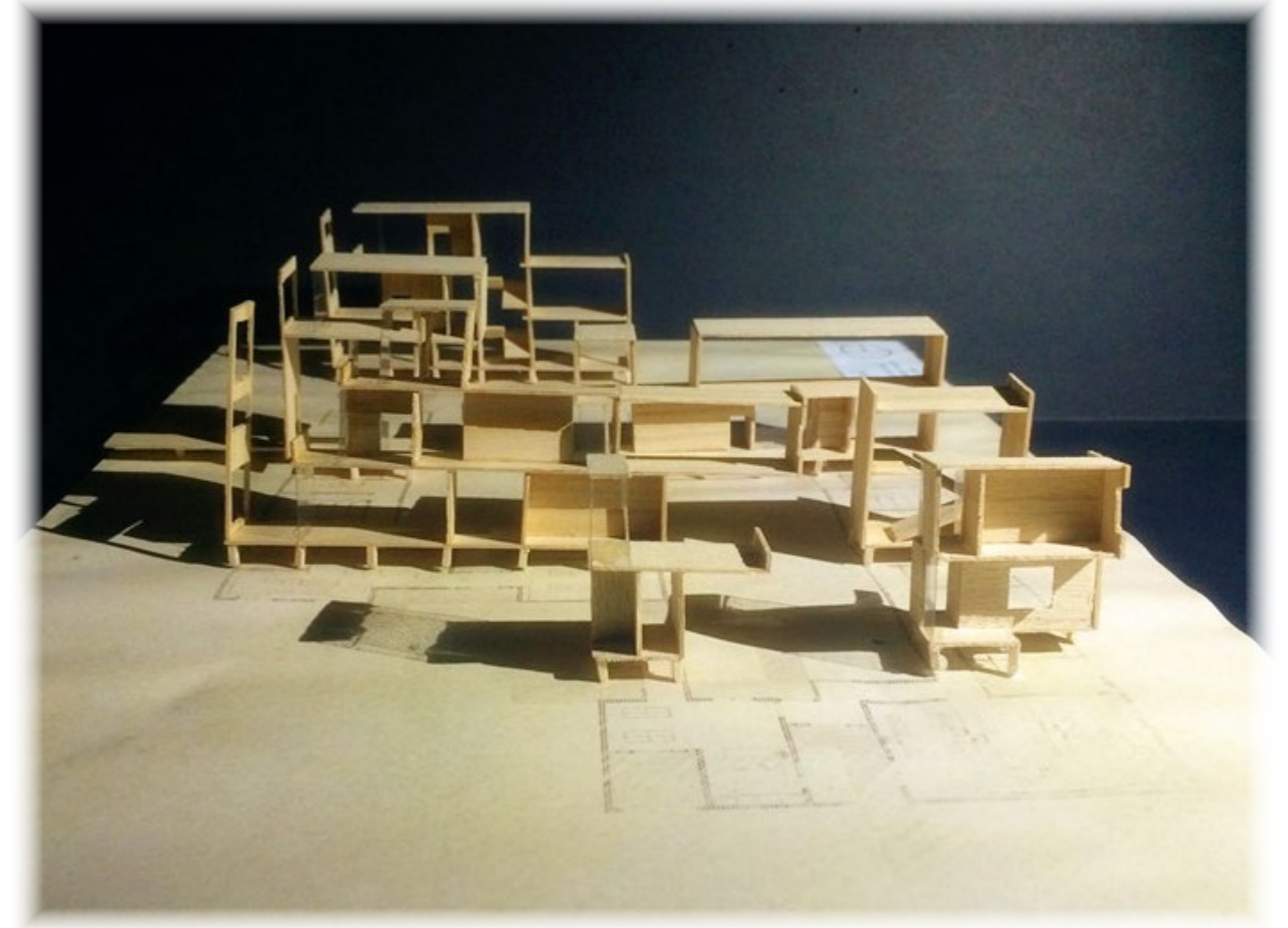
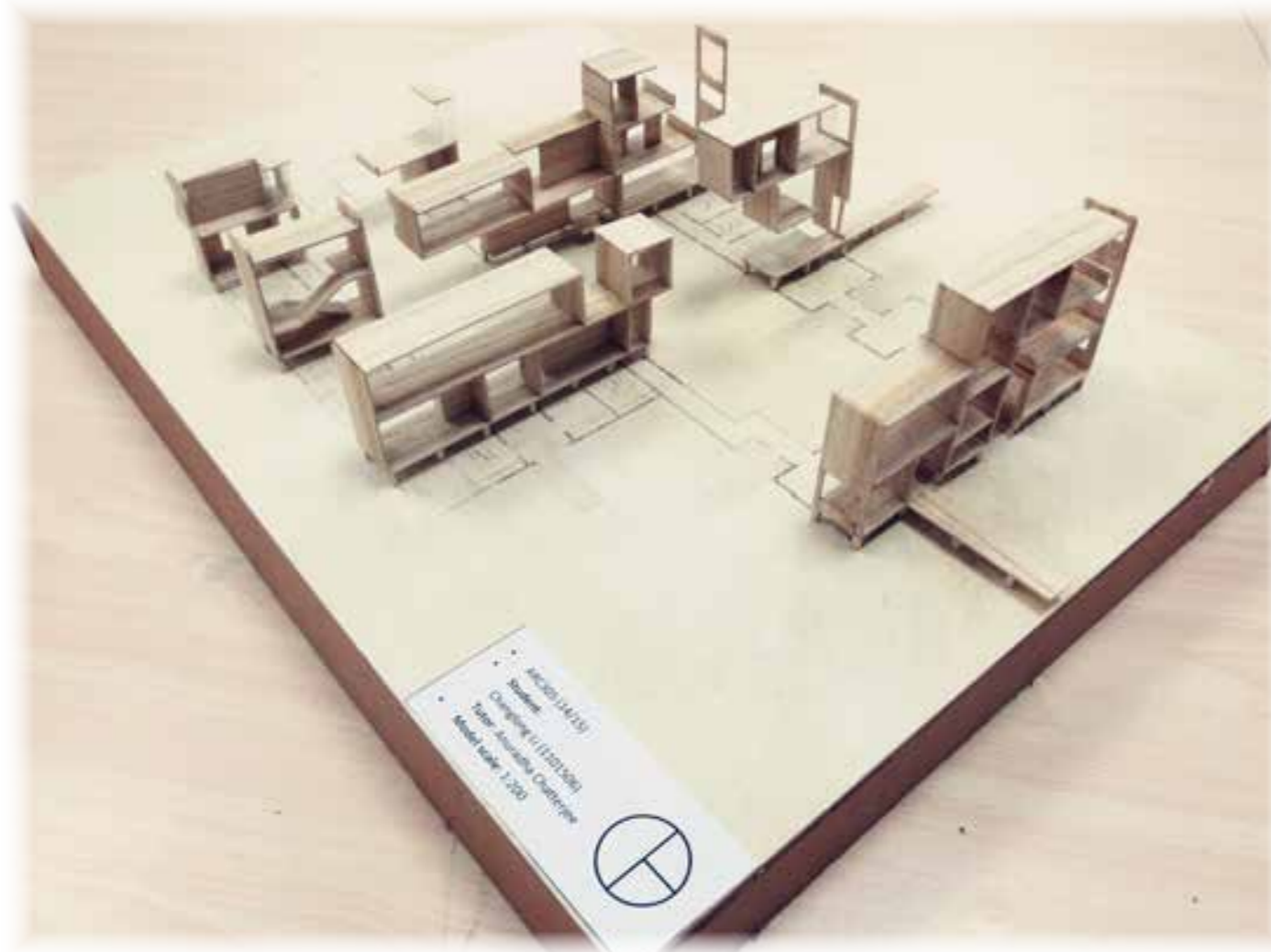


“Project sitting test model #2 (1:500):

this model was generated in the end of explorative design stage. There was a proposed relatively large lake surrounded by design project, however the design of lake led to the conflict of wetland masterplan (the proposed physiognomy in masterplan should be involved prior rather than newly-design large inner lake), which contributed to the direction of development in design resolution stage; in this stage, the roof and façade still need to design for not only involving the factors of site in design but also presenting the feature of project.”

Explorative Design Stage (Crit 2)

Design Exploration 3: Fragment Sectional Model (1:200)



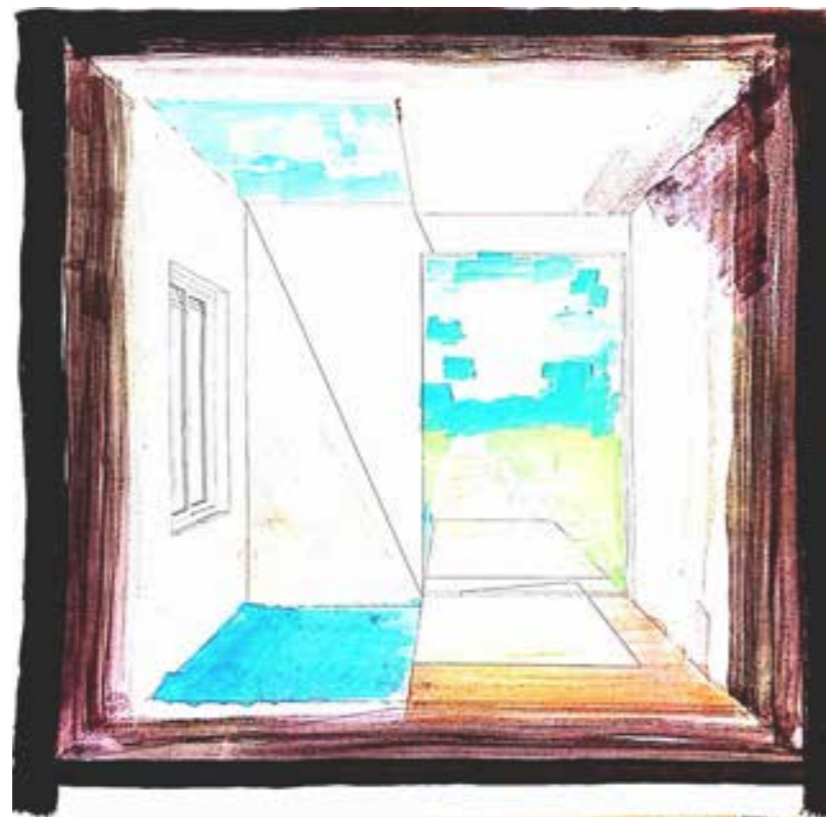
“The 1:200 sectional model shows four linear sectional parts of design project and its spatial relationships (design exploration 3). However, the roof and façade were not designed in this step. From the vertical and horizontal spatial relationships, the vertical and horizontal movement of water (rain) can be explored, which contributed a great help to the design of building envelop (in terms of the integration of the movement of rain and the location of opening on building envelope).”

Explorative Design Stage (Crit 2)

Design Exploration 3: Atmospheric Sections



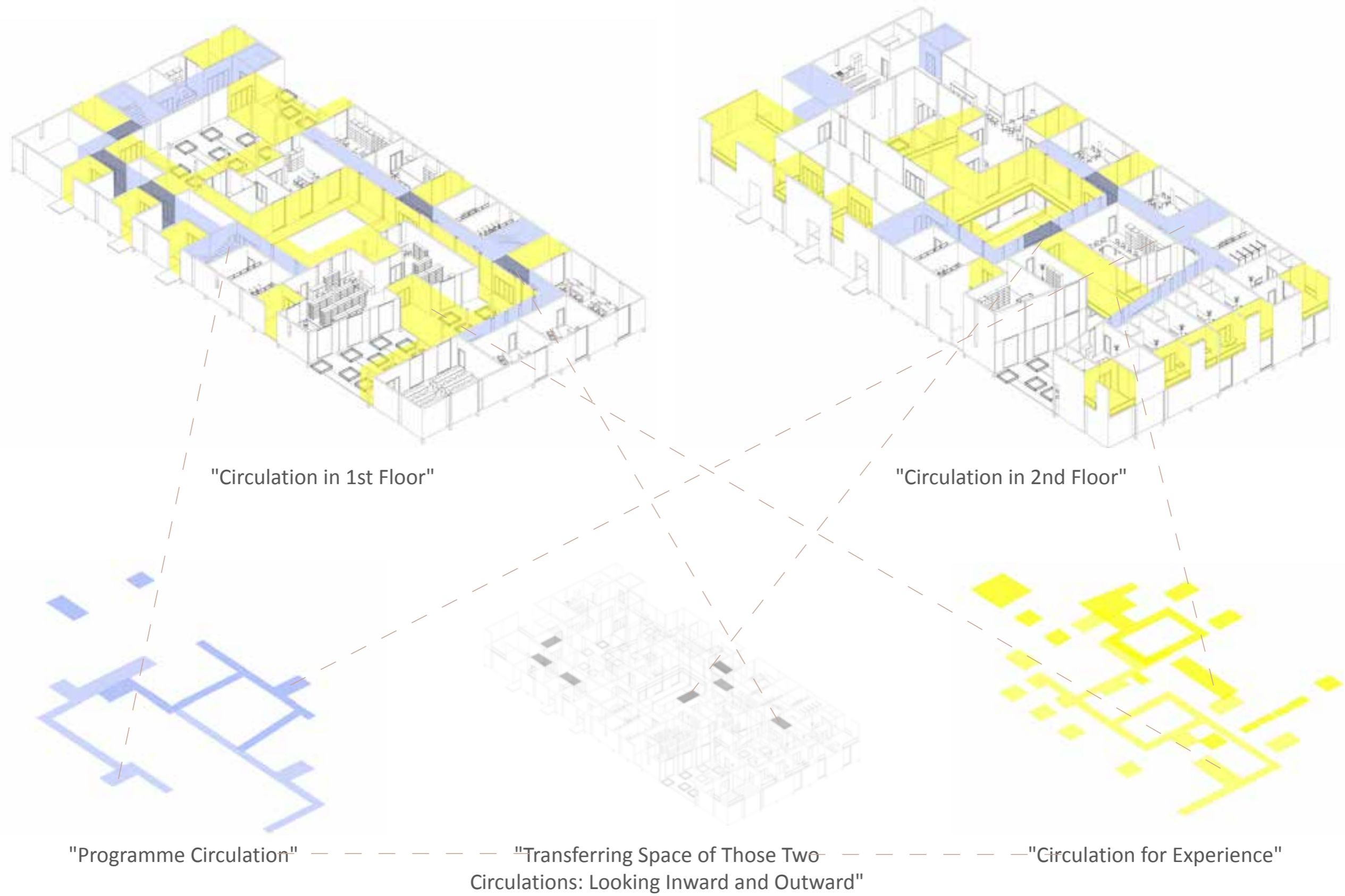
"Senario 1: void space in restaurant; Senario 2: raindrops falling through the void spaces and architecture"



"Senario 3: looking from dark corridor to light space; Senario 4: Looking out side from picture window; Senario 5: lighting shining into the inner lake"

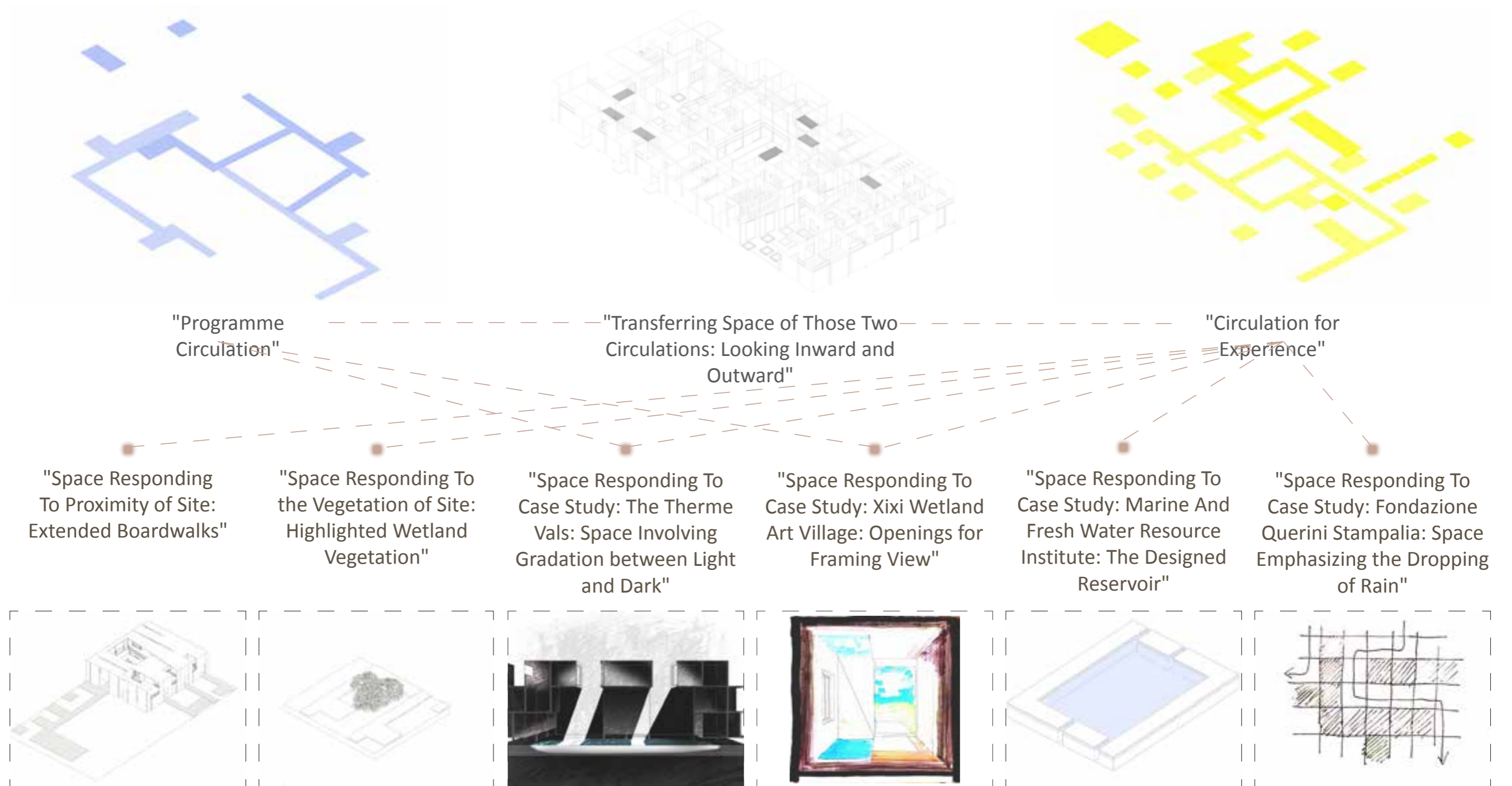
Design Resolution Stage (Final Crit)

Conceptual Frameworks (Circulation Anatomy)



Design Resolution Stage (Final Crit)

Conceptual Frameworks (Circulation Anatomy)



"Design concept: the interpenetration between programme circulation (blue part in diagram) and circulation for experience (yellow part in diagram). The space which people can have different experiences when looking inward and outward is the transferring space of those two circulations (darker part in diagram). The spaces with different spatial qualities defined in site analysis and precedent studies are involved in different circulations."

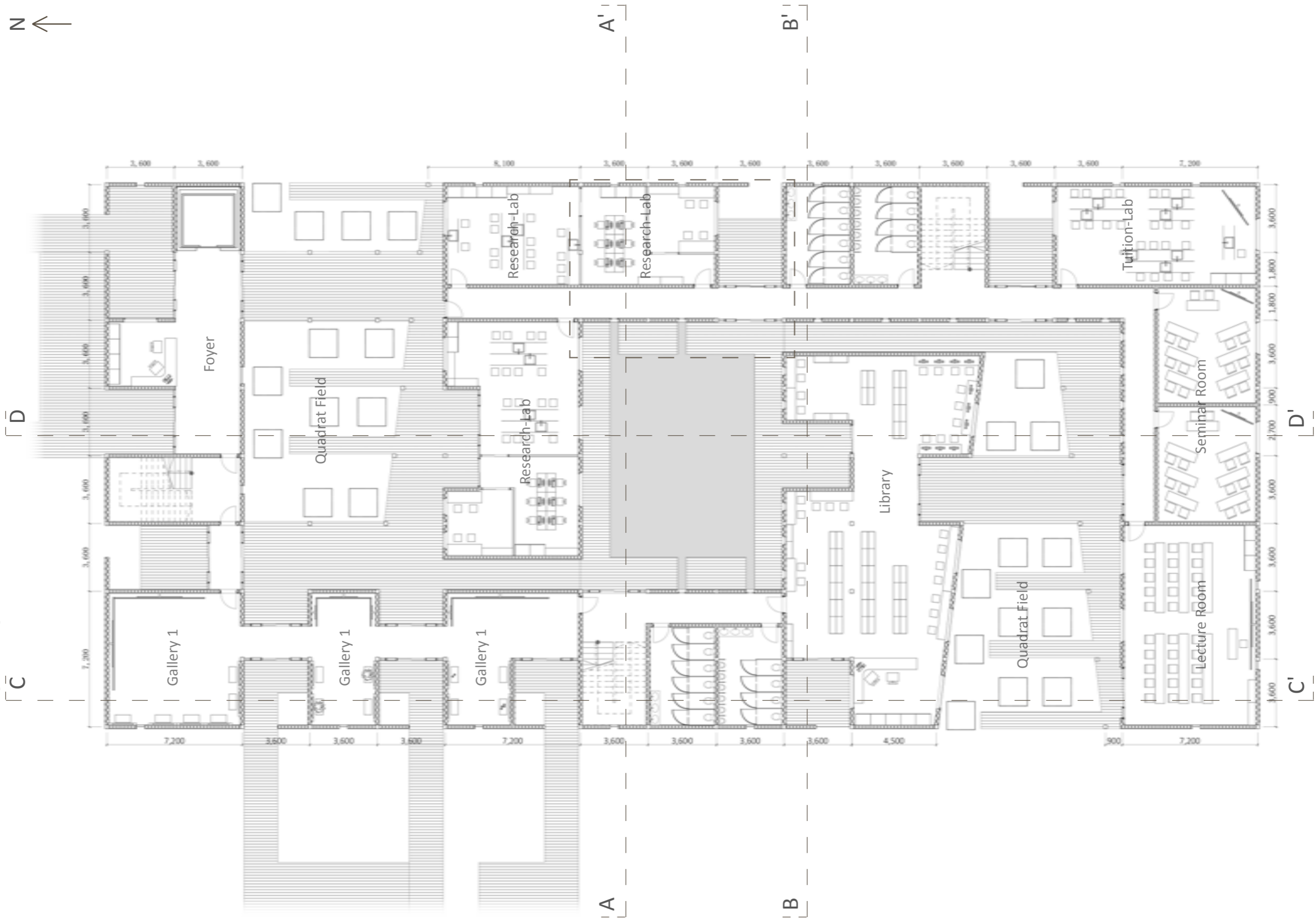
Design Resolution Stage (Final Crit)

Site Plan (1:1000)*



* The Scale of Site Plan Is 1:500 (In Folded Page) in Printed Version of Folio

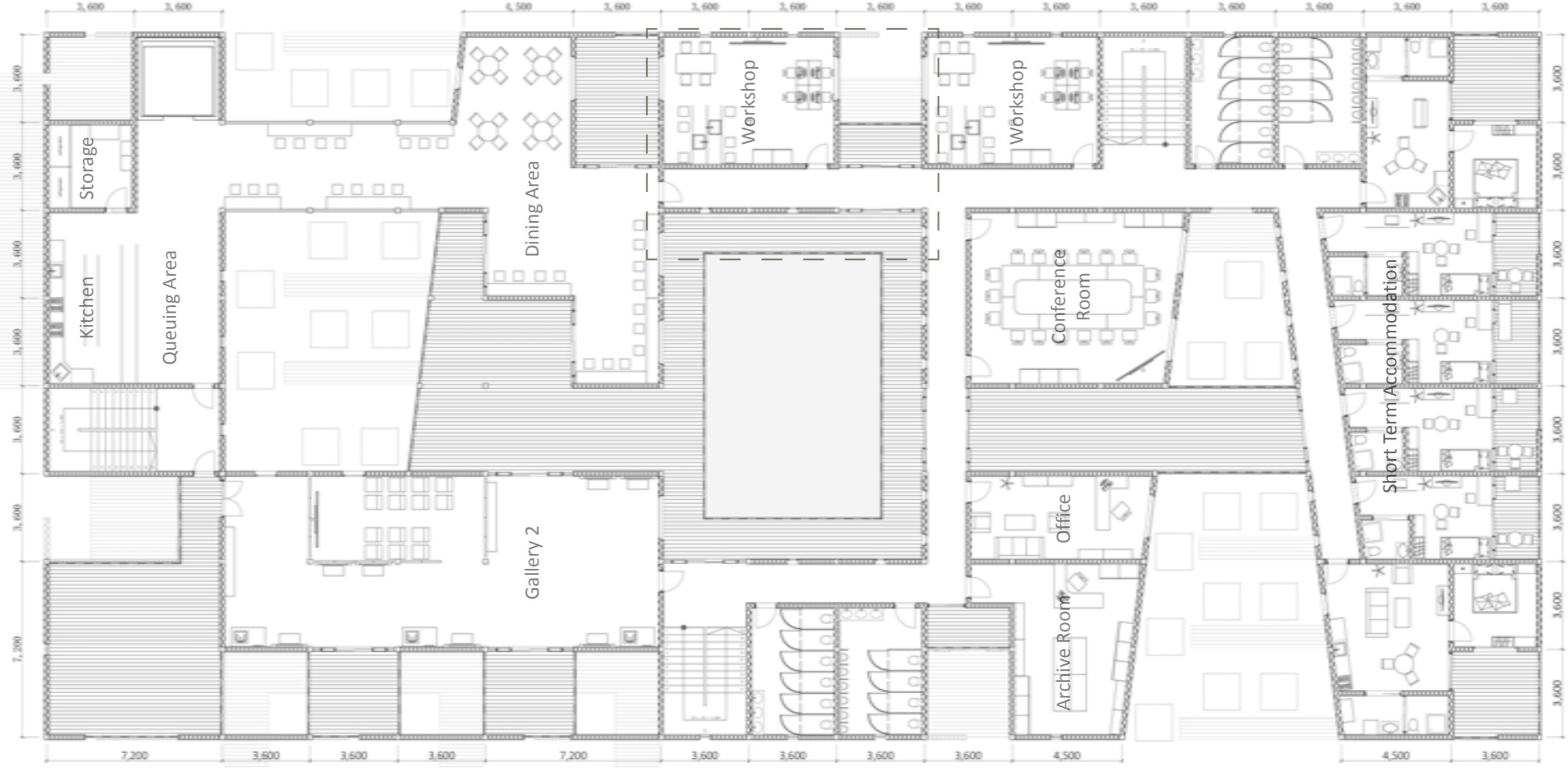
Design Resolution Stage (Final Crit)
The 1st Floor Plan (1:200)



"The 1st Floor Plan (Scale 1:200)"



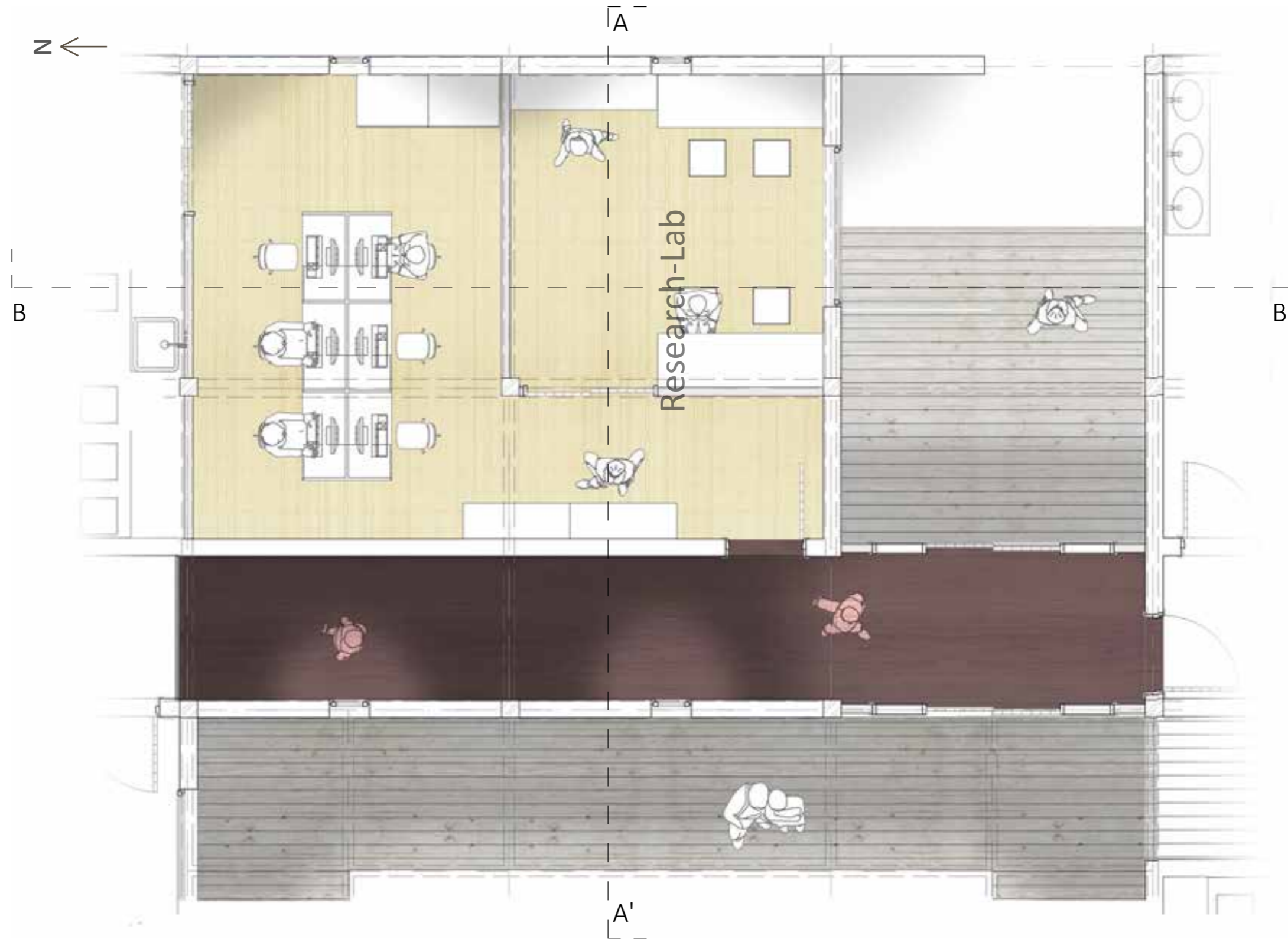
Design Resolution Stage (Final Crit)
The 2nd Floor Plan (1:200)



"The 2nd Floor Plan (Scale 1:200)"

Design Resolution Stage (Final Crit)

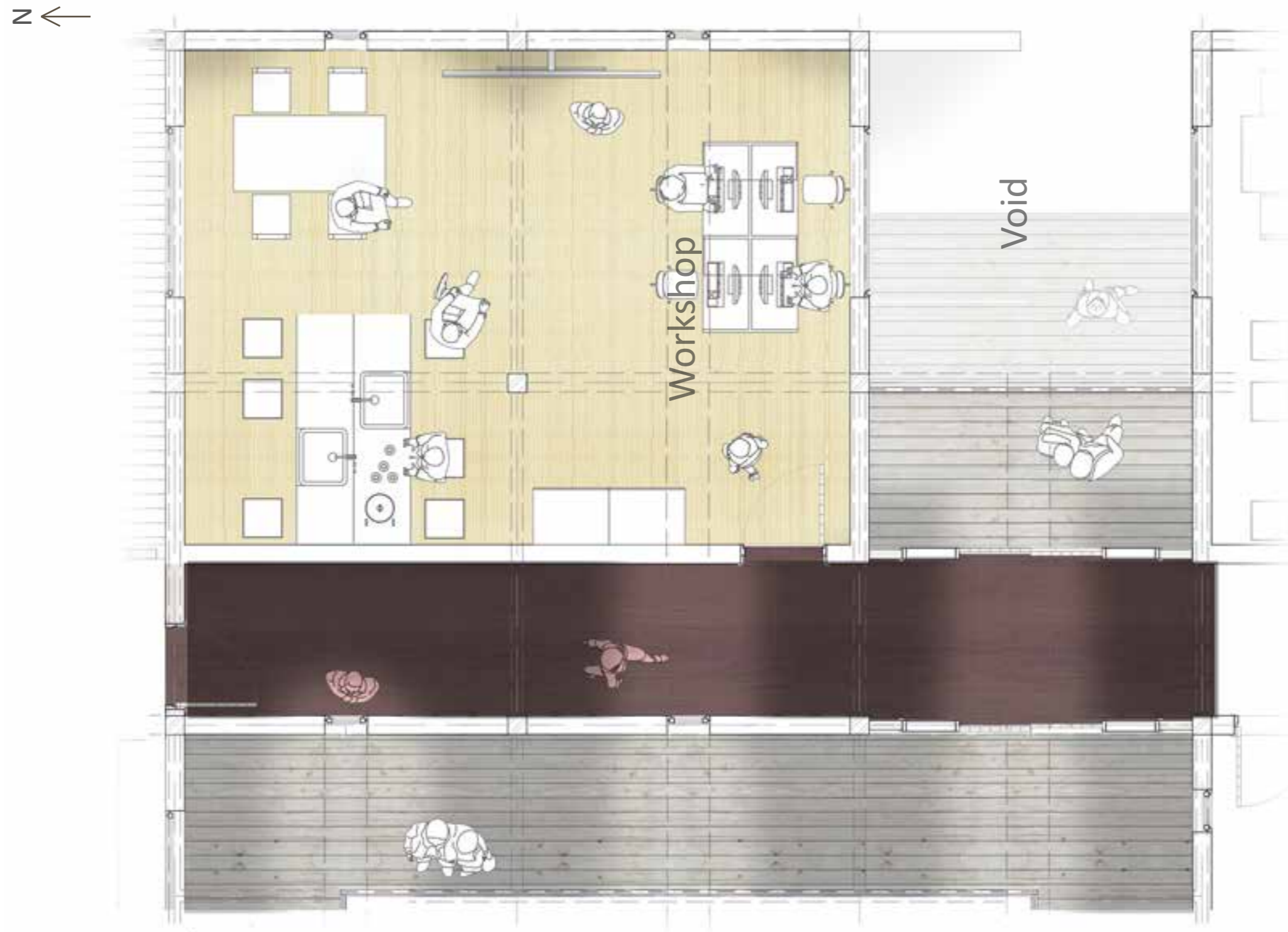
Fragment Details Plan (1:50)



"Detailed Plan: The Area around Research-Lab
(1st Floor; Indicating by Dashed Square In the 1st Floor Plan) (The cutting lines correspond with the 1:50 sections in Chapter 5)
(Showing the Texture of Floor, Lighting Condition, Beam and Skylight Layout Above) (Scale 1:50)"

Design Resolution Stage (Final Crit)

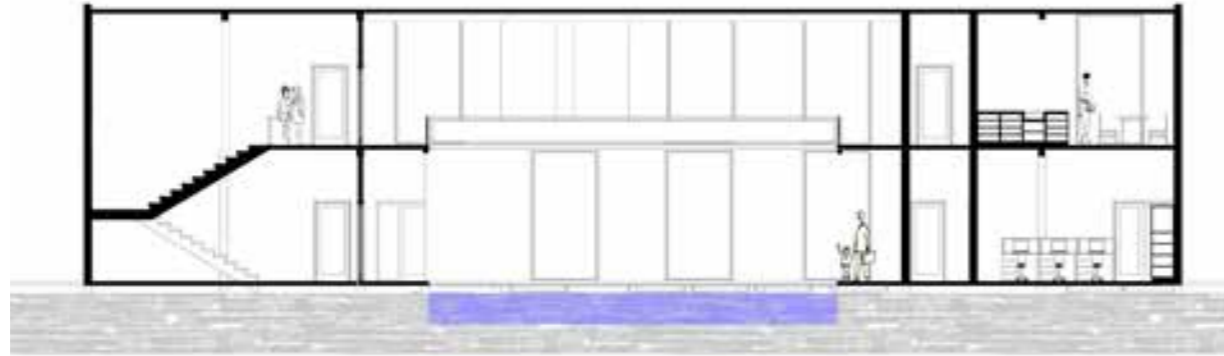
Fragment Details Plan (1:50)



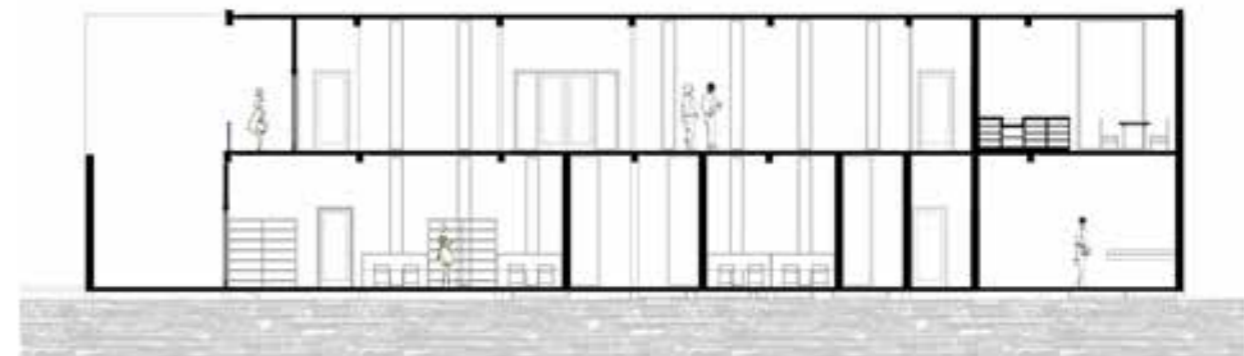
"Detailed Plan: The Area around Workshop
(2nd Floor; Indicating by Dashed Square In the 2nd Floor Plan)
(Showing the Texture of Floor, Lighting Condition, Beam and Skylight Layout Above) (Scale 1:50)"

Design Resolution Stage (Final Crit)

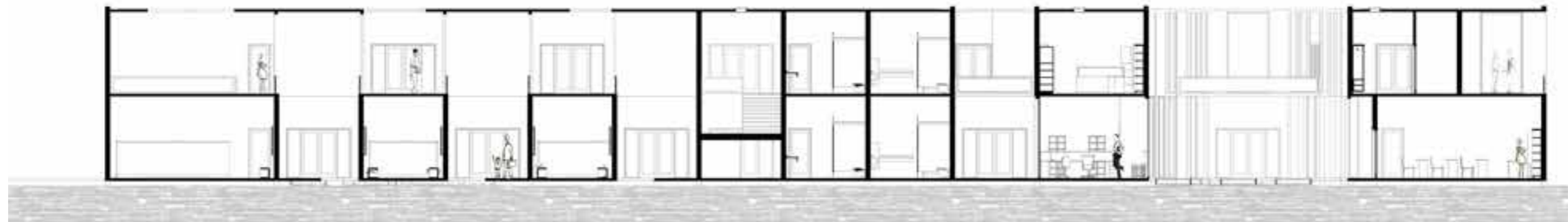
Sections (1:200) (cutting lines are indicated in "*# the 1st floor plan*" part)



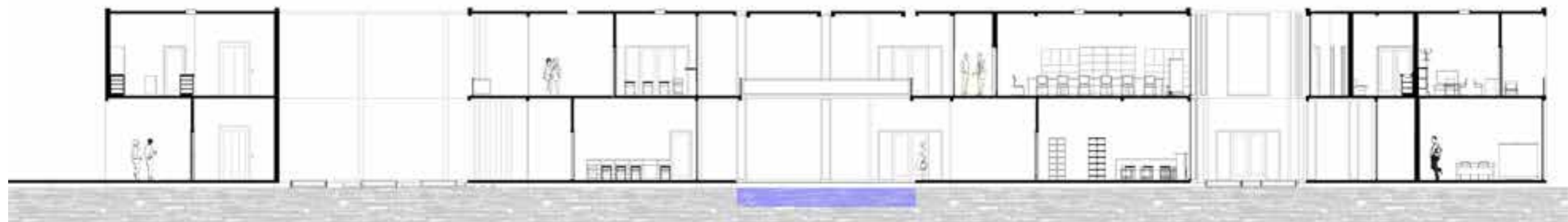
"Section A-A' (Scale 1:200)"



"Section B-B' (Scale 1:200)"



"Section C-C' (Scale 1:200)"



"Section D-D' (Scale 1:200)"

Design Resolution Stage (Final Crit)

Elevations (1:200)



"South Elevation (Scale 1:200)"



"North Elevation (Scale 1:200)"



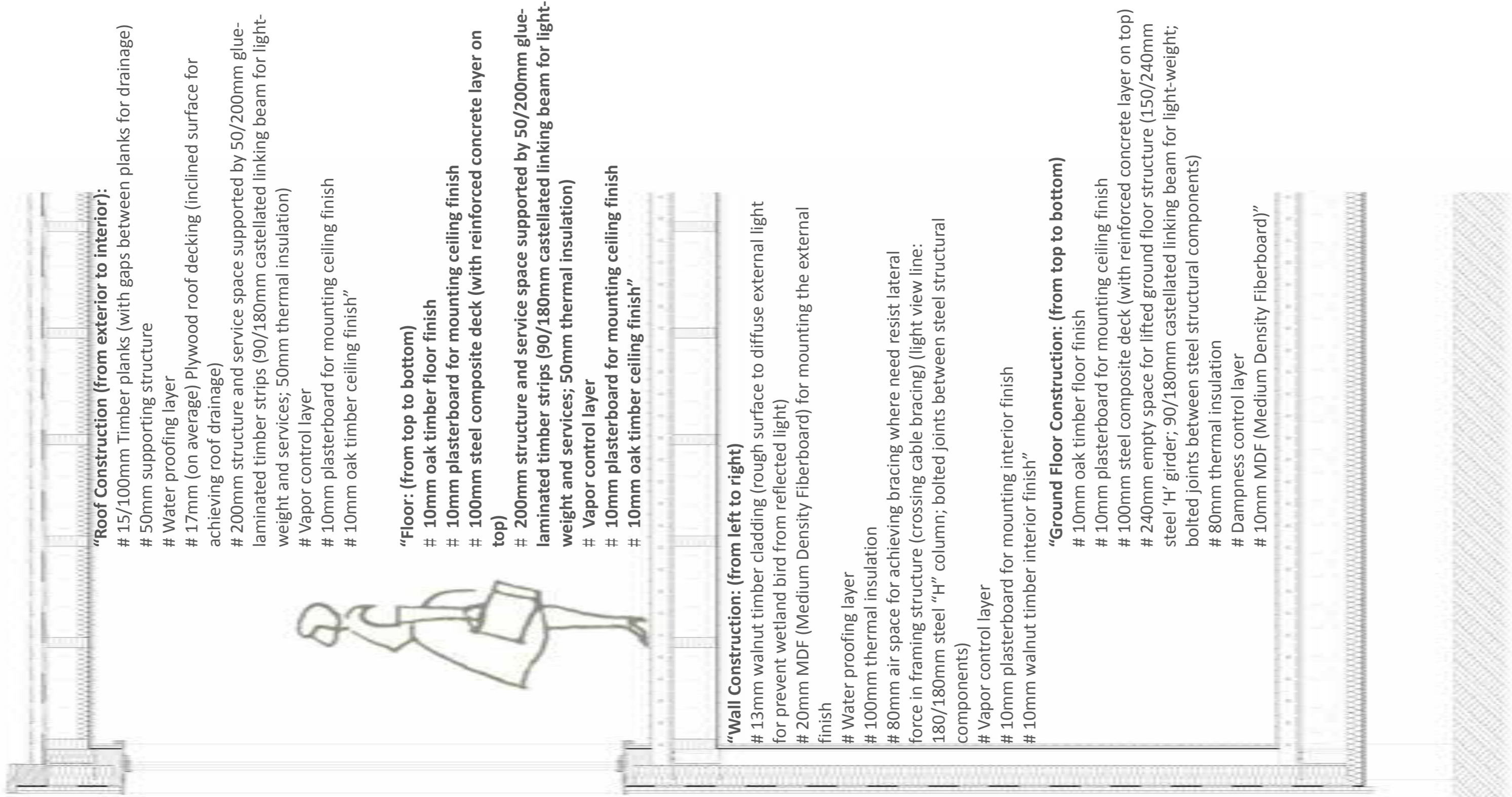
"East Elevation (Scale 1:200)"



"West Elevation (Scale 1:200)"

Design Resolution Stage (Final Crit)

Construction Details (1:20)



“Roof Construction (from exterior to interior):

- # 15/100mm Timber planks (with gaps between planks for drainage)
- # 50mm supporting structure
- # Water proofing layer
- # 17mm (on average) Plywood roof decking (inclined surface for achieving roof drainage)
- # 200mm structure and service space supported by 50/200mm glue-laminated timber strips (90/180mm castellated linking beam for light-weight and services; 50mm thermal insulation)
- # Vapor control layer
- # 10mm plasterboard for mounting ceiling finish
- # 10mm oak timber ceiling finish”

“Floor: (from top to bottom)

- # 10mm oak timber floor finish
- # 10mm plasterboard for mounting ceiling finish
- # 100mm steel composite deck (with reinforced concrete layer on top)
- # 200mm structure and service space supported by 50/200mm glue-laminated timber strips (90/180mm castellated linking beam for light-weight and services; 50mm thermal insulation)
- # Vapor control layer
- # 10mm plasterboard for mounting ceiling finish
- # 10mm oak timber ceiling finish”

“Wall Construction: (from left to right)

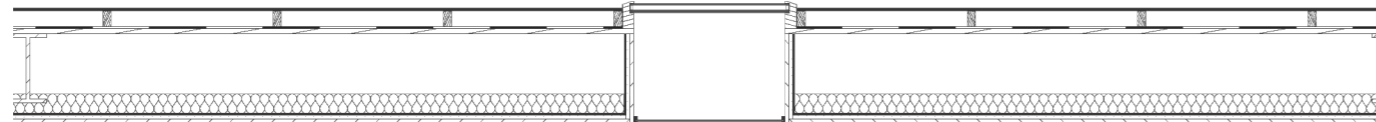
- # 13mm walnut timber cladding (rough surface to diffuse external light for prevent wetland bird from reflected light)
- # 20mm MDF (Medium Density Fiberboard) for mounting the external finish
- # Water proofing layer
- # 100mm thermal insulation
- # 80mm air space for achieving bracing where need resist lateral force in framing structure (crossing cable bracing) (light view line: 180/180mm steel “H” column; bolted joints between steel structural components)
- # Vapor control layer
- # 10mm plasterboard for mounting interior finish
- # 10mm walnut timber interior finish”

“Ground Floor Construction: (from top to bottom)

- # 10mm oak timber floor finish
- # 10mm plasterboard for mounting ceiling finish
- # 100mm steel composite deck (with reinforced concrete layer on top)
- # 240mm empty space for lifted ground floor structure (150/240mm steel ‘H’ girder; 90/180mm castellated linking beam for light-weight; bolted joints between steel structural components)
- # 80mm thermal insulation
- # Dampness control layer
- # 10mm MDF (Medium Density Fiberboard)”

Design Resolution Stage (Final Crit)

Construction Details (1:20)



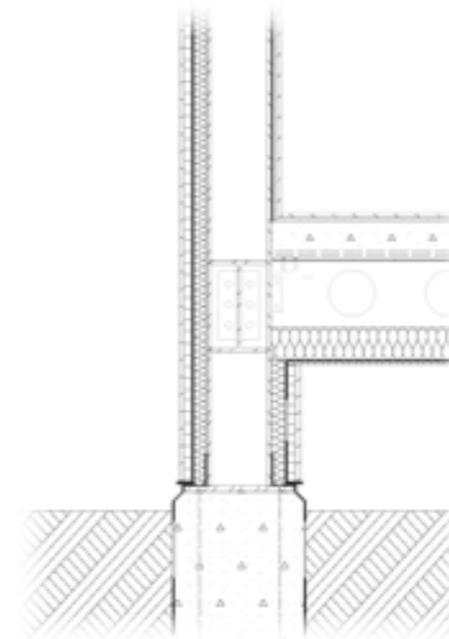
"Skylight Construction: (from exterior to interior)"

- # Double glazing skylight in wood/aluminum frame (5mm low emissivity glass, 12mm dry air space and 8mm laminated glass) (the frame of skylight is insulated and designed with inclined top for drainage)
- # The interior surface of empty space is painted in white color for improving the lighting condition
- # Insulated glass for creating flat ceiling and insulating the sound and thermal transferring through empty space of skylight."



"Glass Wall Construction: (from left to right)"

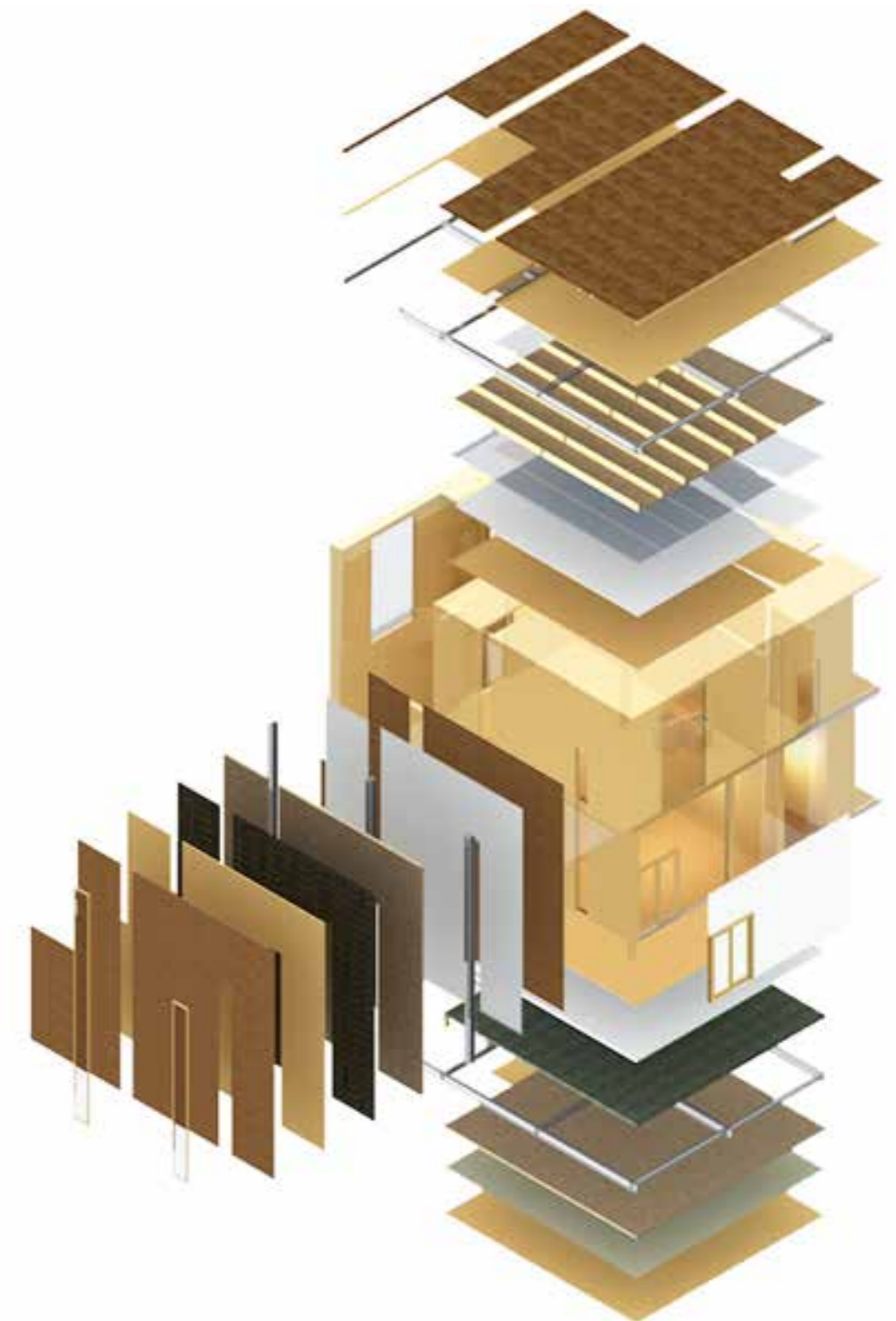
- # Edge of non-load bearing wall (view line in back)
- # 20mm glass slats on aluminum construction (with sound and thermal insulation membrane)
- # 10mm dry air space
- # 20mm thermal insulated low-e glass (if adjacent to exterior)
- # 30mm laminated safety glass"



"Pile Foundation Construction:

Steel "H" column bolted deeply joining with concrete pile foundation. The concrete pile foundation is water proofed and inserts into wetland soft soil to touch the hard rock layer for achieving reaction forces."

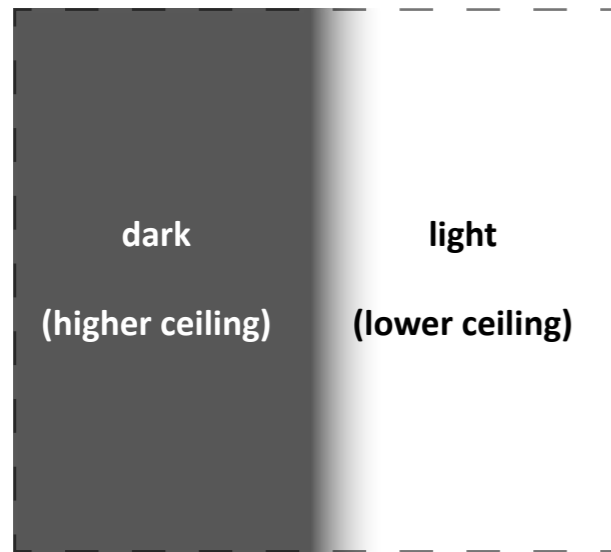
Exploded Axonometric Drawing (1:200)



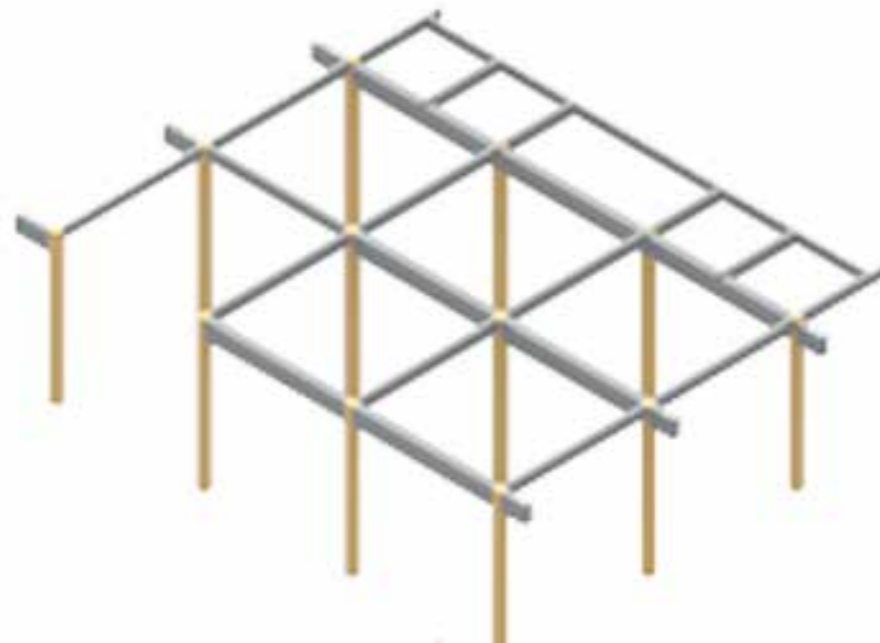
"Exploded Axonometric Drawing shows the main construction parts (including roof, wall, glass wall and ground floor constructions) mentioned in "construction details (1:20)" section."

Design Resolution Stage (Final Crit)

Ceiling Design and Structure



“Ceiling Design: the ceiling of corridor is designed into wavy shape (the lighter the lower, the darker the higher) to emphasize the lighting special lighting atmosphere within corridor. The plan (scale 1:400) showing how the wavy corridor ceiling is designed in the 1st floor.
 (Reference picture for showing the atmosphere of this ceiling design: the picture from the designing: dl atelier outdoor orchestra stage)”



“# Major Structure: Steel Frame Structure with Cantilevered Balcony
 (for light-weight and large span)
 # Structure System: Column Grid System
 # Structural Module: 0.9m”



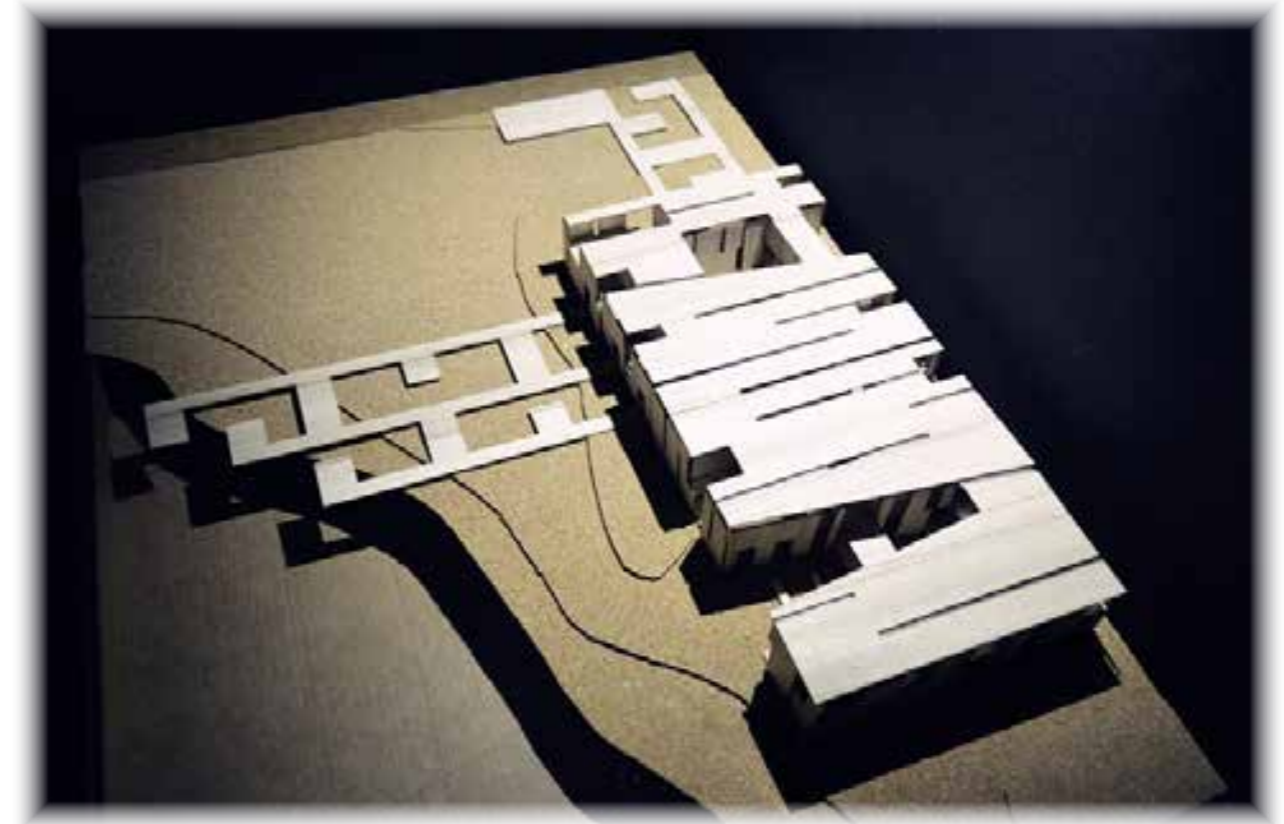
“Bracing Design: since the major structure is steel frame structure, the bracing should be designed for resisting lateral forces (earthquake or wind load). This proposal uses cable bracing (is achieved in the cavity part of non-load bearing wall). The design proposal basically can be regarded as four main rectangular blocks, in that case, the corners should be braced as the plan above showing (scale 1:400)”

Design Resolution Stage (Final Crit)

Models



"1:500 Site Model For Showing the Relationship between Site and Design Project"



"1:200 Model with Surrounding Environment"



"1:50 Fragmental Model"

Design Resolution Stage (Final Crit)

Design Process Overview



"Design Development Process: Phase 1 (1:500)"

Main Challenges and Improvements:

- # Different scenery: looking inward and outward
- # Creating rhythm to building: considering elevations
- # Simplifying and strengthening the "loop" circulation

Different scales involving in this phase:

- # 1:50 atmospheric sections for designing the spatial quality
- # 1:200 plan for designing the spatial organization
- # 1:500 schematic plan and section for considering architectural concept
- # 1:500 site plan for designing the relationship between site and architecture
- # 1:1000/1:2000 Masterplanning Wetland



"Design Development Process: Phase 2 (1:500)"

Main Challenges and Improvements:

- # Experimental attempt of design: shifting the square geometry and achieving less control in circulation and more spatial possibilities

Different scales involving in this phase:

- # 1:50 atmospheric sections for designing the spatial quality
- # 1:200 plan for designing the spatial organization
- # 1:500 site plan for designing the relationship between site and architecture

Design Resolution Stage (Final Crit)

Design Process Overview



"Design Development Process: Phase 3 (1:500)"

Main Challenges and Improvements:

- # The continuity between architecture design and the masterplan of wetland
- # Strengthening the poetic circulation (emphasizing the people's experience on dropping of rain)

Different scales involving in this phase:

- # 1:50 atmospheric sections for designing the spatial quality
- # 1:200 plan for designing the spatial organization
- # 1:200 section for discussing spatial relationship
- # 1:200 fragmental model for discussing spatial relationship and the concept of water movement
- # 1:500 site plan for designing the relationship between site and architecture
- # 1:500 site model for different options of sitting test on site



"Design Development Process: Phase Now (1:500)"

Main Challenges and Improvements:

- # Cladding design: combining the modular structural system with openings (Picture openings, windows, skylights and gaps)
- # Cladding design: cohering the whole project with the consistency between façades design and roof design.

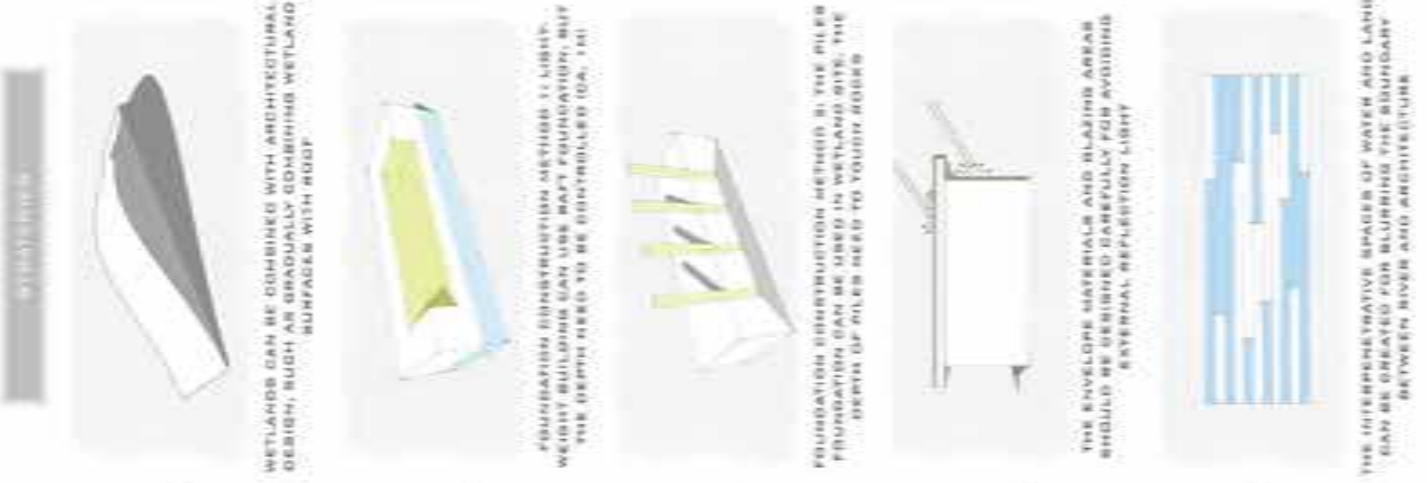
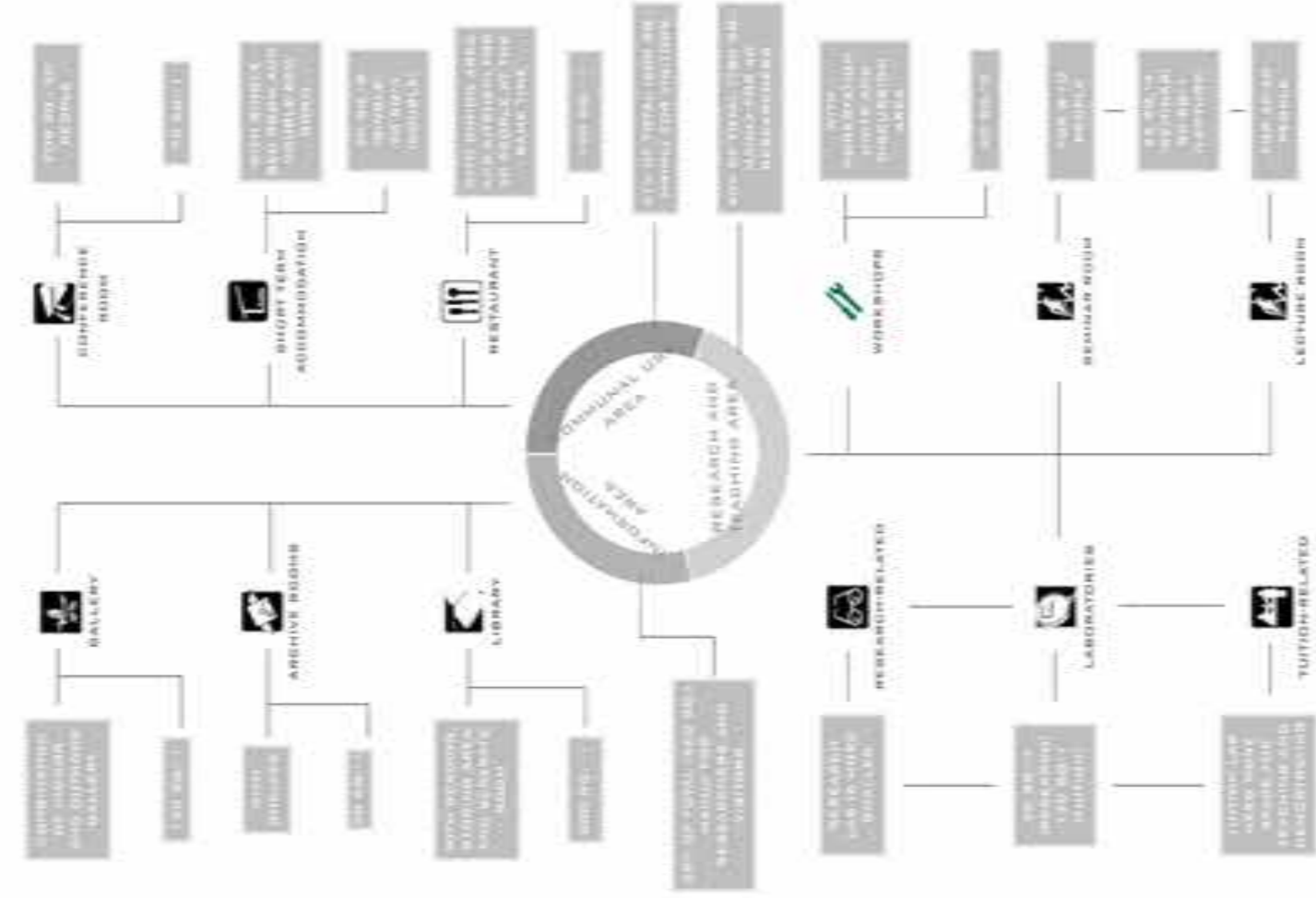
Different scales involving in this phase:

- # 1:10/1:20 construction drawings for involving architectural requirement into construction
- # 1:50 exploded axonometric drawing for illustrating and understanding construction
- # 1:50 atmospheric sections for designing the spatial quality
- # 1:50 fragmental detailed plan and section for interior design
- # 1:200 plan for designing the spatial organization and roof design
- # 1:200 section for discussing spatial relationship
- # 1:200 elevation for conducting façade design
- # 1:200 project model with surrounding contextual environment
- # 1:500 site plan for designing the relationship between site and architecture
- # 1:500 site model for sitting test on site

Chapter 4: Design Posters

Crit 1 Poster
Crit 2 Poster
Final Crit Poster

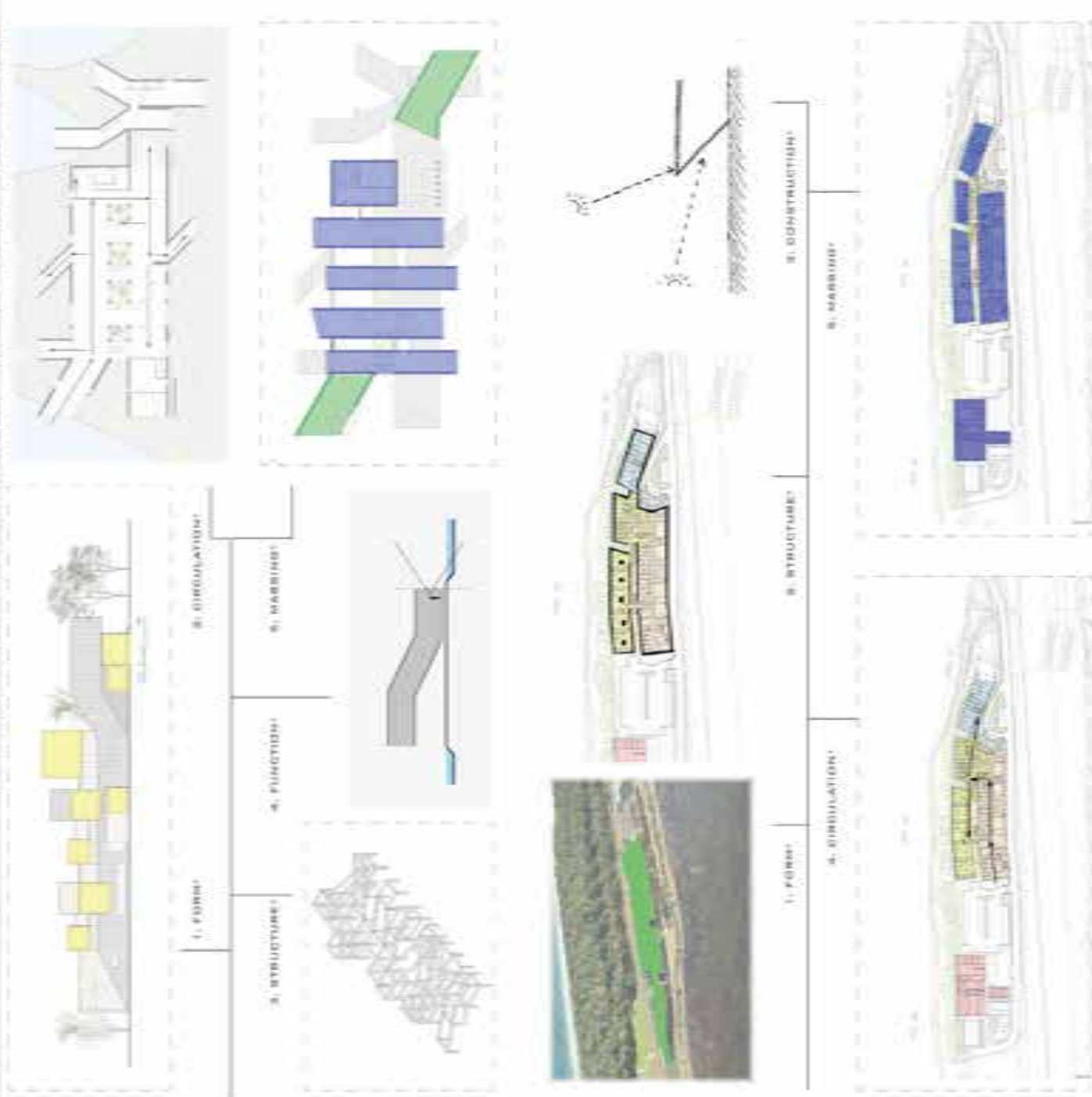
*Since the content of chapter 1, 2 and 3 contains the most content of poster, this chapter is mainly for showing the holistic layout of posters in each crit.

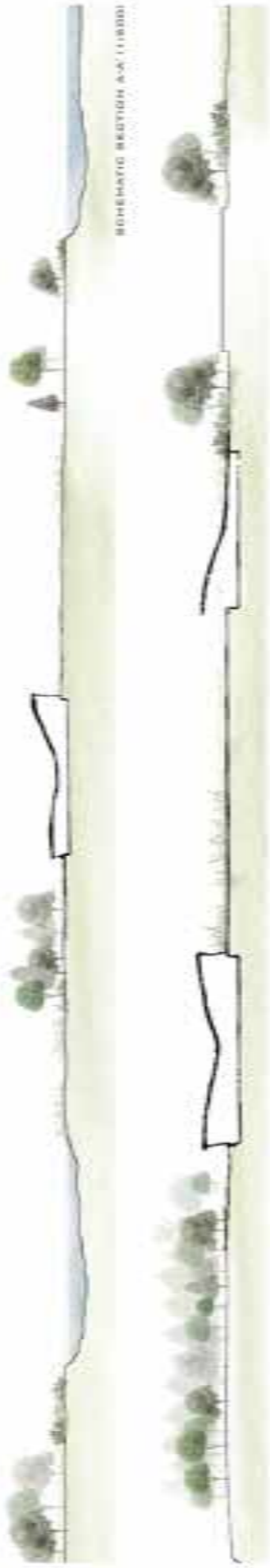
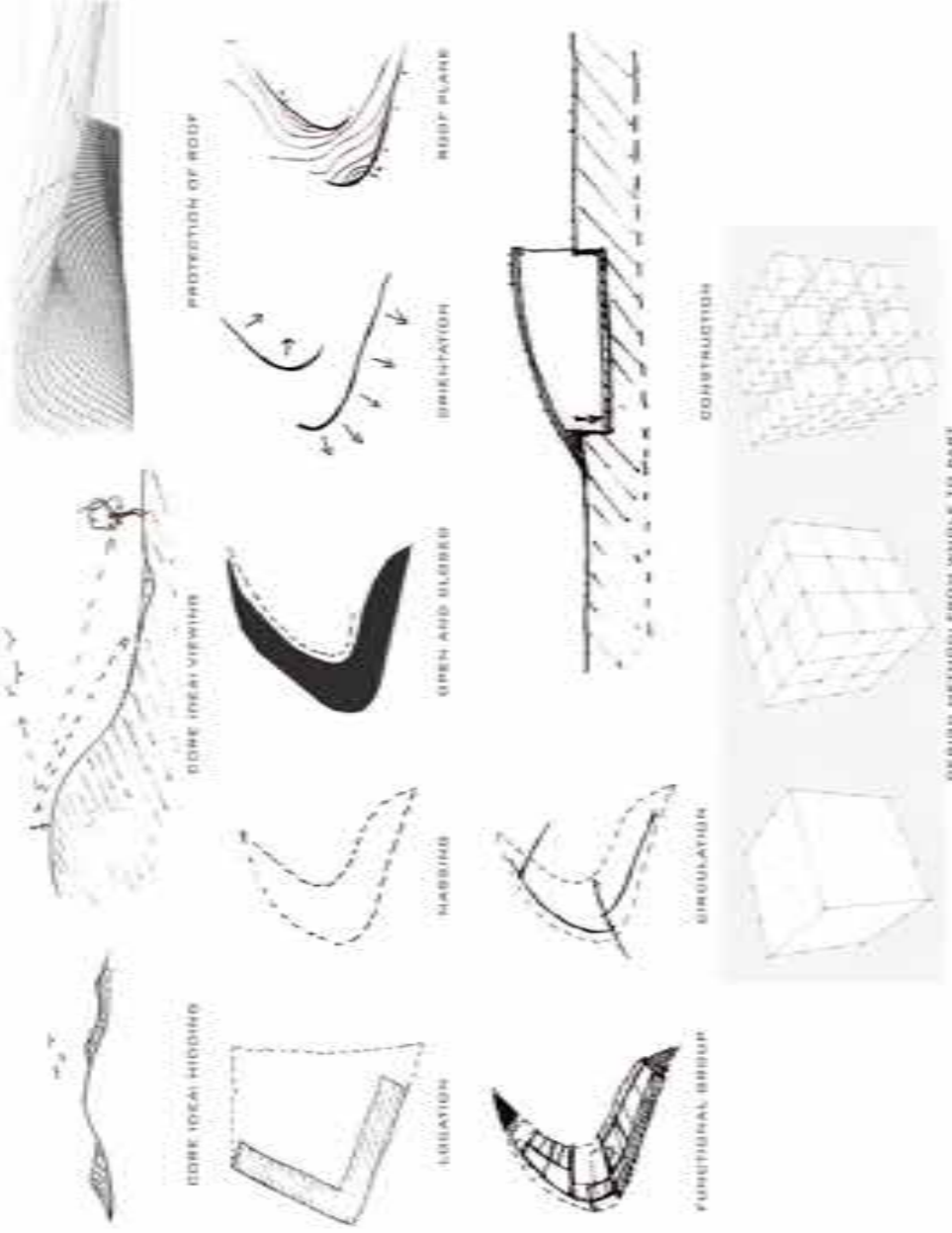
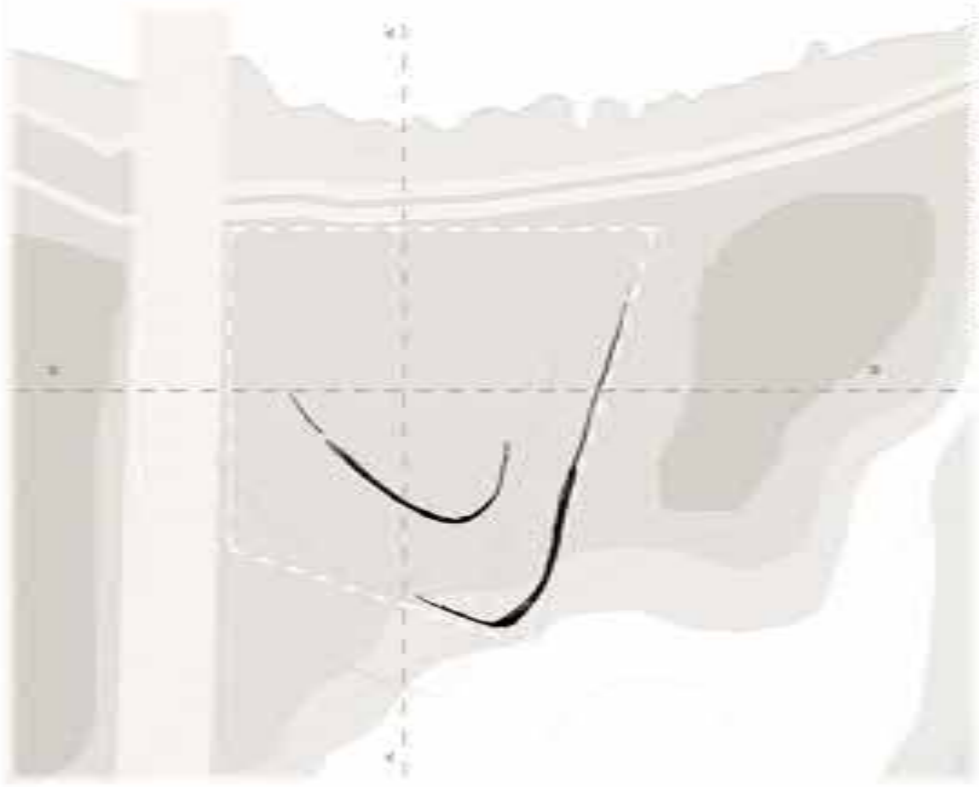


TYPOLICAL PRECEDENT STUDY #1
XIXI WETLAND ART VILLAGE / WANG WEIHEI ARCHITECTURE
1. PROUDING LINEAR FORM / 2. U-SHAPED MAIN CIRCULATION /
3. REINFORCED CONCRETE FRAME CONSTRUCTION /
4. FUNCTIONALVARIOUS VIEWING FRAMES /
5. RELATIONSHIP OF LINEAR BUILDING MASSING

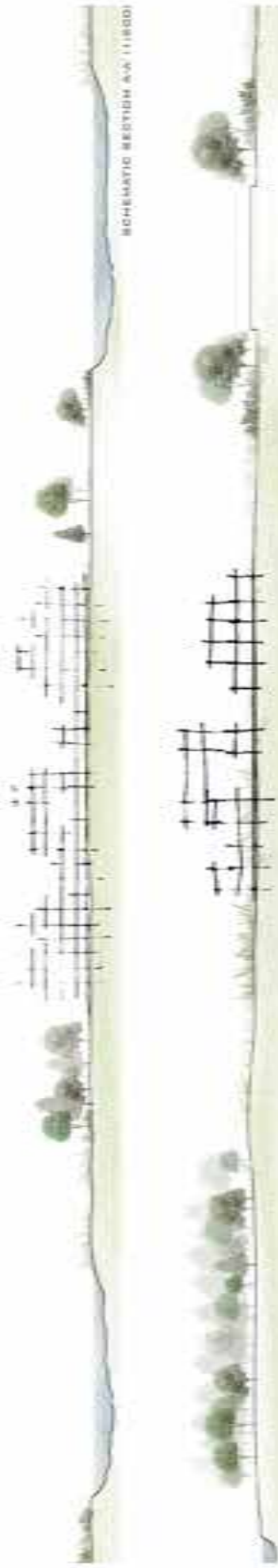
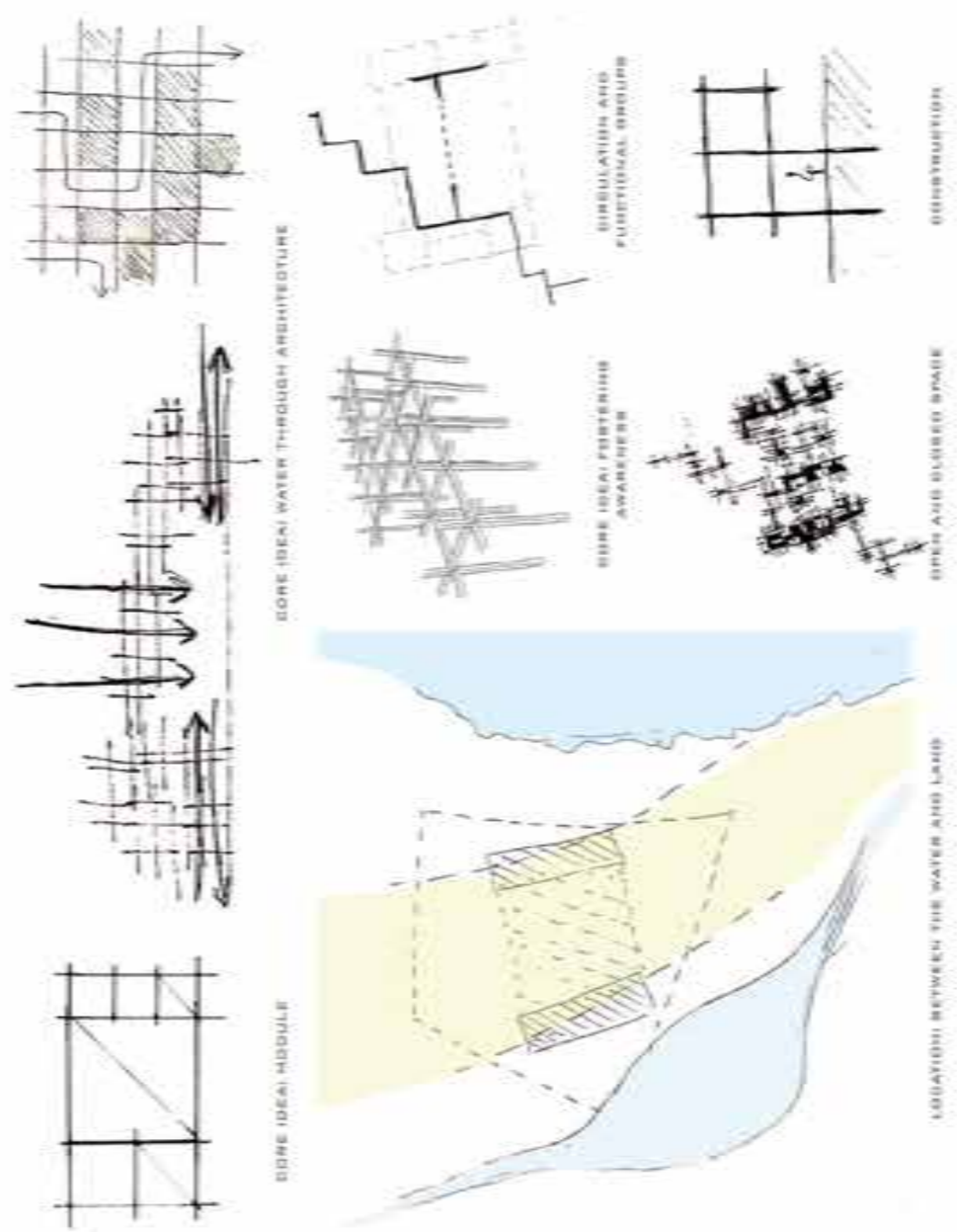


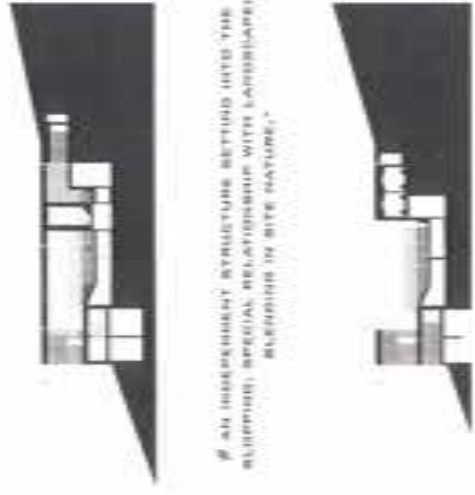
TYPOLICAL PRECEDENT STUDY #2
MARINE AND FRESH WATER RESOURCE INSTITUTE / LYONS ARCHITECTS
1. LINEAR FORM FOR FITTING TO THE NARROW SITE /
2. CONCRETE & STEEL STRUCTURE /
3. SPECIAL CONSTRUCTION FOR SUSTAINABLE DESIGN (INCLINED WALL AS SUNLIGHT CONTROLLER) /
4. MAIN CIRCULATION IN DARK BUILDING BLOCK /
5. RELATIONSHIP OF RECTANGULAR BUILDING MASSING





OPTIONS AND RELEVANT ARCHITECTURAL CONCEPTS



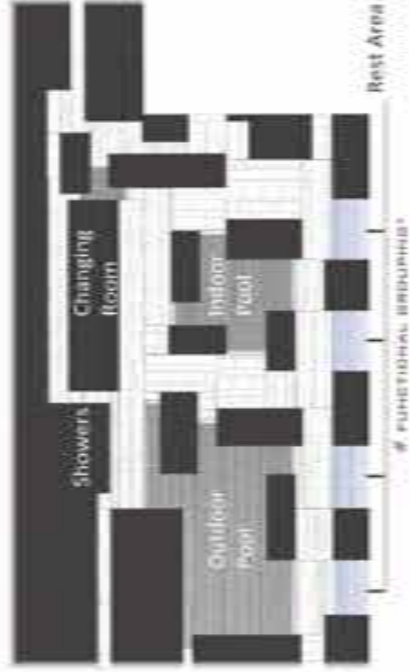


AN INTEGRATED STRUCTURE SETTING INTO THE (SLIPPER) SPECIAL RELATIONSHIP WITH LANDSCAPE SUCCESSION IN SITE NATURE.*

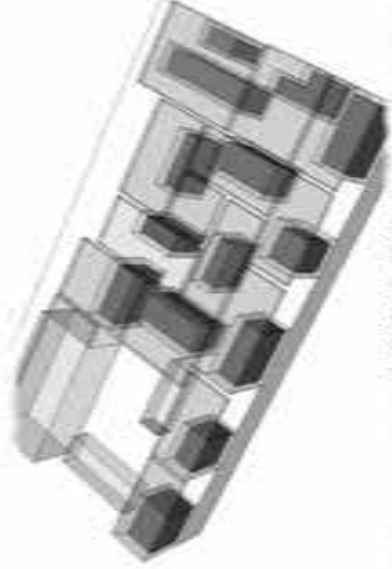
AROUND THE PREMISE OF KEEPING ORIGINAL TOPOGRAPHY AND HYDROLOGY, THIS BUILDING WANTS TO INCIDENTARILY PROVIDE NECESSARY PRIVACY AND VIEWING HEIGHT TO THE USERS. WITH EXPANSION OF SPACE SIZE, PEOPLE'S RIGHT CAN BE THROUGH THE CONSTRUCTION TO PROVIDE A DIRECTLY IMMERSION WITH NATURE.*

SHOULD THE BUILDING MAKE THE BATHING PLACE HAVE A SUFFICIENT BOUNDARY WITH ENVIRONMENT?*

CONTEXTUAL RESPONSE



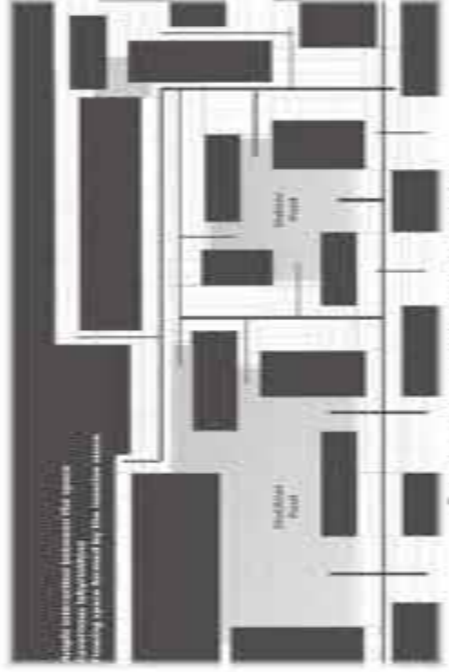
FUNCTIONAL GROUND



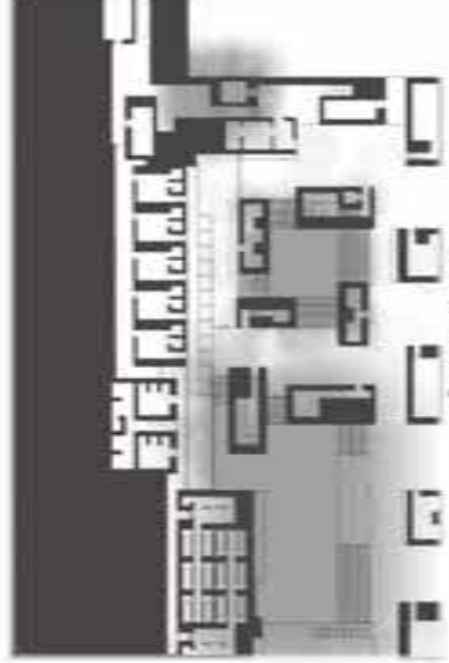
BUILDING MASSING



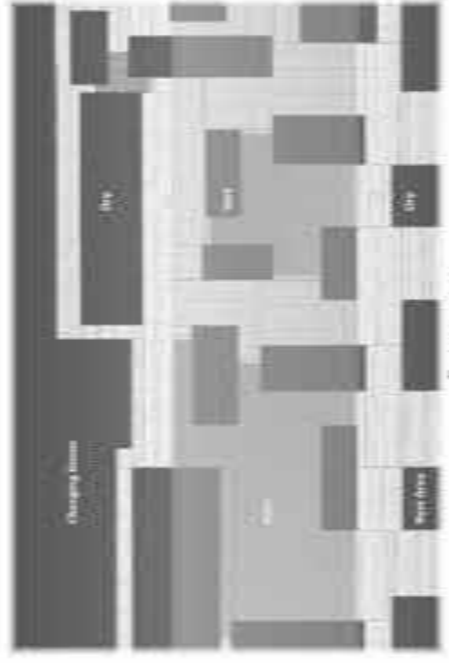
LIGHTING AND ATMOSPHERE*



MAIN AND SECONDARY CIRCULATION*

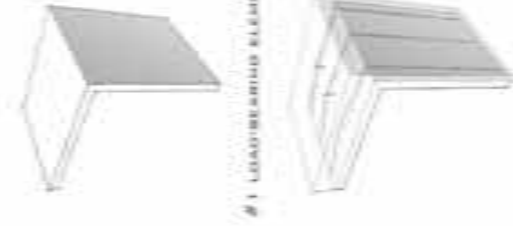


TEMPERATURE*

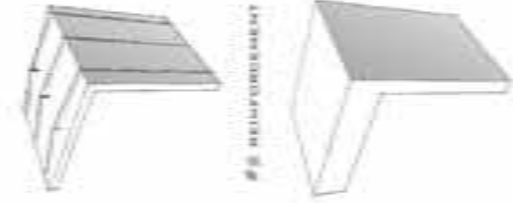


HUMIDITY*

PART I



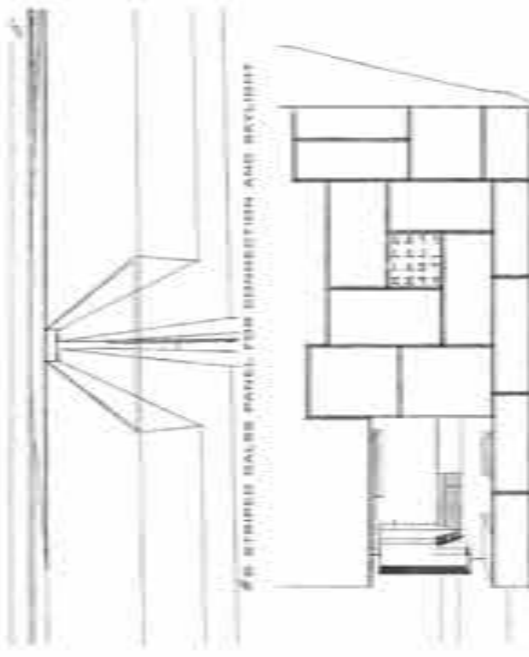
#1 LOAD-BEARING ELEMENT



#4 ONE STRUCTURE UNIT

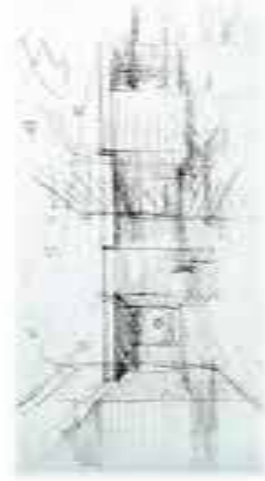


#5 10 TABLE-LINE STRUCTURAL UNITS*



#40 STRIPED GLASS PANEL FOR ORIENTATION AND DAYLIGHT

#7 10 UNITS FORMING A JIGSAW PEEZLE PATTERN



#1 CURVED FACADE WIDTH*



#2 MATERIAL STONE STRIPS



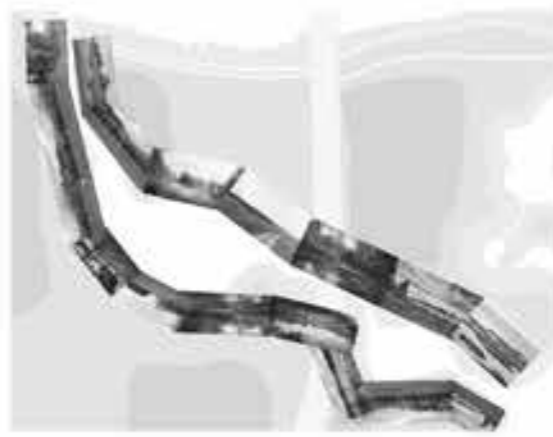
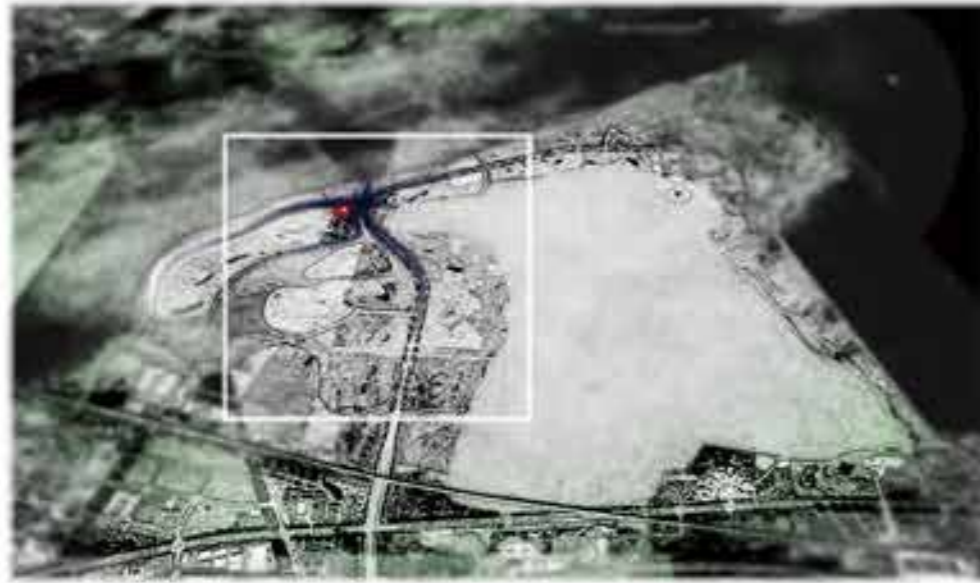
#3 THE TOTAL THICKNESS OF 3 DIFFERENT STONE LAYERS IS CERTAIN FOR ASSURING SAME HEIGHT OF FACADE



STRUCTURE

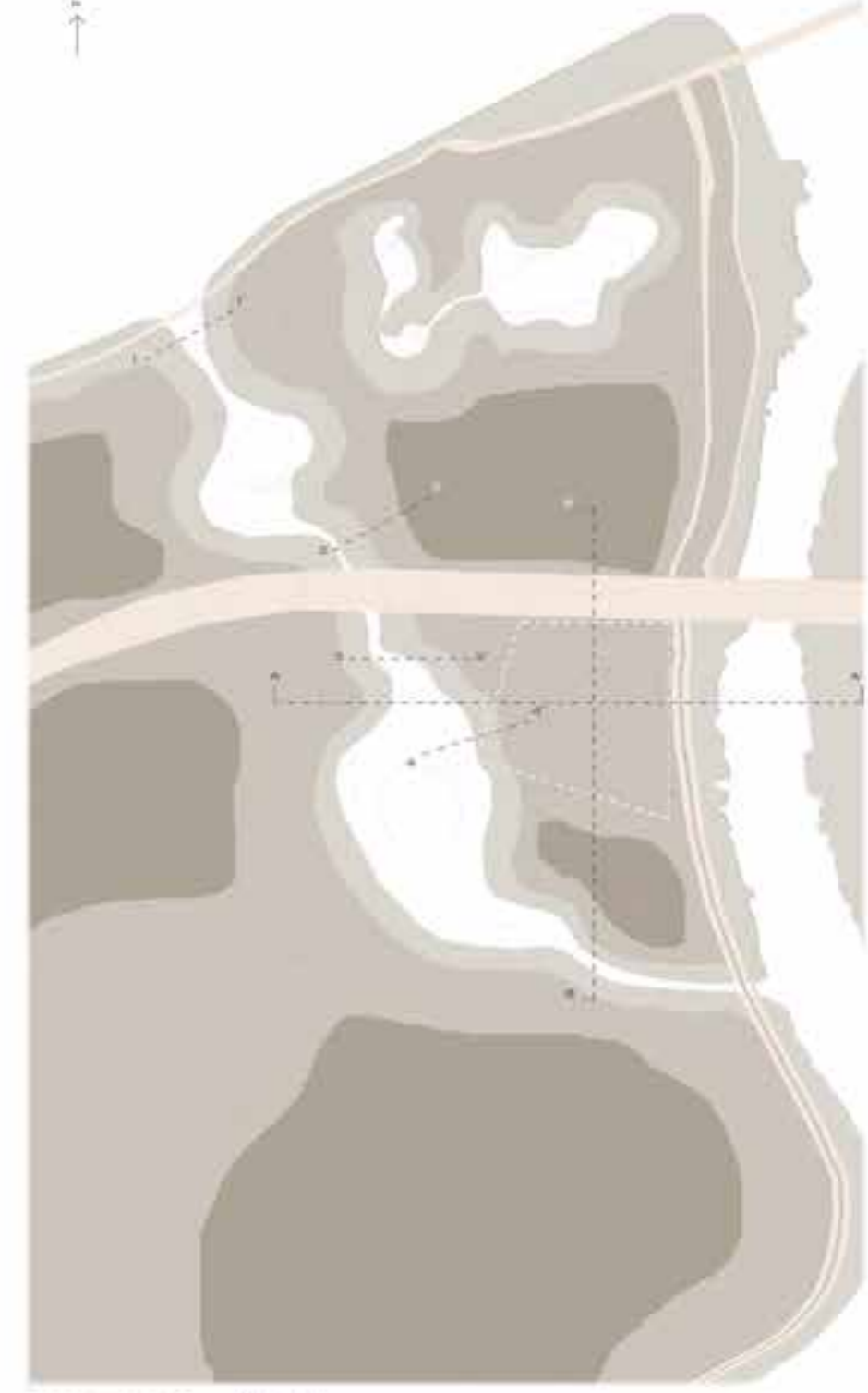
MATERIALS

*MATERIALS OF 'CONTEXTUAL RESPONDING' ARE CITED FROM [HTTP://WWW.ARCHITECTURAL-REVISION.COM/INNOVATIVE/THERMAL-BATHS-BY-PETER-ZURHORST-VALSWITZ-BERLIN-061679-ARTICLE](http://www.architectural-revision.com/innovative/thermal-baths-by-peter-zurhorst-valswitz-berlin-061679-article) AND [HTTP://WWW.ARCHITECTURAL-REVISION.COM/INNOVATIVE/MATERIALS-OF-PETER-ZURHORST-VALSWITZ-BERLIN-11211471-135098](http://www.architectural-revision.com/innovative/materials-of-peter-zurhorst-valswitz-berlin-11211471-135098) AND [HTTP://WWW.ARCHITECTURAL-REVISION.COM/INNOVATIVE/MATERIALS-OF-STRUCTURE](http://www.architectural-revision.com/innovative/materials-of-structure) ARE CITED FROM [HTTP://WWW.ARCHITECTURAL-REVISION.COM/INNOVATIVE/MATERIALS-OF-STRUCTURE](http://www.architectural-revision.com/innovative/materials-of-structure) ARE CITED FROM [HTTP://WWW.ARCHITECTURAL-REVISION.COM/INNOVATIVE/MATERIALS-OF-STRUCTURE](http://www.architectural-revision.com/innovative/materials-of-structure)



EXISTING SITE PLAN (1:1500)

WOODLAND HERBAGE/SHRUB HELOPHYTE ROAD/LANE



PROPOSED SITE PLAN (1:1500)

WOODLAND HERBAGE/SHRUB HELOPHYTE ROAD/LANE



SECTION A-A' (1:700)



SECTION B-B' (1:700)



FRAGMENT SECTION 1-1' (1:300)



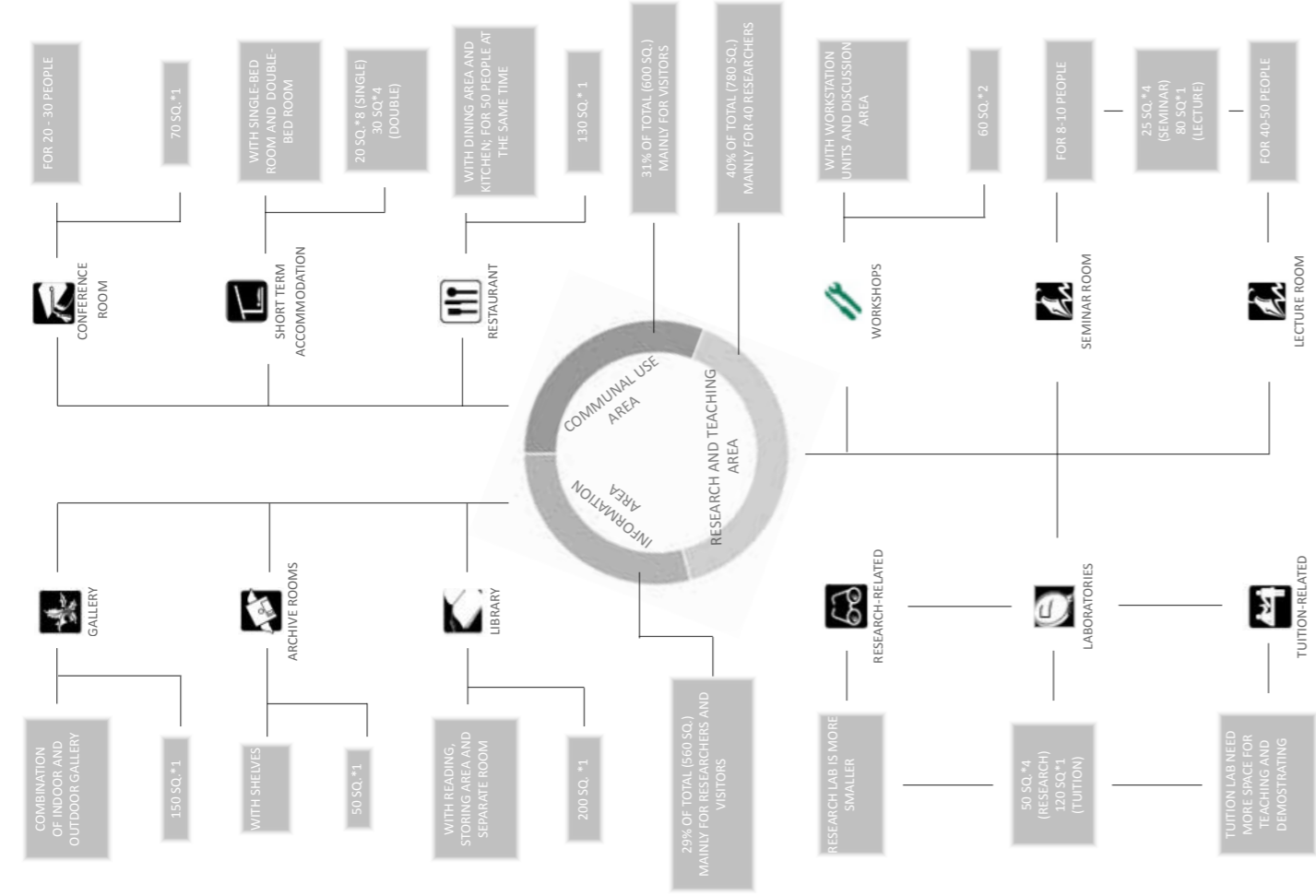
FRAGMENT SECTION 2-2' (1:300)



FRAGMENT SECTION 3-3' (1:300)



FRAGMENT SECTION 4-4' (1:300)



GENERAL SITE CONDITIONS



TOPOGRAPHY: GENTLE SLOPE AND GENERALLY EVEN TYPOGRAPHY WITH VARIOUS VEGETATION



PHYSIOGNOMY: THE WETLAND PHYSIOGNOMY NEED TO BE PROTECTED DURING THE FOUNDATION CONSTRUCTION PERIOD



LOCAL BIRDS*: PROTECTING LOCAL EGRETS FROM EXTERNAL LIGHTING REFLECTIONS WHICH LEADS BIRDS TO CONFUSION



SPECIAL LOCATION: THE ACTUAL SITE IS LOCATED BETWEEN WATER AND LAND

STRATEGIES



WETLANDS CAN BE COMBINED WITH ARCHITECTURAL DESIGN, SUCH AS GRADUALLY COMBINING WETLAND SURFACES WITH ROOF



FOUNDATION CONSTRUCTION METHOD 1: LIGHT-WEIGHT BUILDING CAN USE RAFT FOUNDATION, BUT THE DEPTH NEED TO BE CONTROLLED (CA. 1M)



FOUNDATION CONSTRUCTION METHOD 2: THE PILES FOUNDATION CAN BE USED IN WETLAND SITE. THE DEPTH OF PILES NEED TO TOUCH ROCKS



THE ENVELOPE MATERIALS AND GLAZING AREAS SHOULD BE DESIGNED CAREFULLY FOR AVOIDING EXTERNAL REFLECTION LIGHT

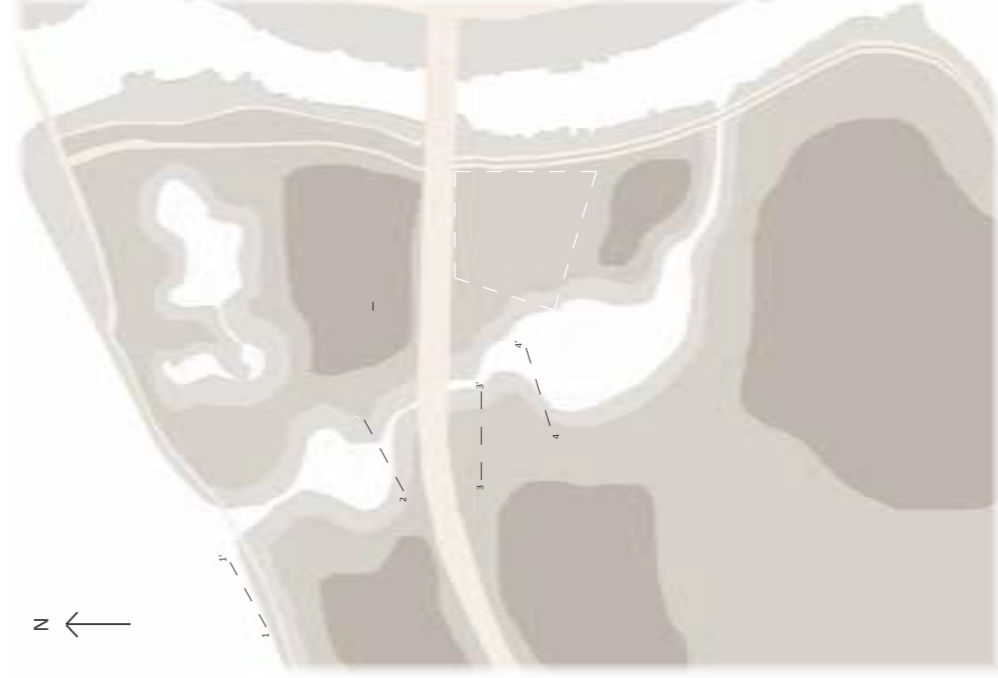


THE INTERPENETRATIVE SPACES OF WATER AND LAND CAN BE CREATED FOR BLURRING THE BOUNDARY BETWEEN RIVER AND ARCHITECTURE

Programme, Site Condition And New Proposed Site



ORIGINAL SITE PLAN (SCALE:1:3000)



PROPOSED SITE PLAN (SCALE:1:3000)



"This fragmentation section shows the relationship among river, helophyte and herbage plants"



"This fragmentation section shows the relationship among river, helophyte, herbage and arbor plants"



"This fragmentation section shows the relationship among river, helophyte and herbage plants"

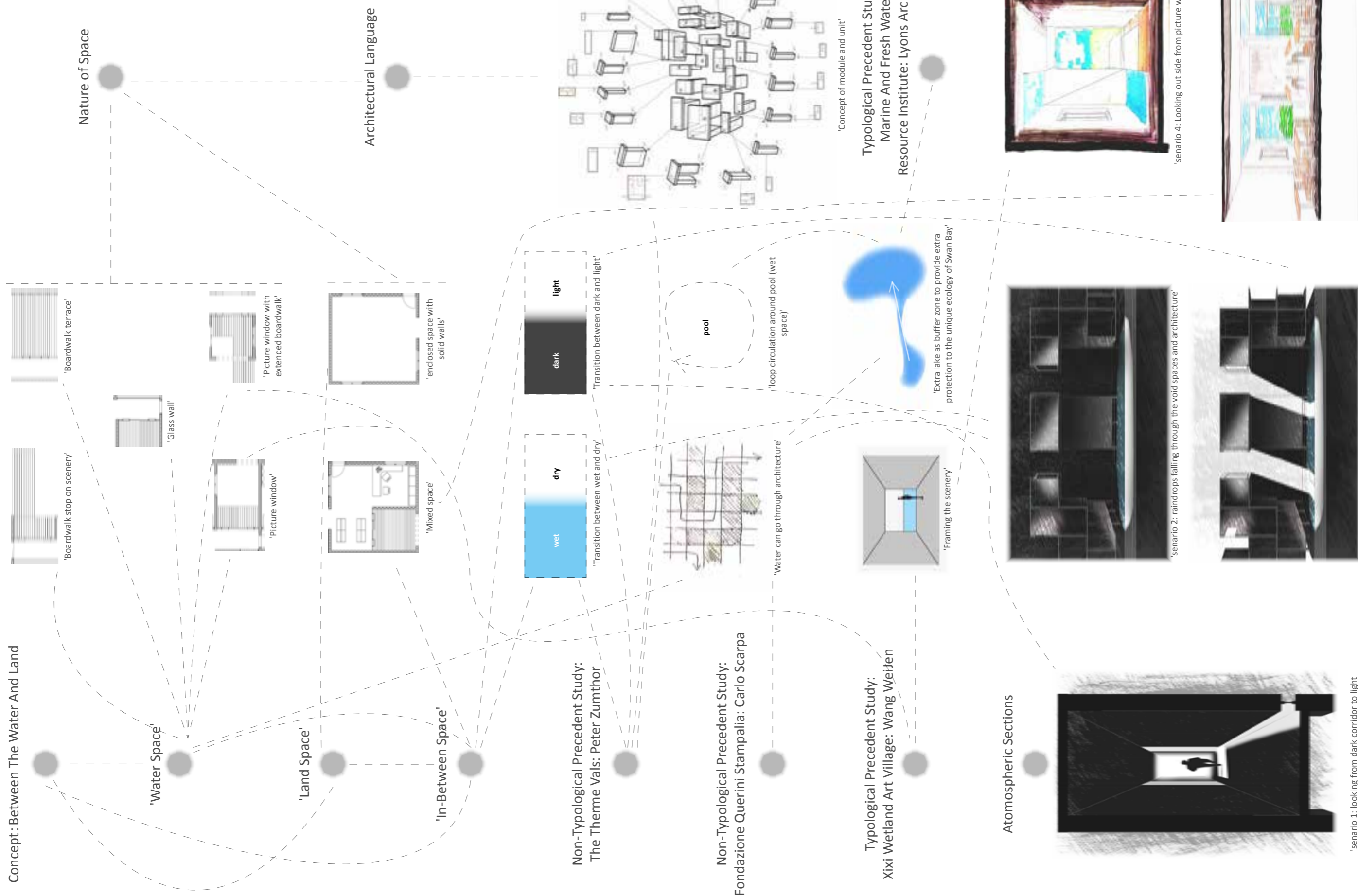


"This fragmentation section shows the relationship between lake and actual site"

- woodland
- herbage/shrub
- helophyte
- road/lane



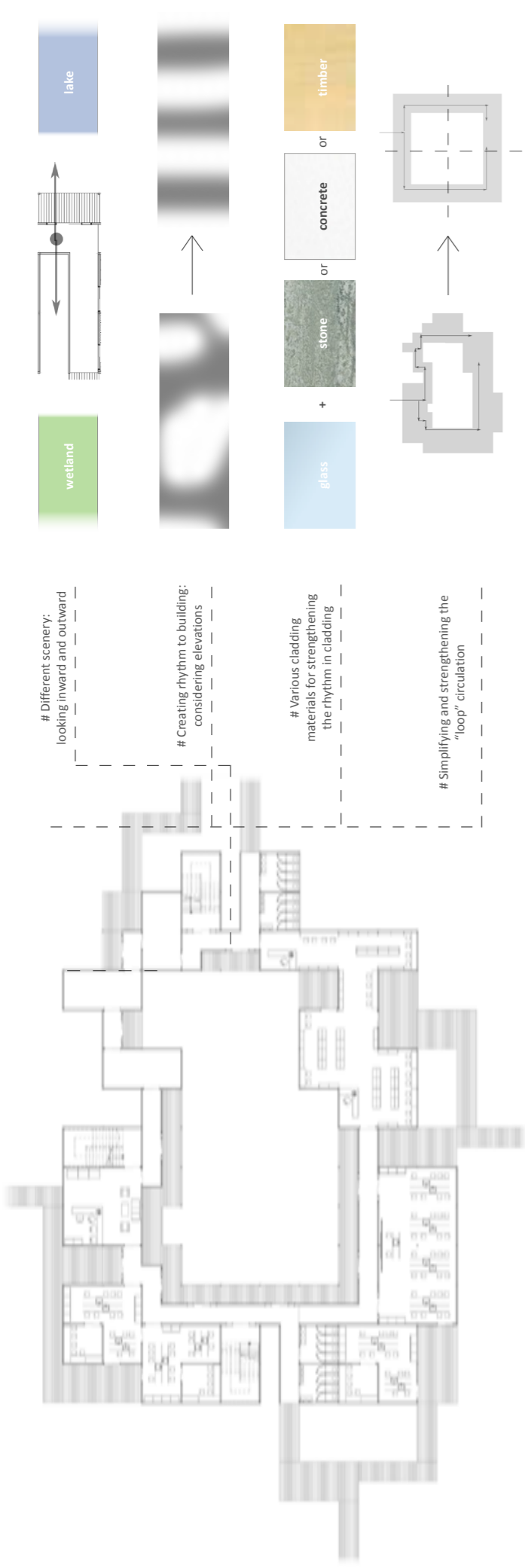
PHOTO MONTAGE OF EAST SIDE OF PROPOSED SITE



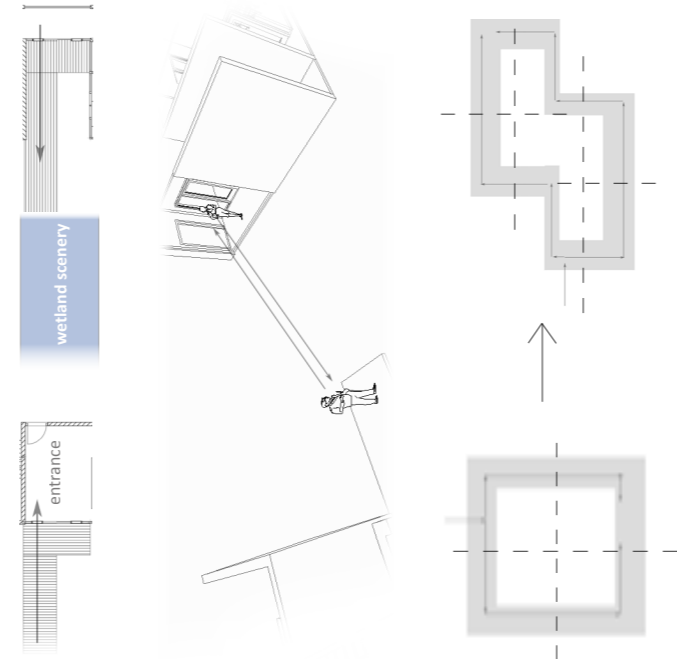
'scenario 1: looking from dark corridor to light space'

'scenario 3: lighting shining into the inner lake'

'scenario 5: void space in restaurant'



DESIGN PROCESS: STEP 1: GROUND FLOOR PLAN (SCALE 1:250)



DESIGN PROCESS: STEP 2: GROUND FLOOR PLAN (SCALE 1:250)

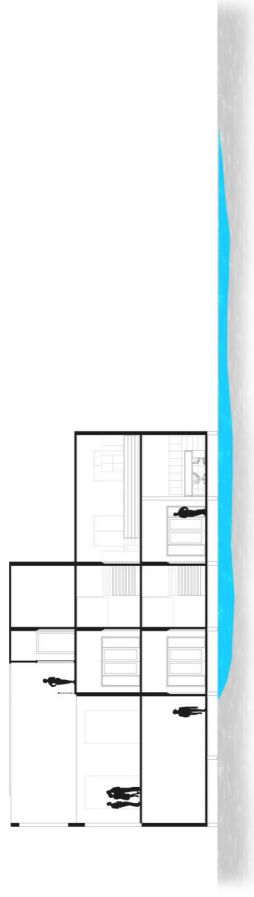
Development Processes And Plans



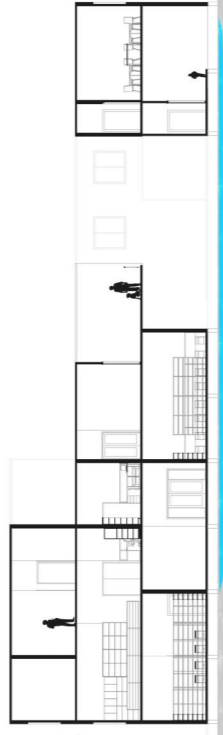
GROUND FLOOR PLAN (SCALE 1:200) [DESIGN PROCESS: STEP 3]



2ND FLOOR PLAN (SCALE 1:200)



SECTION A-A' (SCALE 1:200)



SECTION B-B' (SCALE 1:200)



SECTION C-C' (SCALE 1:200)



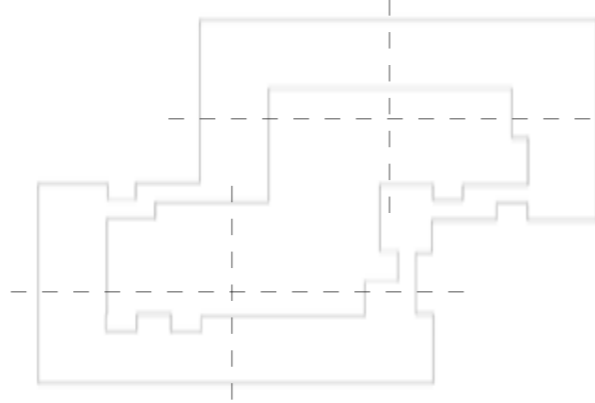
Structure



Circulation To Use

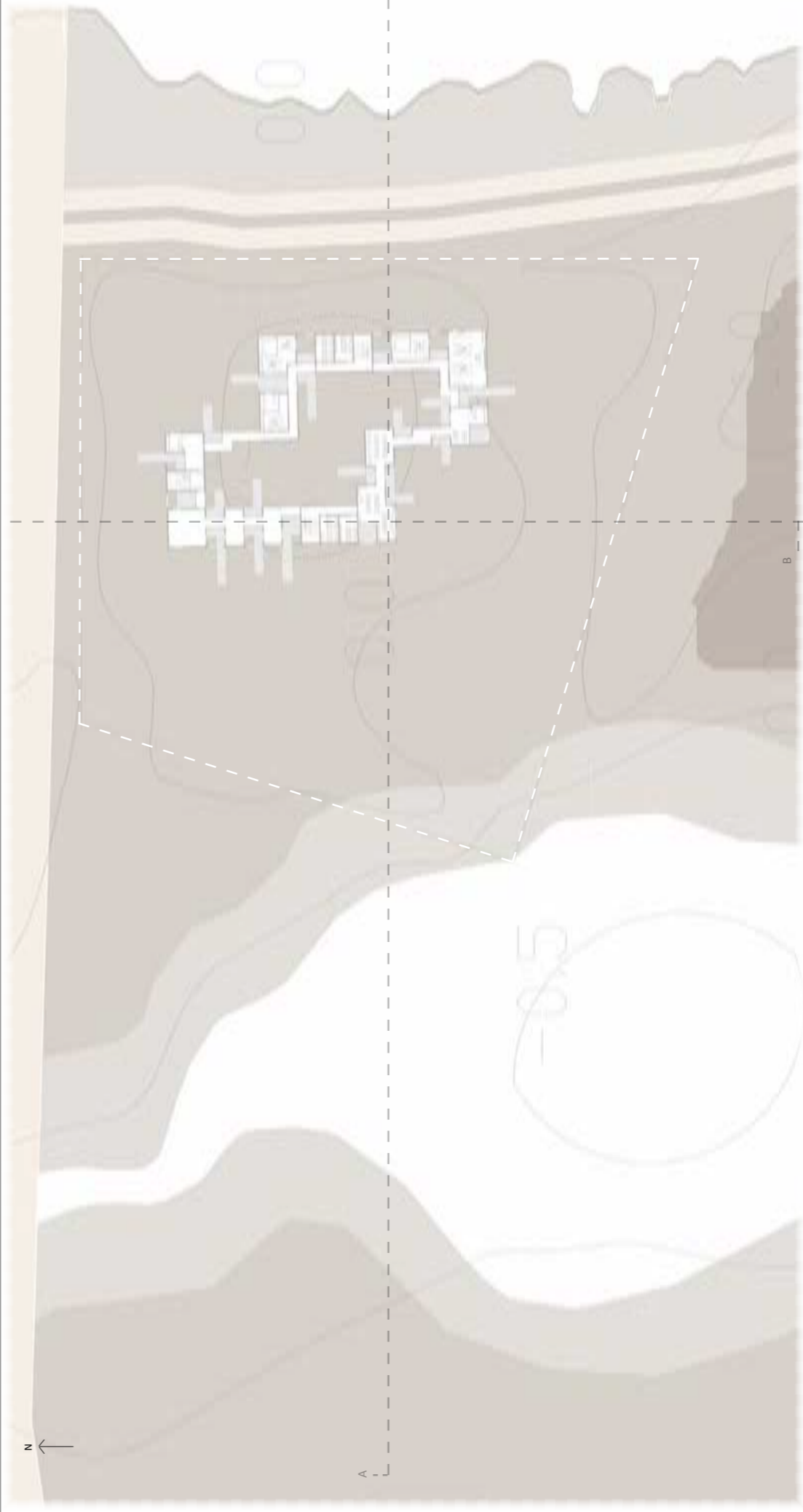


Additive And Subtractive



Symmetry And Balance

Sections, Analytical Diagrams, Site Plan And Site Sections



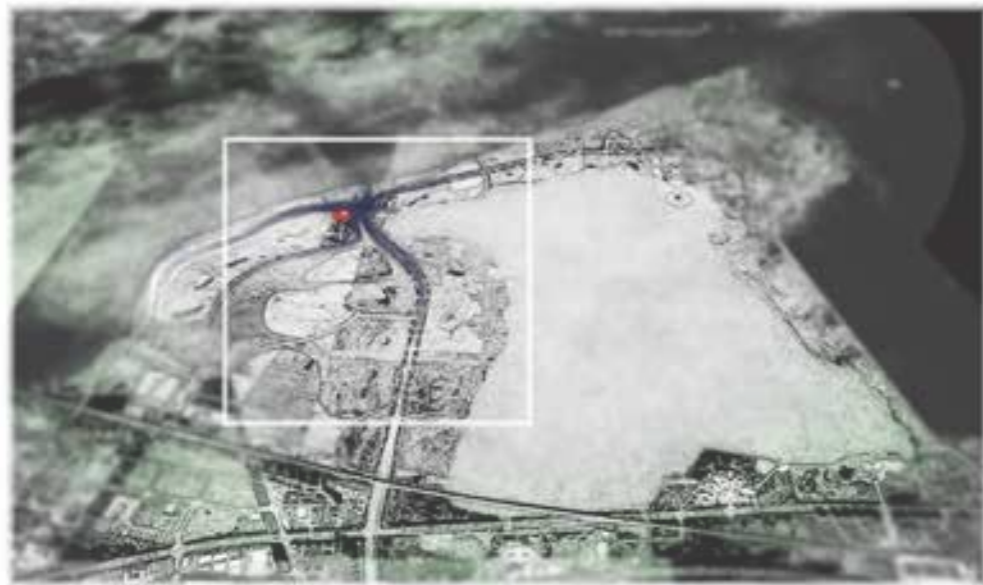
SITE PLAN WITH GROUND FLOOR OF PROJECT (SCALE 1:500)



SITE SECTION A WITH PROJECT (SCALE 1:500)



SITE SECTION B WITH PROJECT (SCALE 1:500)



"# The Satellite Photo Of Yangcheng Lake Peninsula and Introduction from Design Brief:
Yangcheng Lake Peninsula is Located In The Northeast Of The Suzhou Industrial Park (SIP). With Over 30 Kilometers Of Shoreline, It Has The Features Of A Typical Water Landscape In South Jiangsu Province. The Peninsula Is Home To More Than 80 Kinds Of Birds, 40 Planktons And 30 Benthos. It Has Over 200 Kinds Of Wild Plants, 200 Types Of Cultivated Plants And 30 Aquatic Plants.
The Diagram In Right Top: The Main Traffic Line In Yangcheng Lake Peninsula (Yellow Line Shows The Bike Lines And Blue Line Shows The Main Road)
The Diagram In Right Bottom: The Main Or Future Possible Commercial, Tourist, Social And Service Spots In Yangcheng Lake Peninsula"



"Proposed Site Masterplan Showing the Major Parts Which Influence the Design Proposal (1:2000)"



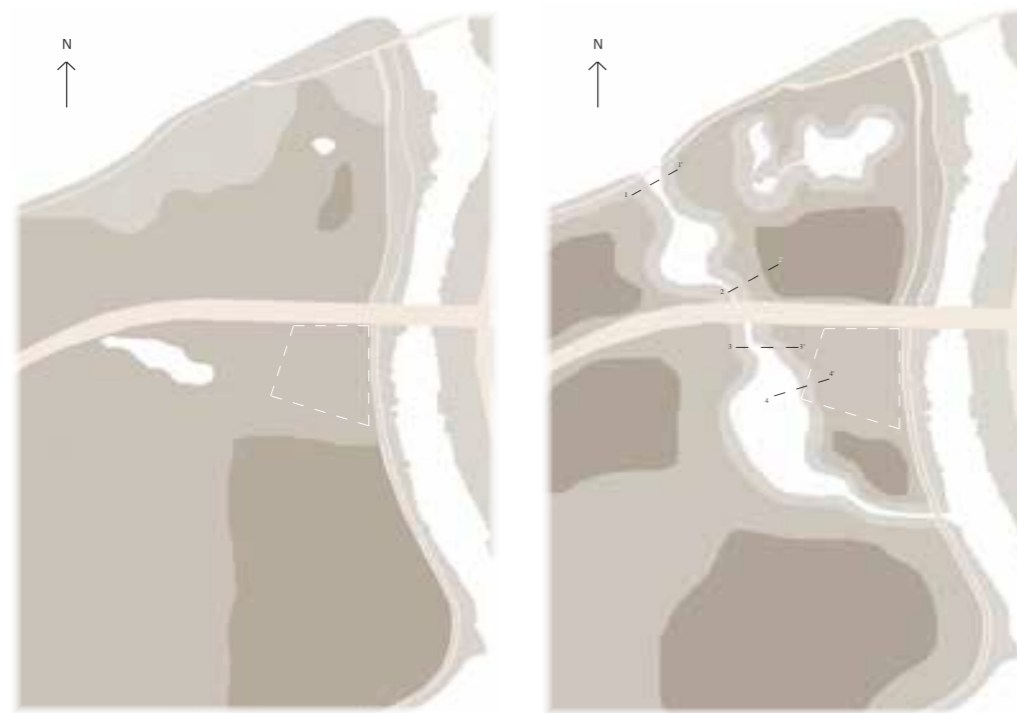
"Responding To Construction Design: The Piles Foundation Can Be Applied To Protect the Wetland Physiognomy"

"Responding To Proximity Of Site: Boardwalks Can Not Only Protect Wetland But Also Can Connect Architecture With Surrounding Scenery Or Facilities."

"Responding To The Vegetation Of Site: The Unique Wetland Vegetation Can Be Highlighted And Involved With The Programme Of Design Proposal."

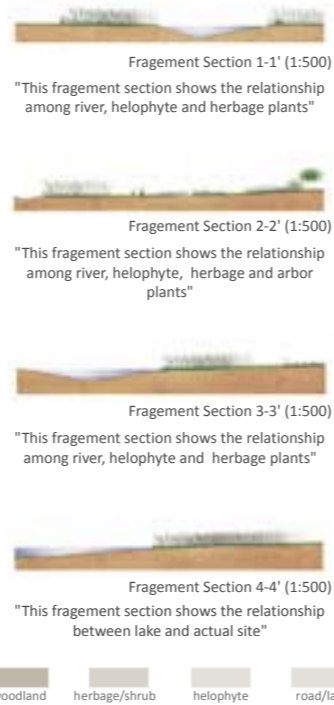
"Responding To Wetland Birds: The Cladding Materials Should Be Designed Carefully For Avoiding External Reflected Light Which Will Lead Birds To Confusion."

Masterplanning the Wetland: Existed Site and Proposed Site (Group Work)



"Existed Site Plan (Scale 1:3000)"

"Proposed Site Plan (Scale 1:3000)"



Fragement Section 1-1' (1:500)

"This fragement section shows the relationship among river, helophyte and herbage plants"

Fragement Section 2-2' (1:500)

"This fragement section shows the relationship among river, helophyte, herbage and arbor plants"

Fragement Section 3-3' (1:500)

"This fragement section shows the relationship among river, helophyte and herbage plants"

Fragement Section 4-4' (1:500)

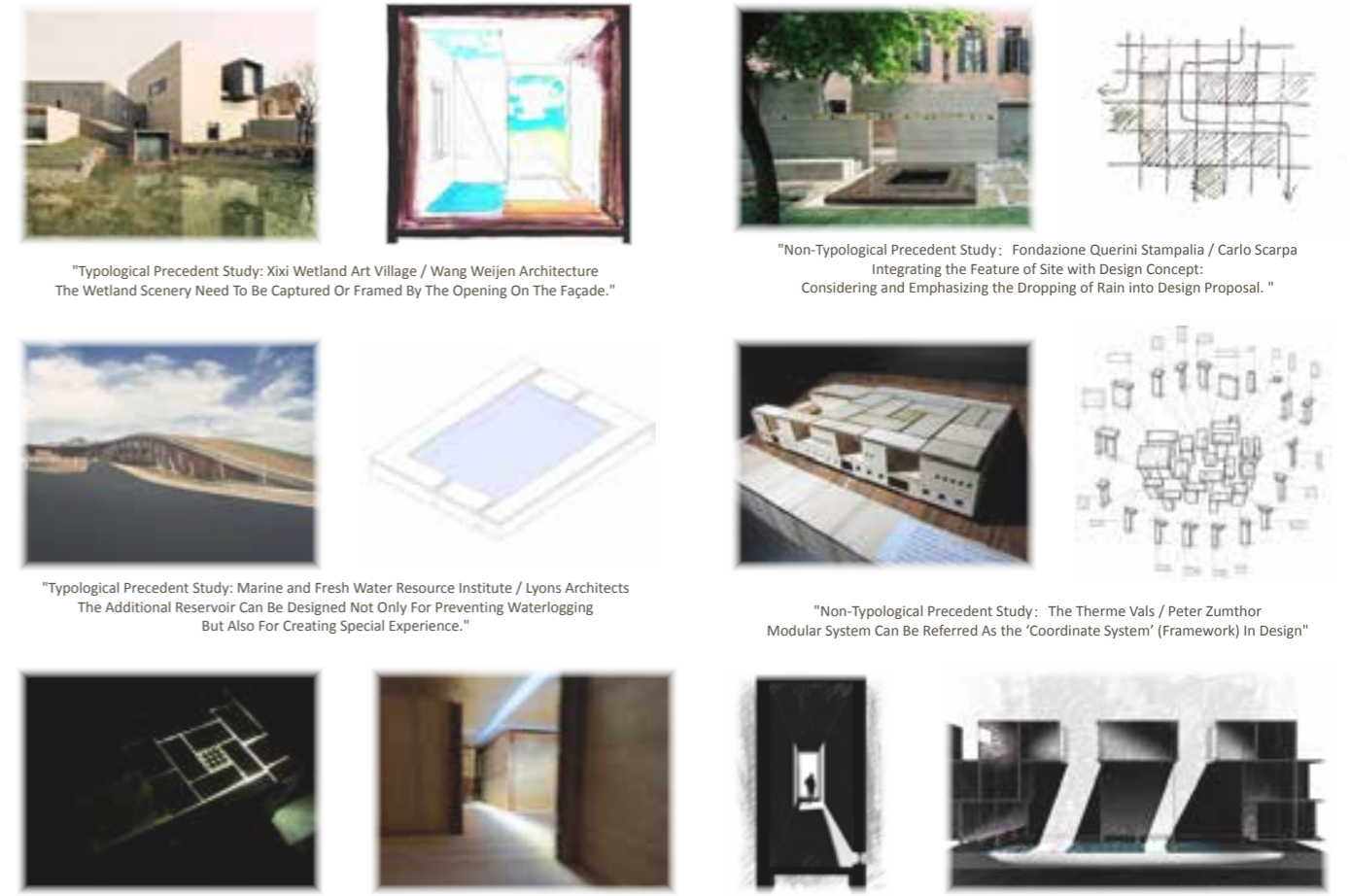
"This fragement section shows the relationship between lake and actual site"



"Photo Montage of West Side of Proposed Site"

"Photo Montage of East Side of Proposed Site"

Site Analysis, Research and Precedent Studies



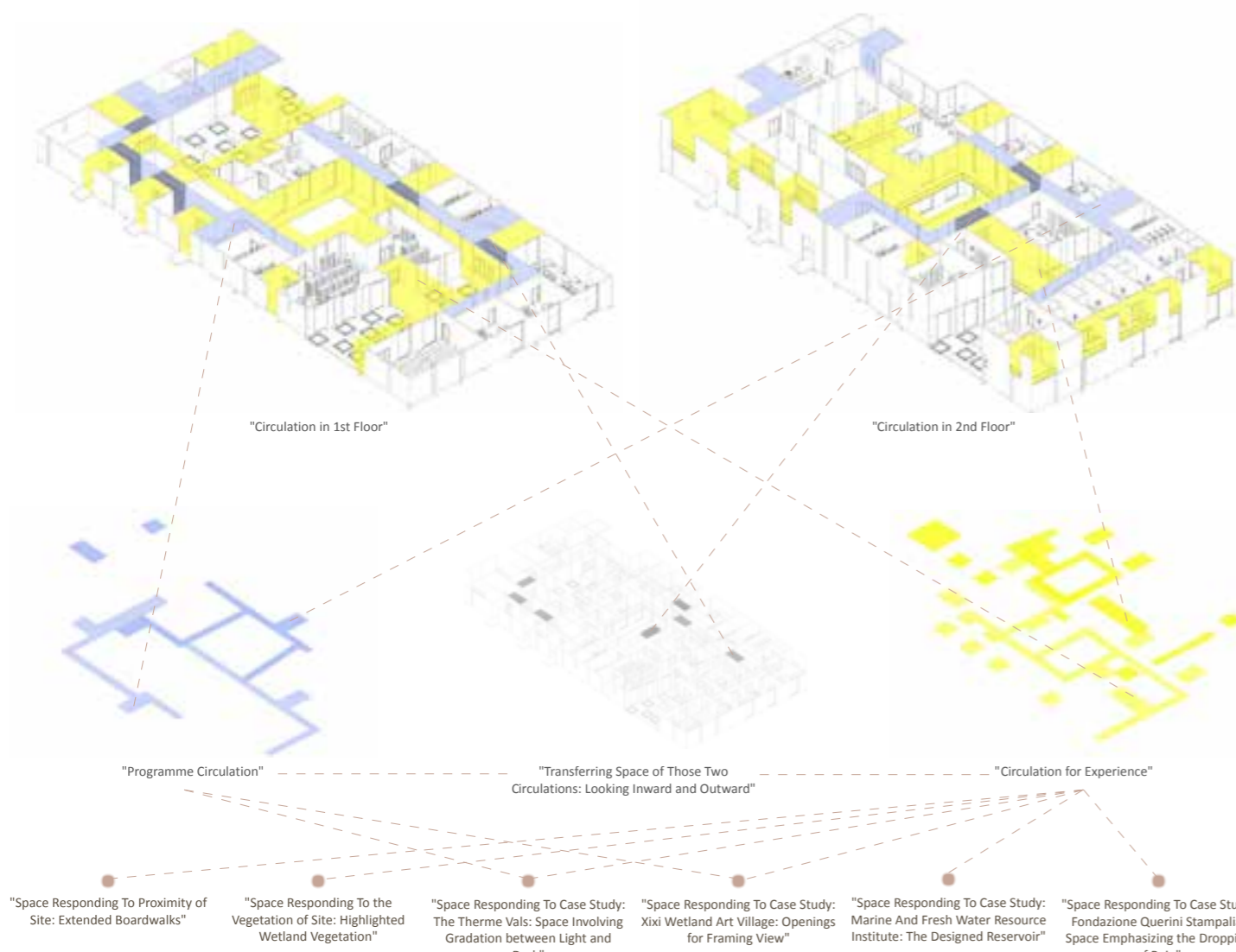
"Typological Precedent Study: Xixi Wetland Art Village / Wang Weijen Architecture
The Wetland Scenery Need To Be Captured Or Framed By The Opening On The Façade."

"Non-Typological Precedent Study: Fondazione Querini Stampalia / Carlo Scarpa
Integrating the Feature of Site with Design Concept: Considering and Emphasizing the Dropping of Rain into Design Proposal."

"Typological Precedent Study: Marine and Fresh Water Resource Institute / Lyons Architects
The Additional Reservoir Can Be Designed Not Only For Preventing Waterlogging But Also For Creating Special Experience."

"Non-Typological Precedent Study: The Therme Vals / Peter Zumthor
Modular System Can Be Referred As the 'Coordinate System' (Framework) in Design"

"Non-Typological Precedent Study: The Therme Vals / Peter Zumthor
The Atmosphere of Gradation between Light and Dark (Created by Skylight and Opening): Atmospheric Sections from Case Study Embed the Atmospheric Special Quality into Design Proposal."



"Design concept: the interpenetration between programme circulation (blue part in diagram) and circulation for experience (yellow part in diagram). The space which people can have different experiences when looking inward and outward is the transferring space of those two circulations (darker part in diagram). The spaces with different spatial qualities defined in site analysis and precedent studies are involved in different circulations."

Circulation Anatomy (Design Concept) and Design Process



"Design Development Process: Phase 1 (1:500)"
 Main Challenges and Improvements:
 # Different scenery: looking inward and outward
 # Creating rhythm to building: considering elevations
 # Simplifying and strengthening the "loop" circulation



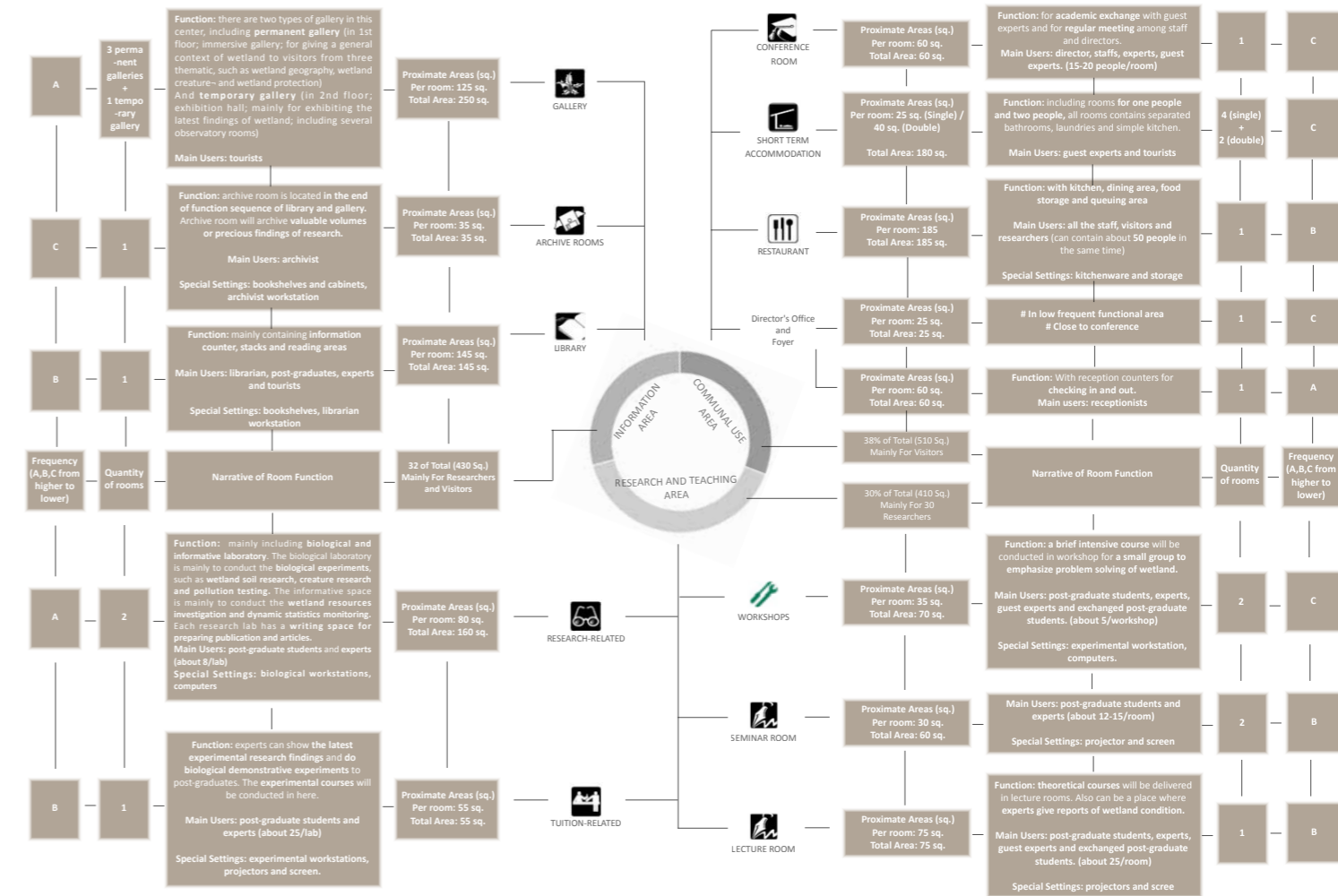
"Design Development Process: Phase 3 (1:500)"
 Main Challenges and Improvements:
 # The continuity between architecture design and the masterplan of wetland
 # Strengthening the poetic circulation (emphasizing the people's experience on dropping of rain)



"Design Development Process: Phase 2 (1:500)"
 Main Challenges and Improvements:
 # Experimental attempt of design: shifting the square geometry and achieving less control in circulation and more spatial possibilities



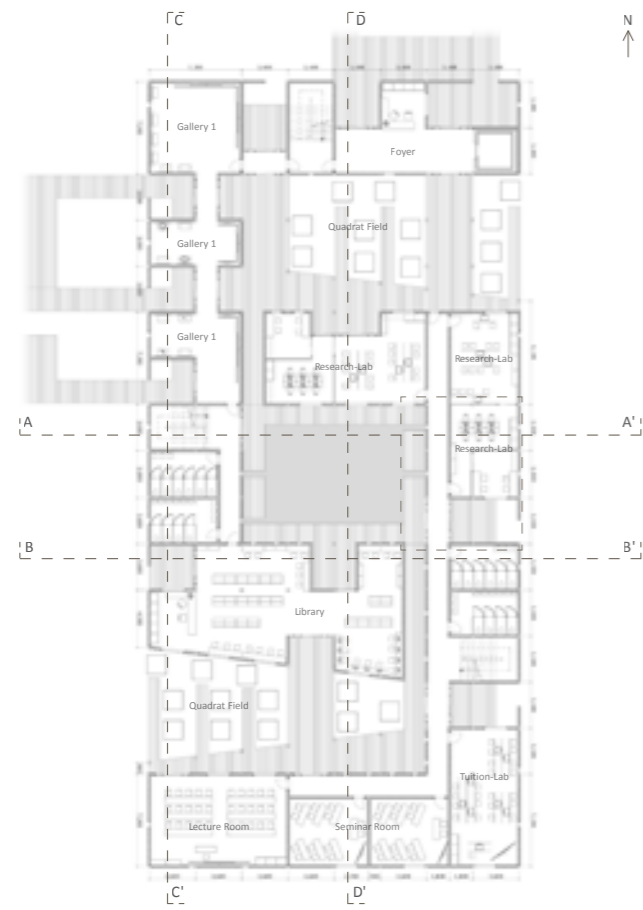
"Design Development Process: Phase Now (1:500)"
 Main Challenges and Improvements:
 # Cladding design: combining the modular structural system with openings (Picture openings, windows, skylights and gaps)
 # Cladding design: cohering the whole project with the consistency between façades design and roof design.



Proposed Programme and Site Plan (1:500)



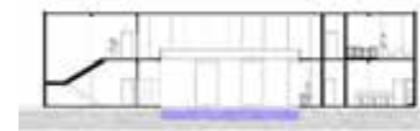
"Site Plan (Scale 1:500): Showing the Accessibility of Design Proposal, the Solar Access and Relationship between Design Proposal and Surrounding Contextual Environment."



"The 1st Floor Plan (Scale 1:200)"



"The 2nd Floor Plan (Scale 1:200)"



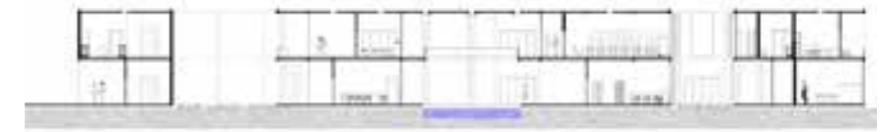
"Section A-A' (Scale 1:200)"



"Section C-C' (Scale 1:200)"



"Section B-B' (Scale 1:200)"



"Section D-D' (Scale 1:200)"



"East Elevation (Scale 1:200)"



"South Elevation (Scale 1:200)"



"West Elevation (Scale 1:200)"



"North Elevation (Scale 1:200)"

Floor Plans (1:200) and Partly Detailed Plans (1:50)

Sections, Elevations (1:200) and Design Impression



"Detailed Plan: The Area around Research-Lab (1st Floor; Indicating by Dashed Square in the 1st Floor Plan) (Showing the Texture of Floor, Lighting Condition, Beam and Skylight Layout Above) (Scale 1:50)"



"Detailed Plan: The Area around Workshop (2nd Floor; Indicating by Dashed Square in the 2nd Floor Plan) (Showing the Texture of Floor, Lighting Condition, Beam and Skylight Layout Above) (Scale 1:50)"



"Perspective View from the Northwest of Research Center"



"Poetic Space for Experiencing the Dropping of Rain: Interior Reservoir in Rainy Evening"



"The Interior Lighting Condition of Gallery 2: The Lighting from Skylight and Opening"



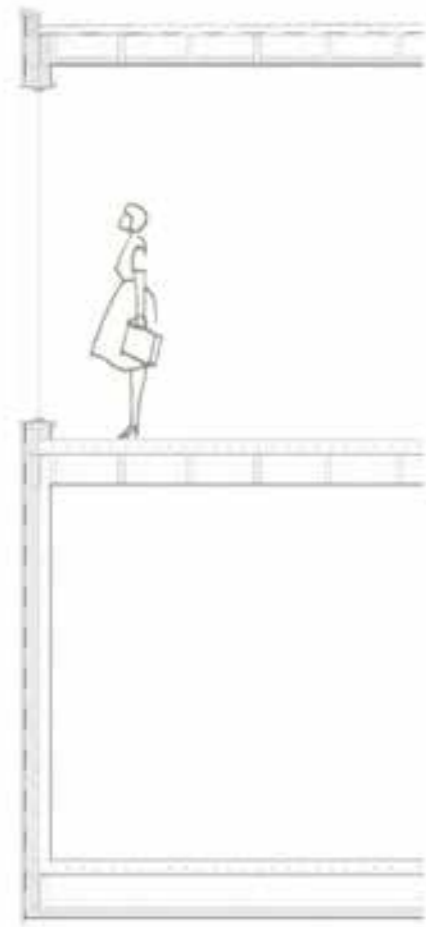
"The Corridor with Inclined Ceiling and Vertical Windows for Creating the Atmosphere of Lighting"



"Vegetation Highlighted Functionally: The Courtyard Quadrat Field for Research"



"Space for Experiencing Scenery: The Observatories Adjacent To Gallery 2"

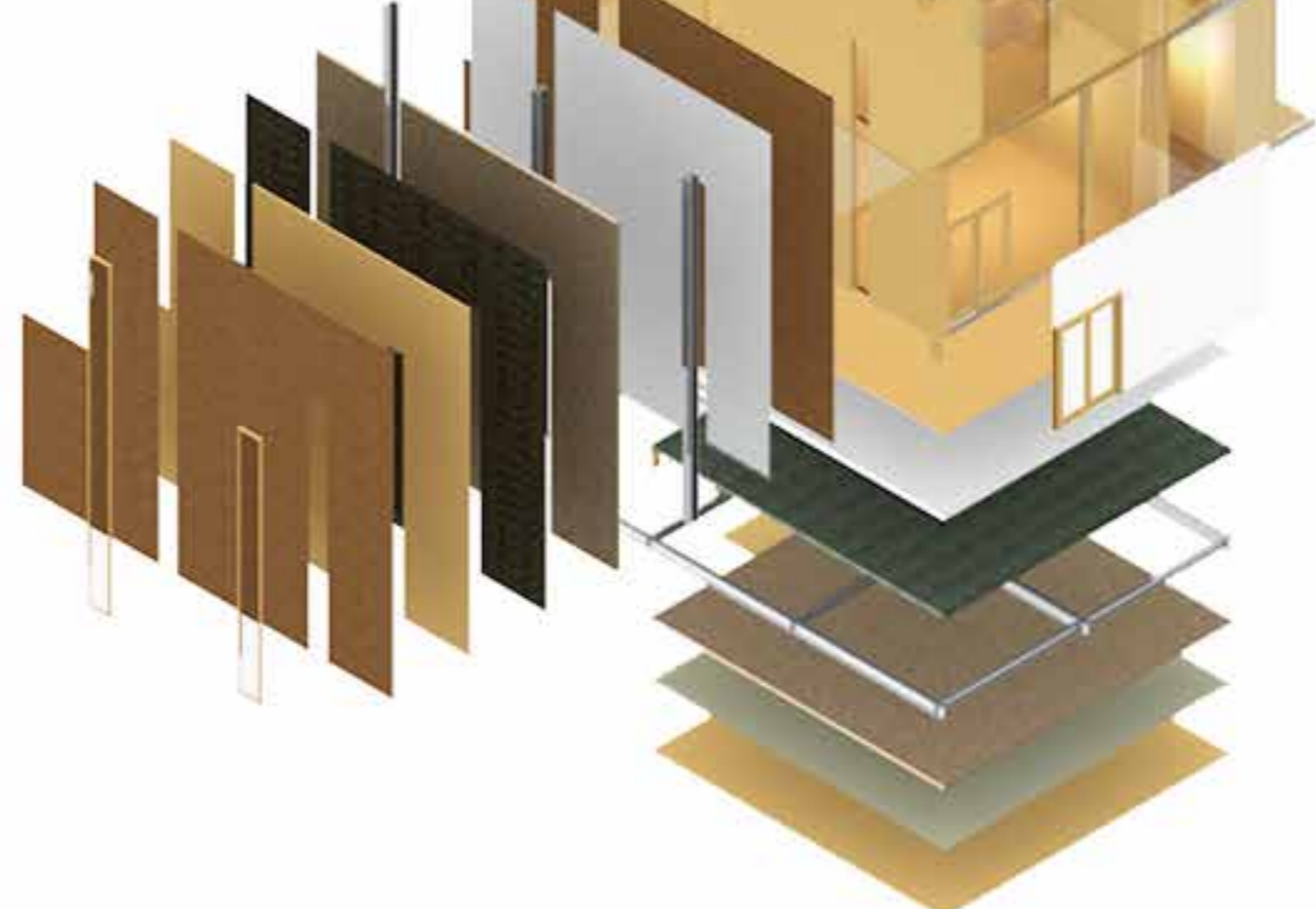


"# Major Structure: Steel Frame Structure with Cantilevered Balcony (for light-weight and large span)
Structure System: Column Grid System
Structural Module: 0.9m"

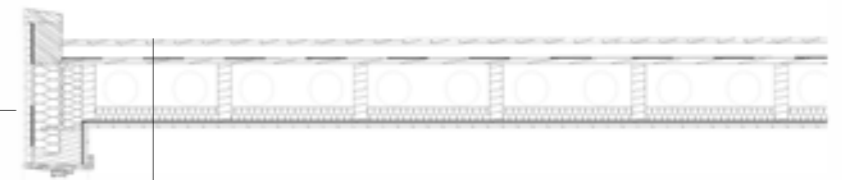


"Bracing Design: since the major structure is steel frame structure, the bracing should be designed for resisting lateral forces (earthquake or wind load). This proposal uses cable bracing (is achieved in the cavity part of non-load bearing wall). The design proposal basically can be regarded as four main rectangular blocks, in that case, the corners should be braced as the plan above showing (scale 1:400)"

"Overall construction details (Scale 1:20): this construction details are showing the major constructive feature of this design proposal, including steel framing structure, wall construction, glazing construction, roof construction, floor and ground lifted floor construction. This overall construction details also shows the relationship between people and architecture spatially."



"Skylight Construction: (Scale 1:10; from exterior to interior)
Double glazing skylight in wood/aluminum frame (5mm low emissivity glass, 12mm dry air space and 8mm laminated glass) (the frame of skylight is insulated and designed with inclined top for drainage)
The interior surface of empty space is painted in white color for improving the lighting condition
Insulated glass for creating flat ceiling and insulating the sound and thermal transferring through empty space of skylight."



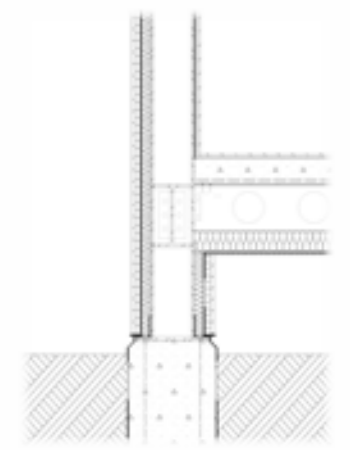
"Roof Construction (Scale 1:10; from exterior to interior):
15/100mm Timber planks (with gaps between planks for drainage)
50mm supporting structure
Water proofing layer
17mm (on average) Plywood roof decking (inclined surface for achieving roof drainage)
200mm structure and service space supported by 50/200mm glue-laminated timber strips (90/180mm castellated linking beam for light-weight and services; 50mm thermal insulation)
Vapor control layer
10mm plasterboard for mounting ceiling finish
10mm oak timber ceiling finish"



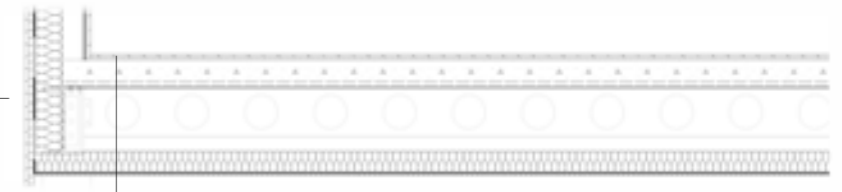
"Ceiling Design: the ceiling of corridor is designed into wavy shape (the lighter the lower, the darker the higher) to emphasize the lighting special atmosphere within corridor. The plan (scale 1:400) showing how the wavy corridor ceiling is designed in the 1st floor. (Reference picture for showing the atmosphere of this ceiling design: the picture from the designing: dl atelier outdoor orchestra stage)"



"Glass Wall Construction: (Scale 1:10 from left to right)
Edge of non-load bearing wall (view line in back)
20mm glass slats on aluminum construction (with sound and thermal insulation membrane)
10mm dry air space
20mm thermal insulated low-e glass (if adjacent to exterior)
30mm laminated safety glass"



"Pile Foundation Construction:(Scale 1:10)
Steel "H" column bolted deeply joining with concrete pile foundation. The concrete pile foundation is water proofed and inserts into wetland soft soil to touch the hard rock layer for achieving reaction forces."



"Ground Floor Construction: (Scale 1:10; from top to bottom)
10mm oak timber floor finish
10mm plasterboard for mounting ceiling finish
100mm steel composite deck (with reinforced concrete layer on top)
240mm empty space for lifted ground floor structure (150/240mm steel 'H' girder; 90/180mm castellated linking beam for light-weight; bolted joints between steel structural components)
80mm thermal insulation
Dampness control layer
10mm MDF (Medium Density Fiberboard)"

"Wall Construction: (Scale 1:10; from left to right)
13mm walnut timber cladding (rough surface to diffuse external light for prevent wetland bird from reflected light)
20mm MDF (Medium Density Fiberboard) for mounting the external finish
Water proofing layer
100mm thermal insulation
80mm air space for achieving bracing where need resist lateral force in framing structure (crossing cable bracing) (light view line: 180/180mm steel "H" column; bolted joints between steel structural components)
Vapor control layer
10mm plasterboard for mounting interior finish
10mm walnut timber interior finish"

Chapter 5: Design Reflection and Revision

Design Reflection
Design Revision

Design Reflection

There are some comments given by tutors and scribe during final review. This “design reflection” section will summarize the main commentary from tutors and scribe, introduce what I will revise or add in this chapter based on those suggestion, explain the importance of those suggestion and analysis what design result those suggestion can lead to.

The 1:200 plan drawing is lacking of the connection with contextual environment is the one of main problems in final review. Since the design project is influenced by the contextual condition of site and the design project impacts site condition as well, 1:200 ground floor plan need to show the part of surrounding site for explaining the relationship between site and architecture. The revised plan also will be added some symbols of different types of vegetation (herbage and helophyte) for indicating the extended exterior gallery space and the way to entrance (the further explanation is noted beside “revised 1:200 ground plan” part). The other problem of 1:200 plan is readability of drawing. There are many void space throughout and some cantilevers in the 2nd floor in this design, so the projection dashed line of 2nd floor should be draw in the ground floor (1st floor) for showing the vertical spatial relationship. After solving those problem, 1:200 ground floor plan can not only shows the relationship between site and project but also can explain the vertical spatial relationship between ground floor and the 2nd floor.

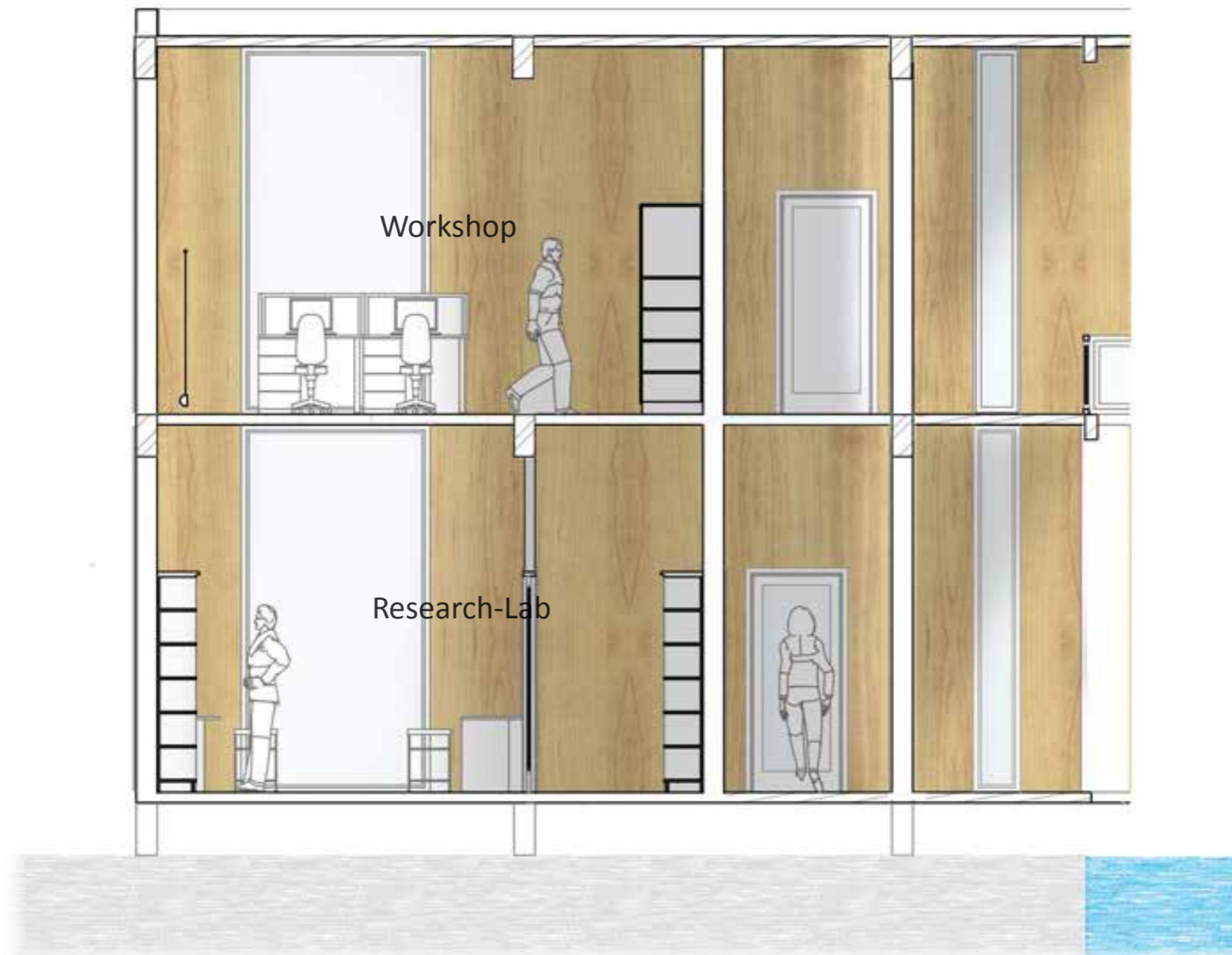
Continuing designing gallery space is the second main comment in final review. Gallery space is the important and major part of information area in this design programme. According to the tutor’s comment, the gallery in the 2nd (gallery 2) need to be developed more. Based on the expanded programme, the gallery 2 is a temporary gallery, which means the layout would be changed relatively frequently. Therefore, the space of gallery 2 is preferred to be designed as an open plan for achieving the flexibility of space and functional requirement. The space layout of gallery 2 showed in final review rendering and plan is just an option of layout. Because steel column structure, the interior space of gallery 2 is very open. In that case, the interior partitions can be used to divide space for creating different options of spatial layout of gallery in order to satisfy the different requirements of gallery. The different layout options will be introduced in “Design Revision” section of this chapter, including layout options for exhibition, for video presentation and for mixed usage. The development of gallery design contributes the further exploration of project programme and the advantage of structural system can be involved in architectural requirement as well.

How the project is located on the site is another significant question tutor asked during final crit. the location of project can reflect which aspects of site influence the design project. Correspondently, different aspects of site condition can anchor the location of project to some extent. Moreover, the orientation of project need to be reconsidered and further explained, as the orientation can reflect the relationship between the location of functional room and contextual site environment. The revised analysis of sitting option will explain which aspects of site condition influence the project location and orientation. Furthermore, why those aspects can determine the location and orientation of project. After that revised analysis of sitting option, the relationship between site and design project will be explored further.

During the final crit, tutors also commented that the idea of openings need to be further explained. The designing of openings in building envelope is a very important part of façade design in this project. The façade design as well as the designing of openings are integrated with modular structure system, the requirement of lighting condition and the thinking of holistic coherence. This project folio will explain the design thinking involved in the opening of building envelope.

Design Revision

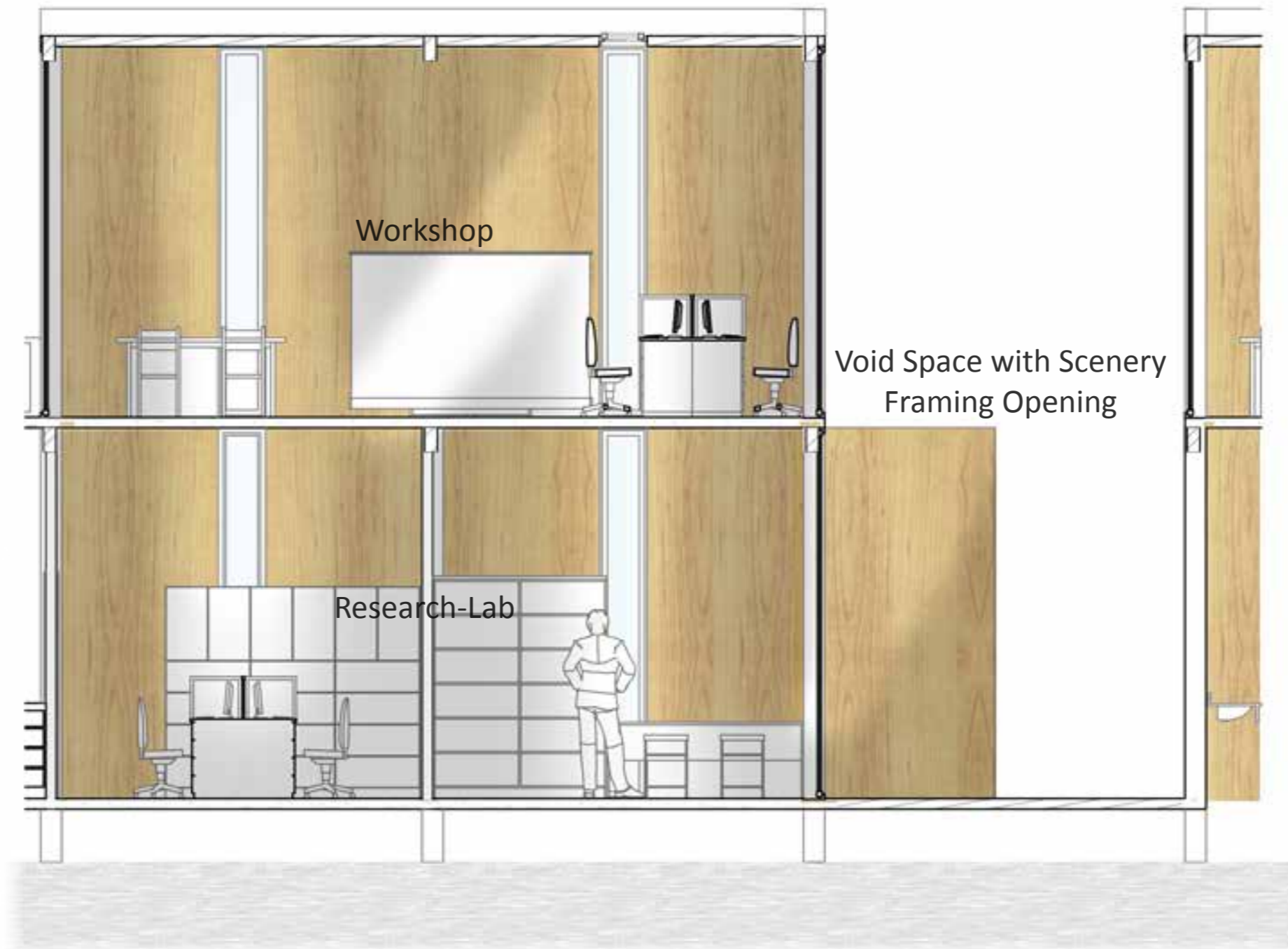
1:50 Sections (Additional Drawing)



“1:50 section A-A’ (the cutting line is labelled in “# *Fragment Details Plan (1:50)*” section of Chapter 3): the section above shows the material texture of interior wall, natural lighting condition, scale of interior space (through furniture and people) and beams (primary beam and link beam; the layout of beam is labelled in the 1:50 plan in dashed line)”

Design Revision

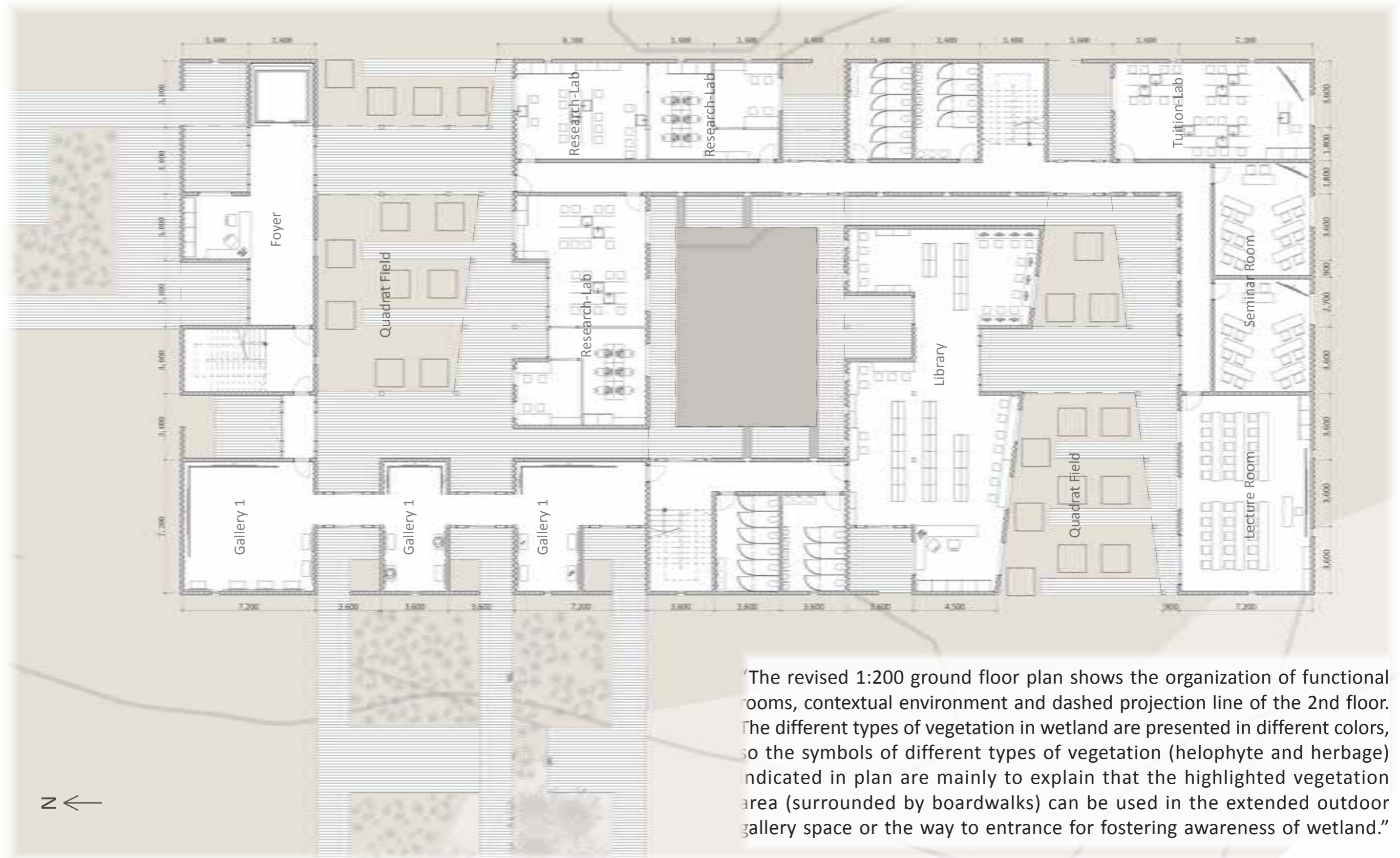
1:50 Sections (Additional Drawing)



“1:50 section B-B’ (the cutting line is labelled in “# Fragment Details Plan (1:50)” section of Chapter 3): the section above shows the material texture of interior wall, natural lighting condition, scale of interior space (through furniture and people) and beams (primary beam and link beam; the layout of beam is labelled in the 1:50 plan in dashed line)”

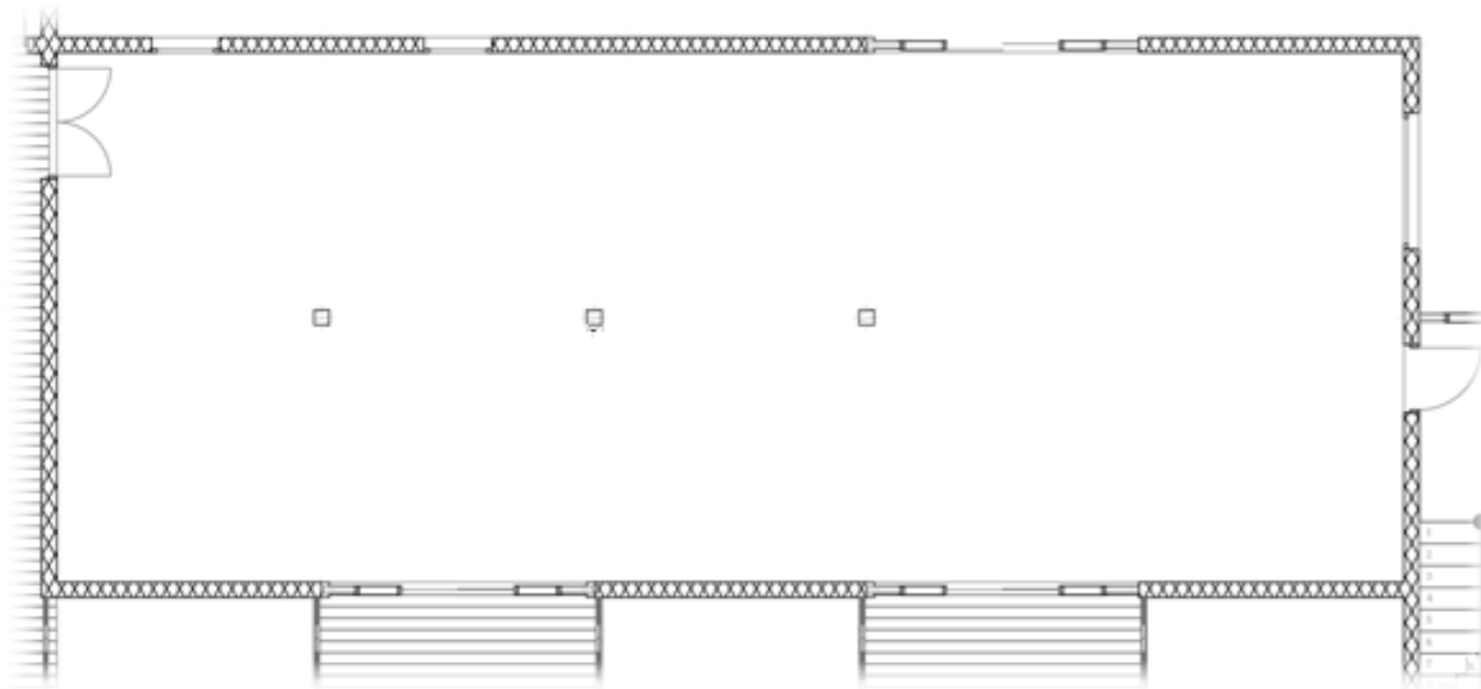
Design Revision

1:200 Ground Floor Plan (Revised Drawing)

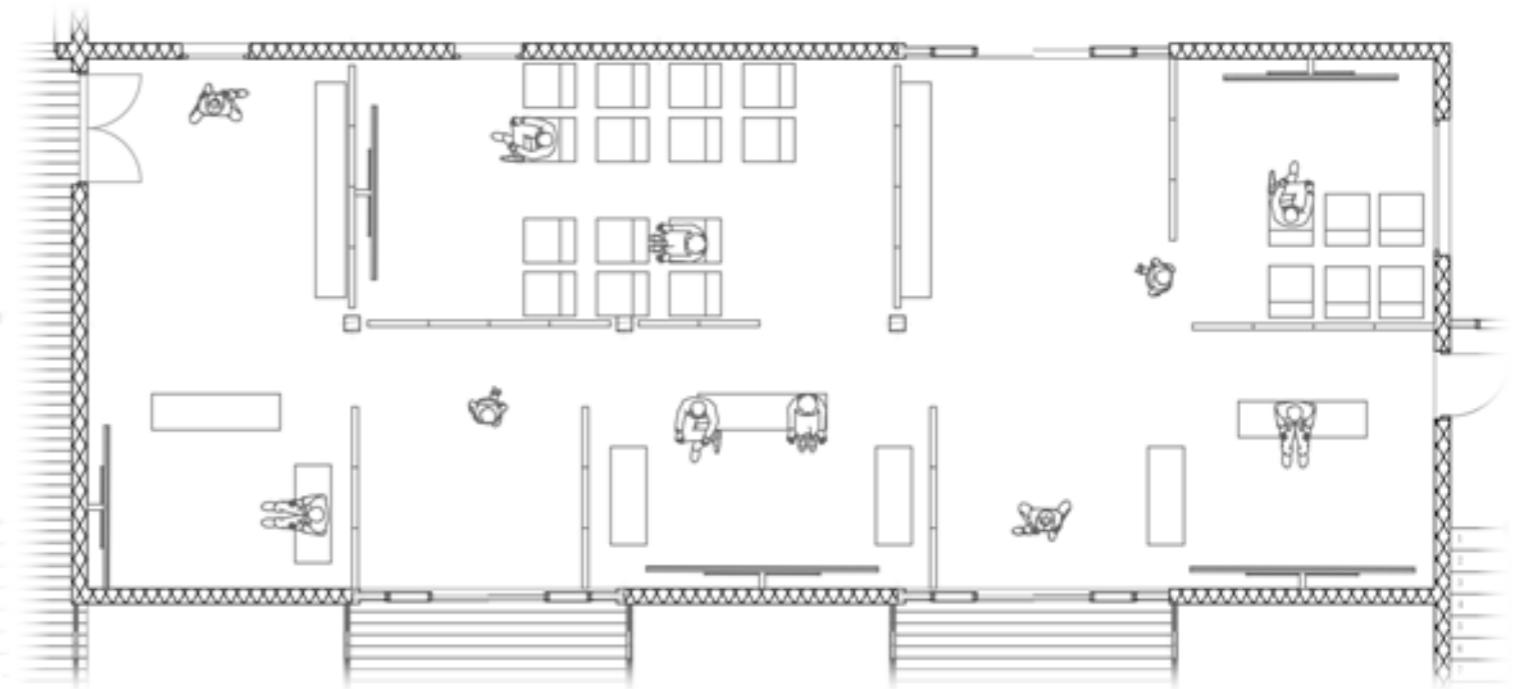


Design Revision

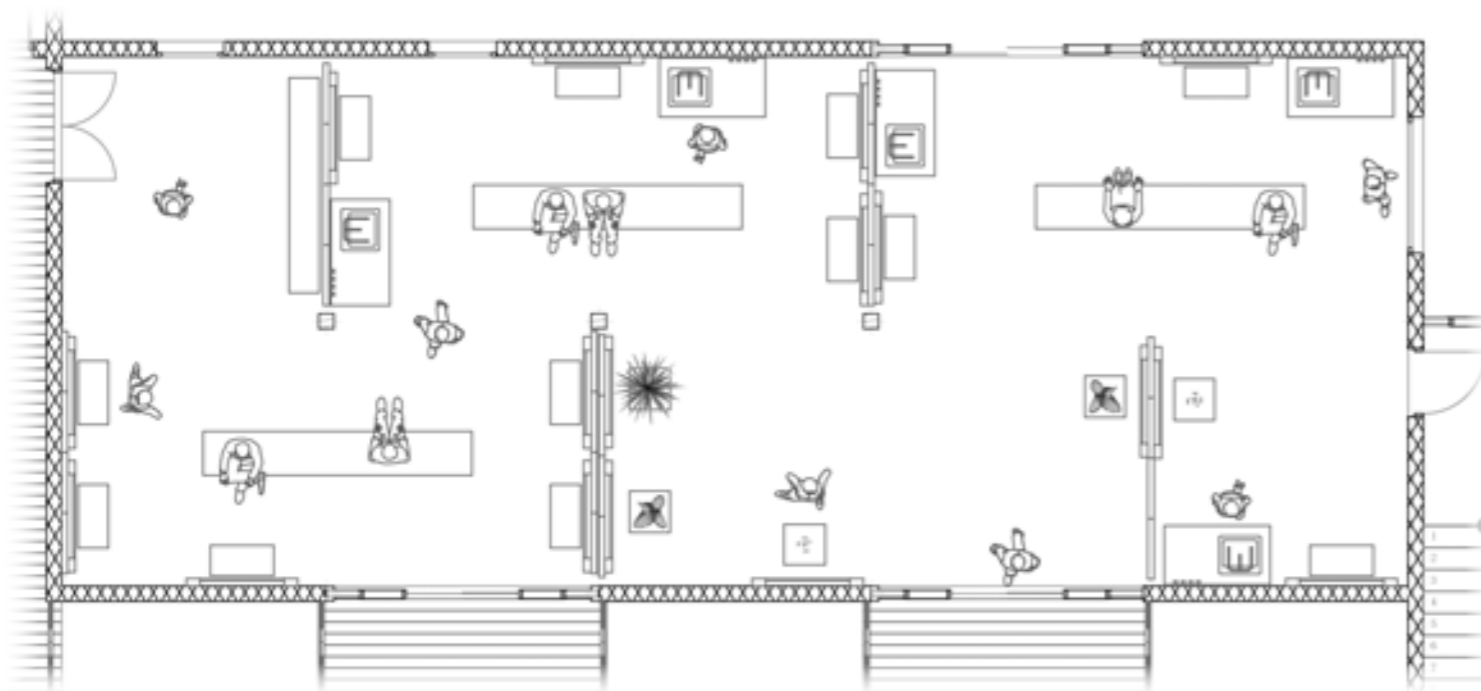
Gallery Design: Layout Options (Additional Design)



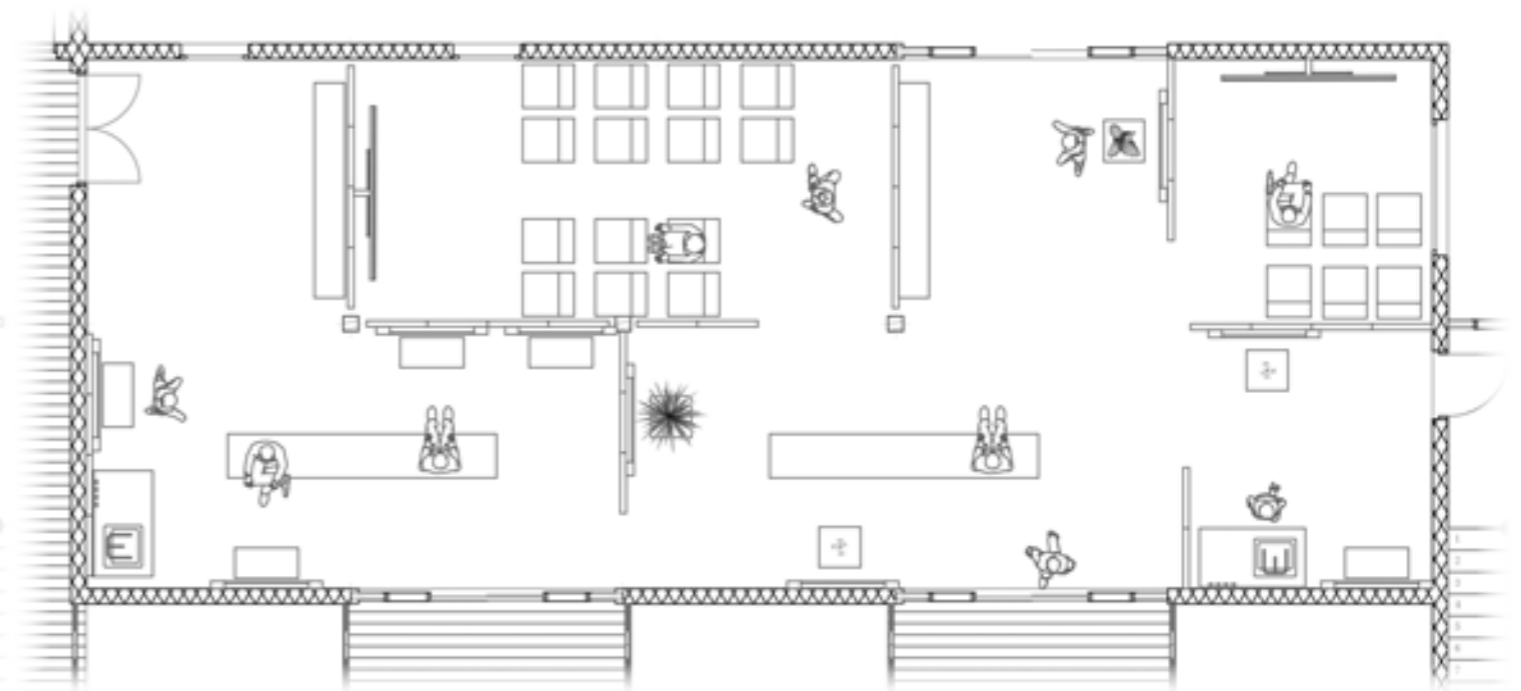
"Open Plan of the Gallery in 2nd Floor (Gallery 2) "



"The Space Layout for Video Presentation Scenario"



"The Space Layout for Exhibition Scenario"



"The Space Layout for Mixed Usage (Video Presentation + Exhibition)"

"The layout options above show (1:100) the four possible layout options for different spatial and functional requirements. Since Gallery 2 is a temporary gallery, the interior space of Gallery 2 is designed as an open plan space for satisfying the spatial flexibility. The modular system and column structure also contribute to open plan positively in this design"

Design Revision

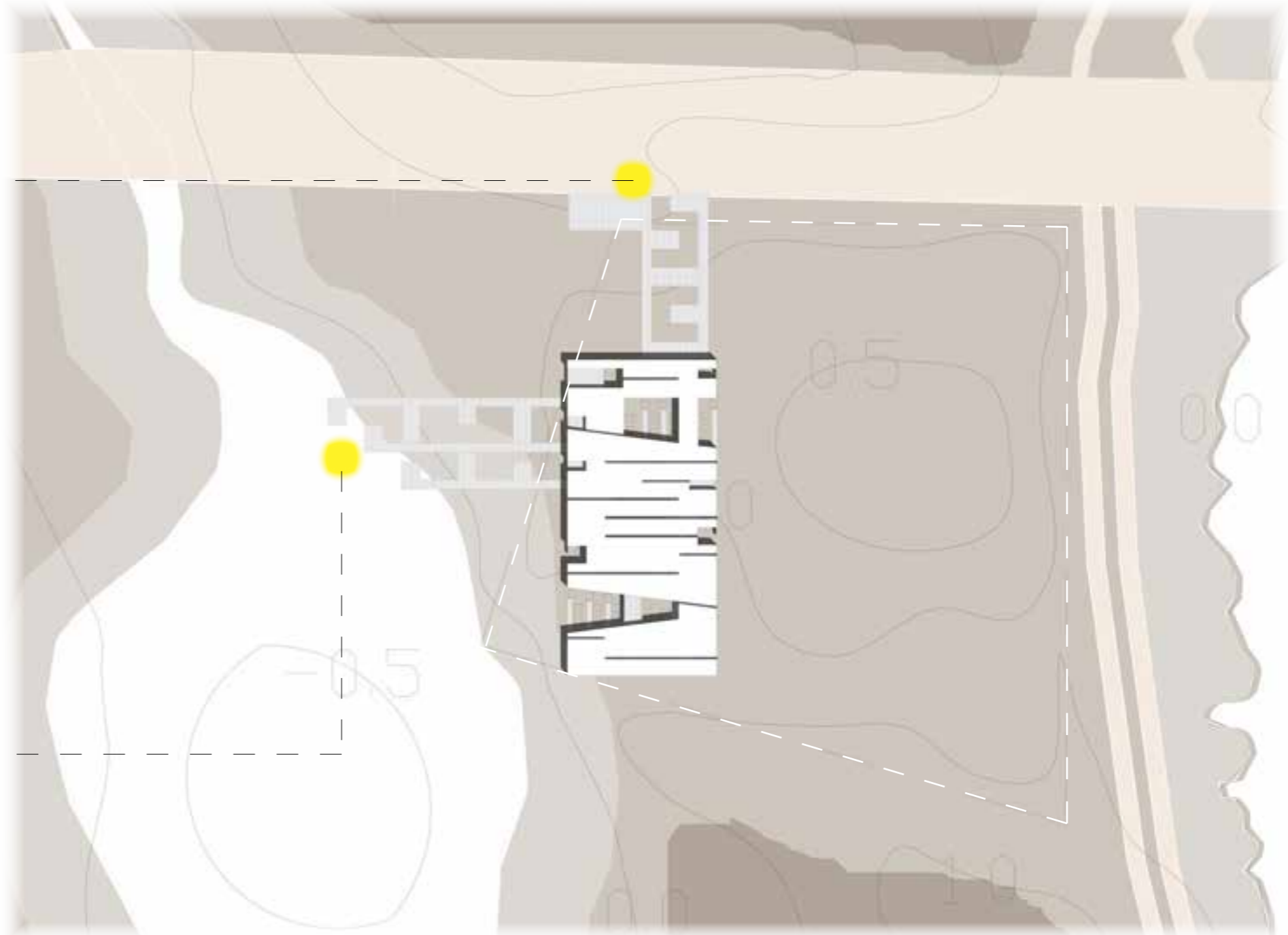
Sitting Option: Project Location (Revised Analysis)

"# Project Location:

Fostering The Awareness Of Wetland: The Way To Entrance Need To Be Designed For Fostering Visitor's Awareness Of Wetland (This Awareness Will Be Fostered By Highlighted Vegetation Space). Therefore, The Distance Of Boardwalk To Entrance Need To Be Relatively Longer For Letting People Have More Time To Wander The Highlighted Vegetation Space Before Enter The Building. Based On That Analysis, It Is Preferable To Locate The Project In The South Part Of Site To Create A Way To Entrance With Proper Distance And Enough Highlighted Vegetation Space For Fostering Wetland Awareness."

"# Project Location:

Considering The Accessibility To Water-Front Space: This Research Center Project Need To Be Located In A Place Where Can Not Only Let Users Access From Main Road To Entrance Easily But Also Let Users Access From Architecture To Water-Front Space Easily. Based On That Analysis, It Is Preferable To Locate The Project In The West Part Of Site For Being Closer To Water Front Area."



"1:1000 Site Plan Diagram for Showing Which Site Condition Influences the Location of Project"

Design Revision

Sitting Option: Project Orientation (Revised Analysis)

"# Project Orientation:

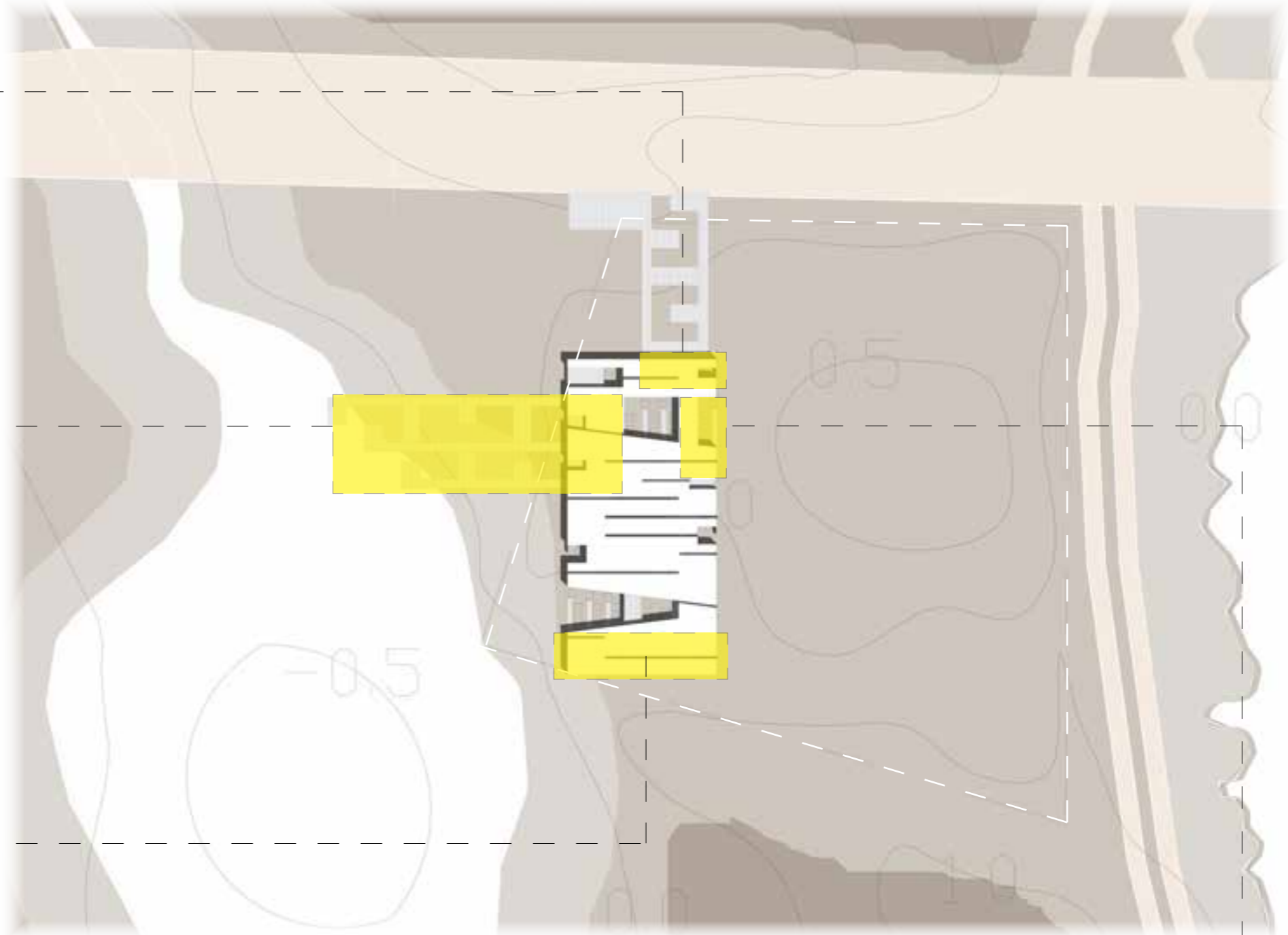
As The Site Plan Showing, The Entrance Is Facing To The Main Road Of This Area, Which Is Reasonable And Convenient For Users To Access To Building. "

"# Project Orientation:

Galleries Are Located In The West Part Of Project, And There Are Some Observatories And Extended Boardwalk Space For Extended Part Of Gallery Space. In That Case, As The Site Plan Showing, The Observatories Are Facing To West Part Of Wetland (The Masterplanned Part Of Wetland). Besides, The Vegetation Types Near Waterfront Space Are Diverse, Which Is Very Suitable To Be Designed As The Extended Part Of Gallery For Introducing The Different Types Of Wetland Plants."

"# Project Orientation:

As The Site Plan Showing, The Short-Term Accommodation Rooms Are Located In The North Part Of Project And Facing To The South Direction. Based On The Passive Solar Design Strategy, The South Facing Accommodation Will Create Thermal Comfort Interior Environment And The Energy Consumption Will Be Lower Theoretically."



"1:1000 Site Plan Diagram for Showing Which Site Condition Influences the Orientation of Project"

"# Project Orientation:

The Restaurant Area Is Facing To The River, Which Will Provide A Good Scenery When People Have Meals. Because The Diversity Of Vegetation In East Part Of Site Is Less Than West Part Of Site (Lake-Front Area) And Tour Lines (Bike Lines) Affect The Accessibility To River-Front Space, It Is Preferable To Locate Gallery Space Facing To West Side (More Suitable For People To Experience Wetland Physically) And Locate The Restaurant Area Facing To East Site (More Suitable For People To Have Visual Connection To River Part Of Wetland)."

Design Revision

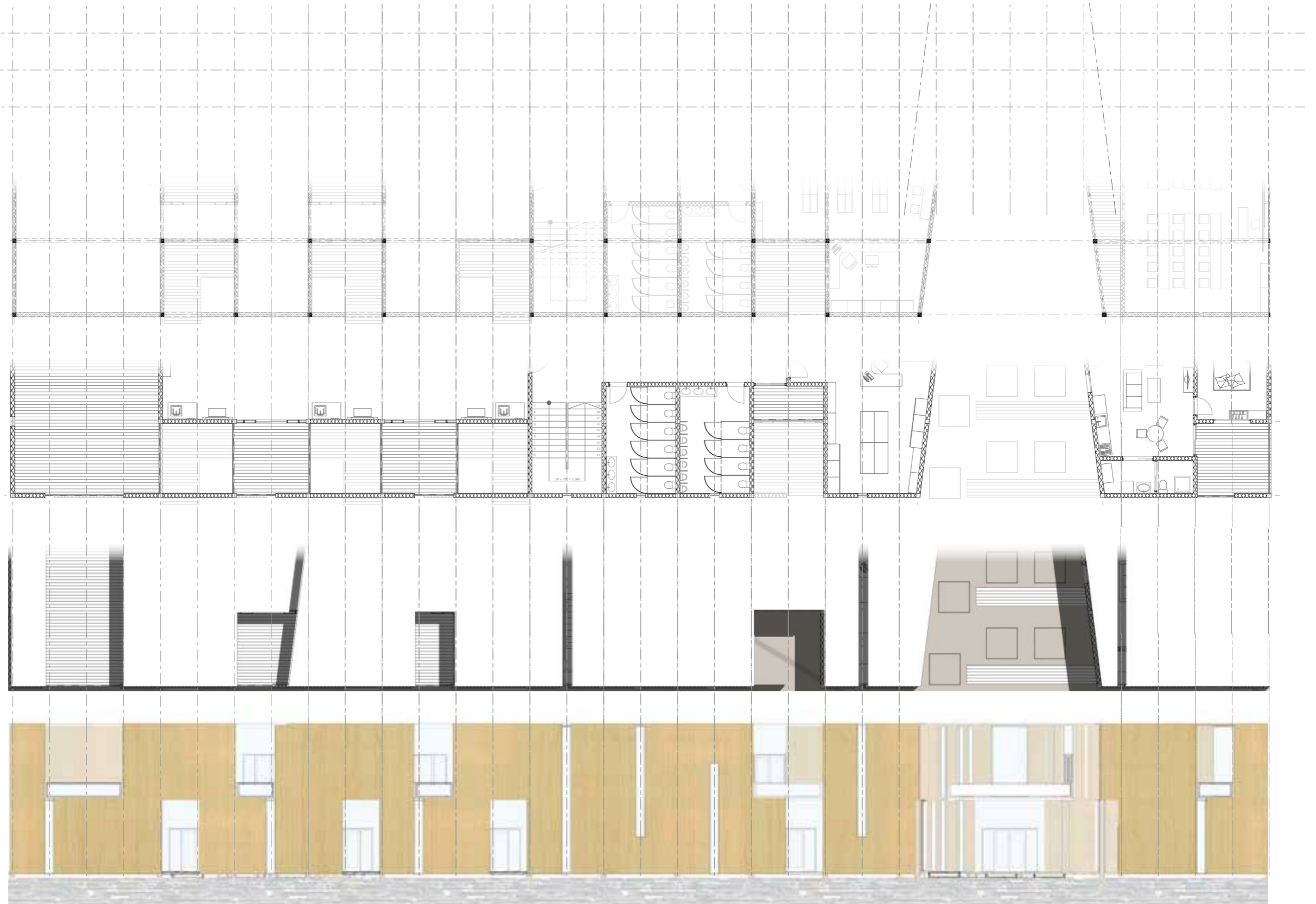
Building Envelope Design Approach (Additional Analysis)

“Modular system grid: 1.8 m modular system as the design framework”

“Steel Frame Structure: generally the span of beam is 3.6m (2x1.8m) or 7.2m (4x1.8m)”

“Interior space: the size of interior area will be designed for satisfying the demands of different functional rooms based on modular system”

“Envelope design for achieving coherence of design. The size of opening is defined by the modular system; the middle base lines of skylight and window are defined by the grid line (usually positioned in the middle of roof)”



“From the analysis (left column), the façade of building can be “read” to know the roof design, the size of interior space and the steel framing structure system.”

Design Revision

1:20 Tectonic Model (Additional Model)



“The 1:20 Tectonic Model Shows The Main Construction Details Of This Project (Including Roof, Floor, Lifted Floor And Wall Constructions)”



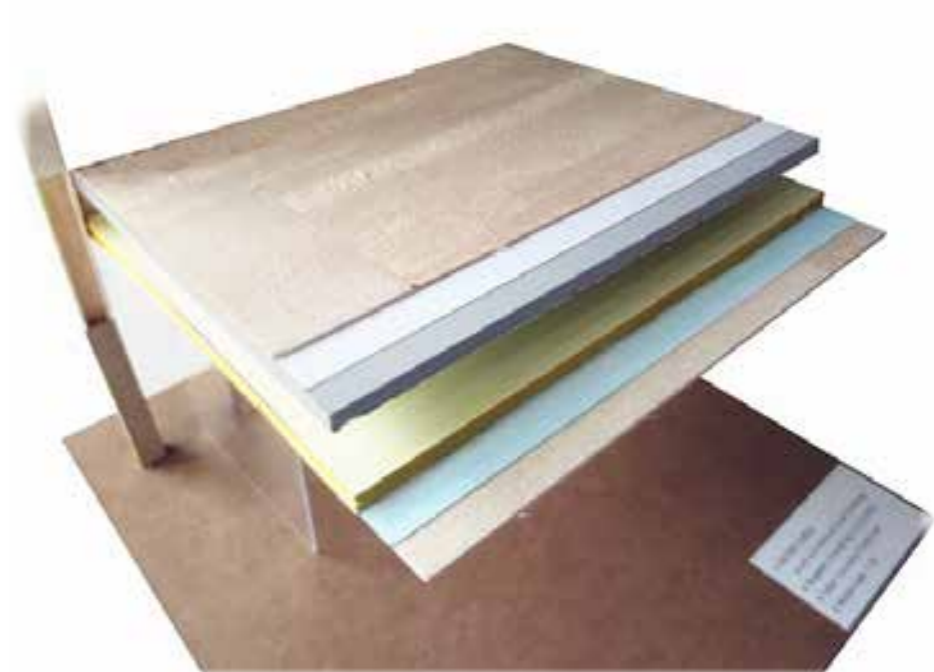
“Wall Construction: Mainly Shows Light-Weight Wall Construction And Load-Bearing Steel “H” Column.”



“Roof Construction: Mainly Include Protection Layer, Structure Layer And Ceiling Layer”



“Floor Construction: The Floor Construction In The 2nd Floor Mainly Shows The Floor Finish Layer, Structure Layer And Ceiling Layer; The Floor Construction In Ground Floor Is Lifted Construction Supported By Steel Column And Pile Foundations; All The Detailed Information About The Constructions Of This Project Can Refer To “Construction Details Drawing” In Chapter 3”



Appendix: Design Reference, Photos and Sketches

Reference
Photos
Sketches (Attachment)

Design Reference

Chapter 1:

The Studio Brief Is Originated And Given By Dr. Anuradha Chatterjee

Chapter 2:

The Photos Of 'Research On Typological Precedent Studies' Section Are Cited From [Http://Pic11.Nipic.Com/20101203/5166655_135124039039_2.Jpg](http://Pic11.Nipic.Com/20101203/5166655_135124039039_2.Jpg)

The Diagrams Of 'Research On Typological Precedent Studies' Section Are Cited From [Http://Www.Archdaily.Com/334677/Xixi-Wetland-Art-Village-Wang-Wei-Jen-Architecture](http://Www.Archdaily.Com/334677/Xixi-Wetland-Art-Village-Wang-Wei-Jen-Architecture)

[Http://Www.Lyonsarch.Com.Au/Marine-Freshwater-Research-Institute-2/](http://Www.Lyonsarch.Com.Au/Marine-Freshwater-Research-Institute-2/) And [Http://Www.Arup.Com/Projects/Dpi20marine_And_Freshwater_Resources_Institute/Details.aspx](http://Www.Arup.Com/Projects/Dpi20marine_And_Freshwater_Resources_Institute/Details.aspx)

The Diagrams Of “Research On Non-Typological Precedent Studies---The Therme Vals: Peter Zumthor: Contextual Responding (Groupwork)” Section Are Given By Jialin Pan And Cited From [Http://Www.Architectural-Review.Com/Home/Innovators/Primal-Therapy-Thermal-Baths-By-Peter-Zumthor-Vals-Switzerland/8616979.Article](http://Www.Architectural-Review.Com/Home/Innovators/Primal-Therapy-Thermal-Baths-By-Peter-Zumthor-Vals-Switzerland/8616979.Article)

The Diagrams Of “Research On Non-Typological Precedent Studies---The Therme Vals: Peter Zumthor: Parti (Groupwork)” Section Are Given By Yujia Lei, Weiwei Chen And Changlong Li And Cited From [Http://Kikilinzi.Diandian.Com/Post/2011-12-14/11356982](http://Kikilinzi.Diandian.Com/Post/2011-12-14/11356982)

And [Http://Wenku.Baidu.Com/Link?Url=Yleby5k_Vowvo4jbzwcwcozsj25dqpf2g_Xxc4feuqn97wfqw0ihy_Qenshz95aiidcgsjno4u3gdtzdvhkymg_Fsusaptpoqkm5qpw8pjm&Qq-Pf-To=Pcqq.Discussion](http://Wenku.Baidu.Com/Link?Url=Yleby5k_Vowvo4jbzwcwcozsj25dqpf2g_Xxc4feuqn97wfqw0ihy_Qenshz95aiidcgsjno4u3gdtzdvhkymg_Fsusaptpoqkm5qpw8pjm&Qq-Pf-To=Pcqq.Discussion)

Diagram Of “Research On Non-Typological Precedent Studies---The Therme Vals: Peter Zumthor: Structure Analysis” Section Are Cited From [Http://Bebon.Tumblr.Com/Post/4730610403/Alechsml-Column-Diagram-Of-Peter-Zumthors-Vals](http://Bebon.Tumblr.Com/Post/4730610403/Alechsml-Column-Diagram-Of-Peter-Zumthors-Vals)

The Diagrams Of “Research On Non-Typological Precedent Studies---Fondazione Querini Stampalia: Carlo Scarpa” Is Referred From The Group Work Of Xinting Cai, Yuqi Guo, Xiaowei Xu, Siyi Zhou And Shuyu Zhao And The Photo Is Available From [Http://Media-Cache-Ak0.Pinimg.Com/736x/79/04/C8/7904c8a64309006c9a9664ee22d044a0.Jpg](http://Media-Cache-Ak0.Pinimg.Com/736x/79/04/C8/7904c8a64309006c9a9664ee22d044a0.Jpg)

The Materials Of “Site Analysis: Research On Wetland: Basic Information Of Site (Groupwork)” Section Are The Group Working Results Of Anu’S Students, Namely Liuqing Liu, Yujia Lei, Weiwei Chen, Shuyu Zhao, Yuqi Guo, Xinting Cai, Xiaowei Xu, Siyi Zhou, Jialin Pan, Changlong Li.

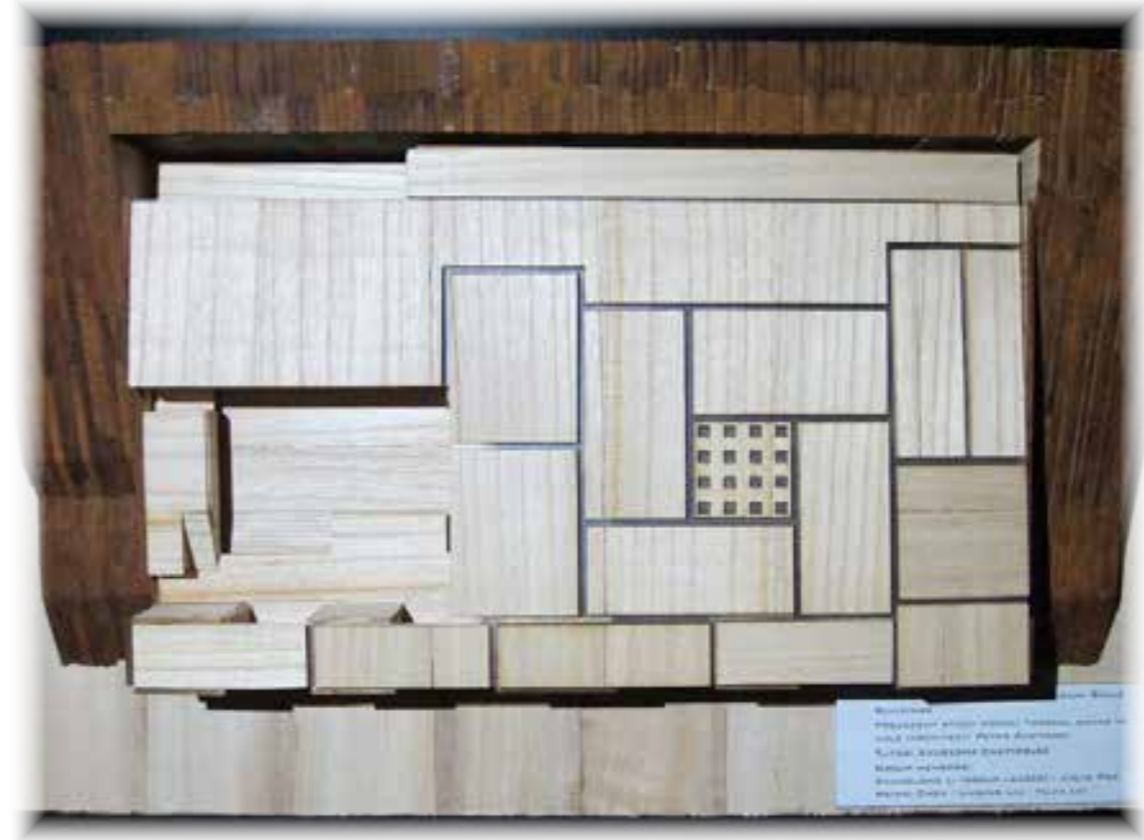
The Photo Of 'Local Birds' Of “Site Analysis: Research On Wetland: Site Condition And Relevant Strategies” Section Is Available From [Http://Pic11.Nipic.Com/20101203/5166655_135124039039_2.Jpg](http://Pic11.Nipic.Com/20101203/5166655_135124039039_2.Jpg)

Chapter 3

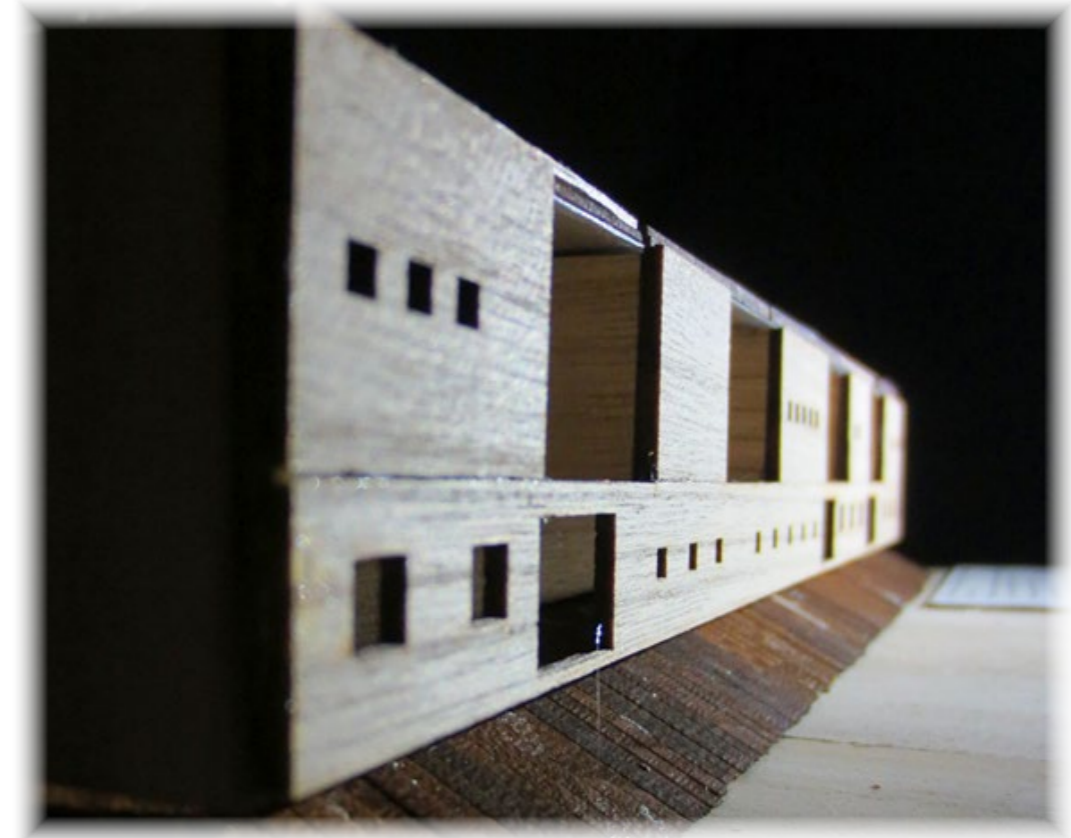
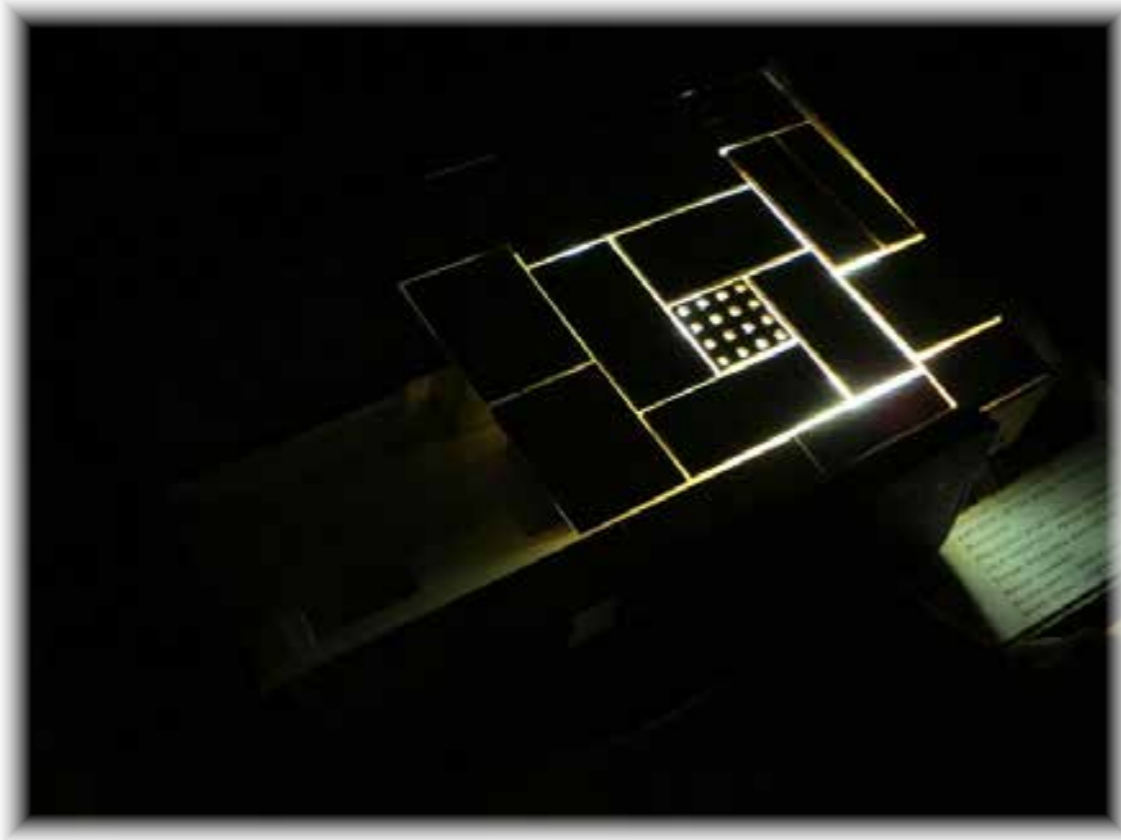
The Materials Of “Masterplanning The Wetland” And “Site Montage As Designed” Sections Are The Group Working Results Of Anu’S Students, Namely Liuqing Liu, Yujia Lei, Weiwei Chen, Shuyu Zhao, Yuqi Guo, Xinting Cai, Xiaowei Xu, Siyi Zhou, Jialin Pan, Changlong Li.

* The Photo Of Fondazione Querini Stampalia Of “Design Resolution Stage (Final Crit): Ceiling Design And Structure” Section Is Available From [Http://Media-Cache-Ak0.Pinimg.Com/736x/79/04/C8/7904c8a64309006c9a9664ee22d044a0.Jpg](http://Media-Cache-Ak0.Pinimg.Com/736x/79/04/C8/7904c8a64309006c9a9664ee22d044a0.Jpg)

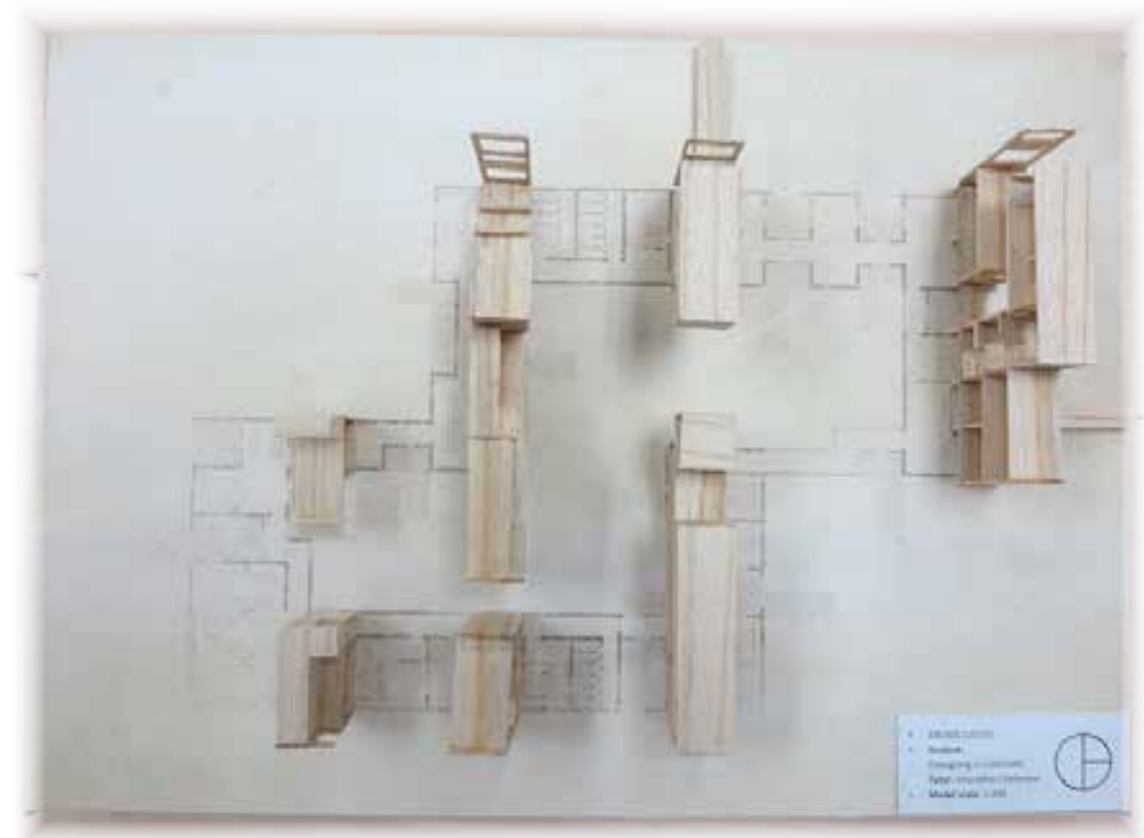
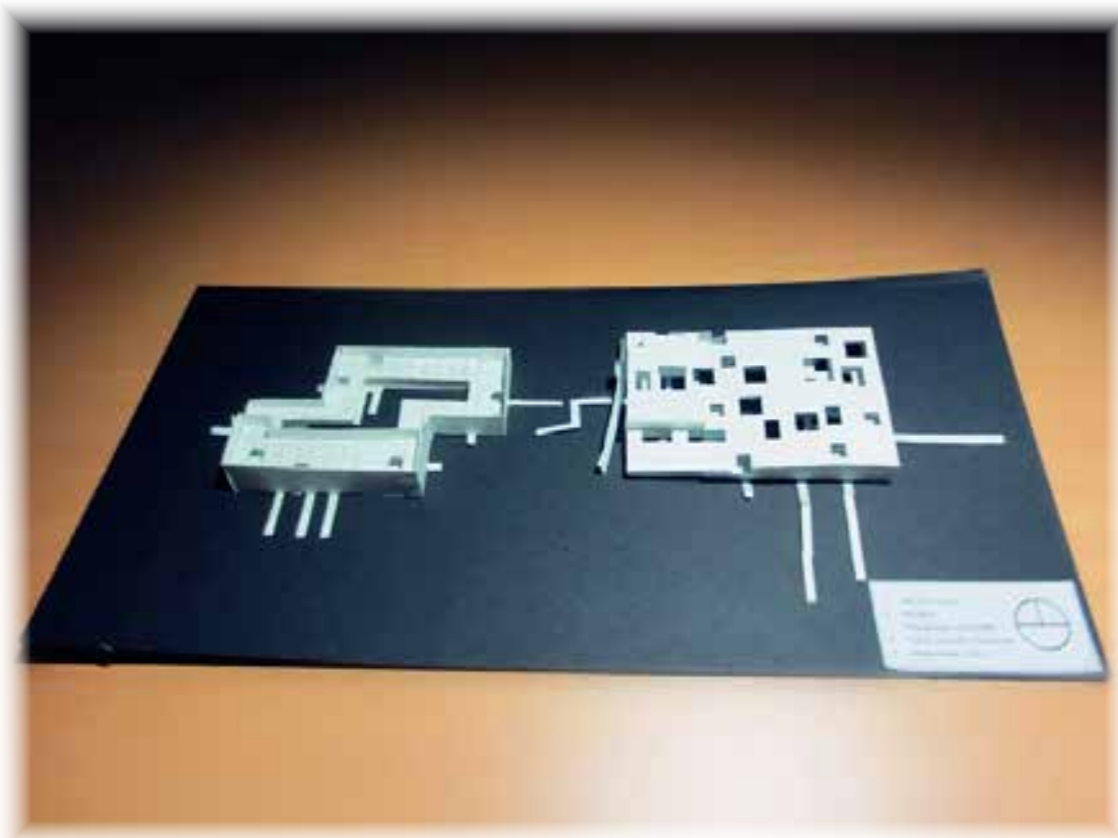
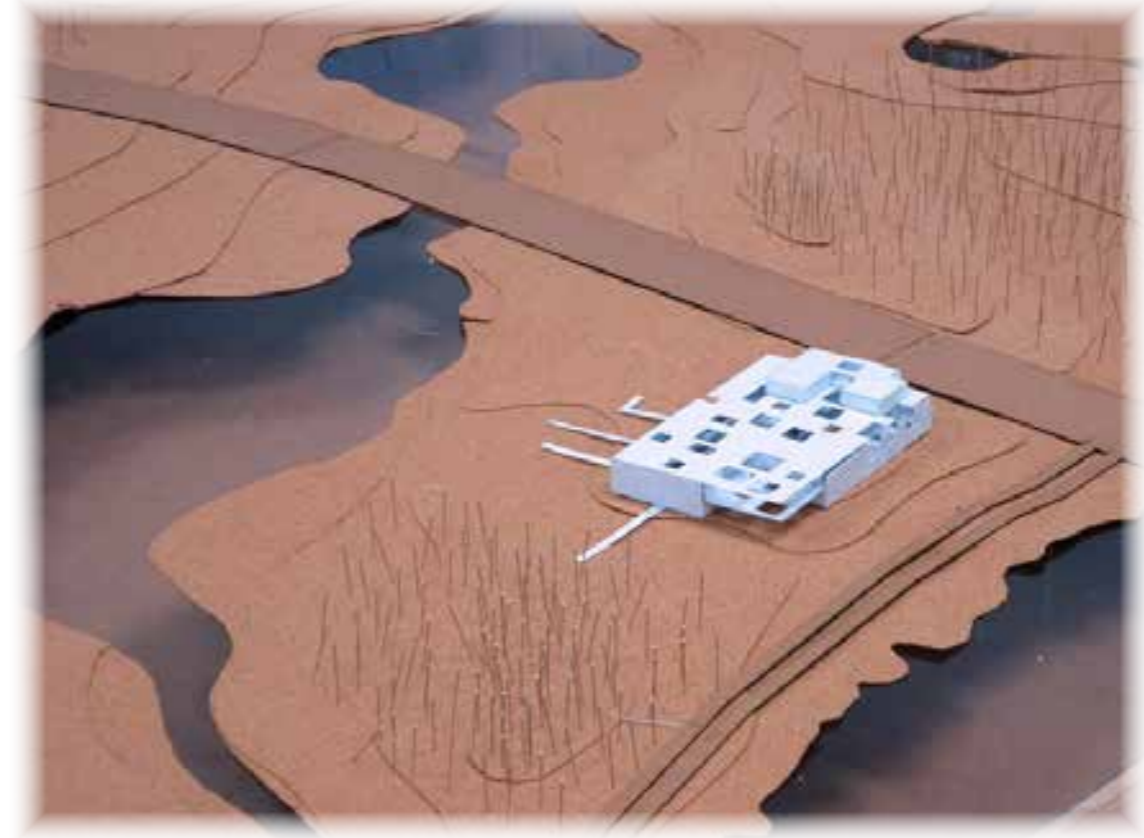
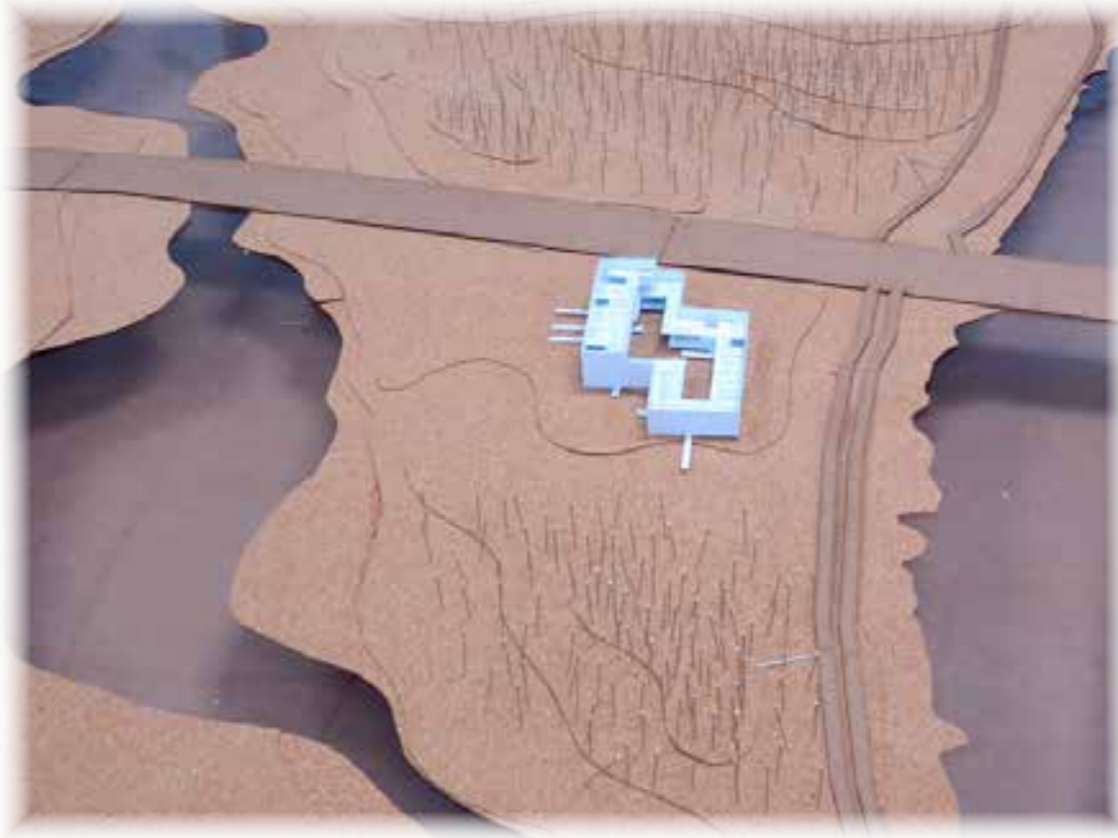
Design Photos



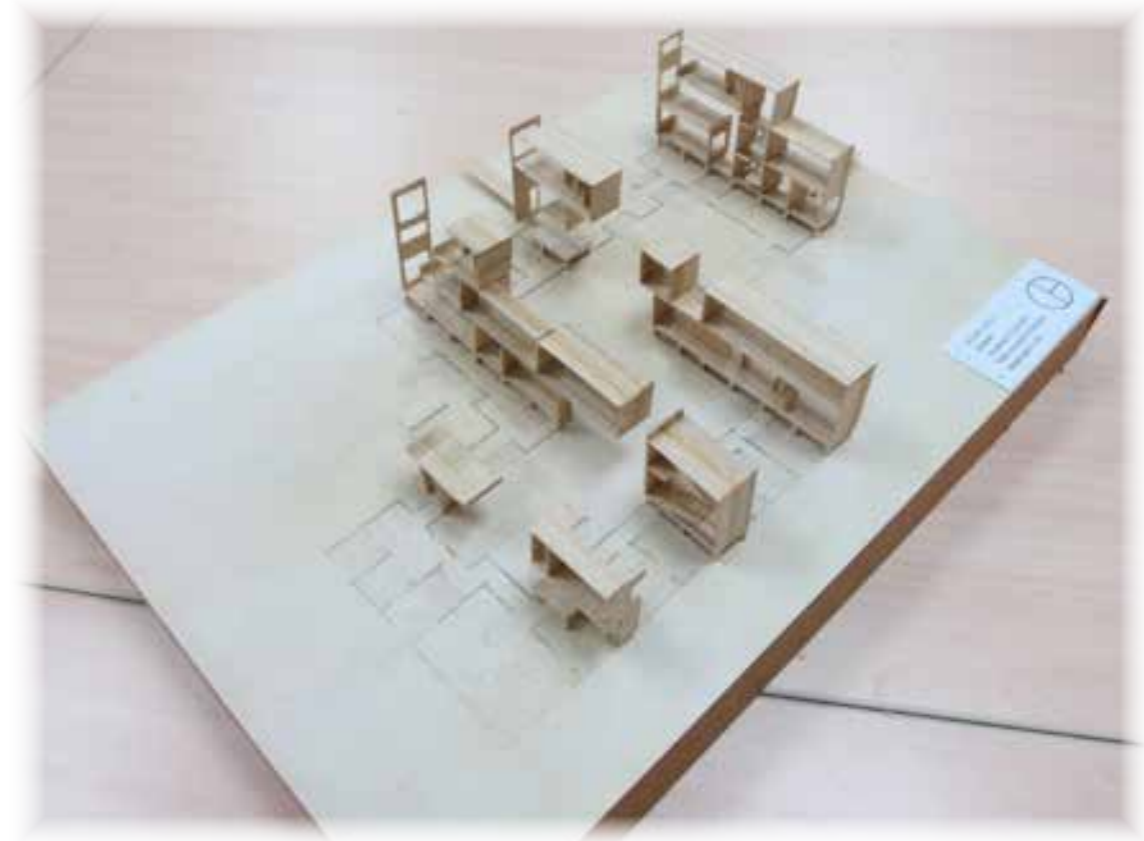
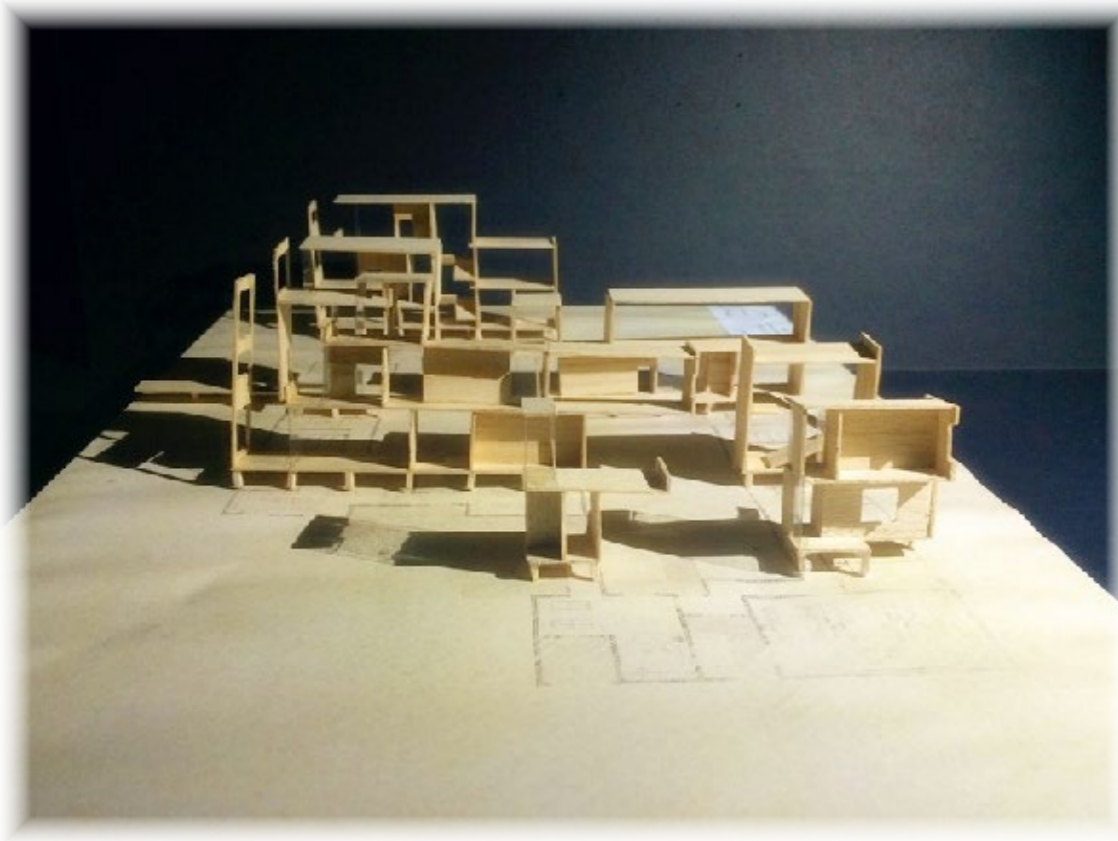
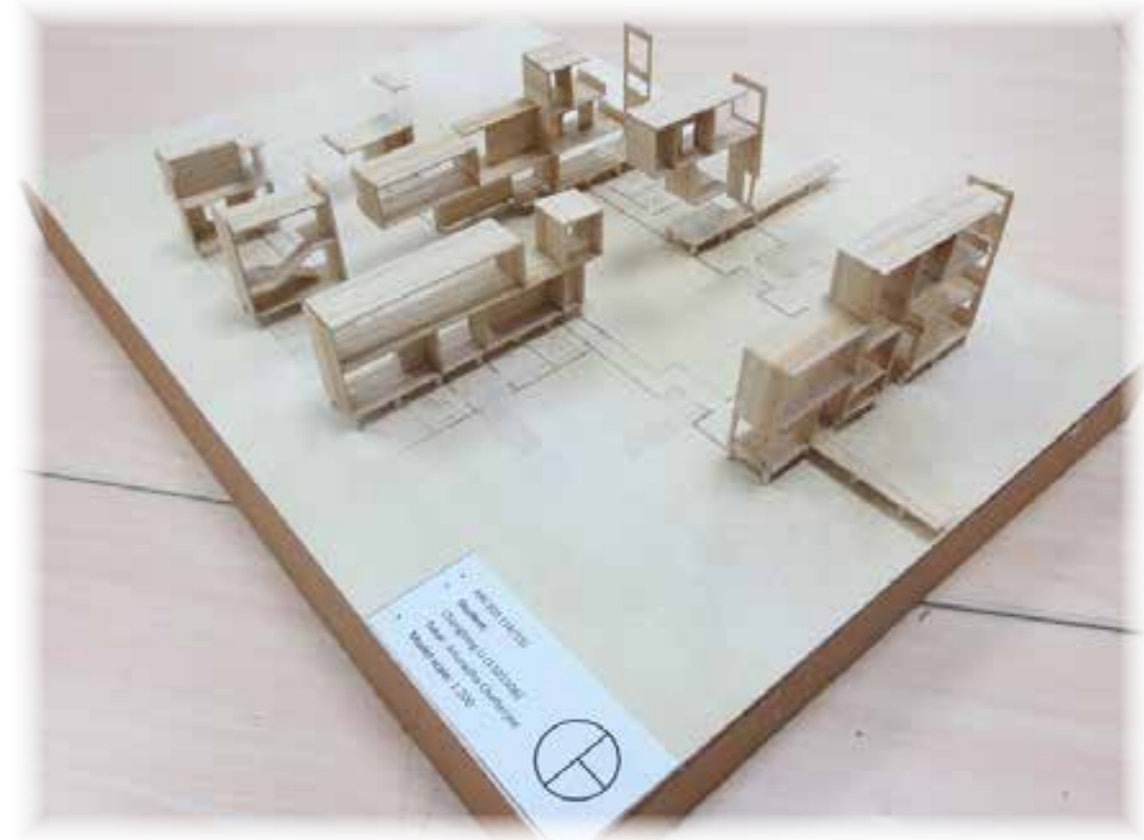
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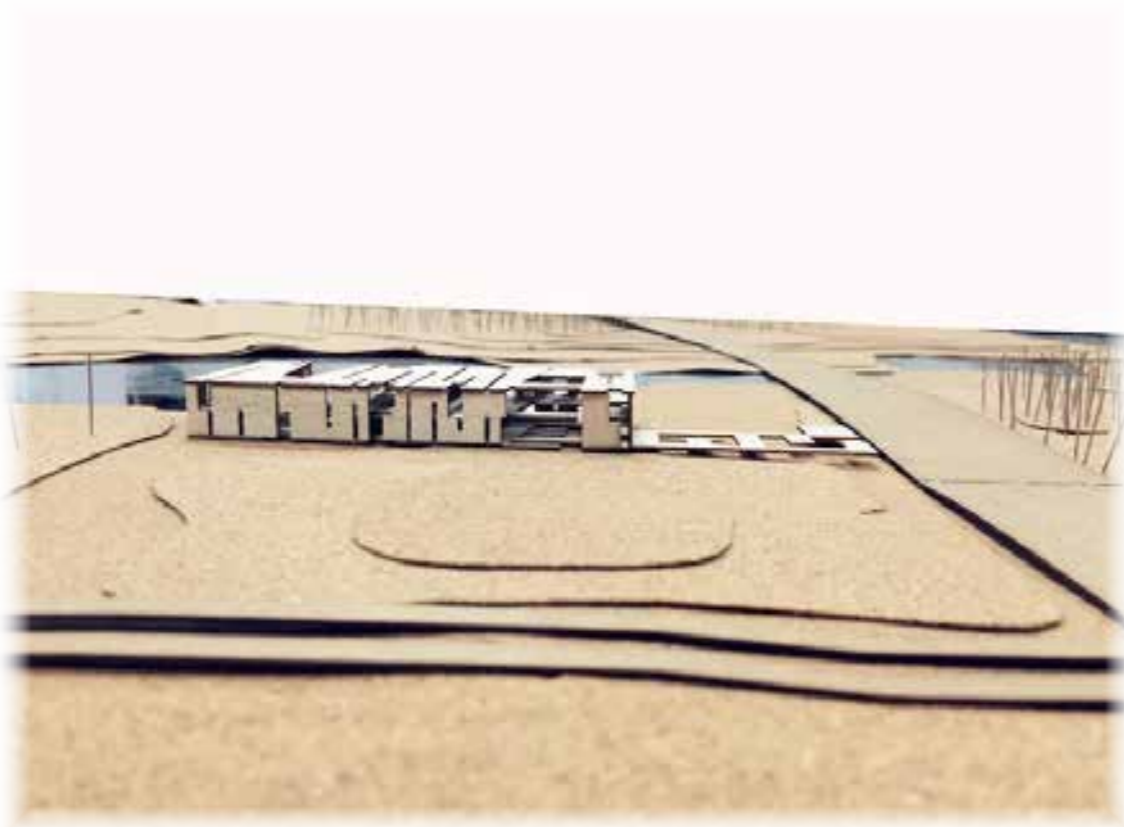
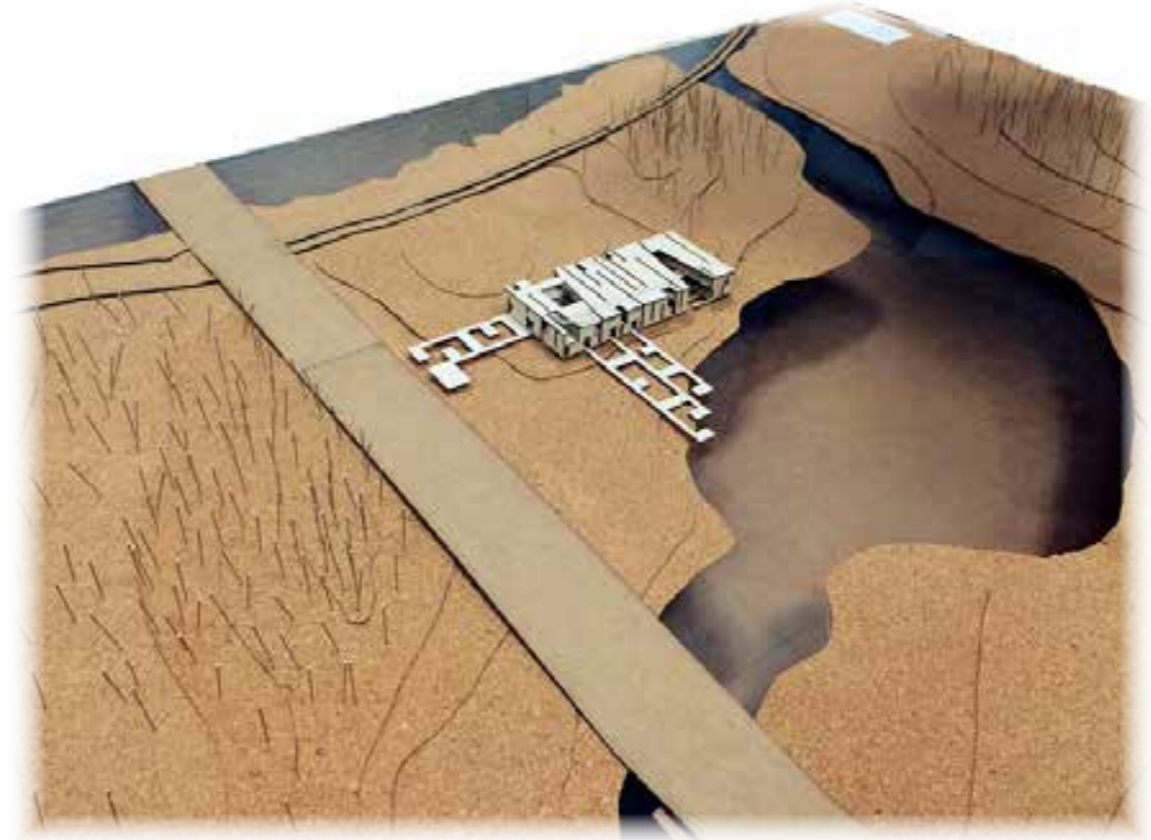
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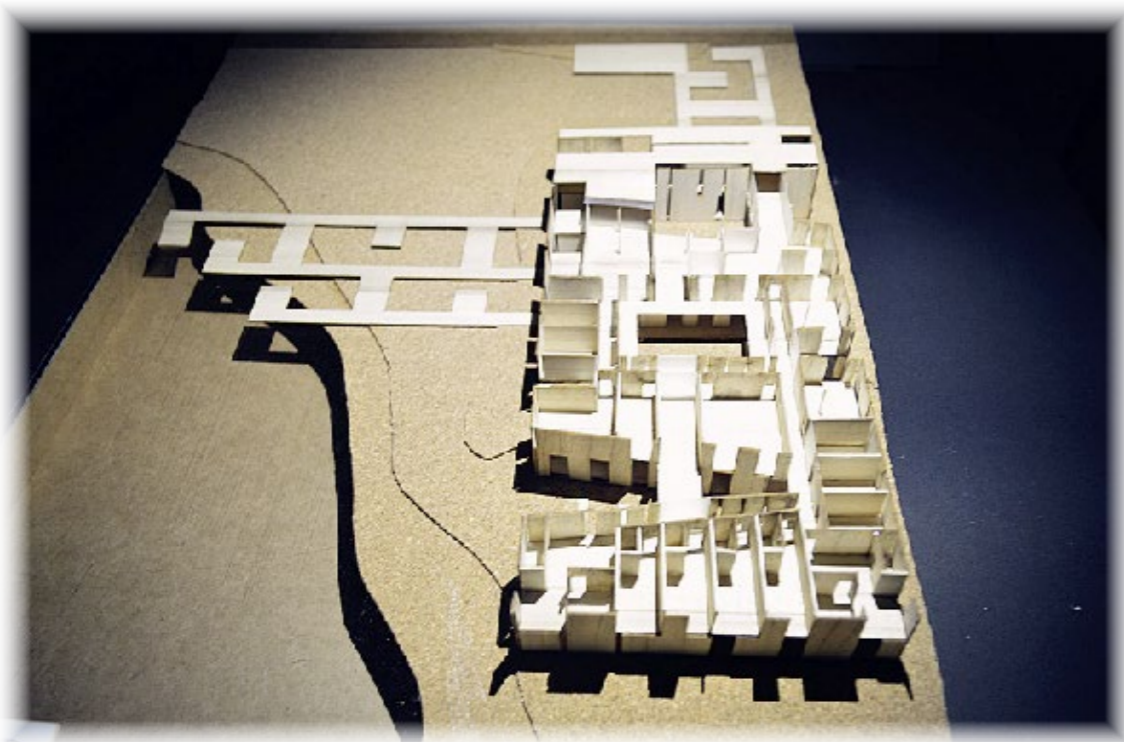
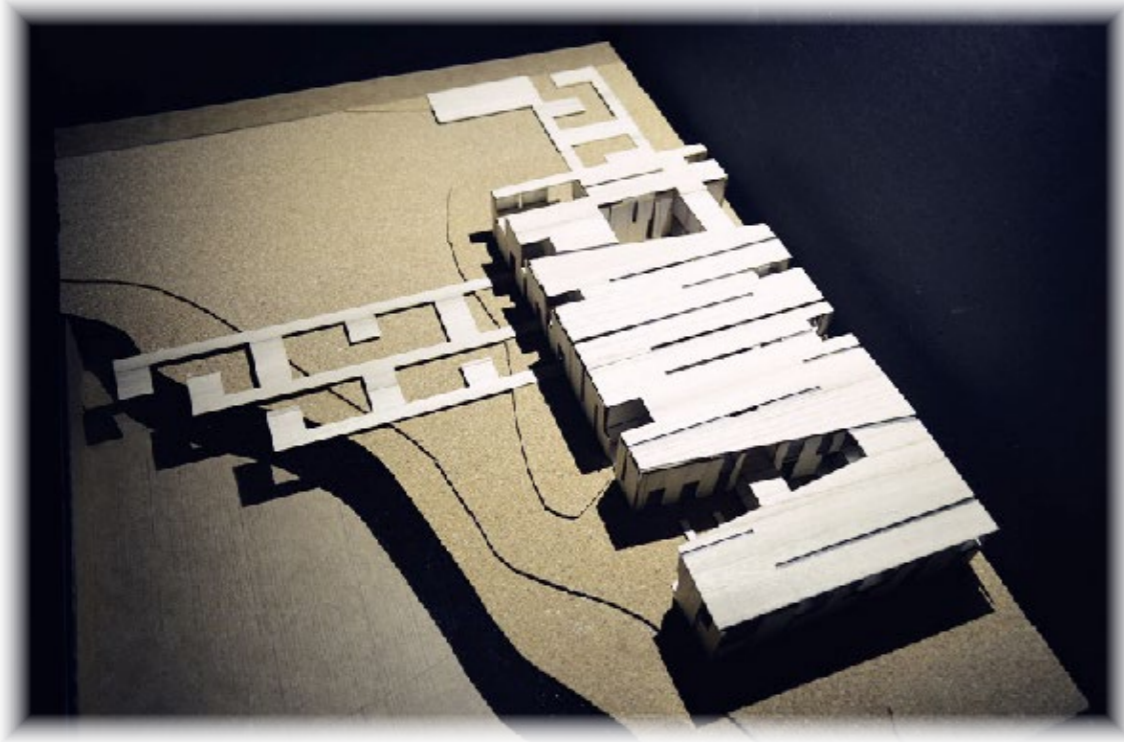
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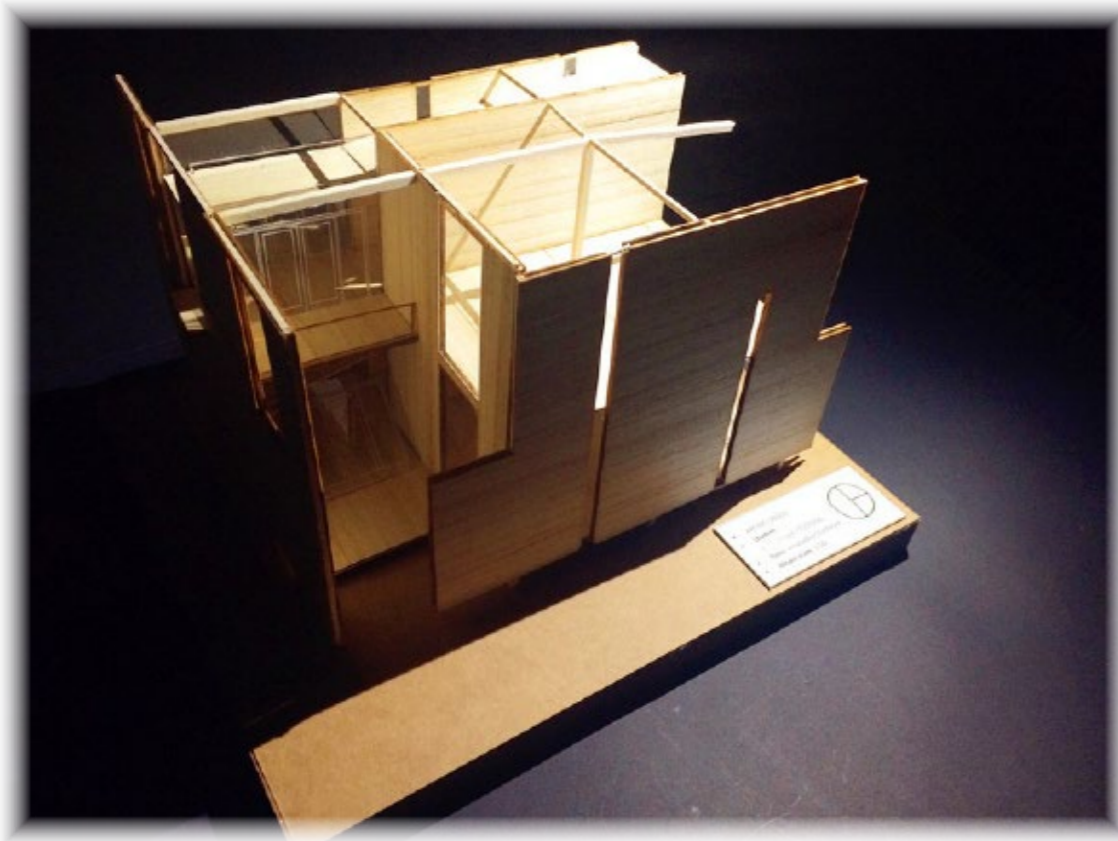
Design Photos



Design Photos



Design Photos



Design Photos

