

# Entering and Revealing of Architecture

A Kindergarten at Windmill Hill Park

by ZhaoYang Kong



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Thesis submitted to the faculty of the Virginia Polytechnic Institute and State University, in partial fulfillment of the requirements for the degree of Master of Architecture in Architecture

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# Entering and Revealing of Architecture:

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### **Abstract**

This thesis topic is focused on the experience of entering and revealing architecture. An entrance is not solely about the physical form of a door, rather it is the beginning of a building; a conversation between public and private, light and dark, safety and danger. The entrance is also a threshold for smell, texture, sound, light, and color. It is the preface of a poem that will lead you to fall in love with the rhythm of the building. It is where beauty begins and never ends.

The building program for a kindergarten was conducive to thinking about architecture in an honest way, just as children are honest. The project site is at Windmill Park in Alexandria, Virginia. The site overlooks the Potomac River at its eastern edge. The kindergarten has three classrooms, with three, four and five years old children, offices, a library, a playhall, meeting space, exhibitions and a bell tower.

Now, let us enter into the life of the building.

## Acknowledgments

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To my friends in China, for their encouraging words that encouraged me when I needed encouragement.

To my friends at the Washington Alexandria Architecture Center, for their inspiration and criticism, especially our Chinese girls, Ningning and Wei, Thank you for your suggestions and always challenging me to develop my project.

To my professor Marcia, it was a pleasure working with you on the 2011 bakery studio project. To my great instructor, Carolina, you have guided me with every project and inspired me with wonderful ideas.

To my dear committee members, Paul, Jaan and James. To Paul, who always led me in the right direction and recommended wonderful books. To Jaan, who not only opened the door to architecture for me, but also shared with me a greater enjoyment of life. To James - who seems more of a friend than a professor - for all the moments I will miss discussing the project with you at your office.

Most importantly, to my family, with all your love and support. To my Mom, sorry I insisted on being an architect instead of a dentist. To my father, for your approval on all my decisions. To my older sister, for all your life suggestions.

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## Introduction

At the beginning of my thesis, I tried to identify how I would design this building. Oftentimes I would get confused and I soon realized that I did not know how it would be designed. Then I asked myself, “What is the way to go about designing architecture?” Then I drifted back to my memories of my 2011 summer in China.

When I traveled with my friend in west part of China last year, I spent one month in a beautiful town. We would watch the sunrise at the top of a hill; we climbed the sand dunes and watched the Yueya Spring; and we explored the historical secrets in Dunhuang grottoes. At sunset, we would lie on the grass and watch cows drink water from the stream as chimney smoke came from what was cooking in the yurt. After reminiscing on these moments, I realized that it was not necessary for me to find an immediate answer to the building design, because architecture is not limited to mathematics or a symbol. Rather, I discovered that what we enjoy most about architecture are the beautiful moments that we experience in a space. People, light, material, structure, color, temperature, - all these elements create the life of the building and guide us the beauty in building design.

“ When you have all the answers about a building before you start building it, your answer are not ture. The building gives you answers as it grows and becomes itself.”

Louis I. Kahn

## The Stories of Entrance

The story of entrance began with Janus, the god of beginnings and transitions in ancient Roman religion and mythology. The entrance could be the beginning of magic, secrets, or a surprise. It could be a way to explore the stories in architecture.

## Entrance to Religion

Janus is the Roman god of doors. He is often depicted as having two faces. Because of his hospitality to Cronus the Titan (Saturn), it is said that Janus was granted the power to both peer into the past and to see the future



a. The Roman door-god, Janus, on a coin

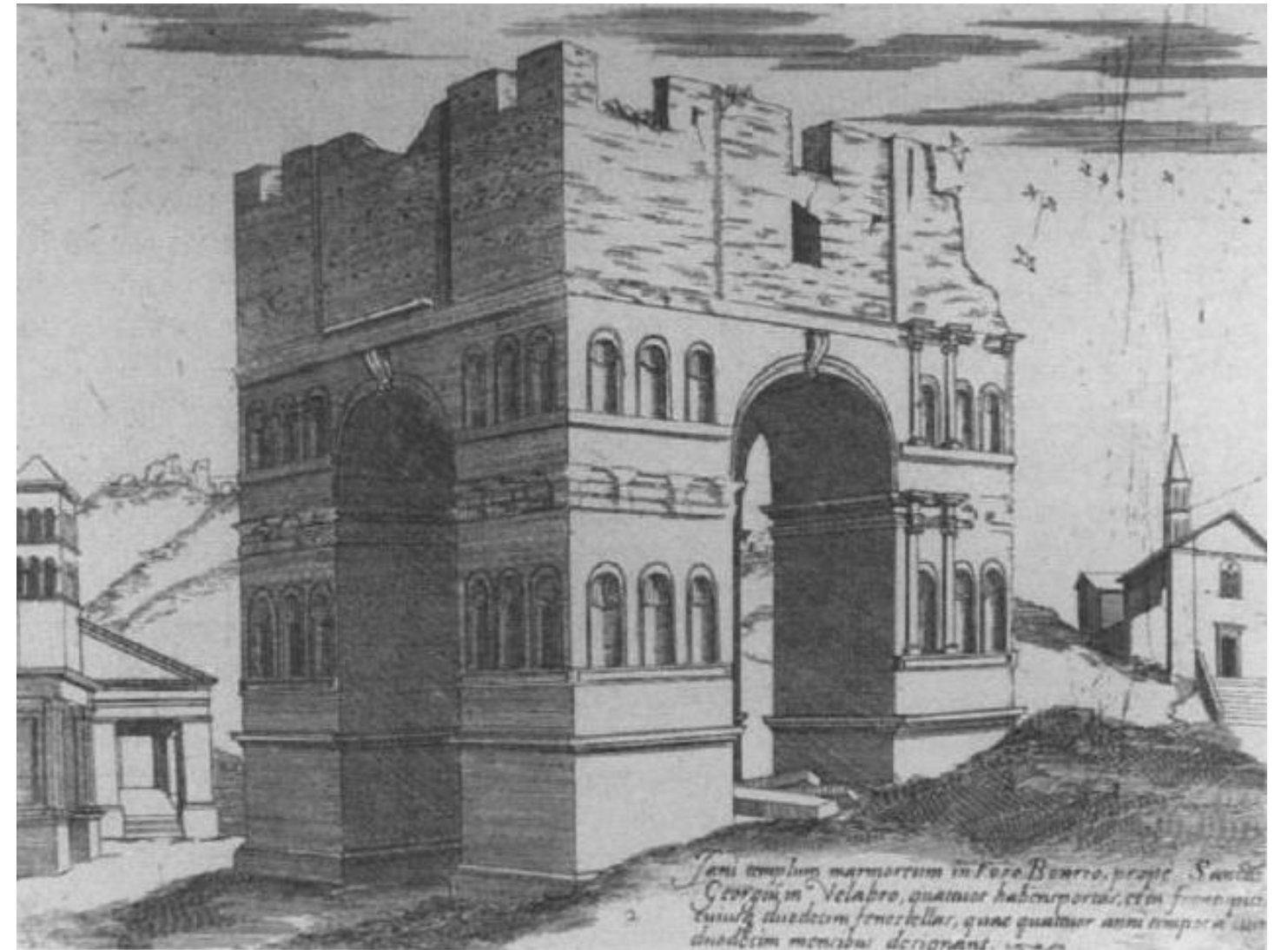


b. Janus with two and three faces, 14th Century

## Arch of Janus

The Arch of Janus was built in the early 4th century, using spolia, possibly in honour of Constantine I or Constantius II. The name is derived from the structure's four-fronted, four-arched configuration; relating this to the four-faced version of Janus (Janus Quadrifons), as well as to actual Janus-related structures mentioned in historic descriptions of ancient Rome.

*Drawings of Janus Quadrifrons from 1569*



## Entrance to Fairtale

Alice in wonderland has a beautiful beginning of the story, Alice follows a rabbit and falls down a rabbit hole suddenly, which is a long way to a curious hall with many locked doors of all sizes.

She finds a small key to a small door which she can not go through, then she drinks a bottle of water to become smaller, and through the door, she sees an attractive garden. It is another world.



a. Alice in the party



b. Alice and the cat



c. Alice with her sister



a. Alice and the Cheshire Cat



b. Alice finding tiny door behind curtain



c. Alice taking "Drink Me" bottle,

## The Examples of Entrance

Entrance is not just an opening to a building, it is a beginning experience in the building. It is where the story of the building starts. The shape, material, structure, thickness of the door and the door handle, give us first impression to the building. The examples here show different experience when we enter different buildings.

## Bruder Klaus Field Chapel, Munich, Peter Zumthor

When you visit Bruder Klaus Field Chapel, you walk on the path in golden wheat field. The wind blows to your face, a little yellow tone building, made of concrete. The entrance is a triangle shape, made from metal. It catches people's eyes, but at the same time, it is harmony with the whole building and environment.

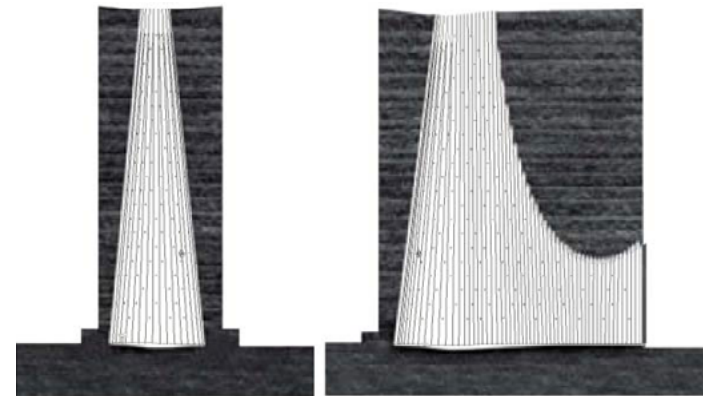
The door is not very high. When you go into the door, you feel a little tense on the head. And the inside space becomes smaller to the top. Light comes from the roof, goes into the room through a curved path. It is full of magic, silent, and religious feeling.



*Exterior View*



*a. Draft drawing of floor plan*



*b. Sections*



*c. Light through the doorway*



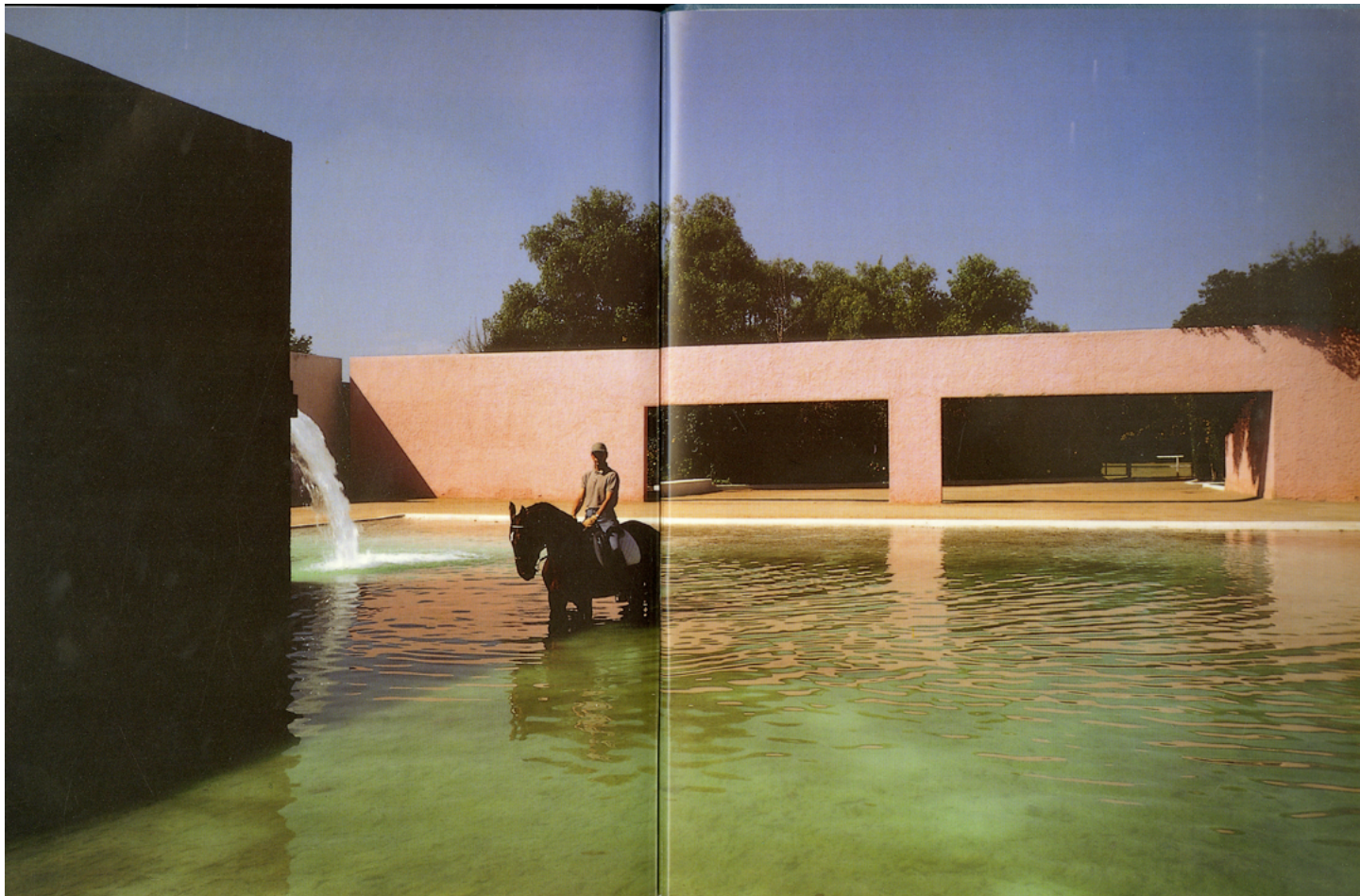
*d. Details of the door*

## Cuadra San Cristobál, Los Clubes, Luis Barragan

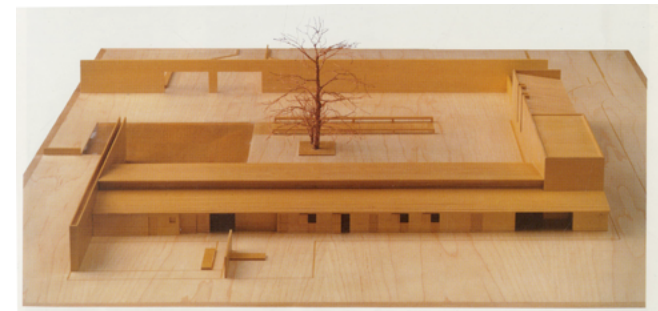
Luis Barragan's design, Cuadra San Cristobal house, is a residential house with horses. People riding the horse, walk through the opening on the wall, enter the courtyard and go into the fountain, where the water falls down from colorful wall.

Sometimes you even forget how you enter the courtyard, because it is a such relax way to pass through the opening on the wall. The water catch your attention and your horse, to lead both of you enjoy the view in coutyard. The water, the sky, the wall, the people and the horse, compose one moment in the life. It is serenity.

*View of Coutyard*



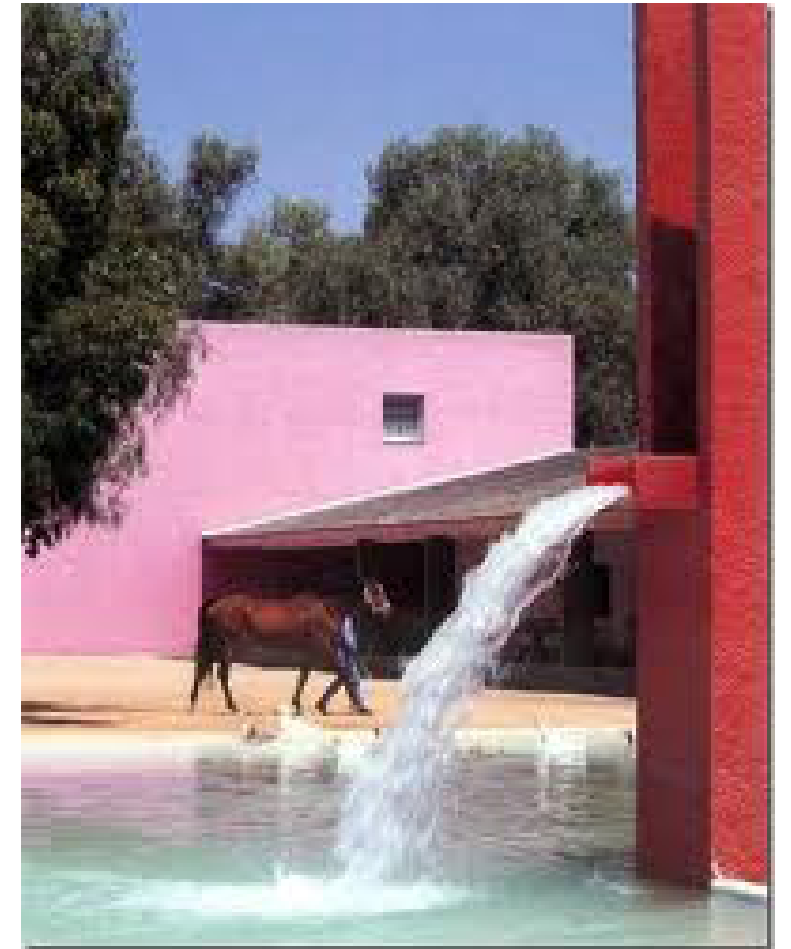
*a. Opening on the wall*



*b. Model of the building*



*c. Model of the building*



*d. Detail of drainage*

## Thinking of the Project

The idea, design a kindergarten came to my mind one day. I read an article online. The author recalled his beautiful memory about reek park trails in Washington DC when he was a child. And he said that now there are less and less children in the park. This inspires me to design a kindergarten. Children always like to play outside, have fun with trees, flowers, mud, stone, water or everything. All of these involve architectural elements. It is a chance to explore the relationship between human's activities and architecture. Designing a kindergarten is a media to think about building in a natural way with children's feeling, to touch, to see, to smell and to play.

## Location of the Site

The map shows location of kindergarten and preschool in this area. Most of kindergarten here are two floors, the material is brick. Each school has outdoor playground. The site is in windmill hill park, Alexandria, Virginia.

It is a trapezoid shaped ground that sloped up 16 feet from east to west, with a slope to the west part of the park. The site is around by residential houses in north, south and west sides. To the east of the park, is the potomac river.



b. Lyles-Crouch Traditional Academy



d. Old Town Montessori School



a. American Day School



c. Meeting House Cooperative Preschool



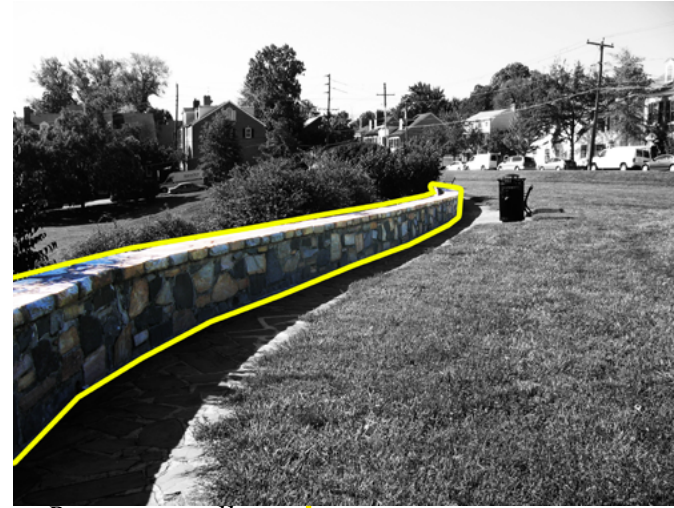
e. St Mary's Catholic School



Area Plan

## Memory on the Site

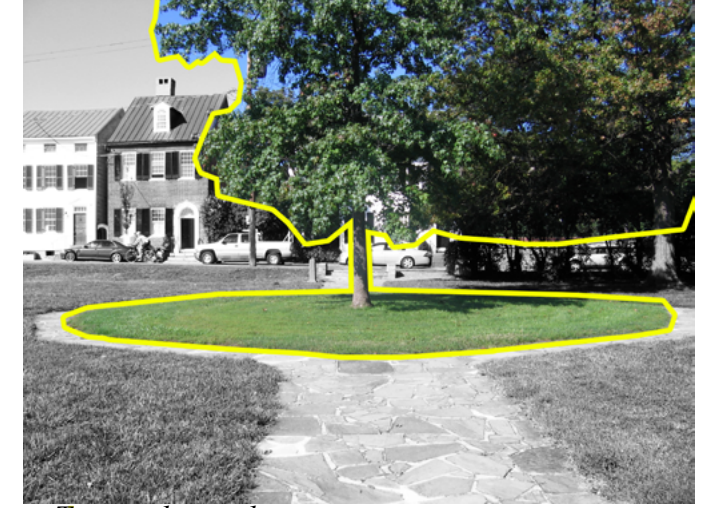
The elements on the site tell us the story happening there. We across the tunnel, walk on the wood plank path, go into the park, and see the basketball playground. Go on the slope, sit on the stone retaining wall and look around, green trees are around us. It is a quiet, and beautiful area.



*a. Retaining wall*



*b. Slope to the west*



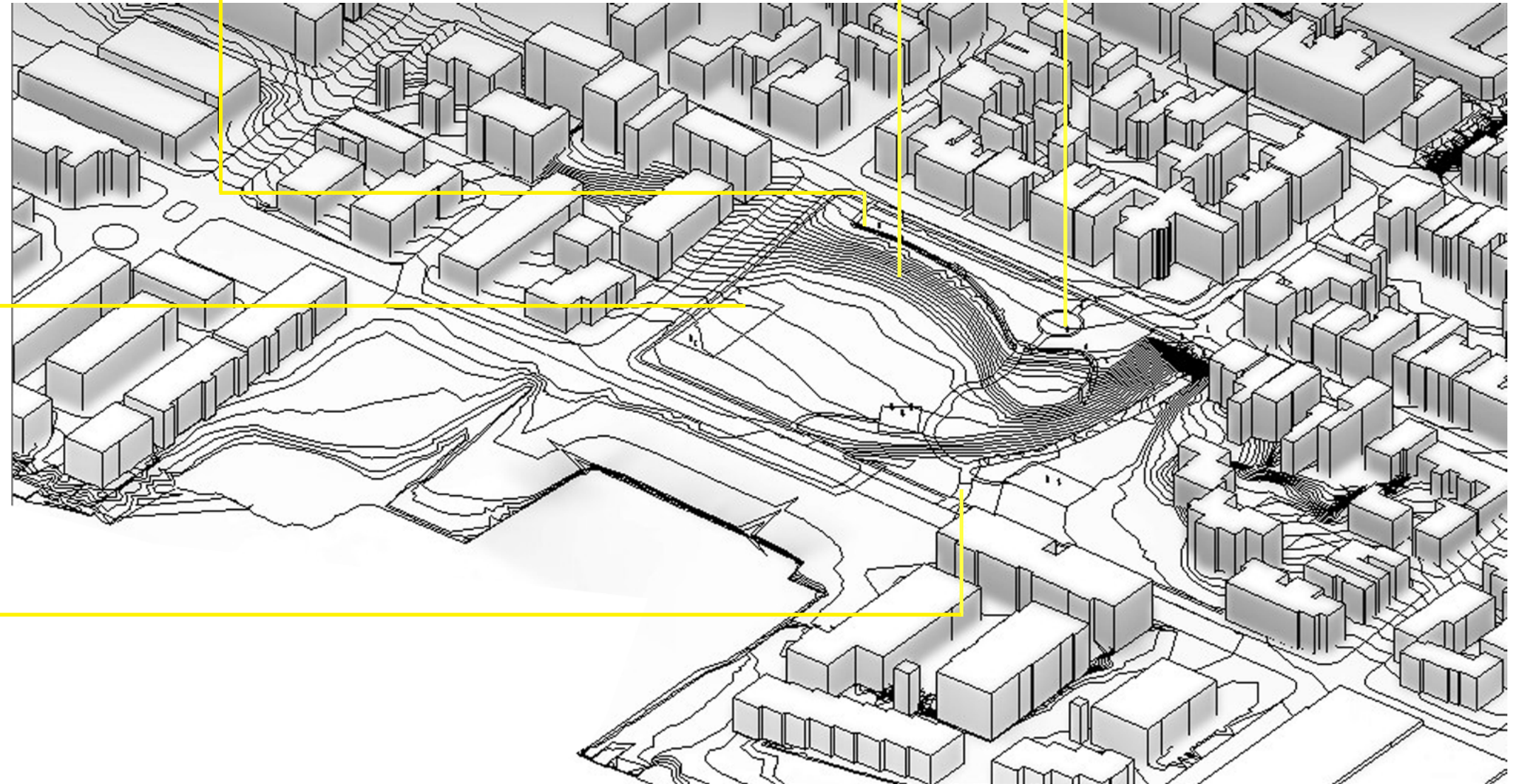
*c. Tree in the circle*



*d. Basketball playground*



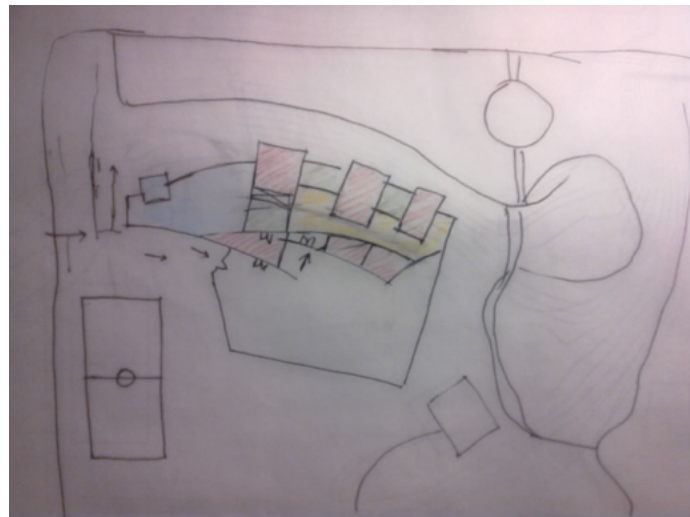
*e. Wood plank path*



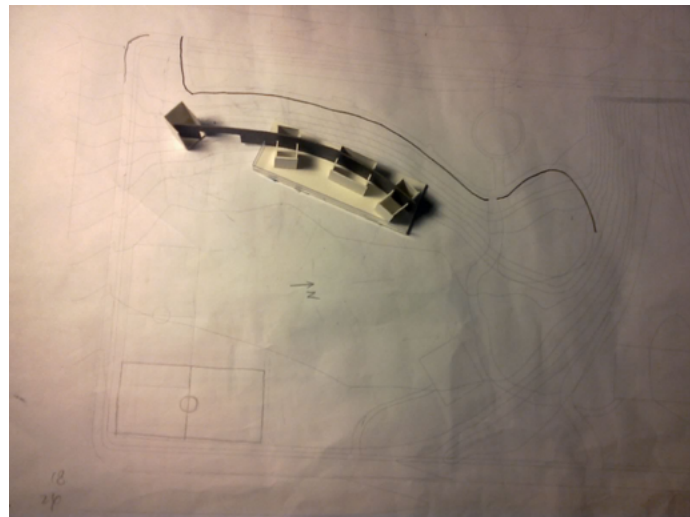
## Start of the Project

The project started with the stone curve wall on the site. The kindergarten is located on the slope side in the park, leave other part of park to the public. A curve wall followed the stone wall and located on the slope.

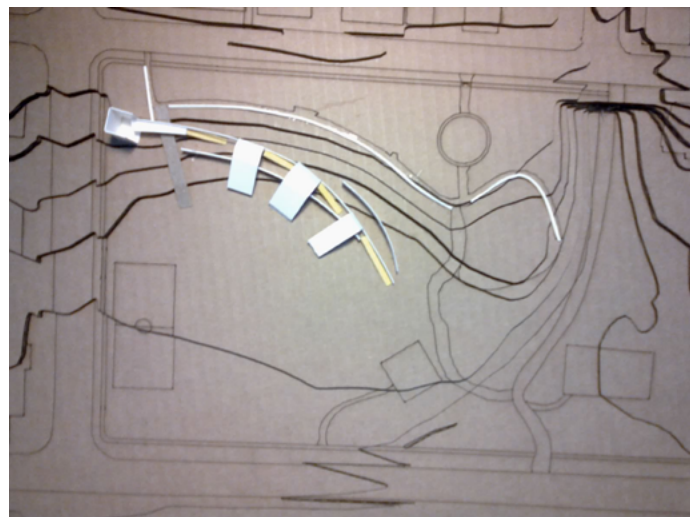
Then three classrooms attach to the curve space. A watch tower is near the corner of the street, connected with the classrooms with the curve wall, as a sign to the entrance area.



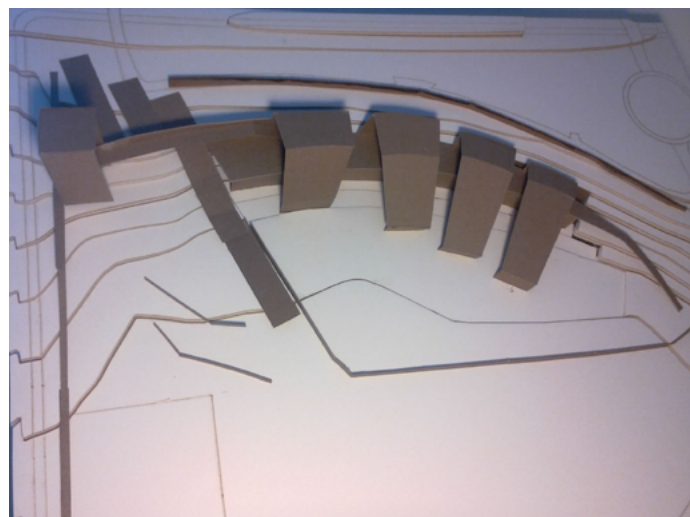
a. Sketch drawing



b. First sketch model



c. Second sketch model



d. Third sketch model

## Challenge of the Project 1

When the curve wall become a curve space sit on the back of the slope, then another curve in front of it separate the three classrooms and one office to the circulation space.

One challenge of this project, was the roof the building. Model A shows the building without any roof. How to design the roof on the space between two curve walls? Is it a solid roof like model B, or with windows like model C?

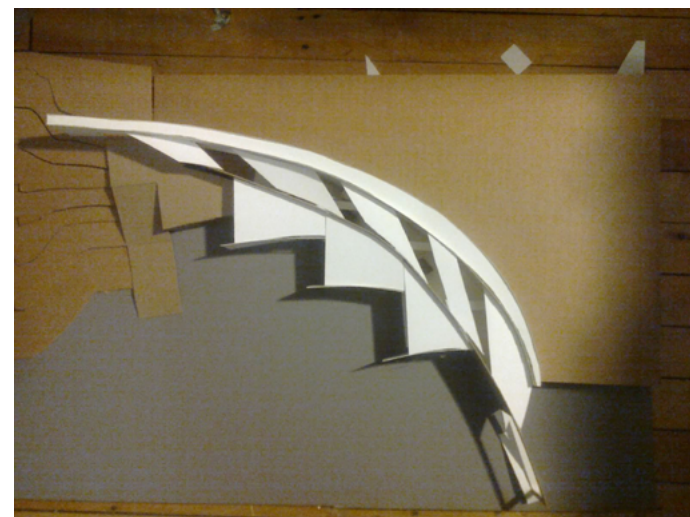
Finally I decided to make a transparent glass roof like model D, with vertical structure which can be functioned efficiently.



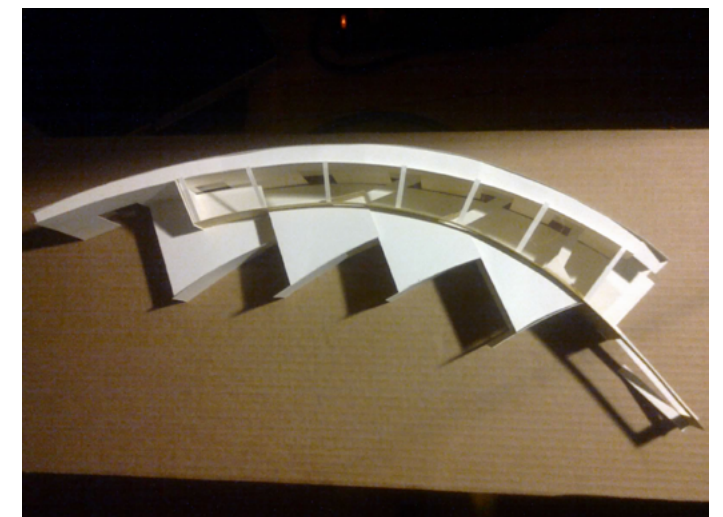
A. Phase 1



B. Phase 2



C. Phase 3



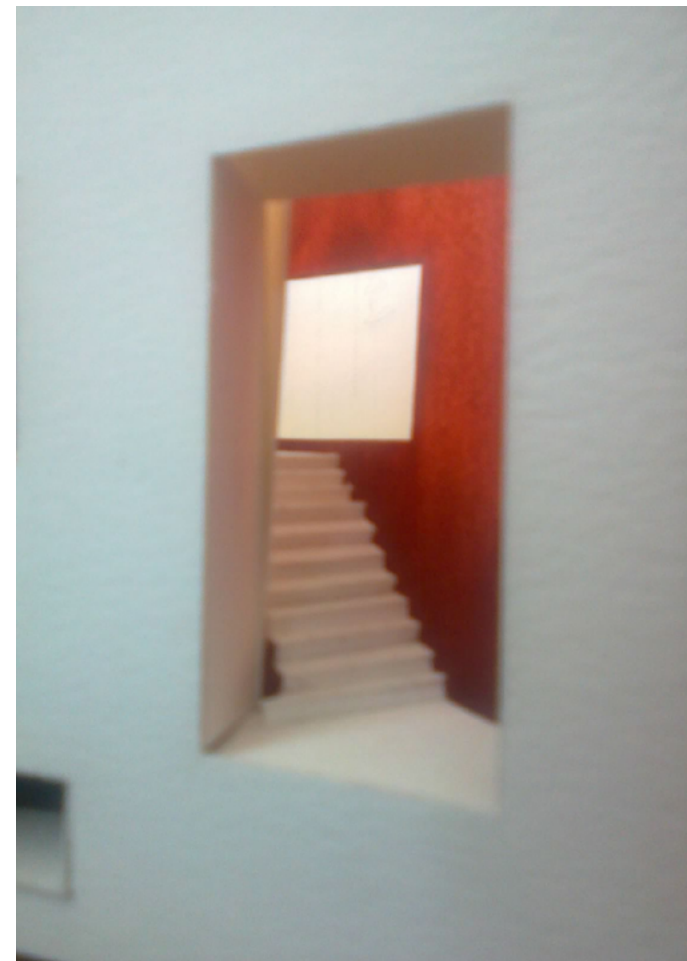
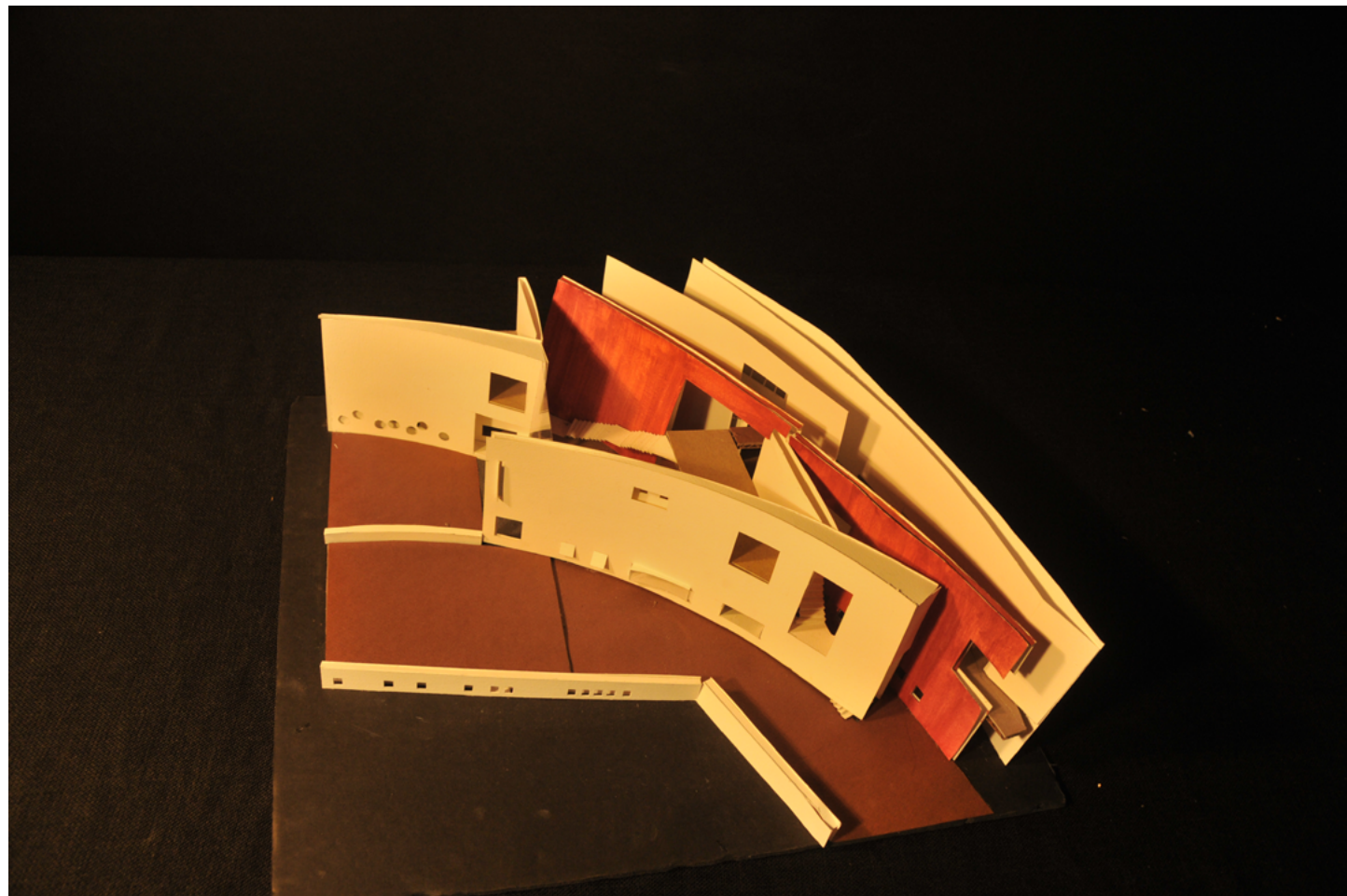
D. Phase 4

## Challenge of the project 2

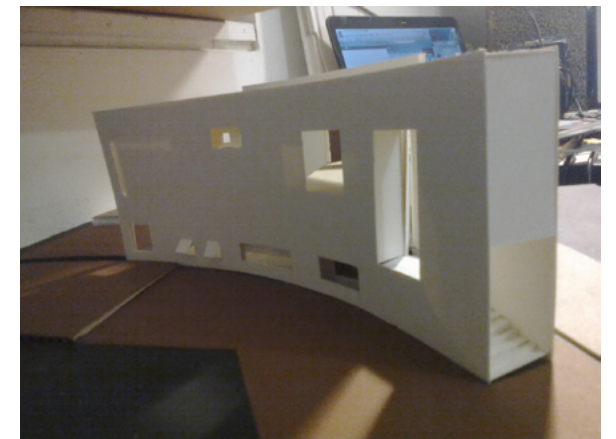
Another important thought of the project is, what happen in the wall. When we think about a wall, it should not just be a black line on the paper. It is formed by material, concrete, wood, stone or others. When the thickness of the wall extends, there will be more characteristic on the wall than just a fence.

The window on the thick wall can be used by children as the space they play. They can plant flowers, breed goldfish there. Also, doorway can be hide in the wall. Now people go into the wall, walk on the stairs inside or open the door inside, then enter to another space. They experience material and temperature of the wall instead of just passing it.

*Perspective of detail model*



*a. View from the opening on the wall*



*b. Perspective view of the wall*



*c. Top view of one classroom*

## Experience of the Project

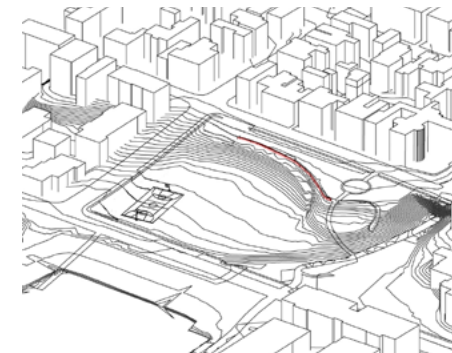
The experience begin with the location of the project, let us go to visit.

## Location of the kindergarten

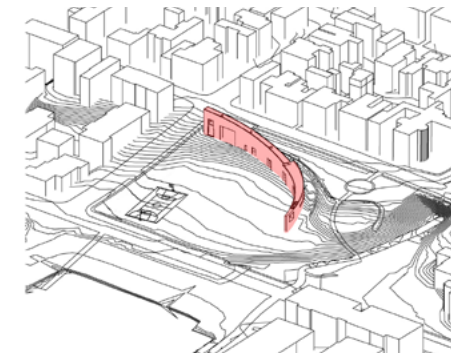
The site is located in windmill hill park, near potomac river in Alexandria. The residential buildings are around the park. From west to east, there is a sloped hill, which the difference is 16 feet.

I thought the kindergarten will locate to the hill side. There are two floors, using the height of the slope, with one floor above it. So the kindergarten will not block the view from the west residential buildings to the park.

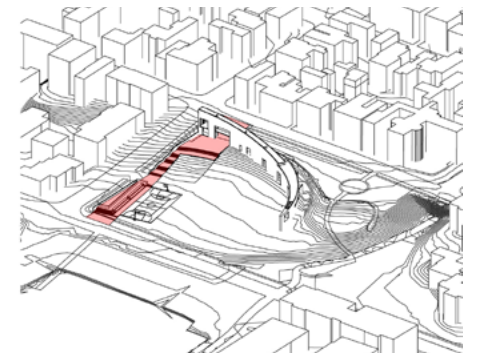
Site plan



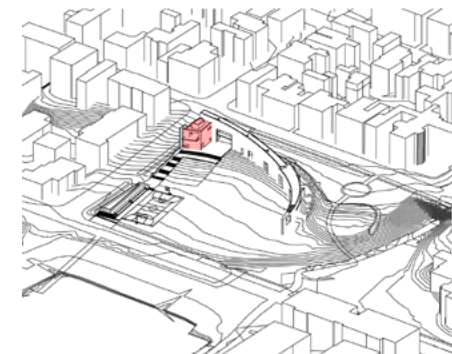
a. Existed retaining wall



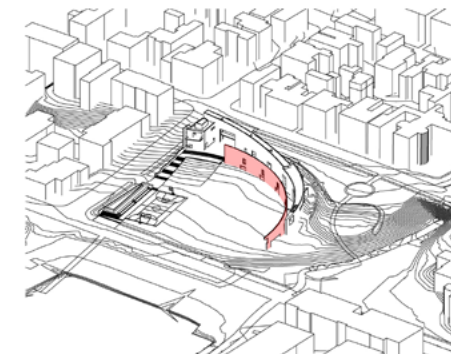
b. Thick curve wall



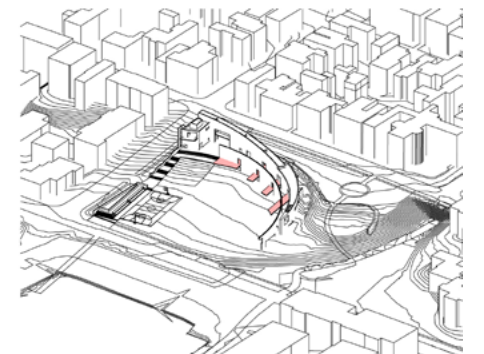
c. Entrance area to the park



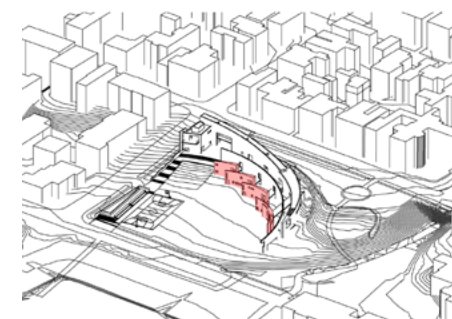
d. Bell tower in entrance area



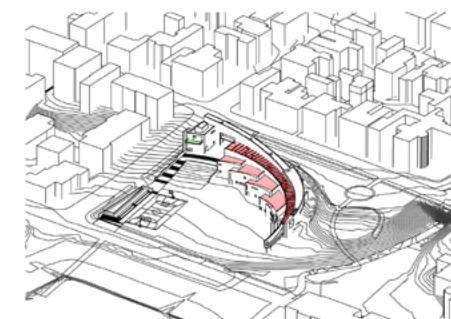
e. Curve wall to the front



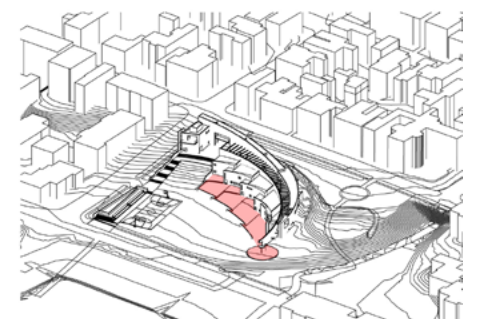
f. Bridges between walls



g. Walls for the classrooms



h. Roofs for main space



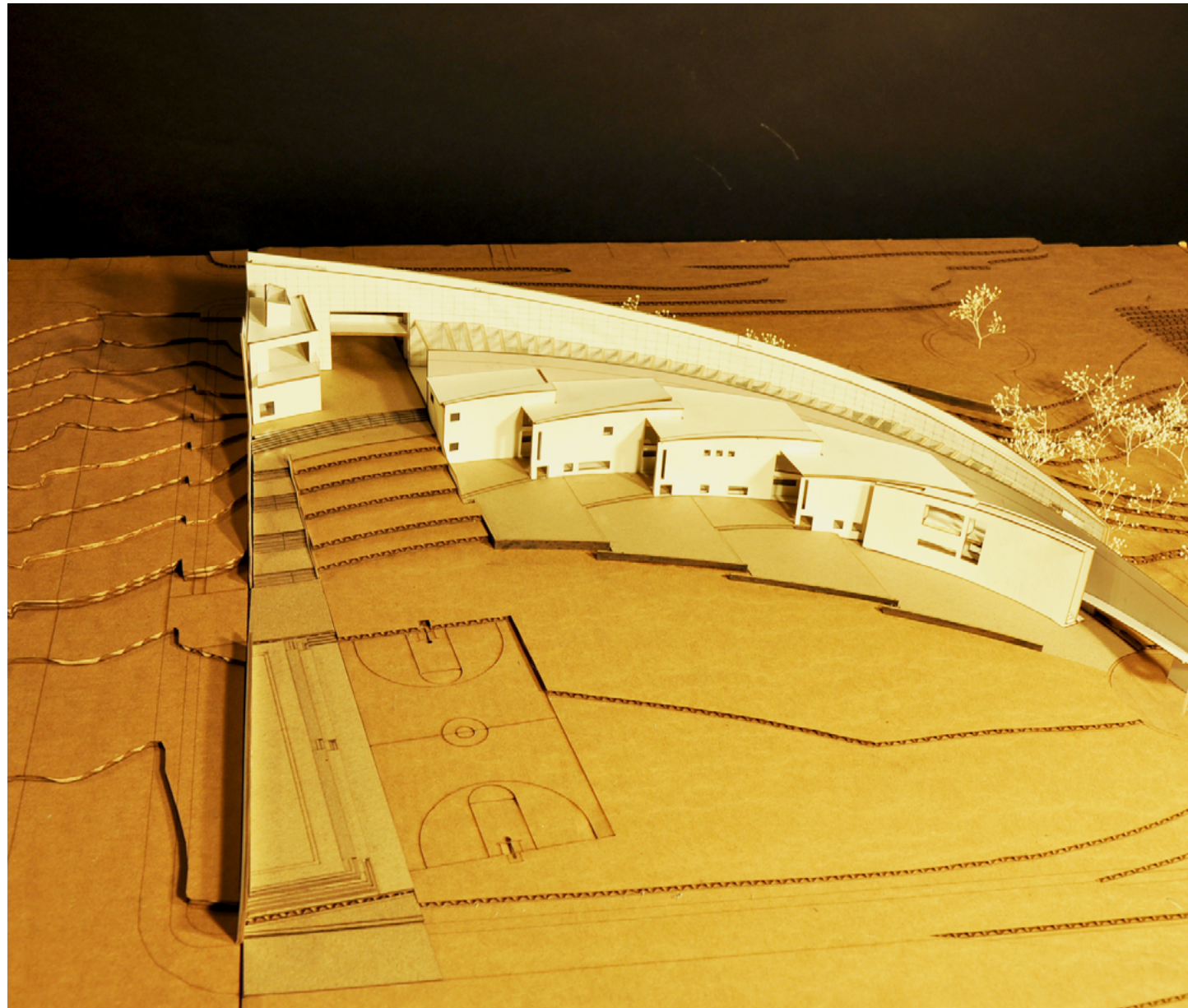
i. Playground of kindergar-

## Entrance area

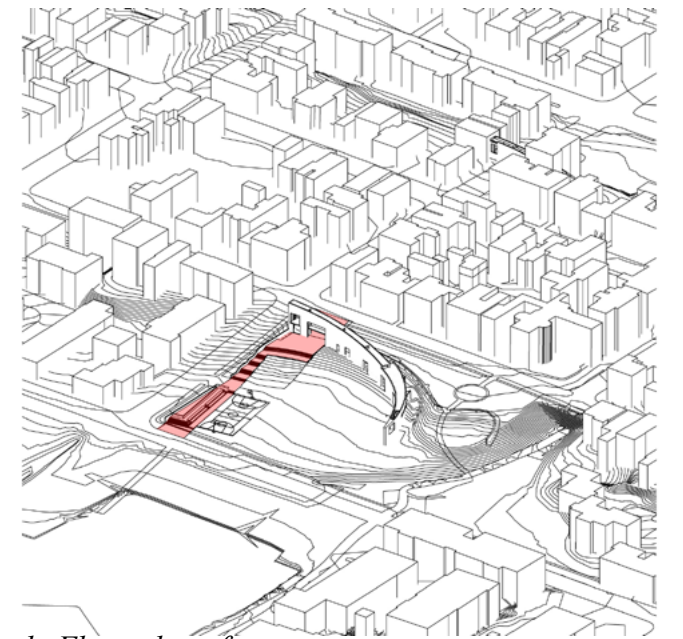
From west to east, I designed a sloped garden with five flight steps in the south edge of the site, as a park entrance connecting the park below and the street level on the hill. The garden serves as a space for public to have a rest and plant trees.

When people go into the kindergarten from the street level, they first pass through the opening in the wall, a bridge in the wall is above their head. To the north, is the doorway to the kindergarten, to the south is the watch tower, and to the east is the garden.

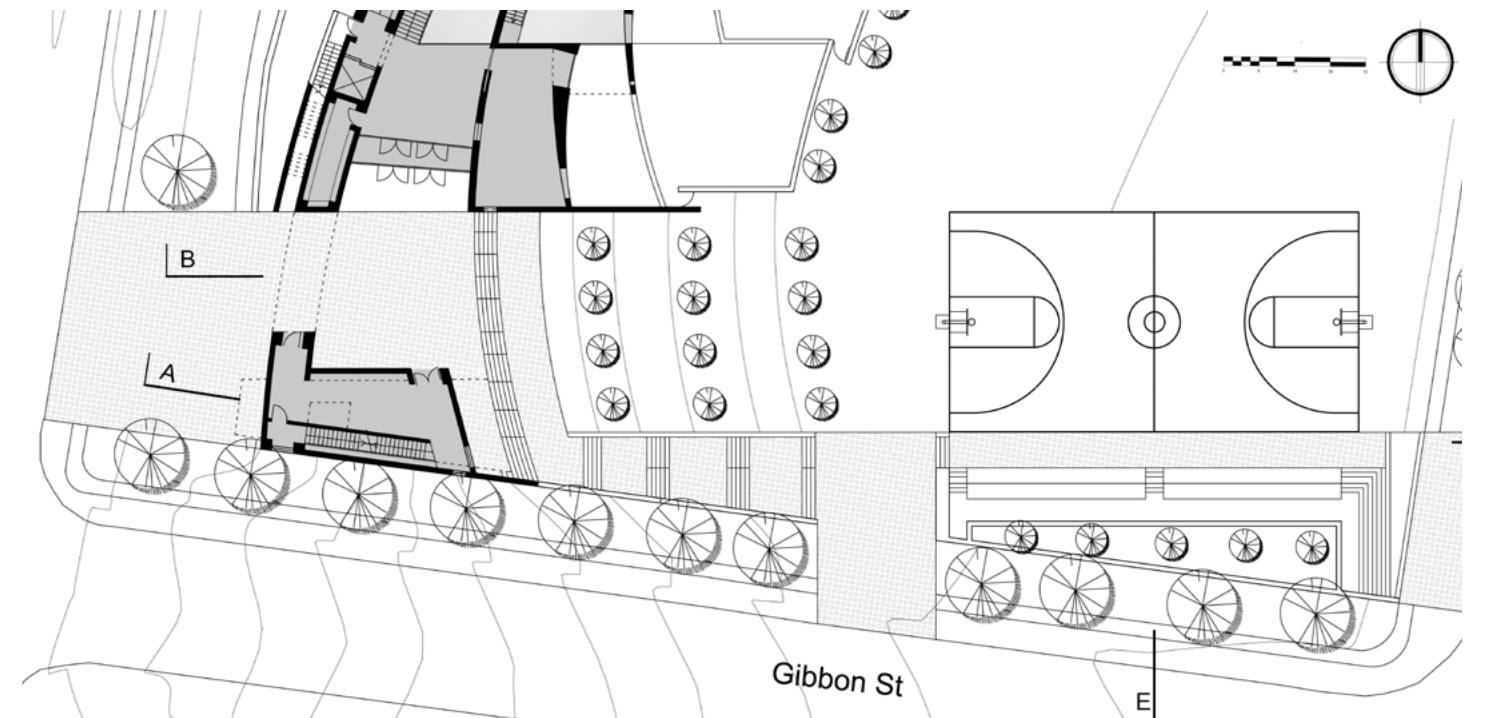
When people go down the steps, they cross the bleachers. They can stay there and watch the basketball game, or they can pass it by the front path. The stage for basketball serves as a space to cheer the game.



a. Hand model  
28



b. Floor plan of entrance



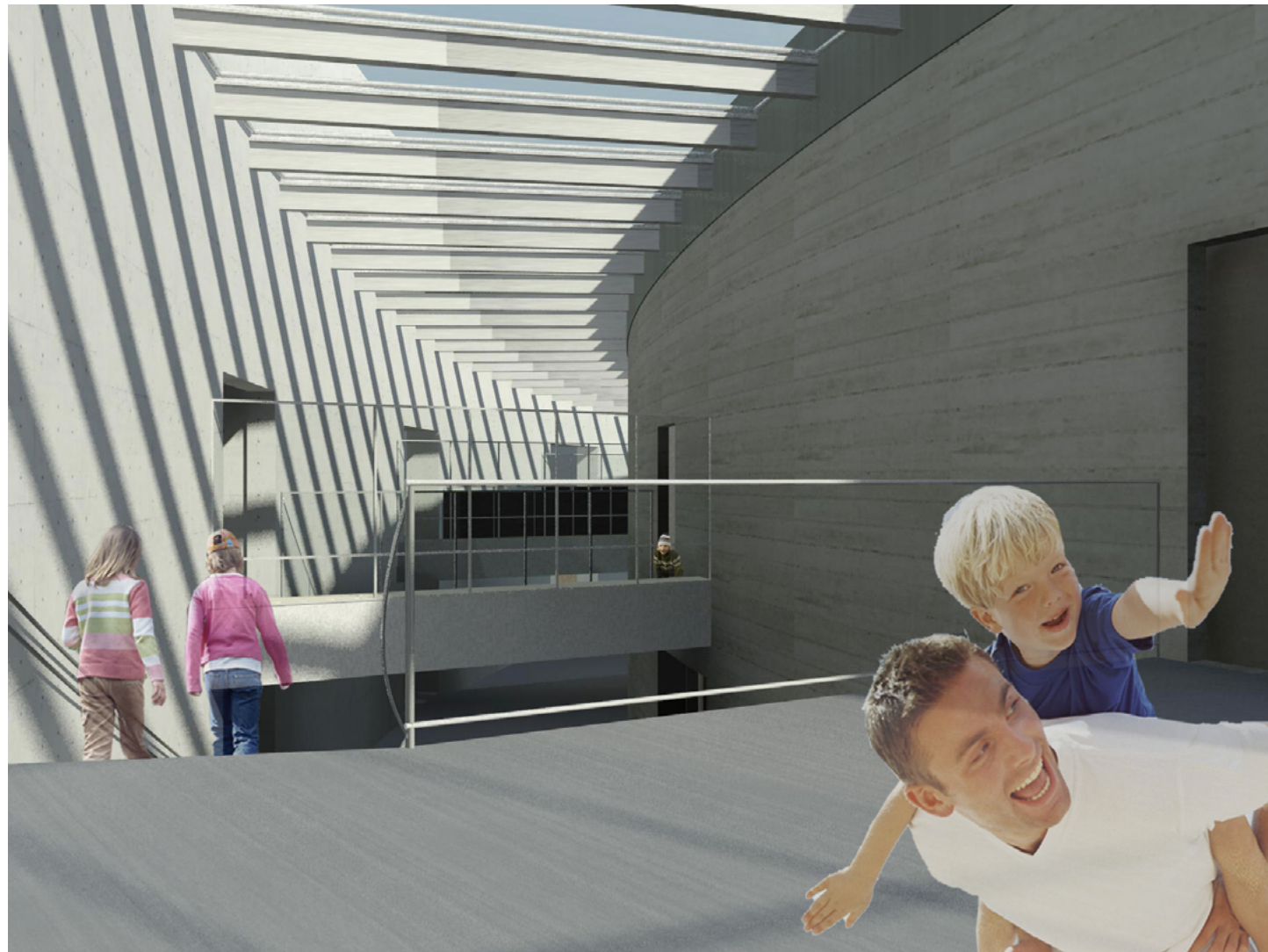
c. Plan of Entrance area

## Hall of the kindergarten

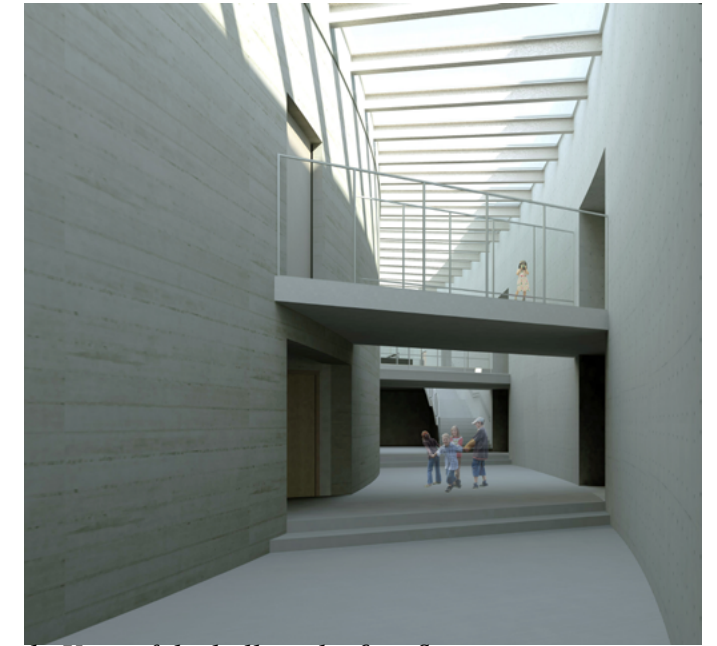
To the north of the entrance area, it is the doorway to kindergarten. People go into the hall first, which is the second floor of the kindergarten. They see three parallel bridges between curve walls, skylight come from the transparent roof.

People can go down the main stair on the wall, go to the ground floor. Or they can go into the thick curve wall in the back, where the library hide in it.

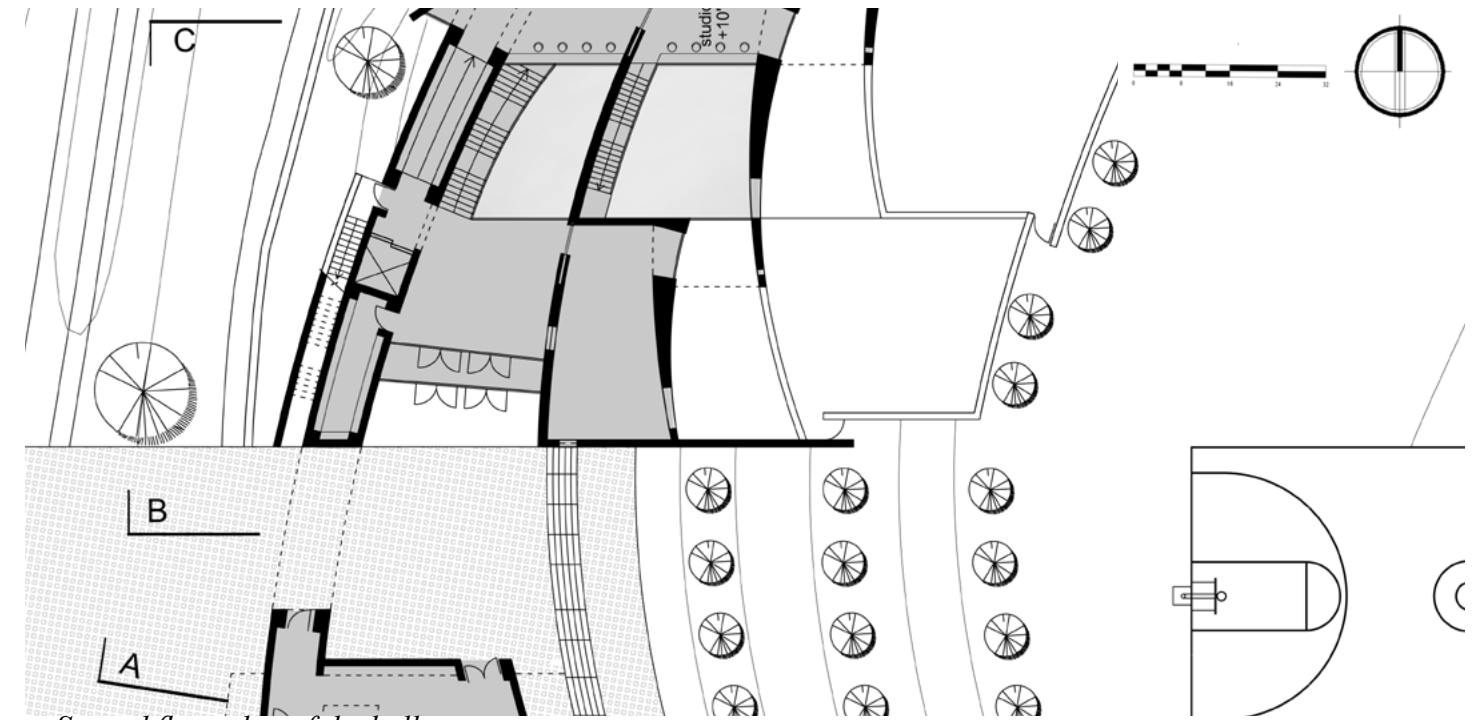
On the bridge, children read books from the library, or watch sky through the glass roof on the top. To the other side of the bridge is the second floor part of each classroom, where serves as handwork room for the class.



a. View of the entrance hall on the second floor



b. View of the hall on the first floor



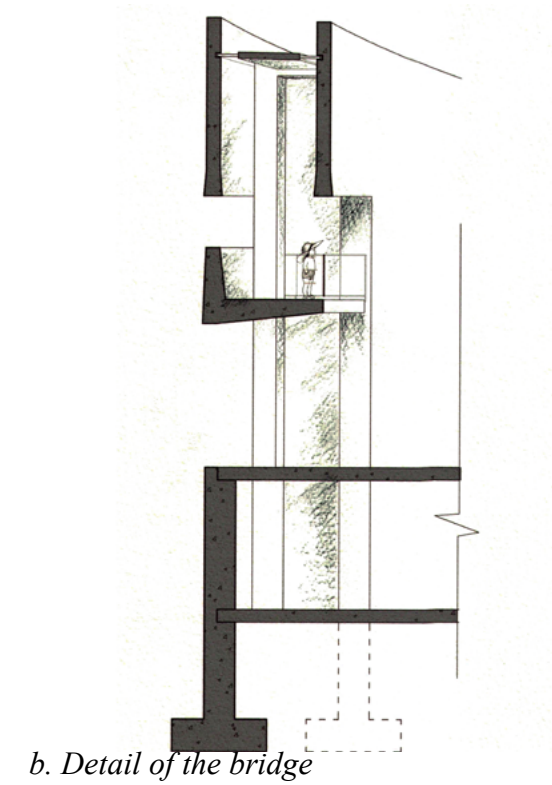
c. Second floor plan of the hall



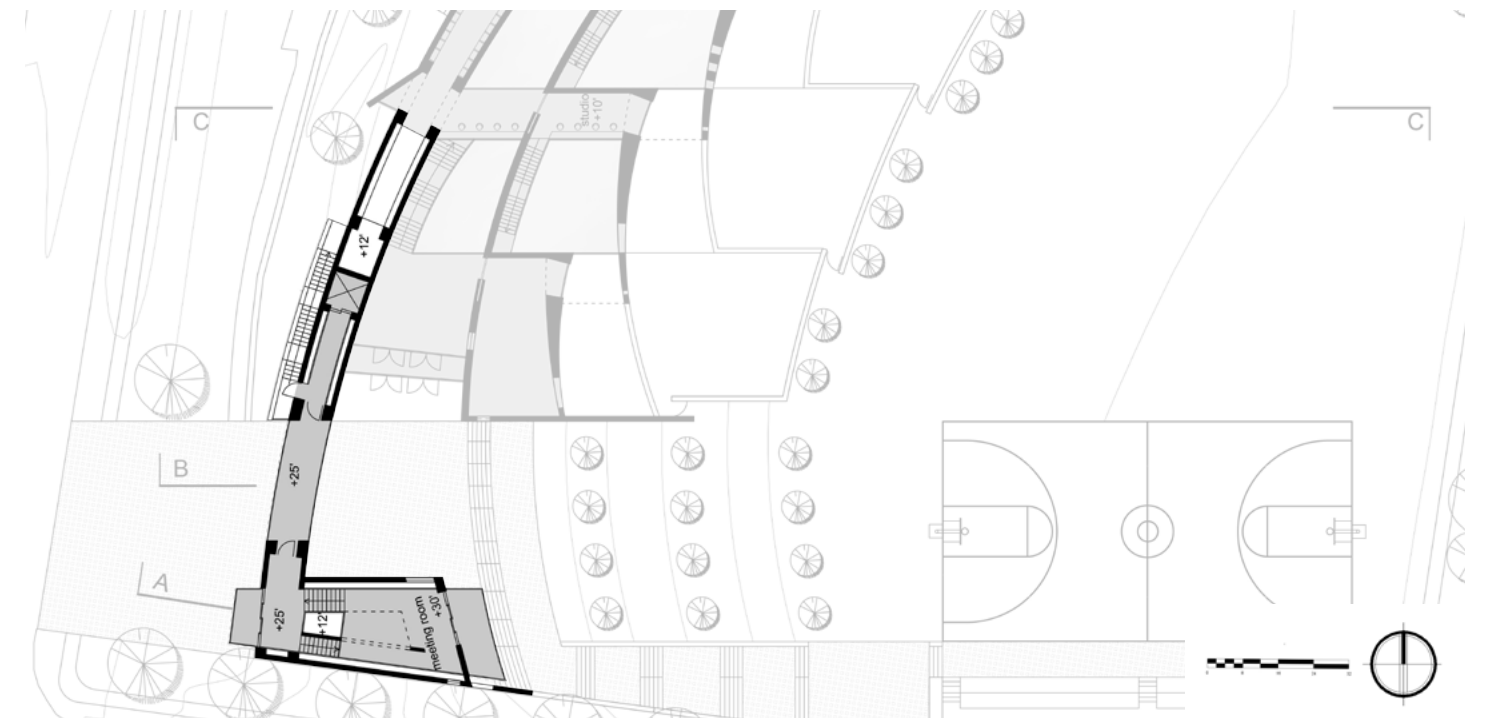
a. View on the bridge  
32

### Bridge to the bell tower

From the entrance hall, people can take the elevator to the third floor, where is the bridge to the bell tower. The bridge structure is a concrete part from the curve wall. When children across the bidge, they can have view outside and feel the air, wind, rain and light outside.



b. Detail of the bridge



c. Third floor plan of the bridge



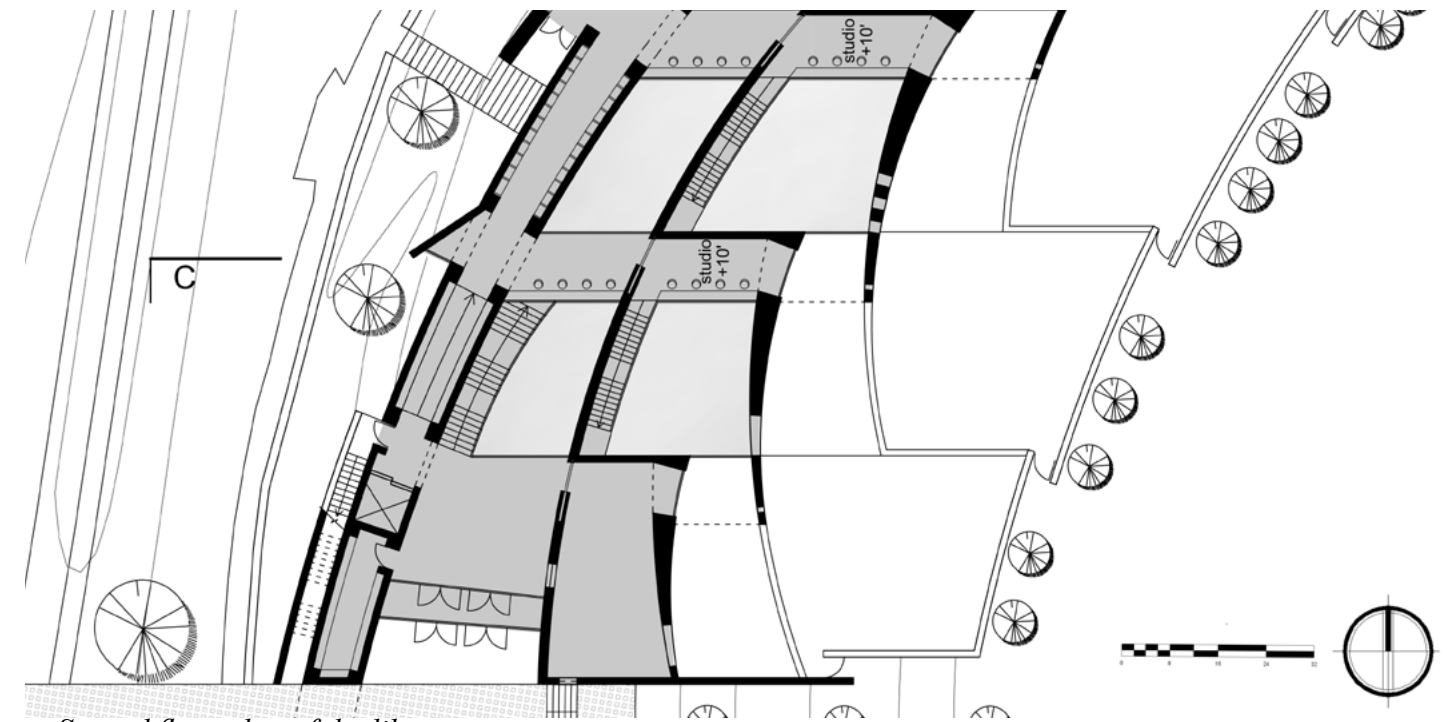
a. View to the library

### Going to the library

From the entrance hall, people can also go down a little ramp to the library inside. The light come from the skylight and windows on the curve walls.



b. View in the library



c. Second floor plan of the library

## Experience in the library

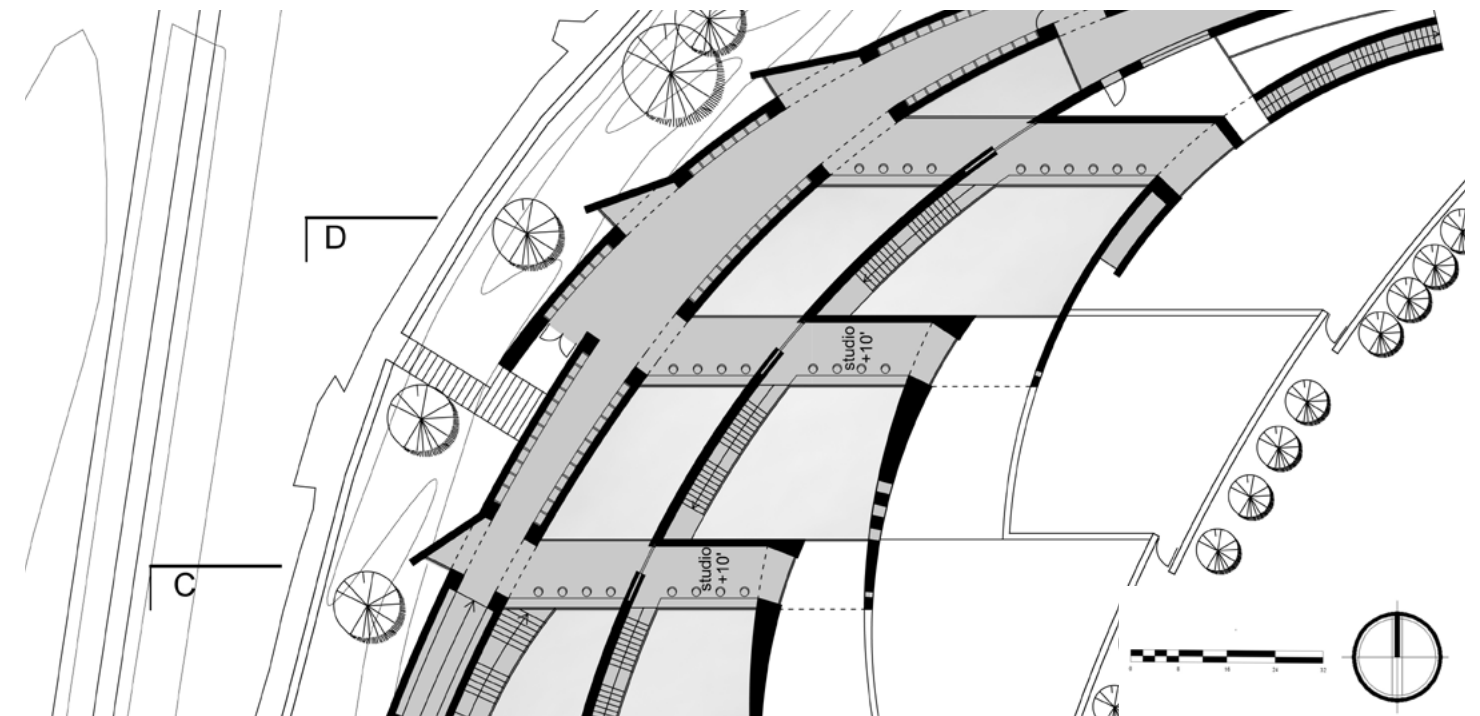
In the library, children can choose books from the bookshelves, which are embedded in the walls. It is one way to make use the thickness of the wall.



a. View in the library  
36



b. Detail of the wall in the library



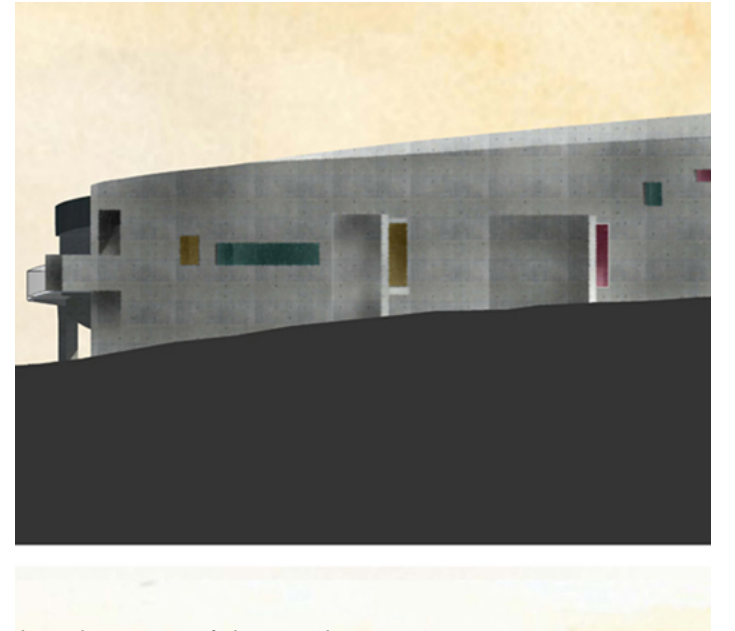
c. Second floor plan of the library

## Windows in the library

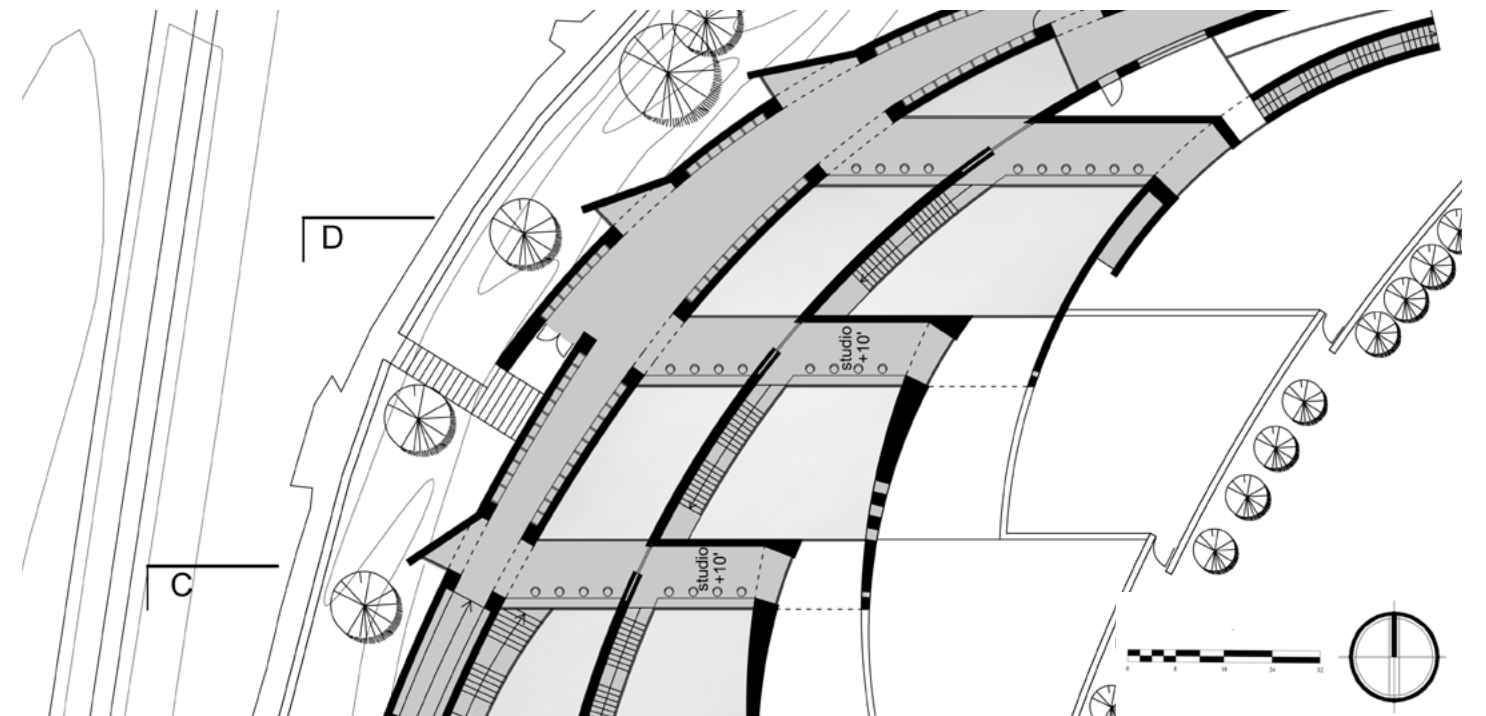
The window in the library designed as an angle face to the south, so the view from outside cannot go into the kindergarten directly. When children get books from the library, they can sit down near the window, light come though from the south, have a little private space.



a. View through the window in the library



b. Elevation of the window



c. Second floor plan of the window

## Studio room

Each classroom has a studio room space on the second floor. It functioned as handwork studio. Children can walk on the stairs beside the wall to reach here. Or they can come from the library side, cross the bridge to the studio room.

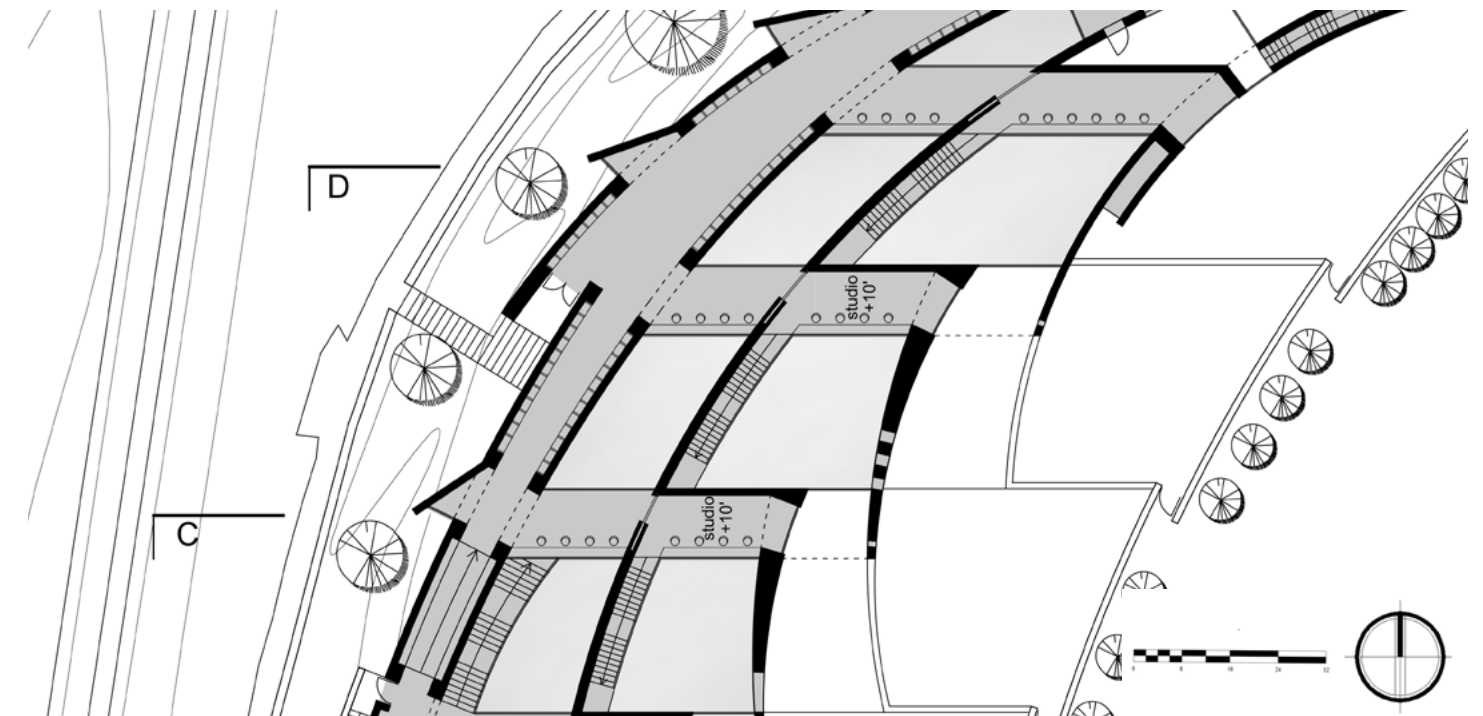
Light come though the floor-to-ceiling window to the studio room. With the thickness of the wall, it creates a inside balcony here more than just a window. Children can have a seat beside the window and enjoy the view to the park.



a. View in the studio room



b. View in the classroom



c. Second floor plan of the studio room

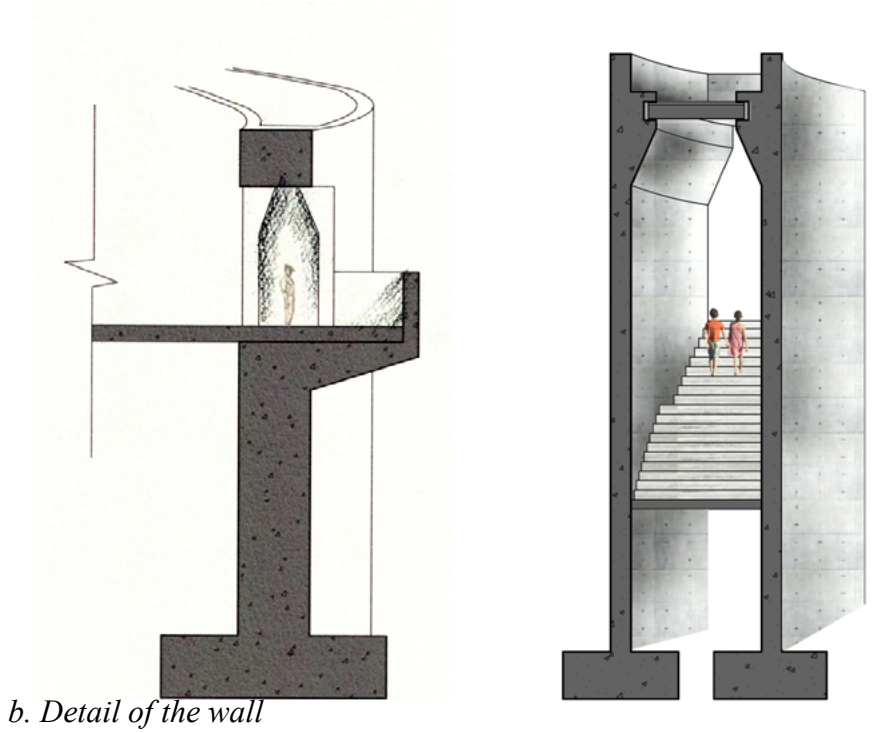
## Meeting room

Go to the end of the library, there is a meeting room for the children. It opens to the outside. The temperature changes here. Skylight comes from the balcony, people enjoy seasons here.

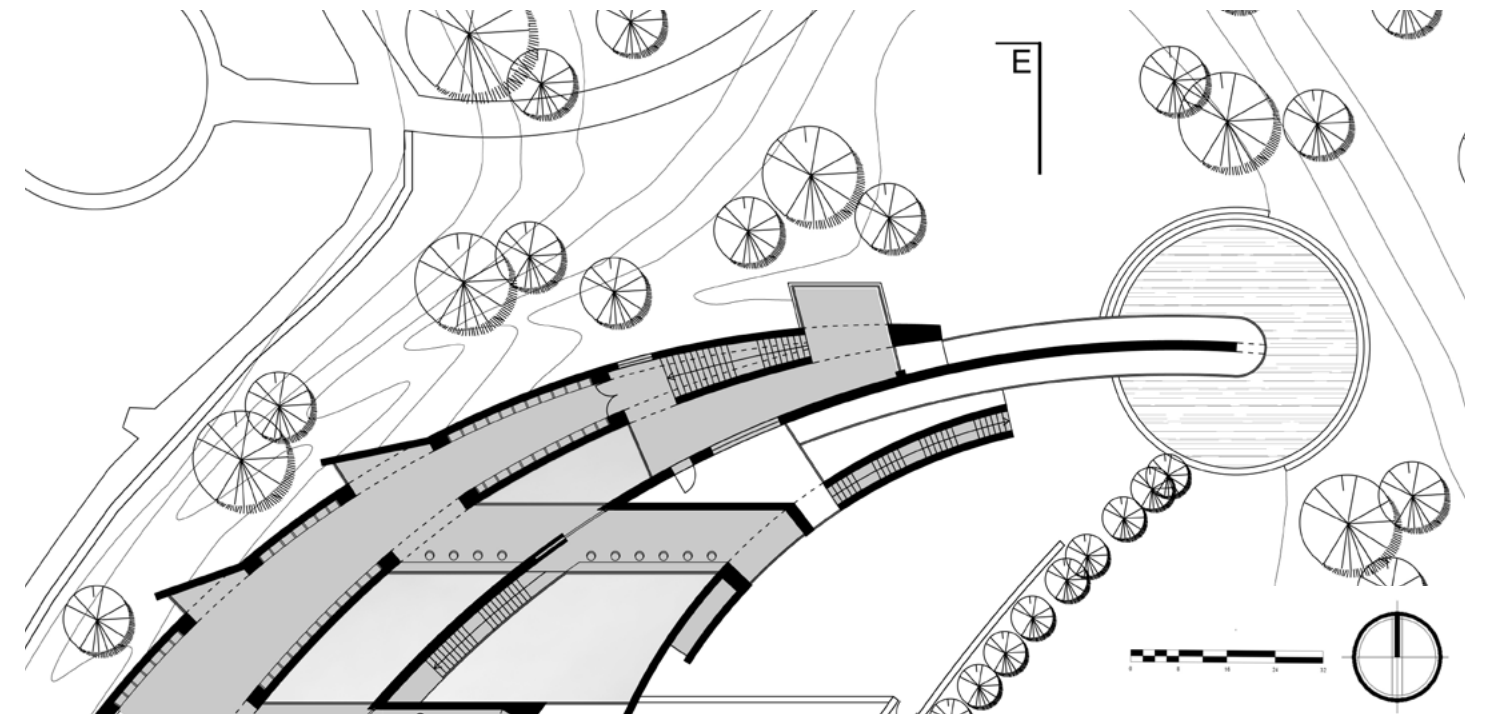
When the space between two curve walls become narrow, they meet together in the end and become one wall. The stair to the lower level hides inside these walls, light comes from the top, and goes smoothly down along the triangle edge of the wall, which also functions as the structure to hold the roof. It is a secrete and magic space.



a. View to the meeting room



b. Detail of the wall



c. Second floor plan of the room

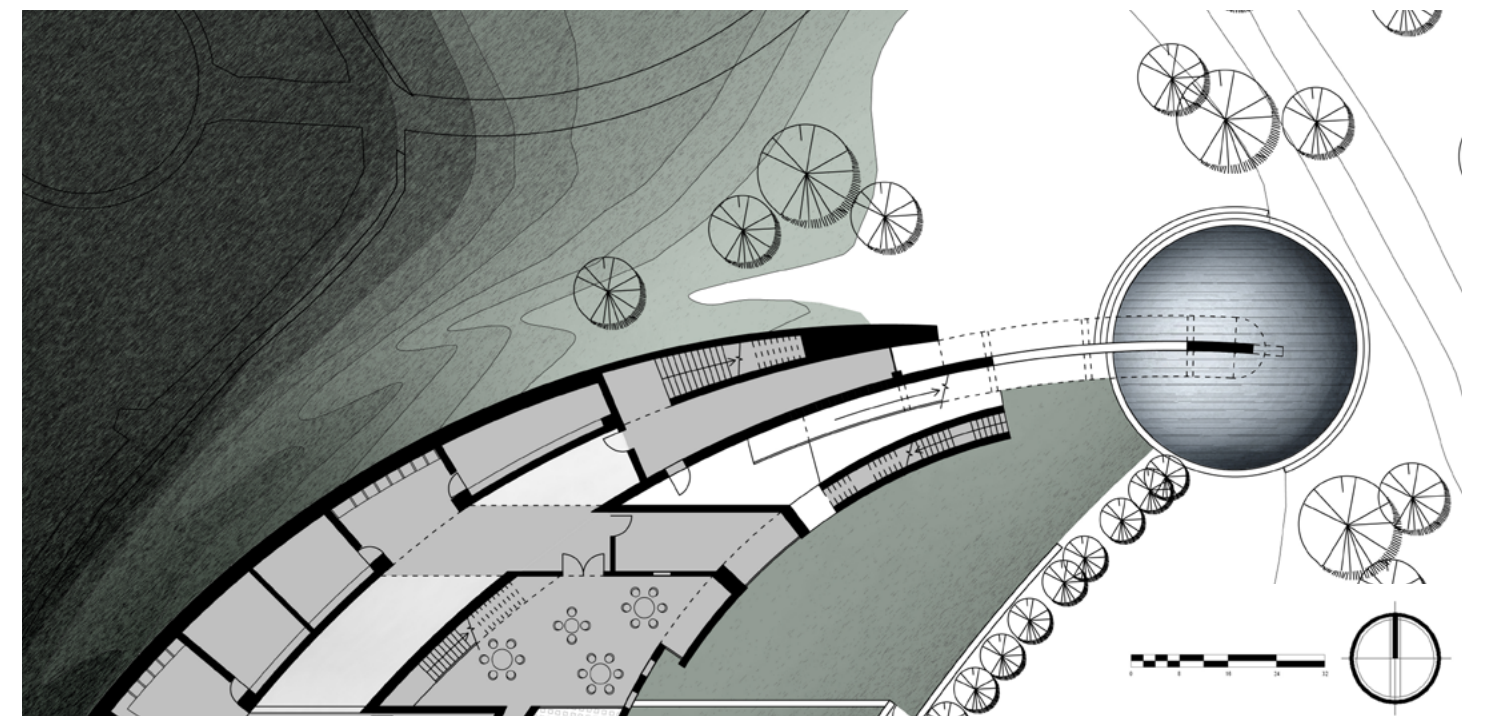
## The ramp and the pool

Go out from the meeting room on the second floor, there is a ramp access to the playground. The ramp hold by the structure on the wall, which stands in the pool. The wall for the last classroom change to a two layers walls, a stair to the meeting room hide inside these two walls. It is a celebrating piece of music.

With green color copper on the top the curve wall, when it rains, water comes from the top of the wall, falls down to the pool. It is a beautiful moment in the life.



a. View in the outside



b. Second floor plan of the pool

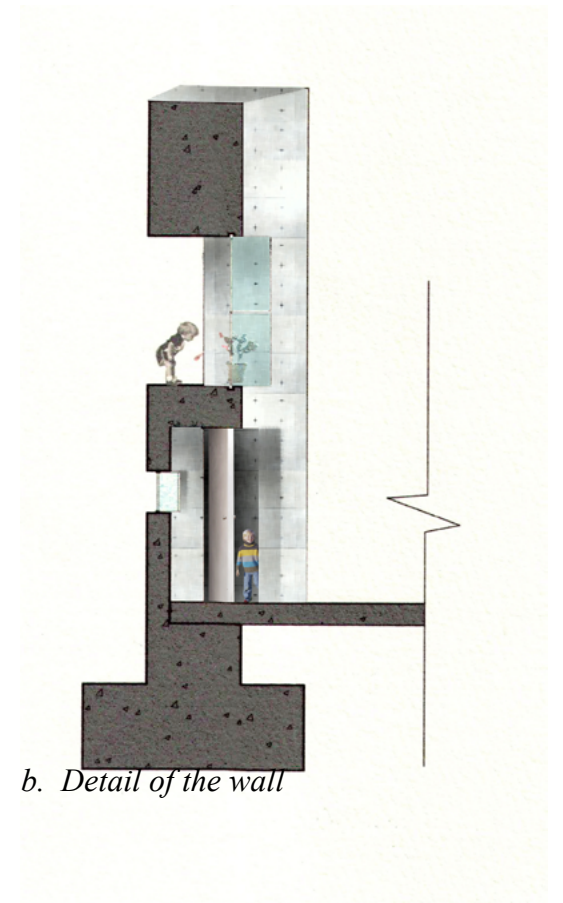
## Classroom

The classrooms locate on the first floor, and have access to the outside. For each classroom, there is one play court outside.

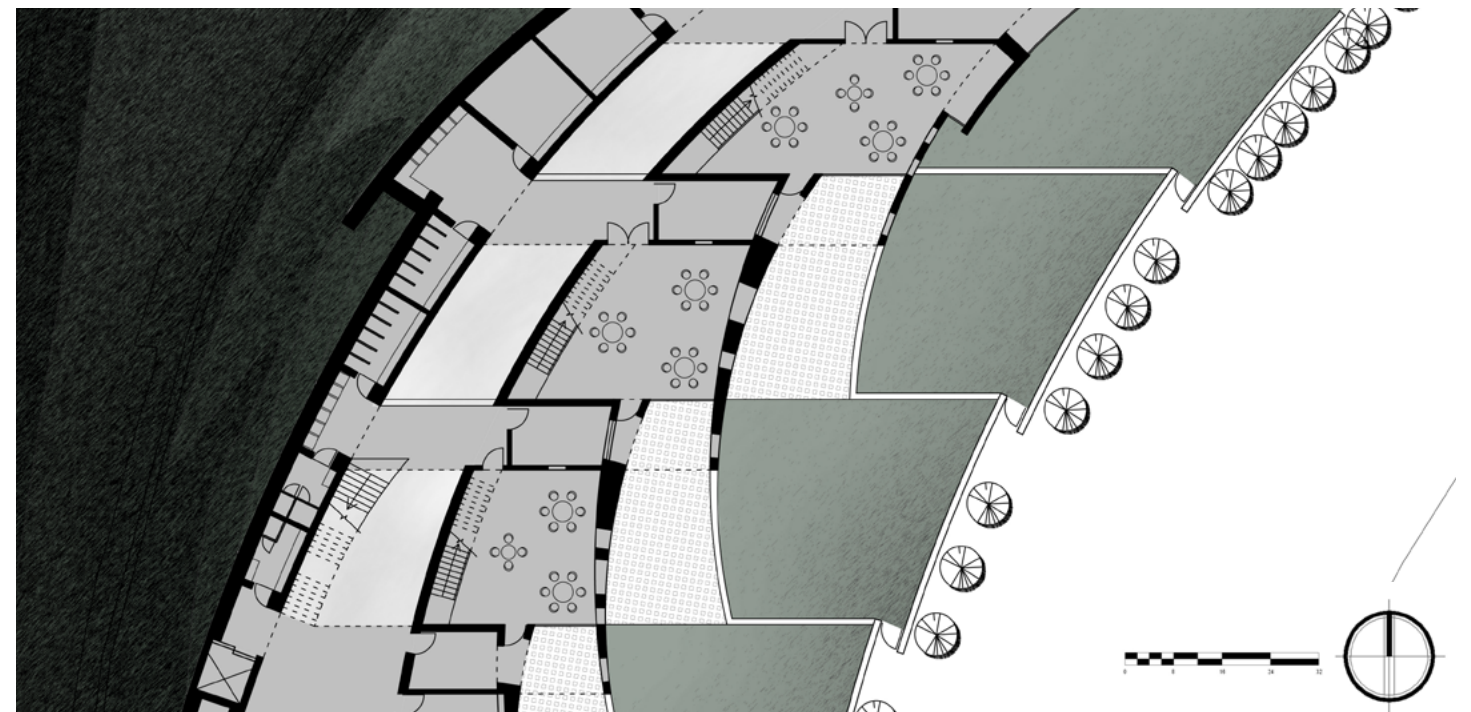
The doorway to the classroom is hide inside the wall. The wall change from thin to thick. It makes use the thickness of the wall and create an entrance space as the picture shows.



a. View in the classroom



b. Detail of the wall



c. First floor plan of the classroom

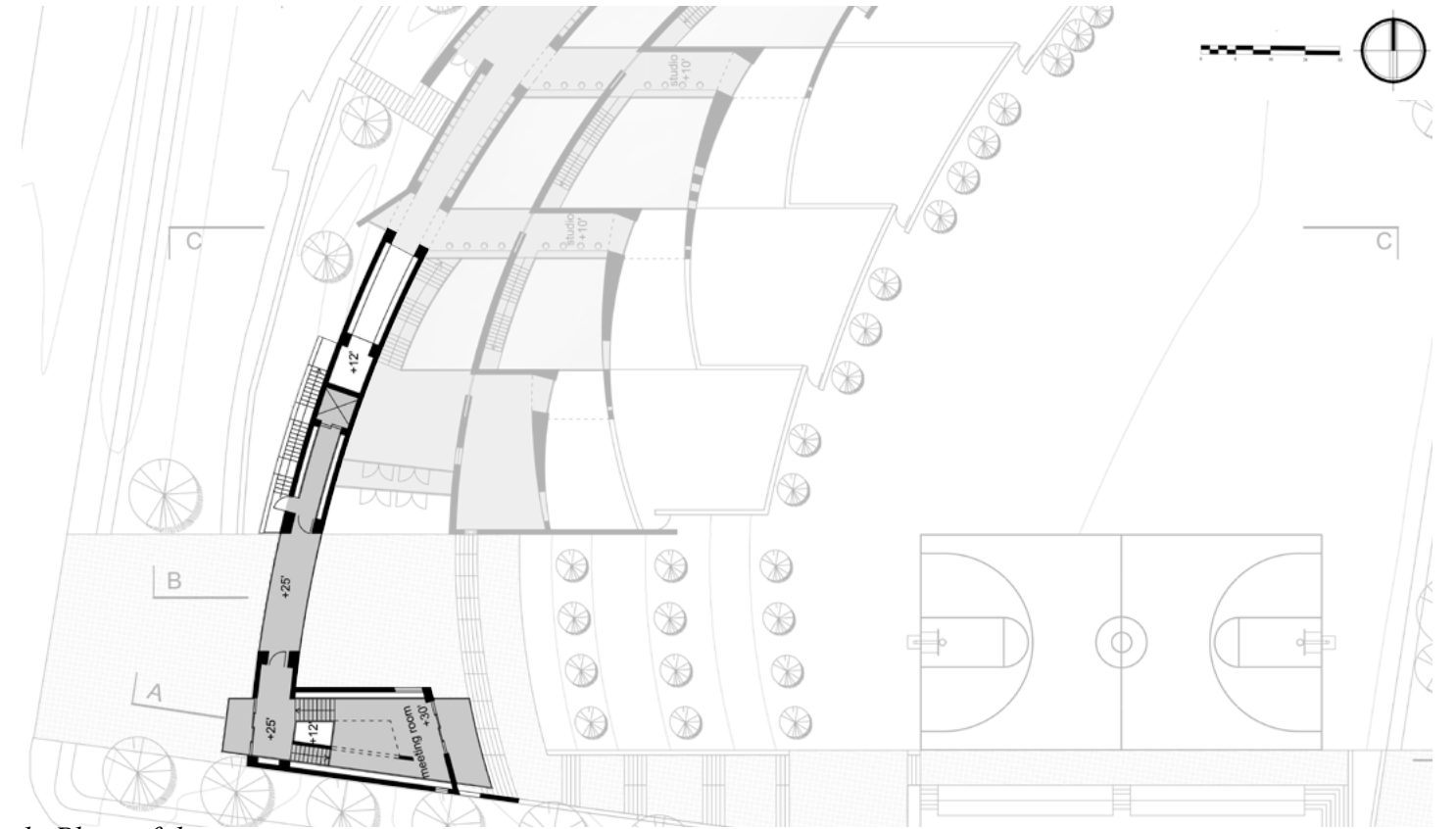
## The bell tower and the theater

The bell tower as a separate part of the kindergarten is a gift to the children. The parents, teacher and the children can have meeting on the upper level of the tower, light come though the roof window. Go to the balcony of the tower, people can ring the bell on the wall.

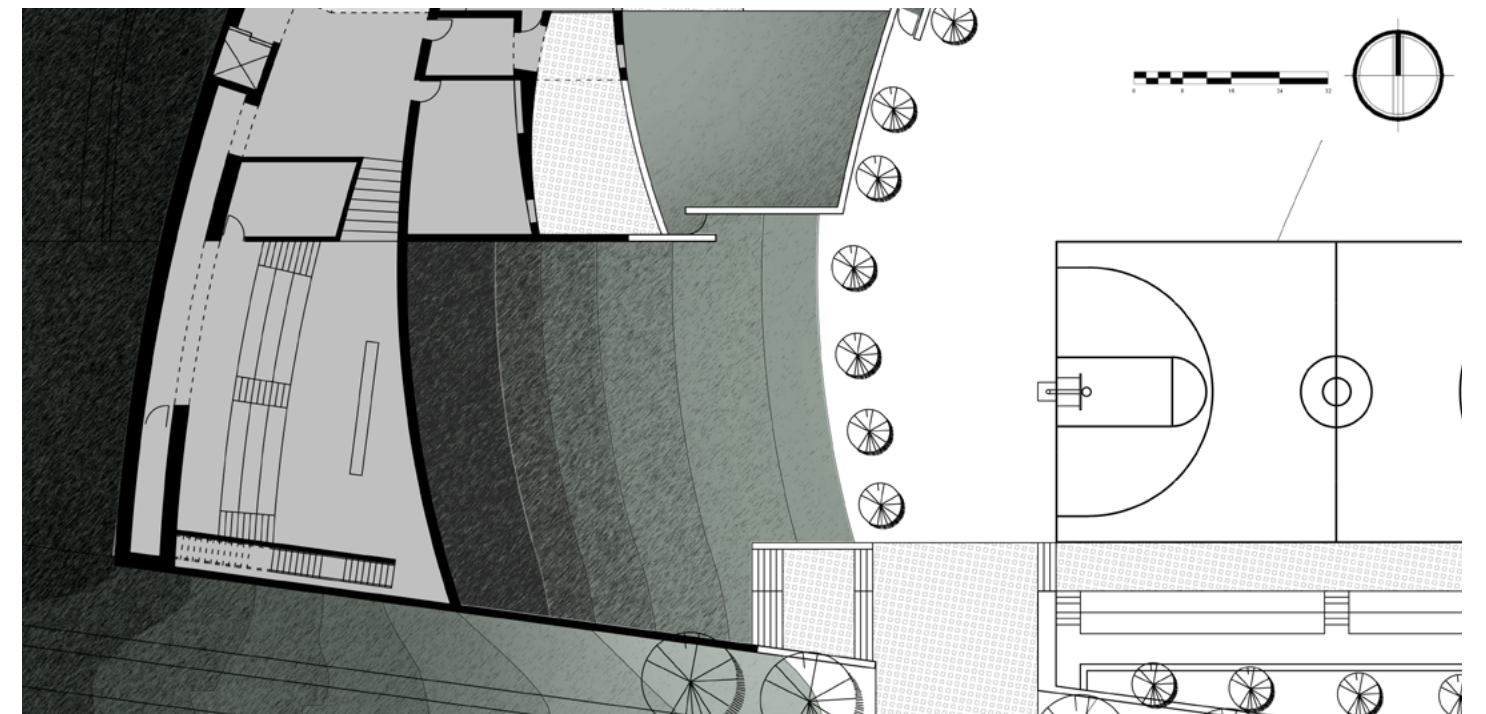
Under the tower is a theater in the kindergarten. It is in the earth, and get access from the stairs on the edge. It gets dark in the end, as a movie theater for the children.



a. Section of the tower



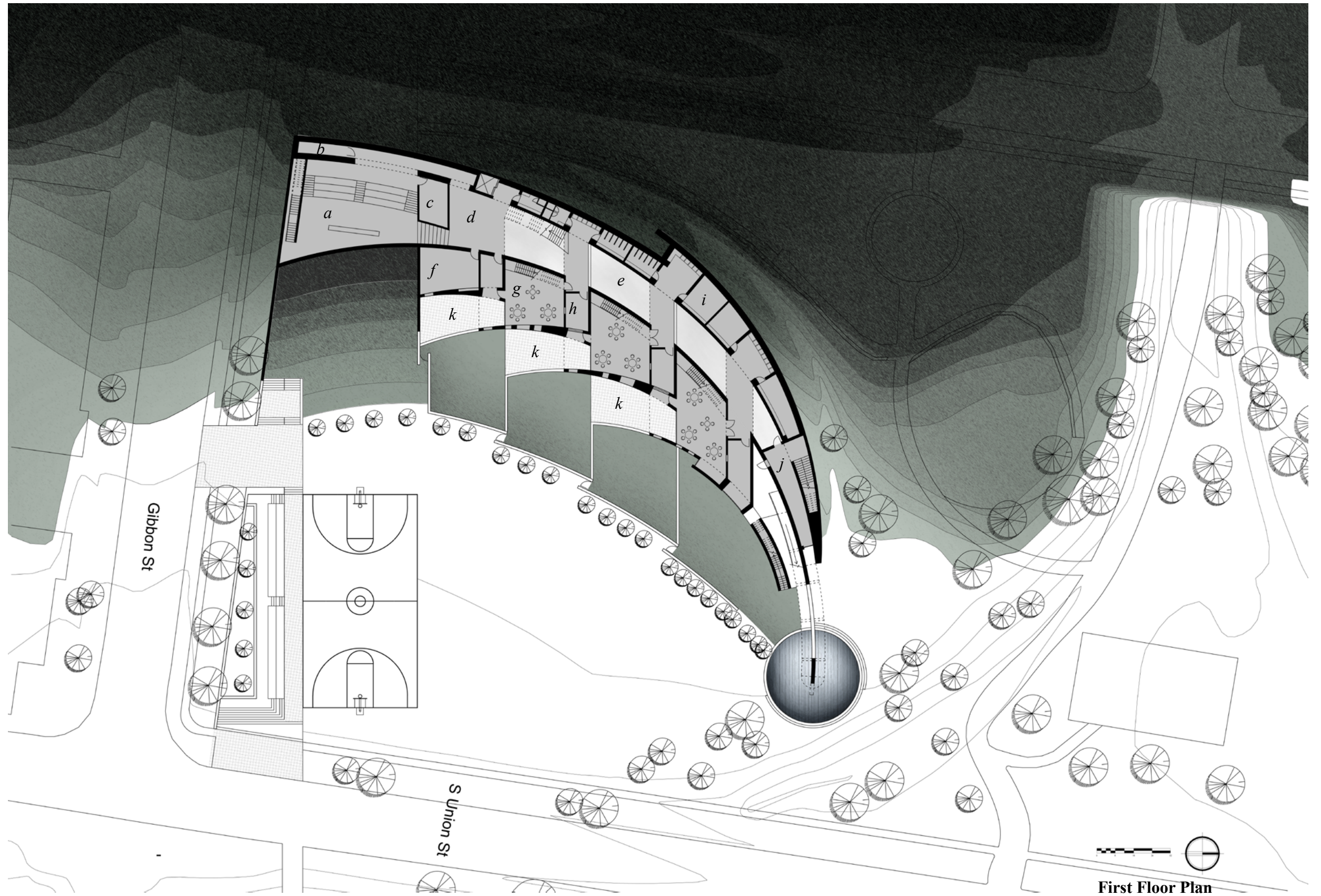
b. Plans of the tower



c. First floor plan of the theater

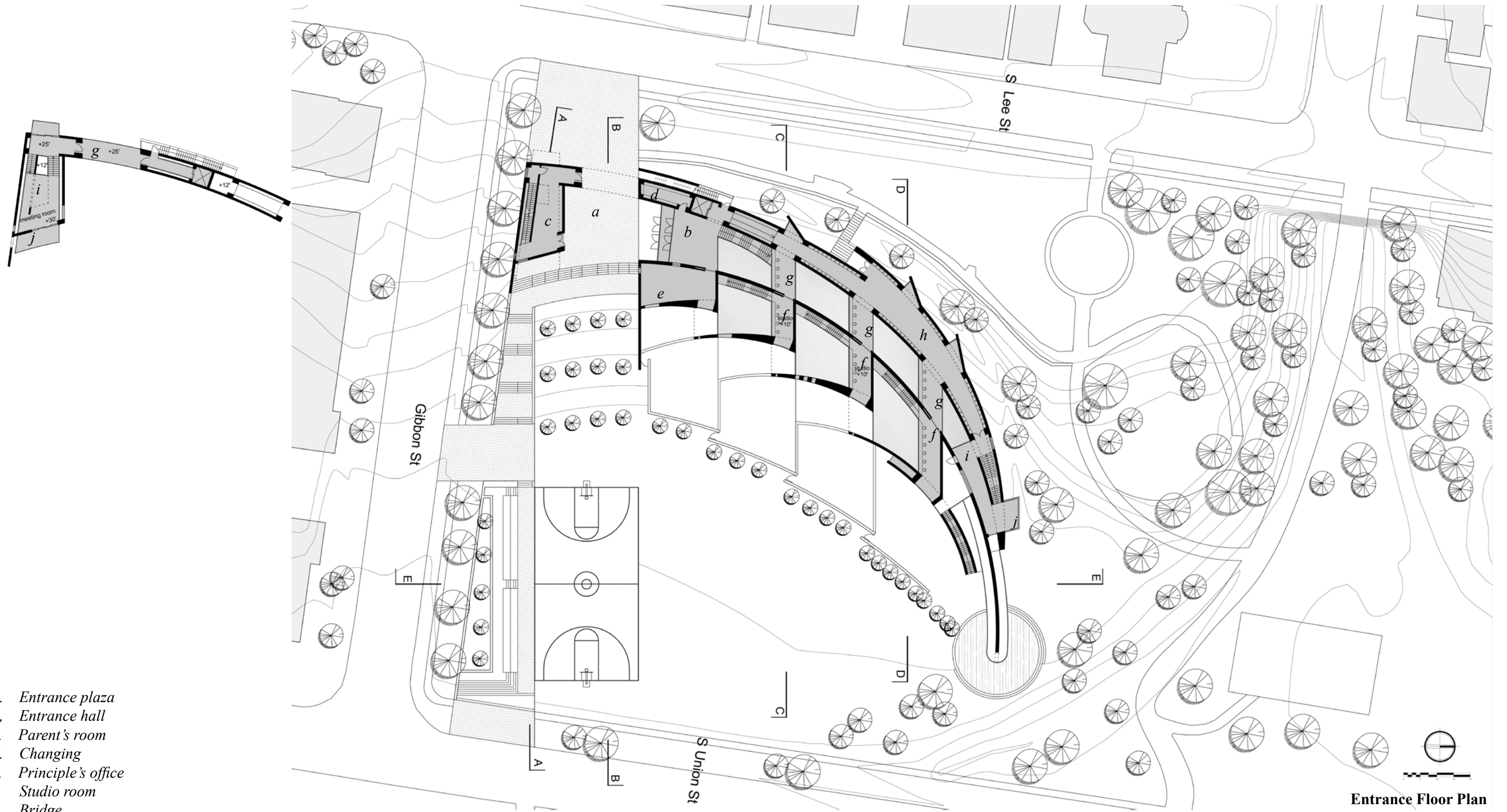
## Presentation of the Project

The final presentaion of the project include site plan, floor plans, elevations, sections, renderings and details. Also there is a hand model to show the kindergarten and its environment.



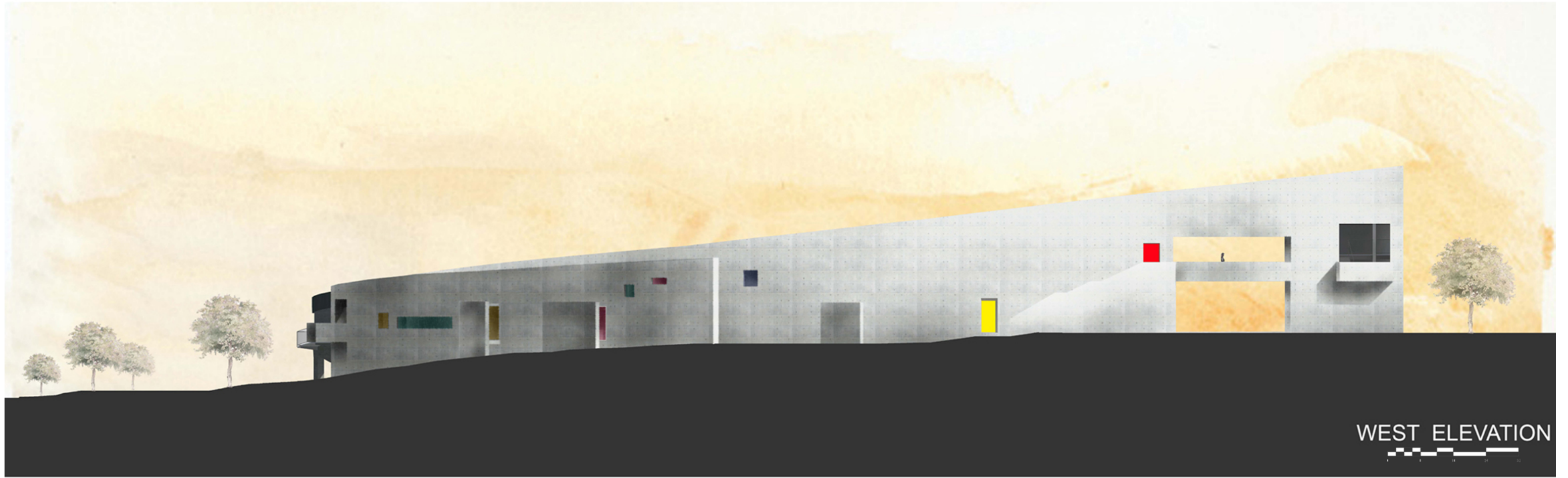
- a. *Movie theater*
- b. *Storage*
- c. *Machanical room*
- d. *Lobby*
- e. *Playhall*
- f. *Kitchen*
- g. *Classroom*
- h. *Teacher's office*
- i. *Service room*
- j. *Exhibition room*
- k. *Play court*

**First Floor Plan**



- a. Entrance plaza
- b. Entrance hall
- c. Parent's room
- d. Changing
- e. Principle's office
- f. Studio room
- g. Bridge
- h. Library
- i. Meeting room
- j. Balcony

Entrance Floor Plan

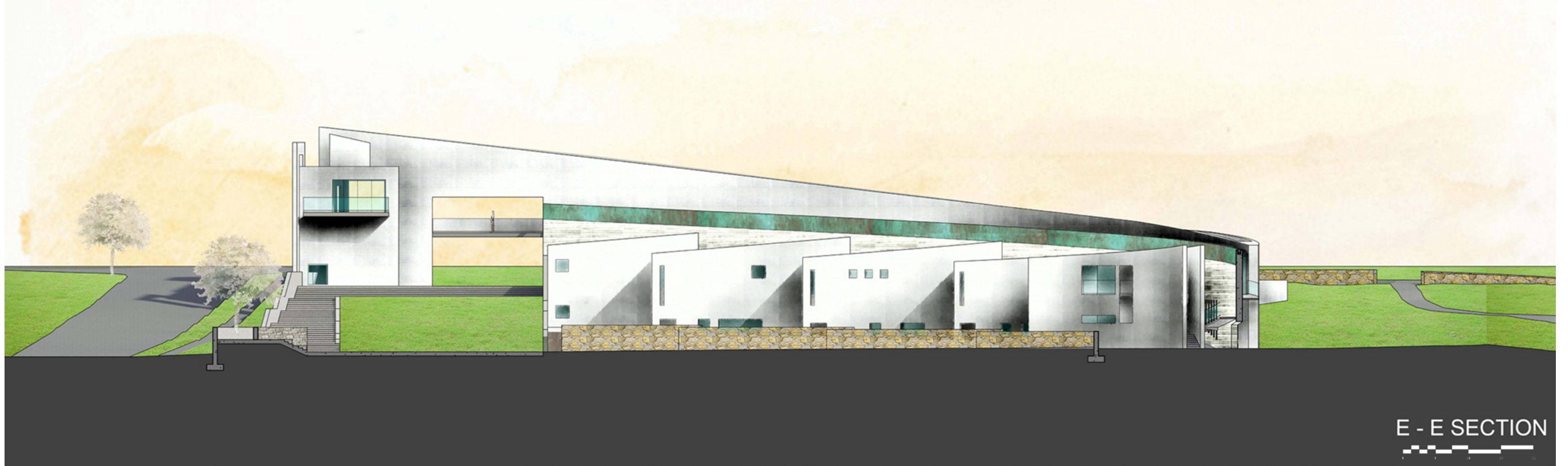


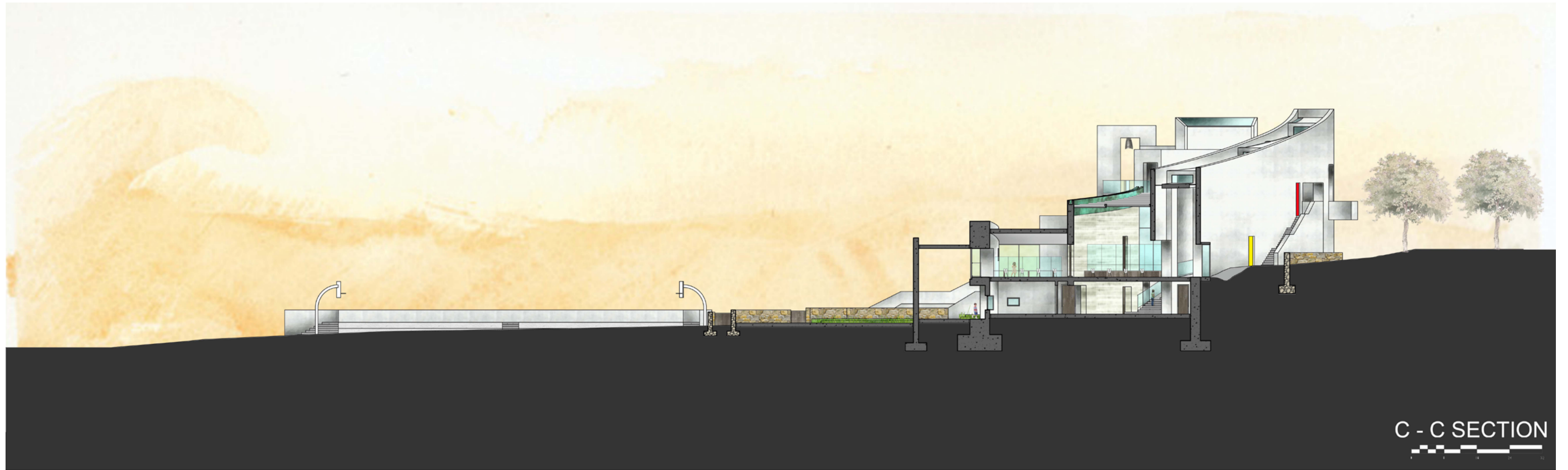


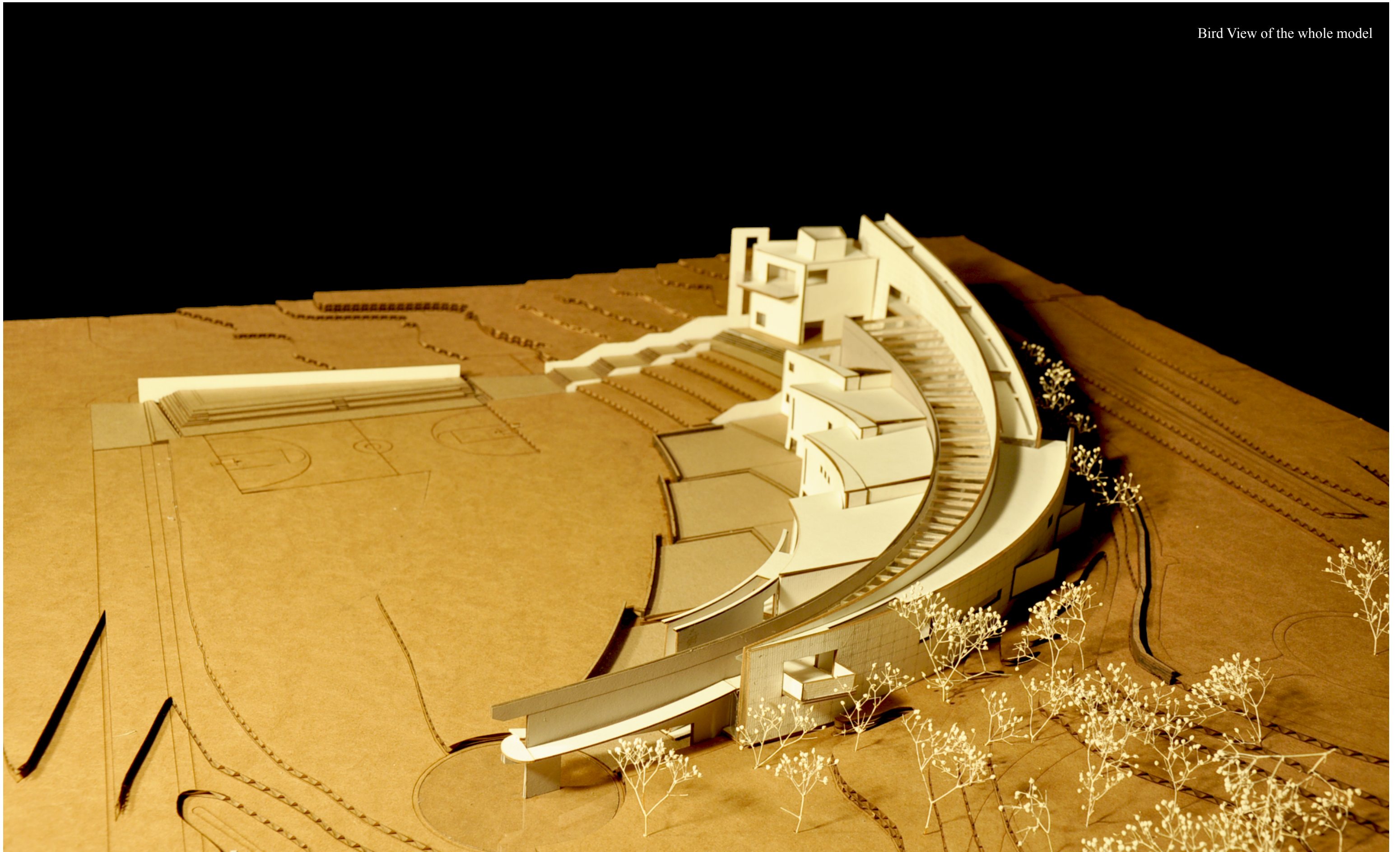
SOUTH ELEVATION



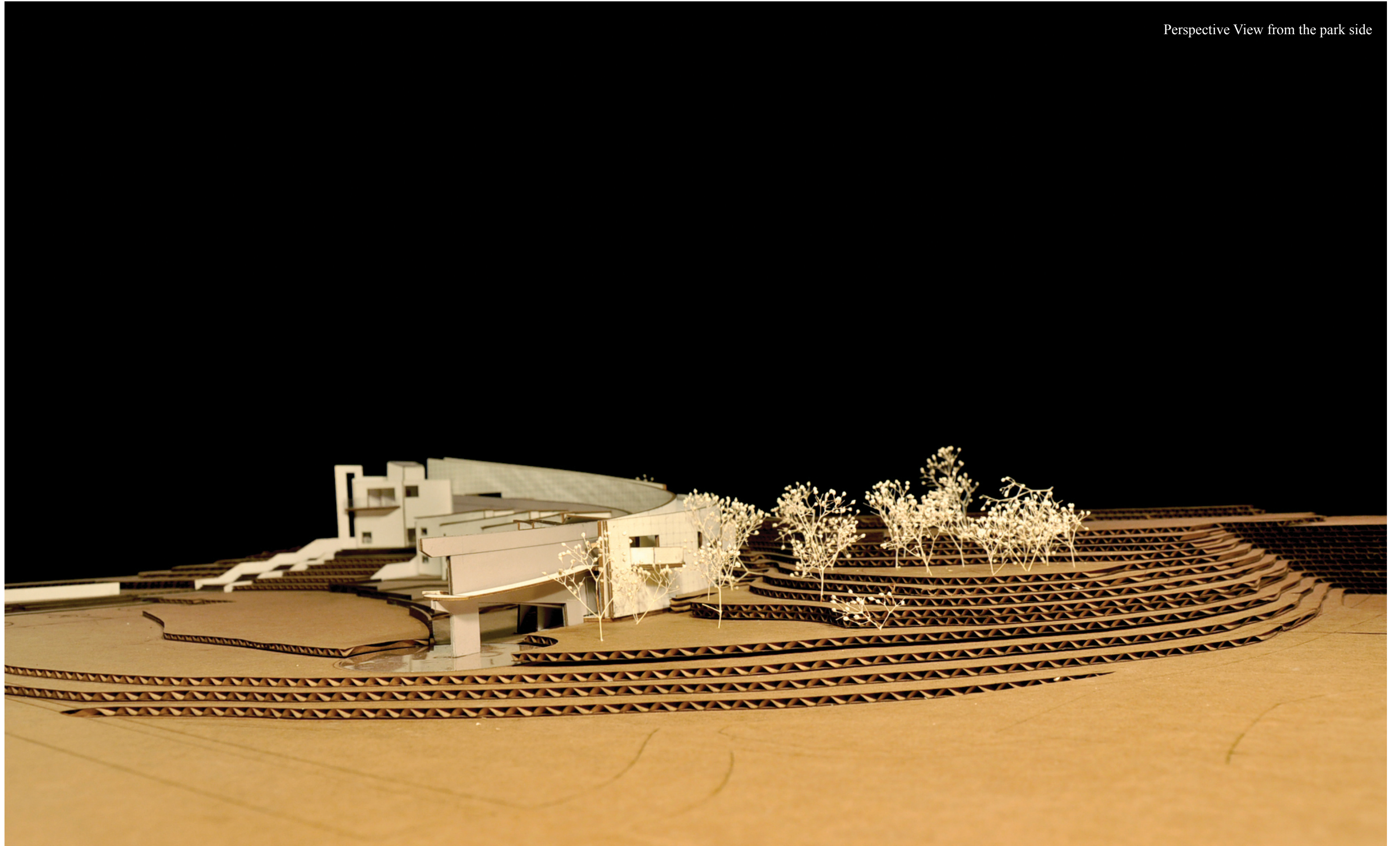
A - A SECTION



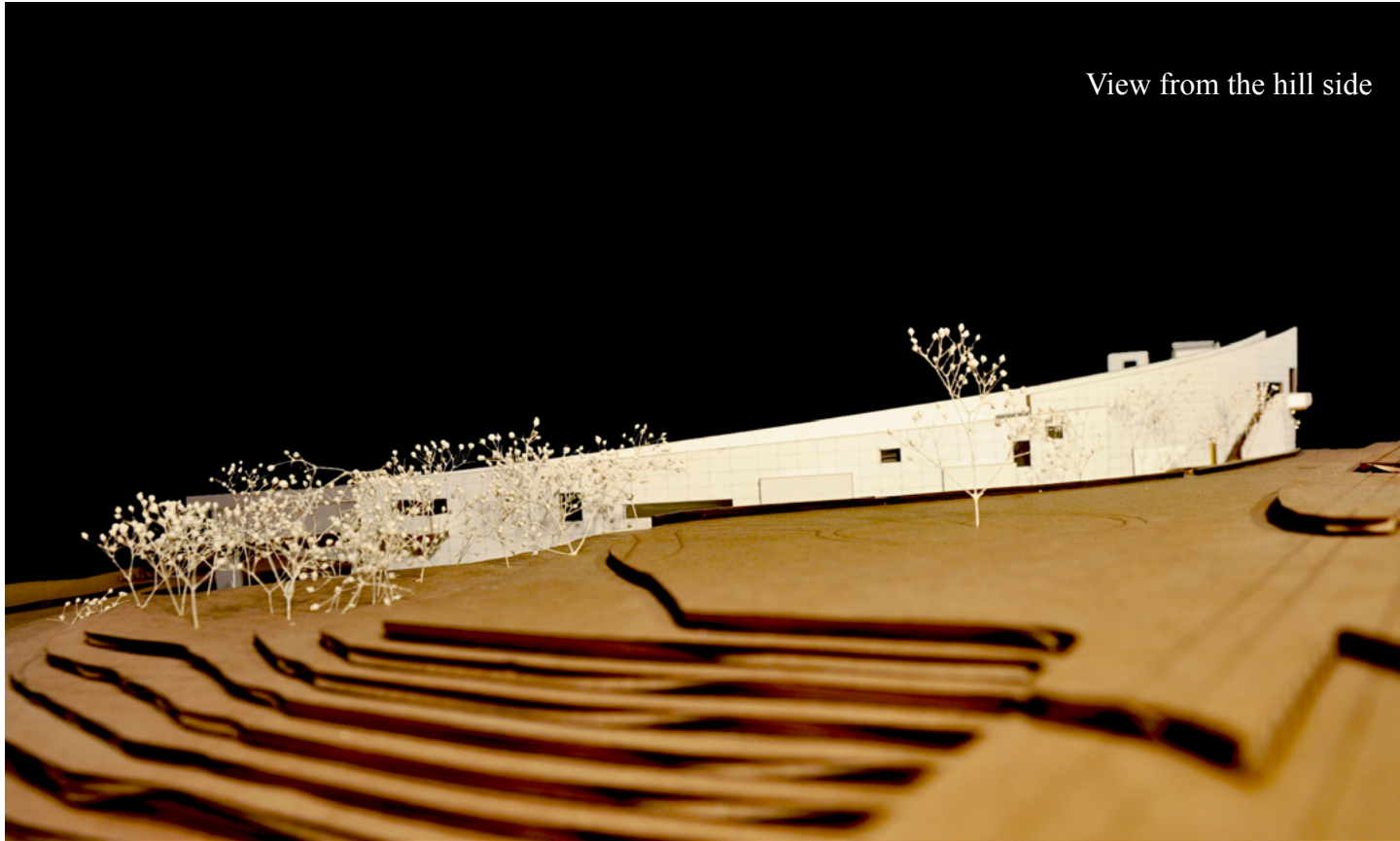




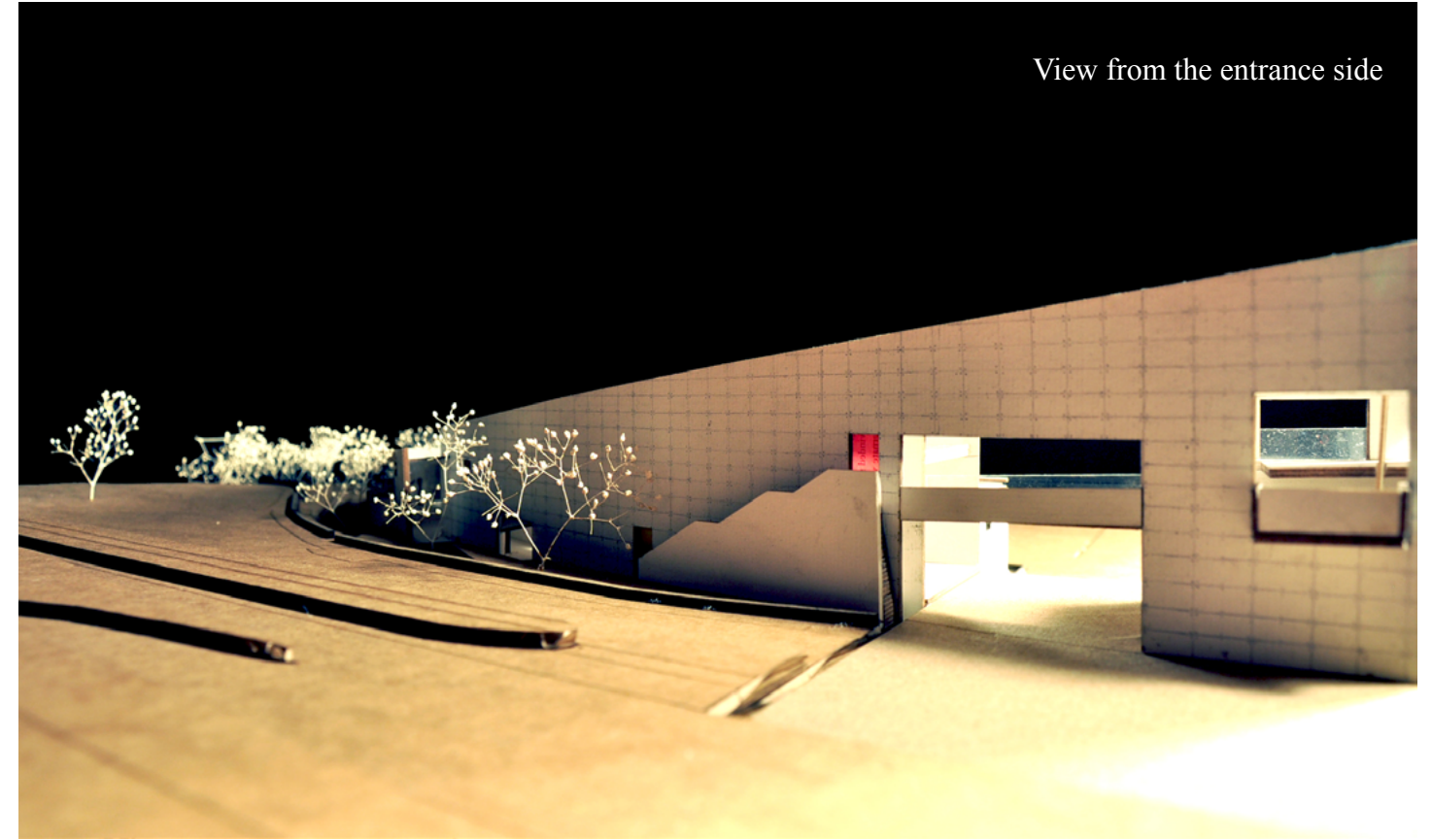




View from the hill side



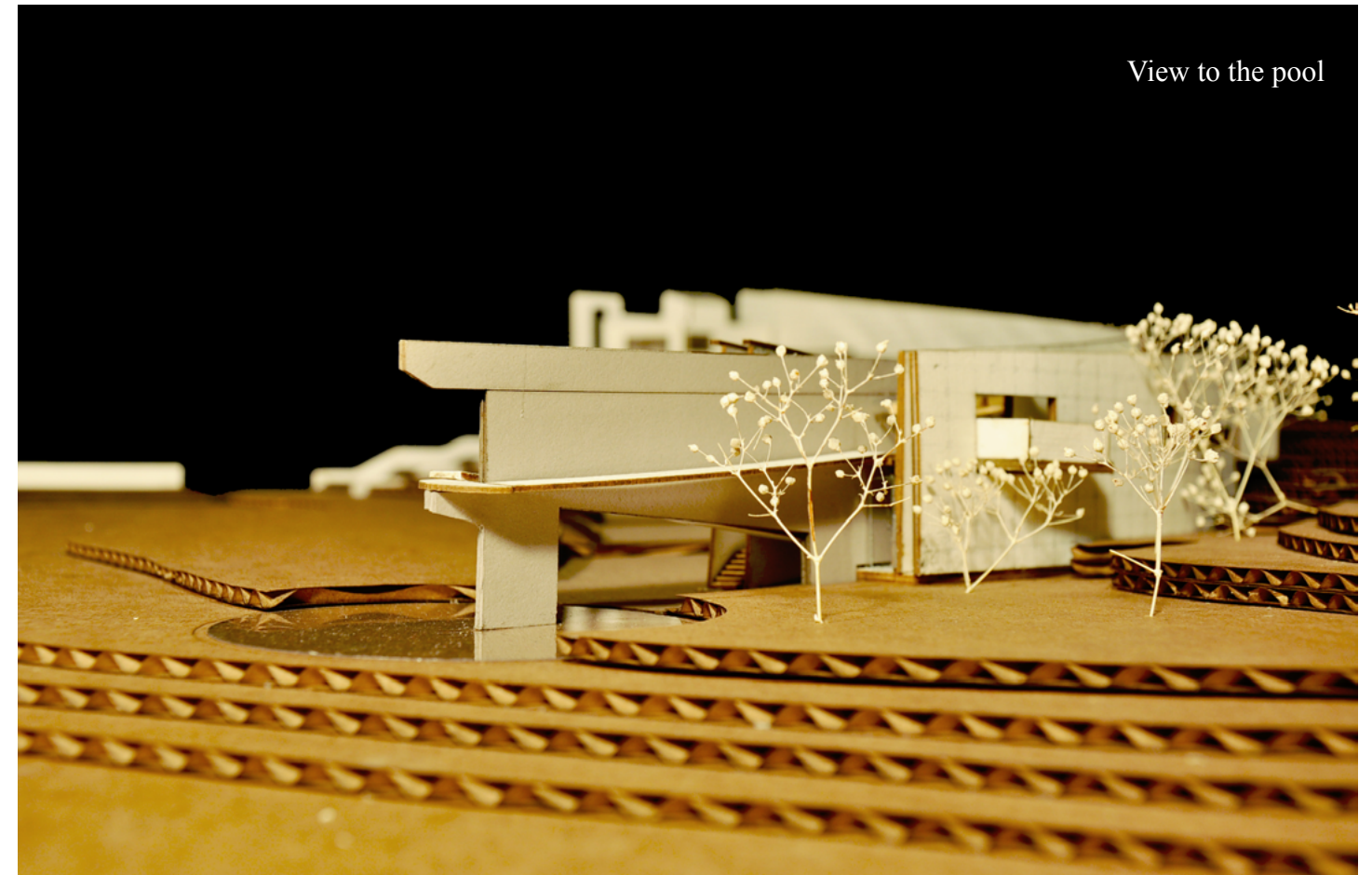
View from the entrance side



View to the windows on the back



View to the pool



## Image Cited

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Page 04, *image a*, The Roman door-god, Janus, on a coin; *image b*, Janus with two and three faces from early 14th century calendars, website: <http://www.flavinscorner.com/twofaced.htm>

Page 05, Drawings of Janus Quadrifrons from 1569, website: <http://www.flavinscorner.com/twofaced.htm>

Page 06, *image a*, *image b*, website: <http://www.tauspace.co.uk/alice/further4.htm> ; *image c*, from Book “*Alice’s Adventures in Wonderland*”, Dover Publications , May 20, 1993

Page 07, *image a*, Alice and Cheshire Cat; *image b*, Alice finding tiny door behind curtain; *image c*, Alice taking “*Drink Me*” bottle, ; website: <http://www.alice-in-wonderland.net/alice2a.html>;

Page 10, Photo of Bruder Klaus Field Chapel, website: <http://reallifeiselsewhere.blogspot.com/2011/01/bruder-klaus-field-chapel.html>

Page 11, *image a*, sketch of plan; *image b*, sections, website: <http://funarchi.blogspot.com/2010/11/bruder-klaus-field-chapel-peter-zumthor.html> ; *image c*, interior photo, *image d*, photo of the door; website: [http://www.danda.be/gallery/bruder\\_klaus\\_chapel/9/](http://www.danda.be/gallery/bruder_klaus_chapel/9/)

Page 12, photo of Cuadra San Cristobál, Book “*Barragan : space and shadow, walls and colour*”, Birkhäuser Architecture; 1 edition, June 6, 2008

Page 13, *image a*, Photo of the courtyard, *image b*, *c*, picture of the model, *image d*, photo of the pool, Book “*Barragan : space and shadow, walls and colour*”, Birkhäuser Architecture; 1 edition, June 6, 2008

Page 16, *image a*, American Day school, *image b*, Lyles-Crouch Traditional Academy; *image c*, Meeting House Cooperative Preschool; *image d*, Old Town Montessori School; *image e*, St Mary’s Catholic School, from google map website.

Page 26, base of site plan, from google map.

## Quote

Page 01, “ *When you have all the answers about a building before you start building it, your answer are not ture. The building gives you answers as it grows and becomes itself.*” from Ruth Peltason, Grace Ong-Yan , “ *Architect: The Work of the Pritzker Prize Laureates in Their Own Words*”, Black Dog & Leventhal Publishers , October 27, 2010

Page 04, “*Janus is the Roman door-go.... see the future*” from online source

Page 05, “*The name is derived from ...ancient Rome*”, from online source

Page 06, “*Alice follows a rabbit and falls down a rabbit hole suddenly, which is a long way to a curious hall with many locked doors of all sizes*“, from Lewis Carroll, “*Alice’s Adventures in Wonderland*”, Dover Publications , May 20, 1993

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