



ADAPTIVE ARCHITECTURE:

DESIGN FOR A DECLINING GLOBAL POPULATION

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THE PROBLEM STATEMENT

With birthrates in developed countries either currently declining or projected to decline in the near future, who is going to, and how will they, maintain the built environment to prevent it from falling into ruin?

THE THEORETICAL PREMISE / UNIYING IDEA

The built environment must now be designed with adaptability, reasonable maintainability, and a much longer life span, to allow a smaller workforce the ability to properly care for and preserve past, present, and future construction.

RESEARCH AND FINDINGS

What is causing populations to decline in developed countries?

- Declining populations in developed countries are the product of birthrates that have fallen below the “replacement rate”.
- The replacement rate refers to the average number of children each woman in a particular country would have to bear throughout her reproductive life in order for the country’s population to remain at its current level. (The replacement rate does not take into account increases or decreases in a population caused by immigration.)
- On average, the replacement rate for any given country is around 2.1.
- Deviation from this mark of 2.1 dictates whether or not a country’s population will increase or decrease and at what rate that growth or decline will occur.
- Countries that have been the hardest hit by population decline such as the Czech Republic, the Ukraine, and Armenia have birthrates of 1.1.
- Developing third-world countries which are still experiencing massive population growth have birthrates as high as 4.6.

RESEARCH AND FINDINGS

What is causing birthrates to decline in developed countries?

- Falling birthrates are the product of varying combinations and degrees of economic and cultural influences in a country or region.
- Russia:
 1. the overall health of infants, children, and women of reproductive age
 2. a decrease in the number of marriages
 3. transition from communism to capitalism and its effect on the economy
- Japan:
 1. increased education opportunities for women
 2. an increase in the availability of jobs for women
 3. delaying of marriage for job opportunities
 4. cultural acceptance of pre-marital sexual relationships

RESEARCH AND FINDINGS

What is causing birthrates to decline in developed countries?

- When analyzed in rather generalized terms it can be seen that the causes of falling birthrates in a majority of developed countries are similar to those seen in Japan.
- Developed countries offer increased educational and employment opportunities, gains in equality between the sexes, and a movement away from agriculturally based economies.
- These changes and opportunities bring with them shifts in the cultural and societal values of these countries.
- Consumerism, negative views of the expense of raising children, easier access to better contraception, the focus on job satisfaction, and the perception that the joy of children can be replaced by the joy that technology and electronic media can bring are all changes in thinking that have made people put off or decide against having children.

RESEARCH AND FINDINGS

How will declining populations affect the world as it exists today?

- Decreased labor forces and consumer markets will negatively impact the consumeristic economies of the world.
- A narrowing in the ratio of working age people to retired people will threaten countries' government funded social programs.
- The prices of goods and services will rise as a result of higher wages being paid to workers in an attempt to attract and retain quality workers in a labor starved market.

RESEARCH AND FINDINGS

What are the possible solutions to the problems caused by declining populations?

- Promote legal immigration from less developed countries to developed countries.
- Make changes to policies that are affected by or are affecting population decline. Changes may include raising the age of retirement, reducing elderly benefits and health care coverage, raising taxes, reassessing labor force participation, and making a life that includes a career and children easier for couples to maintain.
- Develop and implement technologies that increase resource efficiency, as well as productivity of a smaller workforce.

RESEARCH AND FINDINGS

How can the field of architecture help with the effects of population decline?

- Buildings can no longer be viewed as having a life-span of only forty to sixty years.
- If buildings are designed to last hundreds of years, they must also be designed with the ability to accommodate the needs of several different user groups that may occupy it throughout its lifespan.
- Architecture and the construction industry must transition from their current “open-loop” system that encourages a “cradle-to-grave” mentality, to a “closed-loop” system that promotes a “cradle-to-cradle” philosophy.
- Design buildings that, once they are no longer useful, can be disassembled and recycled.

PROJECT JUSTIFICATION

We cannot afford to ignore or be indifferent to the issue of population decline. And while it will require the cooperation and coordination of a large number of groups to develop a comprehensive plan, we as architects and members of the design community have a responsibility to develop our own set of criteria that will ensure the consistent design of buildings that are sustainable, adaptable, and durable.

“CLIENT” SELECTION

- Adaptive strategies are not typology specific.
- I wanted to showcase these strategies in a project that involved an organization that had some sort of connection to the issue of population decline
- As I have grown up in Fargo and have witnessed its growth and change first-hand, I also wanted the project to be based in Fargo.
- Based upon these two criteria...

“CLIENT” SELECTION

Lutheran Social Services of North Dakota (LSSND)

- Offer a range of twenty-one services and programs to the citizens living in LSSND's eight regions of North Dakota.
- Program Centers in Fargo, Bismarck, Grand Forks, Minot, and Williston help coordinate and manage these services.
- LSSND's Region Five, which consists of Cass, Ransom, Richland, Sergeant, Steel, and Trail Counties, offers thirteen of LSSND's twenty-one services. These include adoption services, troubled youth counseling and supervision, addiction counseling, food services for the hungry and needy, in-patient psychiatric care for children and teens, disaster relief, in-home assistance for senior citizens, and refugee resettlement.
- Currently nine of these thirteen services are offered directly from the program center in Fargo. The new Fargo Program Center will directly offer eleven of these thirteen services, with the Luther Hall and the Great Plains Food Bank programs still being run from satellite sites.

“CLIENT” SELECTION

LSSND's Partnering Organizations

- In the new Program Center, LSSND will be partnering with three different organizations:
 - **The Bishop's Office of the Eastern North Dakota Evangelical Lutheran Church of America (ENDELCA)**
 - **Lost and Found Ministries:** developed an extensive resource library regarding addiction, as well as abuse, marriage, parenting, spirituality, and grief
 - **Recovery Worship:** provide recovering addicts of all kinds, spiritual growth and support

USER GROUPS

- **Staff of the Fargo Branch of LSSND:** The workforce that will consist of the President and Vice Presidents of LSSND, counselors, social workers, and IT, Accounting, Human Resources, Communication, and Development staff.
- **Staff of the partnering organizations**
- **Clients and recipients of LSSND's and its partnering organizations' social programs and services:** Because LSSND and its partnering organizations offer so many different types of programs, the groups of people that will come to the new Fargo Program Center seeking assistance, counseling, or guidance will be extremely diverse. They will include families looking to adopt, troubled children and teenagers, people recovering from addiction, people recovering from a disaster, refugees, senior citizens, and volunteers.
- **Unidentified Future Occupants:** It is important to consider the unidentified user groups that might occupy this building in the future; whether it is 50, 100, or 300 years from now. While it is impossible to know how many of them there might be or what their specific requirements will be, what must be determined in the present is what components, technologies, and materials a building's design must utilize today in order for it to possess the ability to successfully adapt to unknown users and circumstances in the future.

MAJOR PROGRAM ELEMENTS AND REQUIREMENTS

LSSND Spaces

- **Administrative Offices:** This will include offices for the President and Vice Presidents of LSSND, and for the IT, Accounting, Human Resources, Communications, and Development departments.
- **Social Programs and Services Offices:** These spaces will accommodate the employees and clients of the 11 services that LSSND will offer from this building. They must be designed in a manner that allows and encourages collaboration between the different programs.
- **Employee Lounge:** This space must be separated from the Social Programs and Services Offices to allow employees to truly relax by removing themselves from their “work” environment.
- **Waiting Room:** Because many of the people that come to LSSND for the first time are hesitant or are in crisis mode, it is extremely important that this space feel both welcoming and secure.

MAJOR PROGRAM ELEMENTS AND REQUIREMENTS

Public Spaces

- **Meeting Rooms:** These should be of different sizes and shapes.
- **Large Multi-Purpose Room:** This space should accommodate 200 to 300 people and be designed so that it can easily be divided into smaller spaces.
- **Commercial Kitchen:** It must be connected to the Large Multi-Purpose Room.

Partnering Organizations Spaces

- **Office space for the Bishop and staff of the ENDELCA**
- **Resource Center:** This space will house the resource libraries of Gambler's Choice, Lost and Found Ministries, and the ENDELCA. The general public will have access to the Resource Center and will be able to check-out materials.
- **Chapel Space for Recovery Worship:** The chapel should be connected to the Large Multi-Purpose Room and be designed so that depending on the situation, the chapel can either be open to or closed off from it.

SITE SELECTION

Located in the heart of downtown Fargo this 42,000 square foot site possesses many advantageous qualities in regards to the nature of this thesis project, as well as, the needs of the client. Sitting at the corner of heavily traveled NP Avenue and Fourth Street, this site offers LSSND accessibility and visibility.

Users of this site will be within close proximity to several mass transit options. MAT Bus' central terminal and Jefferson Bus Line's terminal are located directly across the street from the site; and just five blocks to the north of the site, Amtrak Trains has its terminal. Making these options as convenient as possible are keys to getting people to use them.

There are also many important civic and municipal buildings that are either within walking distance or a short bus ride from the site. The Fargo Public Library, City Hall, the Civic Center, the Police Station, the Federal Building, the Federal Courthouse, Municipal Court, and the Fargo Housing Authority are all within five blocks of the site. The Cass County Courthouse and the Cass County Annex are only nine blocks away.



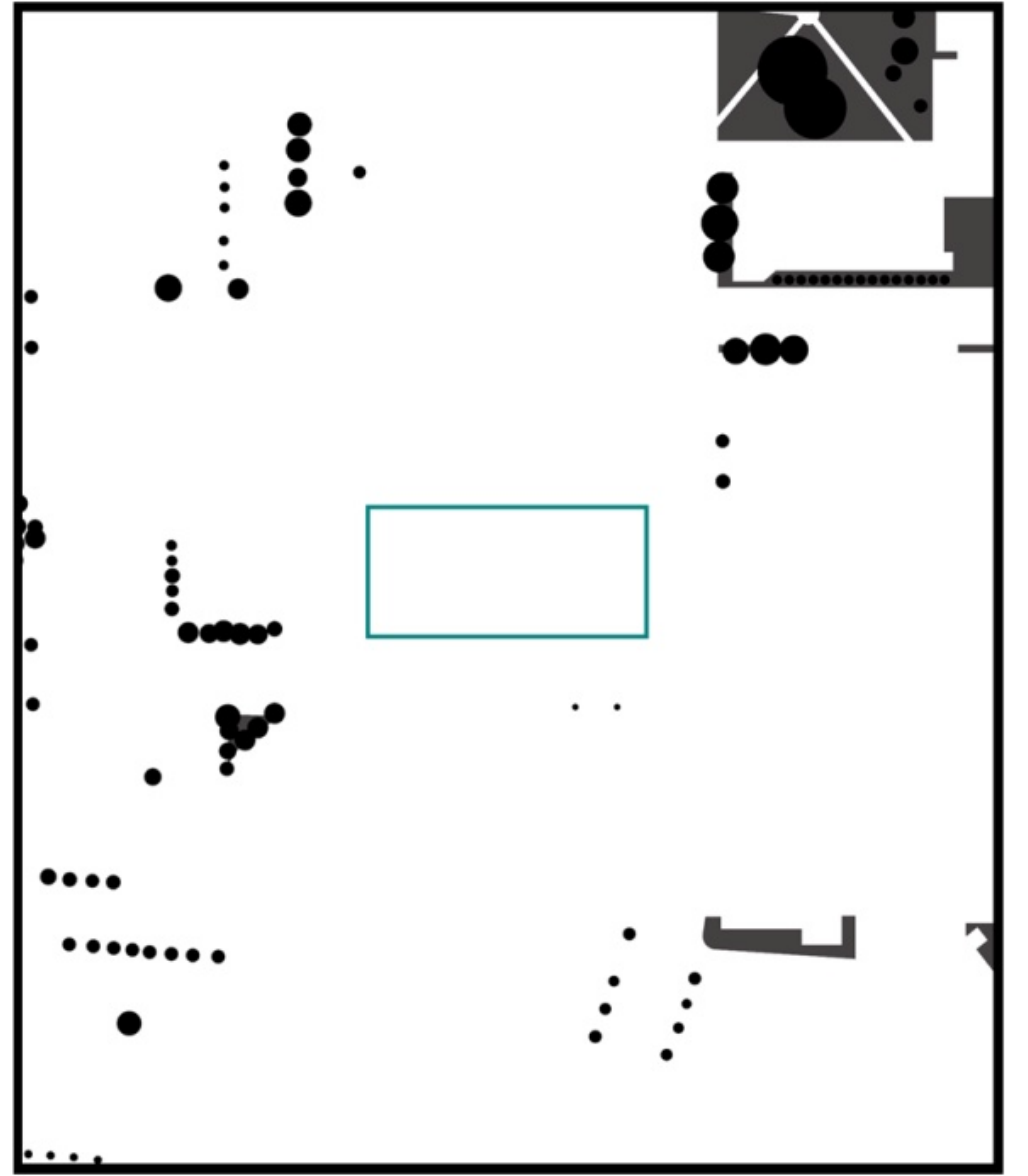
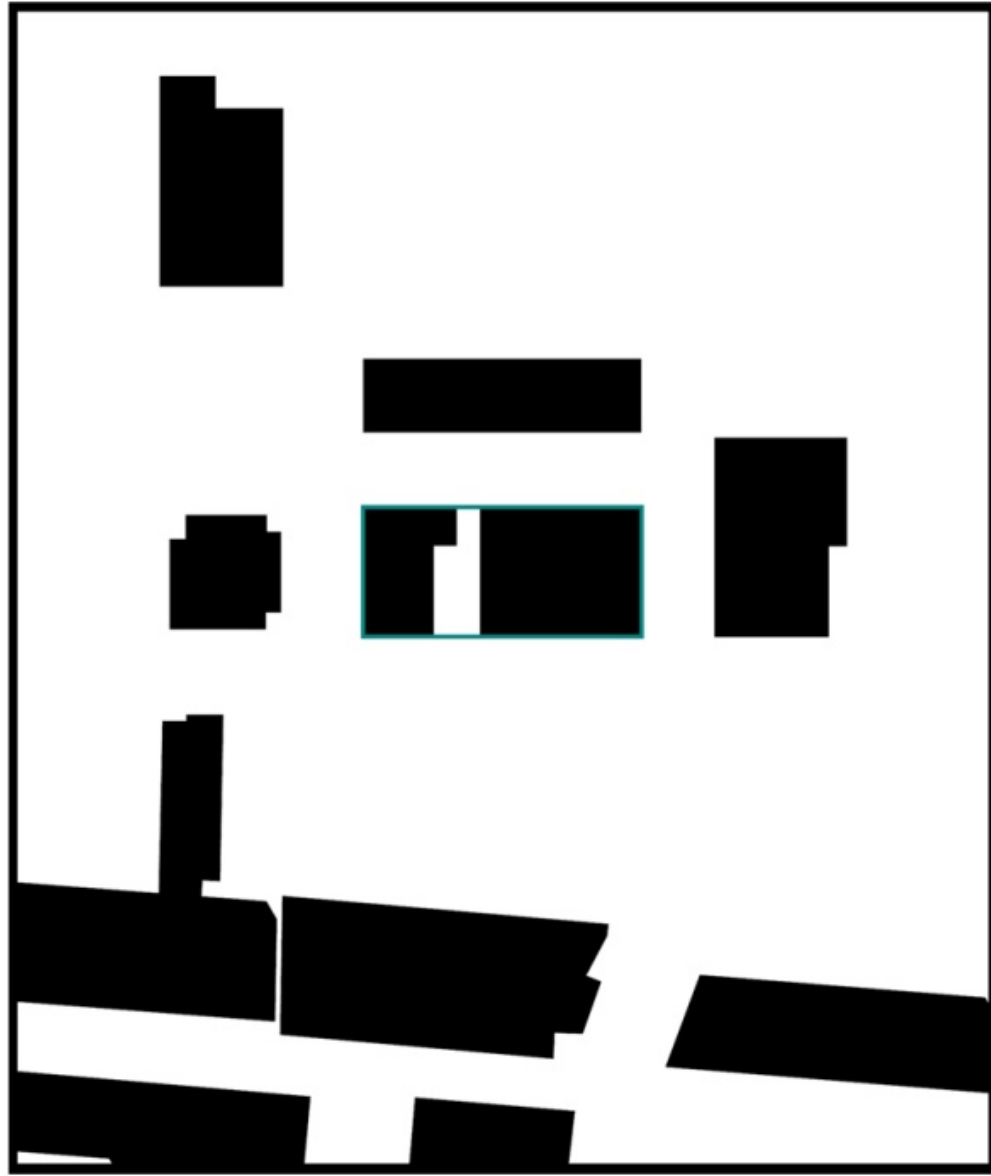
SITE SELECTION



ADAPTIVE ARCHITECTURE: THE RESEARCH

ADAPTIVE URBAN OASIS

THE DESIGN PROCESS



ADAPTIVE URBAN OASIS: THE DESIGN PROCESS

and bent steel beams are used as parking curbs. Throughout the site there is a complete absence of life, human or plant.



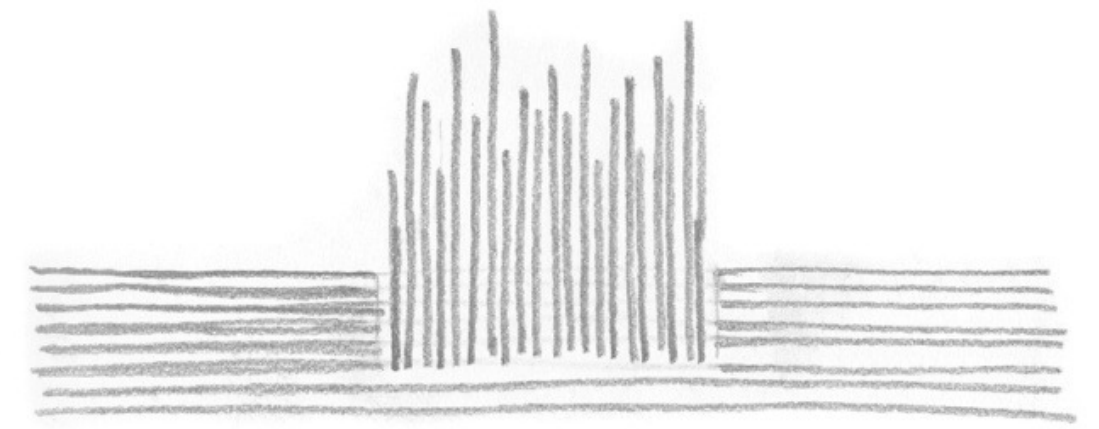
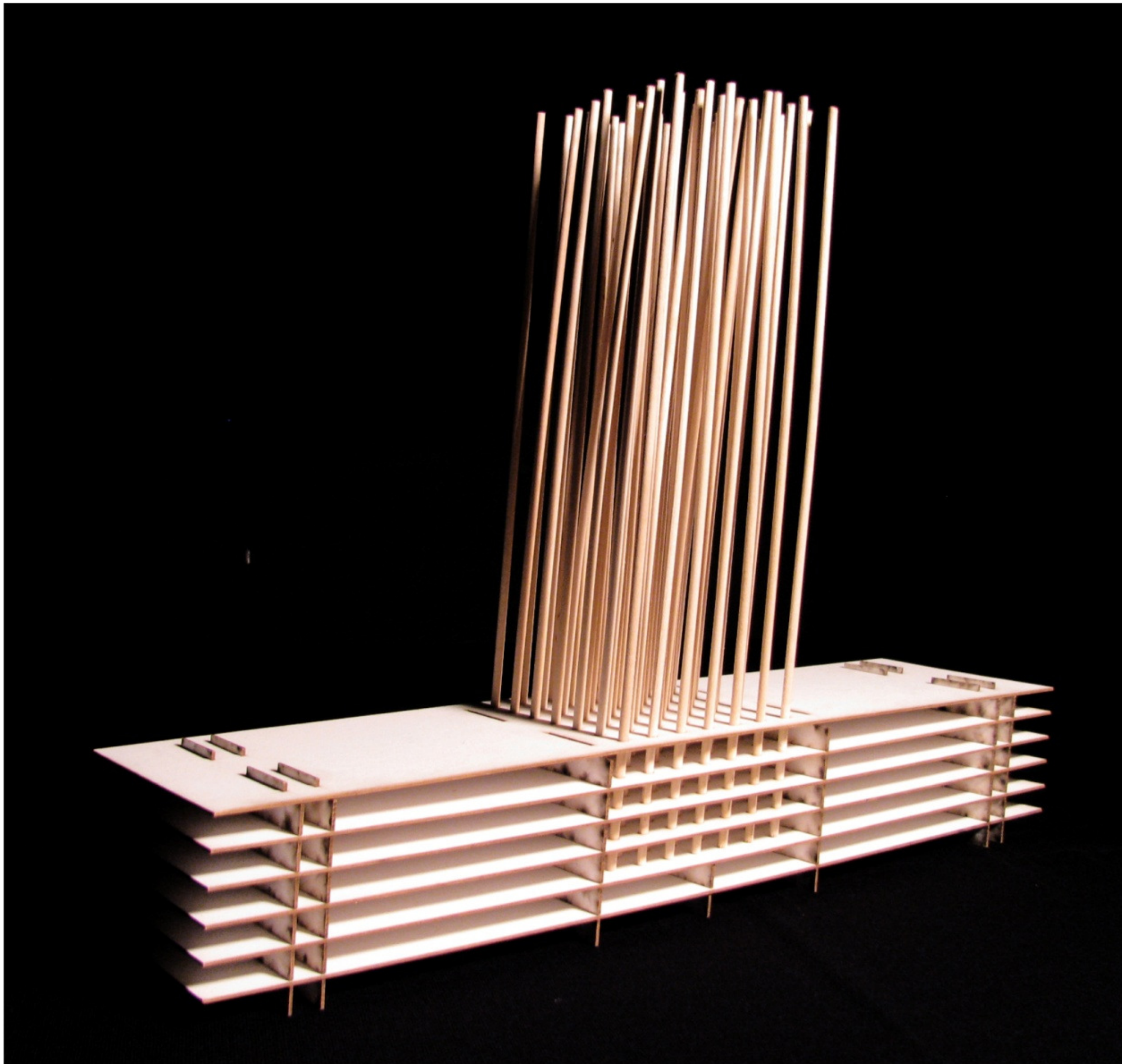
Making the situation worse, the area that directly surrounds the site offers nothing in aesthetic value, and seems to only amplify the site's unwelcoming nature. Across the street, to the east and to the west, are more parking lots. These lots, like the ones on-site, exhibit a complete lack of even the smallest amount of design consideration. Across the street to the south are two bus terminals. These terminals, while very functional, add nothing in the form of architectural value to the area. And bordering the site on its north edge, there is an alleyway and an old brick building. This building is of no architectural significance, and essentially acts as a wall, running the entire length of the site without offering any relief in the form of openings, jogs, or changes in materials.

After visiting the site, it becomes clear that this project must transform the site from its current condition into an **oasis** among its neighboring landscape of asphalt and architectural mediocrity. To successfully do this, the new site plan must, in addition to incorporating a well designed and well placed building, include a focus on the importance of trees, plants, grass, and water; natural elements that reach out to people and encourage human activity and interaction. By facilitating this human involvement, the site will be able to get back its life which it had lost, and so desperately needed.

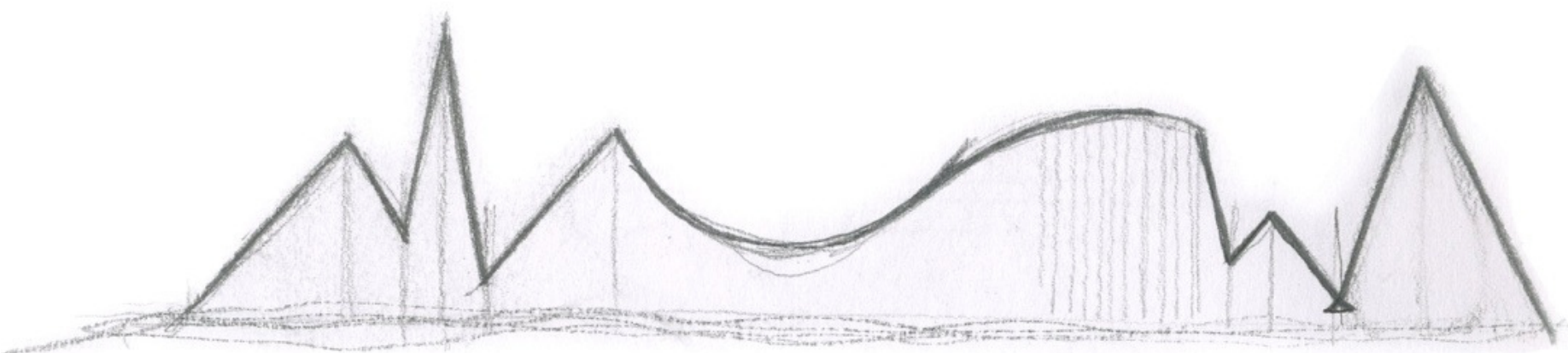
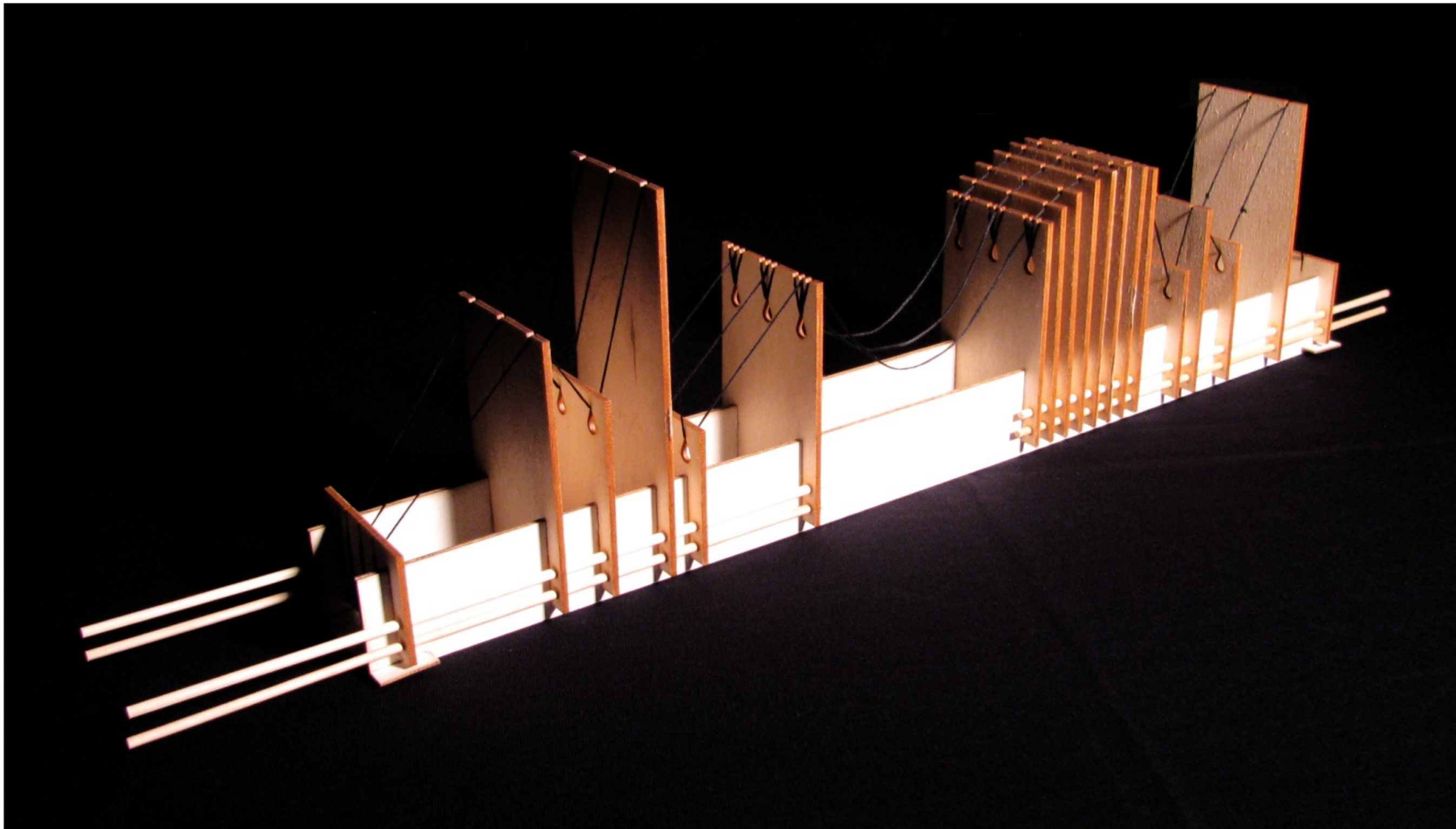
OASIS

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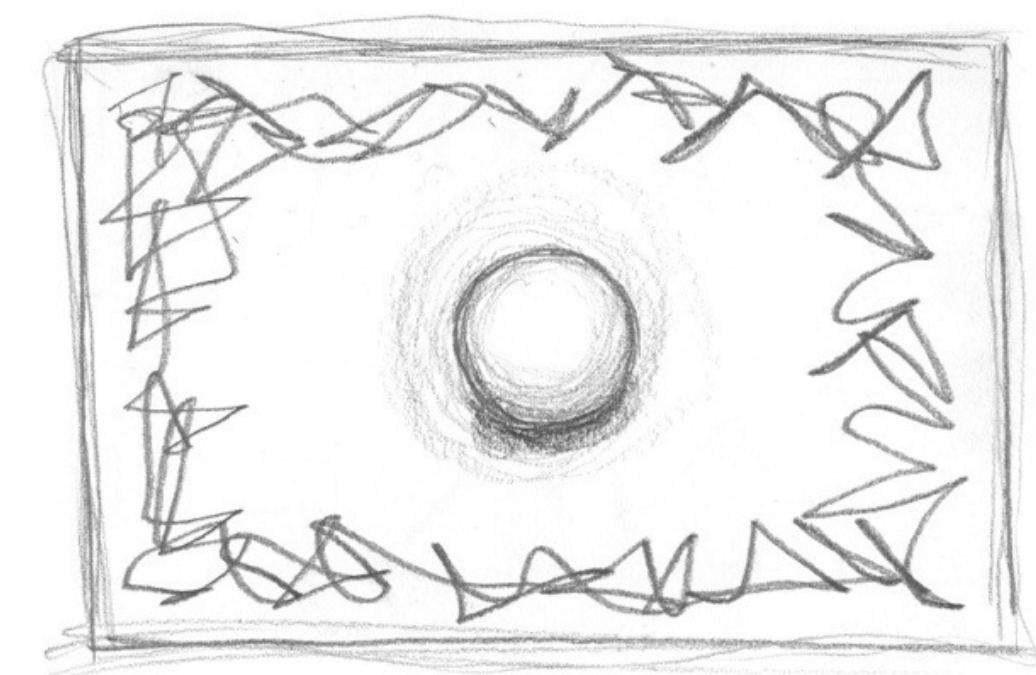
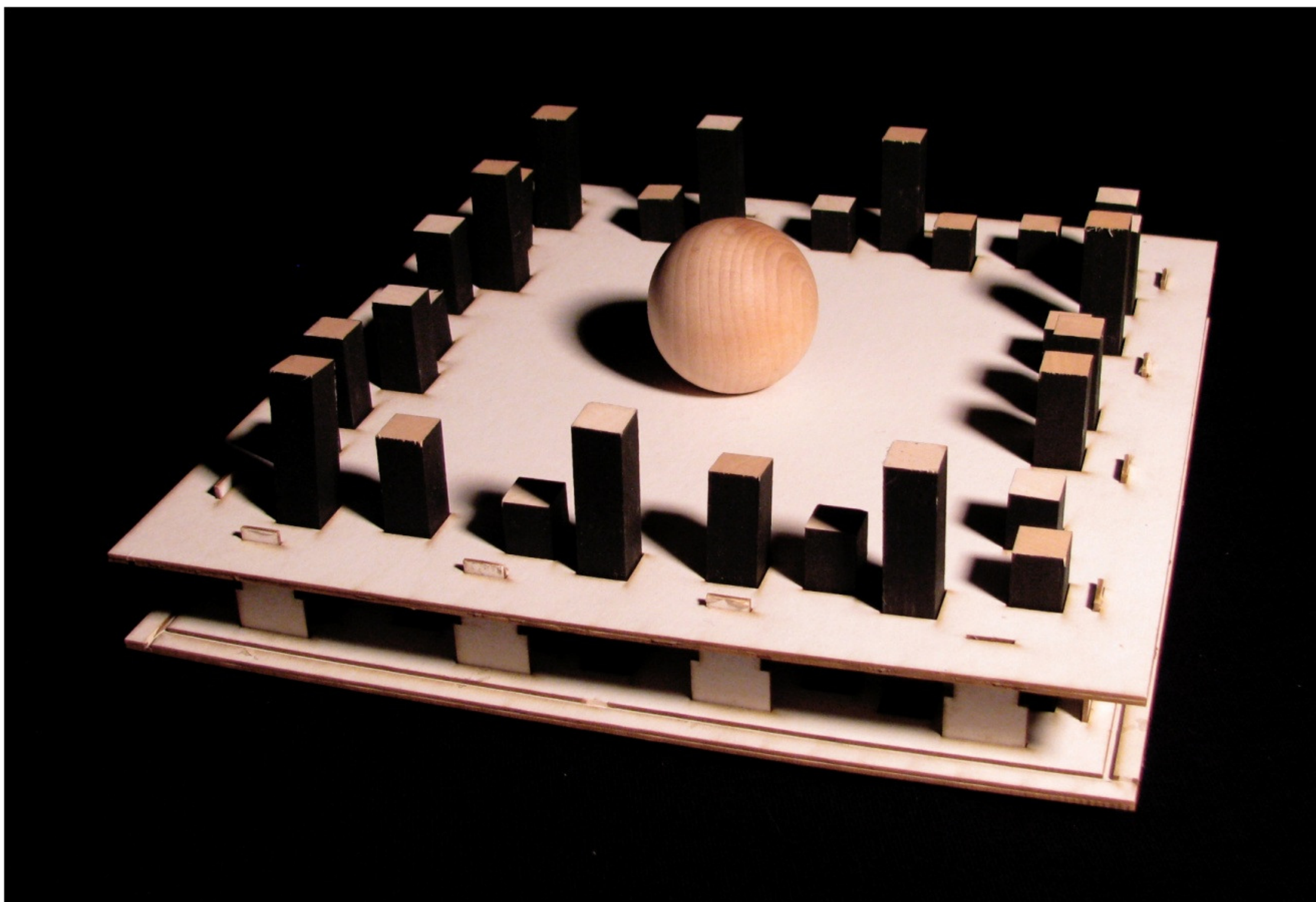
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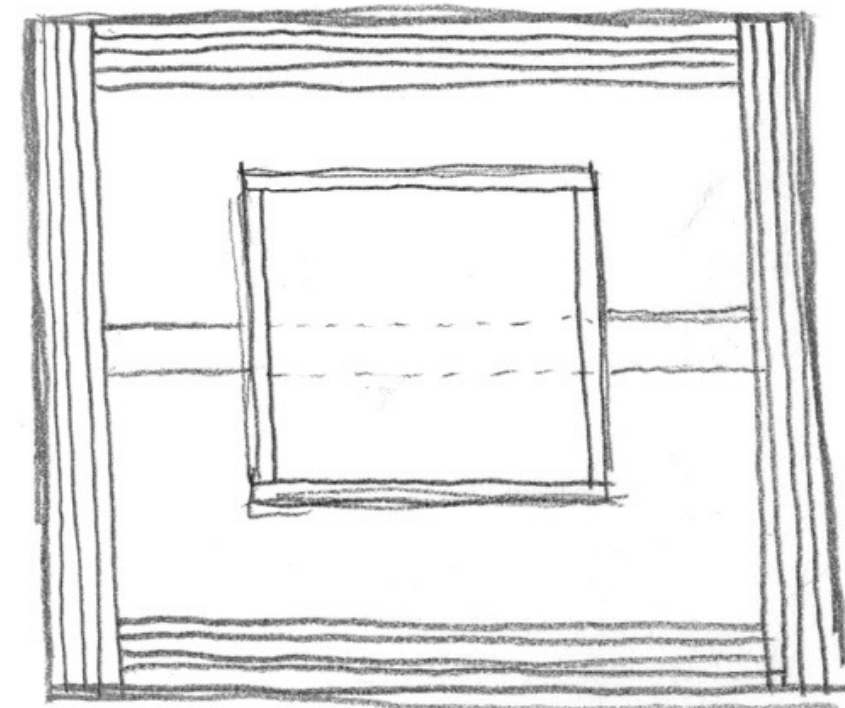
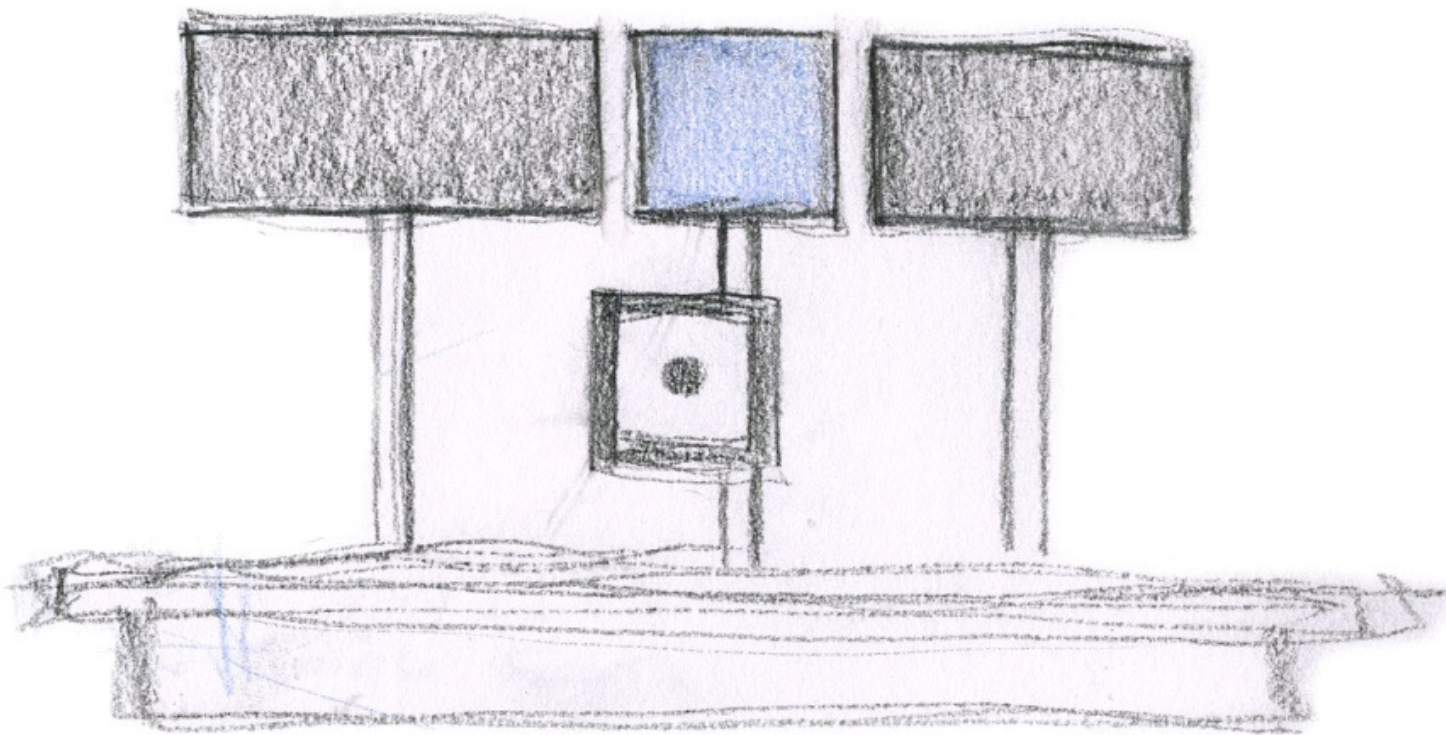
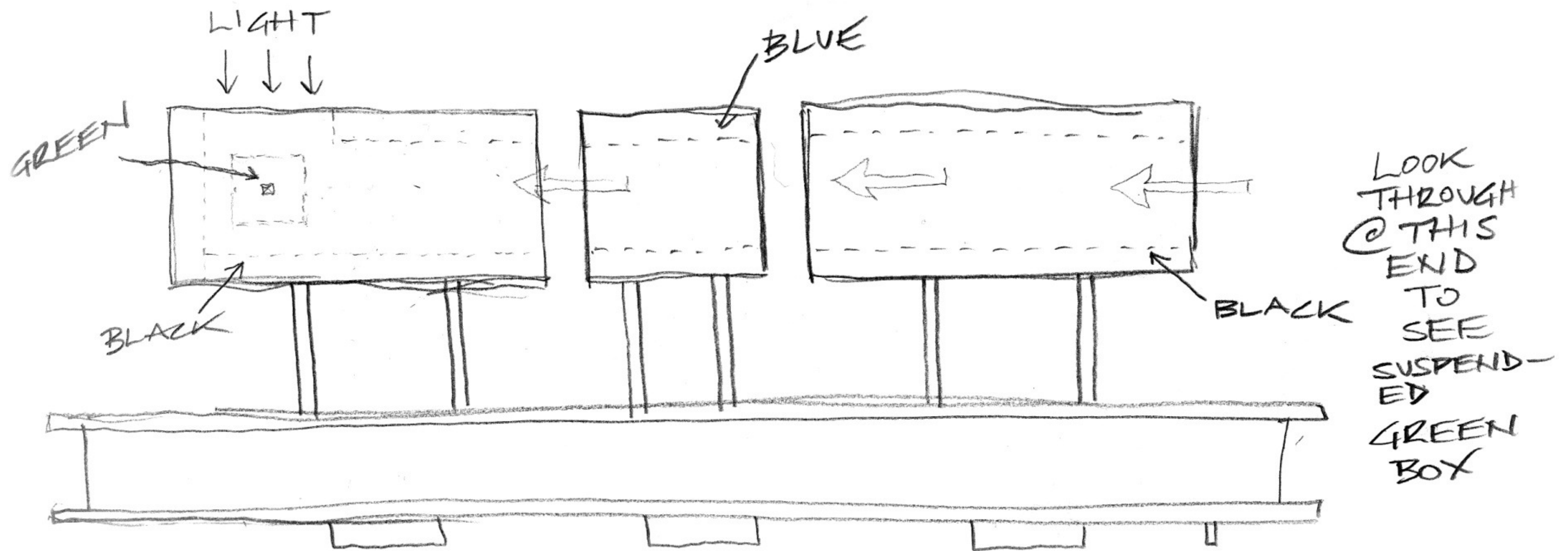
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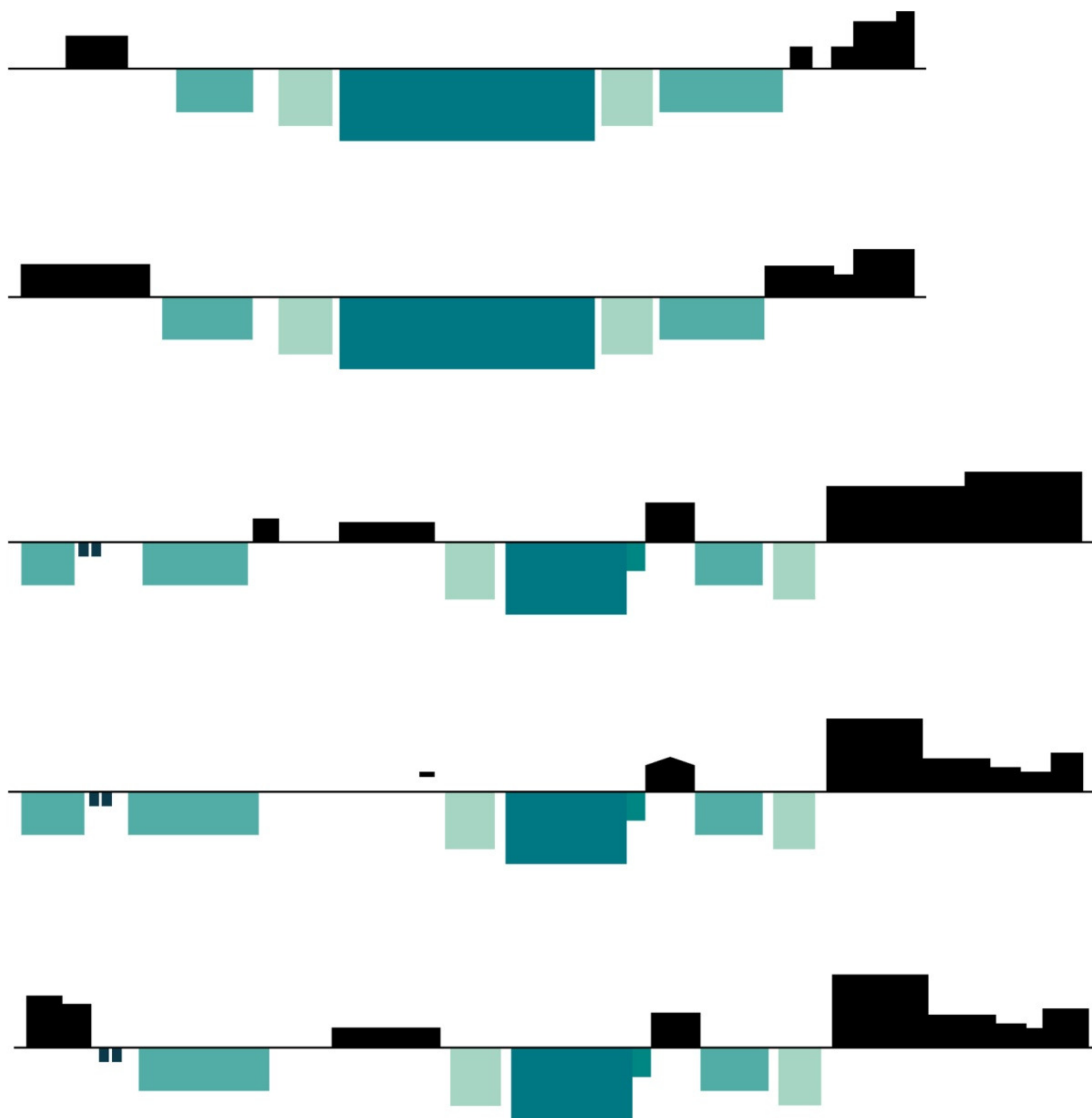
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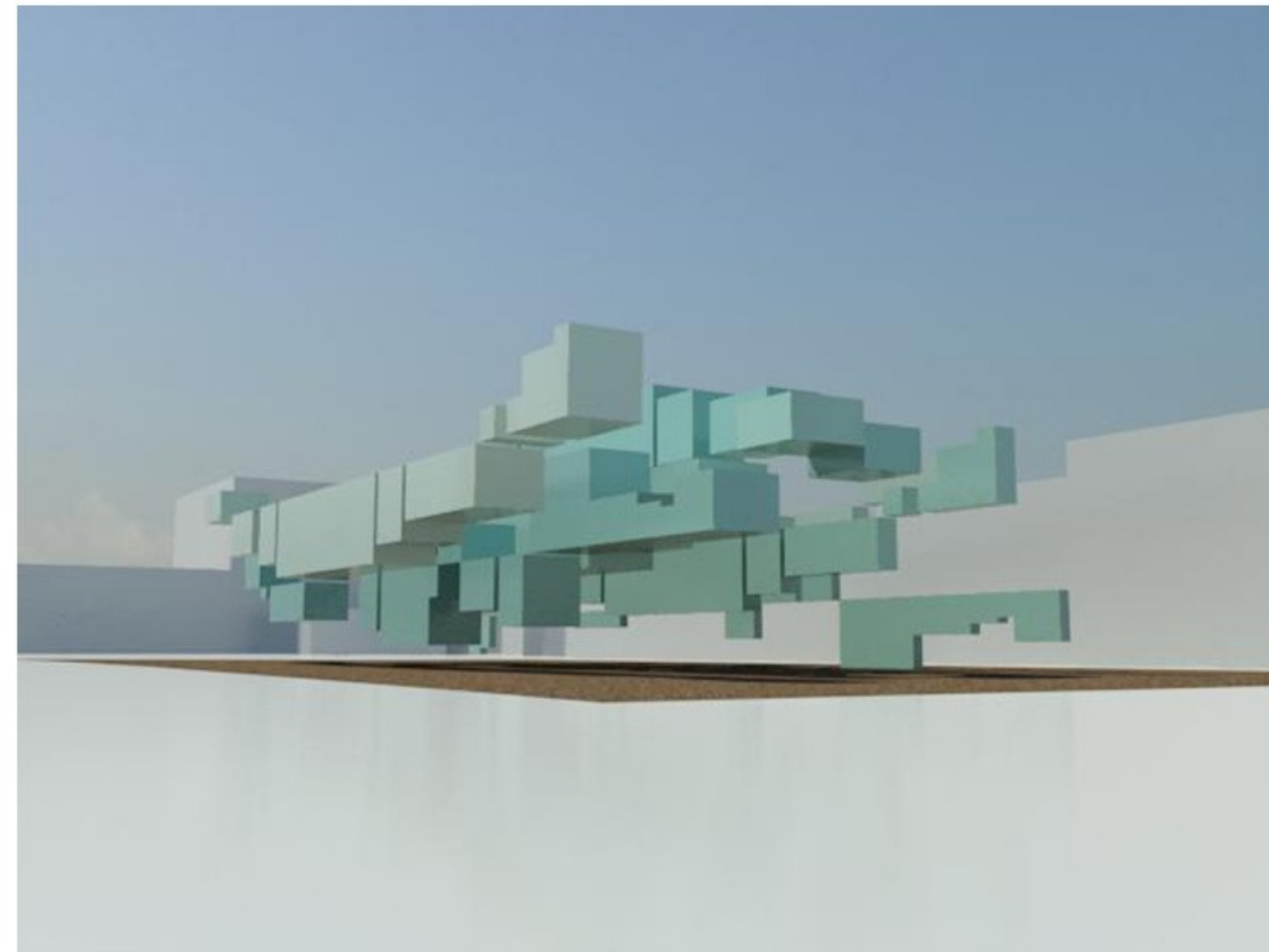
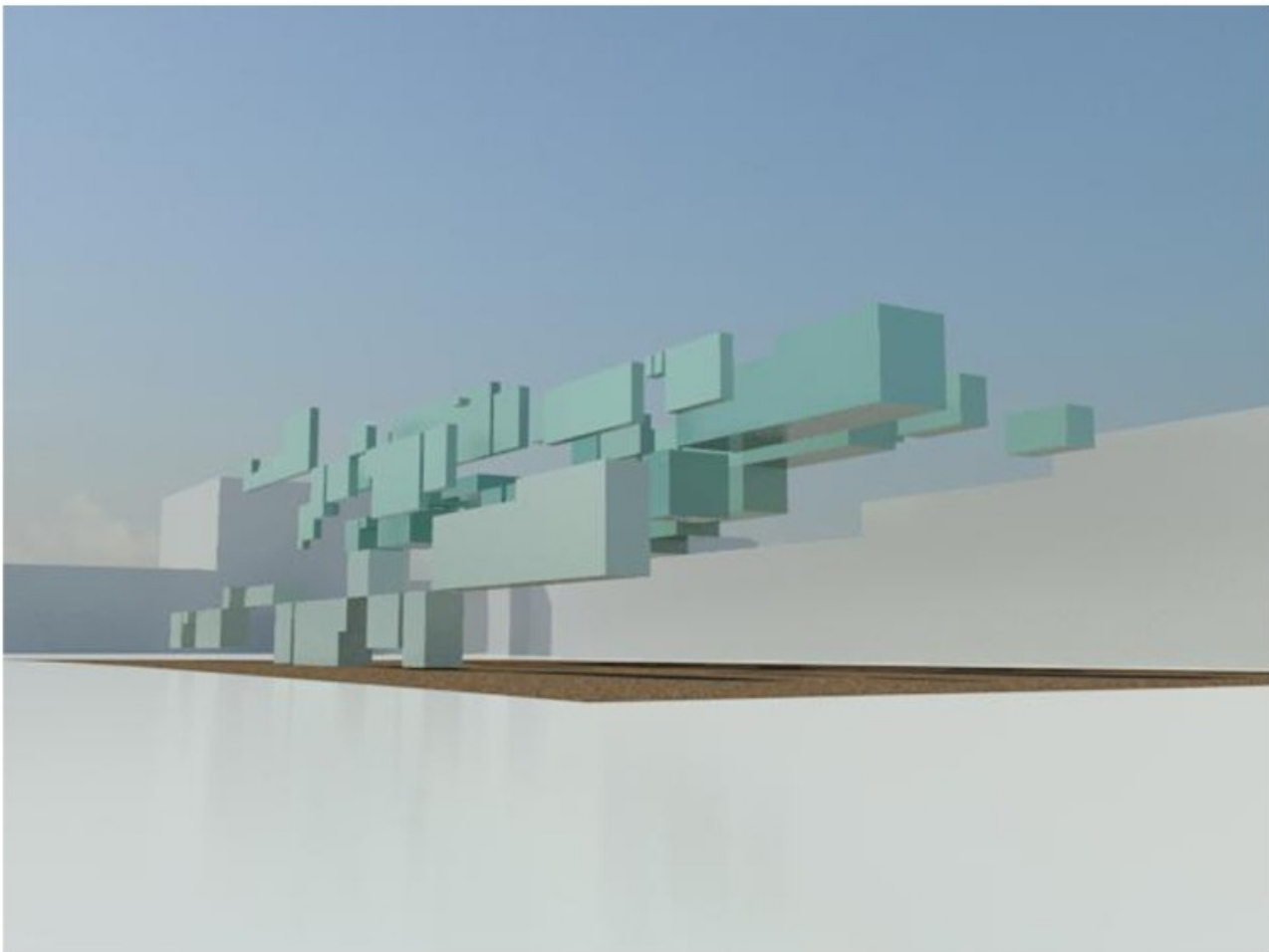
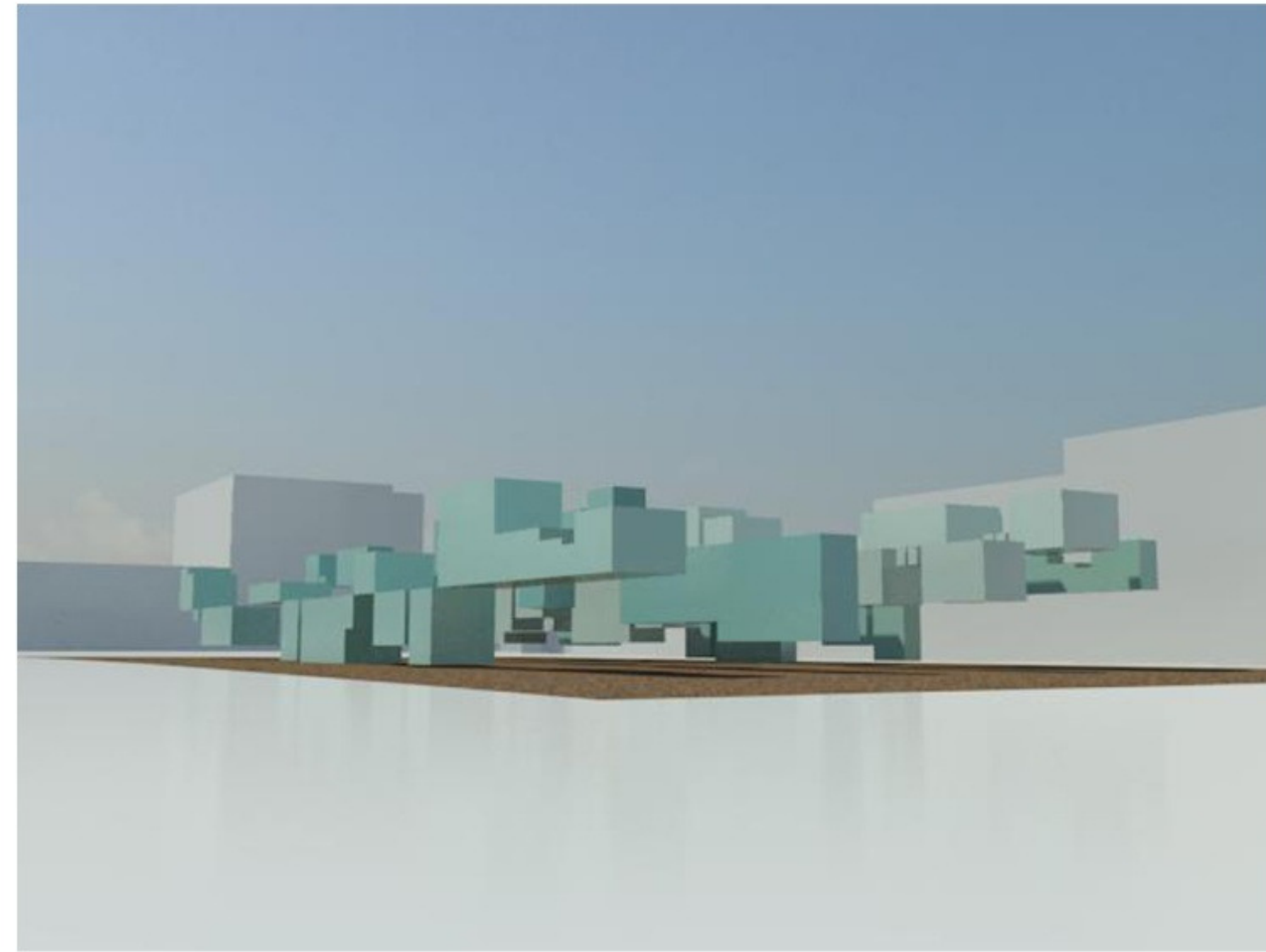
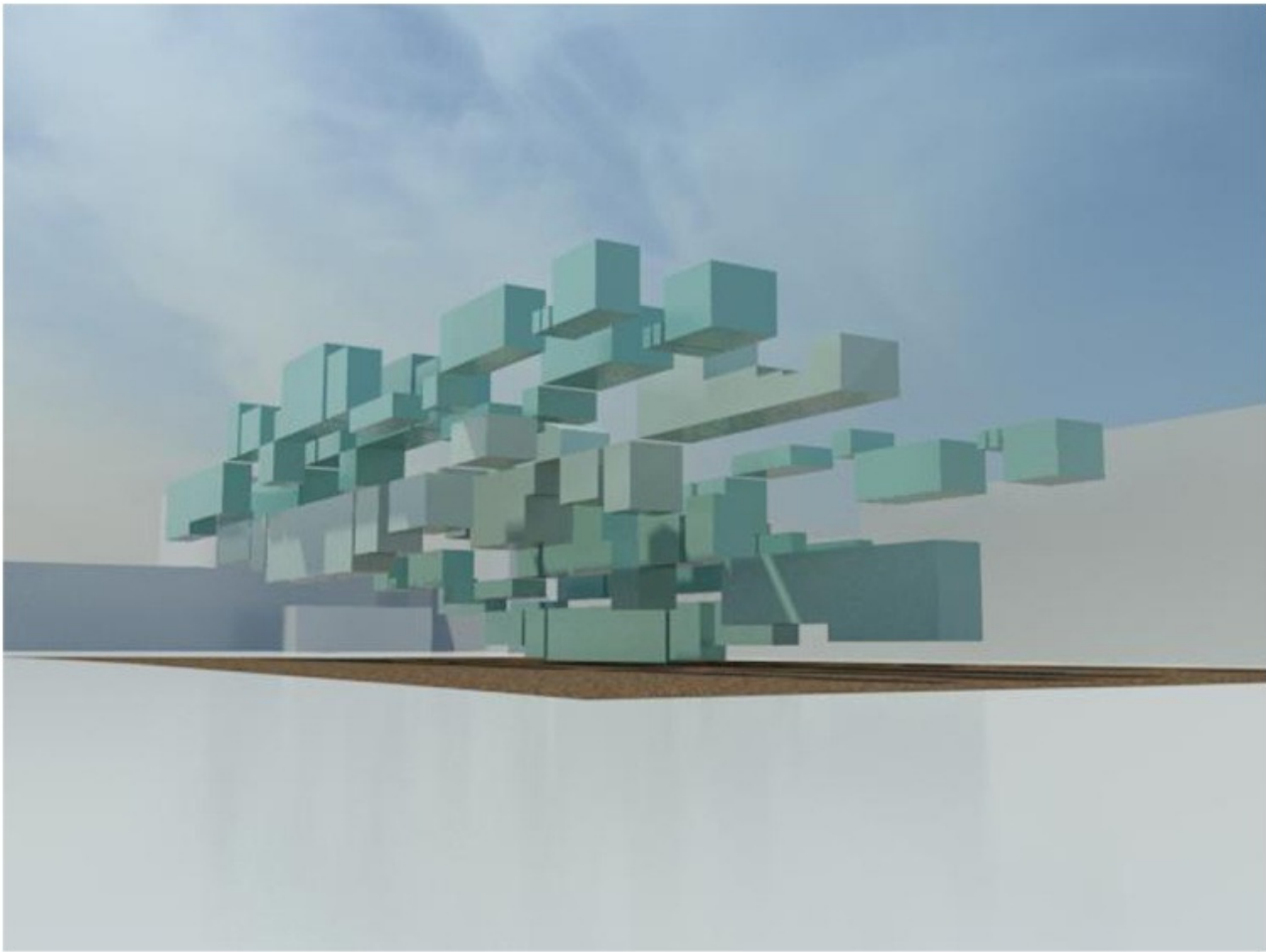
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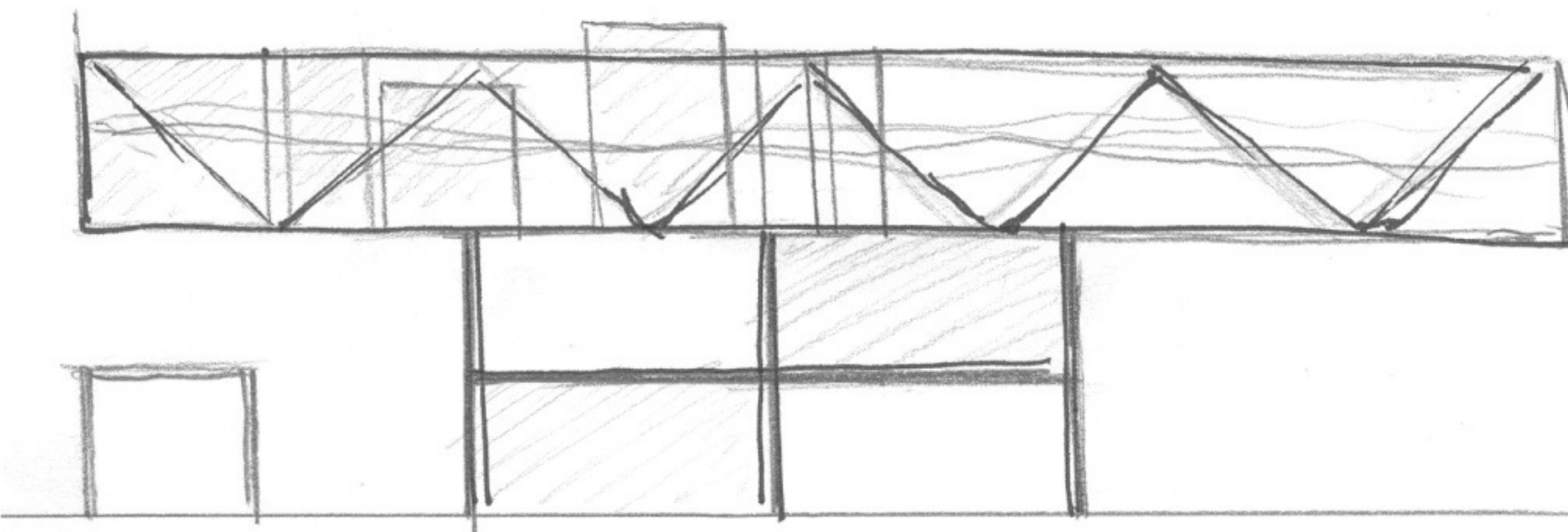
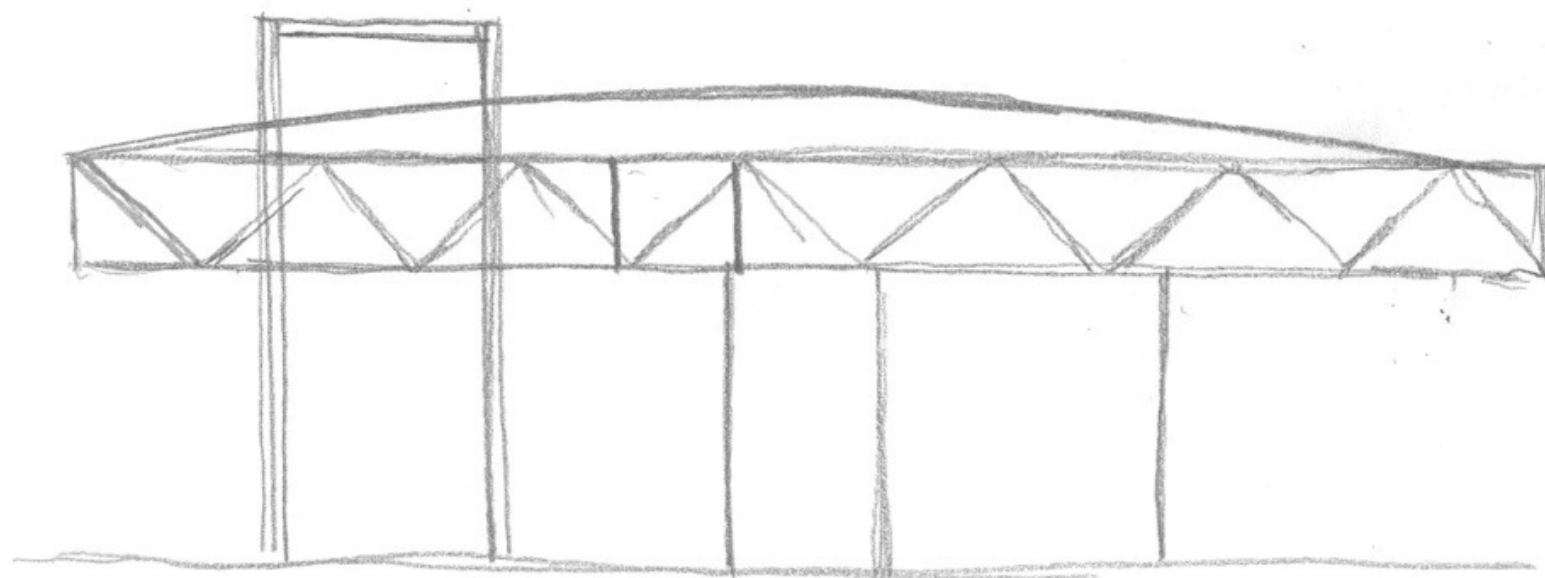
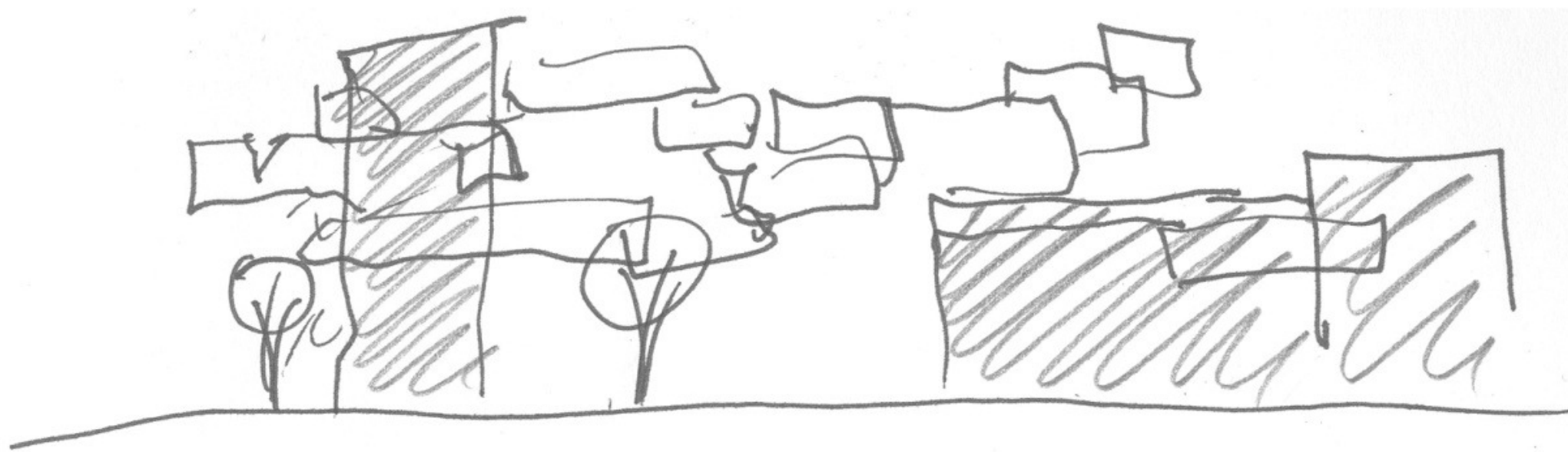
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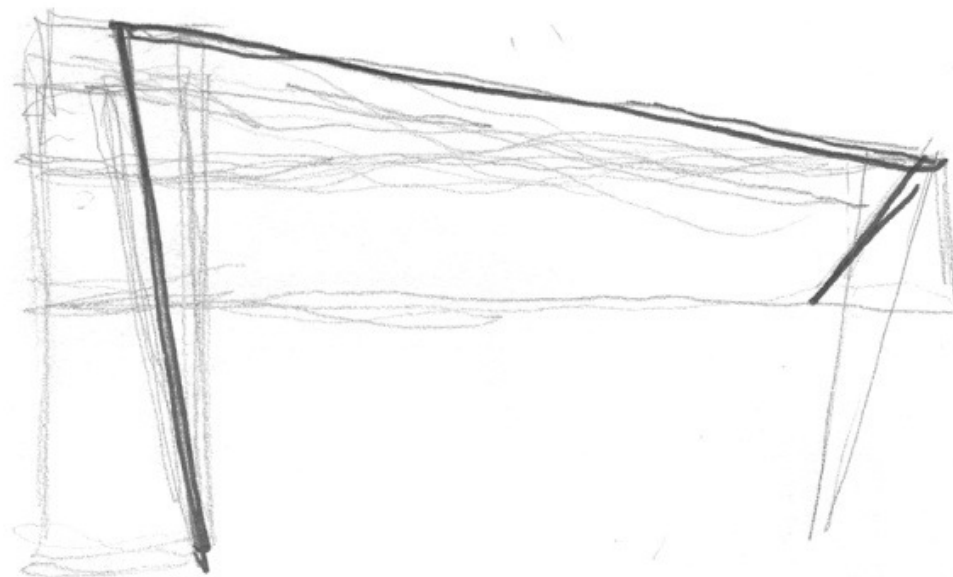
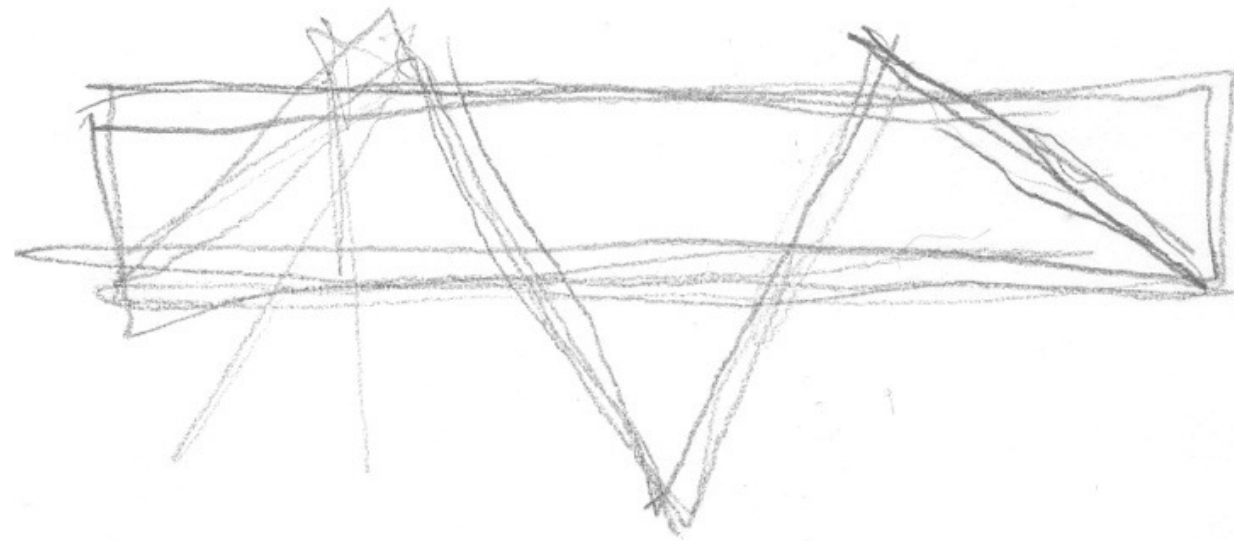
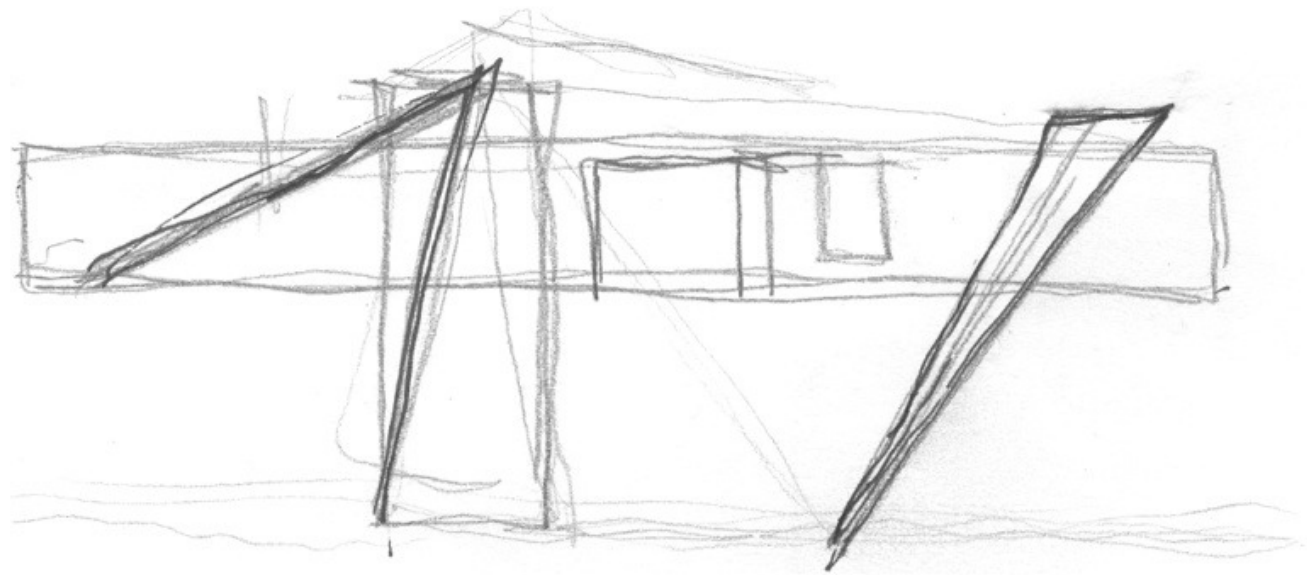
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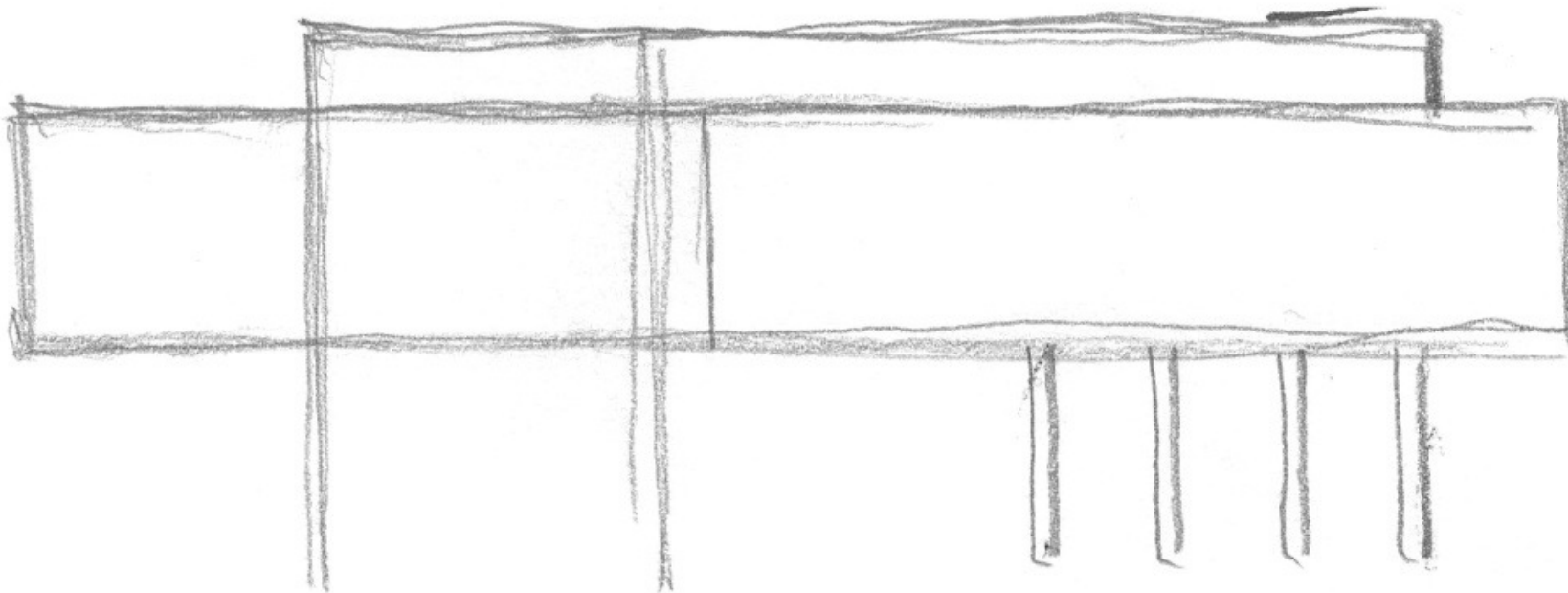
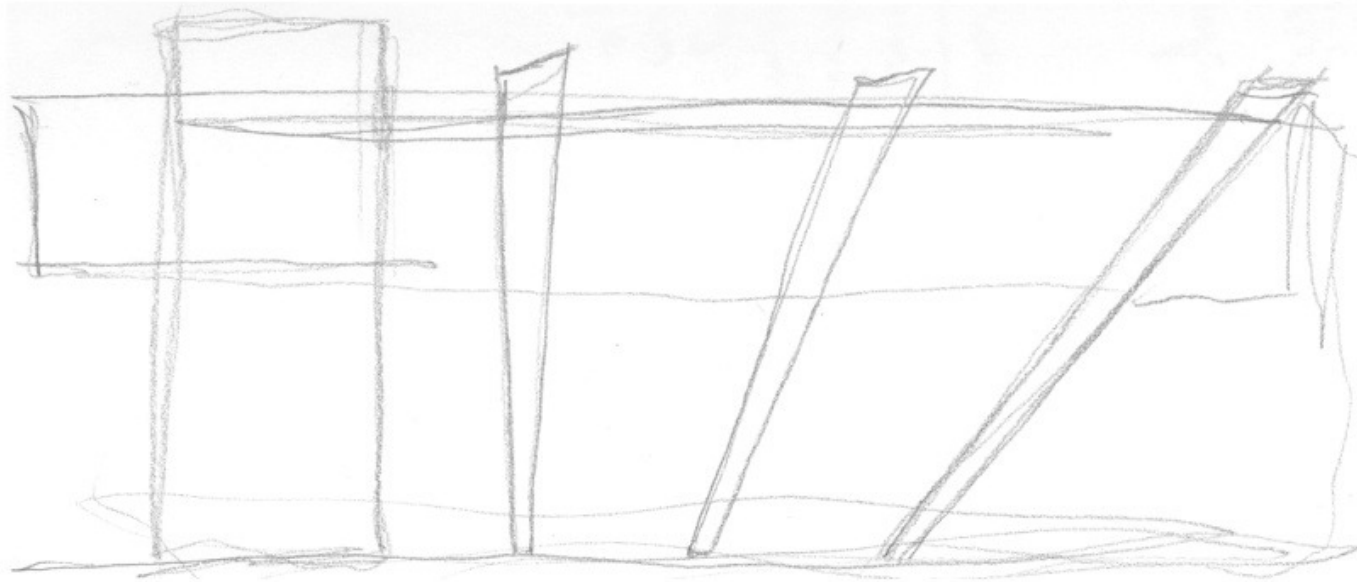
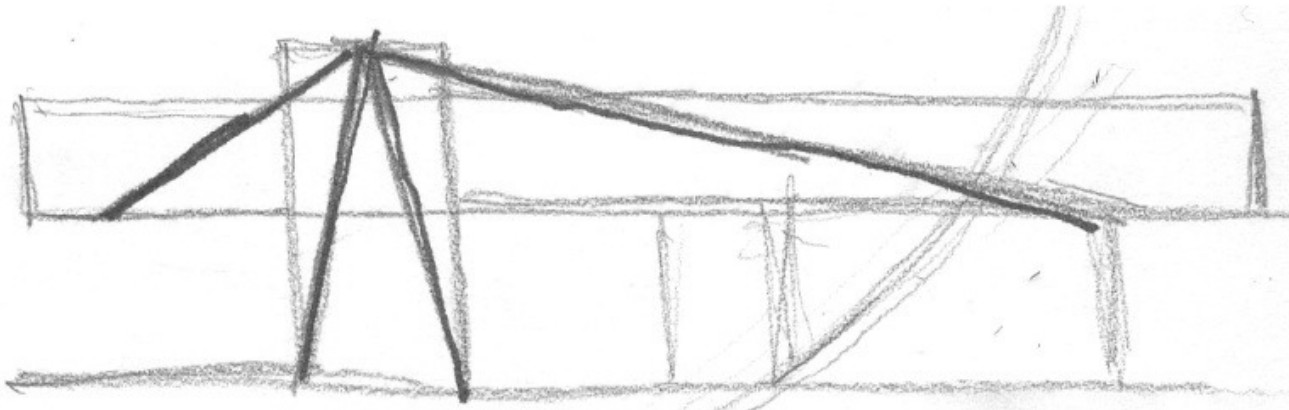
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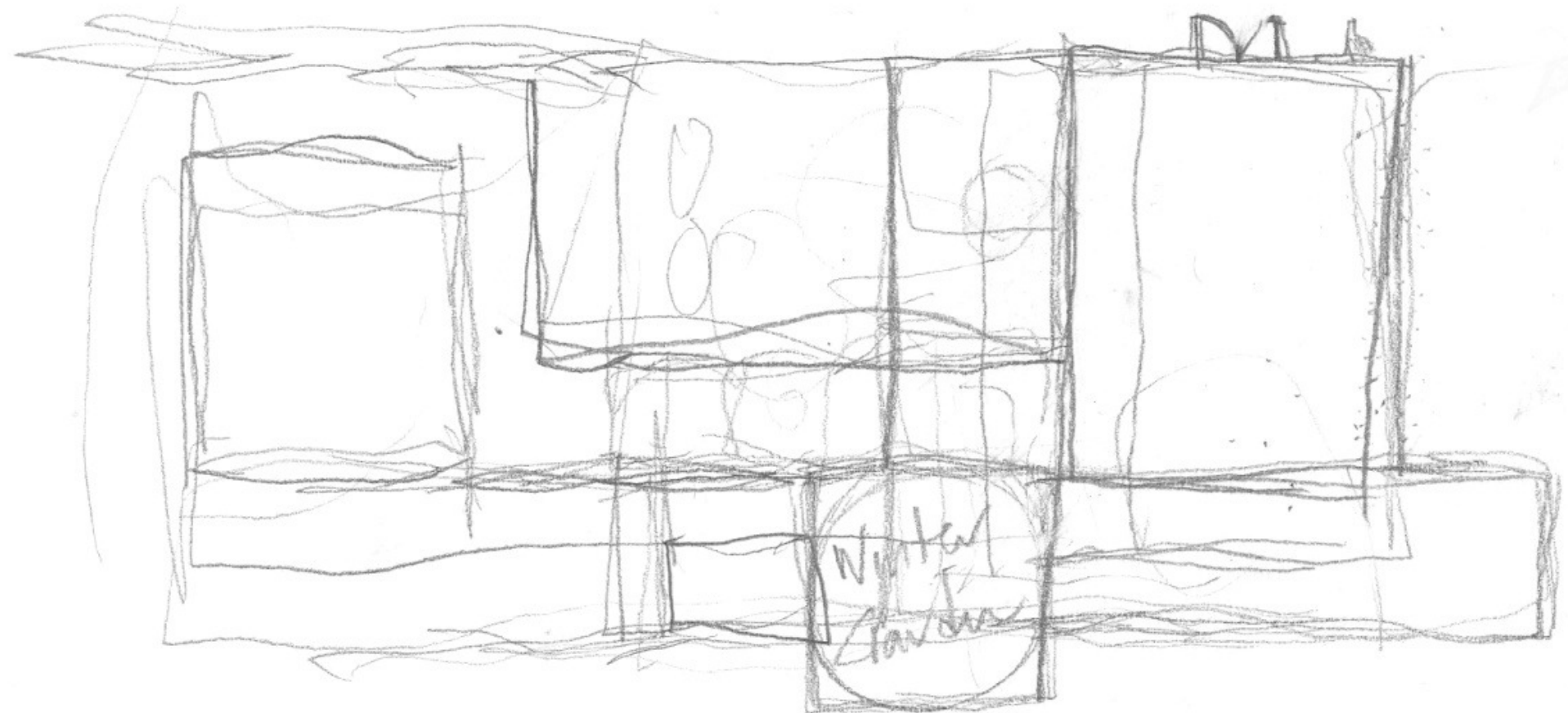
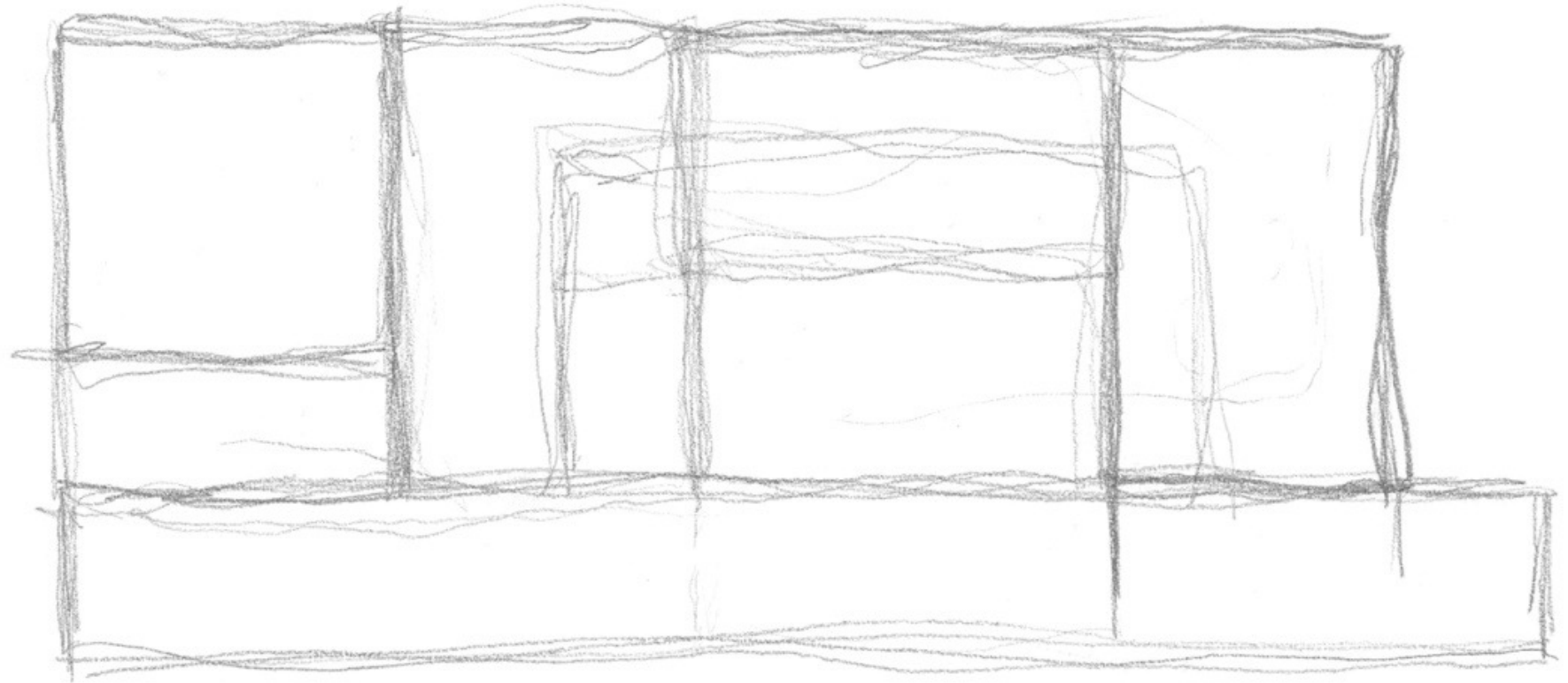
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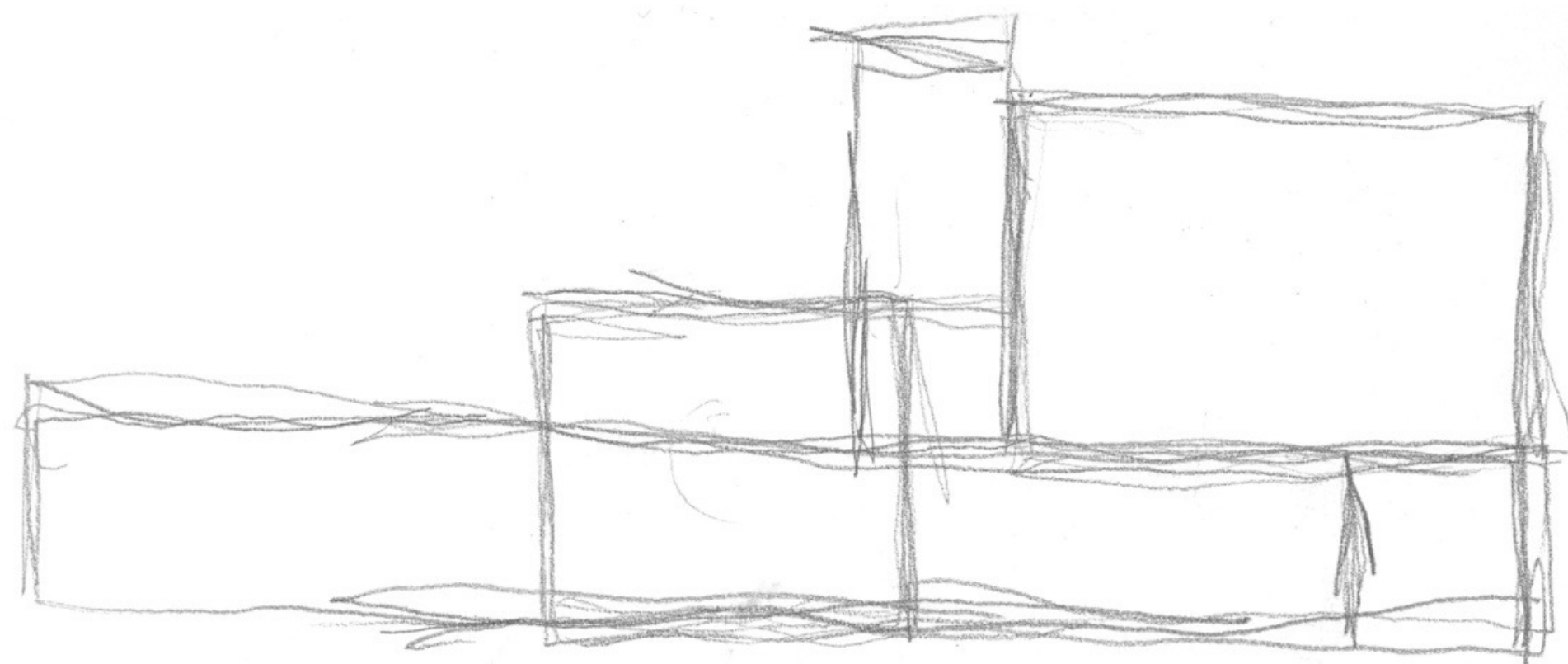
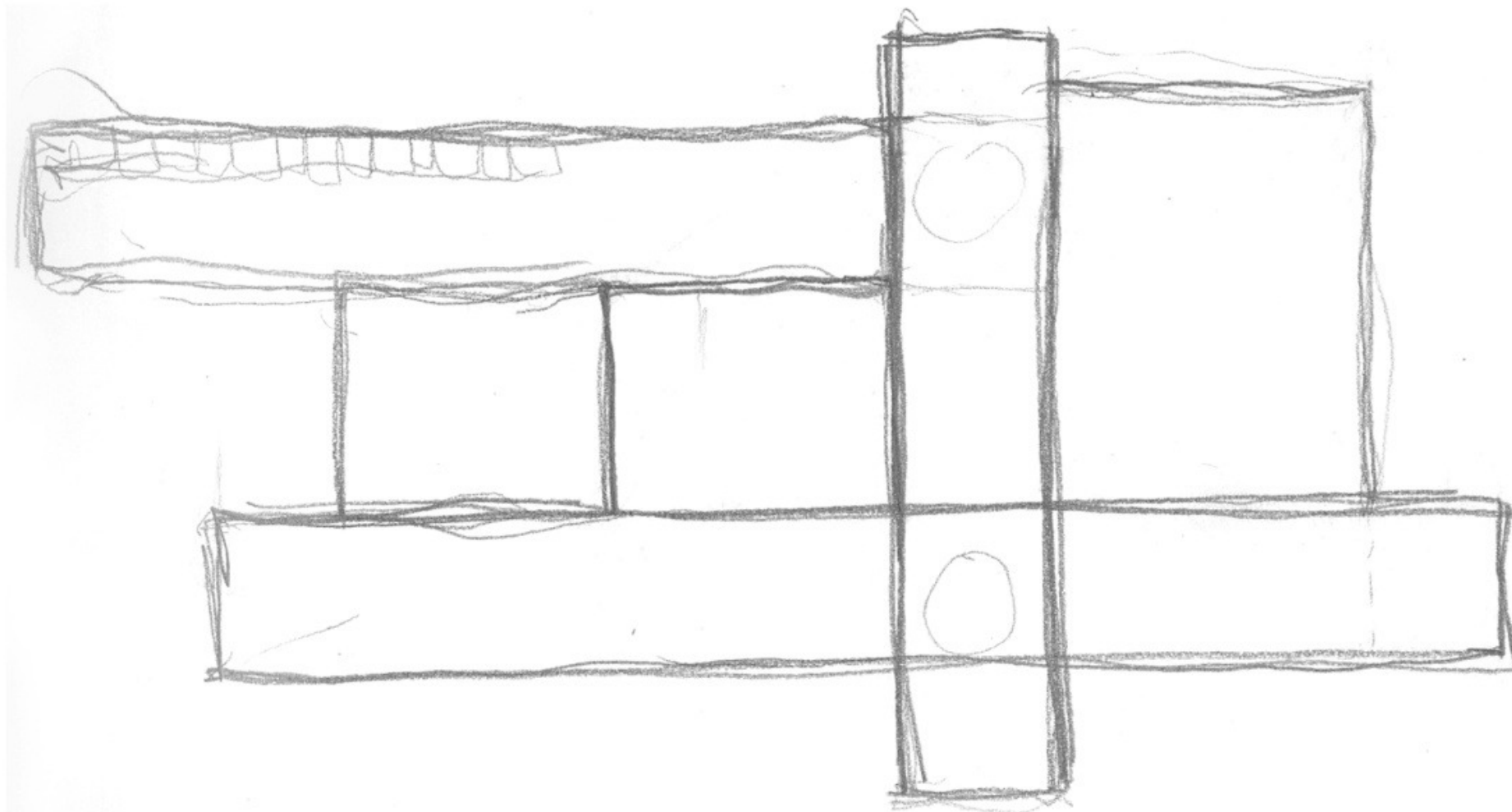
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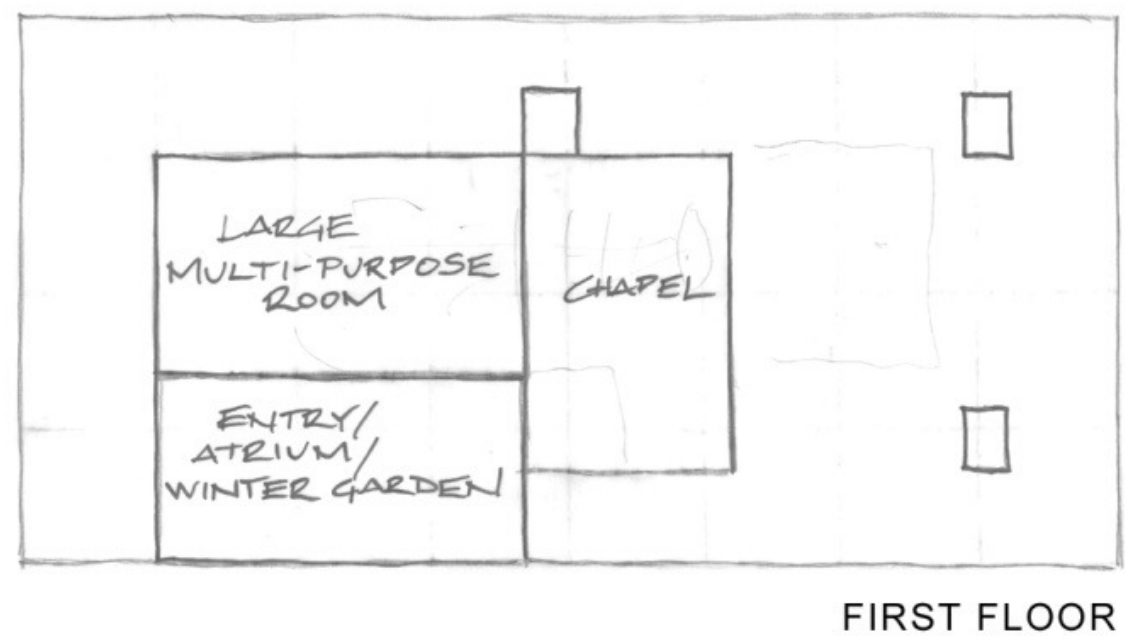
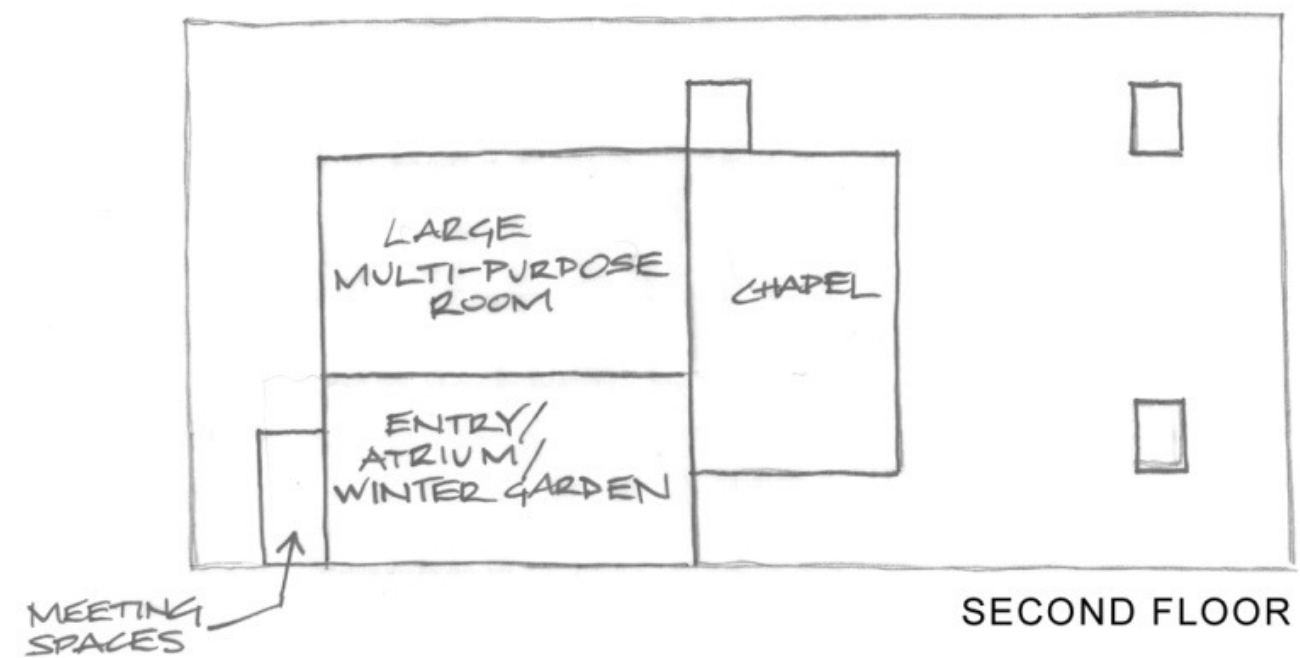
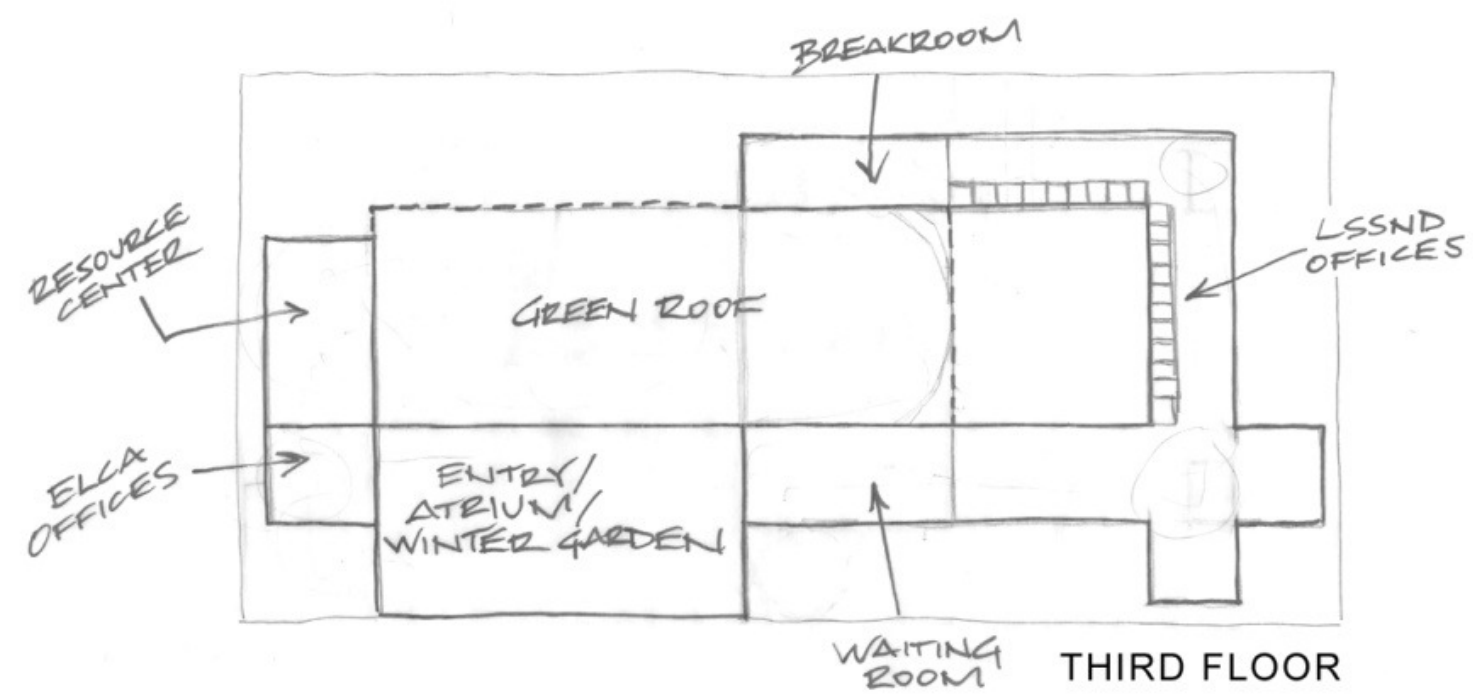
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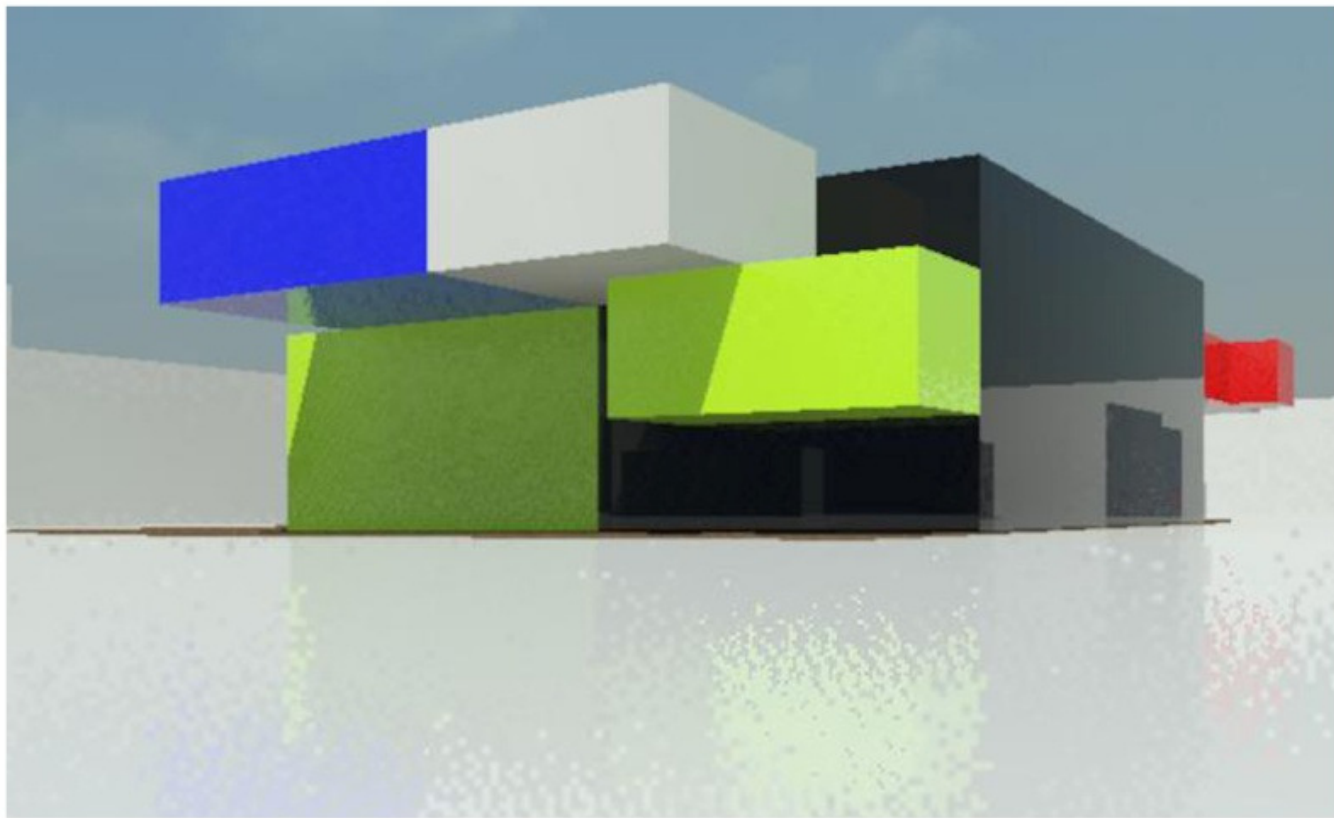
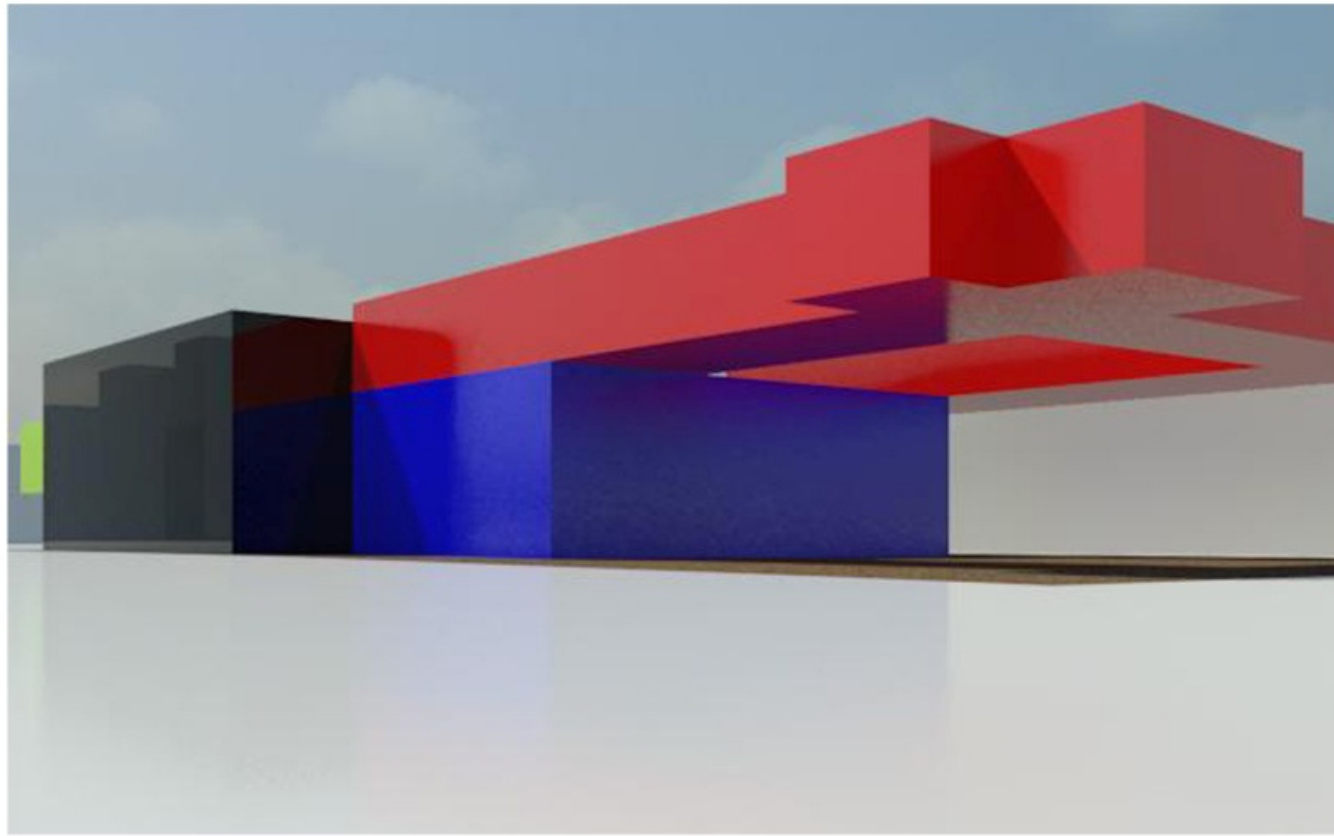


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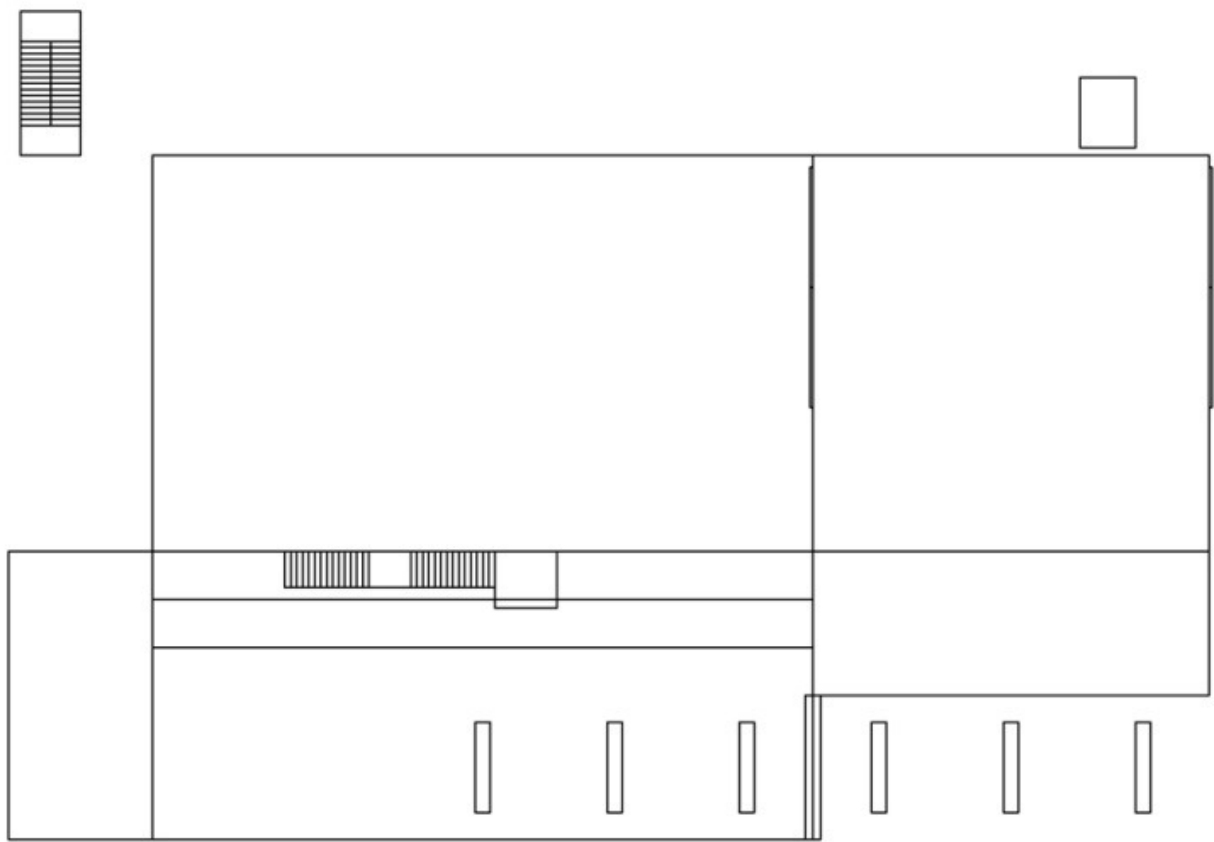


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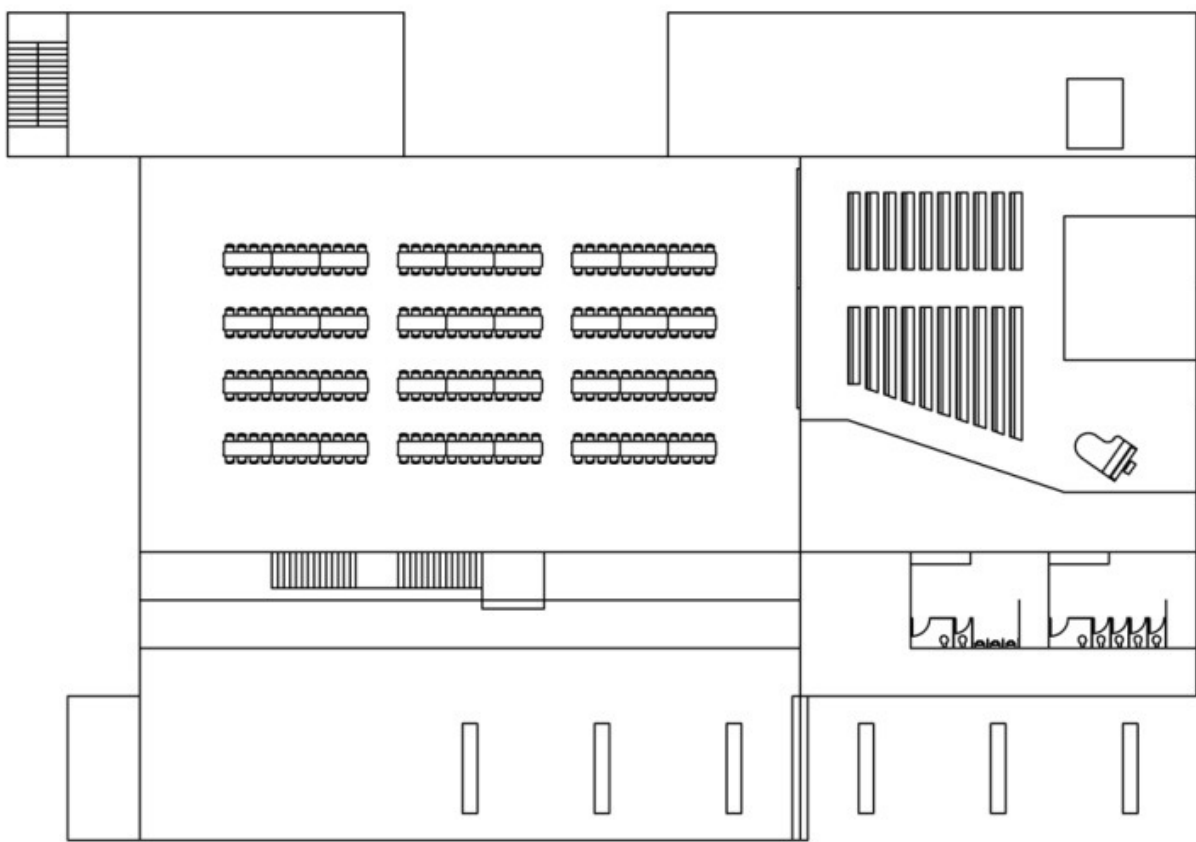




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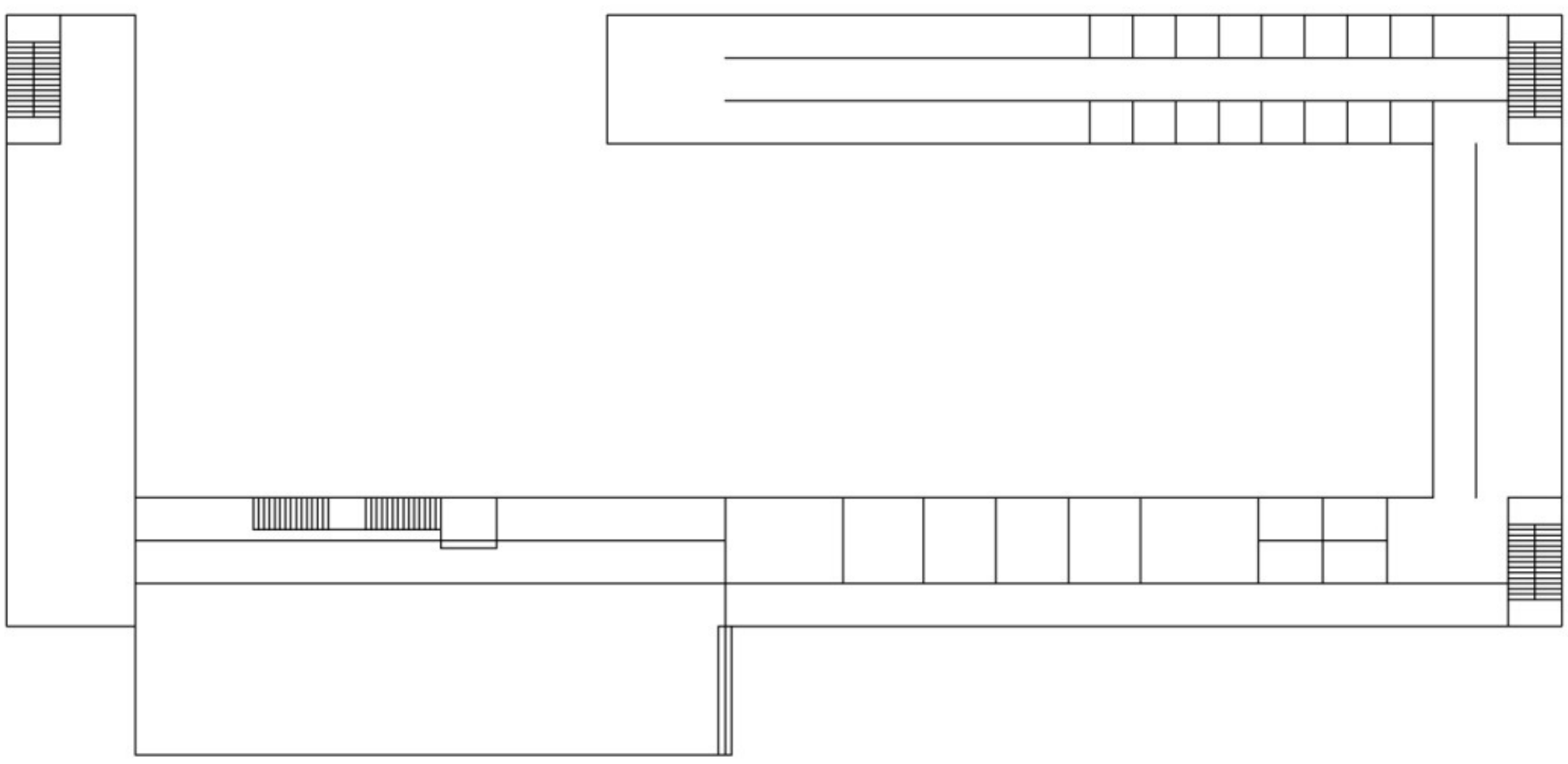


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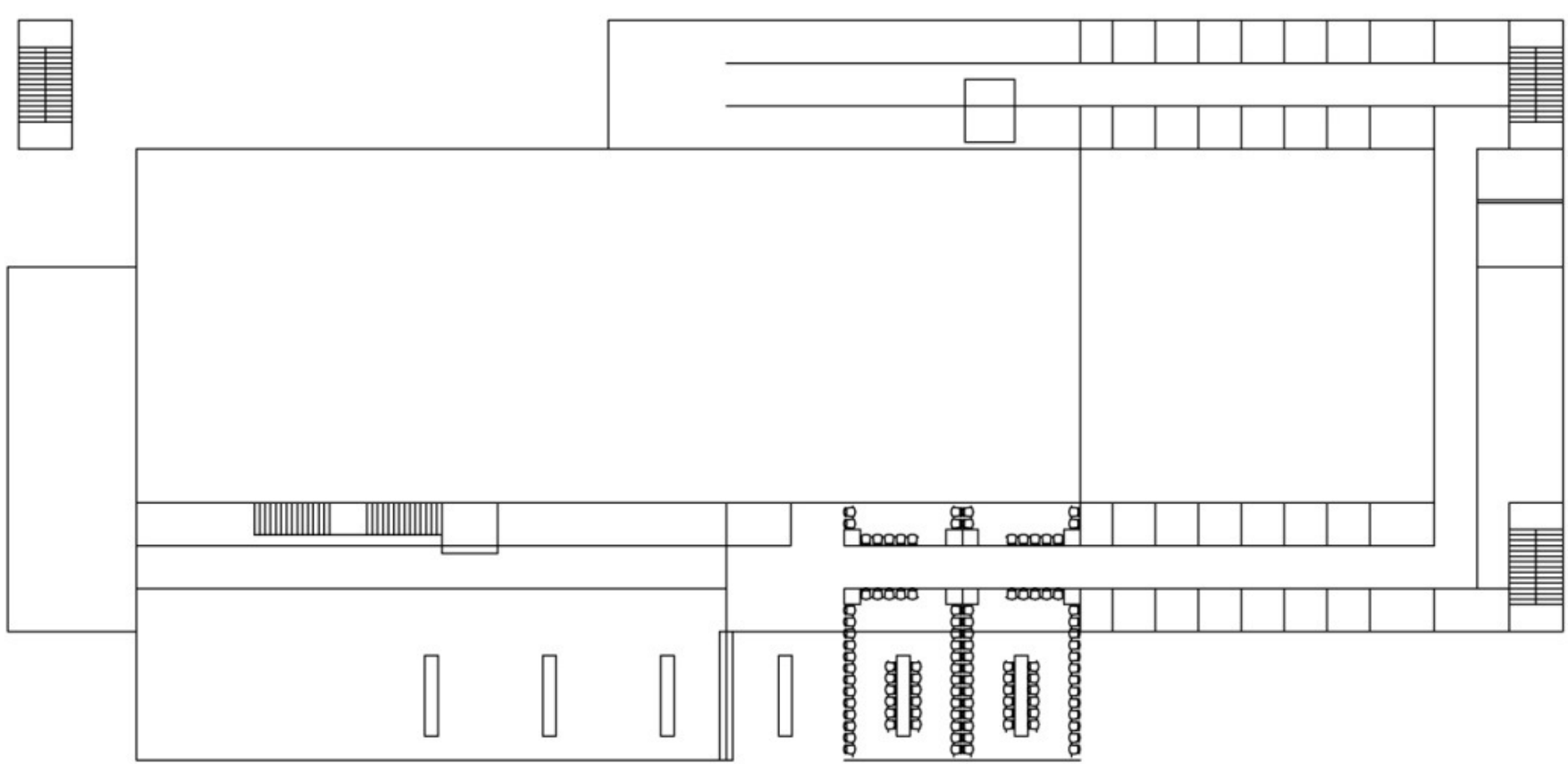


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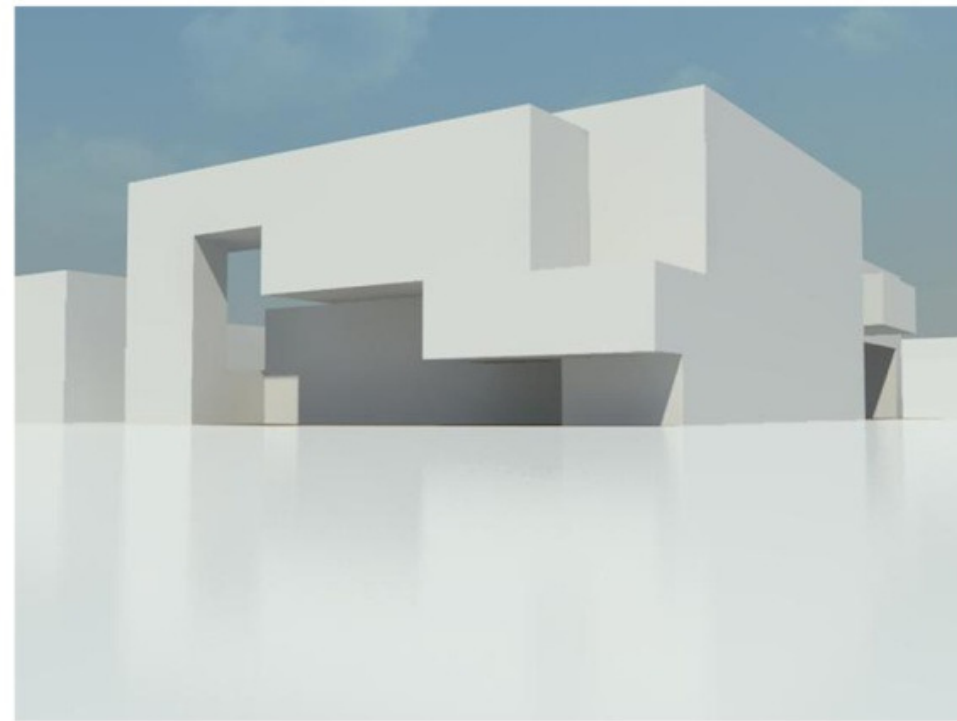
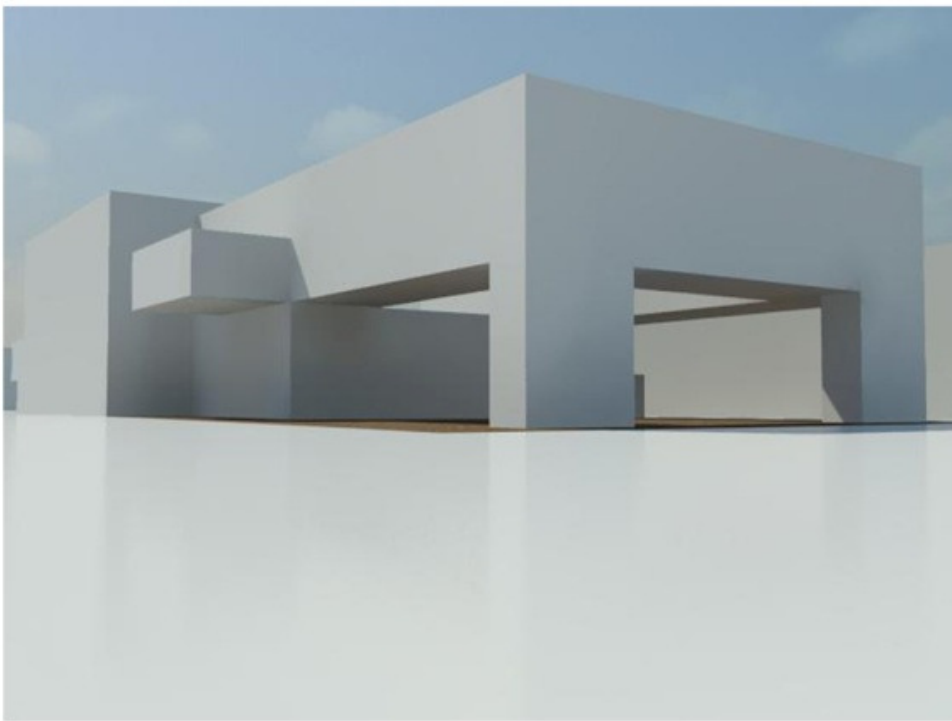
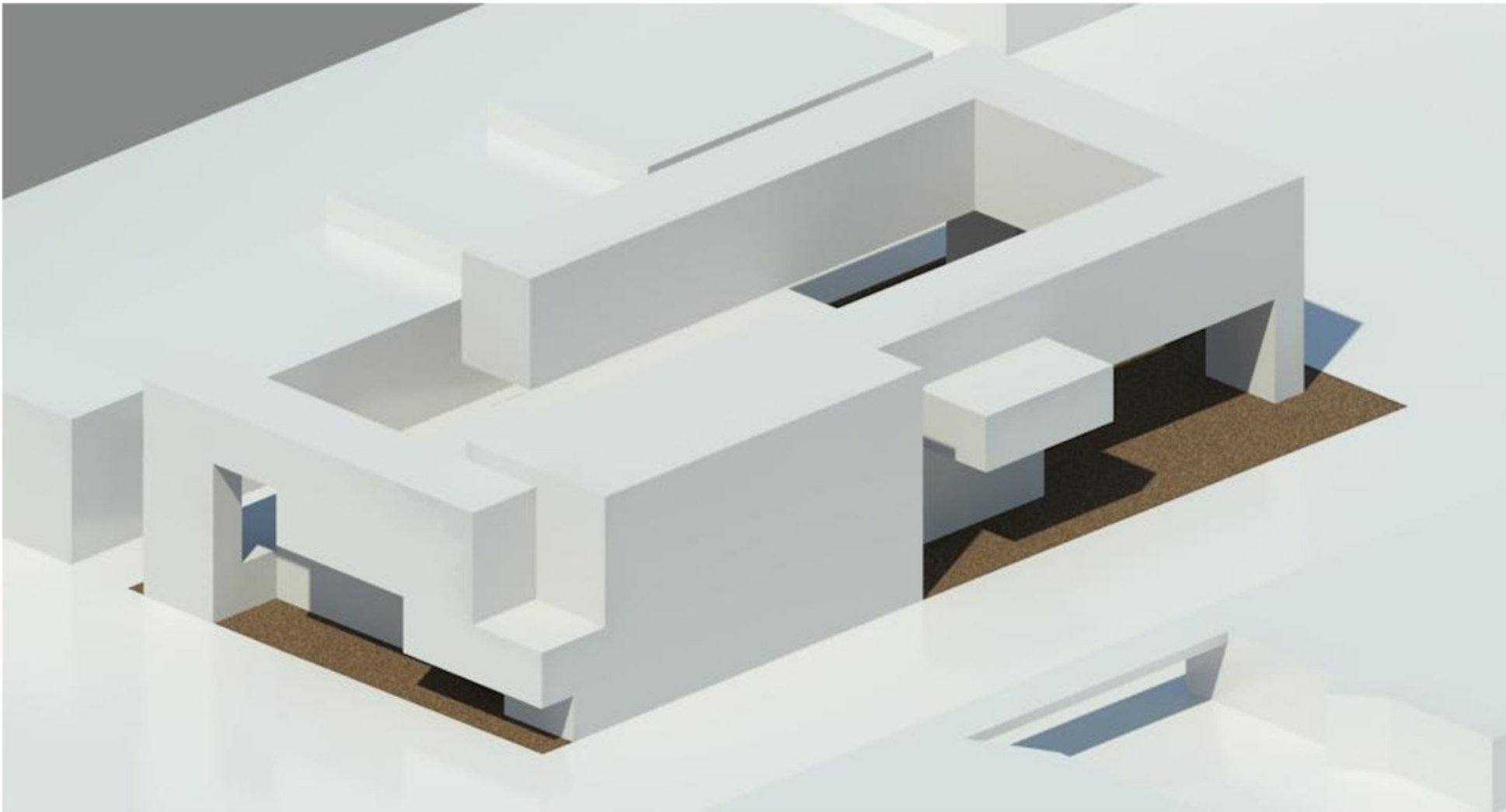




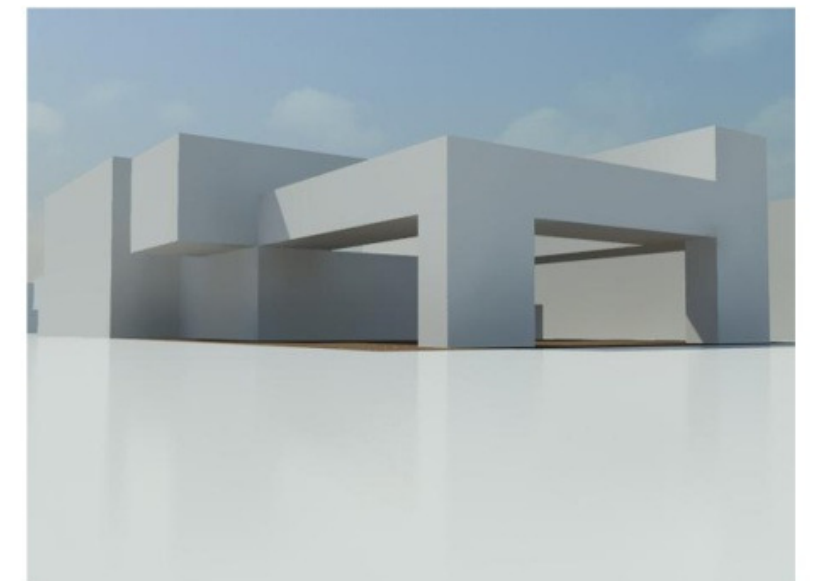
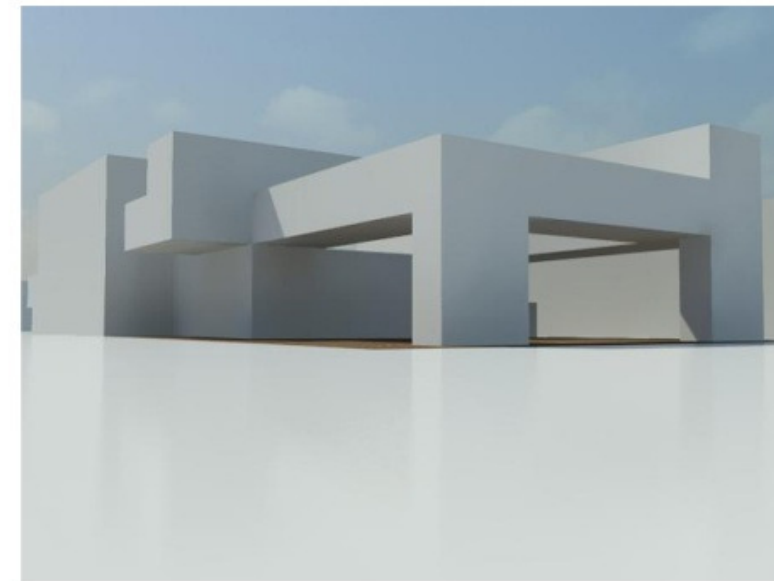
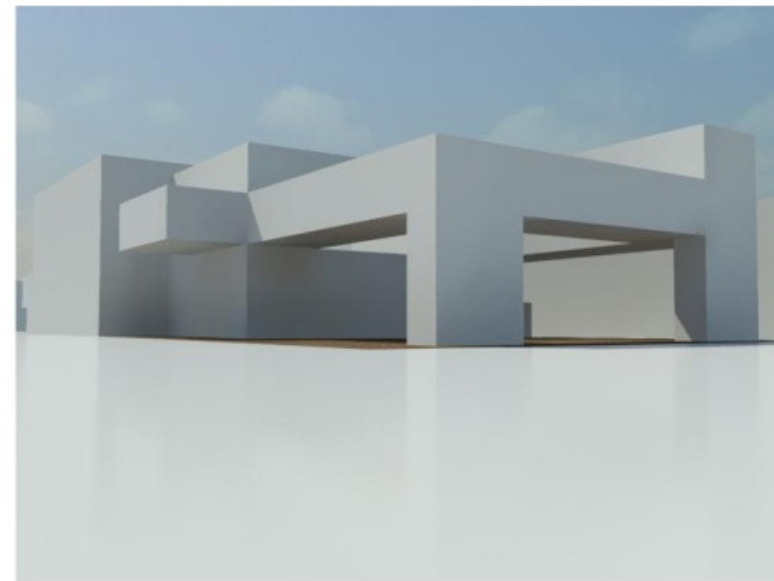
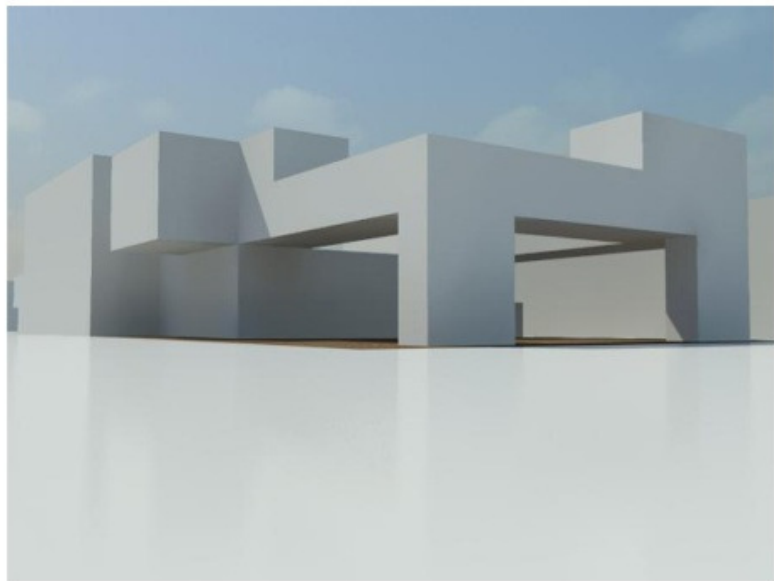
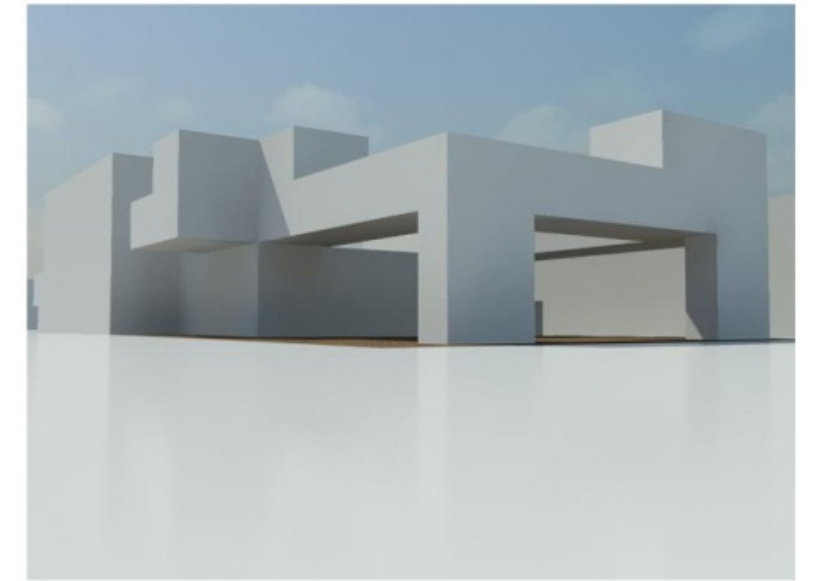
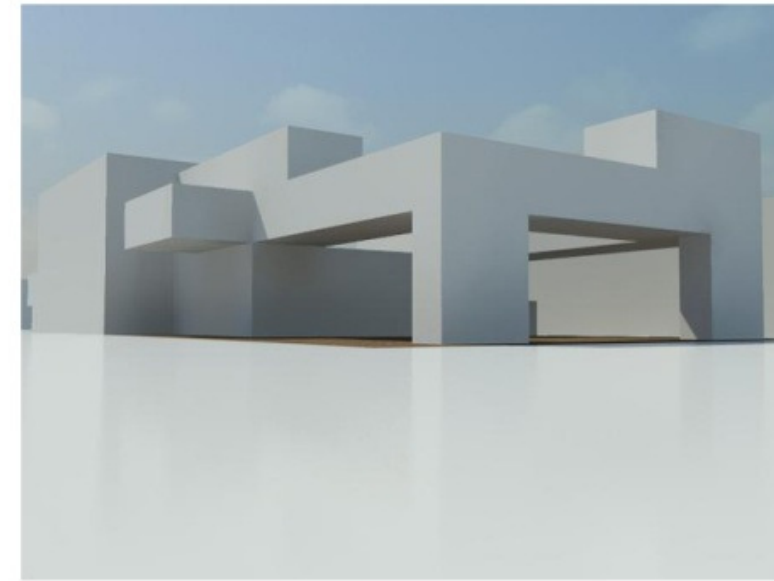
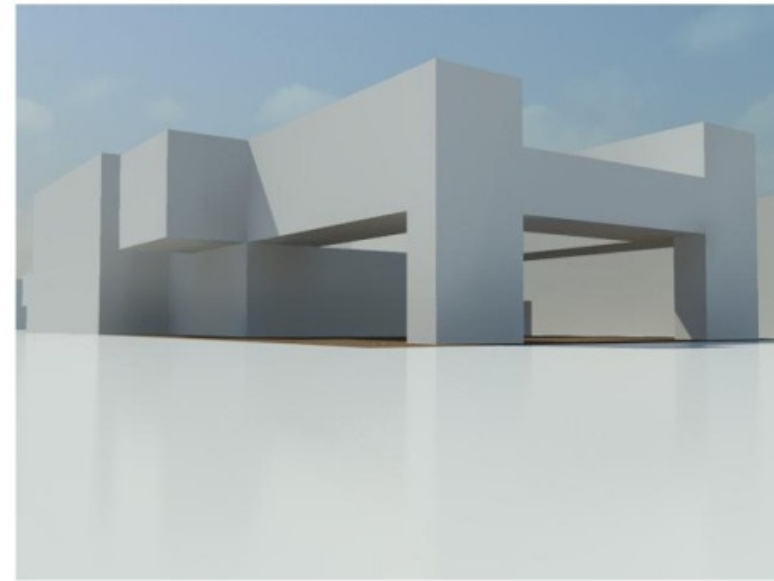
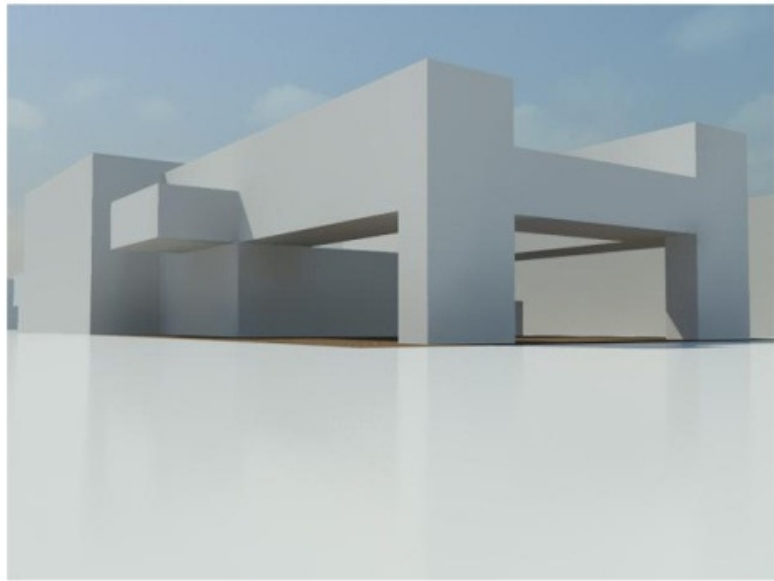
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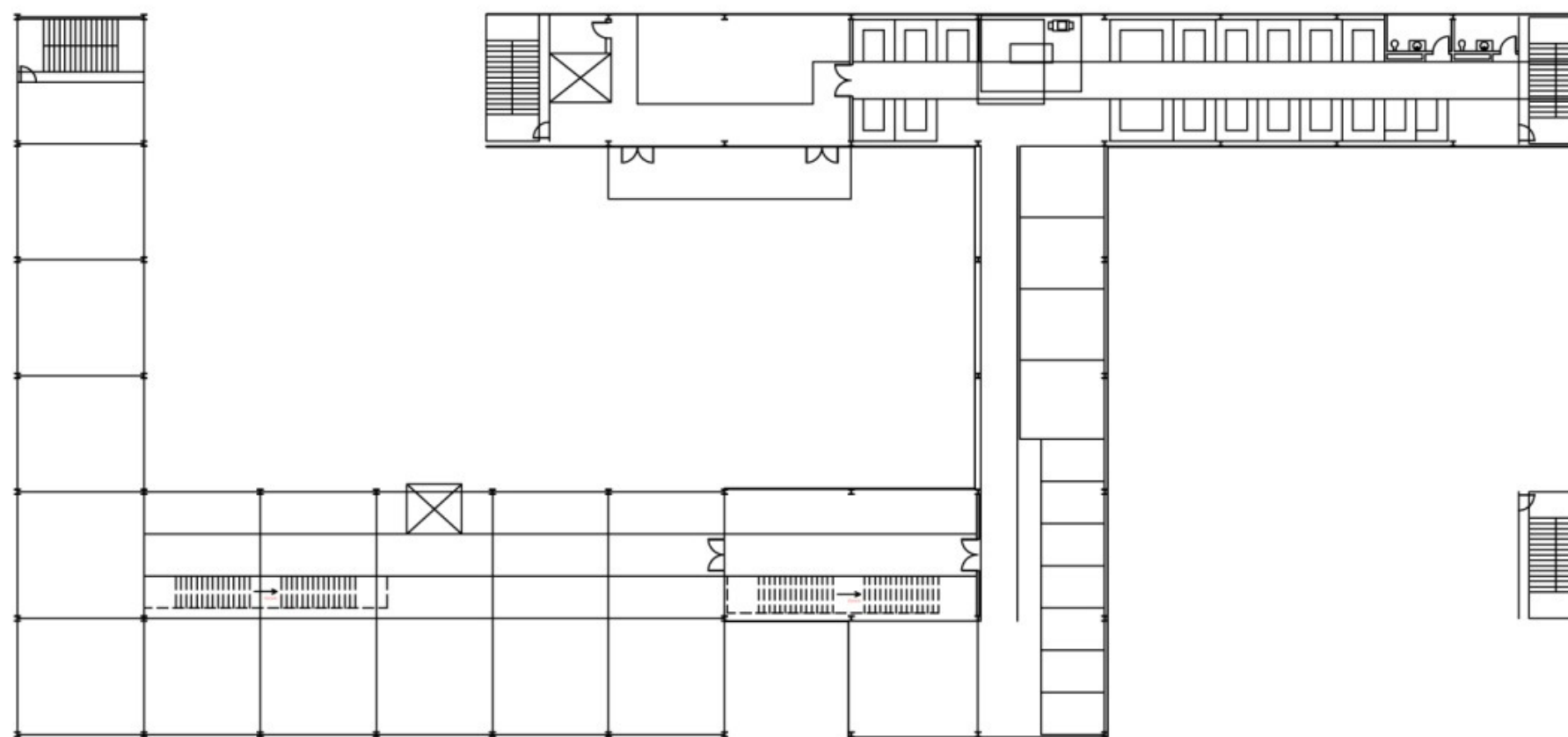
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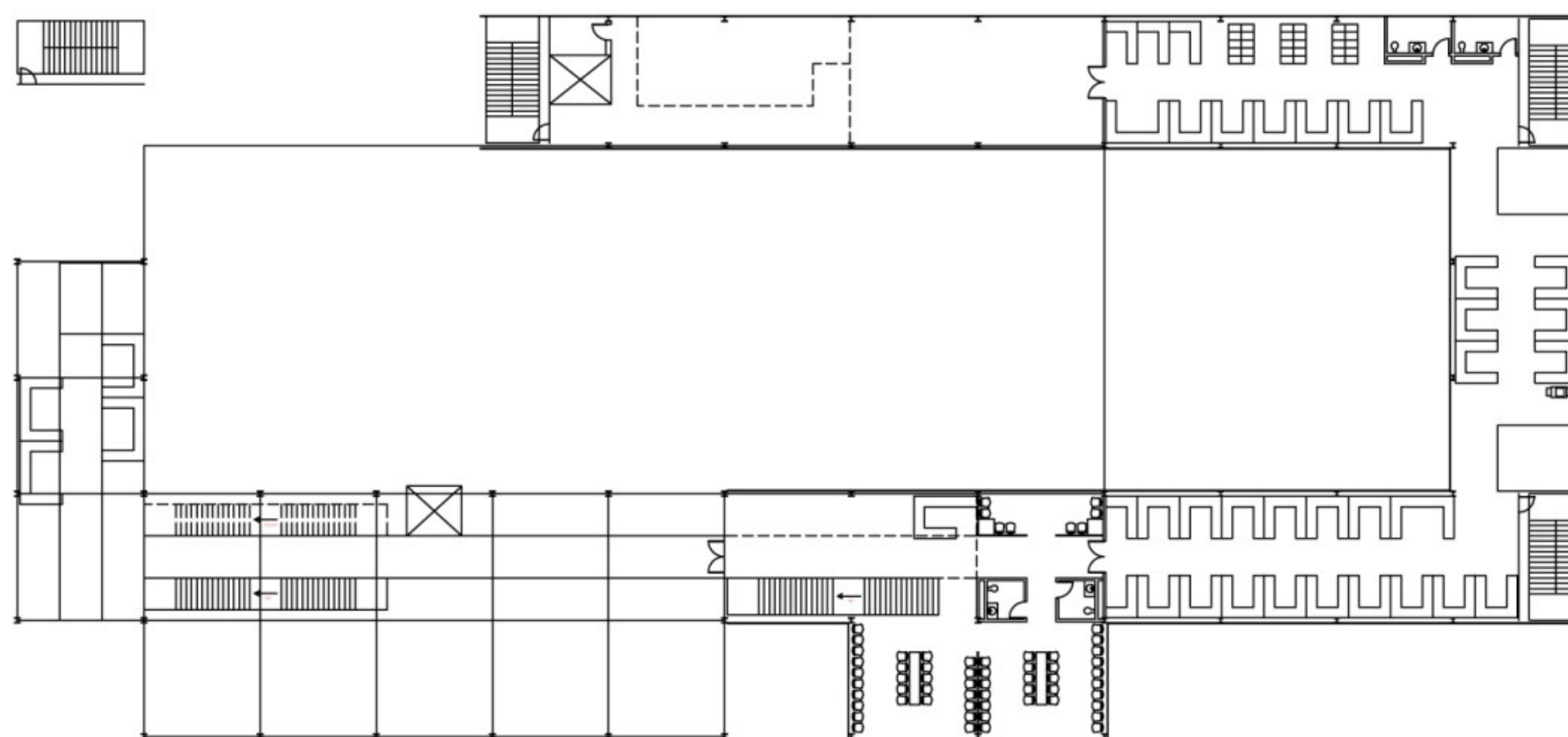
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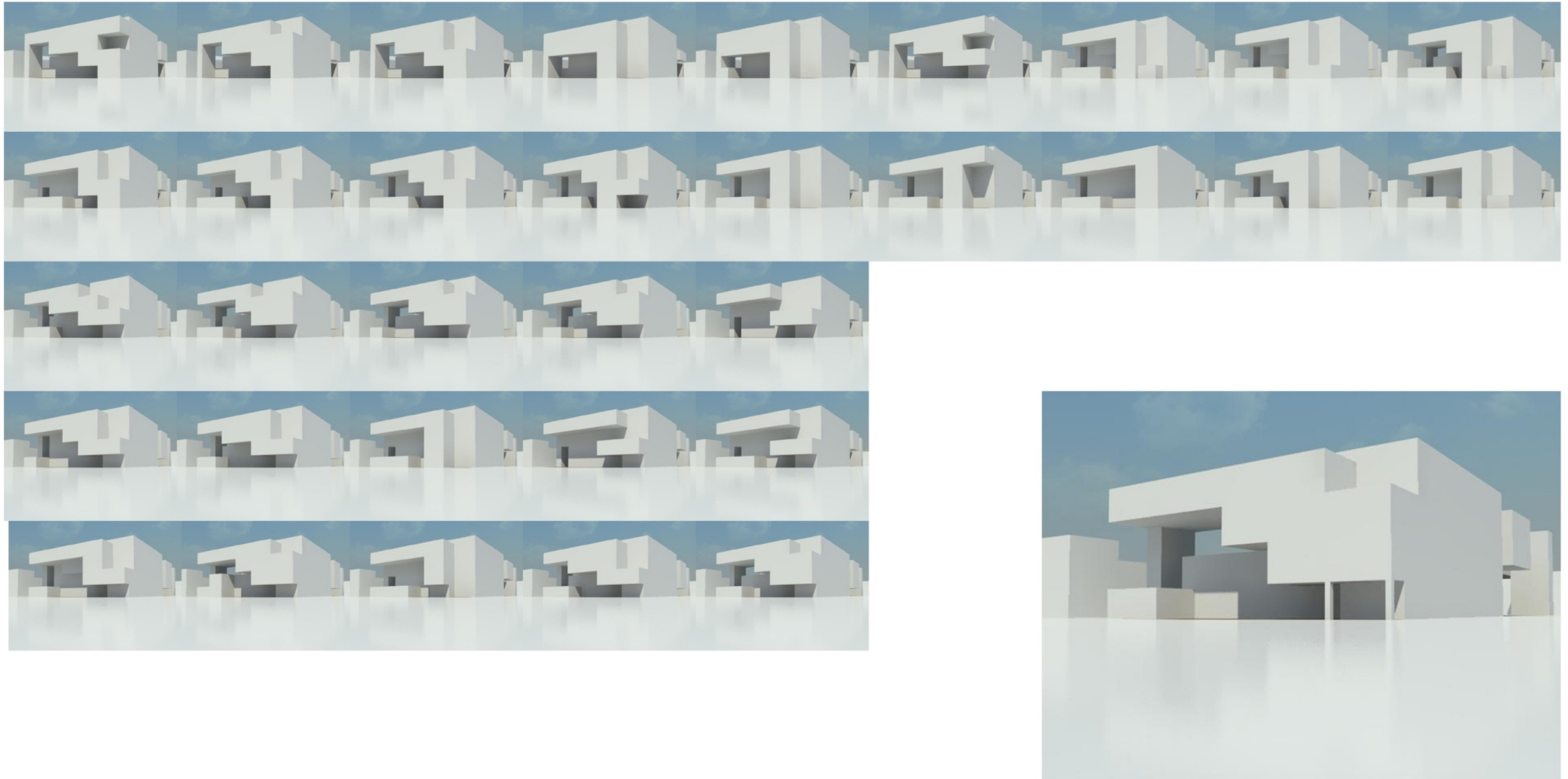
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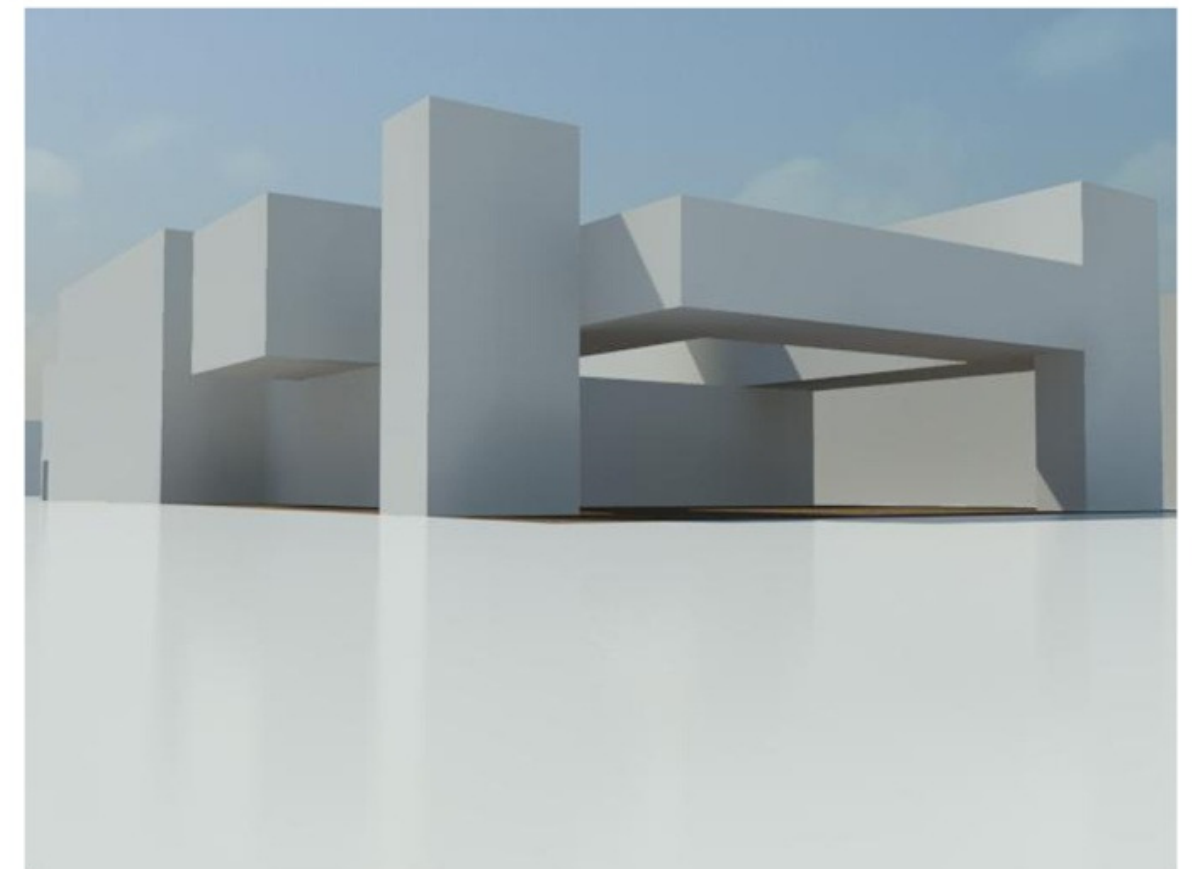
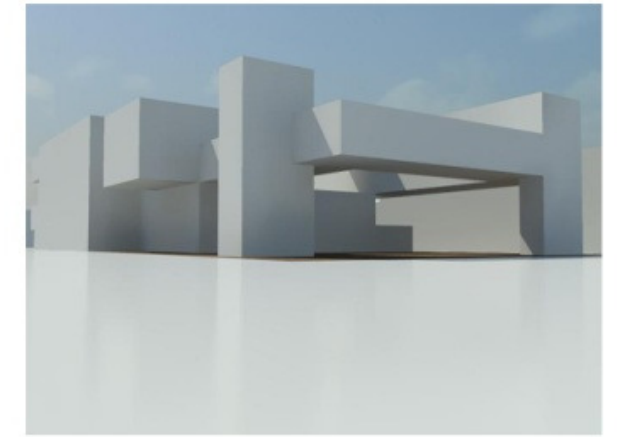
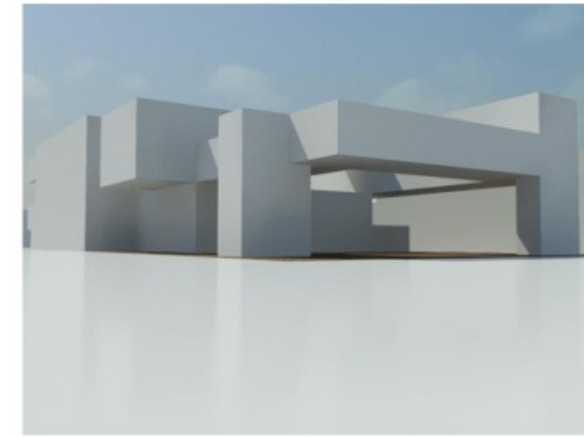
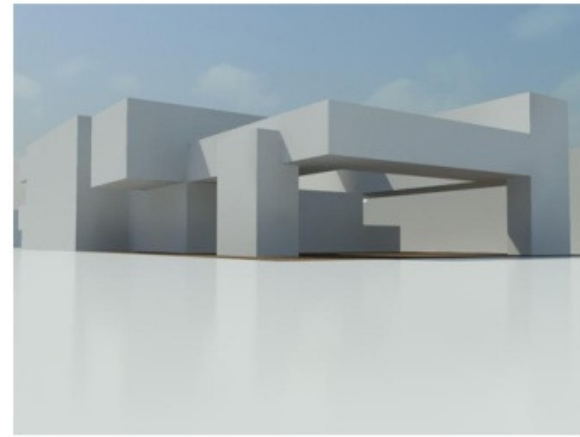
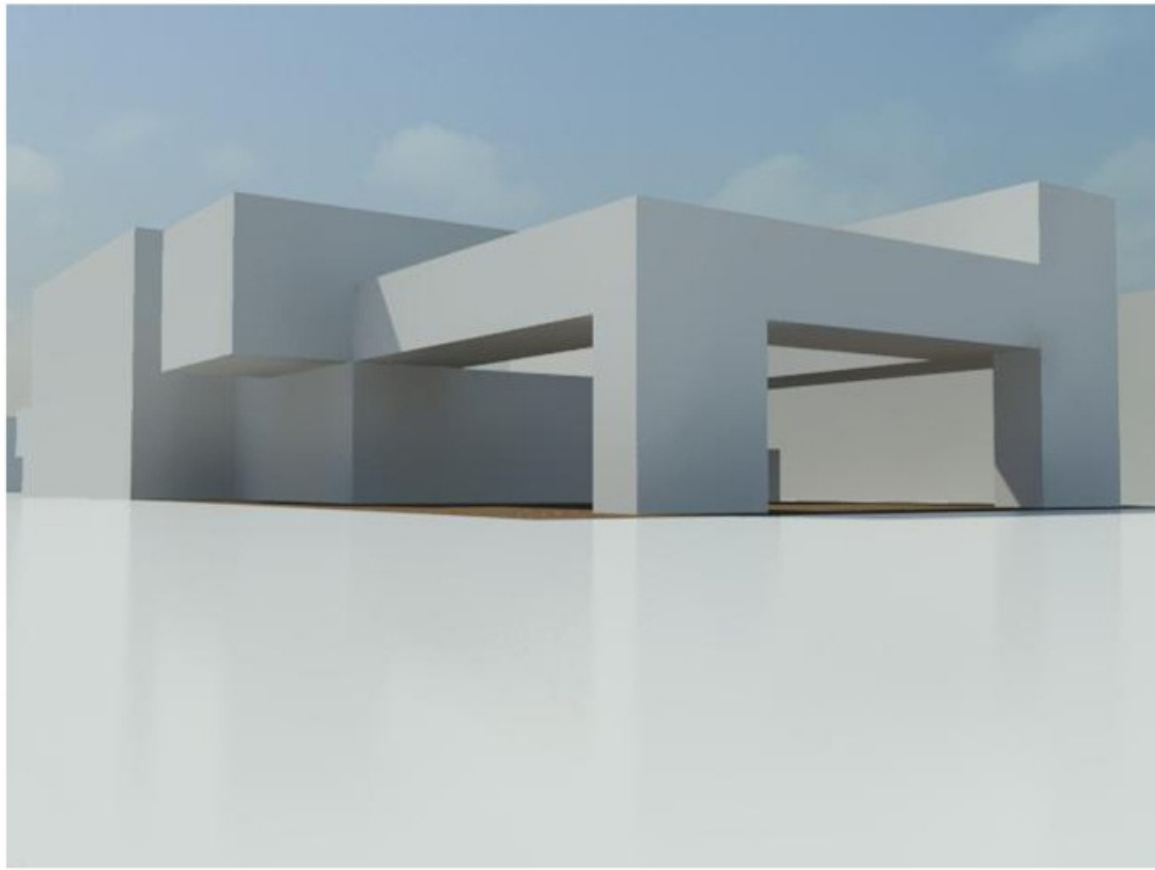
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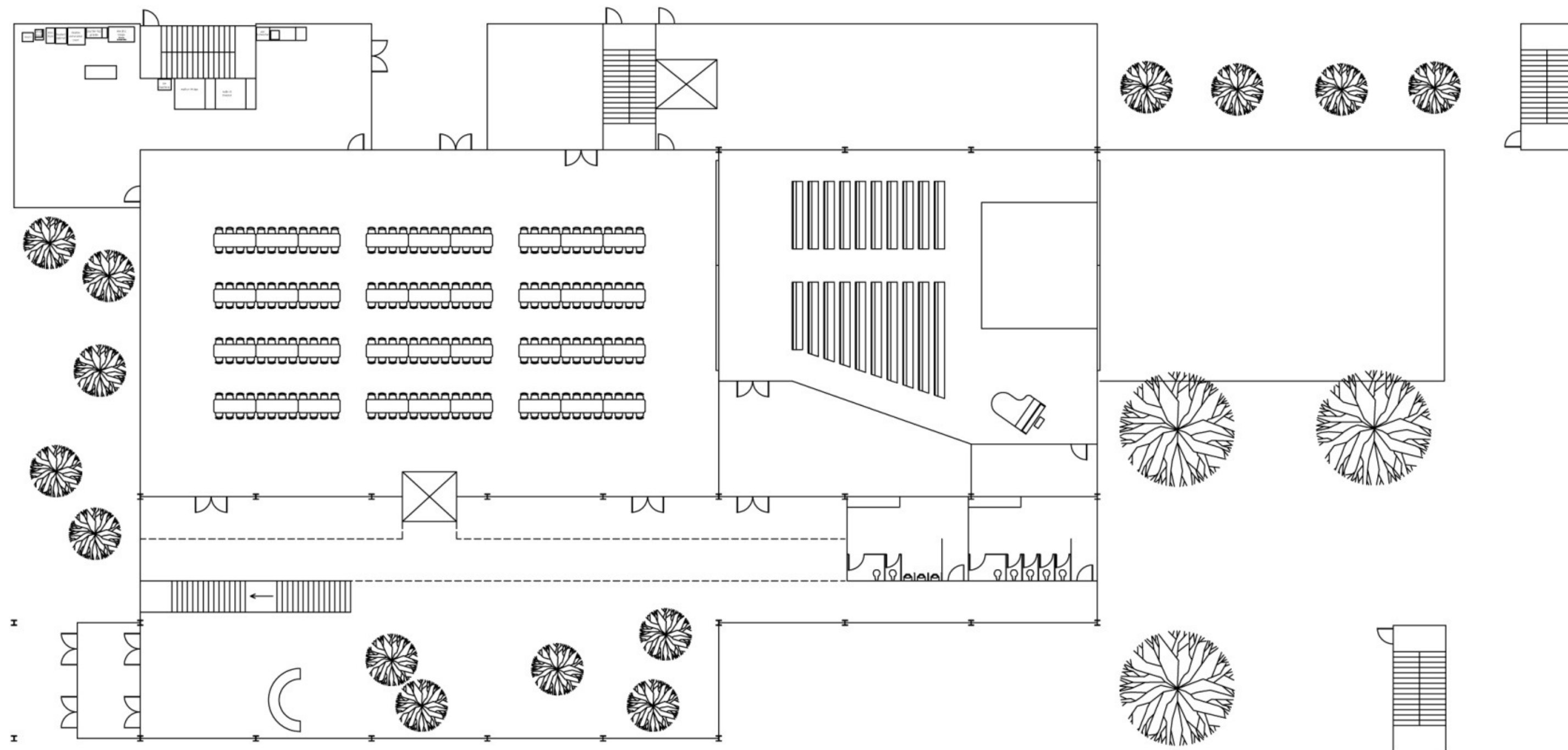
THREE FLOOR



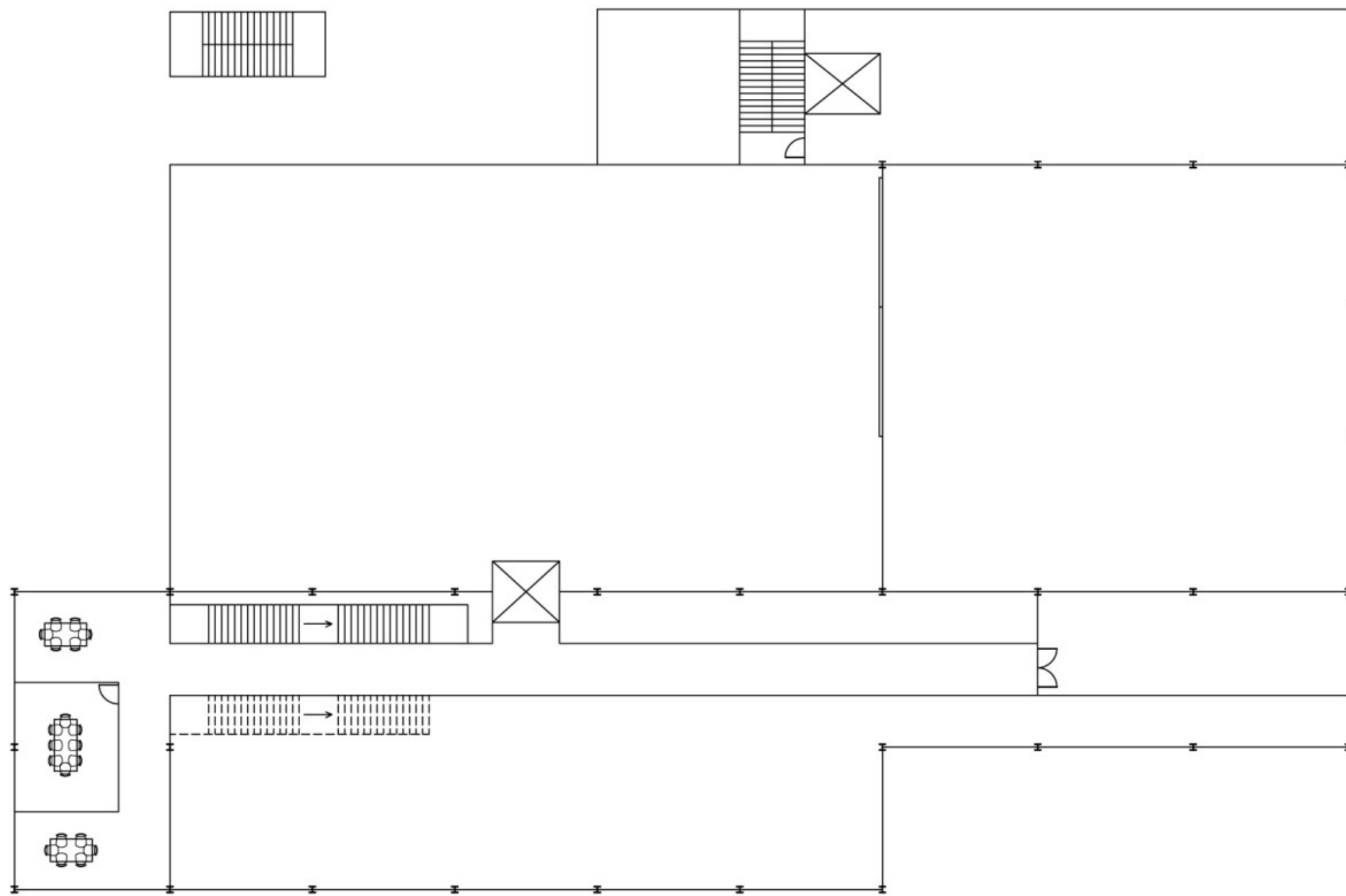
ADAPTIVE URBAN OASIS: THE DESIGN PROCESS



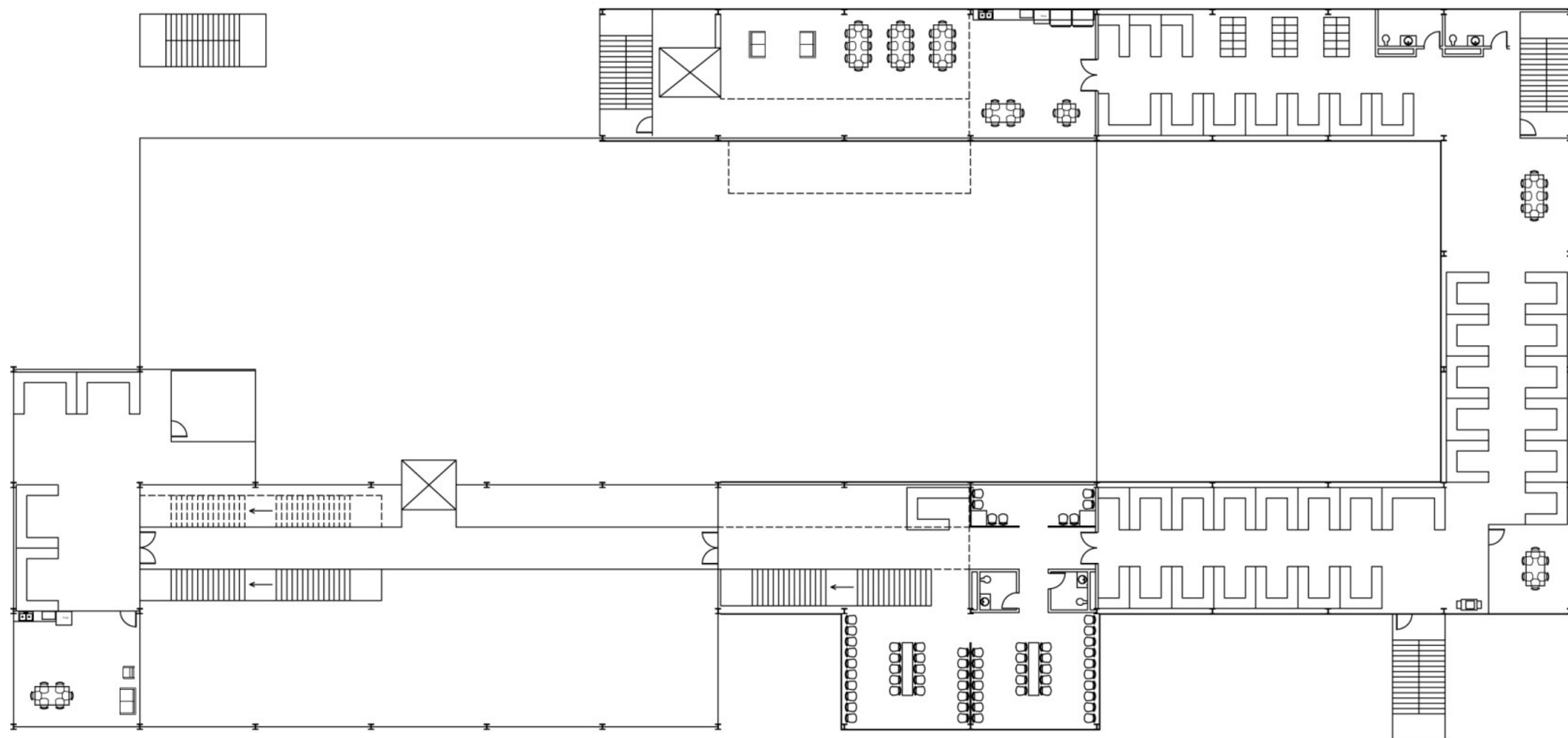
ADAPTIVE URBAN OASIS: THE DESIGN PROCESS



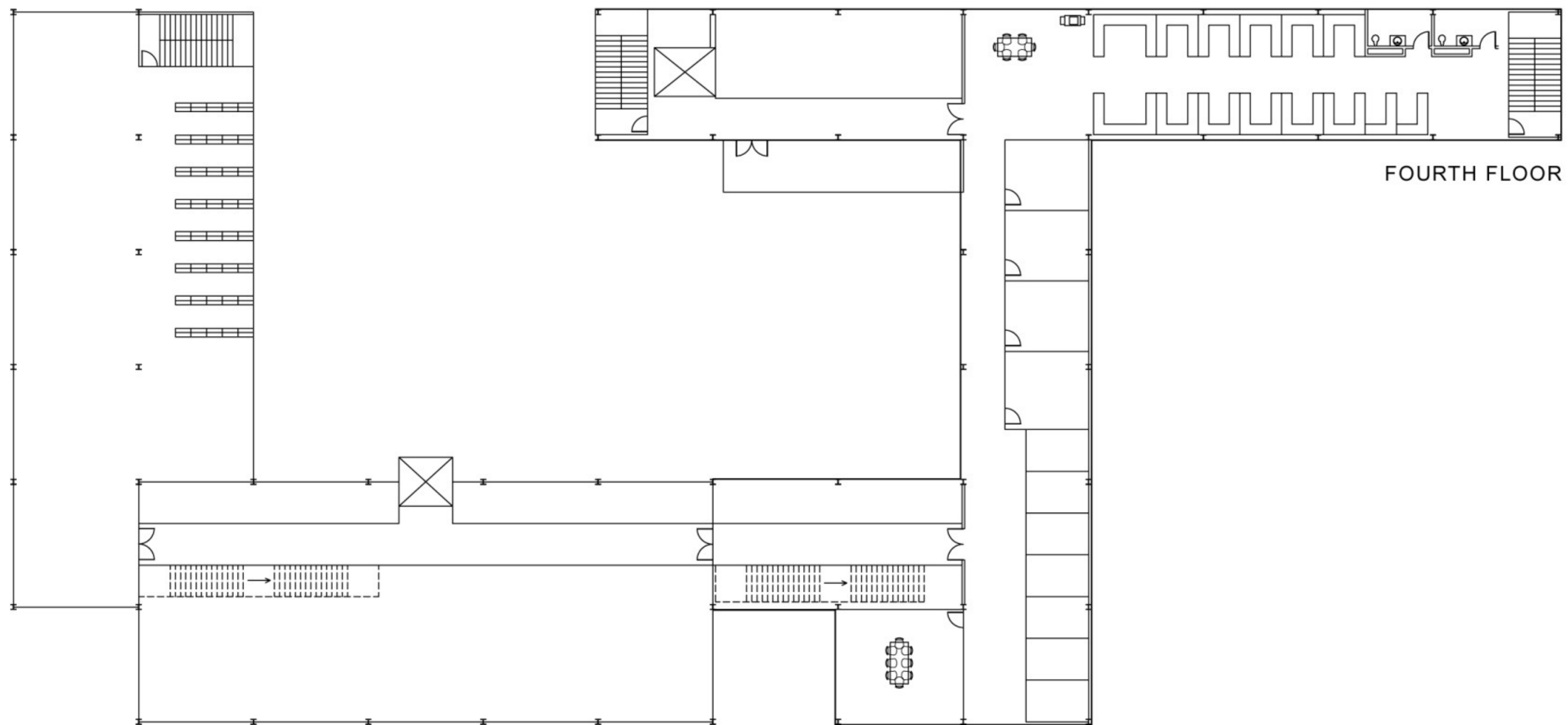
FIRST FLOOR



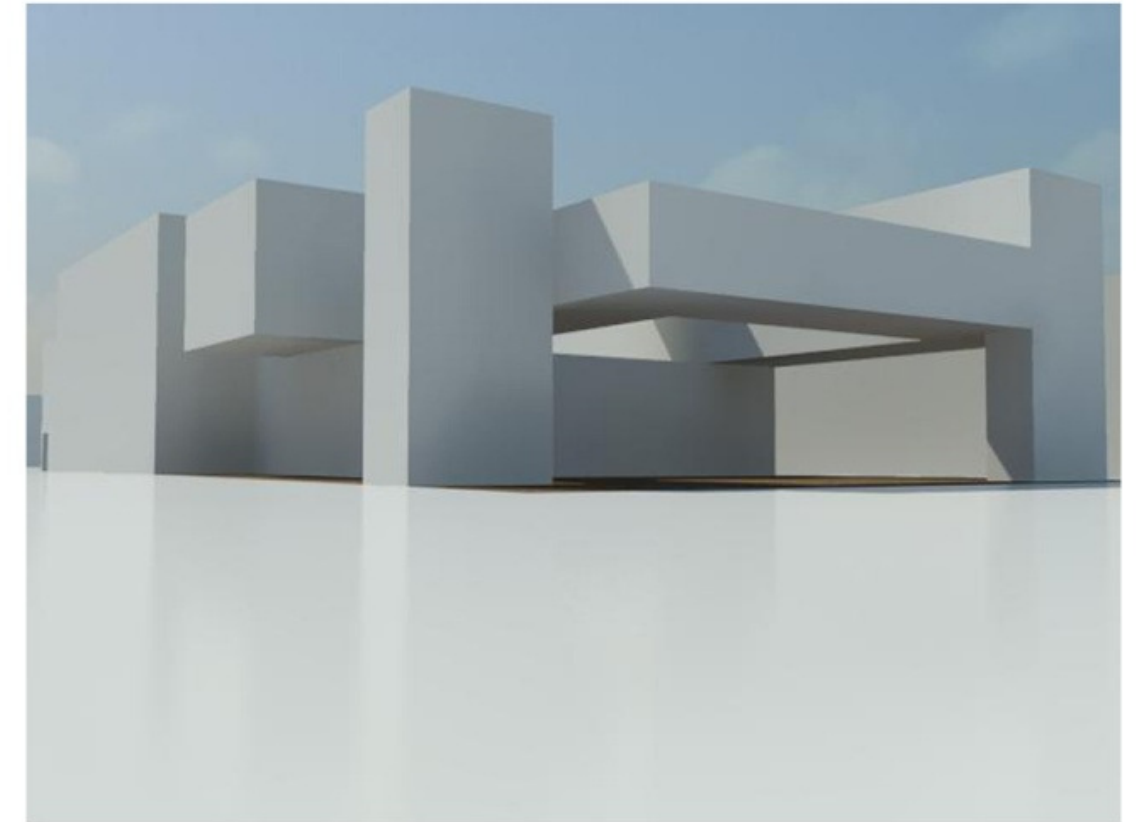
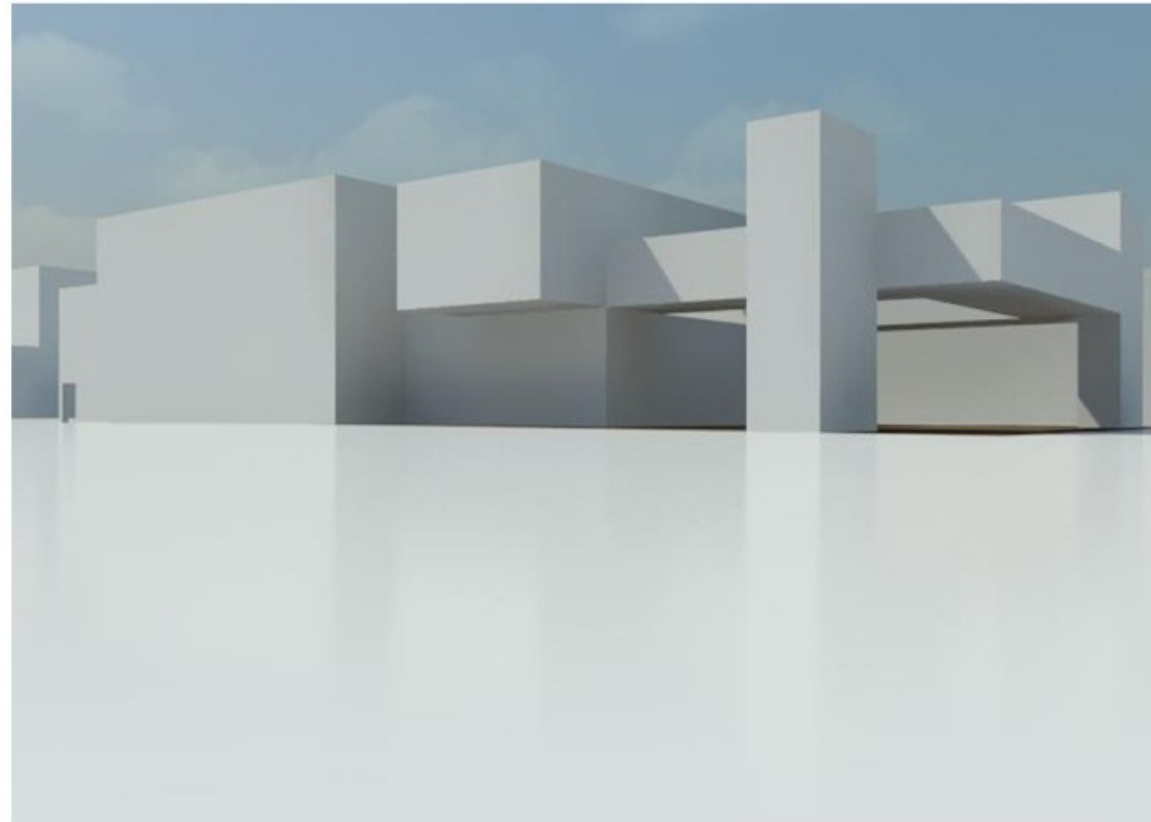
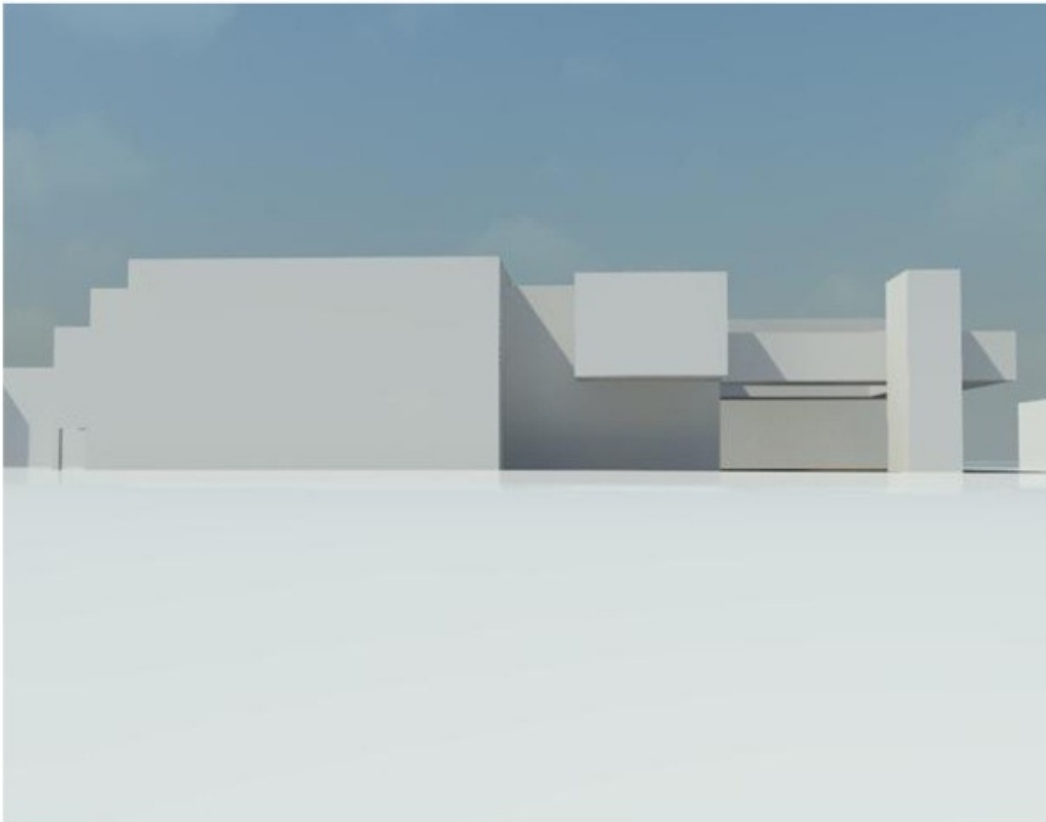
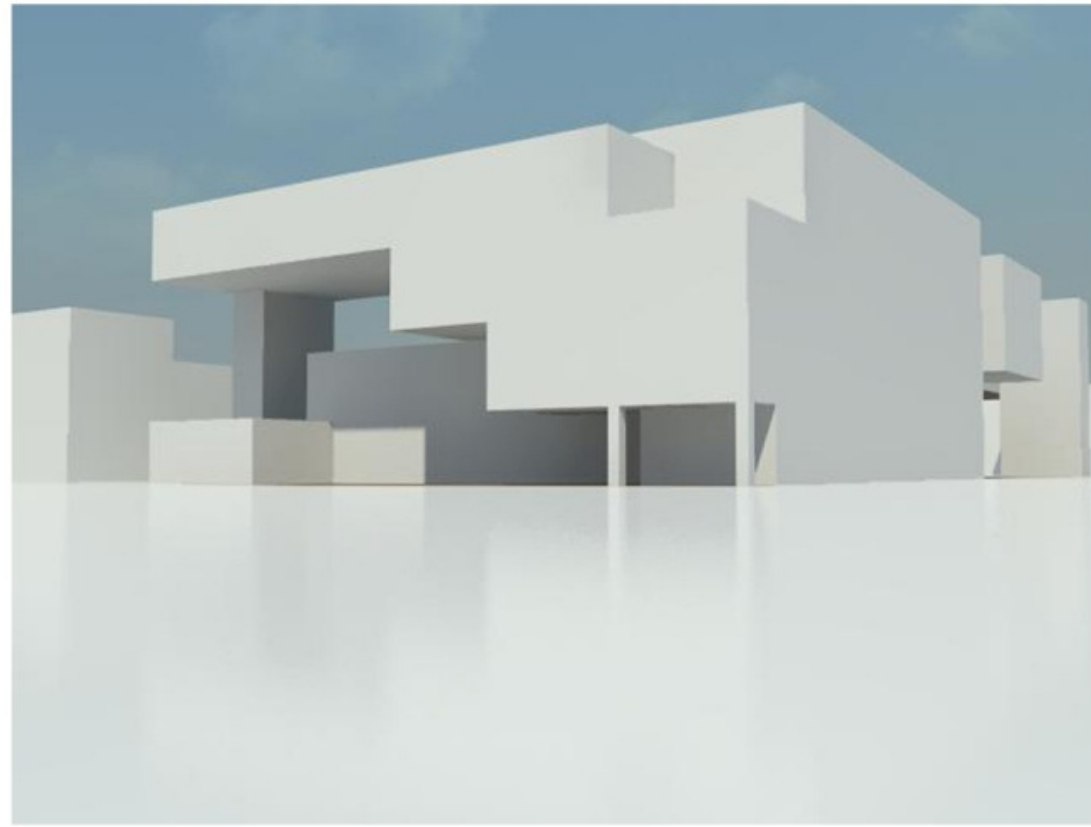
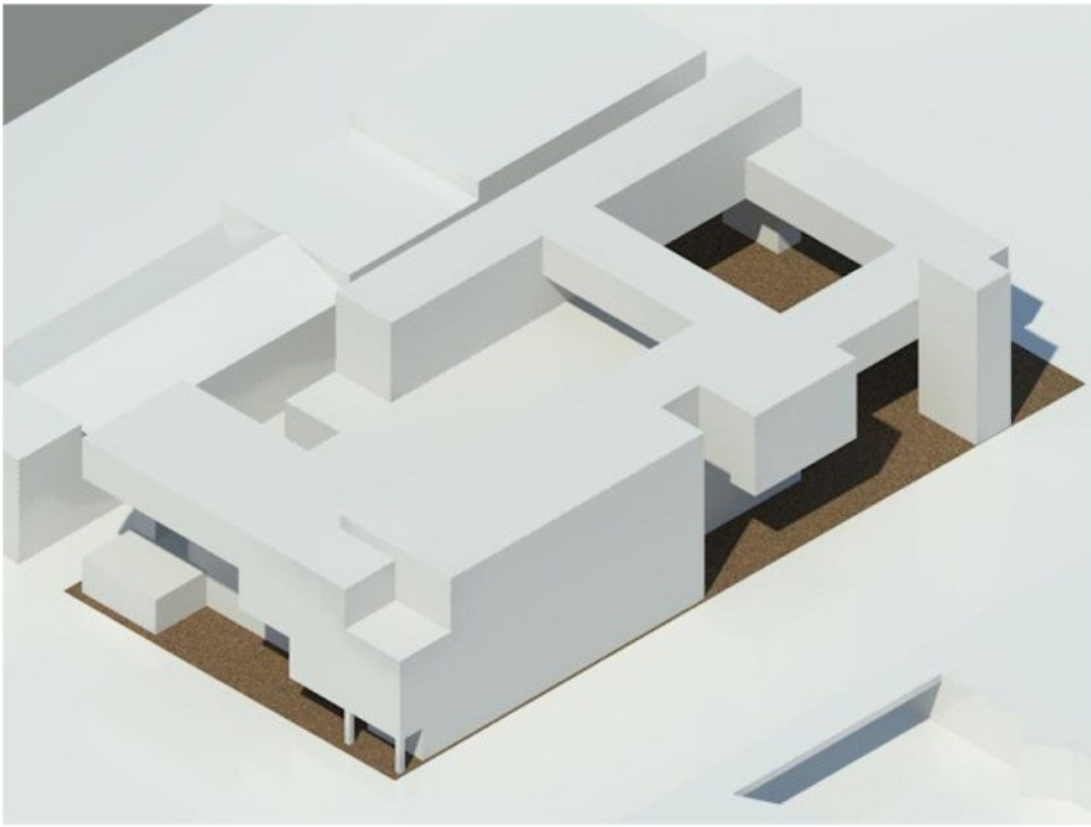
SECOND FLOOR



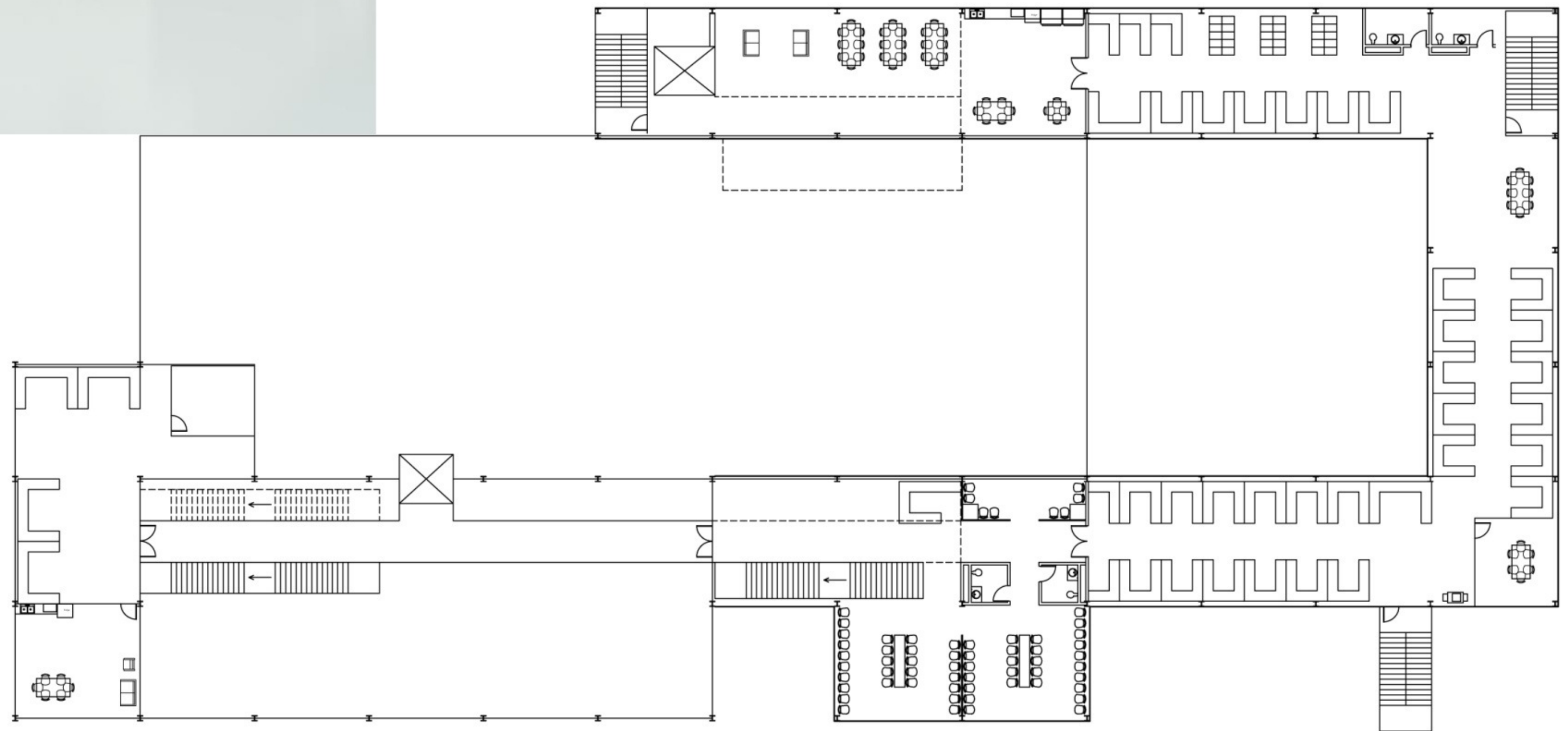
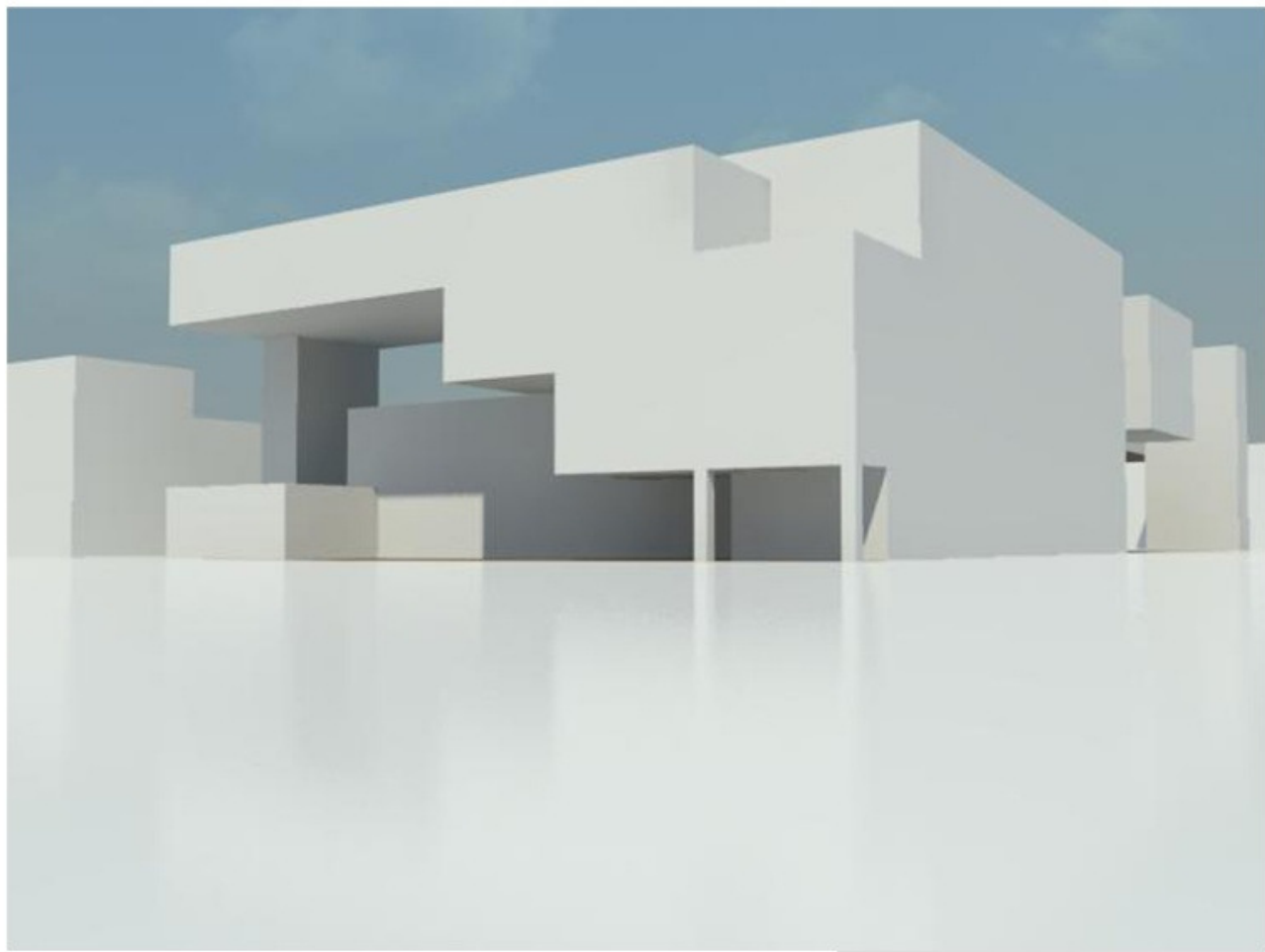
THIRD FLOOR



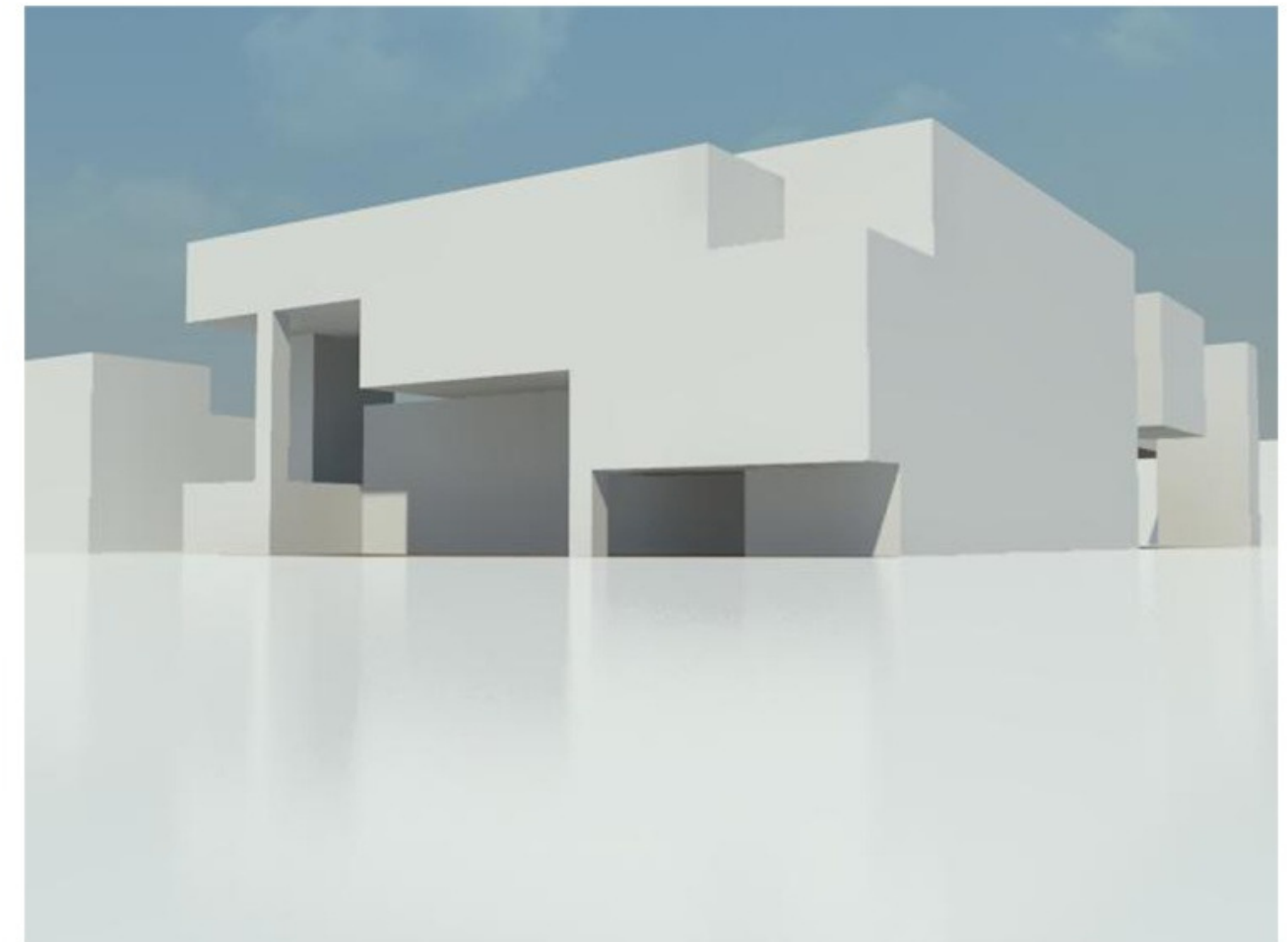
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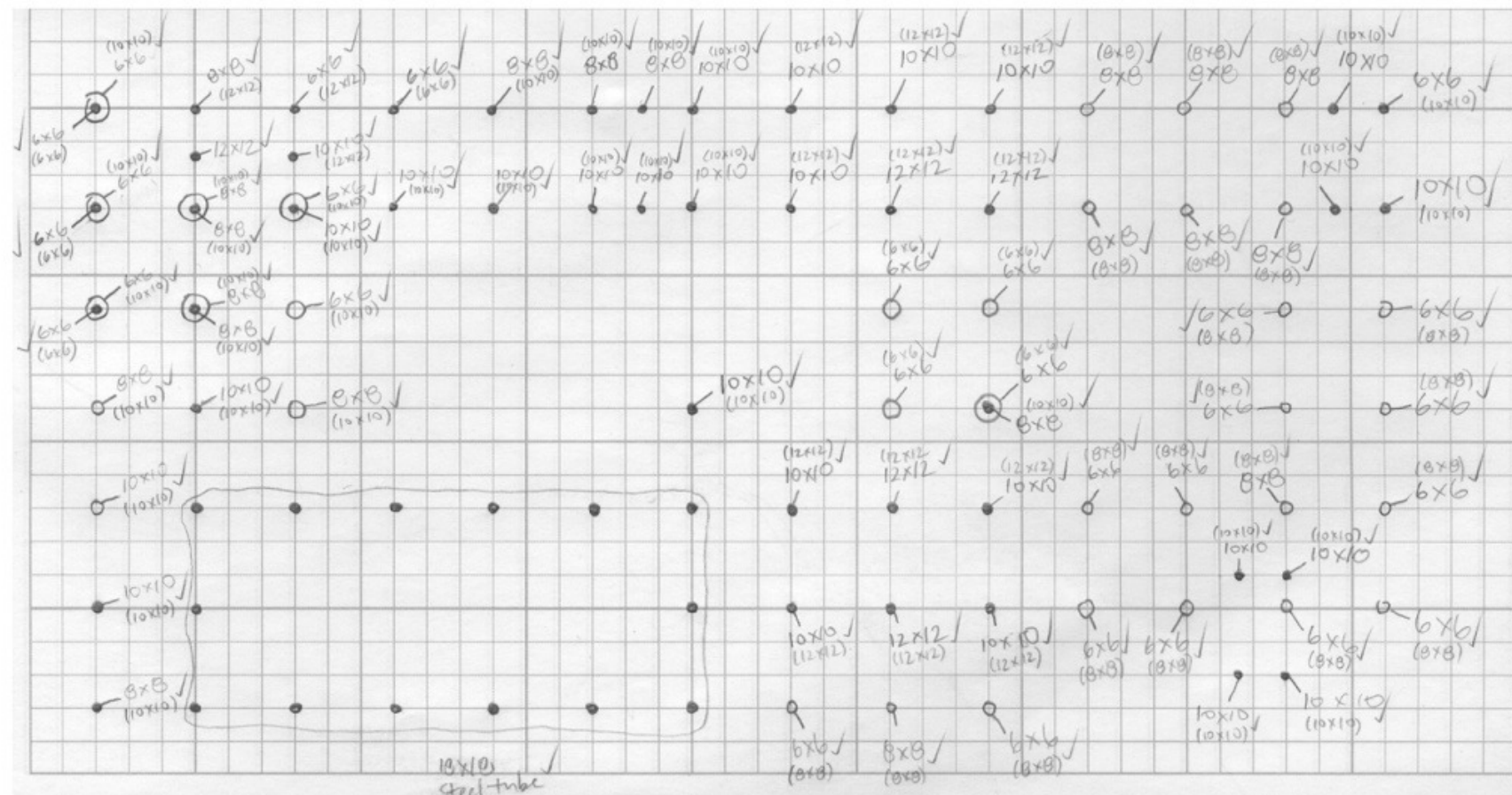
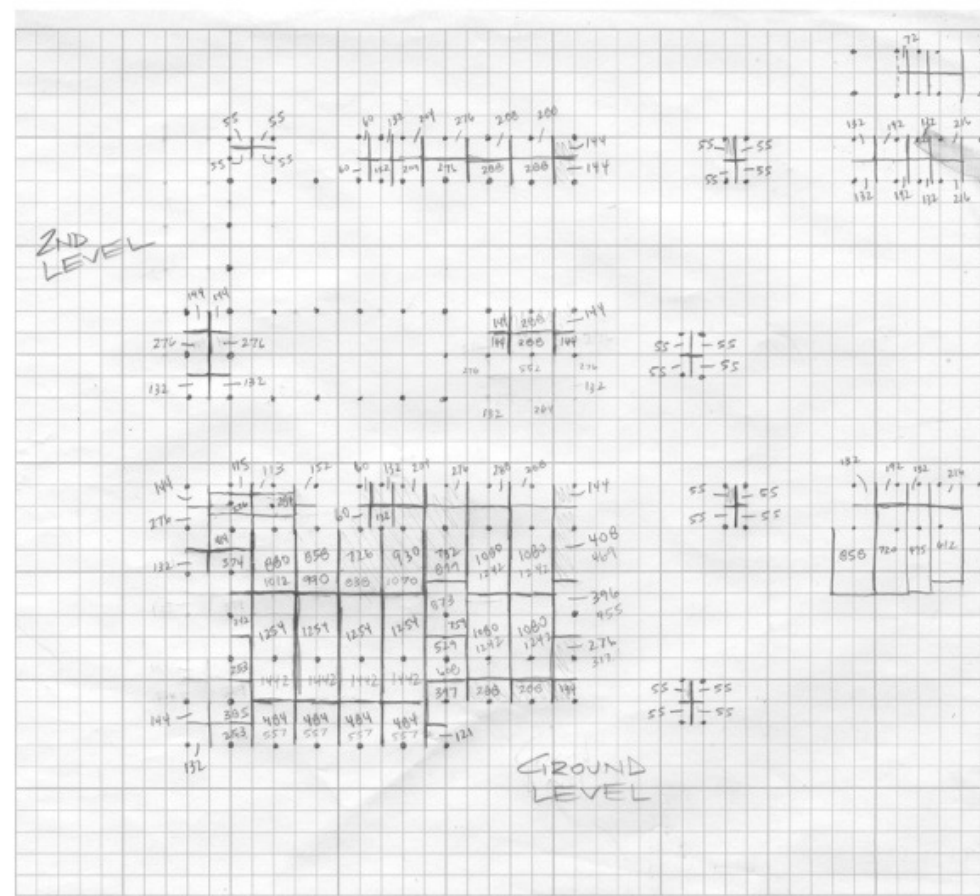
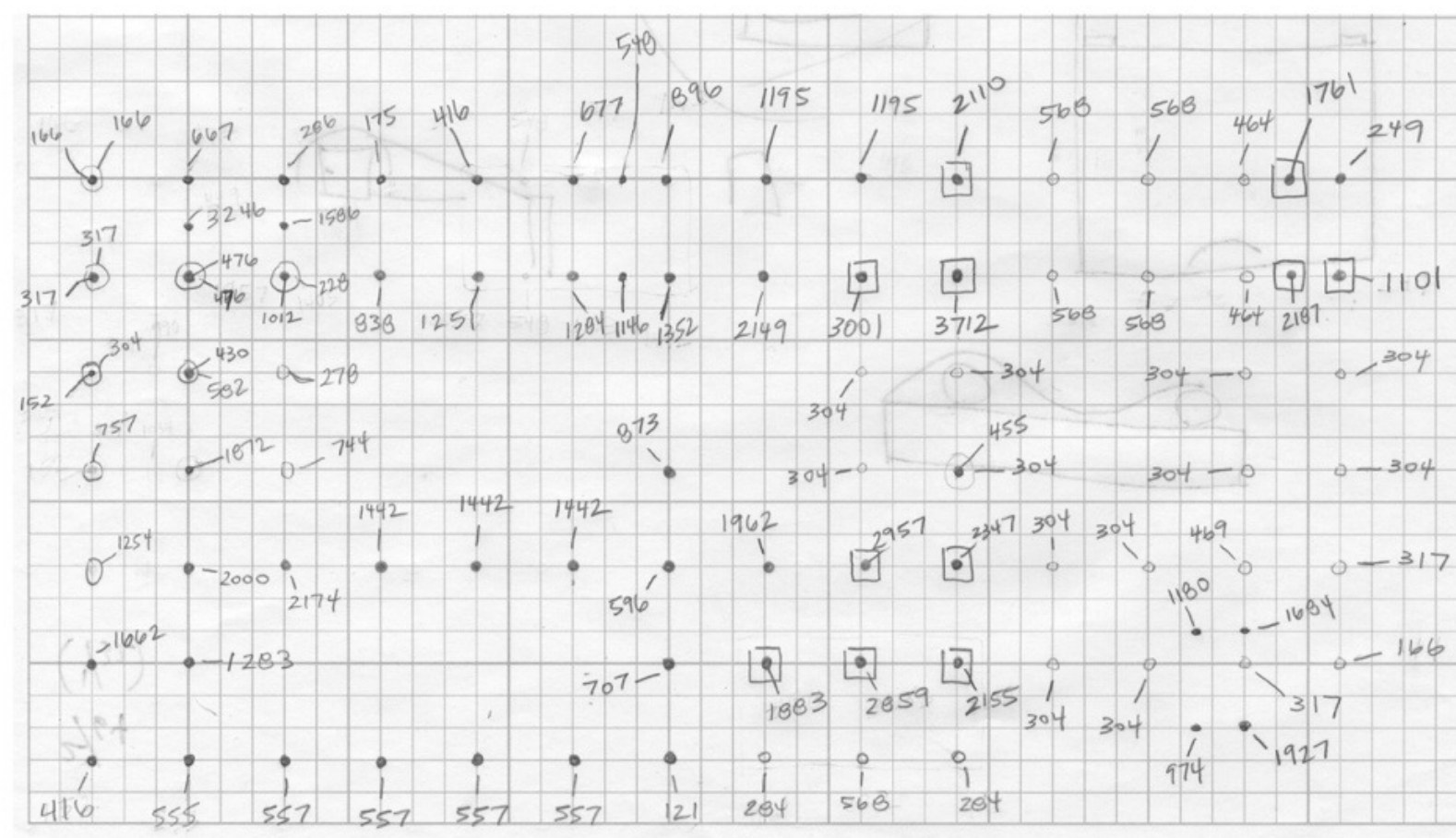
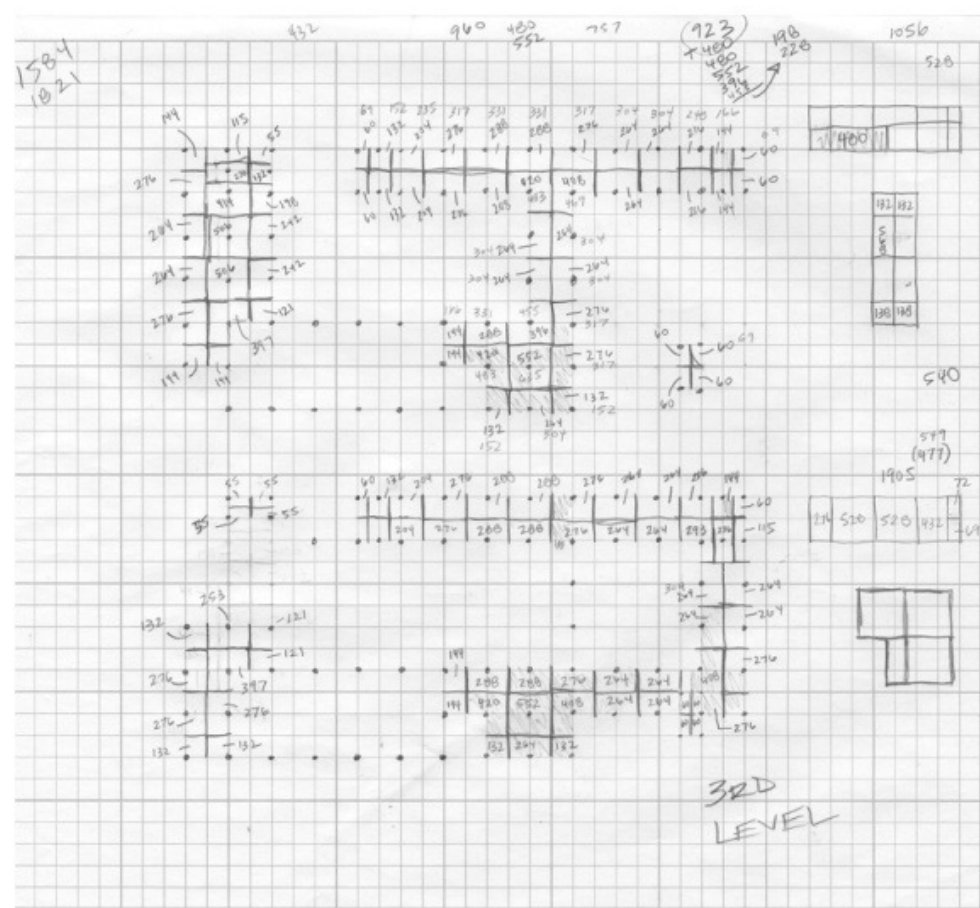
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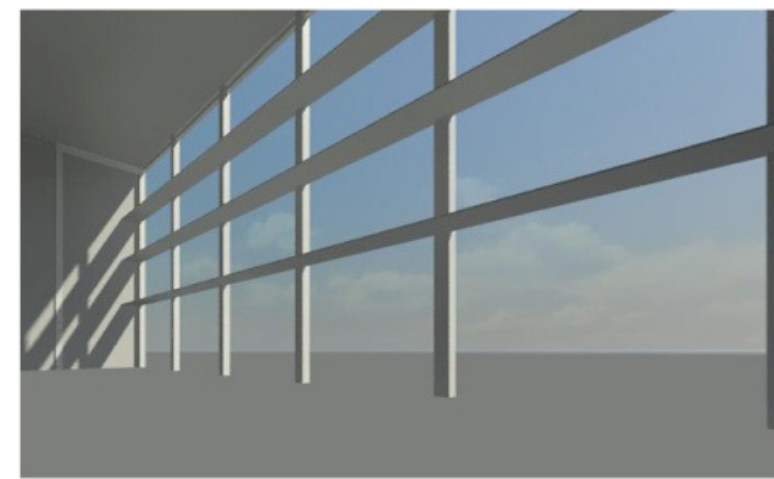
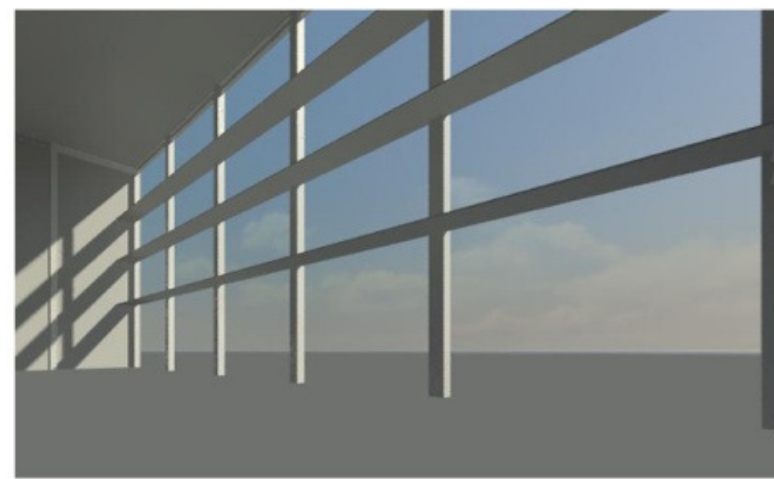
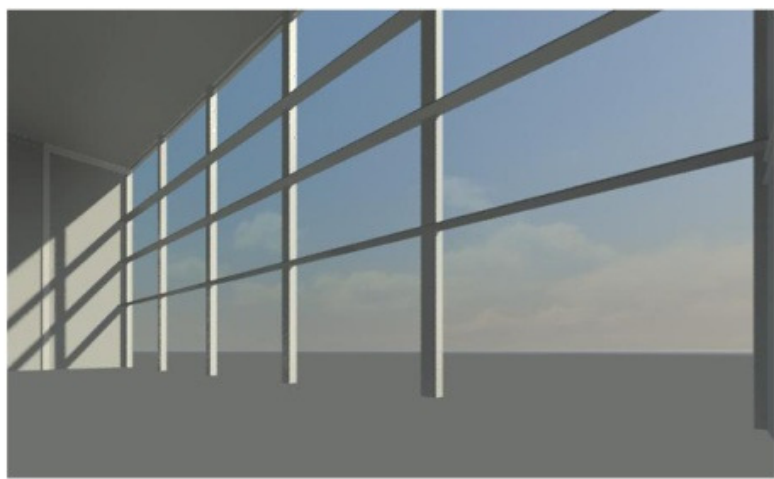
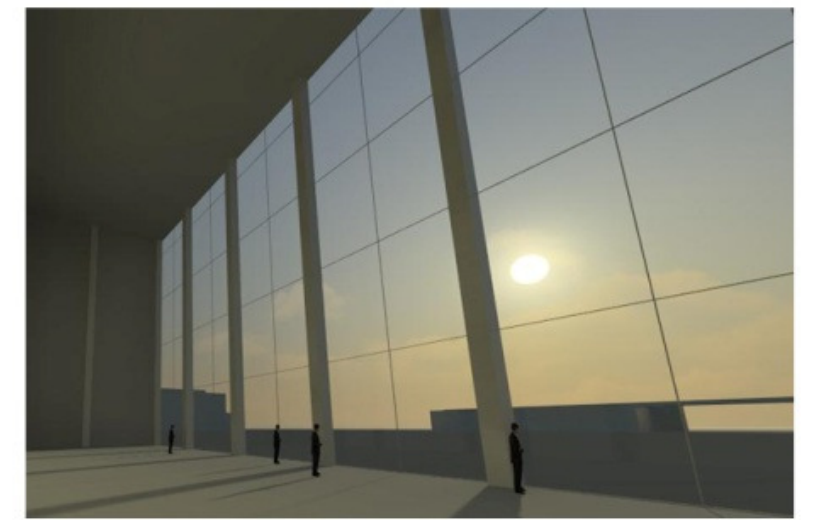
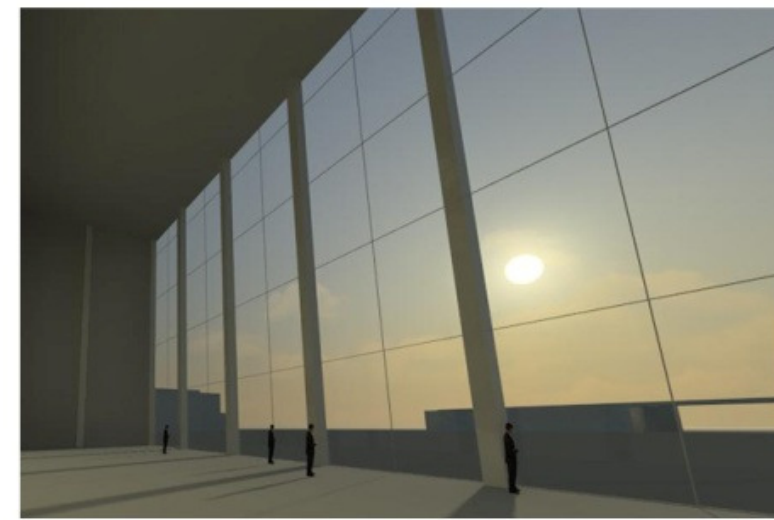
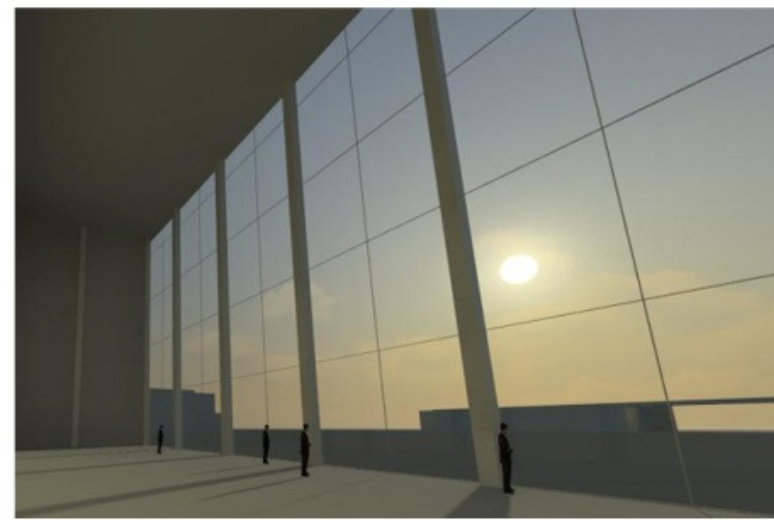
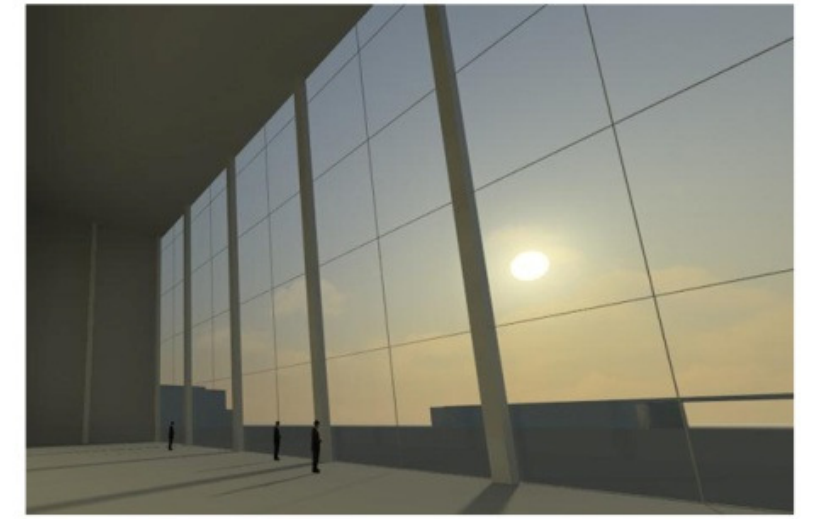
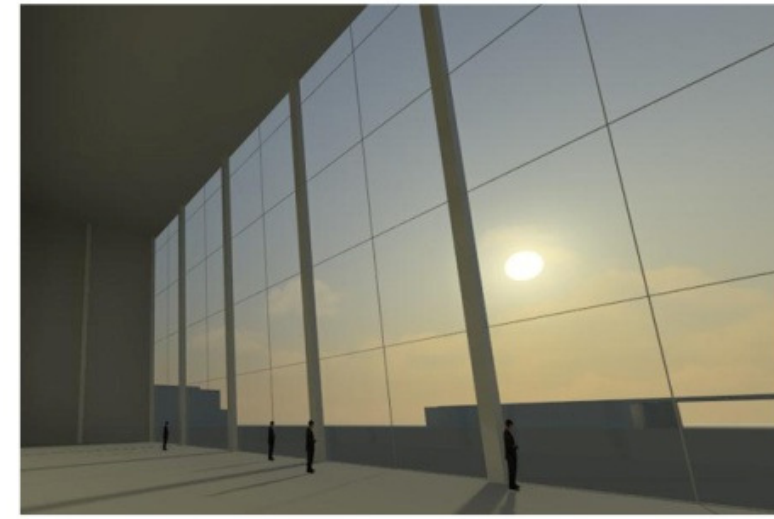
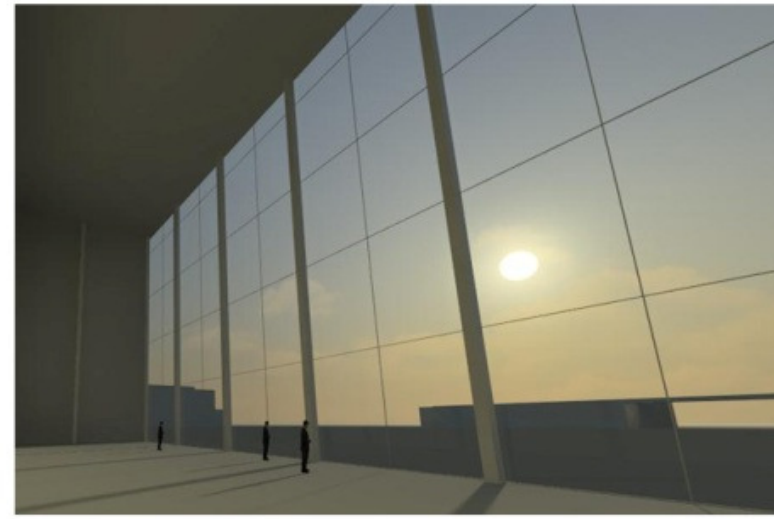
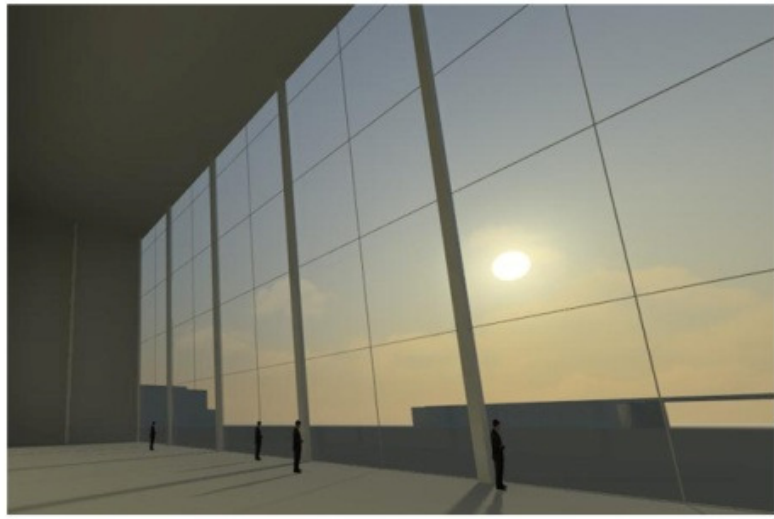
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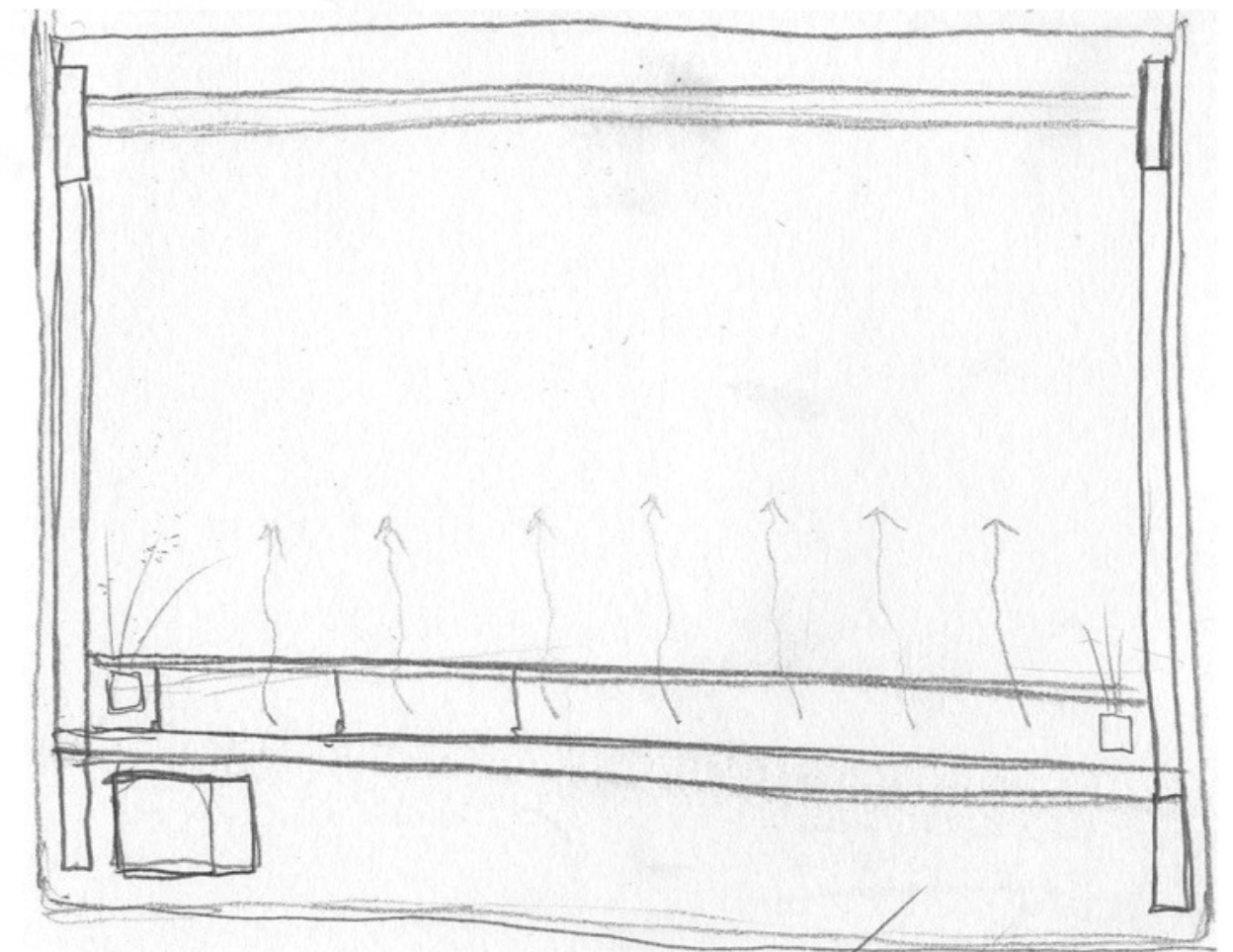
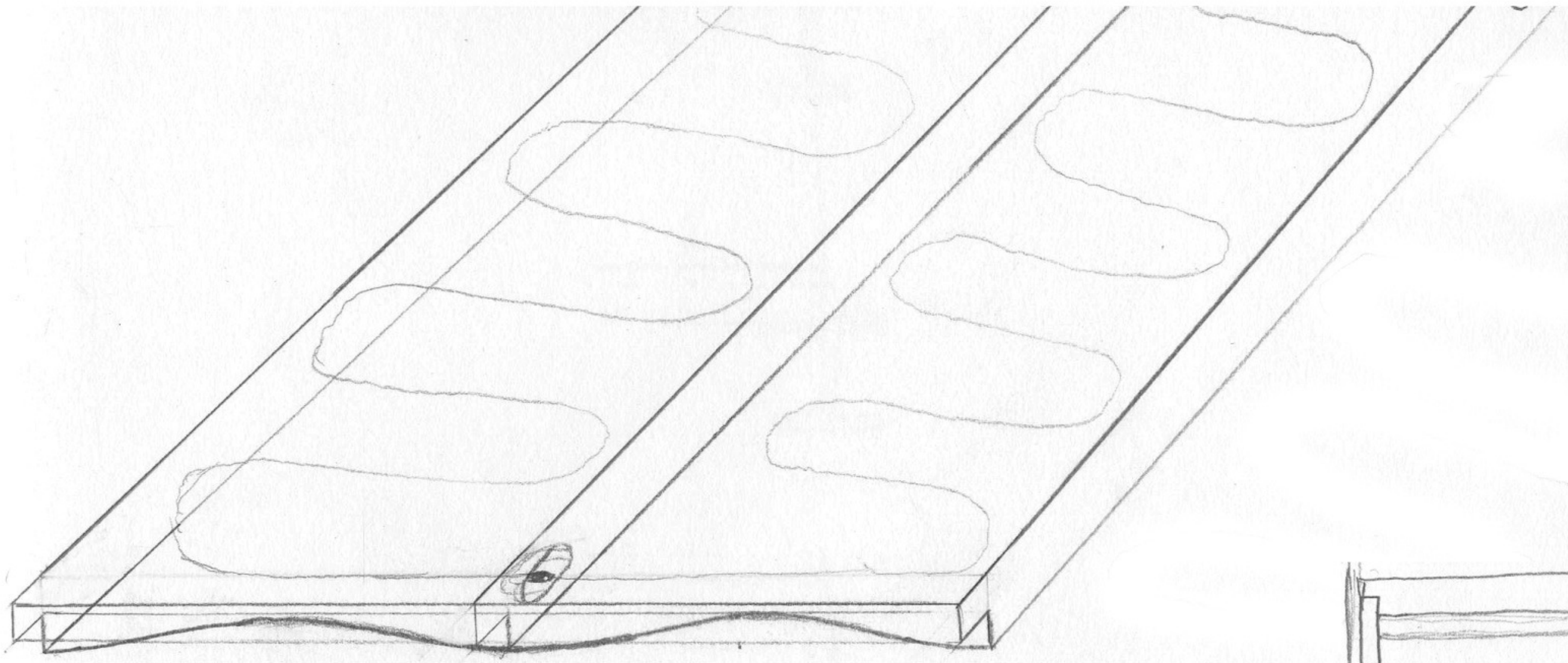
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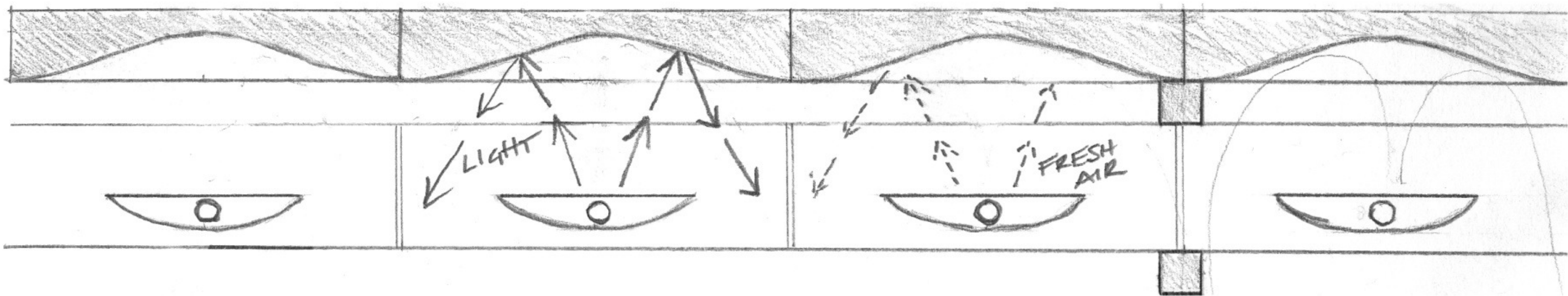
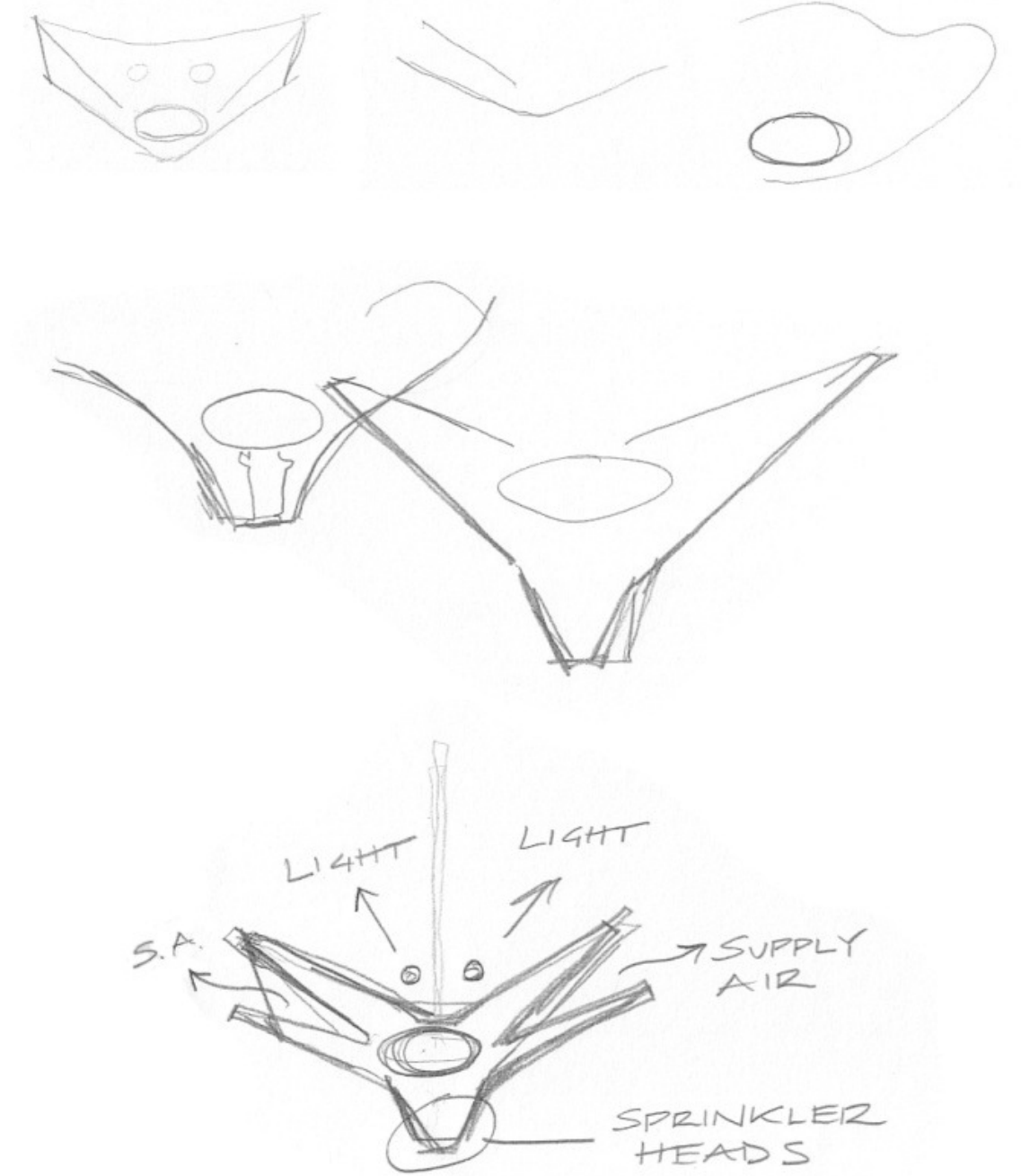
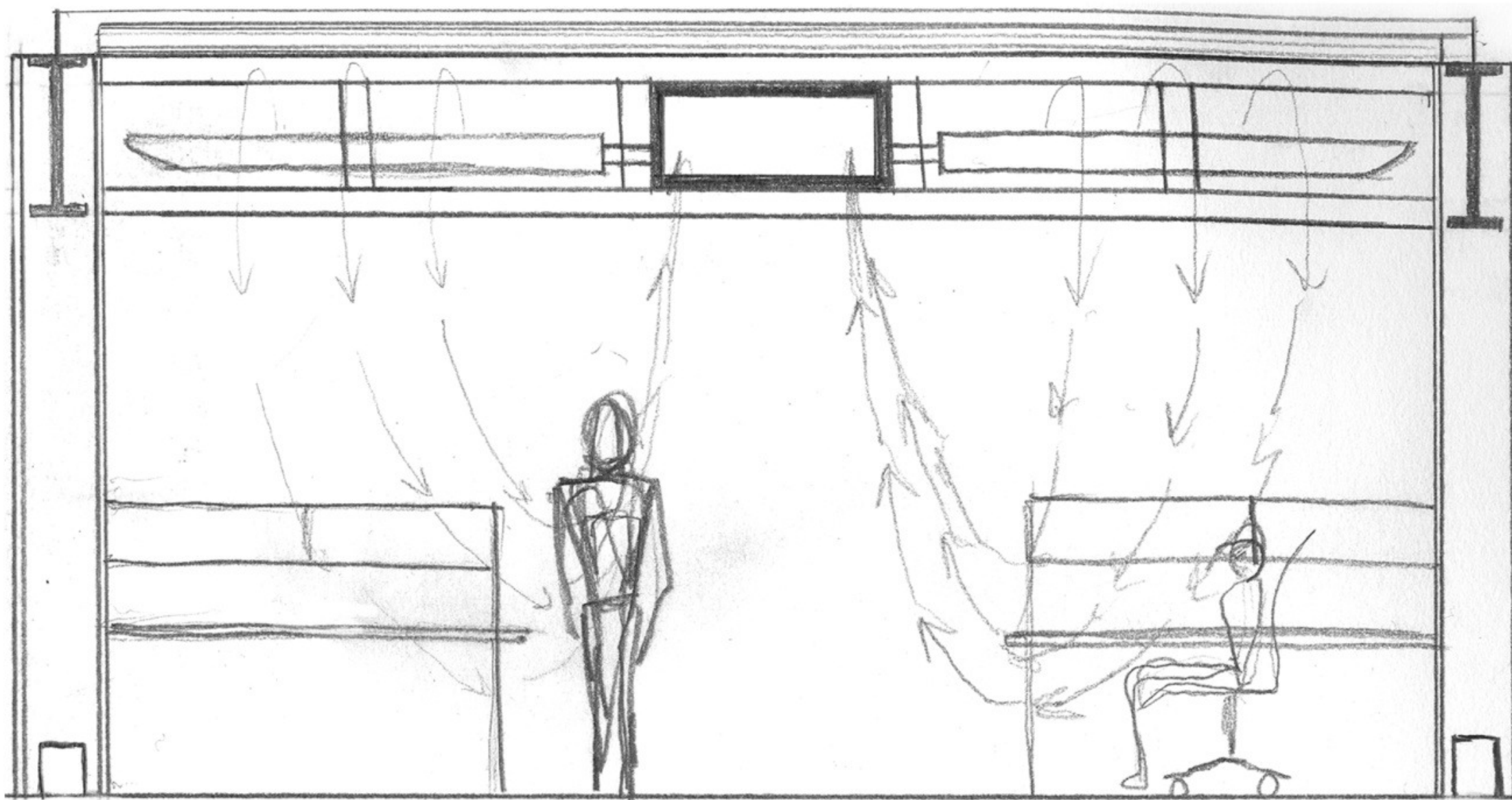
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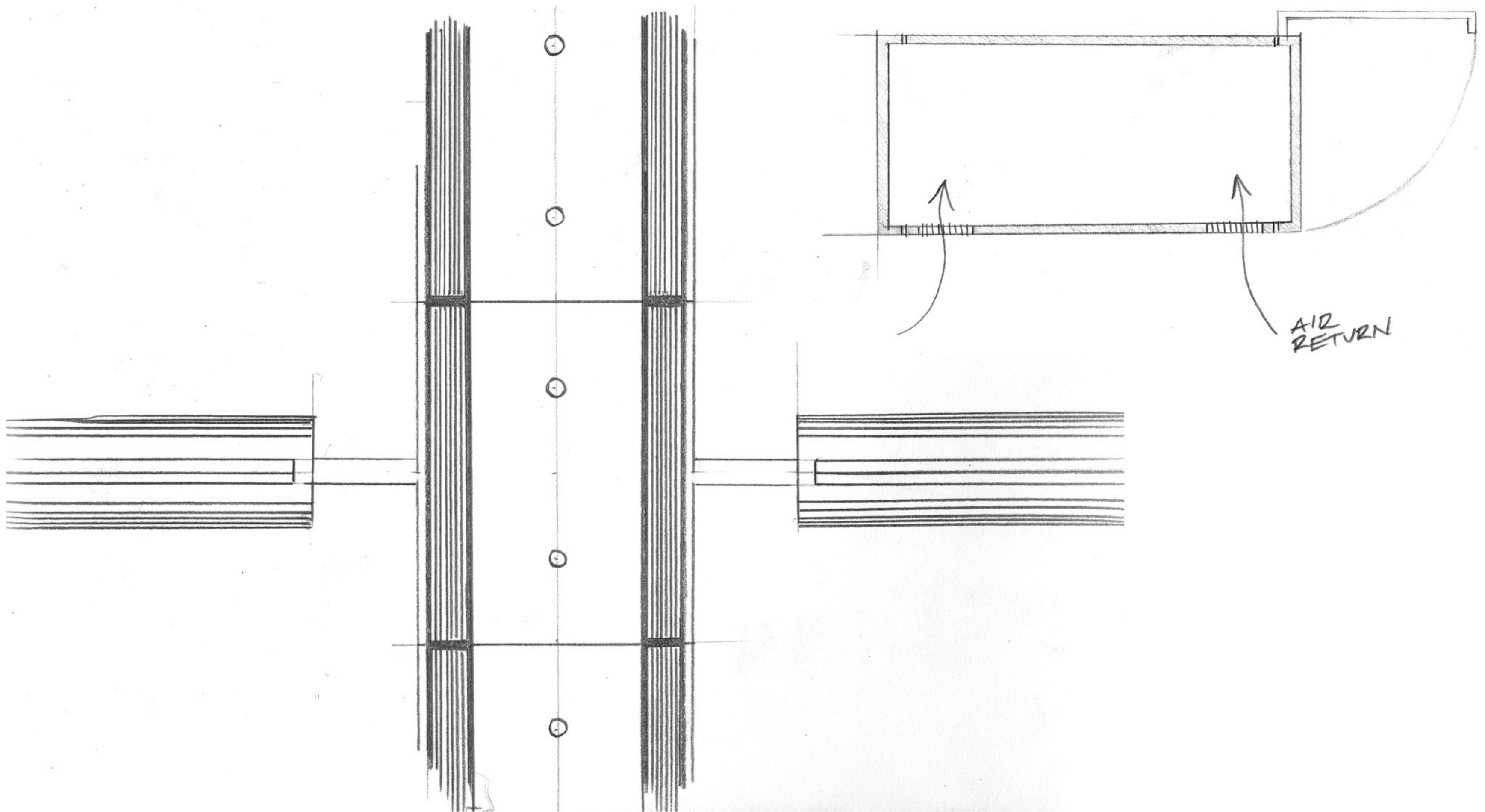
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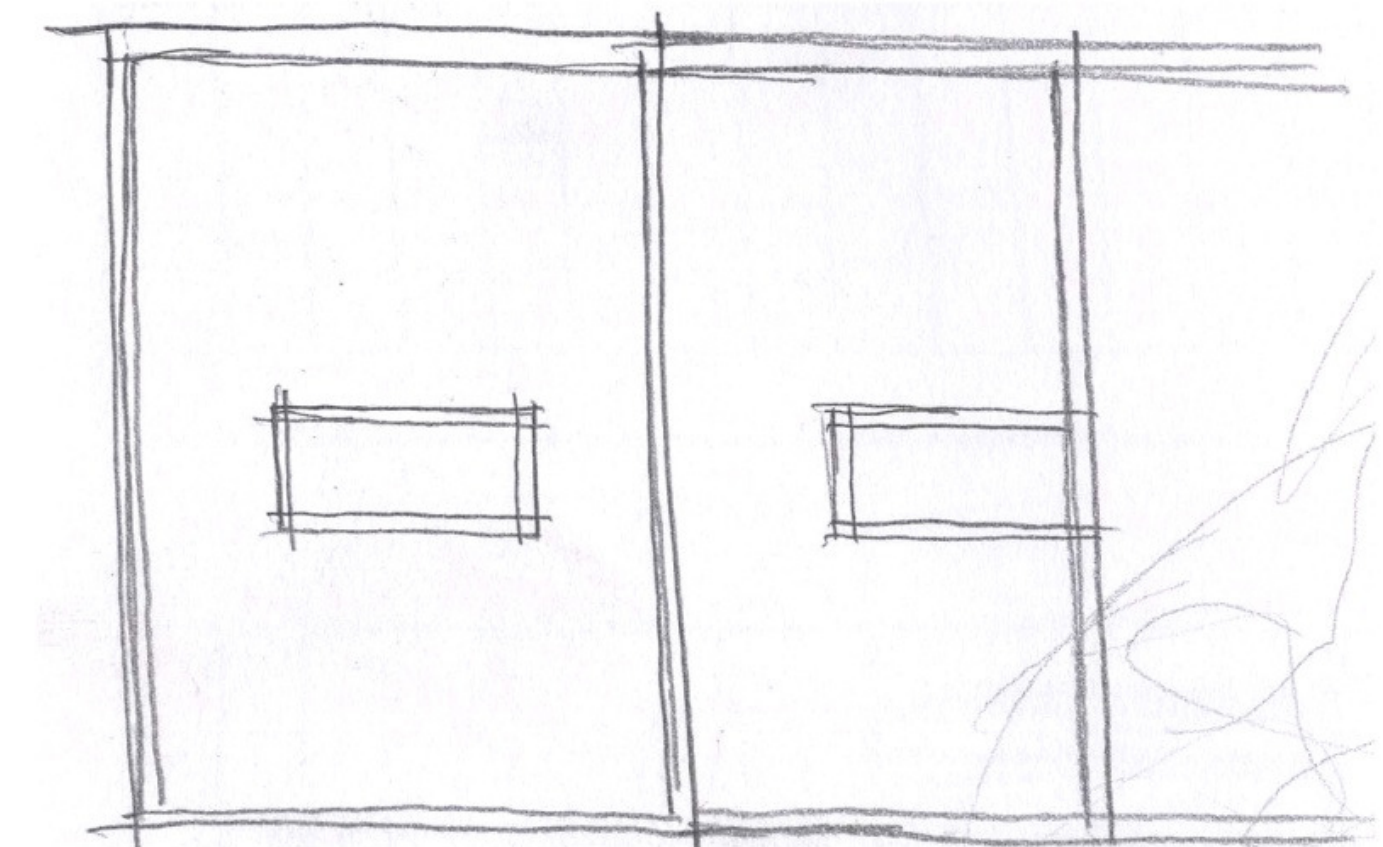
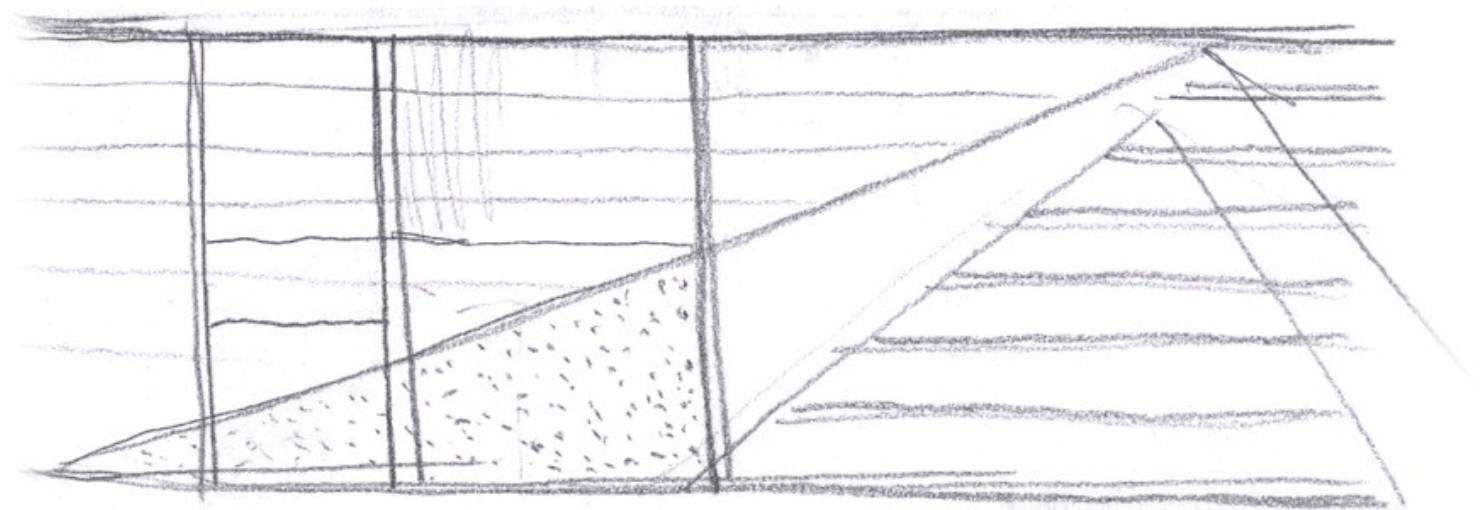
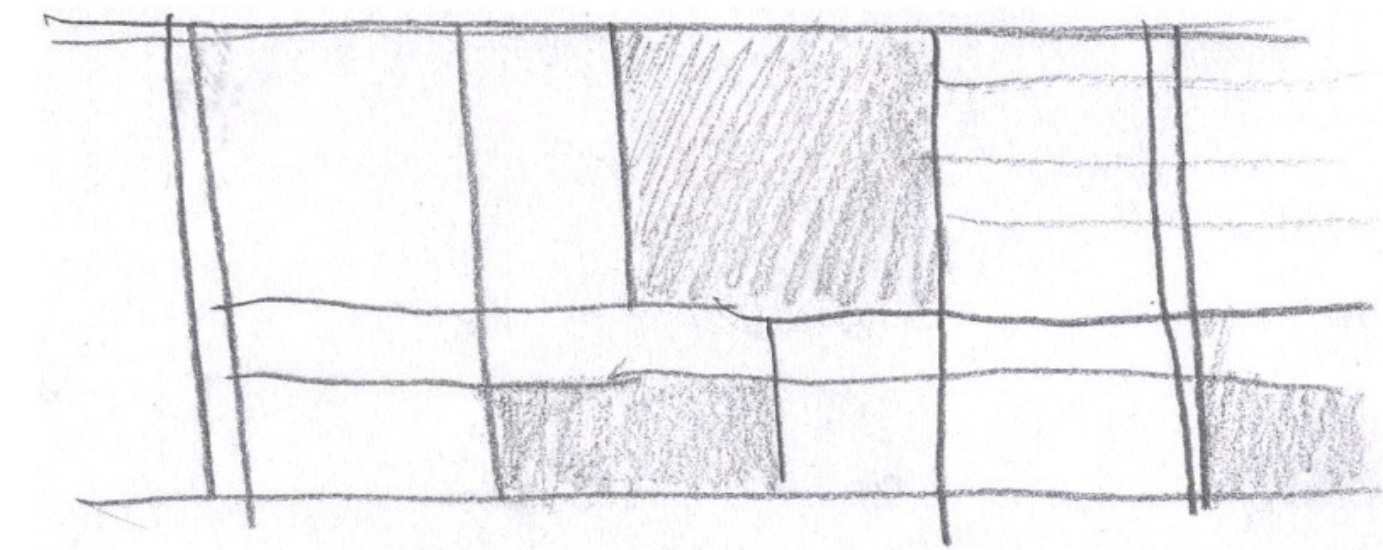
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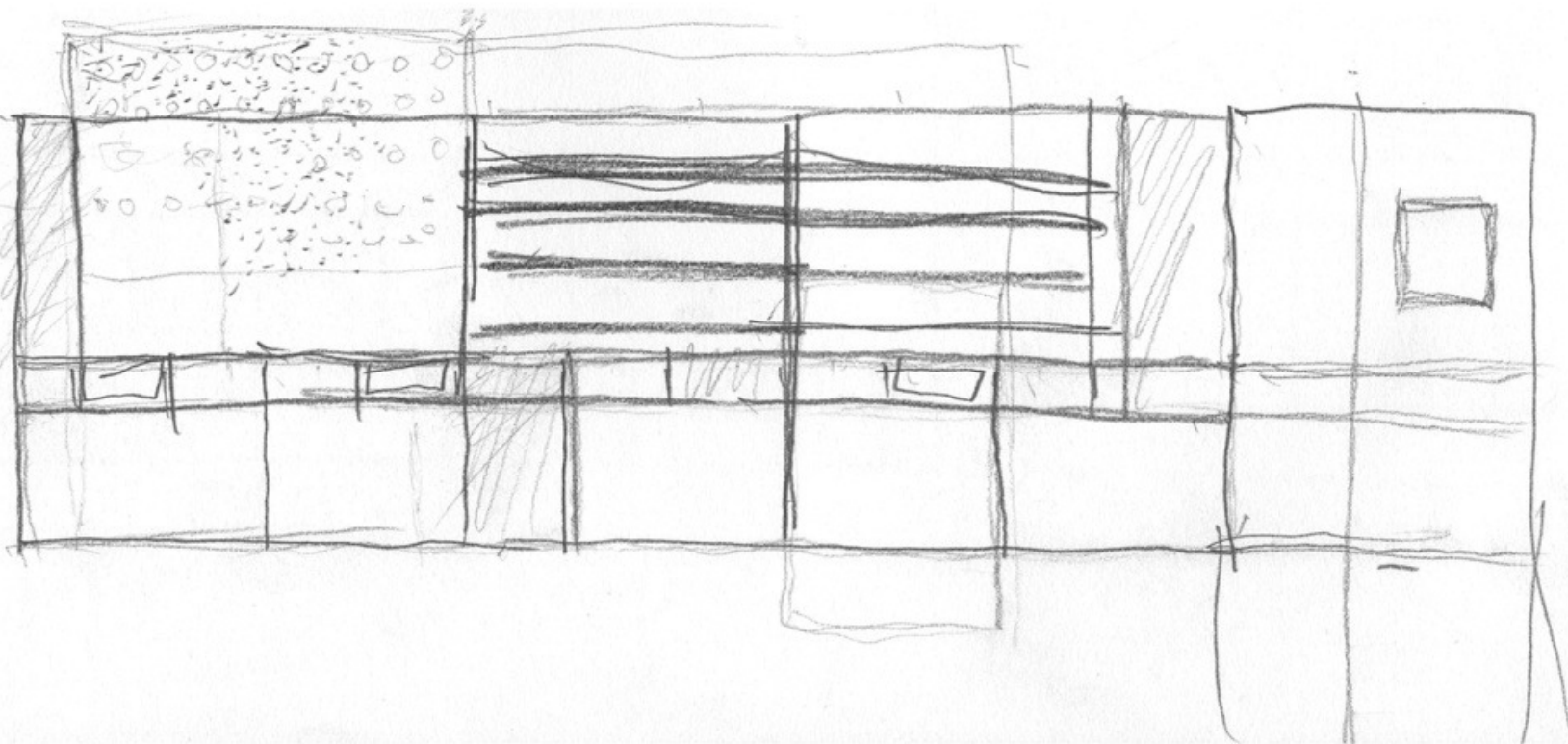
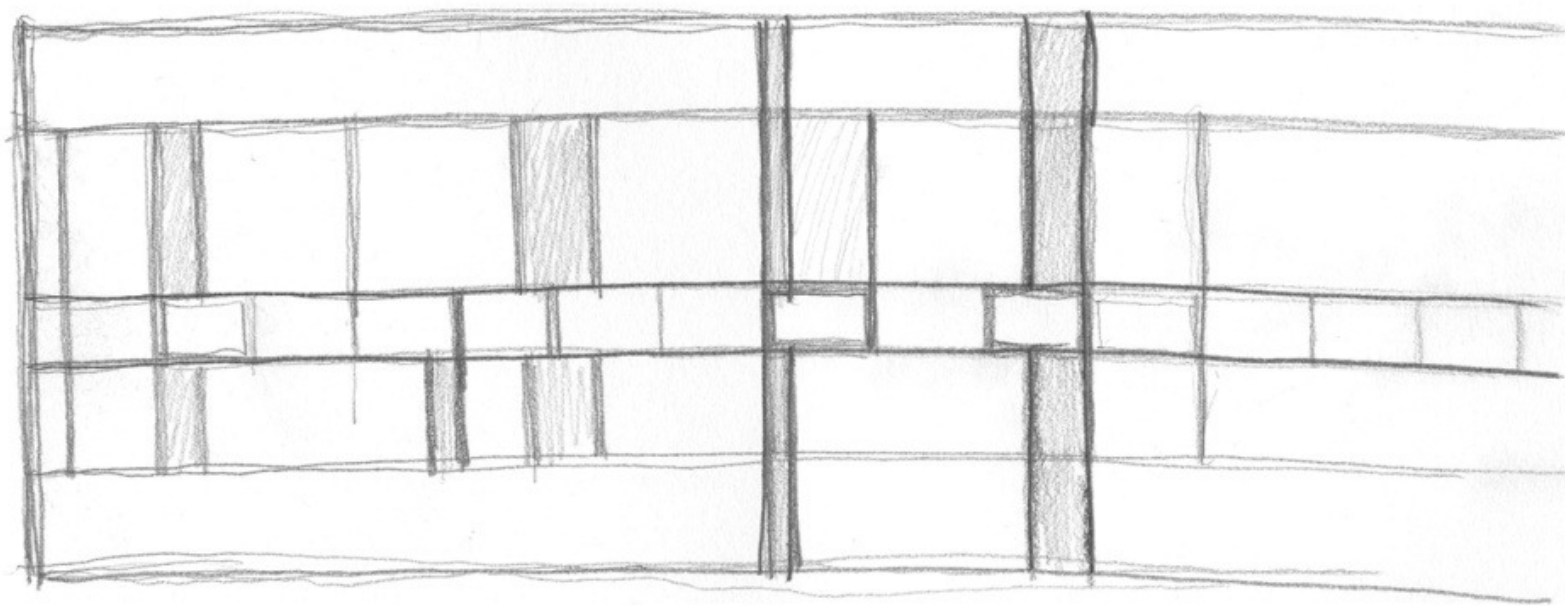
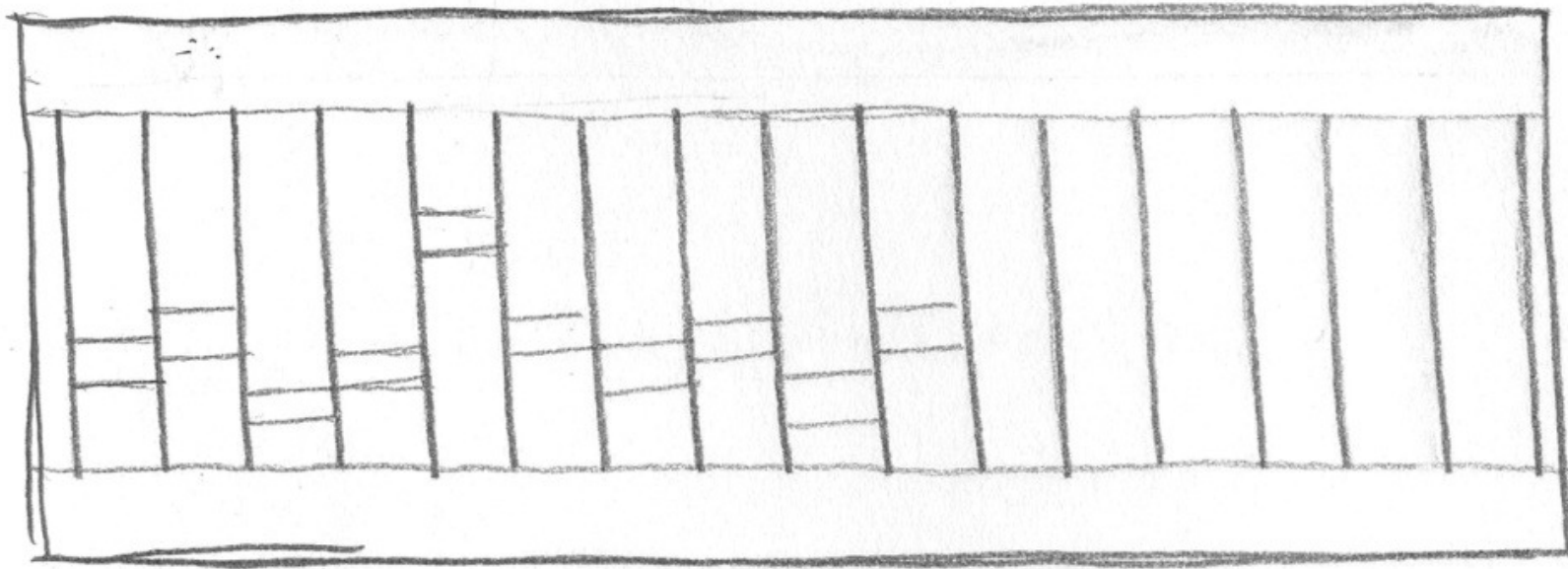
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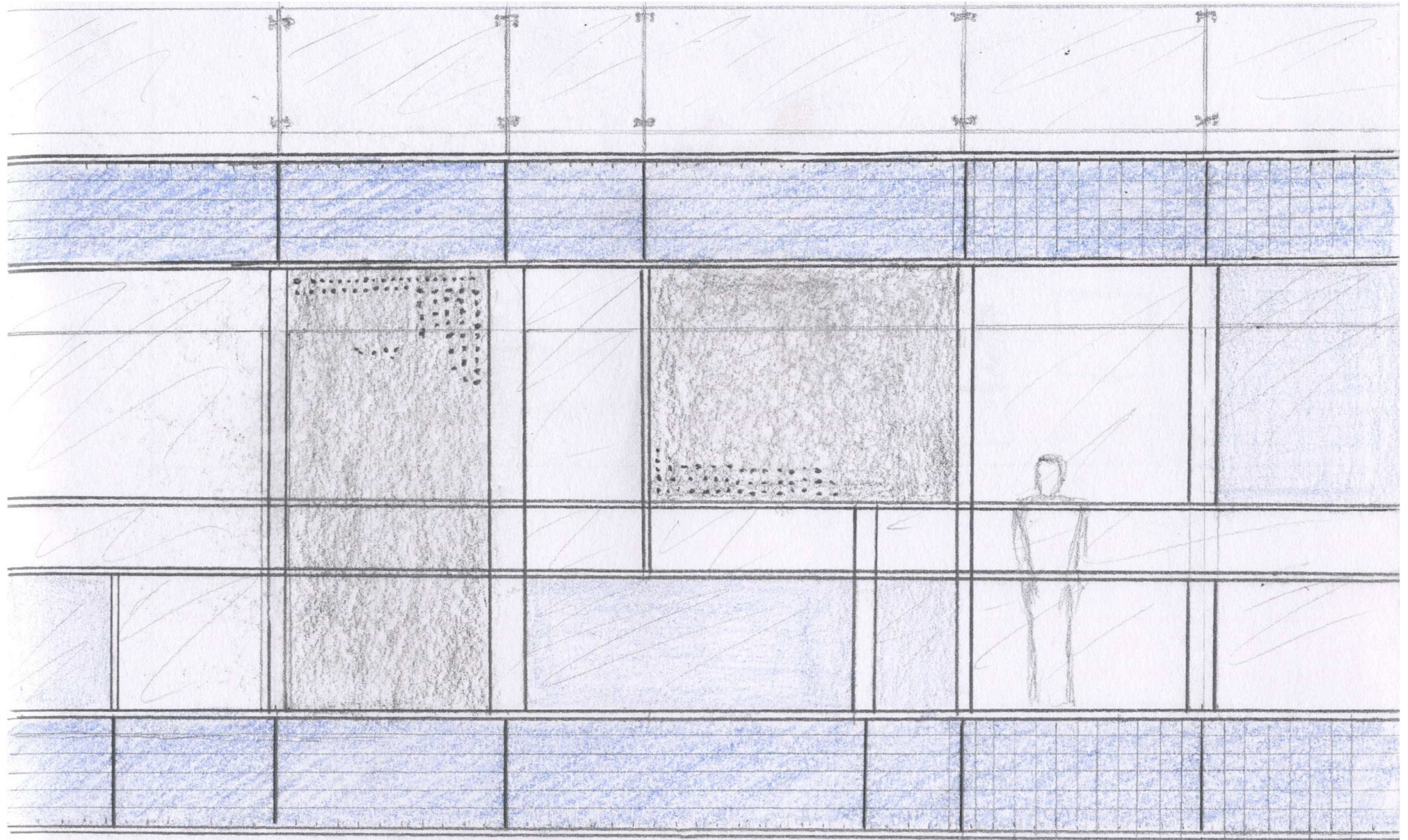
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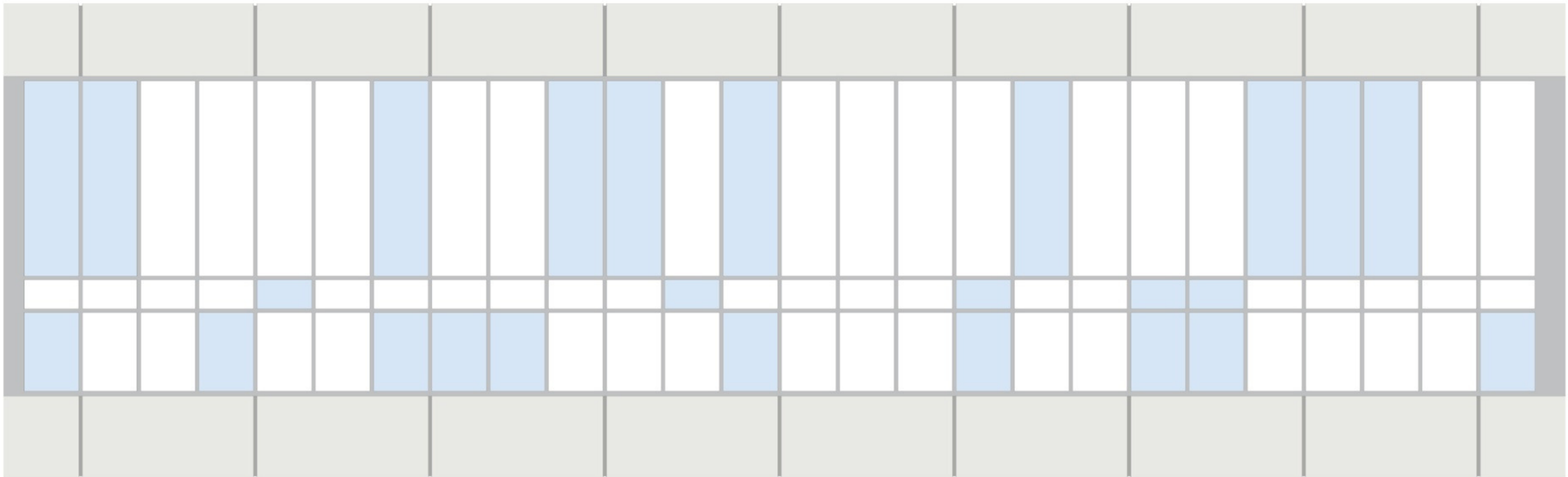
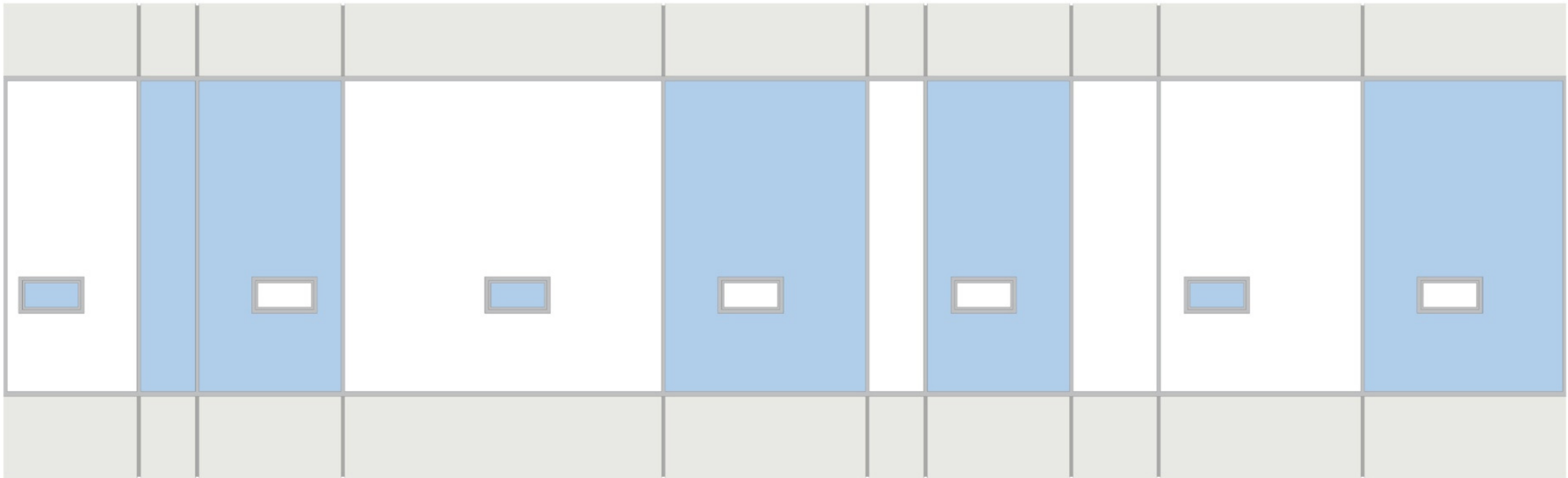
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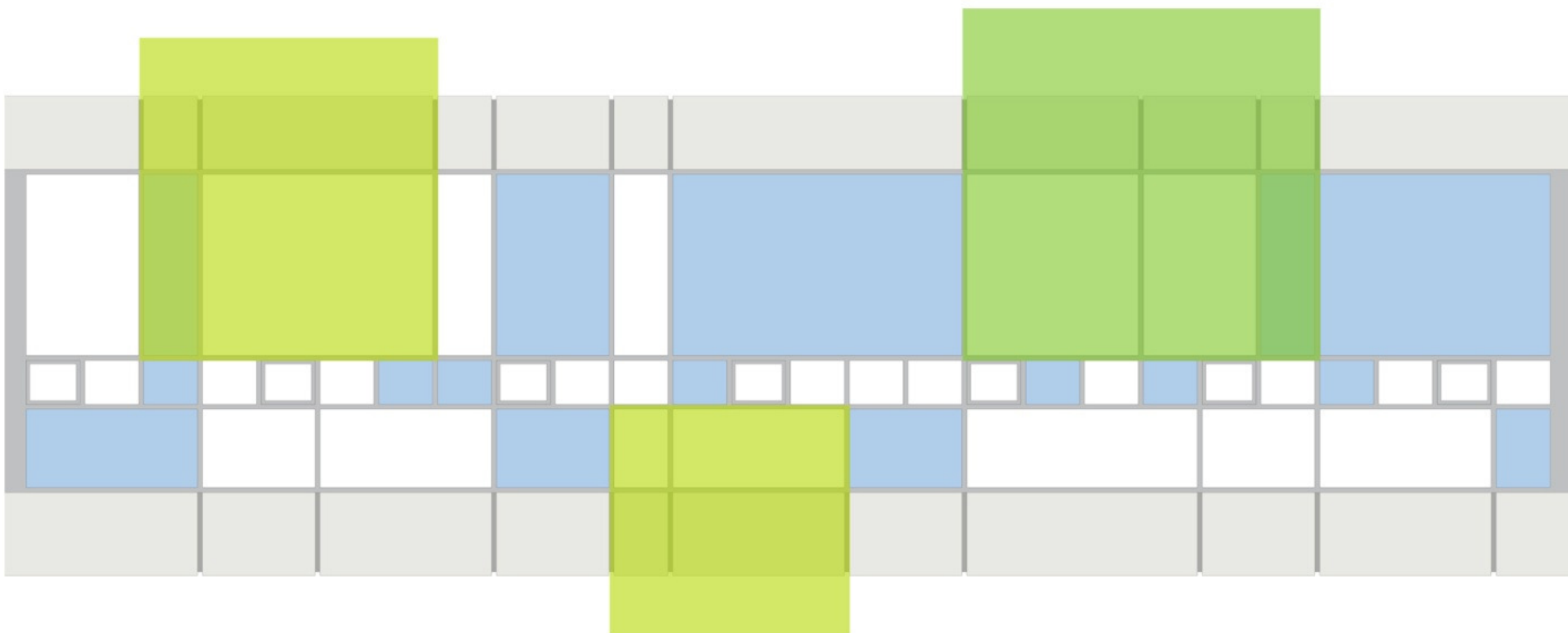
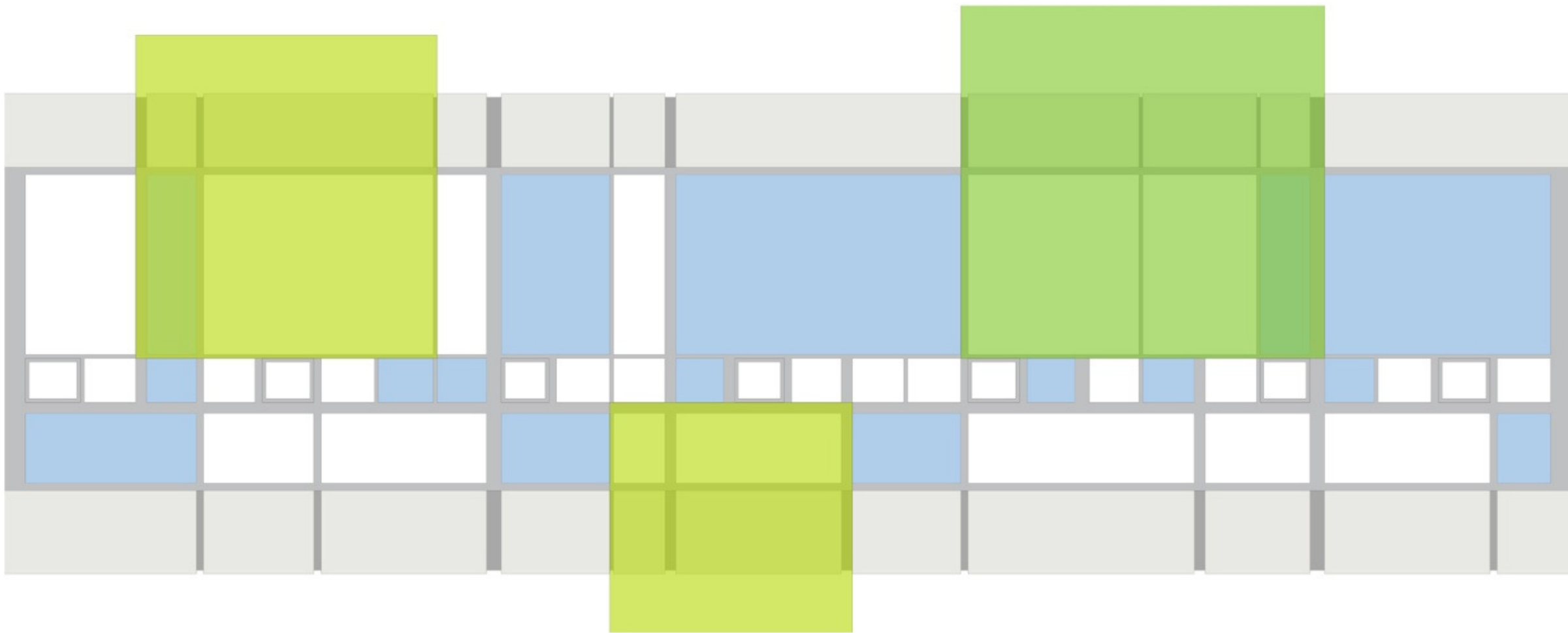
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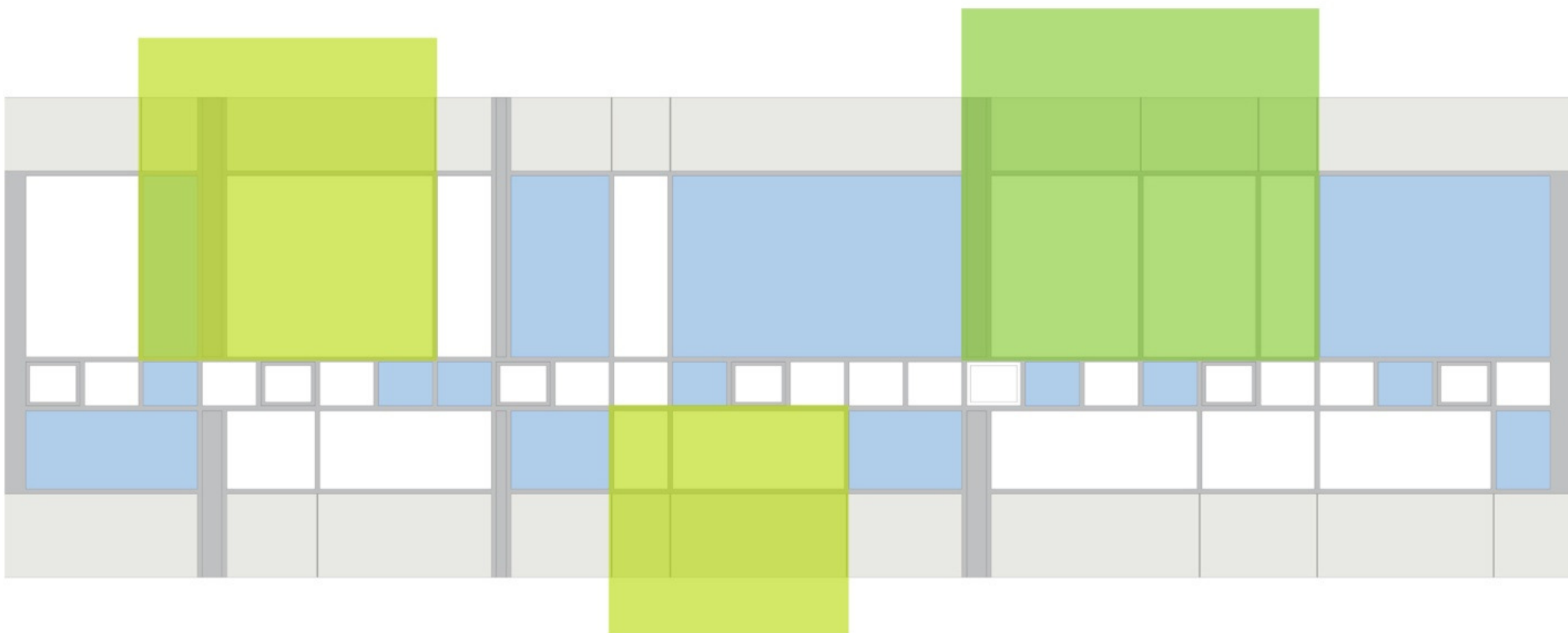
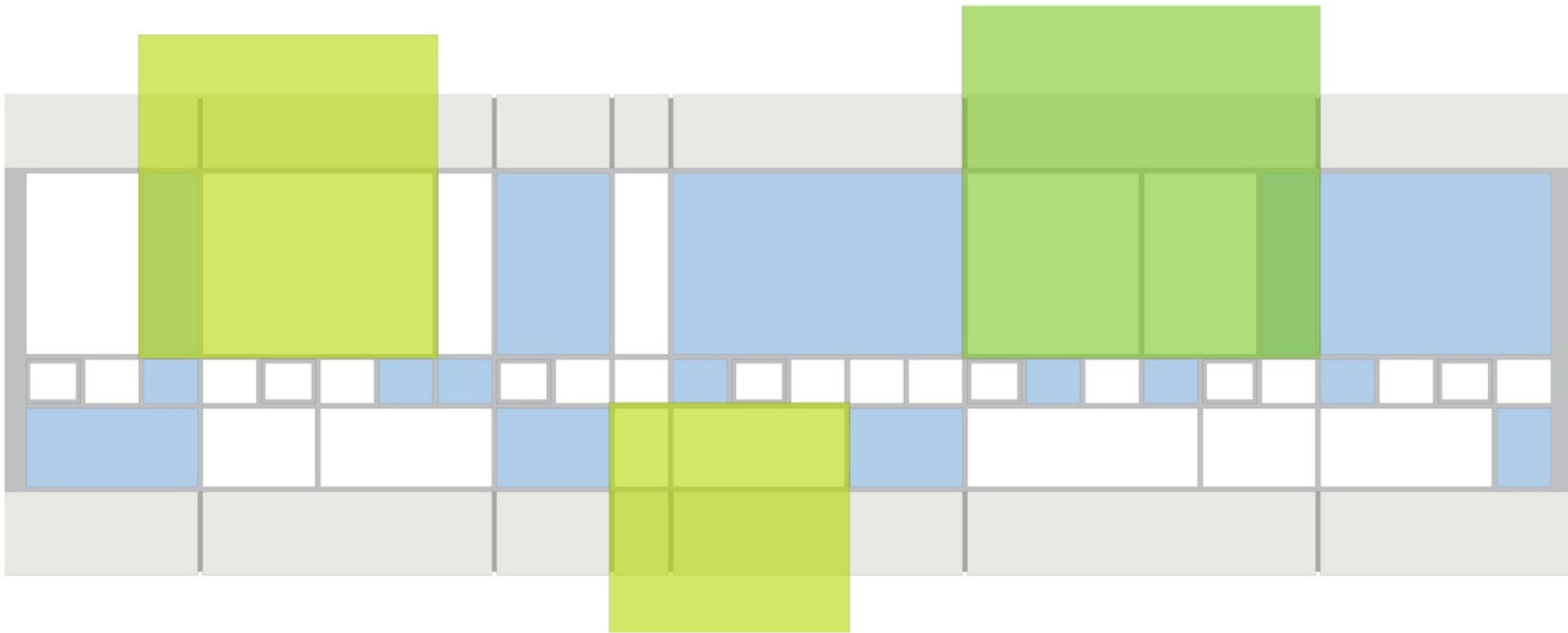
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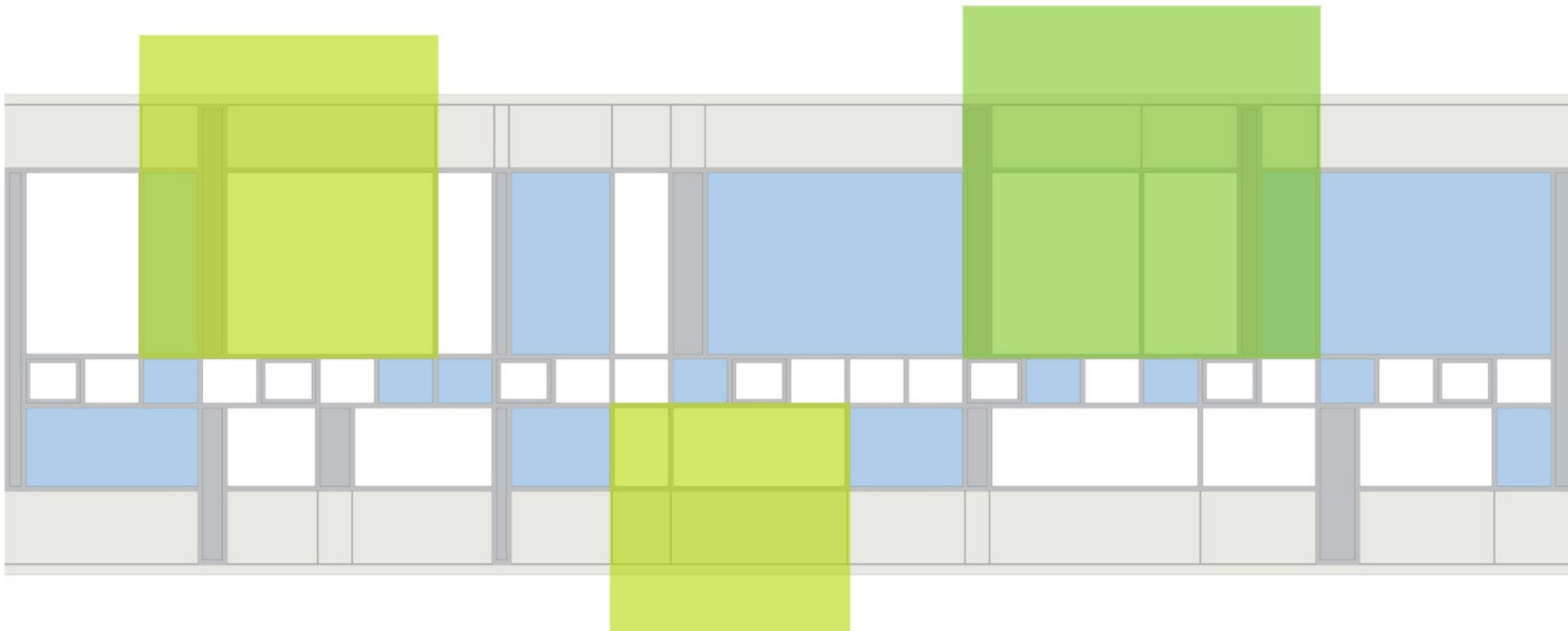
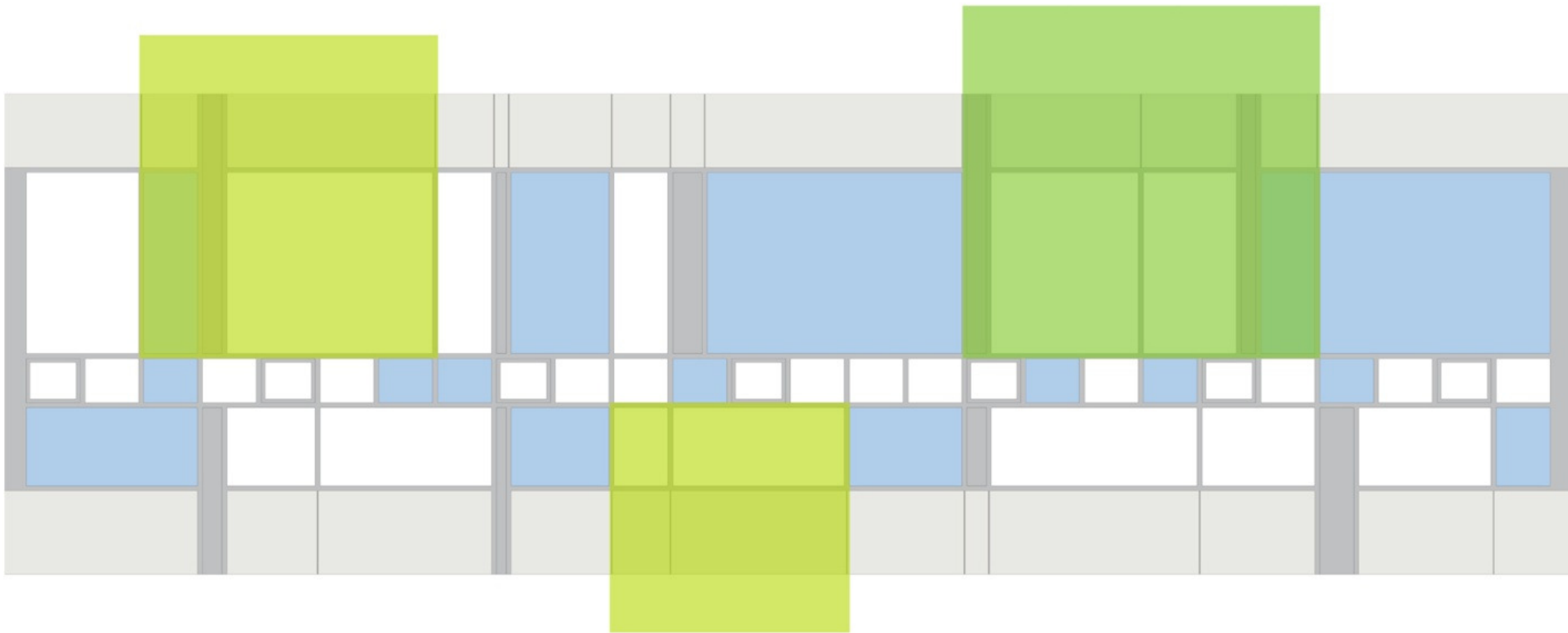
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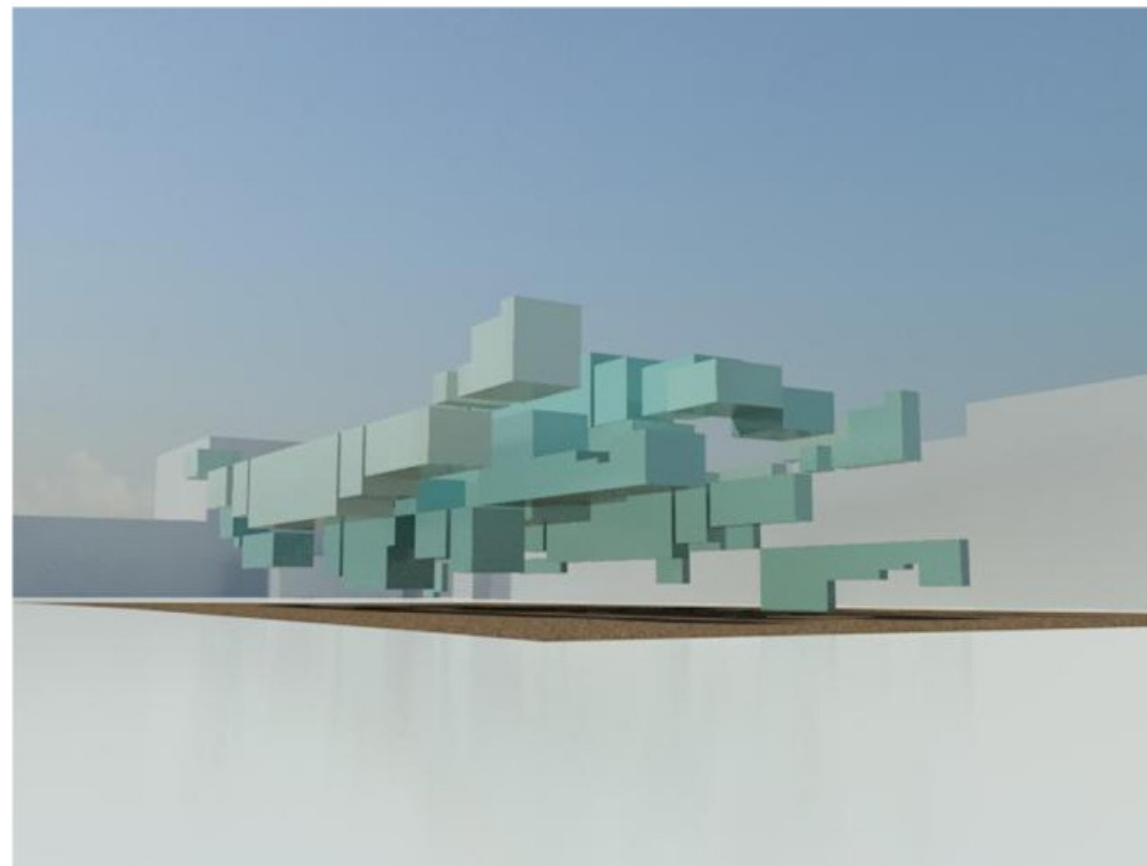
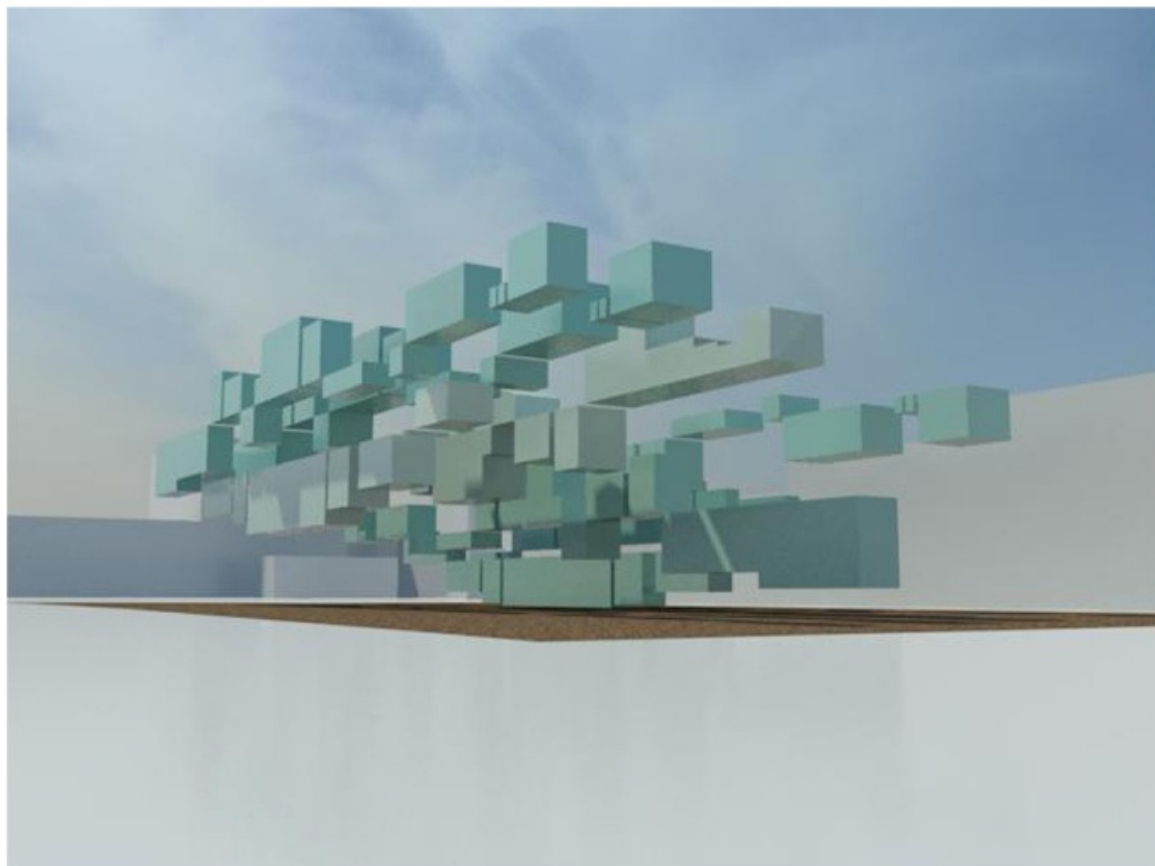
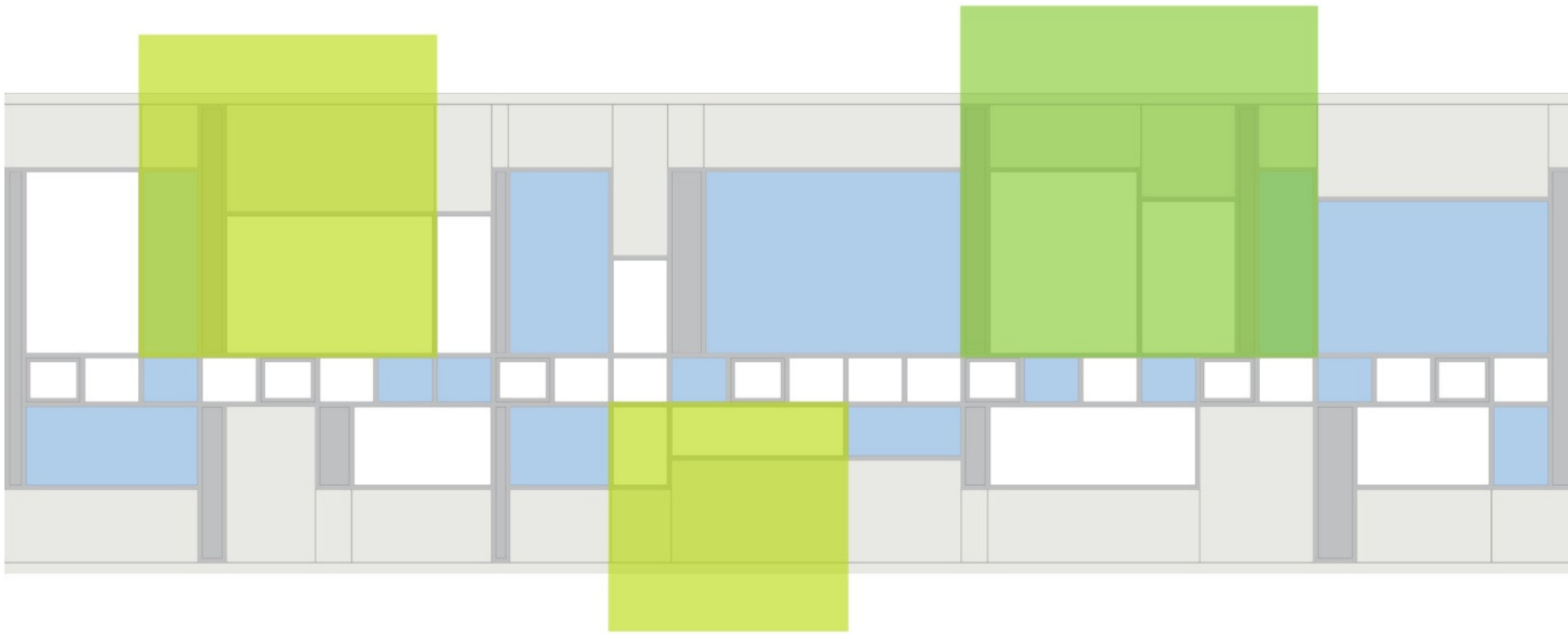
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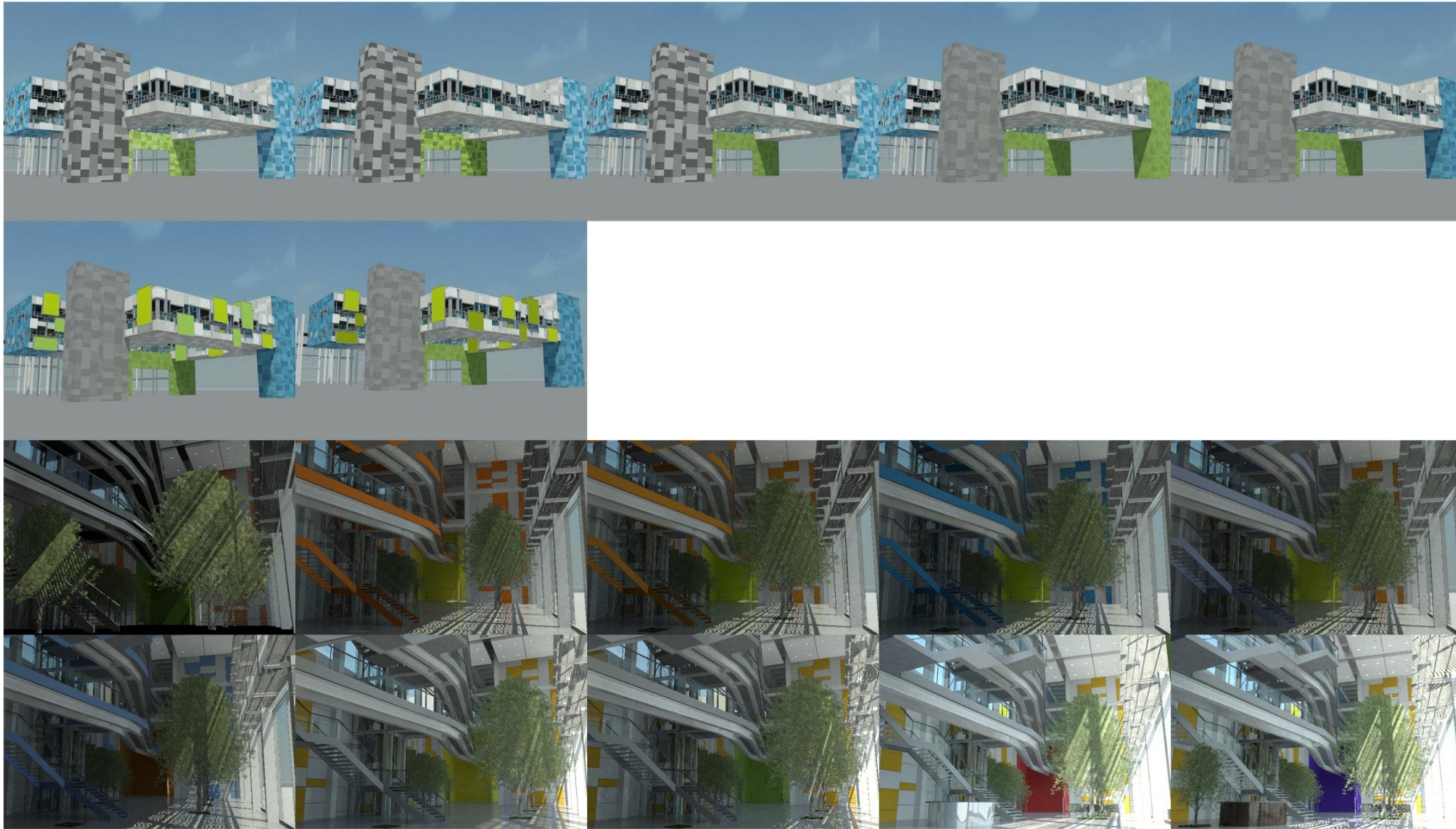
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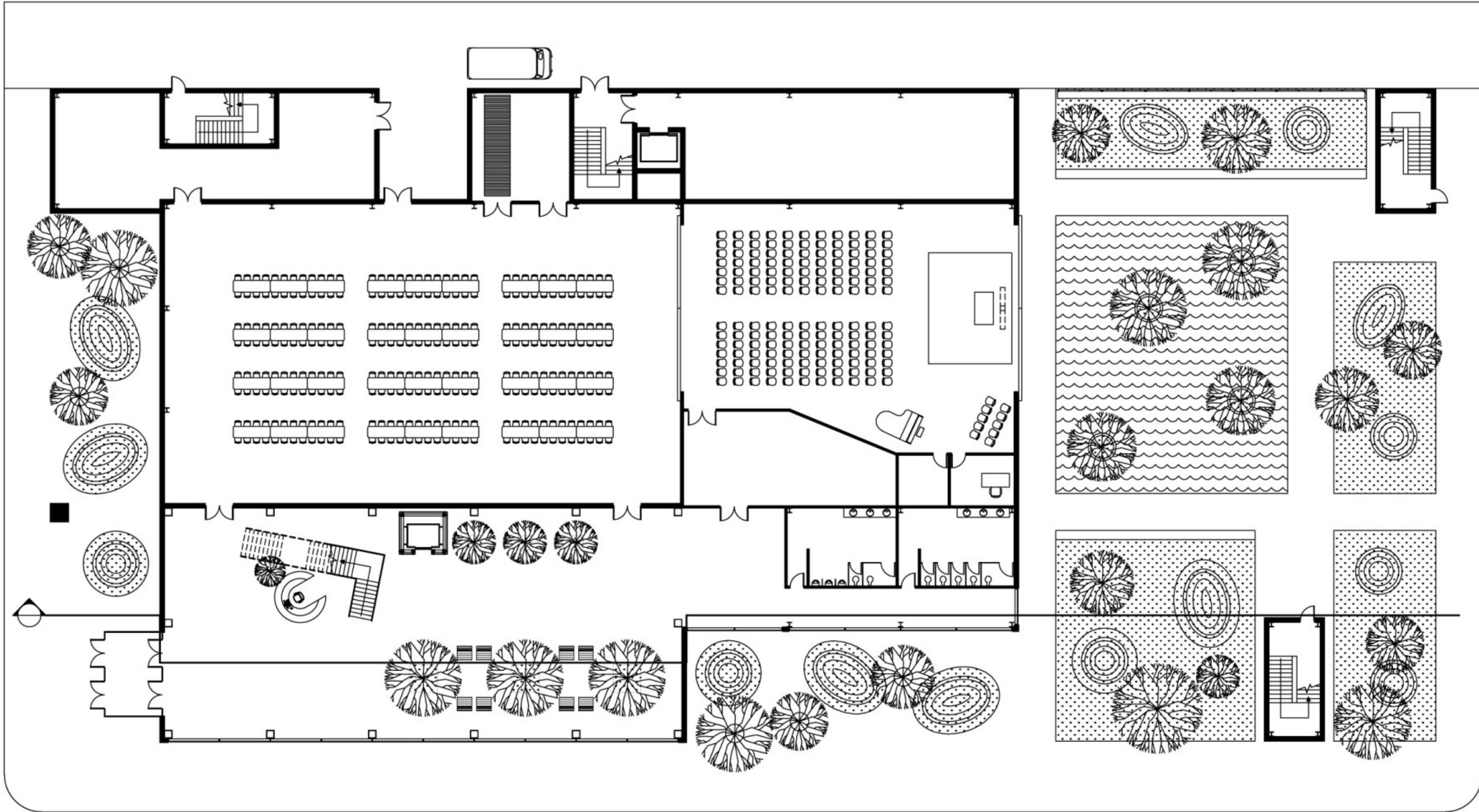
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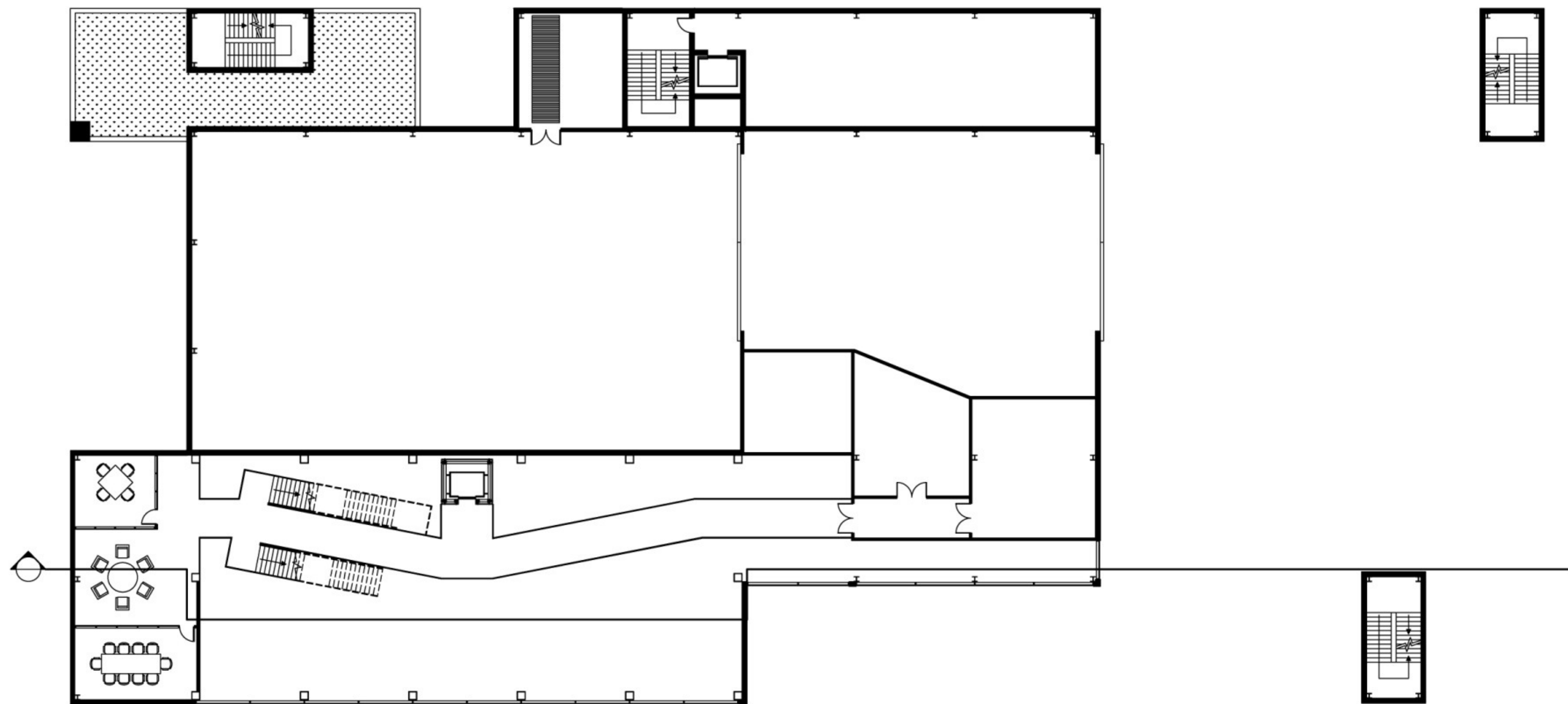
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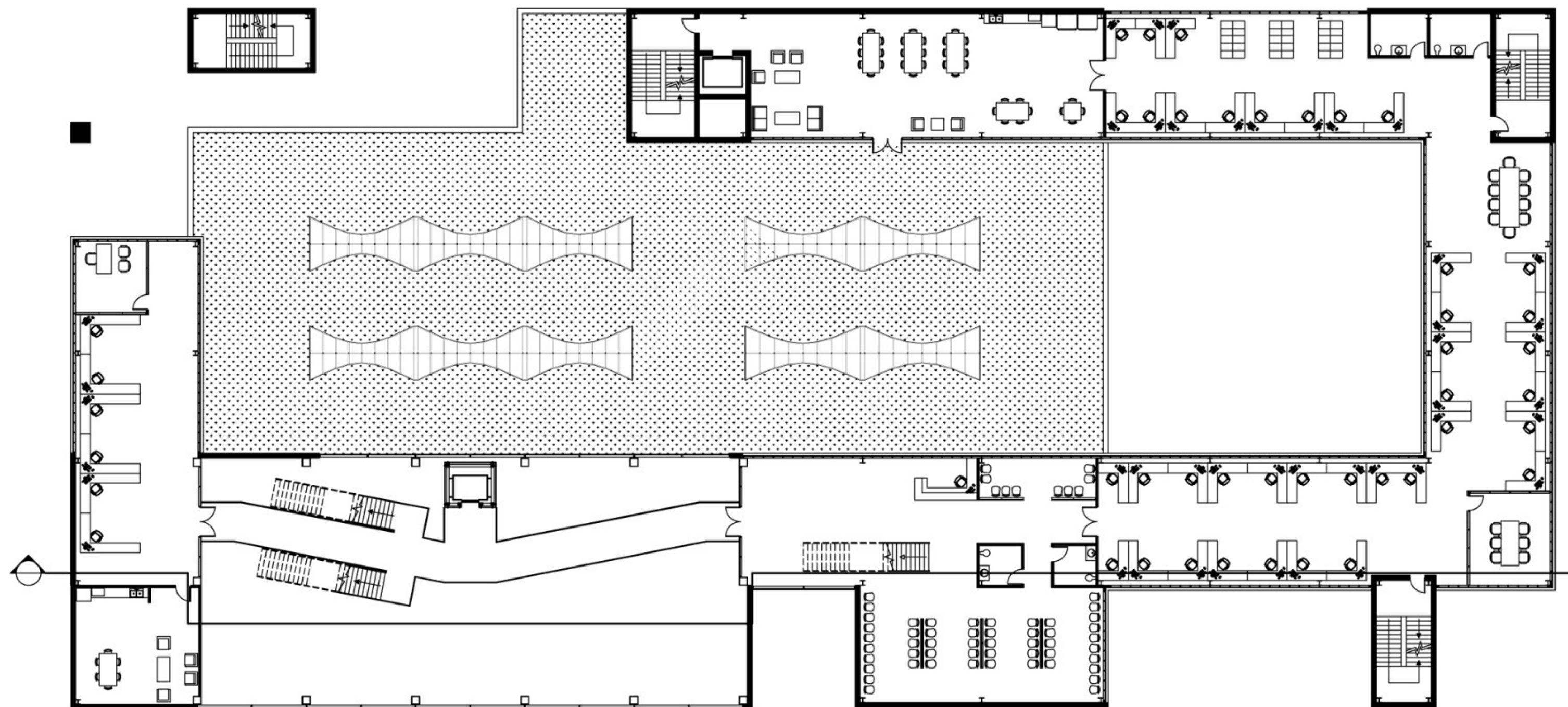
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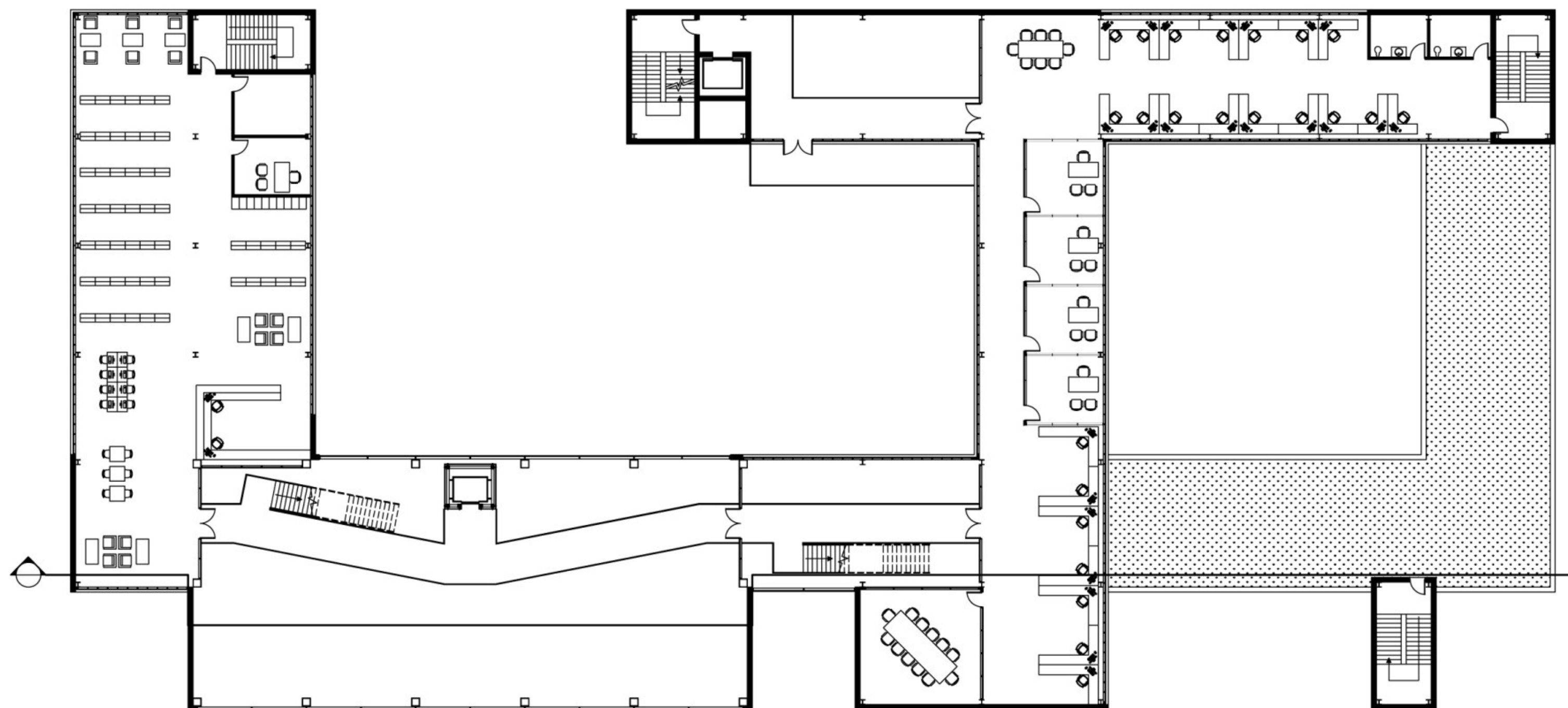
FIRST FLOOR



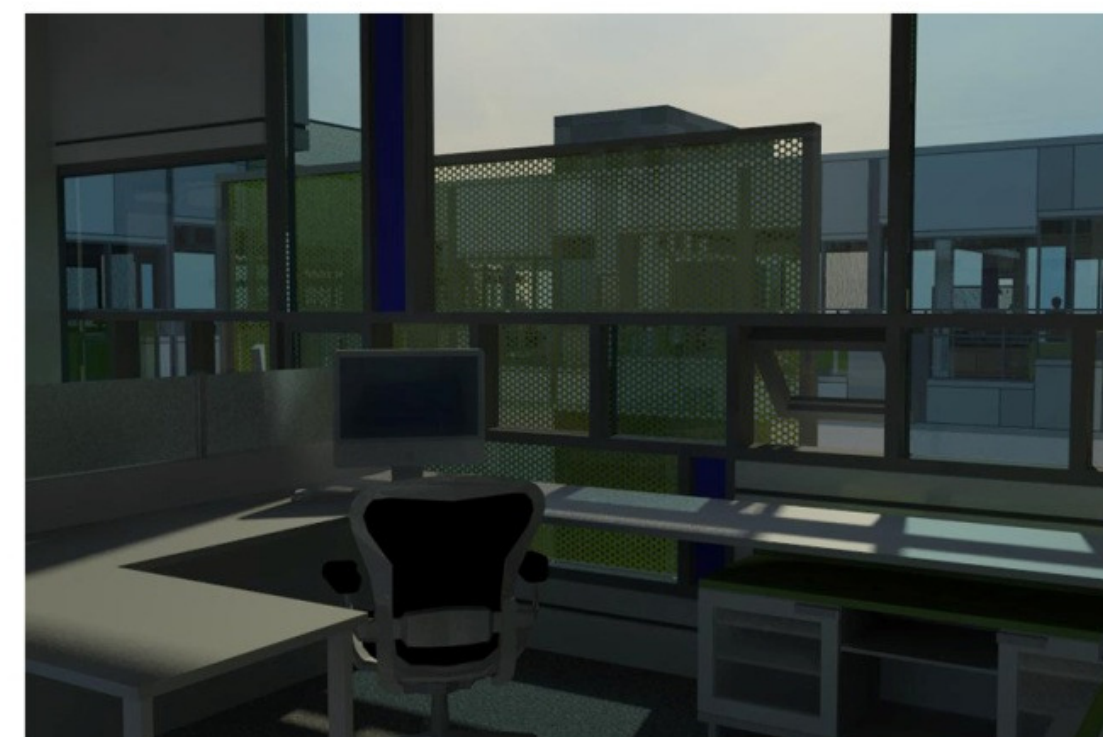
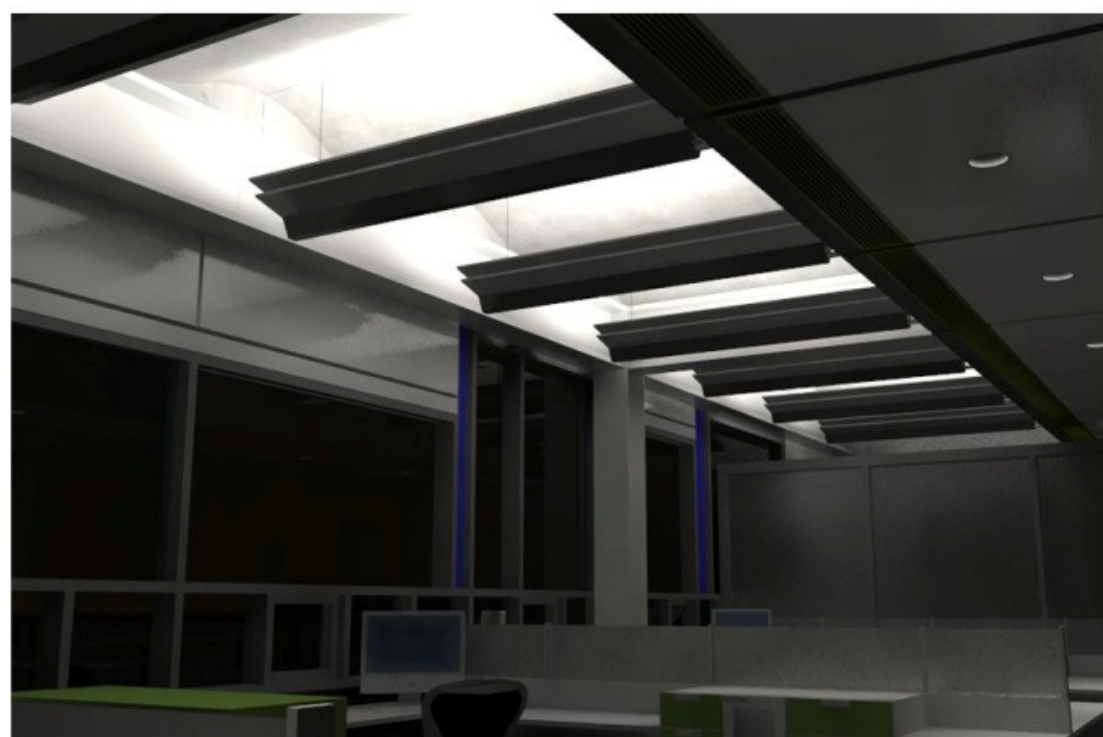
SECOND FLOOR



THIRD FLOOR



FOURTH FLOOR



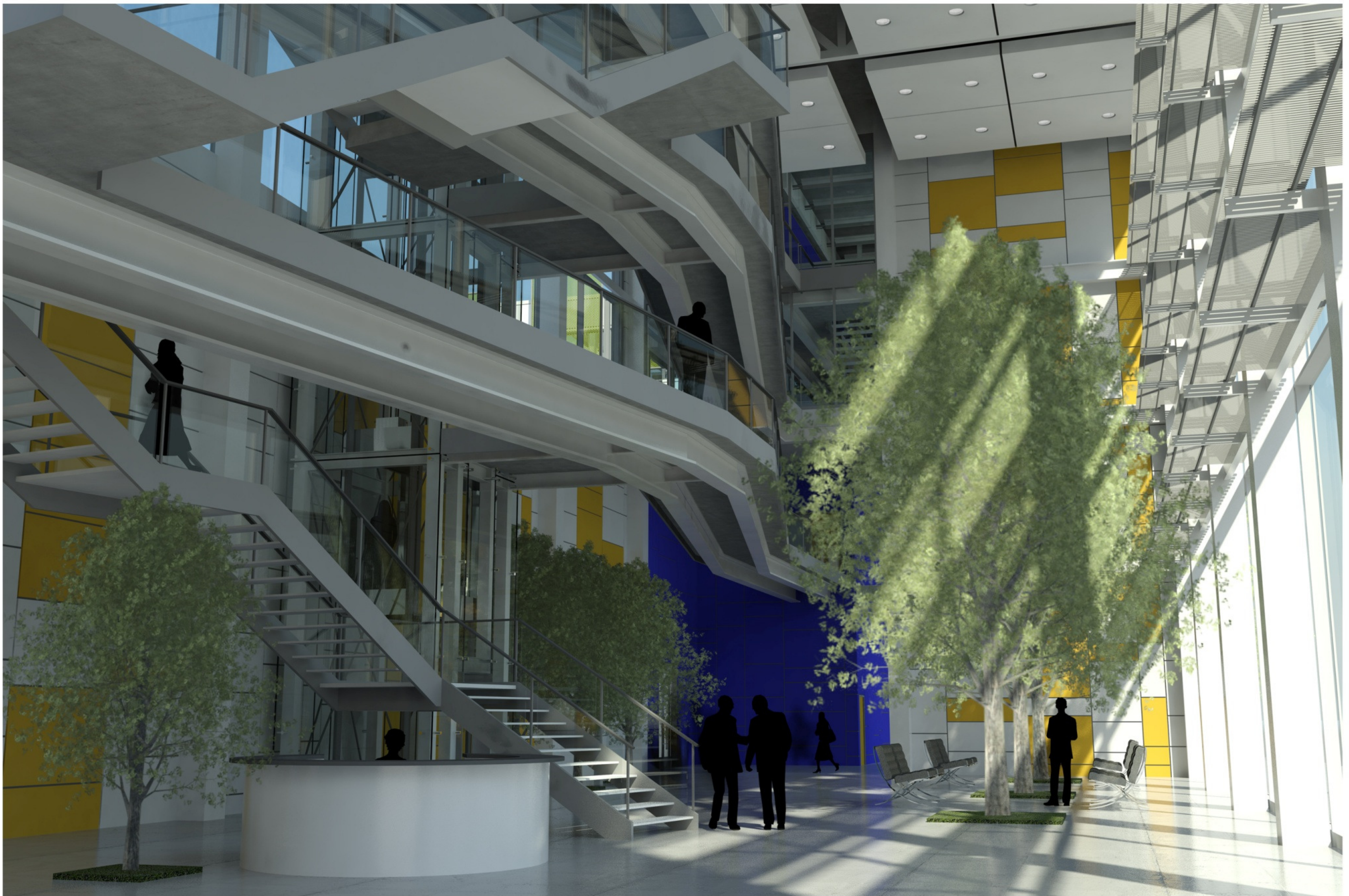
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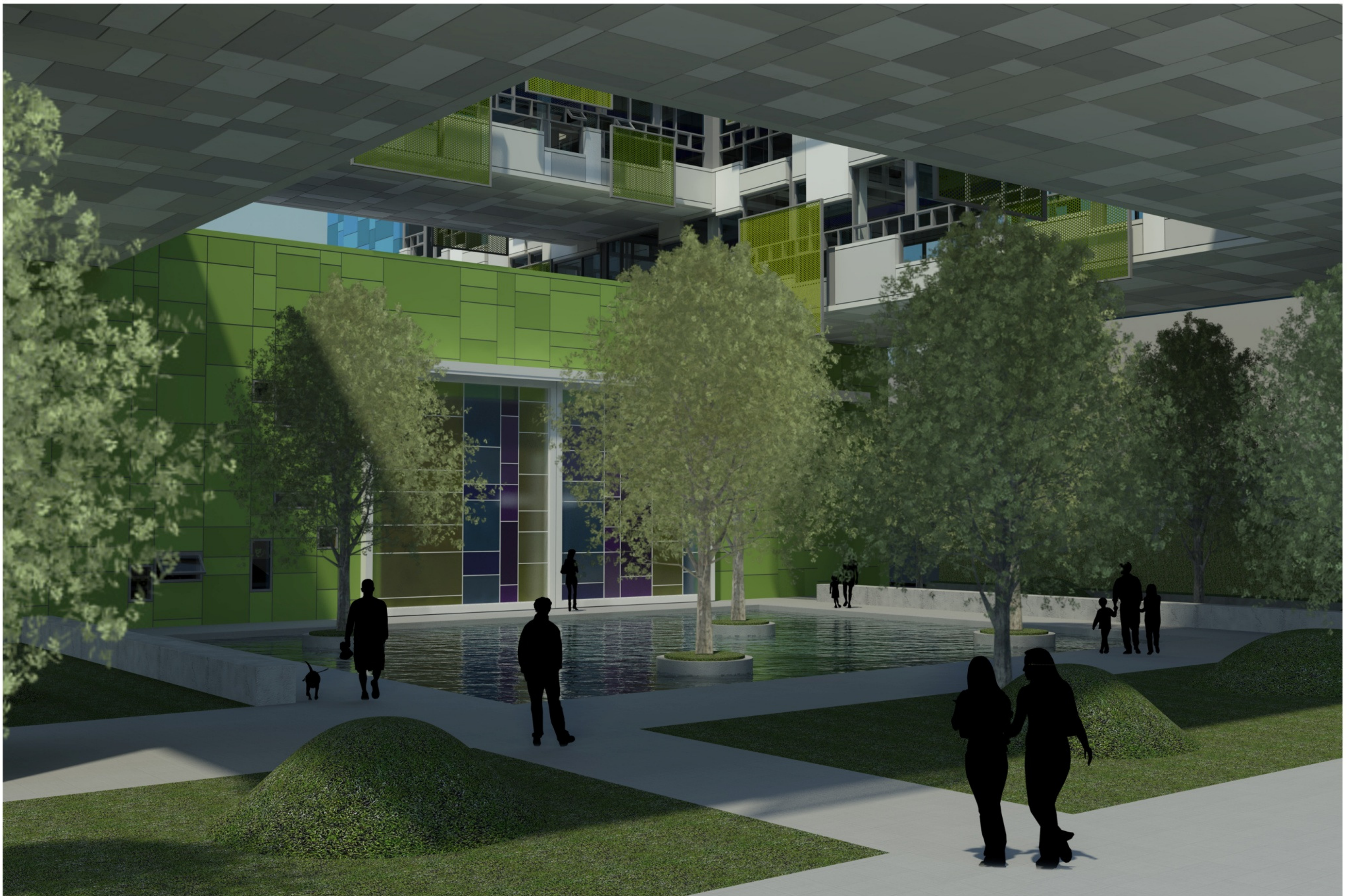
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QUESTIONS,
COMMENTS,
COMPLAINTS,
OR CONCERNS?