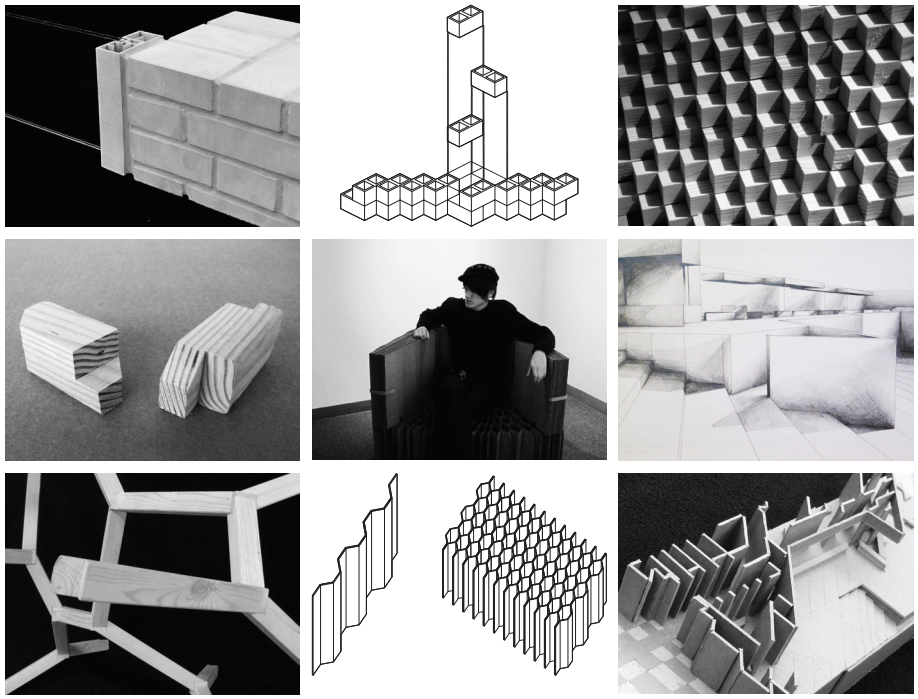
ARCH 202B

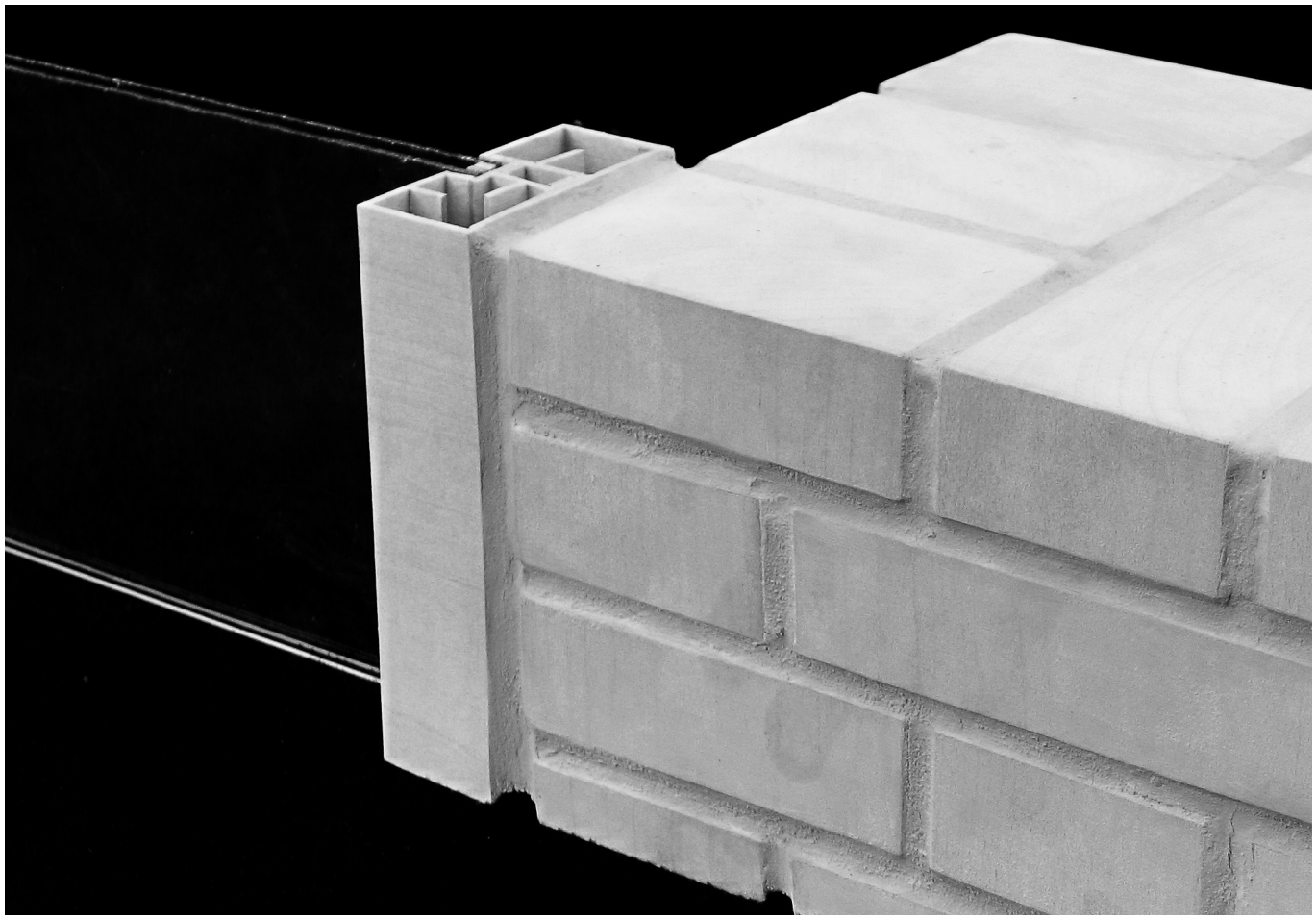


SPRING 2011

CONTENTS

CONTENTS

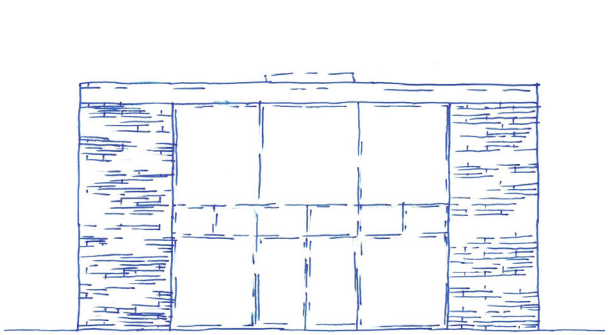
01: IIT CHAPEL

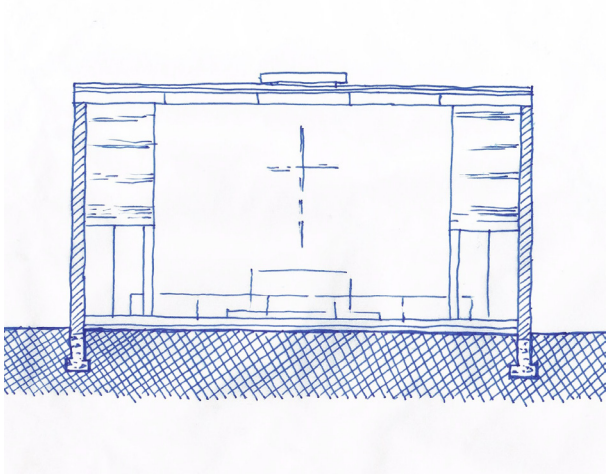


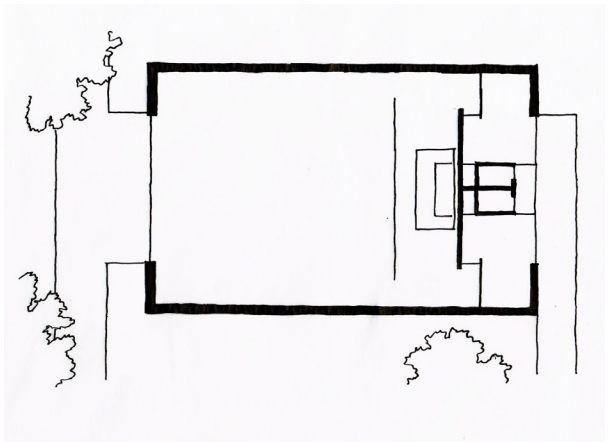
MATERIAL PRECEDENT

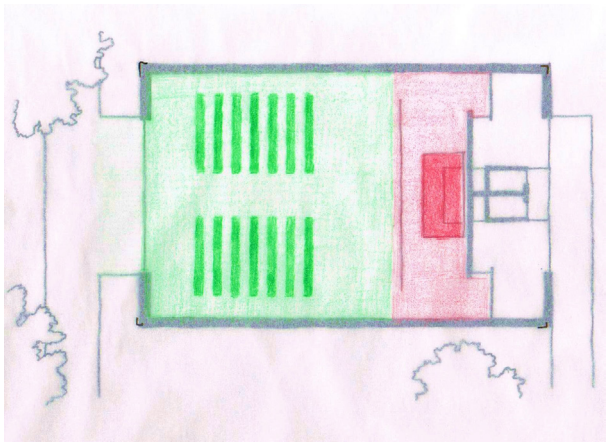
Project 1 focused on the development of a material case study of Mies Van Der Rhoe's small chapel on the IIT campus in Chicago. This non-denominational religious center is primarily a one-room space for congregation and worship that is congruous with Mies' iconic minimalist style and the other buildings he designed on the IIT campus. Essentially a simple, symmetrical rectangle in plan, the chapel makes use of large, solid brick walls that enclose the entirety of its space on the long sides, with large panes of glass floating between at the entryways on either end. This project began with the collection of concept and construction documentation of the building in order to fully understand the intent of Mies' material interaction. The sheer mass and visual weight of the brick walls on the chapel are emphasized by the comparatively light glass panels on the front and rear facades. The delicate and transparent glass not only provides a material counterpoint, but also denotes a clear directionality through the interior space from end to end. Drawings demonstrating this relationship in terms of weight, texture, geometry, and field effect were created, as well as a model detailing the connection between brick and glass.

Left page: Photo documentation of building.



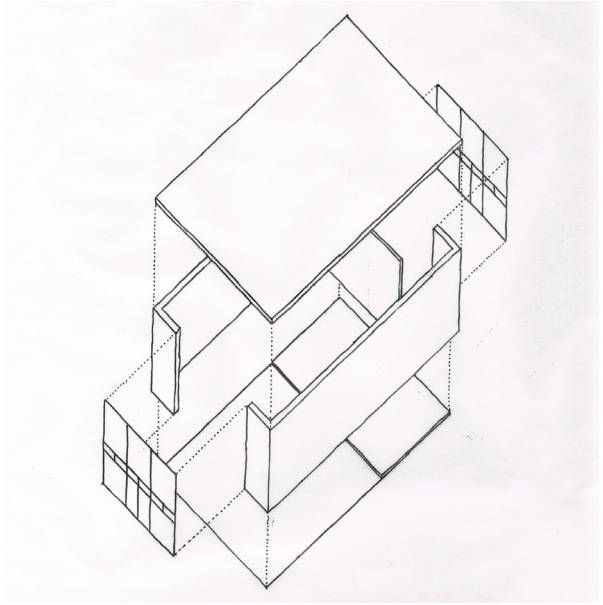


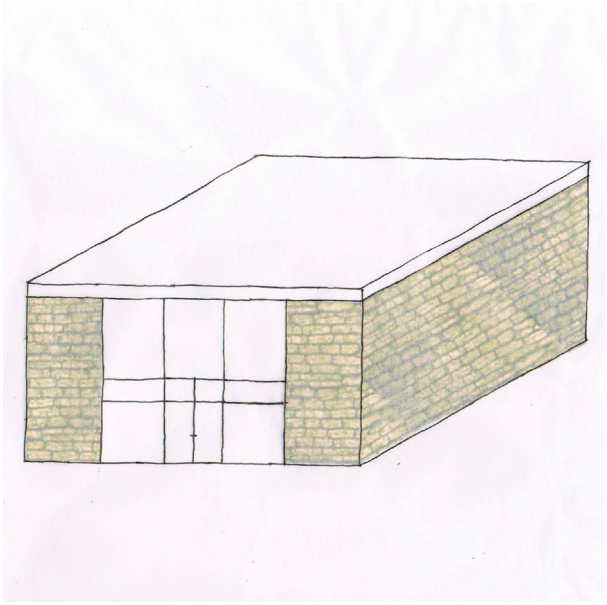


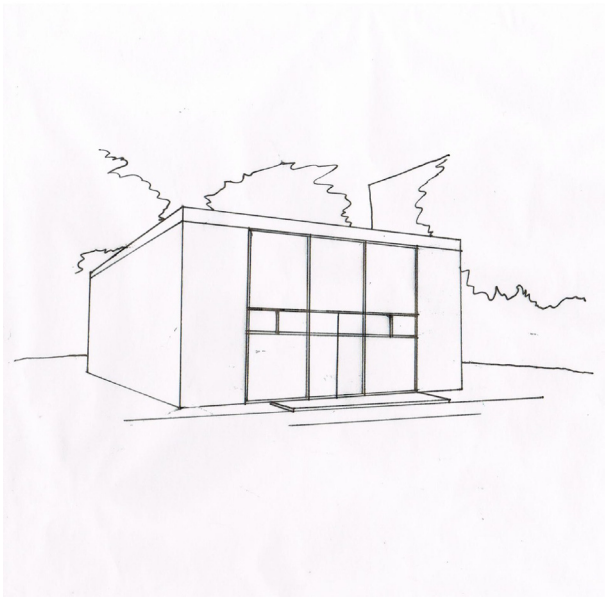


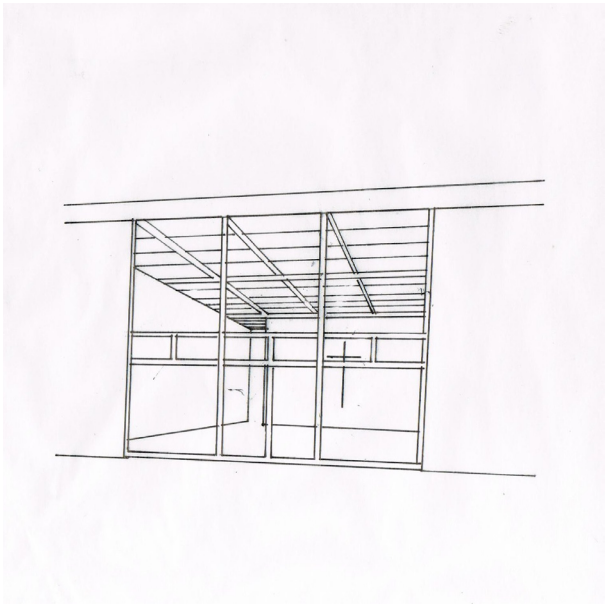
Clockwise from upper left: Hand drawn elevation, section plan, and program map.

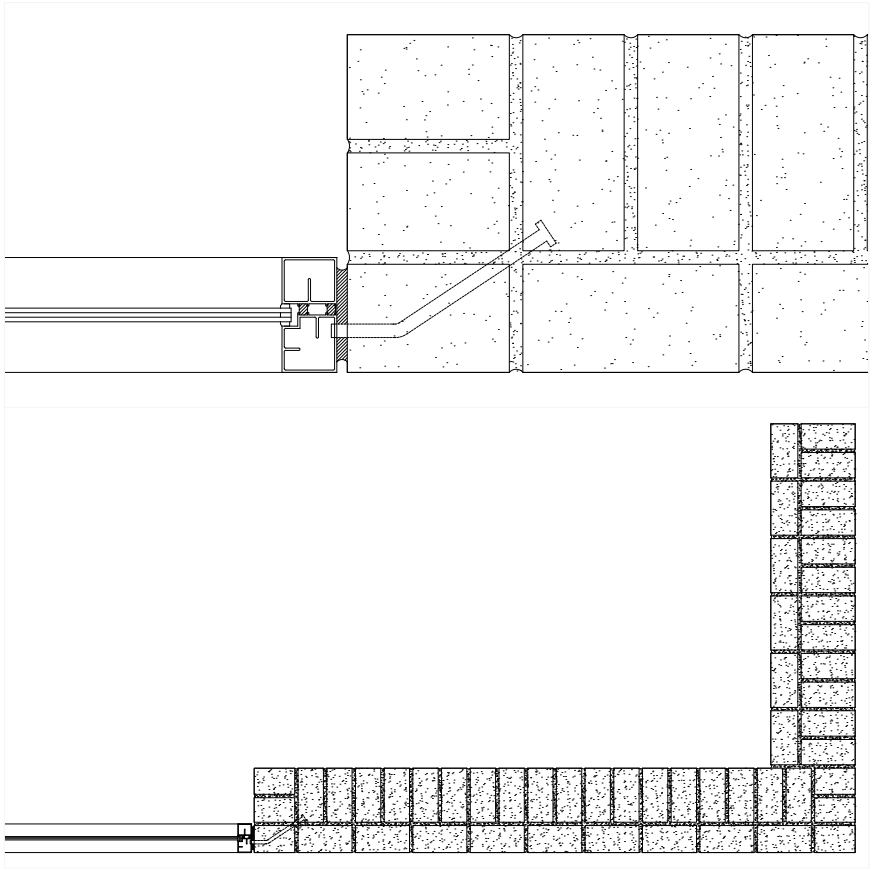
Right page: Axonometric and perspective studies.

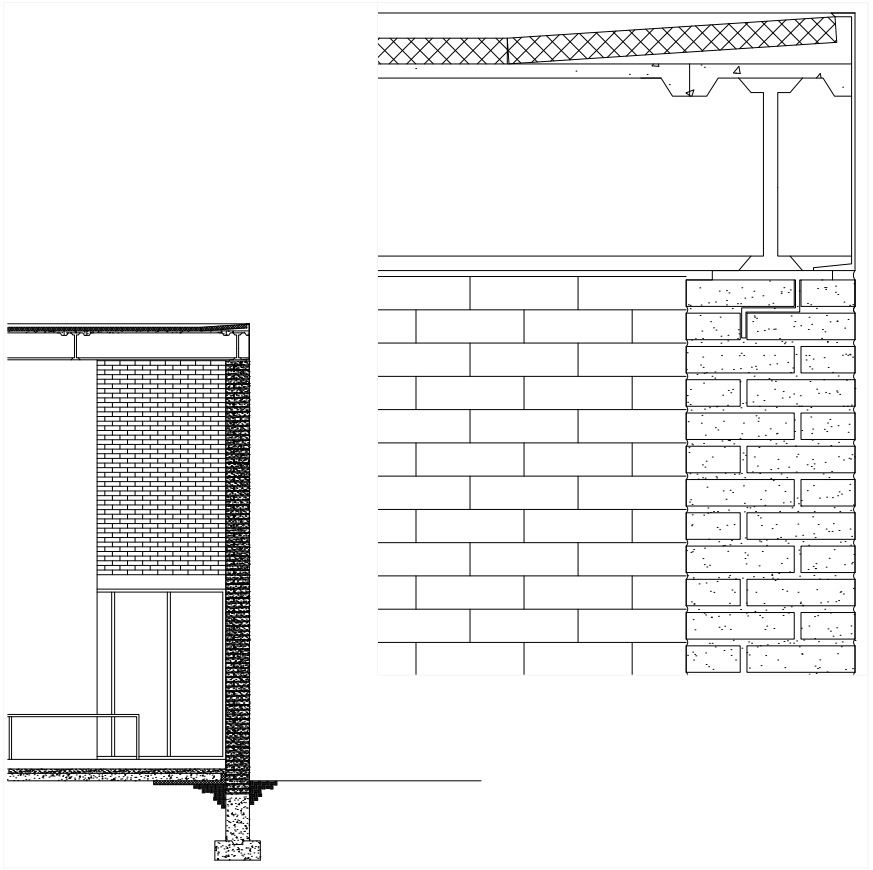




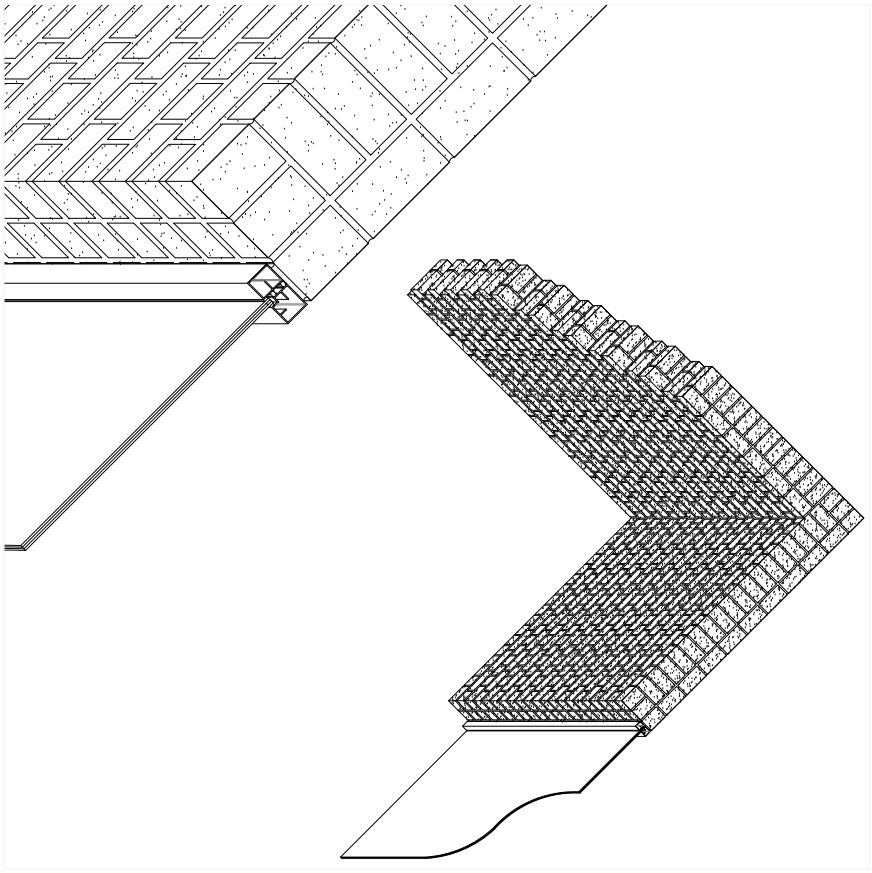


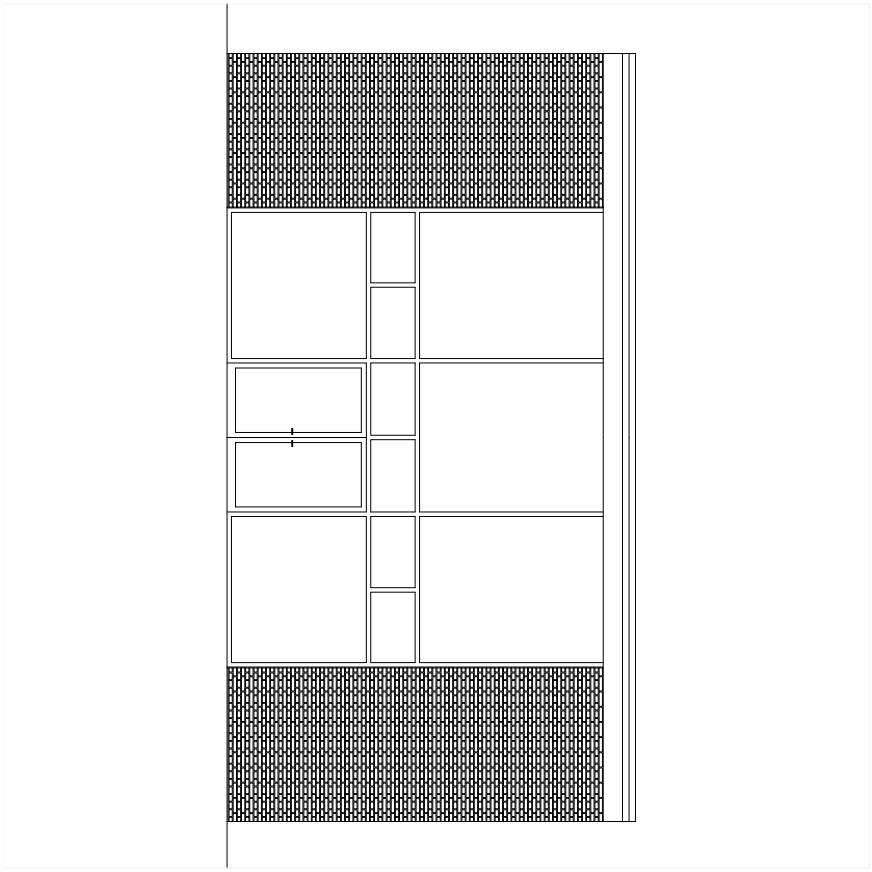


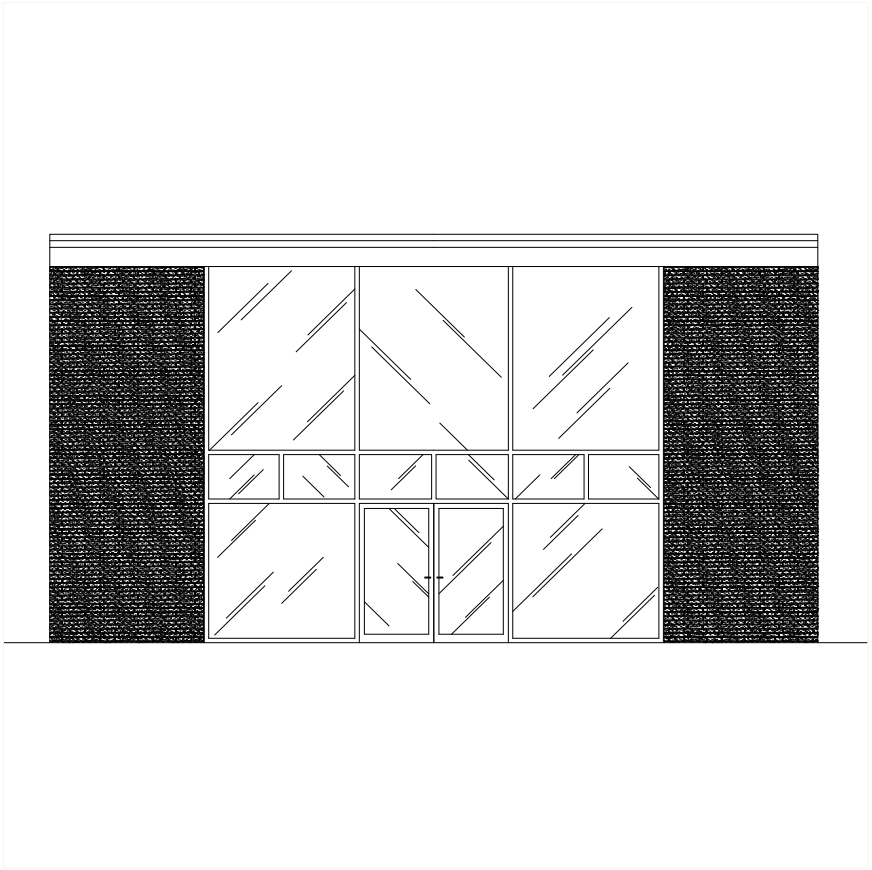


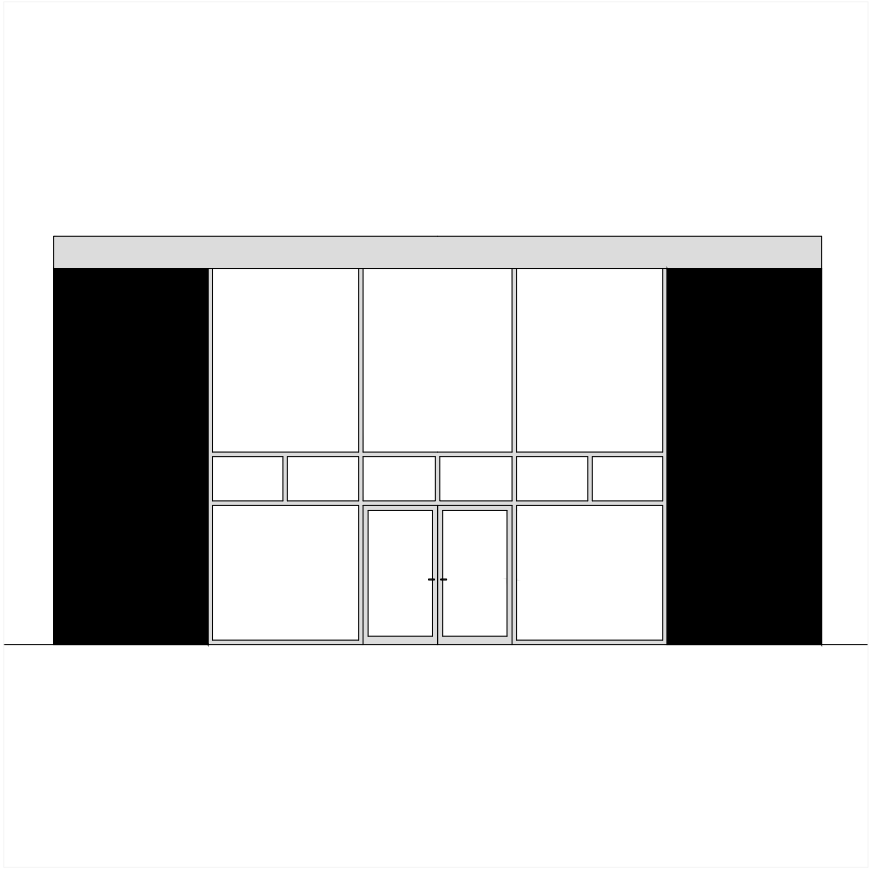


Left to right: Detail plan, detail section, axonometric, and elevation.

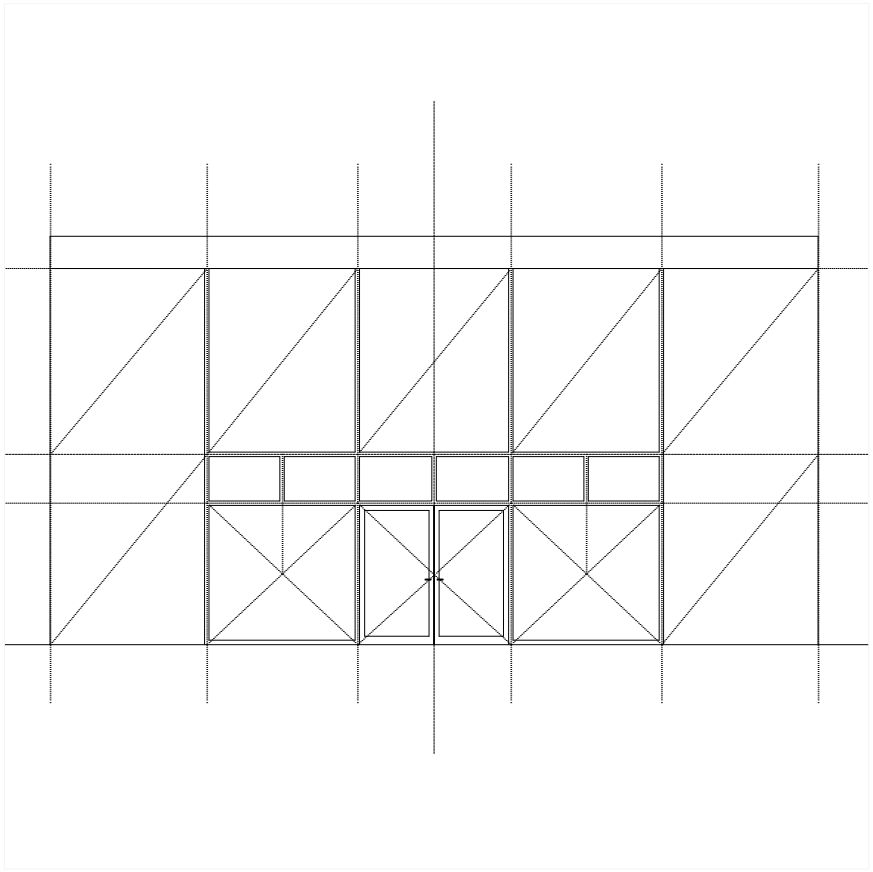


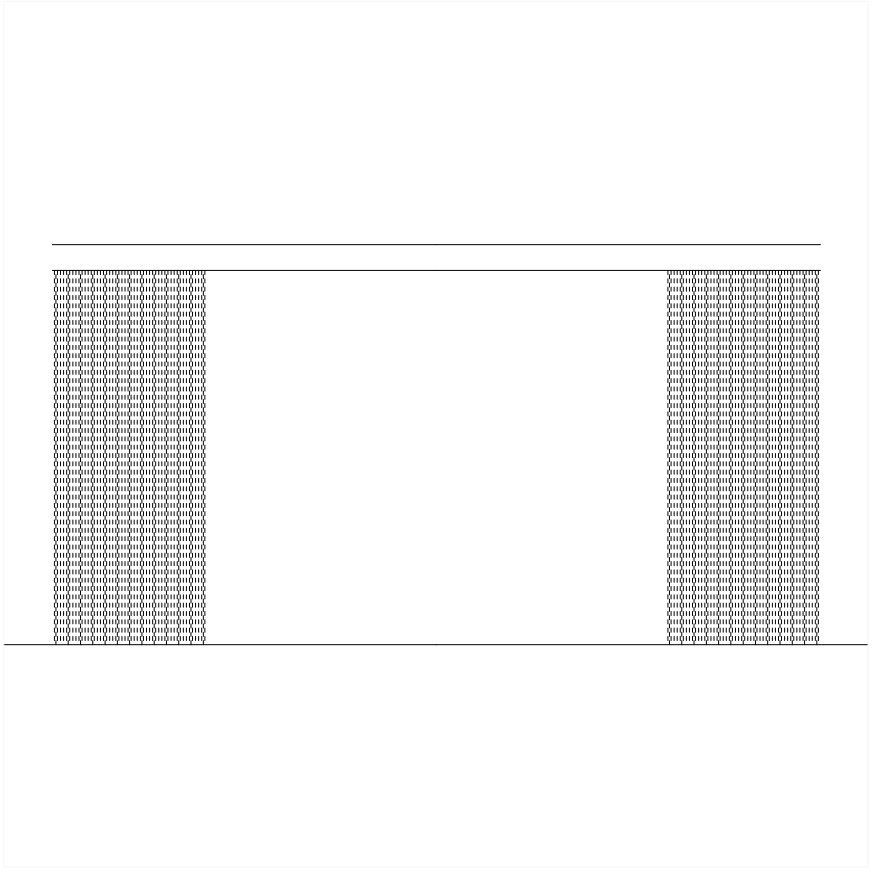


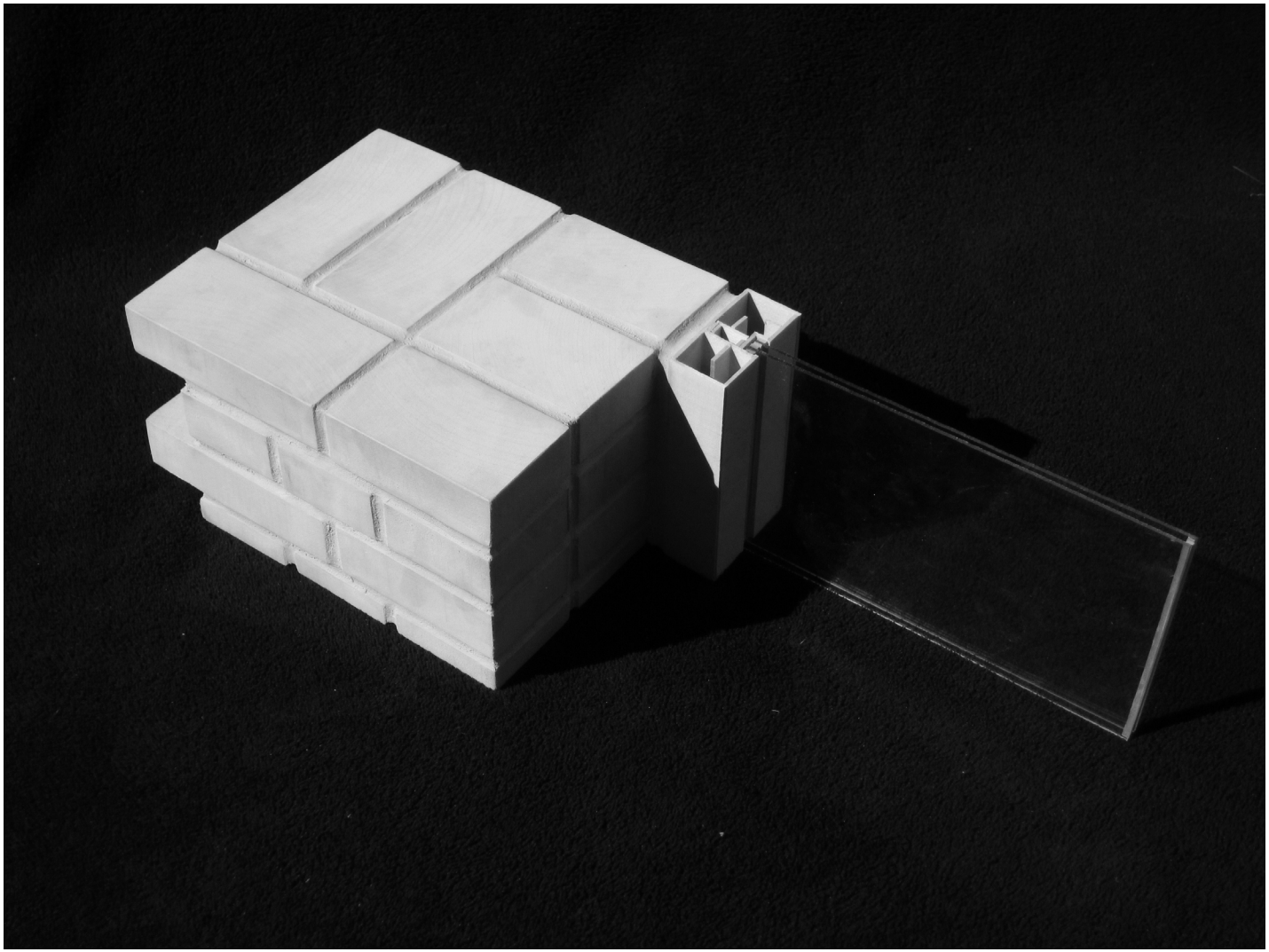




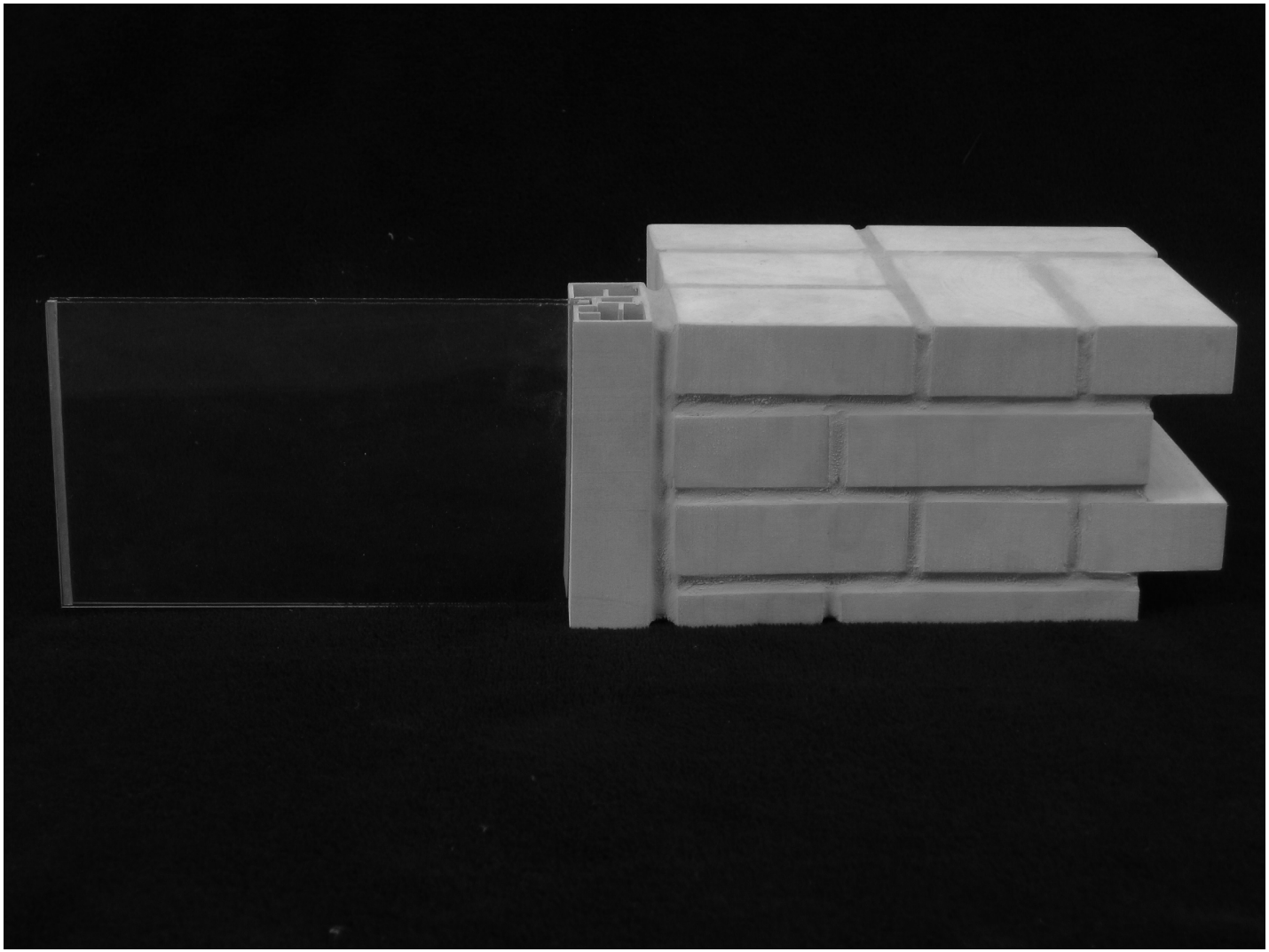
Left to right: Diagrams showing texture, weight, geometry, and field effect.





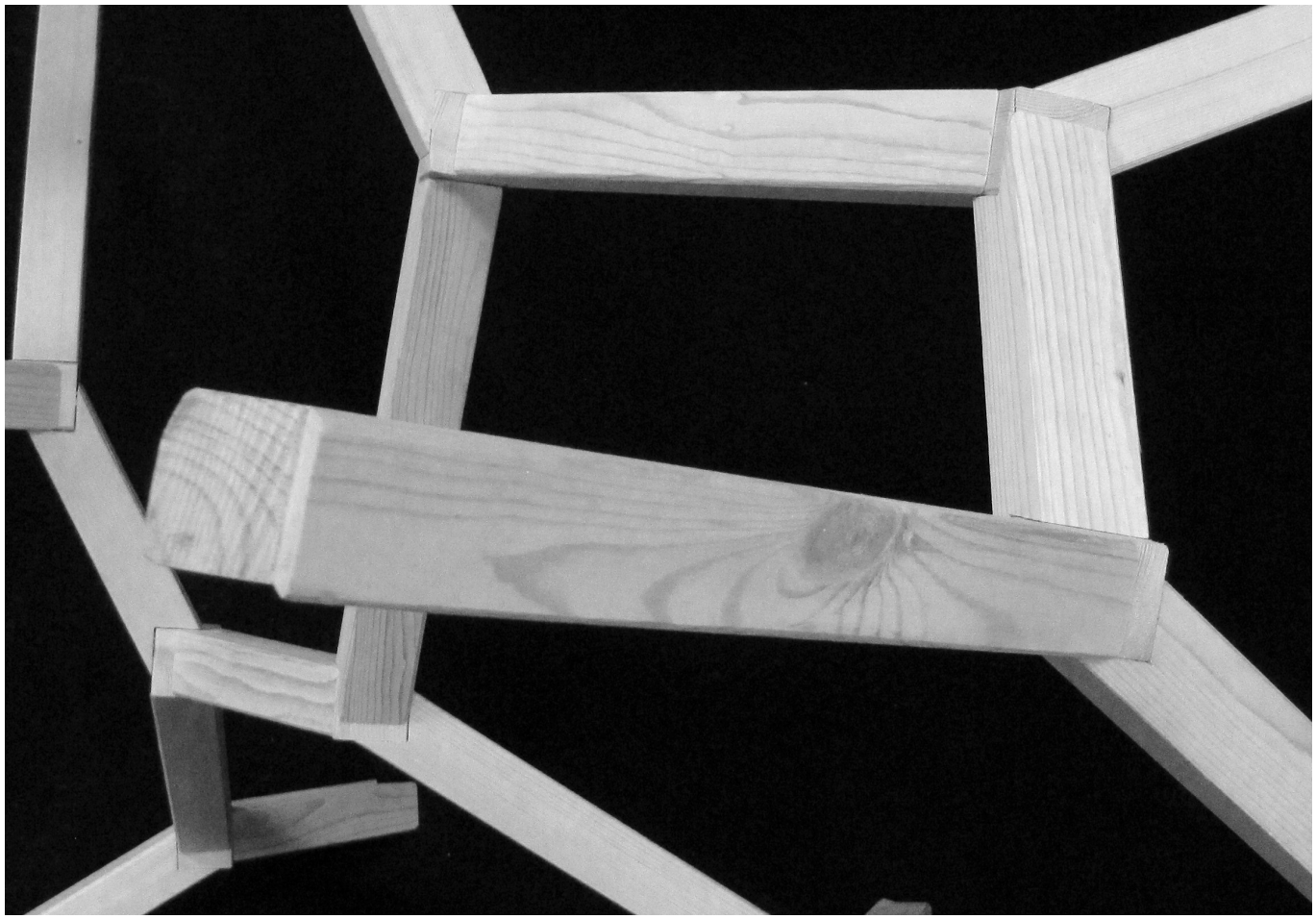


Left to right: Diagrams showing texture, weight, geometry, and field effect.

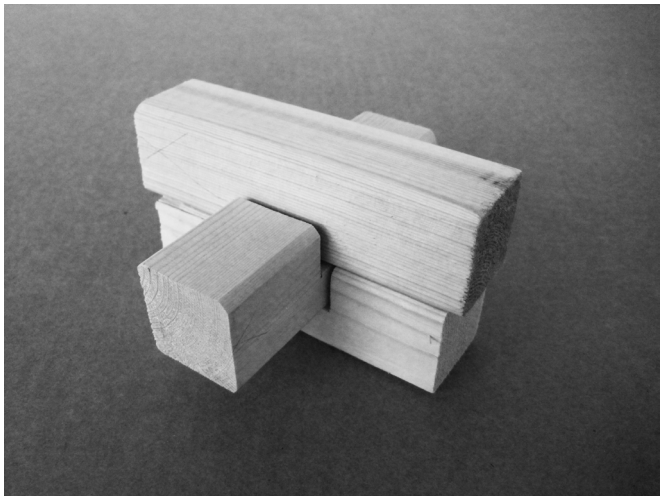


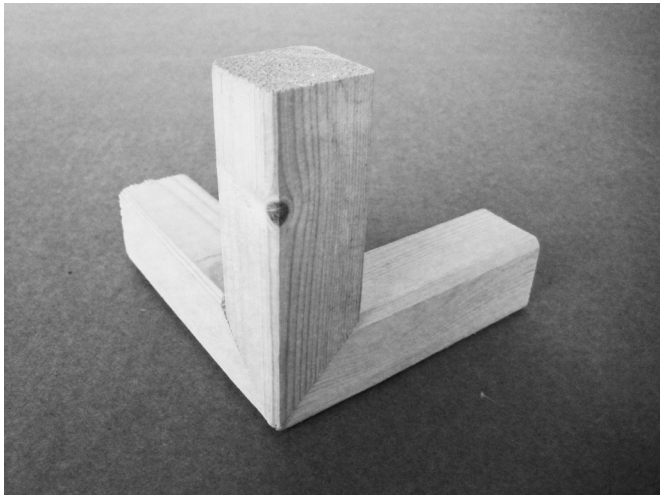
Left to right: Diagrams showing texture, weight, geometry, and field effect.

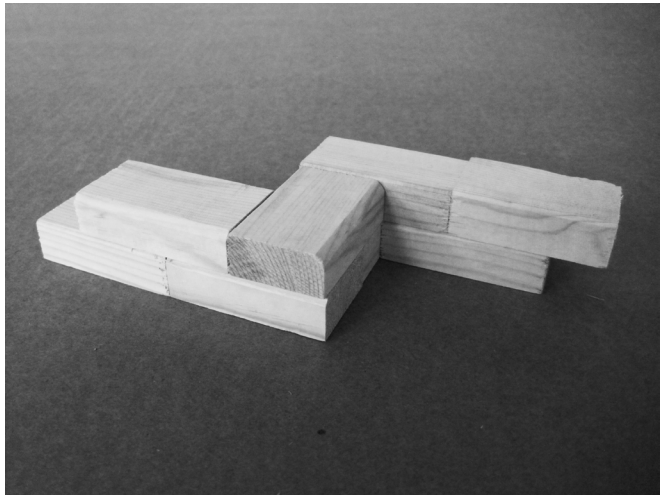
02: THREE WAY JOINT



ASSEMBLY & AGGREGATION

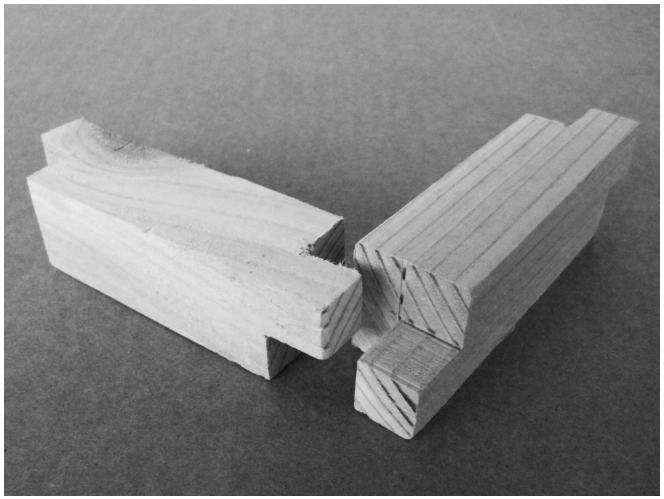


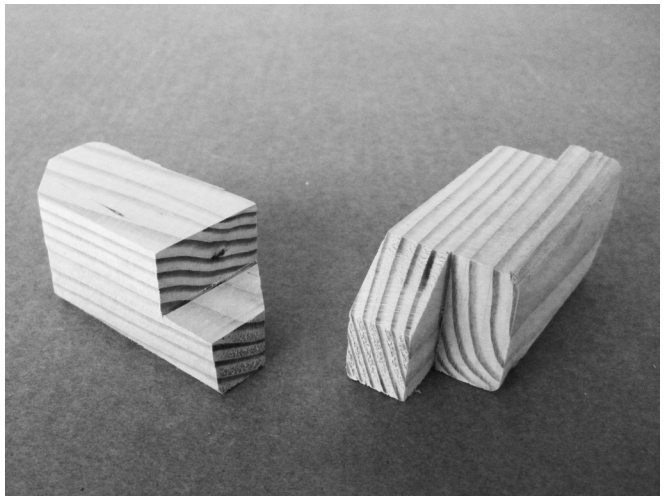


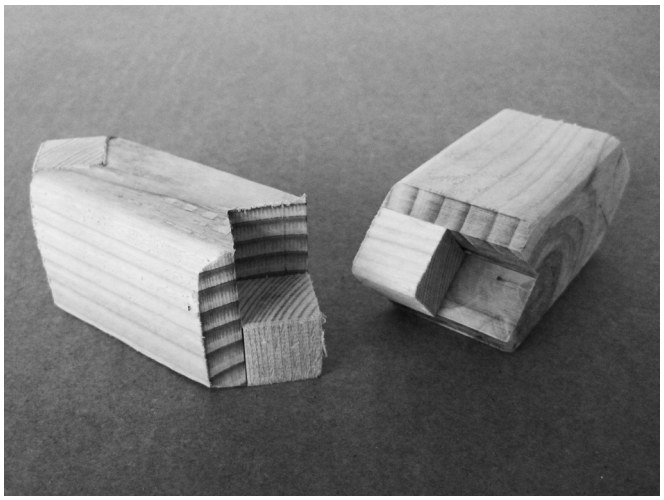


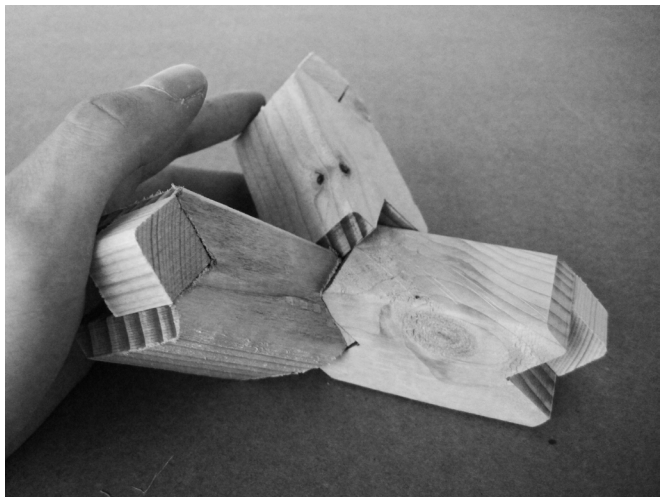
Project 2 began with the investigation of different processes such as subtraction, addition, mirroring, and translating, applied to woodworking operations in the effort to design a versatile and sturdy joint capable of instigating the aggregation of several 2x2” wooden pieces into a mass field possessing visual and spatial interest. Number of cuts, flexibility, waste material, how the unit interacts with the joint, and how the units aggregate into a field were all factors taken into account in the design of the joint. Initial experimentation considered the possibility of producing a uniform unit type that would create the joint at its ends when combined with other units. After further refinement, a final design was developed using simple 30 and 60 degree cuts into the basic 2x2 segment, seated onto the edges of a small wooden cube capable of joining three individual segments together. This simple approach allowed for ease of production, durability, and minimal waste, but also allowed for the generation of a flexible, organic, and varied aggregation that possesses dimensional richness and volumetric depth.

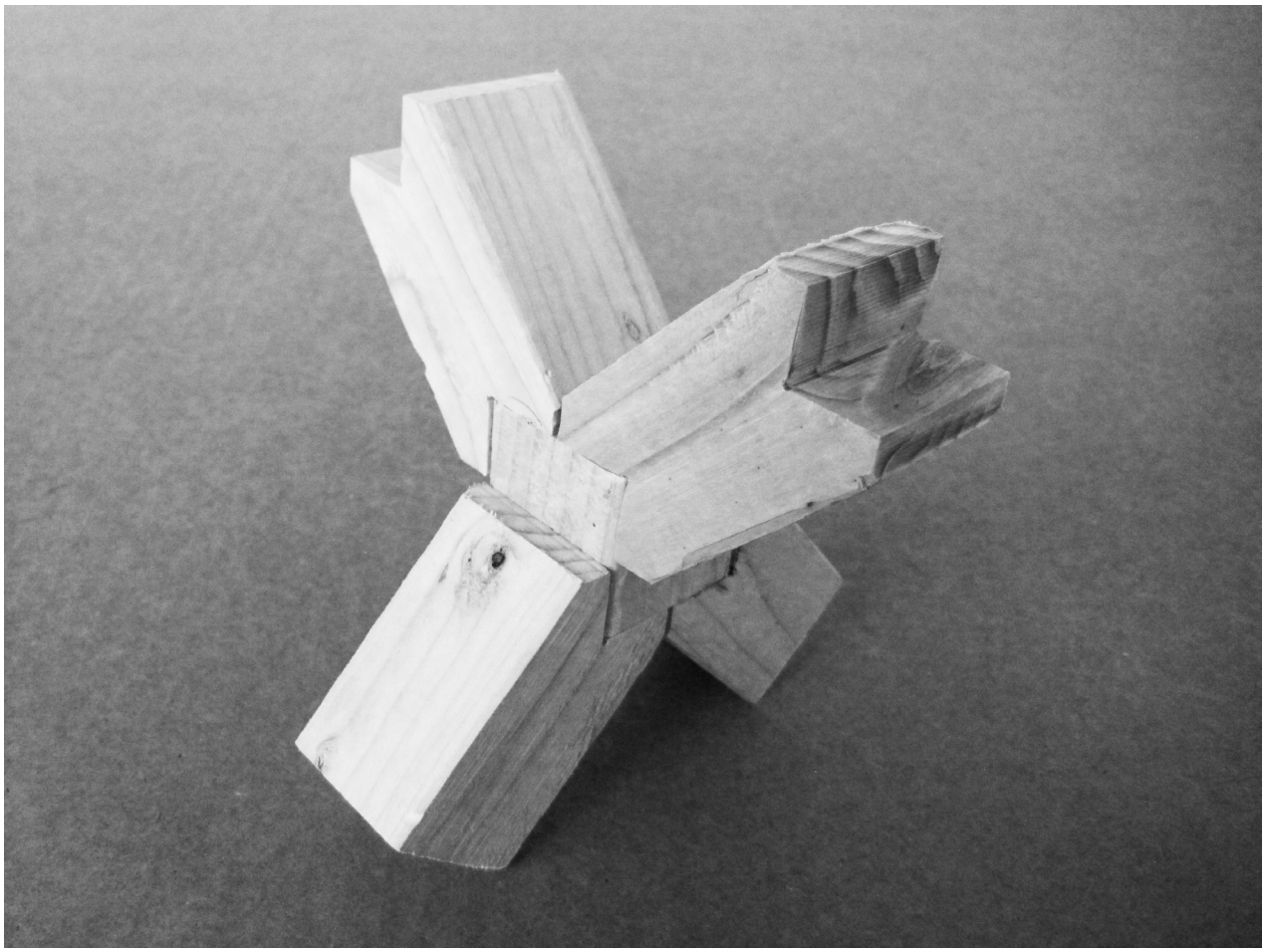
Left page: Preliminary joint concepts.





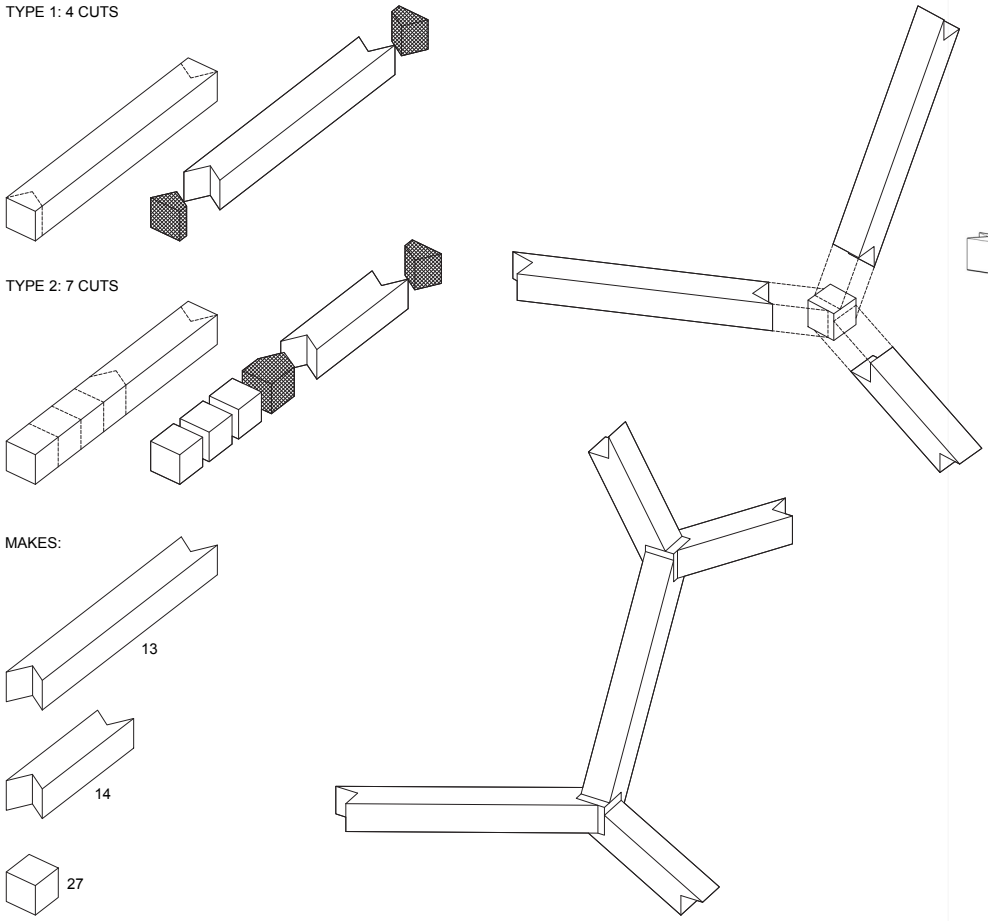


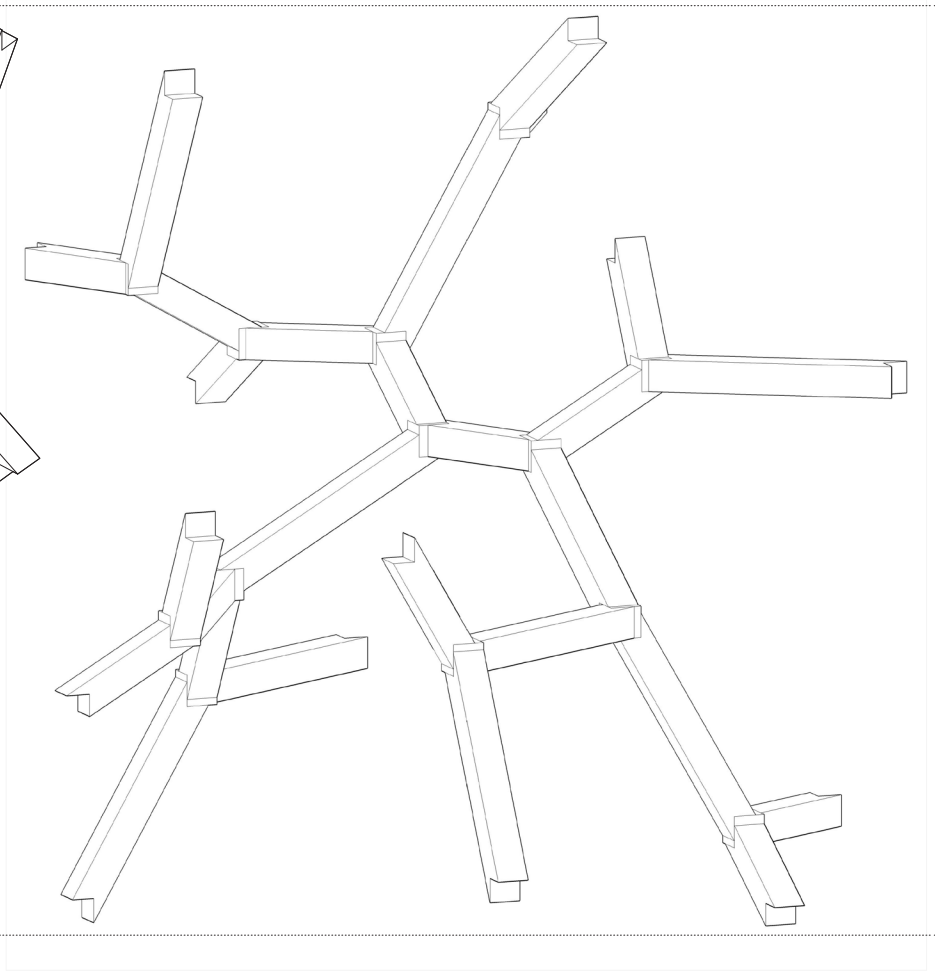




Left page: Attempts at creating a uniform joint/unit.

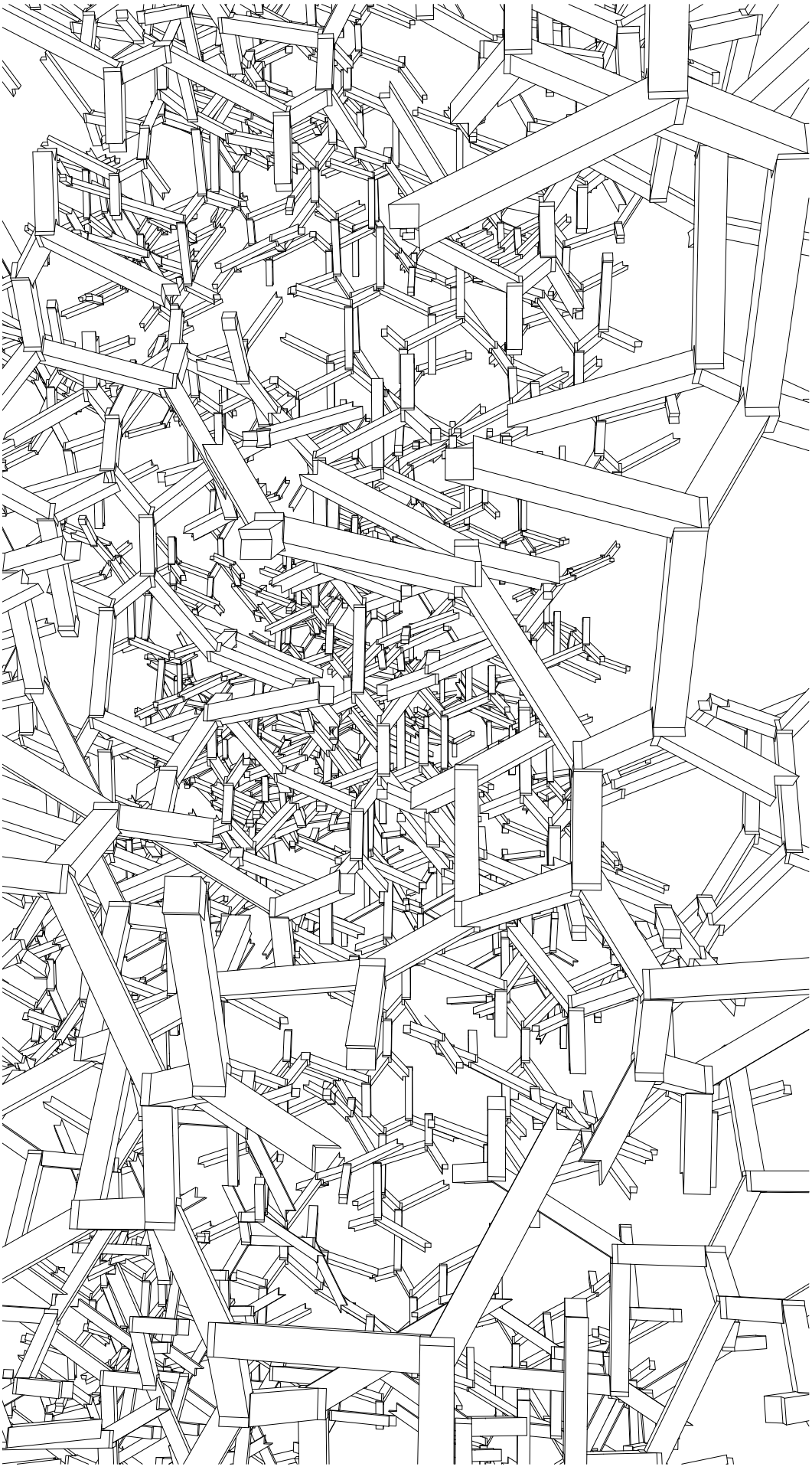
Right: Preliminary two-part joint concept.

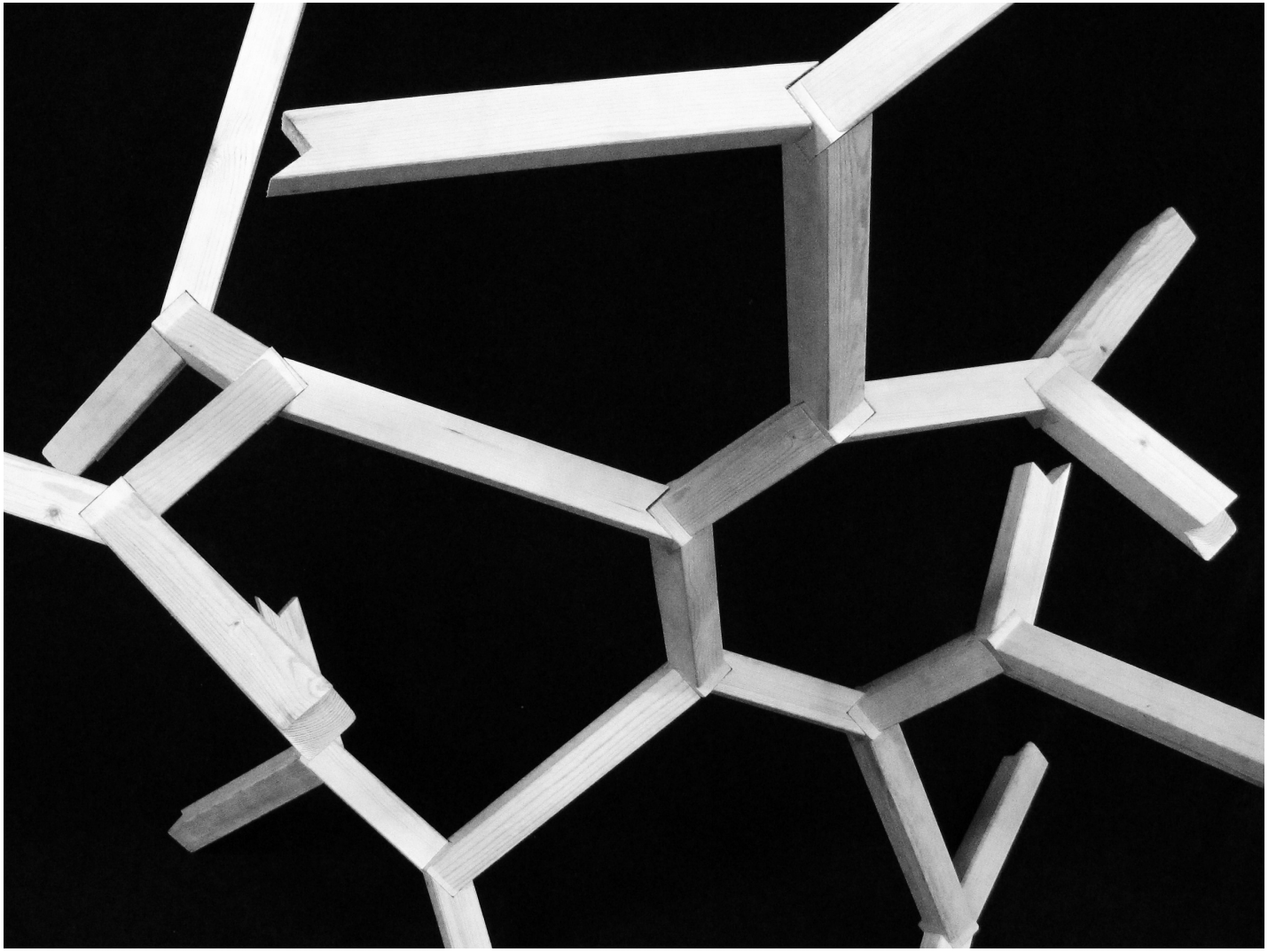




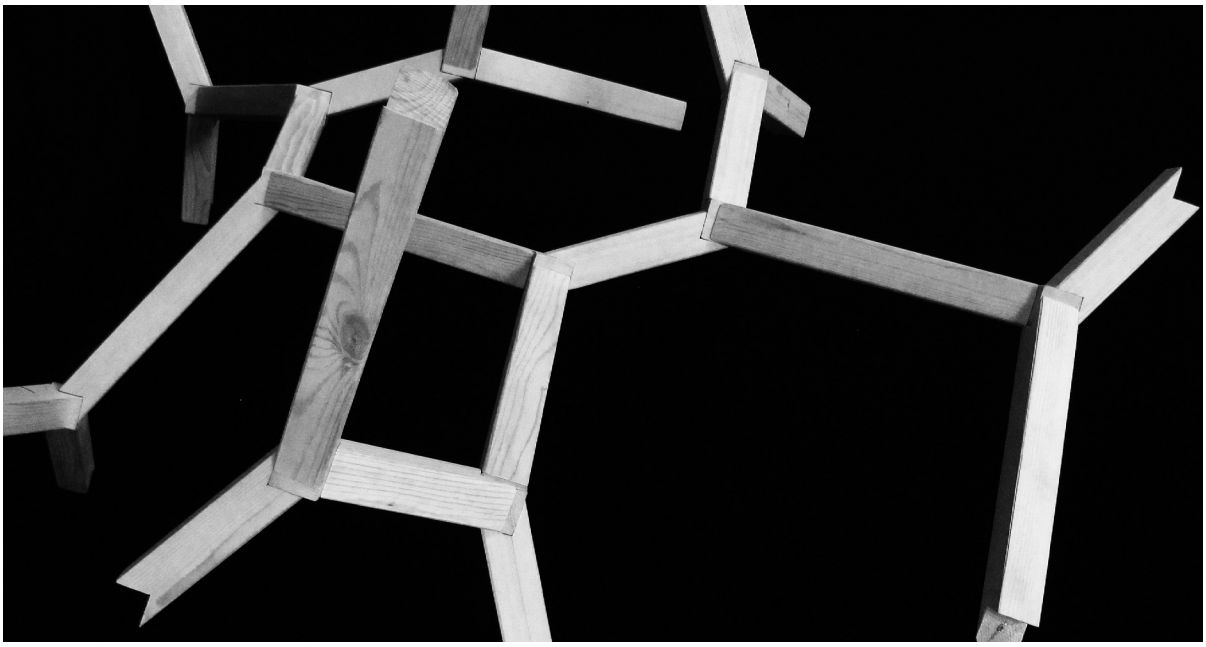
Above: Diagrams illustrating manufacture of final unit, unit to part, and part to chunk assembly.

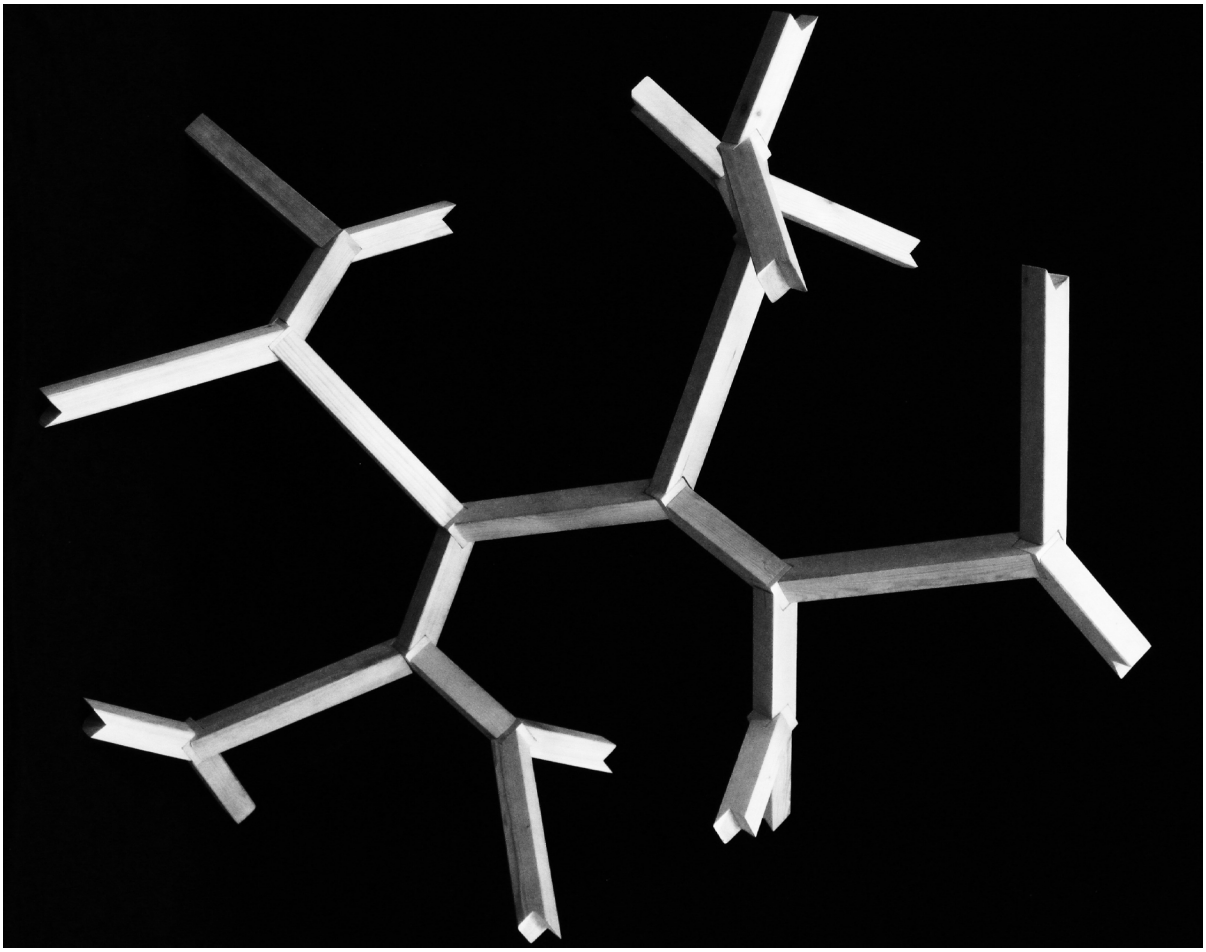
Right page: Field effect of final aggregation.



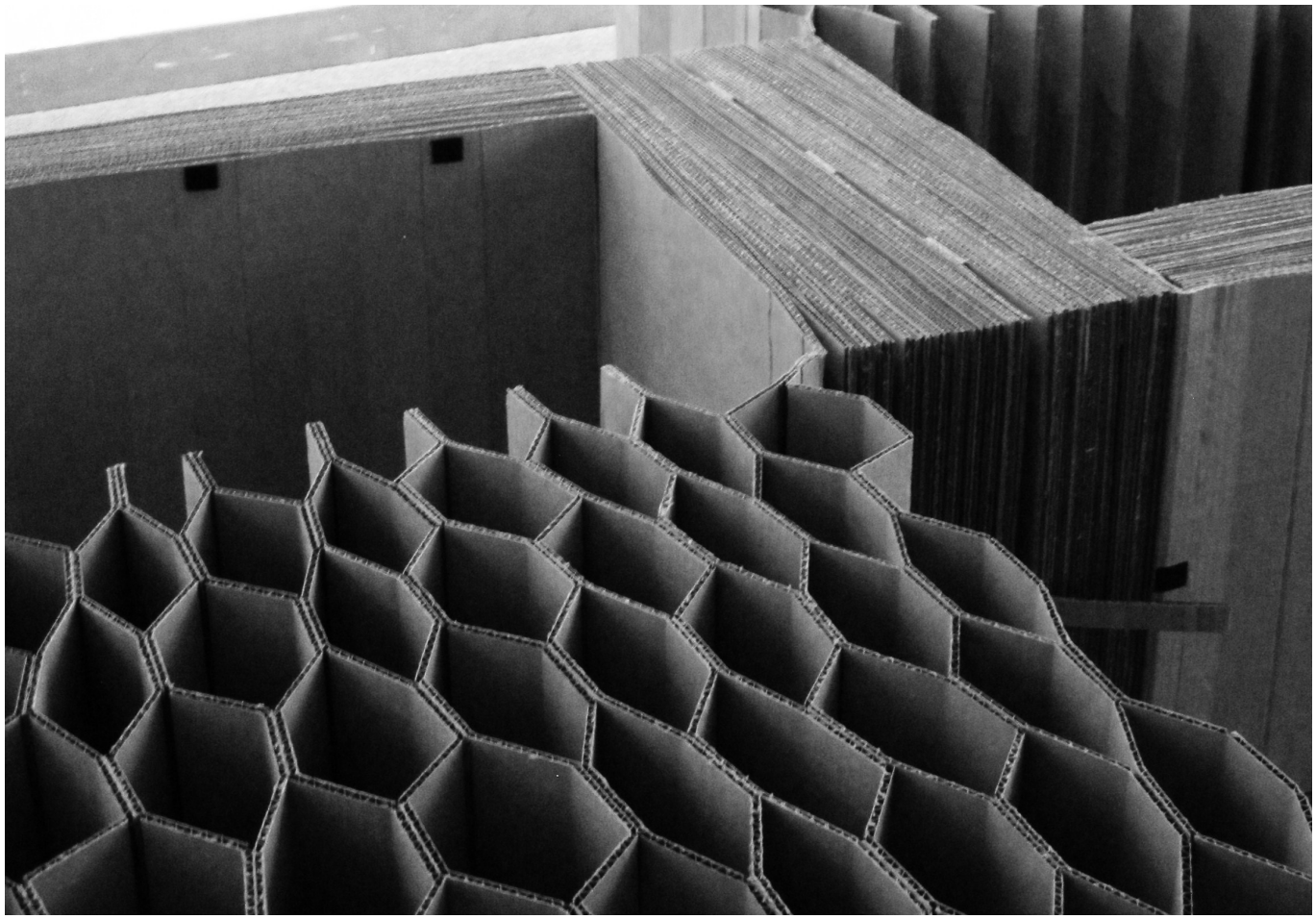


Model of final aggregation.

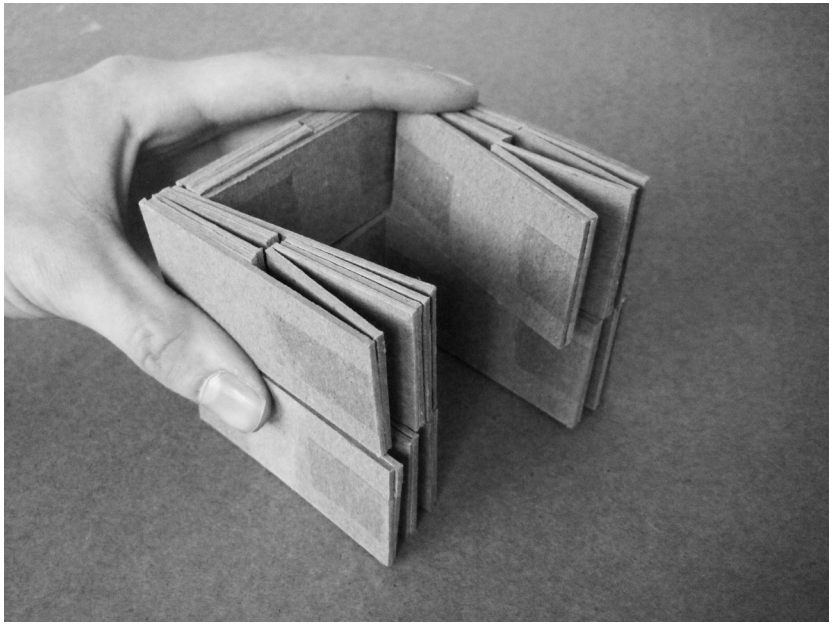




03: EXPANDABLE BENCH

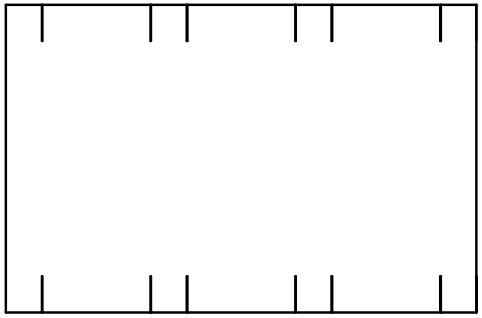


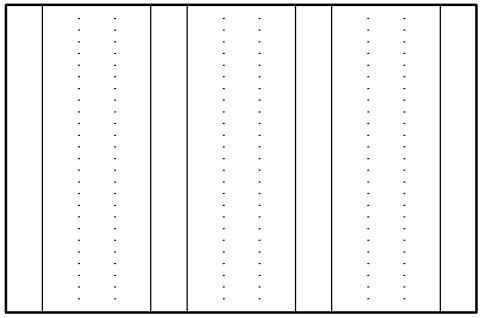
PERFORMATIVE OBJECT

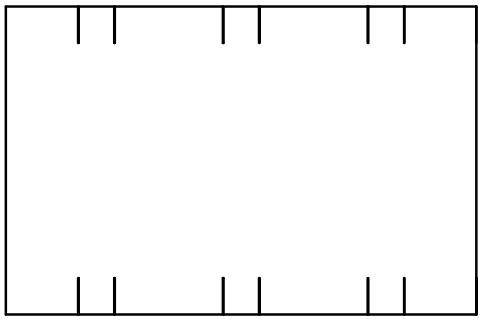


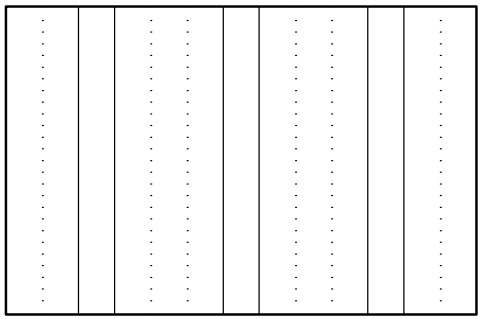
Project 3 involved the application of a basic program, the requirement of the ability to seat multiple people, to a material object. This performative aspect added to the design problem extra considerations in its composition, both theoretical and practical. A realatively benign and ordinary material was chosen, courragated cardboard, the objective being to construct an object that as a whole is synergistically versatile, dynamic, and flexible literally and programmatically from only manipulation of a basic, pedestrian material. This resulted in the investiagtion of cardboard's inherent strengths and weaknesses, research into its current applications, and experimentation with methods of unconventional application in regards to programmatic flexibility such as folding and expanding. Further development led to the creation of a honeycomb based, expanding unit "chunk" that can be manufactured effeciently using assembly-line methods, and attached to other chunks using cardboard hinges to create the formal organization of the chair/bench. The end result is literally a single-person chair in compact state, which then can be "broken down" (unfolded and expanded) with a few simple motions on the user's part to create multiple seating positions for groups of several people.

Left page: Preliminary expanding unit parti and study model.



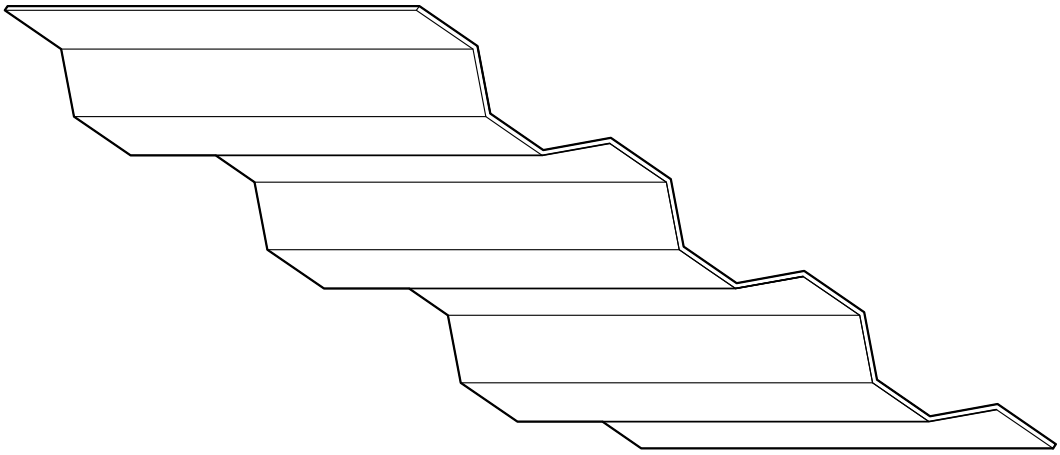


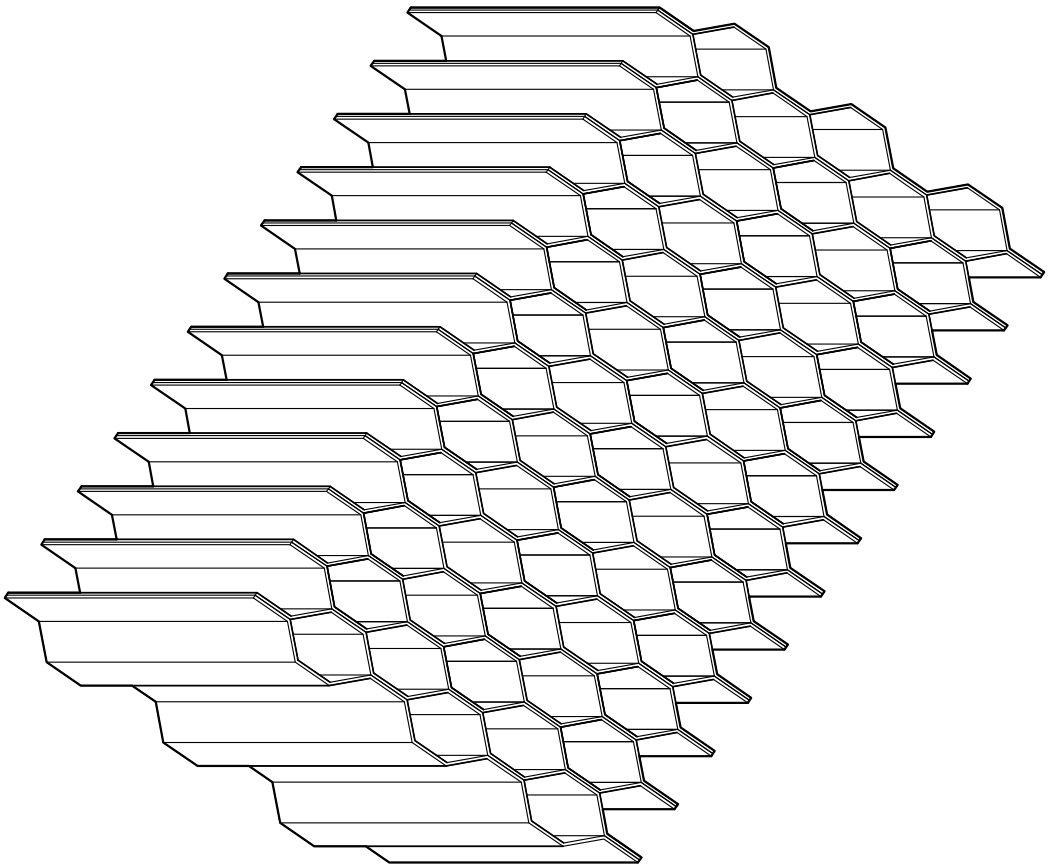


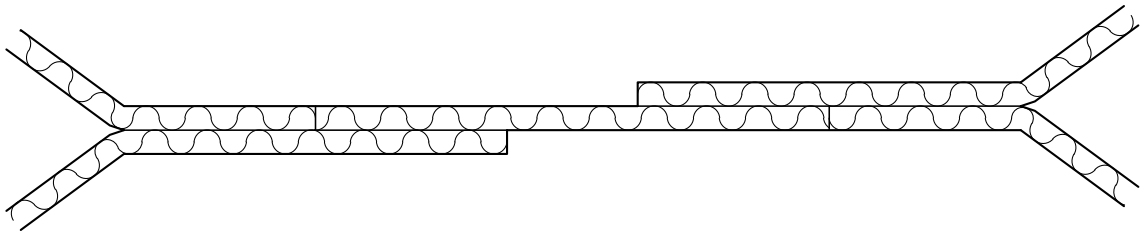


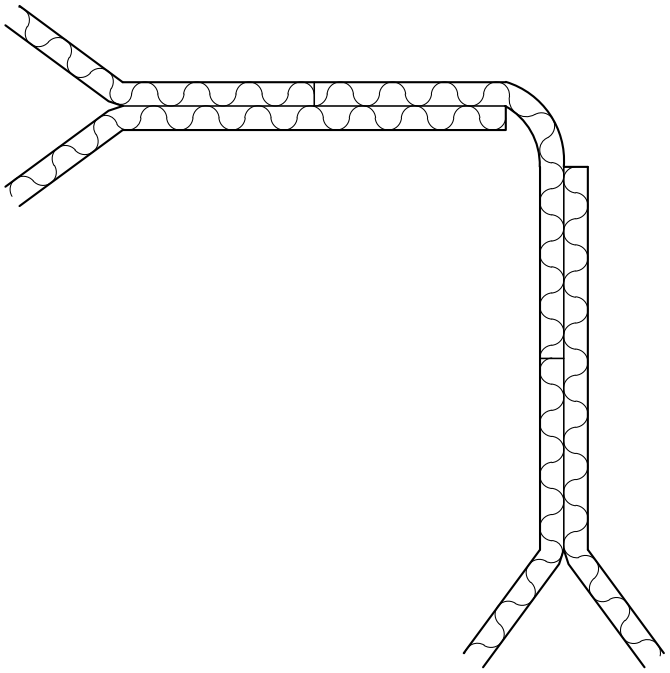
Above: Diagrams illustrating manufacture of individual sheets, template and scoring on each side.

Right page: Axonometric diagram of scored sheet and expandable chunk.



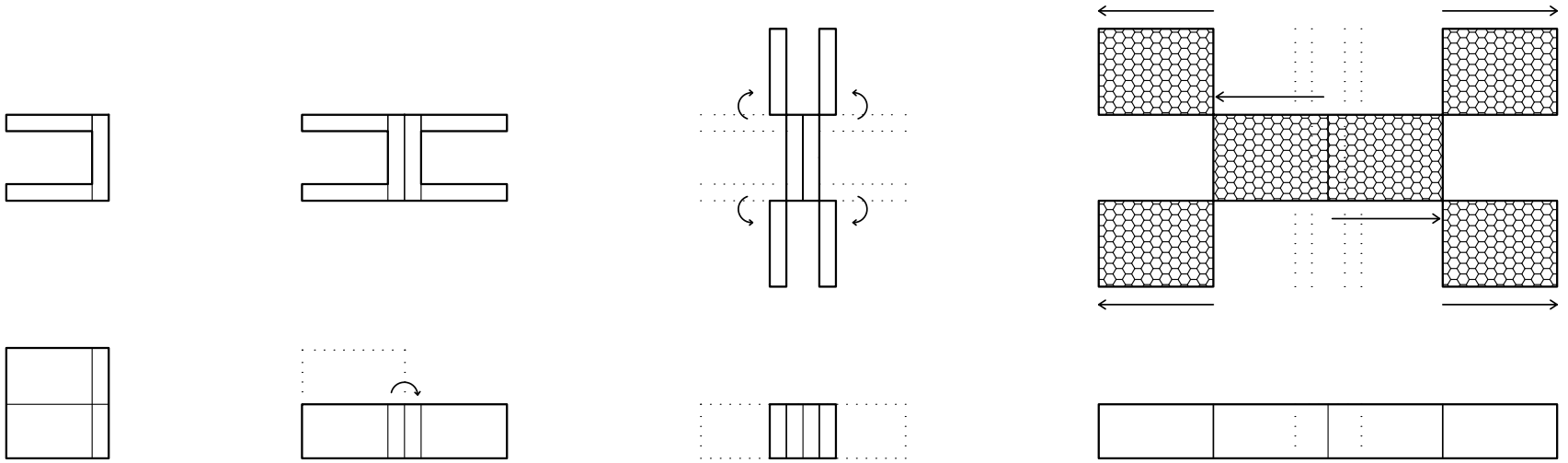


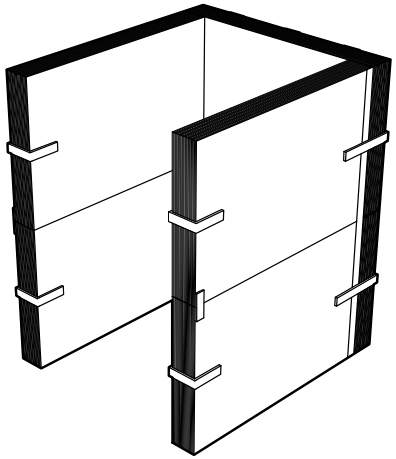


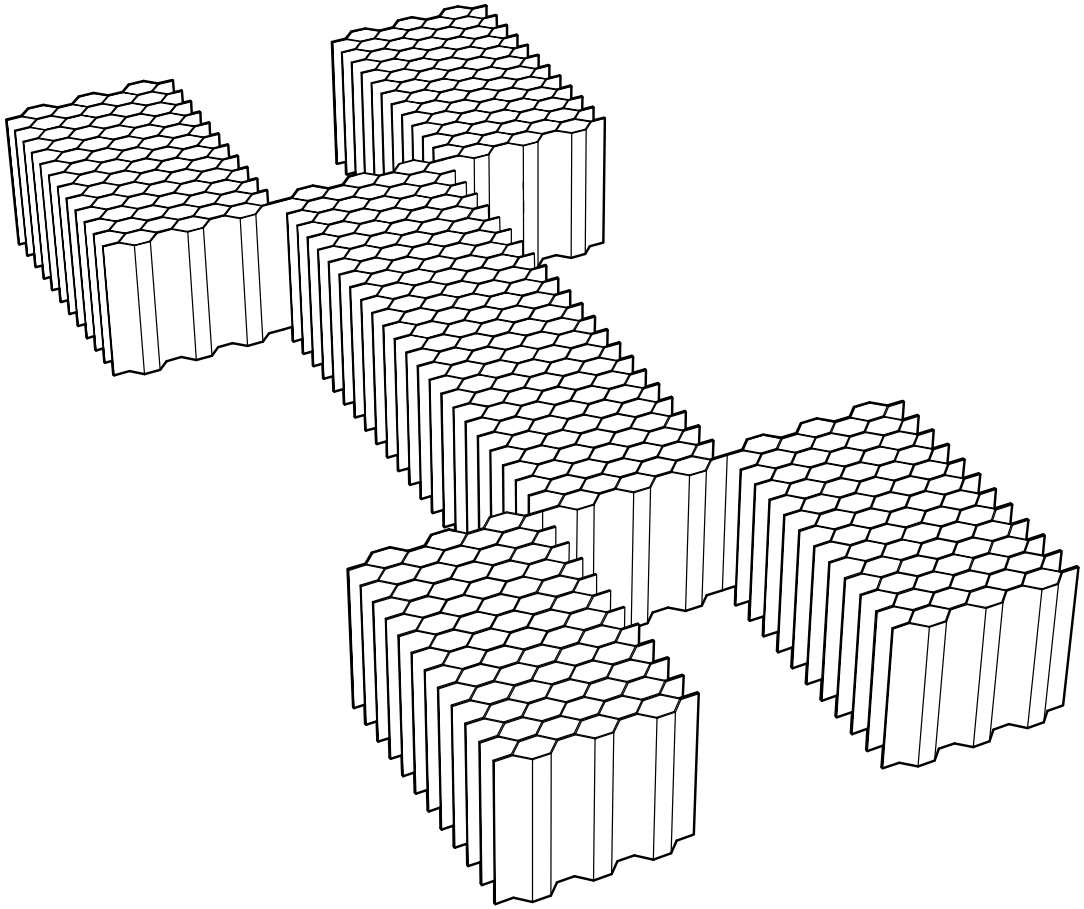


Above: Detail illustrating joint connection between chunks.

Right page: Diagram illustrating expansion from single seat to full bench.

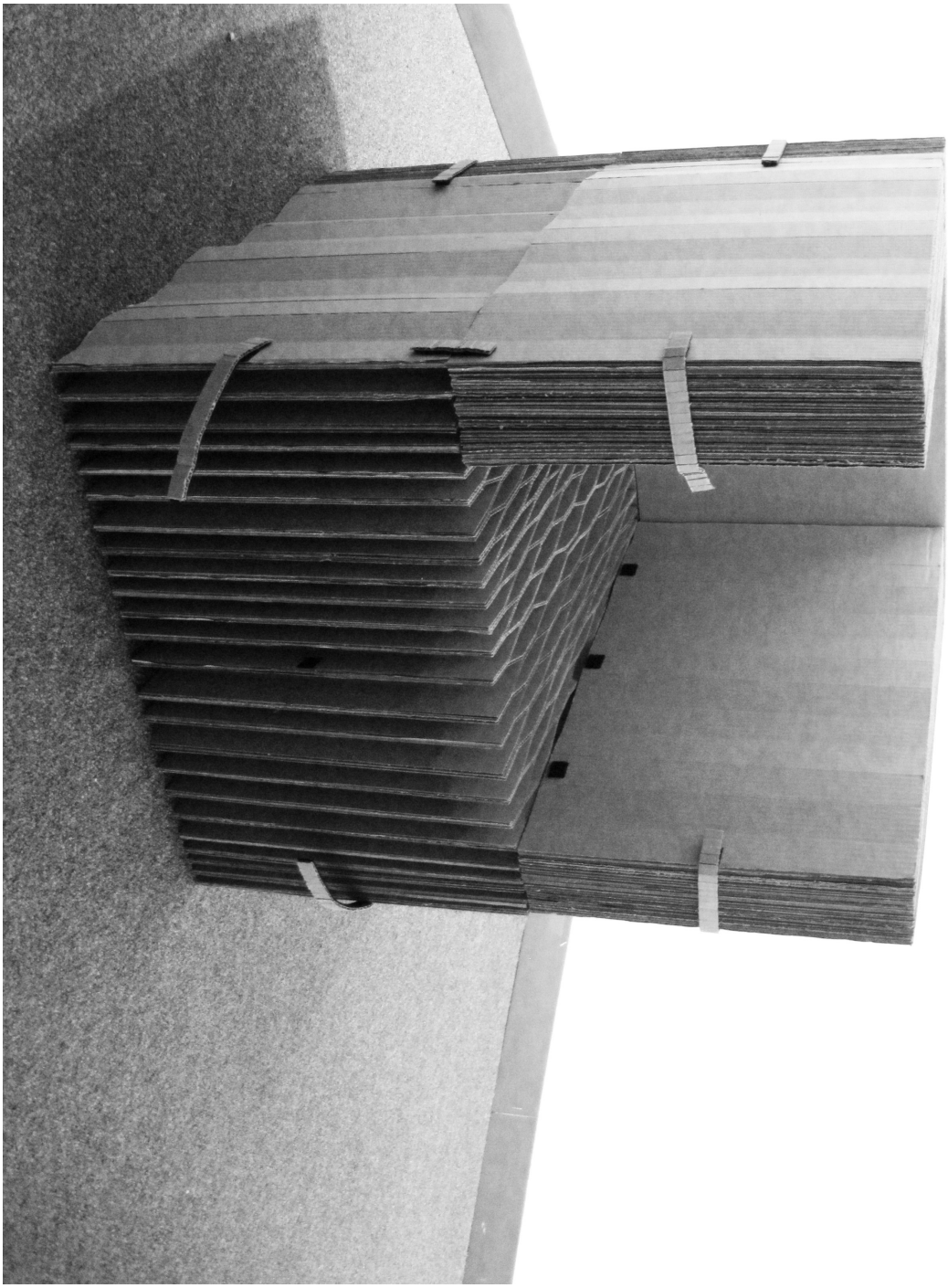


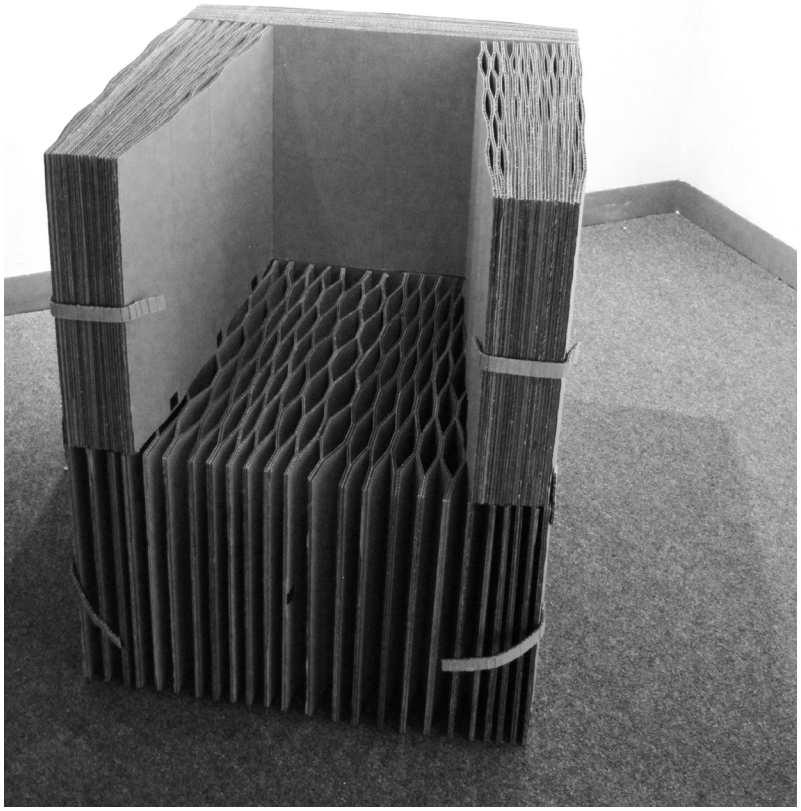


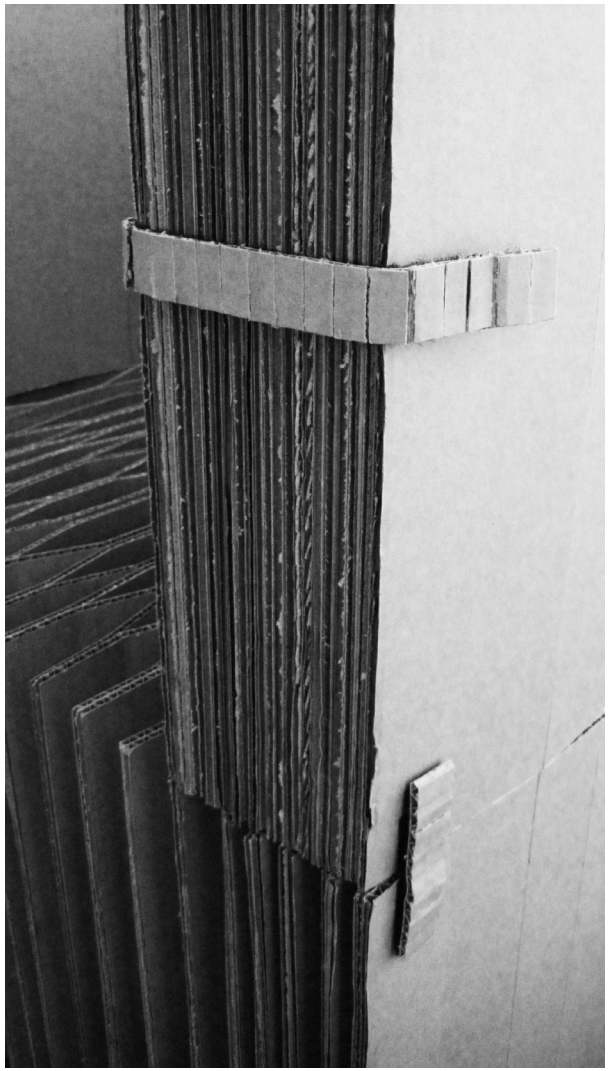


Above: Diagram illustrating fully compact and expanded arrangements.

Right page: Final bench in compact seating position.

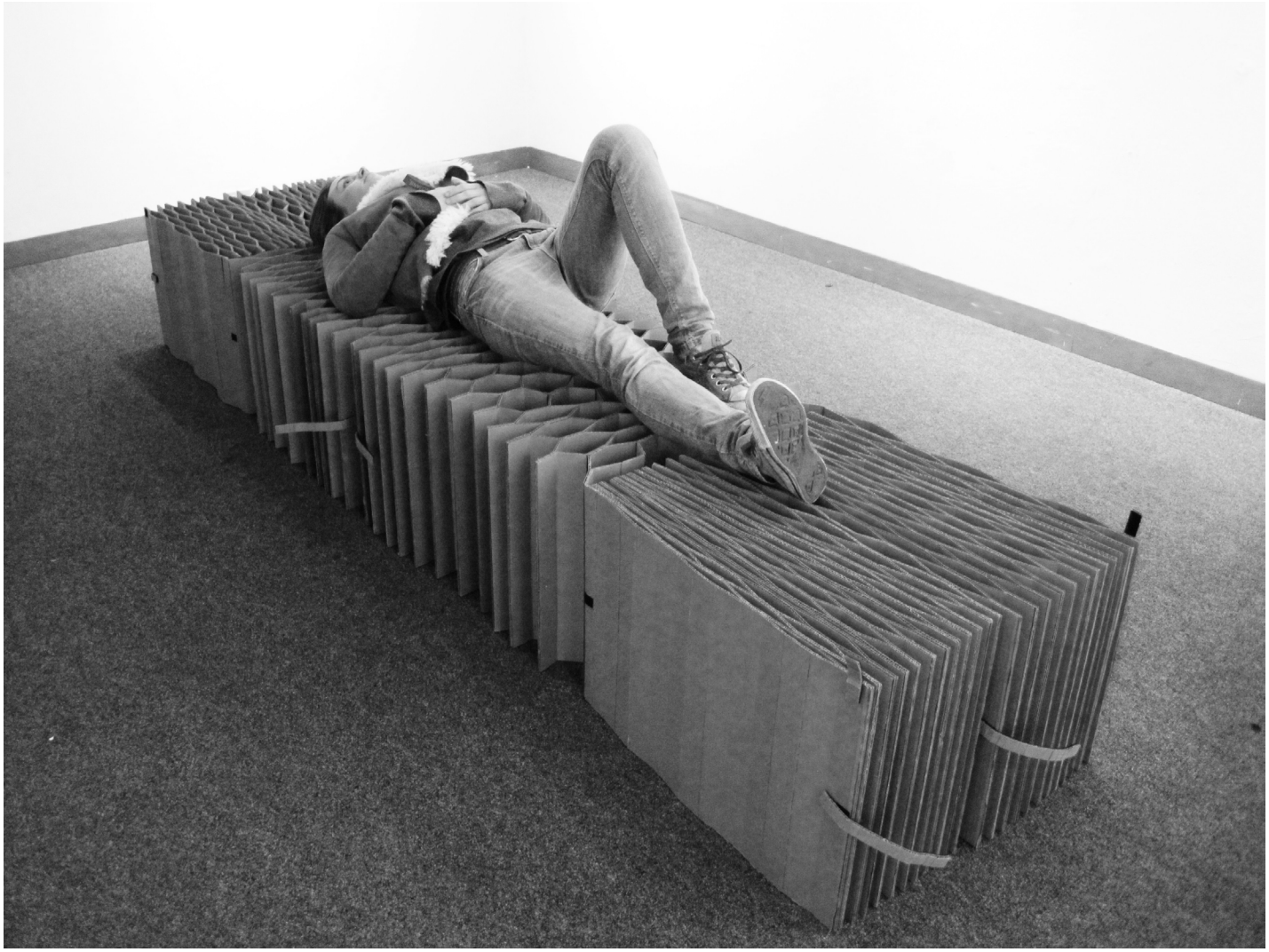






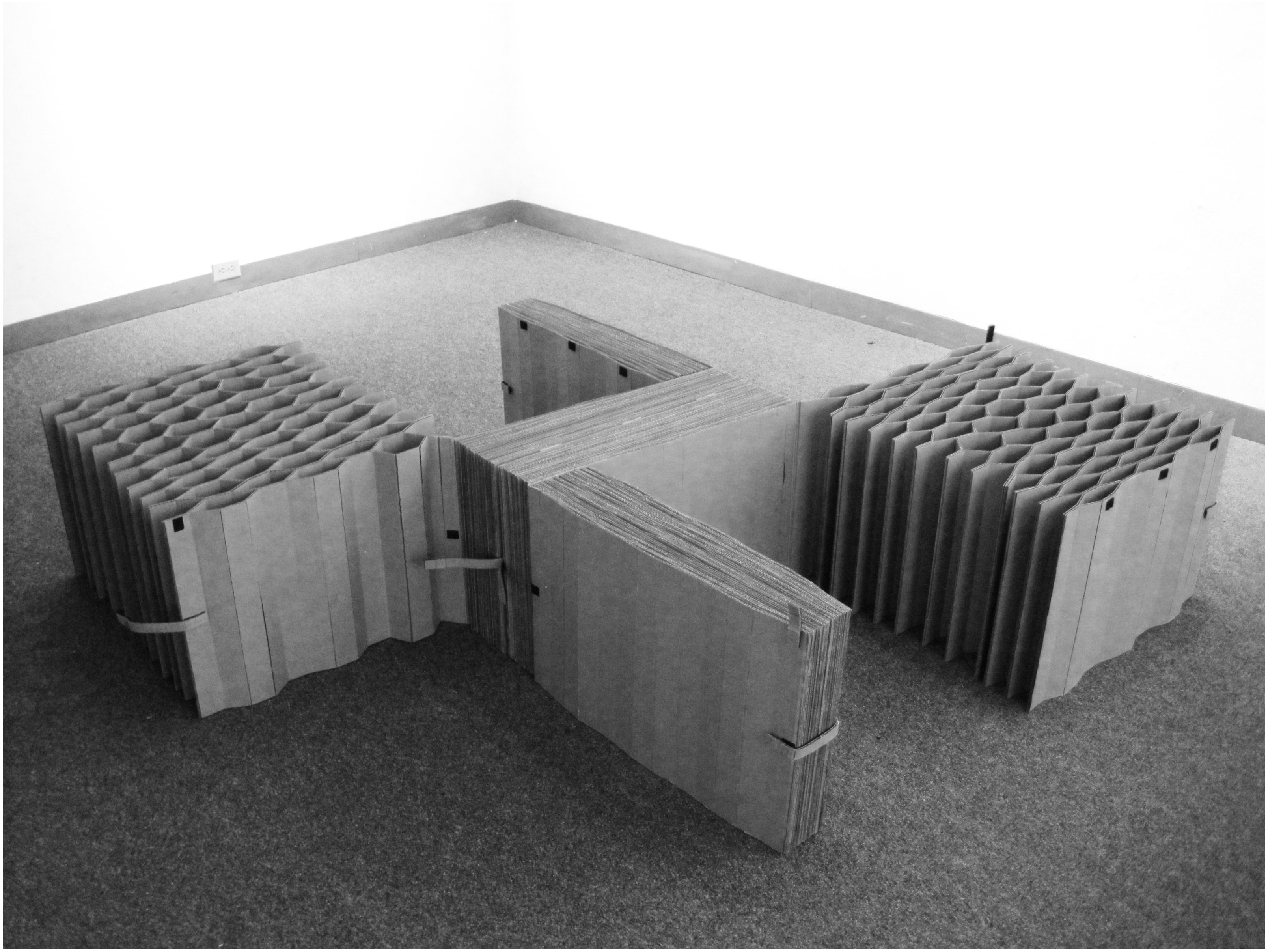
Above: Velcro lined cardboard straps holding chair closed in compact position.

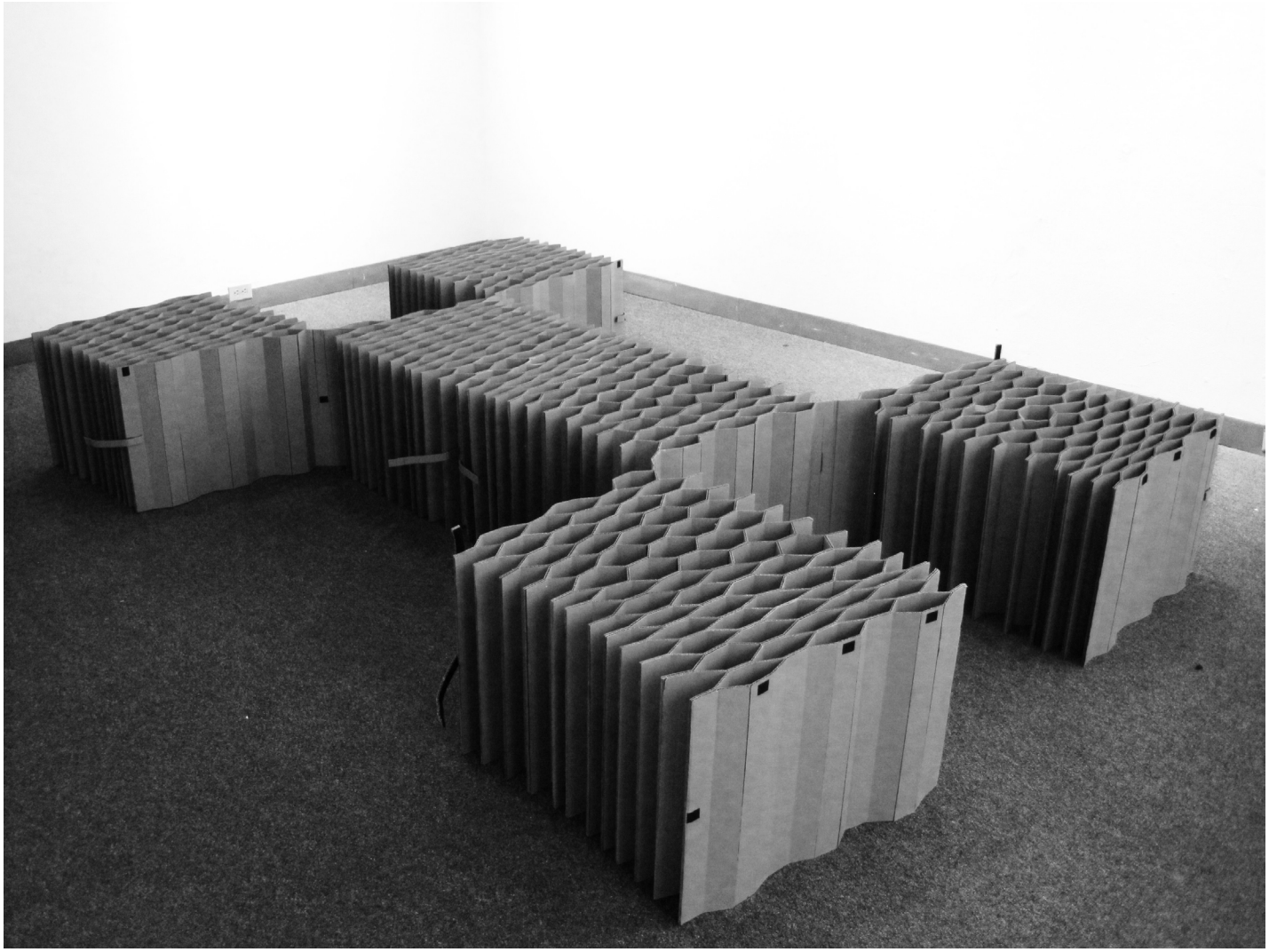
Right page: Chunks still compact, with first fold toward expansion along center “mirror” hinge.



Above: Fully linear arrangement.

Right page: With only first two opposite chunks expanded.

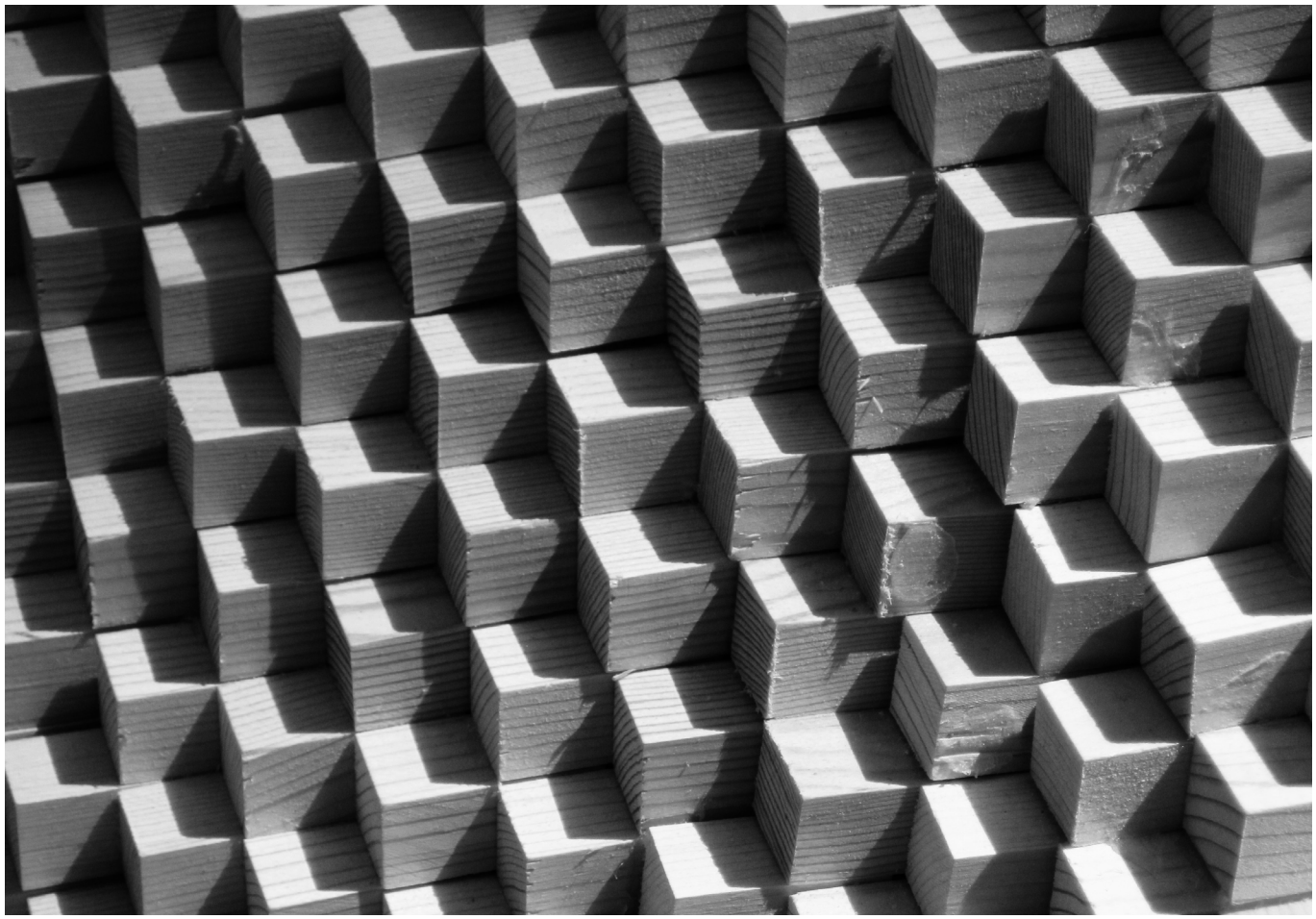




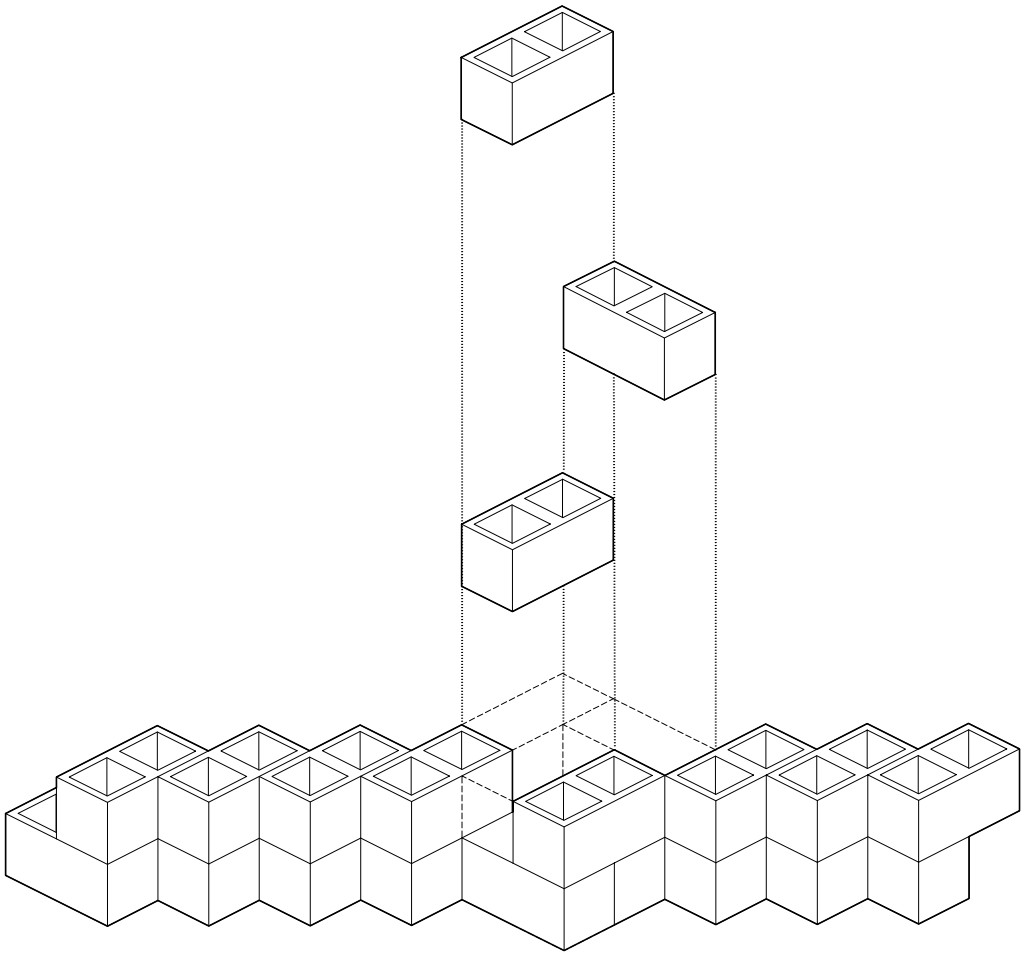
Fully unfolded, expanded arrangement.


ΒΘΠ

04: CMU WAREHOUSE

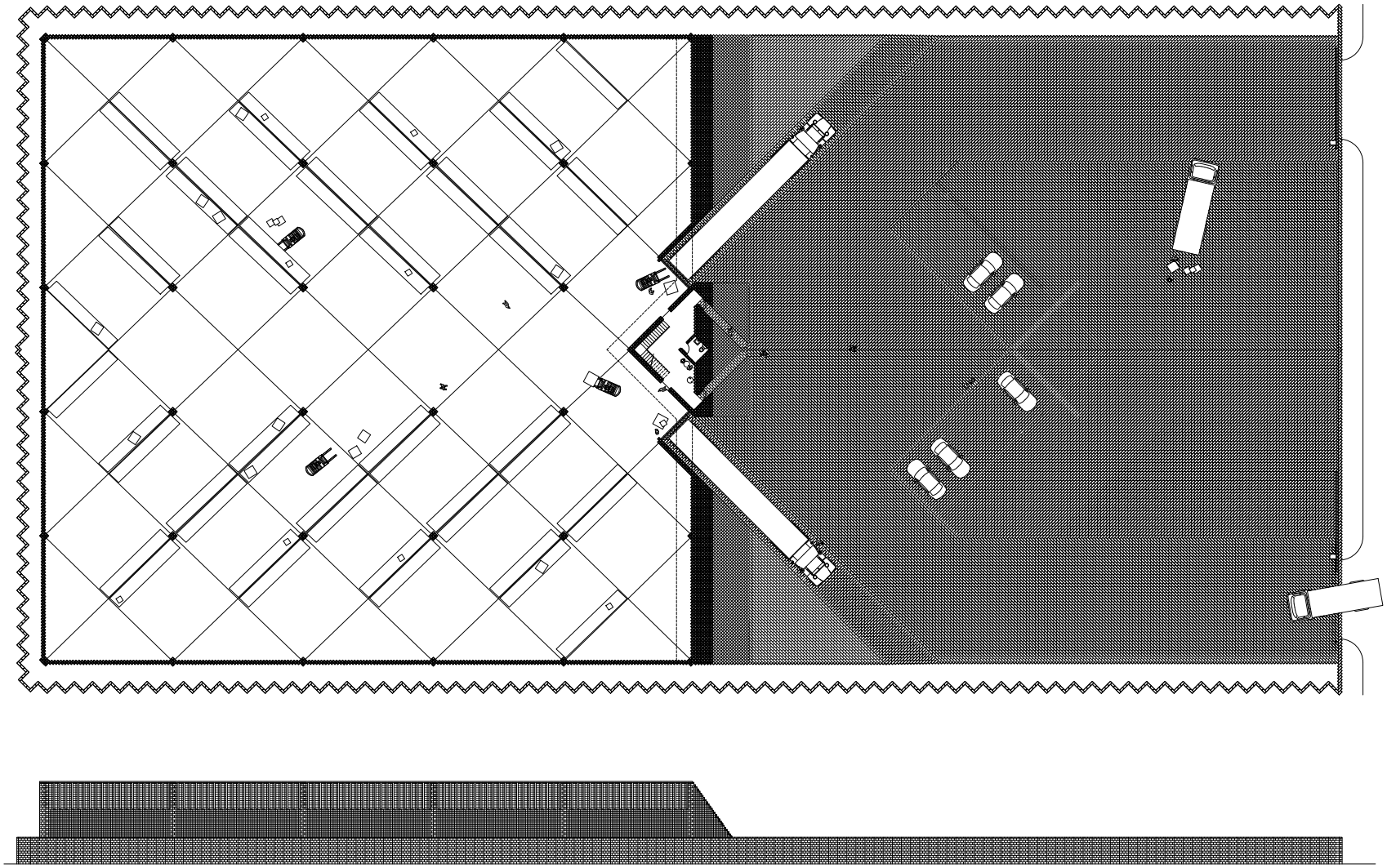


TEXTURED AGGREGATION



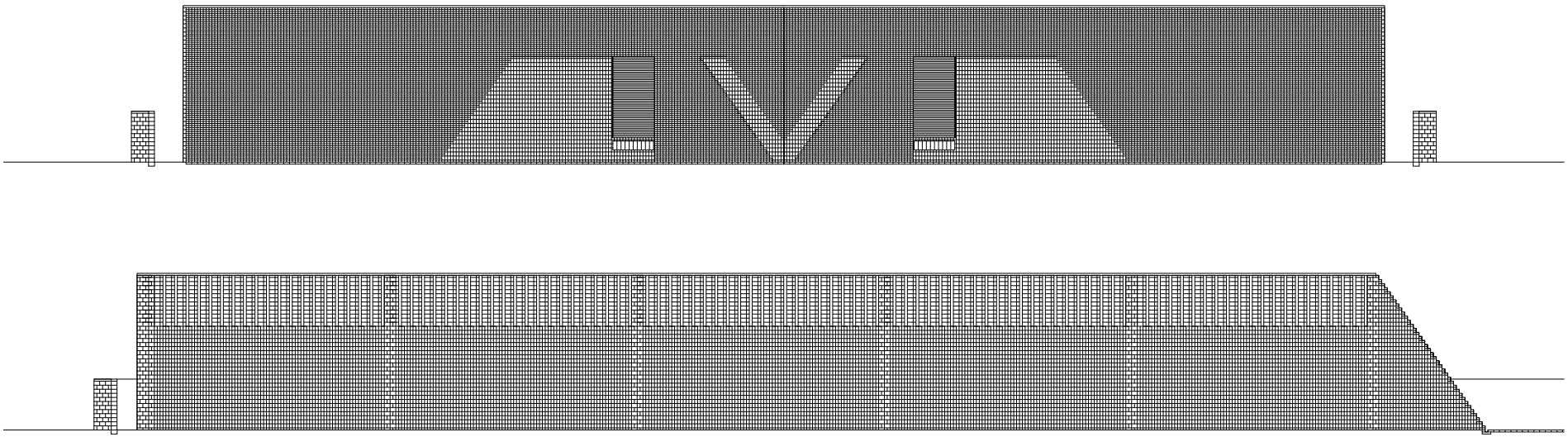
Project 4 integrates process, material, and program on a given specific site in Marfa, Texas. Being a warehouse, the project only has a few specific programmatic requirements, allowing for much freedom in arrangement of the warehouse and hardscape itself. The angled, non-traditional approach in laying the standard CMU blocks themselves reflects a course of methodology that pervades every element of the warehouses design. The warehouse itself features a massive stepped wall that possesses thermal mass, and pervades the site with a sense of security and clear threshold, and provides a visual transition between hardscape and building. The shelves, loading bays, and cargo routes are angled toward the direction of travel, and intend to increase efficiency while funneling traffic through a central panopticon-like eye of the office/pedestrian entryway.

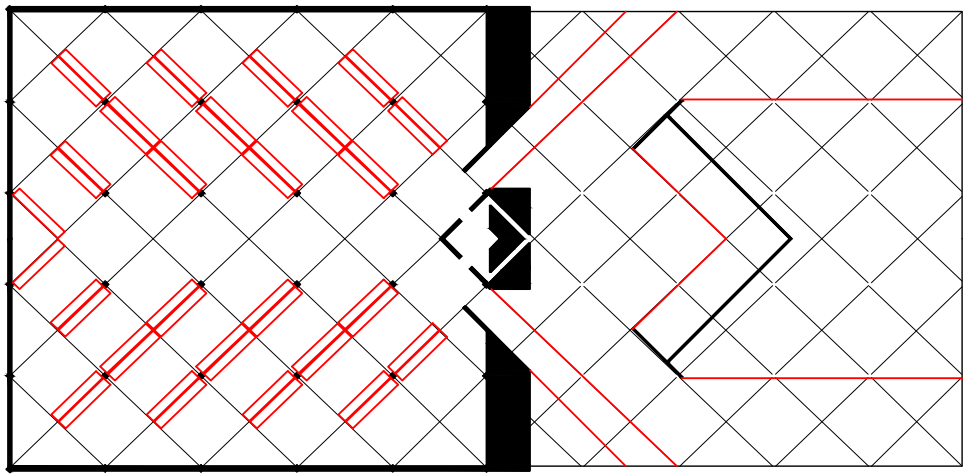
Left page: Axonometric detail showing wall construction.

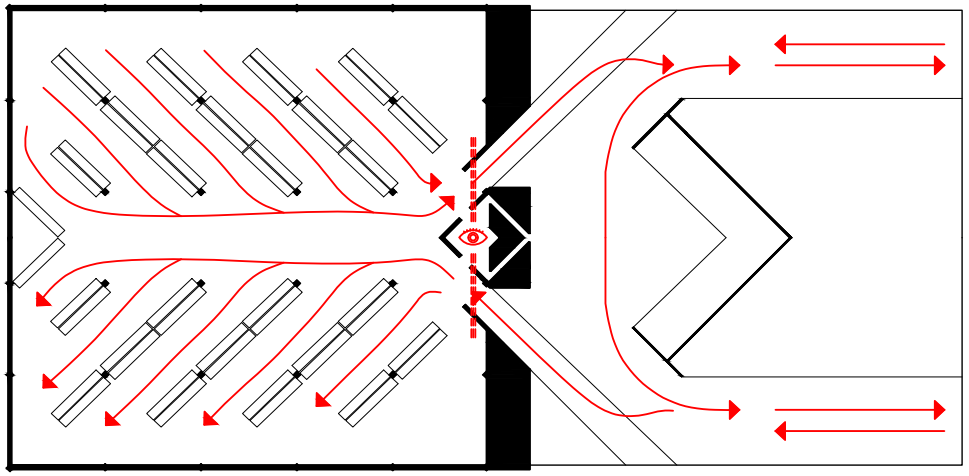


Above: Plan and elevation.

Right page: East (top) and West (bottom) elevations.

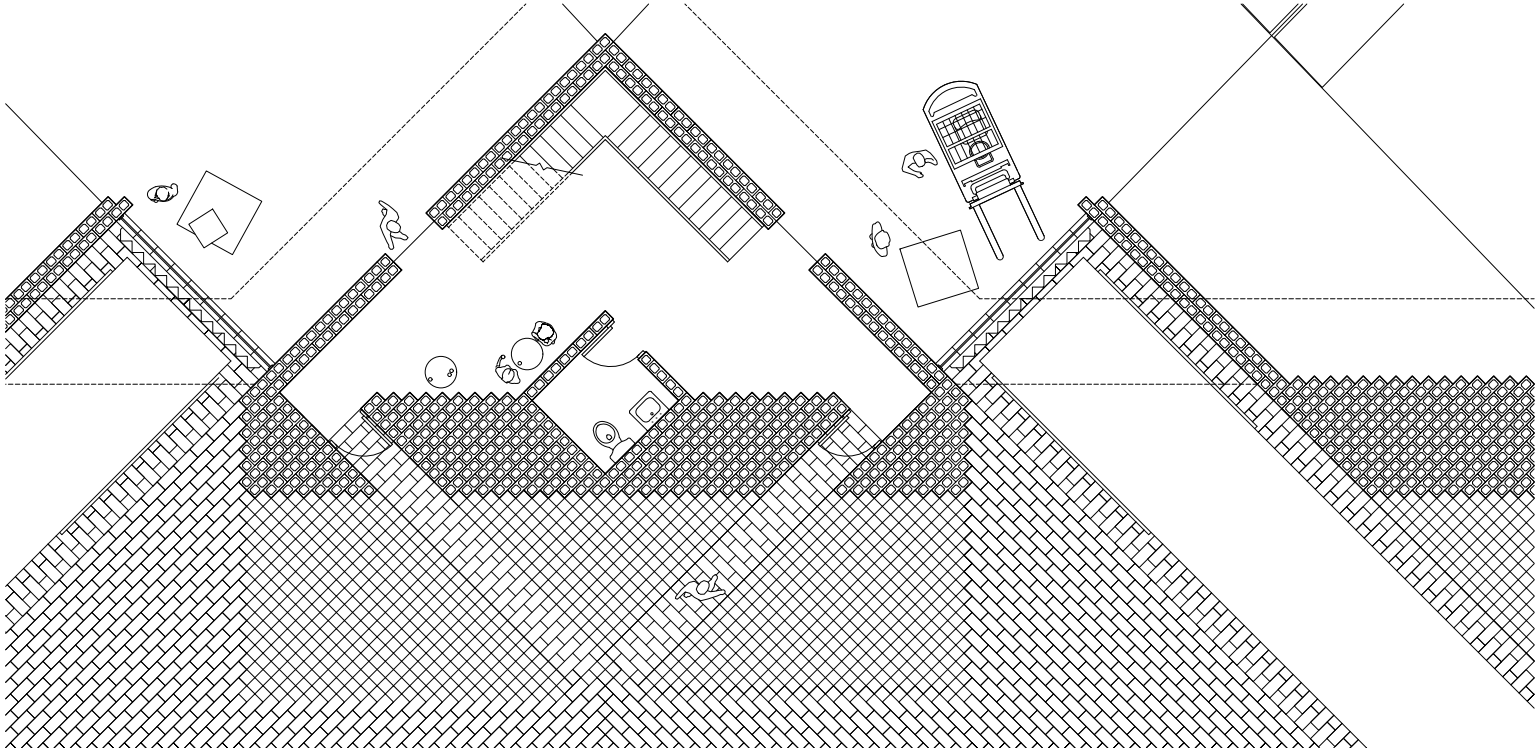


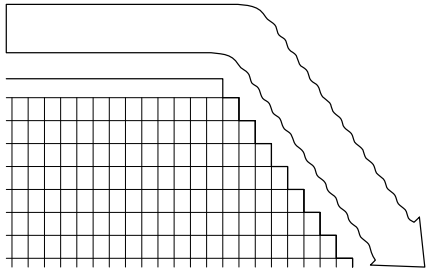


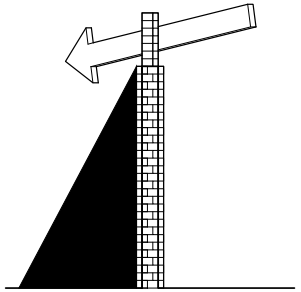


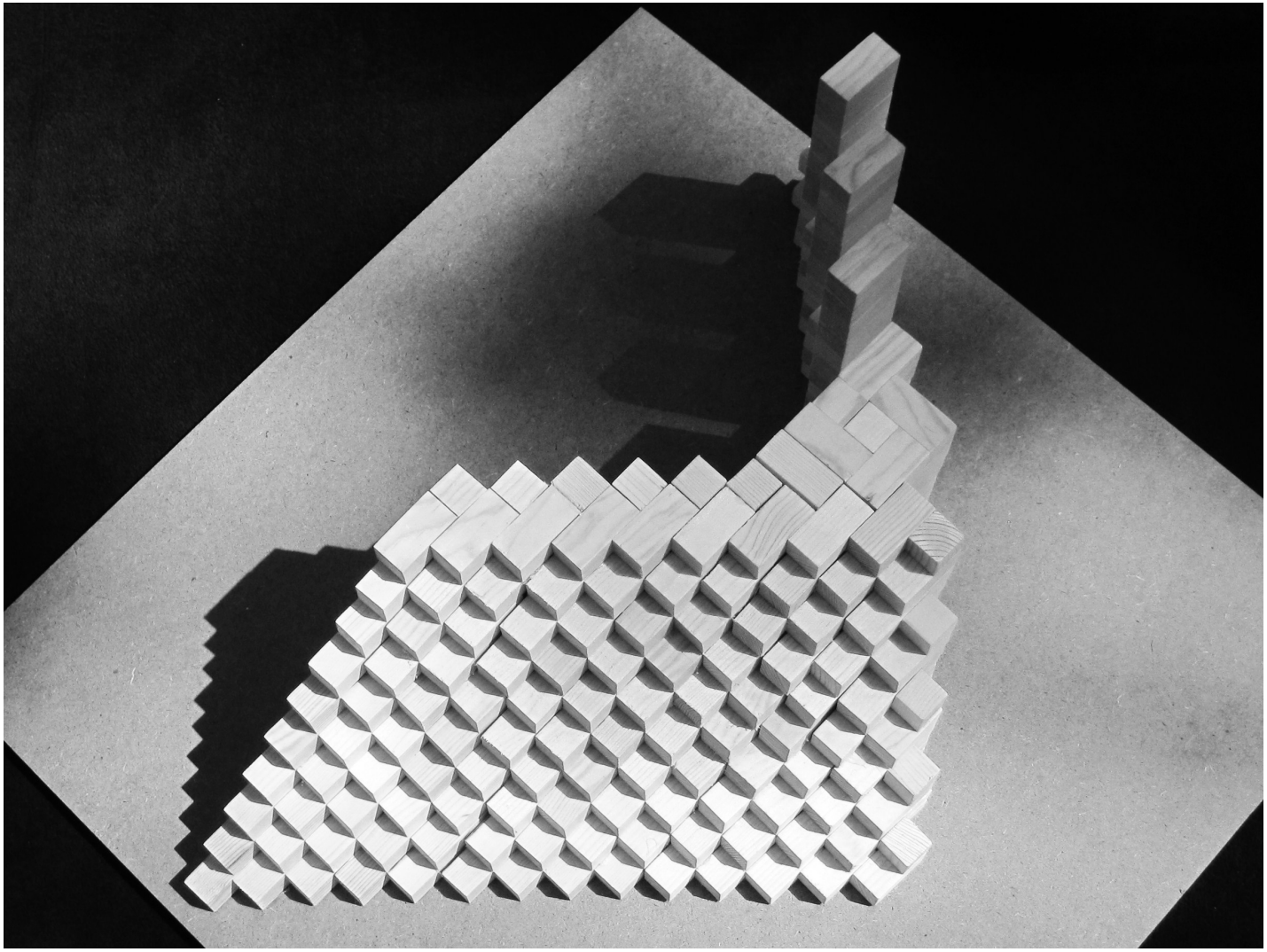
Above: Diagrams illustrating 45 degree organizational grid and cargo circulation/panopticon control.

Right page: Detail plan and diagrams showing roof drainage and clerestory lighting.

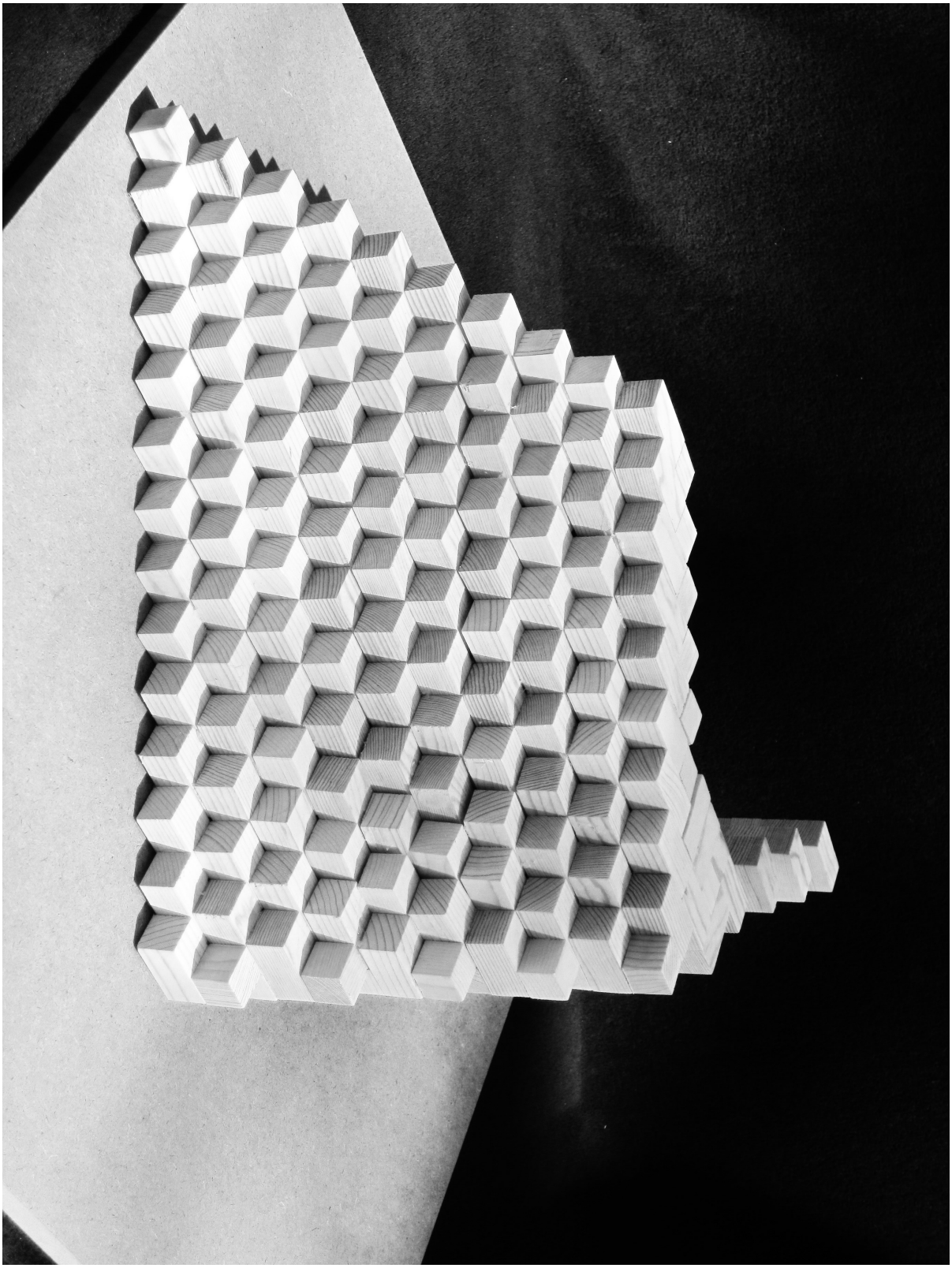


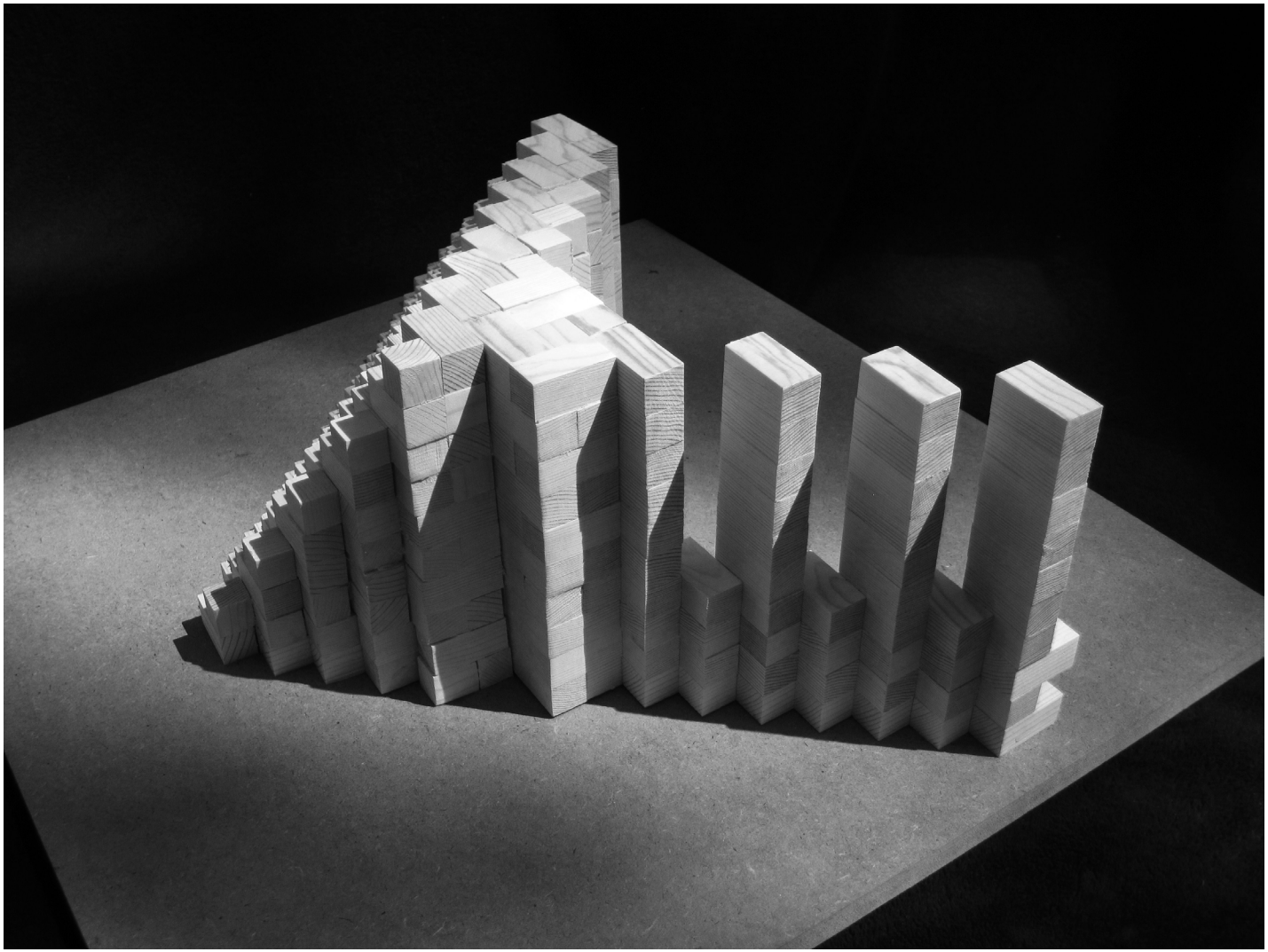




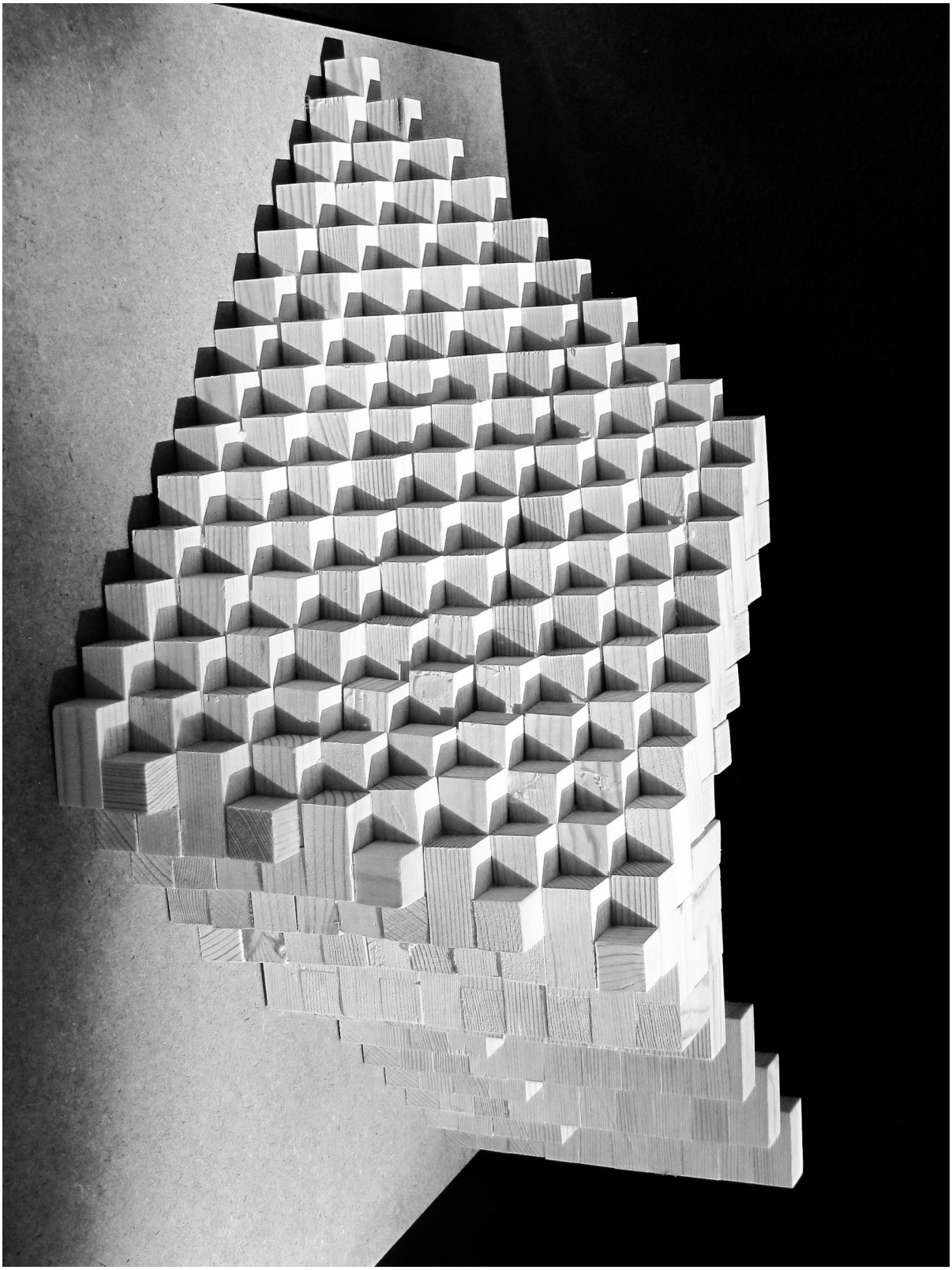


Detail model of front corner.

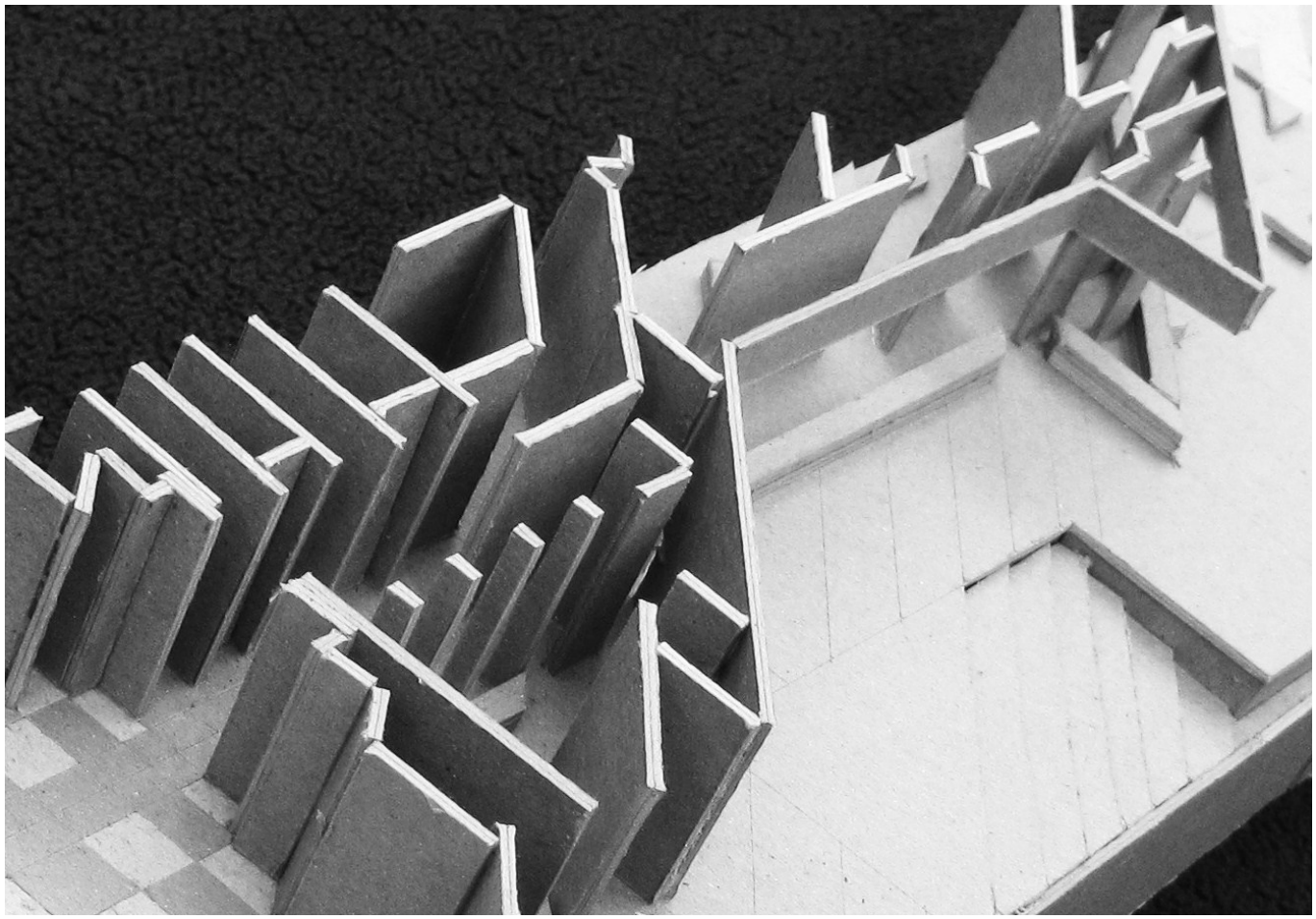




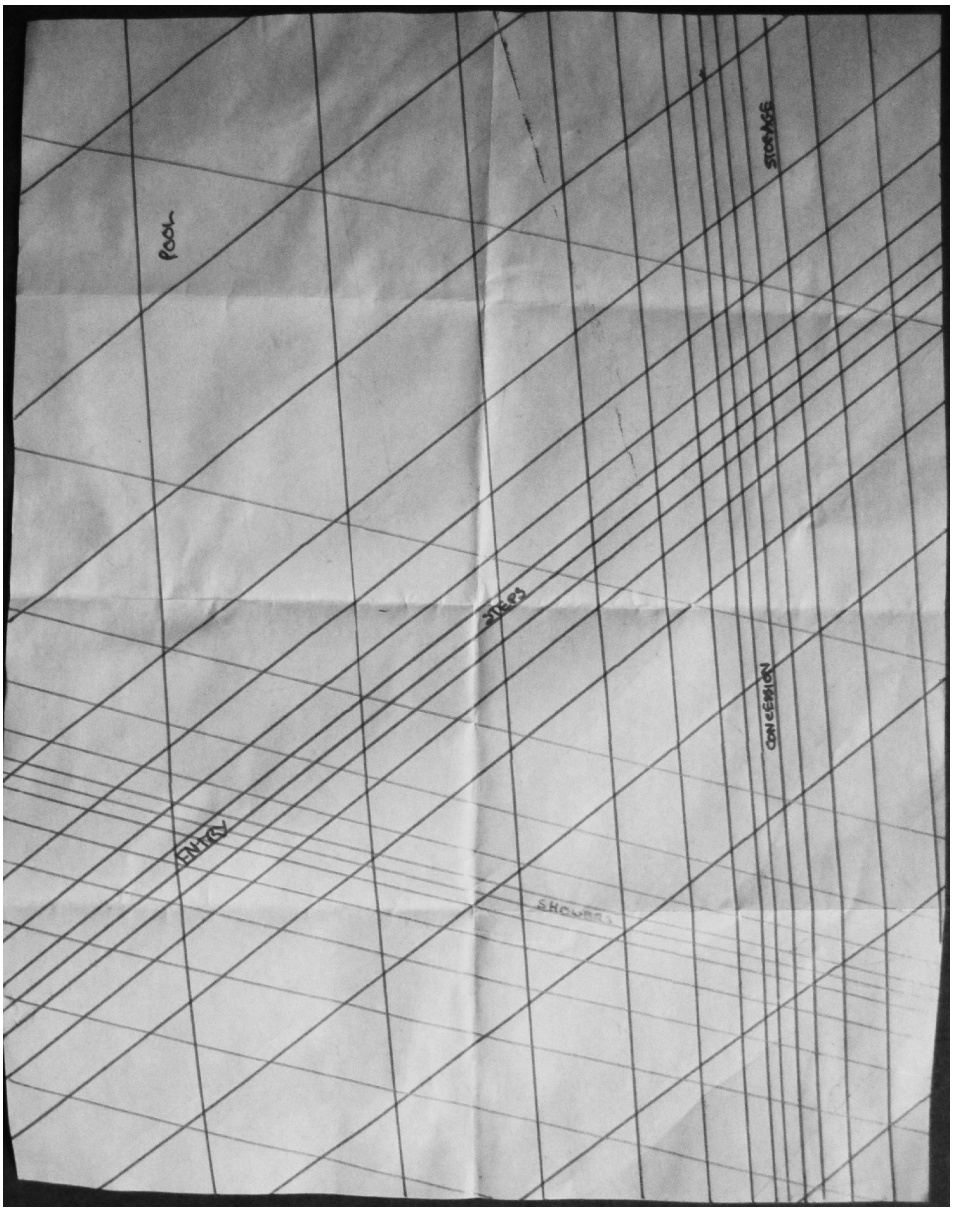
Detail model of front corner.



05: GRID DENSIFICATION

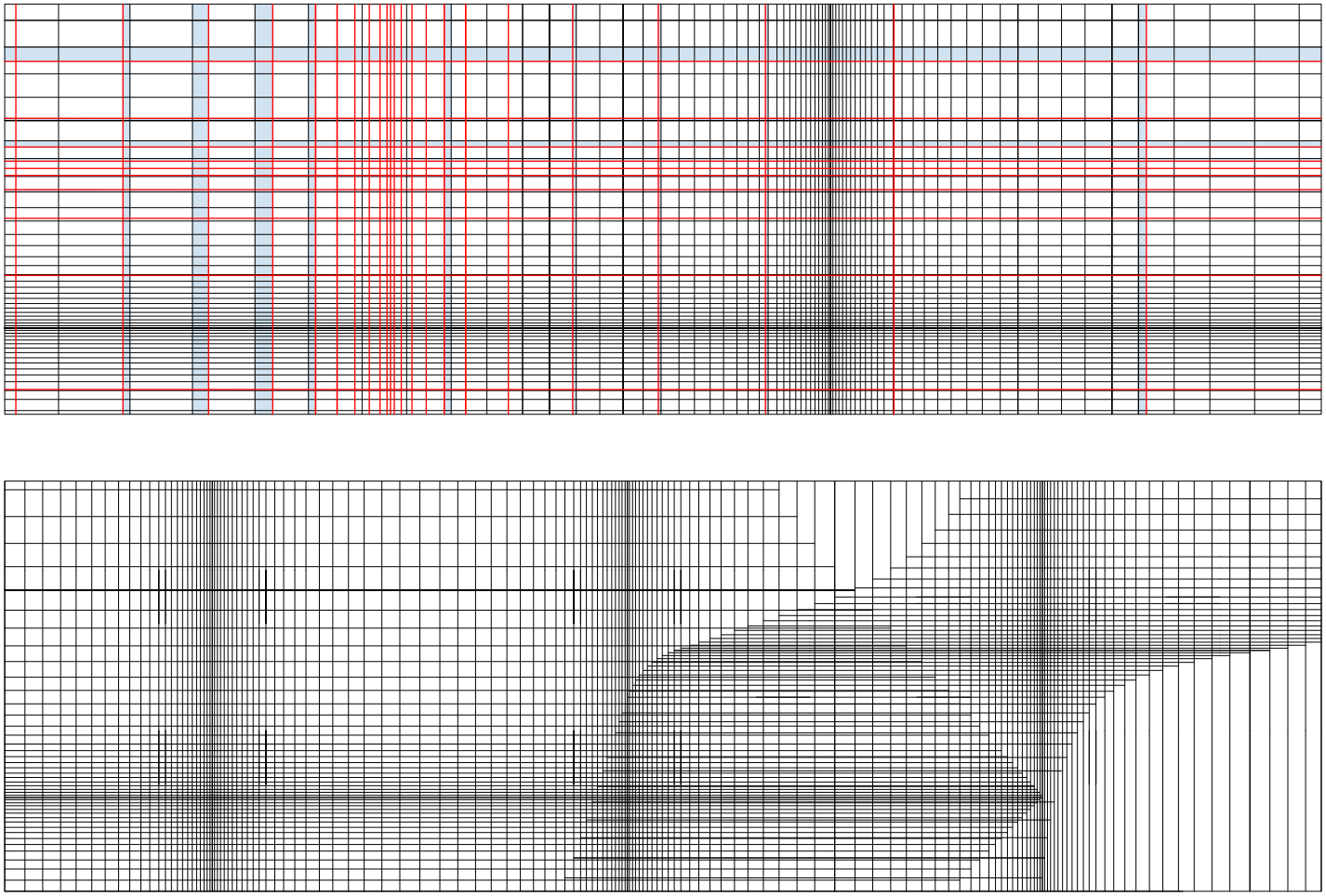


HOLLYWOOD PUBLIC POOL


POOL
STORAGE
CONCESSION
SHOWER

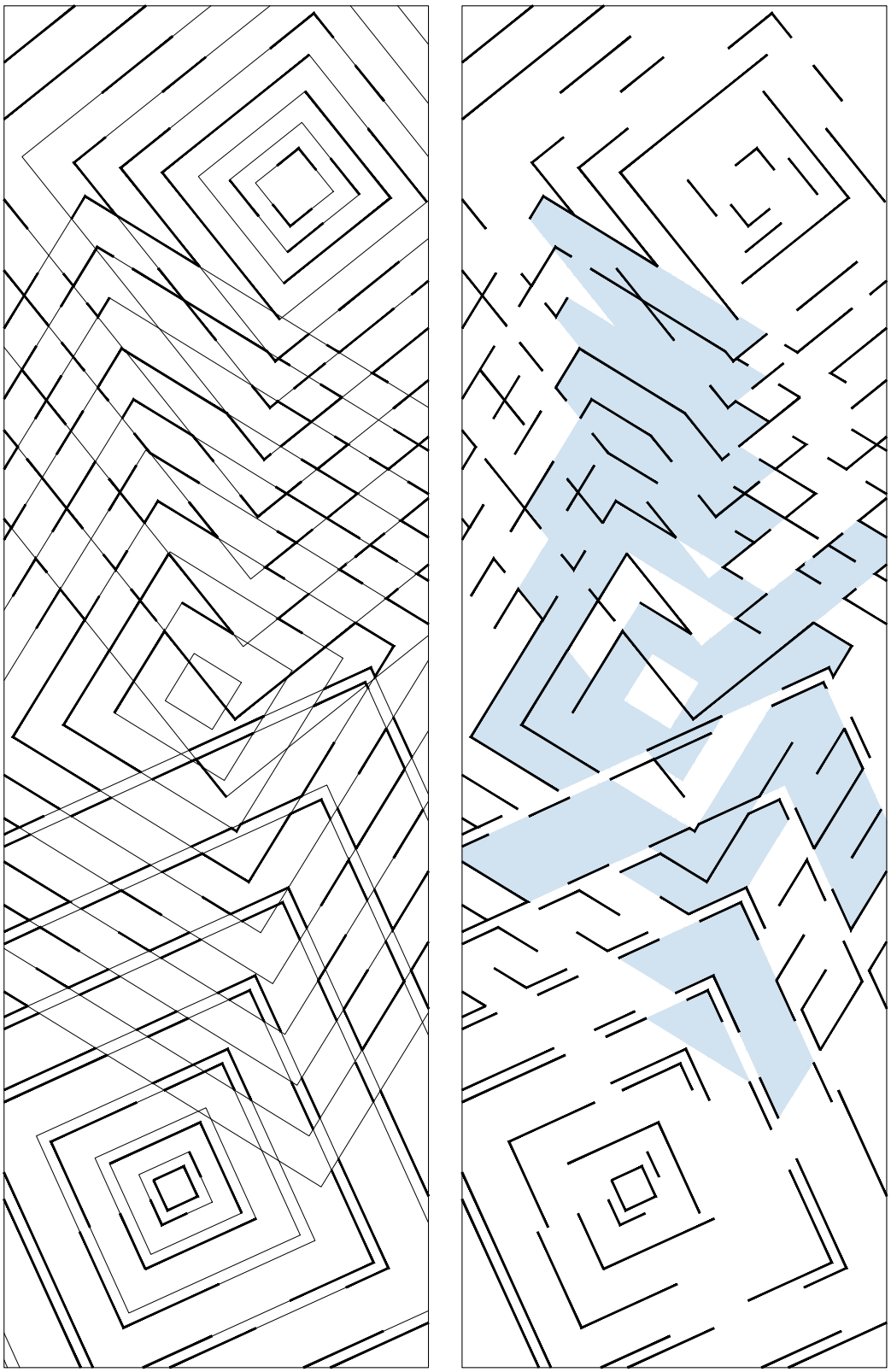
Project 5 culminates with the creation of a public pool in Hollywood. With the application of all material operations onto a full scale programmatically driven site with specific and dynamic occupiable spaces, the primary design challenge was finding a system that was capable of addressing issues of program that can respond to the needed specificity, as well as cover the entire site in a cohesive organizational framework. It was decided that a grid system could be used best to accomplish these intracacies, and the development of a particular grid system that was able to respond to varying needs of programmatic density while also generating visual and spatial richness became the main challenge. Several grid systems were experiemented with using “nodes” as reactive points of density within the grid, and eventually a system was developed using three axes that “radiated” parallel lines outward in decreasing density to form nodal intersections and organized program density based on program. This unique grid system was able to reconcile the problems of programmatic density, and when combined with clever elevation changes creates a rich expansion and compression of space that one experiences as clearly on site as it shows in plan.

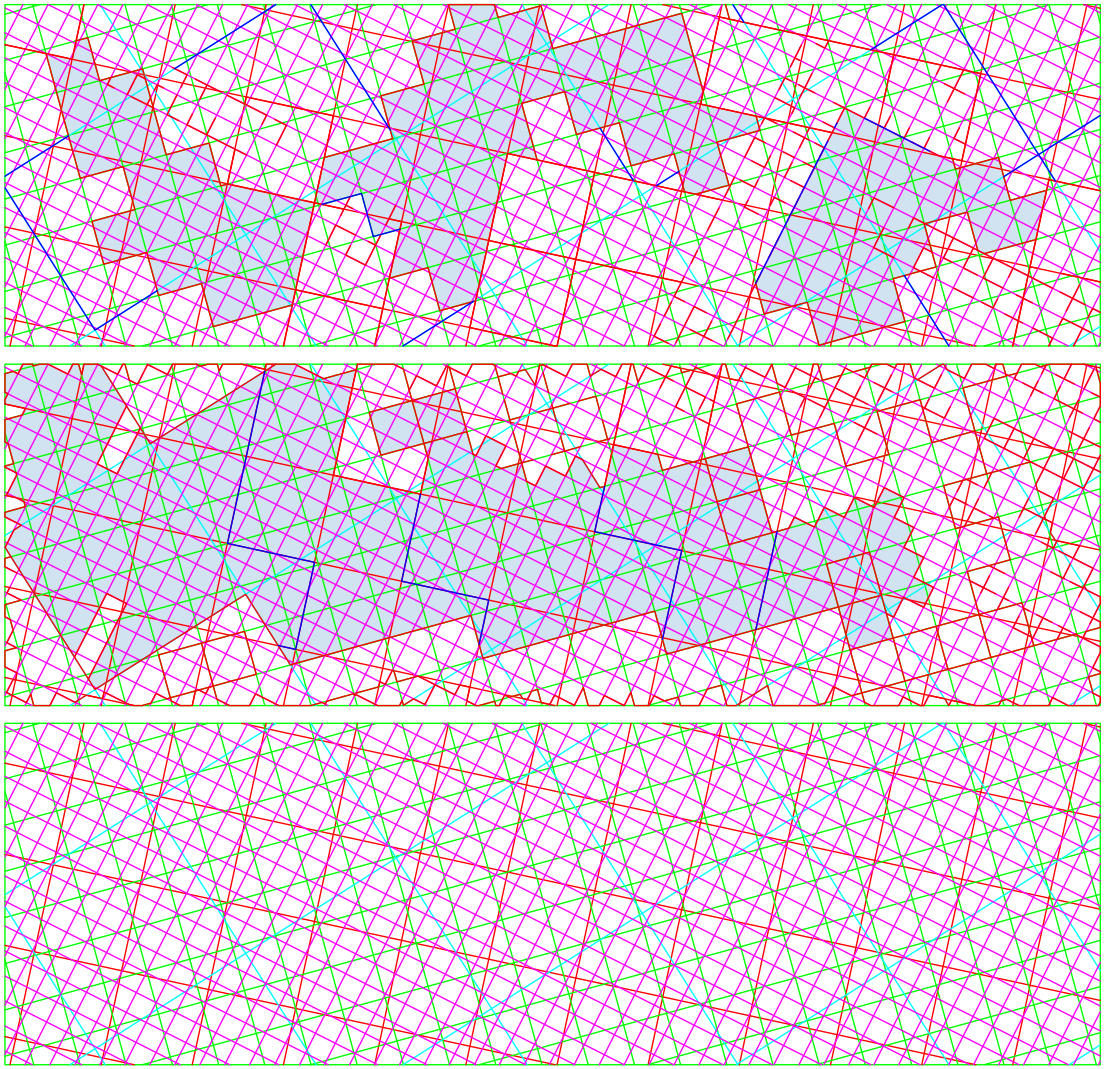
Left page: Preliminary hand drawing of final grid system and programmatic organization.



Above: Preliminary grid study.

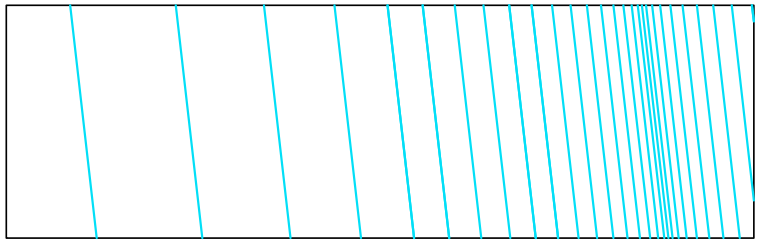
Right page: Preliminary parti plan investigating interference effect.



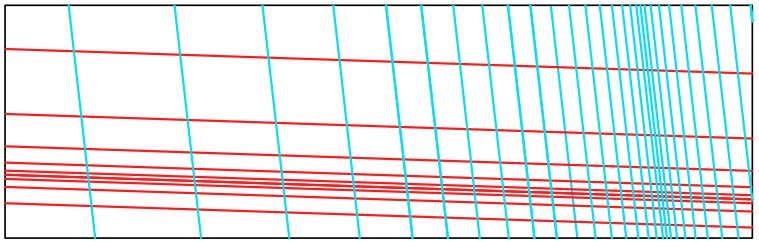


Above: Second parti plan using layered grids.

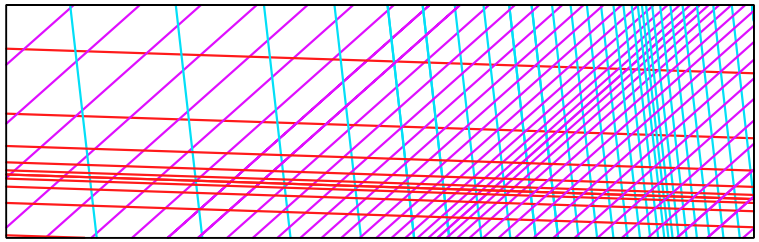
Right page: Diagrams showing final programmatic grid.



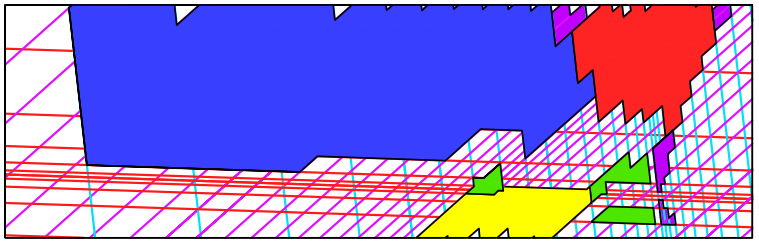
AXIS: ENTRANCE BAND

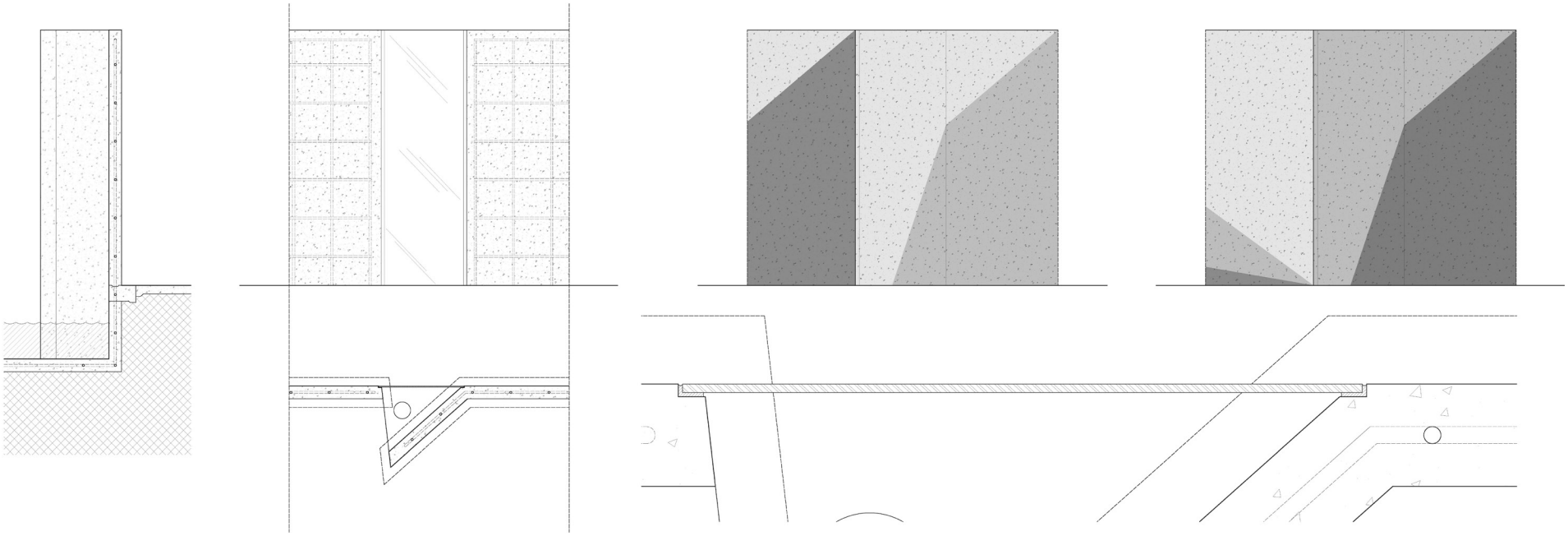


AXIS: LATERAL CORRIDOR



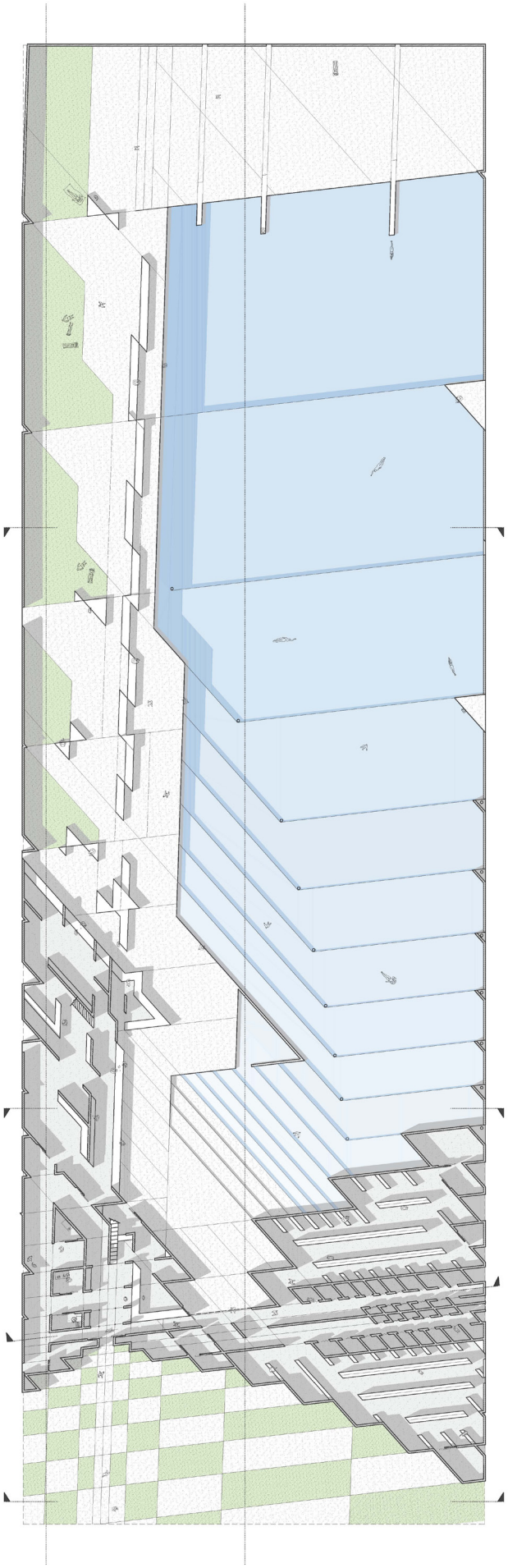
AXIS: DIAGONAL INTERFERENCE

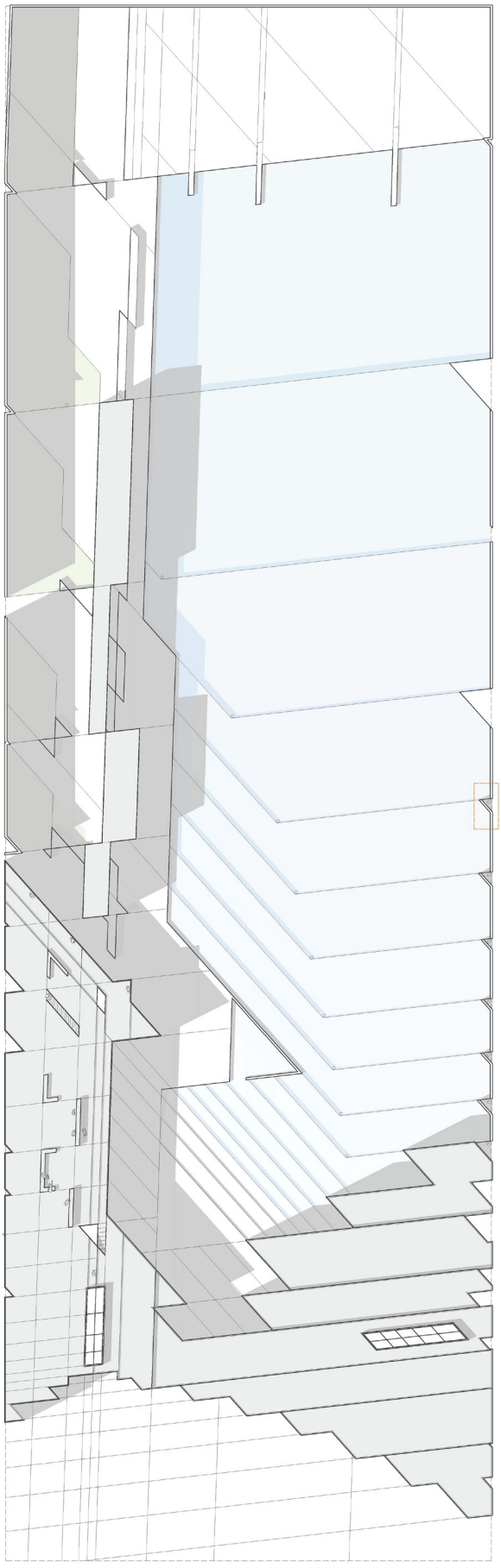


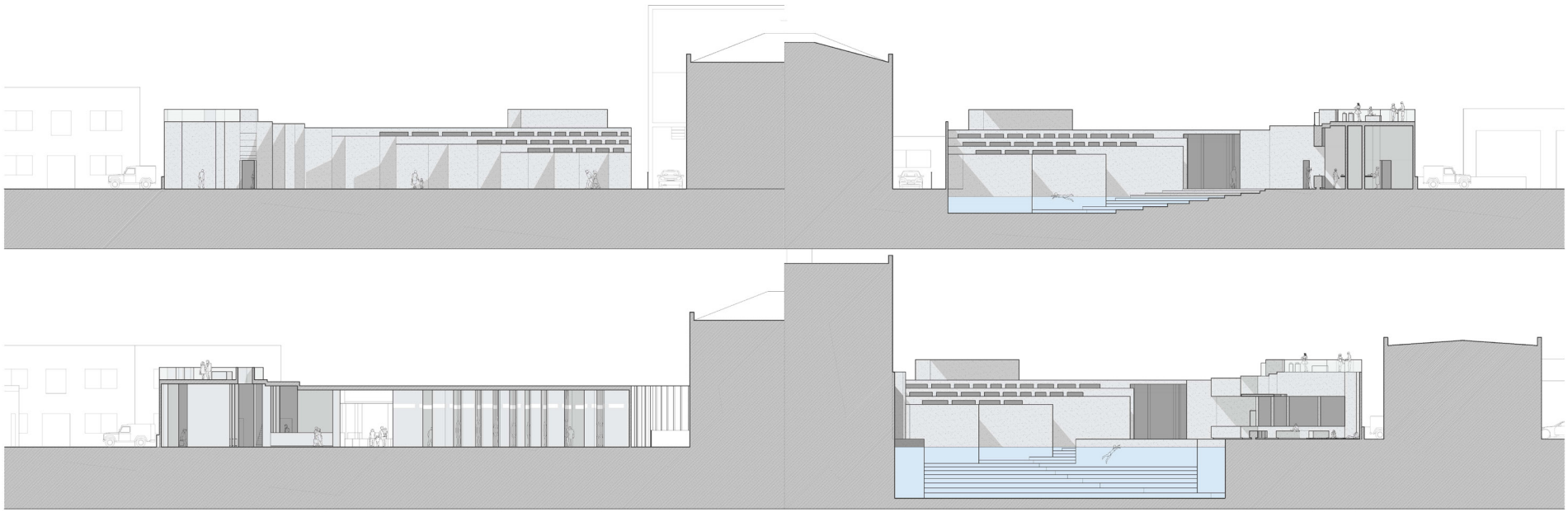


Above: Detail plan, section, and elevation of wall segment.

Right page: Final roof and 4’ cut plan.

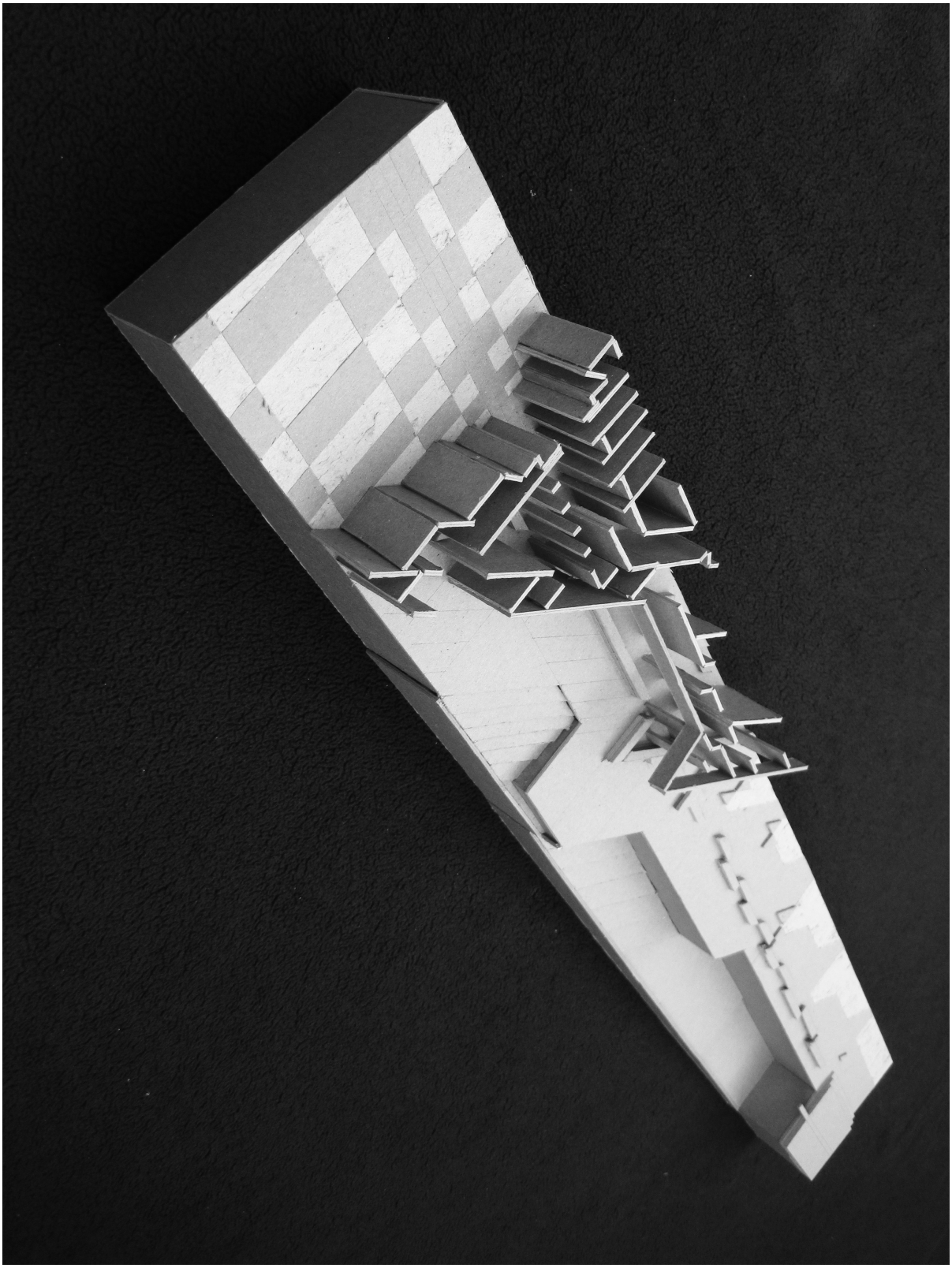


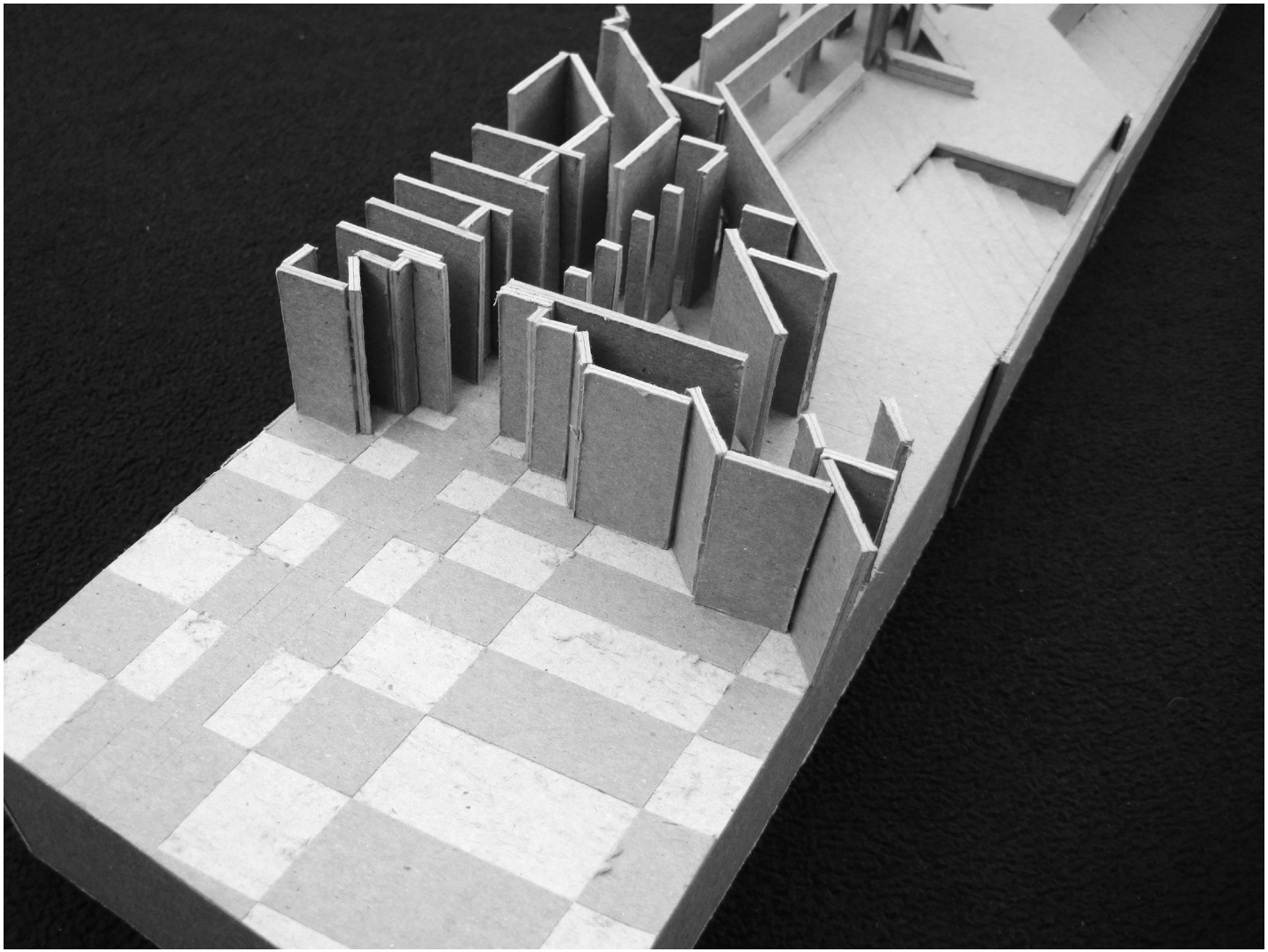




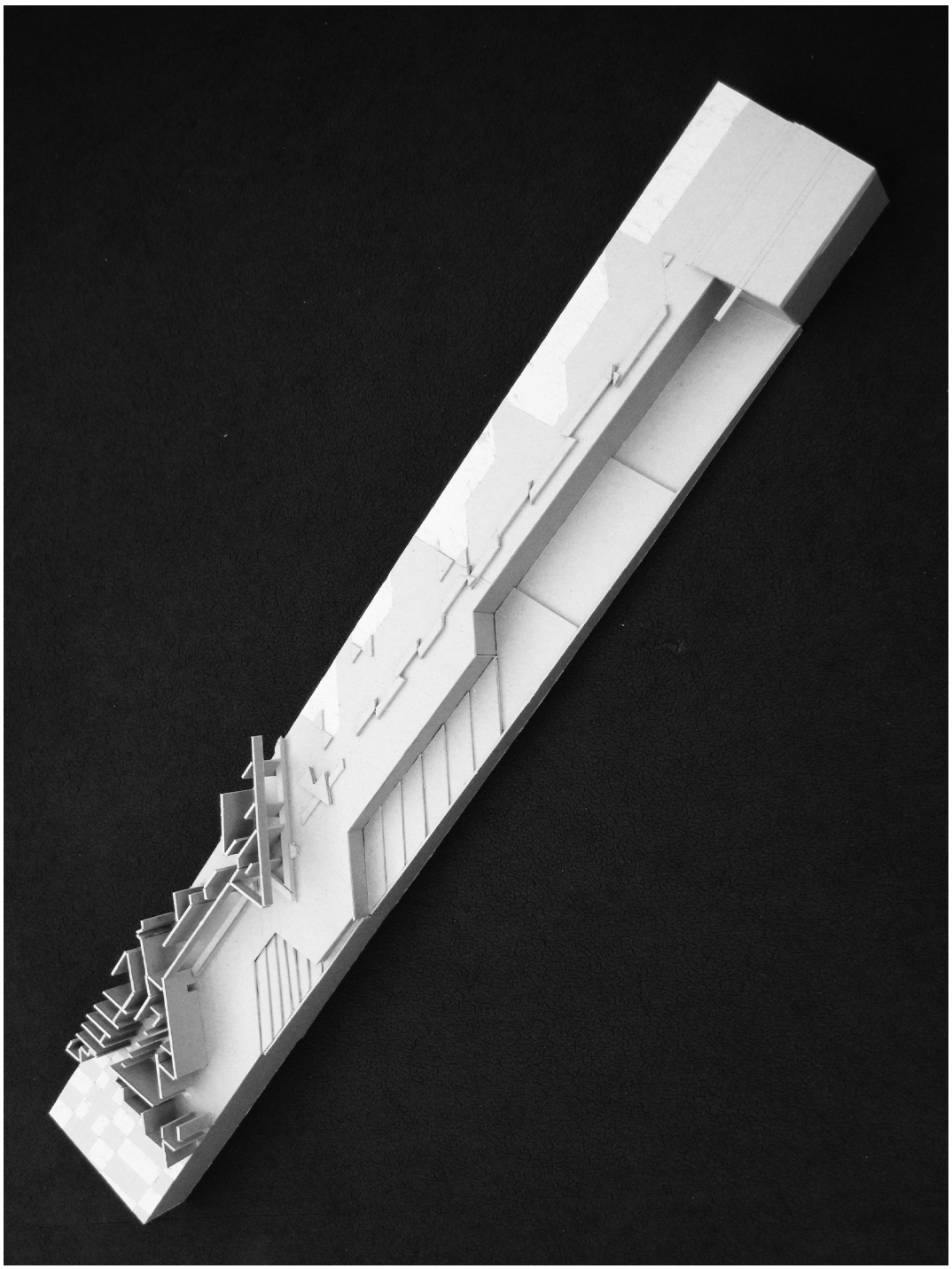
Above: Final sections.

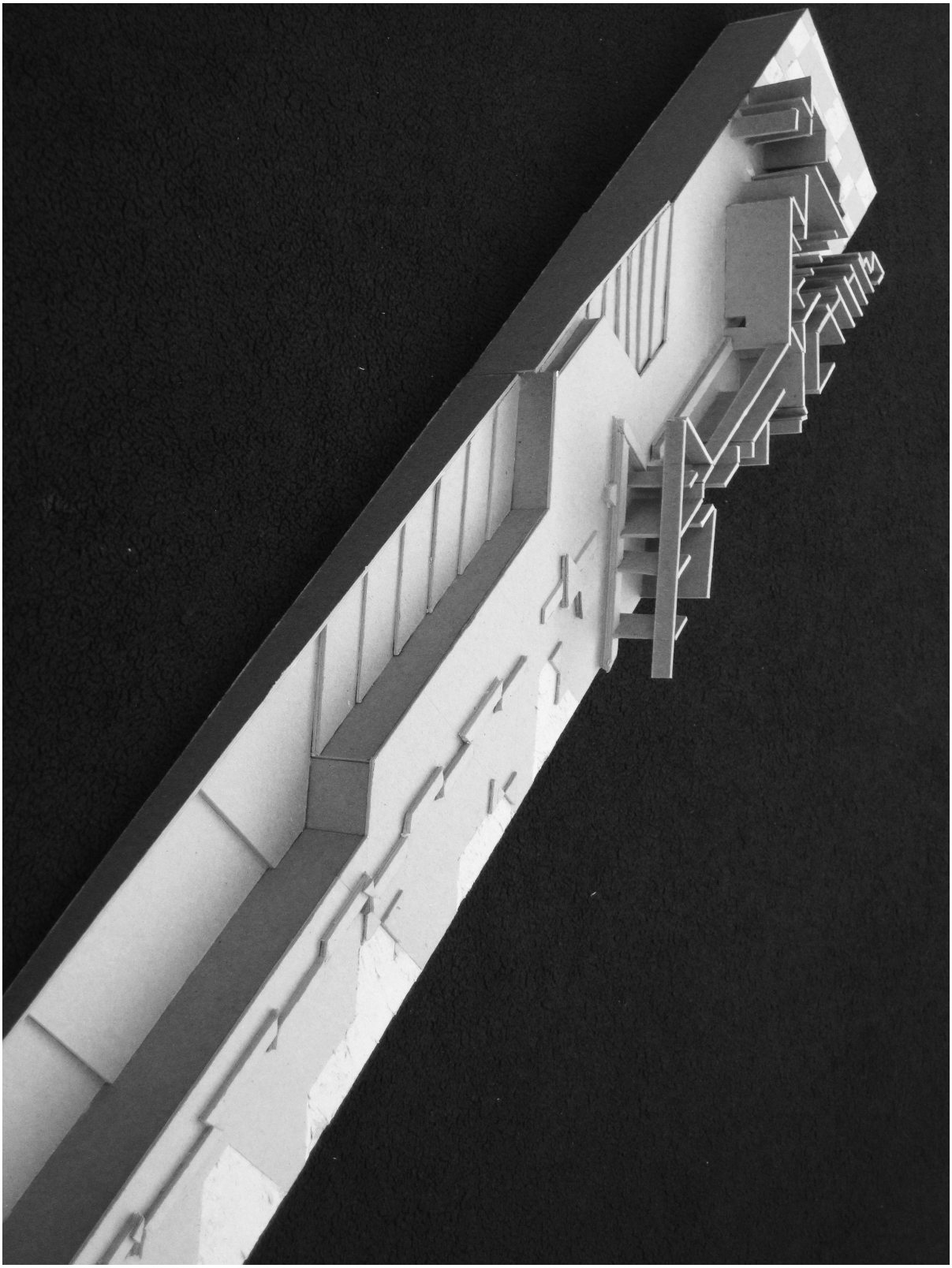
Right page: Final model.

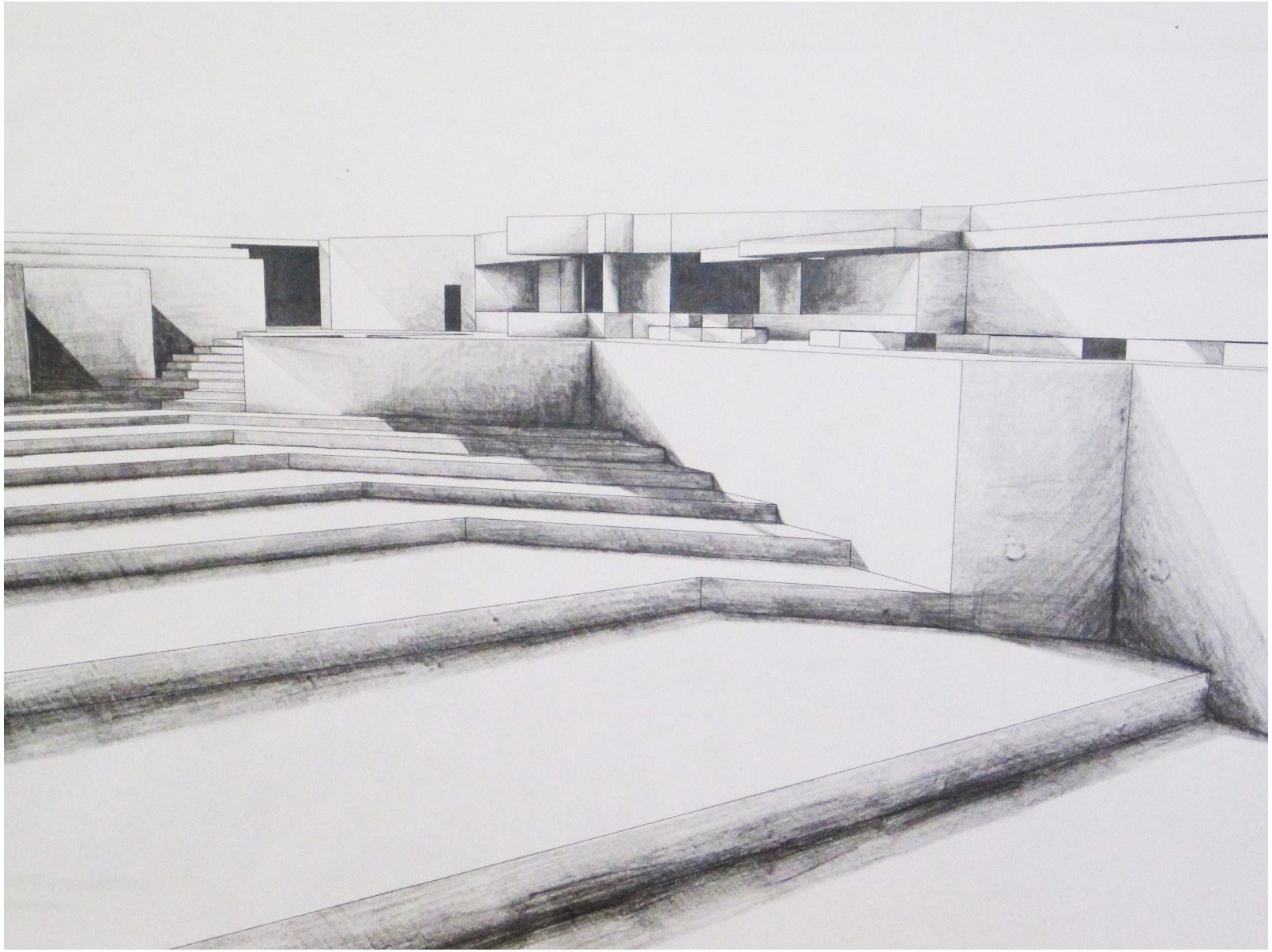




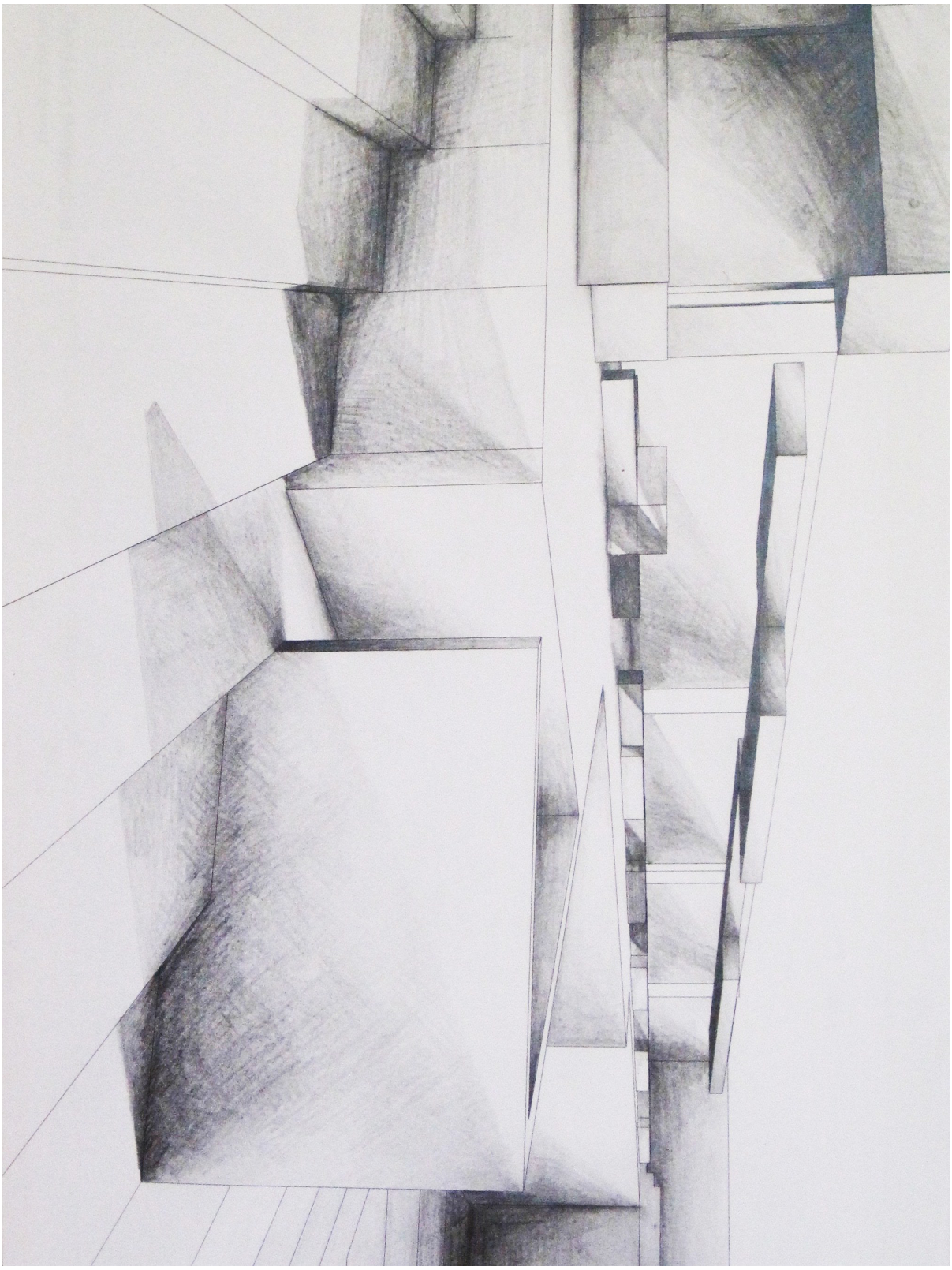
Final section model.







Hand rendered perspectives.



SPECIAL THANKS

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