

FRAMING HUDSON SQUARE:

A Stair Encloses a Converging Grid
in the City

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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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Steven Thompson, Committee Chair

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Keywords: City, Glass, Grid, Frame, Stair, Steel Structure, Unit, Urbanization

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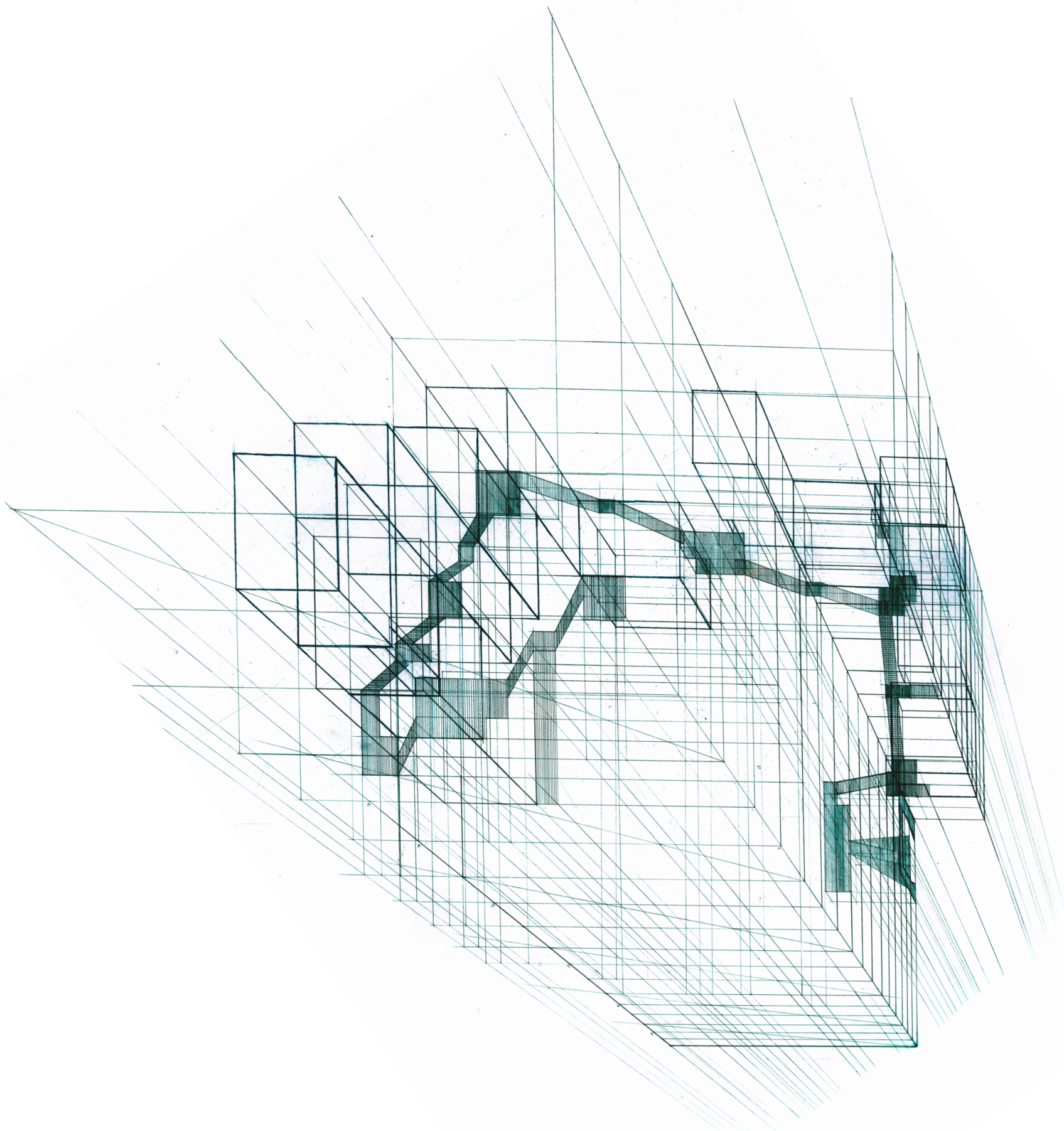
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ABSTRACT:

This thesis explores an alternate typology for a residential high rise in the Hudson Square neighborhood in Manhattan. The units that make up the building are organized with stairs and corridors placed along the interior perimeter of the unit which both bound the central floor space and expose it, creating a layered vertical circulation space around a central, permeable core. The collective organization of units within the building recapitulate their interior organization to form the building object creating a whole that is governed by the same organizational rules as the parts. The building is created as an object in the city meant to frame the duality between transparency and reflection, between lines and surfaces and ultimately between exhibition and anonymity.



ACKNOWLEDGEMENTS:

To my mother, for your tenacity and mind for details.

To my father, for your creativity and delight in all things.

To my sister, for our hours of play, during which we would build worlds.

To Aki, for your understanding, keen sensibility, and unrelenting insistence on high quality in my drawing and work.

To Markus, for your encouragement to push boundaries and remain true to my ideas.

To Steve, for initiating transcendent discourse during our meetings, challenging me to expand my thinking and find a grounding for my pursuits, of which I was often otherwise certain, and for conversations on which I am still ruminating.

To my friends and colleagues who have helped me get where I am to make this what it is.

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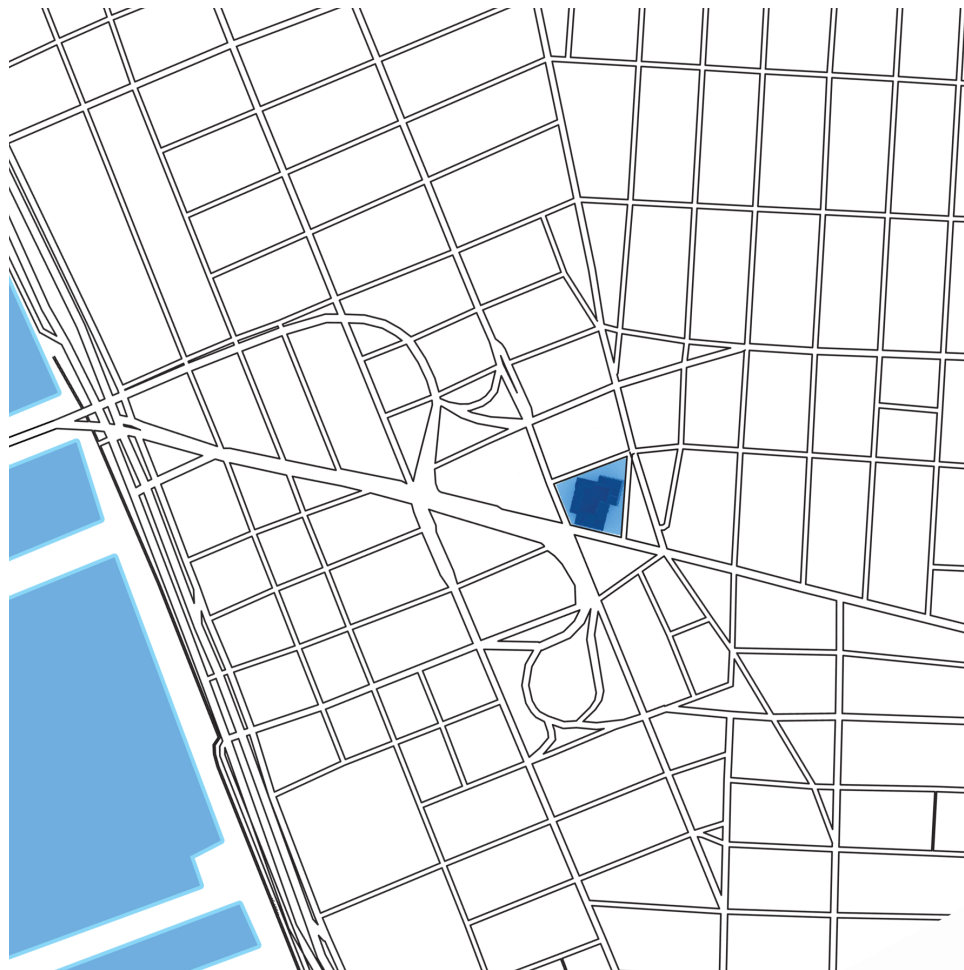
THE CONVERGING GRID

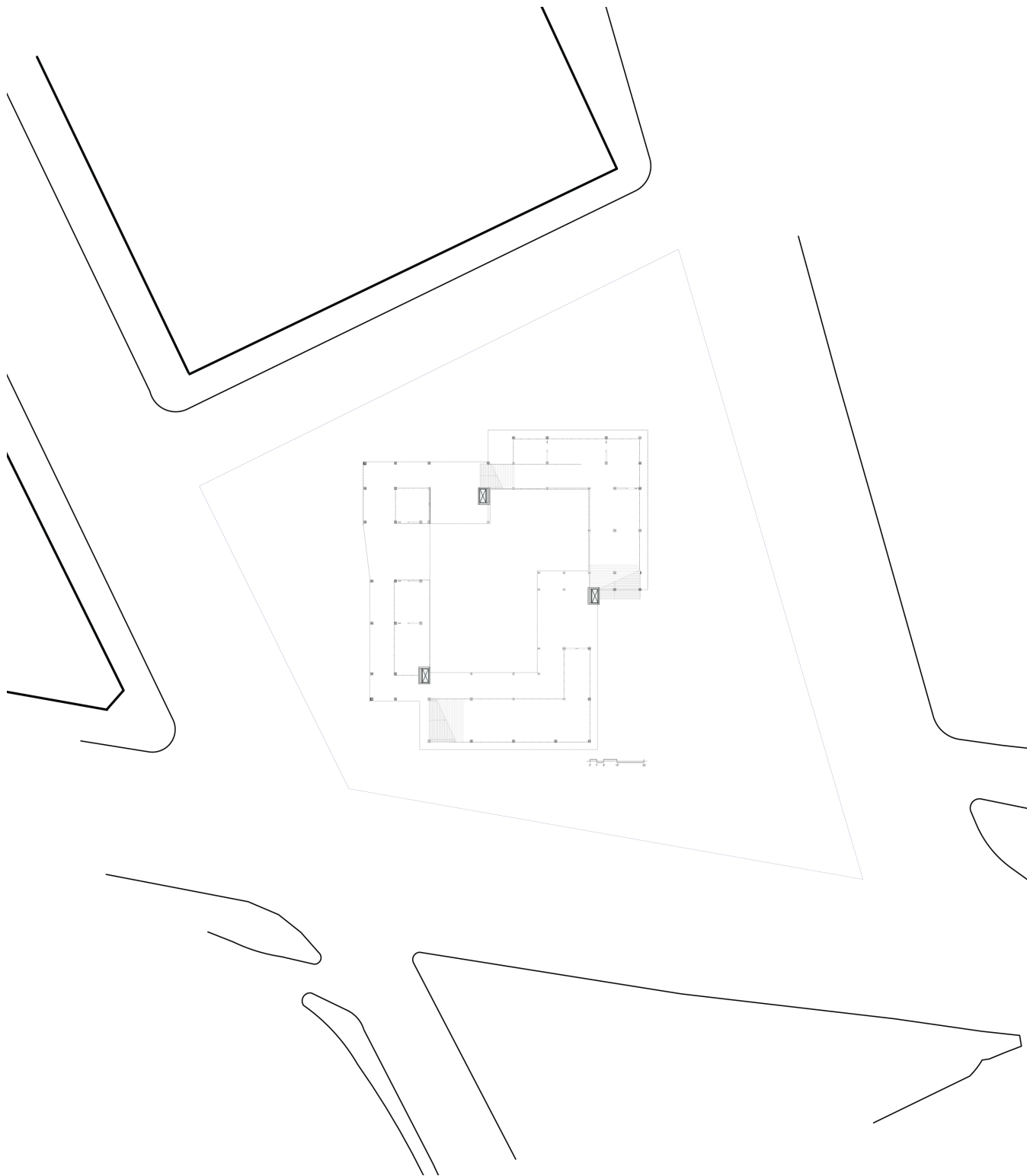
The site in Hudson Square lies in an area of lower Manhattan where the uniformly gridded streets of Midtown start to converge upon each other. The site is created by the collision of the city grid upon itself, of rigid orthogonal streets and avenues into angular directions. This convergence toward the central point of the site sets a visual centripetal flow in motion. This convergence creates irregular blocks and grid patterns in this part of the city, and is a model for the irregular framework of the building.

Three staggered L-shaped towers, representative of fragments of a converged grid, contain the residential apartment units and form the plan of the building. They open up into each other, forming a central courtyard. Their edges align so that the interior of one flows into the exterior of another. Inside becomes outside becomes inside again. Along these edges run the circulation stairs, flowing from the interior courtyard providing access to the apartments from the inside, through the space between towers to the exterior of the building, providing access to the apartments from the outside, and then back again.

The three towers are enclosed within an outer curtain wall that creates binds the three into a visual of a singular object within the city. This outer wall gives the building autonomy from its site, making it so that an apartment resident is separated from the city by multiple visual layers.







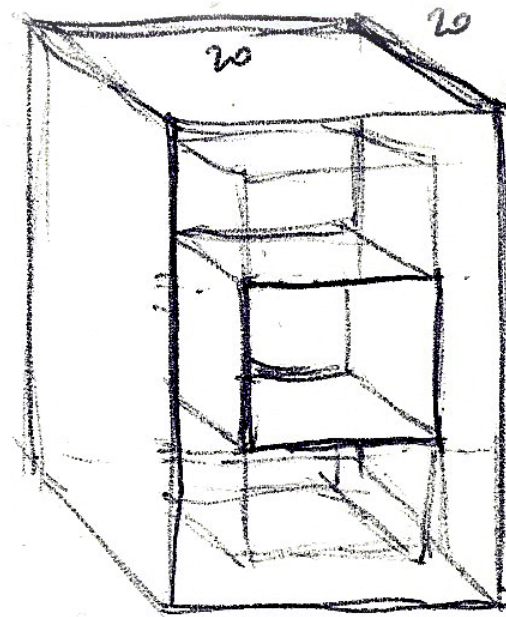
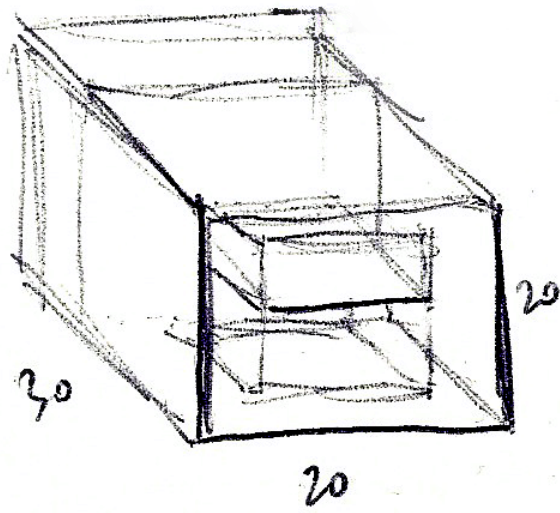
THE UNIT

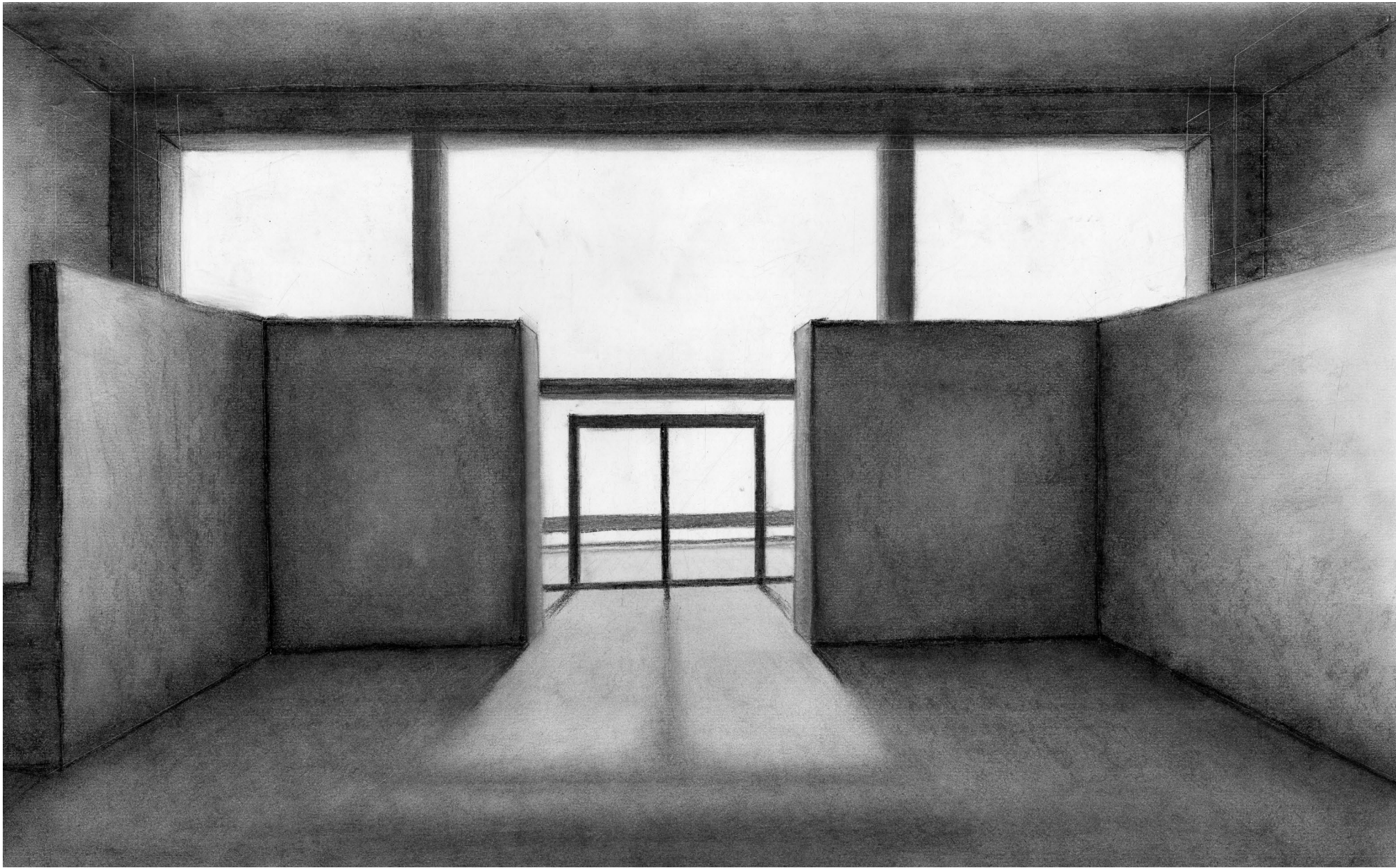
In a traditional room, one can generally experience that room without a peripheral awareness of the space adjacent, above or below that room. Within the apartment unit of this building, the traditional boundaries of a room are pushed back to the limits of enclosure. There is a continuous flow of movement through the layered spaces. Each room has two ways to enter and exit; no dead-end spaces exist. The unit is a nested nook for the resident, yet the space itself is open, circuitous, and flowing.

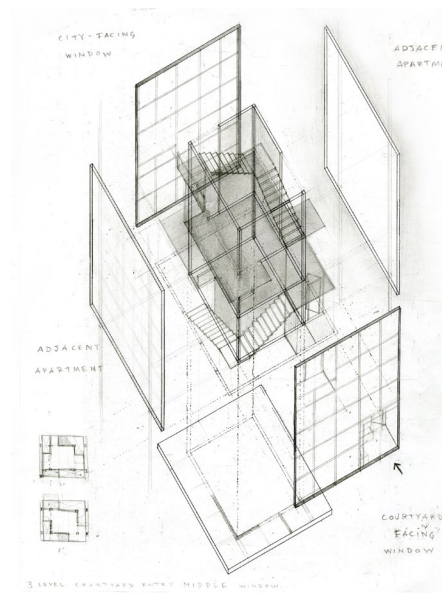
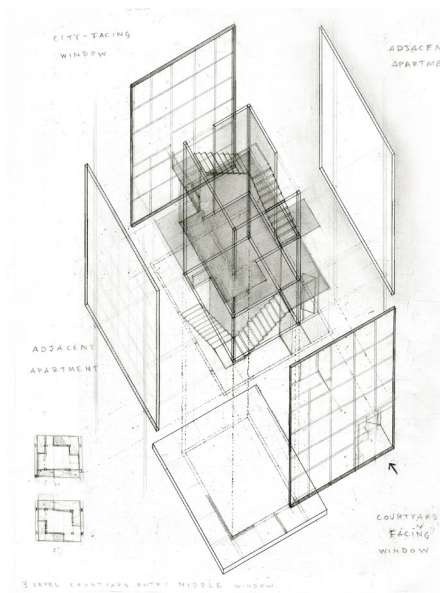
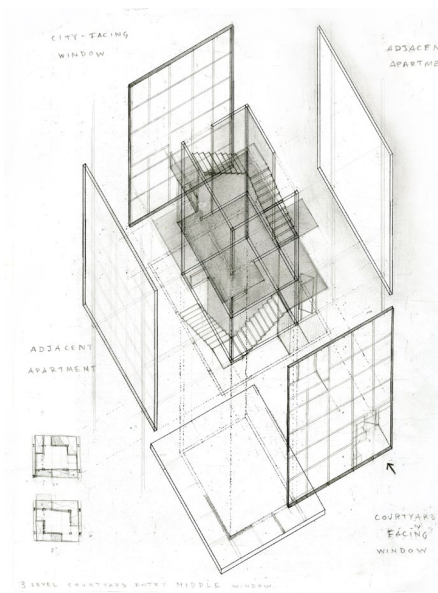
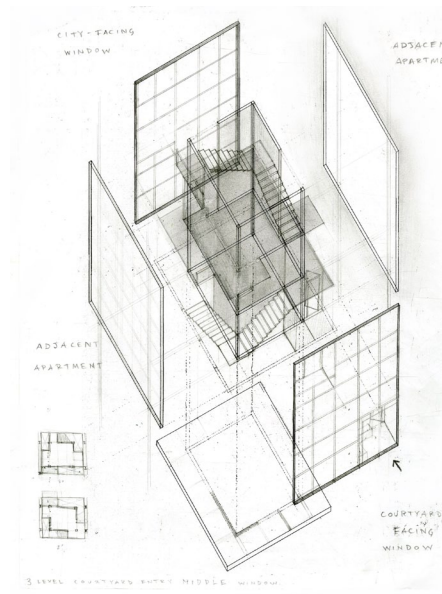
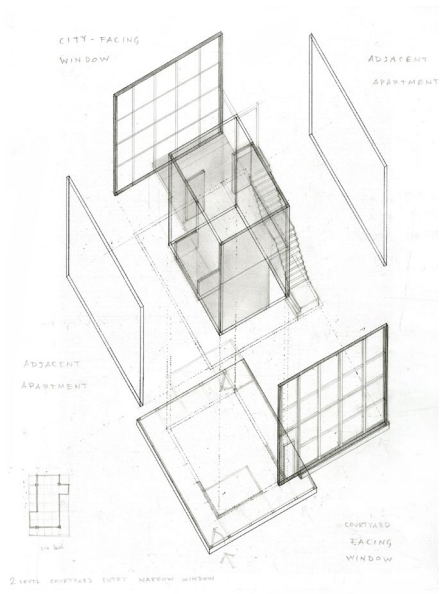
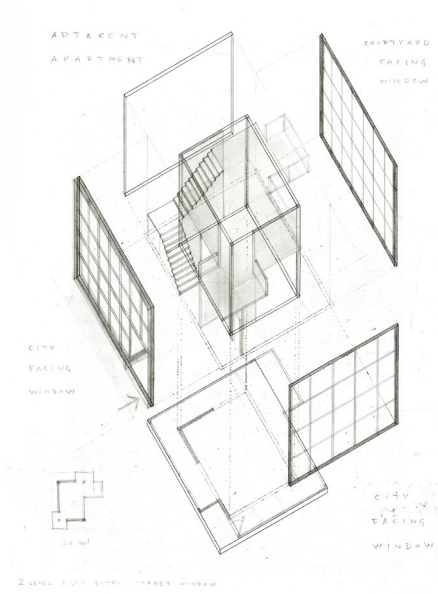
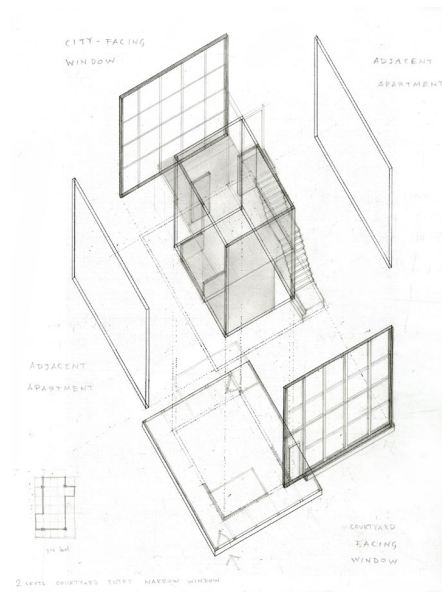
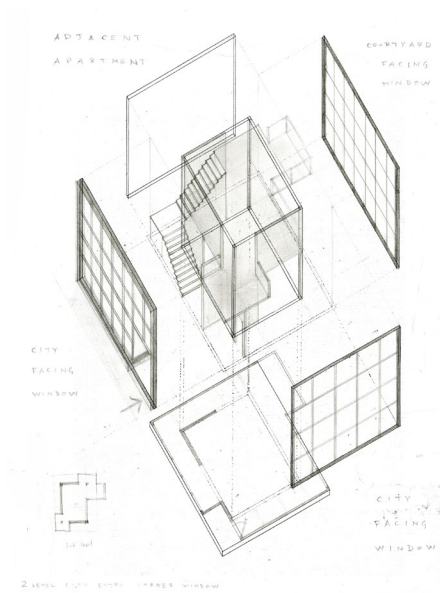
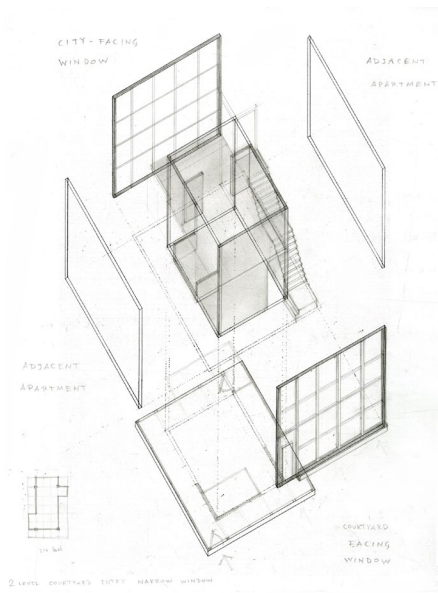
The organization of the unit within itself consists of a central positive space, delineated by partition walls of varying positions that provide privacy and enclosure; and a perimeter space that contains stairs and corridors, allowing for movement, circulation and views of the entire unit. This module is then enclosed within glass curtain walls on at least two sides that span the multi-story units from floor to ceiling, allowing light to fill the entire unit.

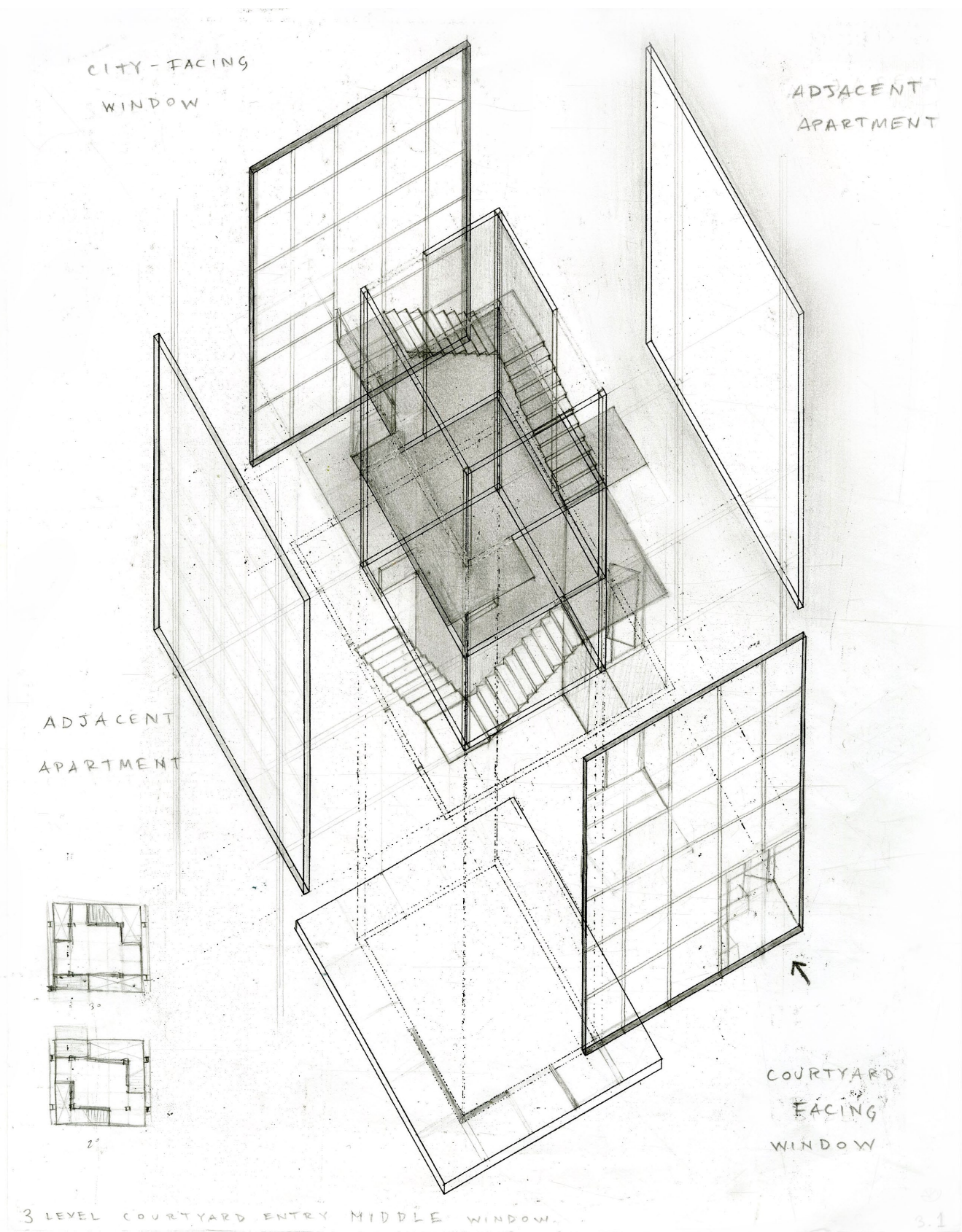
The apartment units are of two types: a double-height unit with a footprint of 25' by 35' and height of 25'; and a triple-height unit with a footprint of 25' by 25' and height of 35'. One unit is the inverse of the other.

The form of the building is generated by the grouping and stacking of the units together with attention to how they are accessed vertically. The units' internal configurations vary based on whether they are accessible via the courtyard or via the city side, whether they are in between other units, on the corners or on the ends of each L-shaped tower, whether they are double height or triple height; resulting in 9 unit variations.

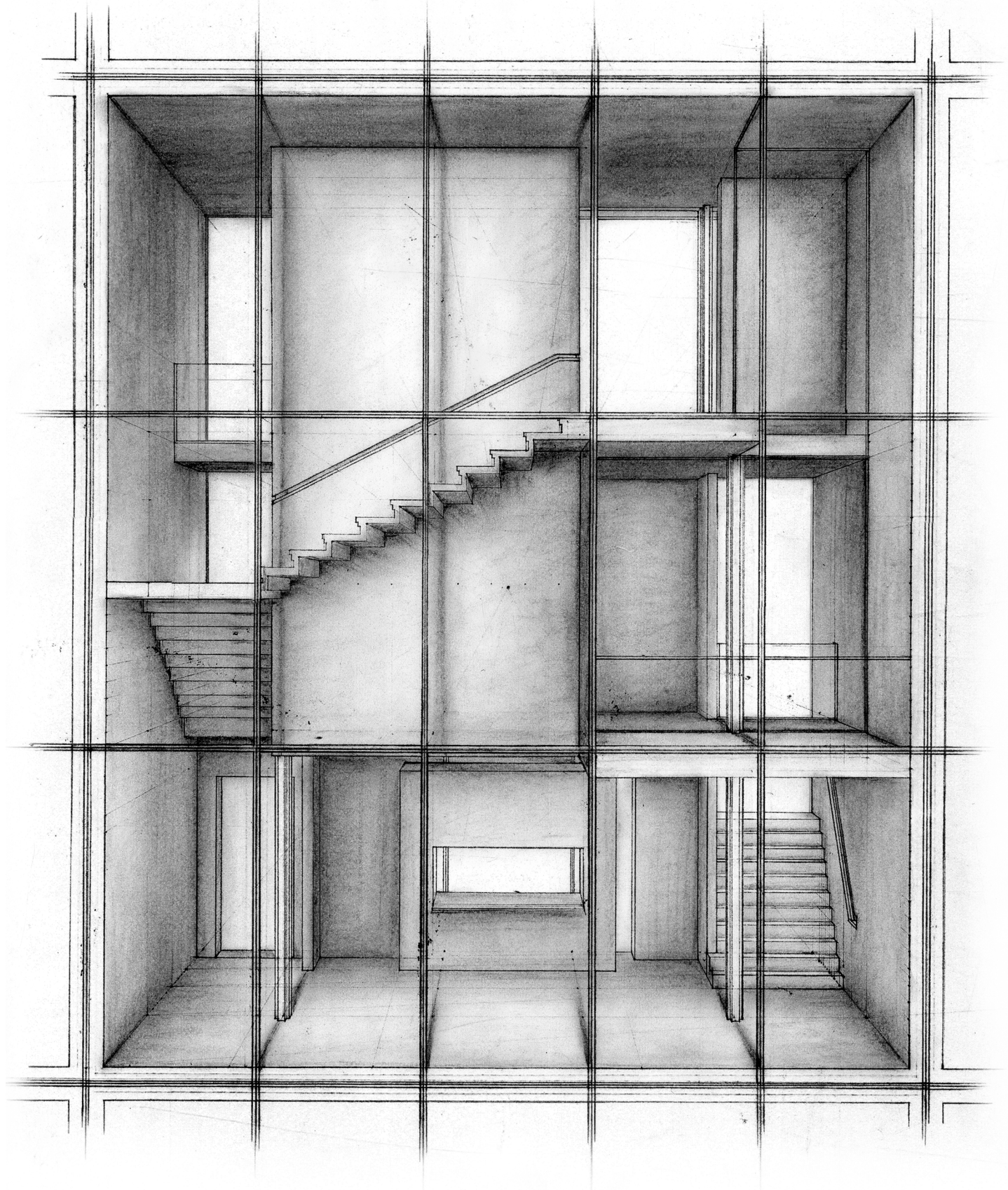




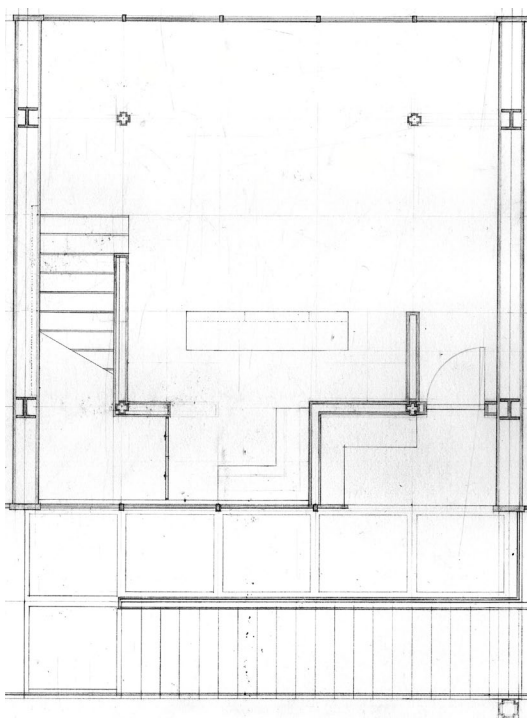
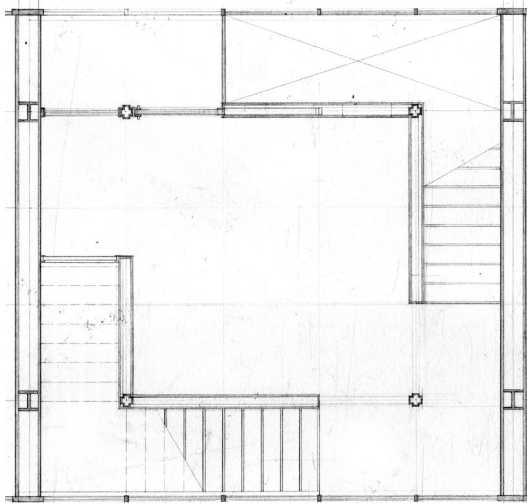
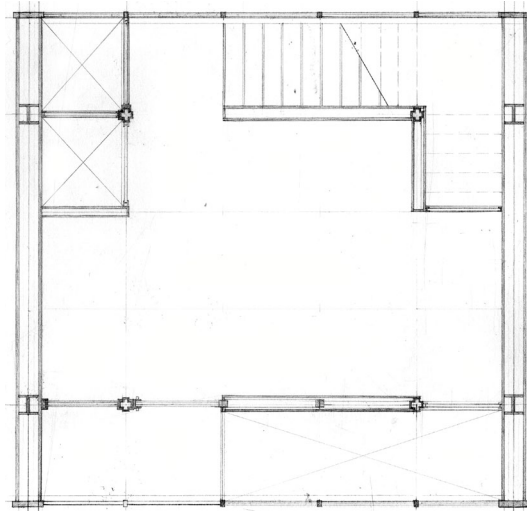


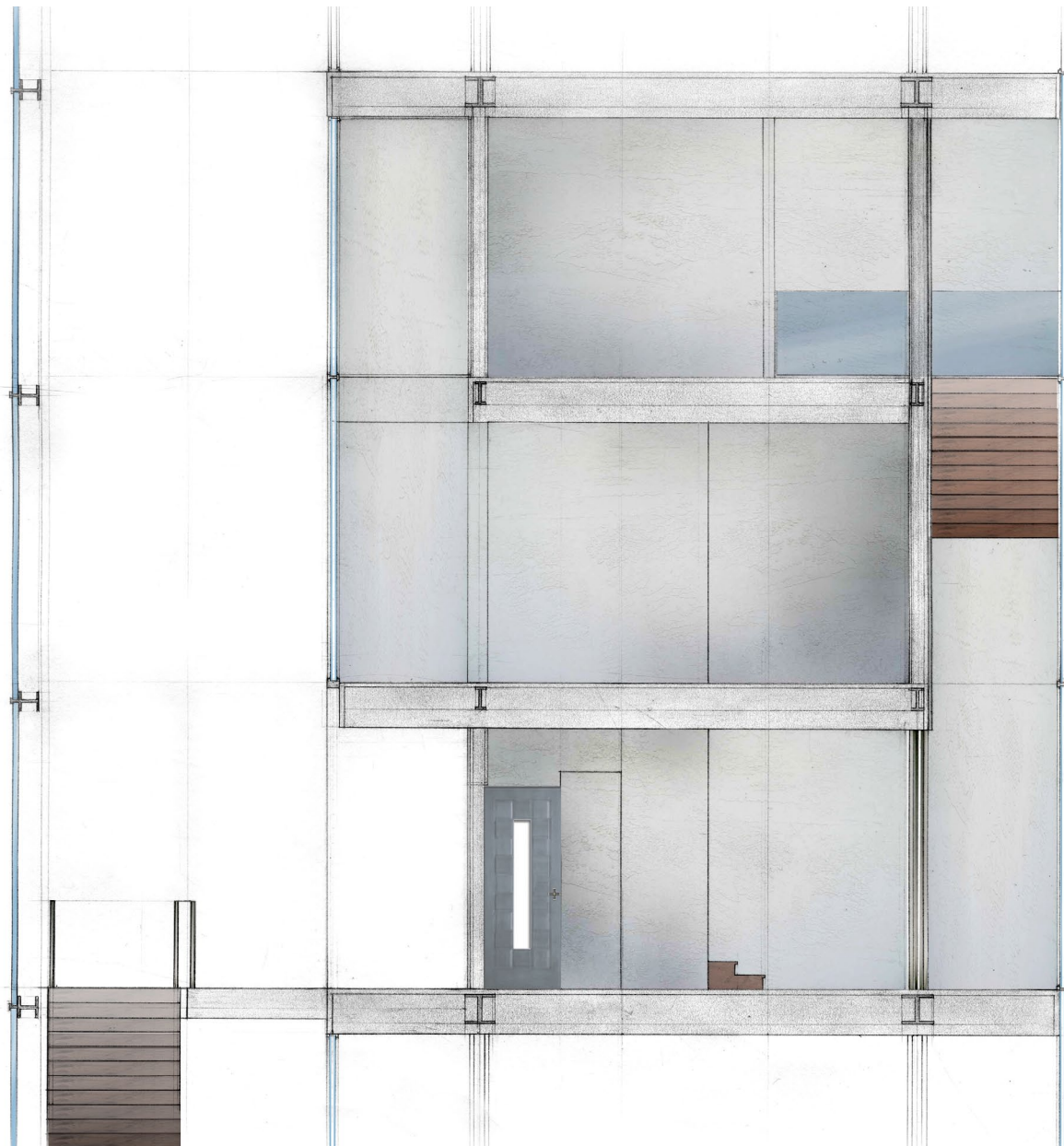


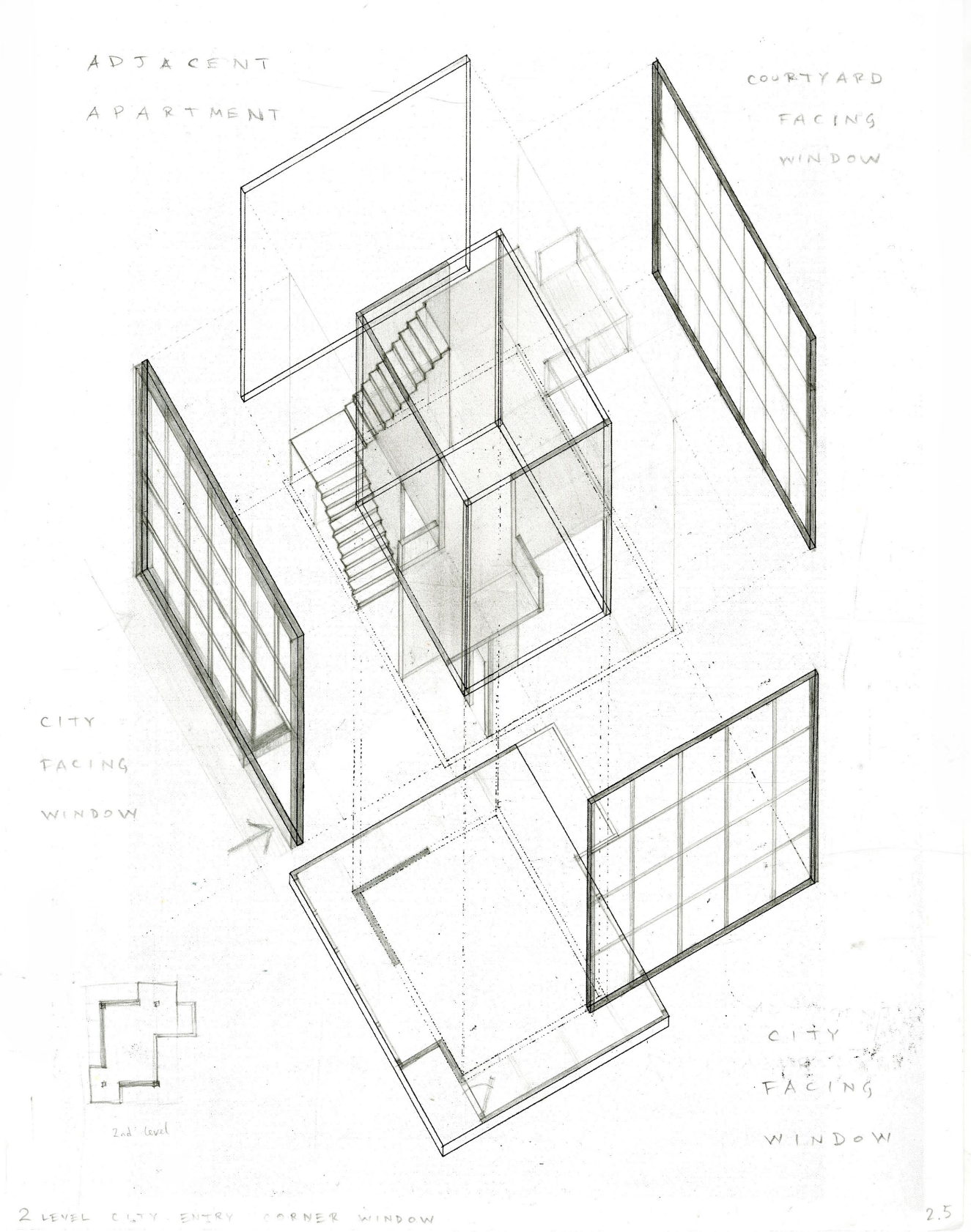
8. Axonometric drawing of three level courtyard entry apartment.

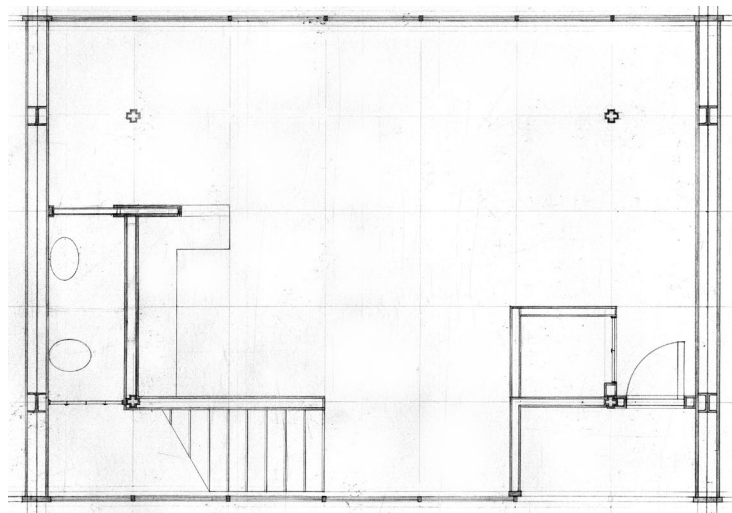
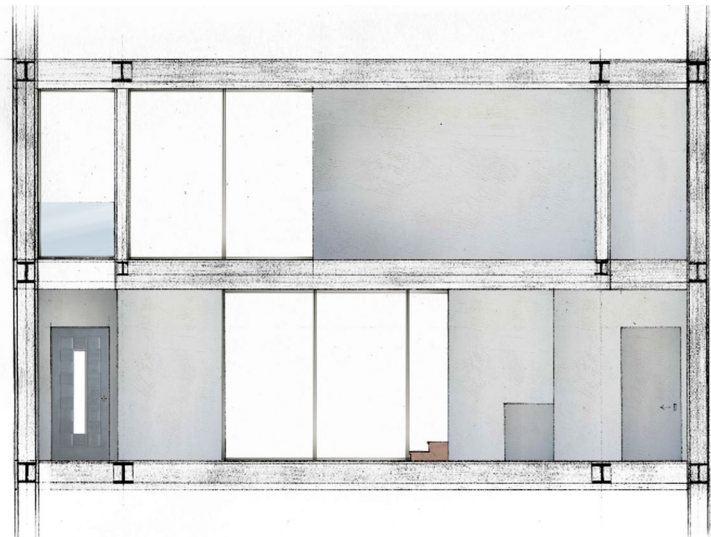
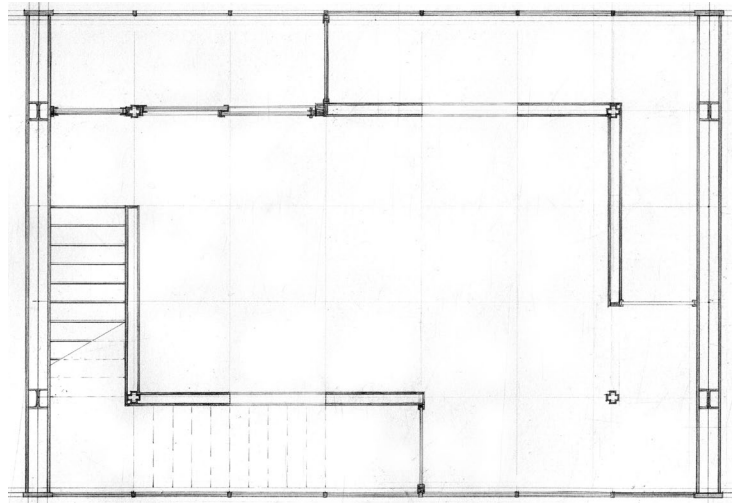


9. Elevation perspective of a 3-level unit with curtain wall overlay; courtyard entry facing the city.









13. Two floor plans and section of 2 level unit.



14. View from interior balcony.



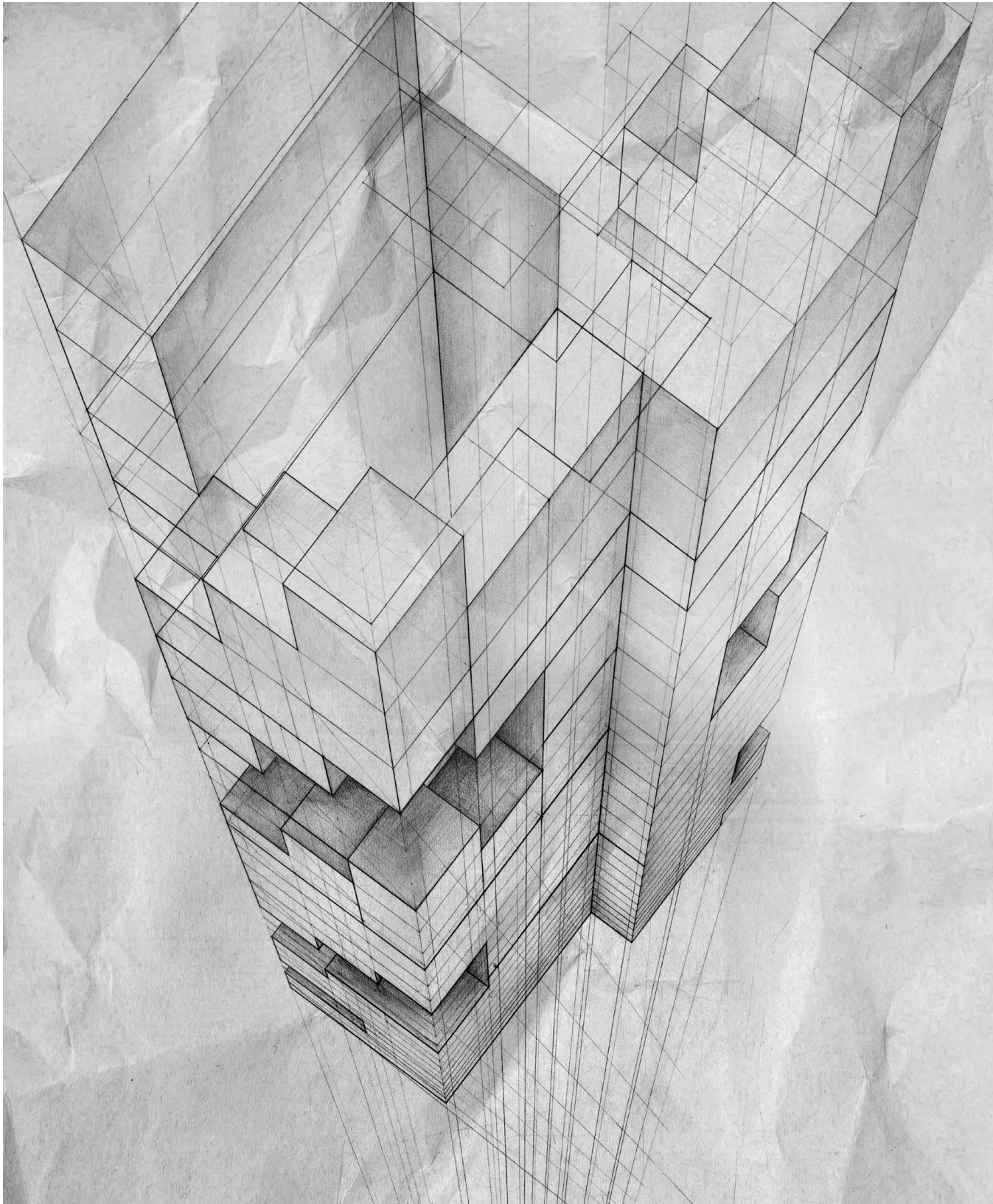


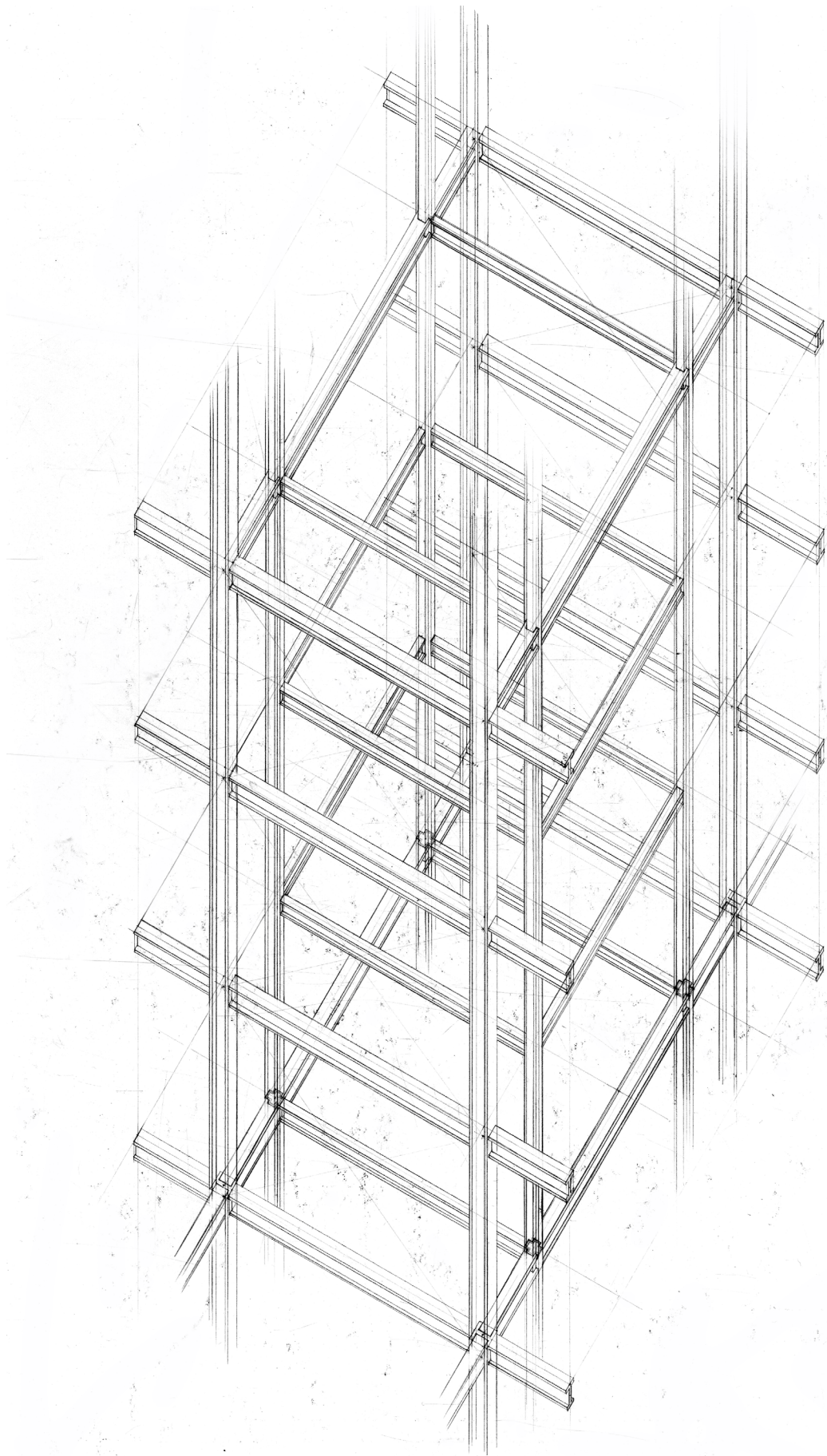
16. Photograph of early unit model.

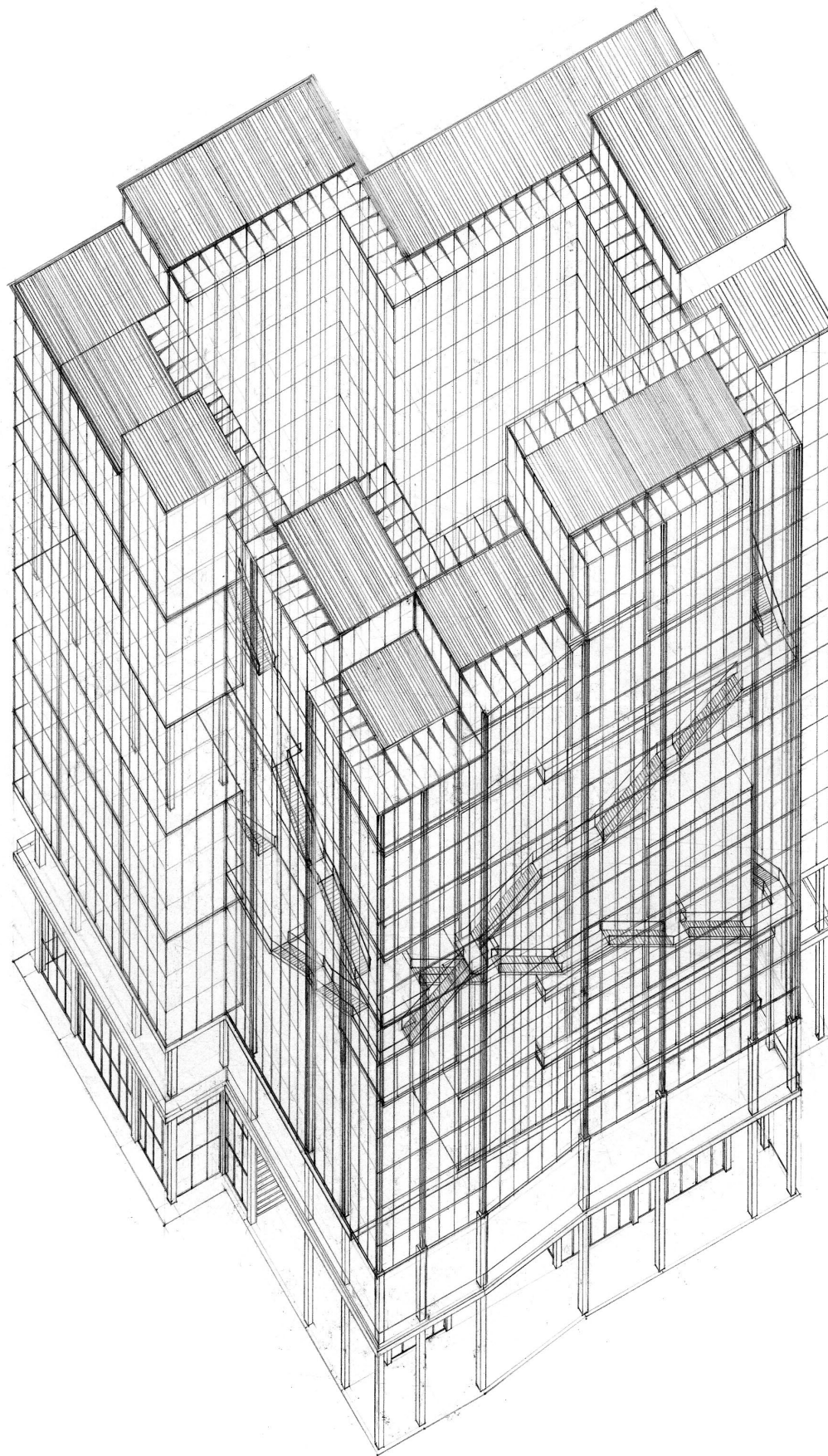
INHABITING THE FRAME

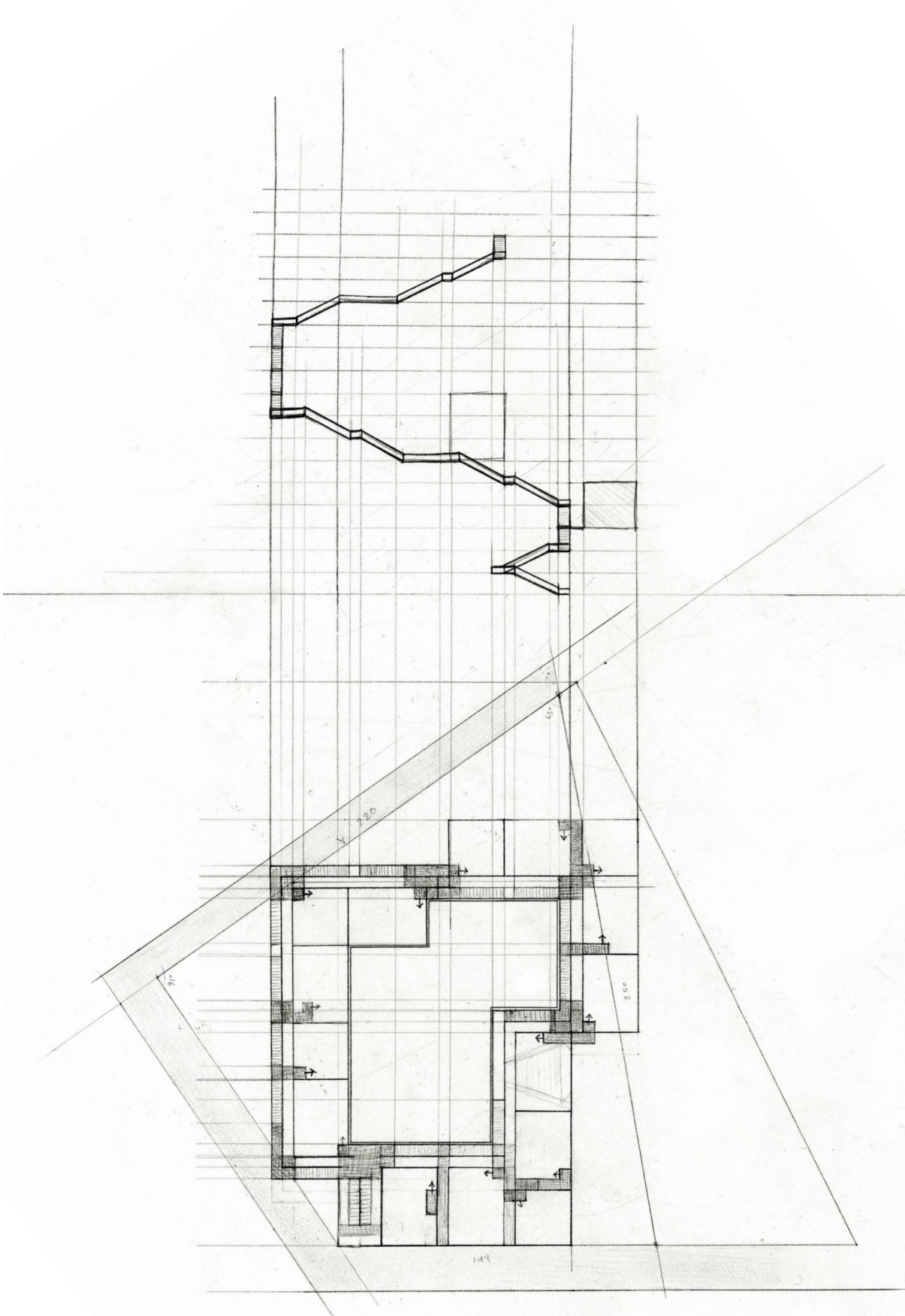
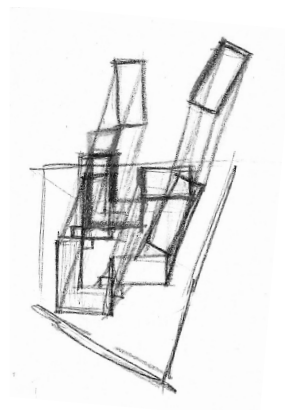
The steel framework for the building is generated by the interaction of the units with the stair that accesses them. The unit and the stair mutually affect each other: the rhythm and dimensions of the units are dictated by the span of the run of stairs and the height of the stair risers is then determined by the height of the floors. The stair winds around the building to access the units, as the units cluster around the stair. The height of the building is determined by the procession and rhythm of the stair.

The three steel framed L-shaped towers are connected around the corridor space and enclosed within an exterior frame and curtain wall to make a single object. The interior units repeat this same structural idea by having an exterior framework that spans the two or three levels of the unit and an interior framework that supports the interior floors and partition walls that is only connected to the exterior framework at the floor and ceiling. Shear bracing runs through the walls in between units leaving two open sides free for curtain walls with unblocked views.

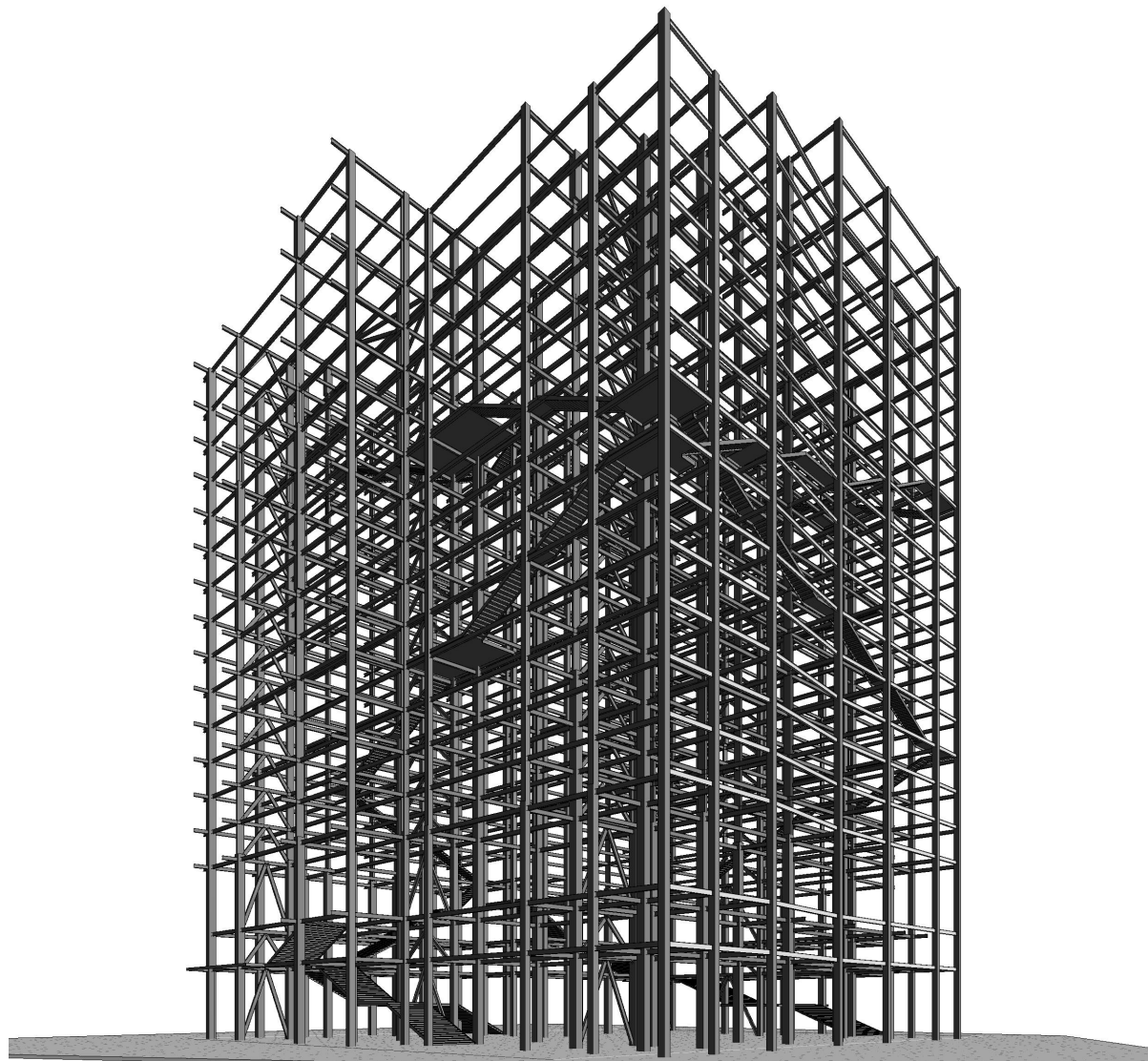




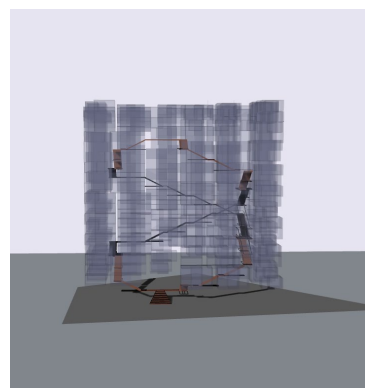
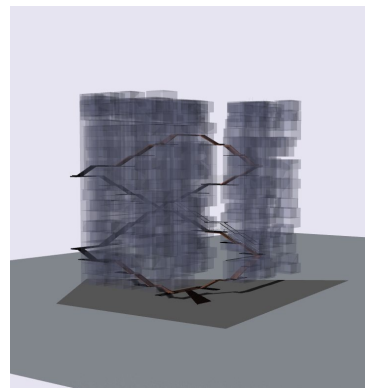
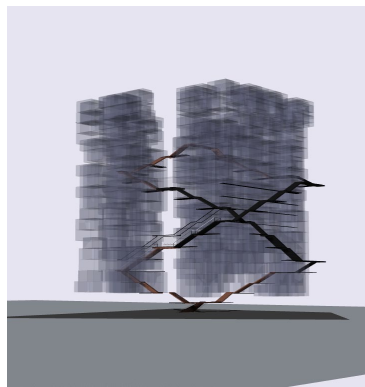
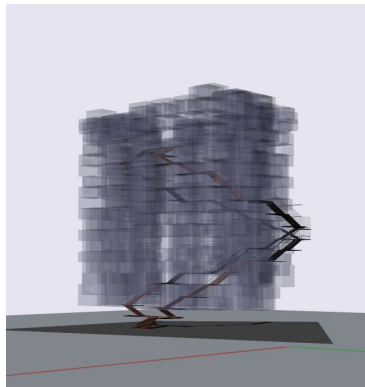


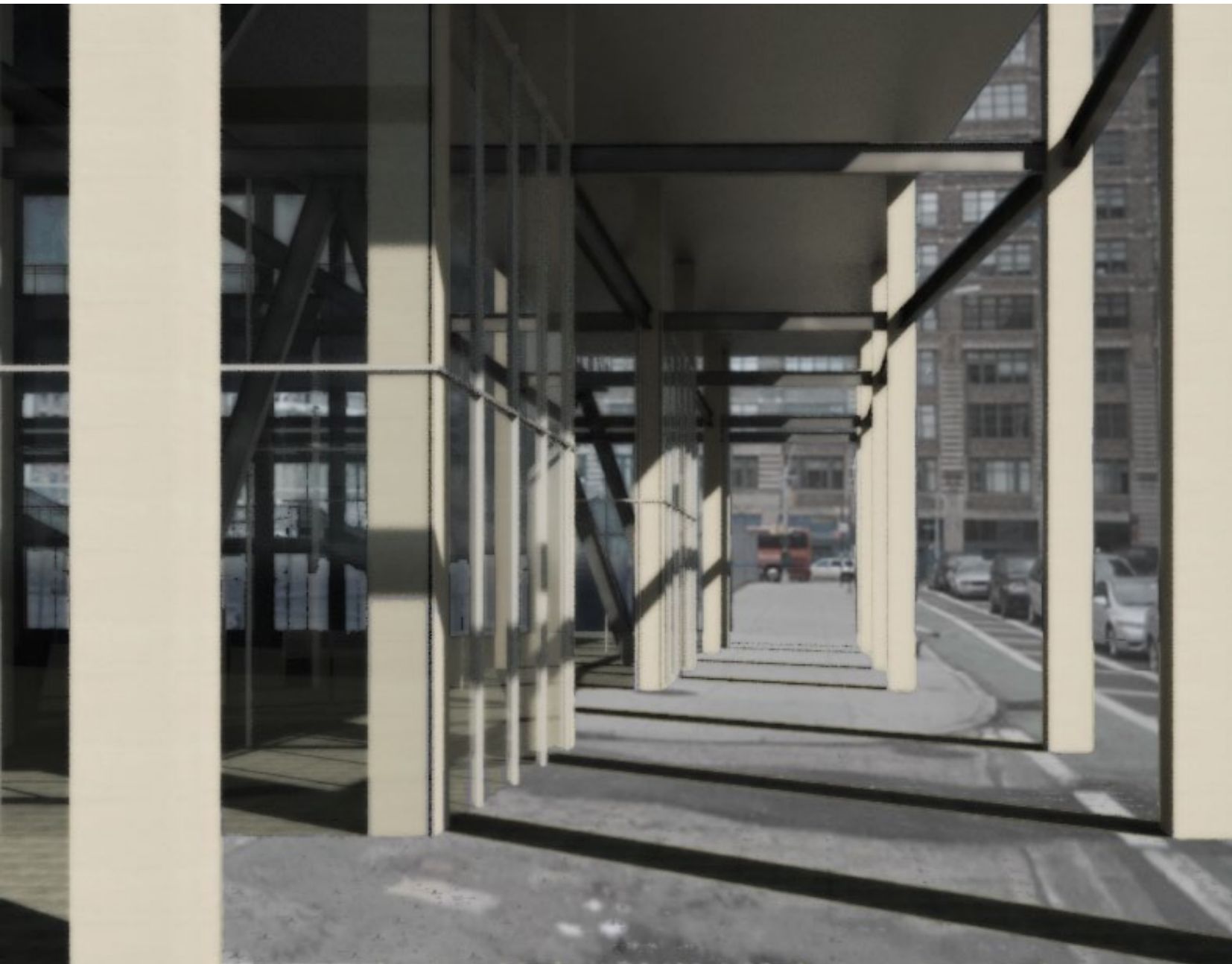


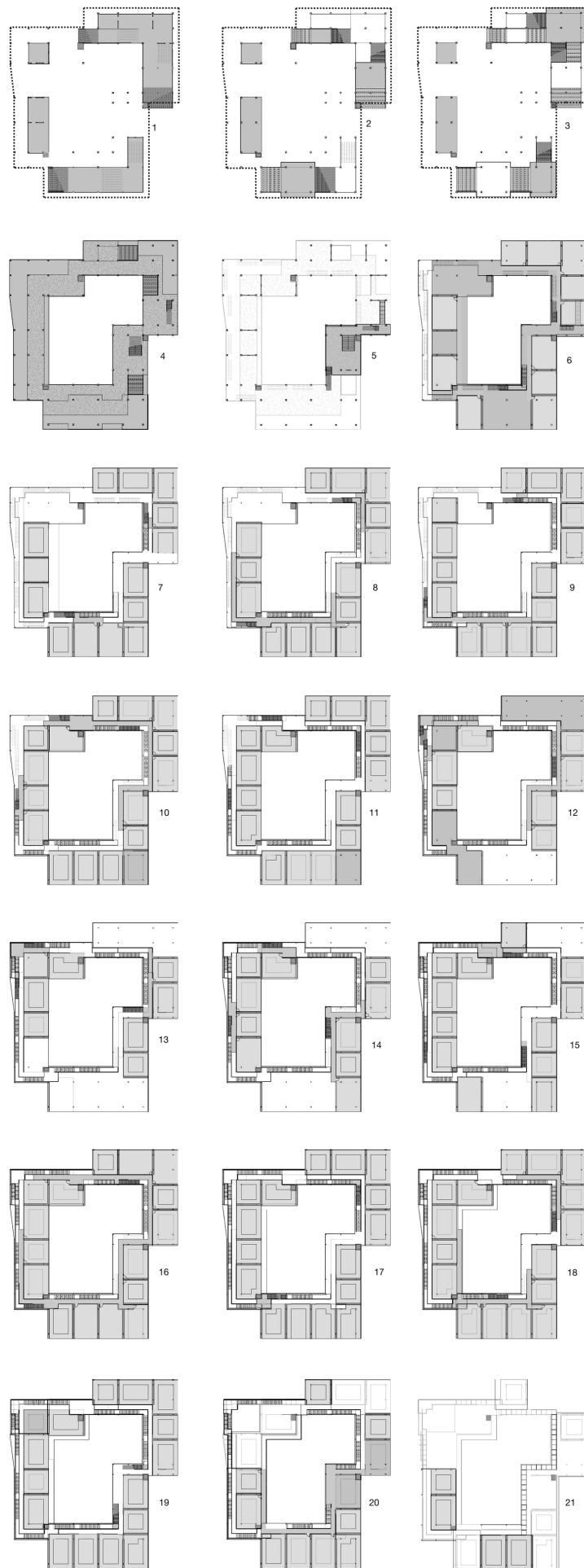
20. Initial sketches of site plan showing layout of L-shaped towers, units, stairs, and courtyard space.



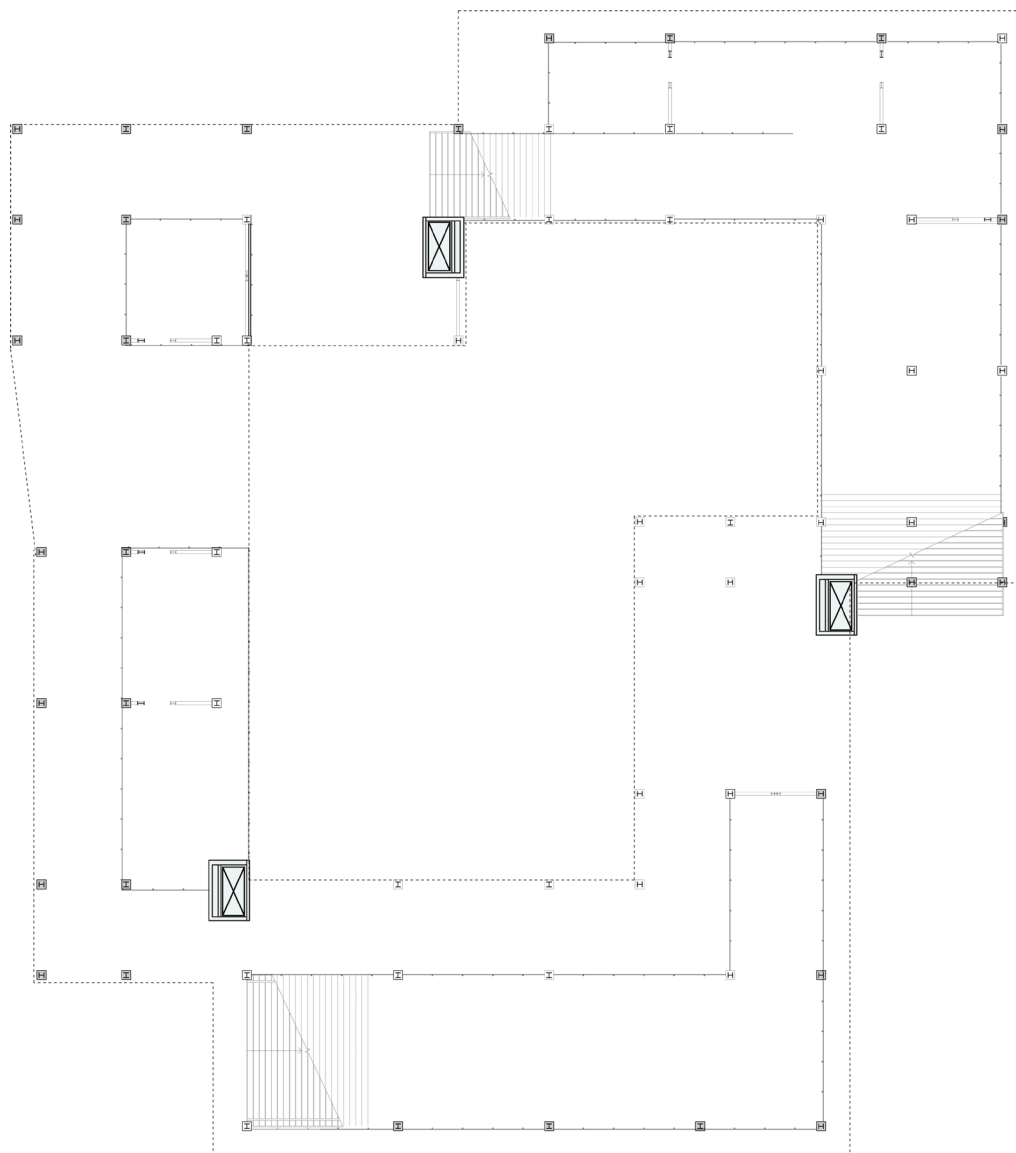






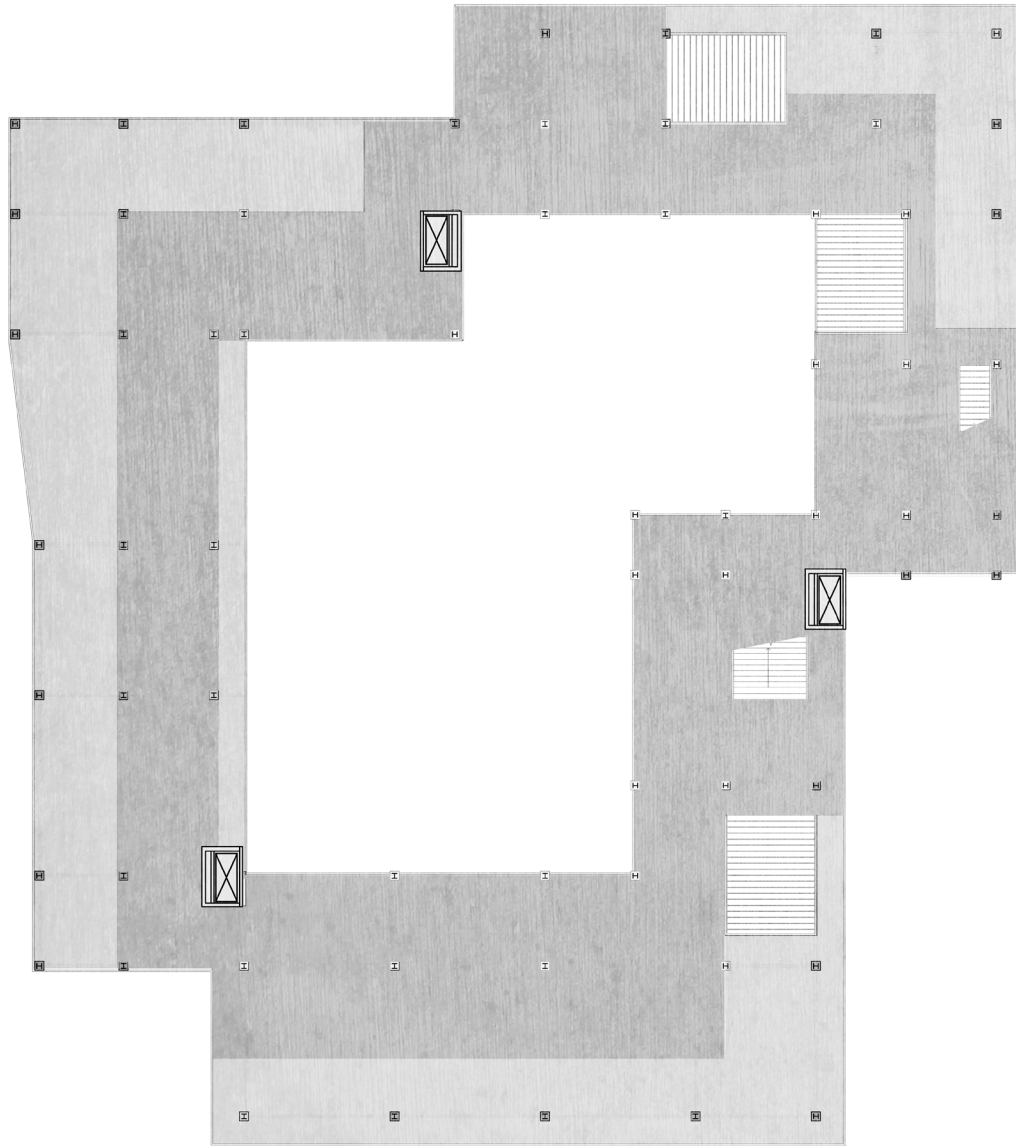


25. Index of floorplans of all 21 floors of the building.

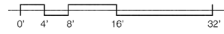


FLOOR PLAN 1



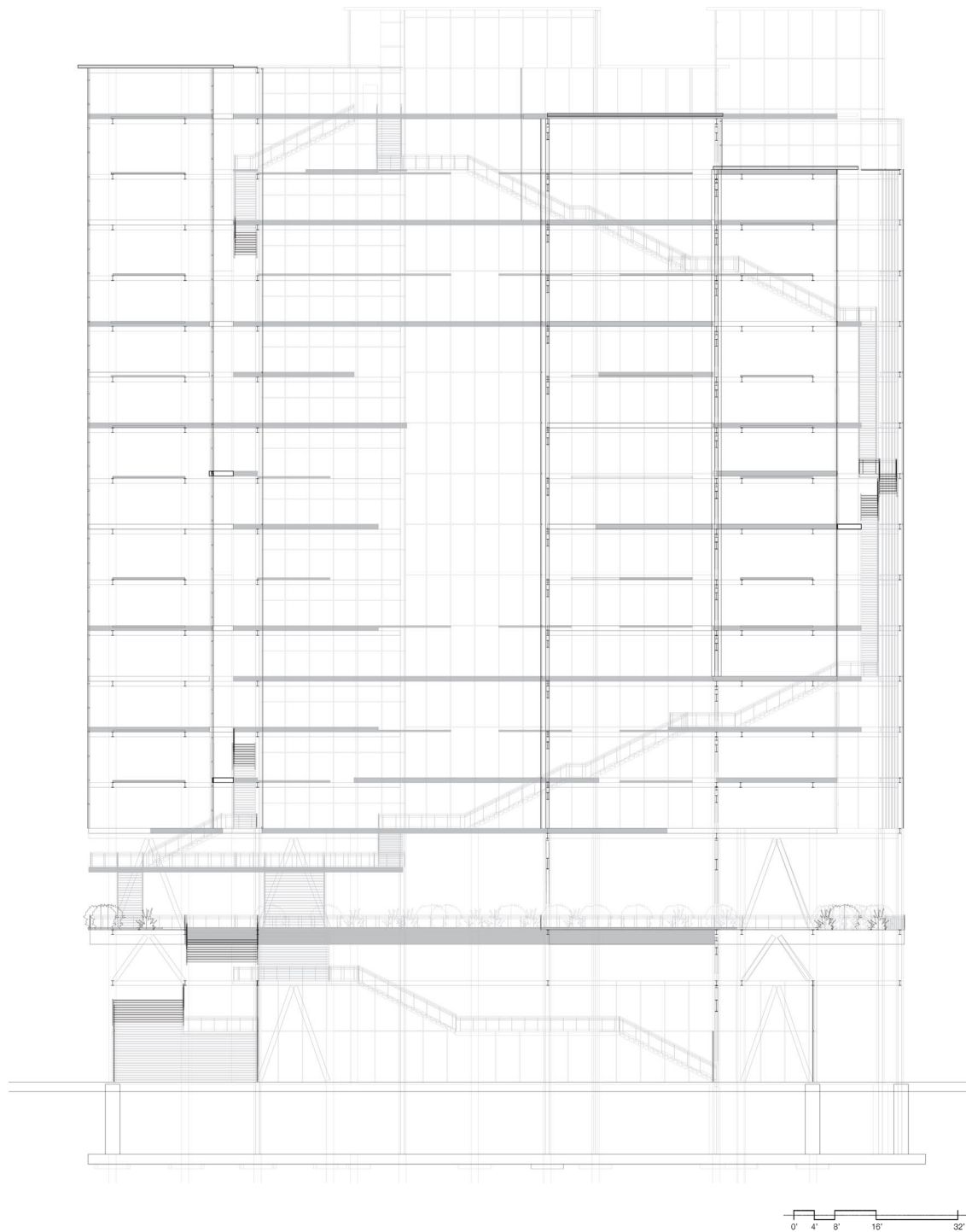


FLOOR PLAN 4





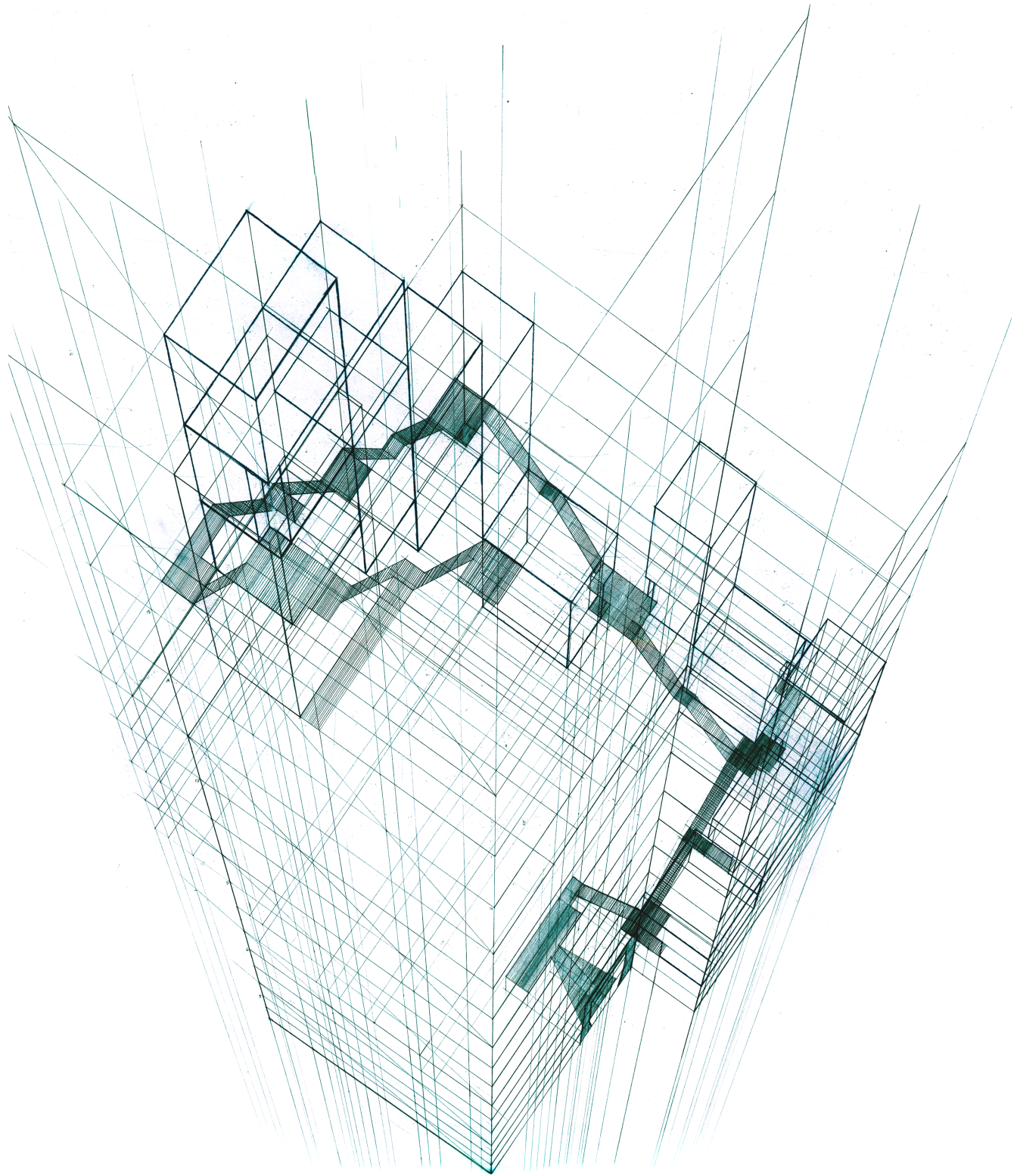
FLOOR PLAN 14 

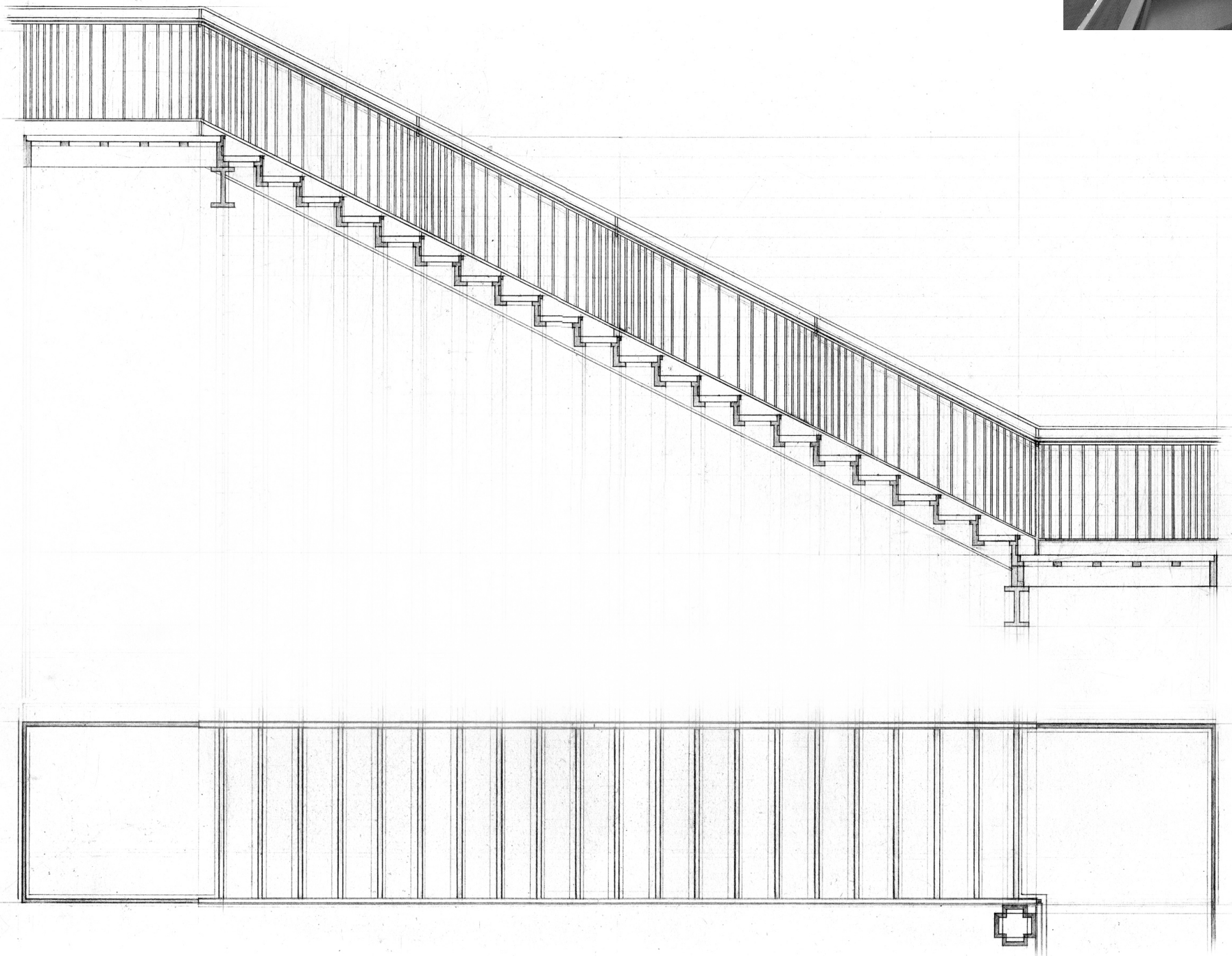


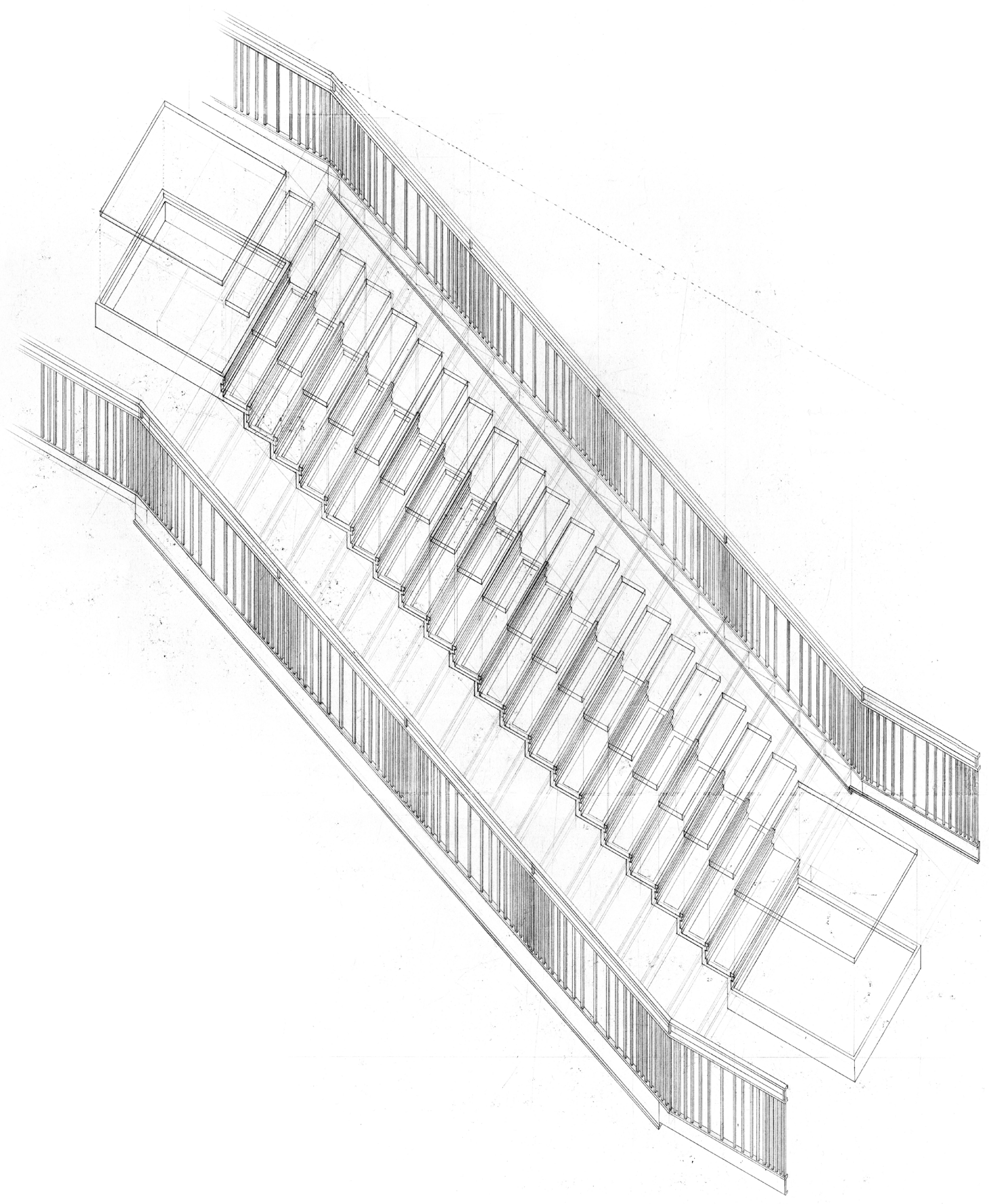
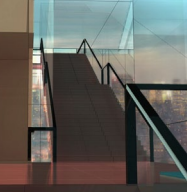
THE STAIR

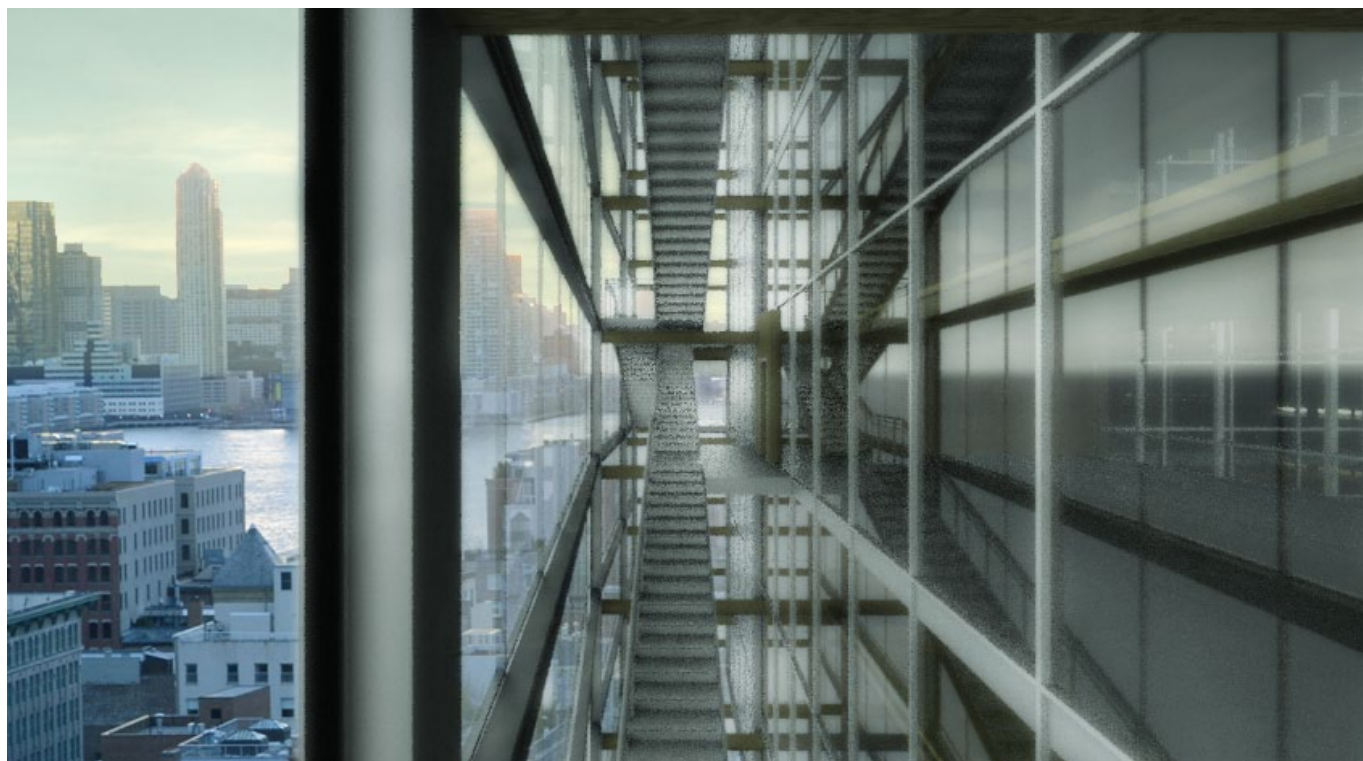
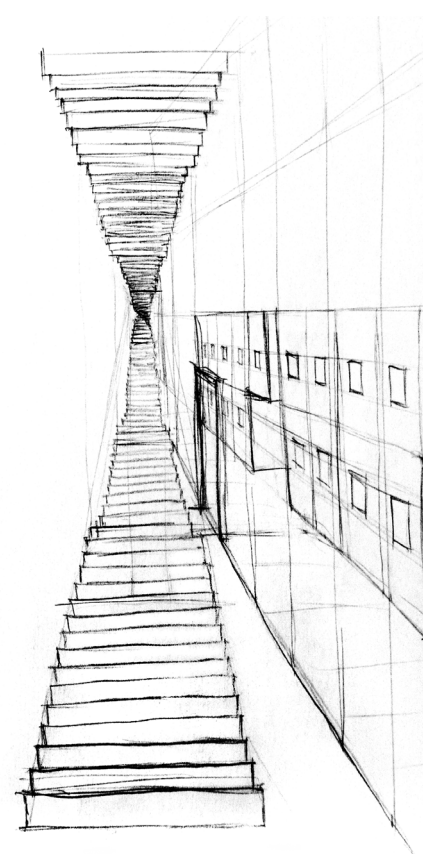
The main stair begins on the ground level as a wide stair that is part of the city and accessible to the public. There are three of these publicly accessible grand stairs on the ground level, corresponding to each of the three towers, and from 15 to 30 feet wide, their width connotes an open welcome to passersby. All three stairs lead to an open promenade on the 4th level which is accessible to the residents and those seeking a more intimate space than the lower courtyard. The stair then narrows as it ascends higher to the private units which begin on the 6th level.

The main stair traces the perimeter space around the building, spiraling upwards, as the apartment stair does within the units. Yet ascending further, the main stair passes between towers and through the building and continues to wrap around exterior. Now outside, facing the cityscape, the stair crosses itself (another stair) coming from the other side, creating an intersection high above the city.









33. Main stair sketch and Revit rendering.

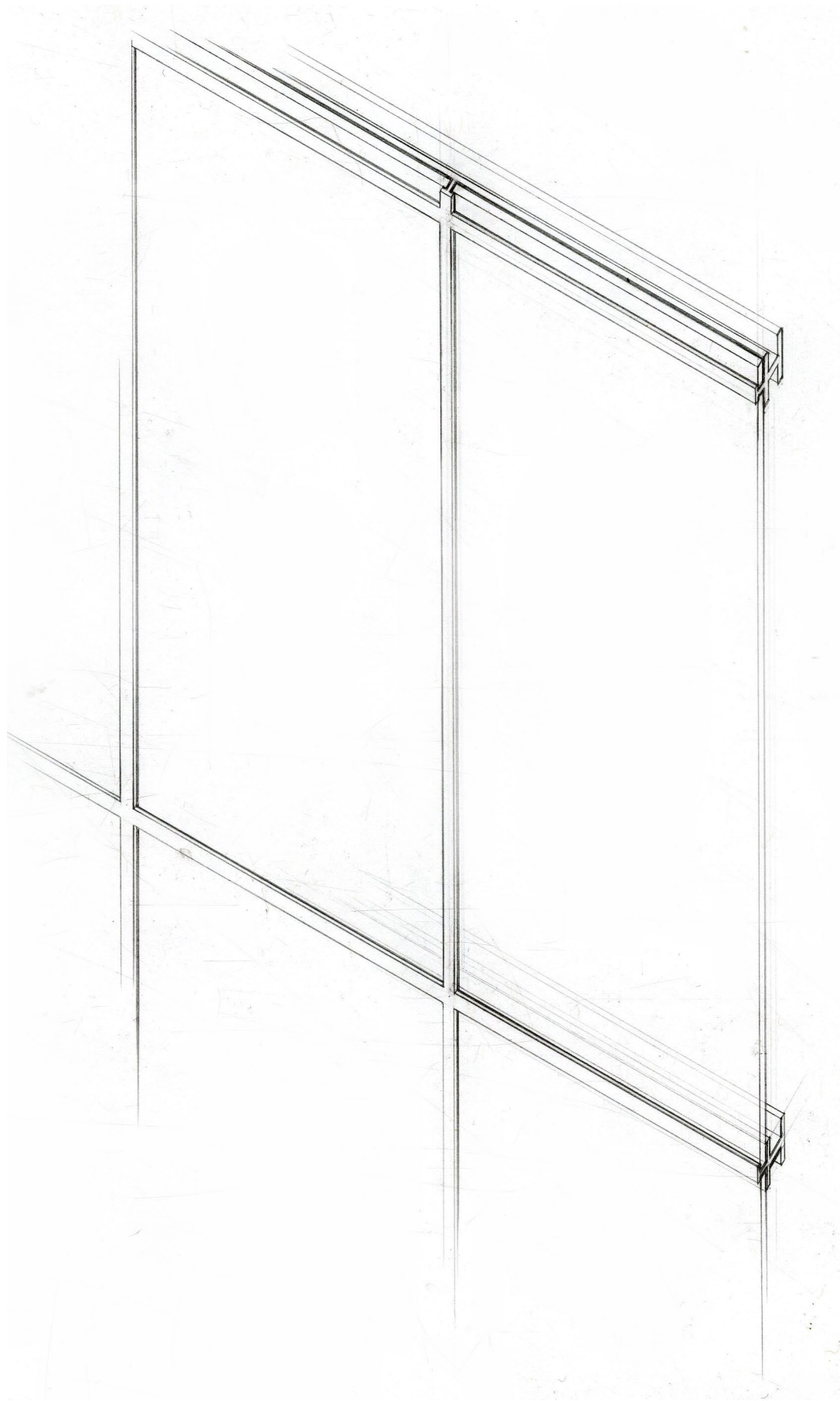


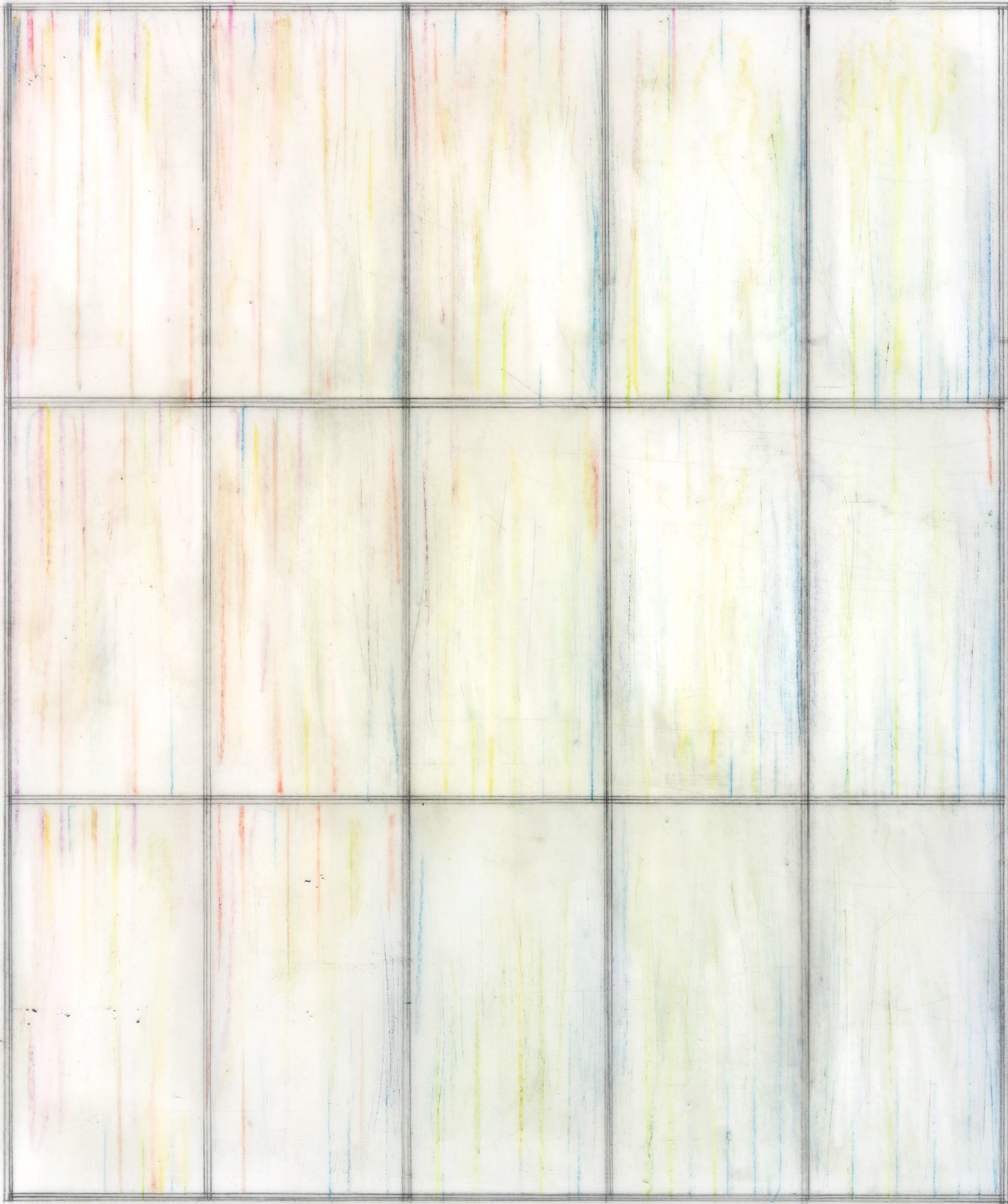
THE ENCLOSURE

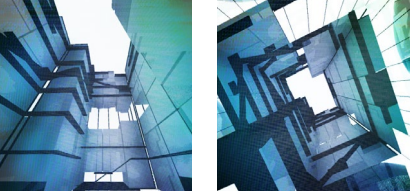
Curtain walls enclose the apartment units as well as the perimeter circulation space. Since the apartments have full curtain walls on at least two sides, they are exposed to light and views out as well as views in. This creates the apartment as an exhibition space. Privacy is provided by the partition walls surrounding the interior core space and also by treatments to the glass panels to add opacity.

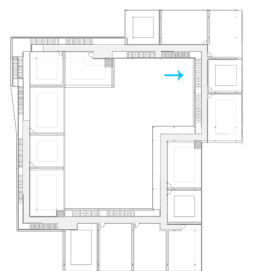
The curtain walls create four boundary conditions around the perimeter of the building and the interior of the courtyard: 1) the apartment window facing the city, 2) the apartment glazing facing the courtyard, 3) the apartment glazing facing the city through the circulation curtain wall, and 4) the apartment glazing facing the courtyard through the circulation curtain wall. To differentiate between these four boundary conditions, the panes have four different treatments:

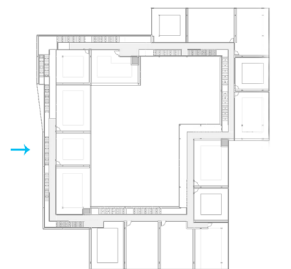
- 1) exterior glazing facing city = reflective coating frame
- 2) interior glazing facing courtyard = white fritted frame
- 3) exterior glazing facing city through circulation curtain wall = white fritted gradient
- 4) interior glazing facing courtyard through circulation curtain wall = reflective coating gradient

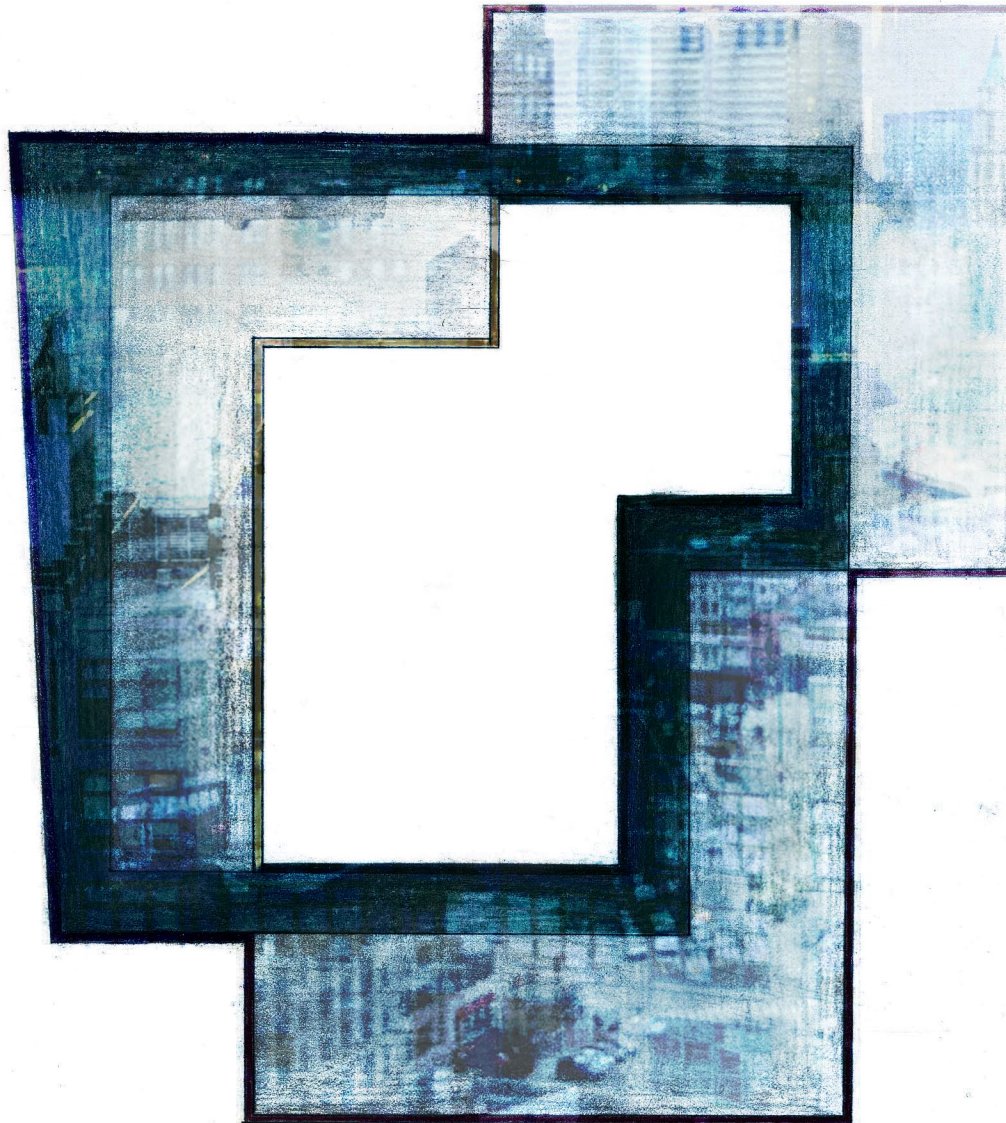












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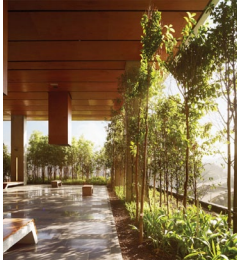
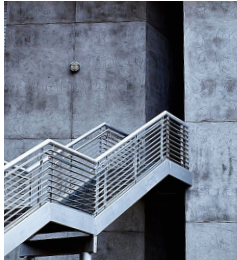
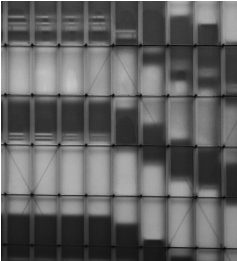
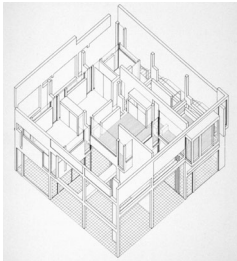
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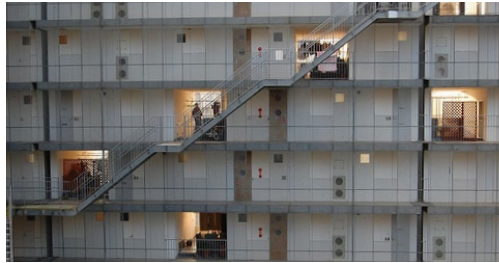
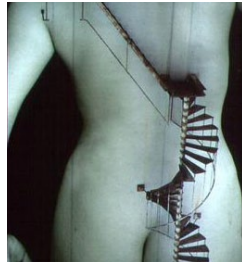
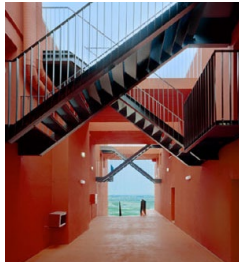
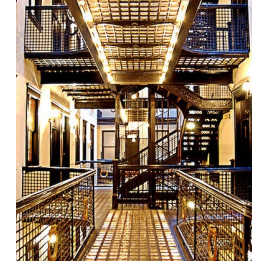
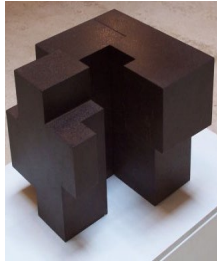
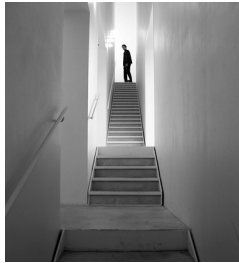
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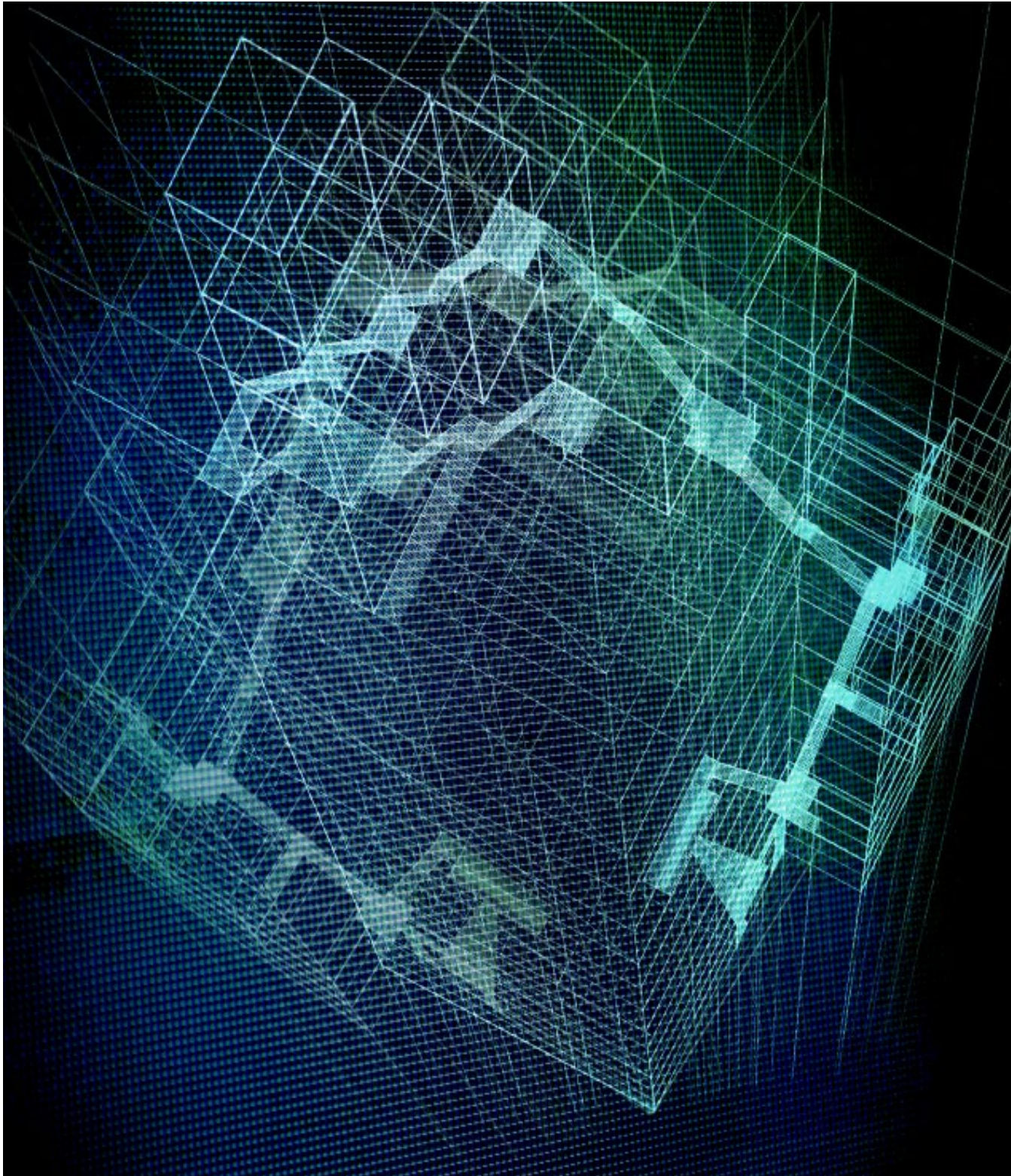
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