

**folding.**  
**·a house**

**kacey joy**  
**huntington**

## **Folding: A House**

Kacey Joy Huntington

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.

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## **Folding: A House**

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### **Abstract**

Folding: A House is a study of the continuity of floor, wall and ceiling within the context of a house. With this method of continuity through folding, a strong directionality occurs within the spaces. The relationship among the different folds and between the folds and their enclosures is a syntactical relationship. Each fold slips in and past the previous fold. The forty-five degree rotation of the house on the forty-five degree sloped hill site allows for four fundamentally different relationships of house to ground and the surrounding views. The closed and open spaces inherently created within the folds directly relate to these differentiated views.

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*Note: All Images by Author*

## **Folding: A House**

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### **Introduction**

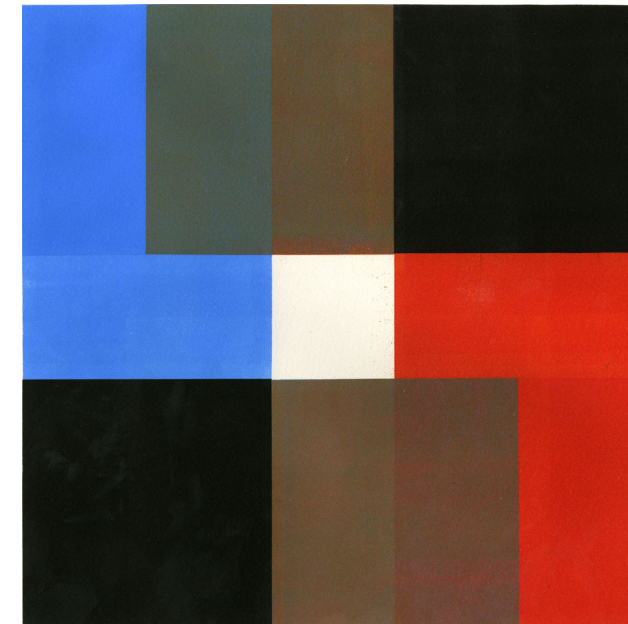
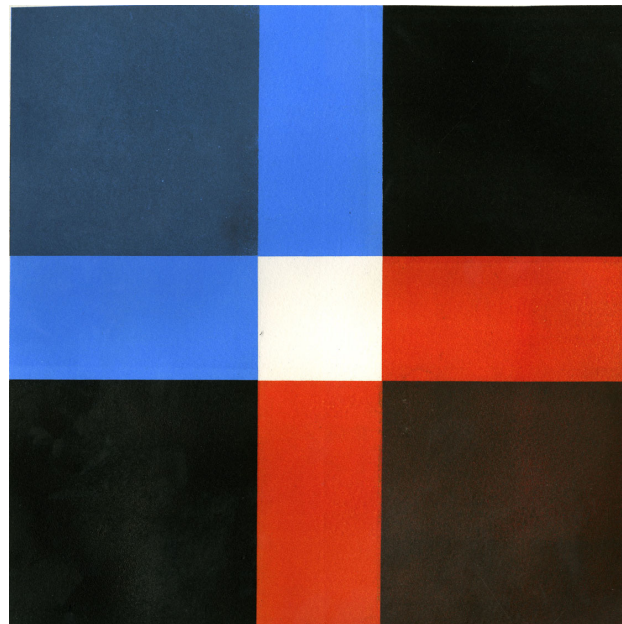
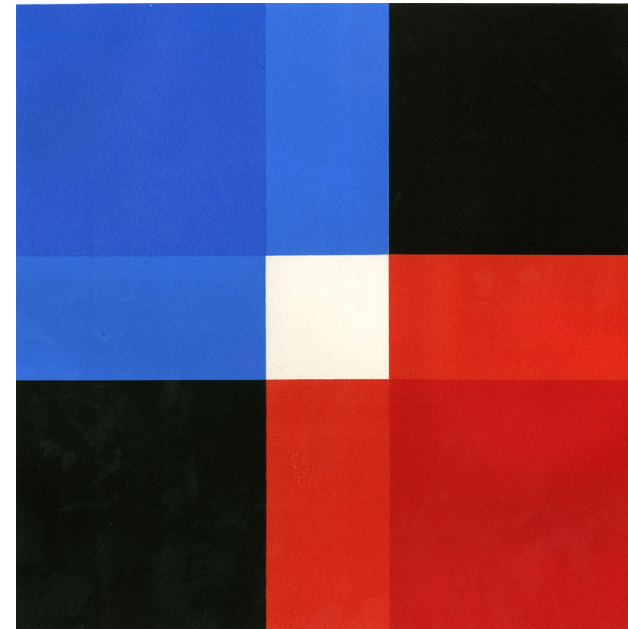
Floors, walls, and ceilings are generally three distinct components which delineate space within a house and are generally represented as such. This thesis asks, "What if these three components are folded into one continuous element?" The floor is folded into the wall which is folded into the ceiling, creating a continuity between the components and between the spaces created. Each of the folds layer and slip past each other in order to delineate space and the movement through space.

Folding creates a strong directionality by focusing movement through the spaces towards the openings at each end of the fold. These openings are what draws movement by encouraging interaction with the exterior views. Moreover, the spaces are open in specific directions and are uniformly closed in others, which directly relates the folds to the views of the surrounding site.

The folds themselves have been relieved of their structural responsibility to the house as a whole. Instead, a frame of 6"x6" tubes takes on this responsibility. The folds sit on and hang from the frame members. A regular grid has been created. However, based on the position of the folds and how they have been shifted, the grid can adapt. Frame members can be moved or removed all together. The frame is always exterior. As the folds slip past and between the frame, so do the enclosures.

The next layer of folding is at a smaller scale than that of the main folds. The stairs are created using folded plates. In order to support the treads vertically, a smaller scale framing system attaches the stairs to the main frame. This system allows the stairs to float above the folds between which it provides access. Just as the larger folds do not come into contact with each other, neither do the stairs.

## Monoprints



At an early stage in the design process, these monoprints began to influence the thesis. A design for the print was loosely based on the building section at the time. In order to print this design, an order of operation had to be determined. The process of how the print was made is more important than simply arriving at the desired outcome. The same outcome could have been reached using multiple methods, but the process followed allows for maximum legibility of the thought process and construction sequence. Rules were set up so that only one process could make sense.

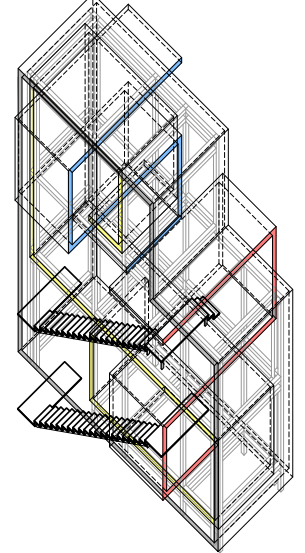
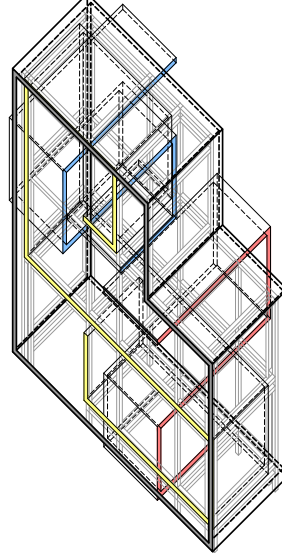
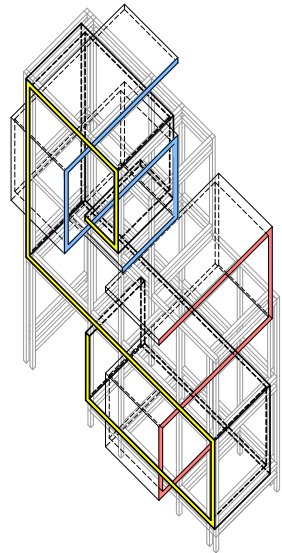
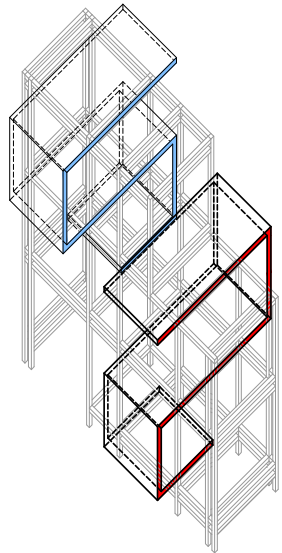
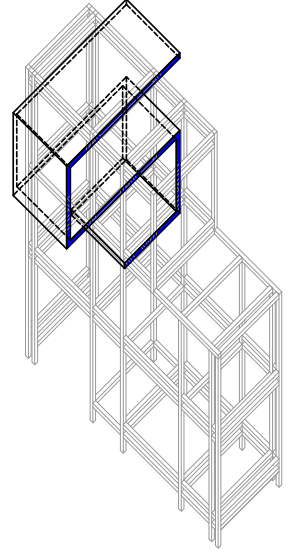
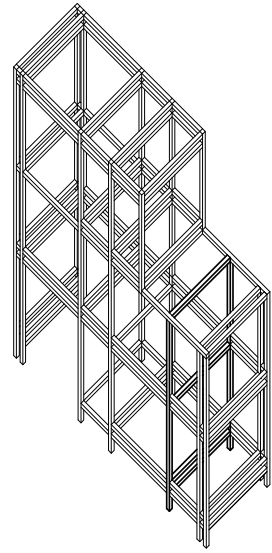
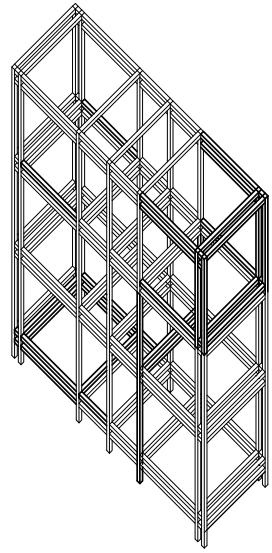
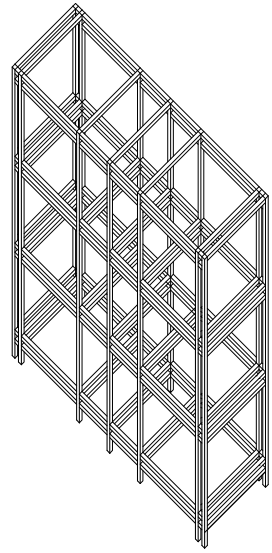
In all the prints, only three colors of ink are used: black, red and blue. The layering of the ink yields the appearance of the additional colors. In the first print, a red rectangle, three inches wide and two inches tall, is laid down in the lower right portion of the page. On the next pass, another red rectangle, this time two inches wide and three inches tall, is laid down on top of the first rectangle, creating a darker red two inch by two inch square in the bottom right corner. These first two steps are repeated in the upper left portion with the blue ink. Then, the remaining two corners are both filled with a two inch by two inch black square, leaving the very center free of ink.

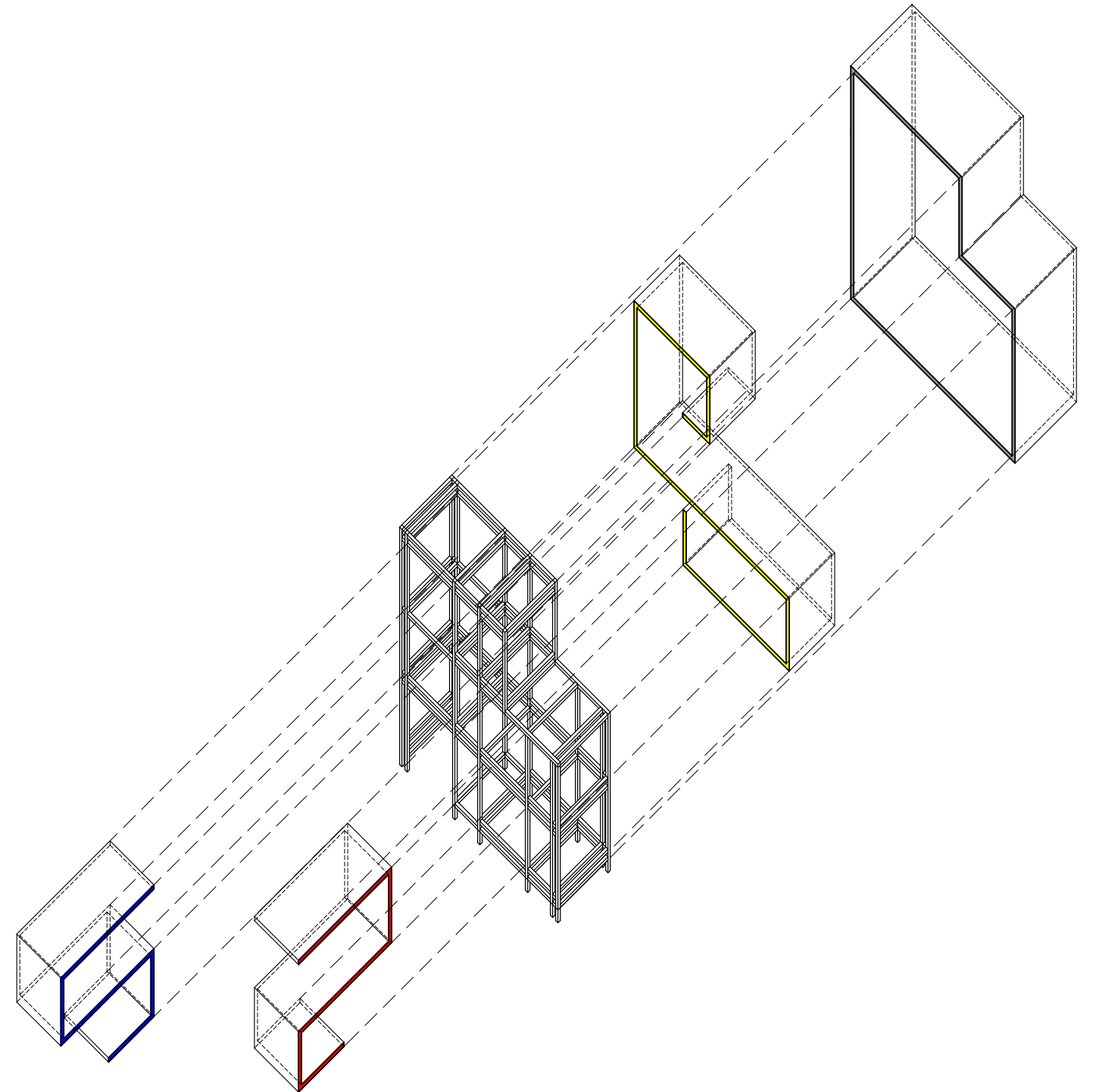
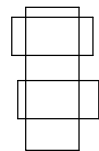
This exact process is repeated in the other two prints. The only difference between these three prints is what precedes step one in the first print. The second print would be identical to the first except that prior to beginning the process, all four corners were filled with two inch by two inch black squares, giving the appearance of a dark brown and a gray blue square where the extra black squares were laid. The third print began with a two inch by two inch blue square shifted one inch to the left from the bottom corner and a two inch by two inch red square laid one inch to the right of the top corner. After the same process has been completed, the print appears to have shades of light brown where the extra blue and red squares were laid.

The systematic approach to creating the prints, in which the outcome varies while the process does not, is similar to the intent of the design and ordering of the house, where a grammar has been established. While the outcomes may vary, the rules of that grammar do not. This grammar controls the relationships of the folds to each other and to the frame and stairs. This spacial syntax allows the thought process and construction sequence of the house to be revealed, in the same way the process of the prints is revealed in the outcome.

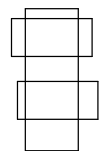




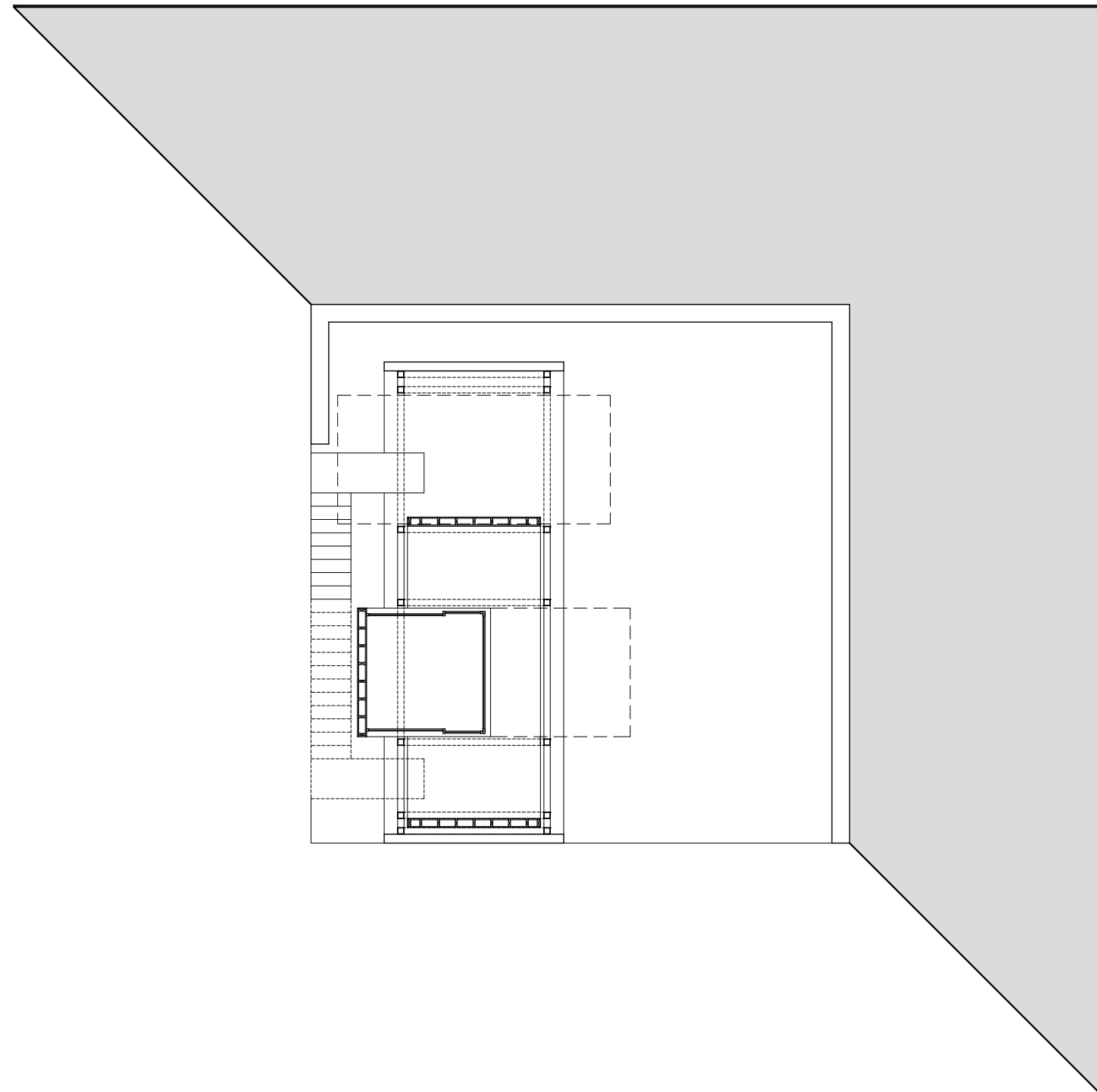


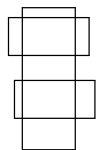


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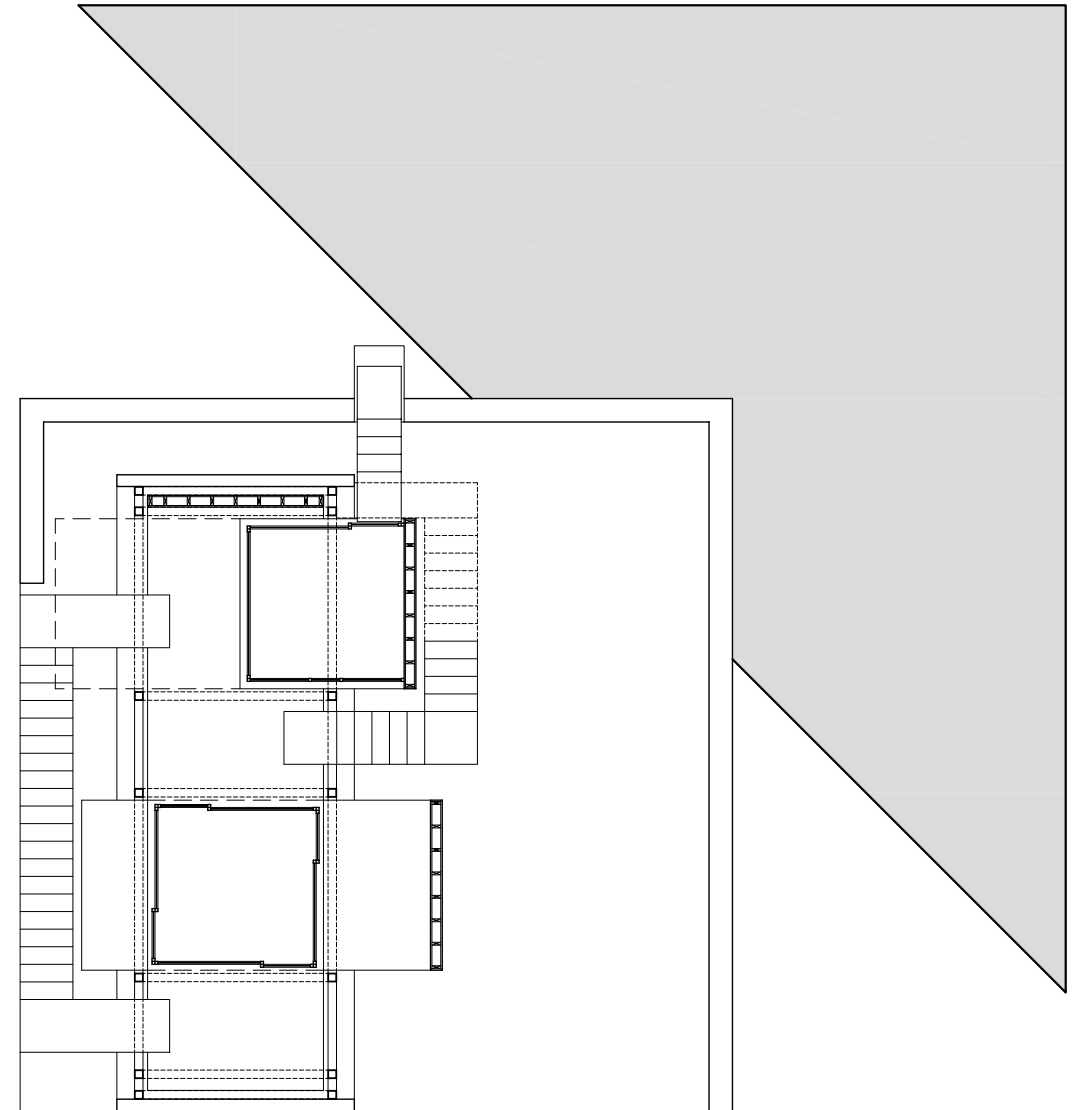


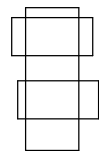
lower floor plan



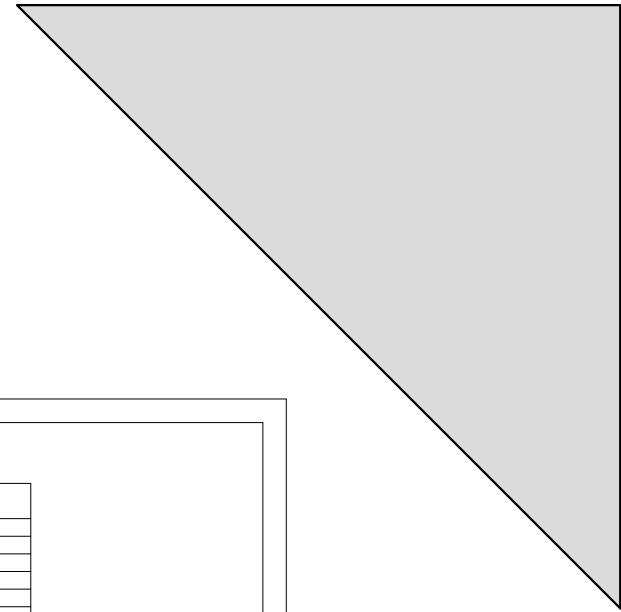
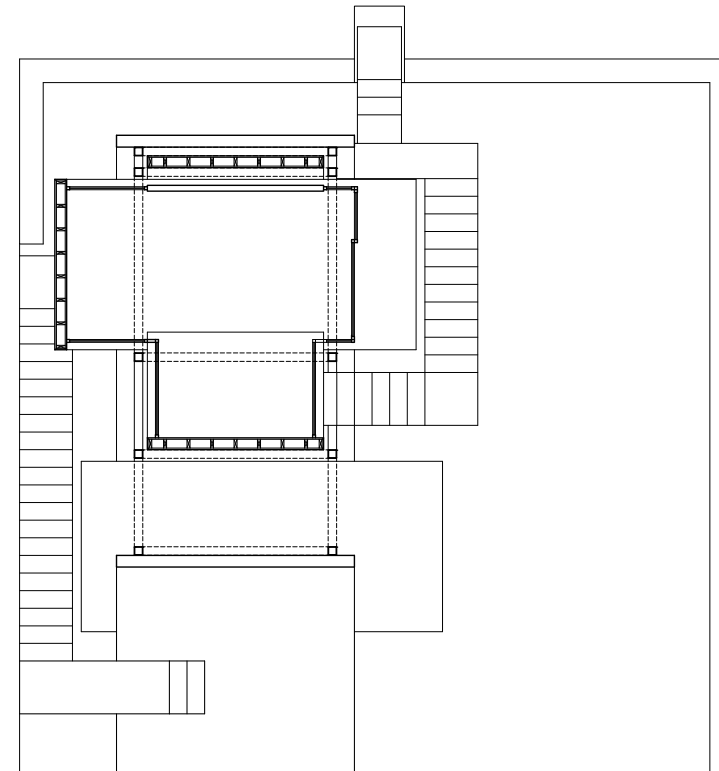


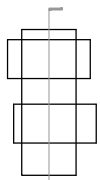
ground floor plan



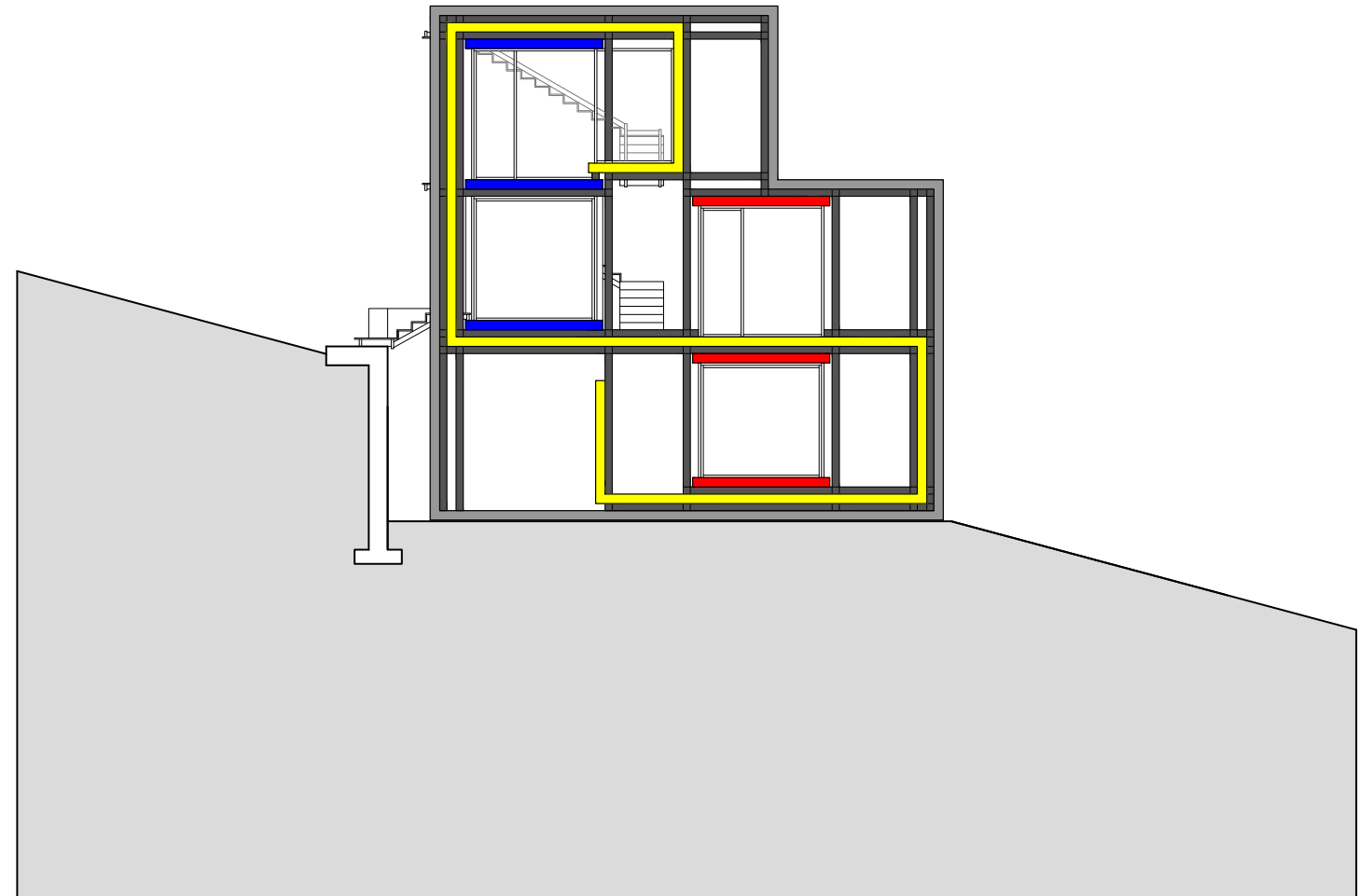


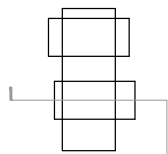
upper floor plan



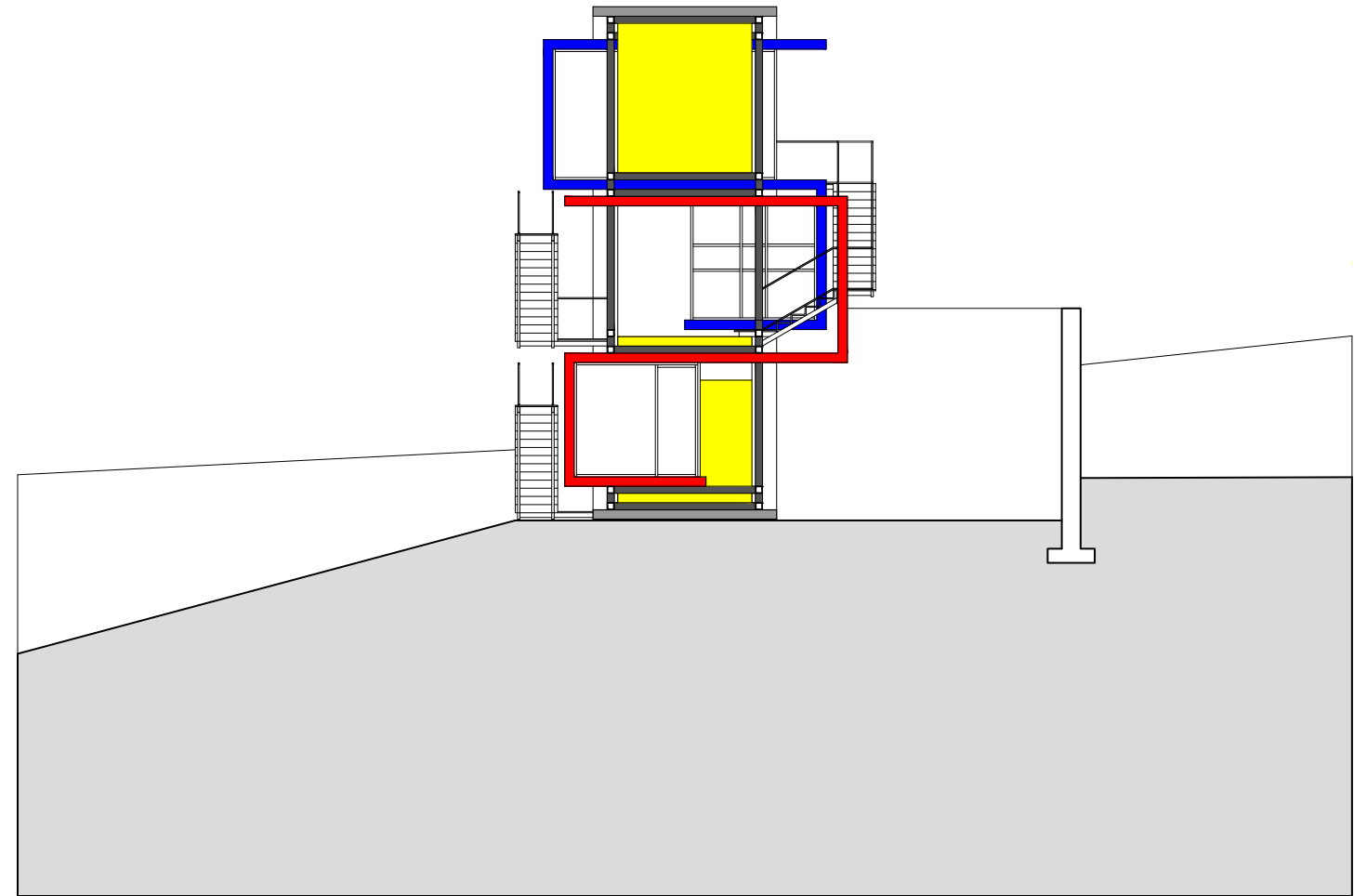


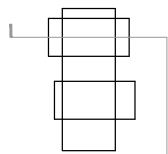
longitudinal section



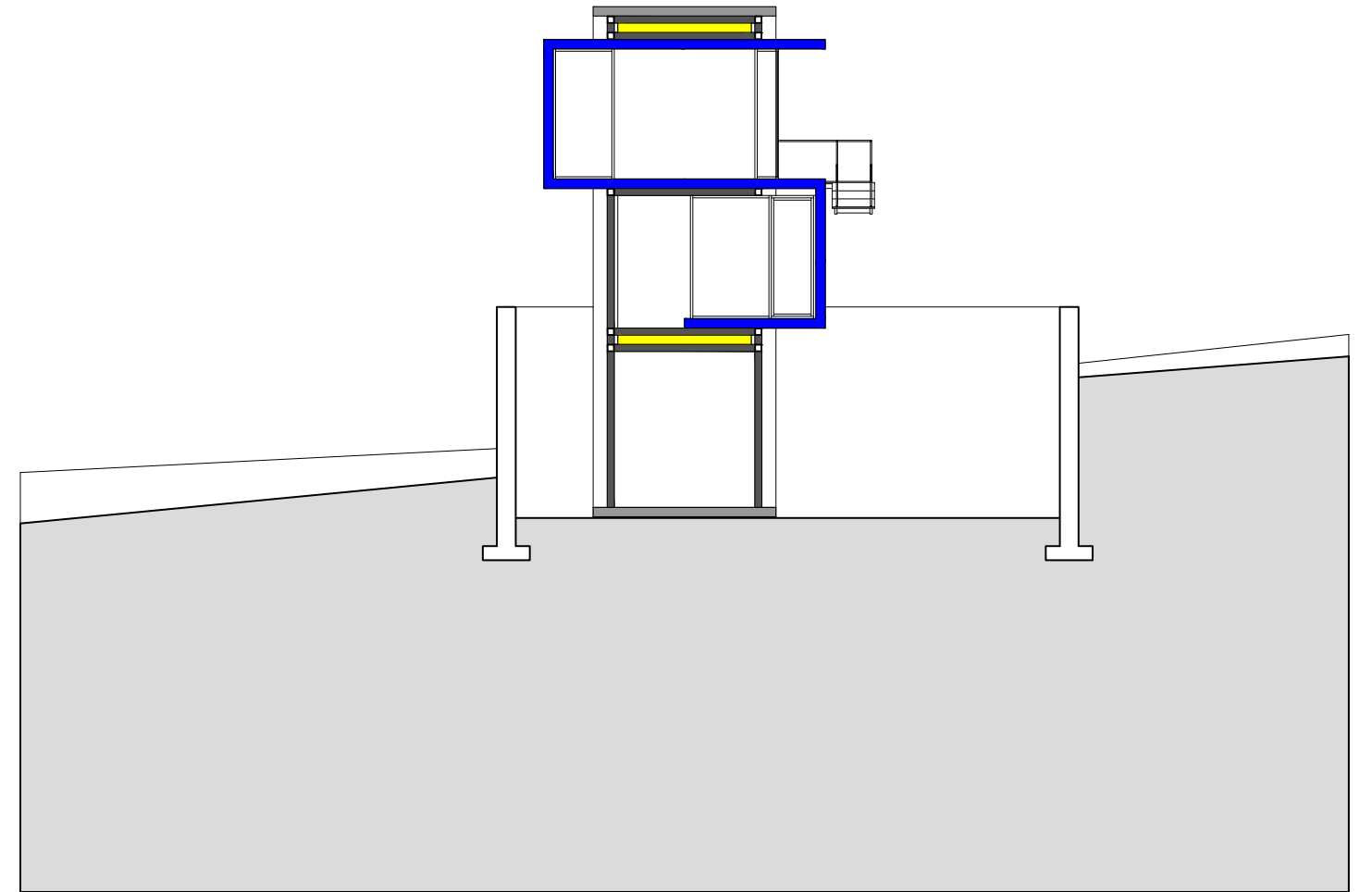


transverse section

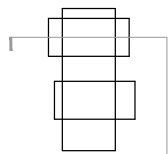




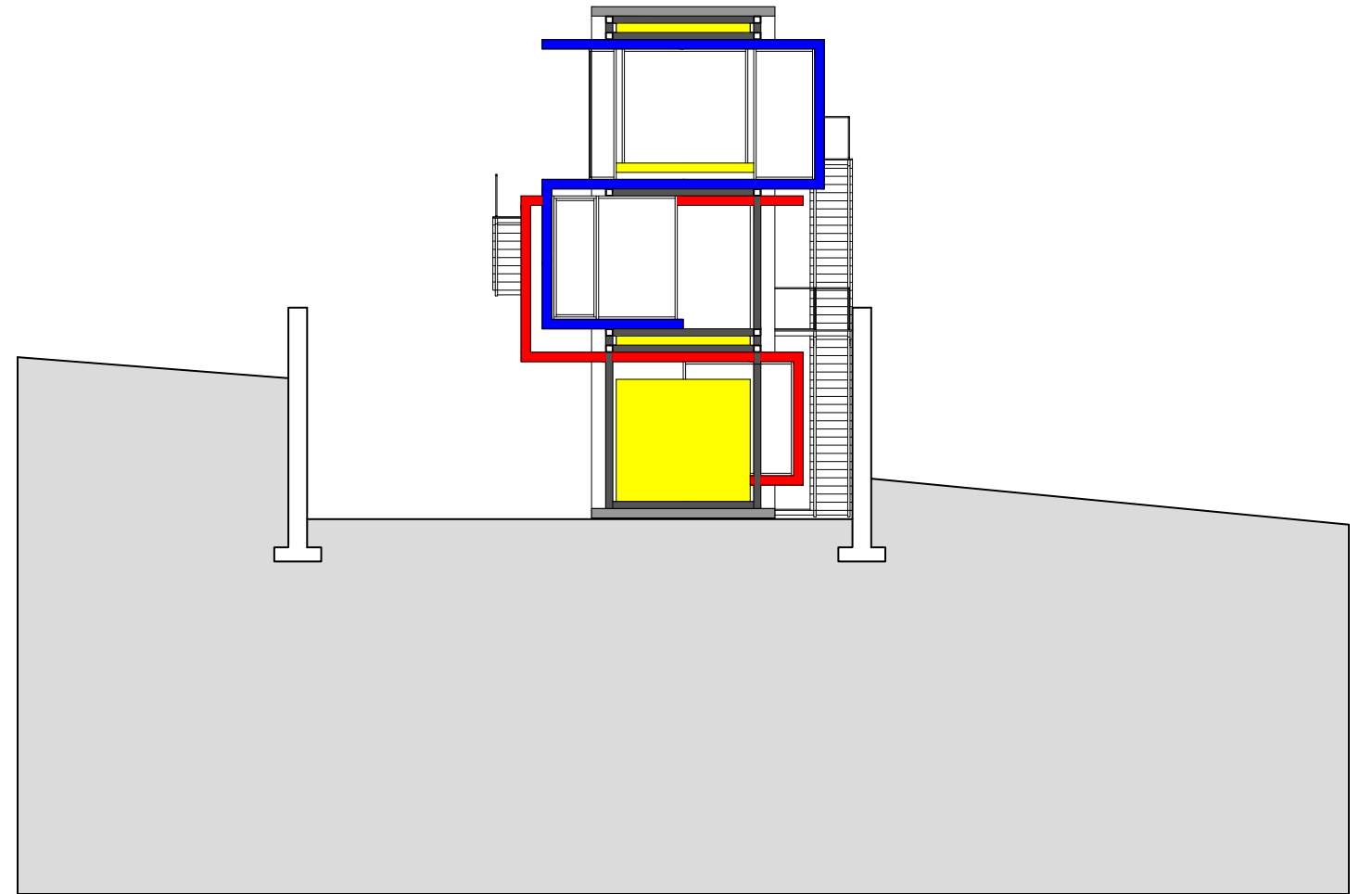
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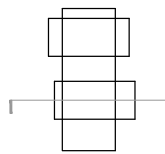




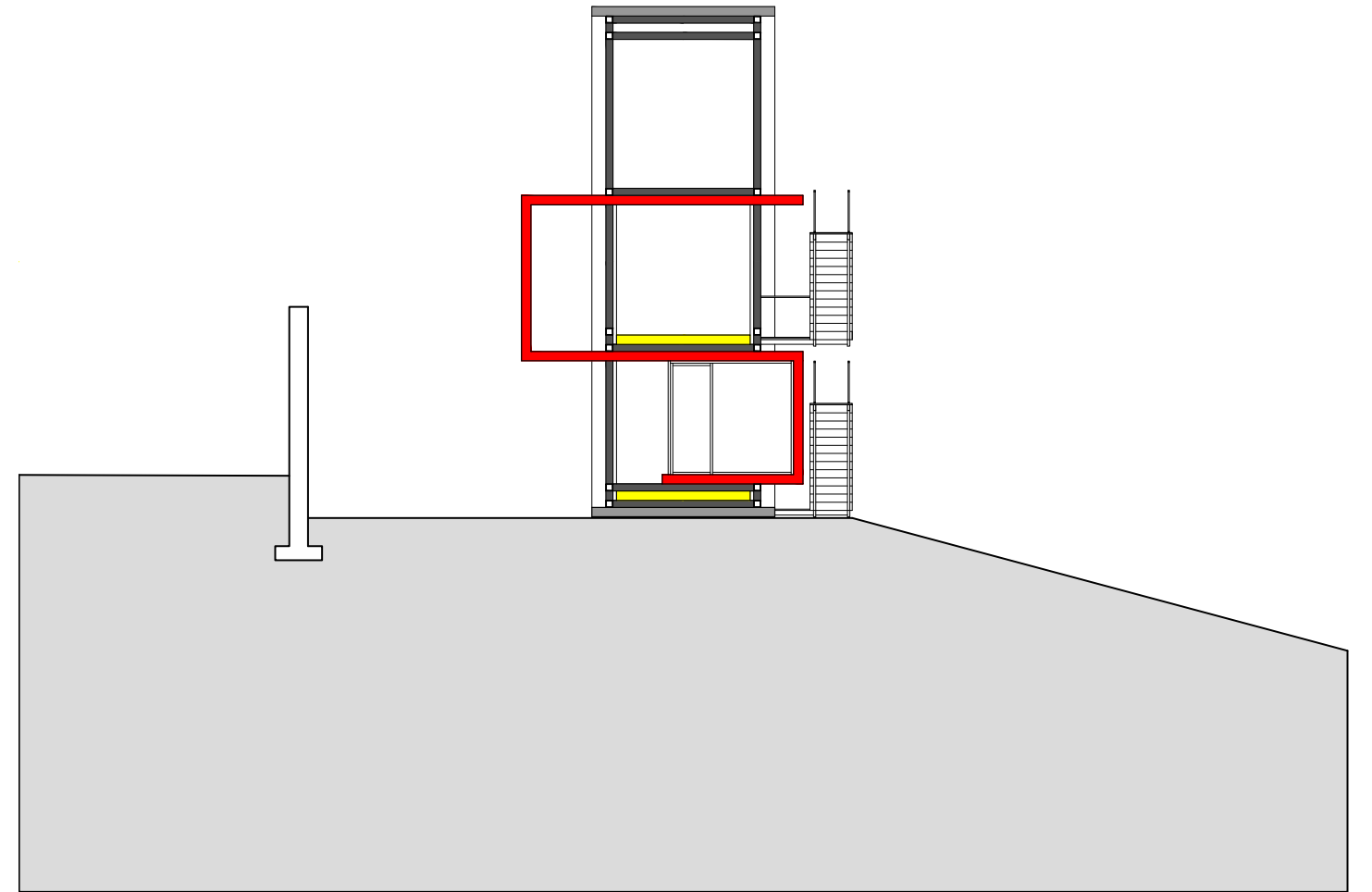


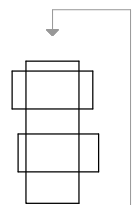
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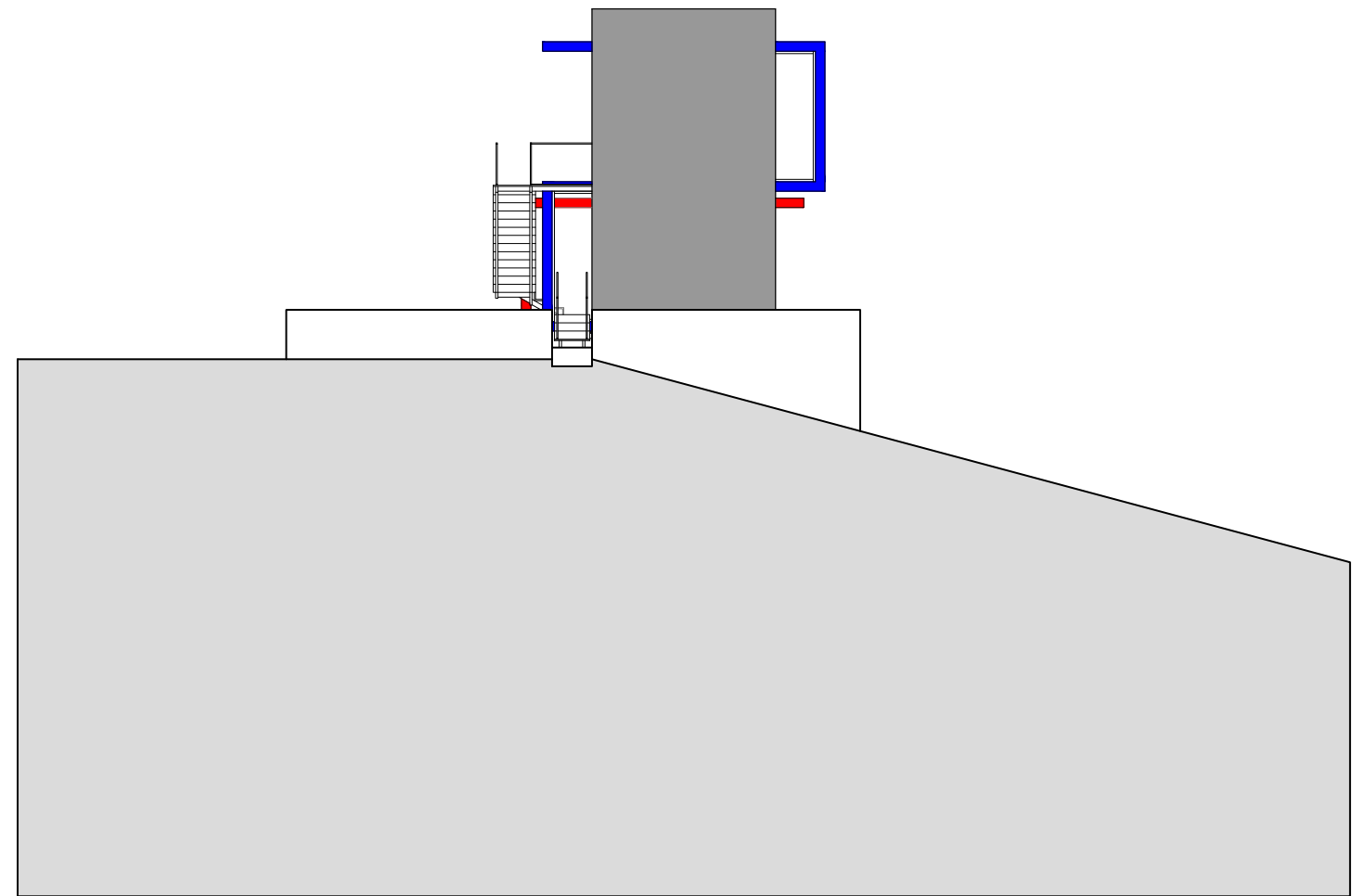


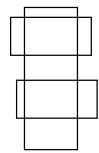
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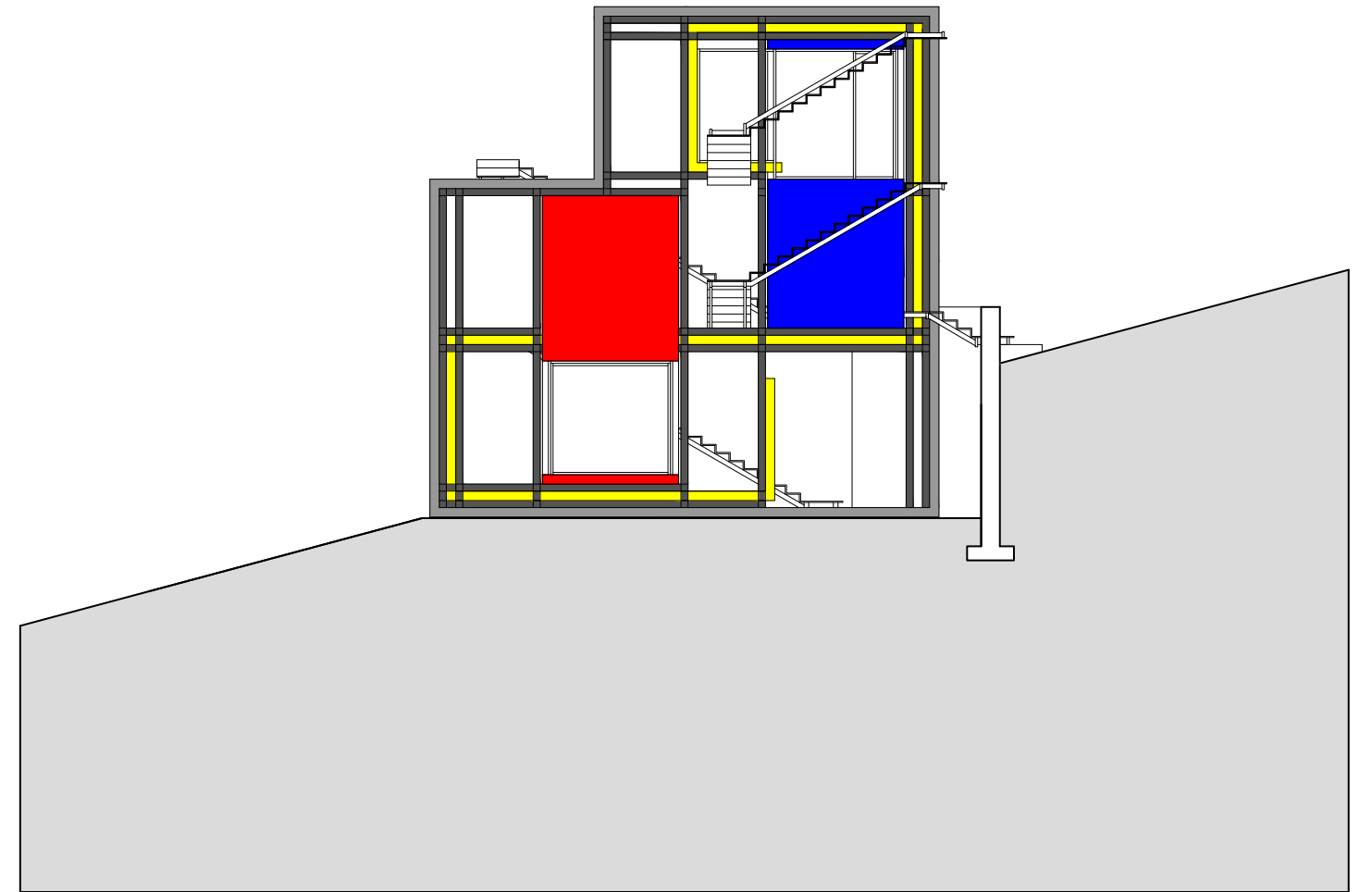


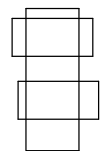
front elevation



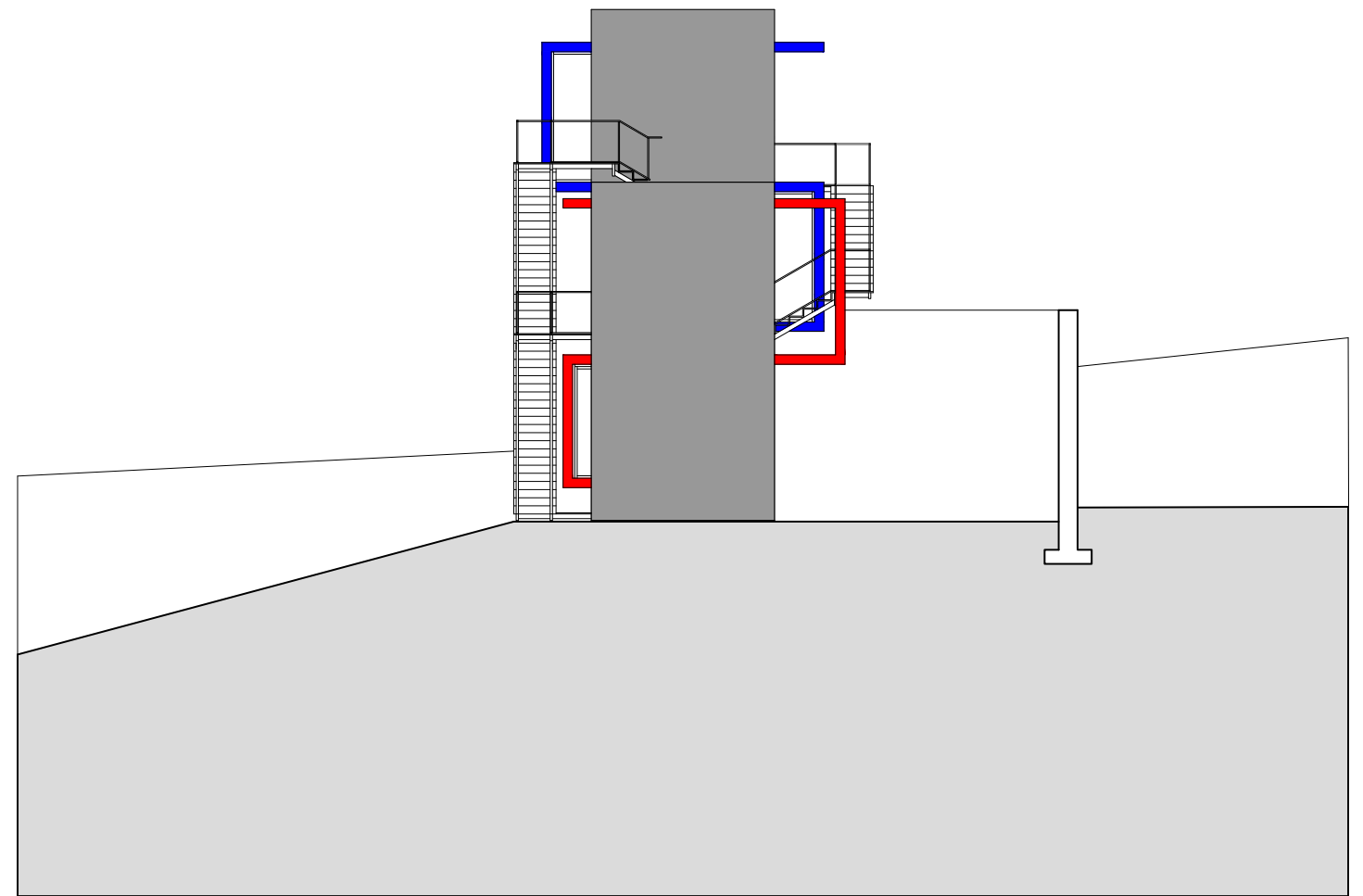


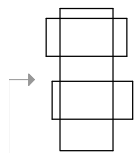
left side elevation



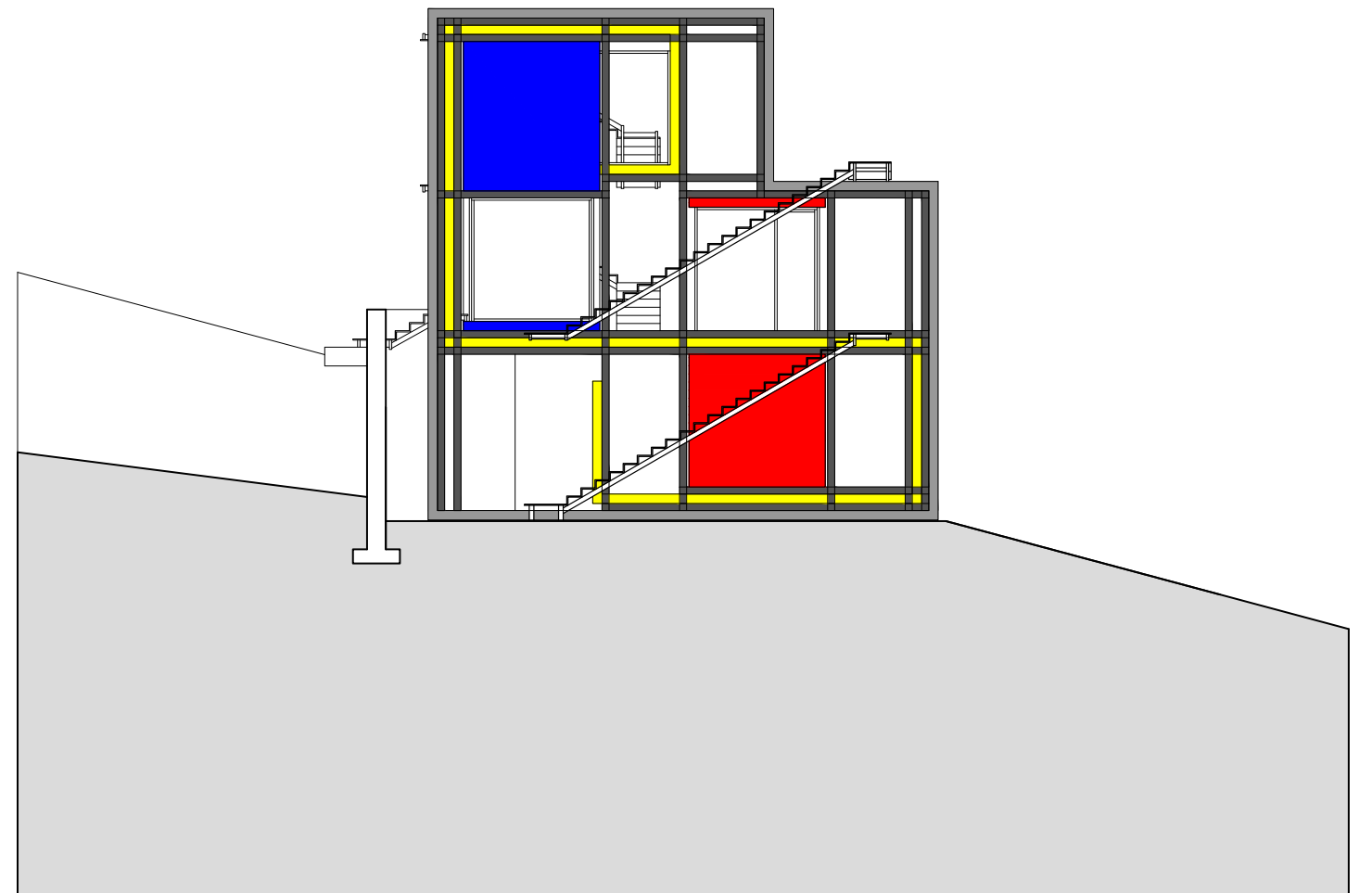


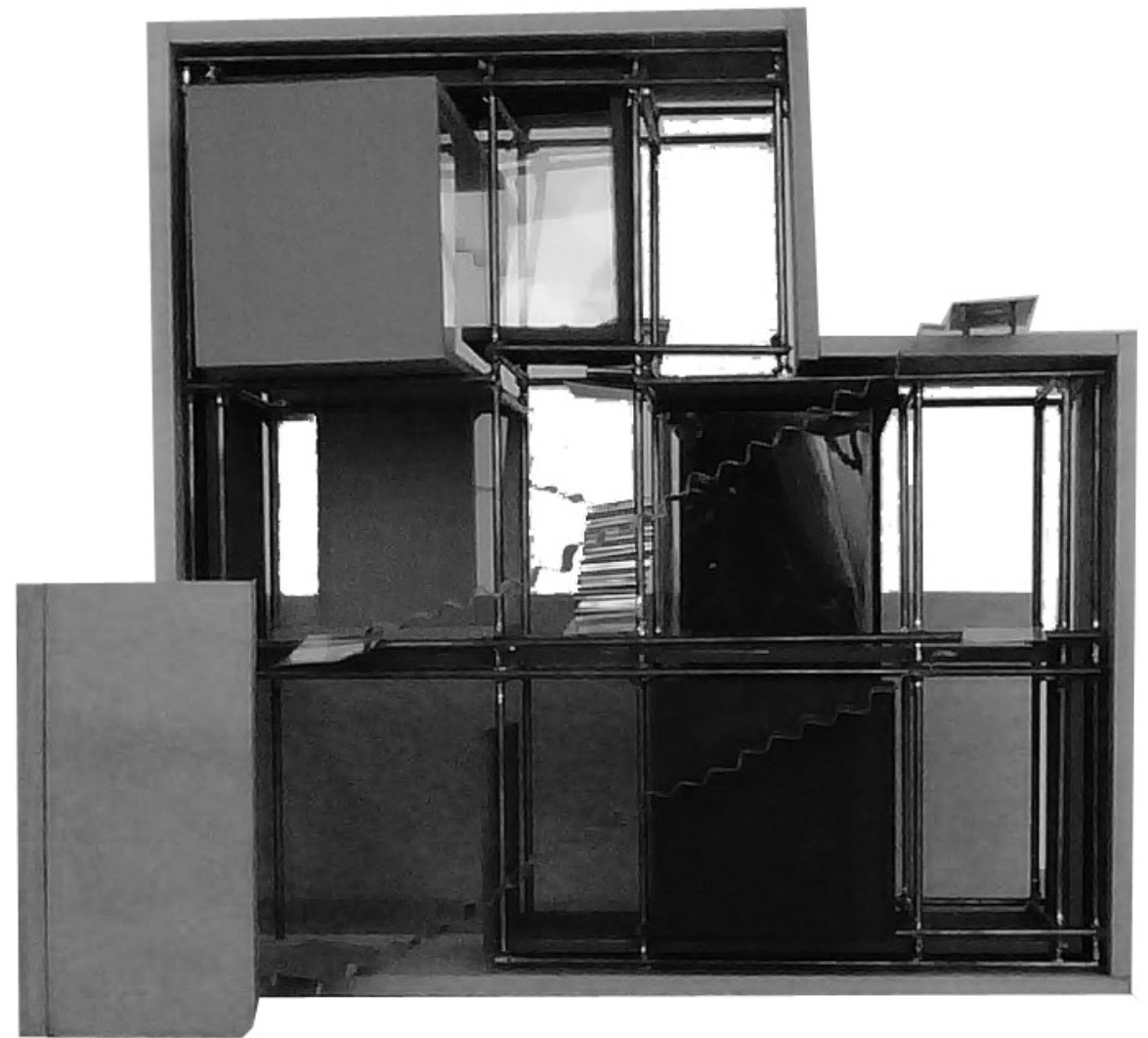
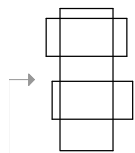
rear elevation



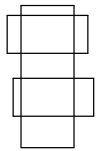
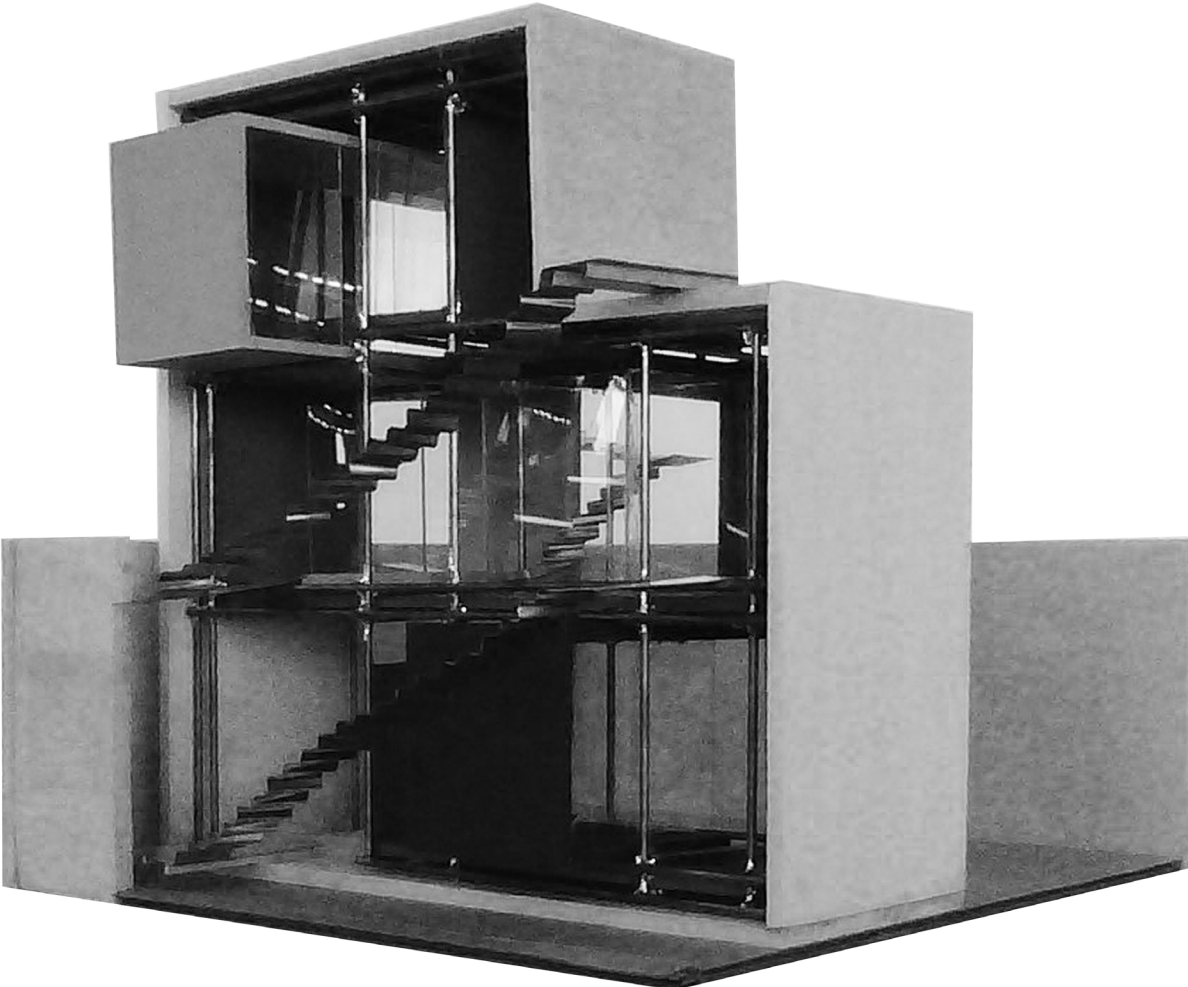


right side elevation



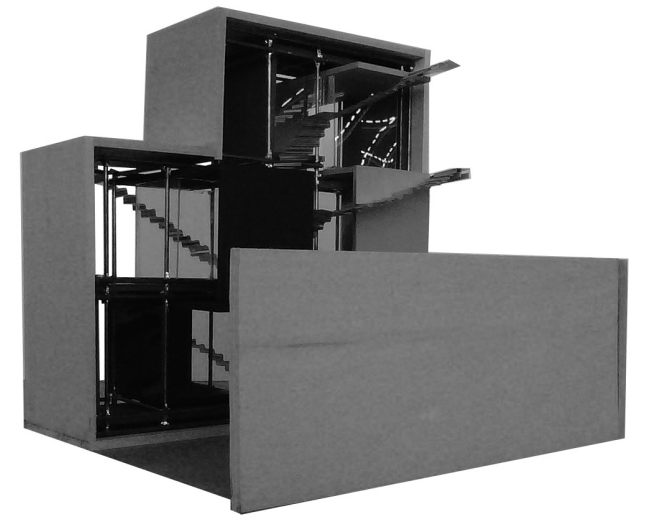
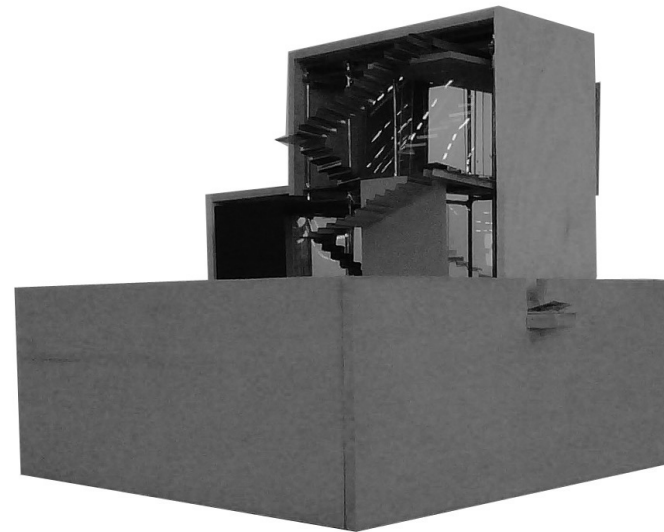
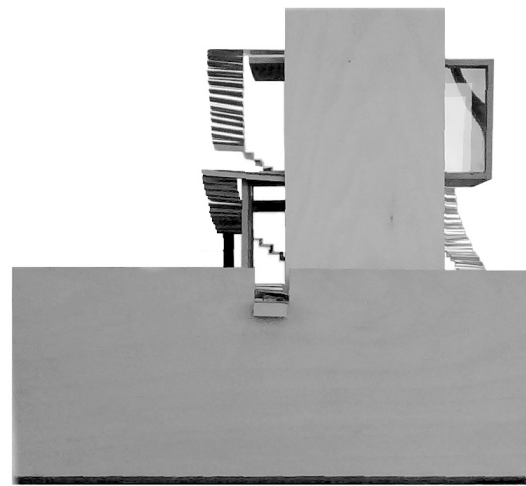
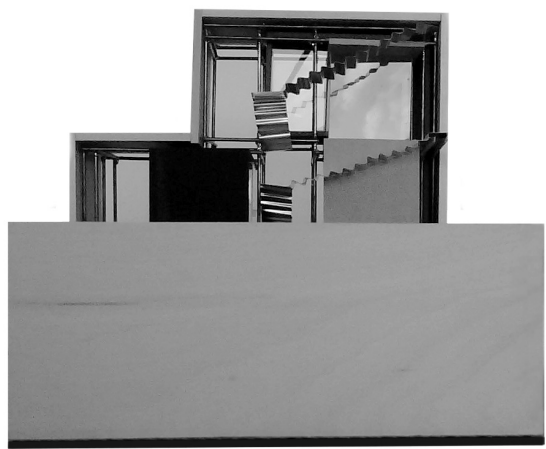
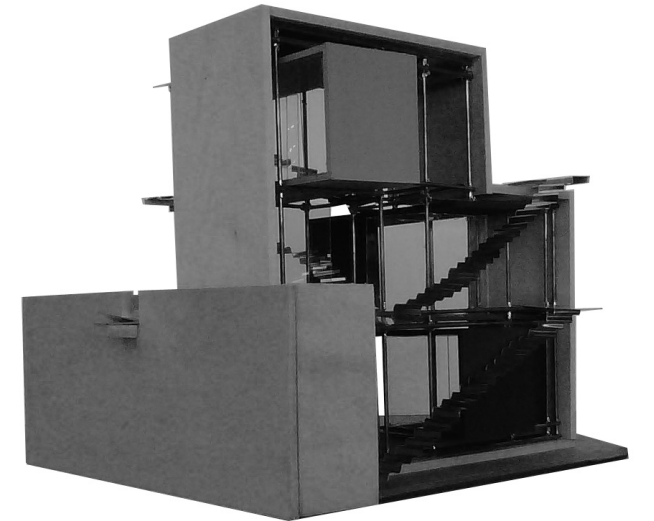
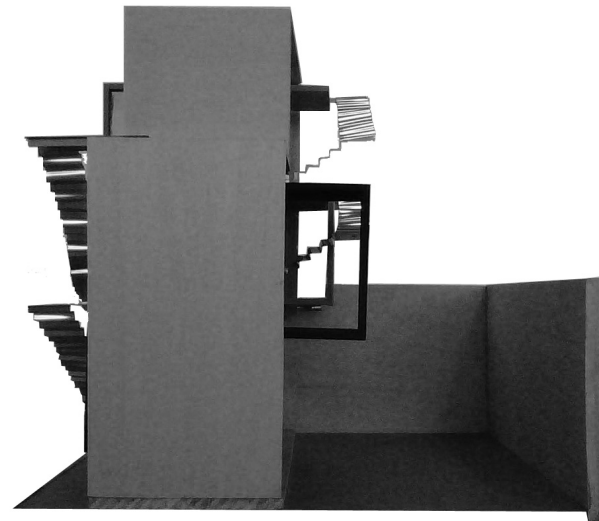


physical model



physical model

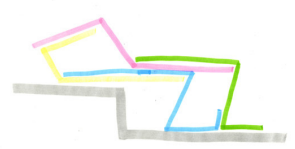
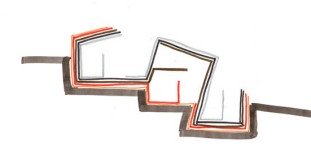
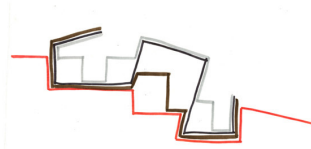
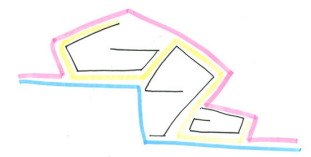
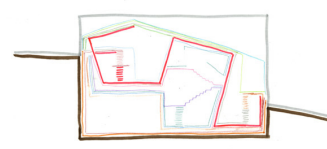
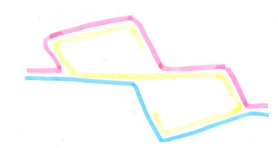
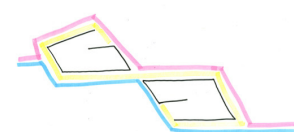
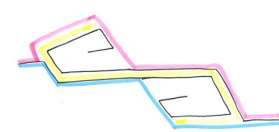
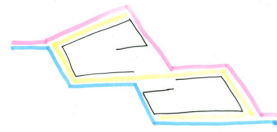
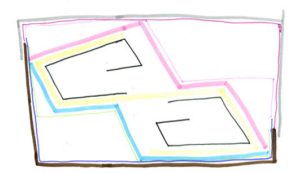
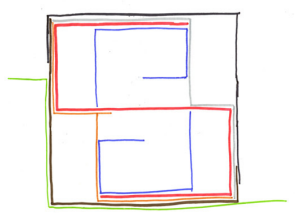
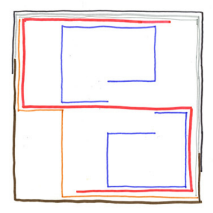
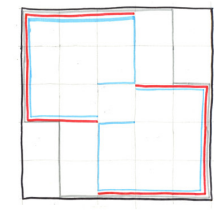
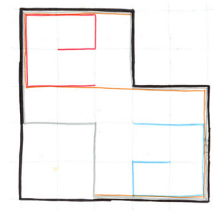
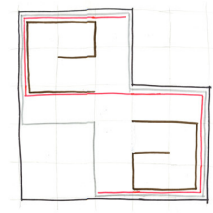
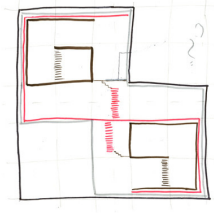
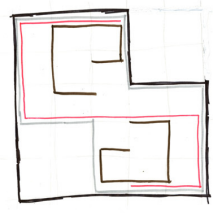
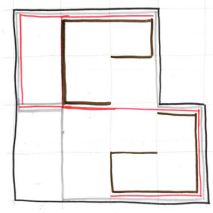
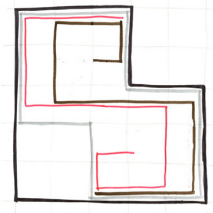
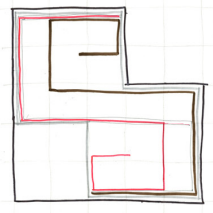
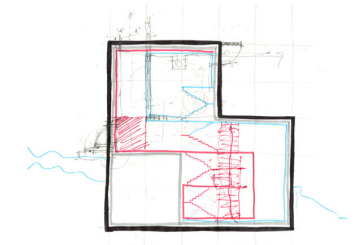
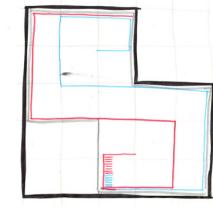
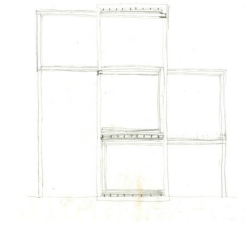
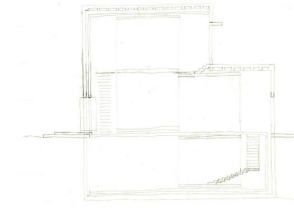
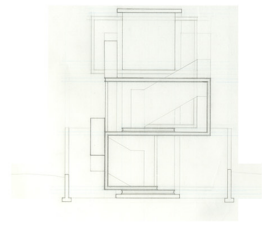
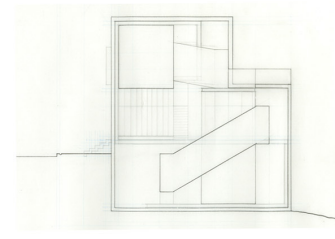
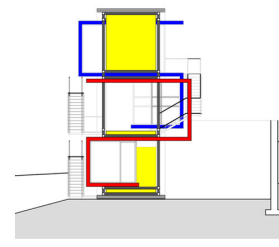
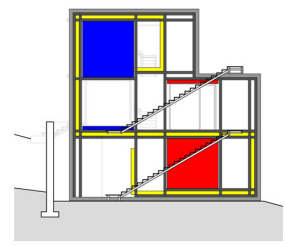




**Folding: A House**

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**Formal Traces**



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