

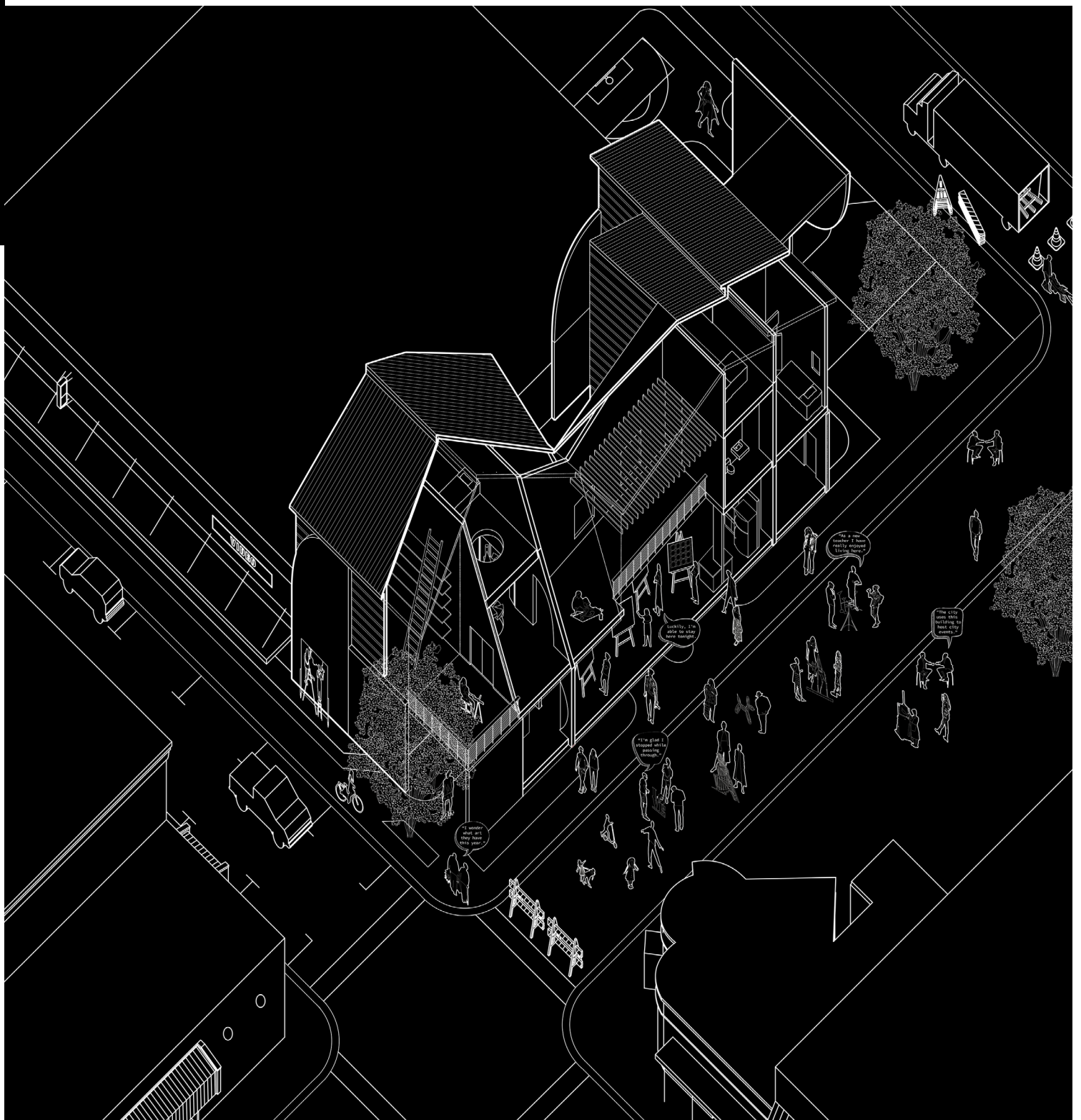
INTRA HOUSING

2022

KATIE RIDLEN BOWEN

**INTRAHOUSING: HOUSING FOR
STUDENT TEACHERS IN RURAL SCHOOL DISTRICTS**
This project provides an architectural solution by offering housing for student teachers and/or newly hired teachers in their first year of teaching as an incentive to teach at these rural school districts.

**HOUSING FOR
STUDENT TEACHERS
IN RURAL SCHOOL
DISTRICTS**



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COMMITTEE CO-CHAIR | **ANDREW TRIPP**

COMMITTEE MEMBER | **JOHN COOPER**

STUDIO PROFESSOR | **BRIAN GIBBS**

DEDICATION

This project is dedicated to **teachers**. All of them. To those that serve tirelessly with love and compassion and sometimes with minimal resources.

ACKNOWLEDGEMENTS

First and foremost I am extremely grateful to my committee professors **James Michael Tate** and **Andrew Tripp** and studio professor **Brian Gibbs**. They offered invaluable advice and continuous support throughout this project. I would like to thank **Texas Target Communities: John Cooper, Jaimie Hicks Masterson**, and **Jeevasmi Thapa** for their insiteful contribution. I would also like to thank former superintendent **Andrew Peters** for sharing this idea and continually assisting to its development. And finally I would like to express my gratitude to the many superintendents in school districts such as Columbus, Burnet, Fredricksburg, and Pecos-Barstow-Toyah Independent School Districts for contributing to the conversation.

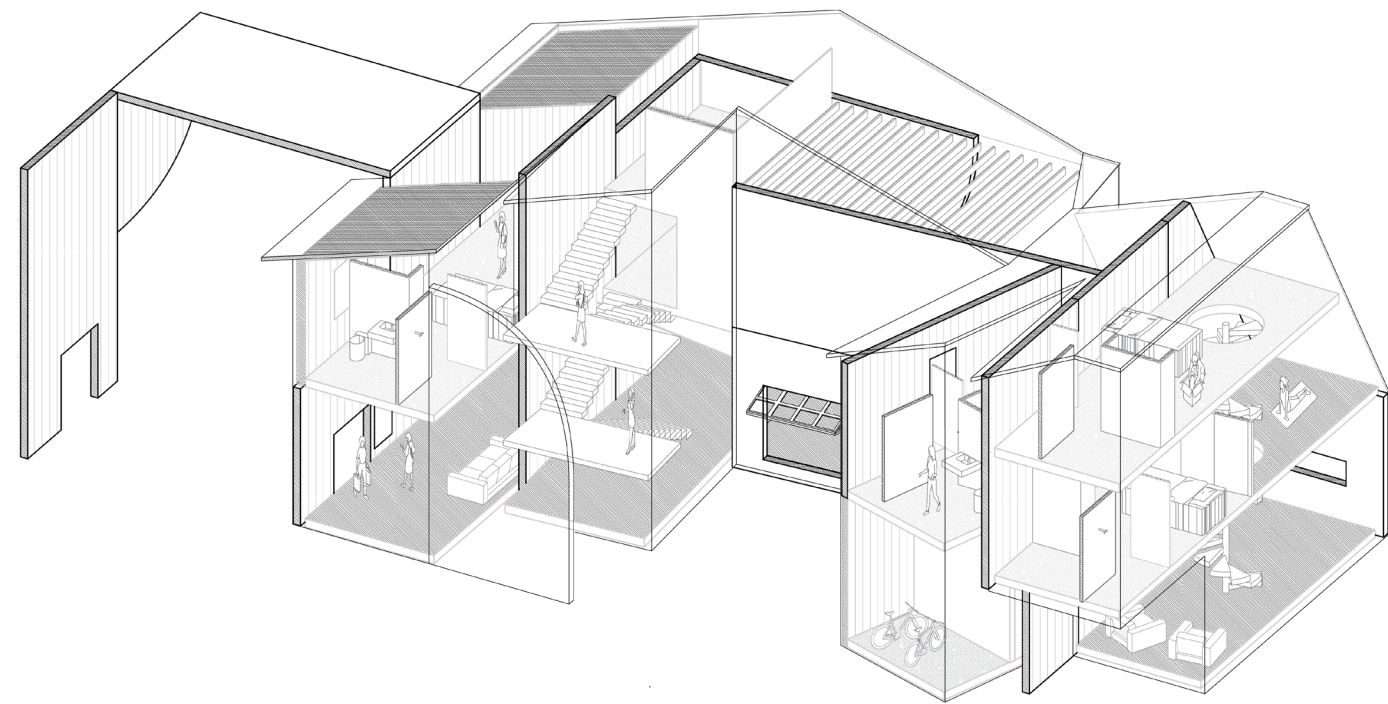


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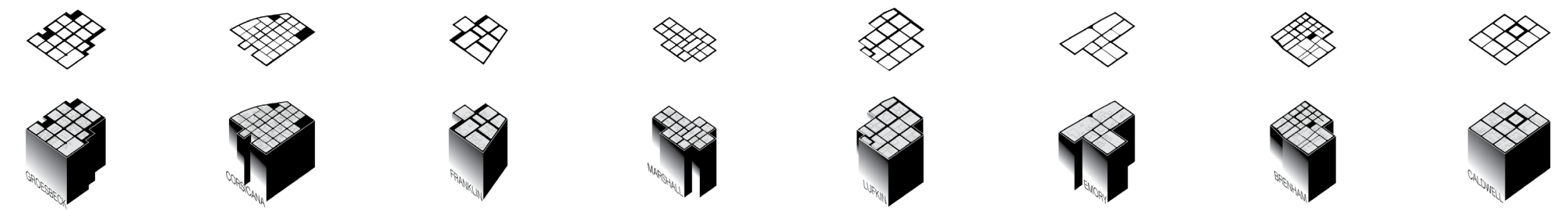
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RURAL STUDENT TEACHER HOUSING

The purpose of this project was to provide an architectural solution to help narrow the gap between rural and non-rural education in East Texas school districts.

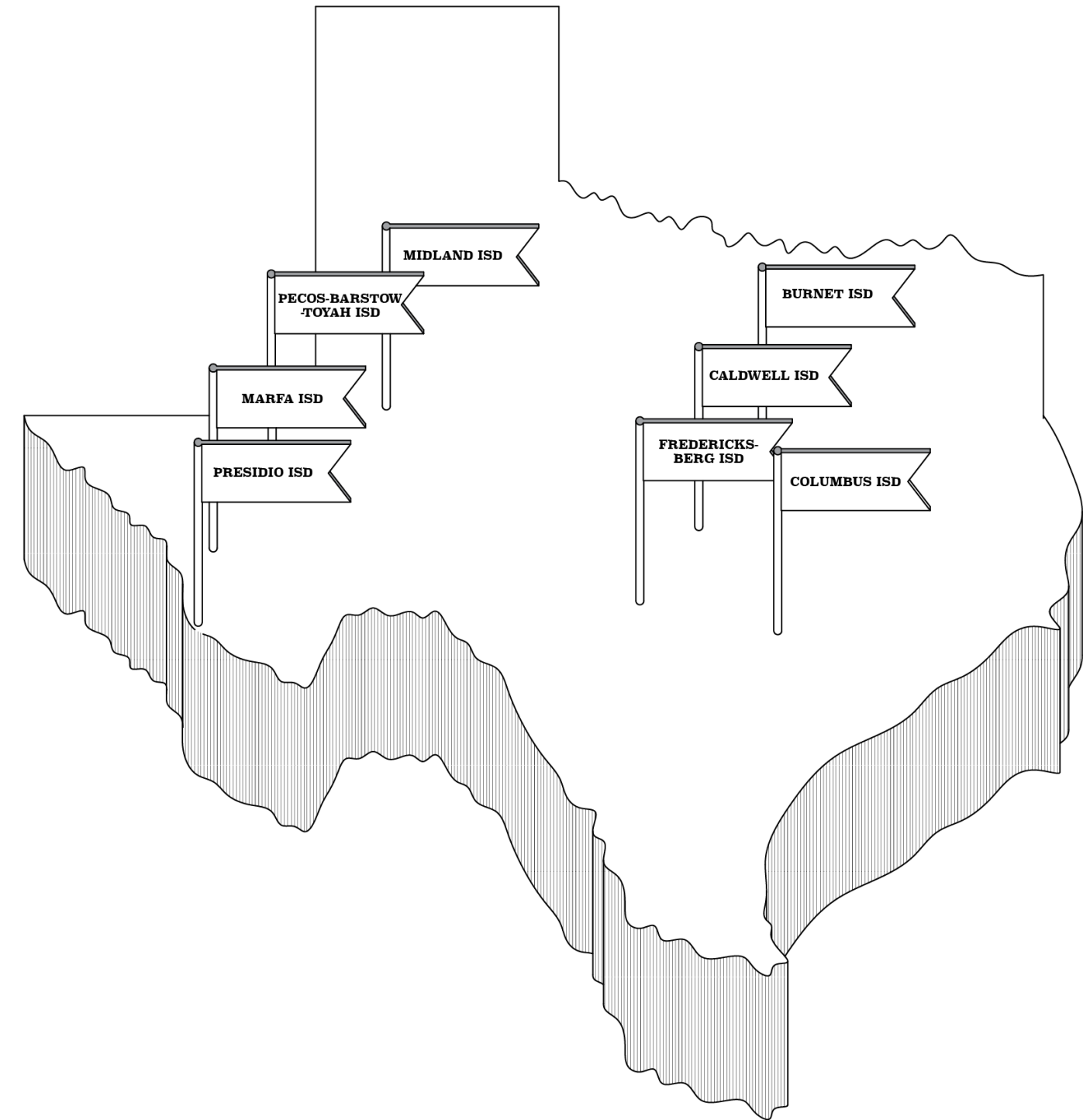
HISTORY

The history of education in the state of Texas is one wrought with many decisions that have not only molded the condition of the State's education today, but also placed a wedge between rural and urban education that has yet to be remedied. Between 1836 and 1875 various legislative documents were enacted to understand a framework for Texas education. However, in 1875 the creation of Independent School Districts (ISD) was instrumental in forming the gap between rural and urban education. Seemingly a win for the state because education was now able to be funded, the Act privileged only incorporated cities by giving them the authority to provide perpetual school funding based on property and poll tax. Thus, the institutionalization of the many small unincorporated cities within the state suffered. Though forged almost 150 years ago, we are still seeing this gap between rural and urban education in Texas.



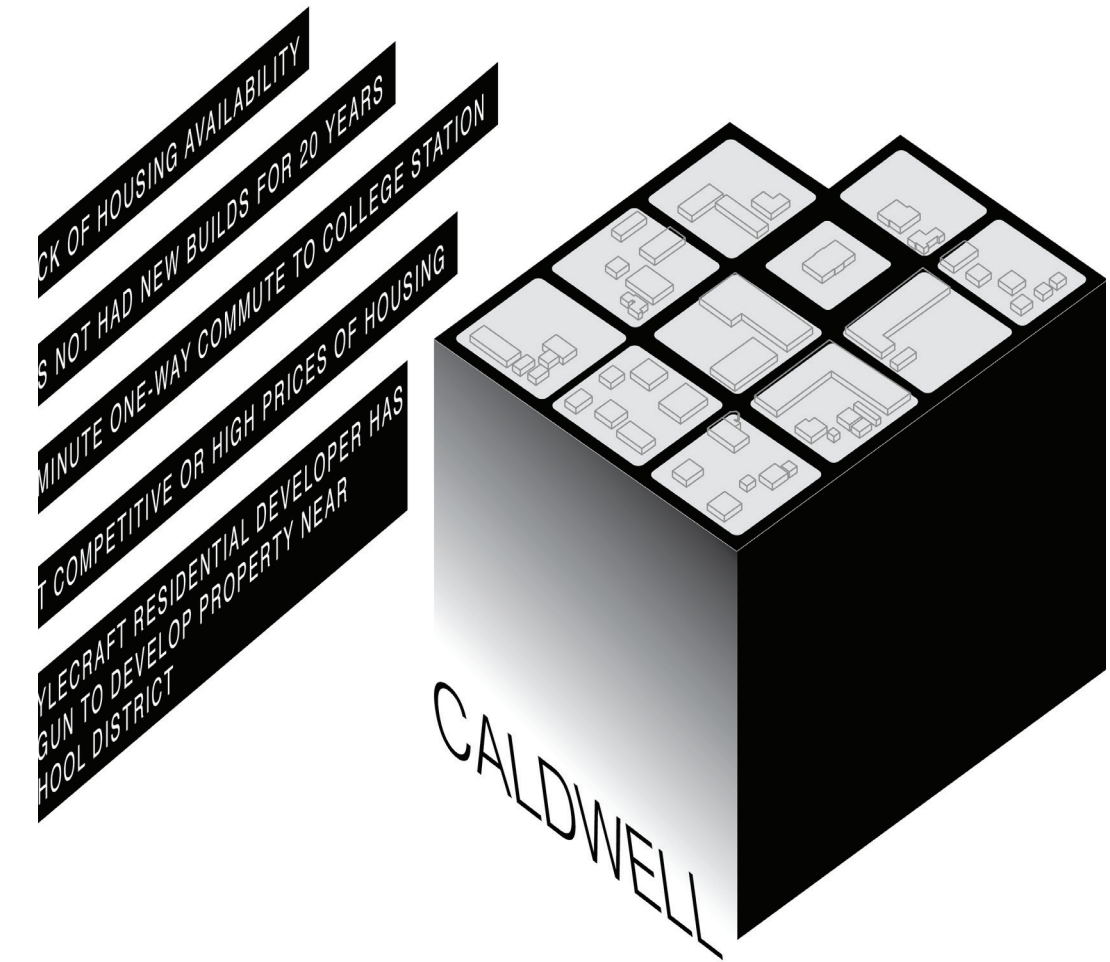
TODAY

The gap presents itself in various ways. First, rural ISD's are unable to compete financially with teacher salaries in urban districts as some rural district salaries average \$30,000 less. There is also a significant decrease in the percentage of districts offering financial incentives to teachers based on their performance. Additionally, the percentage of private grants received to fund the Professional Development of the faculty and staff is half of non-rural schools. Finally, and perhaps most importantly, the percentage out-of-field teaching is significantly higher in rural school districts than non-rural (Jimerson, 2004). This combination shows only the largest and most obvious of many disadvantages that set apart rural ISDs from non rural ISDs which continues to broaden the gap and leave rural schools short of qualified teachers.



PROJECT PROPOSAL

This project provides an architectural solution by offering housing for student teachers and/or newly hired teachers in their first year of teaching as an incentive to teach at these rural school districts. Interestingly, this has been attempted before. In an effort to combat the turnover rate and attract teachers to their district, Marfa ISD renovated an old administrative building and an unused army barrack into five apartments. These apartments helped to minimize teacher turnover by providing an attractive incentive upon acceptance of a teaching position with the school district. Though less flourishing districts cannot compete with these larger urban school districts financially, offering student teachers/newly hired teachers a place to live at an affordable cost could help to narrow the gap between urban and rural schools. This project, based in Caldwell, Texas, builds on Marfa's concept by exploring a more social and city-oriented construct while providing a "kit-of-parts" to be implemented in other rural towns.





SITE AT CITY SCALE



0 25' 50' 100'

DOWNTOWN CALDWELL

Rural downtowns typically offer a communal and central hub for rural communities. In Texas's county seats, these small city centers are generally organized by a nine-square grid with the courthouse in the center square. The downtown nine square of Caldwell is a mere eight minute drive from the elementary, junior high, and high schools making it an ideal site for this project. It also allowed for the project to be far enough from the schools to offer a clear separation from work while strategically engaging the project with the downtown.



- A** SHOPPING
- B** BUSINESS
- C** DINING

SITE ANALYSIS



DOWNTOWN ATTRACTIONS

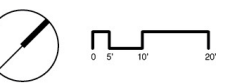
The downtown offers various shopping, businesses, and dining options all within walking or biking distance from the site of the project.

THE SITE

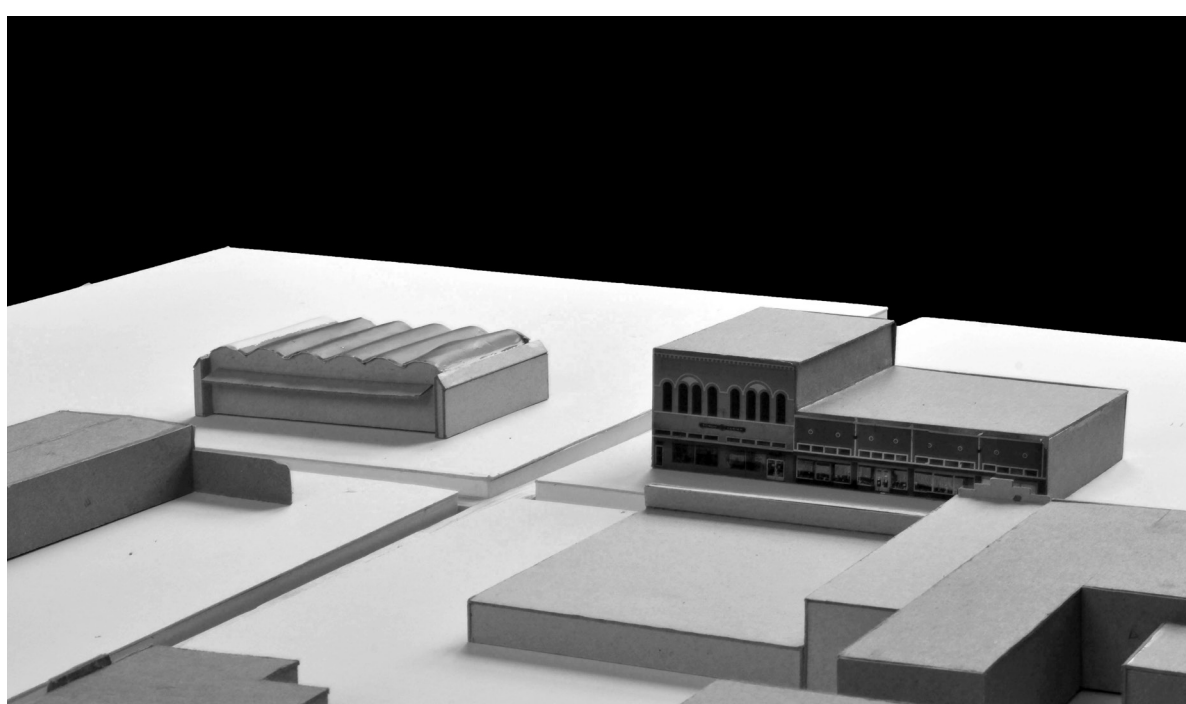
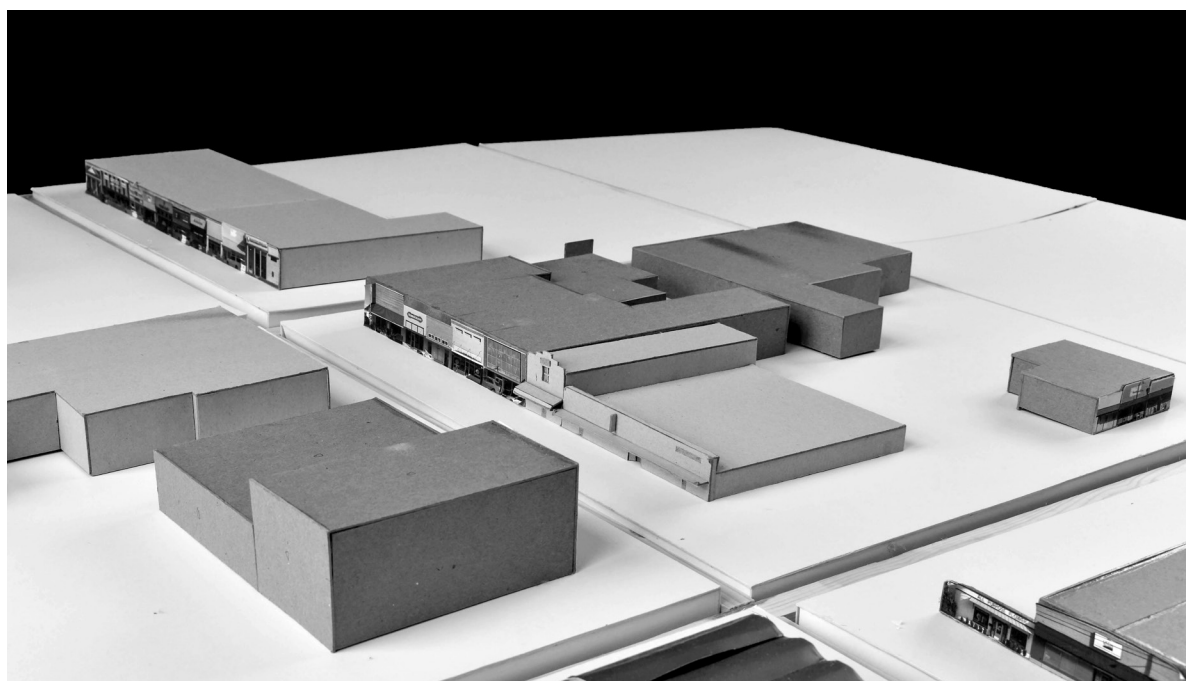
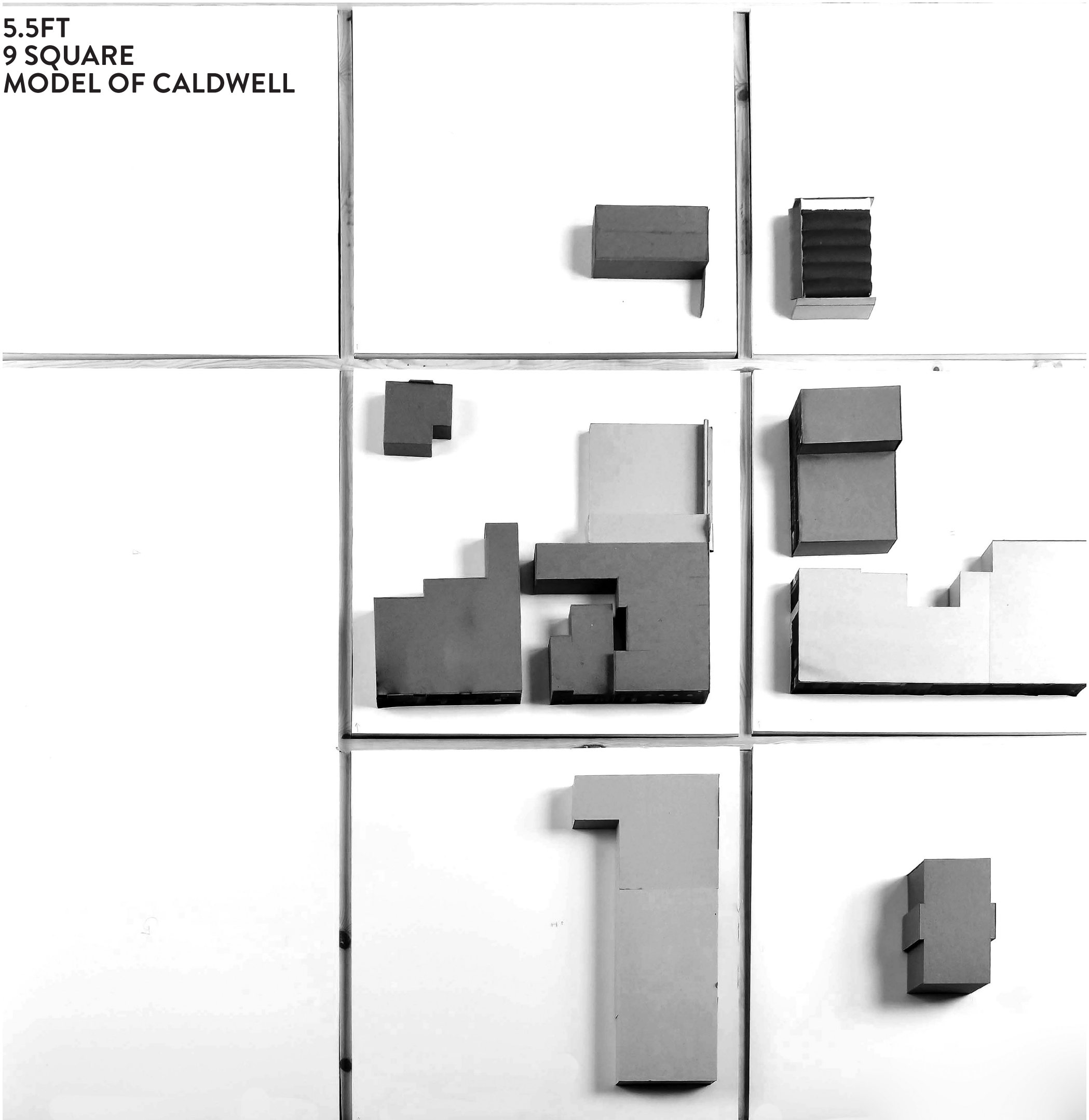
This particular location in relation to the nine square is where the commercial buildings begin to relax geometrically and where we see residential properties emerge.



SITE AXONOMETRIC



5.5FT
9 SQUARE
MODEL OF CALDWELL

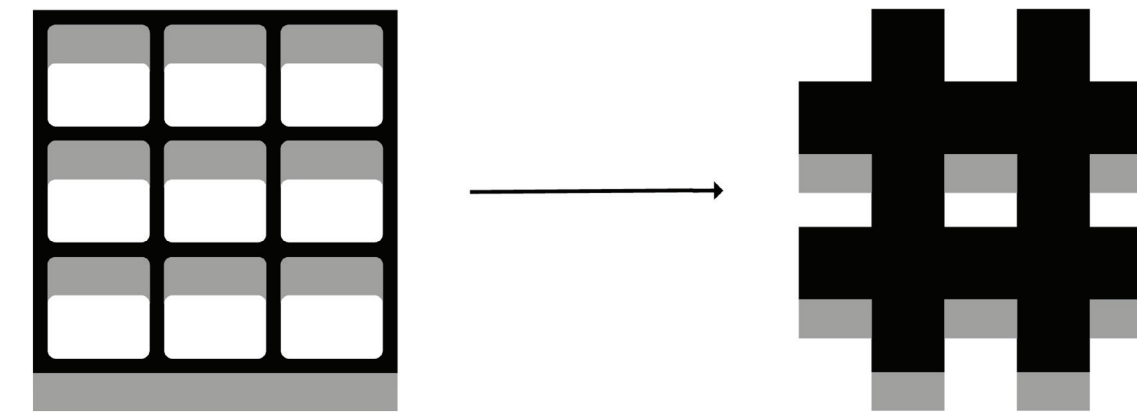


DESIGN PROCESS

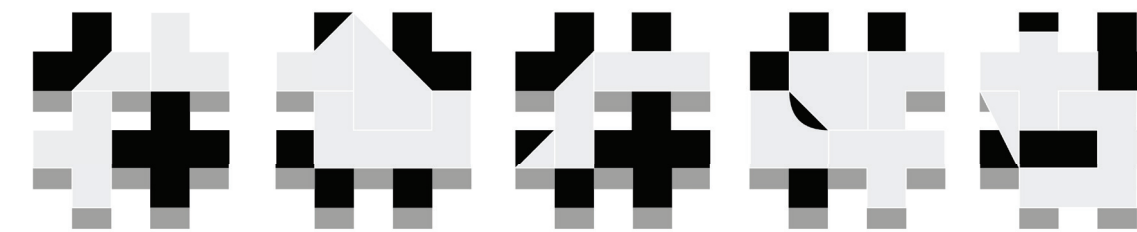
“The first starting point for the project is not the urban infrastructure but the individuality of the islands seen as independent historical, social, and environmental formations”
- O.M. Ungers Green Archipelago

Repeated throughout these rural East Texas towns is the imposition of the nine square grid typically containing the courthouse in the center square with businesses and homes making up the outer eight squares. Aureli makes mention of this realm of habitation, writing, “This structure lies in the space infra, or in between them; it is infrastructure. If infra, as defined by politics, is a trace of the impetus toward separation and confrontation within the city, the infra of the urbs is the space of connection and integration”(Aureli, 2008). Now understanding the infrastructure of these small East Texas towns as the nine square, a study of the nine square was conducted. This led to the works of John Hejduk. Hejduk uses the nine square as a strategy to investigate the 7 Houses, about which Peter Eisenman wrote, “[the Texas Houses] is intended to frame the particular transformations of the conception of the object which take place in these houses from the first to the last, in order to determine how the subtle transitions manifest a kind of “work on the language” (Hejduk, 1979). Not only was 7 Houses studied for the approach but also to be understood as a set of guidelines to further as the architectural strategy “work on the language” was developed.

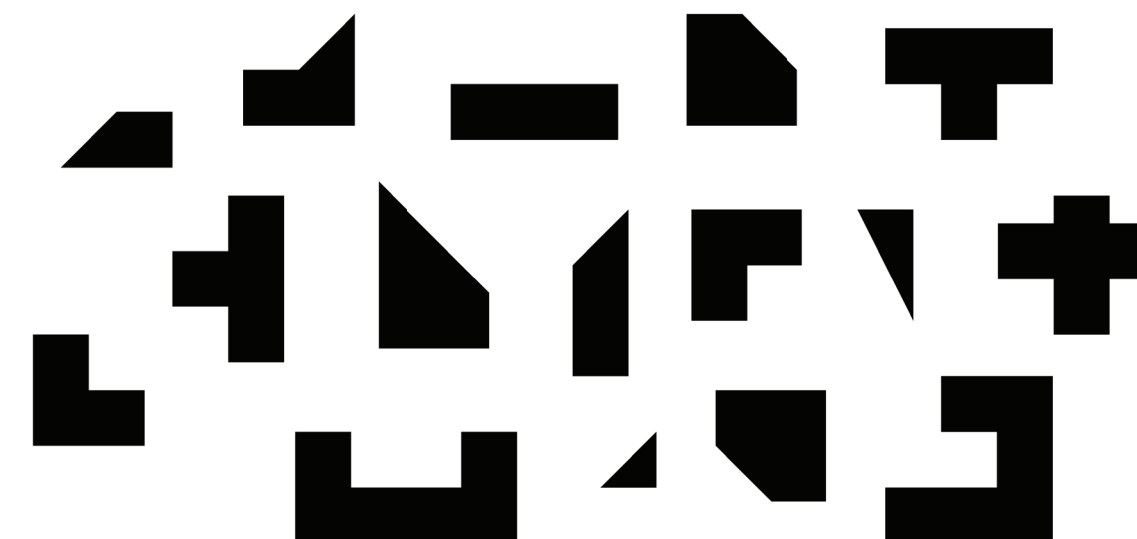
Within these small rural towns as it stands the infra - an imposed structure in which happenings occur between - the grid is seen as a regulator. Through a process of investigating the infra, questions arose such as, “what if the grid was seen as a liberator?”.



Following this thought process and heeding inspiration from Hadid’s Malevich Tektonik, the grid then became the “elements”.

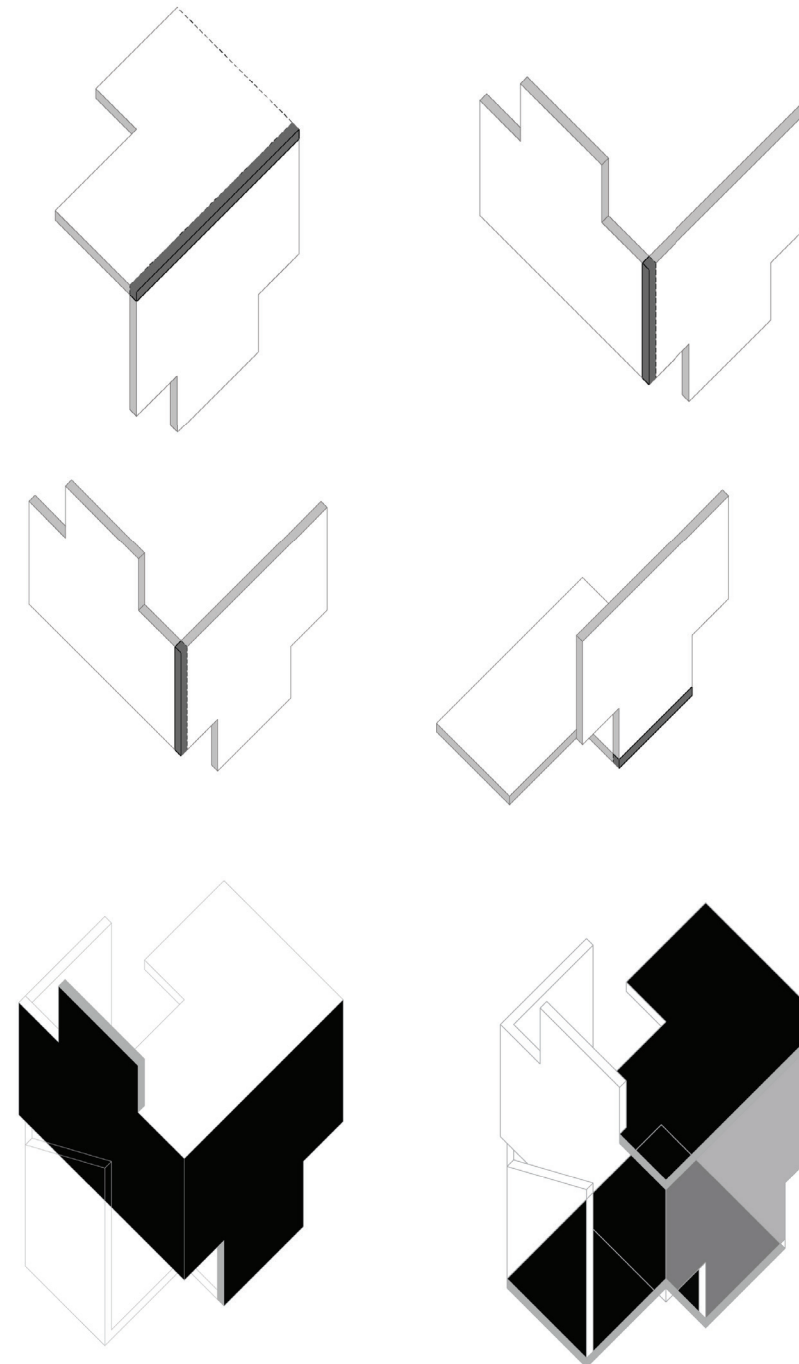
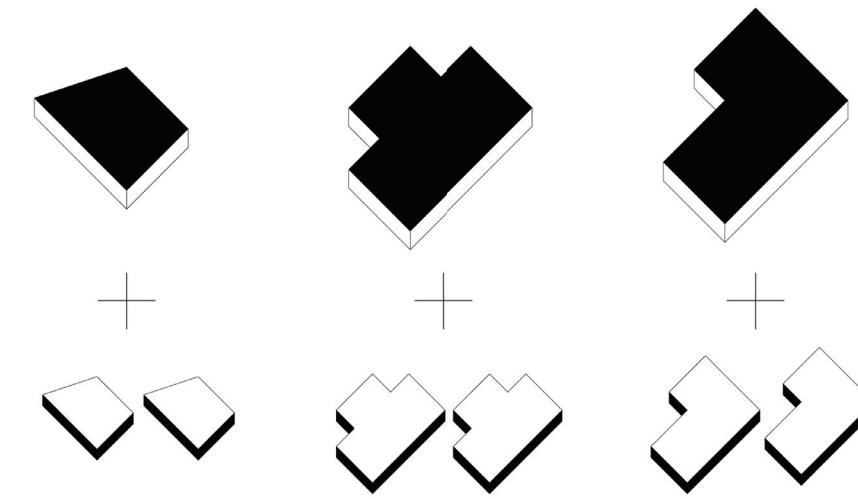


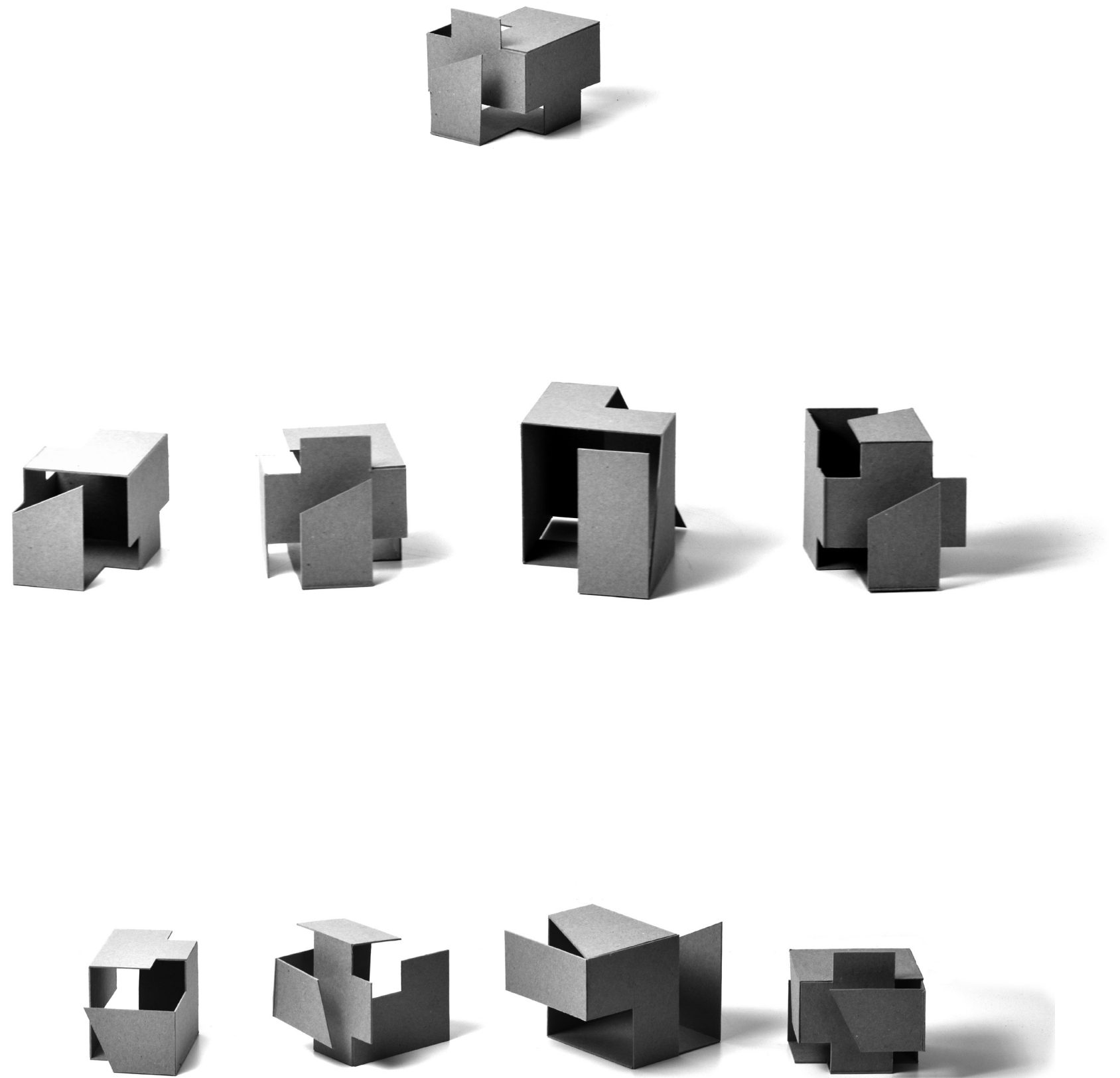
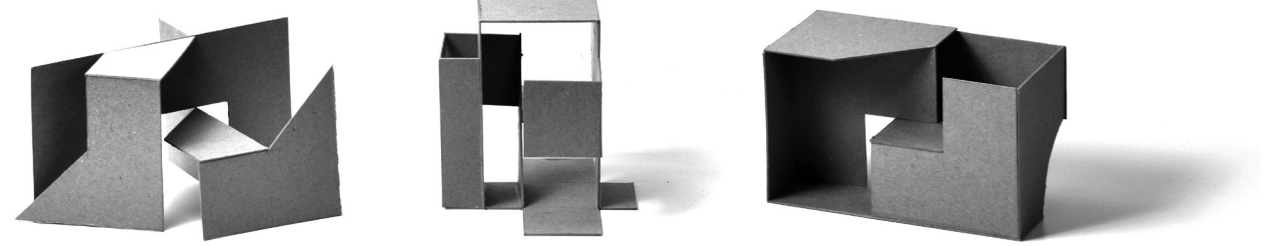
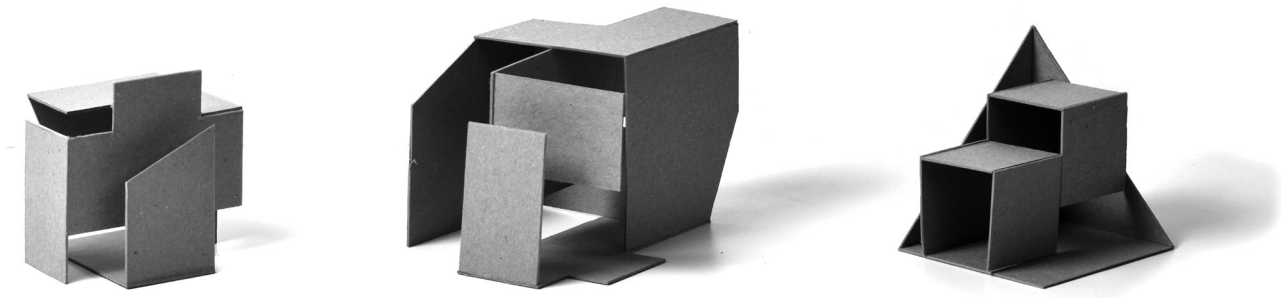
Various elements were then modeled derived directly from the grid itself where a series of rules were set in place to understand the relationship between them.

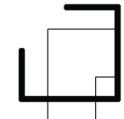
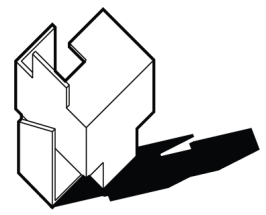


MODELING GUIDELINES

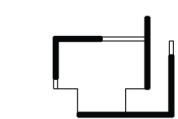
The first rule duplicated each element. The second rule required the pieces match up with another piece on a one-to-one connection. And the third rule maintained that pieces must either be connected to its duplicate element or one element away.







PLAN



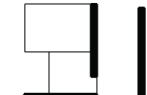
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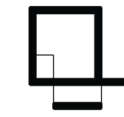
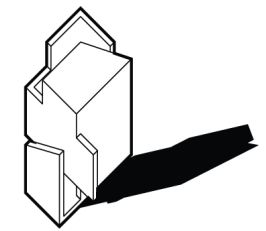
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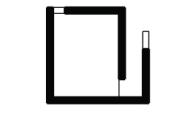
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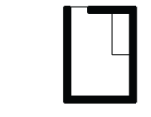
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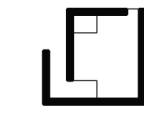
PLAN



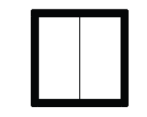
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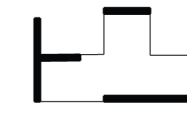
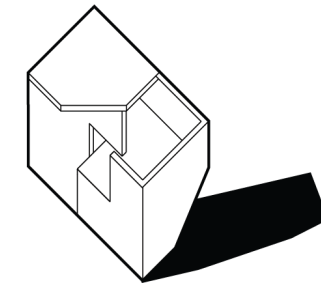
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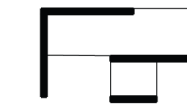
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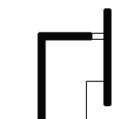
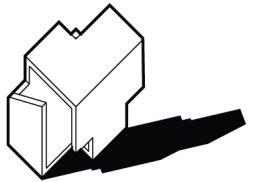
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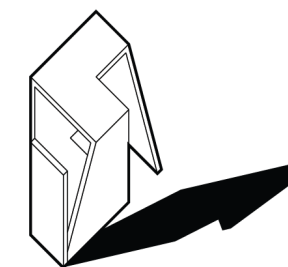
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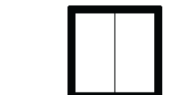
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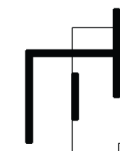
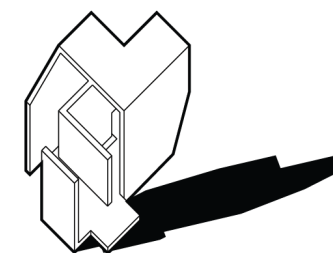
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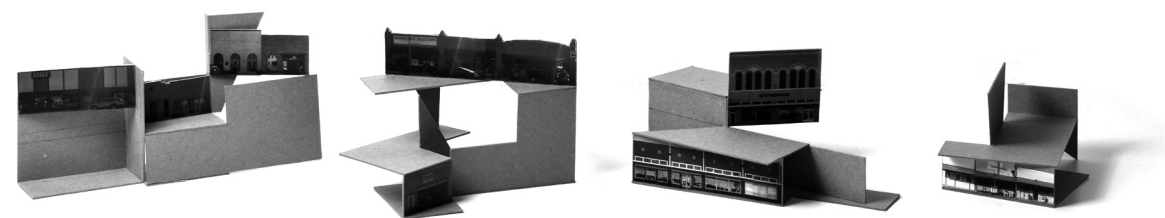
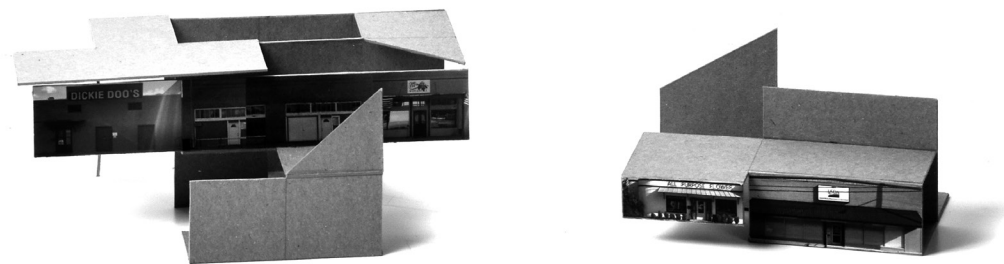
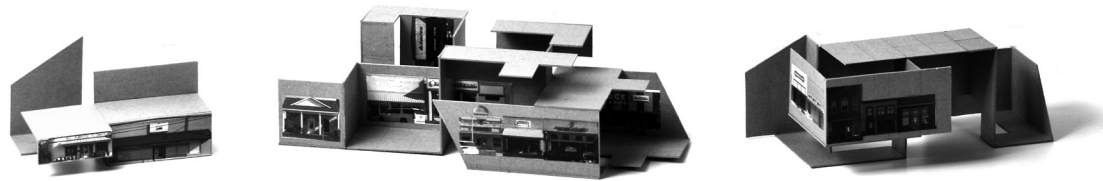
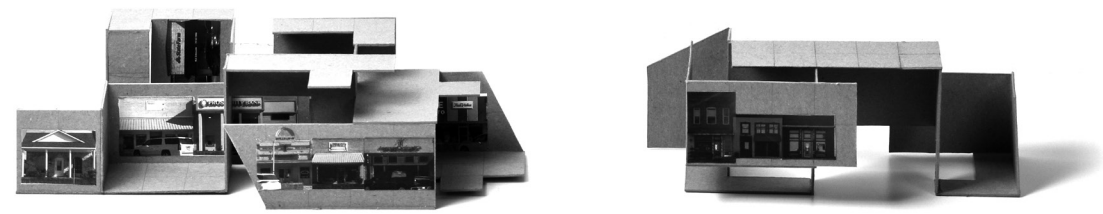


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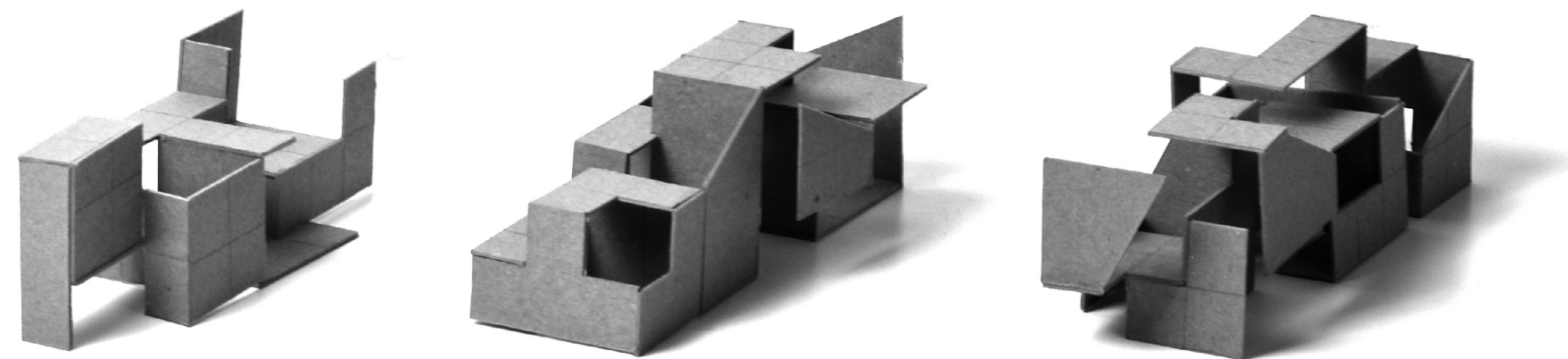
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MODEL DRAWINGS



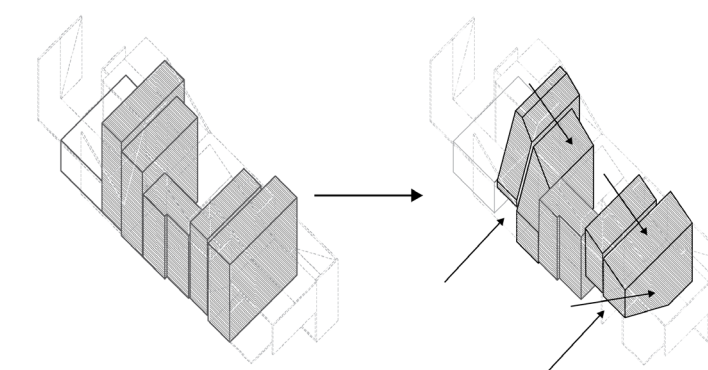
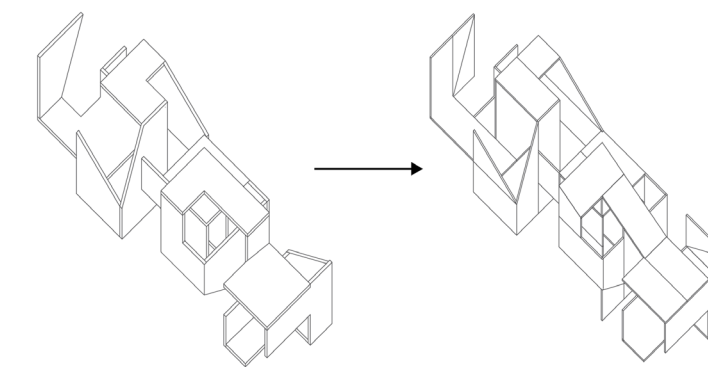
MODEL STRATEGIES

There were four major strategies understood within the models and developed upon. The first strategy was the notion of transposition; as you move near the project you are subtly moved from the urban context to the building scale. With that came the strategy of gradient: As you move throughout the project you experience a subtle change in the level of privacy. The third strategy was the ability to pivot the project when the program demanded it. And finally, the fourth strategy encompassed the notion of surfaces. Surfaces become important throughout the project through the manipulation of folding, pivoting, and changing of material. The four notions are questions and referenced conceptually within the project.



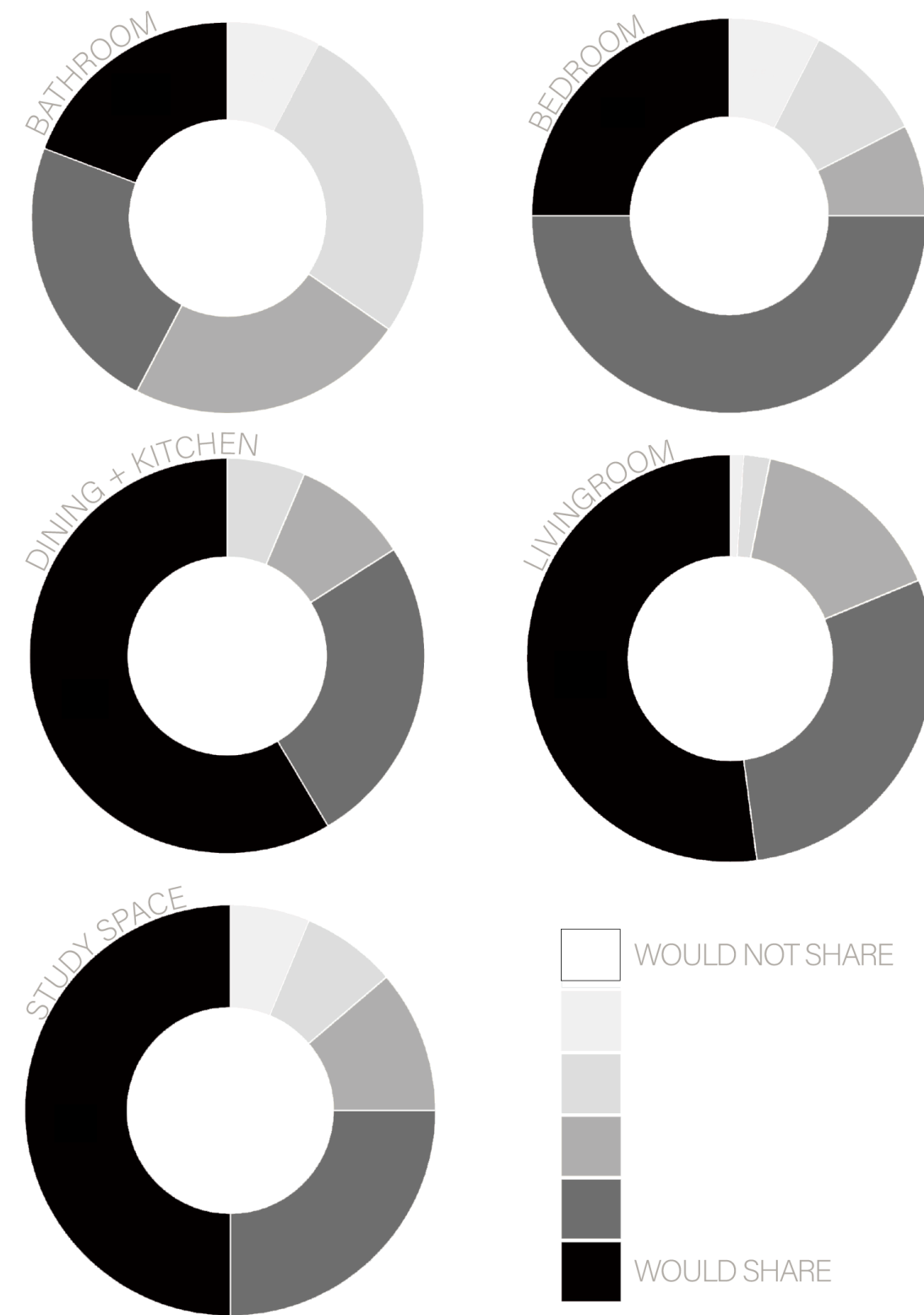
FORMAL DIAGRAM

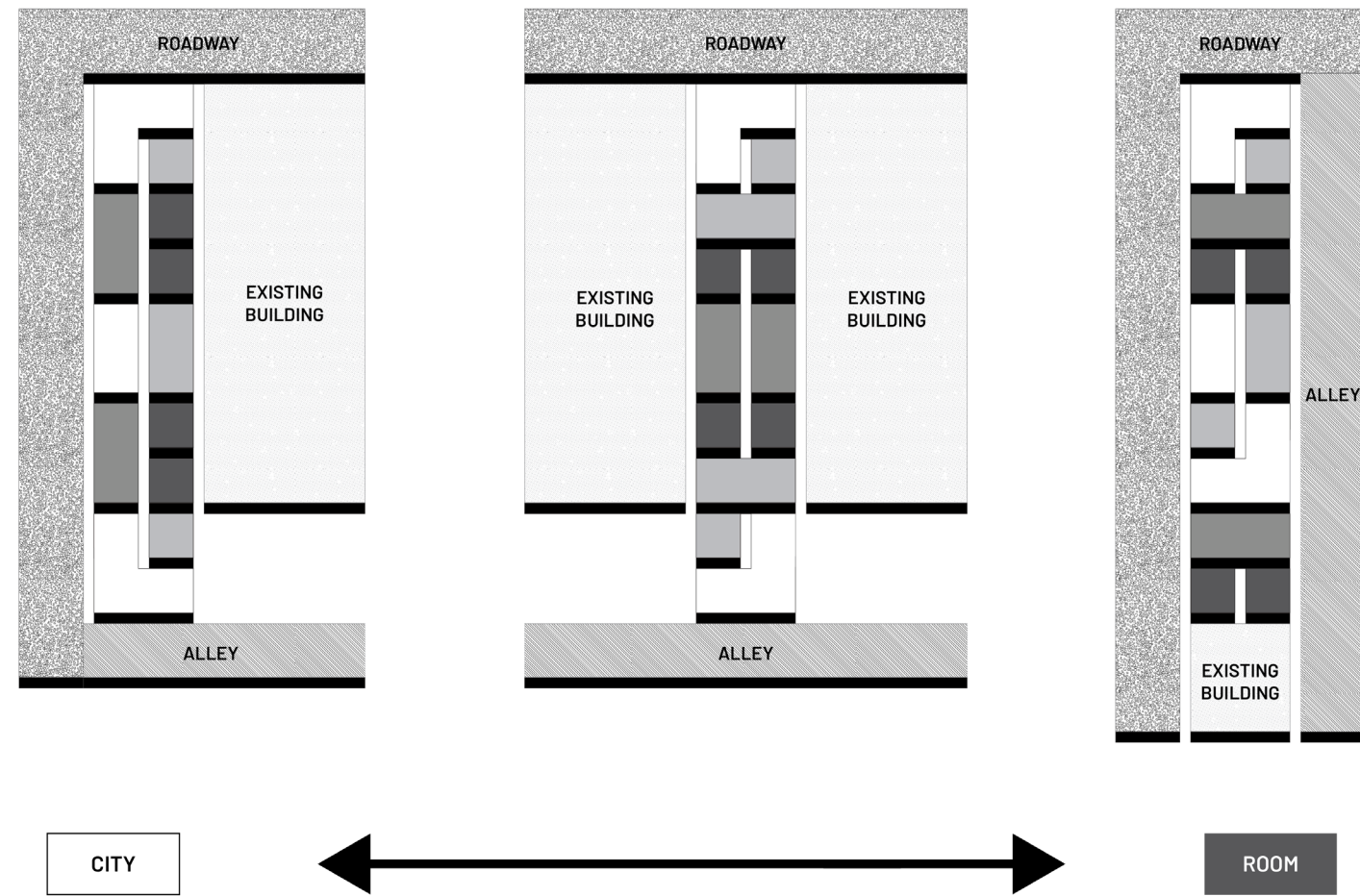
The exploration began with the nine square grid tested at various scales. Following this same exploration, a grid from the Caldwell site was derived and elements extracted. The elements followed the same three rules the models above followed. From this process three different site possibilities were made in which the ladder was used create the form of the housing project. The form is a direct result of the grid exploration.



PROGRAM

John Hejduk makes a list of programmatic spaces in his exploration of the 07 Texas Houses. Using Hejduk's list of spaces, a survey was sent out to teachers across Texas. The survey asked the teachers to rate their level of comfort in sharing certain spaces. It also asked them to list any spaces needed that were not included in the survey. The following conclusions were drawn from the results of the survey: teachers are far more willing to share the spaces considered to be more private than the conventional Western culture housing model affords, and there is a need for craft/preparatory space in order to prepare classroom lessons. These results were coupled with the architectural strategies for the project. This led to the development of City-Room diagram. This diagram establishes various diagrammatic strategies and the various ways to accomplish the same level of gradient and transposition within different urban contexts. The various programmatic needs led to certain design decisions within the grid accomplished through the modeling process.



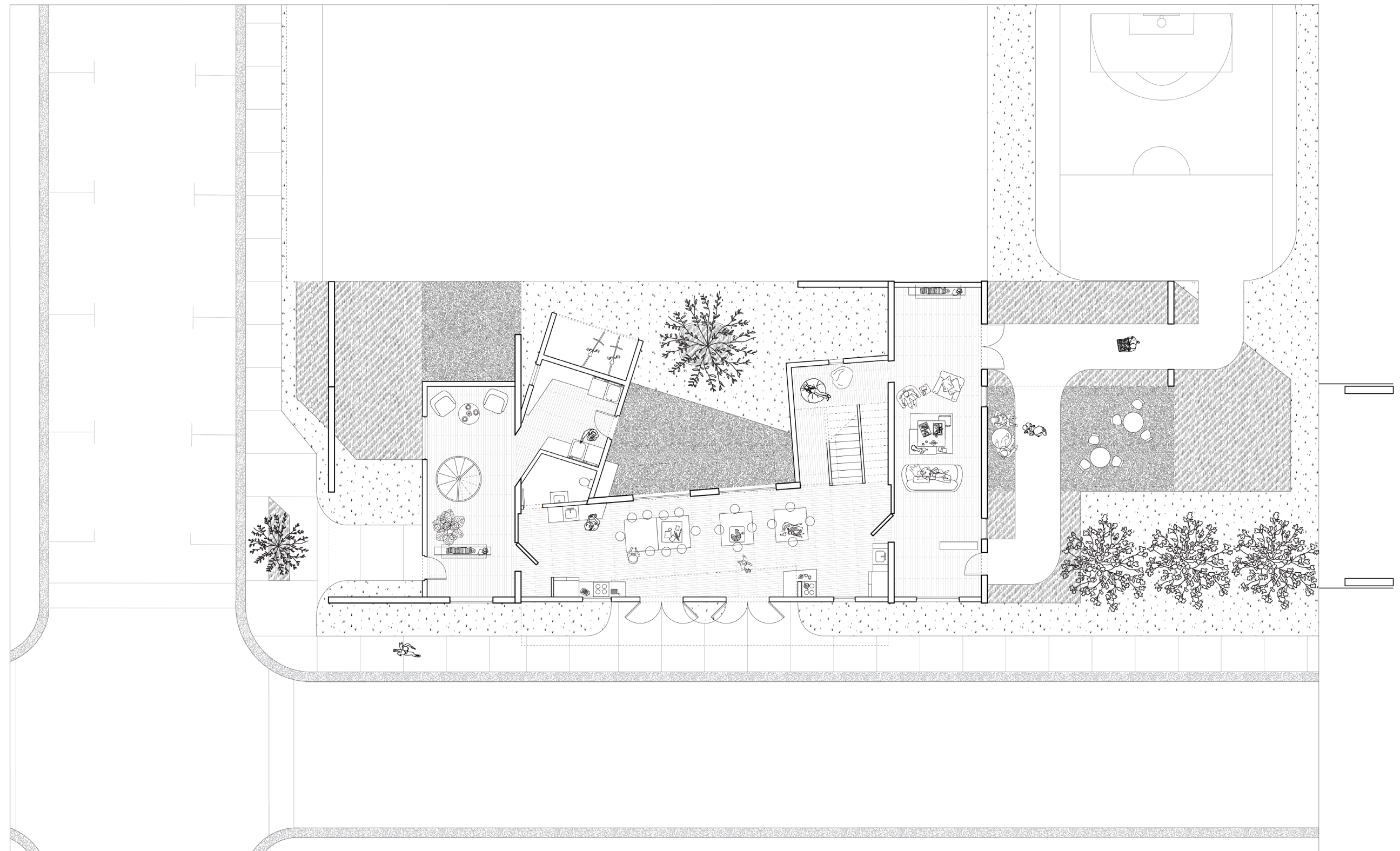


URBAN TO ROOM CONDITION

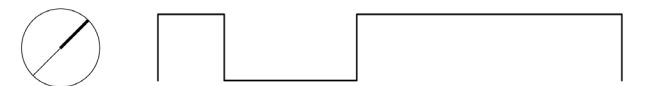
The diagram on the left depicts the manifestation of the city to room gradient dependant on the condition of the site. The various levels of privacy can manifest in the the various conditions with the white block being the most communal spaces and the darkest gradient being the most private spaces.

FIRST FLOOR PLAN

The site has an existing building to the Northwest and roadways on the other three sides. This is consistent with the first diagram shown in the City-to-Room graphic. The floor plan follows the diagrammatic strategy.

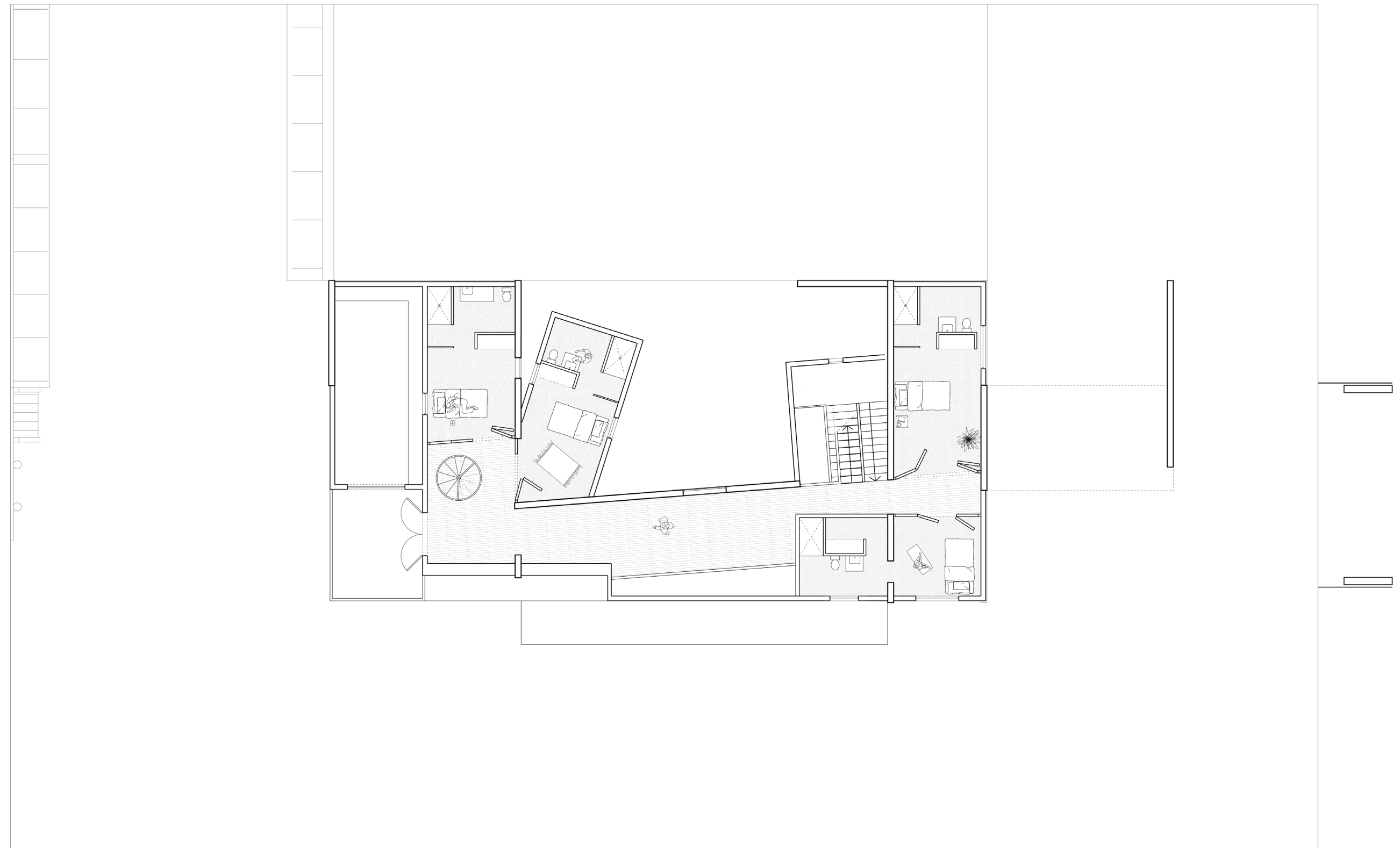


FLOOR PLAN LEVEL 01



SECOND FLOOR PLAN

The second floor has four bedrooms. The amount of doors used within the entire housing was limited. Therefore, the folding doors were designed to create a flexibility of privacy from room to room and teacher to teacher.

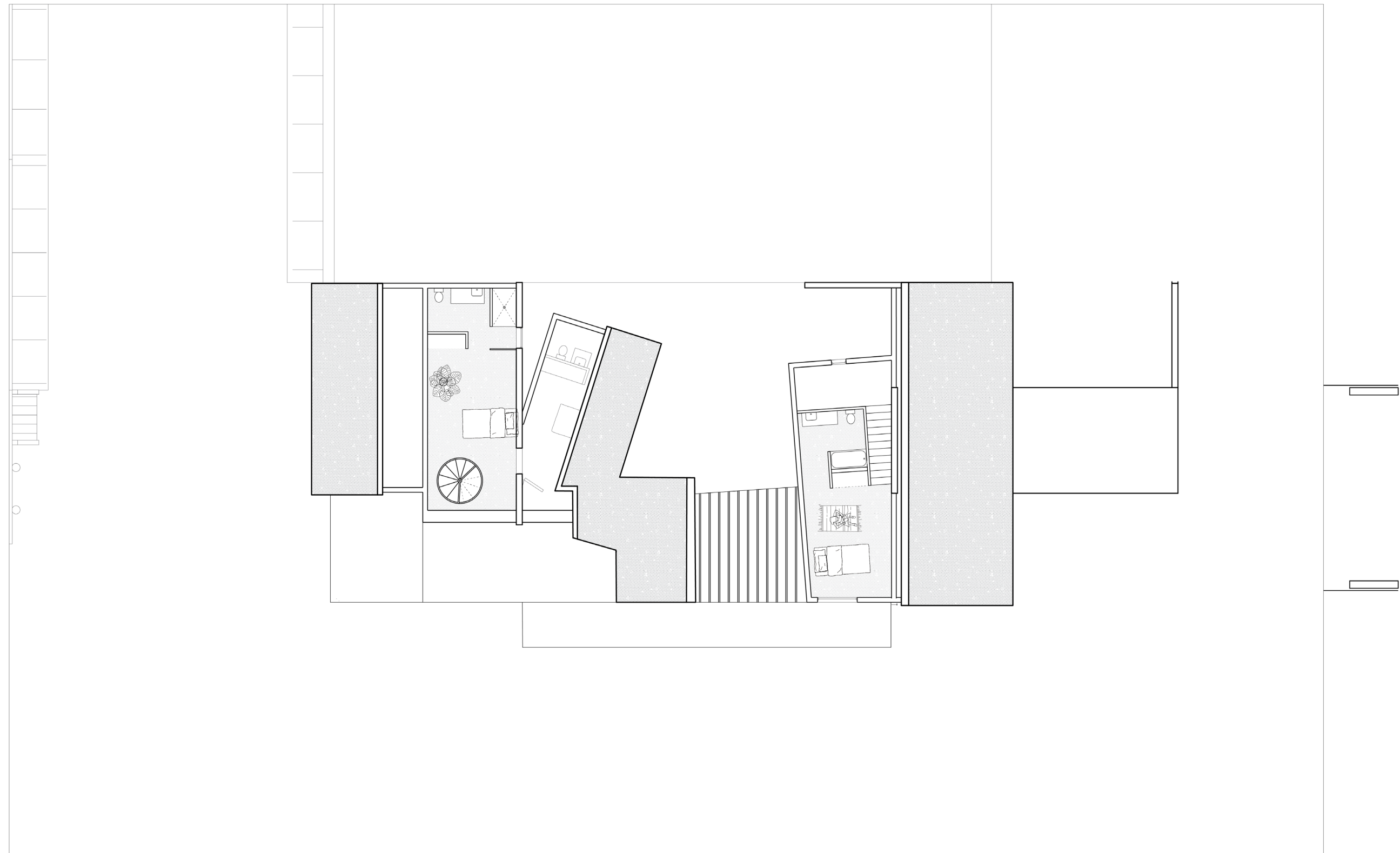


FLOOR PLAN LEVEL 02

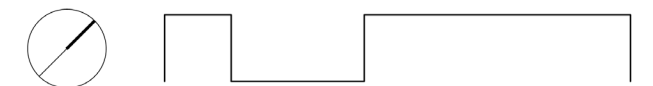


THIRD FLOOR PLAN

The third floor is two loft spaces. This floor adds to the flexibility of the space by allowing as much or as little connection to the spaces below. The rooms are slightly smaller; however, still follow the same floor concepts as the second floor rooms.

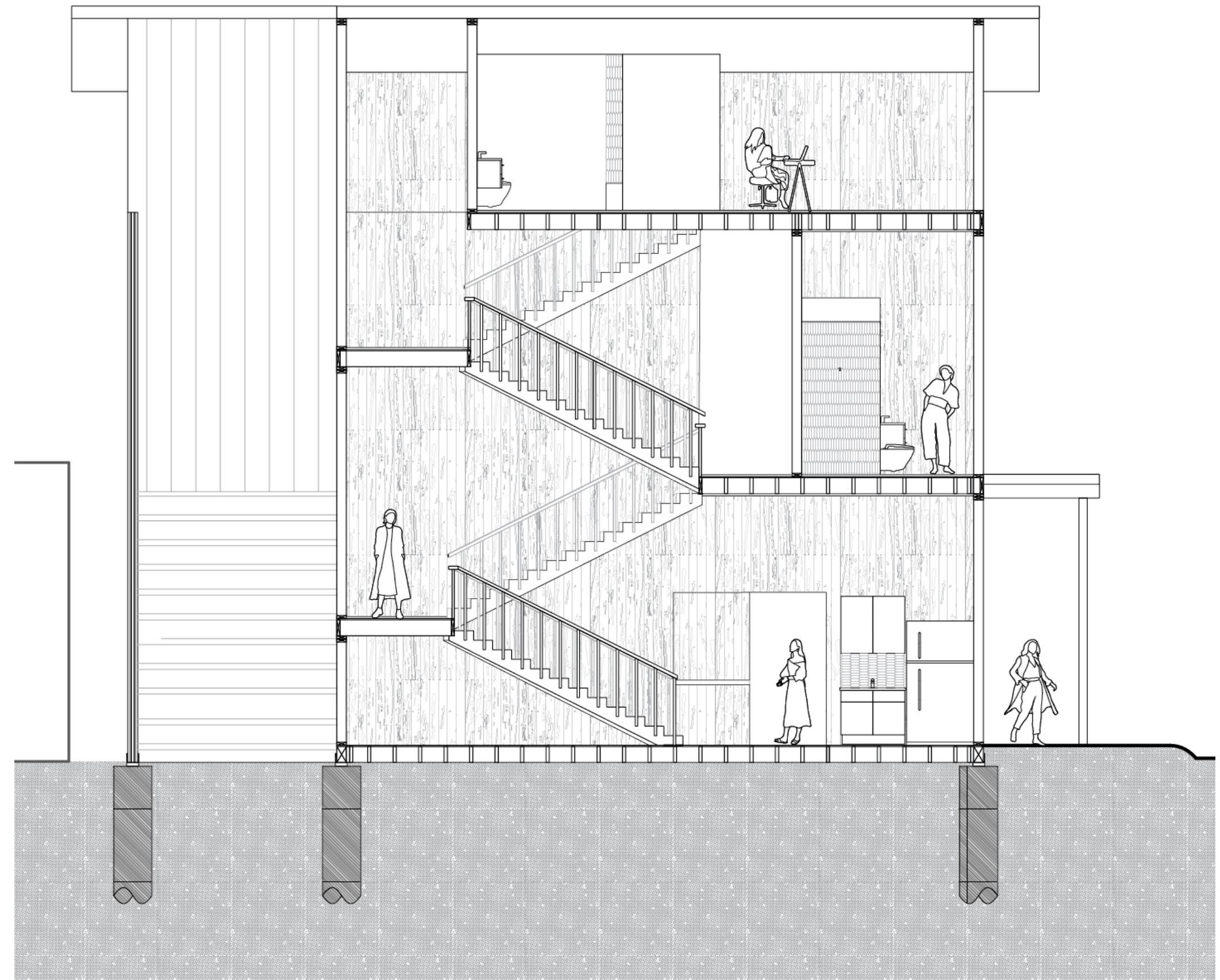


FLOOR PLAN LEVEL 03

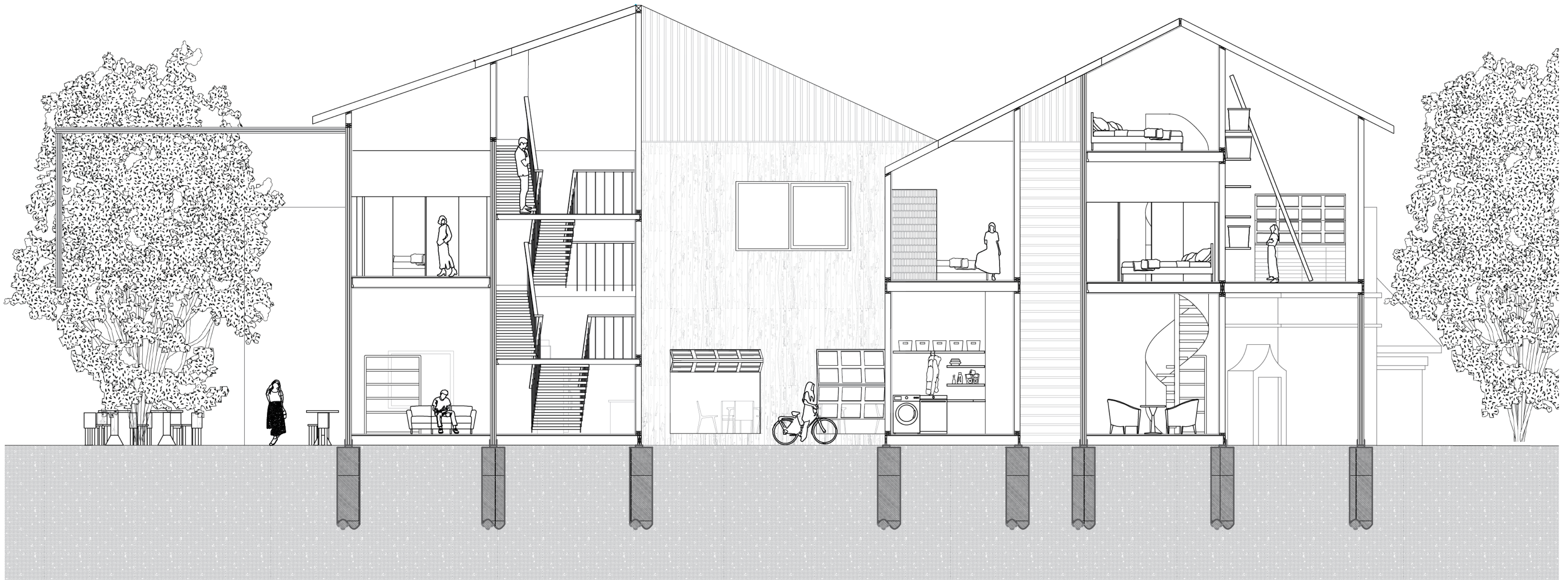




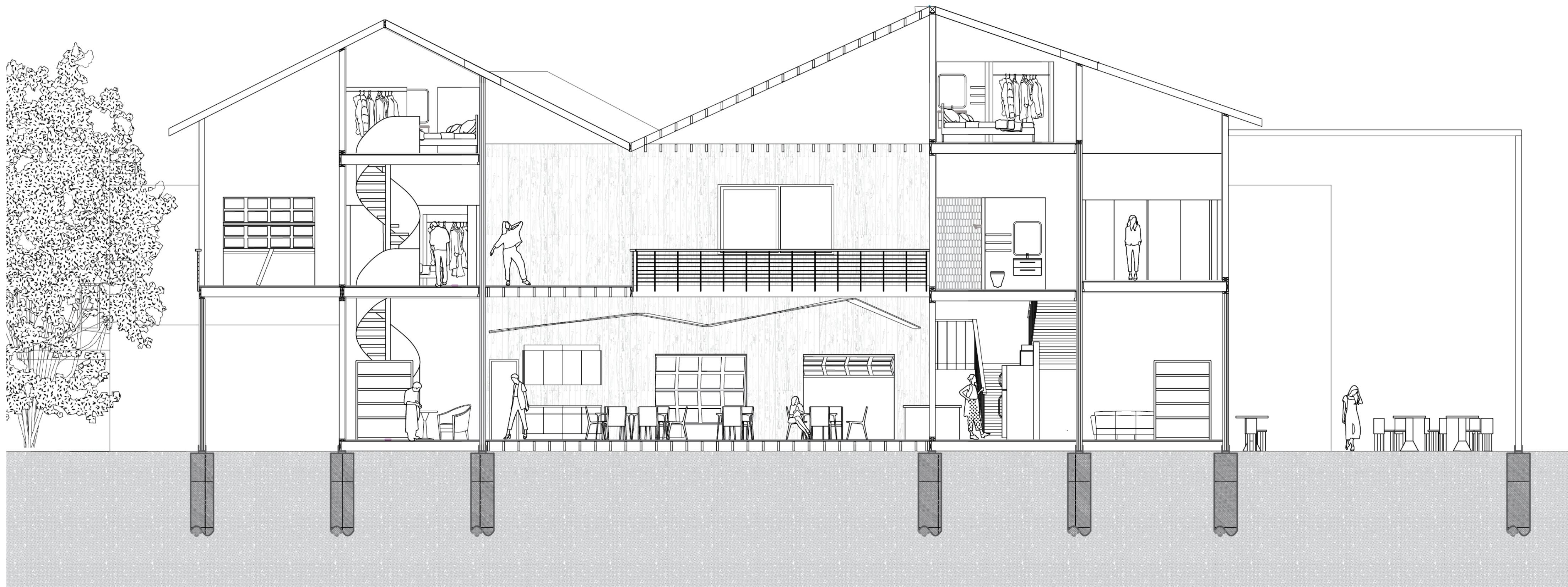
SOUTHWEST SECTION



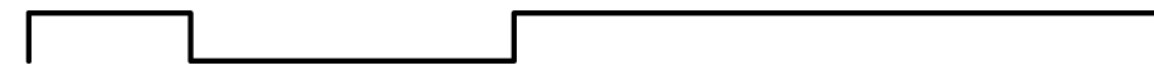
NORTHEAST SECTION

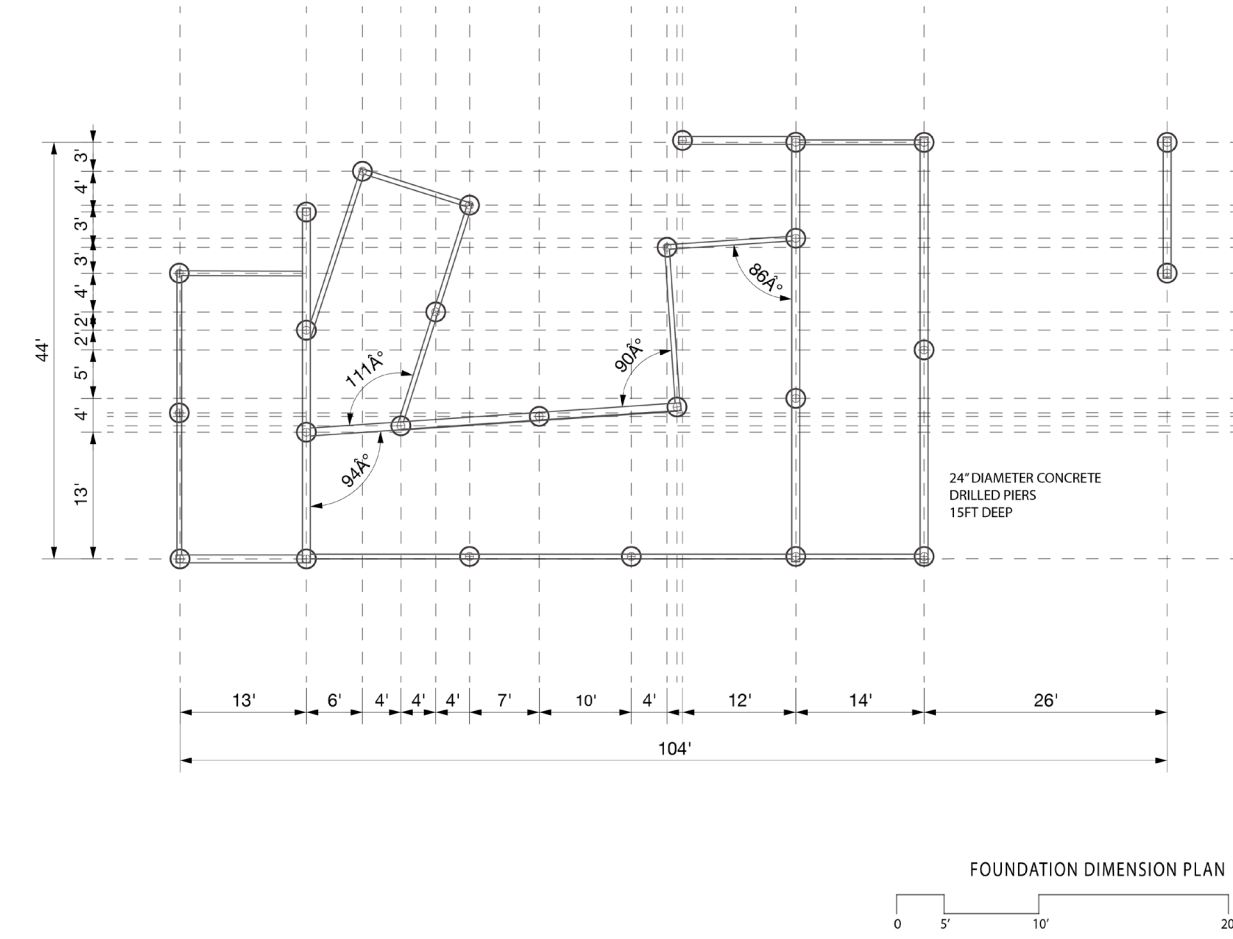
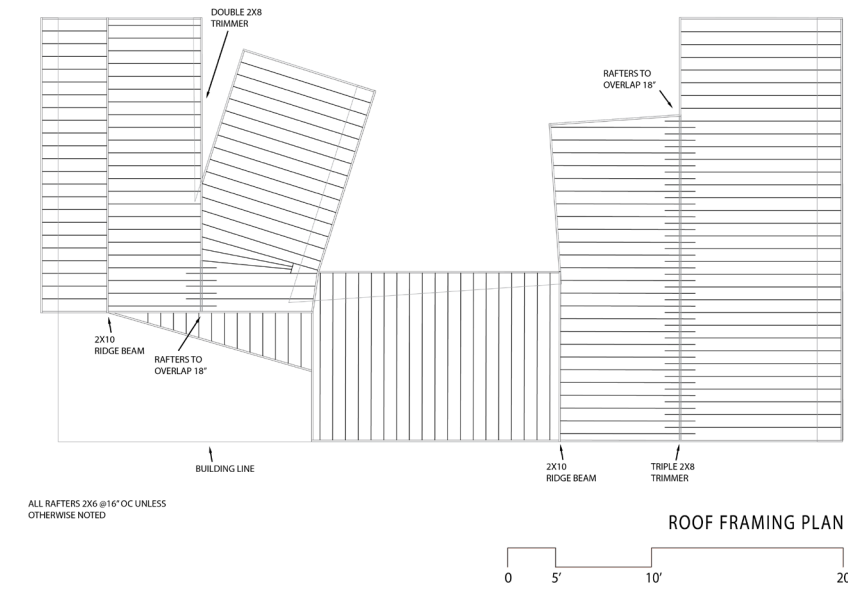
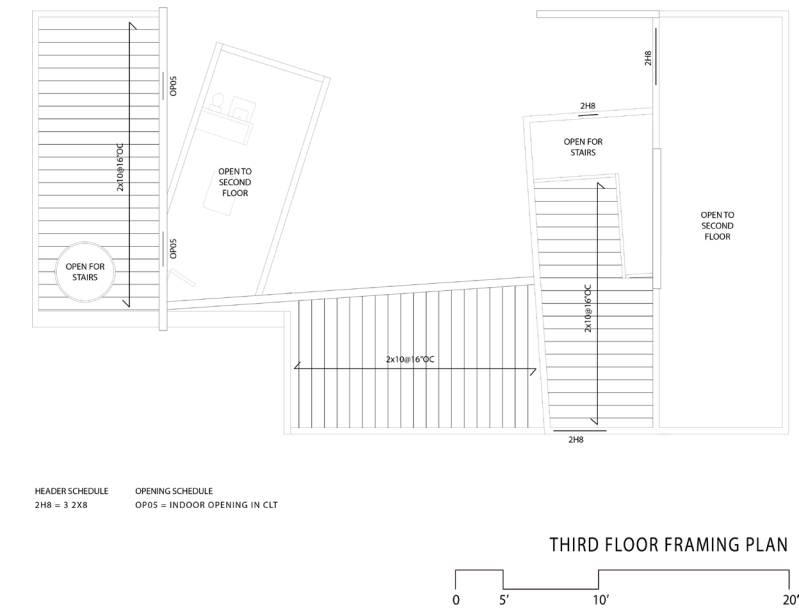
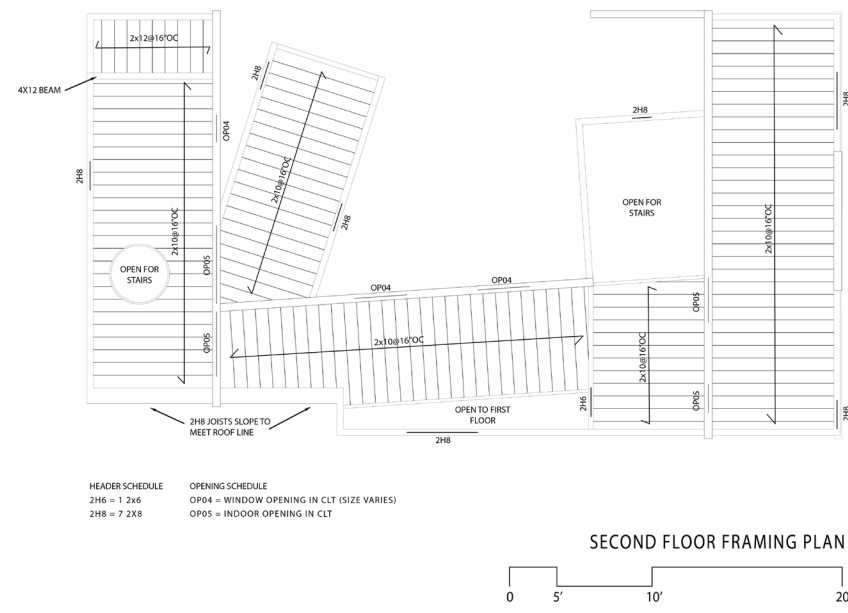
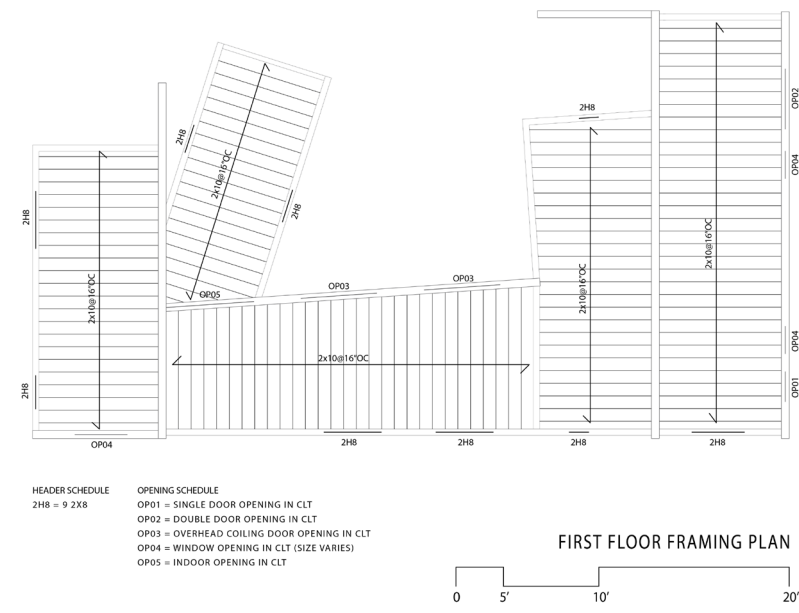


SOUTHEAST SECTION



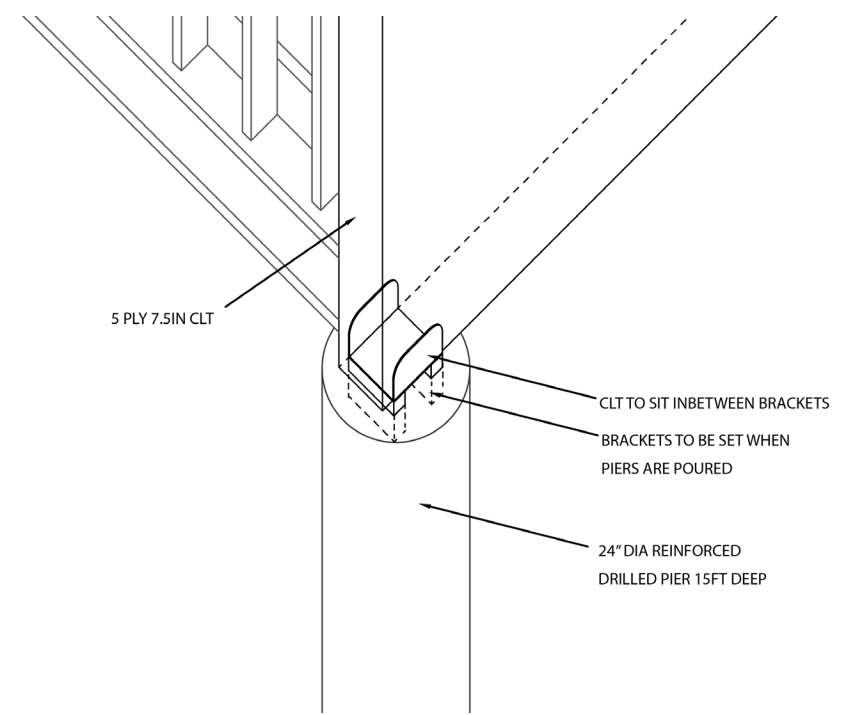
NORTHWEST SECTION





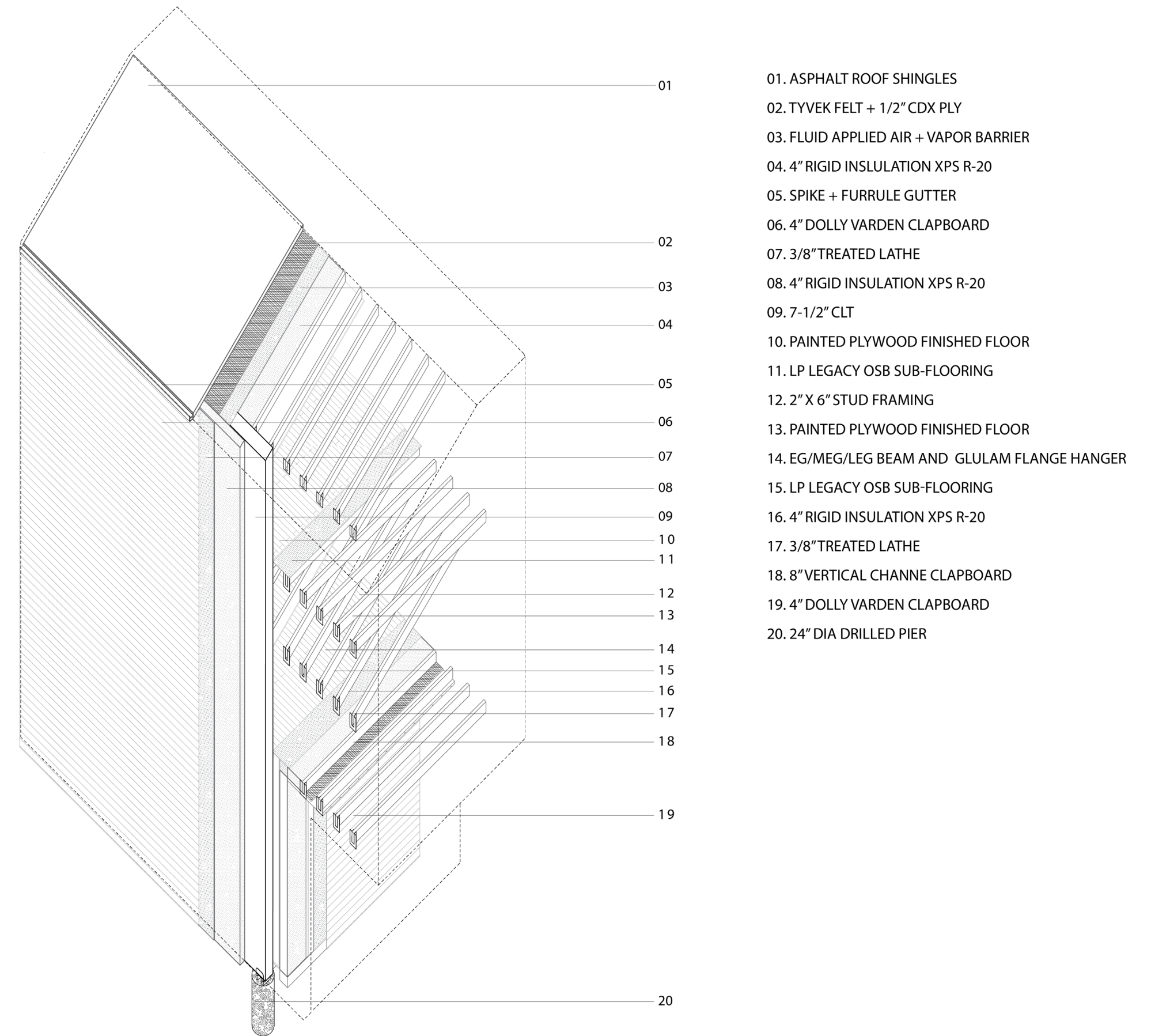
TECHNICAL RESOLUTION

The structure is a combination of Cross-Laminated Timber (CLT) as the superstructure and conventional wood stud framing. The decision to use CLT as the superstructure was to keep the conceptual framework materially visible. It also allowed for the exploration of the material as a residential building structure. With East Texas termed the "wood basket" of the nation, the continued evolution of wood structural technology could be a benefit to the wood economy that exists in that region.



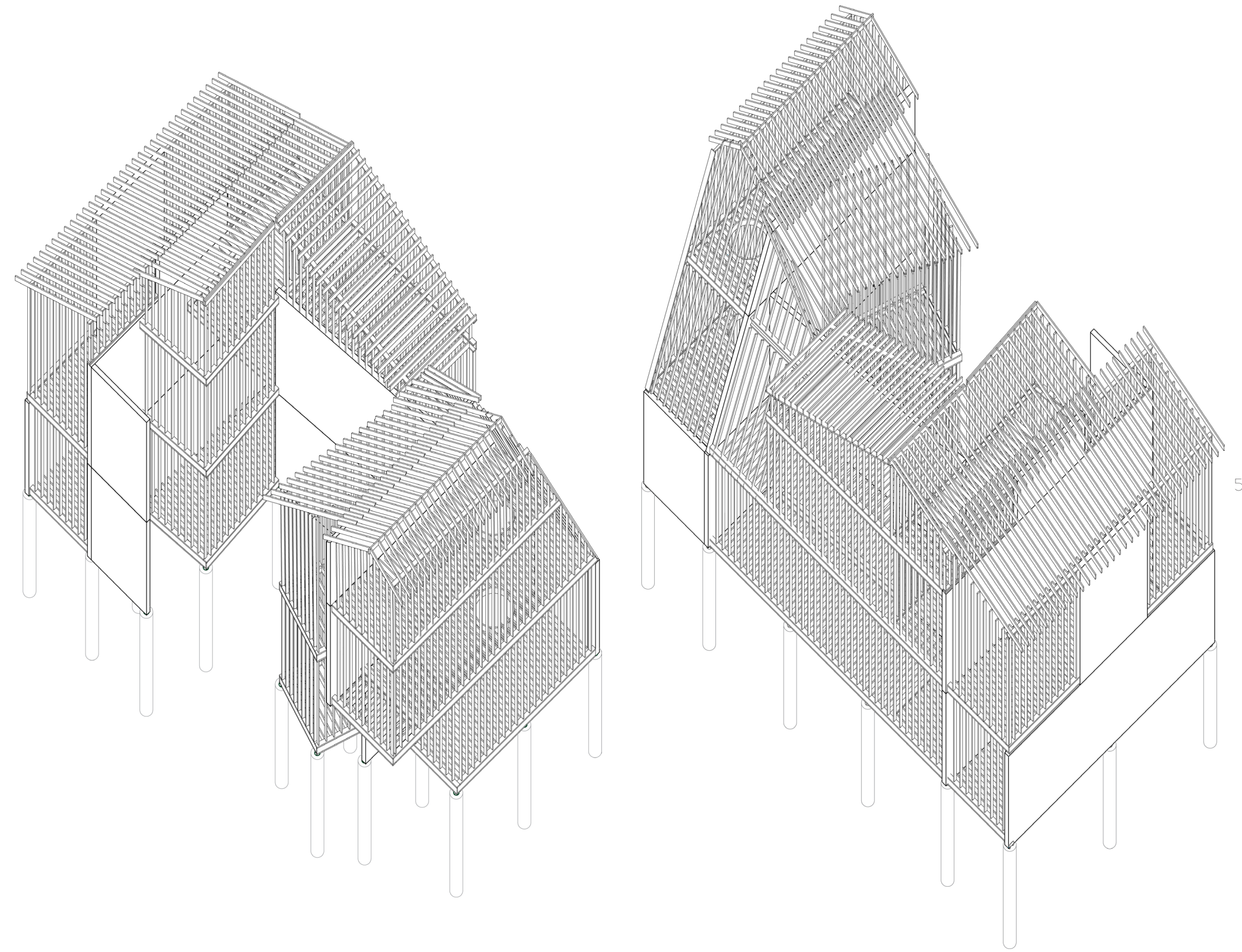
STRUCTURAL DETAIL

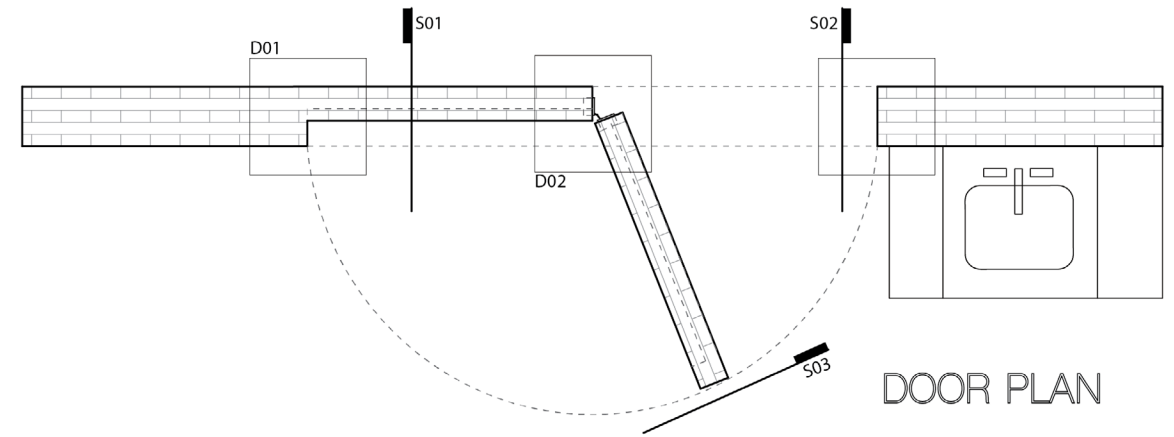
Due to both the use of CLT and wood stud framing materials, the foundation is a series of twenty-six drilled piers twenty-four inch in diameter reaching a depth of fifteen feet. The drilled piers mimic the pier and beam foundation commonly found in these rural towns such as Caldwell.



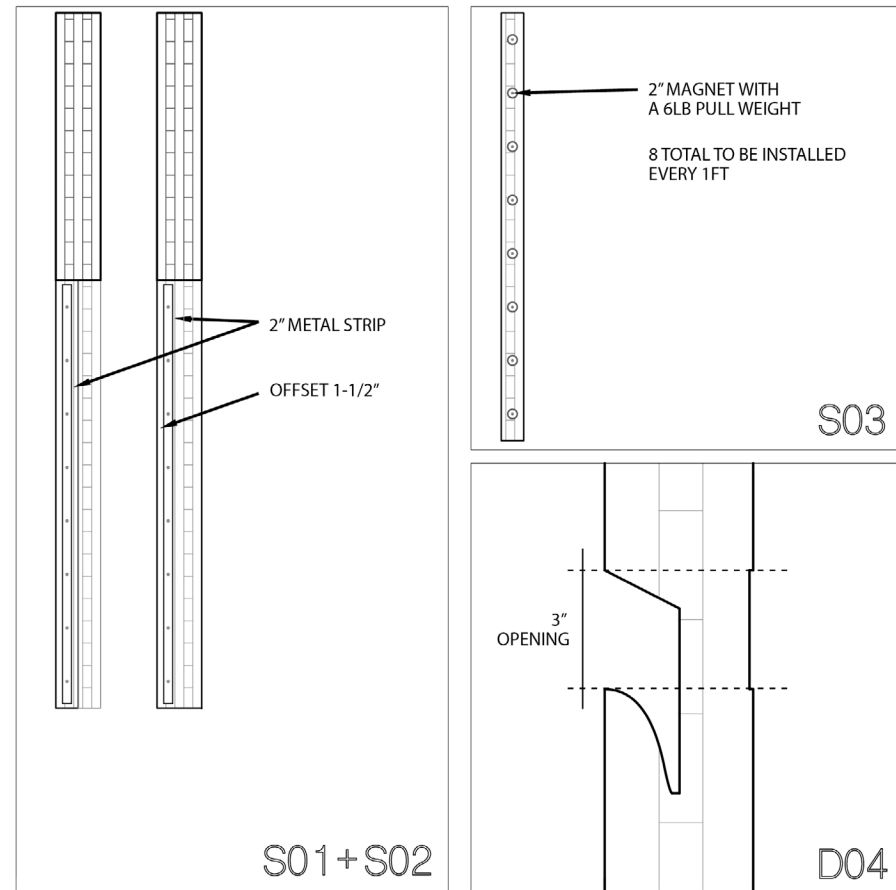
CROSS LAMINATED TIMBER + WOOD STUD FRAMING

The CLT in combination with the traditional light frame wood construction method afforded the project varying levels of flexibility. Traditional wood stud framing accomplished tapering floor spans more successfully and with less waste than the CLT material. Furthermore, the CLT allowed for flexibility with openings, especially larger openings and material thickness as a design strategy with door openings.

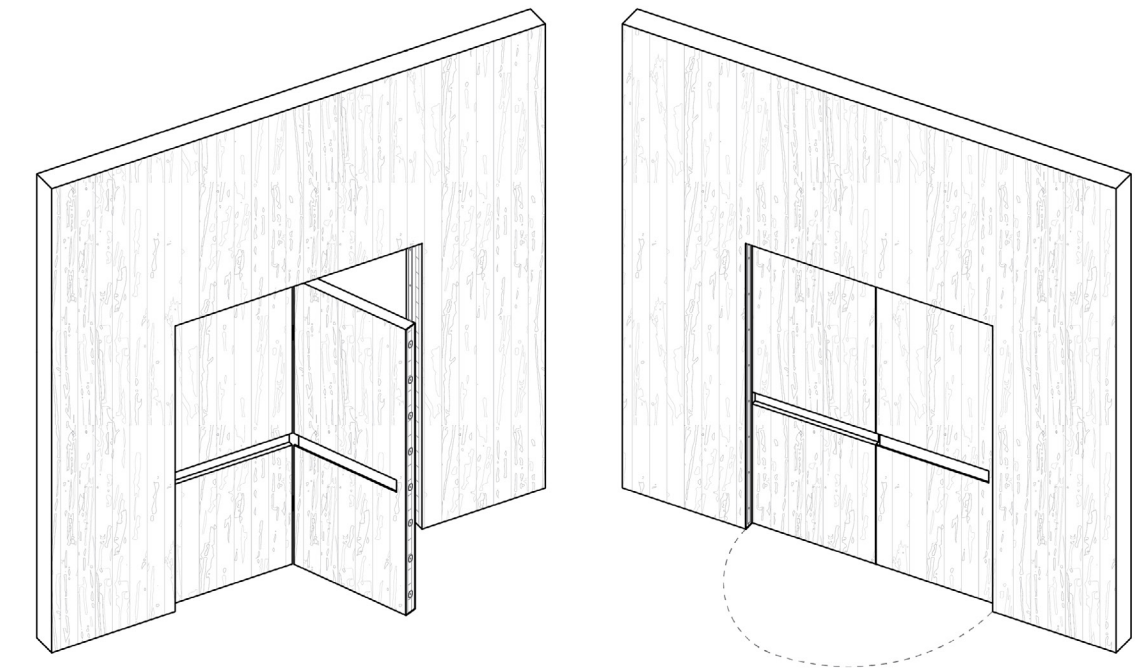
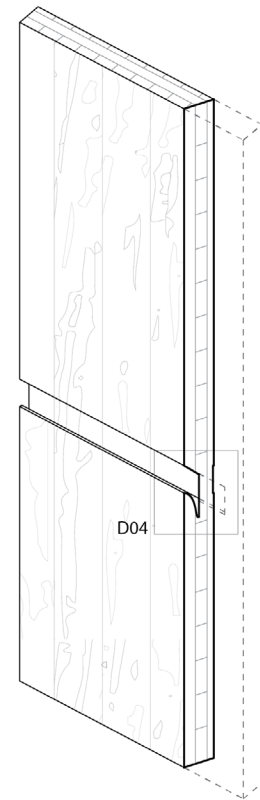




DOOR PLAN

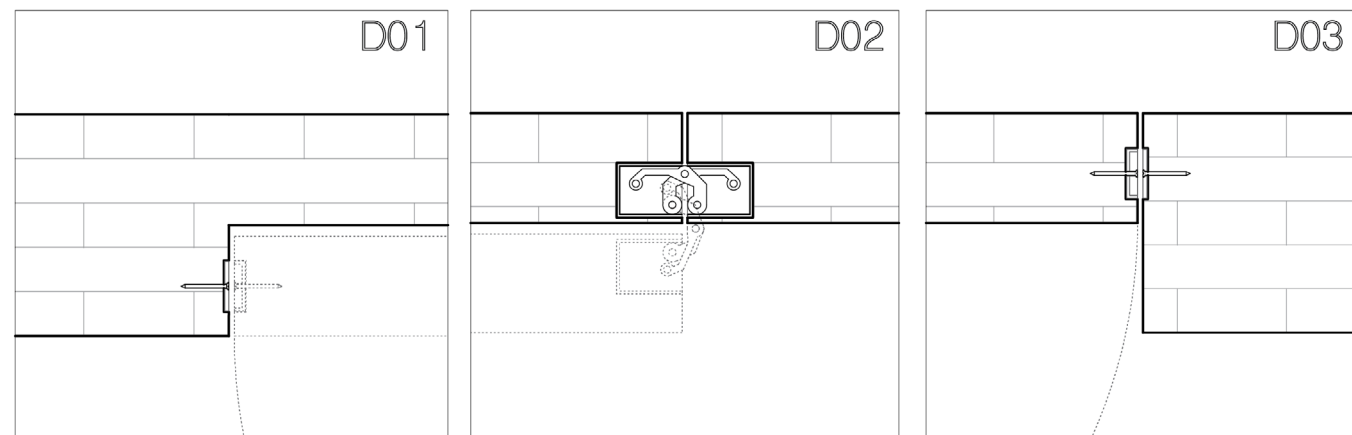


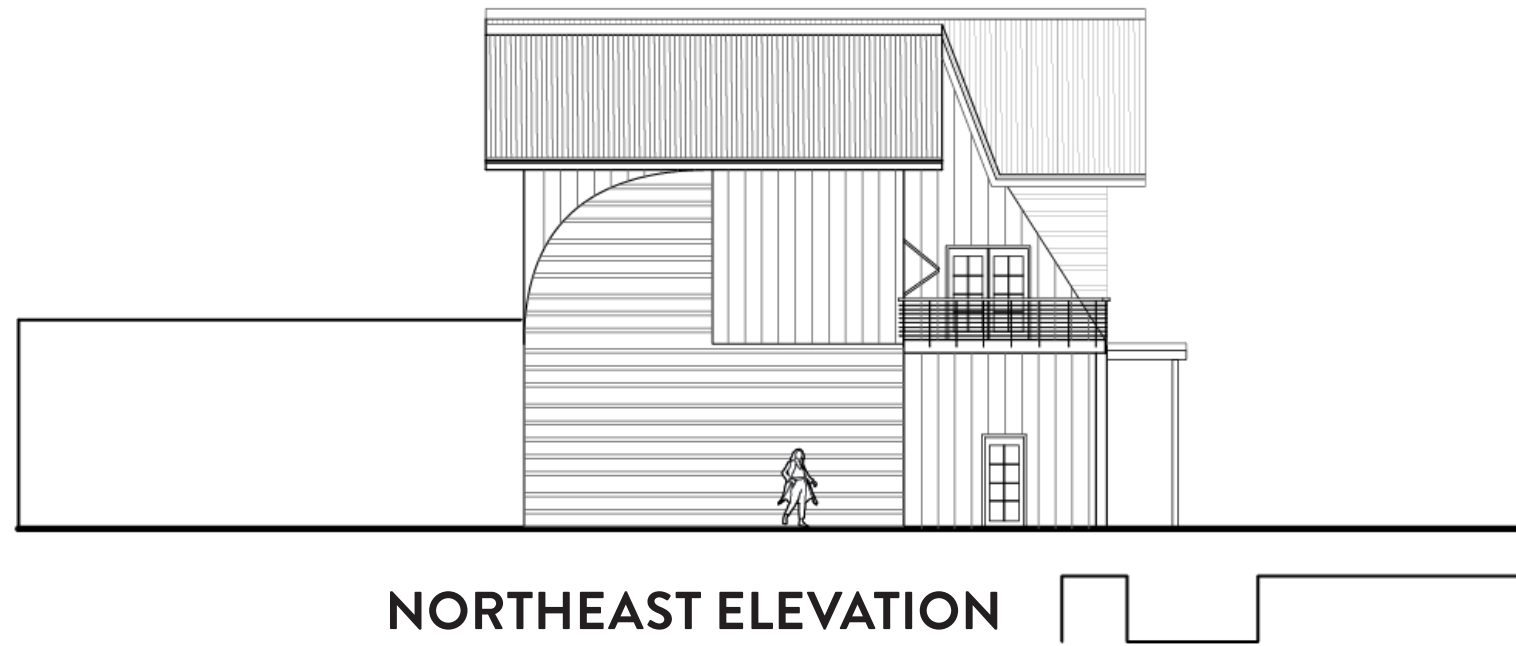
DOOR AXON



CLT DOOR

While a shut door can be a symbol of denied access to what lies behind, the intention behind the design of these CLT doors was to create a symbol of beauty when the doors were closed. These doors are carved from the CLT wall in which they lie. When the doors are open, they open 180 degrees making them flush against their door jam. The doors can be closed when the communal space is being used by the city so that guests access is limited, keeping private spaces used by the teachers. When the door is closed it looks as if it is a continuous CLT wall. The handle of the door is carved out of the CLT to fit the curvature of the user's hand. Magnets are embedded within the door jamb so that the door can either remain open or closed within the jamb.



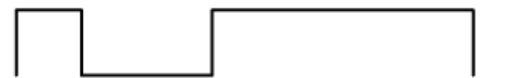




NORTHWEST ELEVATION



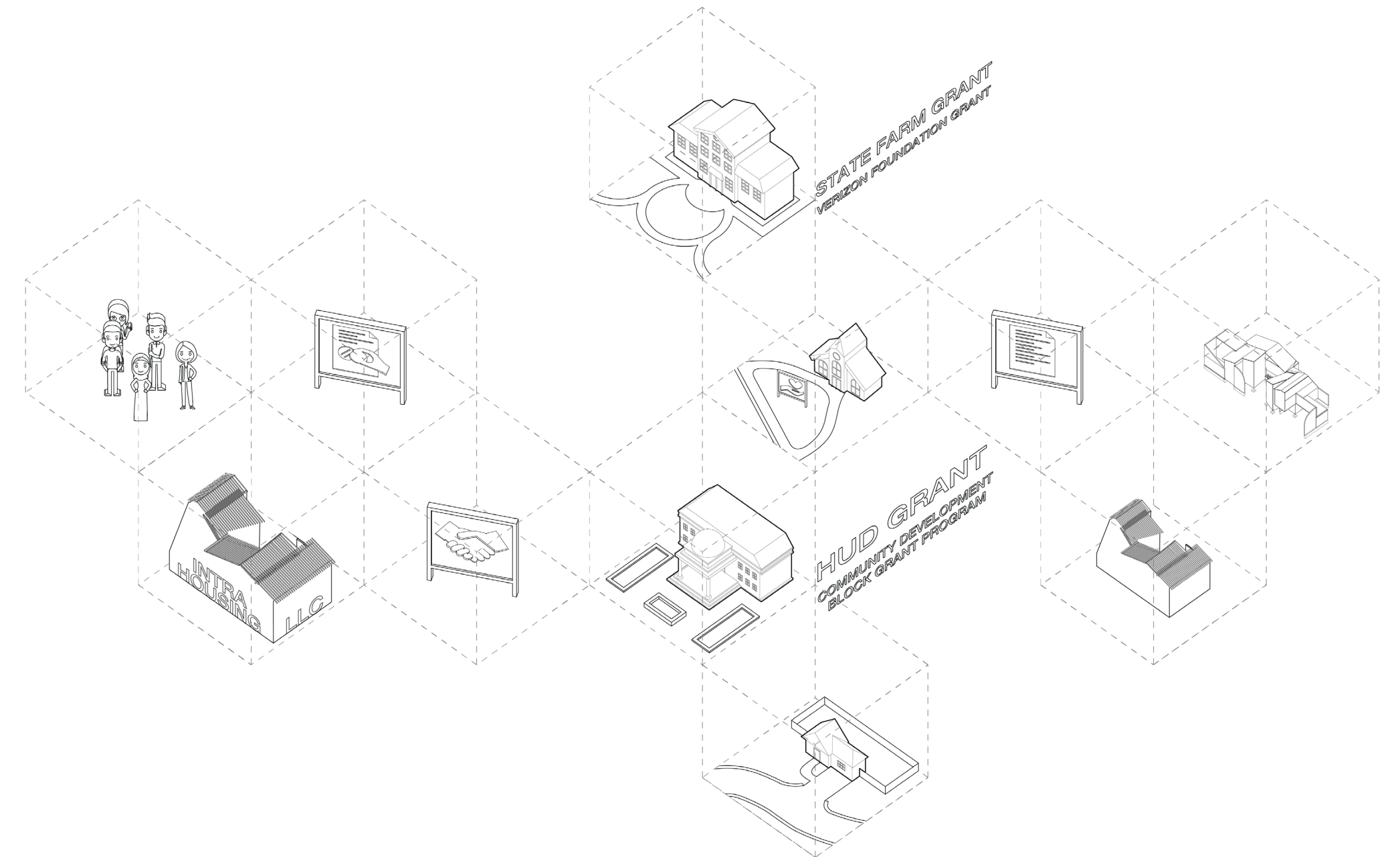
SOUTHEAST ELEVATION

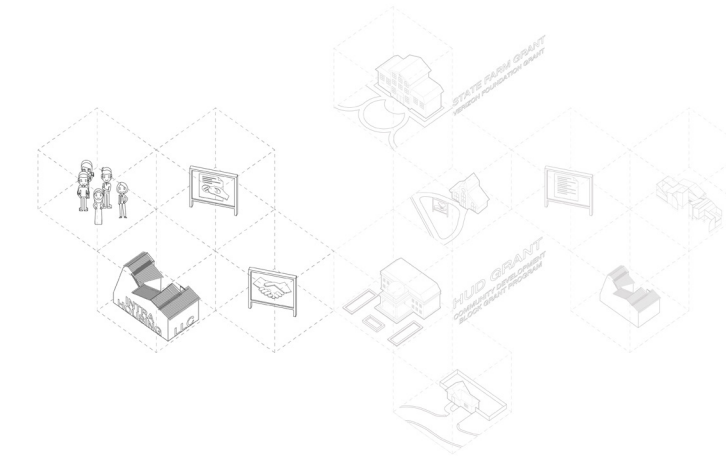
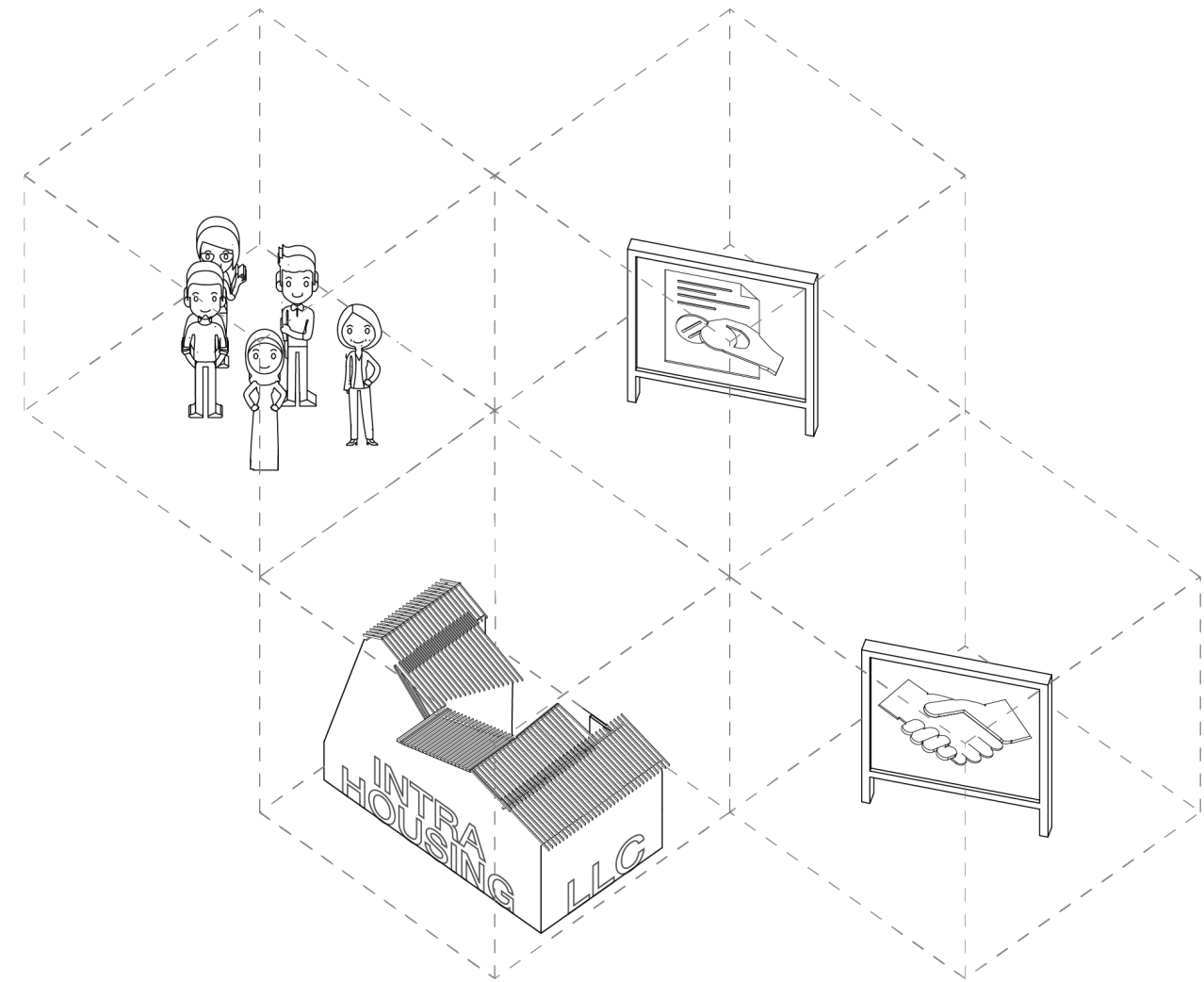


THEORETICAL INSTITUTIONAL + FINANCIAL FRAMEWORK

FRAMEWORK INTRODUCTION

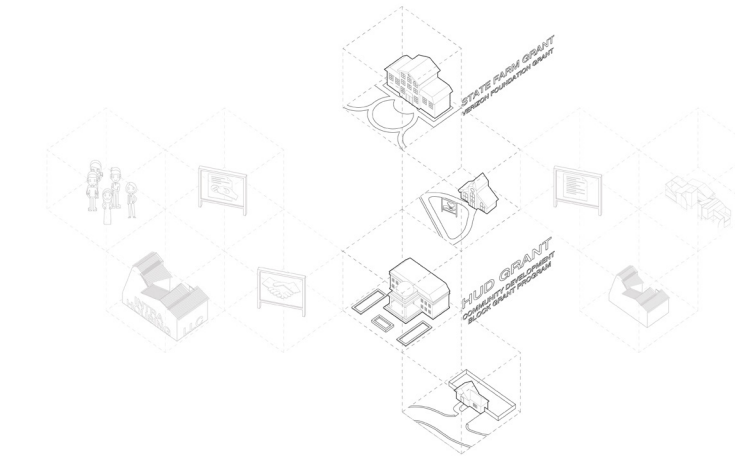
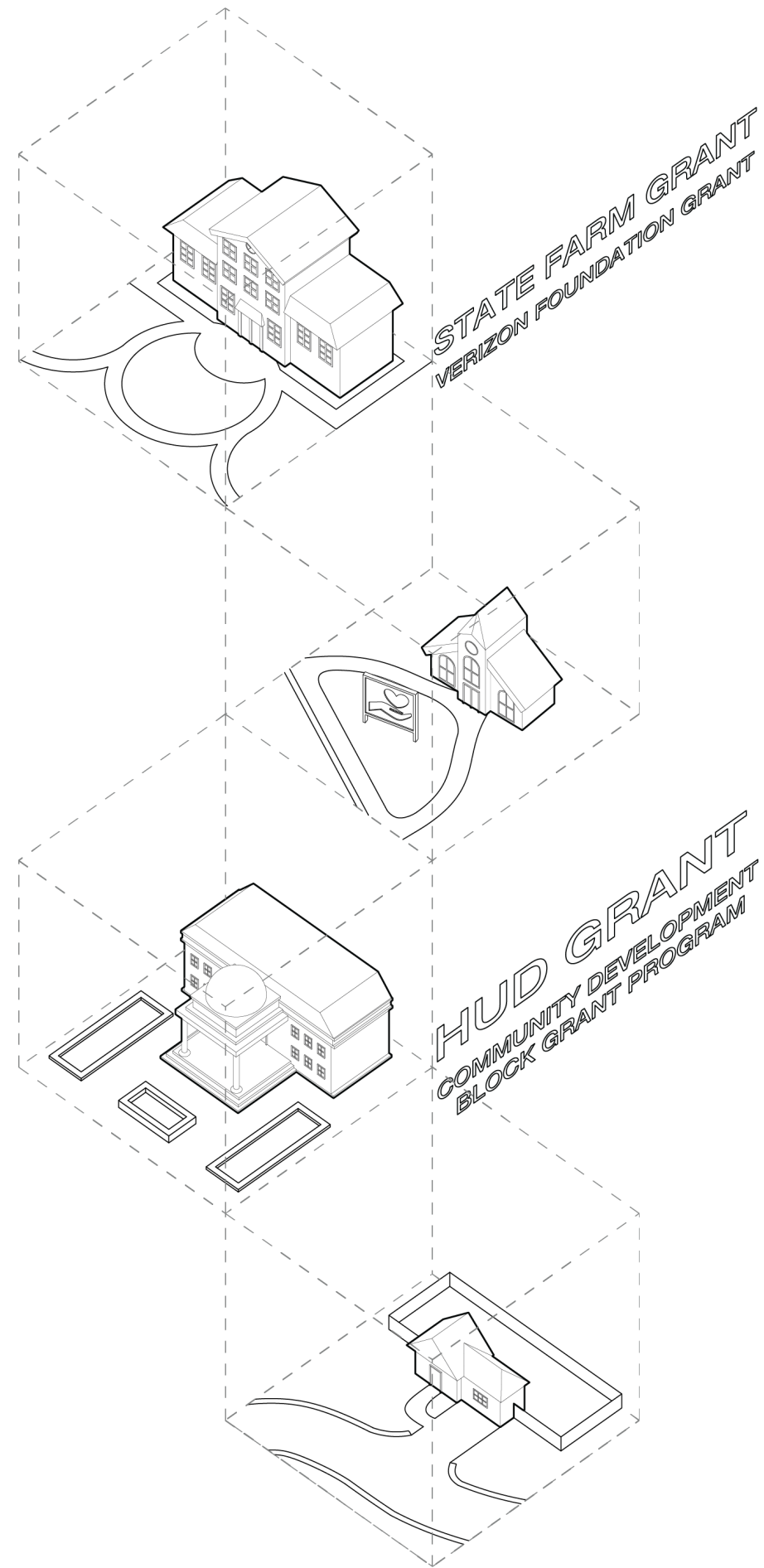
A “kit-of-parts” was developed that could be used in other school districts facing the same educational issues that Caldwell faces. A series of design, implementation, and financial strategies was understood. The design strategy, as discussed in the design portion of the document, uses the notion of the nine square grid inspired by the rural county urban condition as the basis of the form and formal organization. Both the implementation and financial strategies were developed through a theoretical and financial framework document. This document outlines the various roles of the owner, manager, and tenants, deeming appropriate responsibilities of the respective parties. Other specifics are also outlined in the framework such as operations and justifications which mention the logistics of the buildings, the bulk of the framework focuses on the implementation and financial aspects of the project by walking through the formation of the project as an LLC.





FORMATION OF LLC

The first step in the formation of an LLC is the formation of the company. This establishes involvement and responsibility of the individual interest groups, naming the LLC, choosing a registered agent, completing the articles of organization, and creating an operating agreement.



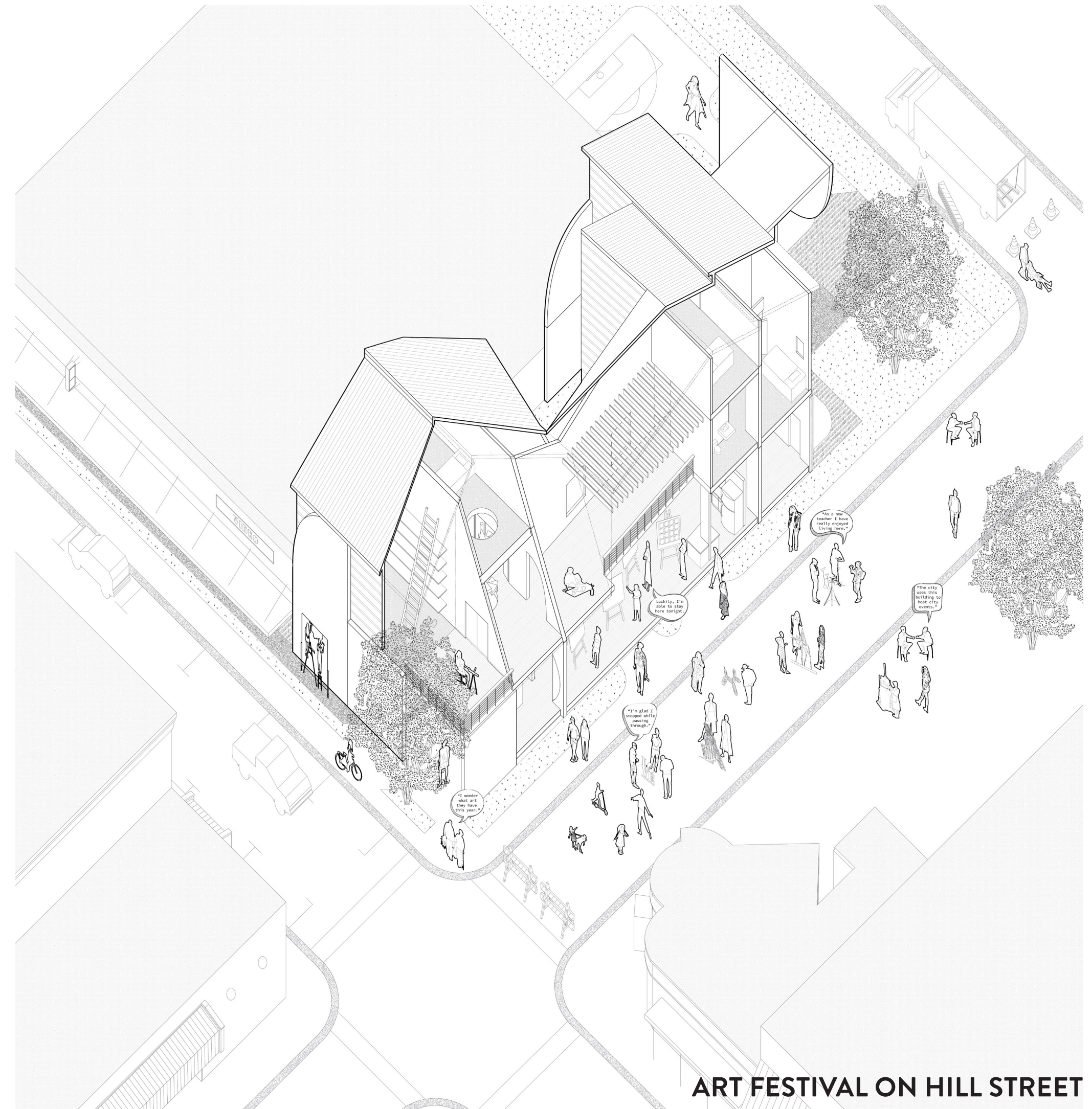
AVENUES OF FUNDING + OWNERSHIP

The next step is determining the appropriate funding-based avenue of development. The funding avenues are based on various entities acting as legal owner. The avenues include, but are not limited to, the school board as owner, a non-profit organization as owner, the city as owner, and a private citizen as owner. Within these four different avenues are various grant opportunities available. These grants have the potential to provide significant funding toward the purchasing of land, development, and maintenance of the property.

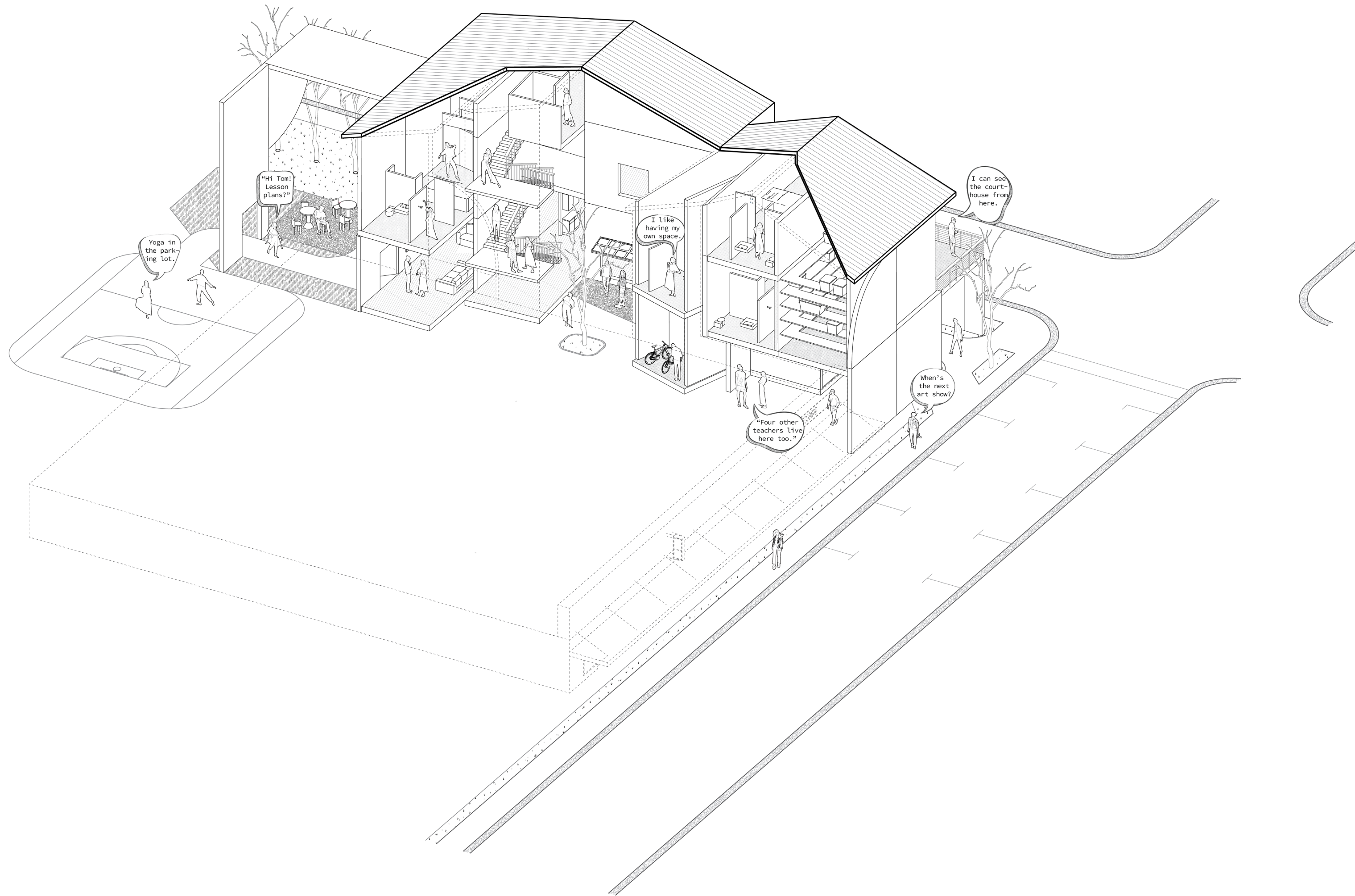
EVERYDAY IMAGINARIES

ART FESTIVAL ON HILL STREET +EVERYDAY USE BY TEACHERS

The purpose of the cutaway oblique drawings is to show the value this project could bring to the everyday life of towns like Caldwell. The everyday cutaway shows what the spaces offer to the teachers and how they could interact with them. The art festival cutaway depicts how the building could benefit a small town.

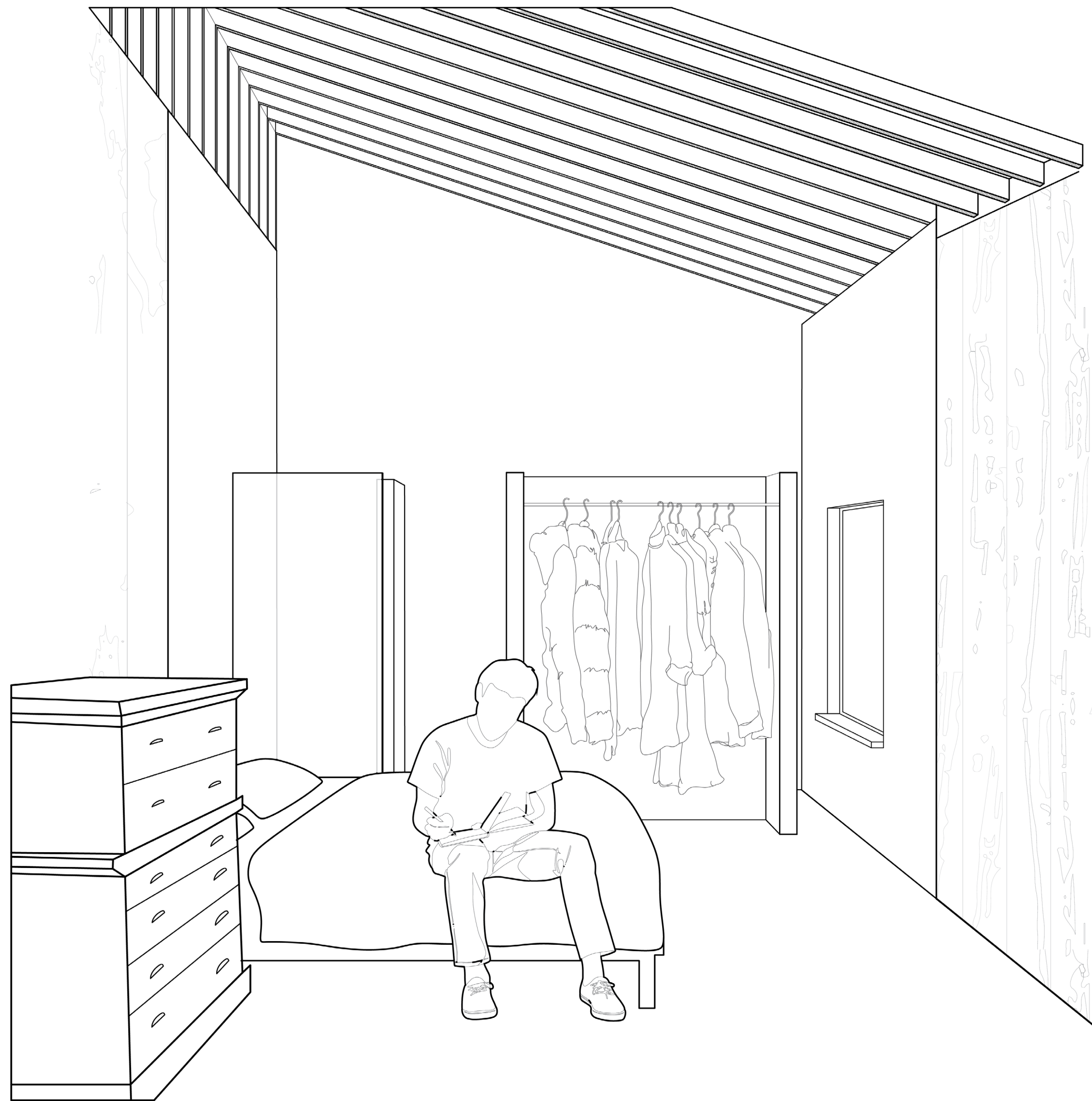


ART FESTIVAL ON HILL STREET

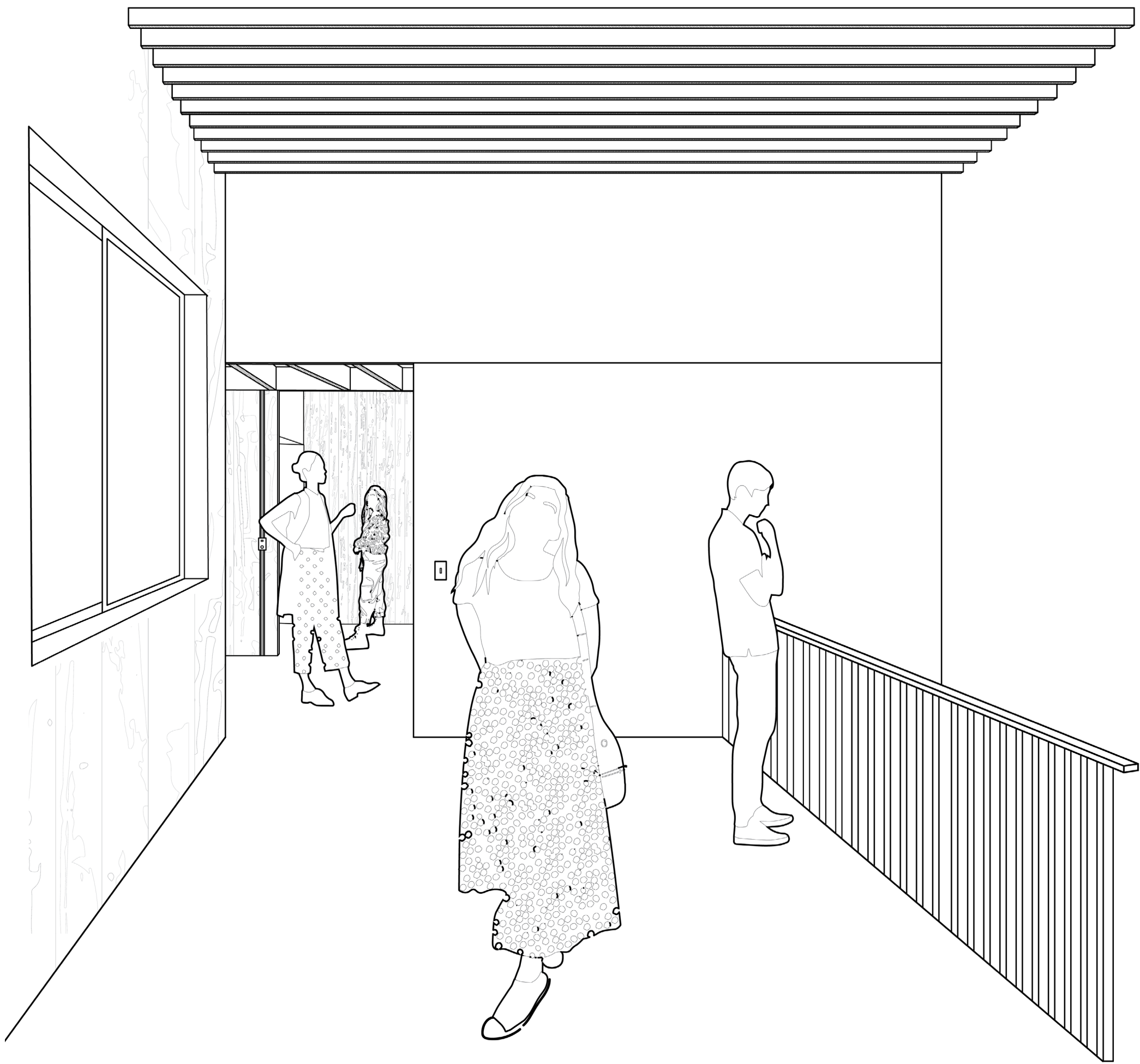


VIGNETTES

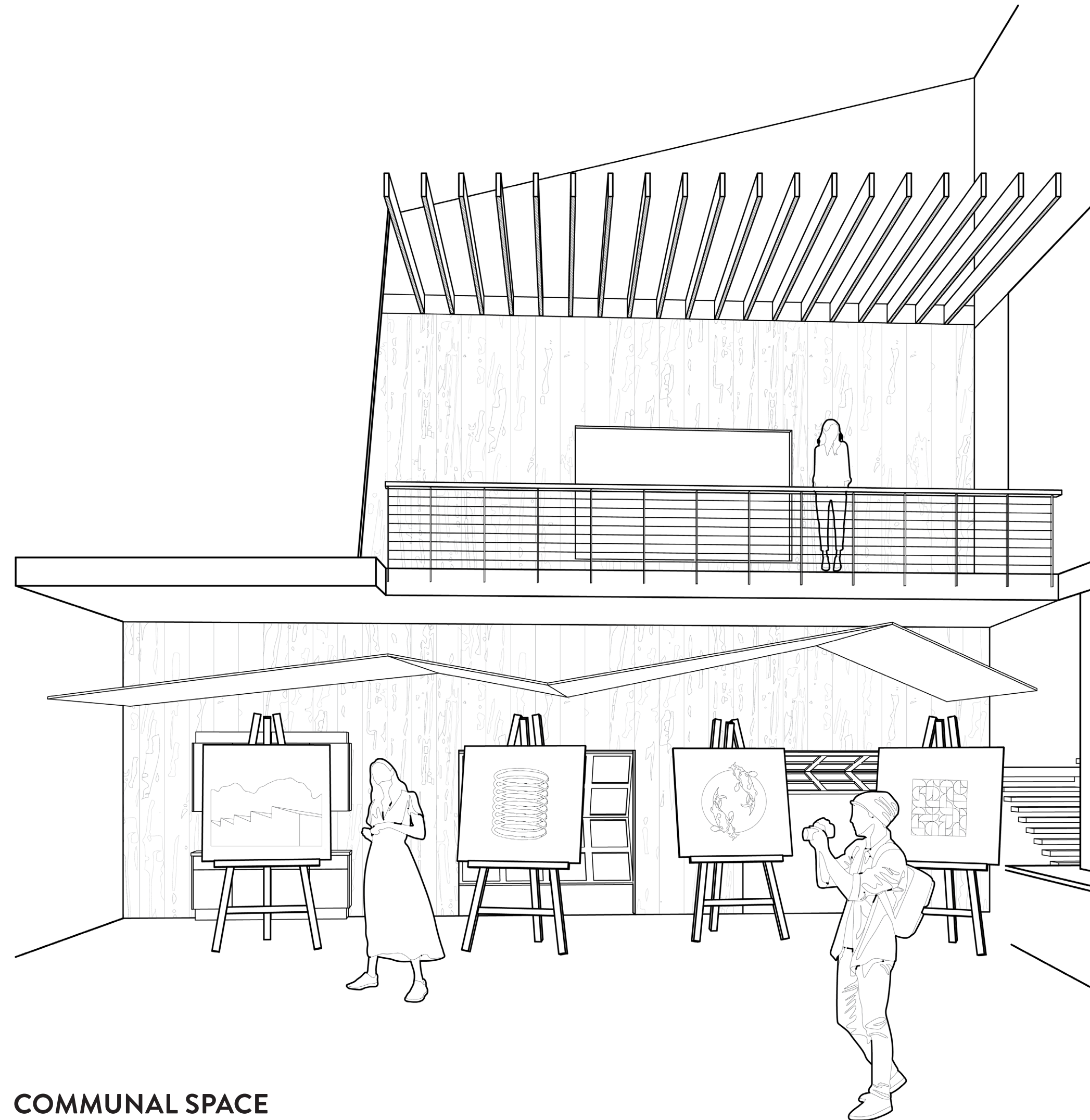
Each vignette provides insight to the various spaces offered in the project. The first depicts what a typical bedroom configuration imagines. The second shows the interaction between the second floor walkway to the first floor communal space. The third imagines the space used for an art exhibition. The fourth shows the storage space used by teachers leaving for the summer. And the fifth depicts an outdoor space following the various levels of privacy.



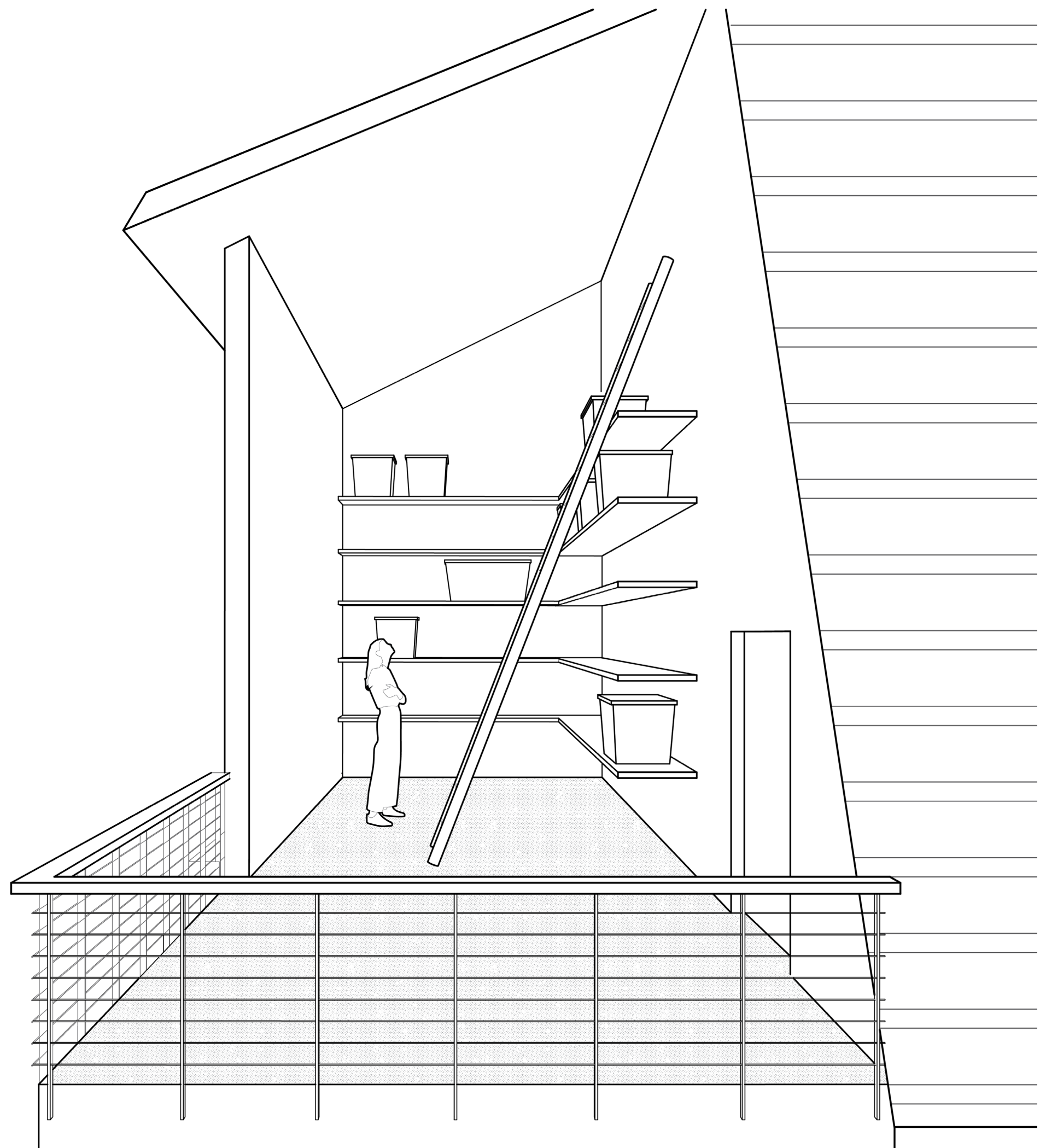
BEDROOM VIEW



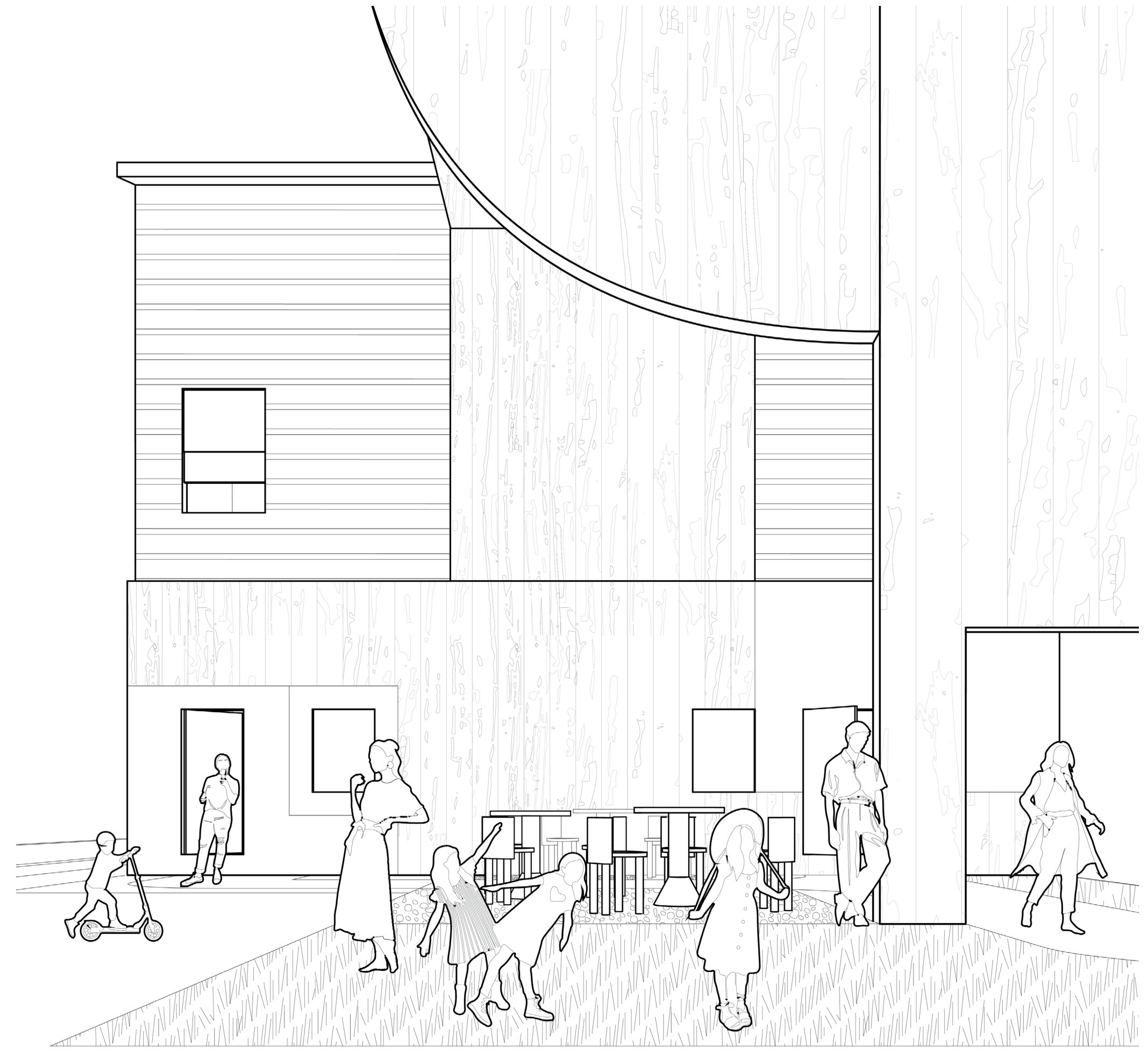
SECOND FLOOR BALCONY



COMMUNAL SPACE



STORAGE ROOM



OUTDOOR SPACE

CLOSING REMARKS

This project is not the sole or even the best solution to the idea of teacher housing. It is my hope that it begins a conversation that is to be continued.

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