NEW HOME:
Creating a New Typology for Migrant Worker Housing

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Abstract

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This thesis proposes a new typology of migrant worker housing that will serve the current migrant worker and his/her family, but can also adapt over time as demographics and needs change. There is a lack of housing for migrant workers and their families and the housing available is substandard and overcrowded. This thesis contends that migrant workers and their families deserve well-designed housing that provides security, promotes community, and meets the needs of diverse demographics.

The design solution seeks to foster safety and a sense of permanence and community, while providing spaces that invite and accommodate all individuals. This thesis proposes a design solution to meet the needs of these individuals in their current situation, yet has the ability to change over time as necessary.

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Introduction

Maslow's hierarchy of needs represents basic physiological needs for self-actualization, or self-fulfilling needs. The most basic need is shelter, found at the bottom of the pyramid. This need must be met before individuals can reach "self-actualization" or become contributing members of society. As we trust migrant workers to harvest the food most individuals eat on a daily basis, it is essential that these most basic needs be met. Migrant workers live and work in all of the contiguous 48 states doing one of the most dangerous types of jobs in the country. Migrant farm laborers are minimally compensated for their work, ranging from $625/week for foreign-born or $797/week for native-born workers in 2012.[1] These wages, however, are often misleading as migrant labor workers do not work continuous 52-week/year jobs and instead work seasonally, waiting or searching for work in the off season. Many factors even cause workers to migrate from place to place to find work.[2] There is a lack of adequate housing available to migrant workers and their families. Furthermore, the housing available is substandard and overcrowded. This thesis posits that migrant farmworker families and their children comprise the neediest group and, given the dire needs of all migrant workers, proposes a flexible, affordable housing solution that can serve the entirety of this marginalized community. This chapter will discuss the historical and current issues associated with migrant workers.

HISTORY

A brief review of the history of migrant labor in the United States reveals the long-time structural barriers to developing adequate, affordable housing for this population. Examining this history will allow for better understanding of the issues that workers have faced since the beginning of the agricultural boom in the United States.

Migrant labor has existed in the shadows of the American labor force since the boom of the agricultural industry. The disenfranchisement of agricultural workers dates to the country's founding when many workers were African Americans (first slaves, then freedmen and finally sharecroppers) or poor immigrants from Ireland, China, or other areas. The majority of these workers historically belonged to racially stigmatized groups. As the need for agricultural workers grew, the United States imported workers from Mexico to meet demand, while continuing the legacy of treating domestic farmworkers poorly. The importation of labor from Mexico led to the "bracero" program in the 1960s and then the H2-A program, which still exists today.[3] These programs provide worker visas for temporary or seasonal work on agricultural farms within the United States. According to the Department of Labor, the period of work allowed must be less than one year.[4] Then and today, these laborers work hard jobs and long hours and live in substandard conditions. Recent studies have found that non-English speaking workers generally live in poorer housing conditions than those who speak English.[5]

Peter Benson argues: "A tradition of legal exceptionalism has historically regarded farm labor as distinct from other kinds of work."[6] This attitude contributes to the poor housing conditions of agricultural workers in the past and today. Historically, marginalized groups have faced very different laws and regulations than the general population at all levels. Defined in immigration law as "aliens," migrant worker have extremely limited rights; as non-citizens, they are permanent outsiders.[7] Benson notes the discriminatory laws that establish farm workers as second-class citizens, who are paid less than the minimum wage through paying by the piece or pound. These legalized forms of marginalization have particularly affected workers with respect to housing. A study conducted of seasonal workers in Minnesota's processed vegetable industry confirmed that: "rather than seeking to improve these appalling

housing conditions, public policies have resulted in substantial barriers to the development of adequate and affordable housing." [8] Examples include exclusionary zoning that often prevents migrant workers from living in the same area as established residents. Furthermore, "perceptions legitimize erroneous cultural beliefs, perpetuating excuses that justify substandard housing as acceptable because Mexican workers had 'no use, nor desire' for better housing; they 'like' to live in overcrowded conditions; or they are comfortable living in substandard housing."[8] Perceptual barriers indicate a lack of knowledge about the individuals whom agencies seek to serve and a disinterest in the subject at large. Since the beginning of the agricultural industry, migrant workers have historically been marginalized through discriminatory laws and social norms that make their low wages and poor housing acceptable, a reality that continues today.

CURRENT ISSUES

As noted by the National Center for Farmworker Health, "Migrant and seasonal farmworkers represent some of the most economically disadvantaged people in the United States."[9] With this lack of economic mobility, it is unrealistic for the agriculture industry and the population at large to expect that migrant farmworkers will be able to attain housing through traditional means, such as market-rate housing or even subsided housing through the government. To better understand who this population is and the kinds of housing available to them, one can consult the United States Department of Labor. The DOL has conducted migrant worker surveys since 1989 to better understand migrant workers. While described as "migrant," most of these workers spend their time in one place, even though they may work seasonally. The current percentage of settled workers is approximately 75%; the numbers have fluctuated over the years (see figure 1). There seem to be more families among the group of settled workers, although this

correlation has not been directly studied. Shuttle workers make up about 20% of migrant workers, traveling between just two farms, whereas follow-the-crop workers make up about 5% of workers.

According to the Department of Labor, the vast majority of housing available to migrant workers is through the private market, see figure 2. The next largest portion is free to workers who are employed under the H2A visa, which is mandated by law. Finally, a small amount of farmworker housing is employer owned. This thesis assumes the use of private market housing is funded by a non-profit organization.

Because of the seasonal and intermittent nature of the work,

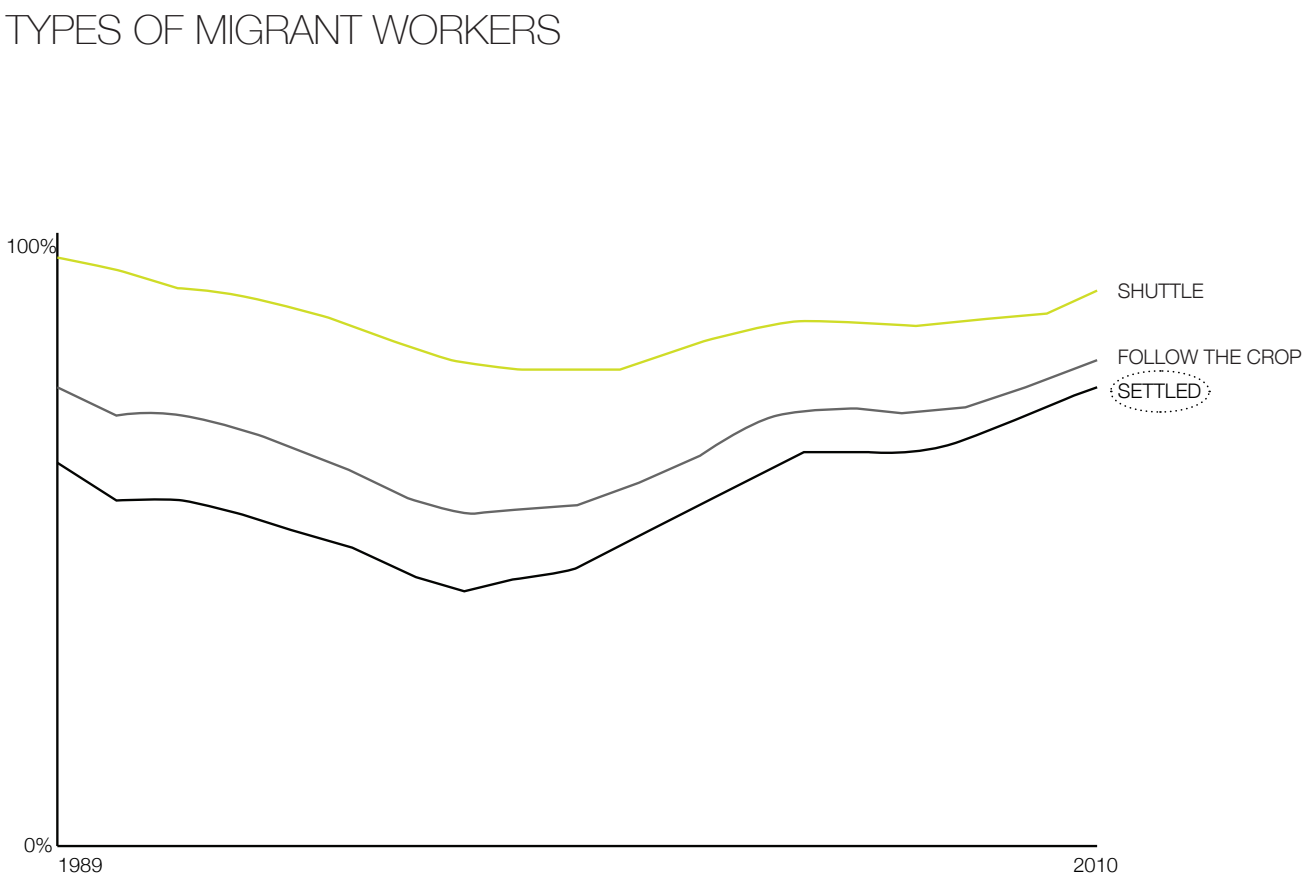


FIGURE 1: TYPES OF MIGRANT WORKERS, THE LARGEST GROUP, SETTLED WORKERS, CIRCLED.

migrant worker wages are often too great to qualify for subsidized housing for the period for which they are working, and then too little (or none) for the period in which they are not employed in agriculture. This often leads to uncertainty and compels individuals and families to live out of their cars or in makeshift camps wherever they may be at the time. The Housing Assistance Council (HAC) survey showed over half of farmworker housing is overcrowded,[10] and nationwide, only enough adequate shelter exists for 425,000 of the 1.2 million farmworkers.[11] In addition, domestic workers, or workers defined as being American citizens or permanent residents,

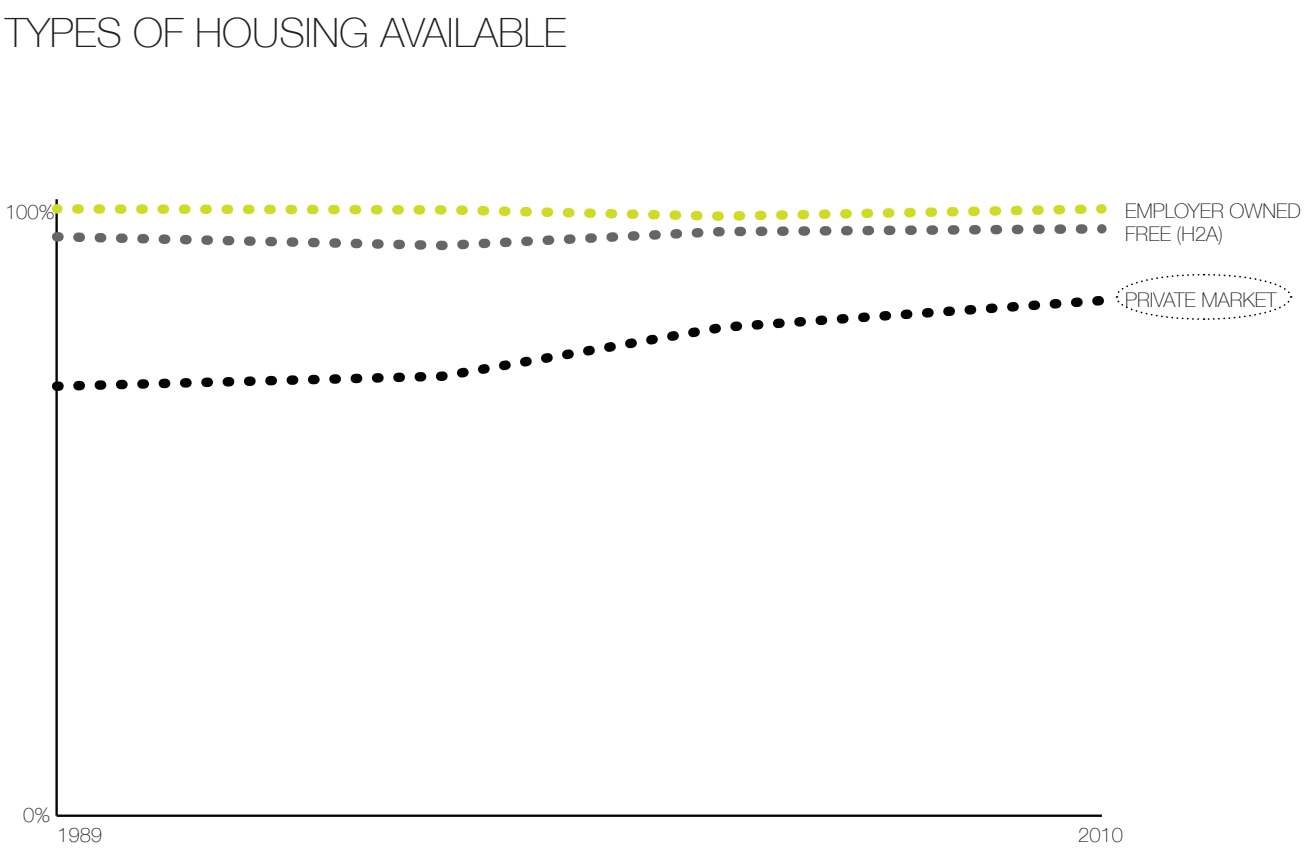


FIGURE 2: TYPES OF HOUSING AVAILABLE
THE LARGEST GROUP, PRIVATE MARKET, CIRCLED

(often immigrants themselves) are separated from guest workers on the H2-A visas. They even live on separate labor camps at the Sakuma farm in Washington.[12] Migrant workers provide an important service to the areas in which they work. The National Center for Farmworker Health asserts that "the presence of farmworkers has been shown to increase the overall economic impact of the regions in which they work."[13] Therefore it is economically beneficial to the entire community to provide these workers with adequate housing.

Migrant women and families are often subject to the worst housing situations because much of the farmer-provided housing is for single men. This frequently forces women and families to look for housing off farms where landlords may discriminate. As Wab Kinew, a journalist, noted: "Like many farmworkers, [one migrant worker] and his wife have had trouble applying for and retaining public child-care subsidies because of their shifting residency and fluctuating income. Applicants for child-care assistance must submit employment-verification documents and pay stubs, none of which are designed for seasonal workers earning per-pound pay rather than hourly wages or salary."[14] Thus the stress on the family without a home and a without government support can be great. The National Agricultural Workers Survey stated that "98 percent of childless, married farm working women lived with their spouses"[15] Additionally a health survey conducted in North Carolina reported that "camps with female residents and with child residents were also more likely to be severely substandard than those that did not have any [females or children]"[16] Herein lies an opportunity to create a housing alternative for families that meets the needs of these migrant workers. It is not only an opportunity to create housing which merely passes the migrant worker housing codes, but also an opportunity to create housing that truly meets the needs of this unique group of individuals. These people do not have the same needs as a typical low-income group for which

housing may be designed. These individuals have long been marginalized yet they continue to support the economies in which they reside but often without a permanent or dignified place to reside.

CURRENT HOUSING PROBLEMS

Migrant worker housing is grouped generally into two categories: on-farm and off-farm. On-farm housing can vary widely as it is provided by the farm owner and built according to the migrant housing laws (which often vary somewhat to significantly from the housing laws of the rest of the state). The housing provided can vary greatly in design and availability based on gender and marital status. Housing can also vary in cost from free to reductions in salary or payment. Moreover, farm owners are not required to provide housing to any farmer with the exception of housing required by the H2-A visa and thus this housing may not exist at all. For simplicity a few case studies will be examined to understand the breadth of possibilities that workers might encounter.

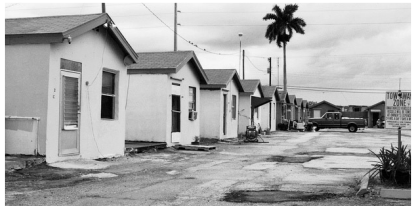


FIGURE 3: CURRENT MIGRANT HOUSING[i]

FIGURE 4: CURRENT MIGRANT HOUSING[ii]

In North Carolina for example, migrant housing is simply defined as any housing that a migrant worker occupies.[17] Therefore any structure, permanent or temporary qualifies as migrant housing, such as camps, huts, tents, or large barrack style structures. Some argue that "the inhumane living conditions harken back to the pre-Civil-War-era-South,"[18] specifically mentioning barrack-style housing, which includes many beds in one building and often has restrooms in a separate, detached building. Barrack-style housing is most often used for male-only housing arrangements but can be used for mixed arrangements as well as for families, depending on the owner. (See figures 3 and 4)

Many other workers live in privately rented housing that is overcrowded, according to the National Center for Farmworker Health (NCFH). Additionally, in more than 50 percent of these crowded units, farm-

workers raise children.[19] In some states, large housing units are regulated; however, small but overcrowded and privately rented units are not regulated and therefore lack accountability as to the quality and space allotted per person. Furthermore, since these units are not regulated by the government the amenities are not controlled nor is the rent, resulting in excessive rents charged to workers who are only staying for short amounts of time.

When on- or off-site housing is not available due to demand, cost, or lack of owner-provided housing, many migrant workers are forced to make do with the supplies and resources they have on hand. As the NCFH reported, "farmworkers may be forced to sleep in tents, cars, ditches, or open fields, where they often lack safe drinking water, bathing or laundry facilities, and adequate sanitation."[20] This current housing options leave workers living in what some have defined as a Fourth World, existing in a First World country but enduring Third World living conditions,[21] subsisting in housing situations that can and do endanger their health.

CONCLUSIONS

This thesis addresses the problem of substandard and overcrowded housing available to migrant workers, especially, those families with children. It posits that migrant farmworker families and their children comprise the neediest group but, given the dire needs of all migrant workers, proposes a flexible, affordable housing solution that can serve a population that inevitably changes over time.

CHAPTER 2

This chapter explores the problems farm workers face in obtaining adequate housing in order to identify the various dimensions of migrant worker housing that the thesis addresses. It investigates each of these dimensions and then analyzes examples of attempts at producing migrant worker housing. The chapter ends by proposing a theoretical framework that will guide site selection and the development of a program for the thesis.

The new architectural typology explored in this thesis seeks to change the paradigm of inadequate migrant housing and improve the lives of these workers. In particular, the thesis will explore a new housing form that can adapt over time with the varying needs of migrant workers and with the particular needs of women, children, and their extended families in mind. The rest of this chapter explores several needs of migrant worker housing, including permanence and sense of community, housing security, resource efficient housing, and adaptable housing. It then offers a critique of recent innovations in worker housing and concludes by proposing a theoretical framework that will guide the planning and design of the housing.

PERMANENCE + COMMUNITY

To create successful housing for migrant workers the residents must feel that they are rooted in a given place and able to create a sense of community with their neighbors. A review of literature demonstrates this need in the design of the housing, and then an architectural case study will reinforce the research.

Migrant workers do not have the same sense of permanence that the average American has. Architecture designed for migrant workers should try to foster a sense of permanence and more

importantly, a sense of community. While permanence and community are two different concepts, community can help to increase the feeling of permanence and stability. As author Tracie McMillan noted, migrant workers have a great sense of community and empathy, sharing food and shelter in order to survive. Furthermore, she noted that, "Because the poor must rely on others to provide a range of needs that the wealthy can pay for, they are also more empathetic and have stronger social skills."[22] Therefore, it is important that migrant workers have housing that supports this community building. Architects Sayyed Zavei and Asad Jusan noted that "mobility…leads to 'placelessness,' which causes lack of place attachment. Place attachment is one of the most influential factors in humans' psychological health, and is therefore powerful in constructing an individual's identity."[23] It is therefore important that residents view the housing as a permanent dwelling and one in which residents can take ownership and pride. Additionally, Zavel and Jusan point out weakness in many housing typologies targeted at low-income residents, "Deficiencies of this housing type in environmental factors, i.e. location, community services, and social aspects adversely affect the satisfaction of higher level of needs."[24] The higher-level of needs they are referring to are those in Maslow's hierarchy of needs. In Maslow's hierarchy of needs, physiological needs must be met first, then safety, love/emotional, esteem, and finally self-actualization, representing an individual's full potential. (See Figure 5) It is therefore important when designing this housing that it covers the covers not only physiological and safety needs but also creates space where individuals can create emotional relations and build esteem. This is what differentiates shelter from house from home, as well as what allows individuals to reach their full self-actualized potential.

FIGURE 5: MASLOW'S HIERARCHY

The dimension of permanence and community can be further understood when studying an architectural precedent. An architectural case study that exemplifies the ability to build community through the

design of architecture includes the low-cost school and home for HIV and AIDS orphans in Africa by Koji Tsutsui. This complex of buildings is designed to create a community of individuals centered around a communal living space. The buildings are meant to be constructed by the local community and grow organically as the community grows over time so as to allow for expansion of small groupings of homes around their own courtyards. Each cluster of homes is organized around a central courtyard, providing a neighborhood or urban design to the community while still allowing for small-scale subdivisions that foster social interactions as well as the organic growth of the entire neighborhood.

FIGURE 6: MODEL OF MASTERPLAN[iii]

FIGURE 7: MODEL OF CLUSTER OF BUILDINGS[iv]

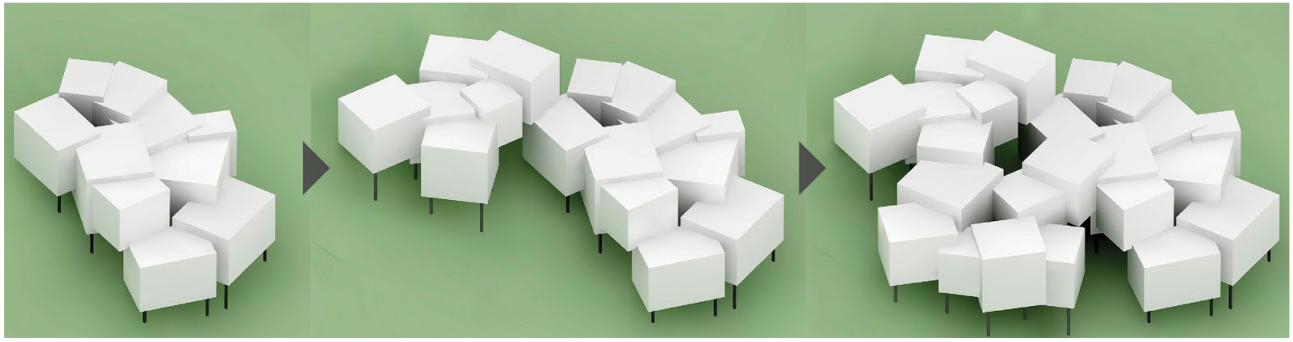


FIGURE 8: HOW THE TYPOLOGY CAN GROW + EXPAND[v]

From the master plan (see figure 9) one can note the overarching goal of community reinforcement, while offering individual spaces. A roof canopy connecting all of the structures serves to unify the buildings and offer outdoor shade as well as protection.

FIGURE 9: RENDERING OF FULLY REALIZED COMMUNITY[vi]

HOUSING SECURITY

Security encompasses another fundamental need in creating a housing typology designed for migrant workers. This dimension is explored through literature relating the importance of security to housing and then through an architectural case study in which this importance is further documented.

Security helps residents to feel they live in more than a mere

shelter. Architects Kathleen Dorgan and Deane Evans argued for more than aesthetics as well, stating that "high-quality design encompass an array of considerations, such as proportion, sense of identity…sense of place, and the creation of spaces that are safe"[25] As Architect Laura Shipman noted in a focus group she conducted with migrant workers, security plays a role for migrant workers in a number of different ways. First the focus group participants preferred open spaces as it made it possible to, "easily keep an eye on the kids."[26] This reflects the desire for open spaces and, in Jane Jacobs seminal observation, an ability to have "eyes on the street." An architecture of openness facilitates the feeling of security without barriers or walls but rather fosters openness and community as discussed previously. Furthermore, the same focus group participants also noted a desire for "off-season security" delivered by "sliding shutters."[27] This demonstrates the two-fold desire of security engendered by a sense of physical security as well as a sense of openness. When designing, the most important consideration is the desire for openness, which is especially critical for families that need to see their children play. Clear sight-lines promote not only a feeling of security but, according to security expert Oscar Newman, they also provide the eyes on the street that result in defensible space.[28] Additionally open sight-lines promote community building, an important dimension discussed earlier.

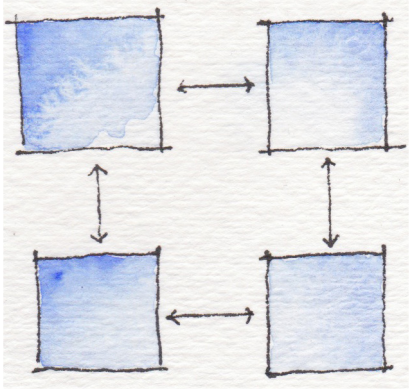


FIGURE 10: COMMUNITY AND SECURITY

SUSTAINABLE DESIGN STRATEGIES

Given the economic constraints of migrant workers, it is essential that the proposed housing solution minimizes the initial price of the units as well as the cost of short- and long-term operations. Resource-efficient housing that utilizes sustainable strategies to minimize resources consumed in both the construction and operation of the housing encompasses another important dimension for

residents. A literature review reveals the importance of this concept and reinforces its importance on the implementation of any housing strategy.

As architects Eric Naslund and John Sheehan note: “In the affordable-housing industry, the luxury of this kind of waste [of resources] is not an option.” Neither architects, nor contractors, nor renter/owners have the margins to absorb this waste, namely space, materials, and energy among others; it is therefore of utmost concern to consider. Naslund and Sheehan note, “In affordable-housing design, basic considerations become paramount. The designer must find ways to make poetry out of…modest… parts”[29] It can be argued that this poetry can often force the design to be more rich and beautiful than if the architect was otherwise challenged. Being creative with locally available materials forces the architect to understand design implications of materials as well as new innovations of often looked over options. Furthermore, passive strategies can often be the most successful as well as the most inexpensive. As Naslund and Shehan continue: “Over the life of the home, the greatest cost savings and environmental sustainability are achieved by intelligent land planning and design, but merchant builders rarely consider passive energy measures that work with the local climate.”[30] Passive strategies are simply a forethought that must be considered before planning and design of the rest of the project occurs.

An architectural precedent in which resources were well managed, including the use of sustainable strategies, is the Design Indaba 10x10 Sandbag Houses by architect Luyanda Mpahlawa. Here, the architect employs sandbags as infill for the walls. Not only was sand plentiful and abundant regionally, but the walls also could be filled by the prospective residents, eliminating the need for machines as well as incorporating the community into the construction process. Sand is also, “…an outstanding insulator. The energy efficiency of the material is further enhanced due to the fact that neither machines nor

electricity is needed to install the sandbags."[31] This helps to engage the community as well as to contribute to the energy efficiently of the buildings. The siting of the homes was also considered: "The structures are situated to one side of each plot. The remaining free space makes it possible to either build an addition to the house or plant a garden…Mpahlwa thus effectively reconceived the interior and exterior spaces of such dwellings."[32] This siting choice both allows for more interior as well as more usable exterior space. This architectural precedent exemplifies the importance of utilizing the concept of sustainable design strategies. The literature underscores the importance of

FIGURE 11: SANDBAG HOUSE UNDER CONSTRUCTION[vii]

FIGURE12: PRELIMINARY DESIGN[viii]

FIGURE 13: COMPLETED HOMES[ix]

incorporating resource efficiency and sustainable design strategies in housing design.

ADAPTABLE HOUSING

Adaptable housing is defined as the ability of housing to adapt to a variety of family sizes and densities. A review of literature documents the importance of the availability of these housing typologies.

When one isolates families, the need is especially severe as housing is often targeted at single (male) workers. However, the demographic of migrant workers seems to be shifting to more families and this is a particularly under-served population. Approximately 50 percent of worker housing is estimated to be overcrowded[33], which does not foster community but instead may force individuals into hostile and cramped quarters that produce stressful living conditions. This thesis allows an opportunity to create a positive change by creating well-designed housing for migrant workers. Furthermore, due to changing patterns in migrant worker lifestyle, namely the increase in families as well as the tendency for workers to continue living in the US for longer than before, as shown by the Department of Labor, it is also important that this housing be flexible and adaptable to cope with changing demographics and needs of the migrant worker population. This adaptability will allow the housing to change over time to the needs and desires of the population, ensuring there is enough space and amenities provided for both families of different sizes as well as the potential of an increase in density among workers. This dimension of adaptable housing, or housing that is successful for a wide variety of users over time, is essential when considering the ever-changing landscape of migrant workers.

Architectural precedents employing these concepts also help elucidate this dimension. An excellent example is the Quinta Monroy Housing by Elemental. In order to adhere to the tight budget of $7,500 per unit including land and construction costs, the architects, “decided the best approach would

be to only partially build each house."[34] This unique approach allowed the architects to build unique and flexible housing that would allow for change over time. Architectural historian and curator Andres Lepik noted that "[the architects'] solution was a building type that could both be inhabited right away and allow of significant changes over time."[35] Courtyards exist as part of a permanent outdoor living space that would not be encroached upon, even when families expanded their homes, "creating communal courtyards and generating organized social spaces outside…"[36] Lepik argued that "the hope is that such a model, in which customization and appreciation is achieved through

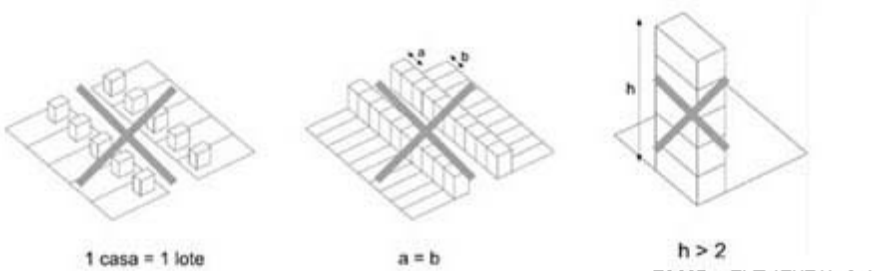


FIGURE 14: DIAGRAM OF CURRENT TYPOLOGIES[x]

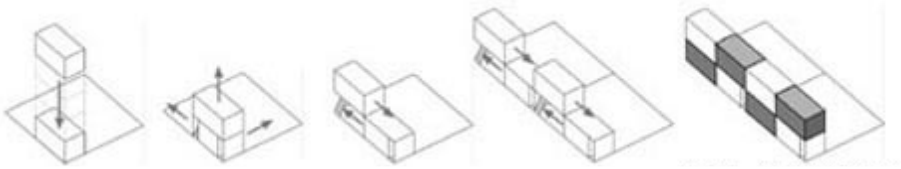


FIGURE 15: DIAGRAM OF ARRANGEMENTS[xi]

FIGURE 17: HOMES LIVED IN AND MODIFIED[xiii]

FIGURE 16: HOMES COMPLETED[xii]

gradual investment and sweat equity, will lead to a more lasting solution."[37] This model, in which one is able to customize the standard not only allows for ownership and pride, but also allows the housing to change as the needs of the residents change. Lepik noted, "Elemental's brick-and-mortar critique of the status quo demonstrates…adaptive design, without sacrificing individuality or access"[38] This critique of the status quo is exemplary to produce an appropriate architecture for migrant workers that can respond to their current needs and adapt in the future.

The literature review and architectural precedents illustrate that housing that accommodates the variable demographics of families and allows change and adaptation over the lifespan of the building is critical for migrant workers.

THEORETICAL FRAMEWORK AND CONCLUSIONS

The dimensions of housing, security, sustainability, and adaptability represent independent factors of the framework. A factor that affects each of these two dimensions includes farmworker demographics (single or married, age, number and gender). Therefore, the housing design must respond accordingly. All of these dimensions affect the sense of community and permanence felt by the residents. Furthermore, the framework demonstrates which elements can become the simpler elements of design and which ones will develop more complexly.

The dimensions essential to migrant worker housing include permanence and community, housing security, resource efficient housing, and adaptable housing. These are understood through literature and architectural precedents that directly relate to each dimension at hand.

CHAPTER 3:

Why, Where, and How

This chapter addresses the goals this thesis seeks to achieve based on the findings from the research conducted, the selection of the site. It will also discuss how the site selection reinforces the goals of the thesis and the literature review. This chapter will also outline the program of the spaces to be designed on a site-wide as well as a per-building basis. Finally, this chapter will discuss limits and delimits of the project, framing and shaping overall goals of the project.

GOALS MOVING FORWARD

This thesis seeks to design affordable, flexible housing for migrant workers to address the many, varying and constantly changing needs of this workforce. It will examine the benefits of flexible (in size, configuration, or otherwise) and expandable housing units as well as permanent in-place housing as options. The target audience for these units will be families since they are the most likely to be separated according the DOL.[39] The housing will allow for change in family size over time as well as the possibility of an increased density to support a wide variety of needs. The housing aims to be affordable to encourage responsible use of materials and to encourage efficient programming and space planning, all under the umbrella of sustainable design strategies. Low-cost housing could potentially be achieved by allowing migrant workers to use sweat equity to help pay for part for their home or earn rent credits. Housing security can be achieved by designing the unit specifically for workers, ensuring availability during peak season, and ensuring lockability when workers are away. Finally, the housing hopes to create a sense of community and, in turn, a feeling of permanence through the housing. A sense of community will be achieved through design of outdoor spaces as well as by assuring year-round occupancy through flexible design and community functions that are continuously occupied. Adaptable housing encompasses

another design objective that will be achieved through flexible and adaptable spaces. As stated previously, migrant workers often have a strong sense of community, since they often rely on family and friends for needs they cannot meet themselves.[40] Therefore, this housing community will seek to foster community-building by designing for shared spaces as well as private ones. These encompass the design objectives and goals moving forward.

DATA COLLECTION

This thesis collected data primarily from secondary sources. Statistics were found through the Department of Labor's National Agricultural Workers' Survey as well as through the National Center for Farmworker Health. Several physiological as well as behavioral studies on the conditions of farmworker environments were also used to understand the impact of current conditions on farmworkers. A particularly enlightening source was The Way Americans Eat, a memoir in which a journalist goes undercover in the agricultural fields. This source gave a personal understanding to many issues farmworkers face rather than just quantitative data. Finally, this information was woven together with theoretical architectural writing on concepts discussed previously in the thesis. This method of data collection contributed to a holistic understanding of the problem, both theoretically and as supported in numerical data, that will inform different aspects of the site analysis, program, and design

THE SITE

The site selection criteria utilized to choose a site includes a variety of factors, among them a large concentration of migrant workers. Another factor considered is the availability of existing resources,

housing and other supports available to migrant workers in the area. This can also be understood as the site's infrastructure. Diversity of workers is also important consideration to fill housing evenly and encourage community among different groups. Theorizing the site as infrastructure underscores the importance of understanding the infrastructure of services surrounding the selected site. Important services to consider include groceries and other convenience needs, transit, and schools, all to be within one mile if possible. Not all workers have transportation and many carpool or ride bikes. Therefore, the closer the housing can be located to both work and essential amenities, the more self-reliant this population can be. Other important infrastructural connections to consider include proximity to the town center, hospitals, and other workers services, if available. Connections into a town may also allow year-round workers or workers who are transitioning to year-round work to become part of the larger community. The boundary of the site will be important to consider as well, depending on the final site location the boundary condition will have to be treated differently. However; in hopes of achieving open sight lines across the site, the goal remains that much of the site should remain easily visible for security reasons. The edge conditions will take precedent from neighboring plots as well as nearby housing. These considerations will be site specific and be discussed at length further. These include the general site restraints and considerations that must be studied when selecting a site.

The two potential sites are in Yakima County, WA and Immokalee, FL. While these two sites are quite distant from each other, they do have some similarities. Washington State's migrants harvest fruit crops, with Yakima County being home to the most migrant workers in all of Washington State.[42] These workers number approximately 81,000[43] and are mostly Hispanic. Current services provided to these workers include "rent a tent" and other various housing services and bus service throughout the county.

The main season for working in Yakima County, WA is the summer. Temperatures can vary greatly during the day affecting the temperature of unconditioned interior spaces. In the summer temperatures can heat to more than 100 degrees and in the autumn, can fall below 0 degrees, greatly affecting the interiors of camps.[44]

Florida is one of the nation's top producers of fruit and vegetables. Immokalee, FL, in southwest Florida is the nation's top producer of winter season tomatoes, producing 90% of the United States' winter tomato crop. This county is also a large producer of other vegetables and ornamental plants, all of which employ migrant and seasonal workers.

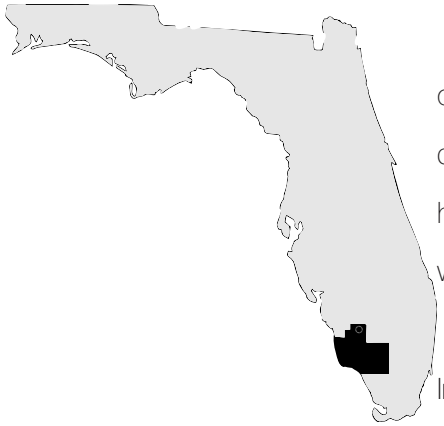


FIGURE 18: A MAP OF FLORIDA HIGHLIGHTING COLLIER COUNTY AND THE CITY OF IMMOKALEE.

The main season for growing is winter, with side crops being grown in the fall and spring.[45] The climate in this area is sub tropical and moist. Temperatures are quite warm and do not vary too much during the day. During the summer months, however, temperatures are quite warm coupled with the humidity. The Coalition of Immokalee Workers has been fighting for an increase in wages for tomato workers and this fight has been featured in many prominent news sources, such as the New York Times.[46]

Due to the lack of existing resources, as well as the current press and immediacy of the situation in Immokalee, this town was chosen for the site. After talking with an advocate at the Coalition of Immokalee Workers (CIW) it became clear that many migrant workers did not have cars (in a rather spread out town lacking public transportation) and relied either on walking or riding a bike to get to services as well as the pick up point for all of the farms.

These conditions necessitate a site within the downtown area of Immokalee. The final site is at the corner of Carver St and Immokalee Rd. This site is within walking distance to all conveniences as well as a very short bike ride to the same necessities and slightly farther reaching necessities as well. (See figure 19)

HOW

This thesis is based on a variety of methods considering precedent, architectural typology, and functional analysis of needs. Design inquiry will be largely speculative, focusing on the needs of migrant workers as a group and desiring to provide space that can remain flexible and functional for a variety of living styles and individuals. Due to these conditions, much of the design will be intuitive and based on the author's expertise in design rather than personal experience. The design will live in between the realms of realistic an exploratory design. While the design may be physically realistic to build it will lie more on

FIGURE 19: PARTIAL MAP OF IMMOKALEE

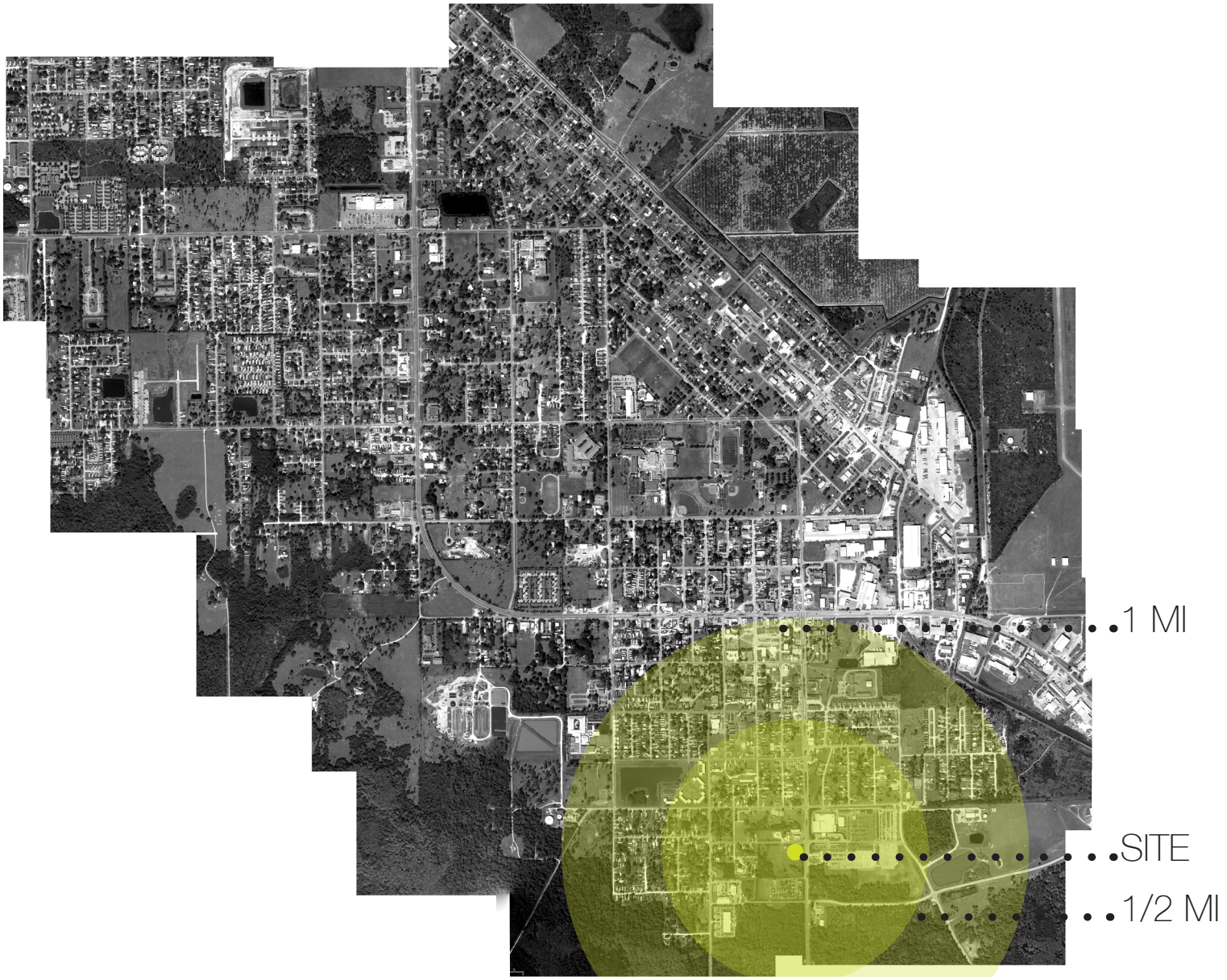


FIGURE 20: WALKABILITY MAP

FIGURE 21: BIKEABILITY MAP

the speculative or prototypical side of a realistic design. In the design the most weight will be given to community, context, users and program. Secondary considerations will include site, climate, and budget. Success of the project will be determined if an aesthetically pleasing housing project is designed that meets all of the dimensions of the theoretical framework. Lastly, although speculative in nature, the project is imagined to be funded and run by a non-profit organization,some money would be received through applicable federal grants. These are the methods on which the design will be based.

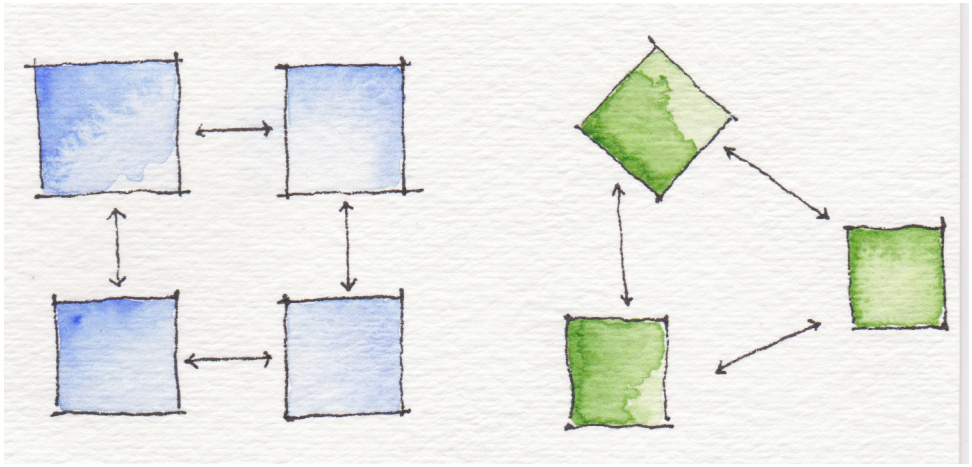


FIGURE 22: COMMUNITY

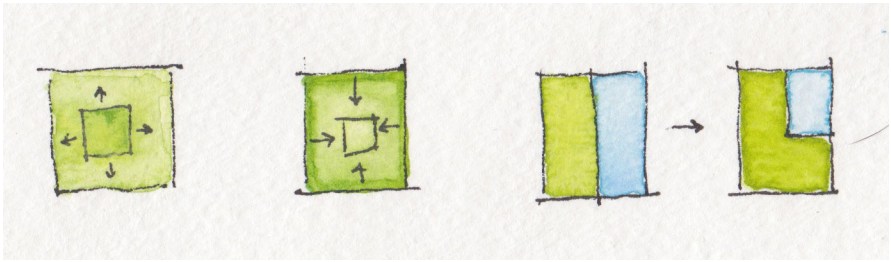


FIGURE 23: EXPANDABILITY/ ADAPTABILITY

FIGURE 24: SECURE SHELTER

PROGRAM

The program of housing is two-fold: space for families and space for community. Families are arranged in a flexible layout with all units having the ability to adapt as times change. This will allow stability, security, and a sense of permanence for the community by having a steady population in the community. The flexible housing allows for the necessary ability to adjust over time including the ability to accommodate for changing household needs. These community spaces, namely the shared backyards, and in the future, a daycare and community center, will further the sense of security and community by allowing for year round function as well as inviting members of the larger community into this housing cluster. These final two spaces, while programmed on the site, will not be designed but will be allotted space for future development. All of the program spaces are organized around multiple outdoor courtyards for children to play in and individuals to socialize in. All interior spaces have good sight-lines to these outdoor spaces, promoting a sense of security. The many outdoor spaces encourage individuals to spend time outside, further encouraging a sense of community. These encompass the major design spaces

Interior Spaces:

Family housing: 35-40,000 sf

- Flexible housing
- Adaptable space
  - Ability to grow and change

Support - Future Development only

- Daycare
- Community center

Outdoor Areas

- Play areas
- Courtyards
- Good sightlines for safety

included in the design of the migrant worker housing.

In order to better understand the necessities of programming, looking at programming by hour (see figures 23 and 24) of both the worker as well as the support individuals helps to understand the hierarchy of spaces as well as the types of indoor and outdoor spaces that might be used by these individuals and at what times. These spaces correlate with the spaces discussed above, but are broken down by hour, and one is able to see a hierarchy emerge.

LIMITS + DELIMITS

While this thesis addresses the design of the building and

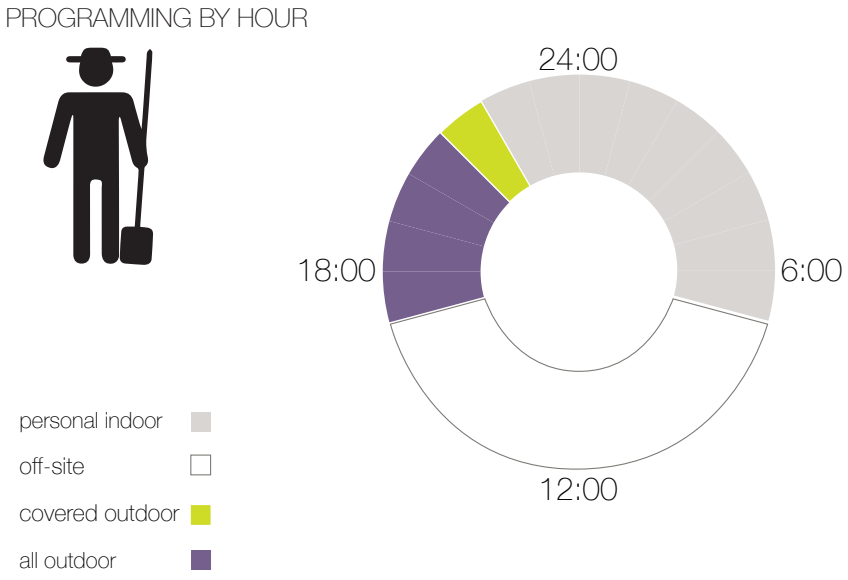


FIGURE 25: UNDERSTANDING USE OF THE FARMWORKER BY HOUR IN ORDER TO CREATE A HIERARCHY OF USES

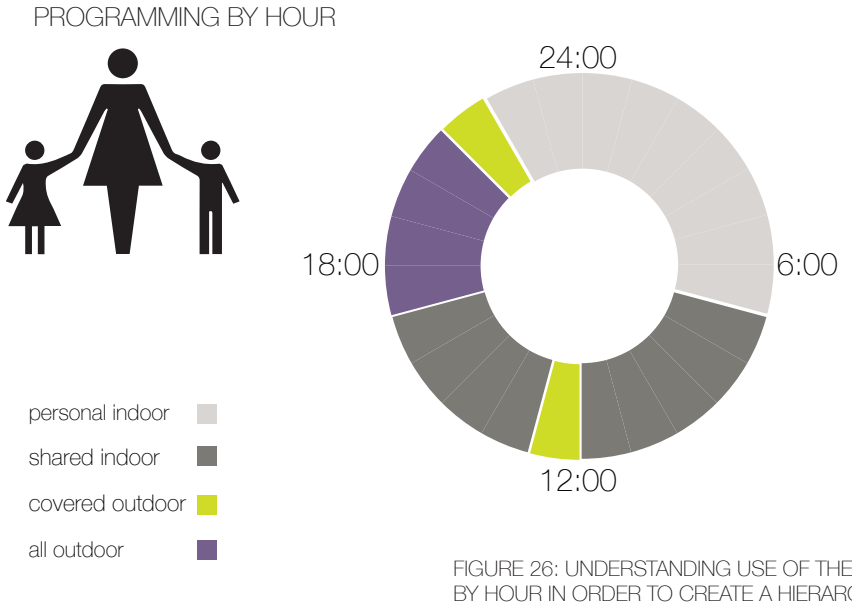


FIGURE 26: UNDERSTANDING USE OF THE SUPPORT INDIVIDUALS BY HOUR IN ORDER TO CREATE A HIERARCHY OF USES

outdoor spaces on the site, it will not address various policy issues associated with this topic. This thesis will address site conditions but assumes that the site can be connected to city power, water, and sewage, while making a minimal impact on the site.

SUMMARY

Designing a combination of spaces will help to ensure the needs of flexible and secure housing achieved, while also creating a sense of community and permanence in these spaces. Utilizing various design and program goals as discussed previously will ensure an excellent migrant worker housing.

CHAPTER 4:

The Design

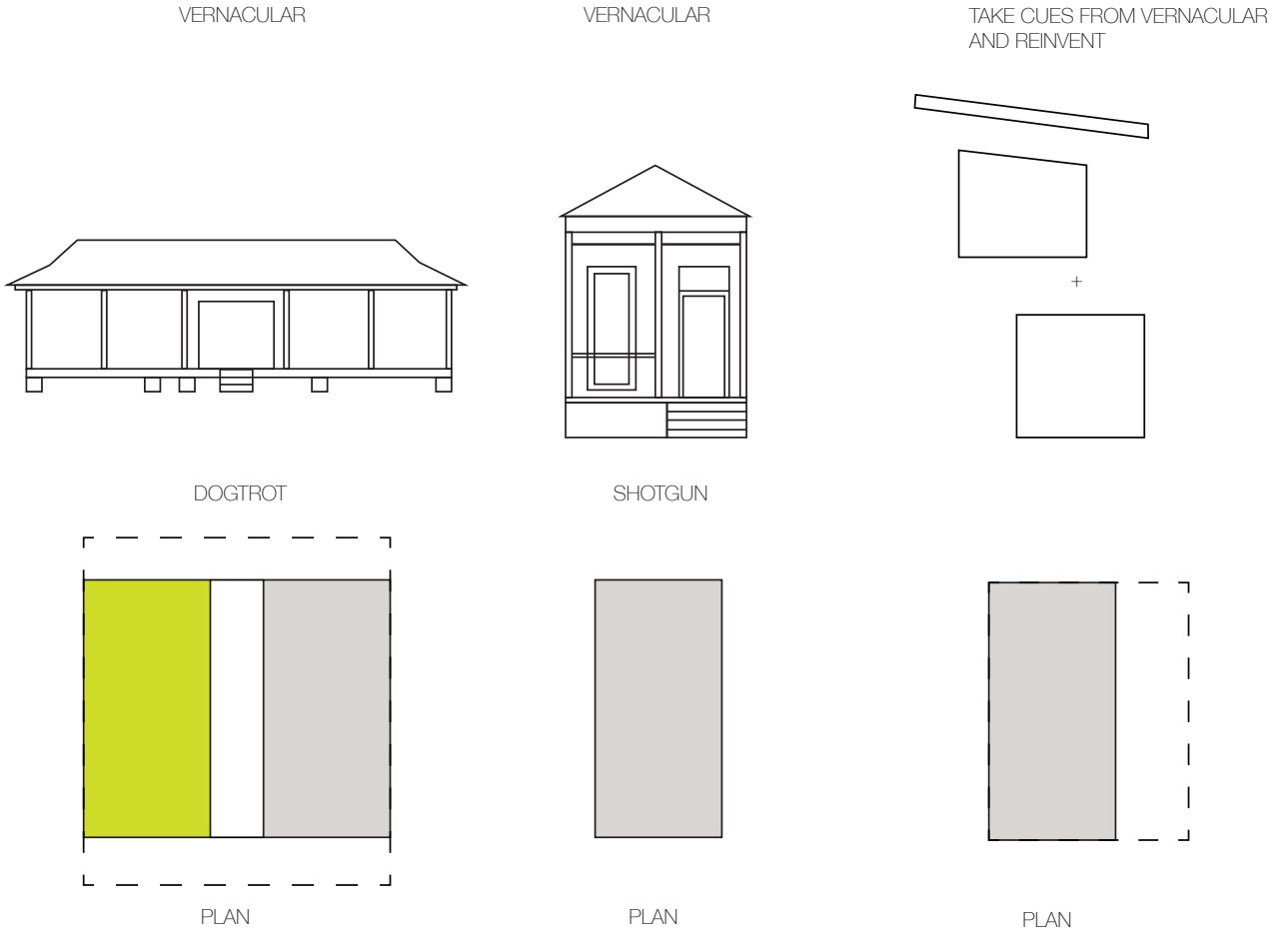


FIGURE 27: UNDERSTANDING THE BENEFITS OF VERNACULAR DESIGN AND THEN COMBINING / CHANGING TO CREATE A NEW, UNIQUE TYPOLOGY

INSPIRATION

It is important to provide workers with housing that not only functions well but also is pleasing and can last over time. The context of existing migrant worker housing in Immokalee, Florida consists mostly of trailer homes or of large apartment buildings. This thesis questions this paradigm and provides a critique of the current typology. Instead, inspiration was derived from traditional vernacular styles found in Florida. Vernacular style was studied for its ability to be flexible, its use of passive cooling strategies including being lifted off of the ground and excellent use of ventilation, and finally the affordability of these structures. This thesis takes inspiration from these vernacular buildings, most importantly the best features from them and then create a new typology inspired from their parts (See figure 27).

SITE MASSING

The relationship of the units on the site is also important, both for climactic reasons as well as to create strong shared community spaces. Many iterations of layout were explored, beginning with the simplest site configurations as seen in figures 28-30, in which the modules take the most inspiration from the vernacular and the community shared spaces are not well developed. Here, community spaces are equally spaced between each unit and a hierarchy has not been reached. In the next iterations, different forms of adaptable units are shown. In between these spaces a difference in outdoor and community spaces is beginning to develop. In this iteration, however, it still remains unclear the exact hierarchy of outdoor spaces. Furthermore the relationship between the size of the units is undeveloped. It is in this iteration that the three site concepts are developed. The three site concepts are as follows, initial condition (figure 31), partial build-out (figure 32), and full build-out (figure 33).

FIGURE 28: FIRST ITERATION OF SITE MASSING WITH EVENLY SPACED “DOGTROT” TYPE CONFIGURATION

FIGURE 29: FIRST ITERATION OF SITE MASSING WITH MORE CLUSTERED AND VARIED “DOGTROT” TYPE CONFIGURATION

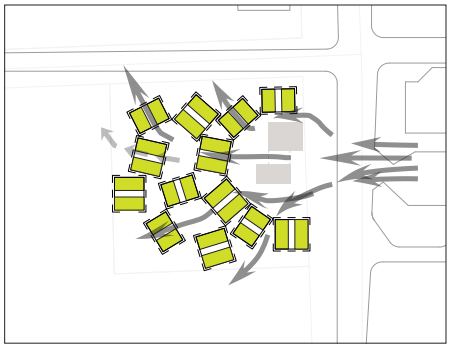


FIGURE 30: FIRST ITERATION OF SITE MASSING WITH CLUSTERED UNITS IN AN EFFORT TO CAPTURE BREEZES.

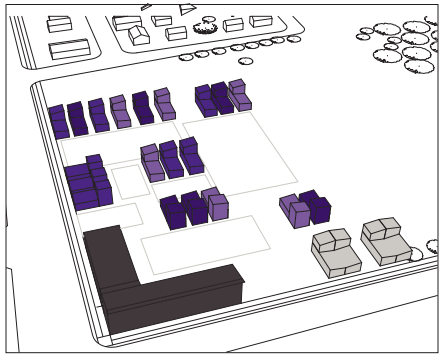


FIGURE 31: EARLY ITERATION OF SITE MASSING SHOWING THE FIRST CONFIGURATION OF EXPANDABILITY, IN THE FIRST, MOST BASIC FORM

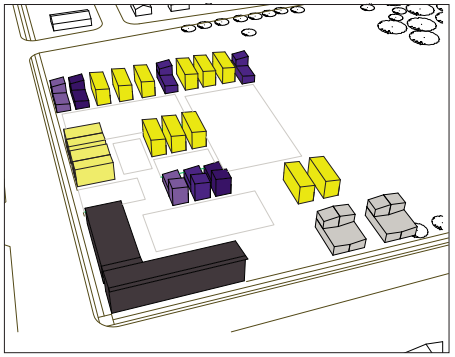


FIGURE 32: EARLY ITERATION OF SITE MASSING SHOWING SOME OF THE SITE EXPANDED TO A LARGER ITERATION

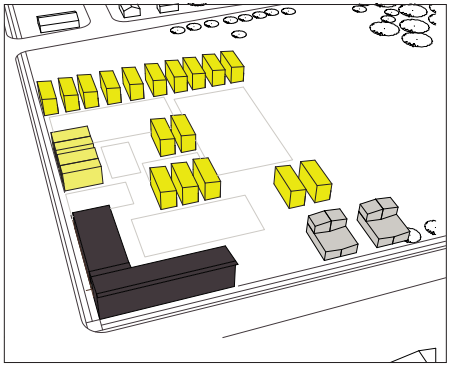


FIGURE 33: EARLY ITERATION OF SITE MASSING SHOWING THE SITE FULLY BUILT OUT

SITE DESIGN

Ultimately a site design that incorporated the hierarchy of spaces as mentioned previously in figures 31-33 was chosen. Furthermore, this site design reinforces the use of communal outdoor spaces which have direct sight lines from each of the units. The units encompass the most personal indoor space, shown in light grey, then the covered porches represent semi-private outdoor space, represented in green. Finally, shared backyards are centered between units and are noted in purple. This site design allows both private interior space as well as communal outdoor spaces and the ability to share responsibility of watching children

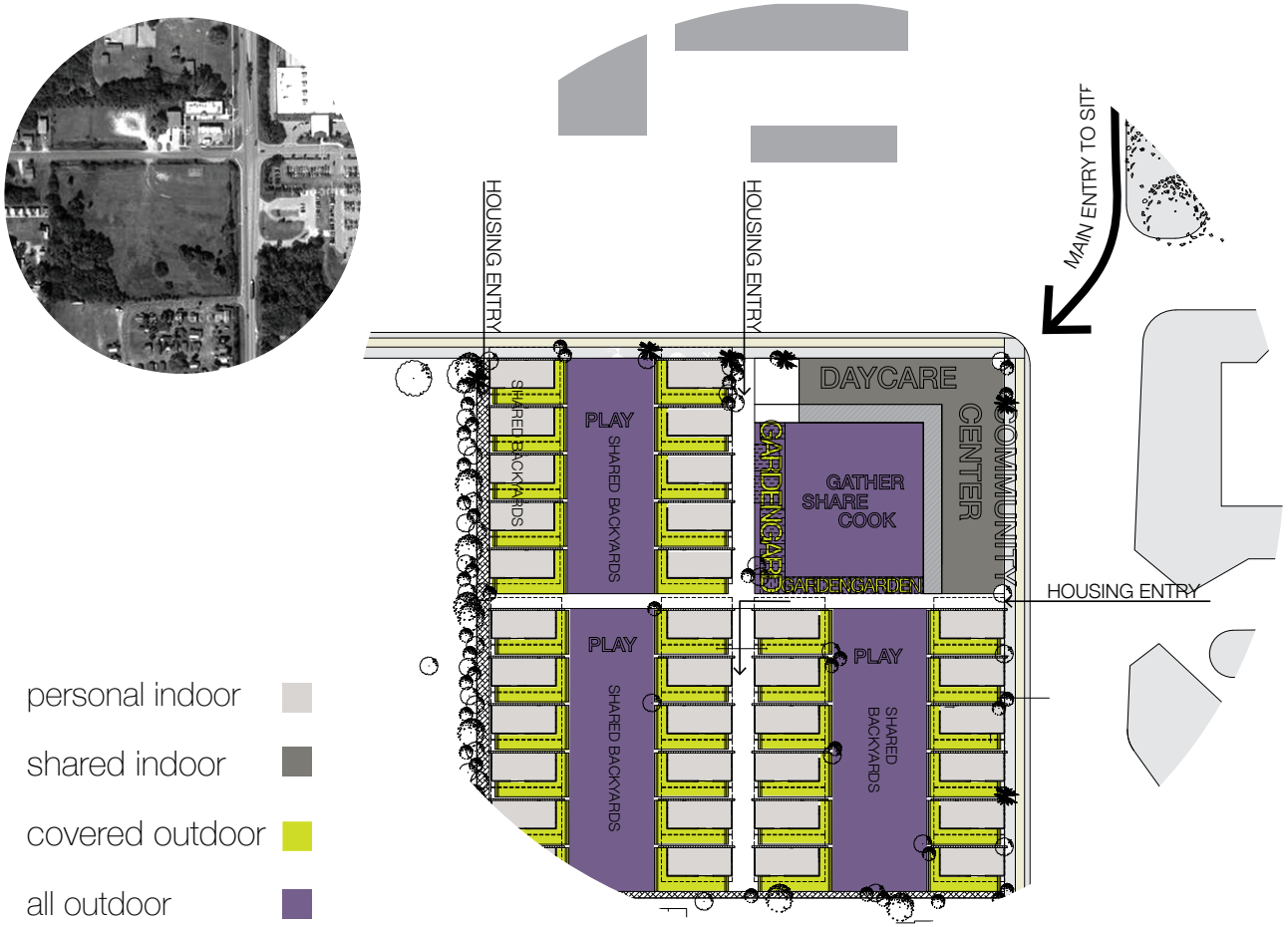


FIGURE 34: FINAL SITE MASSING SHOWING RELATIONSHIP OF SPACES TO HIERARCHY OF SPACE AS DEFINED BY PROGRAMMING

as well as increase security of outdoor areas.

UNIT TYPES

Three unit types allow for flexibility and adaptability as needs change over time. As seen in figure 35, the unit types include the basic unit, the large unit, and two units. The basic unit is the prototype and is constructed initially. Next, the large unit is designed for a large, intergenerational or otherwise expanded family. This unit incorporates a second story with additional sleeping and living areas. Finally, the two unit configuration utilizes the second story as an autonomous unit. Each of these unit types will be discussed further.

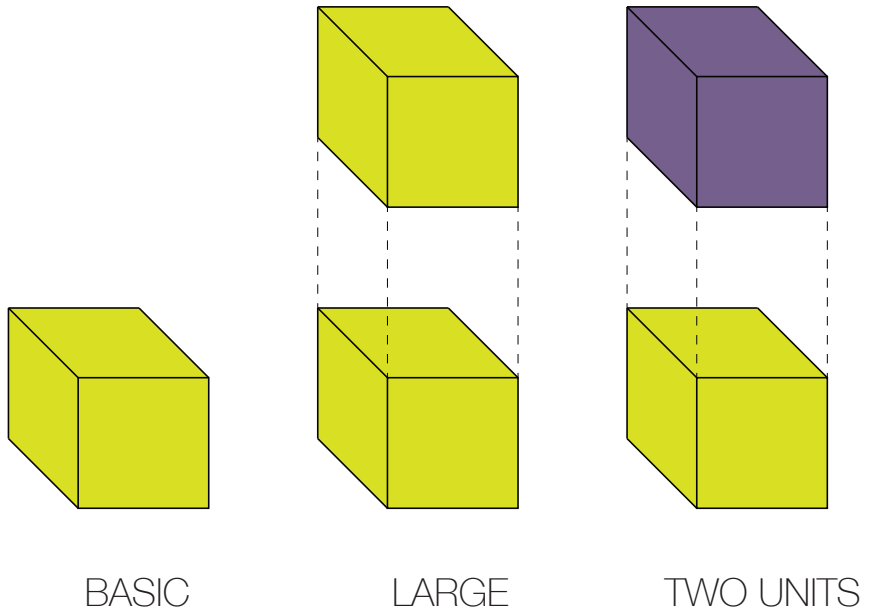


FIGURE 35: DIAGRAM SHOWING THREE DIFFERENT UNIT TYPES WITH THEIR TARGET AUDIENCE

BASIC UNIT

The Basic Unit, designed for one family takes into account many considerations. First, due to the subtropical climate of Immokalee, FL it is important that the porches are shaded to provide a respite for workers and their families wishing to stay in the shade but enjoy community with neighbors or watch children play outside. For this reason, having large overhangs is important. The units are designed with this in mind, they only receive light from the northern clerestory at 9am. Furthermore, utilizing natural ventilation when possible is also very important to keep operating costs low as well as to further include both passive strategies as well as queues taken from vernacular strategies. In order to best "pull" air through a space the large windows were located on the leeward side (non-prevailing wind side) and smaller windows should be placed on the side of the prevailing winds.[47] Large jalousie windows were placed on the west side of all of the units, and smaller casement windows on the east side; this creates an area of low pressure effectively pulling the wind through the unit. All units are oriented west-east on the site in order to maximize shading possibilities as well as maximize the aforementioned ventilation possibilities.

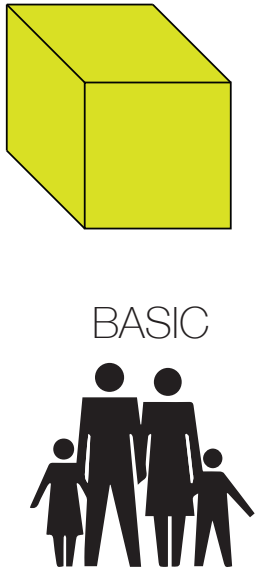


FIGURE 36: THE BASIC, SMALL UNIT DESIGNED FOR A SMALL FAMILY

TECTONICS

Construction begins with the concrete masonry unit (CMU) walls to the north. They extend to the datum height of the first story. The one foot thick CMU wall reaches past the other walls to express the simplicity of the units that line the site. The CMU is insulated for further privacy. Additionally, this wall acts as a footing; other point footings with wood column supports are added at this time. Next the structural insulated panel (SIP) flooring is added with the exterior joist framed deck. Then, SIP walls are added, followed by the SIP roof. Finally, the units are completed with finishing materials.

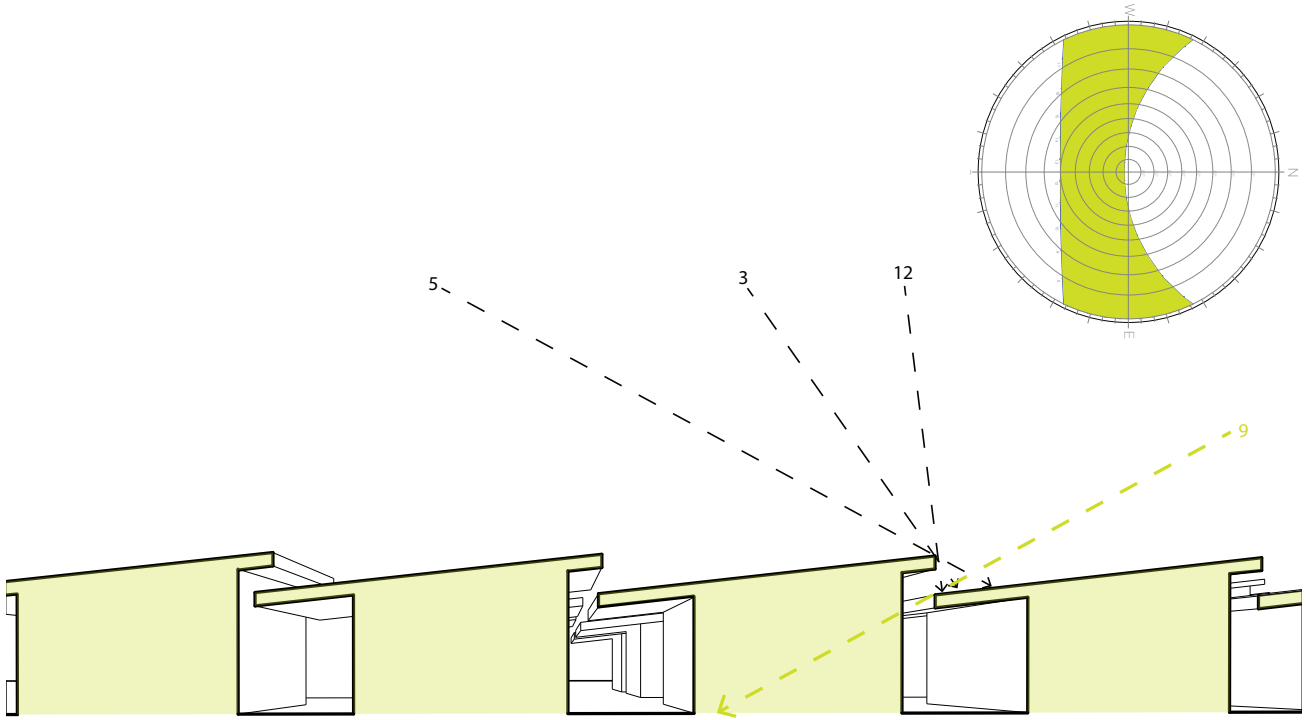


FIGURE 37: SECTIONAL DIAGRAM SHOWING ROOF OVERHANGS SHADING OUTDOOR PORCHES

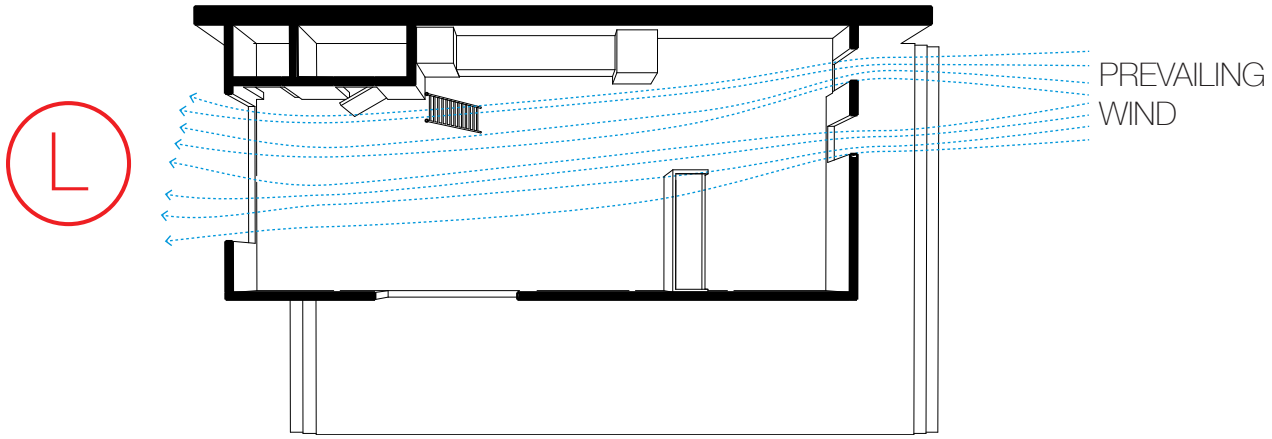
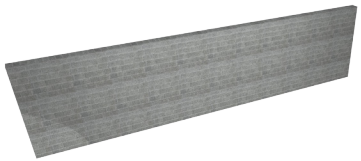
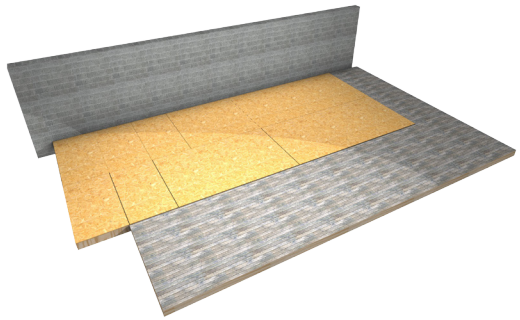


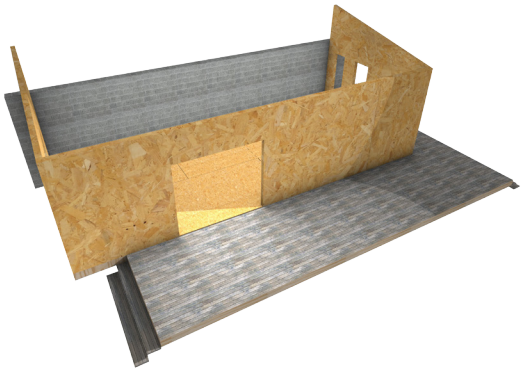
FIGURE 38: PLAN DIAGRAM ILLUSTRATING WINDFLOW THROUGH THE BUILDING FACILITATED BY WINDOW SIZE AND PLACEMENT



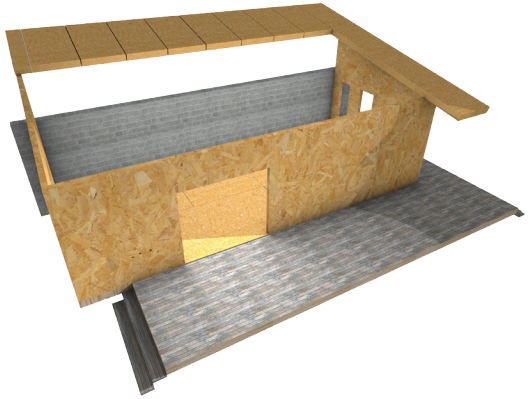
1. THE CMU WALLS ARE CONSTRUCTED



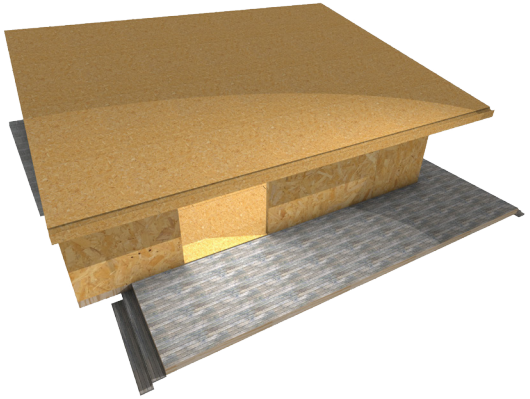
2. THE POINT FOUNDATIONS, SIP FLOORS, AND JOIST DECK ARE CONSTRUCTED



3. THE SIP WALLS ARE CONSTRUCTED



4. THE SIP ROOF GOES IN MODULARLY



4. THE SIP ROOF IS COMPLETED

FIGURE 39: TECTONIC INTENTIONS

FIGURE 40: SECTION PERSPECTIVE THROUGH THE UNITS
SHOWING DIFFERENCE OF SPACE FROM PERSONAL TO PUBLIC

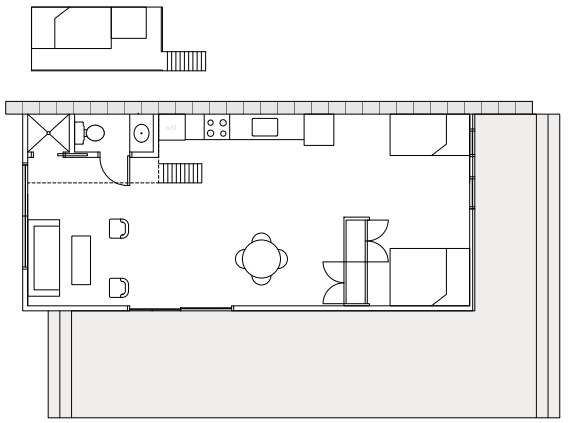


FIGURE 41: PLAN OF SMALL UNIT, THE ONLY TRADITIONAL WALLS ENCLOSE THE BATHROOM AND SHOWER, ALL OTHER PARTITIONS ARE MOVABLE

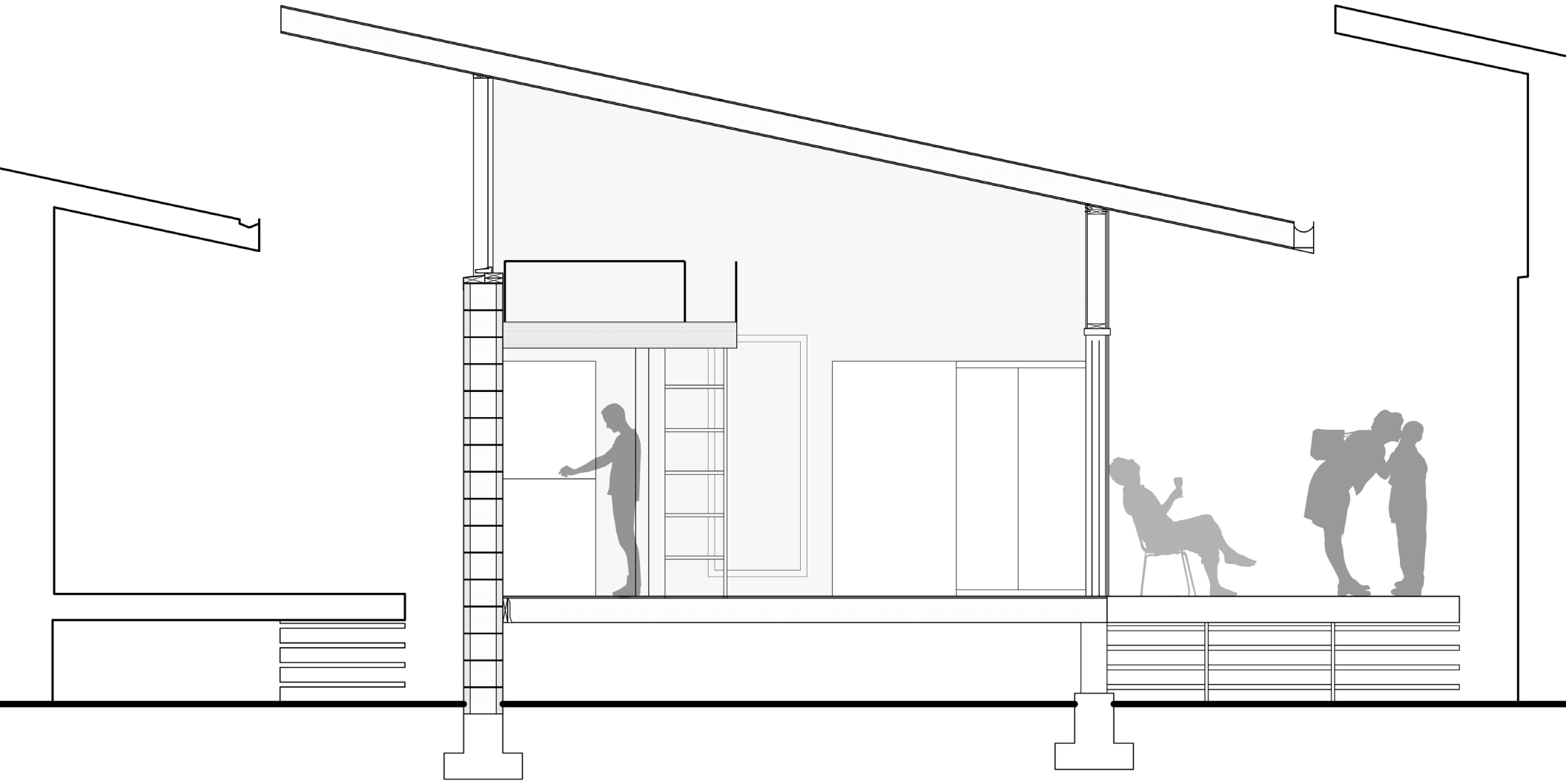


FIGURE 42: SECTION SHOWING EXPRESSED CMU WALL, AND BLEND OF SPACE FROM INTERIOR TO EXTERIOR

FIGURE 43: INTERIOR RENDERING OF SMALL UNIT, HIGHLIGHTING FLEXIBLE LIVING AREA, BATHROOM POD, LOFT, AND KITCHEN

LARGE UNIT

When the need for flexibility and adaptation arises, a large unit can be formed utilizing the basic unit as the base. See Figure 43, the clerestory and the roof are removed, and part of the sloped wall is demolished. The prefabricated second story (of SIPs) is placed on top, and the clerestory and roof are re-assembled on top. This allows for the basic structure of the unit to remain in place and a rather simple additive process to occur. The CMU wall acts as the datum of the first floor, on which the new second story rests.

The addition of the second story allows for the same shading benefits with an overhang over the porch area. The additional area of the second story provides more sleeping and living area for a multi-generational family or a larger family. There is also a second, upper porch for resting and personal outdoor space.

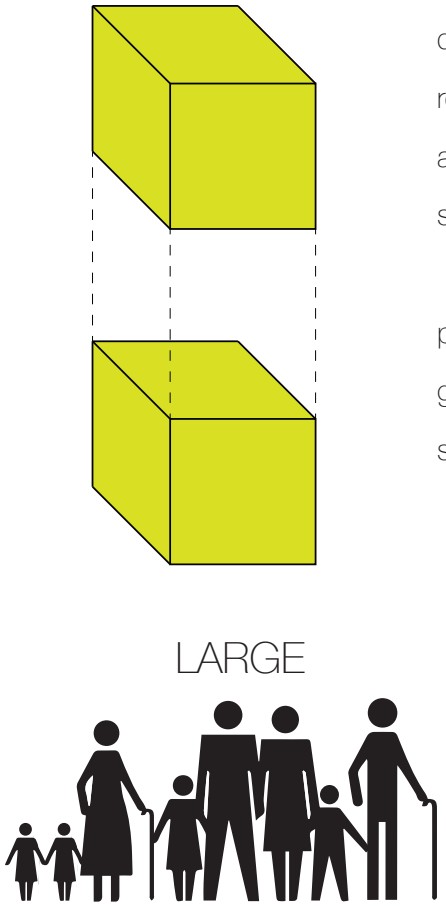
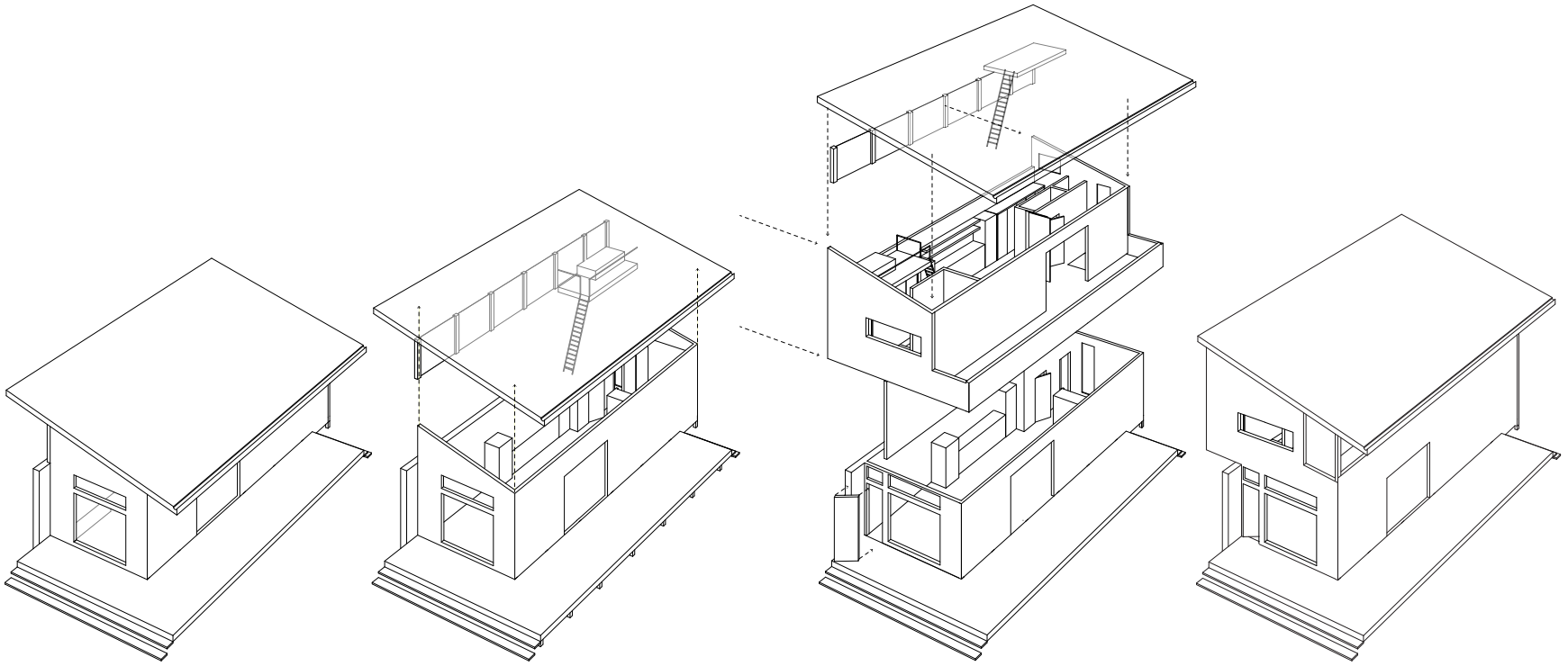


FIGURE 44: THE LARGE UNIT, DESIGNED FOR AN INTERGENERATIONAL FAMILY



BASIC UNIT

ROOF, LOFT, AND CLERESTORY ARE REMOVED

PRE-MANUFACTURED SECOND FLOOR IS INSERTED AND ROOF, CLERESTORY AND LOFT ARE REATTACHED

LARGE UNIT COMPLETED

FIGURE 45: TECTONIC EXPANSION

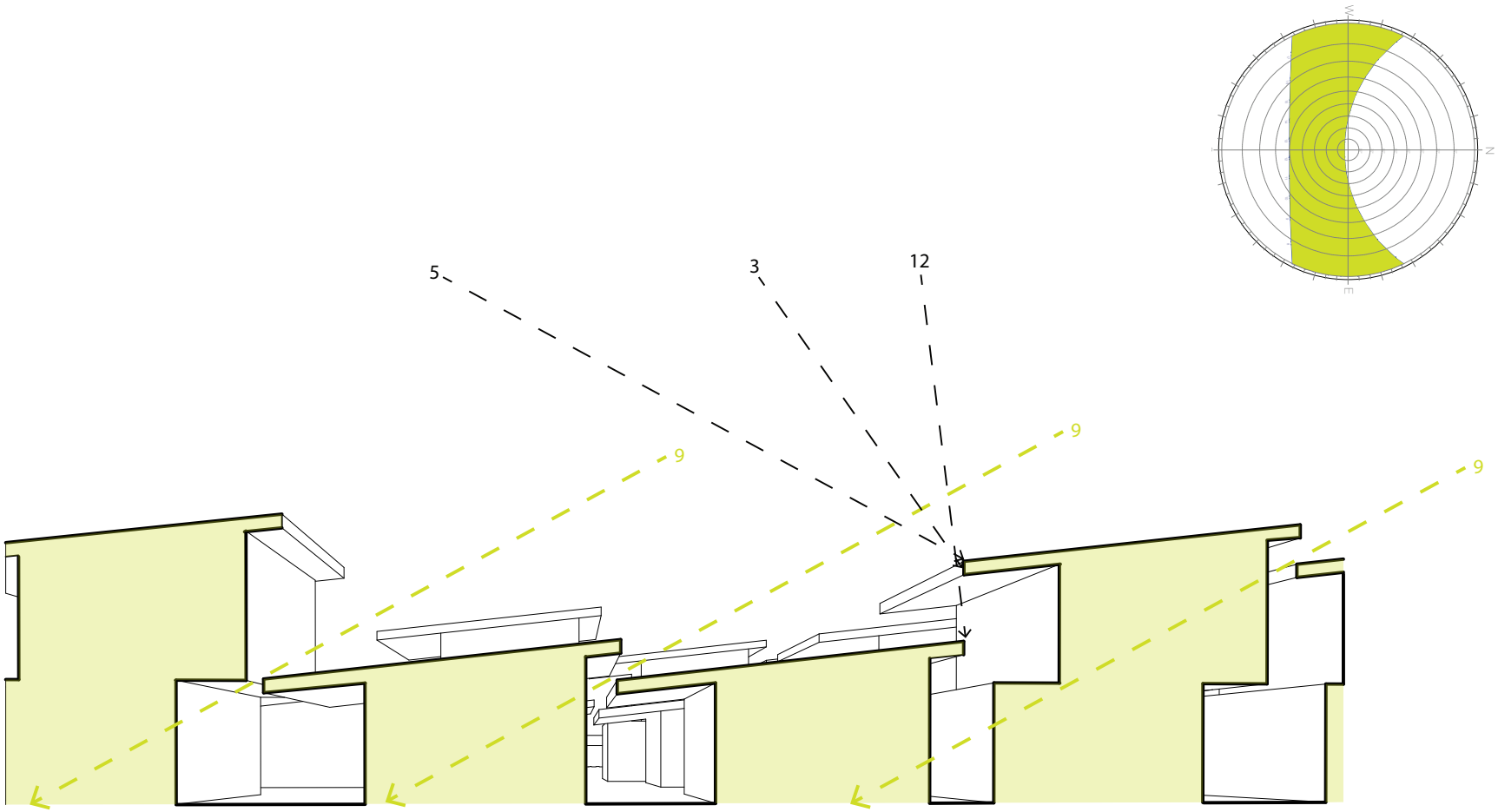
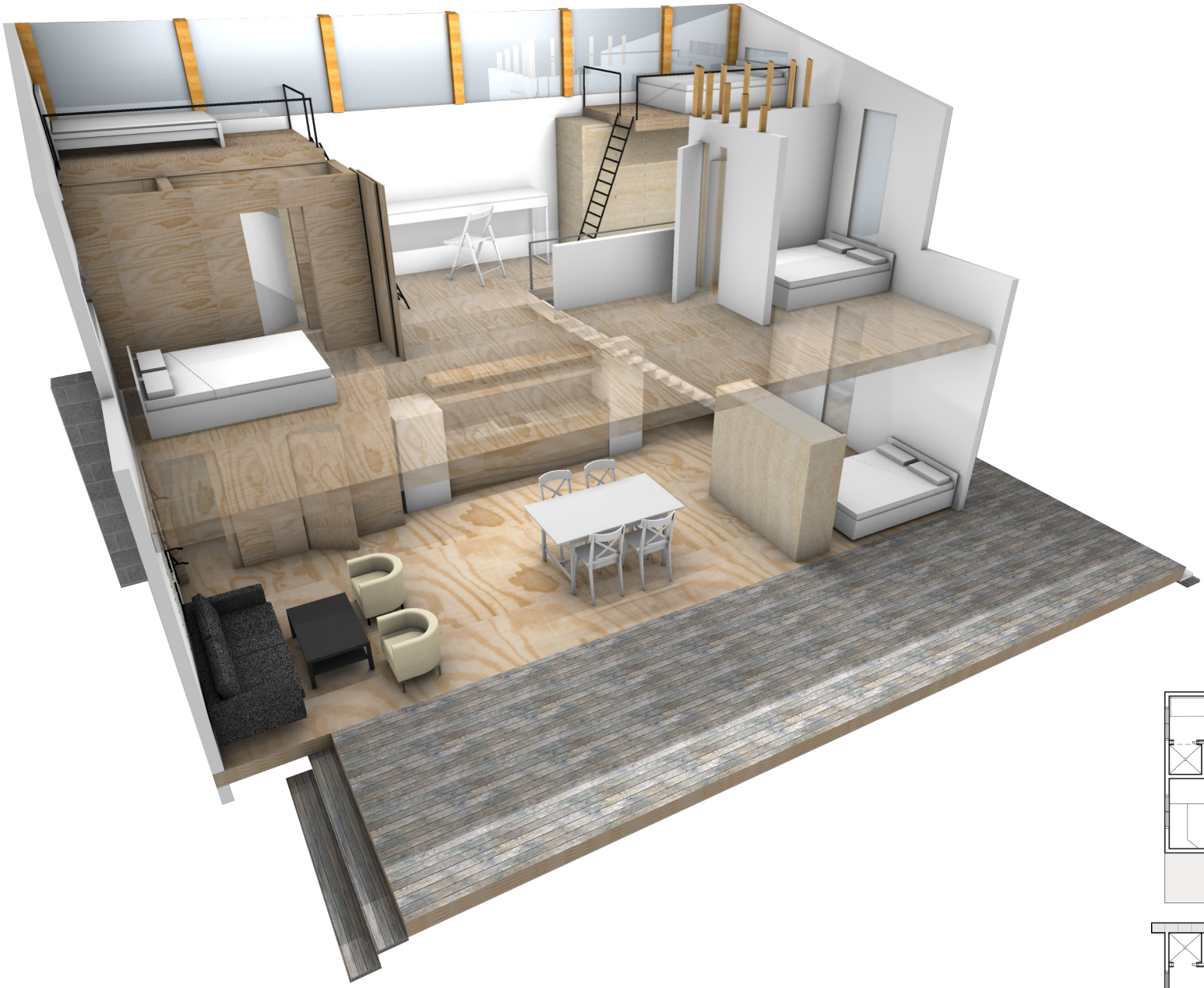


FIGURE 46: SECTIONAL DIAGRAM SHOWING ROOF OVERHANGS SHADING OUTDOOR PORCHES

FIGURE 47: SECTION PERSPECTIVE THROUGH THE UNITS SHOWING DIFFERENCE OF SPACE FROM PERSONAL TO PUBLIC



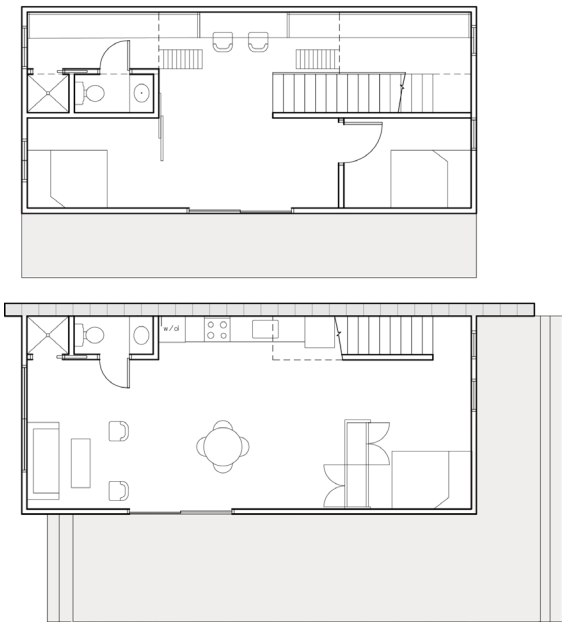


FIGURE 48: PLAN OF LARGE UNIT

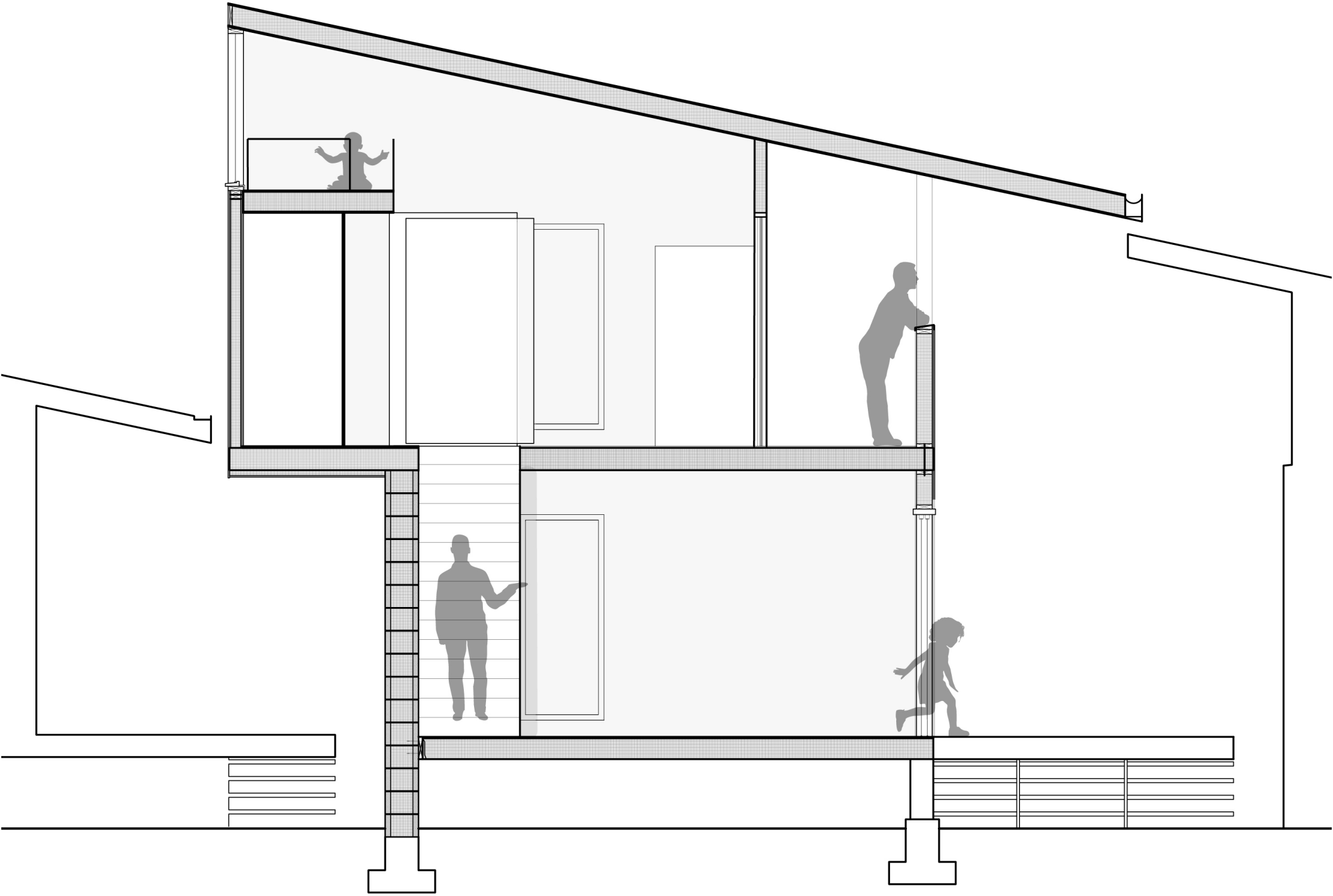


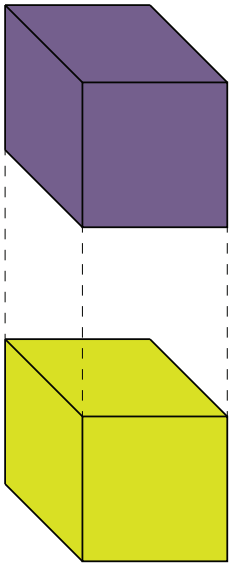
FIGURE 49: SECTION SHOWING EXPRESSED CMU WALL, AND BLEND OF SPACE FROM INTERIOR TO EXTERIOR

FIGURE 50: INTERIOR RENDERING OF LARGE UNIT, HIGHLIGHTING FLEXIBLE LIVING AREA, STAIRS TO UPSTAIRS, AND KITCHEN

MATERIALITY

The materials chosen are simple and minimal both to reduce cost and to achieve an open and airy aesthetic. On the interior, gypsum for the walls and plywood for accents as well as flooring is utilized. These materials are readily available, easily replaced and refinished. Furthermore the combination of CMU, gypsum and plywood has a simple, clean aesthetic that leaves even a small dwelling feeling airy and light. The walls of course may be painted by workers bringing their own vibrancy to the space, as this is easily covered or repaired if necessary.

When the need arises to create more units on the site, the basic unit can also be expanded to create a separate unit on top. When creating the separate unit, a separate entrance is added to the back of the porch for private access. The top unit is equipped with its own kitchen, bathroom, living, and sleeping areas as well as outdoor porch. This allows both units autonomy while still allowing a view to the communal backyards and shared living spaces. When the site is fully built-out, all porches still remain in shade, while still allowing morning light into the units. A sense of hierarchy also remains, in that each unit possesses personal indoor space, semi-personal outdoor space (porches), and public outdoor space.



TWO UNITS

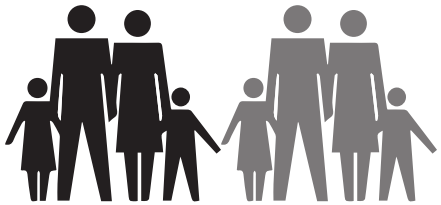


FIGURE 51: TWO UNITS, DESIGNED FOR TWO SMALL FAMILIES

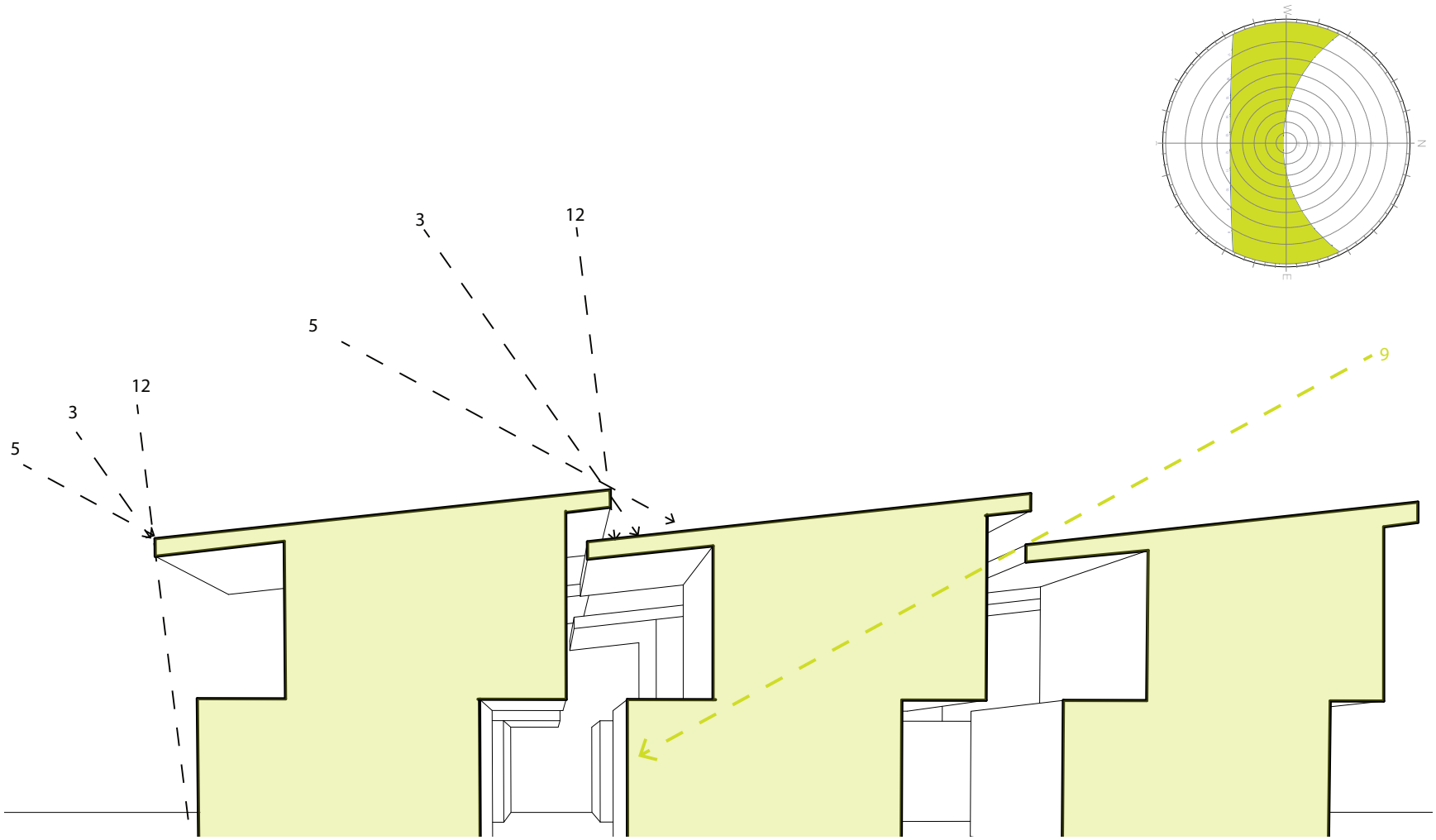
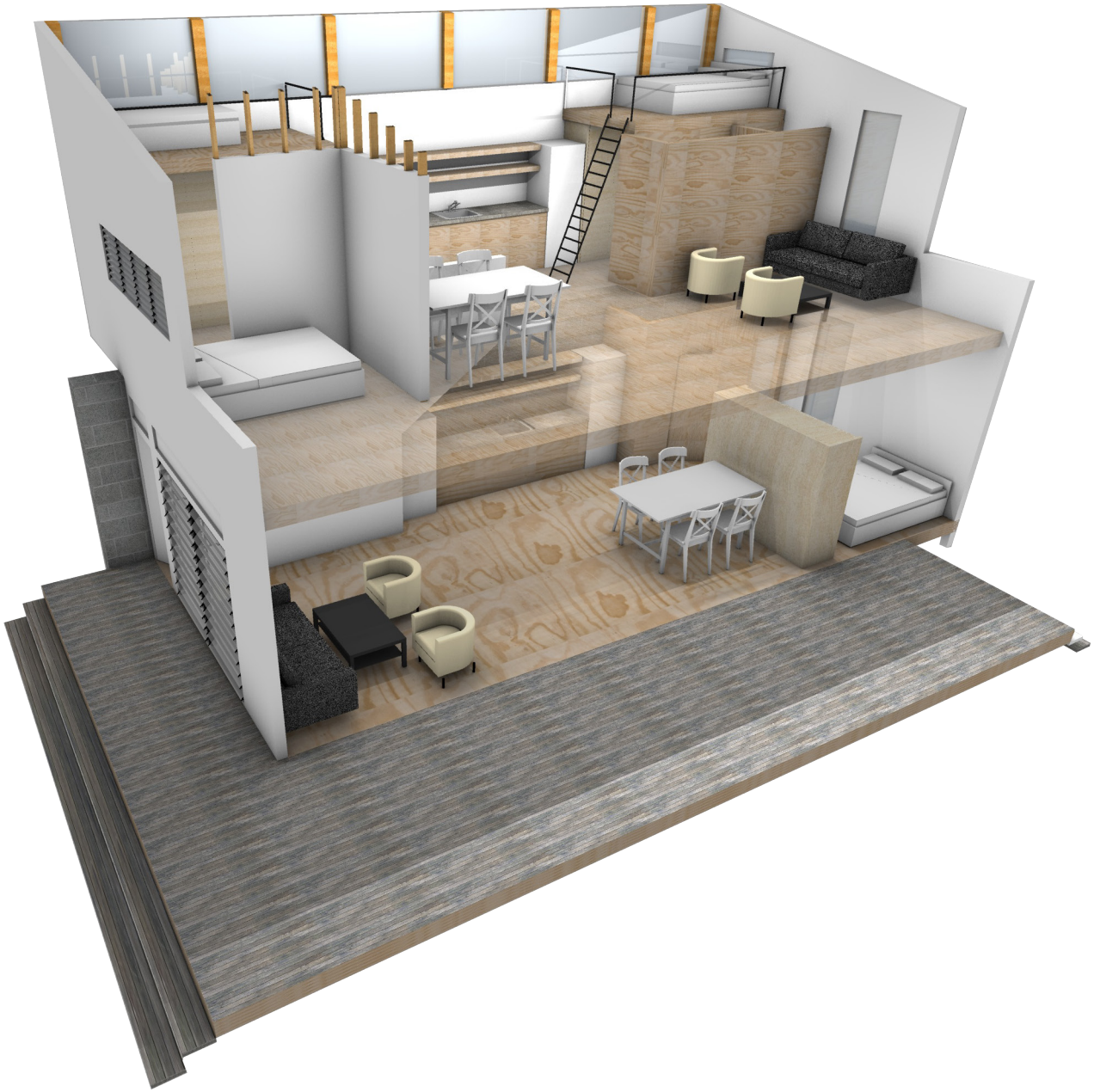


FIGURE 52: SECTIONAL DIAGRAM SHOWING ROOF OVERHANGS SHADING OUTDOOR PORCHES

FIGURE 53: SECTION PERSPECTIVE THROUGH THE UNITS SHOWING DIFFERENCE OF SPACE FROM PERSONAL TO PUBLIC



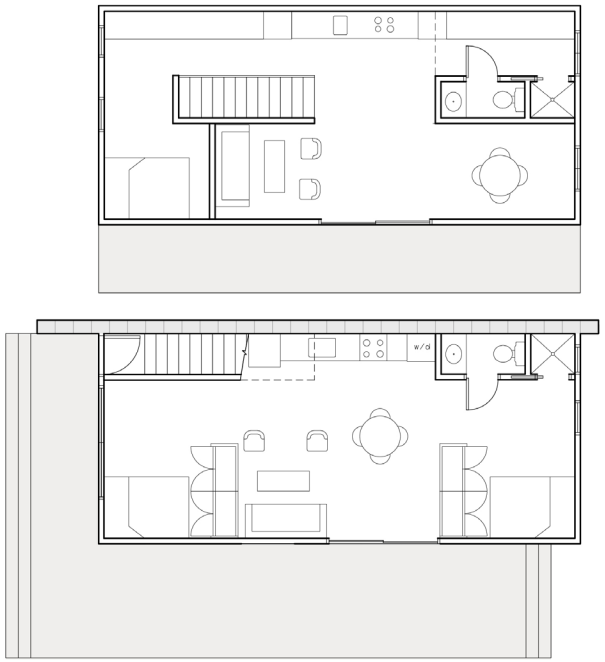


FIGURE 54: PLAN OF TWO UNITS, ONE ON THE LOWER LEVEL, ONE ON THE UPPER.

FIGURE 55: INTERIOR RENDERING OF UPPER UNIT HIGHLIGHTING FLEXIBLE LIVING AREA, LOFT, AND KITCHEN

FIGURE 56: INTERIOR RENDERING OF UPPER UNIT FROM LOFT HIGHLIGHTING LIVING AREA

FIGURE 57: EXTERIOR RENDERING OF ENTRY ON TO FRONT PORCH FROM SIDEWALK

FIGURE 58: EXTERIOR RENDERING OF SHARED BACKYARD SPACE

CONCLUSION:

This thesis proposes a new residential typology that challenges many notions that currently apply to migrant worker housing. The strategy with respect to both site planning and unit design is intended to be prototypical. While the proposed design is specifically intended for the Florida climate, the underlying ideas for this thesis could easily be adapted for other areas of the country.

The overarching principles of flexibility, adaptability, community, and security are essential considerations when designing for a population that changes, sometimes drastically, over time. While this thesis does not address all challenges associated with migrant worker housing, it explores a new way of thinking about the serious shortage of adequate housing for this population. The thesis incorporates the necessary factors of community, security, sustainability and adaptability. Through careful site and unit design, neighbors are encouraged to encounter one another and are offered the opportunity to interact in their shared backyards. Children can play with limited supervision due to clear sight-lines from and close proximity to the residential units, allowing for shared child responsibilities. Workers and parents can relax after a day in the sun under the covered porch while still having the opportunity to be social if they choose. With so many eyes facing shared walkways and backyards, children and adults feel secure in their homes and surrounding spaces. Security and privacy are promoted in the design of interior spaces through the careful placement of openings that look only onto communal spaces. Sustainability is embraced through a variety of passive design strategies. Homes are raised above the ground and shaded to keep them cool. Window openings generate air movement through the homes when possible and operable windows promote a passive-first approach to cooling. A minimal number of building materials reduces waste while increasing affordability. The potential for the units to expand when necessary exploits the potential of adaptable design. With a few modifications, a pre-fabricated second story can be added to the base unit

for increased capacity. This ensures a long lifespan as the units are able to evolve as the demographics and the needs of the residents change over time.

To take this design further, the concept of the unit and site as a prototype could be further explored. It would be important to understand the essential configuration of units to create the necessary community spaces. Additionally, tectonic details are another source of further exploration, especially understanding how the two buildings connect during expansion.

As architects we have both the opportunity and the obligation to innovative when presented with less than ideal conditions. This thesis strives to demonstrate that through careful site planning, simple and efficient architectural design and the use of a limited pallet of economical materials, constraints both an opportunity and a motivator for better life through better architecture.

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