LIVING IN THE CITY OF ANGELS

AFFORDABLE HOUSING IN LOS ANGELES

“Neighborhoods built up all at once change little physically over the years as a rule…[Residents] regret that the neighborhood has changed. Yet the fact is, physically it has changed remarkably little. People’s feelings about it, rather, have changed. The neighborhood shows a strange inability to update itself, enliven itself, repair itself, or to be sought after, out of choice, by a new generation. It is dead. Actually it was dead from birth, but nobody noticed this much until the corpse began to smell.”

Jacobs, Jane (1961). The Death and Life of Great American Cities. Vintage Books.

LIVING IN THE CITY OF ANGELS

AFFORDABLE HOUSING IN LOS ANGELES

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M.Arch 2020
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This one's for you.

Abstract

The cost of living in California exceeds many peoples budget in the urban areas. San Francisco and Los Angeles are two of the most expensive cities in the U.S. The average rent in Los Angeles if up 32% since 2000, while renter's income is on the decline. There are over half a million low-income renters in need of affordable housing. Affordable housing is defined by HUD as housing in which the occupants spend no more than 30% of their gross income for rent and utilities.

This thesis dives into the housing crisis in Los Angeles as well as the governmental subsidies available for affordable housing. The thesis will also look at case studies and better grasp what it takes to design high quality and long-lasting affordable housing.

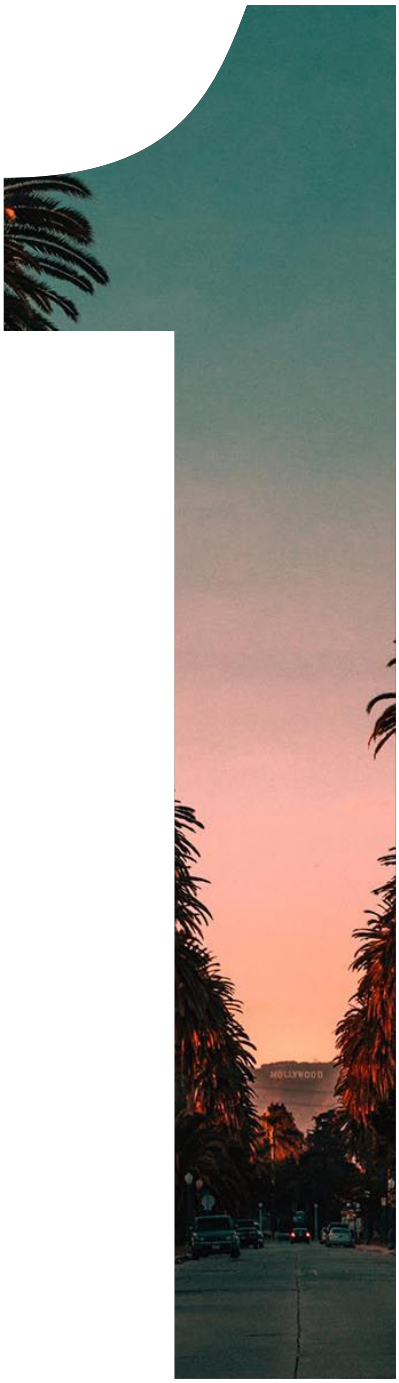
Thesis Statement

Many people in the city of Los Angeles struggle with the burden of the cost of living. Many people spend most of their income on rent and utilities and leave little to no money for other things. Housing is considered “affordable” if the rent and utilities cost no more than 30% of the monthly income. Low-income housing allows for rent and utilities to cost no more than 50-60% of the monthly income. What few affordable housing units there are, many are disappearing everyday. There are 10,000 units due to expireand turn to market rate value by the end of 2023.

The need for more affordable housing is extremely high and something needs to be done. According to LA Curbed, in order for LA to meet the demand of affordable housing units, 516,946 units need to be built. The median rent is up, while the median renters income is down. This makes making means meet even harder for renters.

I intend on exploring why so many units are expiring. I will be lokking into the different financing programs offered for affordable housing. I want to explore where the massive amount of money given for the LA Housing Crisis is going. I want to explore what housing units have been successful and what ones have not and why.

In the end there will be some sort of building or buildings to help the need for affordable housing units. The challenge is going to be finding a site within LA for my design. LA is a very dense area so the likelihood of finding land within the city will be challanging. On top of trying to find land, when the land is found the cost of it will likely be very high. Land outside of the city is slightly more available but this land is constantly consumed by forest fire.


HOLLYWOOD

Poverty

"Poverty is the worst form of violence"

-Gandhi

i. Poverty Threshold

Low-income families are defined as families that have a median income less than the poverty threshold. According to the U.S. Census Bureau, a family of two that make less than on average $17,100 per year is considered low income. There are 34 million people in poverty in the US as of 2019. The poverty rate in 2019 was 10.5% with a projected rate of 9.2% in 2020.*(fig. 1)*

ii. Problem Low-Income Families Face

Low-income families are facing a shortage of housing across the country. With the cost of living increasing in many cities every year, more families are falling under the poverty rate and facing housing issues. Living in urban cities entails high rent costs and for many, low income. Thus, resulting in these low-income families being cost burdened and no longer able to afford housing.

Size of family unit	Related children under 18 years								
	None	One	Two	Three	Four	Five	Six	Seven	Eight or more
One person (unrelated individual):									
Under age 65	13,465								
Aged 65 and older	12,413								
Two people:									
Householder under age 65	17,331	17,839							
Householder aged 65 and older	15,644	17,771							
Three people	20,244	20,832	20,852						
Four people	26,695	27,131	26,246	26,338					
Five people	32,193	32,661	31,661	30,887	30,414				
Six people	37,027	37,174	36,408	35,674	34,582	33,935			
Seven people	42,605	42,871	41,954	41,314	40,124	38,734	37,210		
Eight people	47,650	48,071	47,205	46,447	45,371	44,006	42,585	42,224	
Nine people or more	57,319	57,597	56,831	56,188	55,132	53,679	52,366	52,040	50,035

Source: U.S. Census Bureau

Figure 1: Poverty Threshold by Family and Number of Kids

The HUD defines housing affordable when the occupant is not paying more than 30% of their income for housing costs such as rent and utilities. *(fig. 2)*

iii. Poverty Breakdown

Today there are 128.6 million households in the US. Due to the burden of cost of living, the average household size has decreased and continues to. The average household size in the beginning of the century was 2.62, a decade later it was 2.59 and now another decade later it has decreased to 2.53. *(fig. 3)*

When looking at households' size, it is important to look at the household income and race. The median household income in the US is $55,300, with varying incomes across the country. Michigan has a median household income of $51,000 while the state of California has a median income of $64,000. (fig.4) Looking at the poverty rates by race and the household income per race, aids us to see which race suffers the most and needs affordable housing the most. *(fig. 5)*

According to a survey done by the U.S. Census Bureau, the poverty rate is 9.1% for white, 18.8% for black, 7.3% for Asian, and 15.7% for Hispanics. *(fig. 6)*

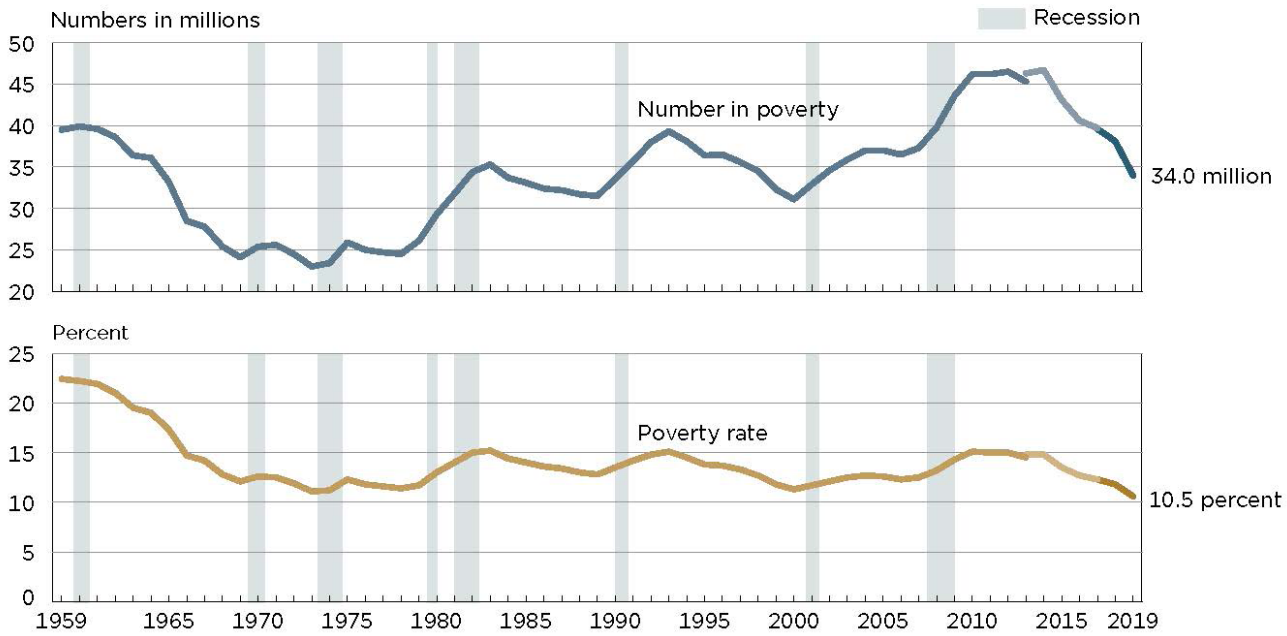


Figure 2: Number in Poverty and Poverty Rate

Changes in household size

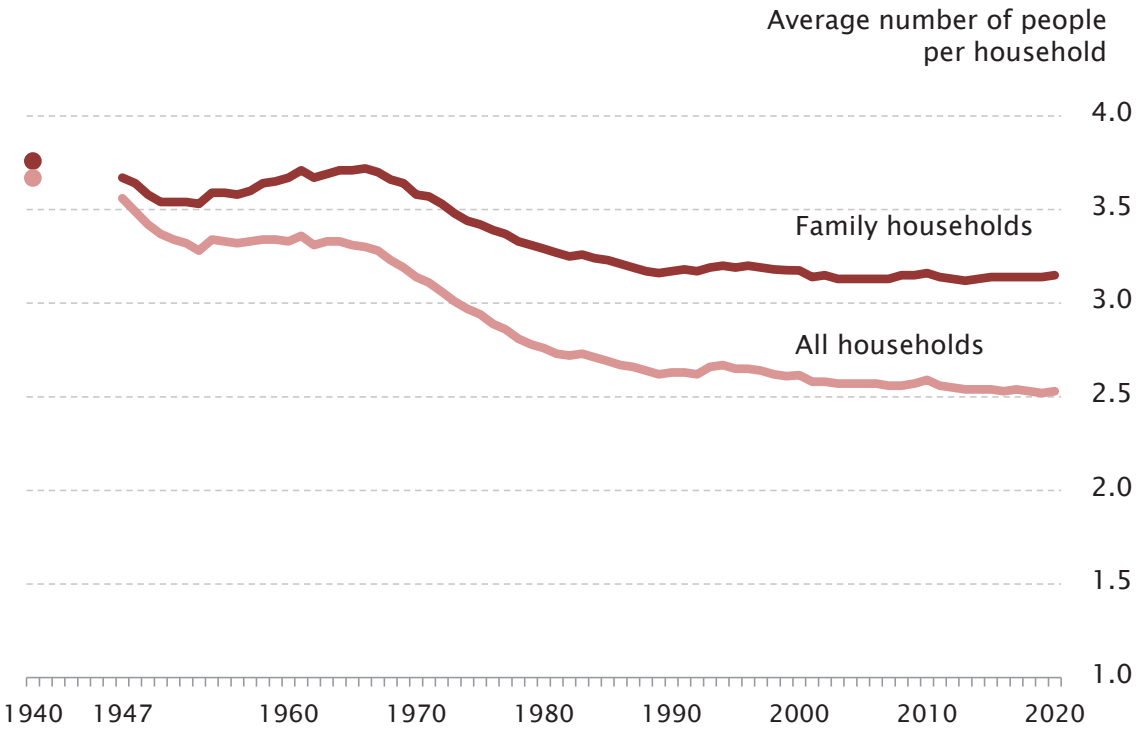


Figure 3: Household Size 1940-2020

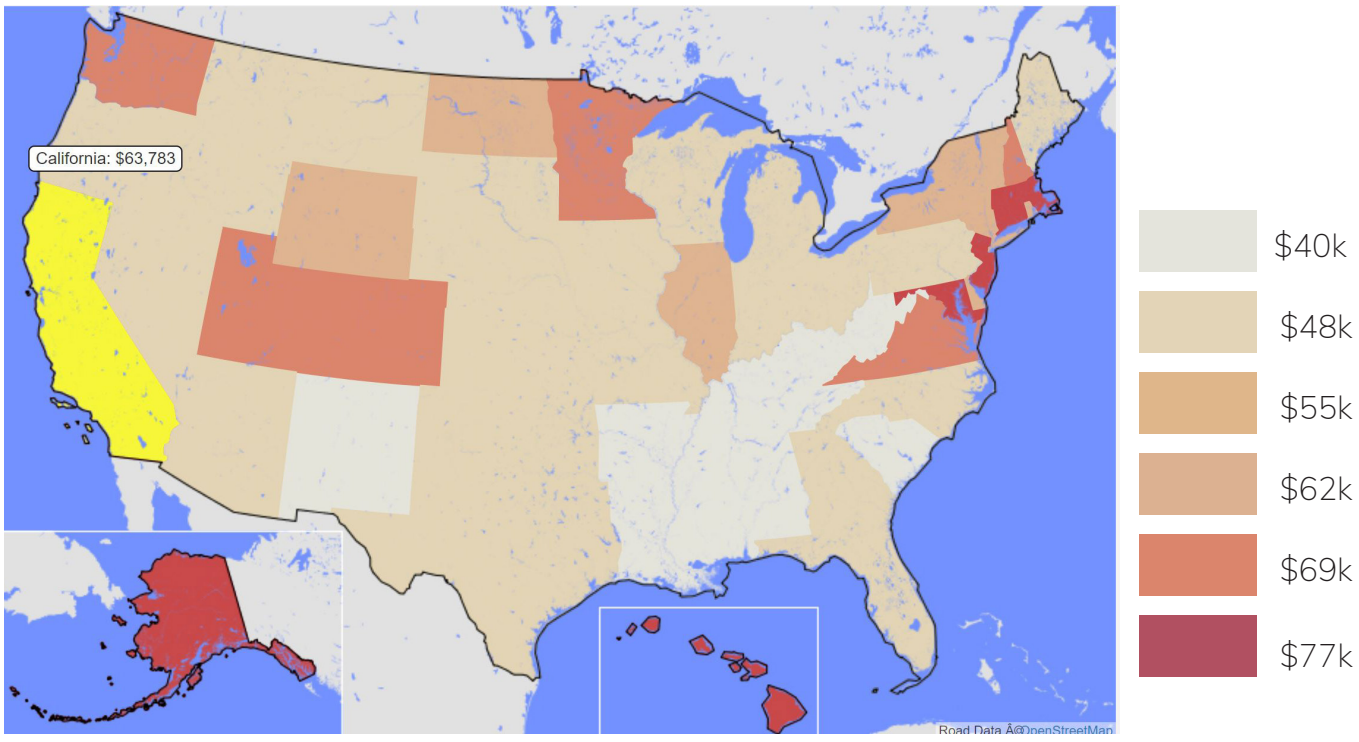


Figure 4:Median Household Income by State

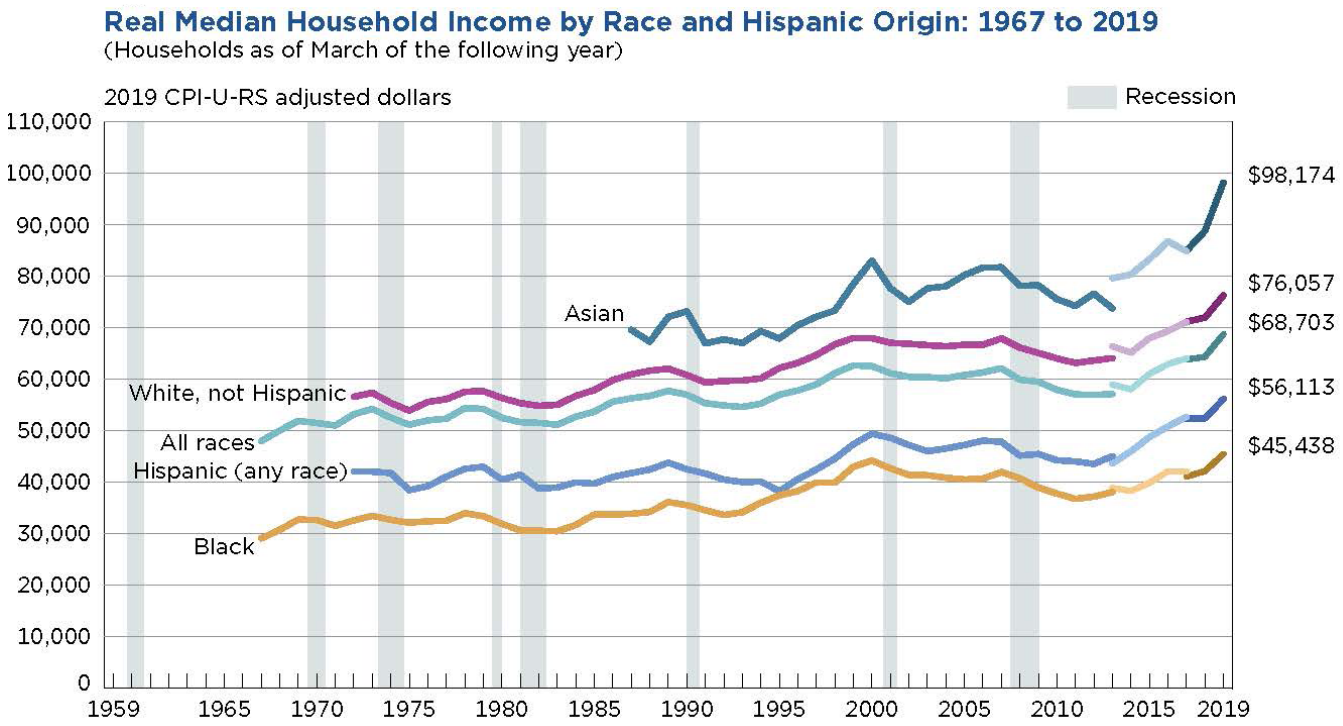


Figure 5: Real Median Household Income by Race: 2019

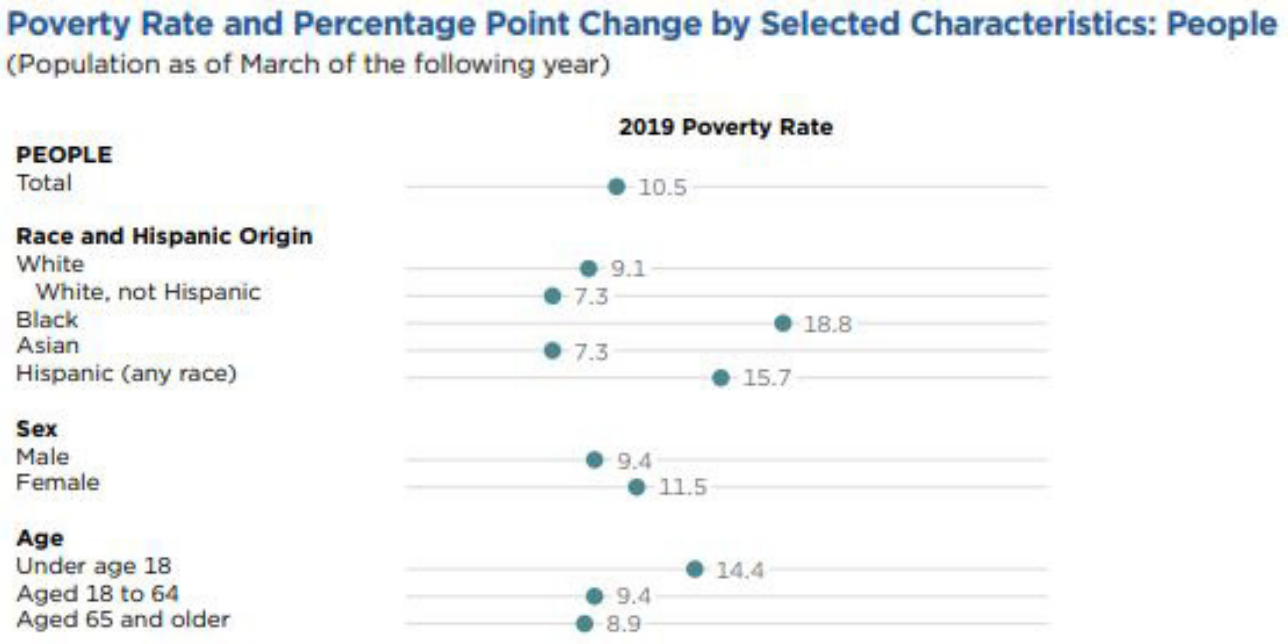


Figure 6: Poverty Rate by Race

History of Affordable Housing

"Low-income projects that become worse centers of delinquency, vandalism, and general social hopelessness than the slums they were supposed to replace. Middle-income housing projects which are truly marvels of dullness and regimentation, sealed against any buoyancy or vitality of city life. Luxury housing projects that mitigate their inanity, or try to, with vapid vulgarity ... This is not the rebuilding of cities. This is the sacking of cities."

-Jacobs, Jane (1961). The Death and Life of Great American Cities. Vintage Books.

i. Public Works Administration (PWA)

The US is no stranger to affordable housing, Affordable housing has been around since the 1930s. Federally funded house came into existence thanks to Franklin Roosevelt's New Deal. In June of 1933, the Public Works Administration (PWA) developed a new a new program. The program was for the "construction, reconstruction, alteration, or repair under public regulation or control of low-cost housing and slum clearance projects. This new program was called the Limited-Dividend Program which aimed to provide public and private groups low-interest loans to fun the construction of new low-income housing projects. Unfortunately, not many applicants stepped forward and only seven projects were constructed which led the PWA to take back control of construction of projects.

This change led to fifty-two new housing projects to be constructed from 1934-1937. The first of these projects to open was in Atlanta in September 1936.*(fig.7)* Across the board these projects were all constructed thesame and had a cohesive layout, one to four story rows houses or apartment buildings and were arranged around open spaces. Projects were built on slum land, abandoned site and even vacant land due to land acquisition being difficult at the time.

Figure 7: Techwood Homes

ii. Housing Act of 1937

The next major housing act was passed in 1937, formally known as the Wagner-Steagall Housing Act. This act replaced the PWA with a non-governmental agency that would administer housing. The act worked towards locating and constructing local housing as well as would place a cap on how much money could be spent per housing unit, $5,000. Construction boomed after this new structure was put into place. In 1939, 50,000 new housing were constructed.

iii. Housing during WWII Era

Due the war happening at the time, in 1940 the government authorized the Housing Authority to build twenty public housing developments to help sustain the current war effort. It was not until 1941 when the Defense Housing Division was founded that ultimately eight of the twenty approved developments were constructed.

During WWII, the housing market decreased drastically, and the construction of homes decreased as well. Once the war ended and the veterans returned home, they were ready to settle down and start a life. The housing market was not able to meet the new demand for houses. Because of this, President Truman created the office of Housing Expediter in 1946 which focused exclusively on veterans housing, creating a materials subsidy for housing construction.

Unfortunately, the Veterans' Emergency Housing Program and the Housing Expediter was ended by President Truman in 1947.

iv. Housing Act of 1949

The ending of the Office of Housing Expediter came the Housing Act of 1949. This act expanded the governments involvement is public and private housing. There were three parts the act covered. The first being expanding the FHA and the governments involvement in mortgage insurance, which led to the authorization of $13 billion for mortgage guarantees. Followed by providing authority and $1.5 billion for slum land clearance and urban renewal. Lastly, the act commenced the construction of a significant program for public housing that had a goal of constructing 810,00 public housing units. According to Truman the goal for the government was "decent home in a decent environment for every American,".

v. Housing in the 1960s

In the ten years after the last housing act was passed, urban renewal for many cities just became an excuse to the eliminate the slums instead of renewing and fixing them. Under the act there were approximately 425,000 housing units destroyed with only 125,000 new units constructed. This led to entire communities in the poorer areas of urban cities being demolished for freeways and newer modern projects.

In 1965 the Housing and Urban Development Act was passed which created the Department of Housing and Urban Development (HUD). The new housing act brought rent subsidies into play for the first time. Also, under this act, the FHA insured mortgages for nonprofit organizations to help with the construction of low-income housing.

Figure 8: Pruitt-Igoe

The HUD would then provide the new rent subsidies to cover the gap between what the units cost and the percentage of the household's income.

Following the Act of 1965, there was a new concern for the development of the new public housing projects. This concern led to the Housing and Urban Development Act of 1968 which prohibited the construction of high-rise developments for families with children. The Pruitt-Igoe was a catalyst for the banning of high-rise developments. (fig. 8) Pruitt-Igoe was constructed in 1955-'56 comprised of 2,870 units in 33 high rise building. This development did not have a bright future and by the late 1960s had a vacancy rate upwards of 65%. Only seven years after the project was constructed and finished, demolition began.

vi. Housing in the 1970s

In 1970 the next housing was passed. Before the next housing act was passed, in 1973 President Nixon placed a halt on all funding for the various housing projects on account of his concern for the previous housing projects that had been constructed over the last twenty years.

In the wake of Nixon's impeachment in 1974 the moratorium was lifted in the summer. As a result of the moratorium being lifted the Housing Act of 1974 was passed.

The Housing and Community Development Act of 1974 created Section 8 housing. The act encouraged more involvement from the private sector in the construction of affordable housing. Section 8 housing provided the tenants with housing vouchers that would cover the gap

between 25% of the household's income and the rent No new Section 8 housing has been constructed since 1963, but vouchers are still used today.

The other main feature of this act does not directly tie to public housing but it was the creation of the Community Development Block Grant (CDBG).

The grants were funds given to state and local governments for housing and community development work. The money was used wherever deemed fit by the community, but the local governments were required to asses their housing stock and determine what populations were in need of assistance.

Due to the growing discontent with public housing, developers turned to alternative forms of affordable low-income housing. Developers began to scatter their housing programs which placed smaller-scale housing programs which placed smaller-scale housing units within diverse neighborhoods that were in need. The concept of scattered-site housing became more popularized in the late 70s and the 80s.

vii. Housing in the 1980s & 1990s

There were not many changes to public housing in the 1980s. The Section 8 rents were increased from 25% to 30% of the household income. In 1986 the Low-Income Housing Tax Credit was created under the Tax Reform Act passed that year. LIHTC would become a leading benefactor for the funding for affordable housing in the upcoming decades.

Travelling to 1990 the HOME program was created to provide grants to state and local governments to fund projects such as building, buying or rehabbing affordable housing for rent or homeownership. HOME also provides rental assistance for low-income people thanks to the Cranston-Gonzalez National Affordable Housing Act-(NAHA).

The next era of public housing began in 1992 when the HOPE VI program launched. HOPE VI devoted funds to demolishing low-quality public housing projects and replacing them with new lower-density developments which often were mixed-use. The funds were intended for construction and demolition costs, tenant relocation costs, and subsidies for the new units. HOPE VI was unfortunately just another excuse for governments to demolition of poorer communities. Tens of thousands of units were destroyed and only about half of them were replaced leaving thousands without a home.

In 1998 the Quality Housing and Work Responsibility Act (QHWRA) was passed by President Clinton which developed new programs to help transition families out of public housing, developed a home ownership aspect to Section 8 housing, and expanded the HOPE VI program to replace public housing units.

viii. Housing in the 2000s

Since entering a new century, there has not been many new advancements for public housing. The biggest thing was in 2012 the Rental Assistance Demonstration (RAD) program was created which addressed the $26 billion nationwide backlog of deferred building maintenance. With all of the efforts towards affordable housing, millions of people nationwide suffer with the burden of housing.

HISTORY OF PUBLIC HOUSING TIMELINE

1935

Techwood Homes built in Atlanta

1937

Housing Act of 1937 initiates construction of public housing

1949

Housing Act of 1949 reauthorizes 1937 Act, expands construction of public housing

1955

Pruitt-Igoe was constructed in St. Louis and was demolished 7 years later

1974

Nixon moratorium on all public housing programs

1992

HOPE VI program demolishes tens of thousands of units; only half replaced; thousands evicted

2012

Rental Assistance Demostration (RAD) program created

Living in Los Angeles

"Tip the world over on its side and everything loose will land in Los Angeles."

-Frank Lloyd Wright

i. Los Angeles Housing Crisis

Since 1970, California has been experiencing an extended and increasing housing shortage, especially in major cities like San Francisco and Los Angeles. There have three major forces behind the rise in housing prices which in turn led to the housing crisis. The first force was and increased concern for the environment of the California's government's behalf. Their concern led to laws that designated land for preservation therefore taking away possible land for housing. Another force was the government put into place new land use restrictions limiting housing density. These restrictions zoned many areas to single-family homes. The last driving force was the community's involvement in the developmental process. There was a lot of push make from the community on affordable public housing and the construction of them. With all of that being said there was still a large demand for housing which then causes an imbalance of the supply and demand. Ever since the 70s, there was a strong economic growth which created thousands of jobs which increased the demand of housing. But with all the push back from the community and the other driving forces, there was an insufficient construction of new housing units. All of this plus the increase in cost of living has led to 151,000 people to be homeless with 41,000 residing in Los Angeles.

ii. Demographics

The greater Los Angeles metropolitan area has a population of 10.7 million with the city of Los Angeles holding 3.96 million making Los Angeles the second largest city in the US. Hispanics make up 49% of the population in the city. Followed by white comprising 28% of the population. The next largest population is Asians at 12% of the population. The next only 9% of the population is black followed by lastly 2% of the population identifying as two or more races. *(fig.9)*. The median age is 35.9 with the population between the ages of 35-59 at 33%, followed by the next largest age group 22-34 with 23%. *(fig.10)*.

iii. Cost of Living

The cost of living is a point scale. The cost of living defers region from region, but they all are based on expenses such as food, transportation, healthcare, and housing.

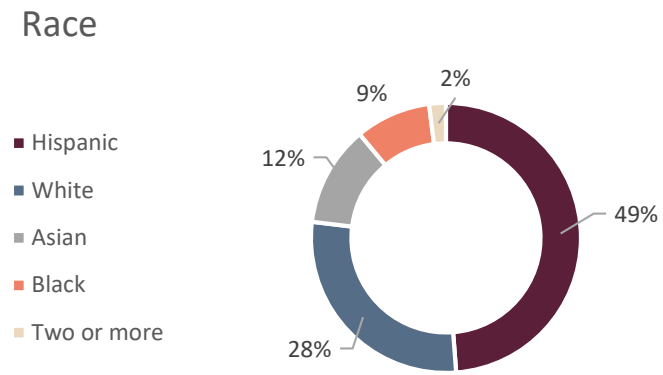


Figure 9: Races

According to the U.S. Census bureau, the median household income is $58,385. The median housing value is just under $600,000 with the average home costing just under $700,000. Since the cost of homes being so high homeownership is only 36% compared to 63% renters.

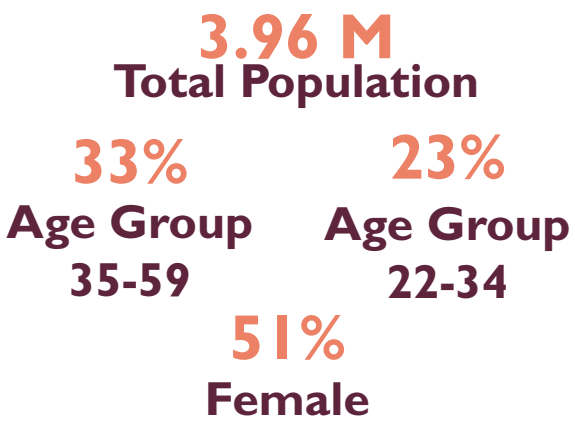


Figure 10: Population

The national average cost of living is 100. California is on the higher side of the national average. The cost of living in California is 149.9 while the cost of living in Los Angeles is even higher at 173.3. For reference, the cost of living in the state of Michigan is 87.6 and the cost of living in Detroit is 87.6.After paying the high cost of housing, very low-income households in California are short $24,848 annually for basic needs. *(fig.11)*. After paying the high cost of housing, very low-income households in Los Angeles County are short $13,659 annually for basic needs. *(fig.12)* The poverty rate in Los Angeles is 19.1%.

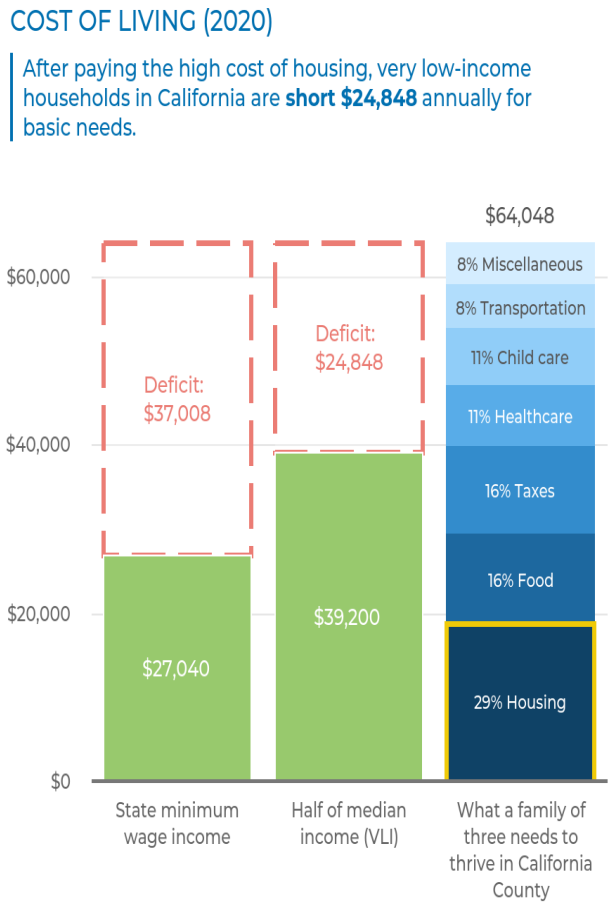


Figure 11: Cost of Living: California

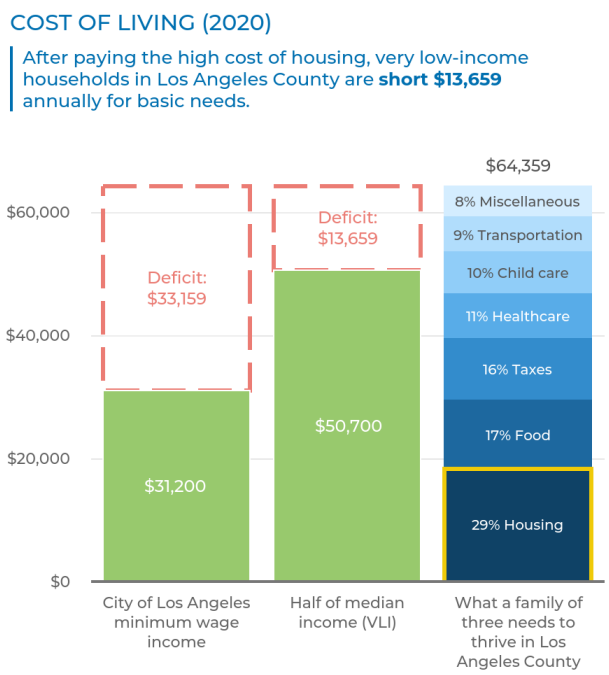


Figure 12: Cost of Living: Los Angeles

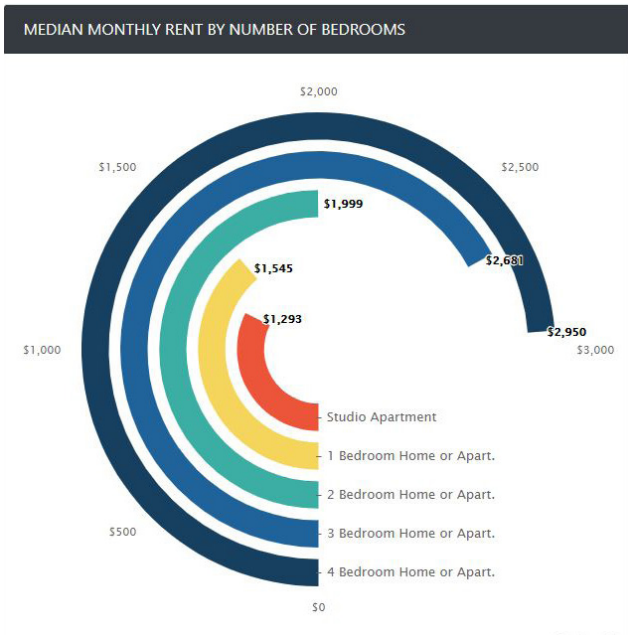


Figure 13: Rent by Number of Bedrooms

The average rent in Los Angeles is $2,375 a month. The most affordable neighborhood in Los Angeles is Jefferson Park, where the average rent is $1,338 a month. Neighborhoods in Los Angeles such as University Park and Downtown Santa Monica and North of Montana are the most expensive neighborhoods. Rents range from $3,938 to $4,323 a month in these neighborhoods. The most popular neighborhood is Hollywood where the rent is closer to the average rent at $2,341. Koreatown is also a popular neighborhood with rent on the lower end at $1,894 a month. Average rent by bedroom does vary. A studio apartment average rent is $1,293. A one bedroom goes for $1,545 a month. Moving up to a two bedroom goes for $1,999. A three bedroom goes for $2,681 a month. Lastly four-bedroom apartments rent tops off at $2,950. *(fig.13)*

So, the real question is, who can afford to rent? Renters need to earn 2.9 times minimum wage to afford the average two-bedroom asking rent in California. *(fig. 14)* In Los Angeles, renters need to earn 2.8 times minimum wage to afford the average two-bedroom asking rent. *(fig.15)*

The shortfall in affordable homes leaves 1.29 million renter households in California access to an affordable home and 509,404 low-income households in Los Angeles without access. *(fig.15)*

WHO CAN AFFORD TO RENT (2020)

Renters need to earn **2.9 times** minimum wage to afford the average two-bedroom asking rent in California

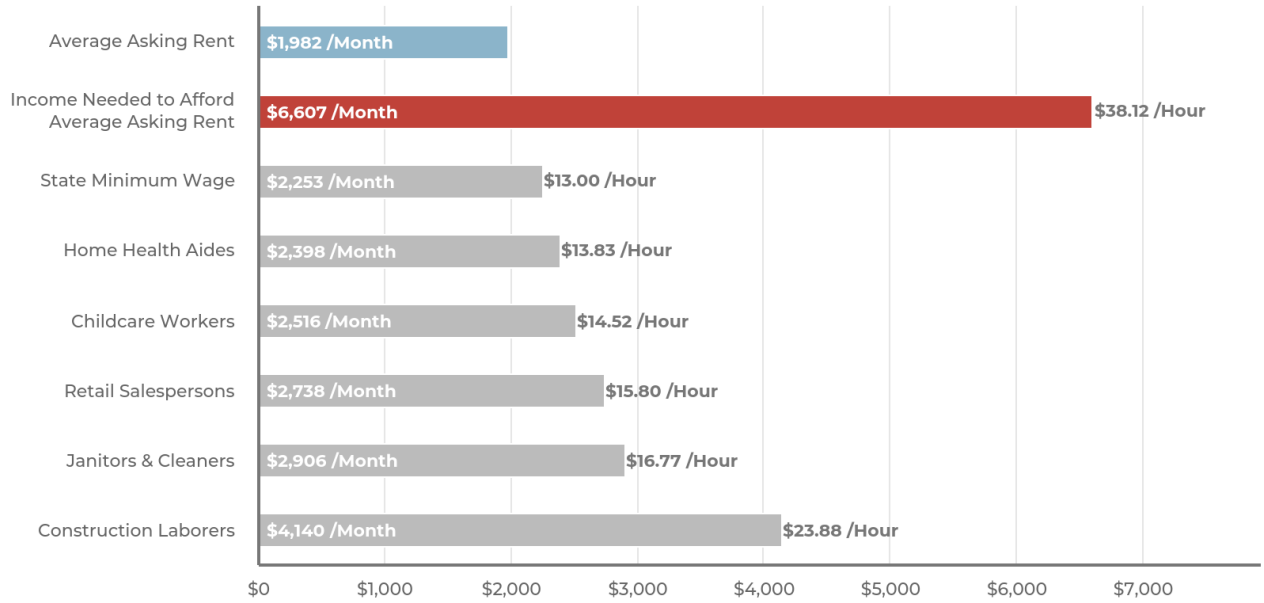


Figure 14: Who can afford rent?: California

WHO CAN AFFORD TO RENT (2020)

Renters need to earn **2.8 times** minimum wage to afford the average two-bedroom asking rent in Los Angeles County.

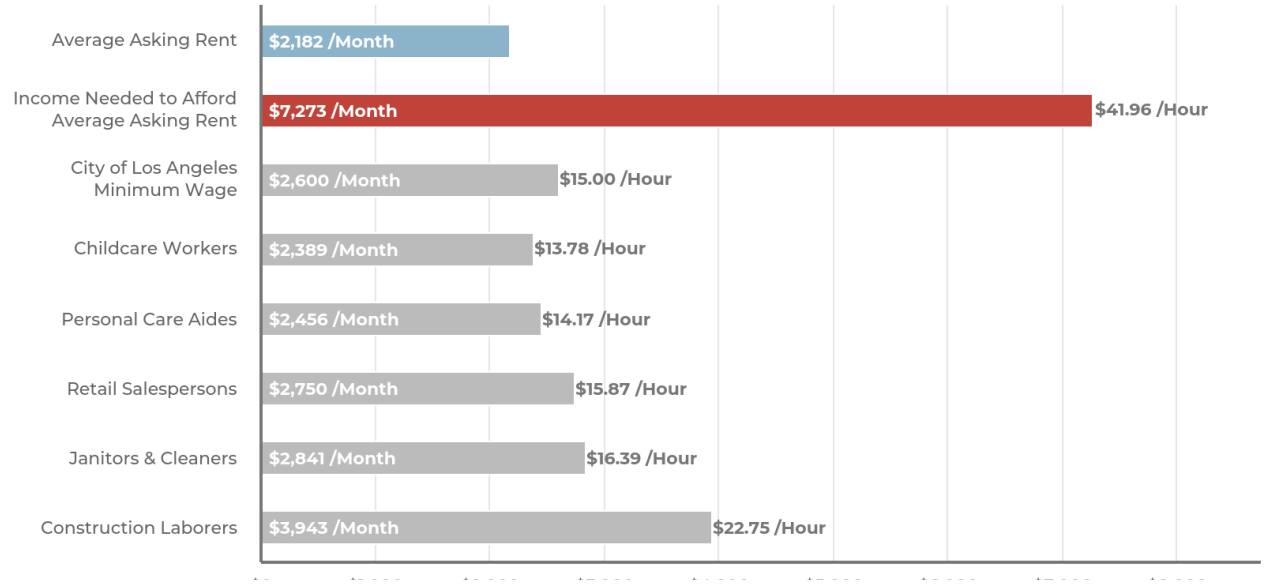


Figure 15: Who can afford rent?: Los Angeles

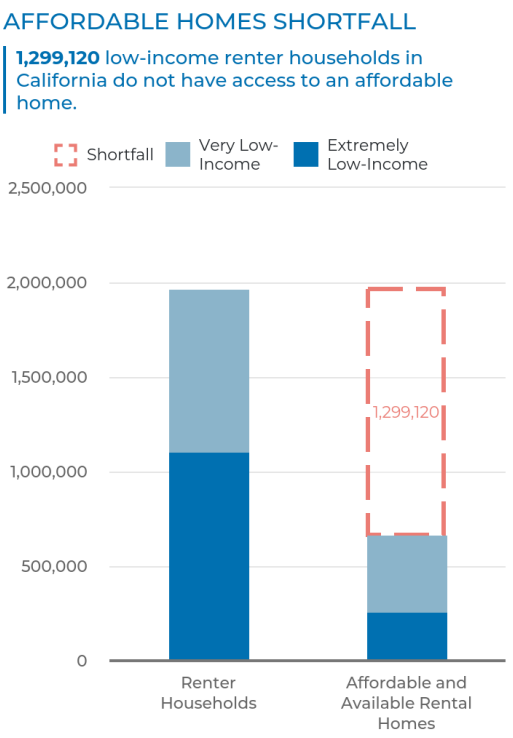


Figure 16: Affordable Homes Shortfall- California

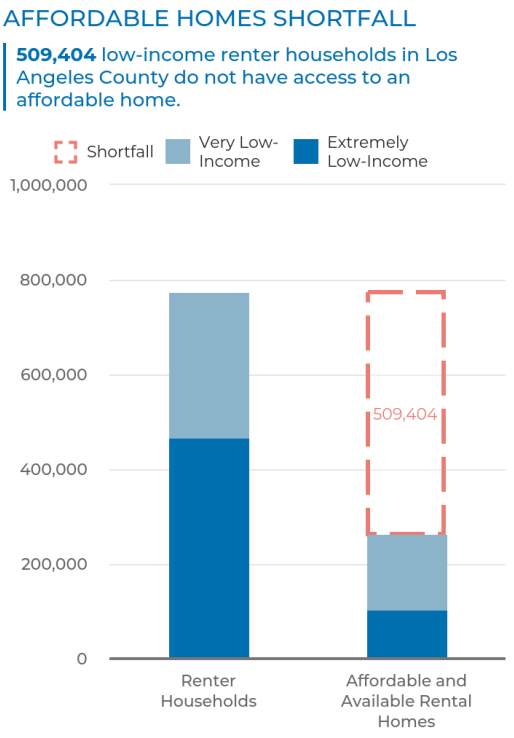


Figure 17: Affordable Homes Shortfall- Los Angeles

iii. Cost Burdened Households

In the State of California, both renters and owners have the highest share of households spending more than 30% of their income on housing. 41.6% of California households are cost-burdened. *(fig.19)* In Los Angeles 57% of low-income households are cost burdened while 13% are severely cost burdened. Very low-income households are 84% cost burdened and 40% severely cost burdened. Extremely low-income households are affected the greatest. ELI households are 91% cost burdened and 79% severely cost burdened. Compared to LI, VLI, and ELI, modern income households are only 29% cost burdened and 3% severely cost burdened. *(fig.18)*

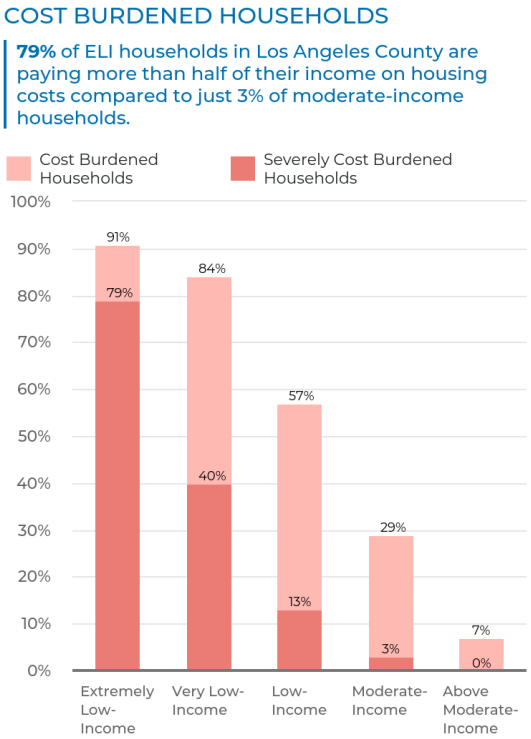


Figure 18: Cost Burdened Households- Los Angeles

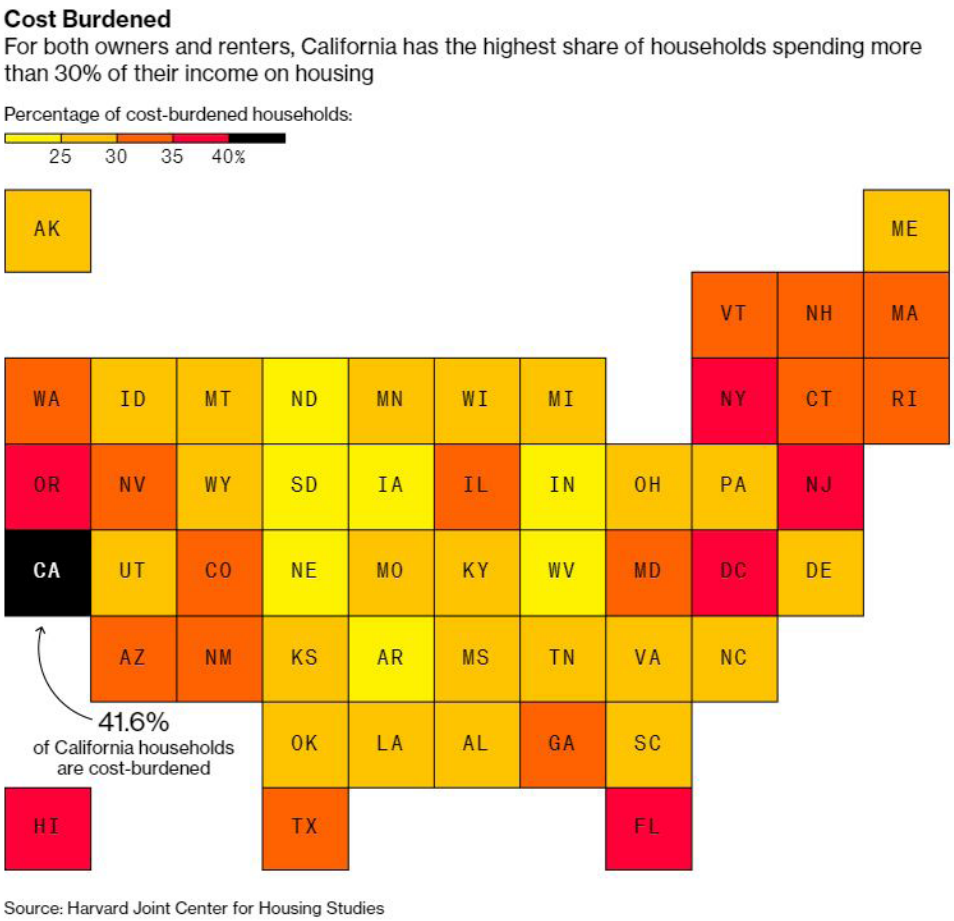


Figure 19: Cost Burdened Households- Nationwide

iv. Funding

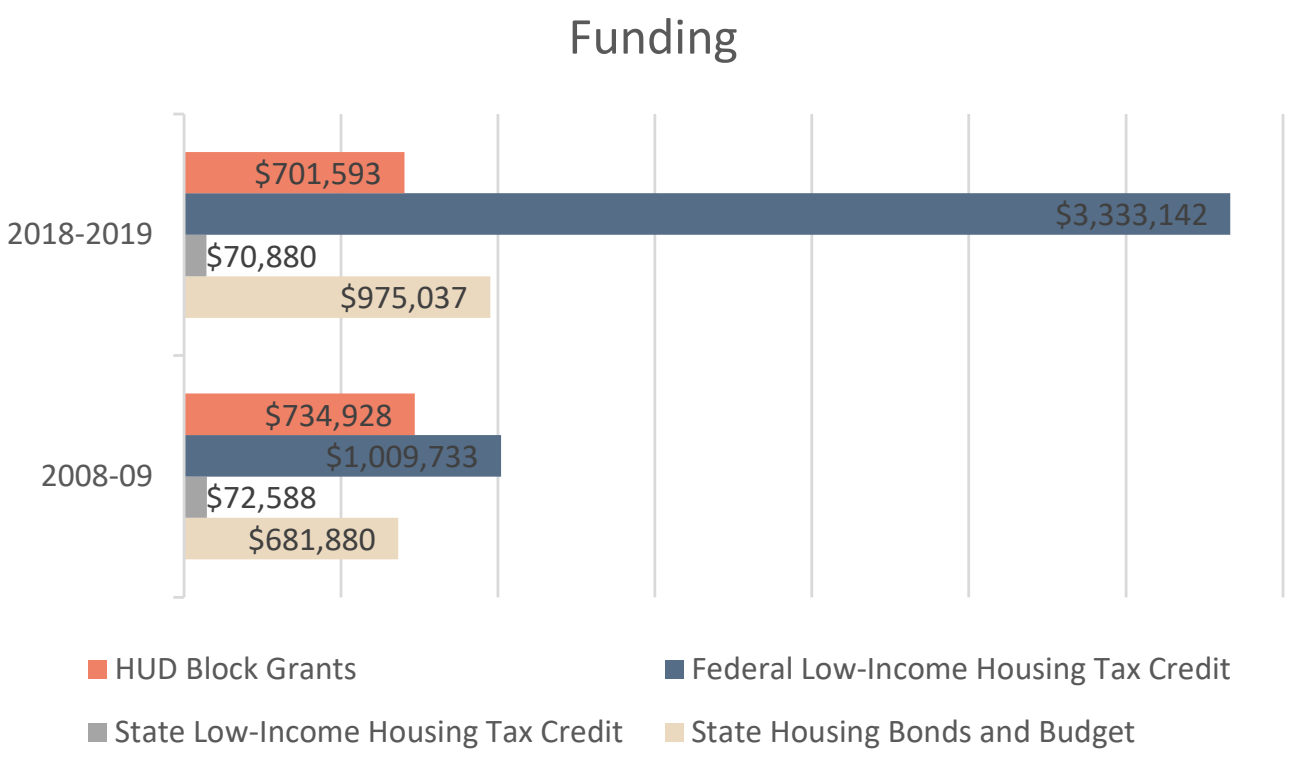
In the state of California, state funding has decreased by 45% while federal funding has increased 131%. *(fig.20)* In Los Angeles, state funding has decreased as well by 15% as federal funding has increased as well by 68%. *(fig. 21)*

v. How to Qualify

The median family income is calculated every year by HUD. The median family income is Los Angeles in $80,000. HUD also calculates the AMI (area median income) which is used to calculate income and rent limits. The AMI in Los Angeles County is $77,300. To qualify for affordable housing, the first step is to have a gross income less the AMI.

The Income limits depend on what category you fall in. Very low (50% AMI) limits range from a one-person family limit of $41,400 to an eight-person family limit of $78,050. The next bracket if extremely low. The limits range from one person family limit of $24,850 to and limit for an eight-person family of $46,800. The last major bracket is low (80%) with limits from $66,250, for a person family, to $124,900 for a family of eight.

The second thing HUD calculates is rent limits. Rents for 30% AMI start at $633 for one bedroom and upwards of $1,081 for a five-bedroom. Moving up, 40% AMI rents start at



State Funding Total:
2008-09: $1,897,023
2018-19: $1,045,917

Federal Funding Total:
2008-09: $1,744,661
2018-19: $4,034,734

Figure 20: Affordable Housing Funding Sources

$ 845 for one bedroom and go up to $1,442 for a five-bedroom. 50% AMI brings a one-bedroom rent up to $1,056 and a five-bedroom up to $1,802. Lastly, 60% AMI rents are $1,267 for a one-bedroom and brings a five-bedroom rent to $2,163. Now for reference, rent for a one-bedroom at market rate rent can cost anyway upwards of $1,500 a month. A two-bedroom at market rate rent would cost upwards of about $2,000 a month with a three-bedroom costing an arm and leg at about $2,600 a month. If those figures weren't bad enough, a four-bedroom at market rate rent would cost about $3,000 a month and a five-bedroom $3,300.

Market rate rental prices are outrageous. Even though qualifying and applying for affordable housing are rather easy, the waitlist is terribly long due to the pure lack of units for people.

Sketch Problem

"To create, one must first question everything"

-Eileen Gray

i. Sketch Problem

Housing today is becoming more and more expensive every year across the country. People are struggling to pay rent every month. Los Angeles County and the city of Los Angeles has been struggling with their housing crisis for years now. More and more market rate apartment buildings are being built every year despite the cities need for affordable units. When it comes to housing, money is a huge factor.

My sketch problem looks at the large amount of money going into market rate apartment buildings. Money is continuously poured into market rate housing. It is almost like the buildings are made of money and full of it. This was an opportunity to bring attention to this issue and make a creative light out of it.

Figure 21: Side View

Figure 22: Front View

Figure 23: Back View

Low-Income Housing Tax Credit (LIHTC)

"Public housing is more than just a place to live, public housing programs should provide opportunities to residents and their families"

-Carolyn McCarthy

i. Introduction

The Low-Income Housing Tax Credit was created in 1986. LIHTC provides a tax incentive to construct or rehabilitate affordable housing low-income households. The tax credit subsidizes the acquisition, construction, and rehabilitation for projects. Since the 1980s, LIHTC has helped provide financing for more than 2.4 million low-income housing units. Each state receives a certain allocation of tax credits from the federal government to distribute to affordable housing developers. The size of these allocations is determined by the population of the state. There has been a limit set by Congress on the amount of funding allocated in a year. Each state is allocated $3.1 million and $2.70 per capita.

ii. Qualifying for the credit

When qualifying for the tax credit, the property can be an apartment building, single-family dwellings, townhouses, and duplexes. When applying for the credit, developers and owners agree with LIHTC to meet an income test for residents and a gross rent test. To meet the income test, there are three ways to meet the test requirements. The first being, at least 20% of the project's units are occupied by tenants with an income of 50% or less of area median income adjusted for family size (AMI). The second way is to have at least 40% of the units are occupied by tenants with an income of 60% or less of AMI. Lastly developer and owners can have At least 40% of the units are occupied by tenants with income averaging no more than 60%of AMI, and no units are occupied by tenants with income greater than 80% AMI. For developers and owners to pass the gross test, they are required to have rents not exceed 30% or either 50% or 60% of AMI.

LIHTC projects are required to comply to the affordability restrictions for either 15 or 30 years depending on when they were built. Properties built before 1990 only have a compliance period of 15 years. While properties built 1990 and after have a 30-year compliance. *(fig.24)* Projects with the 30-year compliance must annually report to the IRS and monitoring agency for the first 15 years, after which the second 15 years they are no longer obligated to report.

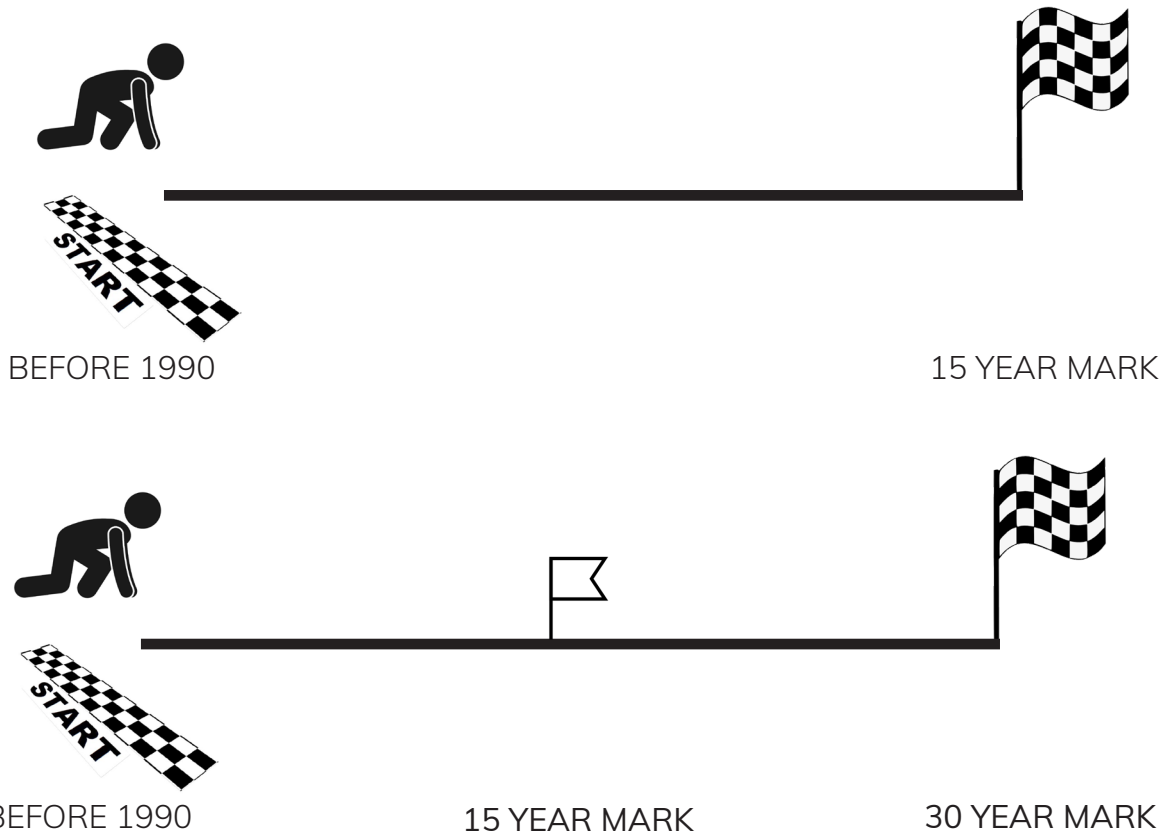


Figure 24: LIHTC Track

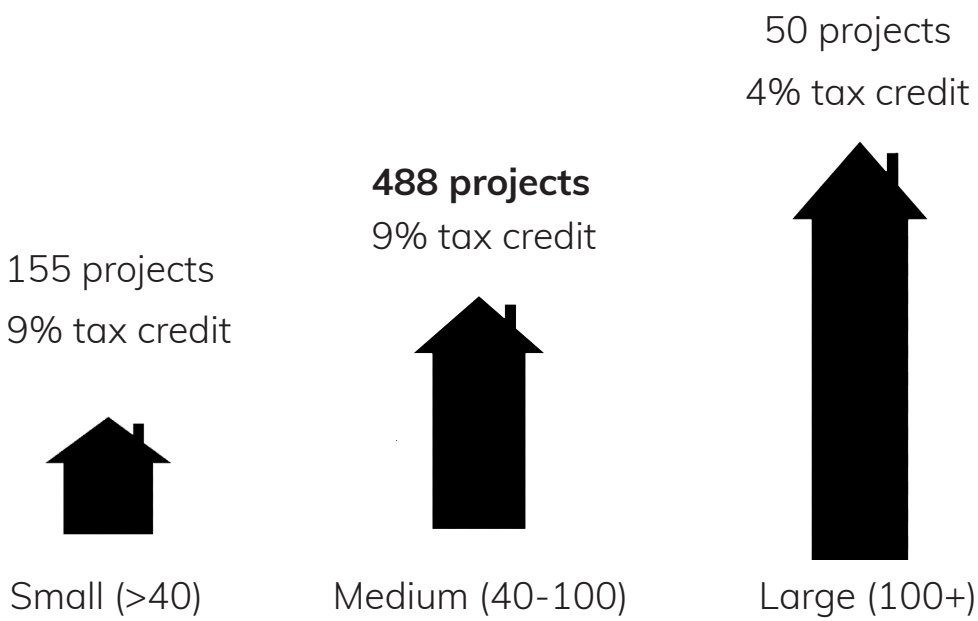


Figure 25: 'Sweet Spot'

ii. Expiration and Failure

When projects reach the end of the 15-year compliance period, they have one of three choices. Projects can remain without recapitalization, remain with a major new source of funding, or decide to turn market rate. Projects that remain without recapitalization typically have high occupancy and high rents (still below market rate) and can generate enough cash flow and have a mission driven owner(s). Some owners choose to take their project down the second path and find a new source of subsidy in order to compete with the new surrounding affordable housing projects. The projects that turn market rate due so to reach a new pool of renters which allows them to charge rents than the LIHTC maximum. There are four main commonalities across the board when it comes to why projects with the 15-year compliance fail and turn market rate. The first being the project has poor property or assets management. Another reason for failure may have been the projects problematic financial structure. Some projects fail due to the poor physical condition of the property. Lastly, some projects fail to the project being in a soft rental market. (fig. 26)

When projects approach the end of their 30-year compliance period, they have similar choices as the 15-year projects. The first possibility is for projects to continue to provide affordable housing despite no longer receiving the tax credit.

The second possibility is for the project to recapitalize with a new public subsidy. The final possibility if for the project to turn market rate as well.

Failure after 15 year mark

- Poor property/assest managment
- Problematic Financial structure
- Poor physical condition of property
- Soft rental market

Propeties to not turn after 30 years

- Mission driven owner
- Location in the city or state
- Restrictions associated w/other financing

Figure 26 : Success vs. Failure

Properties on the 30-year compliance track fail for similar reasons but often are less likely to fail and either close entirely or turn market rate. The key to success for the properties that stay open and do not turn are due to one or more of the following reasons: a mission driven owner, prime location in the city, or the possible restrictions on the project due to other financing sources.
The key consideration for any project when repositioning is whether the projects location will be able to support market rents substantially more.

Figure 27 :15 year track

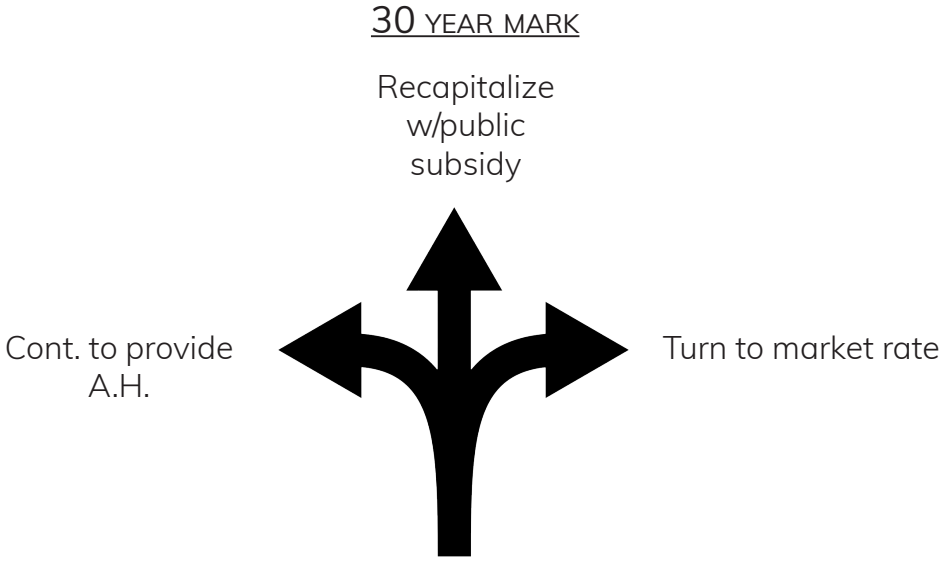


Figure 28: 30 year Track

Case Study Analysis

"Creativity is allowing yourself to make mistakes. Design is knowing which ones to keep."

-Scott Adams

i. Introduction

There is a wide array of design guidelines for mixed income and mixed-use developments, but not many for strictly low-income developments. In response to the lack of design guidelines, design guidelines were created to analysis and compare various project in Los Angeles. The projects in the analysis are not deemed successful or unsuccessful, the analysis simply complies what the projects provide and what they lack in providing.
The first set of design guidelines are general guidelines no matter the occupancy. The second set of guidelines are occupancy specific, broken down into senior, supportive, family, and non-specific housing. Senior housing needs to ADA. Supportive housing is for people who have suffered from homeless for a long period of time as well as veterans. Supportive housing needs to provide support services. Lastly family housing needs to be designed for kids.

ii. Design Guidelines

Local Amenties

The first general guideline created in local amenities. Local amenities comprise of businesses, education, industry, shopping, and transit stops. Having local amenities such as businesses or shopping complexes can provide employment to residents, allowing the rise from poverty. Nearby education provides residents the opportunity to receive an education.

Public Green Space

The Project for Public Space defined public space as “the art and science of developing public spaces that attract people, build community by bringing people together, and create local identity”.

Here the projects were evaluated on if they offered on site public green space.

Variety of Units

Projects that provide a variety of units for residents to stay as they grow and expand in life. For example, a single resident may get married and need to get a larger unit, a married couple may have children and need to move up to something larger. Variety of units allows residents to downsize if that is what they desire as well. Each project identified what types of units they offered: studio, one-bedroom, two-bedroom, or three-bedroom.

Building Amenities

Projects that provide building amenities create a community within the project. Each project was evaluated on whether they offered these amenities:

elevator, resident parking, community center, support services, playground, and computer center. The projects also demonstrated their unique building amenities.

Density

The density of a project is the number of units in relation to the site acreage. The projects actual density was determined as well.

iii. Precedent Study

To better understand what goes into designing affordable housing, case studies were gathered from around the city. The projects were sorted into occupant specific categories for comparison. Senior housing typically has an age restriction of either 55+ or 55/65+ head of household, while others may not. Supportive housing is a combination of housing and services for people with mental or physical problems or even chronically homeless or homeless veterans. Each project was analyzed according to the five design guidelines previously discussed. This analysis was then used to decide what occupancy the hypothetical project would be and help inform the design.

SENIOR HOUSING

ANGELUS PLAZA

Angelus Plaza is in Central LA in the Bunker Hill neighborhood. It was built in 1980, making it the oldest project in the analysis. Angelus plaza is also the largest project with just under 1,100 units in five, high rise towers and was designed by KTGY Architecture and Planning. Angelus Plaza is also the largest subsidized community for low-income seniors in the United States.

With Angelus Plaza being right above Downtown LA, it is in a prime area. There are many local businesses around and plenty of public transit stops around, therefore fulfilling the Local Amenities guideline. The project also has on site green space which checks off the open green space category guideline. Angelus Plaza only offers one-bedroom apartments which is the greatest when it comes to a variety

of units. For Building Amenities, Angelus Plaza offered elevators, community center, support services for residents, and a community kitchen. Angelus Plaza residents had access to a mini mart, healthcare services, a beauty salon and a library.

Figure 30: Angelus Plaza

CANBY WOODS

Canby Woods is located within the Reseda neighborhood in the South Valley. It was built in 2013 by Thomas Safran & Associates. The project is comprised of 98 units.

Canby Woods is the northern most project, so it does not have as much of a connection to the public transit routes that Angelus Plaza had. But there are plenty of local businesses for the residents to have access to. The access to on site green space allows for residents have a connection to nature. Canby Woods has slightly more of variety in the units than Angelus Plaza had with one-bedrooms and two-bedrooms. Canby Woods does not offer elevators or support services like the pervious example, but Canby Woods does offer a community center, community kitchen, and library as well. Canby Woods offers two amenities Angelus Plaza does not which is a computer center and an outdoor spa. Canby woods is a LEED for Homes Gold Project

Figure 31: Canby Woods

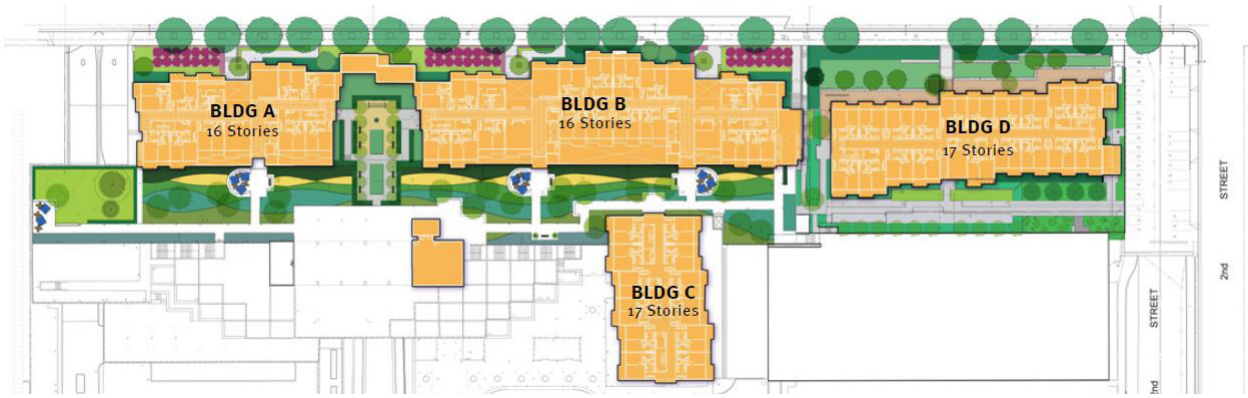


Figure 29: Angelus Plaza Site Plan

SUPPORTIVE HOUSING

MLK1101

MLK1101 is in Vermont Square in South LA. MLK was built in 2018 making it one of the newest projects. Lorcan O'Herlihy Architects designed the four-story building which is comprised of 26 units.

MLK is located on a major road in the neighborhood, so there are plenty of local businesses and public transit stops nearby. There is also green space on site for residents. MLK offers studios, one-bedrooms, and three-bedrooms, which is a really good variety. MLK offers elevators for the residents as well as parking, a community center and support services.

HOPE ON ALVARADO

Hope on Alvarado is only a few neighborhoods west of one of the pervious projects, Angelus Plaza. Hope is within the Westlake neighborhood in Central LA. Hope is the newest project, which was designed also by KTGY Architecture and Planning and constructed in 2019. There are 84 units in the five-story building.

Central LA is very well connected to public transit stops and has a plethora of local businesses. The open courtyard in the center of the project allows for residents to get out and connect with nature. The project offers studios and one-bedrooms for residents. The full extent of amenities for residents was unclear but the project does have elevators and offers social services. A plus for this project is the rooftop garden for residents

Figure 32: MLK1101

Figure 32: MLK1101 Floor Plan

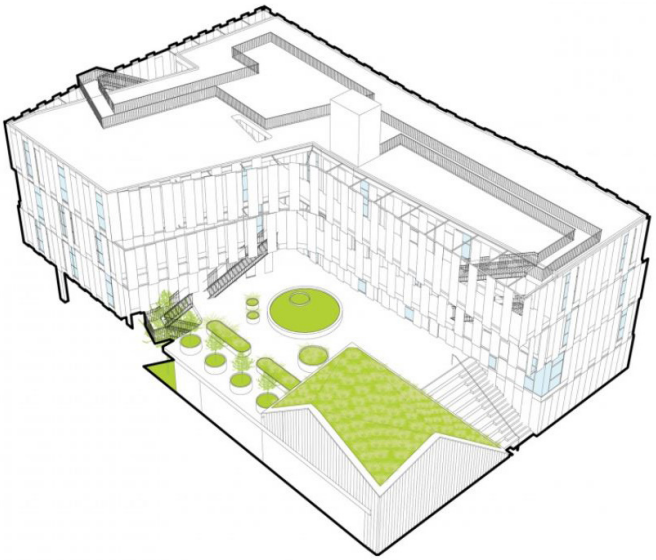


Figure 33: MLK1101 Axon

FAMILY HOUSING

THE WHITTIER

The Whittier is also a few neighborhoods from Angelus Plaza, but this time to the east. The Whitter is in Boyle Heights in East LA. The Whittier was built in 2013 and was also designed by KTGY Architecture and Planning. The Whittier is a five-story building of 60 units.

The Whittier has connections to public transit stops as well as access to local amenities. Residents, especially kids, have plenty of open green space on sit. Since The Whittier is family housing, it offers one, two, and three-bedrooms for families. The project does have elevators for residents to use. The Whittier includes two community rooms for the Boyle Heights community as well as one for residents only. Also, there is a library, computer center, outdoor kitchen, playground, play area for tots, and basketball courts. This project is unique because it is LEED Silver Certified.

Figure 34: Hope on Alvarado

Figure 34: Hope on Alvarado Floor Plan

Figure 35: The Whitter

Figure 35: The Whitter Site Plan

Figure 36: Burlington Family

BURLINGTON FAMILY APARTMENTS

Burlington is in the same neighborhood as Hope on Alvarado, Westlake. Construction was completed in 2014 and was designed be Gonzales Goodale Architects. Burlington is a four-story building comprised of 30 units.

The project has many nearby amenities and connections to public transit. It is unclear if the project offers open green space for residents. Burlington offers wide range of units from studio all the way to three-bedrooms. Burlington offers resident parking, a resident lounge that has computers, an edible garden, and a community kitchen. Burlington also partners with a local counseling servicer to provide on-site supportive services for the residents.

NON-SPECIFIC HOUSING

28TH STREET APARTMENTS

During the search for projects, many projects are occupant specific. There are not many that do not specify the residents.

28th Street apartments is in the South-Central neighborhood in South LA. It was built in 2012 and designed by Koning Eizenberg Architecture. 28th St. offers 49 units.

28th St. Apartments has a great connection as well to local businesses and public transit. What's special about this project and makes it different from every other project is that it is an adaptive re-use of an historic YMCA that was designed by the renowned African American architect Paul Revere. The project does offer open space for residents to use, though there is not much greenery on site. The project does offer support services for residents and the community on the ground floor. The project offers a community hall, community center, commons room, and a rec room. This is the only project to achieve a LEED Gold rating.

Figure 37: 28th St. Apartments

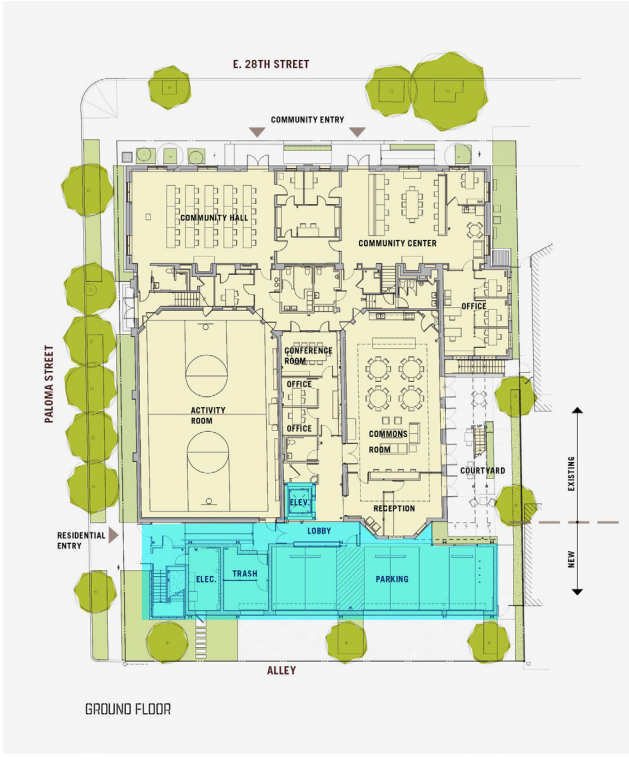


Figure 37: 28th St. Apartments. Ground Floor

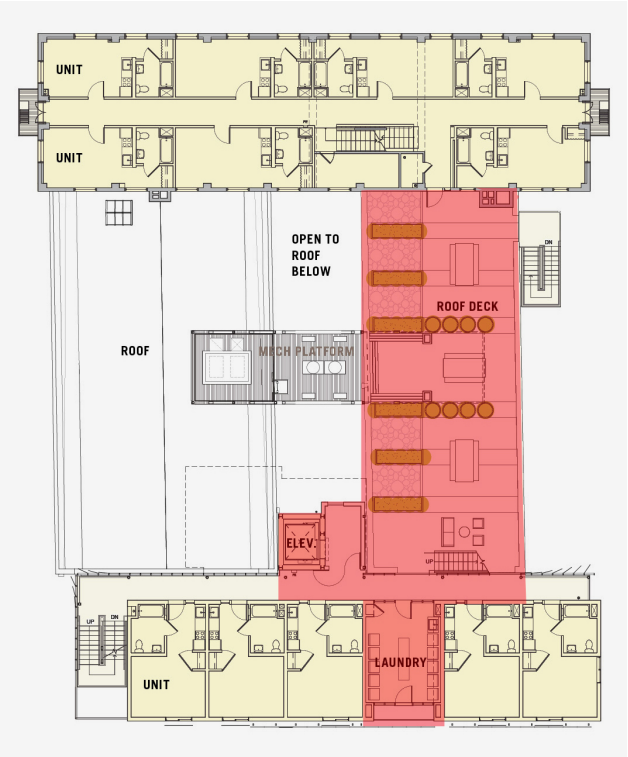


Figure 37: 28th St. Apartments. Fourth Floor

The Design Phase

“Everything is designed. Few things are designed well.”

-Brian Reed

i. Introduction

After all the research and analysis of the case studies, it was time for the design process. The goal for the project was for “well designed, cost affective affordable housing with a high quality of living that is comparable to market rate living” to be the end product. The target users for the project are singles and single parents. (fig. 38) Open land is very hard to find in LA. To find large lots, you have to look either in Northern LA or Southern LA but then you become farther from downtown, and traffic becomes a bigger issue. Land closer to Central LA is sparse and lots are smaller and even less are zoned for residential. The city of LA is pushing for affordable housing to be located on city owned land, which is where the search began.

After looking through the city owned lots, the final site is 217 W 1st St. It is in Little Tokyo in Central LA. As you can see from the site plan *(fig. 39)*, the selected site is just south of Chinatown and just Northwest of Skid Row, home of Skid Row Housing Trust which is known for providing permanent supportive housing for homeless, prolonged extreme poverty, poor health, disabilities, mental illness, and addiction. Continuing south is Downtown LA. The site is surrounded my governmental buildings. *(fig. 40)*

ii. Schematic Design

The first step was compiling the components of the building. This would consist of four floors plus underground parking. The first floor would consist of retail or commercial. The second through fourth floor would be the units as well as the amenities for the residents. The building amenities would be a community kitchen, daycare center, fitness center, makerspace/ workspace, and a community garden. *(fig. 41)*

Singles

Single Parent

Figure 38: Target Users

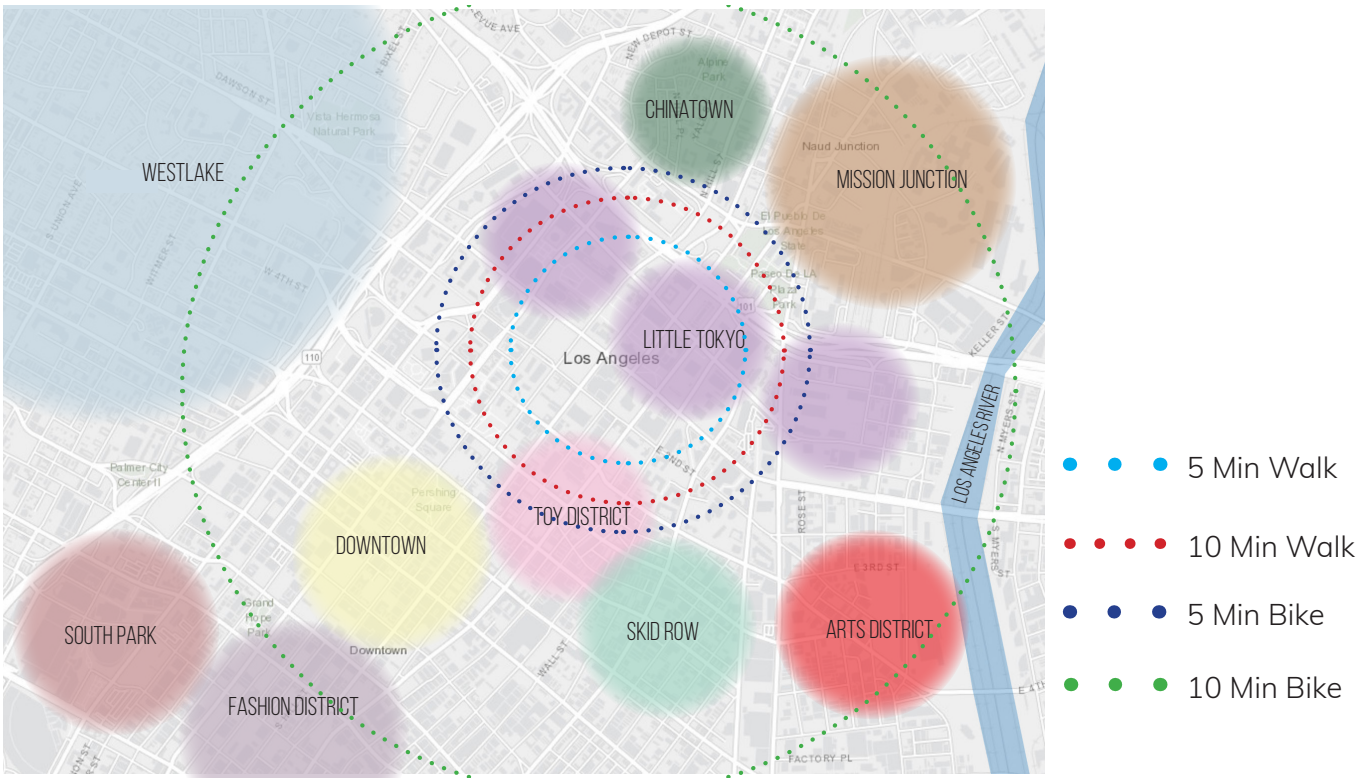


Figure 39: Zoomed out Site Plan

Figure 40: Immediate Site Plan

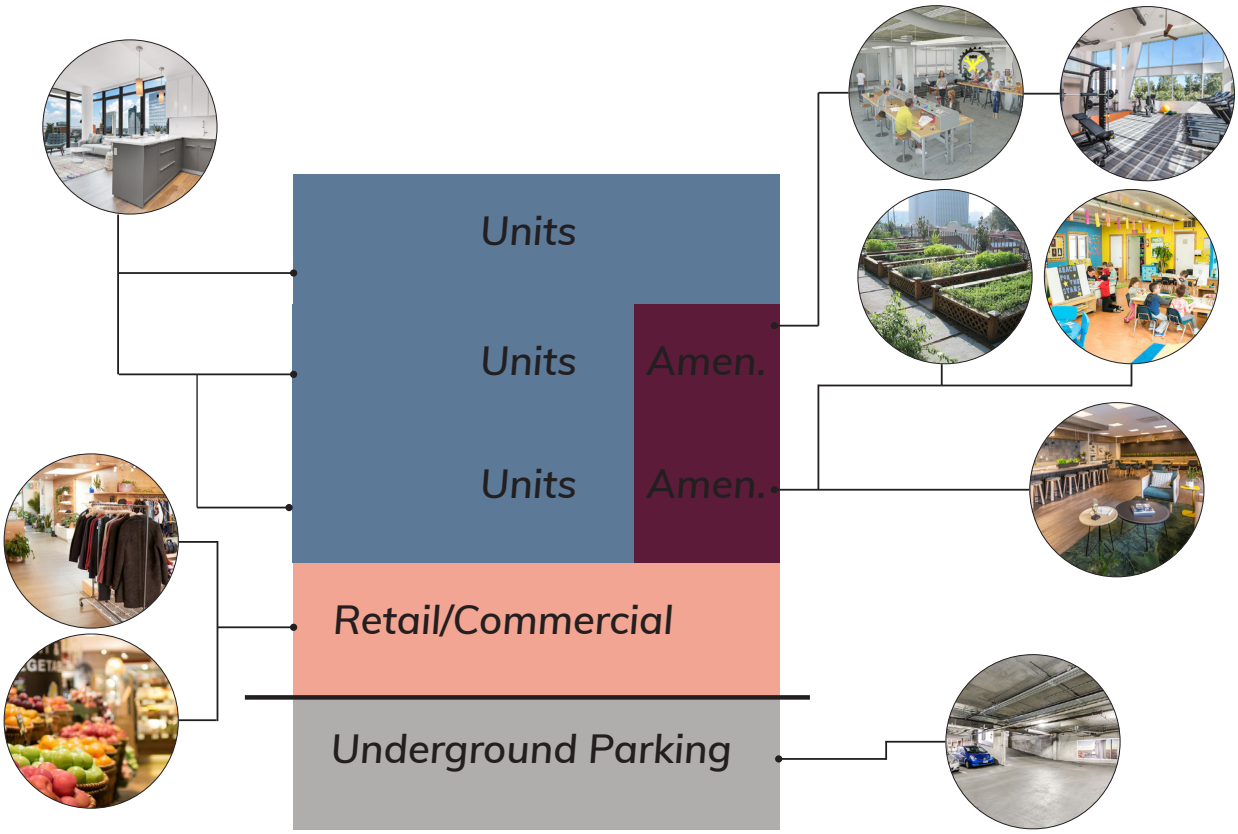


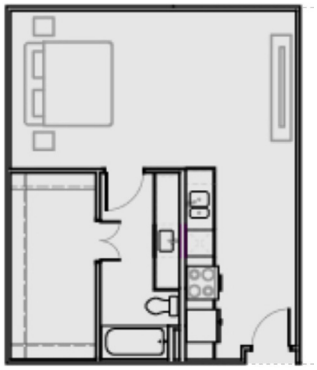
Figure 41: Schematic Building Program

With the Midwest climate being the most familiar, the first go around the buildings were double-loaded corridors. The project would consist of studios, one, and two-bedrooms. *(fig.42)* Four iterations were completed to find the best building layout and unit ratios.

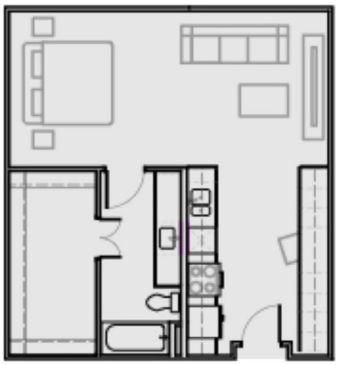
iia.Iterations

The first iteration was the 'T' iteration due to the building resembling a lowercase t. *(fig 43)* The T iteration was five floors with 75 units. Retail and commercial would take up the first floor, with the community kitchen and daycare residing on the second floor. On the third floor, you'd find one of the workspaces with the *(fig 44)* There are 23 studios, 19 one-bedrooms, and 33 two-bedrooms. A pro of this iteration was that every units would have natural lighting. The site would have four smaller open green spaces with landscaped seating. (fig.43)

The second iteration was 'O' iteration due to its resemblance to the letter. *(fig. 45)* The O iteration was four floors with 123 units. The first floor would be where the retail and commercial reside as well as units. On the second floor is where you would find the daycare and community kitchen. The third floor would house the gym and a workspace, with the other workspace being on the fourth floor. The fifth floor would be entirely units. *(fig. 46)* The unit breakdown was, 30 studios, 31 one-bedrooms, and 62 two-bedrooms. A benefit of this iteration was the private courtyard for the residents that would allow for outdoor activity.



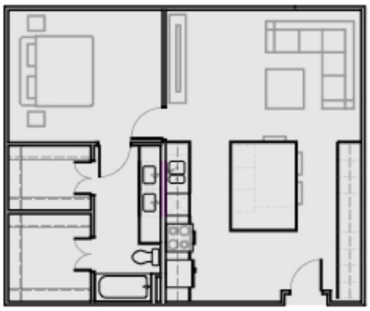
540 SF



661 SF

STUDIO (S)

804 SF



882 SF

ONE-BEDROOM (A)

1,300 SF

1,160 SF

TWO-BEDROOM (B)

1,080 SF

1,020 SF

Figure 42: Schematic Units

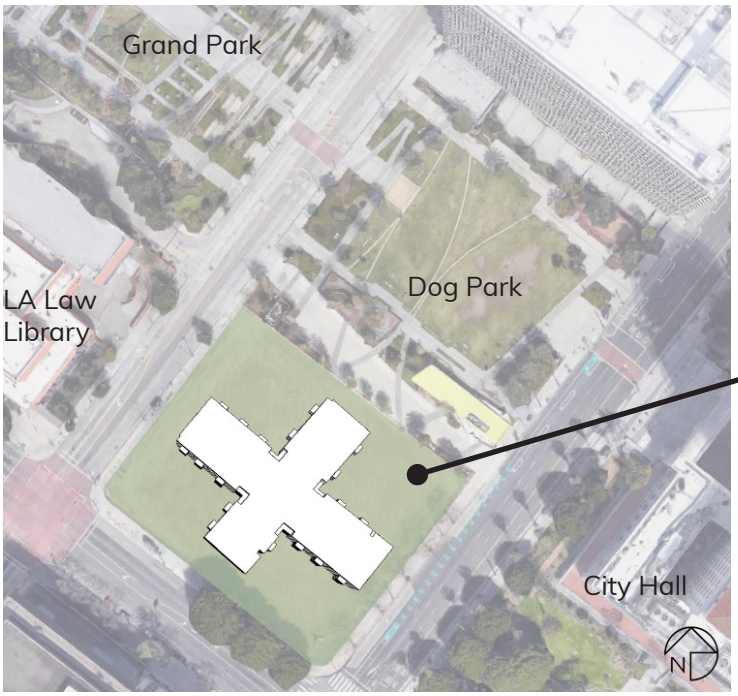


Figure 43: Iteration 'T' Site Plan

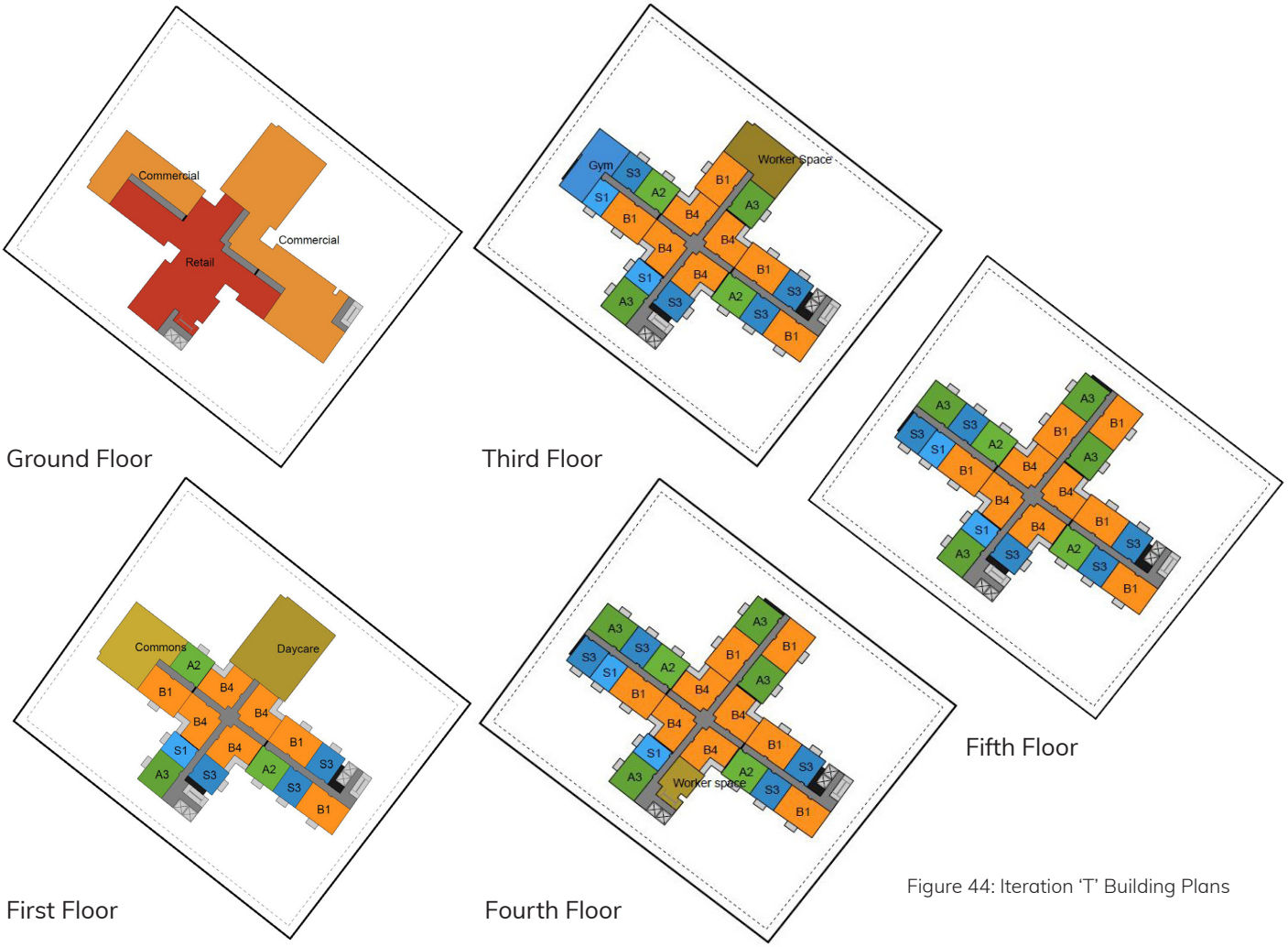


Figure 44: Iteration 'T' Building Plans

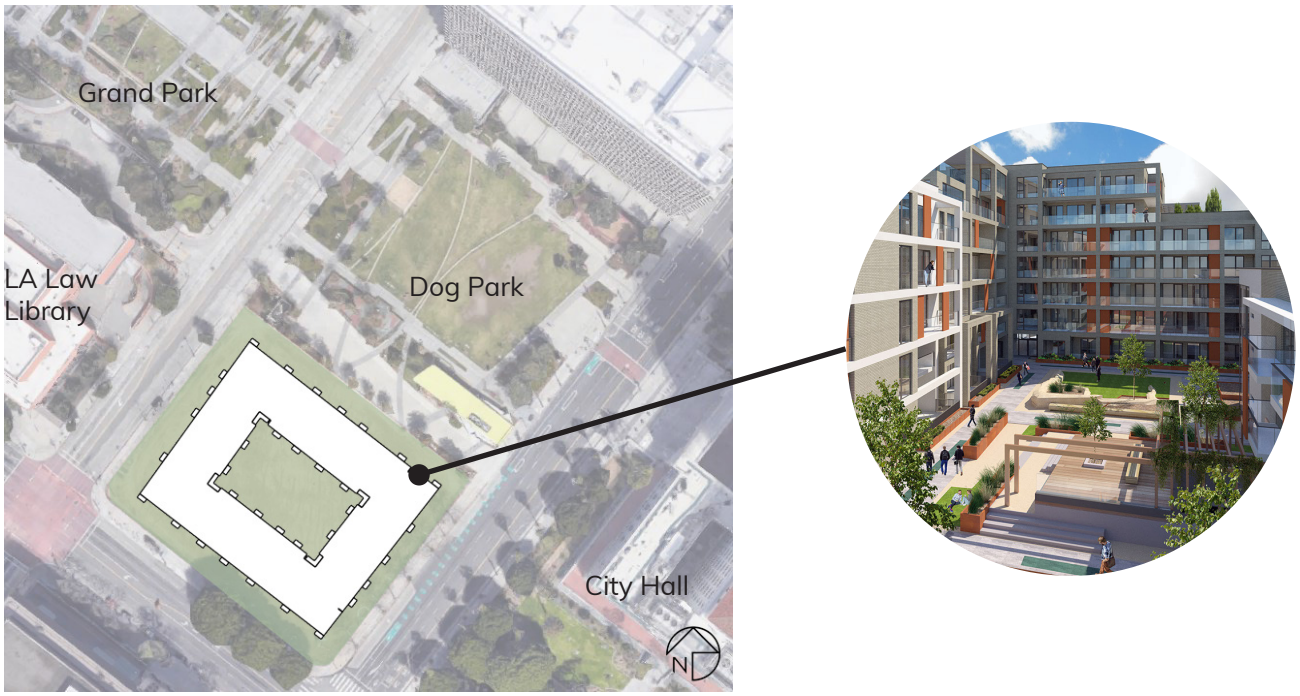
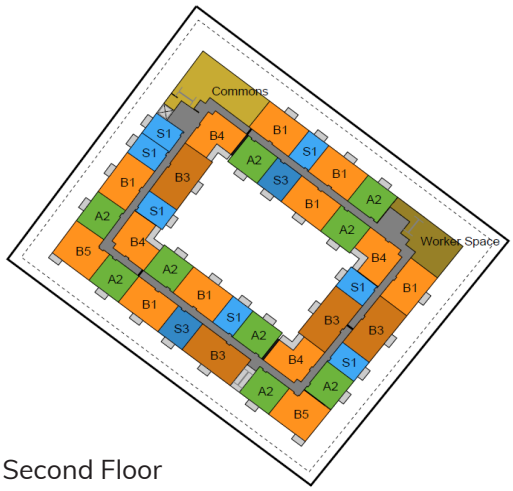


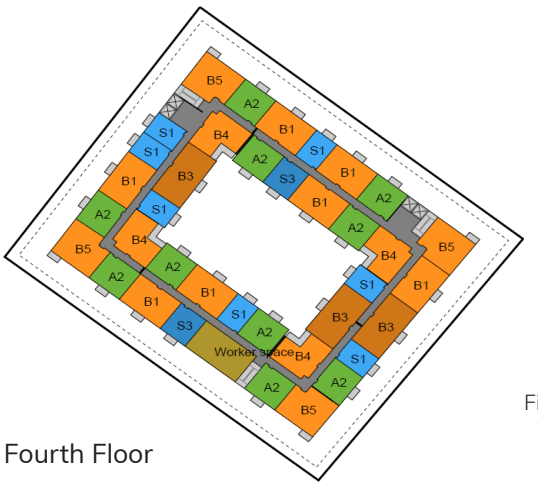
Figure 45: Iteration 'O' Site Plan

Ground Floor

Third Floor



Second Floor



Fourth Floor

Figure 46: Iteration 'O' Building Plans

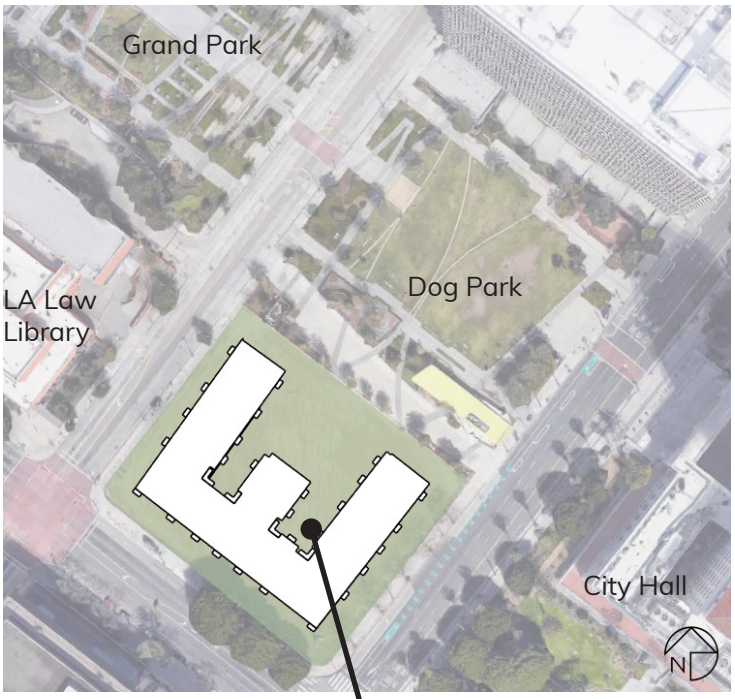
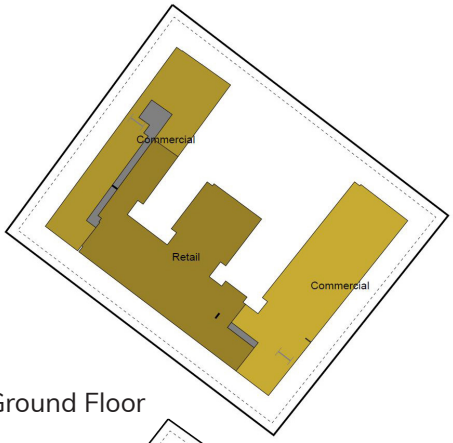
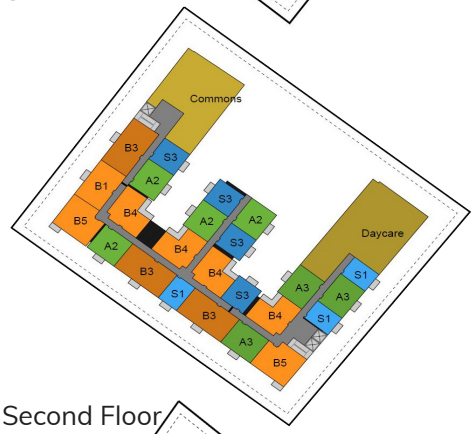


Figure 47: Iteration 'E' Site Plan

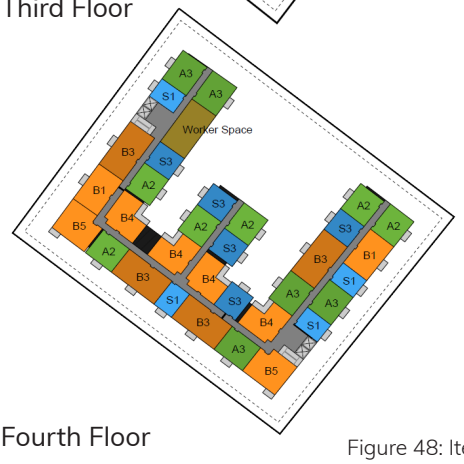


Ground Floor



Second Floor

Third Floor



Fourth Floor

Figure 48: Iteration 'E' Building Plans

The third iteration is named after the letter E. *(fig. 47)* This iteration was four floors with 87 units. The first floor would house the retail and commercial. Moving up, the second floor would be comprised of units, community kitchen, and the daycare. The third floor would be where the workspace and gym would be along with the units. The last floor would be just units. (fig) There were 25 studios, 29 one-bedrooms, and 33 two-bedroom. The pros from the last two iterations were combined into one. Every unit would receive natural lighting as well as the project would have two more private courtyards.

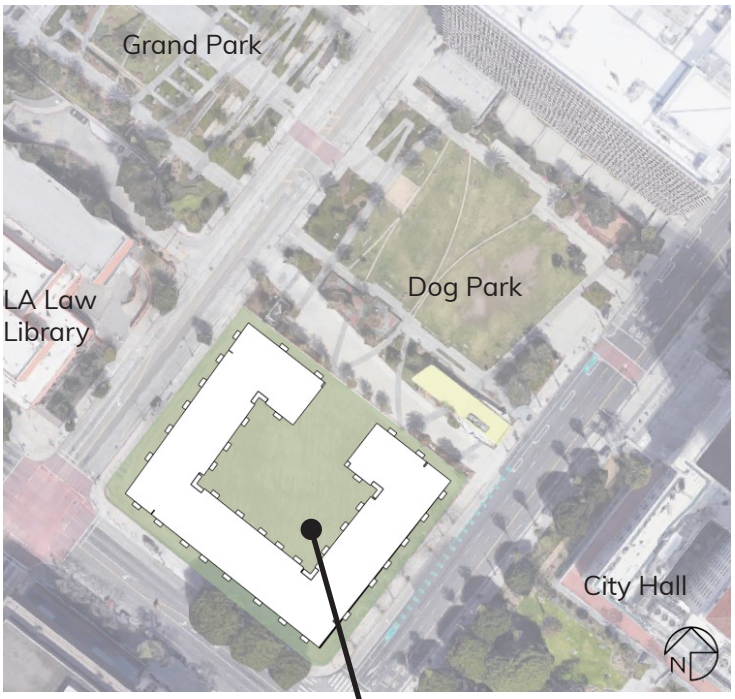


Figure 49: Iteration 'C' Site Plan

The fourth and final iteration gets its name from the letter C. *(fig 49)* The 'C' iteration was four floors as well with 114 units. The retail, commercial, and daycare were located on the ground floor. Moving up the second floor would be units and the community kitchen. The third floor would be units as well as two workspaces and the gym. Finally, the fourth floor would consist of only units. *(fig. 50)* The project would be made up of 30 studios, 34 one-bedroom, and 50 two-bedroom units. The 'C' iteration would have similar benefits as the 'E' iteration and have plenty of natural light for units and a courtyard for residents.

Ground Floor

Second Floor

Third Floor

Fourth Floor

Figure 50: Iteration 'C' Building Plans

iii. Final Design

iiia. Construction Method

In an effort to find a more sustainable and energy efficient design solution, I decided to use repurposed shipping containers that would act as modules and could be simply placed on the site. Shipping containers come in 3 sizes: 10', 20', and 40'. *(fig. 51)* For the sake of this project, the 40' containers were used. The module idea has many benefits.

The first benefit of shipping containers is the ability to repurpose, reuse, and recycle. Americans through away millions of tons of metal and wood each year from the building construction and destruction. Shipping containers allow for a greener living and helps reduce metal waste in the country. They reduce the carbon footprint of the project.

Another benefit of shipping containers are their durability. Shipping containers were built to protect the cargo and endure harsh weather conditions. Being in California, earthquakes are a commonality so shipping containers are better equipped to handle such harsh conditions.

A major bonus is the affordability of shipping containers. Individual shipping containers can be purchased for as low as a few thousand dollars. Shipping containers also allow for faster construction which in turn saves money. In figure 52, you can see that with modular construction, site development and the building of the modules can be done at the same time which allows the schedule to be reduced by 30%-50%. When it comes to affordable housing, money must be spread very thin and anyway to save money is a plus.

For this project, the construction method would be the methods created by KTGY Architecture and Planning. The studio and two-bedroom units was three containers together and the one-bedroom units were two containers for this project. To create the modules, the side panels of the container are removed and then connected to the other containers and reinforced with angle and tube steel. *(fig. 53)* The exploded axon *(fig. 54)* shows how the containers would be reinforced and insulated to be suited for living.

Figure 51: Shipping Container Dimensions

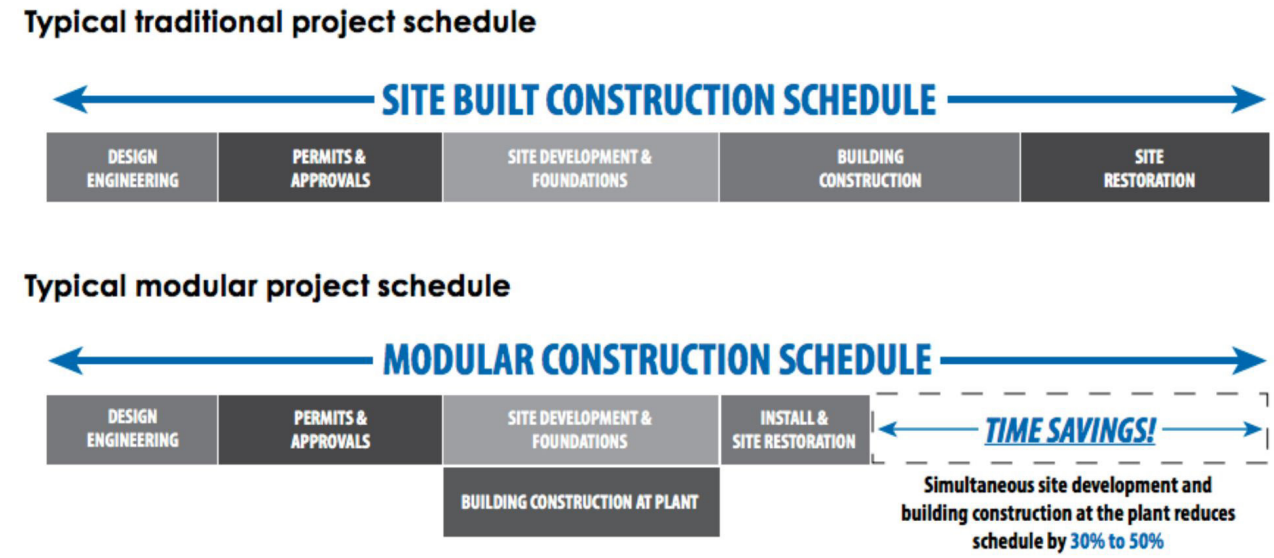


Figure 52: Site Built Construction vs Modular Construction

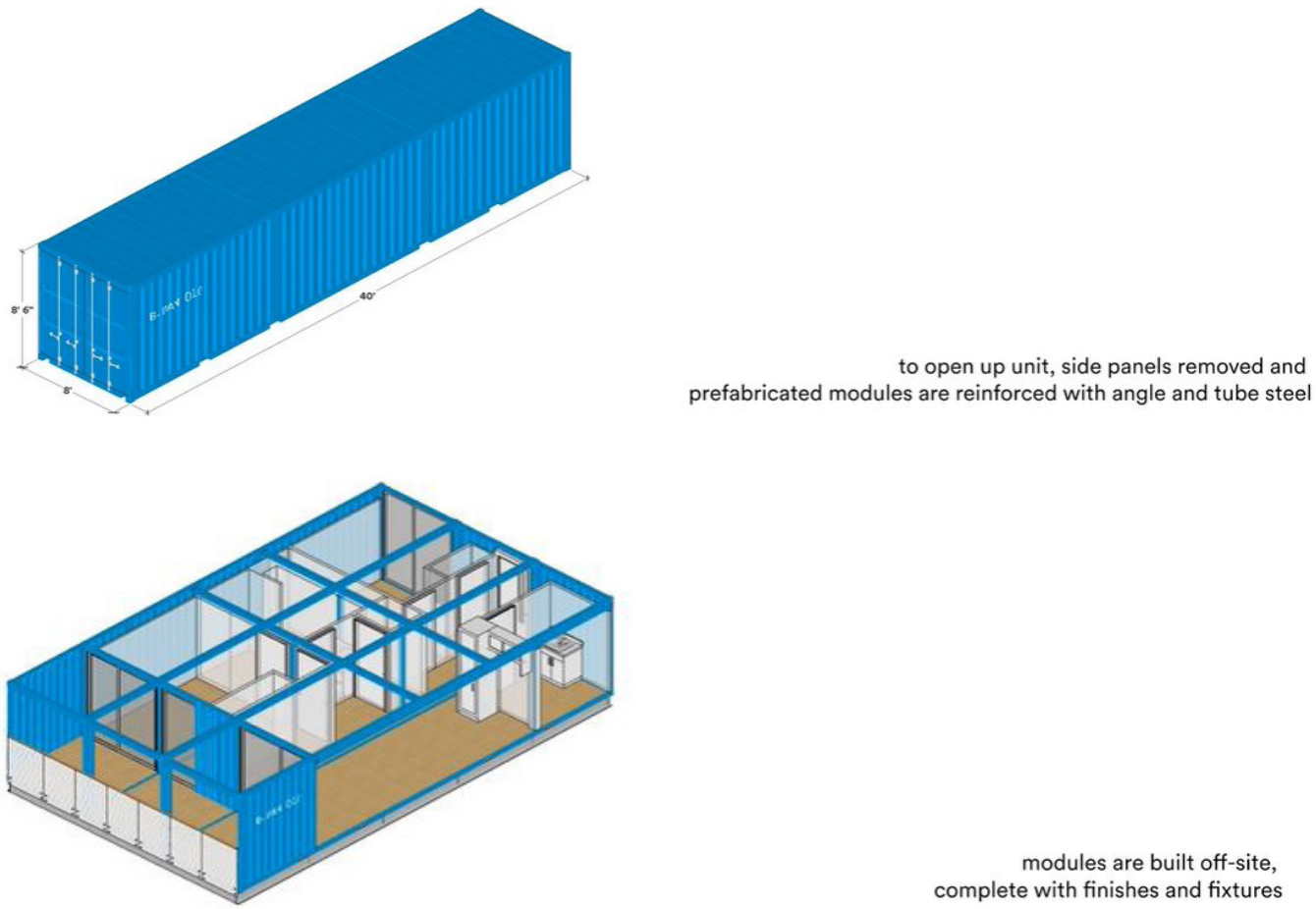


Figure 53: KTGY Construction Method

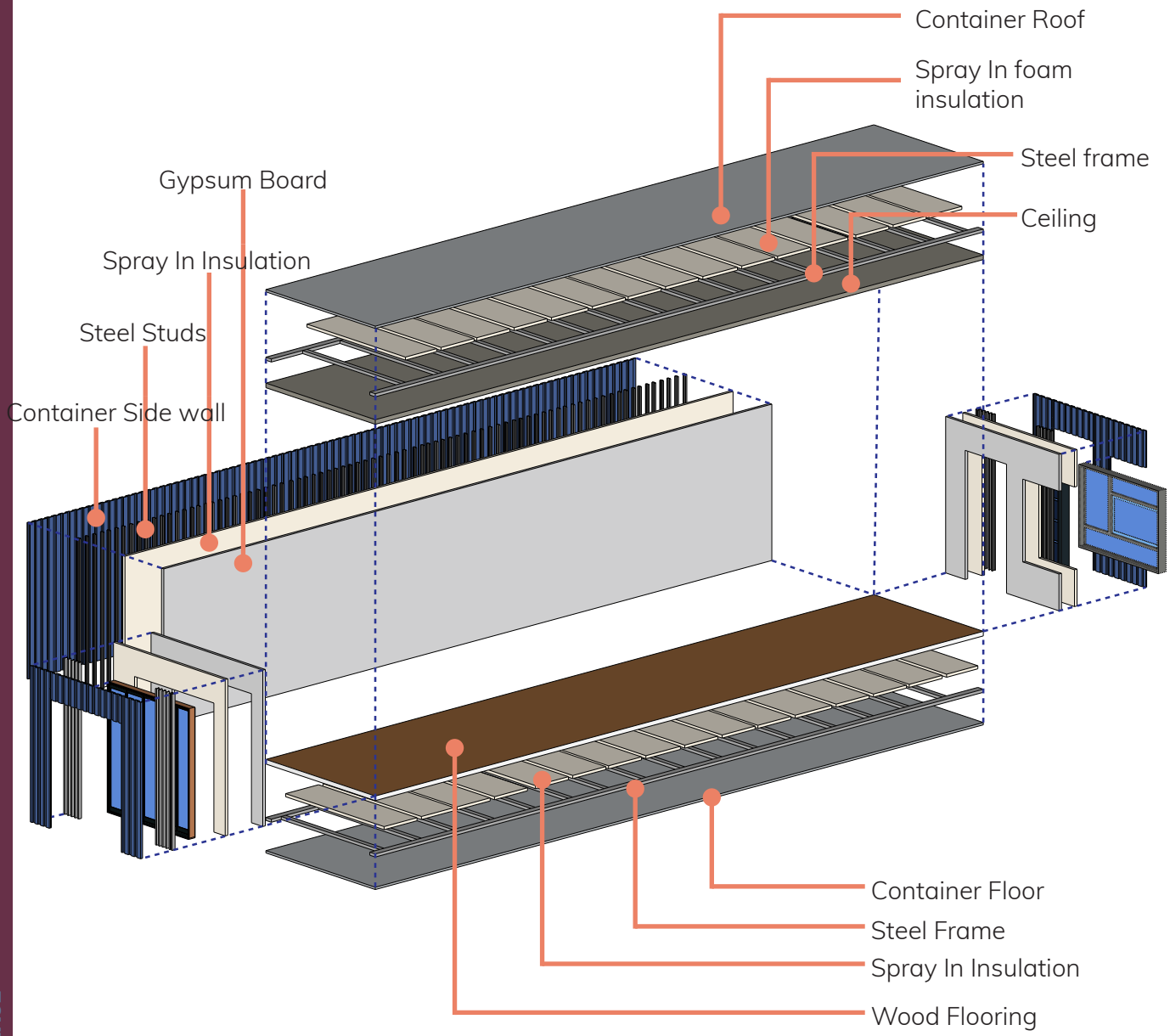


Figure 54: Exploded Axon Shipping Container

iiib. Shipping Container Precedents

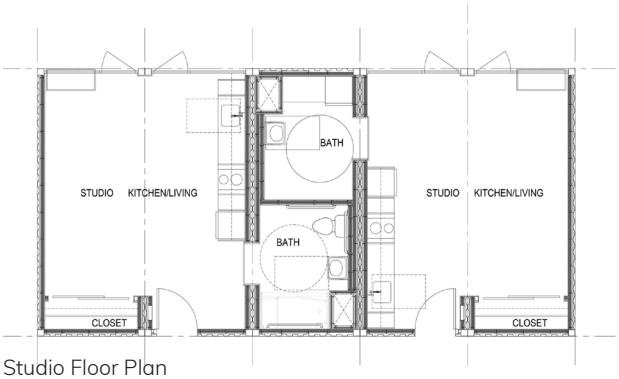
Once determining the construction method, more case studies were pulled but this time strictly for shipping container developments. All the projects were designed and constructed by KTGY Architecture and Planning an HBG Construction Corp.

The first development pulled was Hope on Alvarado which was part of the initial case study analysis. As a refresher, the project was offered permanent supportive housing located in Westlake. The project was five stories and was comprised of 64 units ranging from 400-480 square ft. *(fig. 55)*

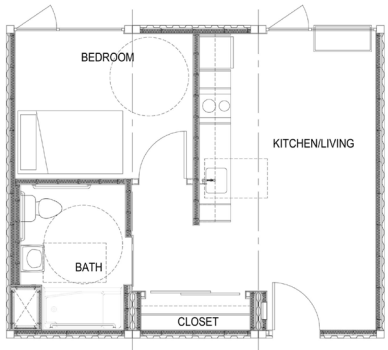
The second development was also permanent supportive housing. Hope on Broadway is in South LA in the South Park neighborhood. Hope on Broadway was five stories as well, but this time offered slightly more units with 96. The units were smaller in square footage ranging from 320 sq. ft. to 480 sq. ft. *(fig. 56)*

The third development is Hope on Avalon. Avalon in not with the city limits of LA but is in Los Angeles County. Hope on Avalon is also a five-story permanent supportive development. The total number of units was unclear, but the units were 400 sq. ft. *(fig. 57)*

The fourth development is Hope on La Fayette. La Fayette is in Central LA. This development differs from the previously three as it provides bridge homeless. Bridge housing provides housing and support services for the transitional homeless. La Fayette is a one-story dormitory with 72 beds. *(fig. 58)*



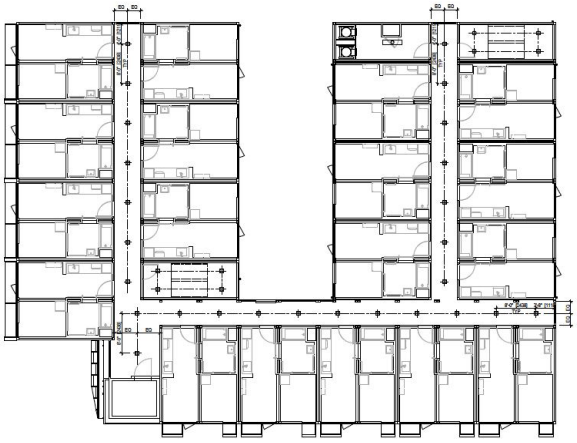
Studio Floor Plan



One-bedroom Floor Plan

Figure 55: Hope on Alvarado

The final development is Hope on Hyde Park. Hyde Park is in South LA. Hyde park is housing for the homeless as well. The five-story Hope on Hyde Park offers 96 studios and one-bedroom apartments. *(fig.59)*



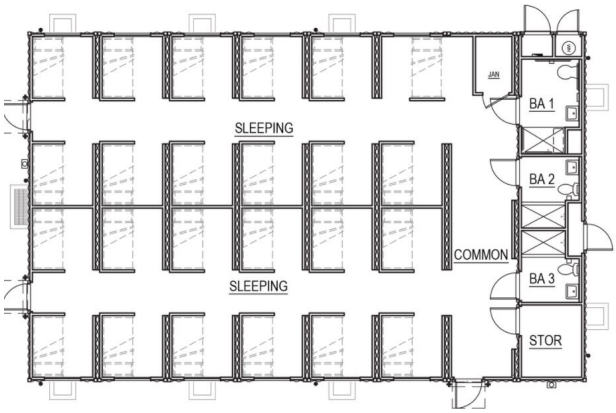
Typical Building Plan

Figure 56: Hope on Broadway

Figure 57: Hope on Avalon

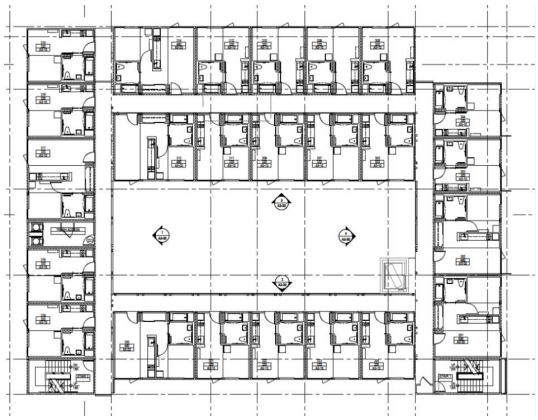
Sign Tower

Figure 58: Hope on La Fayette



Sleeping Units Plan

Figure 58: Hope on La Fayette



Typical Building Plan

Figure 59: Hope on Hyde Park

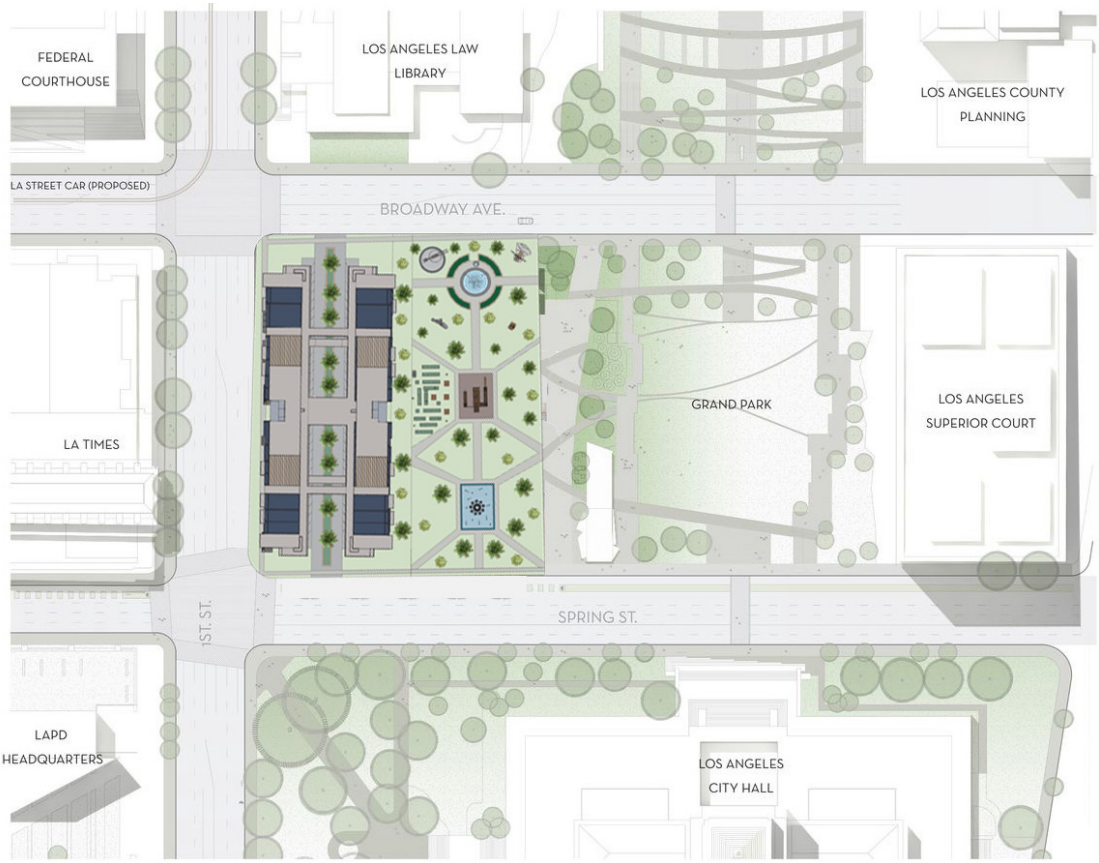


Figure 60: Final Site Plan

iiic. The Design

The final outcome for the project was a single loaded corridor building. The project site was divided into sections to allow proper space for the building as well as open green space for the residents and nonresidents. The building in on the southern end of the site, leaving the open space to the north. The green space was designed after Grand Park that runs just north of it. The plaza, as I named it, was divided into three sections. Starting from the East is a splash pad for kids to enjoy. Continuing into the plaza brings you the playground for kids as well. A community garden is located between the building and the playground. Finally in the plaza is the sculpture garden and fountain. Seating as well as plants are throughout the entire site. The pathways through the plaza are designed to connect to the existing sidewalks and paths in the connecting Grand Park. *(fig. 60)*

The building consists of two buildings connected by crosswalks. The crosswalks allow for gathering and interaction between residents. Building 1 would have retail space on the ground floor to support mom and pop shops, a supermarket and or possibly even clothing stores. Moving up the second through fourth floor would be the container units. On the very top of the building would have roof access for a roof terrace where another community garden and seating would be located. Building 2 would have building amenities on the ground floor. Amenities would consist of a daycare, community kitchen, recreation room, work/ study spaces, and a fitness center. The second through fourth floor of building 2 would be the exact same as building 1, units. A roof terrace would be atop building 2 as well. Under the crosswalks would be an underpass where parking for residents and users of the retail would use. *(fig. 61)*

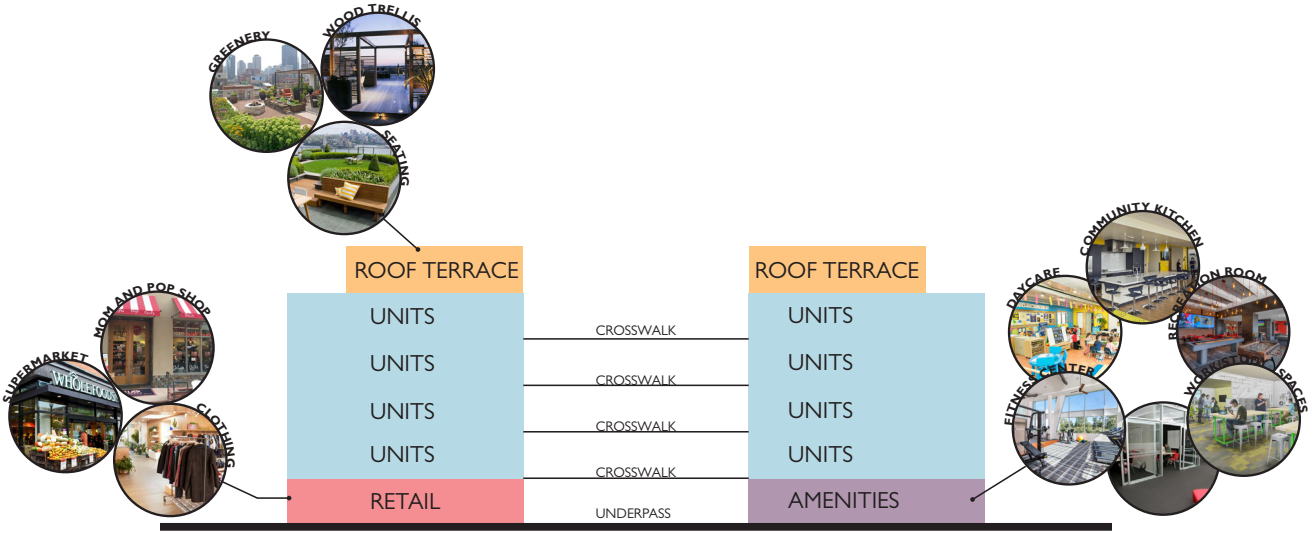


Figure 61: Final Building Program

The project is 100 units. There are 36 studio units. Three shipping containers make up two studio units. One studio is 1.5 of a container and is 480 sq. ft. (fig.) There are 32 one-bedroom units. A one-bedroom consists of 2 containers and is 640 sq. ft. (fig.). The last 30 units are two-bedrooms. Three containers are put together to make up the 1,2840 sq. ft. unit. (fig.) Each room with the units were designed and place strategically to maximum space and allow for the highest quality of living. The interior spaces are very important. It was important to make sure the spaces were humane and did not seem like people were being stuffed together and in the units.

3 containers- 1 1/2 each
480 SF

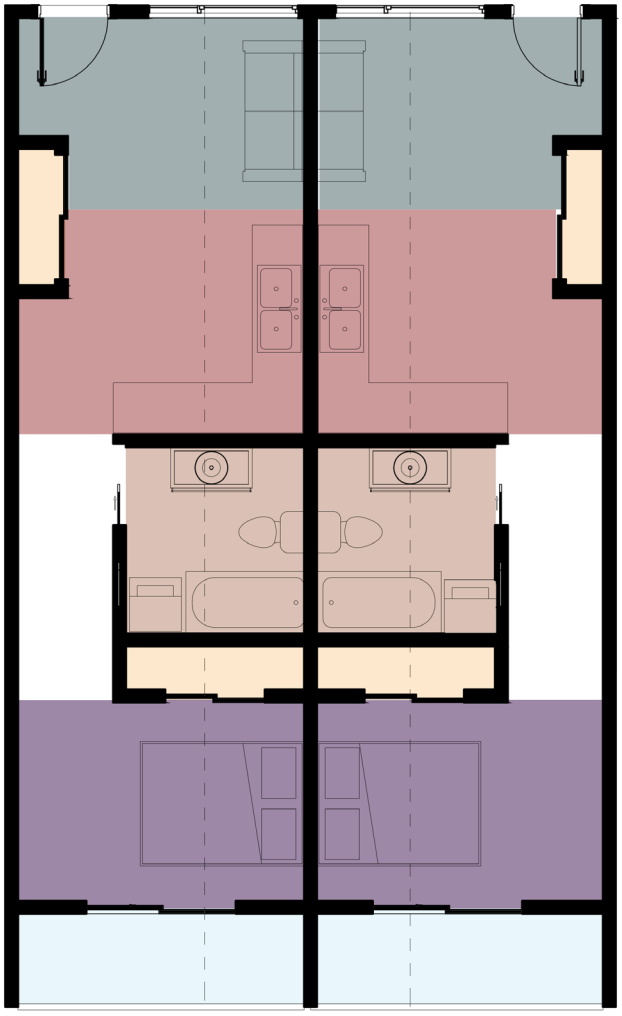


Figure 62: Studio apartment Floor Plan

2 containers
640 SF

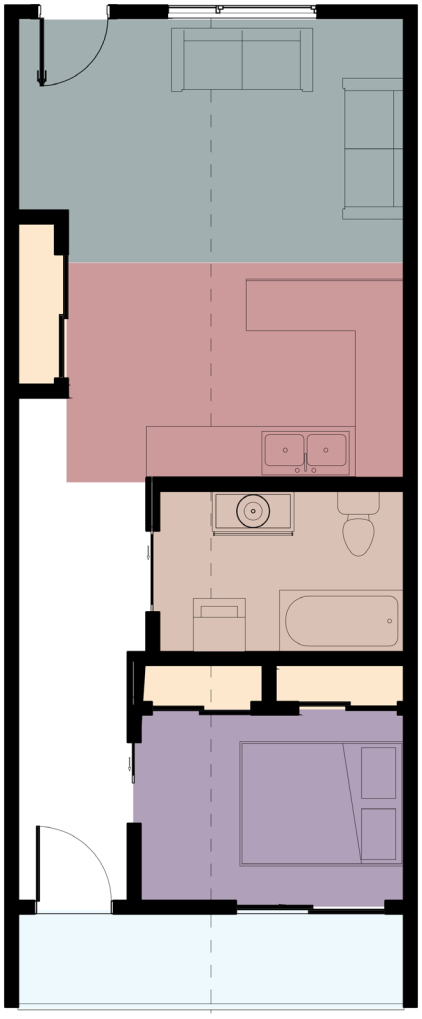


Figure 63: One-bedroom apartment Floor Plan

Kitchen

Bedroom

Living Room

Closet

Bathroom

Patio

3 containers
1,2840 SF

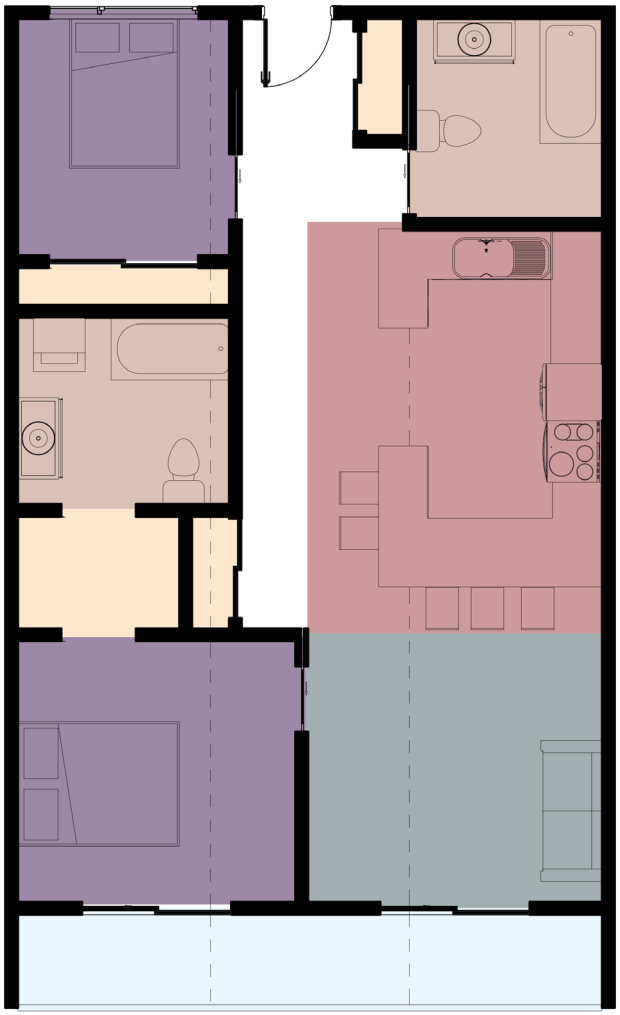
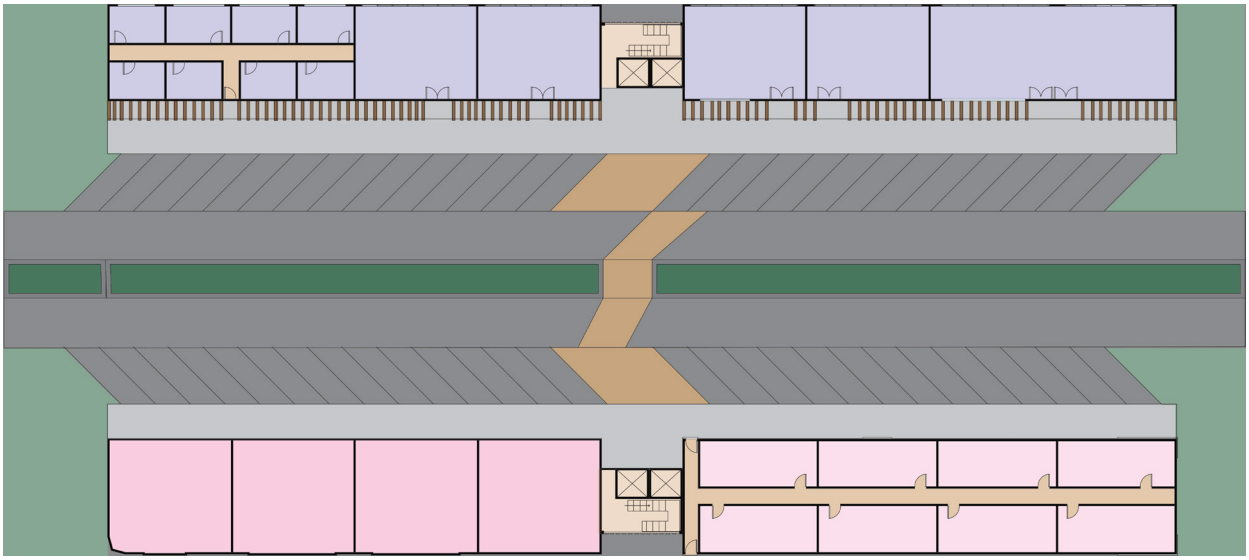
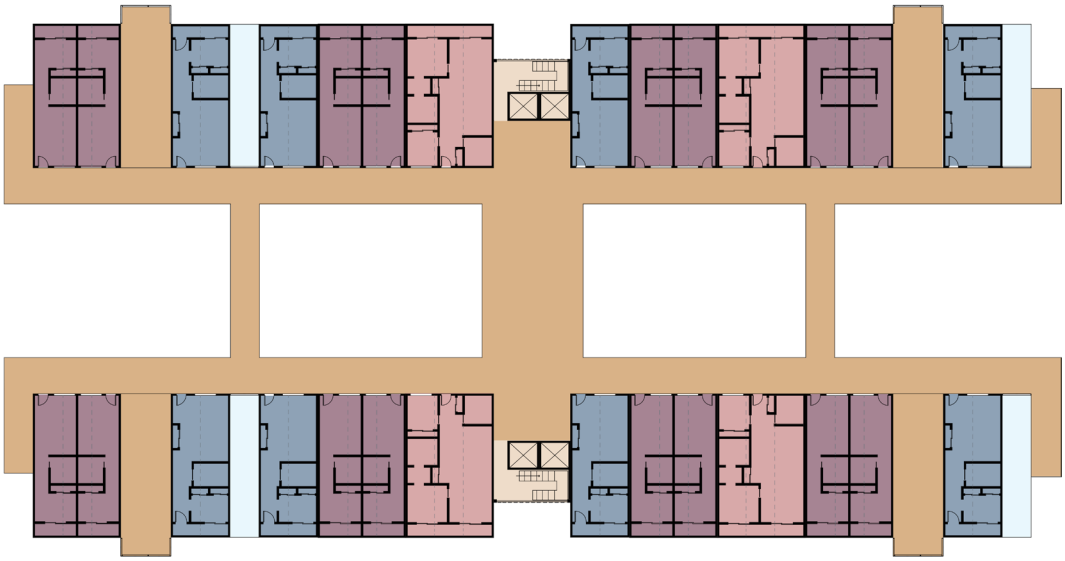


Figure 64: Two-bedroom apartment Floor Plan



Ground Floor

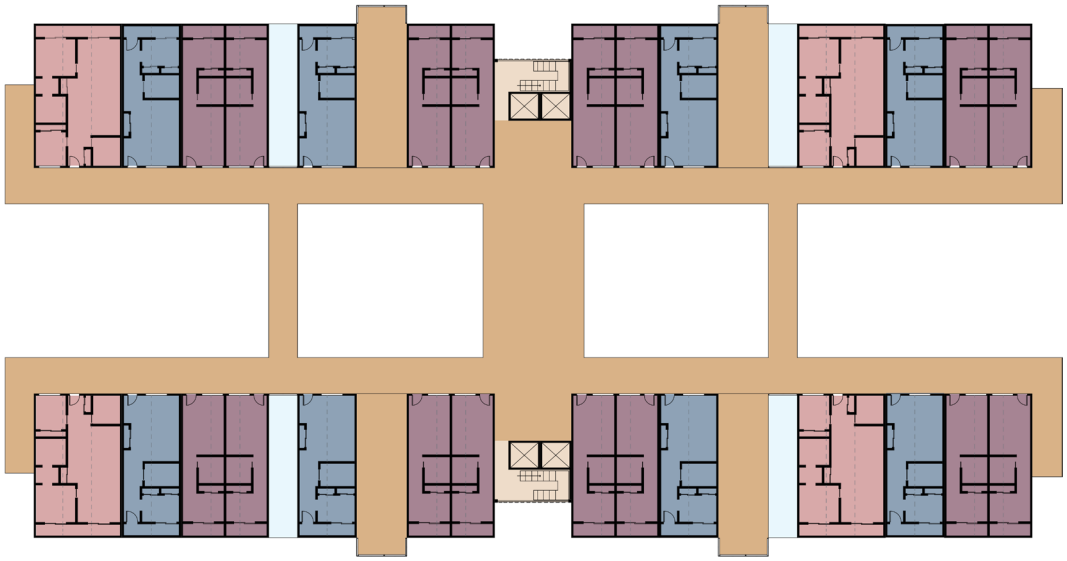


Second Floor

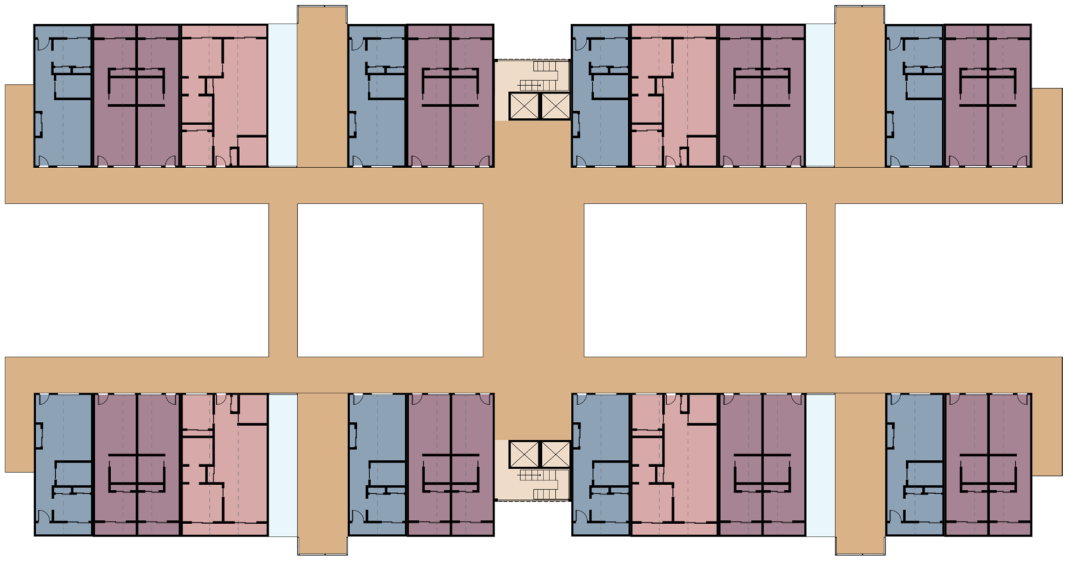
Each floor consists of all unit types. There are ‘platforms’ on each side which also allow for gathering space and/or open space for residents to use as they please. There are breathing points or ’gaps’ that allow for a relief in the units and allows for natural light and a breeze to me generated. The core is located in the center of the building for the best access. *(fig. 65)*

The following pages are renderings of the exterior and inside the individual units.

Figure 65: Building Plans



Third Floor



Fourth Floor

Retail

Mom & Pop Retail

Building Amenities

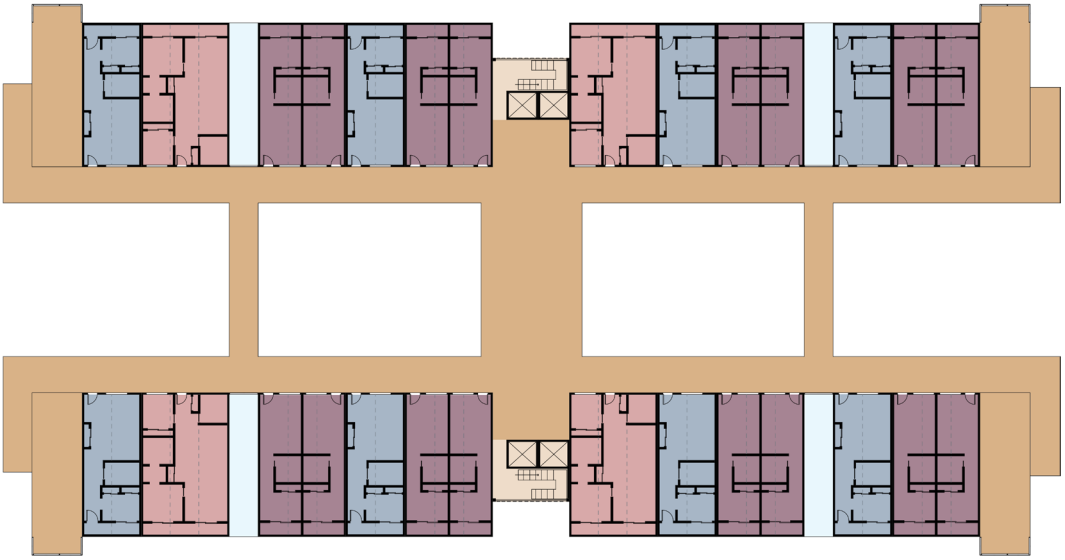
Studio

One-bedroom

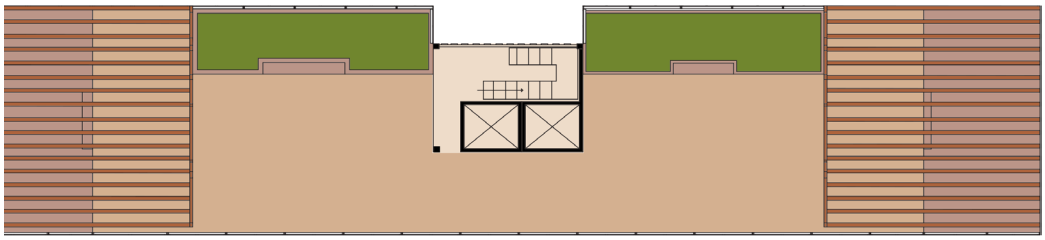
Two-bedroom

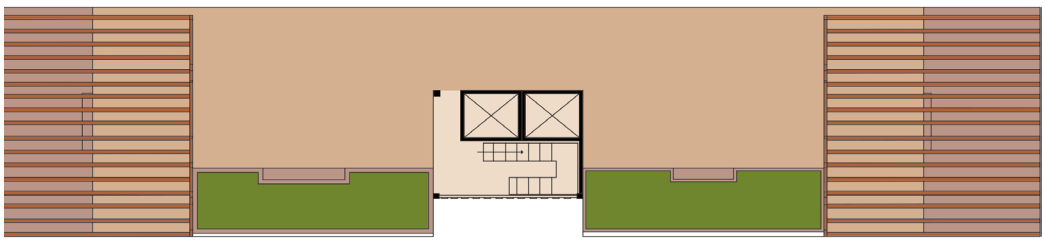
Gap

Platform



Fourth Floor





Roof Plan

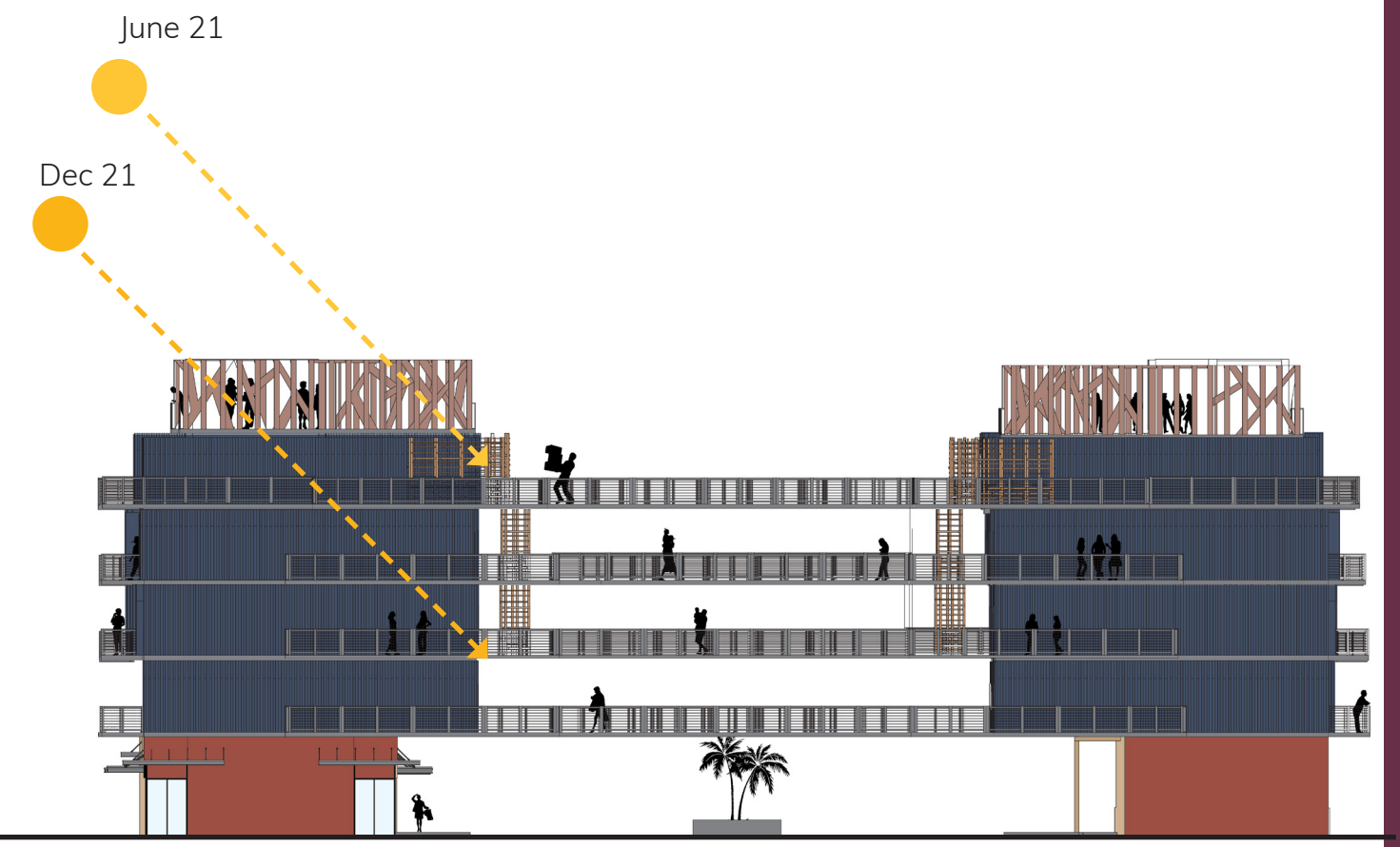


Figure 66: East Elevation

The East Elevation shows how the summer and winter sun will interact with the building.

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Figure 67: 1st St. Exterior Rendering

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Figure 68: Underpass Exterior Rendering

Previous Page:
Figure 69: Walkway Exterior Rendering

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Figure 70: Back Exterior Rendering

Figure 71: Plaza Exterior Rendering

Figure 72: Plaza- Play Area Exterior Rendering

Figure 73: Plaza-Community Garden Exterior Rendering

Figure 74: Plaza- Sculpture Garden Exterior Rendering

Figure 73: Plaza-Fountain Exterior Rendering

INTERIOR RENDERINGS

Figure 74: Studio Apartment-Living Room Rendering

Figure 75: Studio Apartment-Bedroom Rendering

Figure 76: One-Bedroom Apartment-Living Room Rendering

Figure 77: One-Bedroom Apartment-Bedroom Rendering

Figure 78: Two-Bedroom-Kitchen Rendering

Figure 79: Two-Kids Bedroom Rendering

Figure 79: Two-Living Room Rendering

Conclusion

i. Conclusion

In the affordable housing world, it is known that nothing about it is “affordable”. Affordable housing is more affordable for the residents but not for the developers. Constructions for market rate and affordable are on the constant rise as the years go by. To make costs even higher, contractors must pay the on-site workers the union rate (which is pricier than nonunion rates). With the costs of all aspects of affordable housing rising, this in turn raises the overall development costs. Along with the expensive price tag as well as the many other obstacles, such as governmental obstacles, when it come to affordable housing, developers are venture more towards market rate since that is where they feel profit can be made.

This proposed design is a prototype for possible sites around the city. The module units can be laid out in a variety of ways. A small study into different possible sites and corresponding layouts was done. The first site is in South LA in the South Park neighborhood. The second possible is still in South LA just across the 110 highway in the South Figueroa Corridor neighborhood. And the final possible site is in East LA in the Boyle Heights neighborhood. The three proposed sites have a different scale than the proposed design. They all are located in a more residential context. Ideally no matter where the site in located in LA the modular units can be used to design a project.

In no way shape or form will these proposed designs solve the housing crisis in LA. It is however the step in the right direction. At the end of the day more affordable units to constructed to meet the cities demand. Also, material and constructions costs need to go down. With every project going up in costs means the governmental subsidies are going faster and faster. The more expensive projects become, the less projects the governmental subsidies will be able to help.

Figure: 5875 S Los Angeles St.

Figure: 5260 S. Figueroa St.

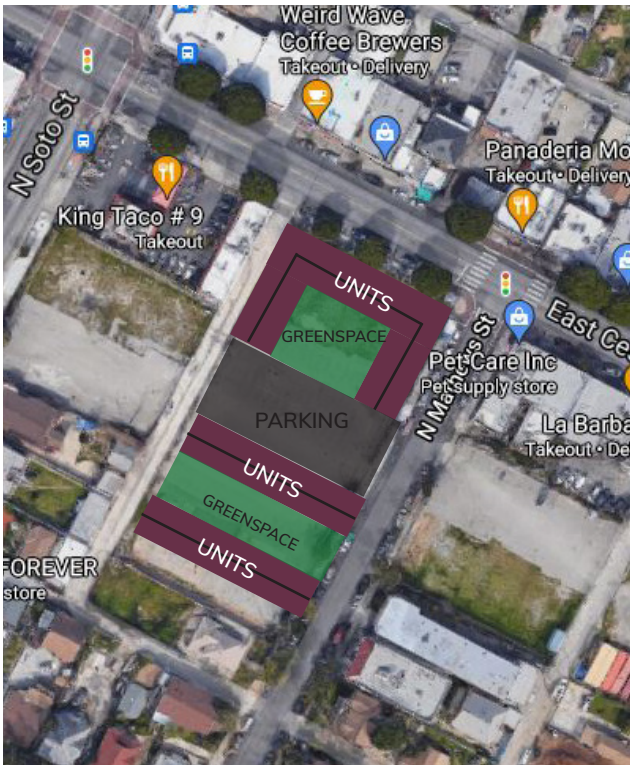

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Figure 15: California Housing Partnership. “Housing Needs Dashboard.” California Housing Partnership, 1 Sept. 2020, chpc.net/housingneeds/?view=34.723555%2C-118.01514%2C6&county=Los%2BAngeles%2CCalifornia&group=market&chart=asking-rents%7C2020.

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Figure 17: California Housing Partnership. “Housing Needs Dashboard.” California Housing Partnership, 1 Sept. 2020, chpc.net/housingneeds/?view=34.723555%2C-118.01514%2C6&county=Los%2BAngeles%2CCalifornia&group=housingneed&chart=shortfall%7Ccurrent%2Ccost-burden%7Ccurrent.

Figure 18: California Housing Partnership. “Housing Needs Dashboard.” California Housing Partnership, 1 Sept. 2020, chpc.net/housingneeds/?view=34.723555%2C-118.01514%2C6&county=Los%2BAngeles%2CCalifornia&group=housingneed&chart=shortfall%7Ccurrent%2Ccost-burden%7Ccurrent.

Figure 19: Buhayar, Noah, and Christopher Cannon. “California’s Affordable Housing Crisis: Why Prices Are So High and How to Solve It.” How California Became America’s Housing Market Nightmare, Bloomberg, 6 Nov. 2019, www.bloomberg.com/graphics/2019-california-housing-crisis/.

CHAPTER 6

Figure 29: “High-Rise Rehabilitation: Los Angeles, CA: KTGY Architecture + Planning.” KTGY Architecture + Planning, ktgy.com/wp-content/uploads/2015/11/Angelus-Plaza.pdf.

Figure 30: “High-Rise Rehabilitation: Los Angeles, CA: KTGY Architecture + Planning.” KTGY Architecture + Planning, ktgy.com/wp-content/uploads/2015/11/Angelus-Plaza.pdf.

Figure 31: Associates, Thomas Safran &. “Canby Woods.” Thomas Safran & Associates - Affordable Housing Los Angeles, www.tsahousing.com/affordable_housing.php?property=1636&name=Canby_Woods.

Figure 32: Architects, Lorcan O’Herlihy. “MLK1101 Supportive Housing.” LOHA, loharchitects.com/work/mlk1101-supportive-housing.

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Figure 34: KTGY Architecture and Planning. "Affordable Housing Using Redesigned Shipping Containers: KTGY Los Angeles." KTGY Architecture + Planning, ktgy.com/work/hope-on-alvarado/.

Figure 35: KTGY Architecture and Planning. "Affordable Apartment Design: Los Angeles, CA: KTGY Architects." KTGY Architecture + Planning, ktgy.com/work/the-whittier/.

Figure 36: Okeke, Claire. "Clifford Beers Housing Burlington Family Apartments." Clifford Beers Housing, Clifford Beers Housing, 3 Dec. 2020, cbhousing.org/communities/burlington-family-apartments/.

Figure 37: Okeke, Claire. "Clifford Beers Housing 28th Street Apartments in Los Angeles." Clifford Beers Housing, Clifford Beers Housing, 3 Dec. 2020, cbhousing.org/communities/28th-street-apartments/.

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Figure 51: Catie, Catie. "How Wide Is a Conex Box?" 360Connect, 10 July 2020, www.360connect.com/product-blog/how-wide-is-a-conex-box/.

Figure 52: Grant SmereczynskyFollowMember/CEO at Modular Building Systems Network LLCLike49Comment8ShareLinkedInFacebookTwitter1, and Follow. "Build Your next Project SMARTER Not HARDER and We Will HELP with Some Additional Capital in the Deal with You." LinkedIn, www.linkedin.com/pulse/build-your-next-project-smarter-harder-we-help-some-you-smereczynsky.

Figure 53: KTGY Architecture and Planning. "Parking Garage Conversions to Housing: Park House." Park House, ktgy.com/work/park-house/.

Figure 55: KTGY Architecture and Planning. "Affordable Housing Using Redesigned Shipping Containers: KTGY Los Angeles." KTGY Architecture + Planning, ktgy.com/work/hope-on-alvarado/.

Figure 56: HBG. "HOPE ON BROADWAY - Permanent Supportive Housing." Hope on Broadway, www.hbgmodular.com/broadway.

Figure 57: HBG. "HOPE ON AVALON - Permanent Supportive Housing." Hope on Avalon, www.hbgmodular.com/avalon.

Figure 58: HBG. "HOPE ON LA FAYETTE - Bridge Homeless Housing." Hope on La Fayette, www.hbgmodular.com/lafayette.

Figure 59: HBG. “HOPE ON HYDE PARK - Permanent Supportive Housing.” Hope on Hyde Park, www.hbgmodular.com/hydepark.