Spring 2012

When It Comes to Design, People Matter: A Search for Defensible Space and Its Application to Public Housing

Jamie Goldstein

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Thesis Design
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FIG 1 - the demolition of Pruitt-Igoe

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Thesis Contention

Thesis Contention

There is prevalent opinion in today's society that public housing projects are built to hold the maximum amount of people possible while meeting cost efficient requirements. This opinion is only the starting point to the failure of many public housing projects. The failure began when Le Corbusier envisioned the high-rise tower as a utopia for living when he presented his idea to reconstruct the city of Paris with Ville Contemporaine, placing all the residents of Paris off the ground in many x-shaped towers. Since then, many housing projects have adopted the same ideas, and removed there residents from the ground plan. These projects, which were envisioned to be a solution to homelessness for low-income families, are often taken over by crime and drug use, and become more dangerous for people to reside in than living on the streets. Why do many of these projects end up becoming dangerous places for people to live? While some may believe that the demographics that end up residing in these housing projects are the driving force behind the devastation, this is not always the case. People in need of public housing could have a well paying job one day and have no job the next. They may be people who have lost their jobs, veterans who are back from serving in the military and have nowhere to go, mothers who are trying to flee an abusive relationship, teens that run away from home, or even the elderly who have no family to take care of them. In the city, placing these people in high-rise apartments that are more than seven stories high on a double loaded corridor that shares only one entry and exit for the building is not proving to be successful. "They are not the result of a careful application of the knowledge employed in housing the few, transferred to the problems of housing the many. Their form evolved in response to pressures for higher densities, with no reference to previous traditions, and no attempt at understanding [human habit]."[1] Is it the architecture of the projects, and not the people who live there, that create these dangerous environments? **I contend that unsuccessful public housing projects have failed because the projects did not identify with the urban morphology and cultural context of the cities they were built in. They were only identified by attempting to house a maximum density of people and their basic needs of living at the minimum budget.**

It is important to remember that "design cannot [directly] cause behavior, but it can offer the possibility of certain activities taking place."[2] So how does the architect design a housing type that relates to the urban morphology, as well as an environment that deters crime? To achieve this goal, the architect must understand how to design a more successful housing type. Oscar Newman declares that a more successful housing type acknowledges and activates the defensible space of the project. Oscar Newman defines defensible space as follows: " . . . a model for residential environments which inhibits crime by creating the physical expression of a social fabric that defends itself" and " . . . a living residential environment which can be employed by inhabitants for the enhancement of their lives, while providing security for their families, neighbors, and friends."[3] In public housing projects, the only space that is defensible against violence

1 Newman, Oscar. Defensible Space; Crime Prevention through Urban Design. New York: Collier, 1973. 8

2 Marcus, Clare Cooper., and Wendy Sarkissian. Housing as If People Mattered: Site Design Guidelines for Medium-density Family Housing. Berkeley: University of California, 1986. 11

3 Newman, Oscar. Defensible Space; Crime Prevention through Urban Design. New York: Collier, 1973. 3

inside the project is the single unit itself. All other parts of the project are considered a "no man's land", and are difficult to defend because they are not heavily populated, yet open to anyone that enters the project. The "no man's land" (lobby, stairs, elevators, and corridors) is where much of the crimes and violence occur. [4] Treating the "no man's land" of the housing project as public spaces and exposing them to the exterior of the project, makes it easier for the outsider to assess the activity going on inside, creating a defensible environment similar to how the viewer could assess the inside of a building from the street.

The city of Allentown poses a successful model for defensible housing in the private market. Much of the housing in the city is of the row home typology, and is placed on the city block divided by a series of alleyways to allow for maximum defensibility. However, much of the public market in the city is not considered defensible. Similar to the typology of the failing housing type, the residents are placed into high-rise double-loaded corridors surrounded by a "no man's land". The design project in question will be tested on the site of one housing project in Allentown that does not meet the requirements to provide defensible space. The project, B'nai B'rith, is an elderly housing project owned and operated by the Allentown B'nai B'rith Housing Corporation, which is a non-profit organization. The project is funded and regulated by the Department of Housing and Urban Development (HUD). [5] Even with the lack of defensible space in its design, the project is within walking distance of many public amenities needed for the resident, which is essential for testing the design project.

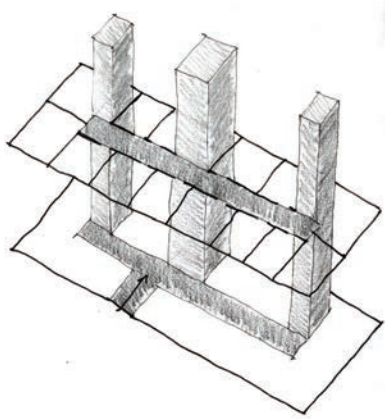
I intend to first critique the advantages and disadvantages with housing built in the urban fabric and how they treat defensible space. Much of the private housing within the City of Allentown is already defensible, so these already present models of defensible space will be studied and used in the decision making of the design process. Four different examples of the residential block will be analyzed with one being studied into greater detail to better understand the urban morphology and cultural context of the city's residences. Then the project of B'nai B'rith will be studied to decide where defensible space presents itself. Then a program will be determined for the project to fulfill the requirements needed to house the same number of residents that would be displaced by the removal of B'nai B'rith, and it will be decided, by analyzing the housing available in the City of Allentown, what demographic the project will be designed for. The goal of the project will be to design a housing type that applies the qualities of defensible space from the urban fabric, as well as considering design decisions that caused other precedents of housing types to fail. This analysis will culminate with a home considered more successful by the resident and create a new public housing type that directly relates to all forms of the city context.

4 Newman, Oscar. Chapter 2: The Problem." Defensible Space; Crime Prevention through Urban Design. New York: Collier, 1973. 22-50

5 Allentown B'nai B'rith Housing Corporation. "B'nai B'rith Apartments."Welcome to B'nai B'rith Apartments. Equal Housing Opportunity, 2009. Web. 26 Oct. 2011. <http://www.abbhc.com/about.php>.

FIG 2 - A raised sidewalk in Buenos Aries acts as a bench

2
Supporting Discussion



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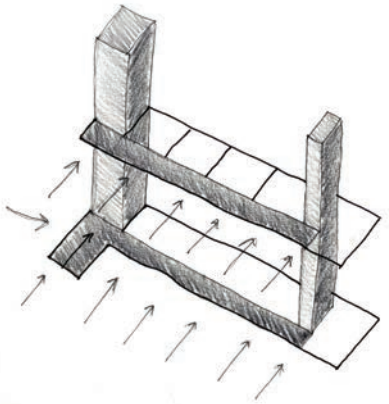


Public circulation space is mandatory for the success of any public architectural project. All projects need an entry and exit. Projects with more than one story need stairs to circulate from floor to floor. When ADA regulations come into play, elevators and ramps are installed. These building elements are essential for anyone to reside in a housing project. However, in many public housing projects, the circulation space can be the most dangerous space to occupy. When the user approaches the project, there are many scenarios that can come into play; the user must walk through a promenade of paths through a span of open space that culminates at the entrance of a building. This entry is hidden from the street, and the user cannot see into the lobby space, where they will wait for the elevator or take the stairs to their apartment. The user is unsuspecting to the mugging that is happening right in front of the elevator, because there is no direct view of the circulation space and enters the dangerous environment. The user attempts to avoid the mugging by entering the stairwell, unknowing of the second mugging occurring on the stairs because there is no direct view into the stairwell. The user evades the second mugging, and arrives at their apartment door, where they hope to stay until they must leave their apartment again.

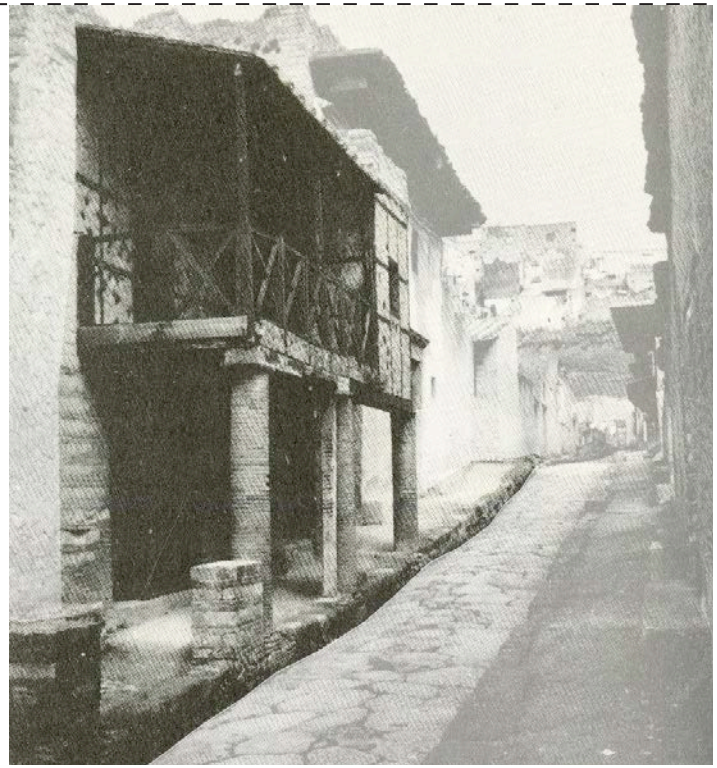
These are the daily occurrences of residents who live in a public housing projects that was designed for the minimum to hold the maximum. It is unfortunate that many residents must succumb to these environments, because this is not how they invisioned they would be living. "Interviews with hundreds of low-income housing residents reveal that most hold the goals and aspirations of the middle class. The desire for security is not limited to the middle class. The desire for a living environment over which one has personal control is part and parcel of the desire for a life which one controls."[6] Of course, it is difficult for a resident to have personal control over their environment when the architecture prevents it. When designing a housing project, personal control and self-policing should be an essential element in the design process when making decisions on how to address the public circulation of a project. Taking into consideration the viewpoints of the user and the views into and out of the circulation space will increase the defensibility of the environment. "The form of buildings and their arrangement can either discourage or encourage people to take an active part in policing while they go about their daily business."[7] We want the form of the buildings to encourage people to regulate the public space to reverse the appearance of dangerous environments.

This is where the application of defensible space comes into play when designing a safer type of housing. Within Oscar Newman's ideas about defensible space can be divided into three different categories of analysis; territoriality, natural surveillance, and images of personalization and ownership. These categories will touch base on how design displays the layering of defensibility on the grounds and inside the project, how design can encourage or discourage individual and group surveillance, and how design portrays the image of a safe community environment and ownership.

6 Newman, Oscar. Defensible Space; Crime Prevention through Urban Design. New York: Collier, 1973. 3

7 Newman, Oscar. Defensible Space; Crime Prevention through Urban Design. New York: Collier, 1973. 3

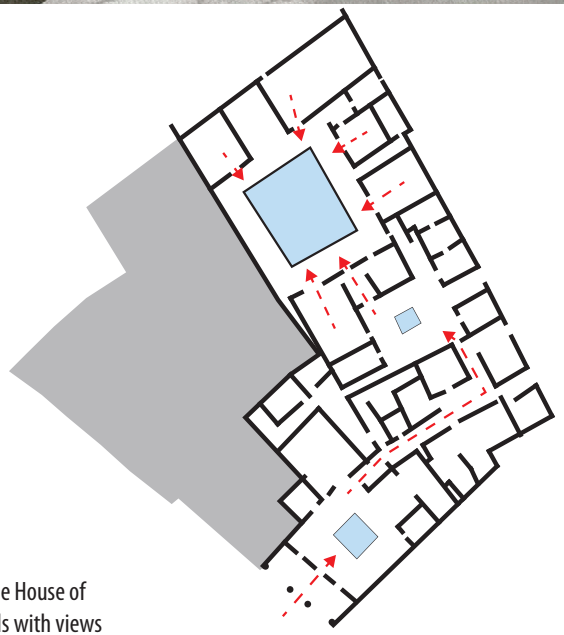
FIG 3 - The entry to the Pompeiian House



Understanding the territoriality of a defensible area means understanding how the layers of defensibility are laid out on the site, from the entry into the grounds to the front door of the apartment. The architectural connotation of these layers acts as symbols of threshold to ward off the unwelcomed visitor. Examples of these architectural symbols date back to the first century in Pompeii. The House of the Vestals in Pompeii had an elaborate formal entrance with a four-column vestibule similar to that of a monumental public architecture, representing that someone of status lived in the house. From the street, the vestibule can be a symbolic marker of threshold by stepping up from the street into the vestibule. Water was also used as a marker of wealth and status. "Water played a dominant role within the open areas through the creation of focal points, highlighting the wealth and status of the property and its owners in the eyes of anyone visiting."[8] Fountains were placed in more public places of the house, and promenades were designed to view the fountains through the monumental entrance.

Similar threshold symbols are apparent in the London terrace houses from 1660 to 1860. These homes typically had a couple of steps up to the front door, with the stoop elevated over existing front basement/vault areas. The vaults could be seen directly from the sidewalk, and were enclosed by a fence. These vaults can be interpreted as acting as an empty moat for the house, similar to a moat filled with water defending a fortress. In the mid-Victorian terrace house, the stoop was covered by a small roof with two columns, similar to a temple front of Roman architecture.[9]

Similar in appearance to the London terrace houses are the Federal Era row homes of Lower Manhattan in the early 1900's. Most homes were only two rooms deep and 25 feet wide, with a cellar and kitchen in the basement and the more formal rooms on the second and third floors. Approaching the entry to the house, there is a small flight of steps that lead up to a stoop. "The origin of the stoop has frequently been attributed to the Dutch tradition of raising dwelling entrances as protection against flood waters".[10] The stoop raises the first floor off the ground, as a representation of ascending to the front door, which acts as a symbol of defensibility. Not only is the stoop a symbol of threshold, but also raising the first floor off the ground allows for light to reach the cellar and the kitchen below ground level. This added perk leads us into how these ideas of threshold help aid in natural surveillance.



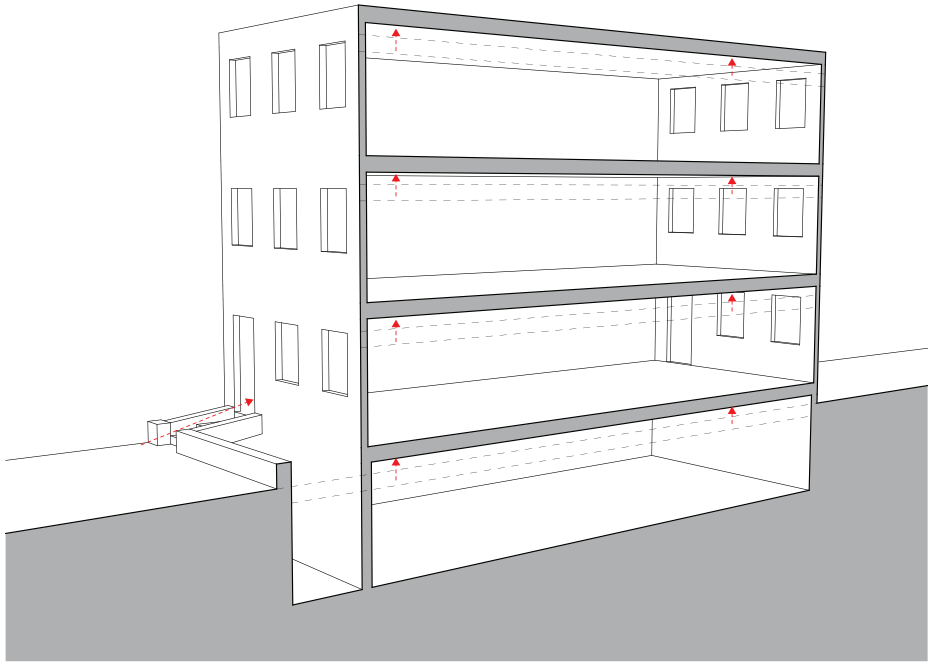
Plan of the House of the Vestals with views

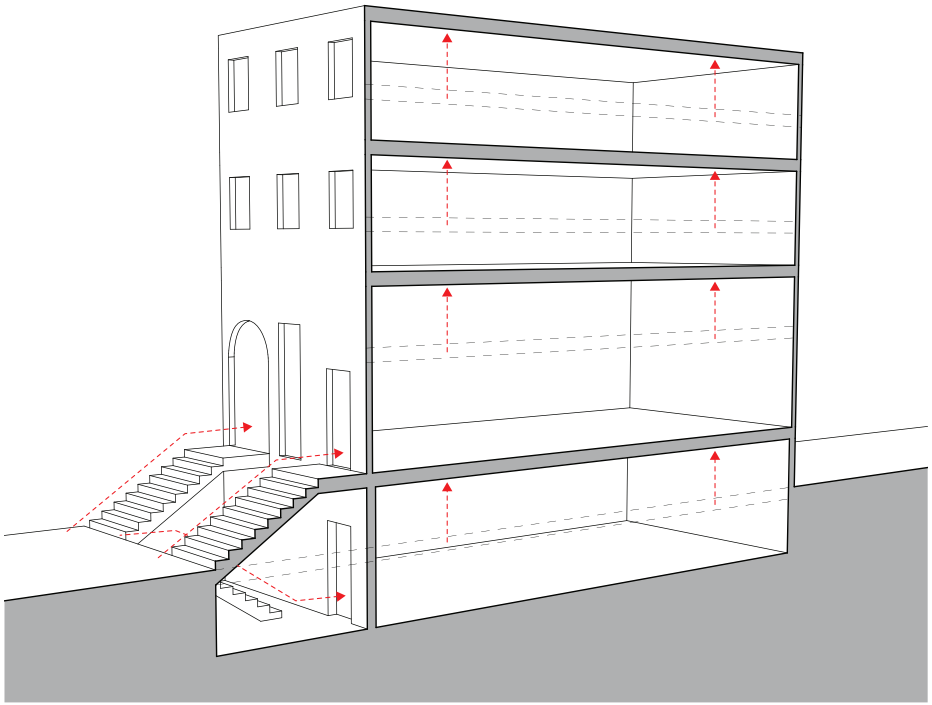
8 Jones, Rick, and Damian Robinson. "Water, Wealth, and Social Status at Pompeii: The House of the Vestals in the First Century." American Journal of Archaeology 109.4 (Oct. 2005): 695-710. JSTOR. Web. 12 Oct. 2011.

9 English Heritage. "London Terrace Houses 1660 - 1860: A Guide to Alterations and Extensions." Avery Index to Architectural Periodicals. Web. 26 Oct. 2011

10 "The Federal Era Row House of Lower Manhattan." GVSHP. The Greenwich Village Society for Historical Preservation. Web. 6 Dec. 2011. <http://www.gvshp.org/13federals.pdf>. 12.

FIG 4 - A London terrace House
FIG 5 - Typical Manhattan row home





Diagrams showing floor slabs raised off ground level to allow void inbetween facade and sidewalk, bridged by steps to house. The Manhattan row home takes advantage of the void to use as circulation to the bottom floor.

Natural Surveillance

FIG 6 - Entrance to a school

FIG 7 - Glass doors between two public spaces

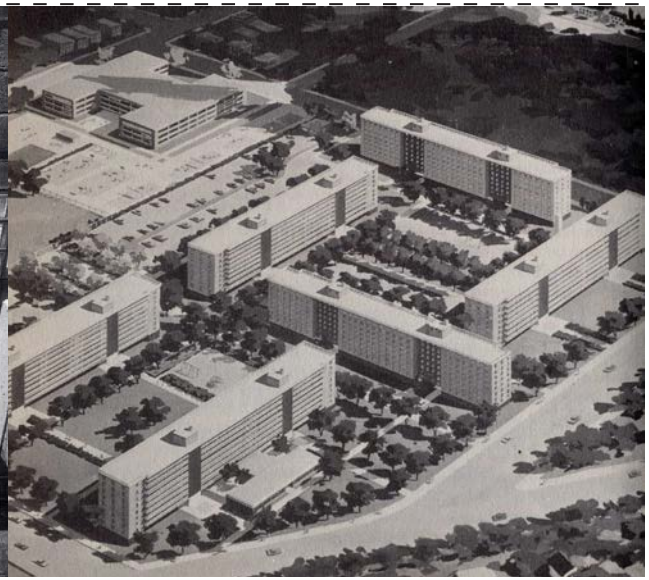


FIG 8 - Defensible site design for high-rise apartments

Natural surveillance is a key element in the design of public housing to begin to eliminate the possibility of the "no man's land". Oscar Newman considered the "no man's land" to be public areas such as parts of the housing grounds and interior spaces; entry, lobby, stairs, elevators, corridors, and fire stairs.[11] To be considered a "no man's land" the space of the project has to be hidden from view during a user's entry and exit of a project, so it is impossible for them to assess what type of environment is present in the space. Eliminating or exposing these "no man's lands", and increasing natural surveillance for the user residing at the project and the visitor to the project will eliminate the possibility of entering a dangerous environment without knowing.

Buildings that orient those spaces into the center of the grounds are not defensible because the user cannot see what is taking place in the lobby of the building from the street. This is apparent in the Van Dyke Houses in New York. The buildings are high-rise apartments, but instead of facing the street, the buildings entrances face towards each other. Although the entrances to the lobbies are glass, and the user can see what is happening in the lobby outside the buildings, they should be oriented towards the street.[12] Residents should be able to view the street from inside their apartments as well. The views from the windows of the buildings in the Kingsborough Houses in Brooklyn, New York are oriented inward towards the other buildings on site, therefore the resident inside cannot view the streets that surround the site. If the building orientation was directed differently, then the streets would be considered safe to walk.[13]

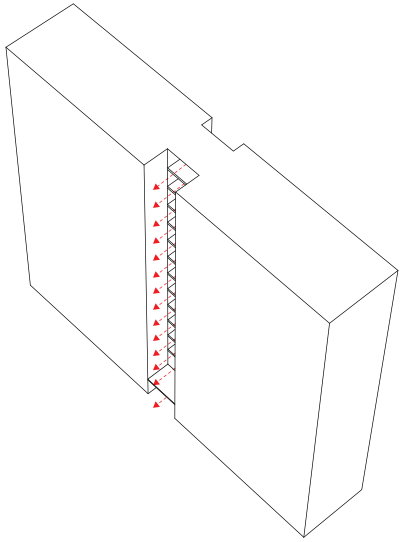
Architecture can be used as a frame to allow the user to zoom-in on the particular parts of the project that may be considered dangerous environments. Opening the entry into the lobby with windows allows the user to see what activities are happening in front of the elevators or stairs. In De Drie Hoven, an elderly housing project in Amsterdam, a framing device as simple as a half door is used at the entrance. This way, the user can identify what is happening outside their door, but the door "is closed enough to avoid making the intentions of those inside all too explicit." [14]

11 Newman, Oscar. Defensible Space; Crime Prevention through Urban Design. New York: Collier, 1973. 27

12 Newman, Oscar. Defensible Space; Crime Prevention through Urban Design. New York: Collier, 1973. 39-43.

13 Newman, Oscar. Defensible Space; Crime Prevention through Urban Design. New York: Collier, 1973. 81

14 Hertzberger, Herman, and Ina Rike. Lessons for Students in Architecture. Rotterdam: 010, 2009. 35



Diagrams showing glass facade treatment at center lobby, which acts defensibly until builidngs are oriented towards each other. They then become indefensible.

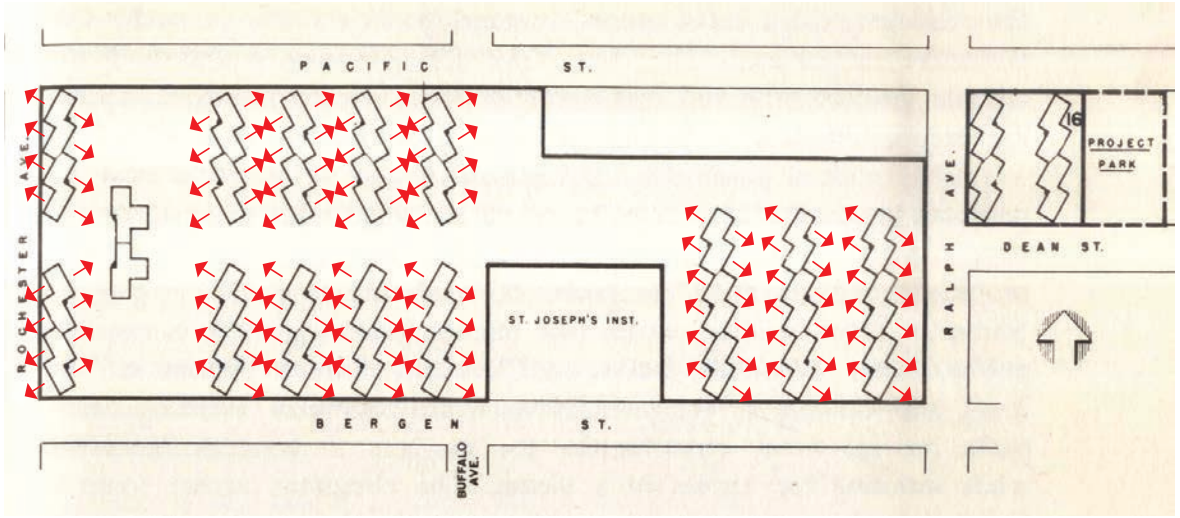


FIG 9 - Plan of Kingsborough Houses

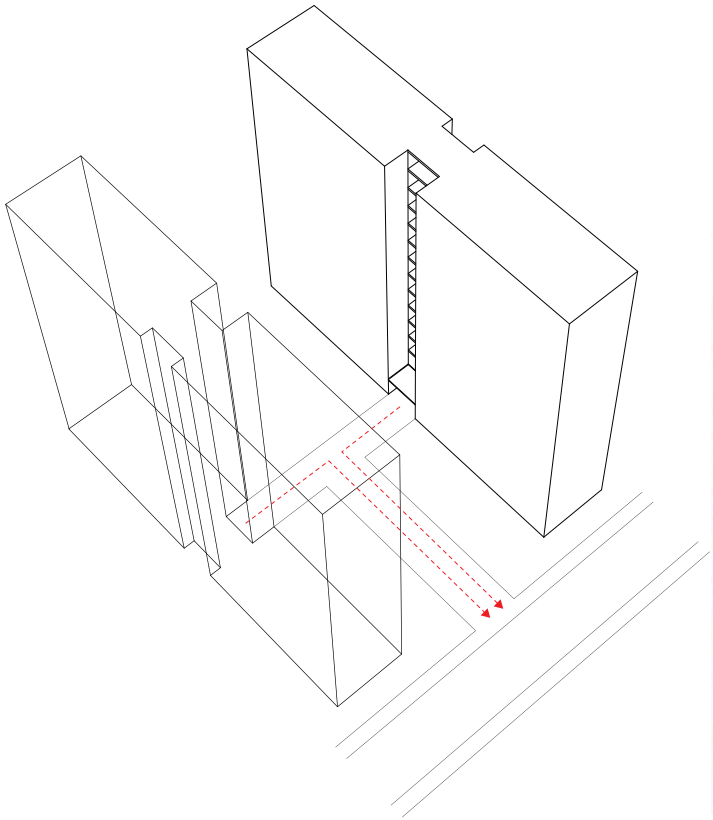
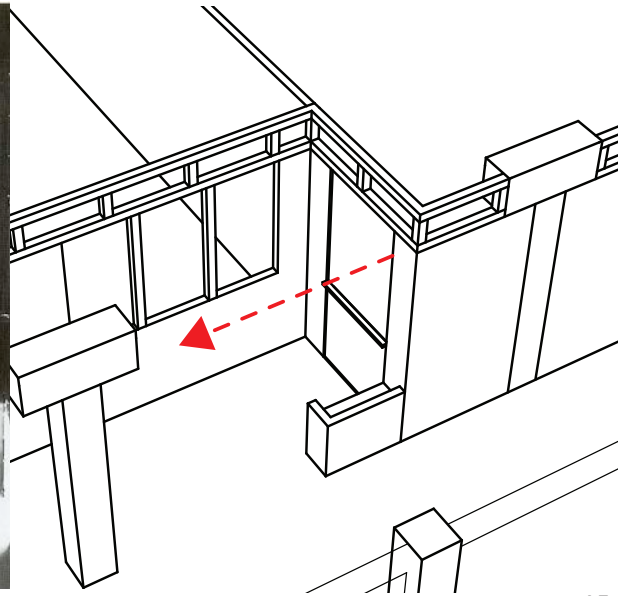


FIG 10 - Image of half door use in De Drie Hoven

Diagram showing direction on view onto public space



Images of Personalization and Ownership

FIG 11 - Front door with the owner's personalization

FIG 12 - Row homes in Boston

When a project poses the impression that it was designed and constructed for density and cost efficiency, it gives a negative connotation for those looking for affordable housing. "The overall exterior impression of a house or group of dwellings significantly affects how residents feel about their homes, sometimes even how they feel about their own worthiness as human beings".[15] Those in need may already feel negatively about their own self-worth, so finding an affordable home should be an enjoyable experience for them. Ownership is a large part of the experience in the upkeep of one's private space, so imposing this idea on design allows the opportunity for the resident to personal a public space to make it feel as their own.

Individualizing the design of housing is a tool to create density without the appearance of a high-rise apartment. A single-family detached house does not create maximum density, so "the architect [should try] to find a balance, so that up close each dwelling is identifiable, but from a distance the dwellings appear to be an integral whole."[16] Clustering units together in smaller buildings, and disguising them as large house expresses the idea of a small community of medium-sized buildings rather than a high-rise. In the city, where large plots of land are not easily available to scatter medium-sized houses over, row homes can have the same diversity of personalization. Units are differentiated from each other by material, color, and ornamentation.

"The architect can contribute to creating an environment which offers far more opportunities for people to make their personal markings and identifications, in such a way that it can be appropriated and annexed by all as a place that truly 'belongs' to them."[17] In De Drie Hoven, each unit's entry is contained in a small alcove that is connected to the adjacent unit's entry and is set back from the hallway of the project. The residents move their belongings into the alcove, which acts similar to that of a front porch, extending their private space to the public area and presenting themselves to the outside.

15 Marcus, Clare Cooper., and Wendy Sarkissian. Housing as If People Mattered: Site Design Guidelines for Medium-density Family Housing. Berkeley: University of California, 1986. 45

16 Davis, Sam. The Architecture of Affordable Housing. Berkeley: University of California, 1995. 85.

17 Hertzberger, Herman, and Ina Rike. Lessons for Students in Architecture. Rotterdam: 010, 2009. 47

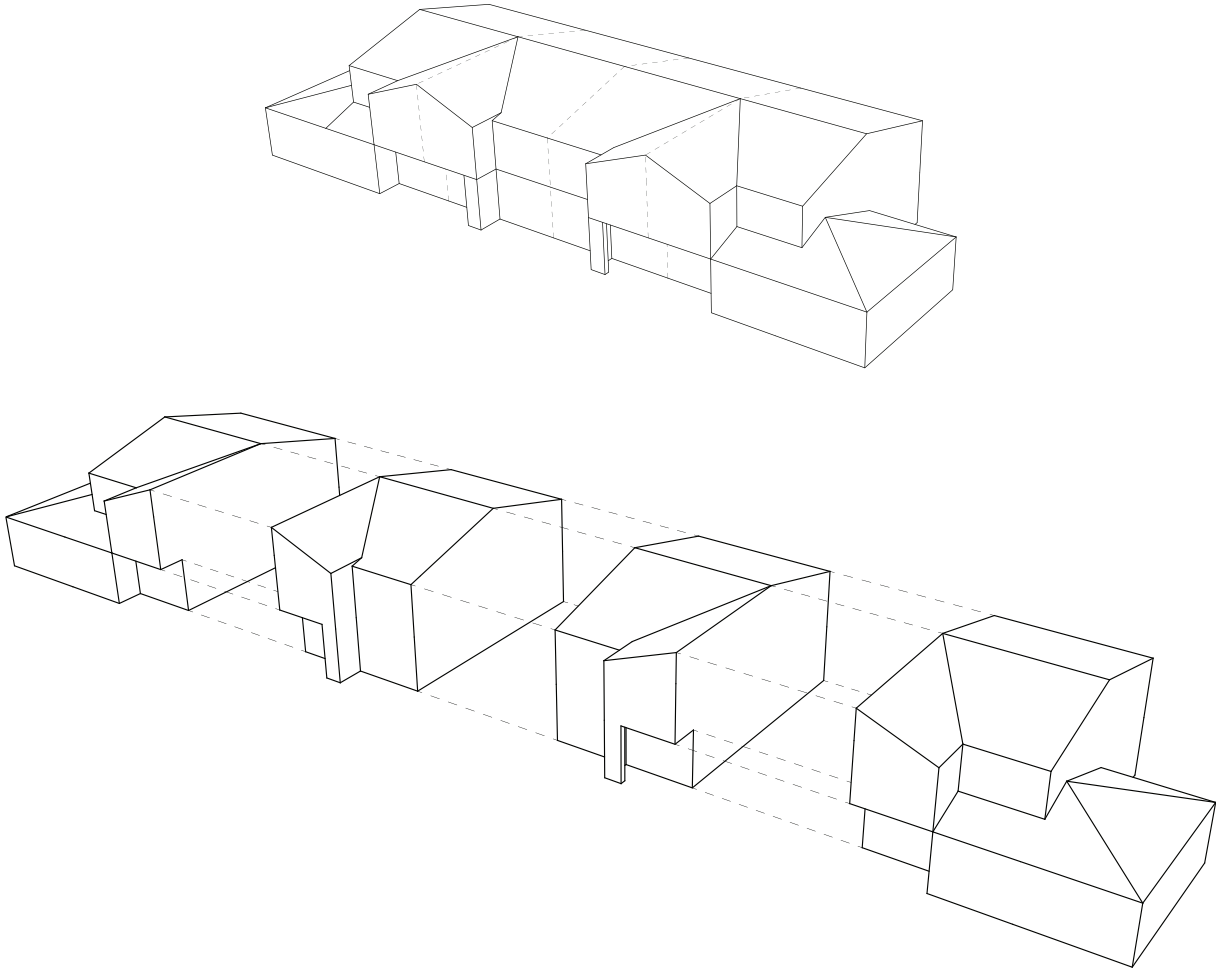


Diagram showing how the big house is actually split into four different units. Disguising the form of the builidng allows the resident to feel they are living in a house instead of a public housing project

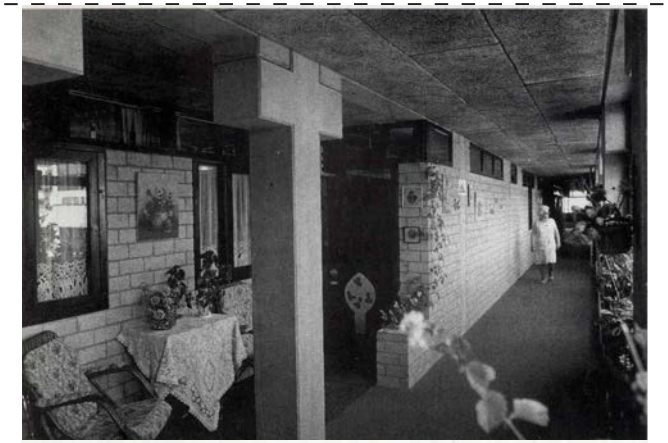


FIG 13 - View of porch created by the resident of De Drie Hoven

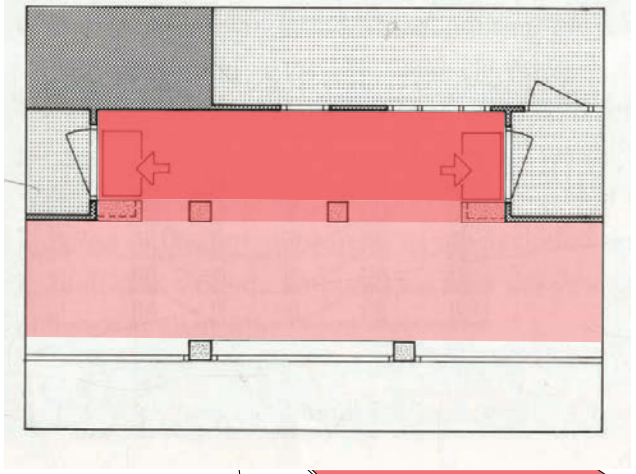


FIG 14 - Plan of entrance alcove with defensibility layered.

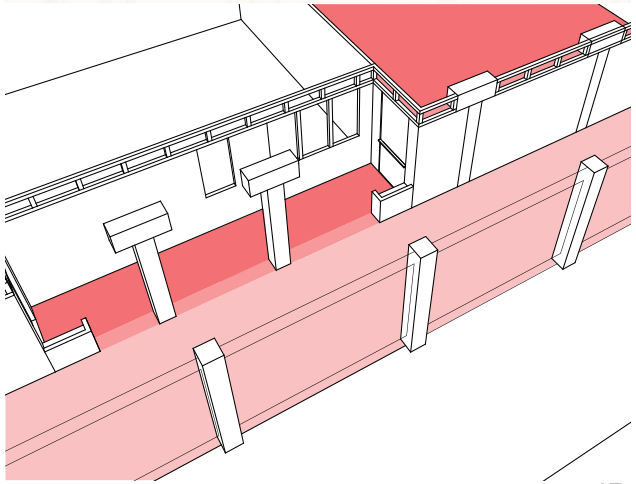
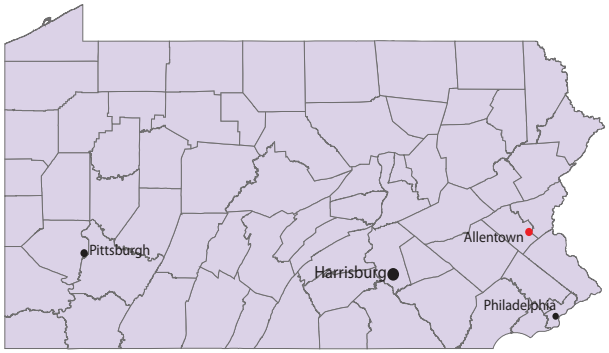


Diagram of extension of private space

FIG - 15 Image of row homes in Allentown,PA

3
City Analysis

History: Allentown, PA



Year 1928

Year 1948

Year 2011

Future Growth

The city of Allentown is the 3rd largest city in the state of Pennsylvania, and has become one of the fastest growing cities in the state. Allentown, together with Bethlehem, PA and Easton, PA, make up the Lehigh Valley. Allentown is the largest of the three cities. The Lehigh Valley is about an hour north of Philadelphia. By the 1830s and 1840s, America's industrial revolution contributed to the growth of the city, with the construction of the Lehigh Canal and later the railroads into the city. During the 1850s and 60s the local iron industry began to grow, causing the nation's growing railroad network to centralize in Allentown. With the collapse of the railroad boom in the Panic of 1873, Allentown's iron industry fell apart, and never came back. With Mack Trucks moving to the city in the 1900's, the city became a nexus for commercial industry, but since then many companies closed or moved away from the city. [18]

Center city Allentown was once the central shopping district of the city. Three major department stores, Hess's (9th and Hamilton); H. Leh and Company (7th and Hamilton), and Zollinger and Harned (6th and Hamilton) were the main anchors of the shopping district. With the development of indoor malls on the suburbs of the city, shoppers returned to the city center less frequently. In 1971, plans were made to revitalize the shopping district and make Hamilton Street the Hamilton Mall, which would end all automotive traffic between 6th and 10th Streets on Hamilton Street.

18 City of Allentown - PA - Official Site. City of Allentown. Web. 26 Oct. 2011. <http://www.allentownpa.gov/>.

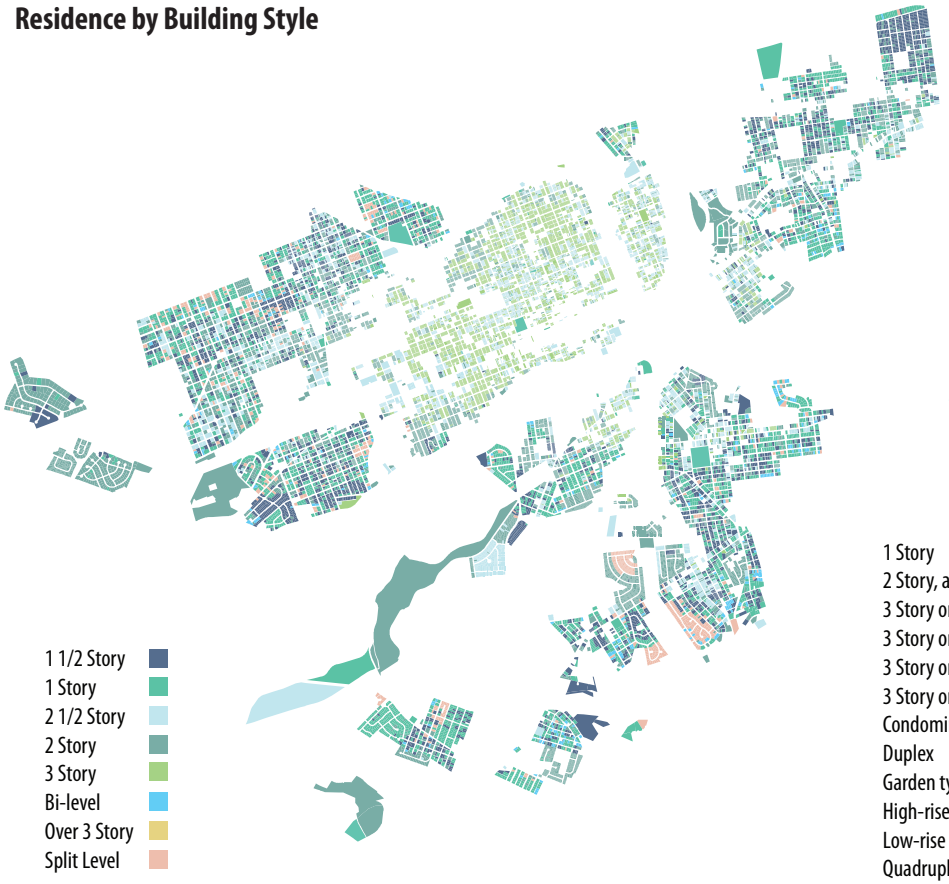
The subsequent increase of suburban shopping malls did not help the Hamilton Mall, and the plan was soon abandoned. The city center has now been transformed to the center of government and public works for the city. As the shopping districts moved to the suburbs, many of the middle class city residents followed. This left lower-income neighborhoods closer to the city center, with more middle-class neighborhoods mostly west of the city center and in the suburbs on the outskirts of the city.

Allentown is divided into five general areas: the East Side, the 1st and 6th Wards, Center City, the West End, and the South Side. The East Side is a mix of residential and commercial concentrated areas. The 1st and 6th Wards is the home of much of Allentown's ethnic population, and is the oldest concentration of residential and industrial areas. Center City comprises of concentrated residential development and commercial development, as well as many of the cultural facilities of the city. The West End holds many of the middle class neighborhoods, as well as the two collegiate campuses of the city and the Allentown Fair Grounds, where the Great Allentown Fair is held every August. The South Side is a mix between older and newer residential neighborhoods, as well as the headquarters for the Lehigh Valley Health Network, and the Queen City Municipal Airport.[19]

19 Allentown City Planning Commission. City of Allentown Comprehensive Plan. 29 Jan. 2009. Allentown 2020. 435 Hamilton Street, Allentown, PA.


Commercial
Educational
Government
Hospital
Industrial
Park
Residential

Residence by Building Style

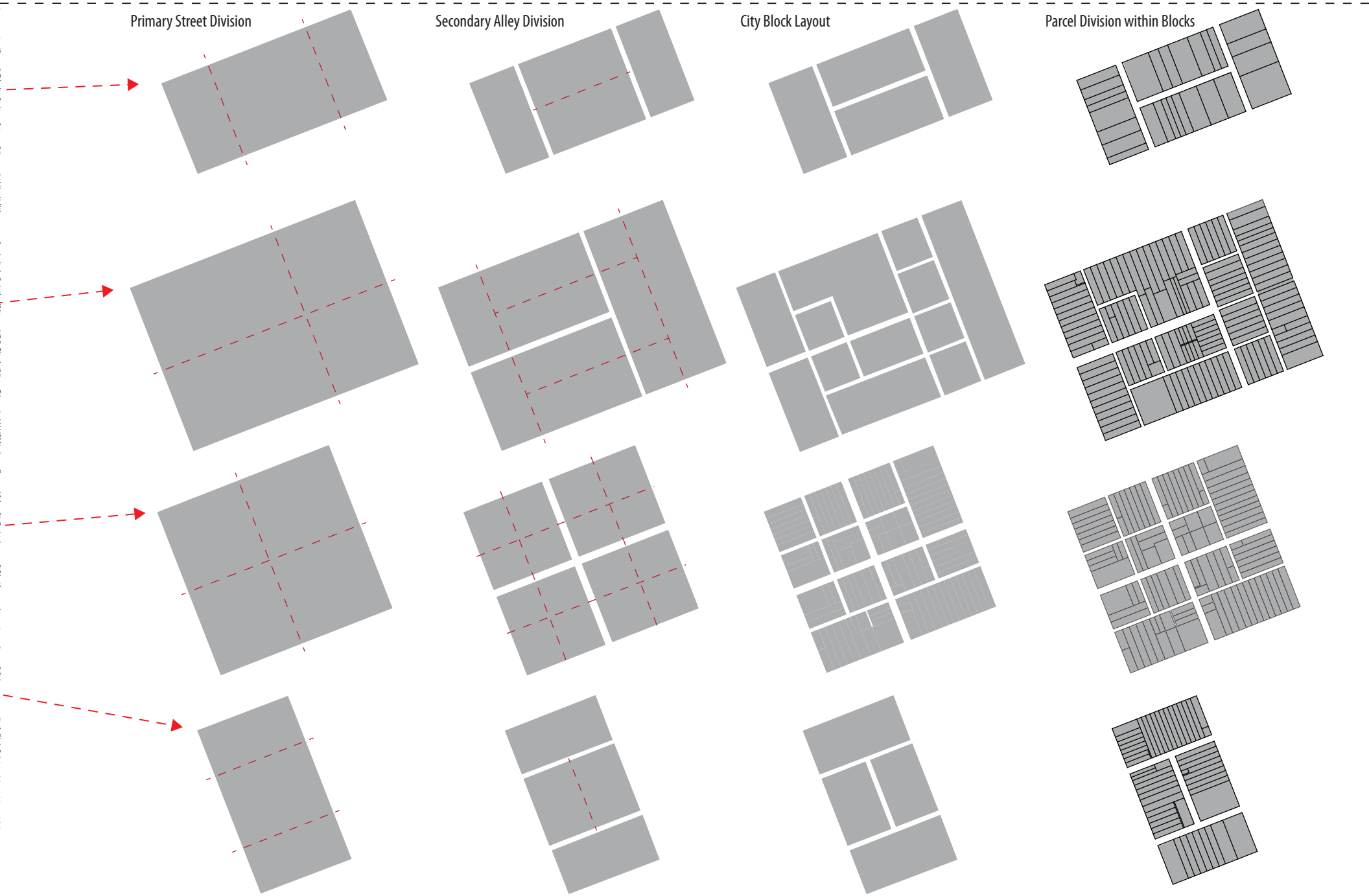


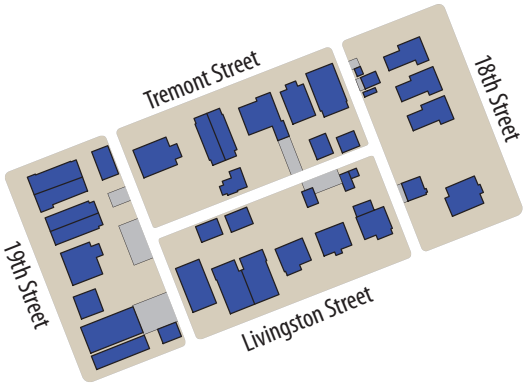
Residence by Building Type

Much of the city is made up of residential blocks. Commercial and industrial districts are densely clustered along the primary and secondary roads. This distribution directly correlates with the dividing lines of the five sectors of the city. The two primary streets of Allentown (Hamilton Boulevard/Street and 7th Street) meet in the city center at a nexus of government buildings. The secondary roads branch off the primary roads and begin to develop the suburbs of the city. The majority of parks are located along the water of the Lehigh River and the Jordan Creek. A secondary road, Sumner Avenue, has direct correlation to the old railroad that ran through the city to an old lumber yard. Looking at the buildng type and style of the residences of Allentown, it is apparent that much of the center city are three story homes, with more one and one and a half story homes clustered surrounding the city center. As for building style, the majority of the residences are typicall single family homes, either detached with a garage or carport, or row home.

The City Block

Four typical city blocks have been chosen to analyze how a block's form is dependent on its division by the city streets and alley ways. These superblocks are divided by primary streets and secondary alleys to construct a city block dense with both residential and commercial program.


Primary Street Division
Secondary Alley Division
City Block Layout
Parcel Division within Blocks



A

Impervious Surface - 41,505 SQFT
27 %

Pervious Surface - 104,510SQFT
69 %

Parking - 5,315 SQFT
4 %

Total Surface: 151,330 SQFT

C

Impervious Surface - 119,987 SQFT
51 %

Pervious Surface - 96,130 SQFT
41 %

Parking - 19,336 SQFT
8 %

Total Surface: 235,289 SQFT

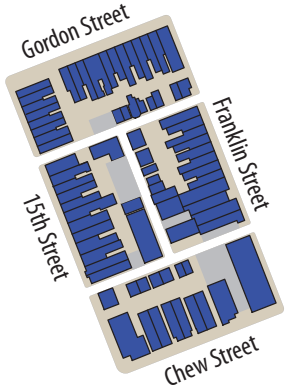
B

Impervious Surface - 180,192 SQFT
58 %

Pervious Surface - 102,793 SQFT
34 %

Parking - 29,916 SQFT
9 %

Total Surface: 312,901 SQFT



D

Impervious Surface - 69,733 SQFT
54 %

Pervious Surface - 51,221 SQFT
39 %

Parking - 9,221 SQFT
7 %

Total Surface: 130,205 SQFT

A

Livingston and 18th | 18th to Tremont | Tremont and 19th | 19th and Livingston

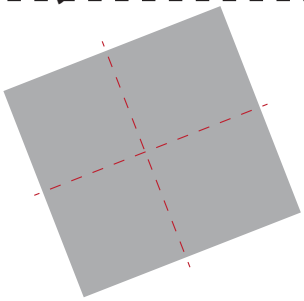
B

Chew and 9th | 9th and Gordon | Gordon and 10th | 10th and Chew

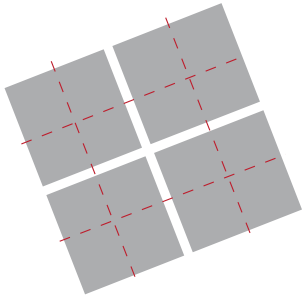
D

Chew and Franklin | Franklin and Gordon | Gordon and 15th | 15th and Chew

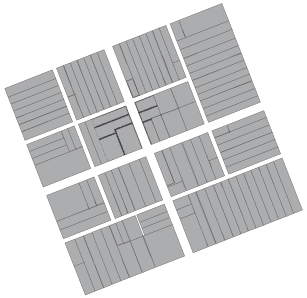
The City Block



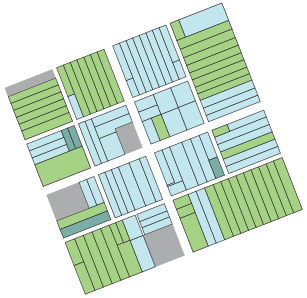
Primary Street Division



Secondary Alley Division



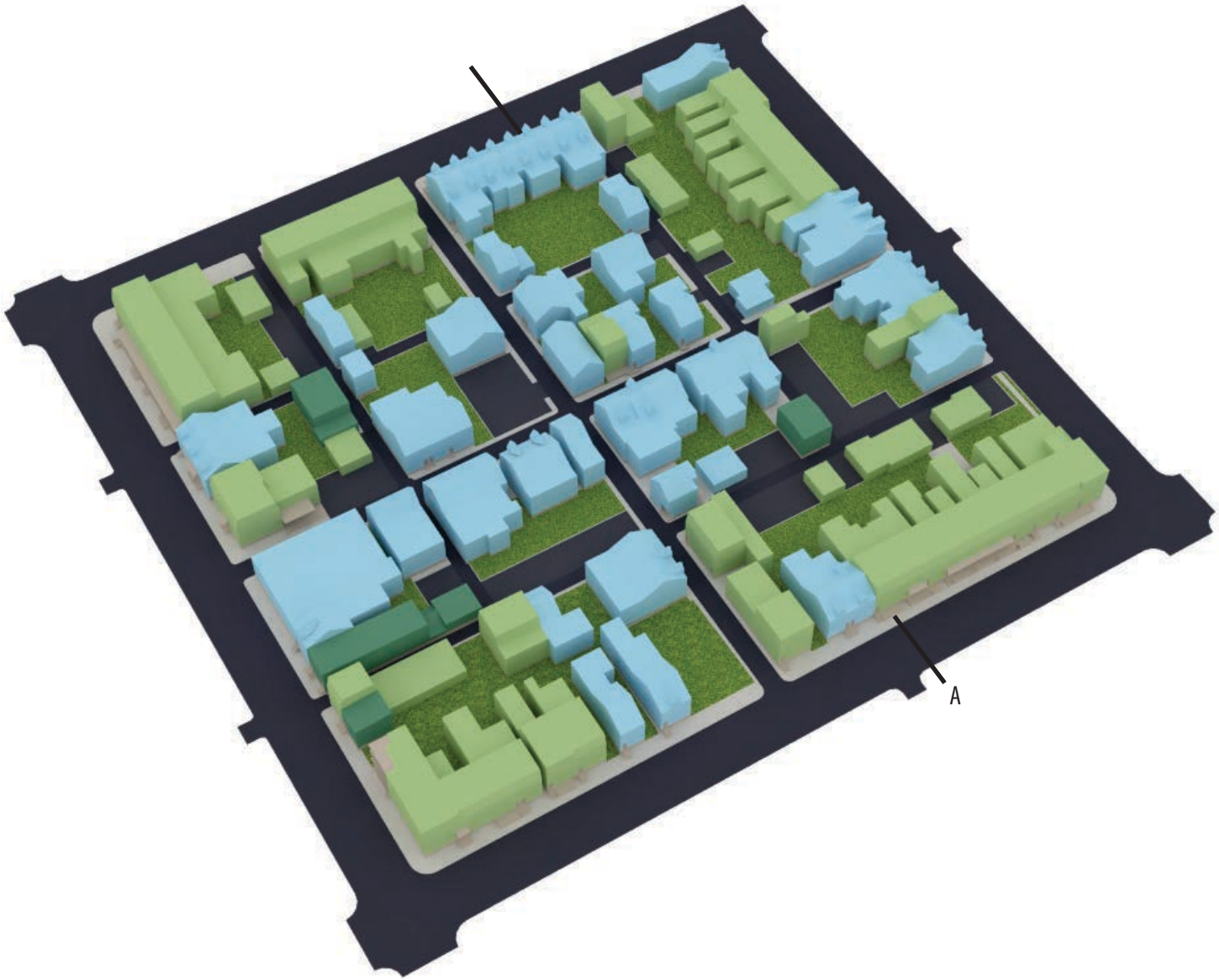
Parcel Division



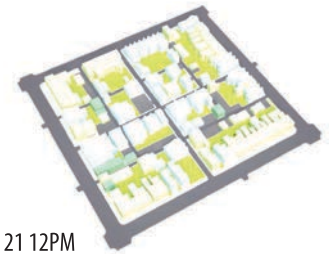
Residence Division

FIG 16

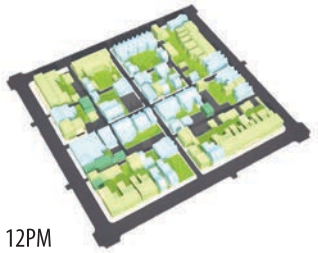
Block C has been chosen to analyze in greater detail to confirm a positive example of defensibility within the city residence



Sun Path

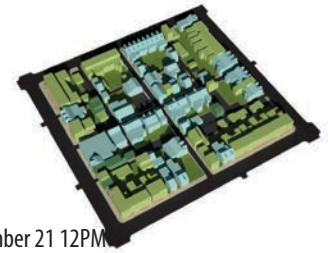


March 21 12PM

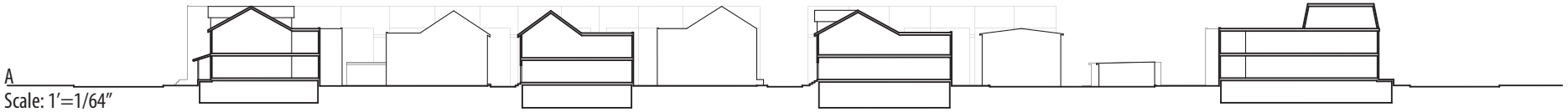


June 21 12PM

September 21 12PM



December 21 12PM



A

Scale: 1′=1/64″

The City Block

Land Coverage:

Total units per block: 111 units

6.9 units per small sub block

Impervious : 119,987 SQFT per block

51%

Open Space : 63,962 SQFT per block

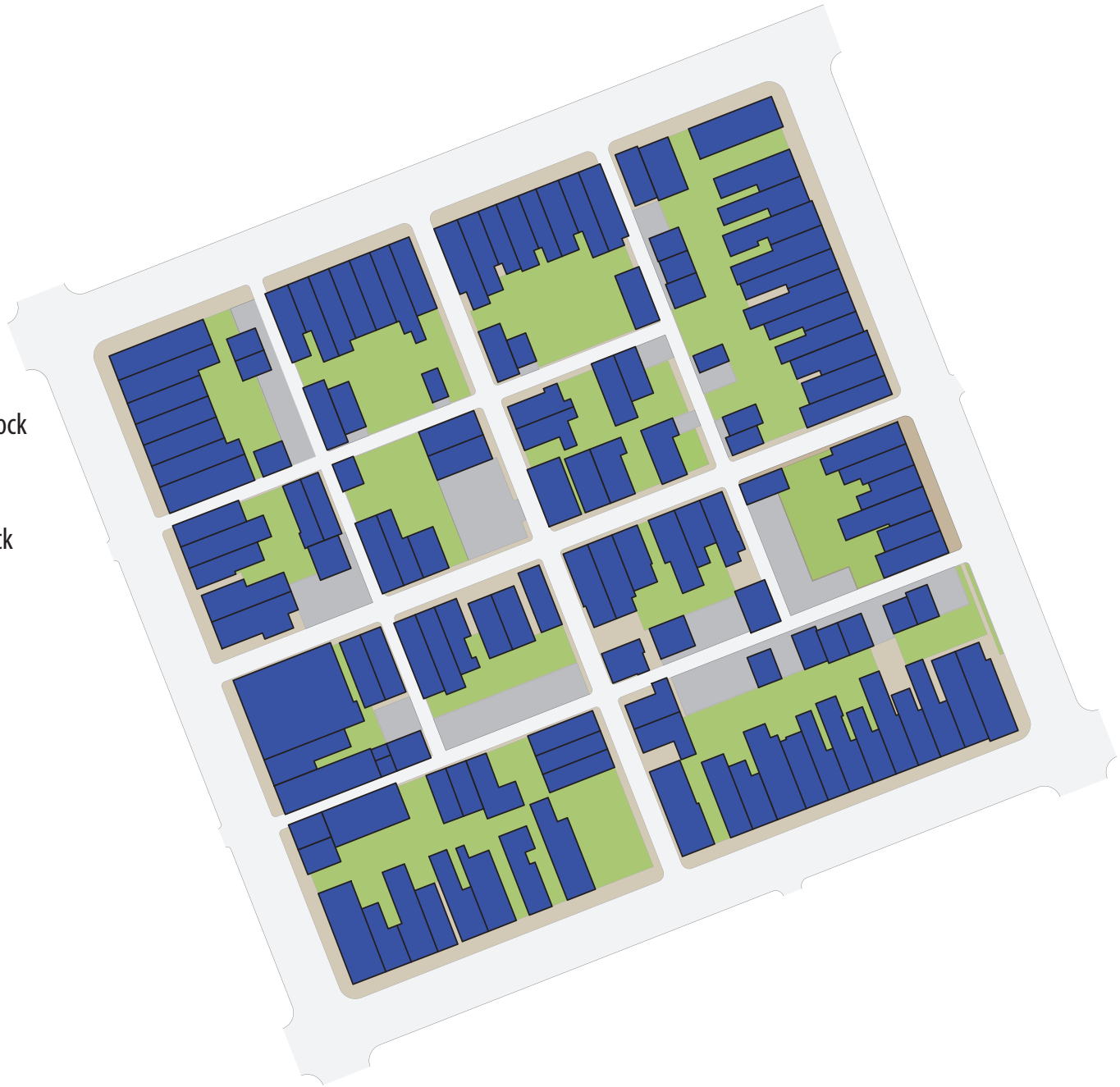
27%

Sidewalk Paving : 32,168 SQFT per block

14%

Parking Paving : 19,336 SQFT per block

8%



Total SQFT per block:

235,289 SQFT

Impervious Surface:

3 Story Unit : 47,804 SQFT per block

40%

2.5 Story Unit : 48,282 SQFT per block

41%

2 Story Unit : 4,872 SQFT per block

4%

Garage / Carport : 10,560 SQFT per block

9%

Church : 5,616 SQFT per block

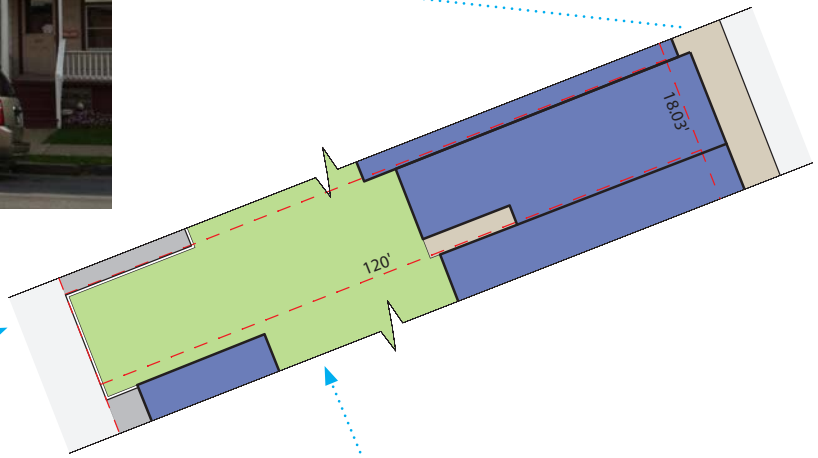
5%

Restaurant : 1,335 SQFT per block

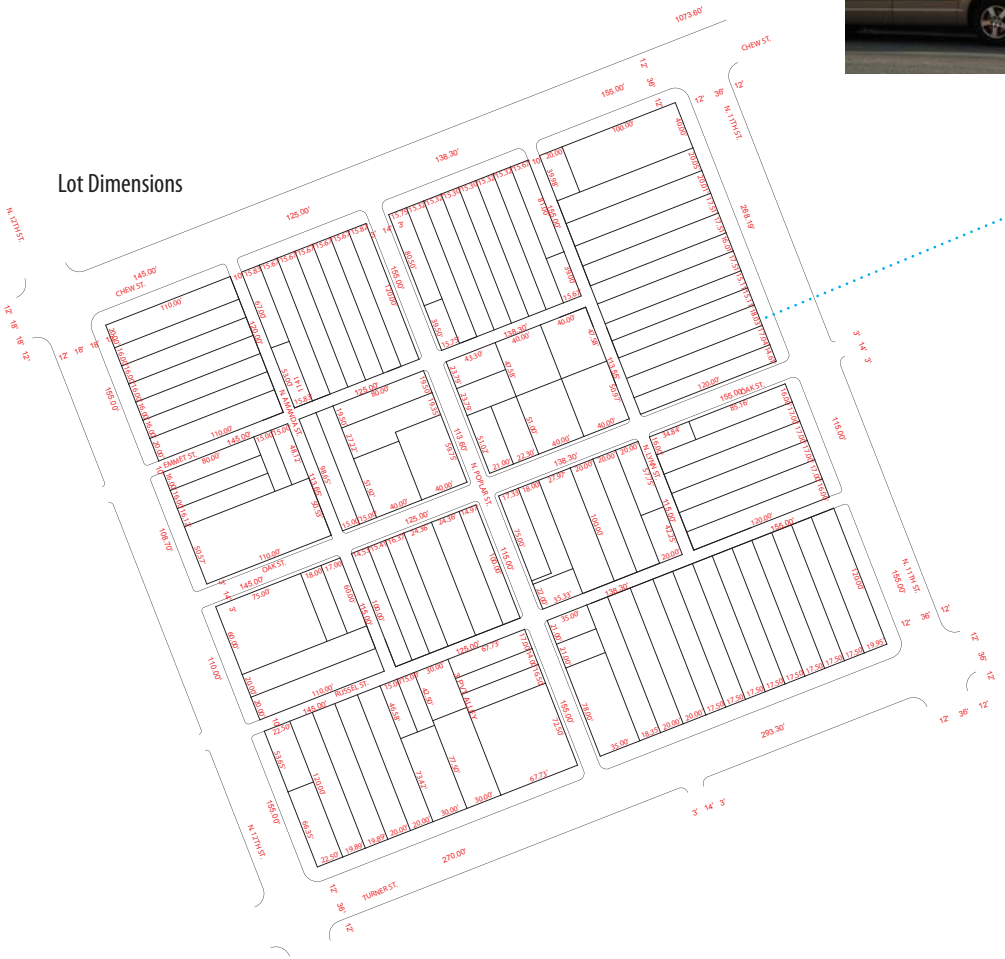
1%

The Urban Residence

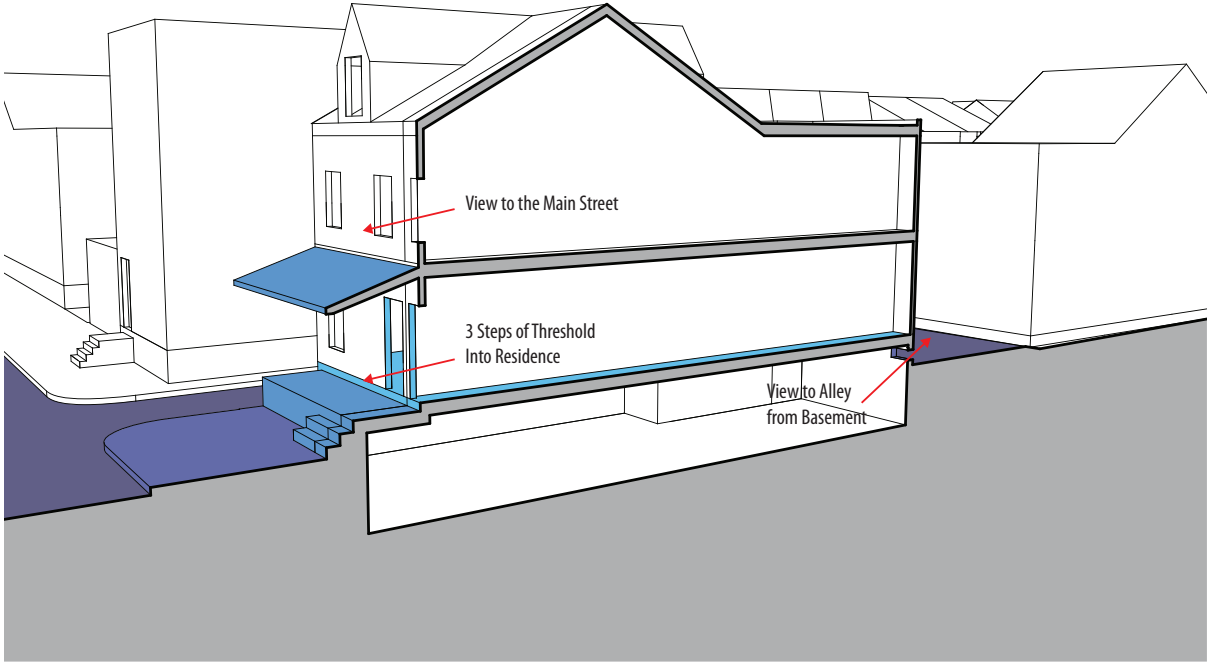
Entry



Lot Dimensions



Yard


View to the Main Street
3 Steps of Threshold
Into Residence
View to Alley
from Basement

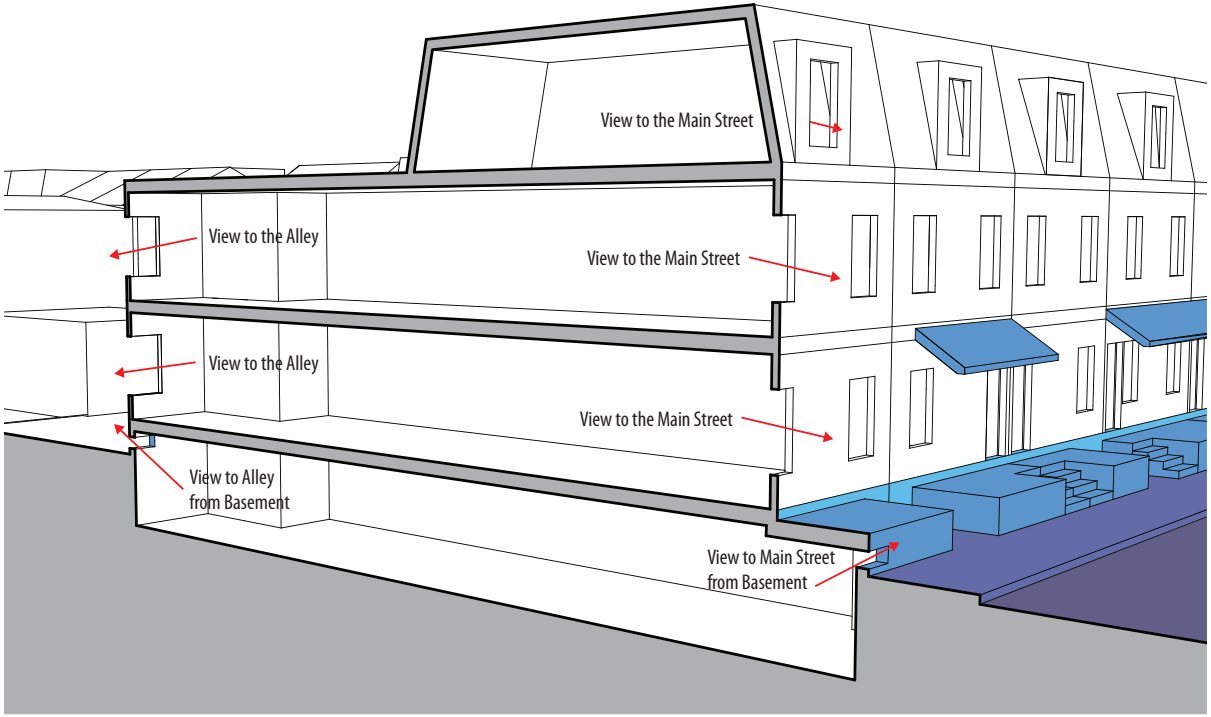
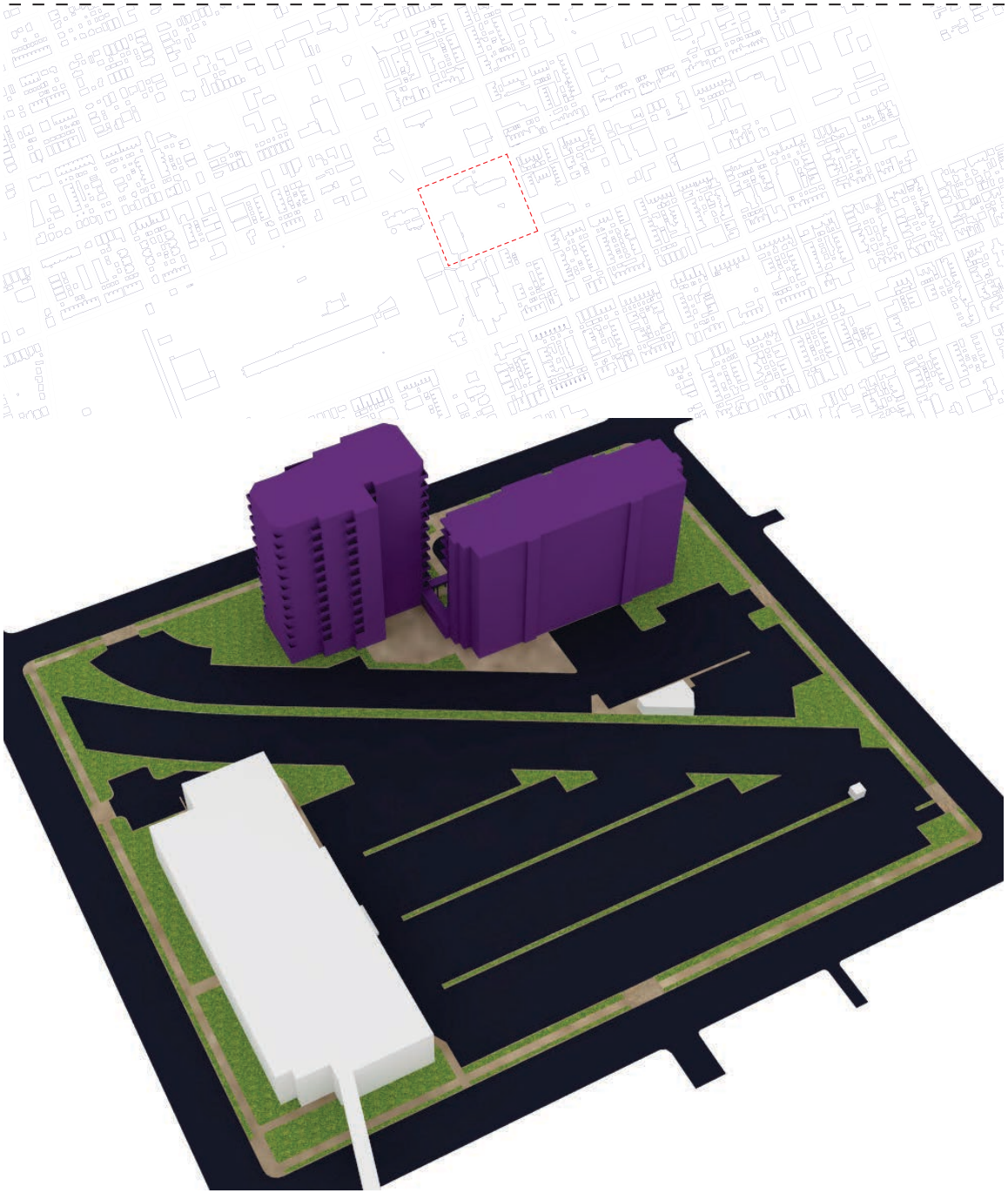

View to the Main Street
View to the Alley
View to the Main Street
View to the Alley
View to the Main Street
View to Alley
from Basement
View to Main Street
from Basement

FIG - 17 Image of B'nai B'rith Apartments

4
Design Site



B'nai B'rith Apartments

1616 Liberty Street
Allentown, PA

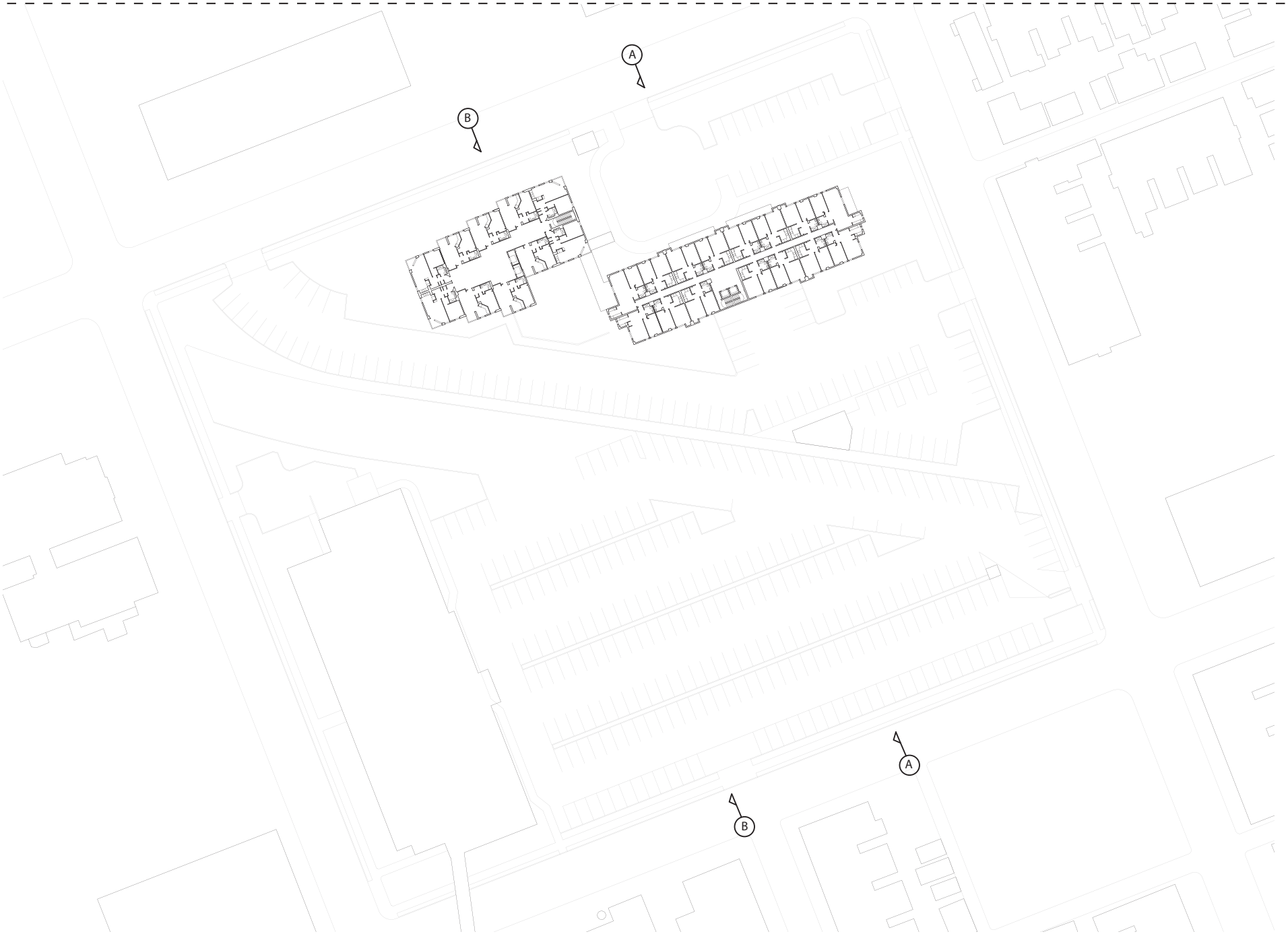
B'nai B'rith Apartments are elderly housing appartments funded by HUD and owned and operated by the Allentown B'nai B'rith Housing Corporation, which is a non-profit organization. The apartments consist of two buildings, the B'nai B'rith House and the B'nai B'rith West. B'nai B'rith House is an eleven story building containing 151 apartments, and B'nai B'rith West is a thirteen story building containing 120 aparments. The two buildngs are connected by a corridor on the first floor so the residents do not have to go outside to move between buildings. Each unit is about 560 square feet, and has a living room, small kitchen, bathroom and bedroom. Residents family types are either single or married couples. Applicants must be at least 62 years of age to apply to reside at the apartments. The building has additional amenities, such as a library, year-round enclosed porch, computer cluster, and coin-operated laundry. However, the complex is strictly aparments; there is no nursing, medical, or attendant care provided by B'nai B'rith.

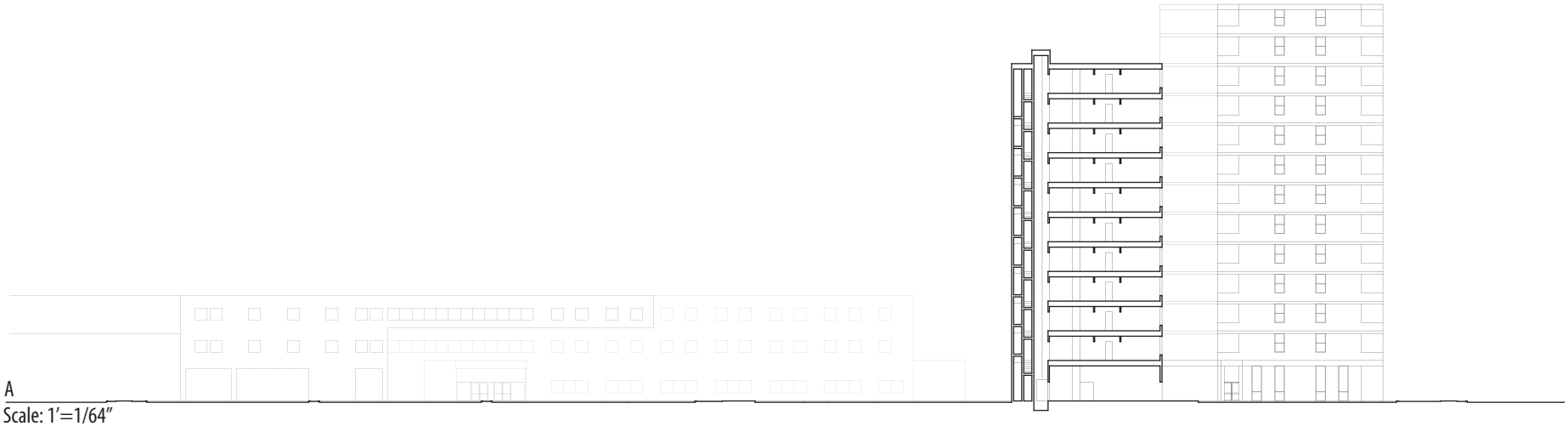
All applicants must meet the current HUD limits:

1 person:
Extremely Low Income - $15,200
Very Low Income - $25,350
Low Income - $40,5000

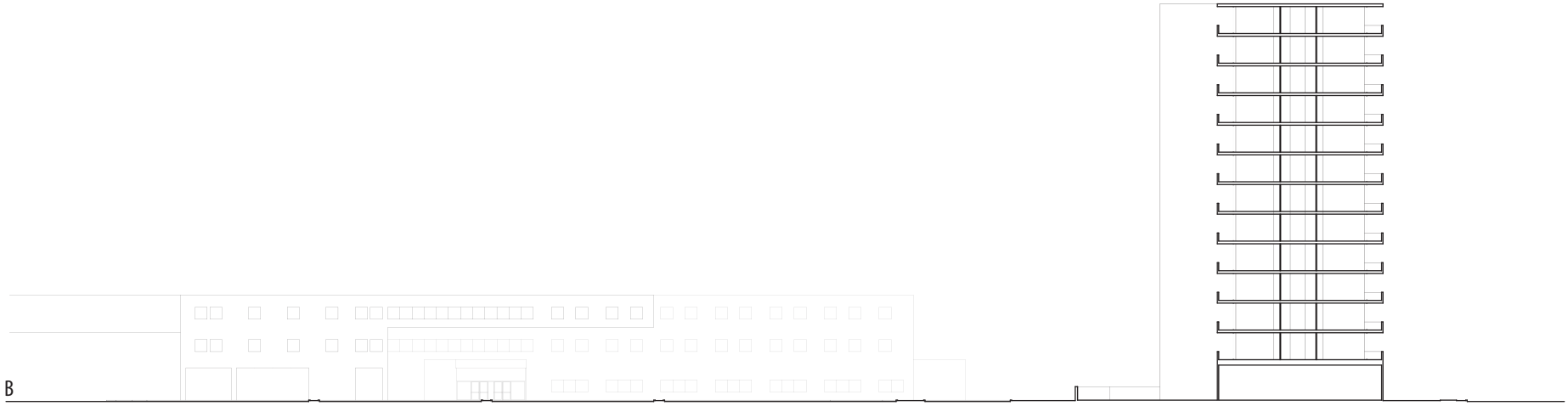
2 persons:
Extremely Low Income - $17,400
Very Low Income - $28,950
Low Income - $46,300

Site Documentation





A
Scale: 1′=1/64″



B
Scale: 1′=1/64″

FIG 18 - View of B'nai B'rith House

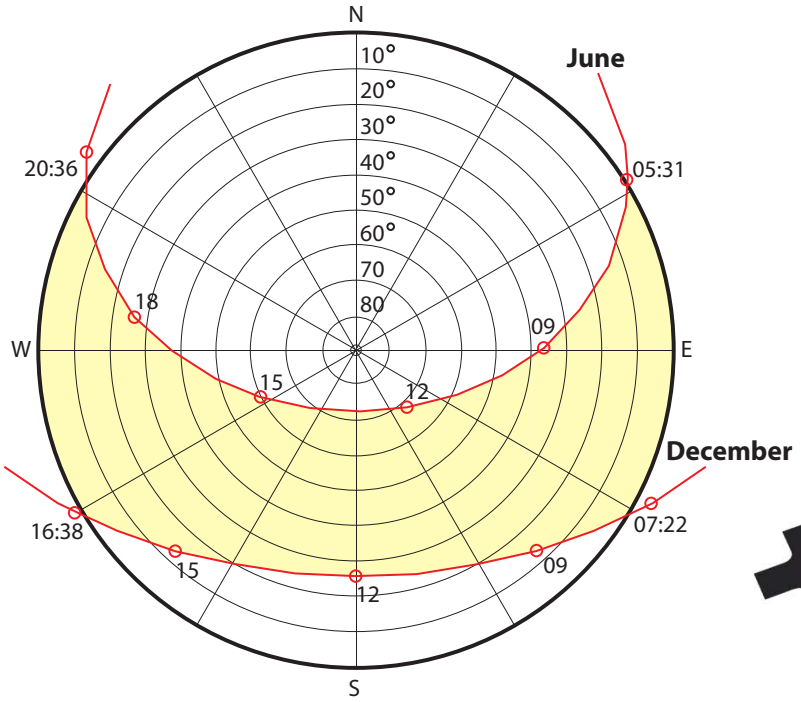
FIG 19 - View of corridor connecting two buildings

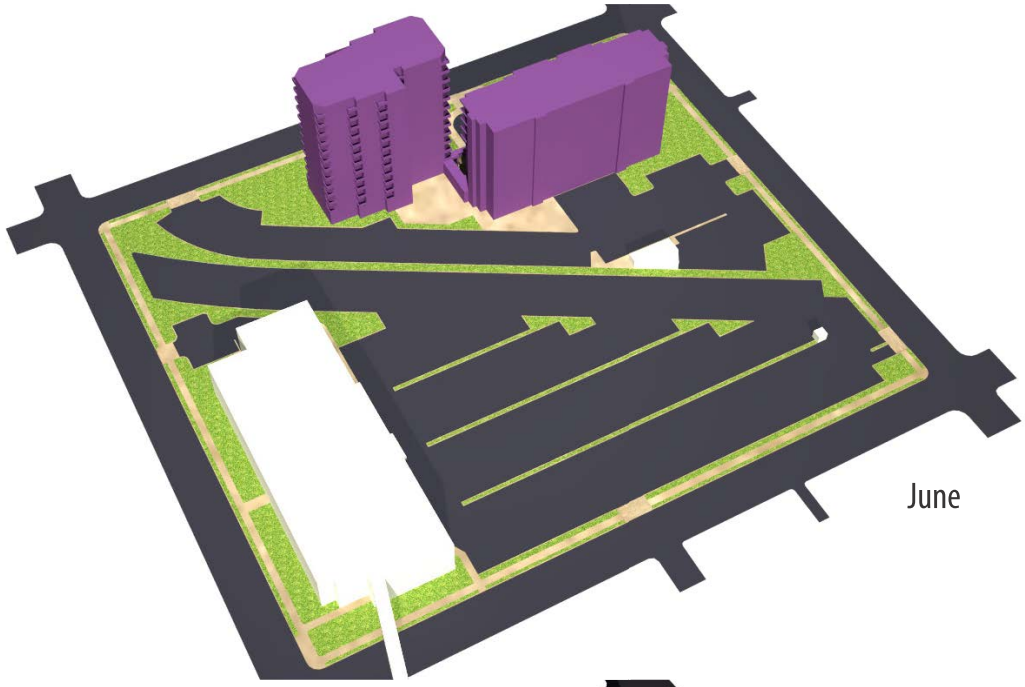
FIG 20 - View of the library

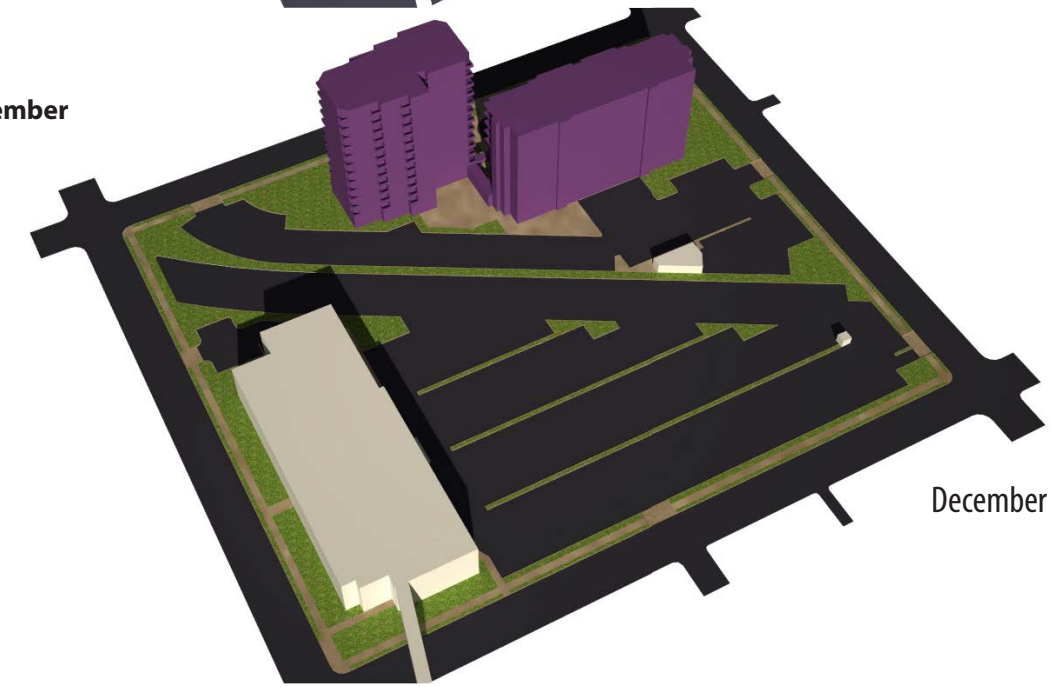
FIG 21 - View of a picnic area

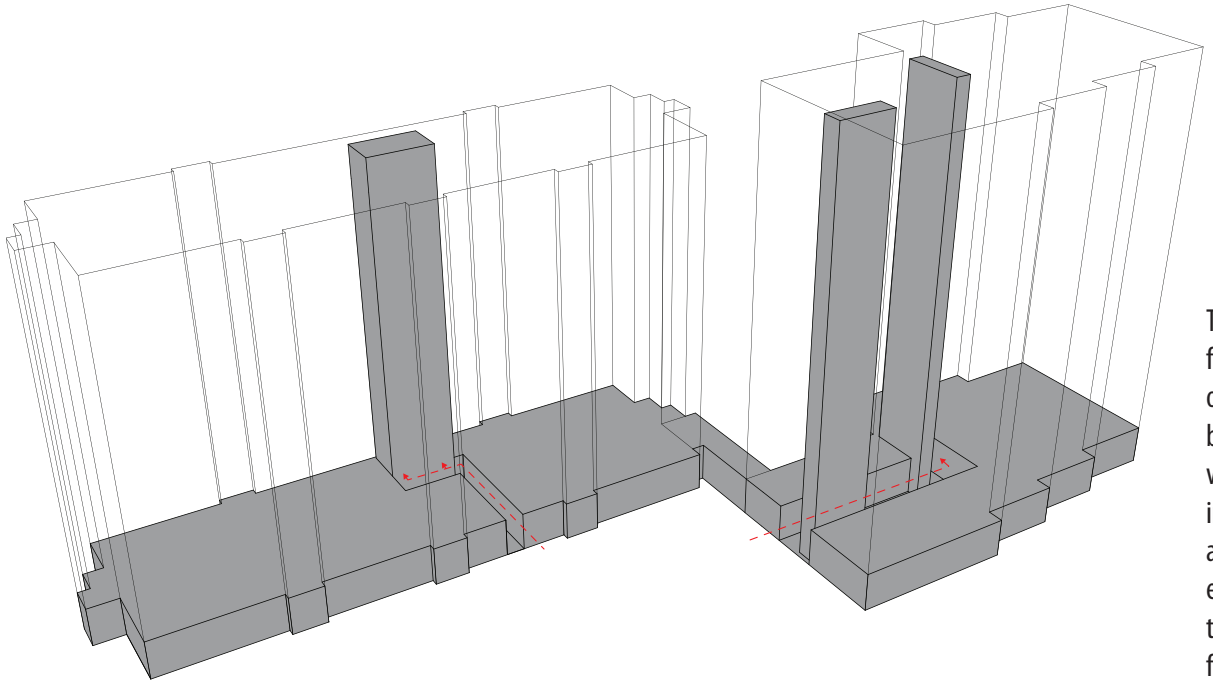
Site Amenities

Amenities within walking distance from site

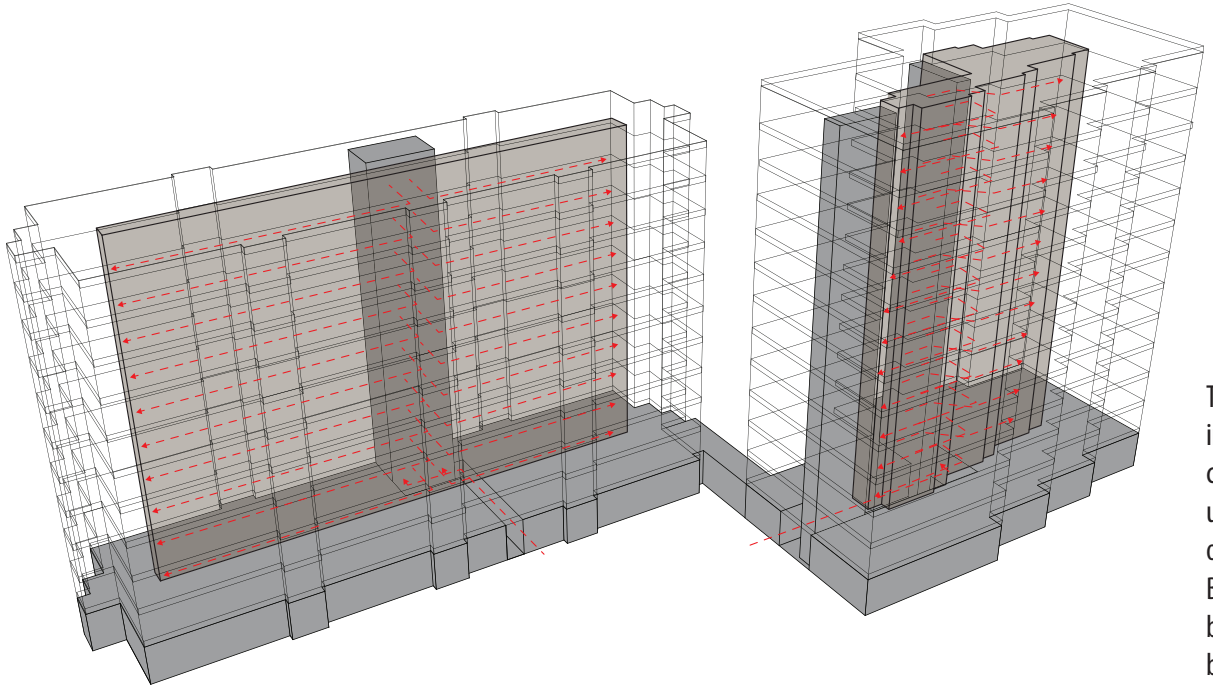

N
10°
20°
30°
40°
50°
60°
70
80
June
20:36
05:31
18
09
W
E
15
12
December
16:38
07:22
15
09
12
S


June


December



The ground floor of both buildings becomes privatized public space for the residents inside, and does not interact with the public space outside of the building. There is only one main entrance to each building, and elevator lobbys and fire stair entrances are not directly viewable from the exterior of the building, which makes these spaces indefensible. In B'nai B'rith West, the elevator core and the fire stair are in two different locations in the plan, which provides two alternate exit routes that building, but doesnt not increase the defensibility of the project, because the entry to the stairs and elevator core are not facing the main entrance of the building.



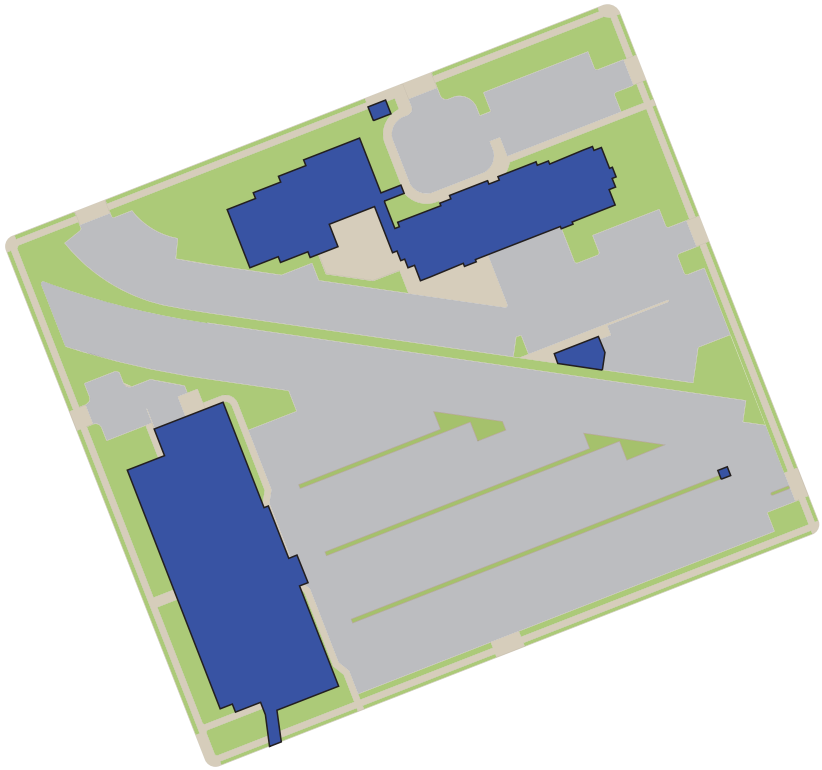
The units being elevated off the ground more than 4 or 5 stories increases the indefensibility of the building. The user must use one corridor to access their unit, and there is only one path from their unit to the elevator or stairs, which also increases the indefensibility of the building. B'nai B'rith House is more indefensible than B'nai B'rith West, since the corridors in B'nai B'rith House are widened with buildng form and there are two alternate paths to the exit of the building with the split of the elevators from the fire stairs.

Site Images

FIG 22

Site Images

FIG 23



VS

How does one alter the high-rise apartment building to conform to the morphology of the the densly packed city block and create a new type of defensible housing?

FIG - 24 Image of vandalism in a Philadelphia Housing Project

5
Program - Site Fit

Program

"Architects and planners who design housing schemes work under especially severe constraints. The most serious of these, and often the hardest to recognize, is the lack of input from the people who must live with their designs."[20] Taking this into consideration, the program must contain enough units to house the elderly displaced by the theoretical demolition of B'nai B'rith. There are approximately 18 housing projects in the city of Allentown that are subsidized by HUD, with about 13 of those projects for the elderly. Because of the dominance in elderly housing, the project will be geared towards mixed family types. The housing type will be low-rise high density, because this typology "allows maximum contact with the ground for the minimum number of people, while the ability of mix dwell sizes allow family size mixing so avoiding the isolation of any single group." [21]

"The right balance [for the housing mix] can be derived straightforwardly from the statistics of the region."[22] Between the two buildings on the site, there are approximately 271 apartments, with each unit at about 560 square feet. Each unit has a small kitchen, bathroom, living room, and one bedroom. This requires about 152,000 square feet of living space required for the elderly displaced. In the diagrams to the right, each small square represents the 560 square feet of each B'nai B'rith unit superimposed onto city block C from the city analysis. All 271 units fit onto the city block at one story, but to meet similar land coverage percentages as the urban context, the units can be stacked at two stories and distributed around the outside of the block. In this form, the units cover about 30% off the city block, which leaves about 20% of the block for mixed use program. [Reference diagrams on the next page] Included in this program is a small library, a computer room, and coin-operated laundry room. About 2,000 square feet will be delineated for these spaces. These programs can be stacked on top of each other at a reasonable height to meet the requirements to still be considered low-rise. Many of the buildings will be low rise, however one or two may need to be lower high rise bulidngs.

61.4% of households in Allentown are family households with 36.3% of those being married couples with children and 25.1% being single parents with children. 38.6% of households are considered non-family, with 31.7% of homeowners living alone, and 11.6% of the non-family households being 65 or older. Since about two thirds of the population are family households, two thirds of the program will be family units, which is about 304,000 square feet, equaling a total livable area of 456,000 square feet for the project. This will give opportunity for various generations of a family in need of housing to live together in the same place. The average family size is 3.25 people, so the family units will range from 1 bedroom to 4 bedrooms. About 2,000 square feet will be delineated for these spaces.[23]

Outdoor areas are designated for picnic areas and seating for the residents as well. All of these amenities will be take into consideration for the design project. With the site design, the users needs should be taken into consideration as well. A playground should be incorporated into the design to encourage families with children to come live in the project. Parking is needed on the site is off street parking is not available. When it comes to the circulatory spaces of the project, it is important to make sure they follow the guidelines to become a defensible space. This means making that "no man's land" (corridors, elevators, lobby, and stairs) directly visible to the users and visitors of the project. Corridor space should directly relate to the outside of the building, either by window or open air. Elevators will be needed, because of ADA regulations if elderly units are above ground, so the elderly units will be kept on the 1st floor. In low rise high-density housing, there should be no need for a large lobby, and so smaller lobbies should be open to the outside of the project. Stairwells should have windows to the outside, and views to the street.

20 Marcus, Clare Cooper., and Wendy Sarkissian. Housing as If People Mattered: Site Design Guidelines for Medium-density Family Housing. Berkeley: University of California, 1986. 1

21 Gilmour, Andrew, Connie Byrom, Sheila Campbell, Ingolfur Helgason, and Howard Liddell. Low Rise High Density Housing Study. Edinburgh: University of Edinburgh Architecture Research Unit, 1970. Print. GET PAGE NUMBER

22 Alexander, Christopher, Sara Ishikawa, Murray Silverstein, Max Jacobson, Ingrid Fiksdahl-King, and Shlomo Angel. A Pattern Language: Towns, Buildings, Construction. New York: Oxford UP, 1977. 190

23 U.S. Census Bureau. U.S. Census Bureau, 2005-2009 American Community Survey. 2009. Raw data. U.S. Department of Commerce, Washington D.C.

Living space: includes gathering space, bedroom, kitchen, bathroom

replace all units to be demolished - **152,000 SQFT**

271 elderly apartments x 560 SQFT = 152,000 SQFT

Living space for mixed familes - **304,000 SQFT**

61.4% family households

36.3% married couples with children

25.1% single parents with children

38.% non-family

31.7% living alone

11.6% 65 or older

2/3 population family households

152,000 x 33% = 304,000 SQFT

TOTAL LIVING SPACE: 456,000 SQFT

Other indoor amenities:

Library

Computer cluster

Coin-operate laundry

TOTAL AMENITY SPACE: 2,000 SQFT

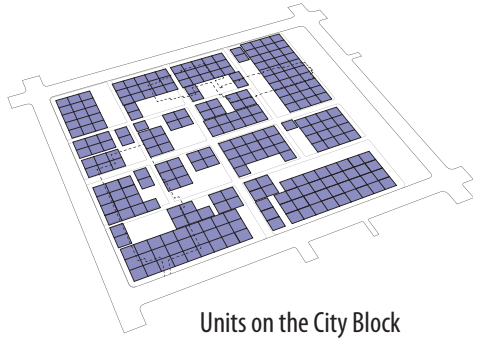
Other program to consider:

Parking

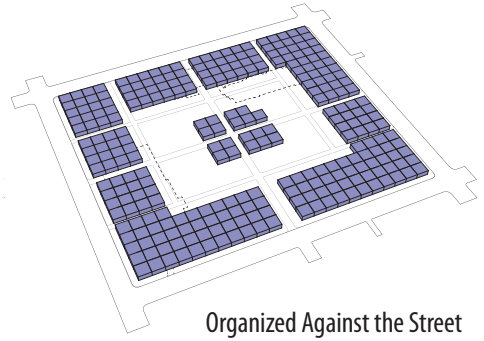
Playground / Daycare

Circulation

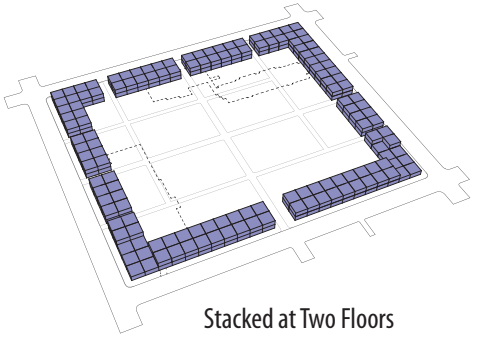
Outdoor picnic areas



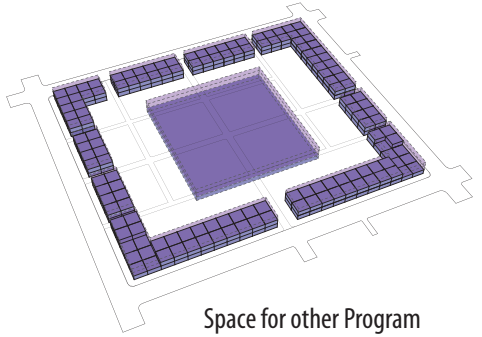
Units on the City Block



Organized Against the Street



Stacked at Two Floors



Space for other Program

FIG - 25 Image of vandalism in Pruitt-Igoe

7
Precedent Analysis

FIG 26 - Front elevation of project

FIG 27 - Back view of project

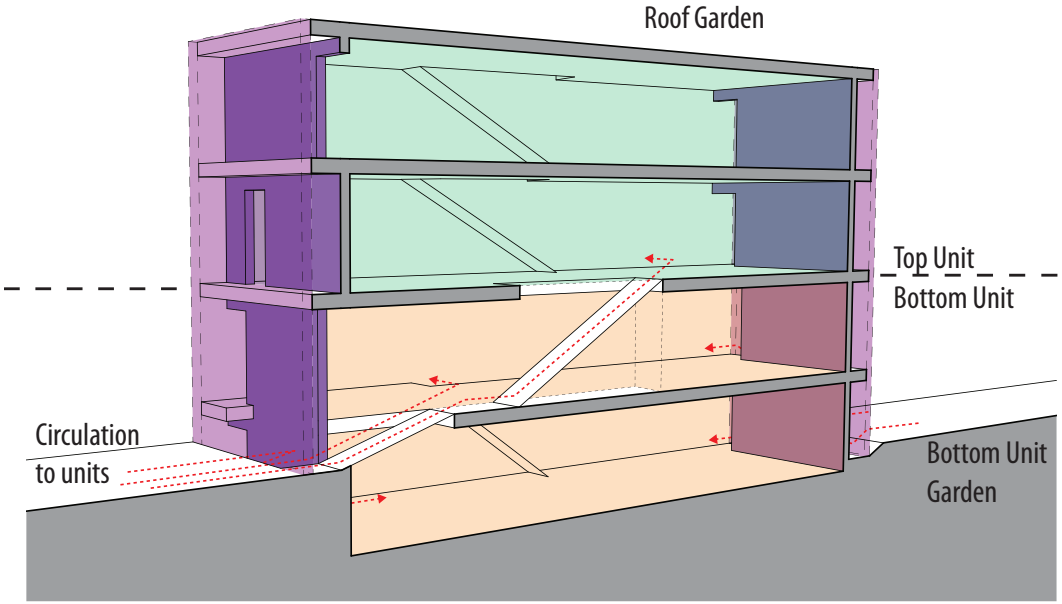
Thin Flats

Architect: Onion Flats

Year: 2009

Location: 145 - 151 Laurel St.
Northern Liberties
Philadelphia, PA

Thin Flats takes the rhythm and image of the traditional Philadelphia row home and applies it to a habitable skin that contains more privatized exterior program of the project. The main facade is pushed back into the unit and a colored skin contains the space created. The skin contains the stair wells to enter the bottom and top units, giving a sense of privacy to the more public circulation to each unit. This skin in punched through or transparent to reveal entrances and porches for each of the 8 units. These holes and the set back of the facade allows for light to easily penetrate the 1st level of the bottom unit, which could normally be very dark. All sercive programs in each unit s contained in the center of each floor. The bottom unit is parially below ground level, so the user enters the unit from the back garden, but still has an emergency exit on the other side of the project out to the street through that habitable skin. The top unit is entered from a stair from the main street, and also has a roof garden. This project is very defensible, with the multiple entrances and multiple views to the streets. However, there is an enclosed corridor that passes through the middle of the project that could be a hot spot for mugging.

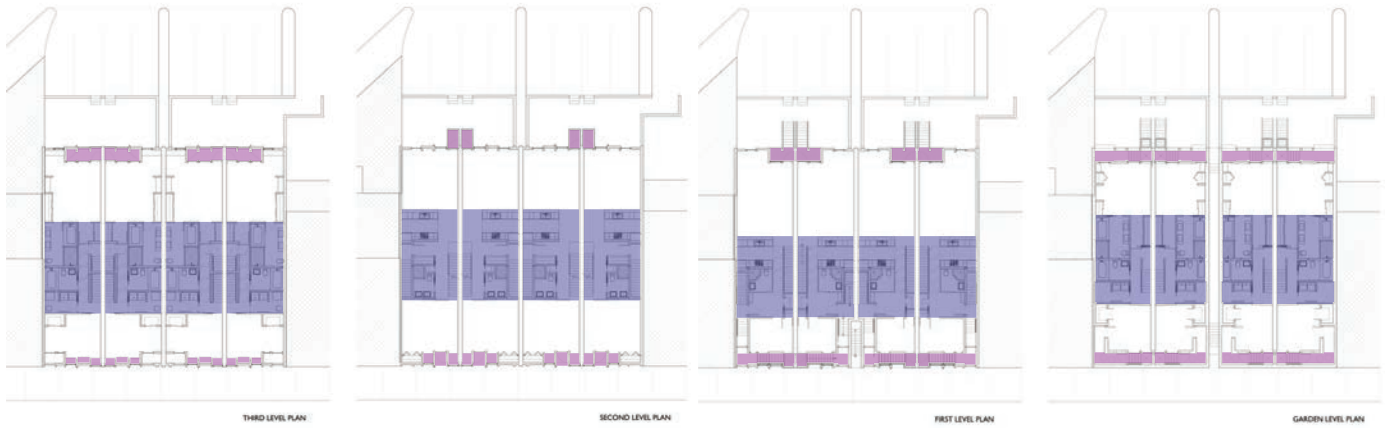


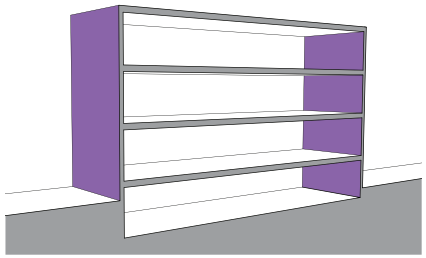
Left - Diagram shows differentiation between the two units and each path of cirulation to each unit through the habitable facade

Bottom - Plans marking the service program in the center and where the facade is punchered by the program

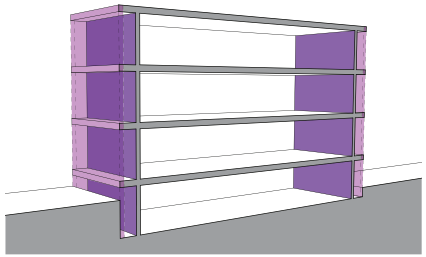
Right - Diagrams showing formation of facade and circulation

FIG 28 - Roof garden FIG 29, 30, 31, 32 - Interior shots of the unit

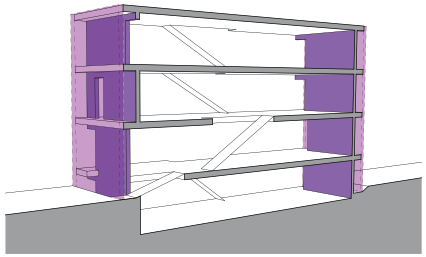




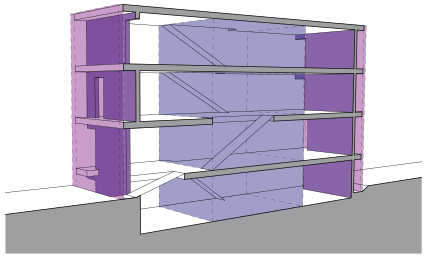
Form



Facade Shift



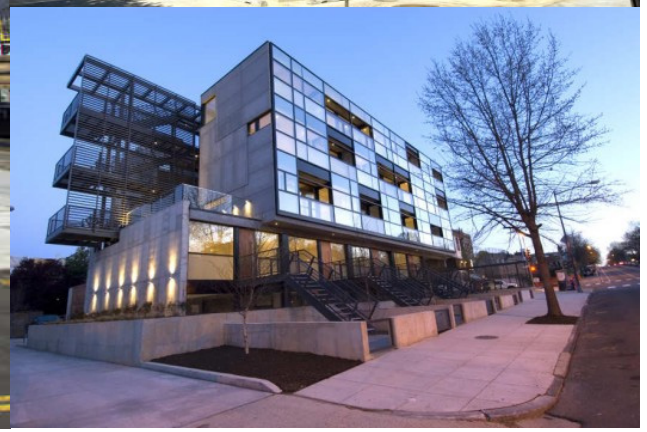
Circulation



Program

FIG 33 - Back elevation of the project showing private garden entrances to the duplexes

FIG 34 - Front view of the project



The Lacey

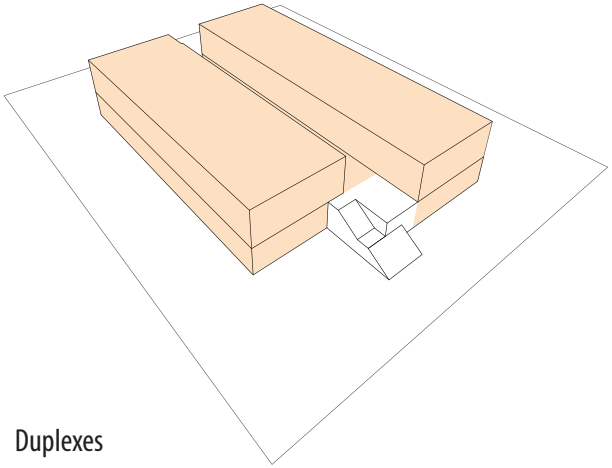
Architect: Division1

Year: 2009

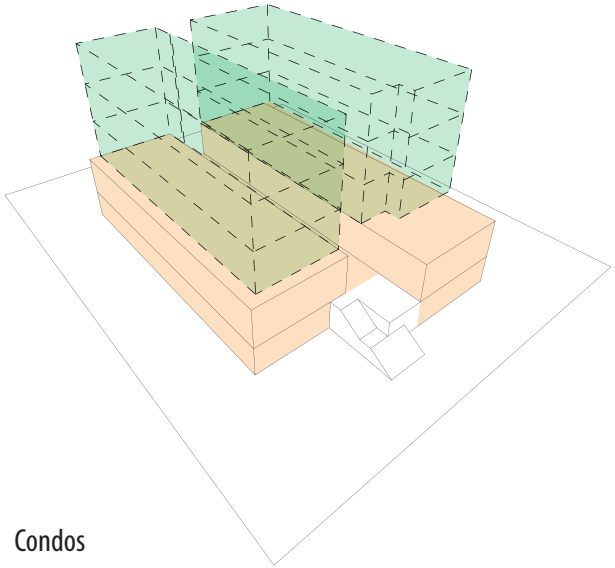
Location: Washington DC

The Lacey is a residential condominium complex that has four levels of units. There are two story duplexes on the bottom level that have their own private garden entrances from the outside the project, as well as entrances from the interior corridor. The third and fourth floors have one bedroom apartments and the fifth floor has larger one and two bedroom apartments. There is a full height open corridor with small catwalk pathways that act as the circulation to each apartment inside the building. There is an exterior steel-framed staircase that looks similar to a fire escape that a user can ascend to access an outdoor terrace on the third, fourth, and fifth floors as well as each interior corridor. There is also a fire stair and elevator inside the project. There are two different entrances to the buildings on each side of the project, increasing the defensibility of the project.

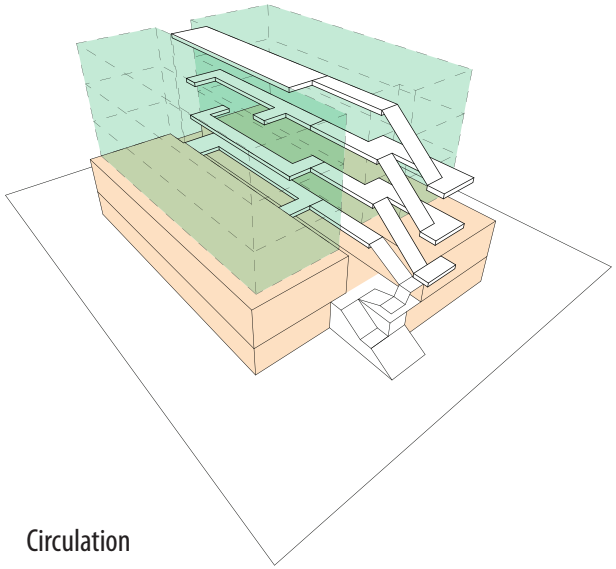
Diagrams depicting how units are stacked and the joint of exterior and interior cirulation. The cirulation is inserted in the middle of the two stacks of program.



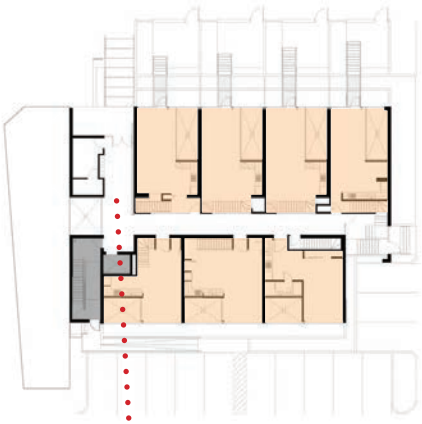
Duplexes

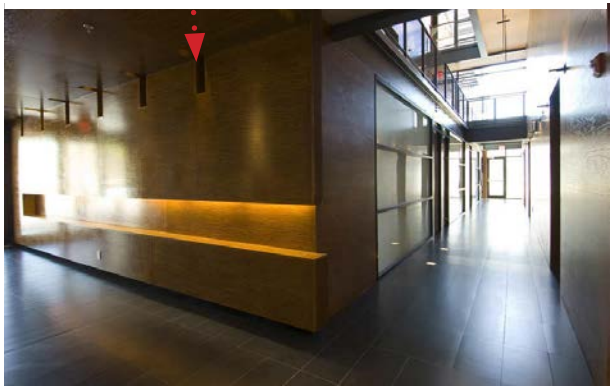


Condos



Circulation





Interior Vs. Exterior

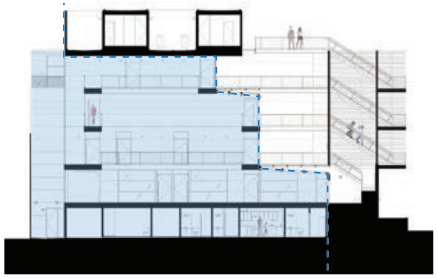


FIG 36 - View of second floor corridor
FIG 37 - View of third floor catwalk

FIG 38 - View of the south elevation

FIG 39 - View of the north elevation

The Docks Dombasles

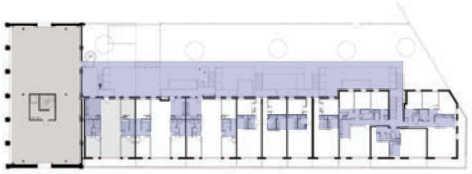
Architect: Hamonic + Masson architects

Year: 2009

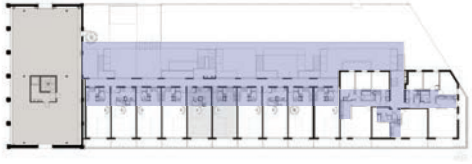
Location: Le Havre, France

This is a mixed use housing project located on a harbor in Le Havre that has restored an old building on the harbor for office space, and juxstaposed it with housing that reflects the image and morphology of the buildings already on site. The form of the building directly reflects the form of the existing building, and the facade inteprets geometries found in the existing facades. The project is very one sided, with living space and balconies on the south side of the building and service programs and circulation to the north. The south facade is very transparent, highlighting the balconies with steel framing, with the north facade being very heavy masonry construction with cut out views of the outdoor corridors. The defensibility of the project is very clear, with open circulation and direct views to the main street.

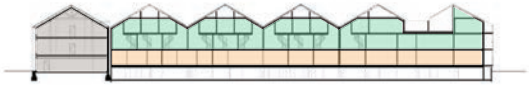
Diagrams showing how units are stacked and how the new construction relates to the historical building, as well as a break down of the steel framing structure



First Floor

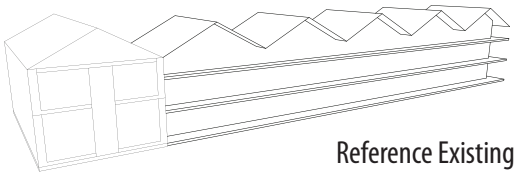


Second Floor

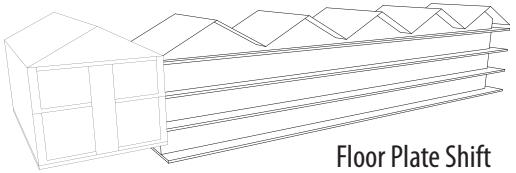


Flats vs. Duplexes

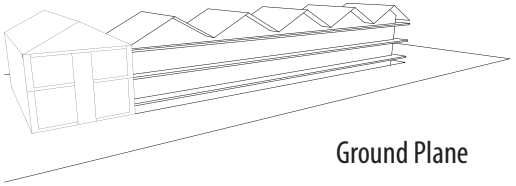
FIG 41 - View from balcony through steel framing



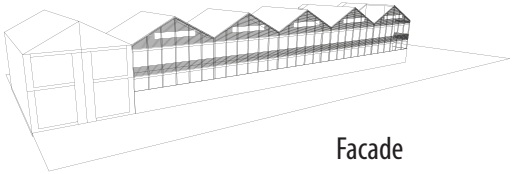
Reference Existing



Floor Plate Shift



Ground Plane



Facade

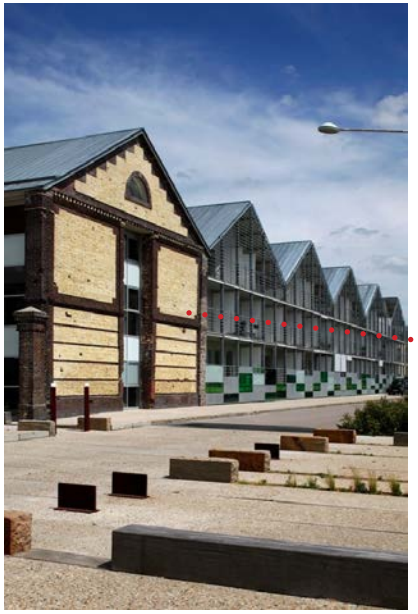
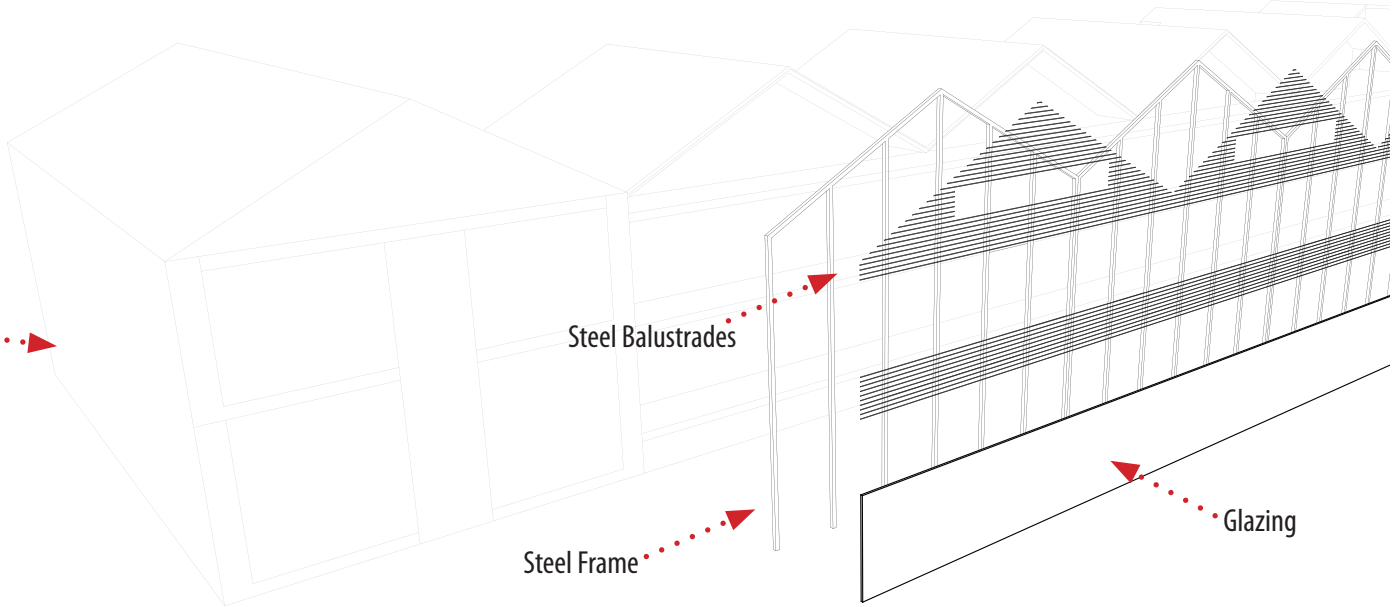
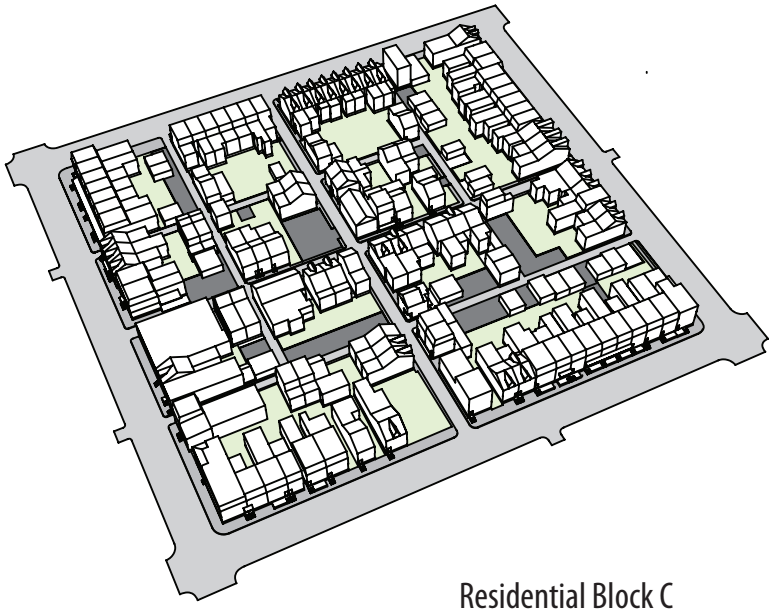


FIG 40 - View of restored historical building

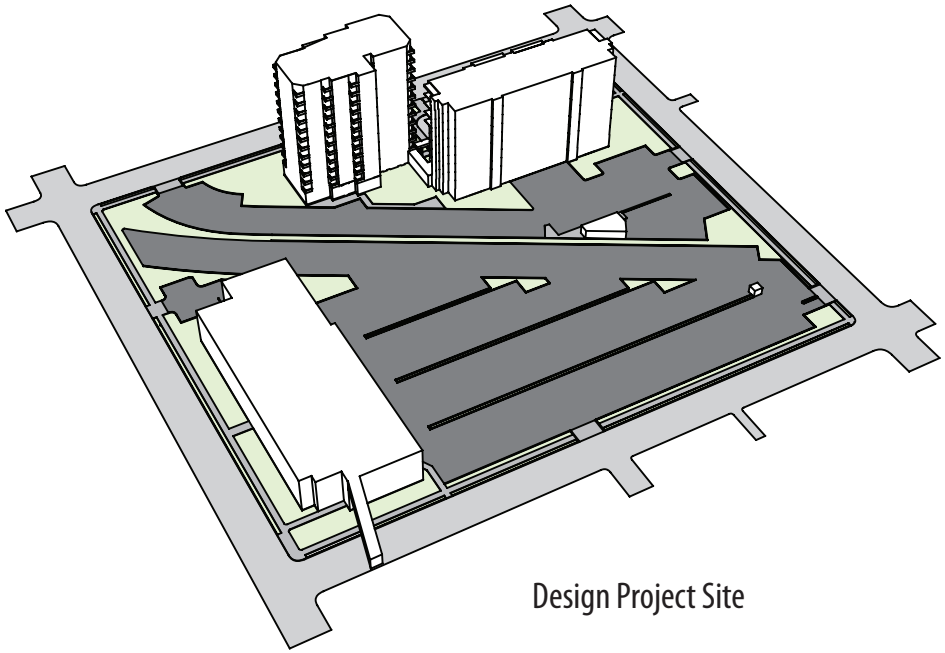


Design Project

Housing Typology Transformation



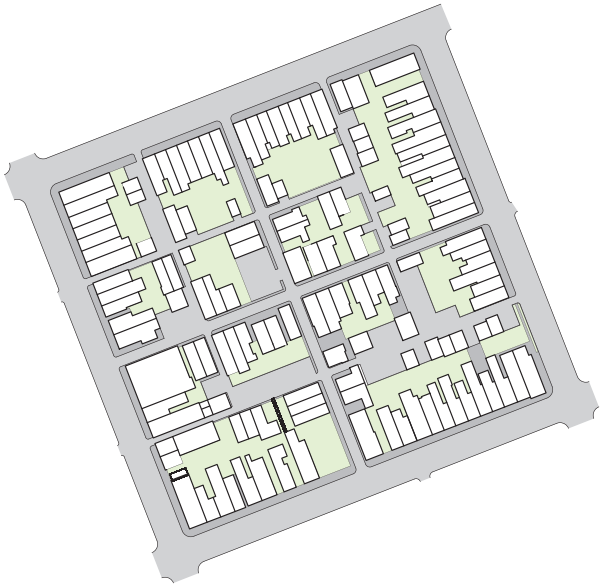
Residential Block C



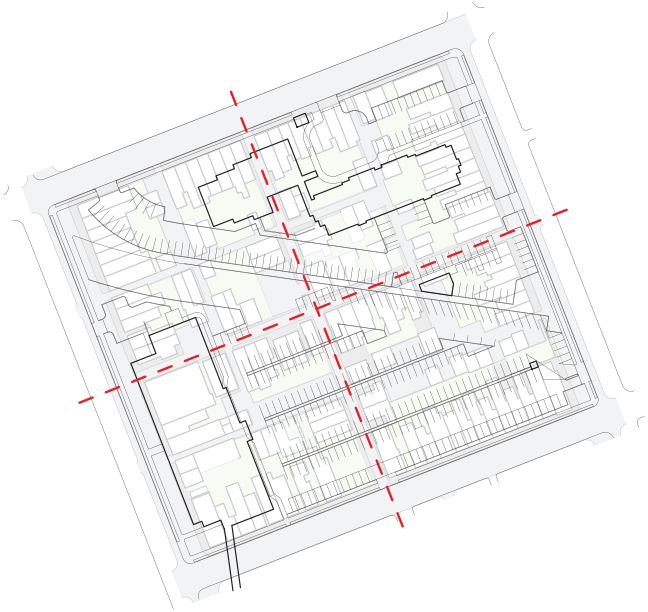
Design Project Site

The design project began with a transformation of the existing site through characteristics of the urban morpology, taking on issues of block division, context influence, creating density, the insertion of green spaces and other program onto the site, and ideas of threshold to increase defensibility.

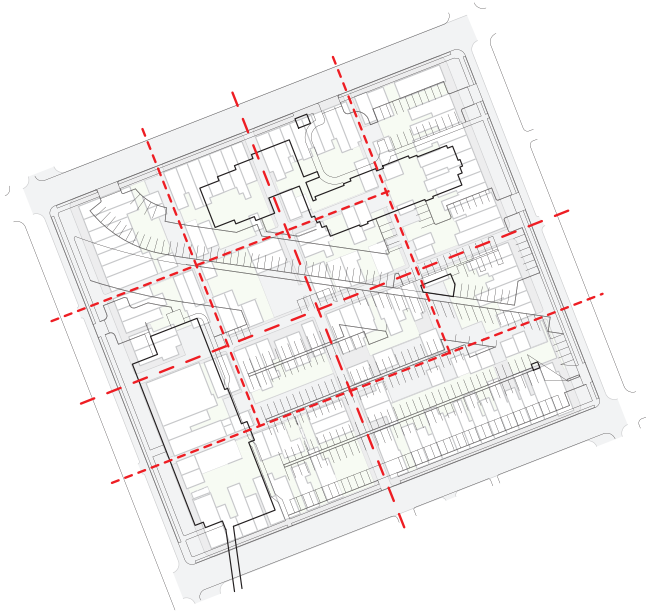
Block C



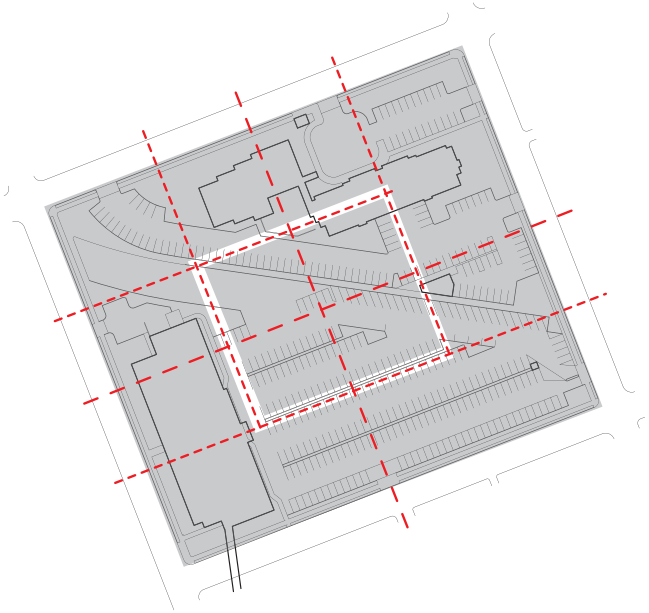
Overlay on the Site



Street Layout

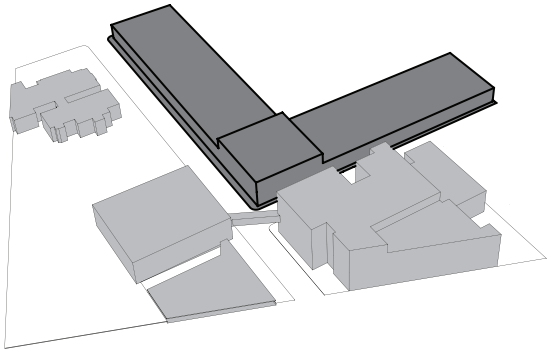


New Block Division

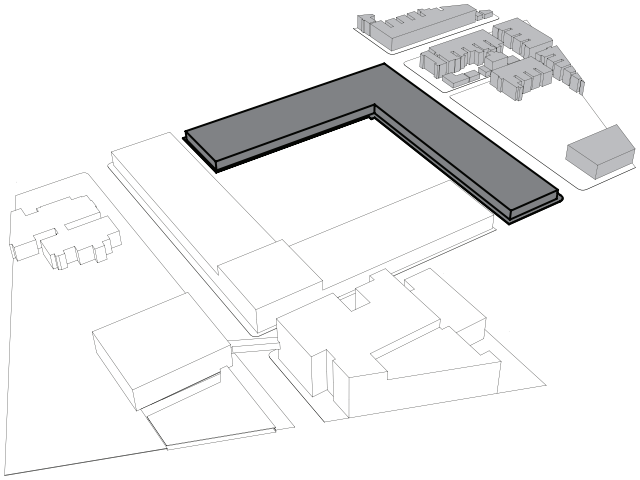


Context Influence on Form

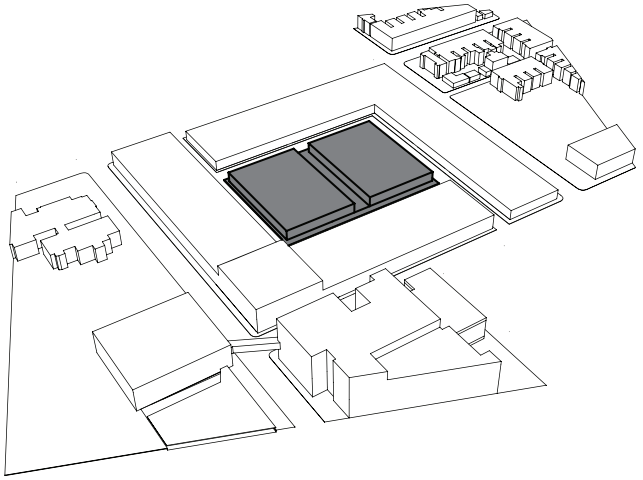
Noise and Building Height



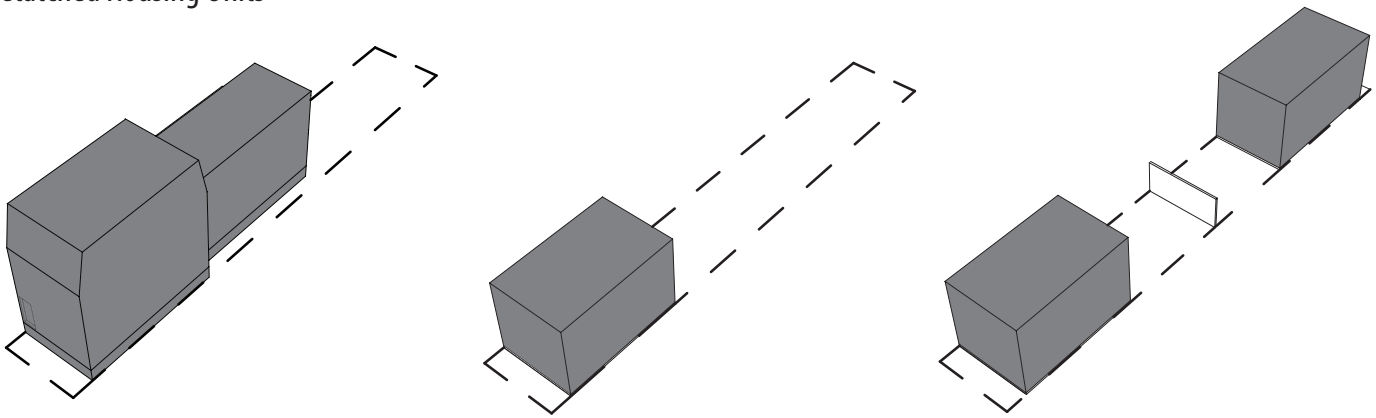
Low Rise Against Residences



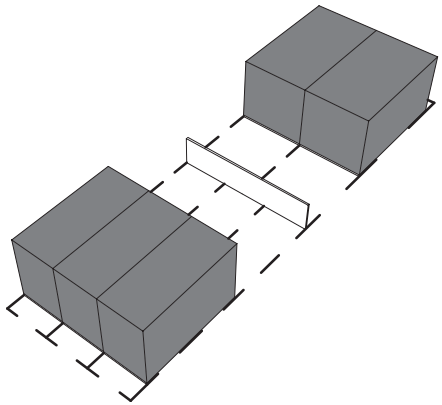
Low Rise Center Units



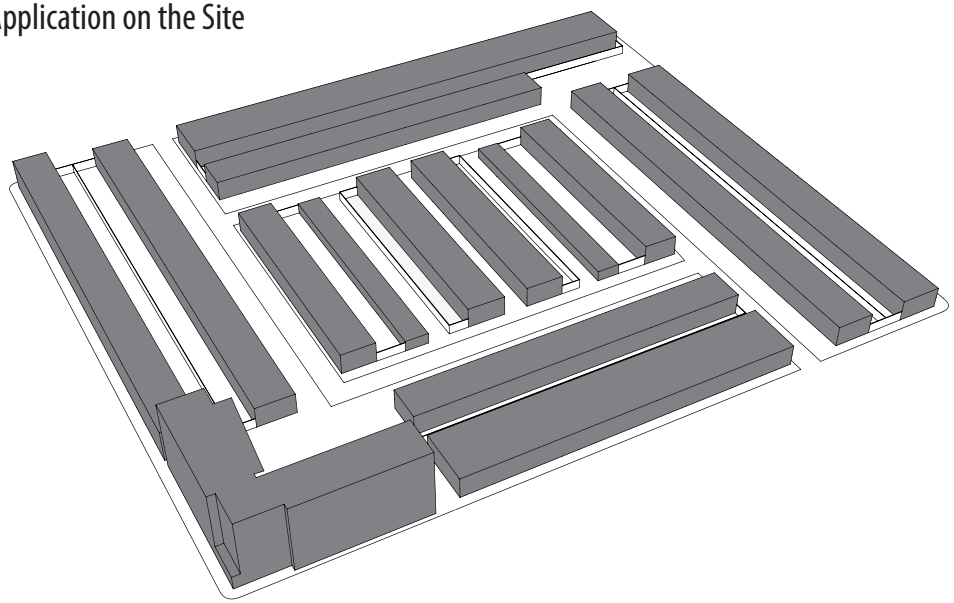
Existing Single Family
Detatched Housing Units



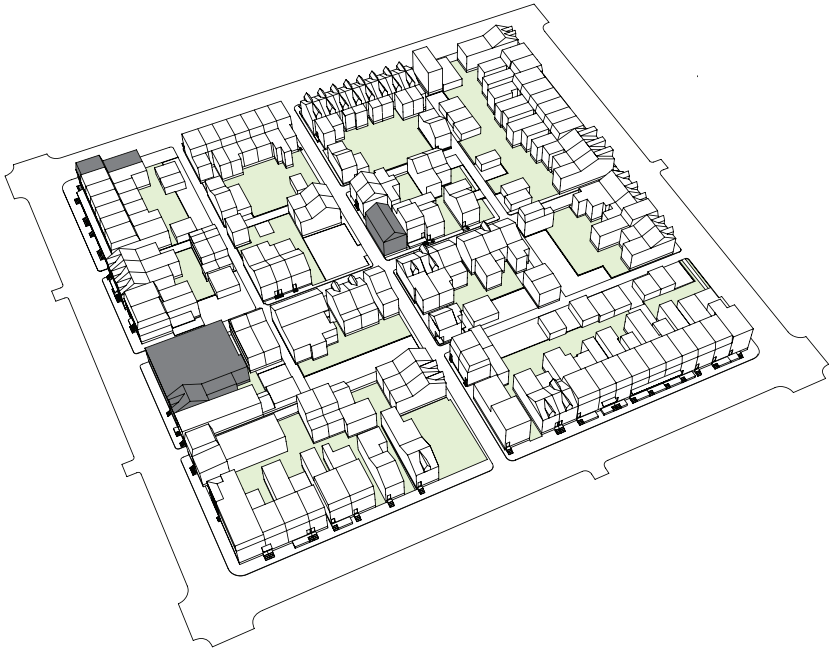
New Attached
Bay System

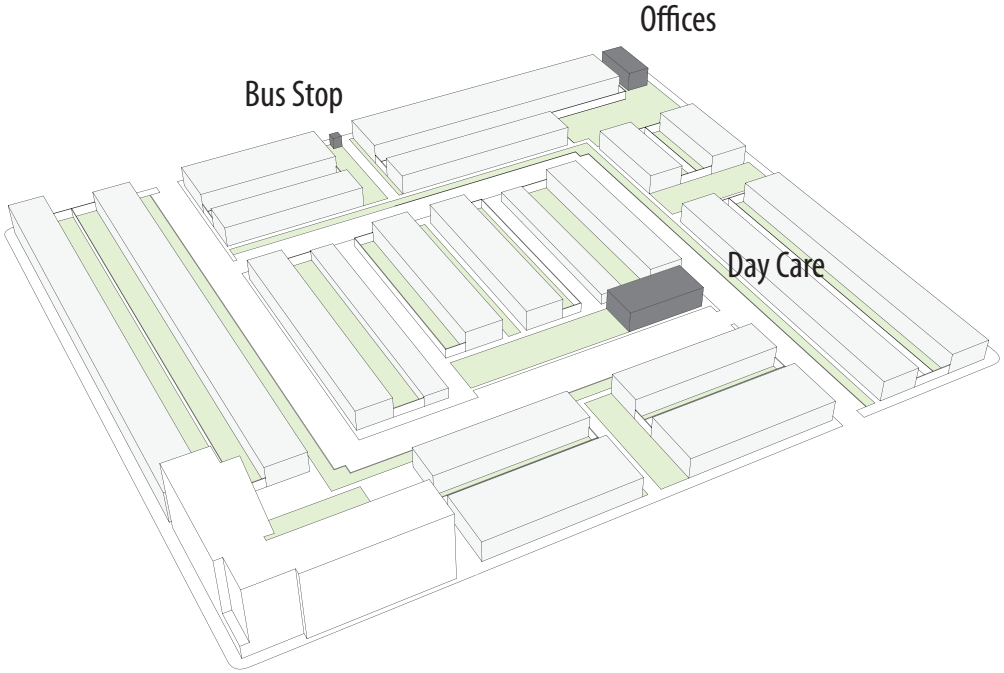


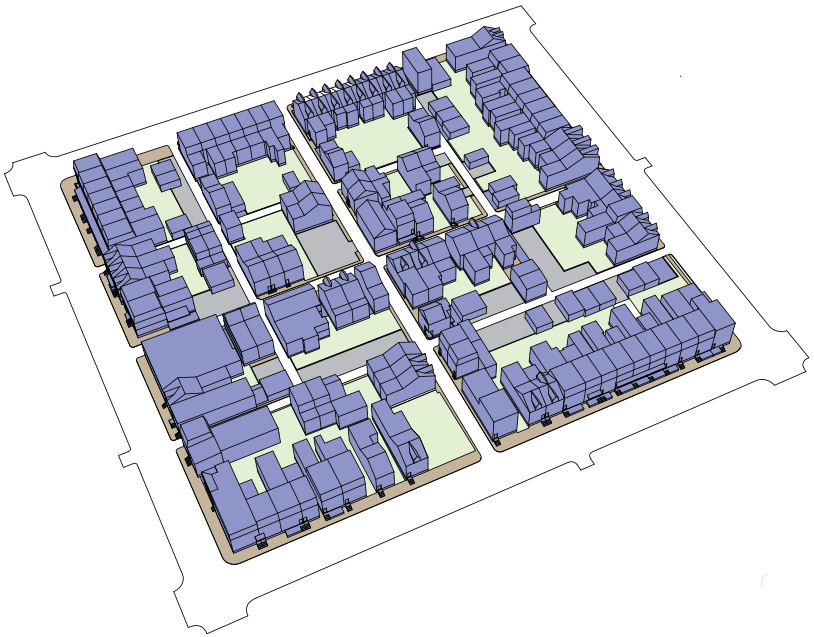
Application on the Site

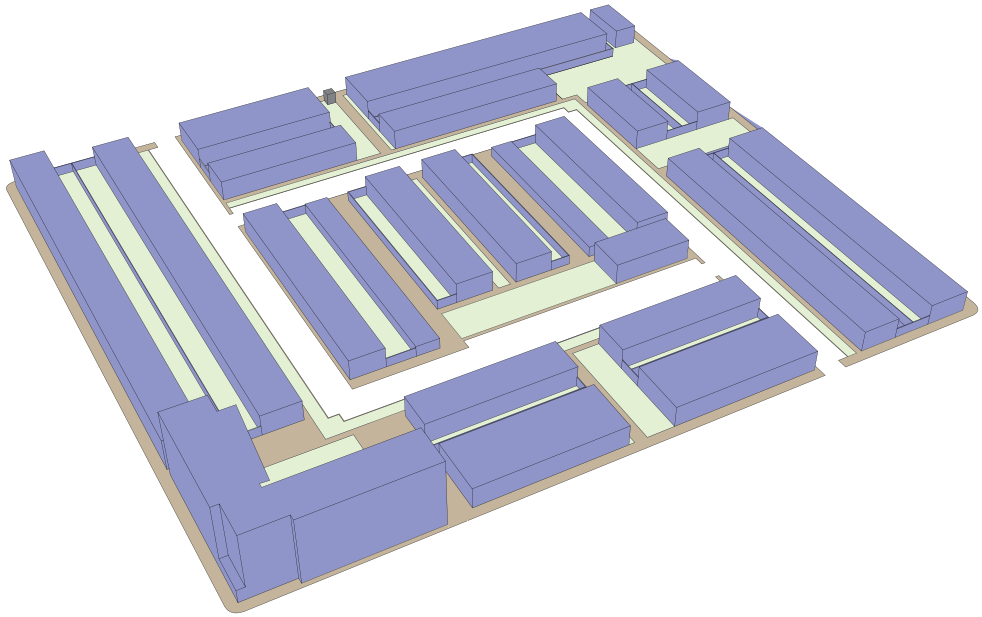


Other Program and Green Spaces









Impervious Surface: 119,987 SQFT **51%**

Open Space: 63,962 SQFT **27%**

Sidewalk Paving: 32,168 SQFT **14%**

Parking: 19,336 SQFT **8%**

Impervious Surface: 145,175 SQFT **53%**

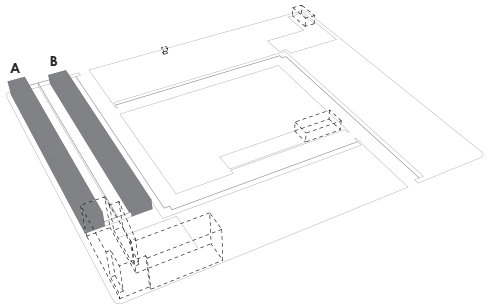
Open Space: 57,706 SQFT **21%**

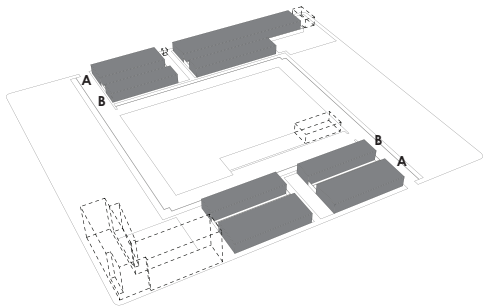
Sidewalk Paving: 55,671 SQFT **20%**

Parking: 11,886 SQFT **6%**

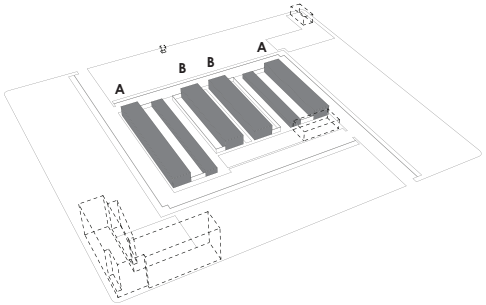
Threshold Ideas

UNIT LOCATION	CONDITIONS PRESENT AT THRESHOLD	CONTEXT EXAMPLE FROM EXISTING RESIDENTIAL BLOCK	SMALL UNIT CLUSTERS DEVELOPED
A UNITS	**A MAIN STREET:** HEAVY VEHICULAR TRAFFIC PEDESTRIAN TRAFFIC PARKING ALONG CURB	**ELEVATE GROUND FLOOR SLAB OFF CURB** **STEP UP TO CARVED PORCH** **STEP UP TO DOOR**	
	B INTERIOR STREET: SOME VEHICULAR TRAFFIC SOME PEDESTRIAN TRAFFIC PARKING ALONG CURB	**PORCH ROOF DEFINES ENTRY** **DOOR LEVEL WITH CURB (GOOD FOR ELDERLY)**	
B UNITS	**A MAIN STREET:** HEAVY VEHICULAR TRAFFIC PEDESTRIAN TRAFFIC PARKING ALONG CURB	**UNIT SET BACK FROM SIDEWALK** **PORCH ROOF DEFINES ENTRY** **DOOR LEVEL WITH CURB (GOOD FOR ELDERLY)**	
	B INTERIOR STREET: SOME VEHICULAR TRAFFIC SOME PEDESTRIAN TRAFFIC PARKING ALONG CURB	**PORCH ROOF DEFINES ENTRY** **DOOR LEVEL WITH CURB (GOOD FOR ELDERLY)**	





C UNITS

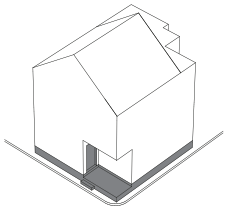


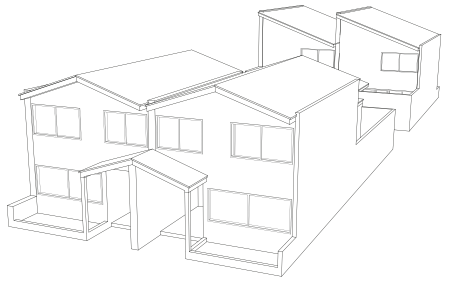
A **INTERIOR STREET:**
SOME VEHICULAR TRAFFIC
PEDESTRIAN TRAFFIC
POTENTIAL FOR OFFSTREET PARKING

ELEVATE GROUND FLOOR SLAB OFF CURB

STEP UP TO CARVED PORCH

STEP UP TO DOOR

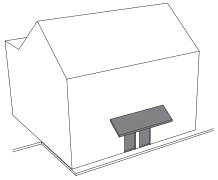


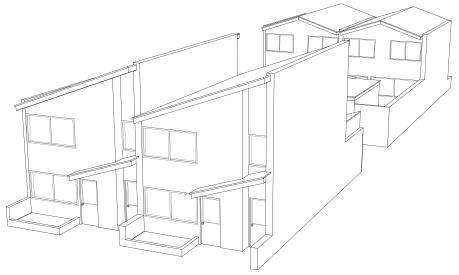


B **INTERIOR STREET:**
SOME VEHICULAR TRAFFIC
SOME PEDESTRIAN TRAFFIC
PARKING ALONG CURB

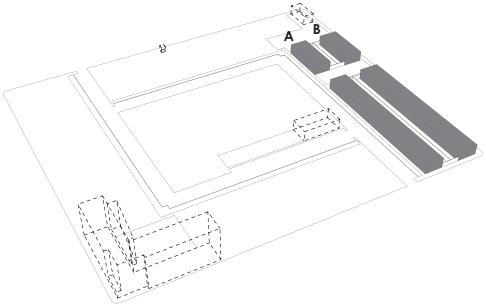
PORCH ROOF DEFINES ENTRY

DOOR LEVEL WITH CURB (GOOD FOR ELDERLY)





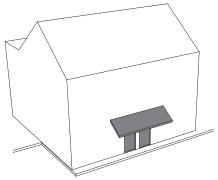
D UNITS

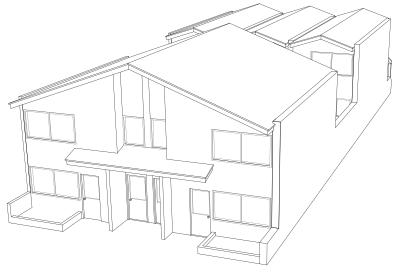


A **INTERIOR STREET:**
SOME VEHICULAR TRAFFIC
SOME PEDESTRIAN TRAFFIC
PARKING ALONG CURB

PORCH ROOF DEFINES ENTRY

DOOR LEVEL WITH CURB (GOOD FOR ELDERLY)



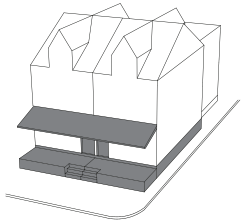


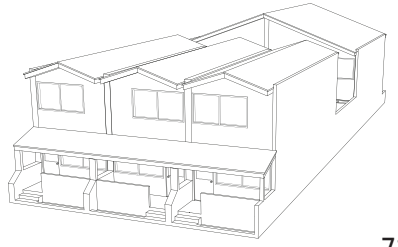
B **MAIN STREET:**
HEAVY VEHICULAR TRAFFIC
PEDESTRIAN TRAFFIC
PARKING ALONG CURB

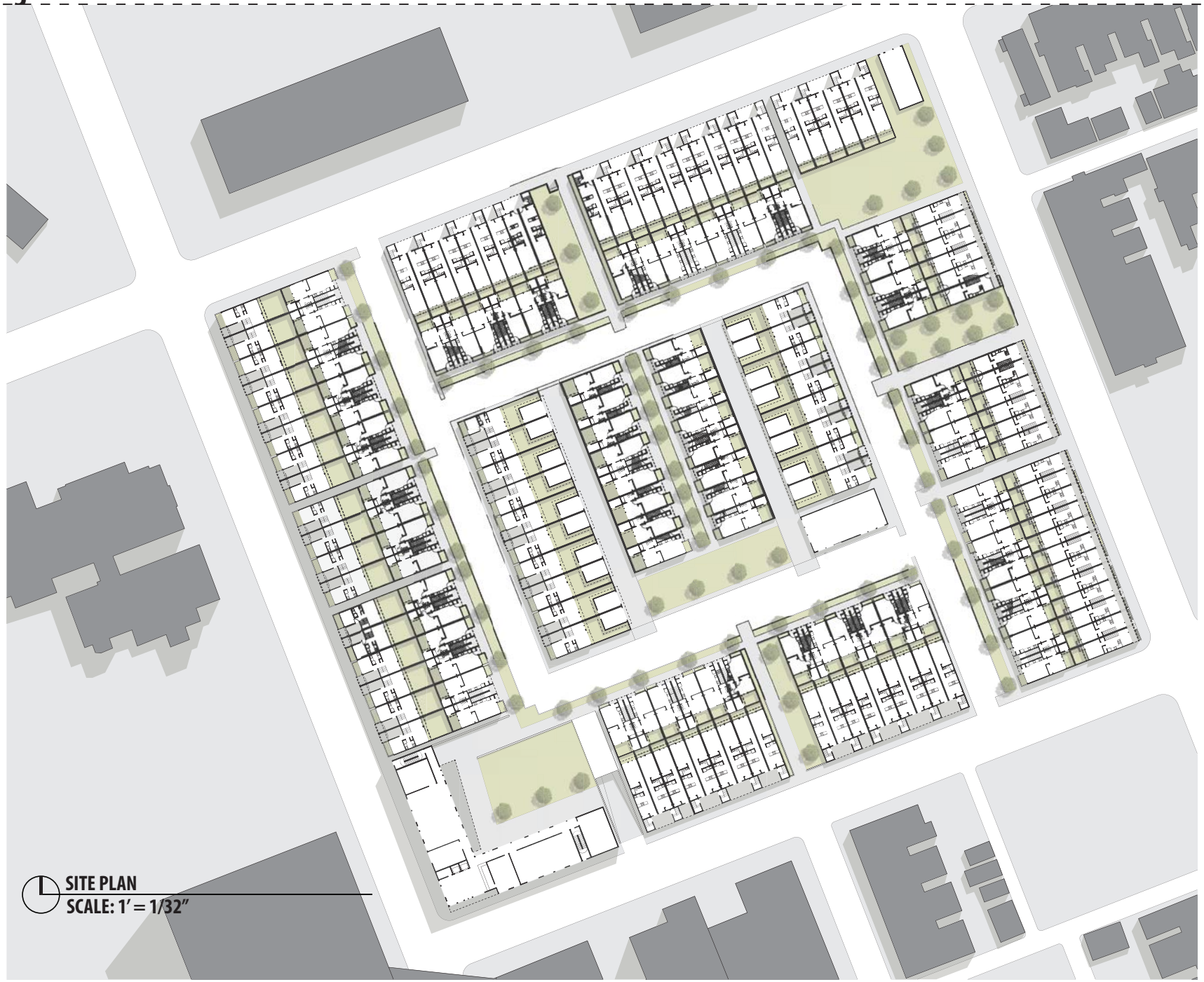
ELEVATE GROUND FLOOR SLAB OFF CURB

STEPS UP TO ATTATCHED PORCH WITH ROOF

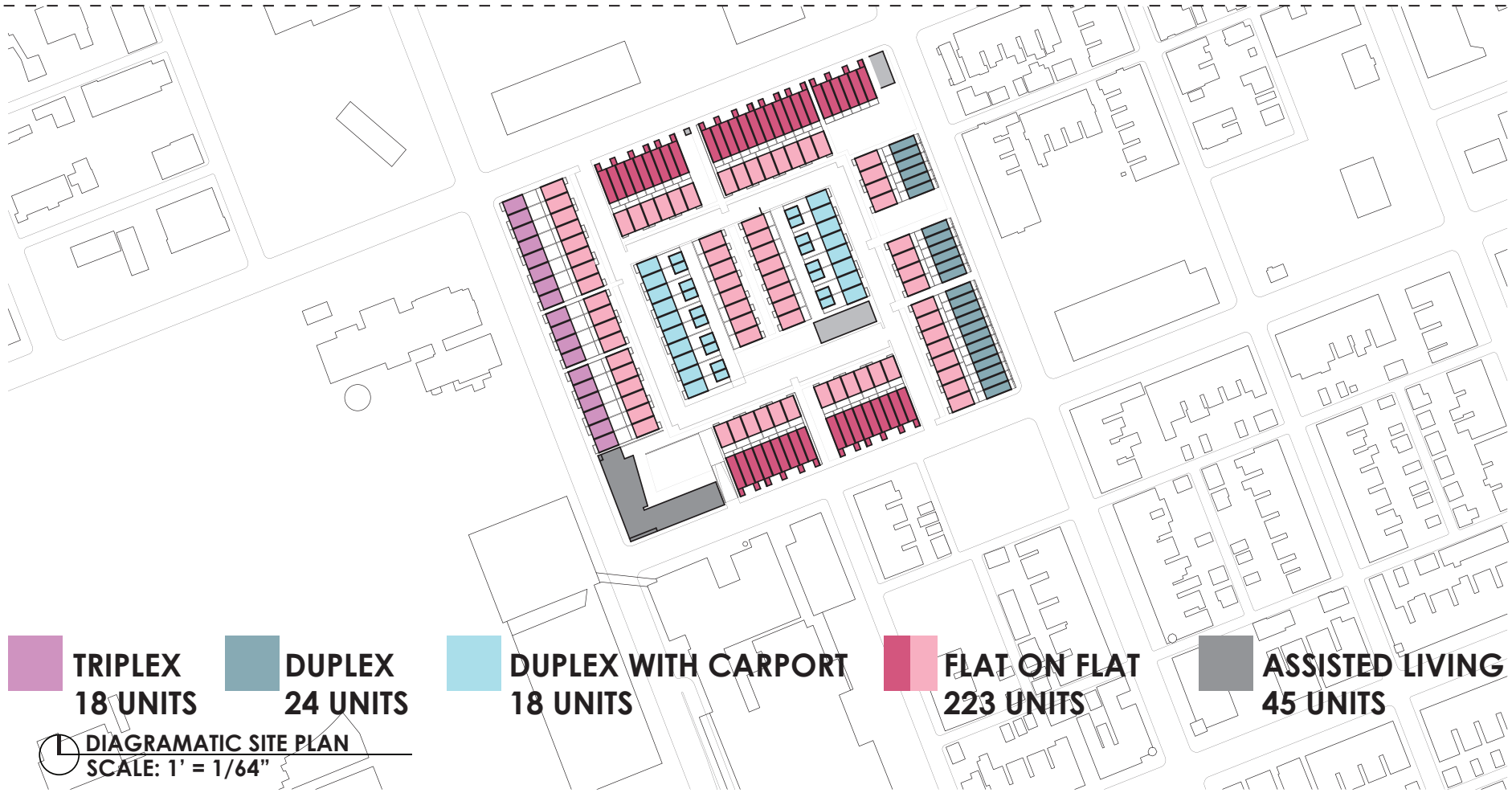
STEP UP TO DOOR



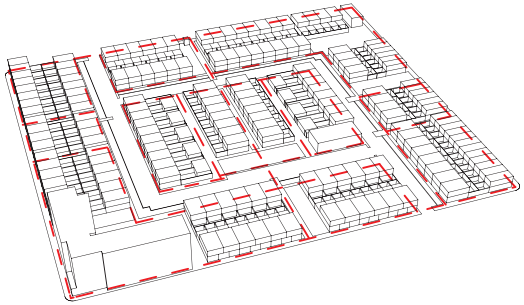




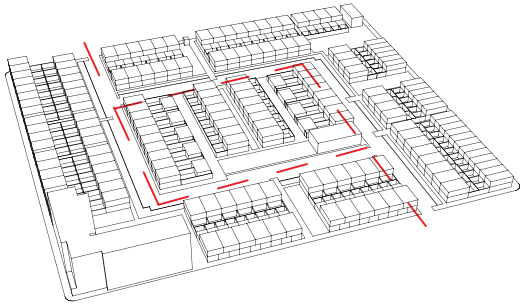
SITE PLAN
SCALE: 1′ = 1/32″



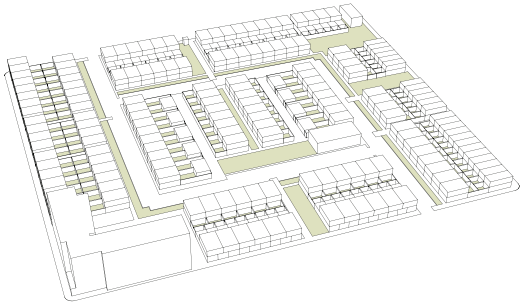
Pedestrian Traffic



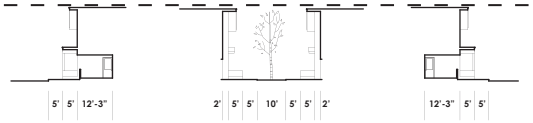
Vehicular Traffic

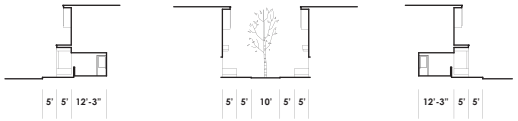


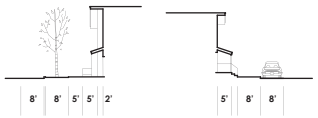
Green Spaces

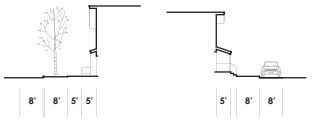


Theshold Rules







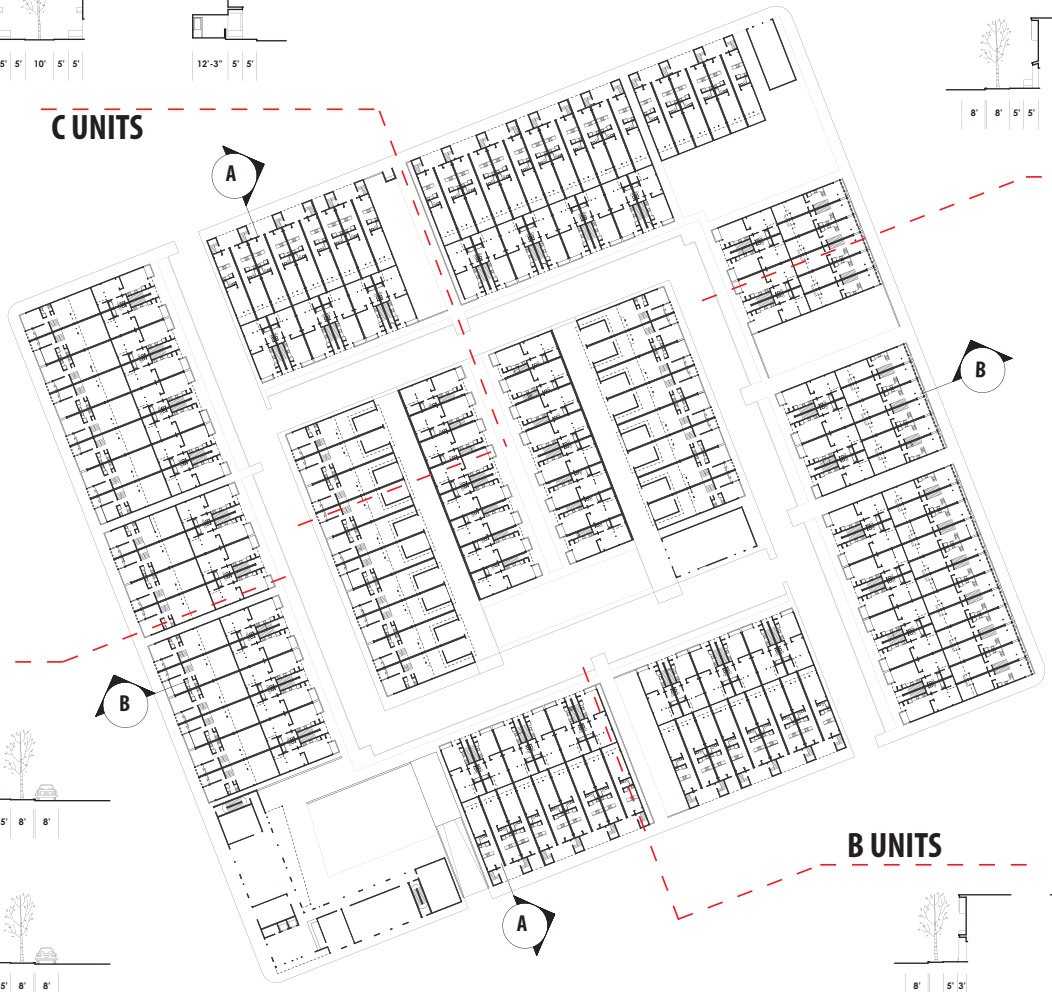


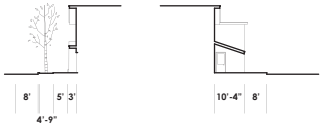
C UNITS

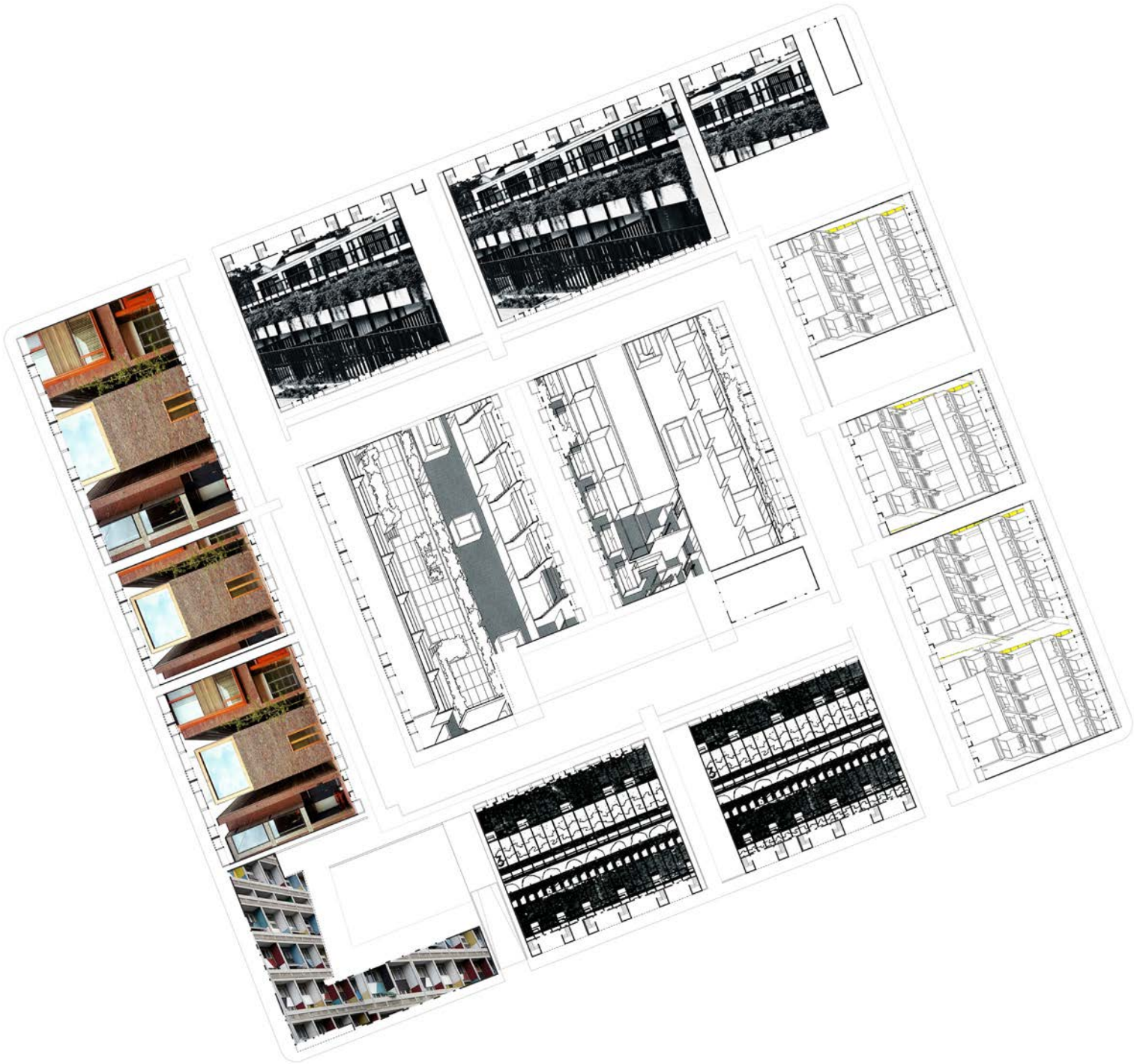
D UNITS

A UNITS

B UNITS







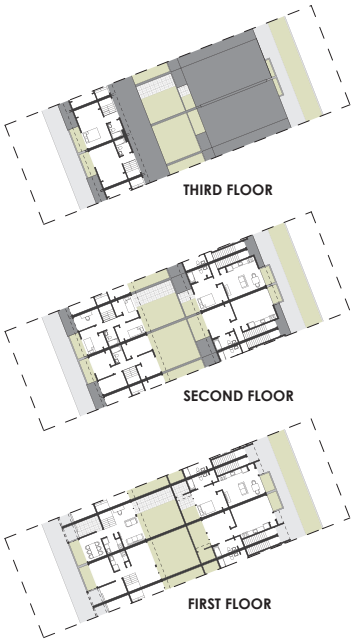
Unit Layouts

A UNIT CLUSTER

TRIPLEX + FLAT ON FLAT

TRIPLEX
1,367 SQFT
4 BEDROOMS

18'-6" WIDE FLAT
520 SQFT
1 BEDROOM



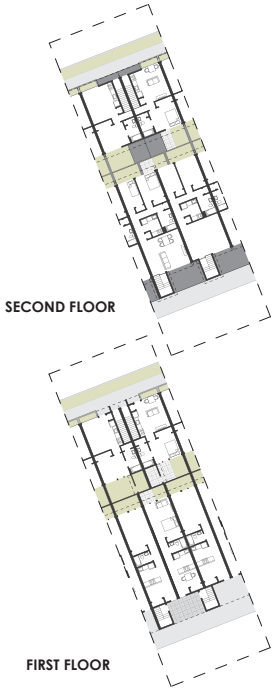
B UNIT CLUSTER

FLAT ON FLAT + FLAT ON FLAT

18'-6" WIDE FLAT
520 SQFT
1 BEDROOM

12' WIDE FLAT
535 SQFT
1 BEDROOM

18'-6" 2ND
FLOOR WIDE FLAT
742 SQFT
2 BEDROOMS

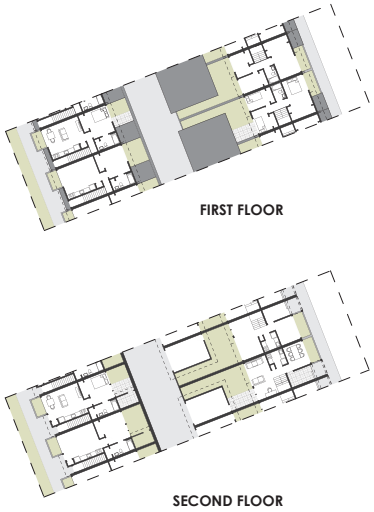


C UNIT CLUSTER

FLAT ON FLAT + DUPLEX W/ CARPORT

18'-6" WIDE FLAT
520 SQFT
1 BEDROOM

18'-6"WIDE DUPLEX W/ CARPORT
1,038 SQFT
3 BEDROOM



UNIT PLANS
SCALE: 1' = 1/16"

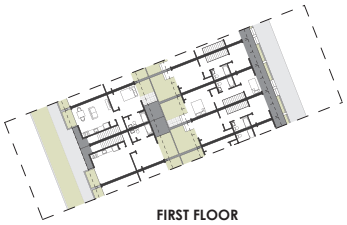
ELEVATIONS
SCALE: 1' = 1/16"

D UNIT CLUSTER

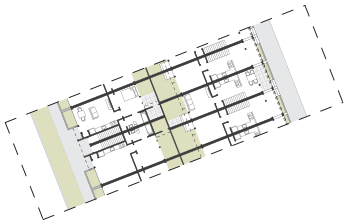
FLAT ON FLAT + DUPLEX

18'-6" WIDE FLAT
520 SQFT
1 BEDROOM

12' WIDE DUPLEX
840 SQFT
2 BEDROOM



FIRST FLOOR



SECOND FLOOR

ELDERLY BUILDING

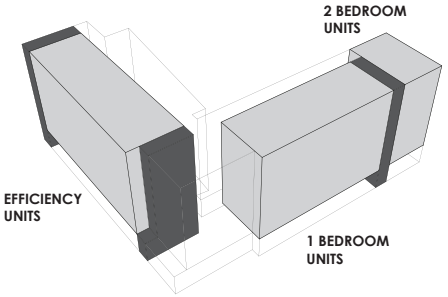
EFFICIENCY UNITS
400 SQFT - 25 UNITS

1 BEDROOM UNITS
550 SQFT - 15 UNITS

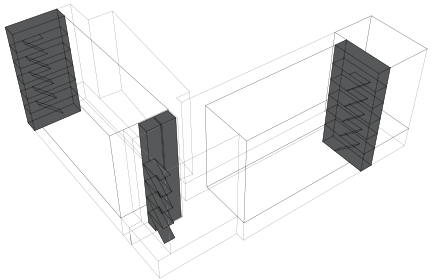
2 BEDROOM UNITS
720 SQFT - 5 UNITS

PROGRAM

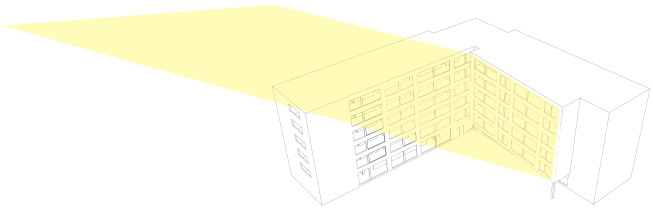
INDEPENDENT AND ASSISTED LIVING

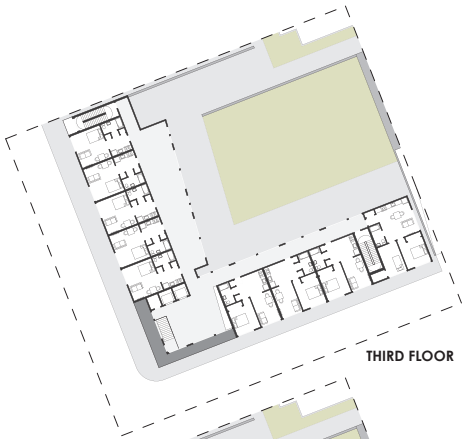


CIRCULATION

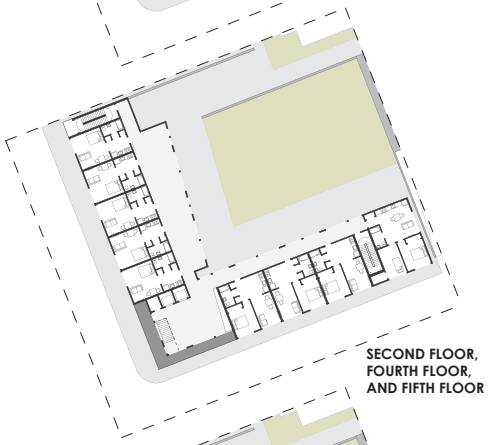


SOLARIUM

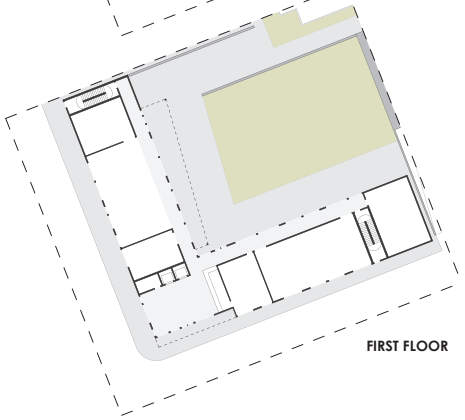




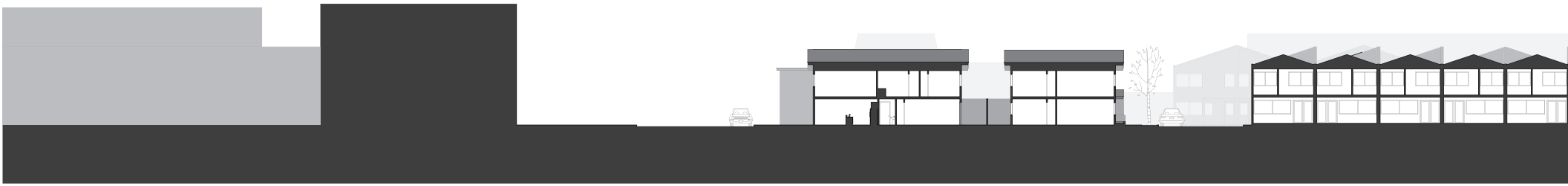
THIRD FLOOR



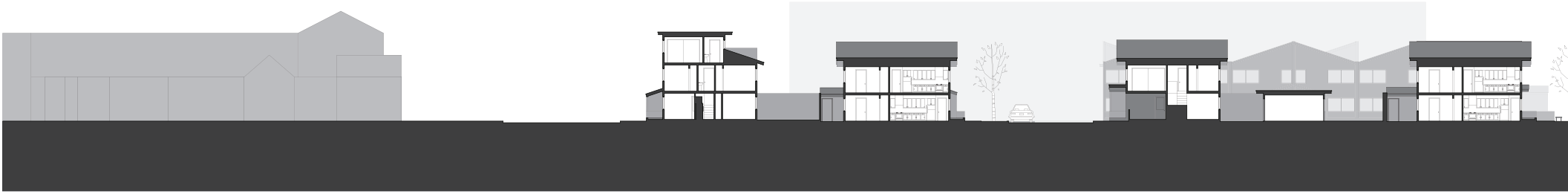
SECOND FLOOR, FOURTH FLOOR, AND FIFTH FLOOR



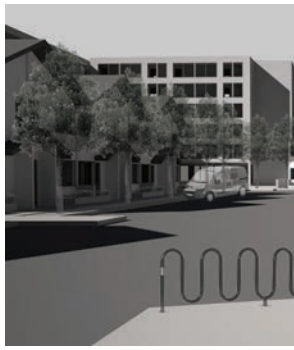
FIRST FLOOR

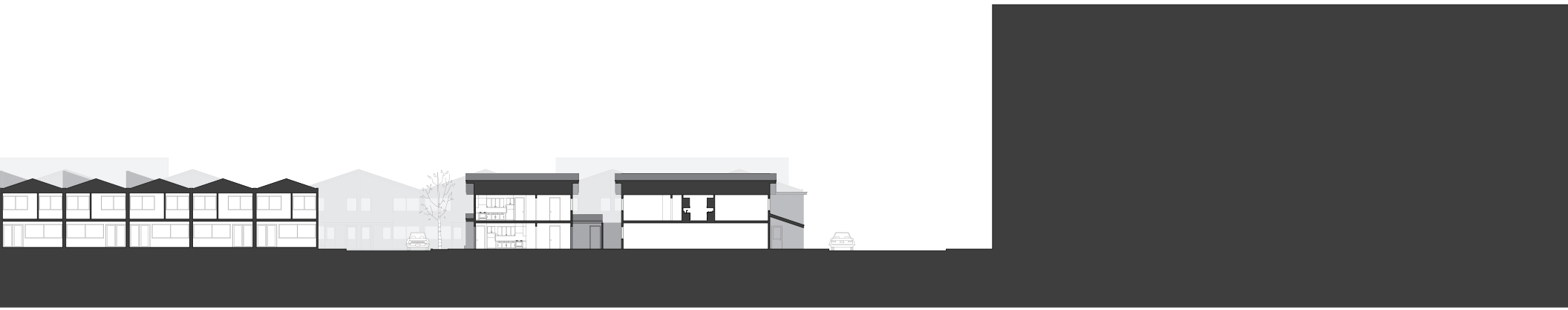


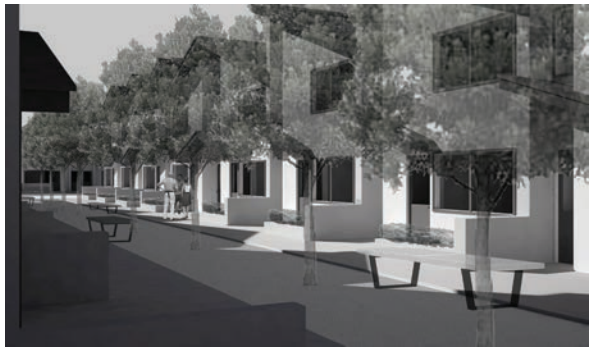
SECTION A
SCALE: 1' = 1/8"



SECTION B
SCALE: 1' = 1/8"







Resources

Glossary

ame·ni·ty

: something that conduces to comfort, convenience, or enjoyment <hotels with modern amenities>

con·text

: the interrelated conditions in which something exists or occurs : environment, setting <the historical context of the war>

de·fen·si·ble

: capable of being defended <defensible theories> <a defensible hill>

den·si·ty

: the quantity per unit volume, unit area, or unit length: as
a : the mass of a substance per unit volume
b : the distribution of a quantity (as mass, electricity, or energy) per unit usually of space (as length, area, or volume)
c : the average number of individuals or units per space unit <a population density of 500 per square mile> <a housing density of 10 houses per acre>

en·vi·ron·ment

: the circumstances, objects, or conditions by which one is surrounded

hab·it

: a settled tendency or usual manner of behavior <her habit of taking a morning walk>
a : a behavior pattern acquired by frequent repetition or physiologic exposure that shows itself in regularity or increased facility of performance
b : an acquired mode of behavior that has become nearly or completely involuntary <got up early from force of habit>

high–rise

: being multistory and equipped with elevators <high–rise apartments>

im·age

(1) : a mental picture or impression of something <had a negative body image of herself> (2) : a mental conception held in common by members of a group and symbolic of a basic attitude and orientation <a disorderly courtroom can seriously tarnish a community's image of justice — Herbert Brownell>
: idea, concept

low–rise

: having few stories and not equipped with elevators <a low–rise classroom building>

mor·phol·o·gy

: a study of structure or form
: structure, form

per·son·al·ize

: personify
: to make personal or individual; specifically : to mark as the property of a particular person <personalized stationery>

ter·ri·to·ri·al·i·ty

: the pattern of behavior associated with the defense of a territory

thresh·old

: gate, door
: end, boundary; specifically : the end of a runway (2) : the place or point of entering or beginning : outset <on the threshold of a new age>

tra·di·tion

: an inherited, established, or customary pattern of thought, action, or behavior (as a religious practice or a social custom)
: the handing down of information, beliefs, and customs by word of mouth or by example from one generation to another without written instruction
: cultural continuity in social attitudes, customs, and institutions

ty·pol·o·gy

: study of or analysis or classification based on types or categories

ur·ban

: of, relating to, characteristic of, or constituting a city

uto·pia

often capitalized : a place of ideal perfection especially in laws, government, and social conditions
: an impractical scheme for social improvement

All definitions cited from http://www.merriam-webster.com/

	ESTIMATE	PERCENT
Total population	**107,225**	
DEMOGRAPHIC		
AGE GROUPS		
18 years and over	78,751	73.4%
21 years and over	73,266	68.3%
62 years and over	15,447	14.4%
65 years and over	13,476	12.6%
HISPANIC OR LATINO		
Hispanic or Latino (of any race)	39,396	36.7%
Not Hispanic or Latino	67,829	63.3%

SOCIAL		
Total households	**39,941**	
HOUSEHOLDS BY TYPE		
Family households (families)	24,528	61.4%
With own children under 18 years	12,988	32.5%
Married-couple family	14,496	36.3%
With own children under 18 years	6,770	17.0%
Male householder, no wife present, family	2,489	6.2%
With own children under 18 years	1,369	3.4%
Female householder, no husband present, family	7,543	18.9%
With own children under 18 years	4,849	12.1%
Nonfamily households	15,413	38.6%
Householder living alone	12,643	31.7%
65 years and over	4,615	11.6%
Average household size	2.56	
Average family size	3.25	
Population in households	**102,155**	
Householder	39,941	39.10%
Spouse	14,515	14.2%
Child	31,861	31.2%
Other relatives	8,722	8.5%
Nonrelatives	7,116	7.0%
Unmarried partner	3,713	3.6%

VETERAN STATUS		
Civilian population 18 years and over	**78,729**	
Civilian veterans	6,861	

ECONOMIC		
EMPLOYMENT STATUS		
Population 16 years and over	**81,616**	
In labor force	50,561	61.90%
Civilian labor force	50,539	61.9%
Employed	45,297	55.5%
Unemployed	5,242	6.4%
Armed Forces	22	0.0%
Not in labor force	31,055	38.1%
Civilian labor force	**50,539**	
Percent Unemployed	10.4%	
COMMUTING TO WORK		
Workers 16 years and over	**43,778**	
Car, truck, or van -- drove alone	31,500	72.0%
Car, truck, or van -- carpooled	5,938	13.6%
Public transportation (excluding taxicab)	2,163	4.9%
Walked	2,762	6.3%
Other means	526	1.2%
Worked at home	889	2.0%
Mean travel time to work (minutes)	22.7	
OCCUPATION		
Civilian employed population 16 years and over	**45297**	
Management, professional, and related occupations	11096	24.5%
Service occupations	9592	21.2%
Sales and office occupations	11613	25.6%
Farming, fishing, and forestry occupations	39	0.1%
Construction, extraction, maintenance, and repair occupations	3915	8.6%
Production, transportation, and material moving occupations	9042	20.0%

INDUSTRY		
Civilian employed population 16 years and over	**45,297**	
Agriculture, forestry, fishing and hunting, and mining	150	0.3%
Construction	2,671	5.9%
Manufacturing	6,193	13.7%
Wholesale trade	1,949	4.3%
Retail trade	5,500	12.1%
Transportation and warehousing, and utilities	2,857	6.3%
Information	1,446	3.2%
Finance and insurance, and real estate and rental and leasing	2,341	5.2%
Professional, scientific, and management, and administrative and waste management services	4,501	9.9%
Educational services, and health care and social assistance	10,379	22.9%
Arts, entertainment, and recreation, and accommodation and food services	4,562	10.1%
Other services, except public administration	1,950	4.3%
Public administration	798	1.8%

CLASS OF WORKER		
Civilian employed population 16 years and over	**45,297**	
Private wage and salary workers	40,053	88.4%
Government workers	3,557	7.9%
Self-employed in own not incorporated business workers	1,607	3.5%

INCOME AND BENEFITS (IN 2009 INFLATION-ADJUSTED DOLLARS)		
Total households	**39,941**	
Less than $10,000	4,203	10.5%
$10,000 to $14,999	3,606	9.0%
$15,000 to $24,999	5,882	14.7%
$25,000 to $34,999	5,461	13.7%
$35,000 to $49,999	7,010	17.6%
$50,000 to $74,999	7,011	17.6%
$75,000 to $99,999	3,464	8.7%
$100,000 to $149,999	2,248	5.6%
$150,000 to $199,999	566	1.4%
$200,000 or more	490	1.2%
Median household income (dollars)	36,454	
Mean household income (dollars)	46,928	

With earnings	30,349	76.0%
Mean earnings (dollars)	48,975	
With Social Security	11,838	29.6%
Mean Social Security income (dollars)	13,675	
With retirement income	6,417	16.1%
Mean retirement income (dollars)	14,728	
With Supplemental Security Income	2,891	7.2%
Mean Supplemental Security Income (dollars)	7,615	
With cash public assistance income	2,347	5.9%
Mean cash public assistance income (dollars)	2,590	
With Food Stamp/SNAP benefits in the past 12 months	7,019	17.6%

Families	**24,528**	
Less than $10,000	2,147	8.8%
$10,000 to $14,999	1,748	7.1%
$15,000 to $24,999	2,930	11.9%
$25,000 to $34,999	3,347	13.6%
$35,000 to $49,999	4,177	17.0%
$50,000 to $74,999	4,977	20.3%
$75,000 to $99,999	2,547	10.4%
$100,000 to $149,999	1,821	7.4%
$150,000 to $199,999	402	1.6%
$200,000 or more	432	1.8%

Median family income (dollars)	41,402
Mean family income (dollars)	53,062
Per capita income (dollars)	18143
Nonfamily households	**15413**
Median nonfamily income (dollars)	26115
Mean nonfamily income (dollars)	33820
Median earnings for workers (dollars)	22569
Median earnings for male full-time, year-round workers (dollars)	35917
Median earnings for female full-time, year-round workers (dollars)	28062

PERCENTAGE OF FAMILIES AND PEOPLE WHOSE INCOME IN THE PAST 12 MONTHS IS BELOW THE POVERTY LEVEL	
All families	20.0%
With related children under 18 years	29.6%
With related children under 5 years only	36.0%
Married couple families	10.2%
With related children under 18 years	14.7%
With related children under 5 years only	11.4%
Families with female householder, no husband present	38.0%
With related children under 18 years	48.4%
With related children under 5 years only	63.1%

All people	23.9%
Under 18 years	35.5%
Related children under 18 years	35.1%
Related children under 5 years	41.2%
Related children 5 to 17 years	32.1%
18 years and over	19.5%
18 to 64 years	20.5%
65 years and over	15.0%
People in families	22.1%
Unrelated individuals 15 years and over	30.0%

HOUSING		
HOUSING OCCUPANCY		
Total housing units	**44,074**	
Occupied housing units	39,941	90.6%
Vacant housing units	4,133	9.4%

Homeowner vacancy rate	2.7
Rental vacancy rate	7.1

UNITS IN STRUCTURE		
Total housing units	**44,074**	
1-unit, detached	10,783	24.5%
1-unit, attached	16,291	37.0%
2 units	3,516	8.0%
3 or 4 units	4,130	9.4%
5 to 9 units	2,653	6.0%
10 to 19 units	3,032	6.9%
20 or more units	3,527	8.0%
Mobile home	115	0.3%
Boat, RV, van, etc.	27	0.1%

YEAR STRUCTURE BUILT		
Total housing units	**44,074**	
Built 2005 or later	631	1.4%
Built 2000 to 2004	658	1.5%
Built 1990 to 1999	1,085	2.5%
Built 1980 to 1989	2,886	6.5%
Built 1970 to 1979	4,327	9.8%
Built 1960 to 1969	5,037	11.4%
Built 1950 to 1959	7,931	18.0%
Built 1940 to 1949	4,390	10.0%
Built 1939 or earlier	17,129	38.9%

ROOMS		
Total housing units	**44,074**	
1 room	559	1.30%
2 rooms	1,049	2.4%
3 rooms	6,086	13.8%
4 rooms	6,798	15.4%
5 rooms	7,837	17.8%
6 rooms	9,050	20.5%
7 rooms	6,148	13.9%
8 rooms	4,015	9.1%
9 rooms or more	2,532	5.7%
Median rooms	5.5	

BEDROOMS		
Total housing units	**44,074**	
No bedroom	701	1.6%
1 bedroom	8,090	18.4%
2 bedrooms	11,335	25.7%
3 bedrooms	16,083	36.5%
4 bedrooms	4,946	11.2%
5 or more bedrooms	2,919	6.6%

HOUSING TENURE		
Occupied housing units	**39,941**	
Owner-occupied	20,317	50.9%
Renter-occupied	19,624	49.1%

Average household size of owner-occupied unit	2.63	
Average household size of renter-occupied unit	2.49	

VEHICLES AVAILABLE		
Occupied housing units	**39941**	
No vehicles available	7,513	18.8%
1 vehicle available	16,275	40.7%
2 vehicles available	12,126	30.4%
3 or more vehicles available	4,027	10.1%

OCCUPANTS PER ROOM		
Occupied housing units	**39941**	
1.00 or less	38754	97.0%
1.01 to 1.50	995	2.5%
1.51 or more	192	0.5%

MORTGAGE STATUS		
Owner-occupied units	**20317**	
Housing units with a mortgage	13665	67.30%
Housing units without a mortgage	6652	32.7%

SELECTED MONTHLY OWNER COSTS AS A PERCENTAGE OF HOUSEHOLD INCOME (SMOCAPI)		
Housing units with a mortgage (excluding units where SMOCAPI cannot be computed)	**13,665**	
Less than 20.0 percent	3,901	28.5%
20.0 to 24.9 percent	2,574	18.8%
25.0 to 29.9 percent	1,898	13.9%
30.0 to 34.9 percent	1,325	9.7%
35.0 percent or more	3,967	29.0%

Housing unit without a mortgage (excluding units where SMOCAPI cannot be computed)	**6619**	
Less than 10.0 percent	1648	24.9%
10.0 to 14.9 percent	1525	23.0%
15.0 to 19.9 percent	862	13.0%
20.0 to 24.9 percent	548	8.3%
25.0 to 29.9 percent	574	8.7%
30.0 to 34.9 percent	358	5.4%
35.0 percent or more	1104	16.7%

GROSS RENT		
Occupied units paying rent	**19,239**	
Less than $200	744	3.9%
$200 to $299	855	4.4%
$300 to $499	1,713	8.9%
$500 to $749	5,898	30.7%
$750 to $999	5,926	30.8%
$1,000 to $1,499	3,656	19.0%
$1,500 or more	447	2.3%
Median (dollars)	762	
No rent paid	385	

GROSS RENT AS A PERCENTAGE OF HOUSEHOLD INCOME (GRAPI)		
Occupied units paying rent (excluding units where GRAPI cannot be computed)	**18,799**	
Less than 15.0 percent	1,546	8.2%
15.0 to 19.9 percent	1,940	10.3%
20.0 to 24.9 percent	2,338	12.4%
25.0 to 29.9 percent	2,051	10.9%
30.0 to 34.9 percent	2,204	11.7%
35.0 percent or more	8,720	46.4%

Annotated Bibliography

Alexander, Christopher, Sara Ishikawa, Murray Silverstein, Max Jacobson, Ingrid Fiksdahl-King, and Shlomo Angel. A Pattern Language: Towns, Buildings, Construction. New York: Oxford UP, 1977. Print.

This book gives guidelines to discovering all aspects of patterning at all scales of architecture, from the large city, to the individual house. This had helped in the decision making process for program and tectonics.

Allentown B'nai B'rith Housing Corporation. "B'nai B'rith Apartments." Welcome to B'nai B'rith Apartments. Equal Housing Opportunity, 2009. Web. 26 Oct. 2011. <http://www.abbhc.com/about.php>.

This website provides some information about the present building occupying the site in question for the design project. It gives some floor plans of the units, as well as the number of units and amenities, and a brief history of the project.

Allentown City Planning Commission. City of Allentown Comprehensive Plan. 29 Jan. 2009. Allentown 2020. 435 Hamilton Street, Allentown, PA.

Doing research on the City of Allentown's website, I am across this publication, stating the city's development plans through the year 2020. The publication gives a lot of information about the cities demographic, land use, and the economics of the city.

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This article discusses the myth of Pruitt-Igoe in St. Louis and its demolition. The article comes to the conclusion that it was the design of the project, and not the economic decline, that set the project on a course for failure and demolition.

City of Allentown - PA - Official Site. City of Allentown. Web. 26 Oct. 2011. <http://www.allentownpa.gov/>.

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Davis, Sam. The Architecture of Affordable Housing. Berkeley: University of California, 1995. Print.

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This book is a study of the success-rate of low-rise high-density housing projects in London cities. The book also provides in detail what would be changed about the projects after interviewing their residents.

Hammond, Claire Holton. The Benefits of Subsidized Housing Programs: an Intertemporal Approach. Cambridge [Cambridgeshire: Cambridge UP, 1987. Print.

This book gives basic guidelines for the types of housing subsidies and the benefits of using subsidized housing over other programs.

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An entire article on the project Thin Flats in Philadelphia, PA by Onion Flats. Article provides pitcures as well as floor plans and sections.

Hertzberger, Herman, and Ina Rike. Lessons for Students in Architecture. Rotterdam: 010, 2009. Print.
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Marcus, Clare Cooper., and Wendy Sarkissian. Housing as If People Mattered: Site Design Guidelines for Medium-density Family Housing. Berkeley: University of California, 1986. Print
This book acts as a list of guidelines for the design of low-rise, high density family housing, and how to create a better image for the projects.

Newman, Oscar. Defensible Space; Crime Prevention through Urban Design. New York: Collier, 1973.
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Marcus, Clare Cooper., and Wendy Sarkissian. Housing as If People Mattered: Site Design Guidelines for Medium-density Family Housing. Berkeley: University of California, 1986. Print

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Picture taken by Jamie Goldstein

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Aerial photo from Google Maps

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