Spring 5-4-2013

Terra[FORM]

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Michael Harpster

2012 - 2013
College of Architecture
University of Nebraska-Lincoln

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by

Michael Harpster

A Design Thesis

Presented to the Faculty of

The College of Architecture at the University of Nebraska

In Partial Fulfillment of Requirements

For the Degree of Master of Architecture

Major: Architecture

Under the Supervision of Professor Jeff Day

Lincoln, Nebraska

May 2013

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This project generates an alternative model of high-density development for emerging metropolitan areas that increases the intensity of use and overall density of a site while simultaneously producing new types of public open space.

Focused intently on ways in which urban form influences or impacts a citys consumption of energy and resources, the project can be understood as a formal approach to sustainability in which basic formal or tectonic properties are examined in favor of technological building systems.

Ultimately, the project redefines the relationship between the park and the city, creating a network of public open spaces through the *intensification* of the city rather than the removal or diminishing of the urban fabric.

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To Jeff Day, for his guidance and criticism throughout the development and realization of this project. To Peter Hind, Steve Hardy, Chris Ford, and Tom Laging, for their helpful questions, comments, and suggestions. To my fellow thesis students, for their encouragment and willingness to share ideas, materials, and knowledge with me. And to my wife, Jillian, for her constant support and understanding during all the late nights.

Thank you.

01

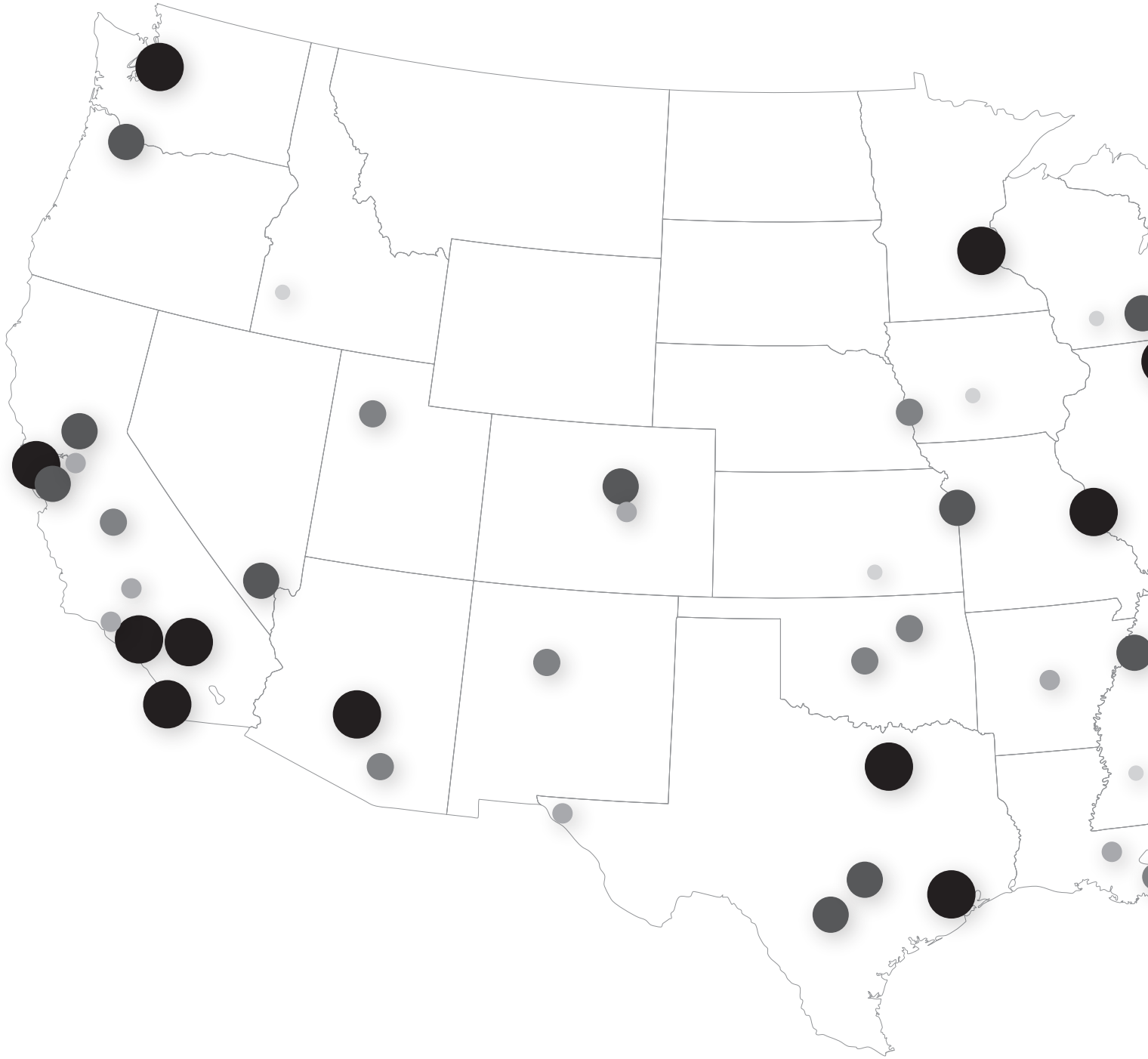
Performance + Urban Form
Part One

The majority of earth's inhabitants live in urban areas.

This simple fact alone would seem to require that all young architects and designers engage in the study of urban environments and the variety of issues associated with the design, development, and maintenance of an urban world. After all, cities not only serve as home to over half of the world's population, they also account for a large percentage of the world's energy use and resource consumption. As a result, any attempt on the part of architects or designers to conceive and implement a sustainable way of living and building must engage the extreme levels of consumption exhibited in urban environments. This project aims to do just that.

More specifically, this project explores the efficiency and energy performance of urban areas within the United States and speculates on ways in which to improve such performance. Furthermore, the project seeks to uncover the relationship between urban or building *form* and energy *efficiency*. Implementing project-specific shading devices, geothermal energy systems, or high-efficiency windows is of no interest to me. Instead, the project is formulated at a much larger scale, aiming to explore ways in which urban forms - whether urban block or building types - can begin to have a positive impact on energy efficiency within the city as a whole.

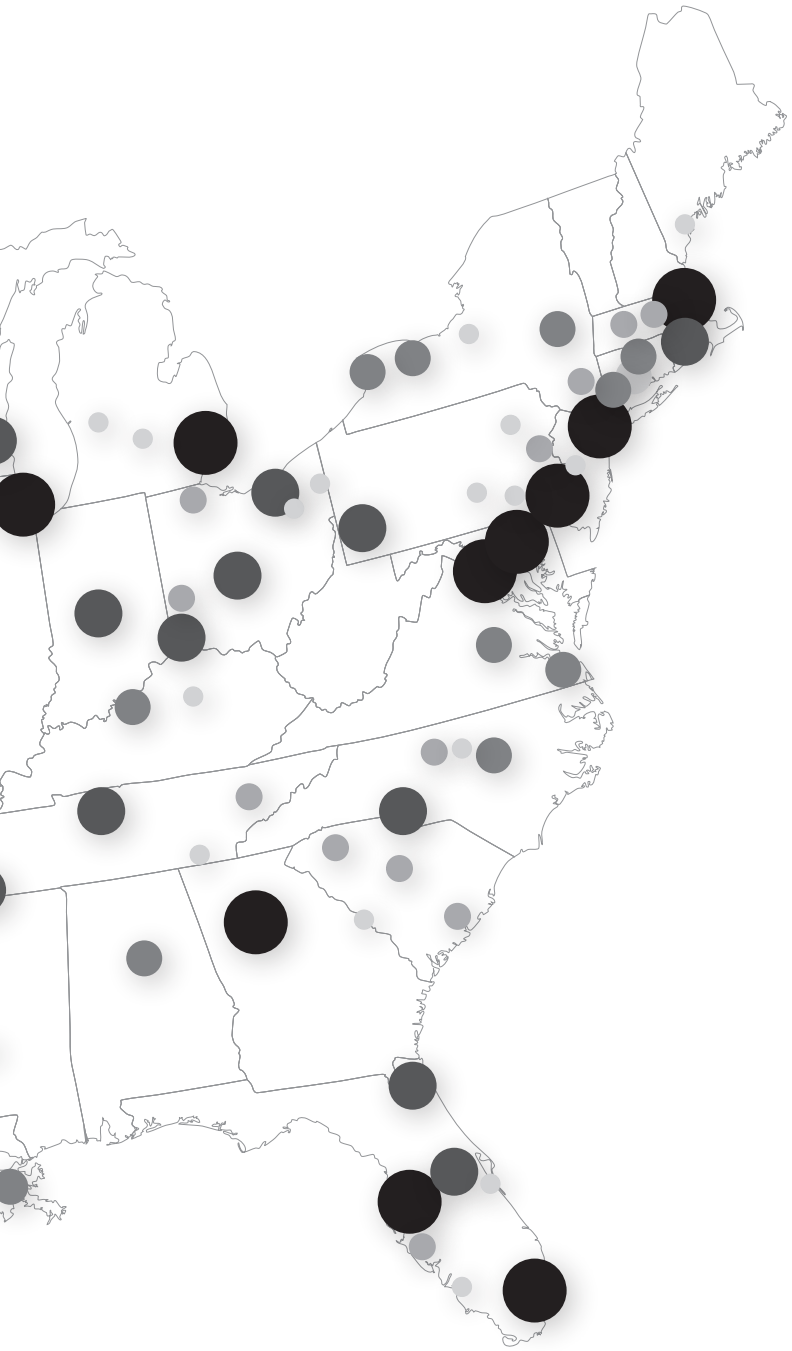
Ultimately, the initial goal of the project is to answer the following question: Can a careful reconsideration of the form of the city - i.e. the shape, spacing, and organization of its buildings, streets, and landscapes - effectively reduce the amount of energy and resources a city consumes while still creating an enjoyable and liveable urban environment?



1.1 Population Rankings for the Largest One Hundred U.S. Metropolitan Areas[1]

[1] Figures based on 2010 Census data published by the U.S. Census Bureau

Lowest Quintile Lower Quintile Middle Quintile Higher Quintile Highest Quintile

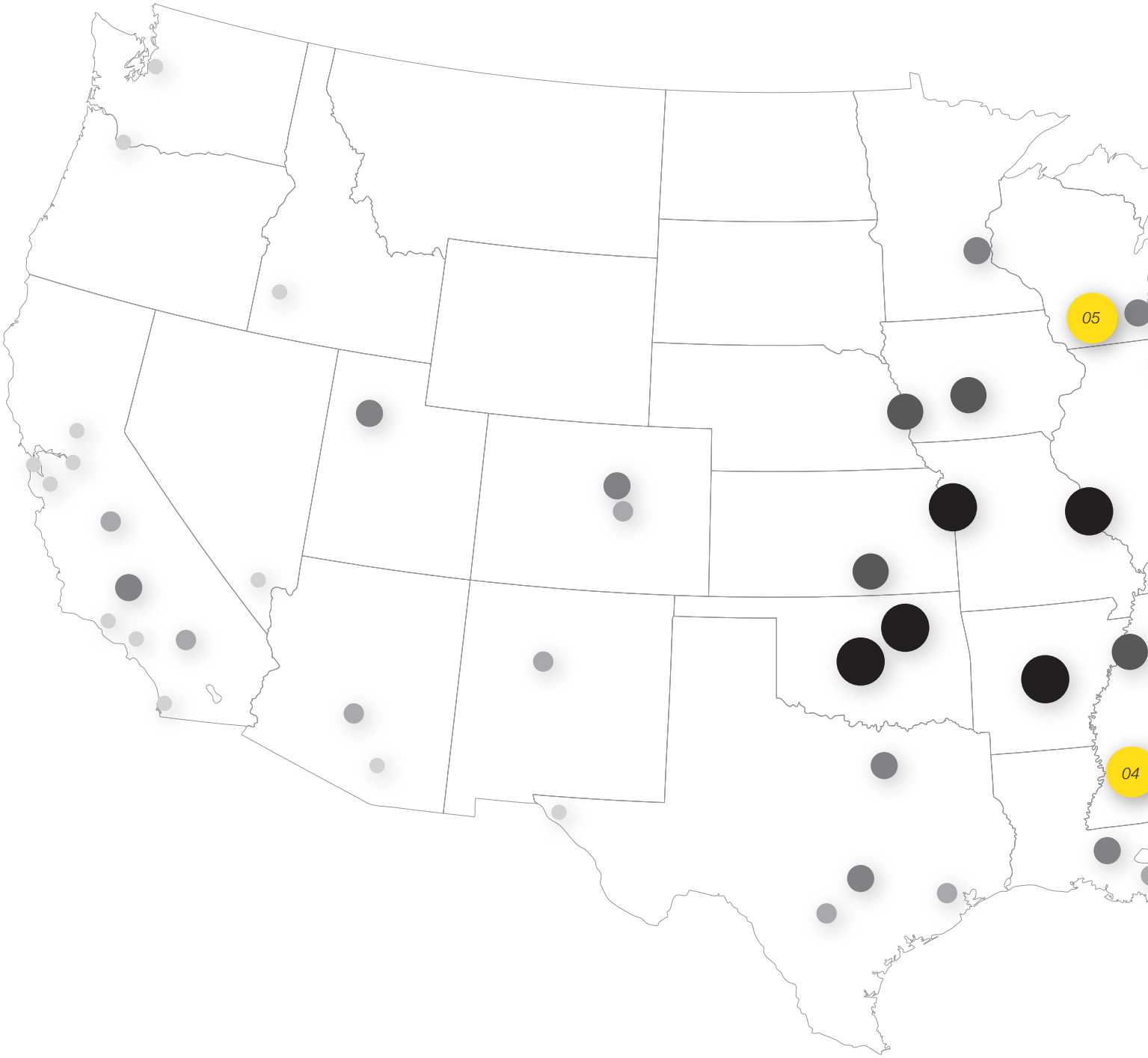


As a first step toward a more in-depth examination of the impact carefully-considered urban form might have on the energy efficiency or energy performance of a city, I examined the population characteristics and energy performance records of the largest one hundred Metropolitan Statistical Areas (MSAs) in the United States.

The diagram at left illustrates the locations and relative population levels of the largest one hundred MSAs in the continental United States, with each MSA being grouped into one of five quintiles according to its population. The diagram utilizes dots of increasing sizes and saturations to represent larger populations - i.e. the larger and darker the dot, the higher the population. The twenty largest cities are grouped into the highest quintile and identified with a large, black dot while the twenty smallest cities are grouped into the lowest quintile and identified with a small, gray dot. By simplyfing the data into this basic graphic display, I hoped to make any patterns that emerge from the data more immediately discernible.

When analyzing the distribution of population shown in the diagram, a number of clear observations can be made. First, one can see that the majority of the largest Metropolitan Statistical Areas are located along the east and west coasts. Boston, New York City, Washington, D.C., Baltimore, and Philadelphia create a continuous string of large dots that run along the northeast coast; and San Diego, Los Angeles, San Francisco, and Seattle punctuate the western edge of the country with a similar string of large, black dots. At the same time, many of the smallest MSAs can be found in the eastern portion of the country. Although their distribution is more sporadic, these smaller MSAs are, for the most part, concentrated in the Carolinas and through much of the Rust Belt stretching from southern Michigan to eastern Pennsylvania.

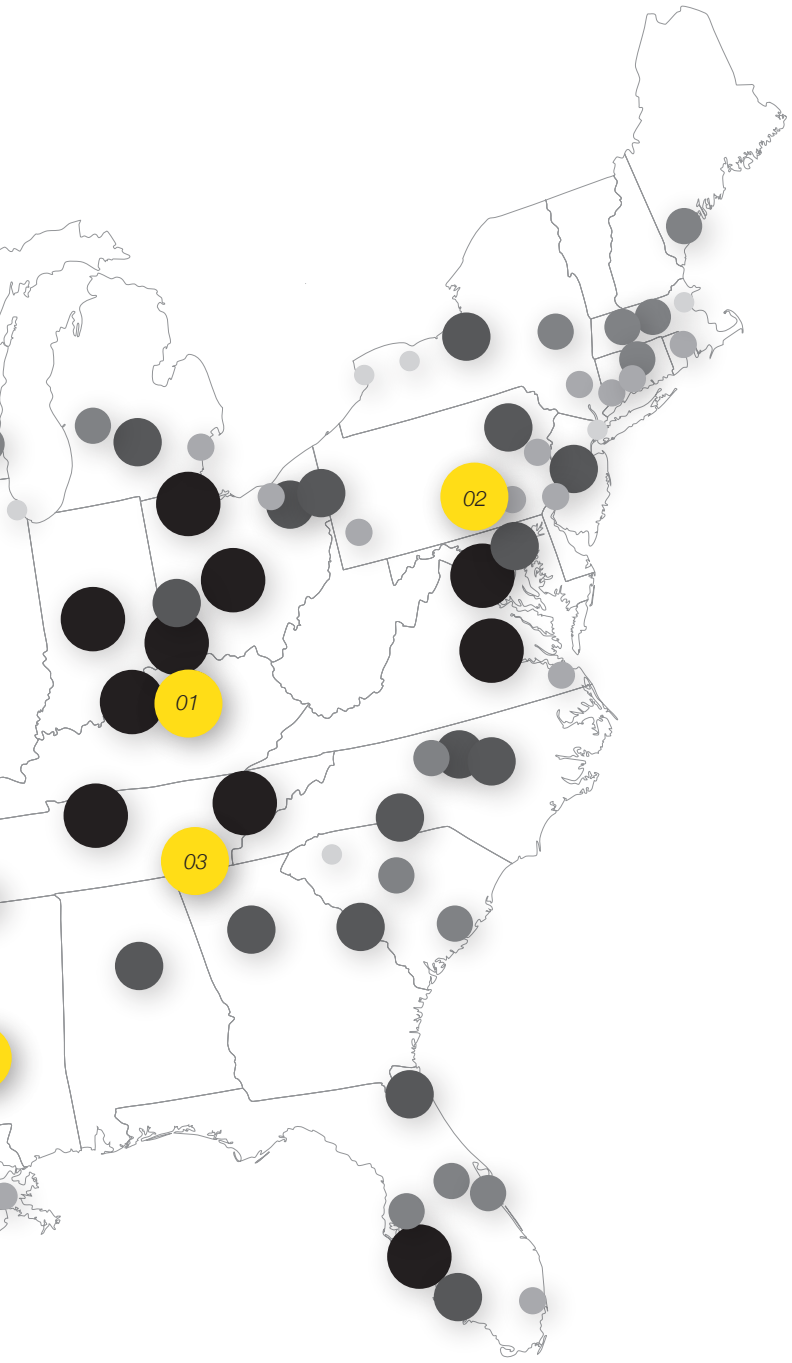
Ultimately, given this pattern, one might expect that a graphic display of the Metropolitan Statistical Areas' per capita carbon emissions would result in a similar distribution of large and small dots. Because large cities or metropolitan areas are often characterized as dirty, wasteful, or polluted, one might expect to see larger carbon emissions (larger dots) being located in the more heavily-populated urban areas along the coasts and smaller carbon emissions (smaller dots) being located in the less-populated areas within the Carolinas or select portions of the Rust Belt.



1.2 Per Capita Carbon Emissions Rankings for the Largest One Hundred U.S. Metropolitan Areas[2]

[2] Figures from *Blueprint for American Prosperity* published by the Metropolitan Policy Program at Brookings

Lowest Quintile Lower Quintile Middle Quintile Higher Quintile Highest Quintile



01 *Lexington-Fayette, KY*
02 *Harrisburg-Carlisle, PA*
03 *Chattanooga, TN-GA*
04 *Jackson, MS*
05 *Madison, WI*

Worst-Performing Cities

Yet, when the same one hundred Metropolitan Statistical Areas are grouped and displayed according to their respective per capita carbon emission levels, a markedly different diagram is produced. In this second diagram, instances of higher per capita carbon emissions are centered in the Midwest and lower Great Plains, stretching from Oklahoma to Tennessee and into Ohio. Cities exhibiting lower per capita carbon emissions are primarily found along the coasts, in regions dominated by large metropolitan regions. Ultimately, this shift in the distribution of large, black dots reveals a clear correlation between population levels and energy efficiency.

In general, the Metropolitan Statistical Areas containing the largest populations exhibit the lowest levels of per capita carbon emissions, while those containing the smallest populations tend to exhibit the highest levels of per capita carbon emissions. Large urban centers like New York City, Boston, and San Francisco all rank in the highest quintile in terms of population but the lowest quintile in terms of per capita carbon emissions. Similarly, cities like Lexington, Kentucky and Jackson, Mississippi rank in the lowest quintile in terms of population but the highest quintile in terms of per capita carbon emissions.

The Metropolitan Statistical Areas identified with a large, yellow dot are all those, like the two mentioned above, that rank lowest in terms of population but highest in terms of per capita carbon emissions. In other words, these are some of the least-efficient urban areas in the country. The residents of these cities, on average, consume highly disproportionate amounts of energy when compared to people living in larger, more dense areas.

Rather than the wasteful, inefficient places they are often stereotyped as, large cities or metropolitan areas are actually, on average, more efficient and less wasteful than their smaller, more suburban counterparts. However, simply increasing the population of a city does not guarantee an increase in efficiency. Although the data displayed show far identifies a clear correlation between population and per capita carbon emissions, it is not population alone that dictates whether residents of an urban center consume energy efficiently. Instead, a variety of factors contribute to the determination of a city's overall energy efficiency, including its climate, the size of its public transit network, and the city's overall urban density.

The diagram below uses data from five U.S. cities to illustrate the inverse relationship between urban density and per capita carbon emissions. The data shows that, as urban density increases, per capita carbon emissions tend to decrease.

Although this relationship may not be surprising, it remains important to understand the conditions that create it. As the diagrams at right show, this relationship exists, at least in part, because of the form or structure of urban environments. Figure 1.4 reveals that apartment units typically consume less electricity than similarly-sized, single-family houses. In addition, Figure 1.5 reveals that people living in higher-density areas consume less gasoline than those living in low-density areas. Together, both diagrams suggest that the increased proximity exhibited within an urban setting allow for higher levels of energy efficiency. The proximity of apartment units - i.e. the fact that they share walls and thereby remain less-exposed to the elements - allows the units to be heated and cooled using less electricity. Similarly, the proximity of uses found in dense areas allows people to make shorter trips or to utilize alternative means of tranist, ultimately resulting in less gasoline consumption.

1.4 Annual Electricity Usage Per Resident[4]

[4] Figures cited in Edward L. Glaeser's *Triumph of the City*.

1.5 Annual Gasoline Usage Per Capita[5]

[5] Figures cited in Edward L. Glaeser's *Triumph of the City*.

1.3 Energy Efficiency Factor Analysis Diagram[3]

[3] Figures based on 2010 Census data published by the U.S. Census Bureau

3

apids, MI

ple / sq. mi.

c tons / year

04

Boston, MA

Density	12,762 people / sq. mi.
Population	4,552,402
CO_2 Emissions	2.02 metric tons / year

05

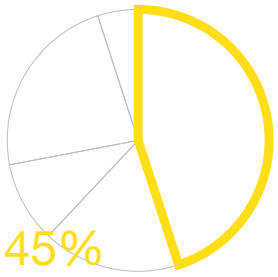
New York City, NY

Density	27,012 people / sq. mi.
Population	18,897,109
CO_2 Emissions	1.50 metric tons / year

Clearly, the higher-density development that exists in larger cities has definite quantifiable benefits. However, the vast majority of urban areas in the United States are small, emerging cities that typically lack this type of high density development. In fact, of the roughly four hundred Metropolitan Statistical Areas in the United States that have a population of at least 250,000 people, only twenty-eight percent have populations larger than one million people while nearly half have populations below 500,000 people. Assuming these smaller MSAs exhibit per capita carbon emissions similar to cities like Lexington, Kentucky it can be concluded that a large portion of U.S. metropolitan centers produce disproportionate amounts of carbon emissions.

Because of their disproportionate levels of energy consumption and prevalence across the United States, these smaller urban centers have been selected as the focus of the project. By examining these cities and identifying opportunities to implement innovative, high-density development, one might be able to suggest ways to improve the energy efficiency of a large portion of U.S. cities.

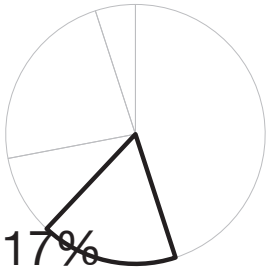
In an attempt to determine ways in which to improve the overall density and energy performance of smaller metropolitan areas, I have chosen perform a case study of Lincoln, Nebraska. As the diagrams at right illustrate, Lincoln is similar to Lexington, Kentucky in terms of population, density, and total land area. Because Lexington ranked last in terms of per capita carbon emissions in the study cited earlier, it can reasonably be assumed that a city with similar characteristics might exhibit a comparably dismal level of energy efficiency. The goal of the project is to discover why this occurs and to propose ways to improve such conditions.



Percentage of US Metropolitan Areas with a population of 250,000 to 500,000 people

01

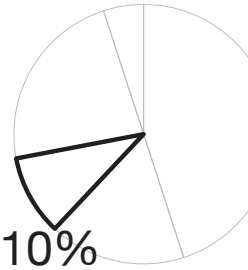
Lexington, KY



Percentage of US Metropolitan Areas with a population of 500,000 to 750,000 people

02

Des Moines, IA



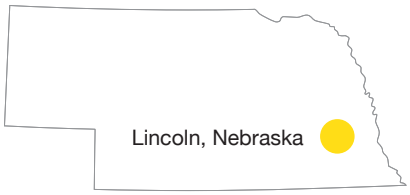
Percentage of US Metropo
Areas with a population
750,000 to 1,000,000 pec

03

Grand Rapids

1.6 U.S. Metropolitan Statistical Area Population Distribution Diagram[6]

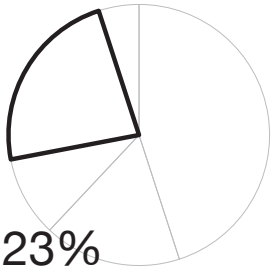
[6] Figures based on 2010 Census data published by the U.S. Census Bureau



	301,569	258,379	
MI.^{2}	87.5	84.7	MI.^{2}
	3,500	3,050	

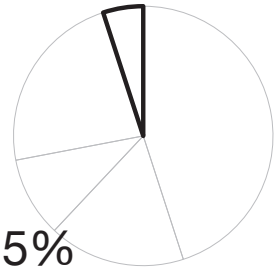
1.7 Case Study City Comparison Diagram[7]

[7] Figures based on 2010 Census data published by the U.S. Census Bureau



23%

Percentage of US Metropolitan Areas with a population of 1 million to 5 million people



5%

Percentage of US Metropolitan Areas with a population of over 5 million people

04

Boston, MA

05

New York City, NY

02

Projections
Part Two

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This simple fact alone would seem to require that all young architects and designers engage in the study of urban environments and the variety of issues associated with the design, development, and maintenance of an urban world. After all, cities not only serve as home to over half of the world's population, they also account for a large percentage of the world's energy use and resource consumption. As a result, any attempt on the part of architects or designers to conceive and implement a sustainable way of living and building must engage the extreme levels of consumption exhibited in urban environments. This project aims to do just that.

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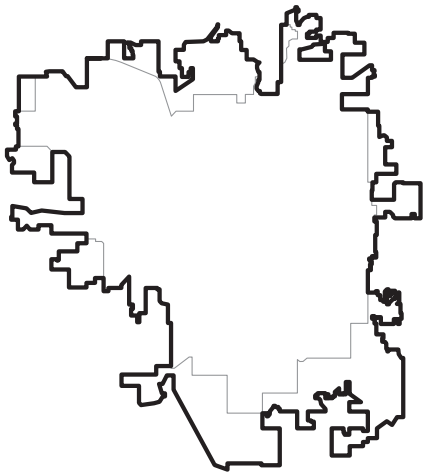
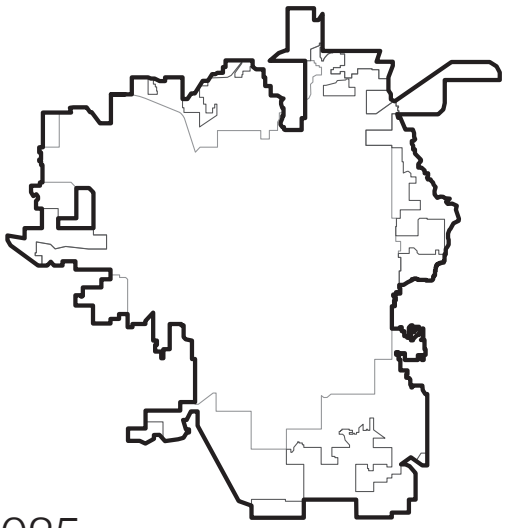


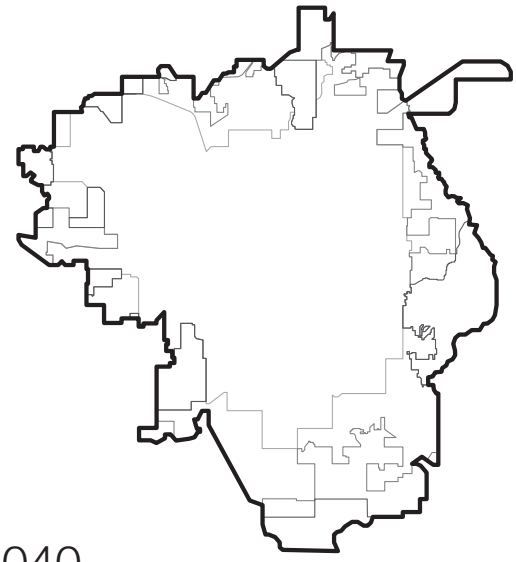
2012

258,379 People
84 Square Miles
3,050 People / Square Mile



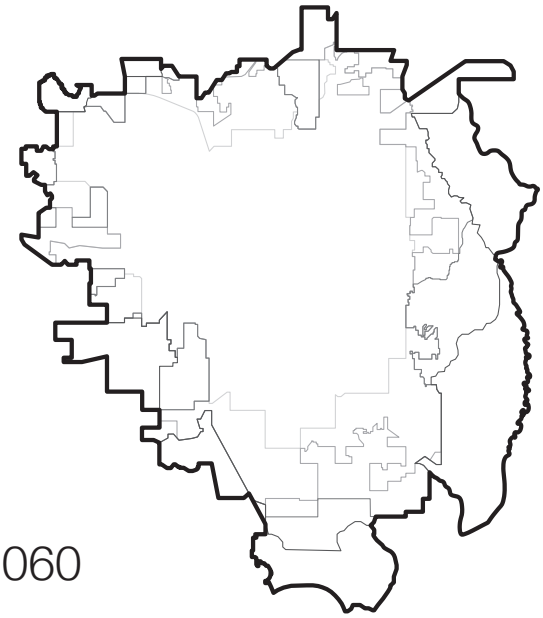
2025

323,379 People
100 Square Miles
3,250 People / Square Mile



2040

384,379 People
115 Square Miles
3,342 People / Square Mile



2060

484,379 People
145 Square Miles
3,340 People / Square Mil

2.1 Projected Growth Diagrams for Lincoln, Nebraska[7]

[7] Figures reported in Lincoln / Lancaster County 2040 Comprehensive Plan

2100

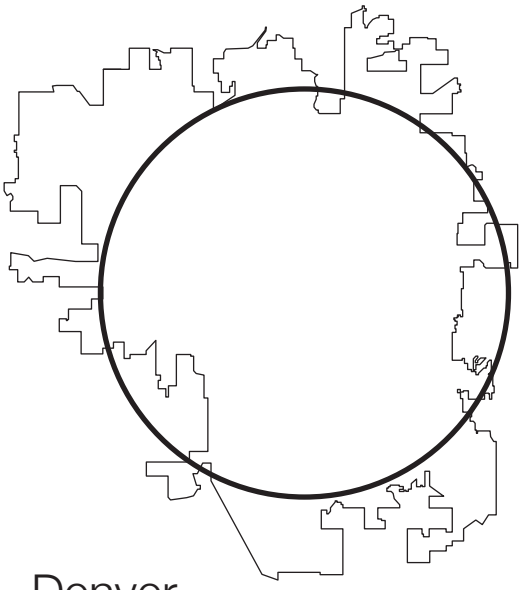
..... People
265 Square Miles
..... People / Square Mile

Currently, Lincoln is home to just over a quarter-of-a-million people. These people live within an 84-square-mile area of land, making the overall density of Lincoln just over 3,000 people per square mile. While this level of density cannot be considered rural, it is far from being compact.

Unfortunately, however, Lincoln's density is not expected to increase significantly over the next fifty years. Although the city is working to redevelop the downtown area and introduce additional housing within the existing city limits, the majority of Lincoln's growth will be accommodated through the aquisition of greater and greater amounts of productive agricultural land. In fact, as the diagrams at left illustrate, the City of Lincoln expects to gain over 225,000 residents over the next fifty years, and it plans to house these residents within an additional 61 square miles of land. This type of growth results in what amounts to a minor increase in urban density, and its impacts on the city and the surrounding environment are significant.

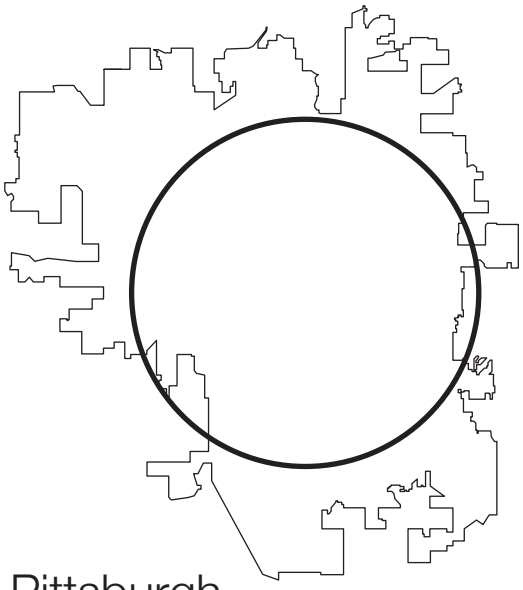
By continuing to expand its boundaries in an attempt to accommodate future growth, Lincoln is consuming productive agricultural land, becoming more spread out and even more dependent on congested auto networks for transportation, and spending millions of dollars on the creation of new infrastructure and the maintenance or improvement of existing infrastructure. Given these facts, one cannot avoid challenging the validity and ultimate sustainability of the city's current growth model.

Is there not even a single alternative - one that accounts for ways to increase density within Lincoln and that allow the city to accommodate future population growth without having to expand its boundaries?



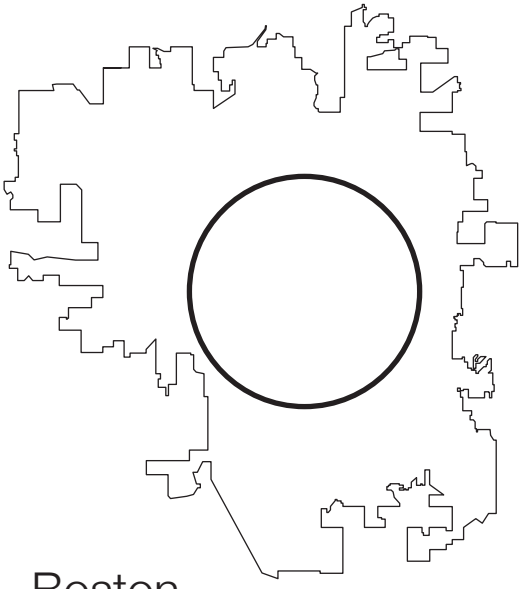
Denver

64 Square Miles
4,000 People / Square Mile



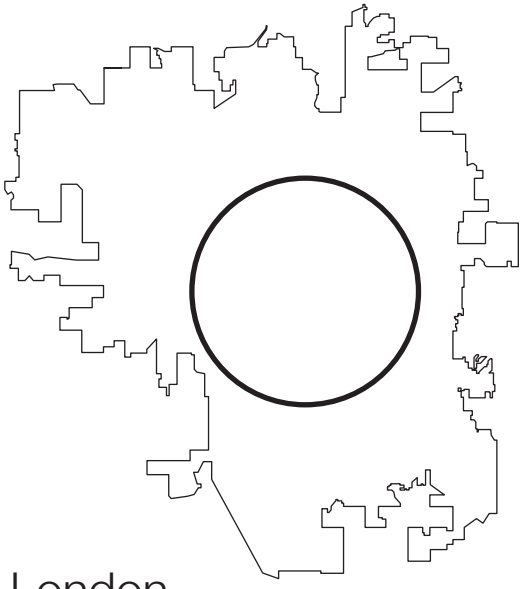
Pittsburgh

46 Square Miles
5,600 People / Square Mile



Boston

20 Square Miles
12,750 People / Square Mile

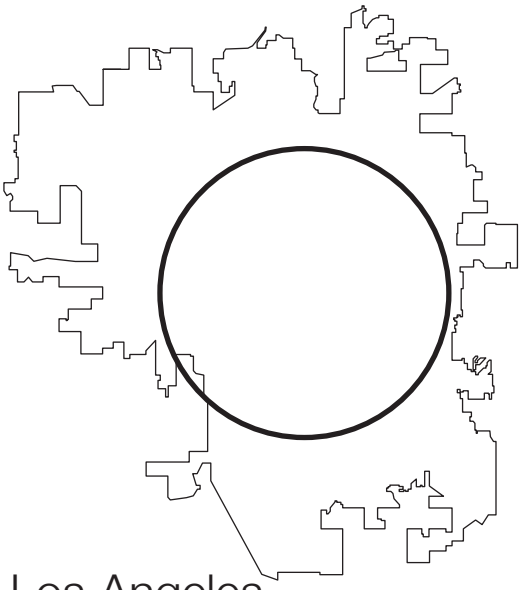


London

19 Square Miles
13,000 People / Square Mile

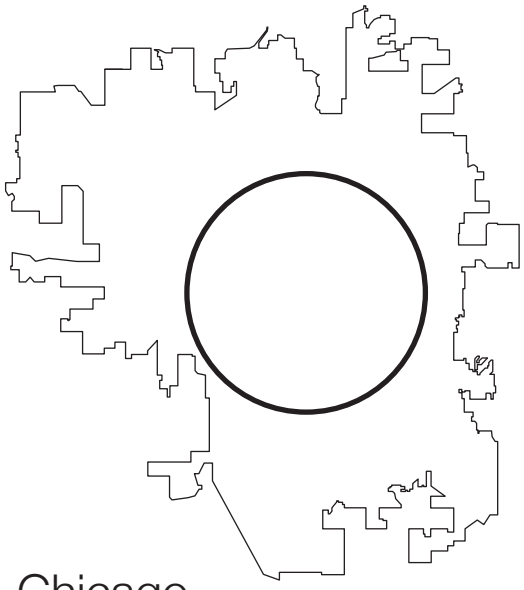
2.2 Lincoln Redensification Diagrams[8]

[8] Figures based on 2010 Census data published by the U.S. Census Bureau



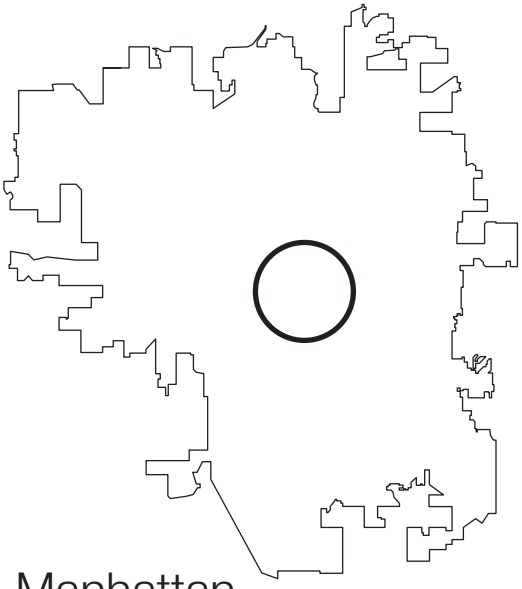
Los Angeles

32 Square Miles
8,100 People / Square Mile



Chicago

22 Square Miles
11,850 People / Square Mile



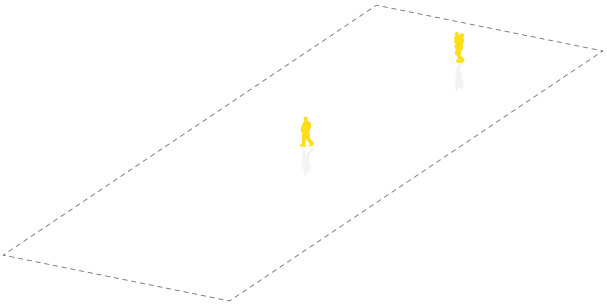
Manhattan

3.7 Square Miles
70,000 People / Square Mile

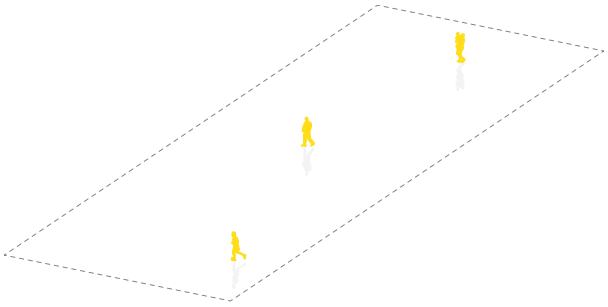
While the diagrams shown here are not meant to be understood as actual proposals, they do challenge the existing notion of continuous horizontal expansion exhibited by the current Lincoln growth model and begin to suggest the potential of growing within the existing city limits.

Each diagram illustrates the existing boundary and subsequent land area of the city of Lincoln. In addition, each diagram uses a circle of a specific size to represent the total land area that would be required to house all of Lincoln's current residents if the entire population were "redensified" at a higher urban density. Furthermore, each density illustrated corresponds with an existing U.S. city. For example, if Lincoln's residents were redensified at the same level of urban density exhibited in Manhattan, the entire city of Lincoln would consist of fewer than four square miles of land area.

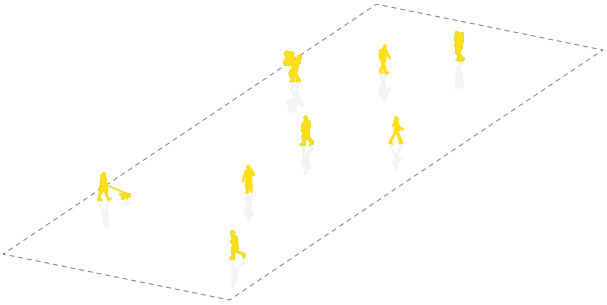
Again, while these thought-experiments and graphics are not meant to be taken as literal proposals, they do provide a wider perspective. Not only do they allow one to compare Lincoln's densities with those of other U.S. cities, but they also allow residents of Lincoln to imagine a more sustainable future for their city.



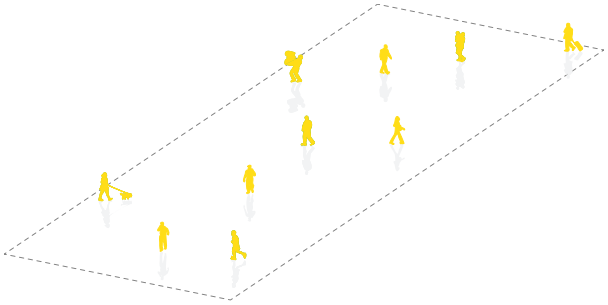
3,000 People / Square Mile



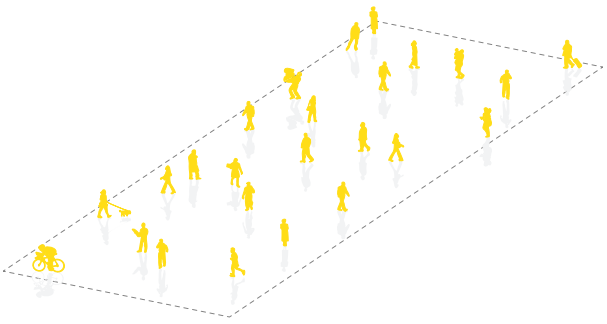
5,000 People / Square Mile



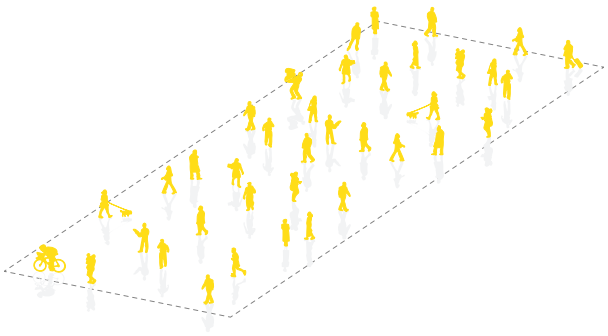
15,000 People / Square Mile



20,000 People / Square Mile

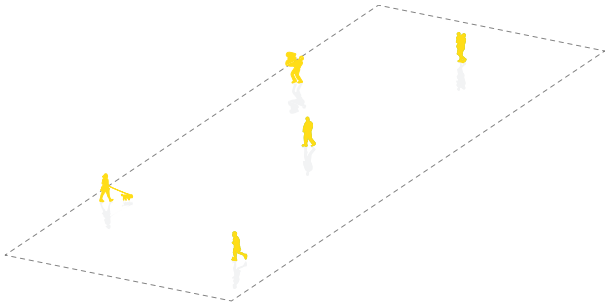


50,000 People / Square Mile

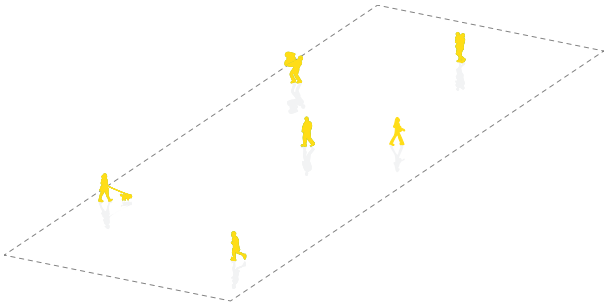


75,000 People / Square Mile

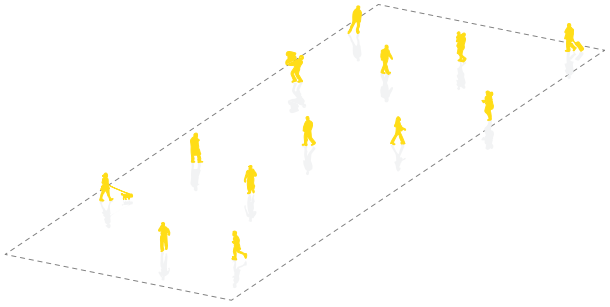
2.3 Density Visualization Diagrams



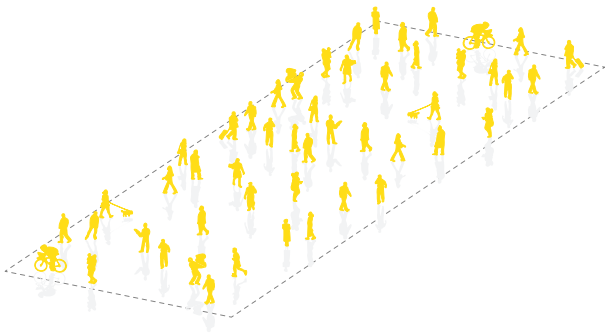
10,000 People / Square Mile



12,000 People / Square Mile



25,000 People / Square Mile



100,000 People / Square Mile

In a second attempt to visualize the current state of Lincoln and to reimagine its future, I developed the series of diagrams included here. Each diagram shows a single lot of land measuring 50 feet wide by 150 feet deep (traditional residential lot dimensions in Lincoln). In addition, each diagram shows the number of people that would be required to live on that single lot of land in order for Lincoln to achieve the respective level of urban density.

For example, in order to achieve an urban density of 25,000 people per square mile, each 7,500 square foot lot would have to house 13 people. While this type of visualization does little to develop an architectural solution aimed at increasing urban density, it does provide a way in which to more fully understand or perceive the levels of density being discussed.

For each statement, please tell me if you strongly agree, mostly agree, mostly disagree, or strongly disagree with that statement.

Limiting energy consumption is an important issue.	**82%** Agree
I have adjusted my travel route to avoid heavy traffic.	79% Agree
I have adjusted my travel time to avoid traffic.	75% Agree
Development and redevelopment in Downtown Lincoln should be a focus.	**73%** Agree
I would pay higher taxes to make improvements in non-vehicular transportation.	54% Agree
I would pay higher taxes to make improvements in public transportation.	48% Agree
Lincoln's streets are well maintained.	42% Agree
The streets in Lincoln are adequate for carrying the volume of traffice we have.	34% Agree
Lincoln is becoming too spread out.	18% Agree

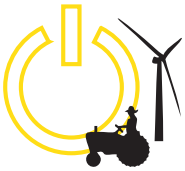
For each statement, please tell me whether you think each issue is extremely important, very important, somewhat important, or not really that important as a priority for the future of Lincoln and Lancaster County.

Develop and maintain a system of parks and recreational facilities across the city.	**2.83** / 4.00
Preserve the quality of rural life and highly productive agricultural land in Lancaster County.	**2.75** / 4.00
Engcourage neighborhood retail areas that are close to residential areas, and more accessible by walking and biking.	2.51 / 4.00
Plan and develop more compact growth to reduce the number and length of car trips that are necessary.	2.23 / 4.00
Spend additional tax funds to build streets and utilities for new, developing areas.	**2.14** / 4.00

2.4 Lincoln Community Survey Results[9]

[9] Data published in *2010 Public Opinion Survey of Planning and Development Issues in Lincoln and Lancaster County*

Open Public Space



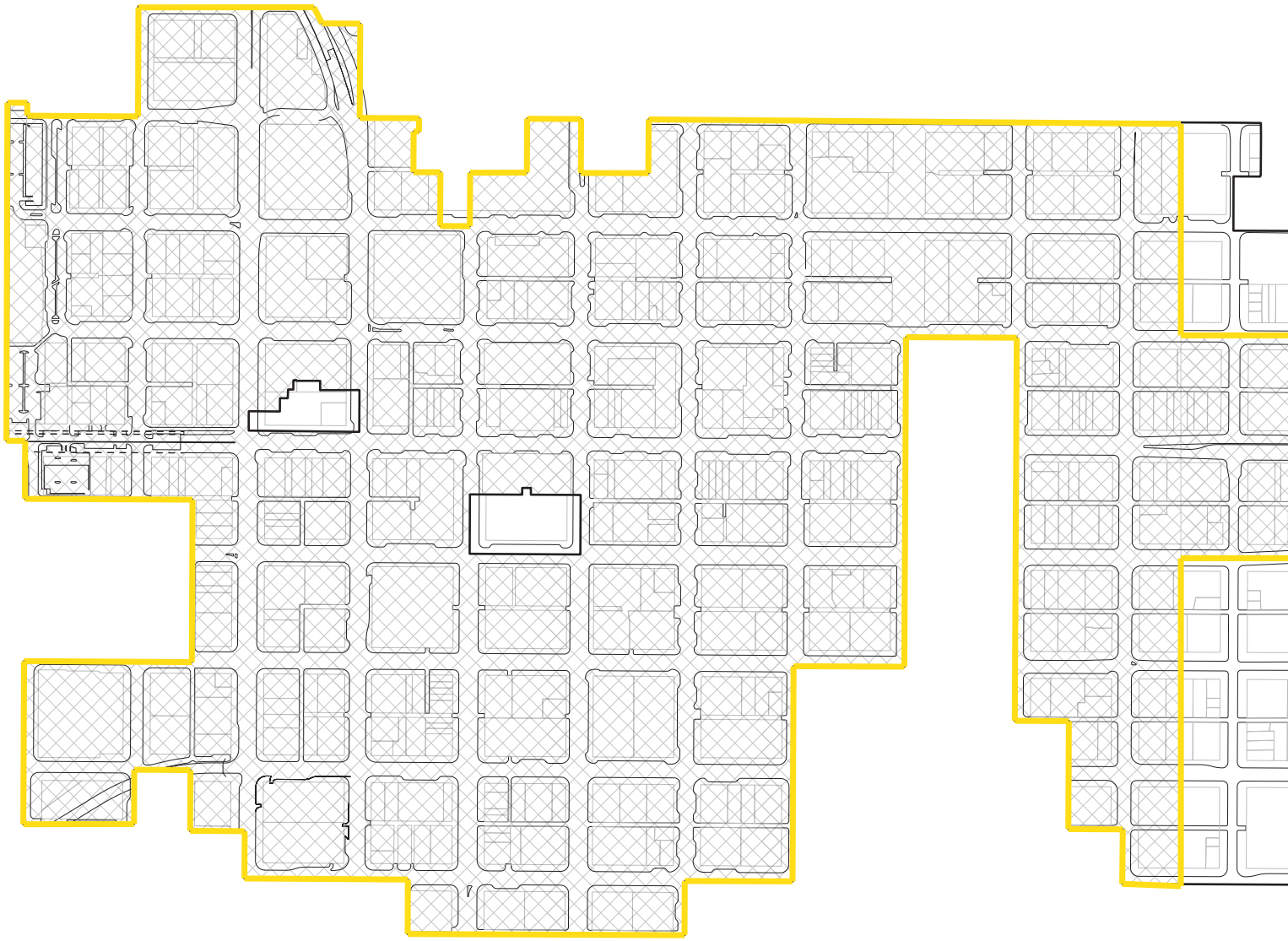
Energy + Resources

Time + Efficiency

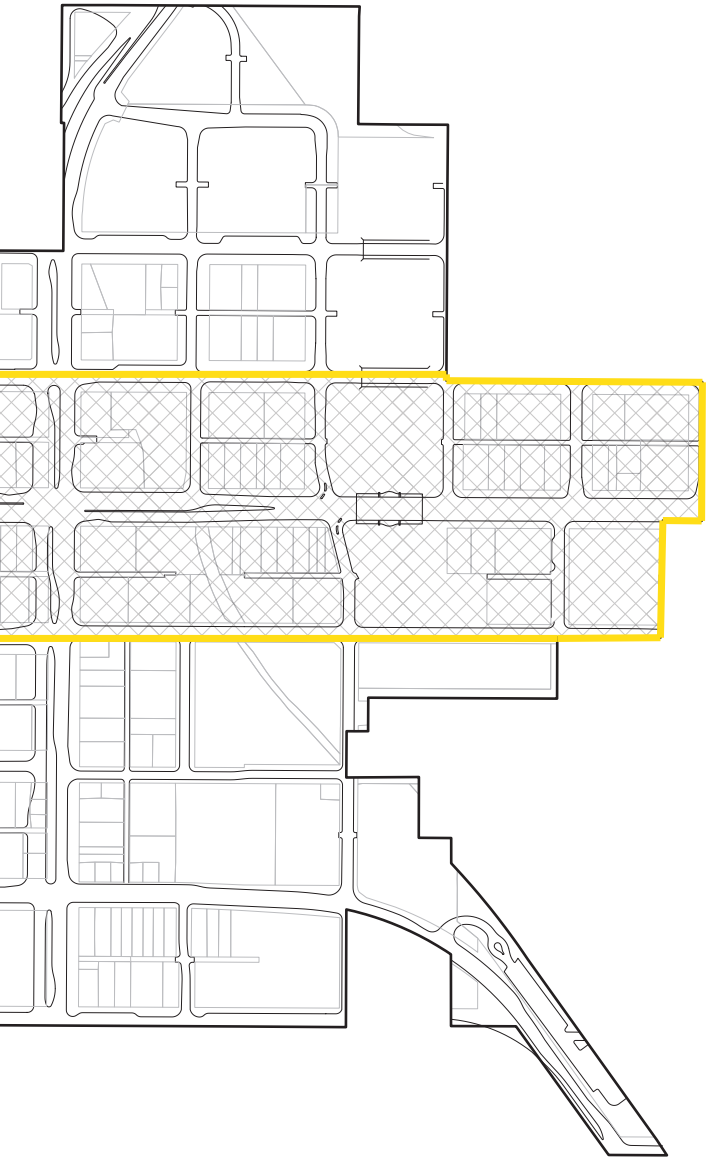
Yet, even with the aide of such visualizations, would residents of Lincoln be open to the possibility of a more compact, higher-density Lincoln? In an attempt to answer this question, I examined the results of a recent community survey conducted by the Lincoln Planning Department.

According to the survey, approximately 82% of respondents agreed that limiting energy consumption was an important issue for Lincoln. This resonates with my own interest in energy efficiency, and it confirms the practicality of looking at new ways to improve the energy and resource efficiency of smaller urban centers like Lincoln. In addition, respondents noted that preserving rural life and the highly productive agricultural land around Lincoln should be one of the top priorities for the Lincoln Planning Department while spending additional tax funds to build new streets and utilities for developing areas should be its least priority. In effect, these responses suggest that Lincoln residents are, in fact, interested in seeing a more compact method of growth deployed in Lincoln. Rather than continuing to expand into the surrounding farm land and having to spend additional tax money and the creation and maintenance of more roads and utilities, Lincoln residents might prefer a proposal that seeks to accomodate expected population growth by simply increasing the overall density within the existing city limits. This is, however, merely an inference reached through an analysis of the two aforementioned responses. When asked direclty if Lincoln was becoming too spread out, only 18% of respondents agreed.

One irrefuteable conclusion that can be reached, on the other hand, is that Lincoln residents enjoy and appreciate the network of parks, trails, and recreation facilities that the city contains. Developing and maintaing a system of parks and recreational facilities across the city was identified as a course of action that should be the top priority for the Lincoln Planning Department. While this fact may not initially seem connected to questions of urban density, I saw this interest in open public space or parks as on opportunity for innovation. Because Lincoln residents value the system of open public spaces and recreational areas that currently exist in the city, I decided that any attempt to introduce higher-density developments should incorporate or in some way enhance the quality of these types of spaces.



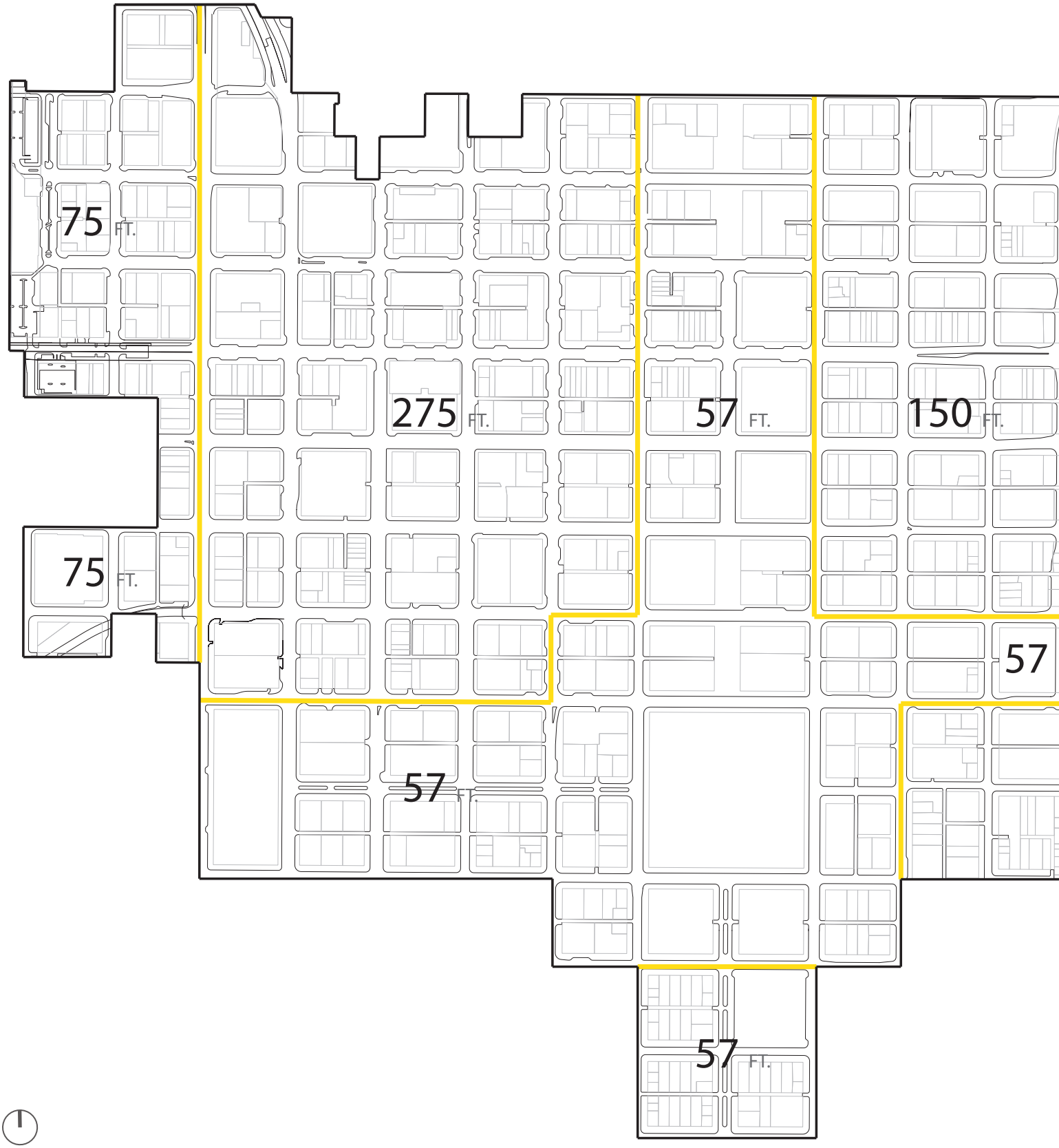
2.6 Lincoln B-4 Zoning District Parking Map Regulations



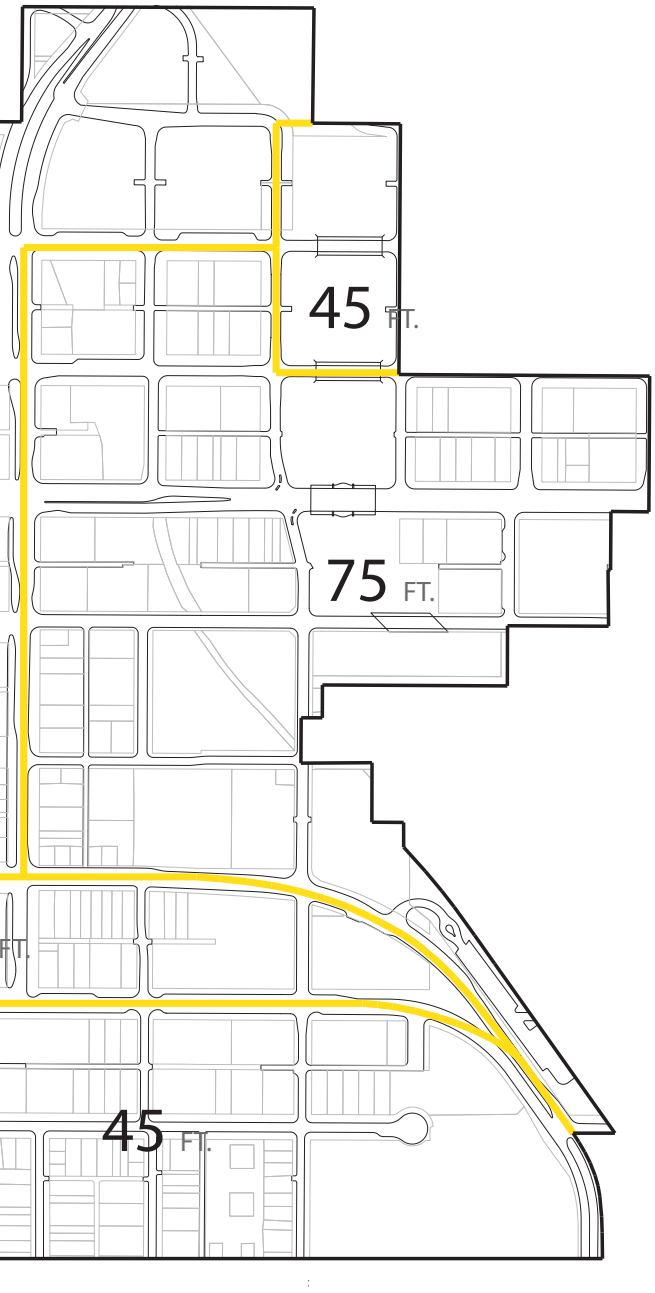
2.5 Zonind District Parking Requirements Table

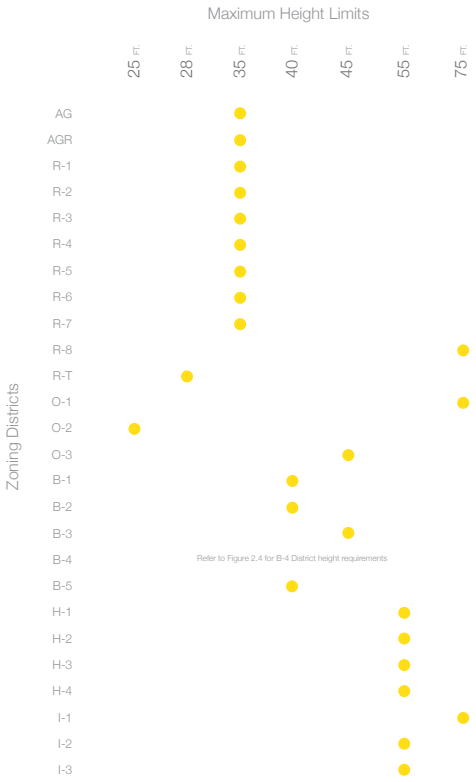
In addition, because nearly three-quarters of respondents stated that development in and around downtown Lincoln should be a focus for the Lincoln Planning Department, I decided that the project should be located in this area.

Downtown Lincoln exhibits a number of characteristics that make it suitable for higher-density developmet. First, a large number of people work here, which suggests that a large number of people might also be willing to work near downtown in order to shorten commute times or eliminate the need to drive to work at all. In fact, the second benefit of locating high-density develop in downtown Lincoln is that the area provides close proximity to a number of different public transit routes as well as the city's primary bus station. Furthermore, because of the relatively compact nature of downtown Lincoln, many of the city's regular parking requirements are not enforced in the area. As the diagram at left illustrates, most of the development in the Downtown B-4 Zoning District (the main business district in Lincoln) is not required to provide off-street parking for building inhabitants or users. Although ignoring parking altogether is not advisable, these relaxed regulations make it easier to increase density without having to worry about the amount of land having to be dedicated to parking lots or parking garages.



2.8 Lincoln B-4 Zoning District Height Limitations Map

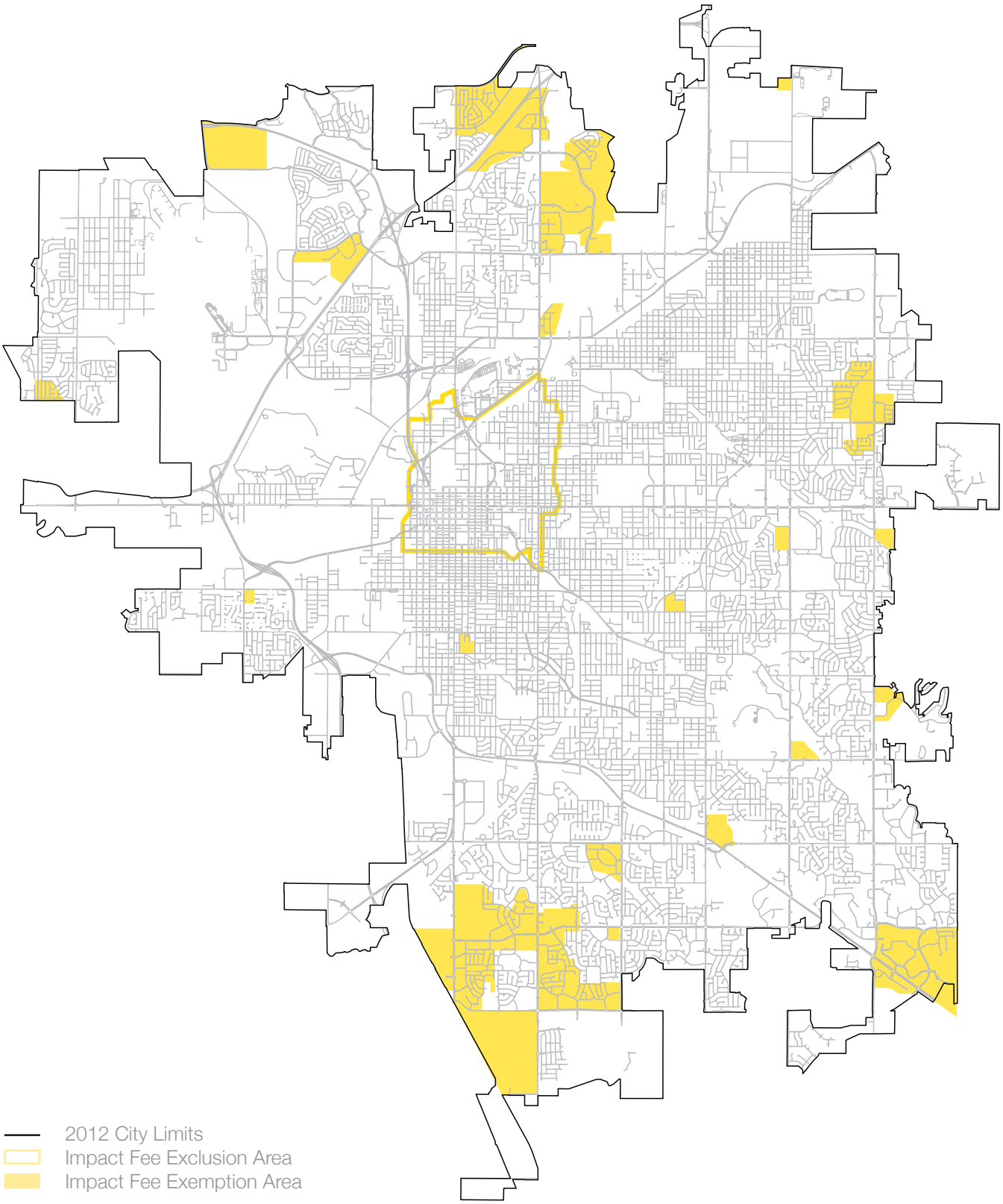




2.7 Zonind District Height Limitations Table

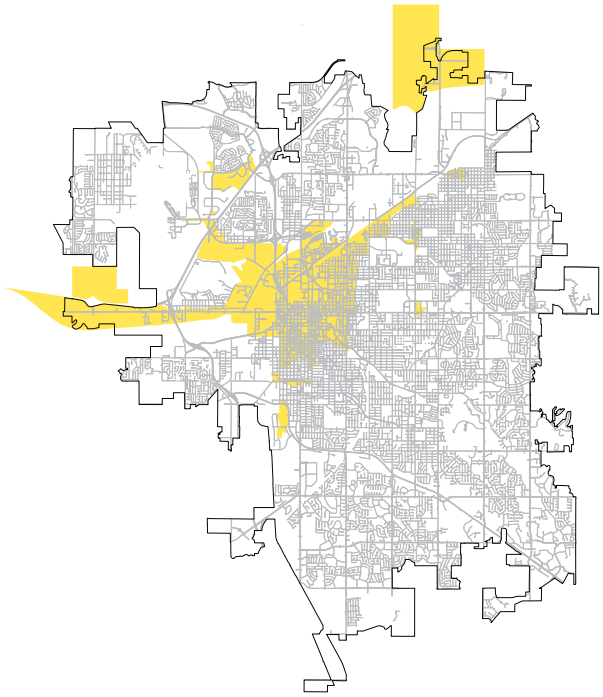
Beyond issues of transit, downtown Lincoln also exhibits unique height requirements that make the introduction of higher-density development in this area seem entirely plausible.

Even with the inclusion of the Capitol Environs 57-foot height limitations that extend from the base of the capitol building, downtown Lincoln offers a lot of vertical space for developers to build. Compared to other zoning districts in Lincoln, which generally allow buildings of 35 to 50 feet in height (see diagram above), the downtown area displays height limits of 275 feet, 150 feet, and 75 feet. Even more intriguing, however, is the fact that almost none of the existing buildings in downtown Lincoln actually utilize these generous height limits. Only two or three buildings extend above 200 feet, and even these fail to clear 225 feet at their highest point. If designers and architects were to take full advantage of these height limits, it seems reasonable to suggest that the city of Lincoln's overall density could be increased significantly. In the end, it appears that current zoning regulations and restrictions would not hinder the implementation of taller, higher-density structures in downtown Lincoln. In fact, current zoning appears to welcome the possibility.

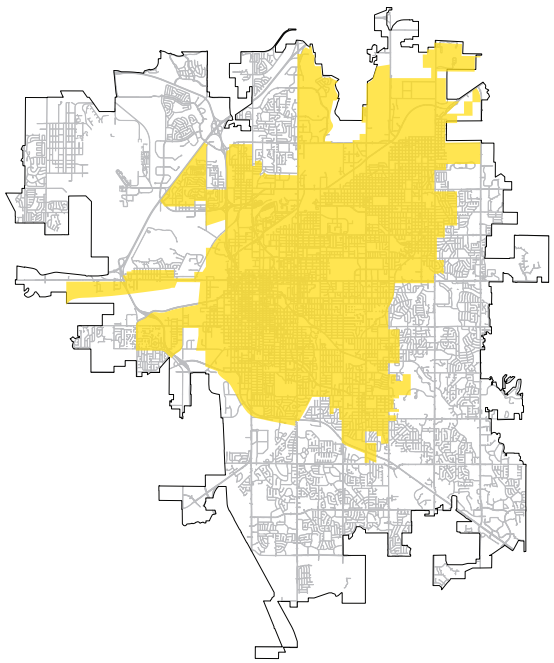


2.9 Impact Fee Exclusion Areas (Above), Blighted Areas (Right, Top) and TIF Core Area Map (Right, Below)[10]

[10] Data found online at the Lincoln / Lancaster County Planning Department website (http://lincoln.ne.gov/city/plan/index.htm)



2012 City Limits
Blighted or Substandar Area

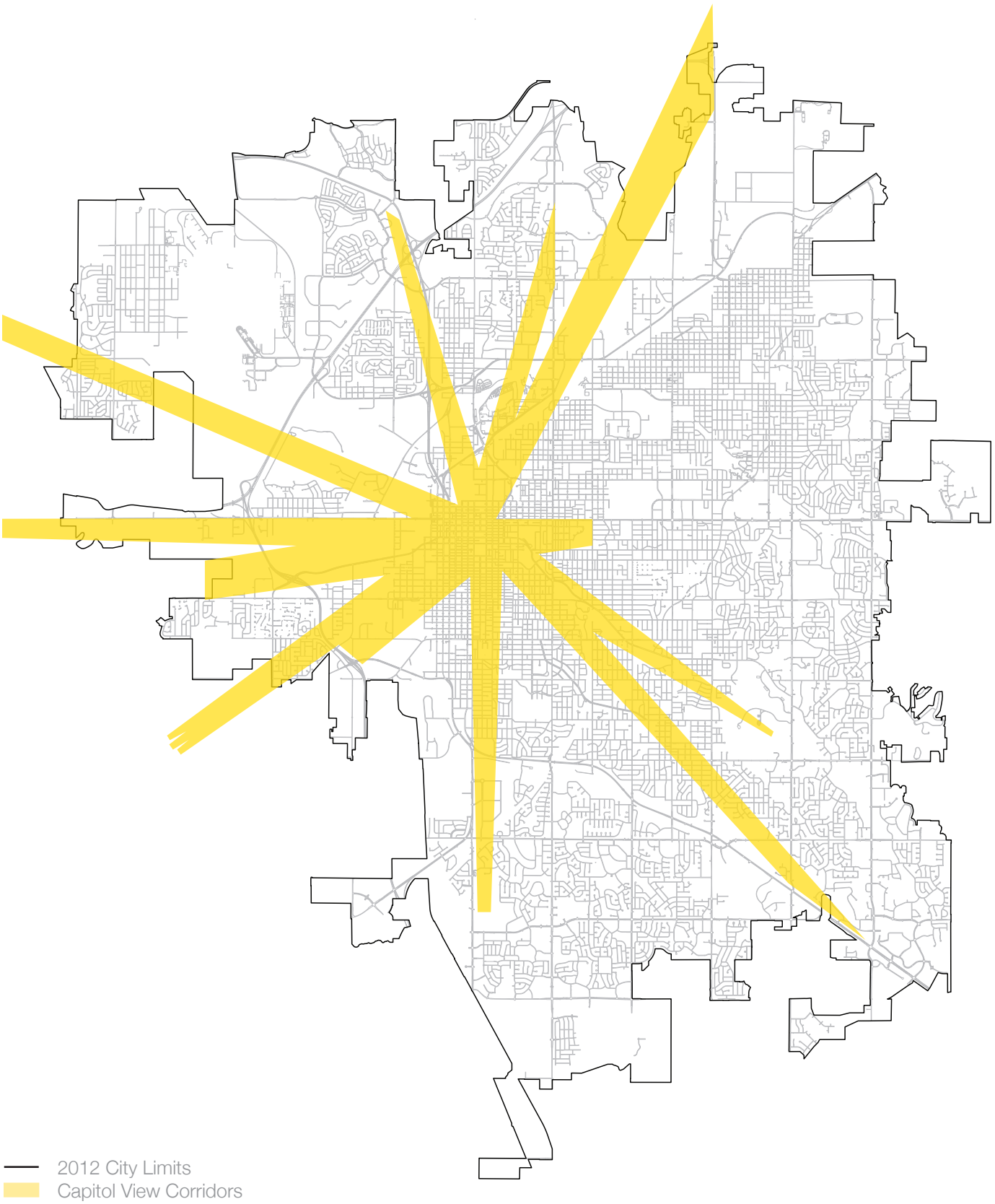


2012 City Limits
TIF Core Area

Other aspects of city regulation that tend to promote or favor the development of projects in and around downtown Lincoln include the city's stance of impact fees, blighted areas, and TIF financing.

As the diagrams at right illustrate, development in downtown Lincoln is exempt from having to pay impact fees. In other words, because the area is already developed, new projects are not required to pay impact fees to help offset the cost of any new roads or utility lines. In addition, a large portion of downtown Lincoln is designated as blighted or substandard. This allows the city to use Tax Increment Financing (TIF) to assist developers with costs associated with public aspects of projects, such as public plazas or sidewalks.

Together, all of these elements make downtown Lincoln the most practical area in which to place high-density development. Once again, this reinforces the notion that an outward expansion of the city may not be the most appropriate means of accommodating future growth. Instead, it seems as if collapsing inward and focusing on the redevelopment of downtown Lincoln provides the most benefits for both residents and developers.



2.10 Lincoln Capitol View Corridors Map[11]

[11] Data found online at the Lincoln / Lancaster County Planning Department website (http://lincoln.ne.gov/city/plan/index.htm)

Finally, in addition to regulations and procedures that simply allow for higher-density development (and the taller structures that would most likely make up such development), there is another element of Lincoln's urban fabric that could provide unique opportunities for taller structures.

Lincoln's capitol view corridors are strips of space that extend out, across the city from the State Capitol Building located at the southern edge of downtown. Large, taller structures that might obscure views of the capitol building from within one of these corridors are often discouraged by the city's planning department. However, located tall structures along or even at the end of these corridors could provide residents or users of such structures incredible views of the capitol building and the surrounding city.

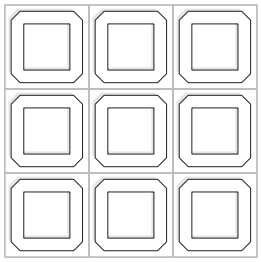
In this sense, the project approaches the capitol view corridors as an opportunity rather than a restriction or constraint. Throughout the development of the proposed design intervention, its relationship to the capitol building and the impact its form has on the visibility and perception of the surrounding urban fabric will be carefully considered.

03

Precedent
Part Three

While Lincoln's codes and regulations do not necessarily prohibit the implemenation of a traditional high-rise development, I hope to propose an alternative model of high-density development that is better able to merge with the existing urban fabric. In addition, I believe there is unique potential in an approach that seeks to inject high-density structures into the city while simultaneously providing public amenities - i.e. open public space, parks, and recreational facilities. As a result, the project is not only concerned with issues of density, but also issues of porosity, public accessibility, and the intersection of building and landscape.

The next section reviews a number of projects that explore similar issues. Each project attempts to blur the line between building and ground and uncover ways in which an artificial or constructed landscape is able to inject an urban site with suburban amenities like open space or private front yards and public spaces or walkways. Ultimately, while the goals of the projects shown here may differ slightly from my own, they nevertheless provide useful demonstrations of the benefits and formal intrigue of mixing high-density urban development with open public spaces.



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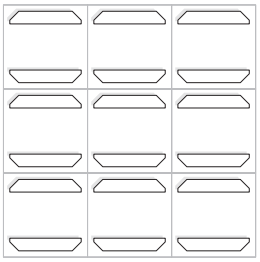

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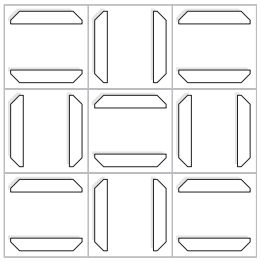

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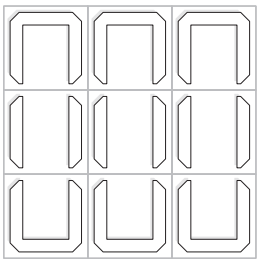

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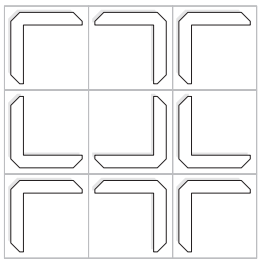

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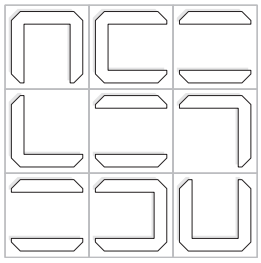

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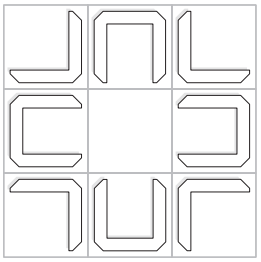

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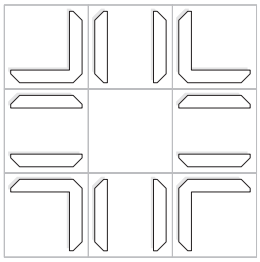

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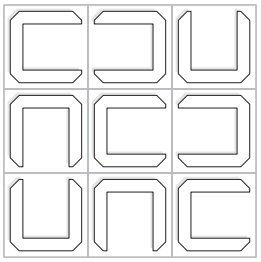

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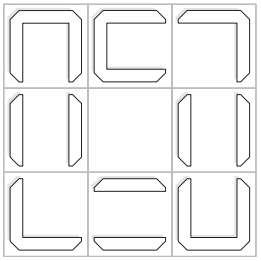

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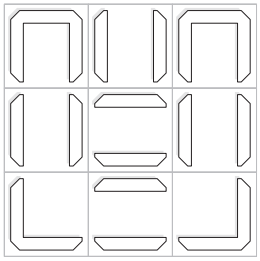

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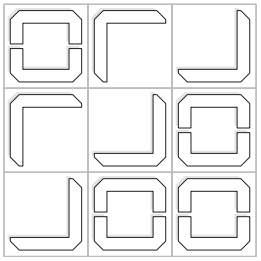

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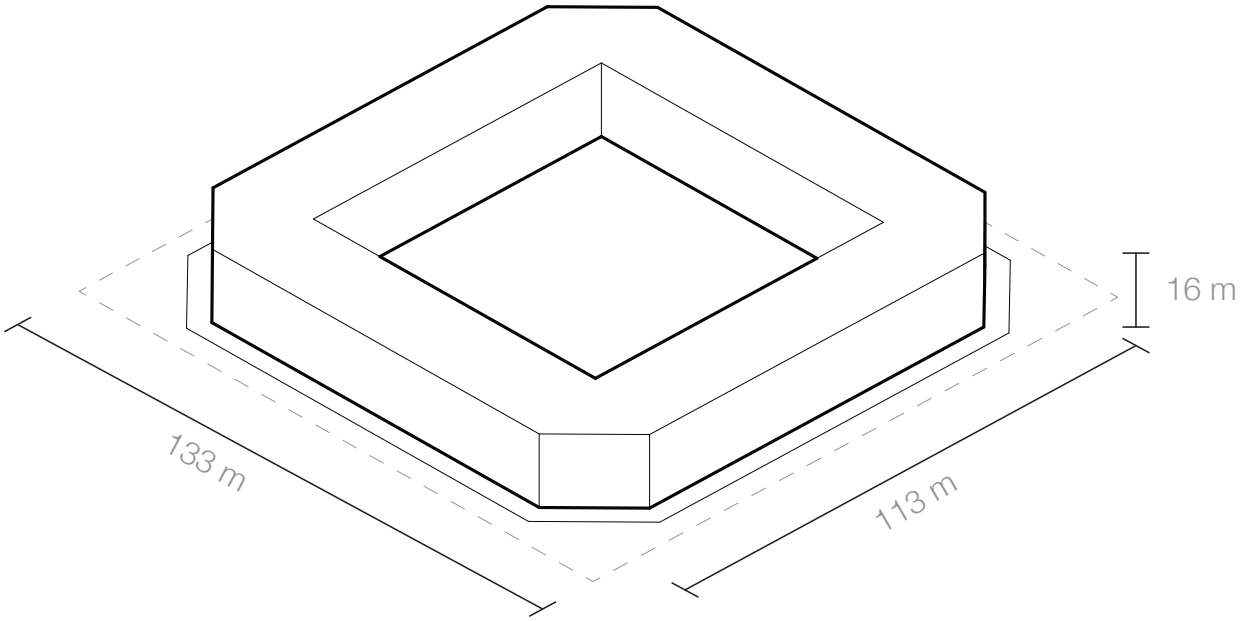


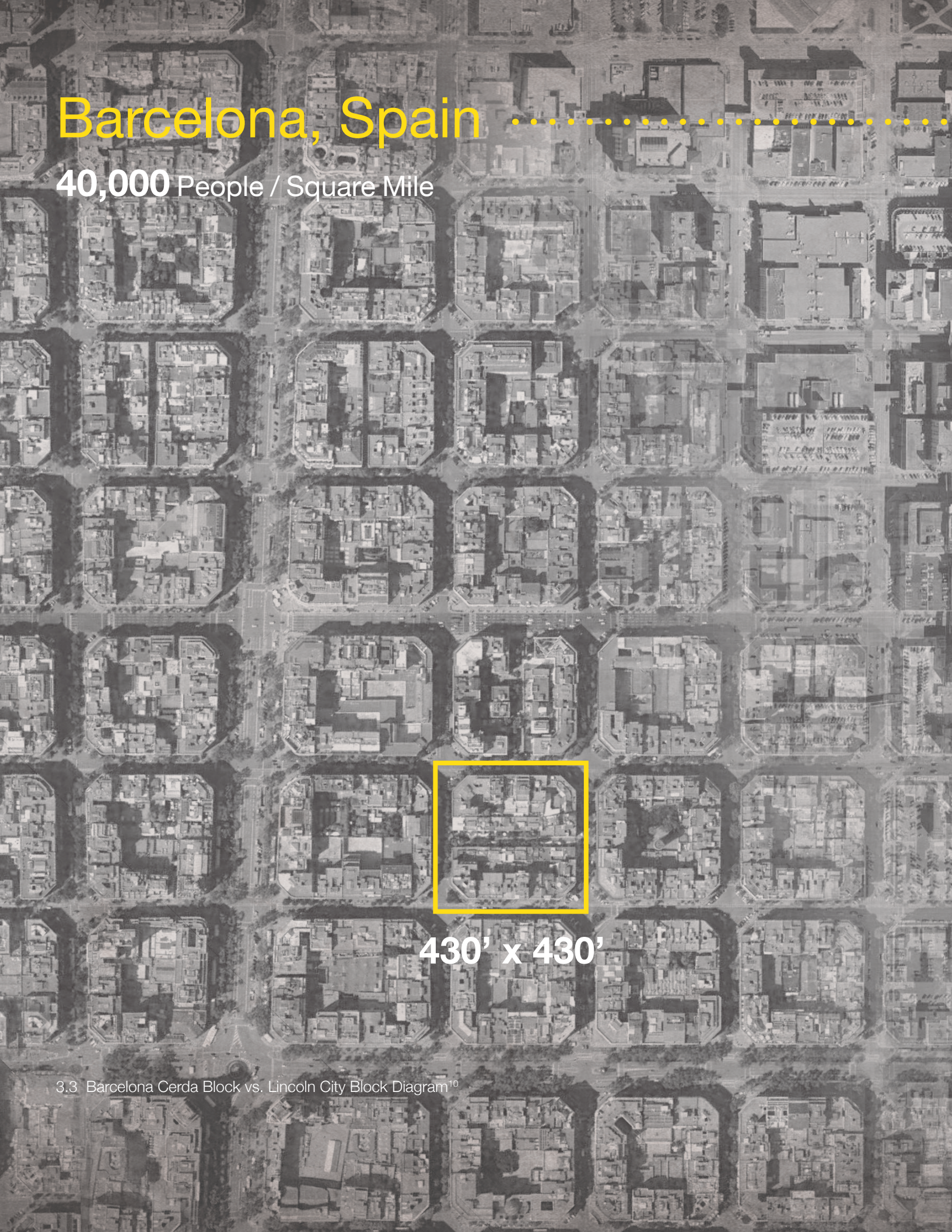
Height	16 Meters
Block Width	133 Meters
Building Width	113 Meters
Street Width	20 Meters

3.1 Cerda Block Dimension Diagram

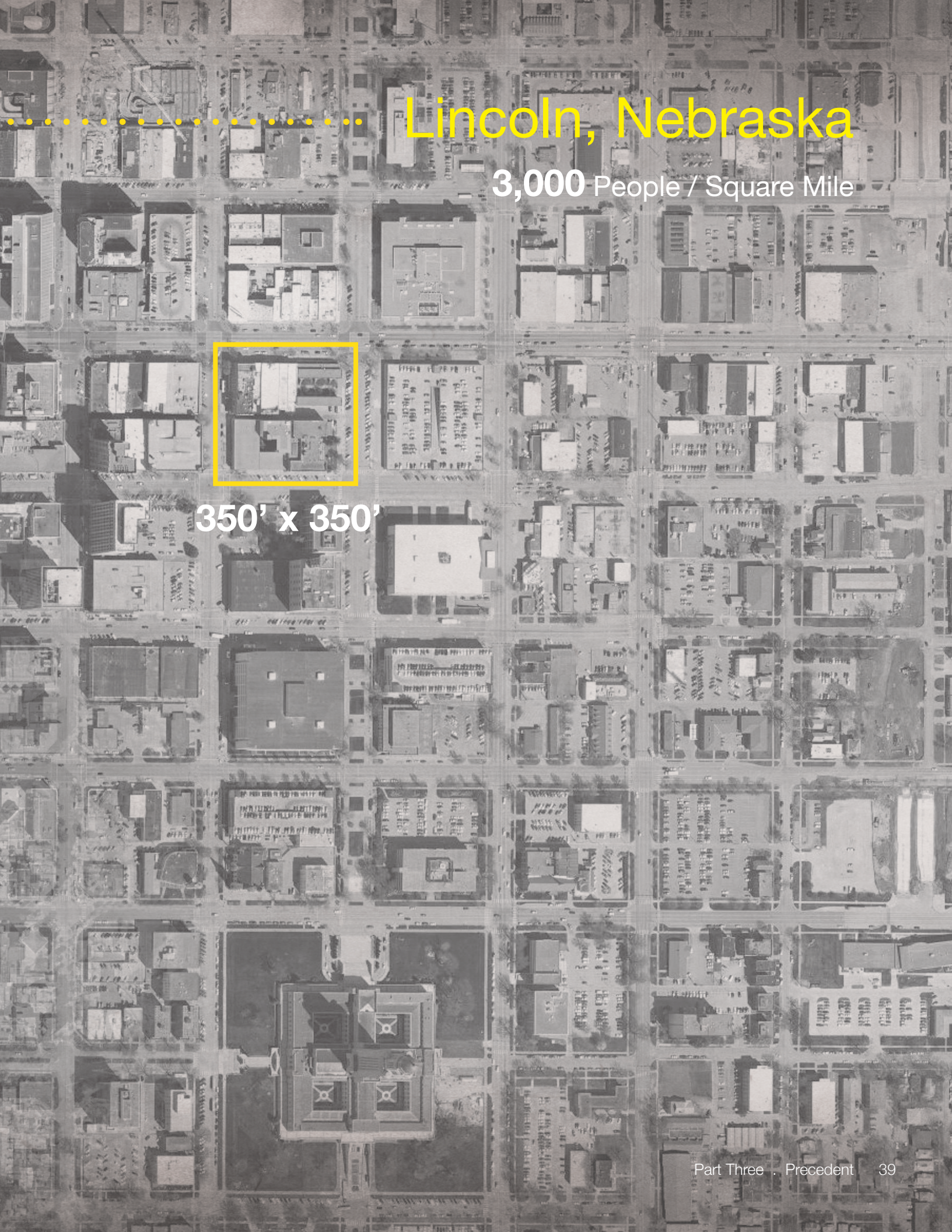
In an attempt to understand how open space might be introduced into a dense urban fabric, I engaged in a closer examination of the Cerda Block implemented in Barcelona, Spain. The overall block dimensions do not vary significantly from those found in Lincoln (see diagram above), so the Cerda Block provides a useful precedent and point of comparison.

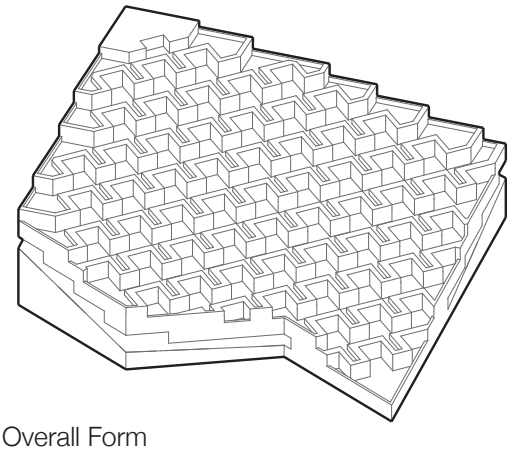
As the diagrams at left show, the individual blocks are able to merge together in order to create a series of open courtyards, plazas, or megablocks. In each configuration, the collective form of the blocks defines transit routes along the well-defined streets as well as pedestrian routes within and through the open courtyard areas. By holding the "edge" of the block and defining the spaces along the street, the blocks are able to open up and allow the public to access the interior sections of the block. This not only produces a stronger urban edge along the streets, it also presents pedestrians with an escape from the commotion of the street. In the end, the porosity of the original Cerda Block and its ability to produce a series of open public ways while still supporting densities of approximately 40,000 people per square mile are two qualities that could be appealing for a city block in Lincoln.

The illustration on the following pages begins to explore this possibility through a suggestive visualization. The dense, well-define blocks of Barcelona stand in stark constrast with the ill-defined, low-density blocks found in Lincoln. In addition to their ability to house greater numbers of people, the Cerda Blocks are also better able to give the city a strong sense of space. The well-defined streets of Barcelona enclose and sculpt space while the deep setbacks and sporadic placing of buildings on Lincoln's city blocks resultsin an urban fabric that is chaotic, ambiguous, and ultimately fails to provide the city with a consistent sense of defined, urban space.

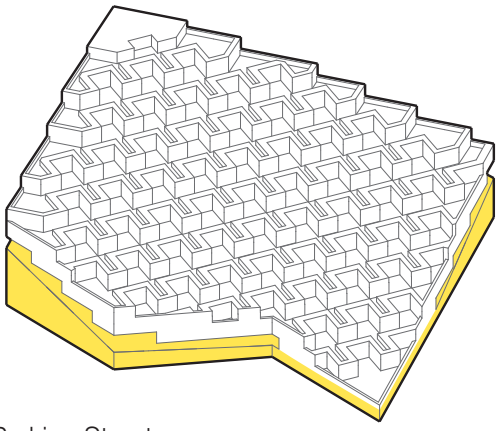


3.3 Barcelona Cerda Block vs. Lincoln City Block Diagram[10]

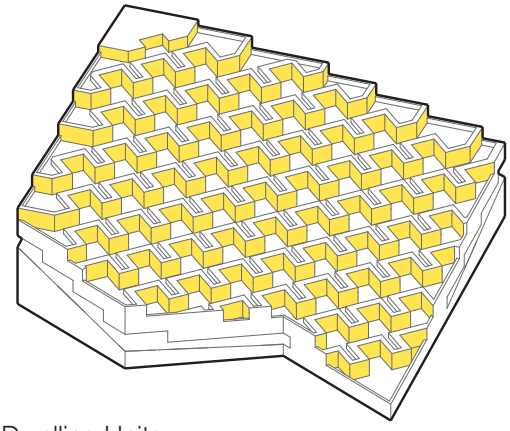

Lincoln, Nebraska
3,000 People / Square Mile
350’ x 350’



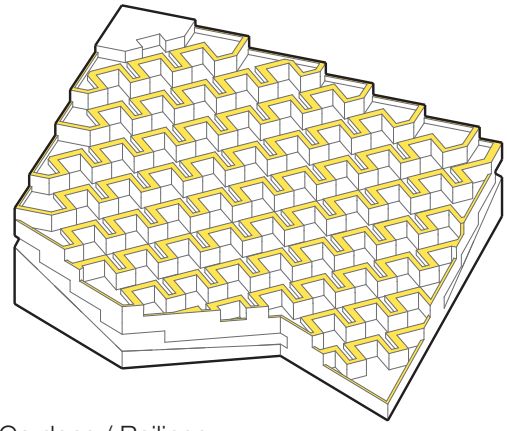
Overall Form



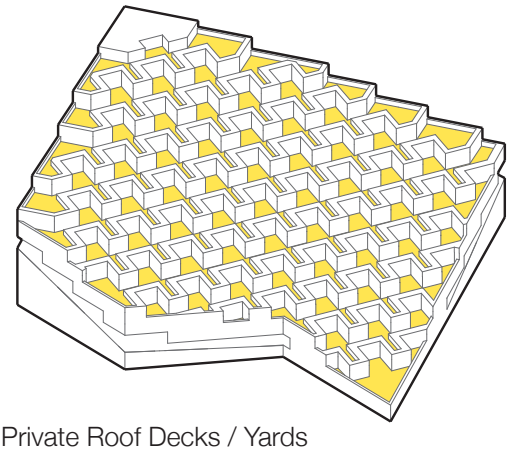
Parking Structure



Dwelling Units



Gardens / Railings



Private Roof Decks / Yards

3.4 Precedent Analysis Diagram[12]

[12] The Mountain Dwelling, Bjarke Ingels Group (BIG)

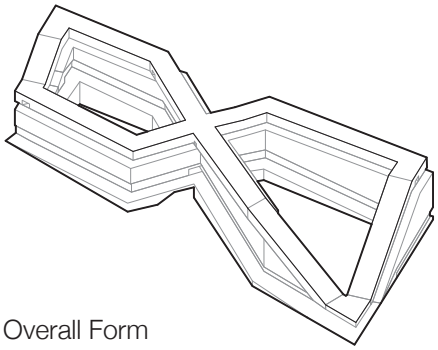
3.5 Precedent Project Images

The first precedent - BIG's Mountain Dwelling - explores how to incorporate a number of suburban amenities into a dense, urban setting. Although not concerned with open public space or larger moves within the city, the project successfully demonstrates the ability of a project to provide high-density living without sacrificing the availability of views, nearby parking, and other suburban amenities.

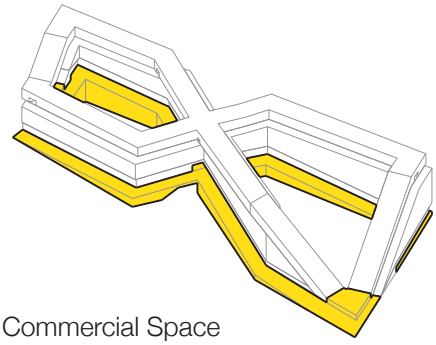
The project as a whole consists of a slope of private residences set above a large, multi-storey parking structure. The parking structure serves the residents of the block, and functions as something of a plinth for the residential units above. By placing the units above the sloped parking garage, the project is able to provide each unit with an unobstructed view of the surrounding city and landscape. In addition to views, each unit also has direct access to an outdoor deck that includes a small patch of artificial turf and deep railings that serve as garden planters. In the end, residents gain all the amenities of urban living (proximity to a multitude of other uses, transit networks, etc.) while still retaining all of the amenities of suburban living.

In addition to its ability to combine urban living with suburban amenities, the project also succeeds is also notable because of its acceptance of the private automobile. This is an aspect of the project that I find especially intriguing, and it is one that has direct implications for my own project. By embracing the desire for a private automobile and subsequently incorporating a large parking garage into the project, BIG is able to create an entirely new landscape within the urban fabric. The project literally reconstructs the ground; it redefines the ground plane and lifts the topography of the city's open space into the air.

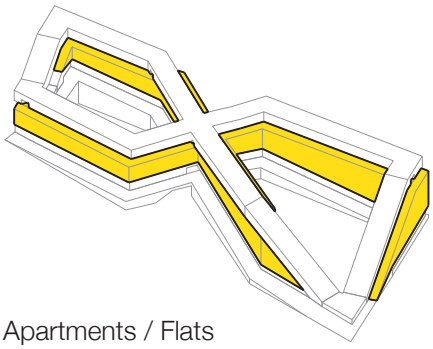
What I find most interesting about the use of the parking garage as an artificial landscape or plinth is that the project's success depends upon it. Without the incorporating of the garage and its massive size, the configuration of the units along a raked slope would be much more difficult to achieve and potentially much less efficient. In other words, the project achieves a condition of "suburban bliss" only through an intensification of the urban - the verticality, intensified use, and close proximity that characterizes urban spaces. In my mind, this tension between urban intensification and suburban openness is the most fascinating aspect of the project.



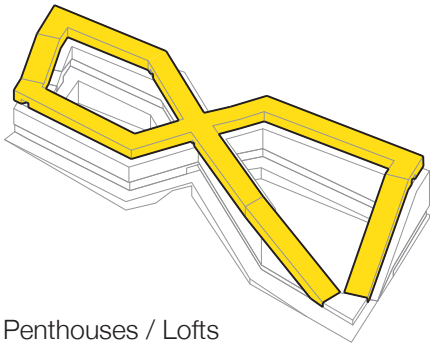
Overall Form



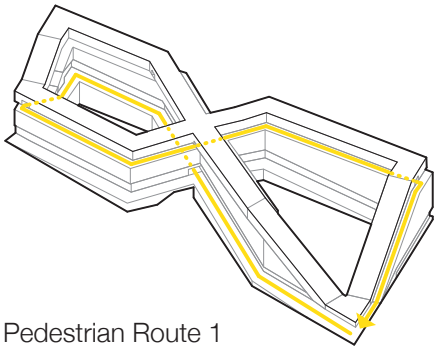
Commercial Space



Apartments / Flats



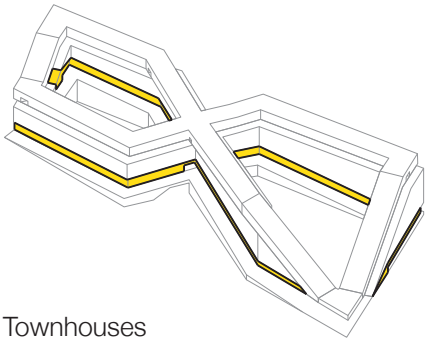
Penthouses / Lofts



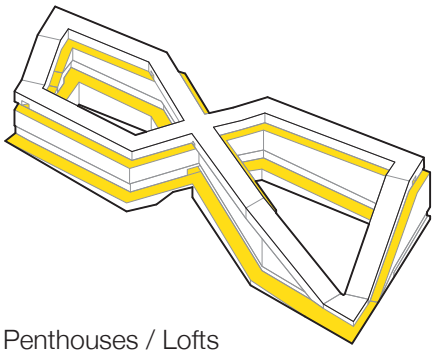
Pedestrian Route 1

3.6 Precedent Analysis Diagram[3]

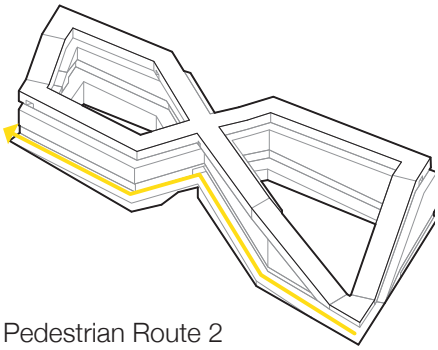
[13] The 8 House, Bjarke Ingels Group (BIG)



Townhouses



Penthouses / Lofts



Pedestrian Route 2

The second precedent is another project by Bjarke Ingels Group (BIG), but it exhibits a different set of interests and intentions than the first. Although the 8 House attempts to inject suburban building types into a dense urban environment (simillar to the Mountain Dwelling), it is much more concerned with issues of porosity and accessibility.

Whereas the first precedent can be understood as a solid mass set on a site, the 8 House is perhaps better understood as an attachment to the site or an integreted element within it. Its figure-eight shape (which consists of office spaces, townhouses, apartments, and penthouses stacked on top of each other) creates two semi-public courtyard spaces that are accessible to residents and tenants of the building. These courtyard spaces are not the only public spaces in the project, however.

The most intriguing feature of the project is its inclusion of a series of pedestrian ramps that move both horizontally and vertically throughout the entire project. The pedestrian ramps meet the existing grade at three points near the corners of the building, but from there move upward to create a series of continuous paths that provide access to the the townhouses, apartments, and penthouses. In effect, these paths function as public streets or sidewalks. Each is wide enough to allow for both pedestrian and bike traffic, and they also contain small “yards” in front of the townhouses and penthouses. As with the Mountain Dwelling, the 8 House successfully injects a suburban condition (a townhouse with a front yard) into a dense, urban condition. More importantly, however, it does so while also creating a complex network of pathways that increase the overall porosity of the site.

This increased porosity is the most intriguing aspect of the project. Not only does BIG provide public spaces at multiple levels within the project, but it also allows the public to move through the site. In this sense, pedestrians are able to move onto, around, and through the entire project. The 8 House essentially serves as a landscape - a publicly-accessible landform within the urban fabric. Once again, the idea of utilizing an intensification of the urban fabric to increase density while also creating unique open, public spaces is shown to be both possible and, quite honestly, incredibly practical. Rather than seeing higher density as a negative characteristic that leads to overcrowding or tight, dark spaces, these projects demonstrate that high-density projects can remain just as open, porous, and inviting as lower-density alternatives.

In fact, it is slightly misleading to refer to “surface” in landscape. Landscape’s matter is spread out in the horizontal dimension, but landscapes are never, strictly speaking, pure surfaces. The natural ecology of a meadow, field or forest exhibits horizontal extension in the macro scale, but at the micro scale it forms a dense mat, a compact and highly differentiated section. This articulated section, the “thick 2D” of the landscape, is fundamental to the work that the meadow or the forest performs: the processing of sunlight, air or water, the enrichment and protection of the soil through the process of growth and decay.

Stan Allen, *Beyond Landscape Urbanism*

[T]he megaform has the capacity to provide public domain in what is otherwise a totally privatized, process-oriented, and largely placeless environment. One may note in this regard how a megaform may possess catalytic potential… Within the space-endlessness of the megalopolis, a megaform may also serve as a kind of landmark feature, like a geological outcropping.

Kenneth Frampton, *Megaform as Urban Landscape*

Rather than monofunction buildings we have strived for new hybrid buildings with rich programmatic juxtaposition.

Rather than iconic object buildings, we have attempted to shape new types of public space.

Reshaping the large programs of private development to mold urban geometry for new public metropolitan experience has been a core aim.

Steven Holl, *Urbanisms: Working with Doubt*

In addition to the examination of a number of built works, the development of the project also required the investigation of relevant discourses currently found within contemporary theory and practice. As a result, the project pulls information from a variety of different sources, but is influenced most by a smaller number of authors/designers whose own ideas resonate most closely with my own. Among these designers are Stan Allen, Kenneth Frampton, and Steven Holl.

While Stan Allen's influence on the project is widespread, the paragraph at left best summarizes Allen's idea of landscape that serves as a primary driving force for my own project. In the paragraph, Allen points out the problem with refering to a landscape as merely a surface. Unlike the surface projects of the 1990s, this project is not interested in smooth continuities and sleek, thin surfaces. Instead, the project is interested in what Allen refers to as the "thick 2D" of the landscape. It is this thickness of landscape that I am most interested in - its ability to both support and house program simultaneously, to conceal some actions while revealing others, to weave together varying uses and programs into a single network of spaces.

In conjunction with my interest in the thickness of landscape as expressed by Allen, the project also explores the idea of the "megaform" as outlined by Kenneth Frampton. More specifically, my own project is concerned with a large-scale intervention's ability to both organize the city and create a network of public open space within a largely privatized environment.

Finally, Steven Holl's discussions of hybrid buildings and new types of public space resonate strongly with my own interests. As with the 8 House and Mountain Dwelling, I am interested in utilizing unique combinations or juxtapositions of building types or programs to create interesting relationships between uses as well as unique public spaces. Ultimately, all of these ideas and interests are expressed in the project's thesis statement, outlined below.

Thesis Statement

A large-scale, mixed-use development that conceives of the building as a constructed landscape can achieve high levesl of density while simultaneously generating unique, accessible open spaces within the city.

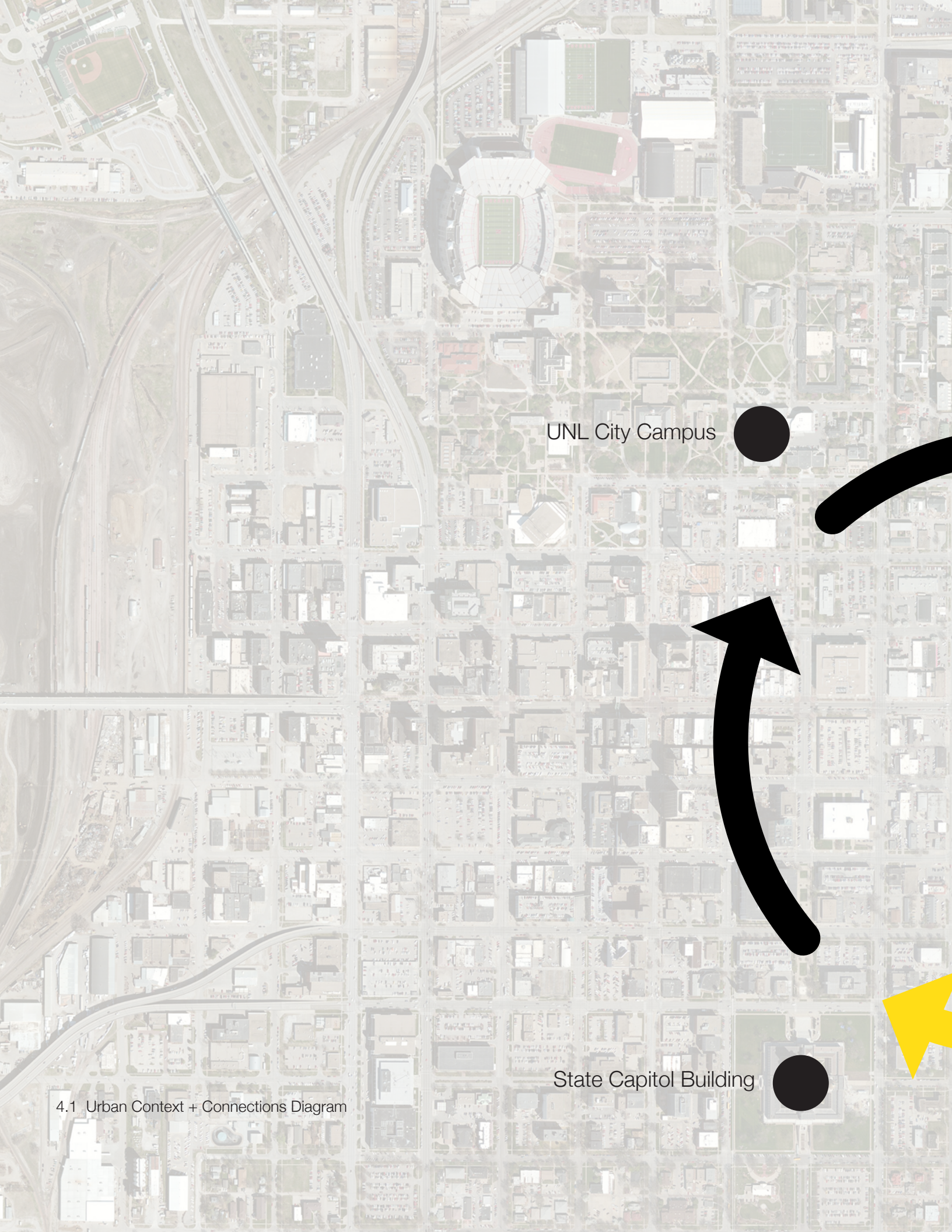
04

Urban Connections
Part Four

The first step in supporting the thesis statement was to select a site on which to design the project.

In selecting a site, I was not only careful to consider the ways in which the site and its surrounding context and infrastructure would be able to support a larger number of people, but I was also interested in how the site (and the project as a whole) could be conceived of as a sort of urban infrastructure. Rather than viewing the site as a destination or terminus, I hoped to develop the project in such a way that the site functioned rather as a transit route or pedestrian freeway.

As a result of this interest, thoughtful consideration was given to which site would most effectively be able to connect different “places” within the city. Understanding the project at this larger scale, as a grand gesture within the urban landscape, was critical for the success of the project. By linking it into existing transit routes and using its massive scale to stretch across otherwise inaccessible portions of the city, the project is ultimately able to promote pedestrian movement throughout the city and retain a high level of openness and porosity.



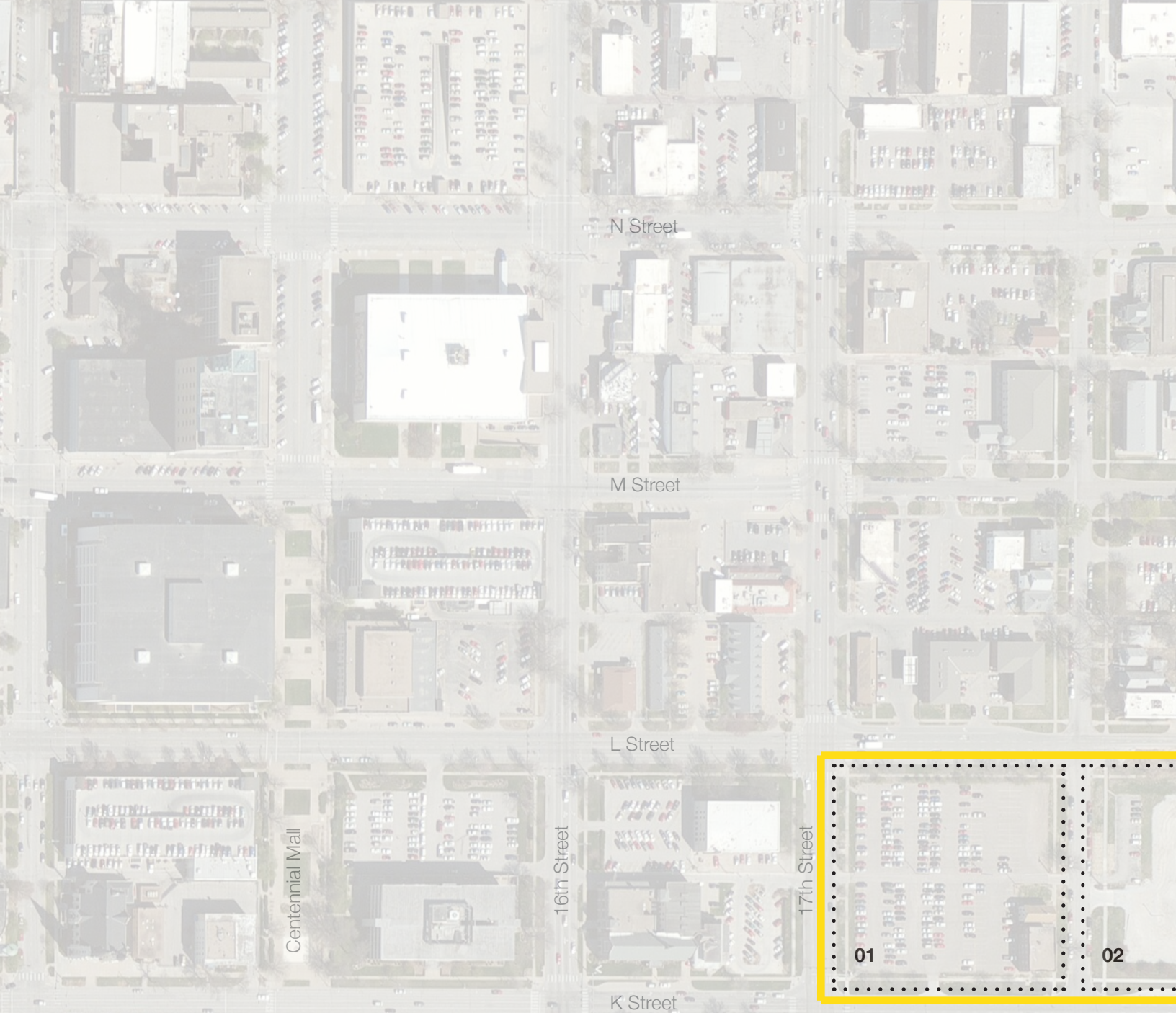
4.1 Urban Context + Connections Diagram

The site for the project is located at the southeastern edge of downtown Lincoln, and it serves to connect a number of the areas primary landmarks or central public spaces.

The State Capitol Building is, perhaps, the most recognizeable and most visible building in the entire city. Centennial Mall, one of downtown Lincoln's few open spaces and true pedestrian routes, stretches north from the capitol building and connects the capitol to the University of Nebraska-Lincoln's city campus. From campus, one can utilize bike paths along Vine Street or a series of other pedestrian routes to access Trago Park. Trago Park is a newly rennovated park that includes open green space, sports courts, a playground, and a unique water feature / playground for children. From the park, one can easily accessible the bike and walking path that leads down Antelope Valley, downtown Lincoln's largest expanse of green space and trail networks. The Antelope Valley trails connect Trago Park in the north with Elliot Elementary School, Lincoln High School, and the Lewis Baseball Fields to the south. Together, these areas make up one of downtown Lincoln's most public spaces, with the fields and grounds of the schools being accessible to the pubilc.

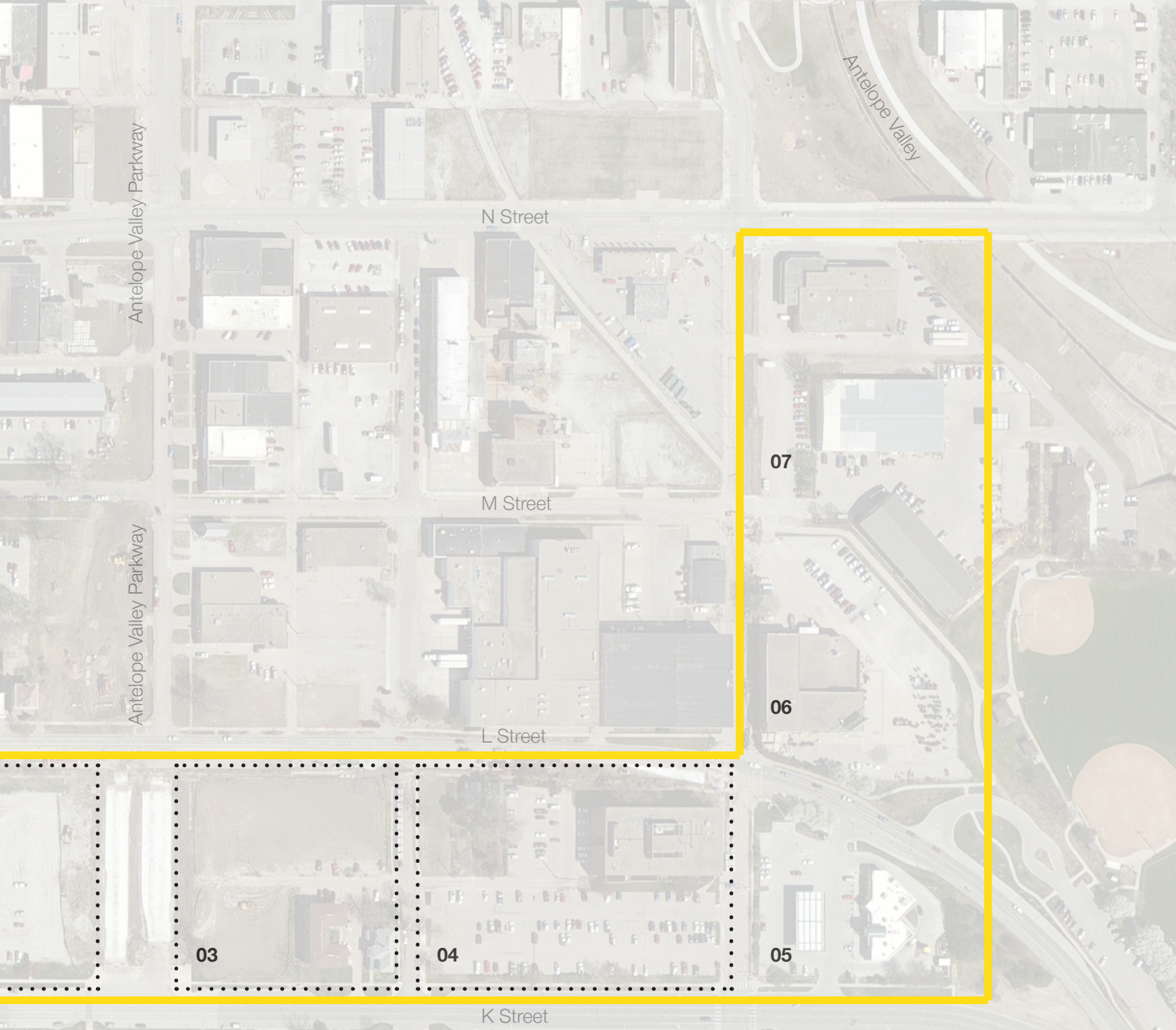
At this point, however, there is no connection back into the heart of downtown Lincoln. Antelope Valley only runs north and south, and the neighborhood separating the Lewis Fields from the heart of downtown Lincoln are filled with abandoned industrial buildings and poorly maintained sidewalks.

In an attempt to overcome these conditions and connect four of the cities most populated and visited areas, the project aims to redevelop a series of seven city blocks that stretch from the Lewis Fields back to 17th Street - just one block east of the capitol building grounds. By constructing a high-density development on these blocks, the site will be able to house a significant number of Lincoln residents, allowing them to live closer to downtown jobs, entertainment, and education facilities. In addition, the project's incorporation of open public space will enable the site to function as a pedestrian gateway that allows pedestrians to move from Antelope Valley into the heart of downtown Lincoln.



4.2 Site Context Diagram

The graphics above outline the entire project site with a solid yellow line. This area includes the nine city blocks to be developed as part of the project. Within this larger site, however, four blocks have been identified (blocks 01 through 04) that were focused on most intently during the design and development of the project. This smaller area of focus was identified in an attempt to reduce the overall scale of the design and allow me to engage with a greater multitude of design and construction issues. Although only a portion of the site was



developed to a high degree of detail, the strategies, materials, and ideas expressed by the design of the four select blocks can be extended to the other portions of the site and even other sections of the city.

The immediate context of the site includes the capitol building to the southwest, Kaplan University to the South, Lincoln High to the southeast, Antelope Valley to the west, and the recently completed Antelope Valley Parkway to the north.

This primary auto route bisects the four select blocks while K Street and L Street - both of which are major routes for the public bus system and for daily commuters in and out of downtown Lincoln - frame the north and south edges of the site. In this sense, the site is almost literally set in the middle of a series of major transportation routes. This enhances the site's accessibility and gives it direct access to the city's public transite system, an important characteristic in attempting to support a high-density residential develop.

05

Hybrid Landscqpe
Part Five

After selecting a site that could serve to stitch together separate destinations within the city, the next challenge was to design a mixed-use, high-density development that would allow users and residents to enjoy the benefits of urban living while still being able to enjoy the city's network of trails, recreational facilities, and public open spaces.

The diagrams, drawings, and images that follow attempt to reveal the characteristics and unique features of the resulting design. One important note to make, however, is that while the project is presented here as a single design solution, the idea that this particular design represents the only way to achieve the project's overall goals should be avoided. The final design simply represents one possible way in which to resolve a high-density, multi-use development with an extensive network of public open spaces. Rather than offering a definite solution, the final design documents simply act as points of reference and the catalysts for further thinking and discussion on the topic.

HOUSING

Apartments
Townhouses

LPS FOCUS SCHOOL

Arts + Humanities FP
Information Technology FP
Entrepreneurship FP
Science FP

GRO

HY-V
Targe
Whol

The diagram above illustrates the various programmatic elements included in the final design. Each of these programs is included on a four-block portion of the site, and all have a significant part in the project as a whole.

Obviously, any attempt to increase urban density requires an investigation and an implementation of housing units. As a result, the project includes both rental apartments and either rental or privately-owned townhouses. The diversity of housing types encourages a wider range of people to live on the site, and it serves as the first example of how the project begins to merge suburban and urban building types into a single project.

In addition to housing, the program also includes a small focus program school that will house the four separate branches of the Lincoln Public Schools Focus Programs. This particular programmatic element was included in the project for a number of reasons. First, school buildings in Lincoln tend to take up a lot of room. They are designed as low-rise structures with large parking lots and an extensive perimeter of turf grass, some of which is devoted to sports fields. Ultimately, this type of design results in a large site that houses just one

5.1 Project Program Diagram

CERY

EE
t
e Foods

PARK

Green Space

RECREATION

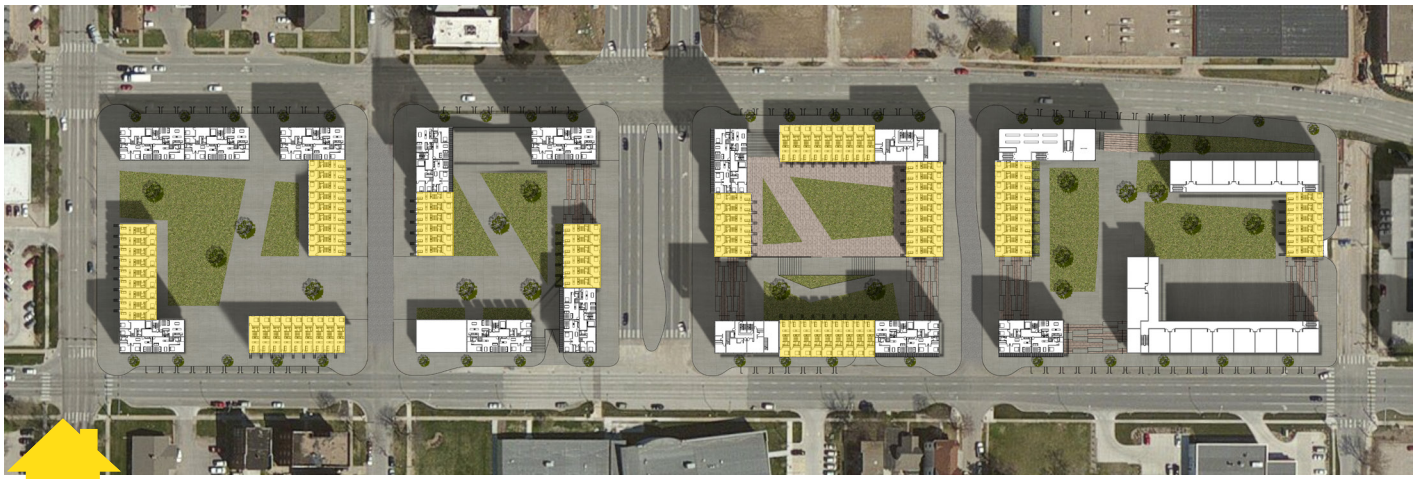
Tennis
Basketball
Volleyball
Frisbee

function (education) and that is only utilized for eight hours on just five days of the week. Furthermore, the large perimeters of grass effectively separate the school from the rest of the community, making the building a place that only students, parents, or teachers regularly visit or even see. In other words, standard school design creates pockets of low density that are isolated from the community and underutilized in terms of multiplicities of use.

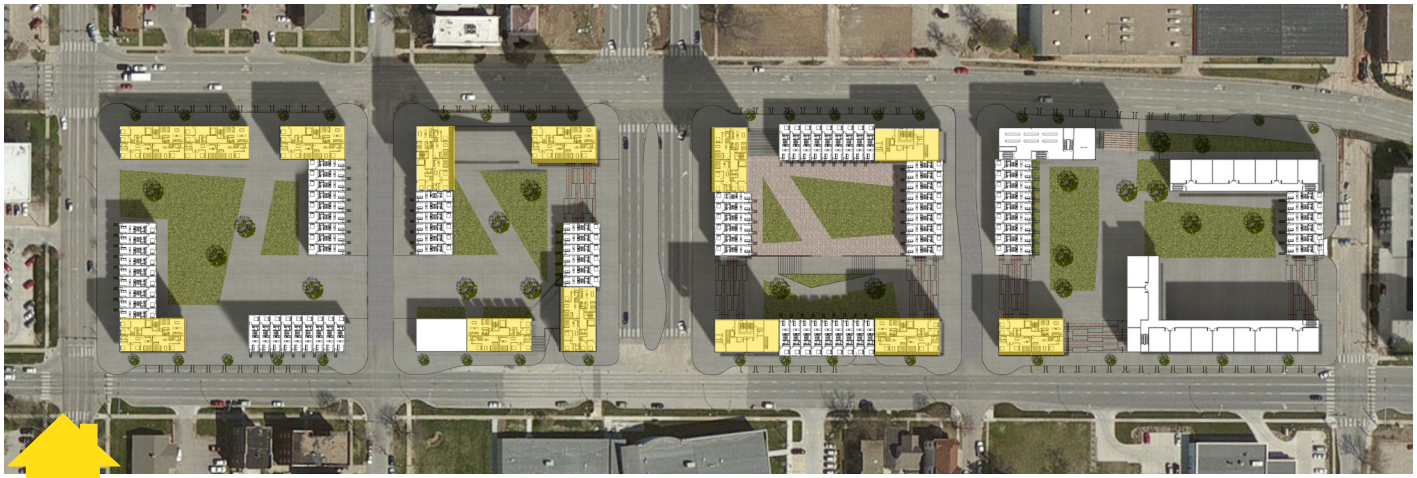
Second, school buildings often drive settlement patterns in Lincoln. Once a new school is planned or built, development in that area begins to increase as families attempt to move closer to schools. By including a school within the design, the project seeks to capitalize on this phenomenon. This will allow residents of the development to live close to school and avoid having to rely on bus services or auto transit to go to or drop their children off at school.

In addition to the large educational use included in the design, a small grocery store is also part of the programmatic requirements. Because downtown Lincoln suffers from a lack of grocery stores, the inclusion of one in this new development will make housing even more people in downtown Lincoln feasible. If a grocery store were not included in the development, residents would most likely have to drive elsewhere to pick up groceries instead of simply walking a few blocks down the street.

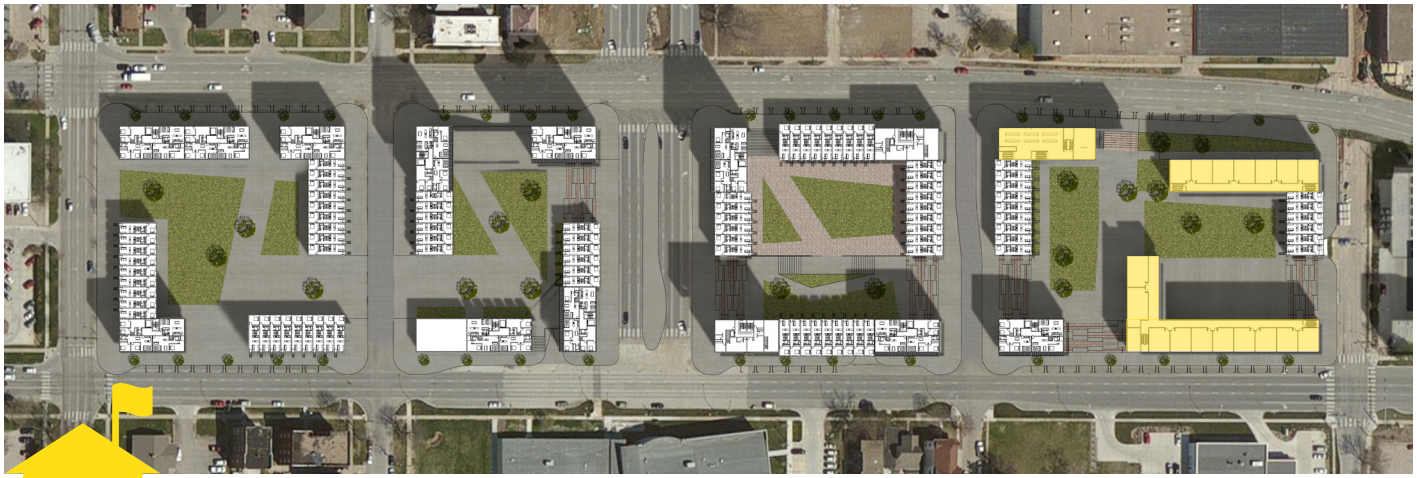
Finally, in addition to the various building programs, the final design also incorporates a series of open spaces (both vegetated and hardscaped) that house a number of different sports fields and recreational areas.



Townhouses

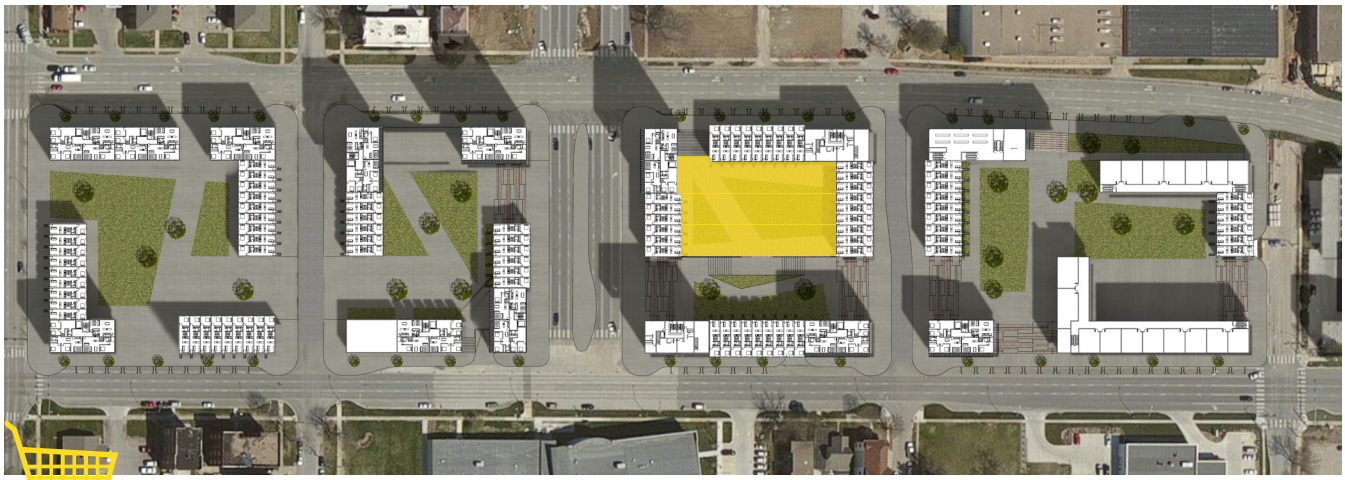


Apartments



Focus Program School

5.2 Site Drawing + Program Distribution Diagram



Grocery Store

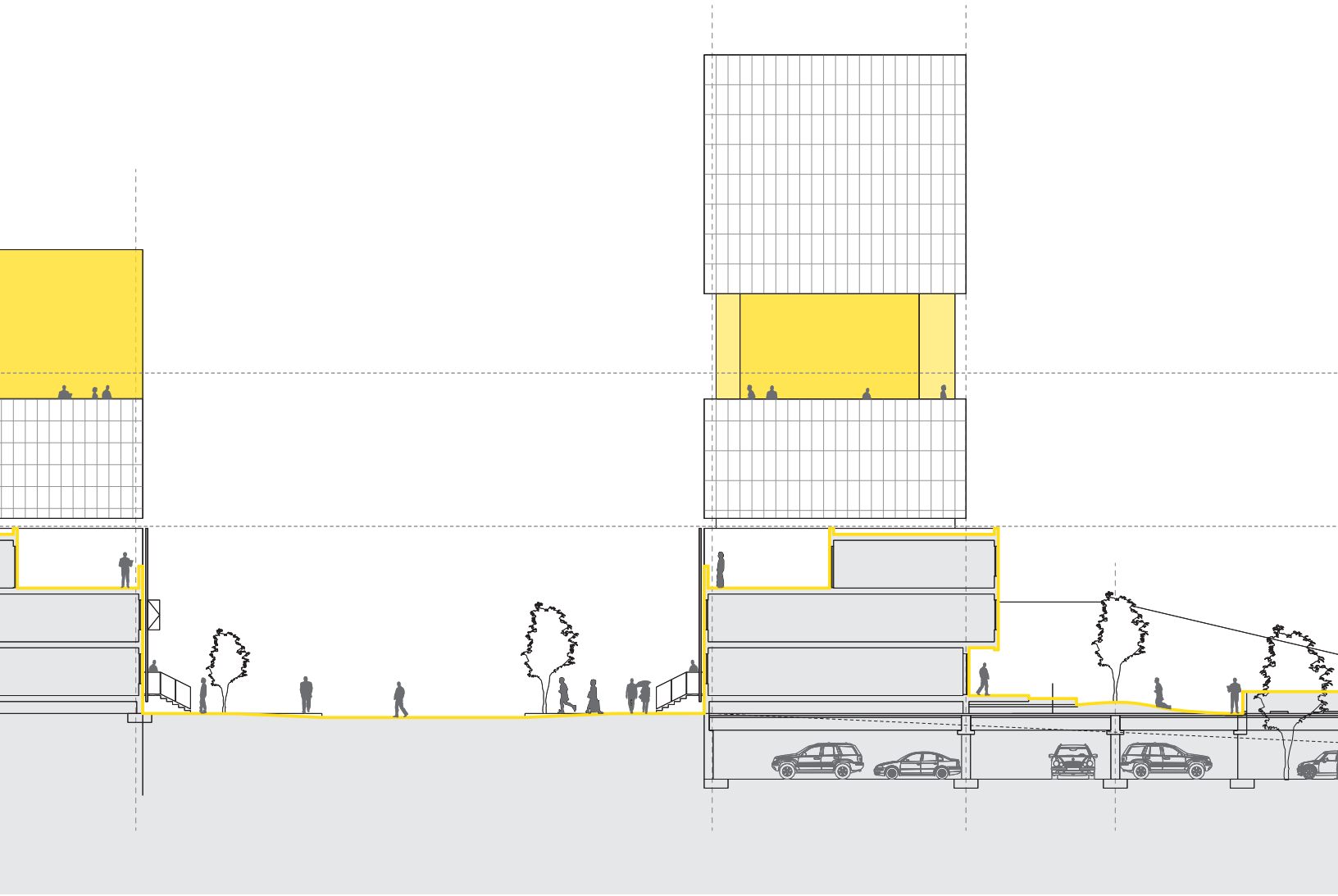
The drawings shown here provide an overal site plan for the four blocks of the project that were developed in greater detail, and they identify the locations of each building program type.

The rowhouses tend to occupy the interior sections of the city blocks, or the sections that are removed from the traffic and noise of K and L Streets. Because the townhouse is introduced here as a remnant of suburban living, the townhouses are located along the quieter streets that see less auto traffic during the course of the day.

Buffering the rowhouses or townhouses from the traffic of K and L Streets, the apartment towers holld the north and south edges of the blocks. Accessible from both the street and interior courtyards, the apartments help to block some of the traffic noise of surrounding streets while still allowing pedestrians to move through the building to access the street or interior courtyard spaces.

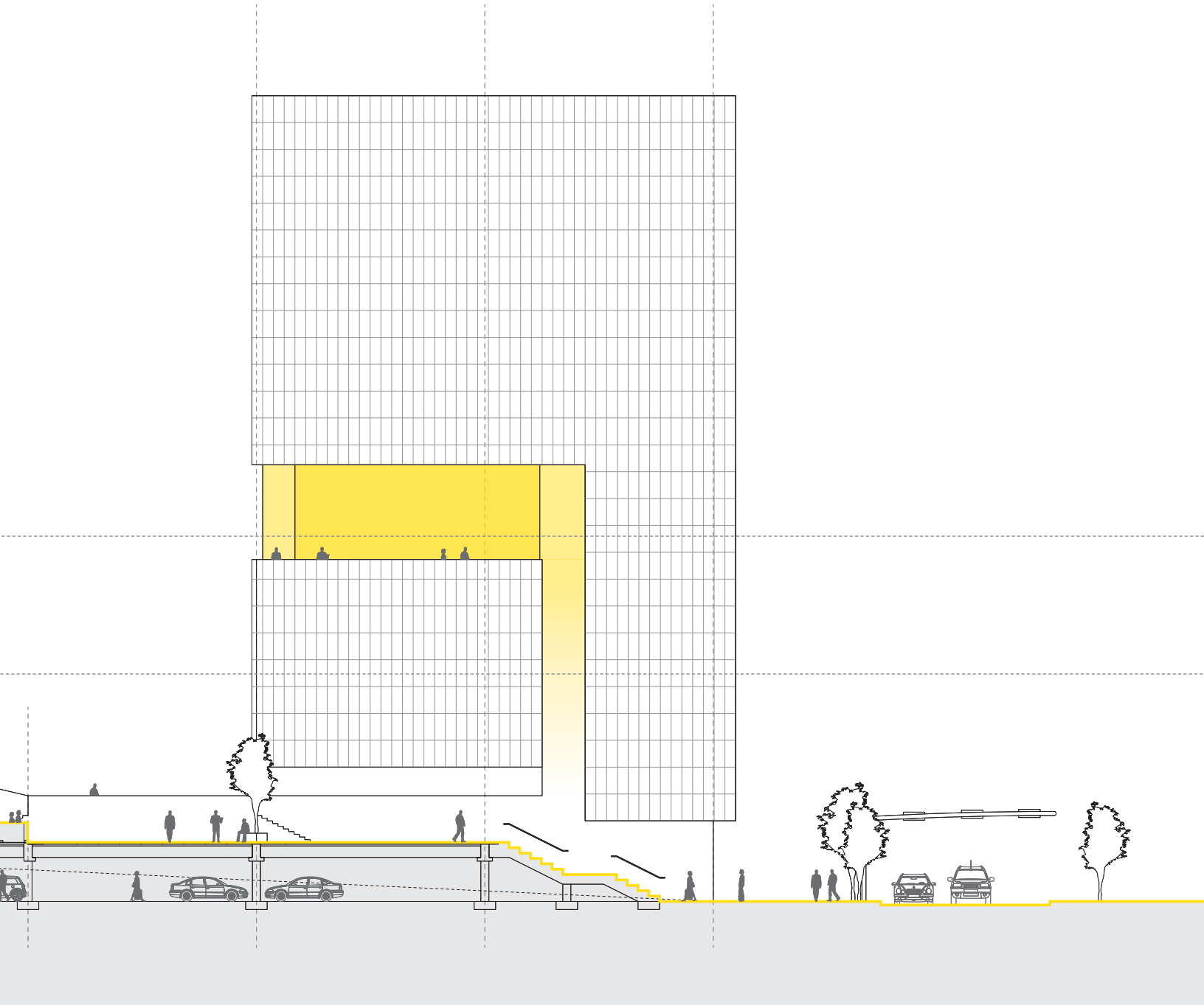
The focus program school is located in the eastern-most block, close to Lincoln High School to the south. The school consists of a cafeteria, auditorium, multi-use space, and small parking lot that are all set benath an accessible roof deck and 3 five-story towers that house the school's classrooms, computer labs, and study areas.

The grocery store, like the school's auditorium and cafeteria, is set within the interior of the block and provides the courtyard space with an elevated roof deck. Accessible from the street, the grocery store maintains its functional presence while simultaneously being hidden from view. In addition, truck acces for the grocery is located along 20th Street, which defines the block's eastern edge.



5.3 Site Section Drawing

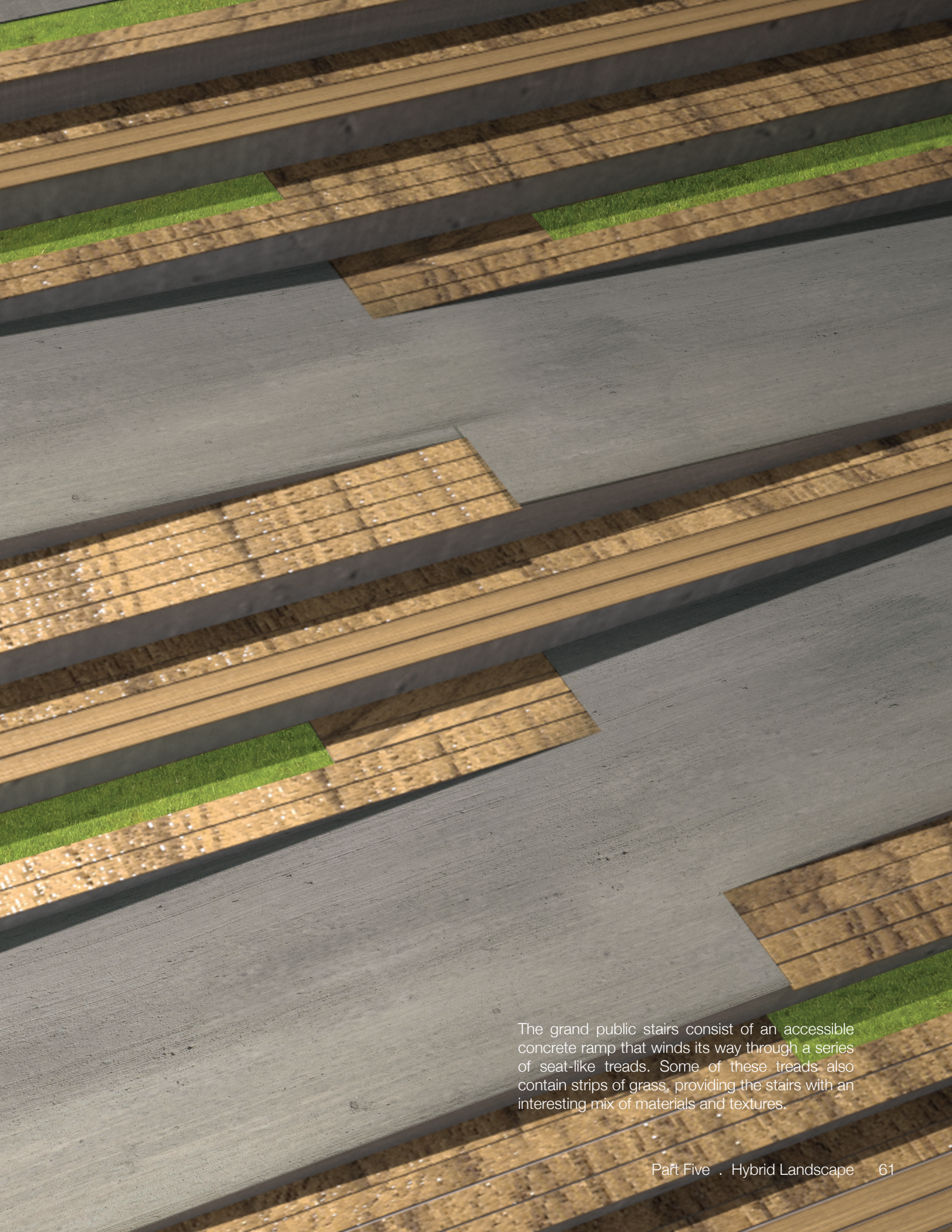
The section drawing above reveals the sectional relationship established between the various programs on the site. At the base of each block, a plinth containing parking, grocery, or educational facilities is covered with an accessible roof deck. This deck forms the surface of the block's large interior courtyards. In the block seen above, a series of parking stalls are held in the plinth, with a public plaza being located above the parking. In addition to the public plaza, however, the townhouses are



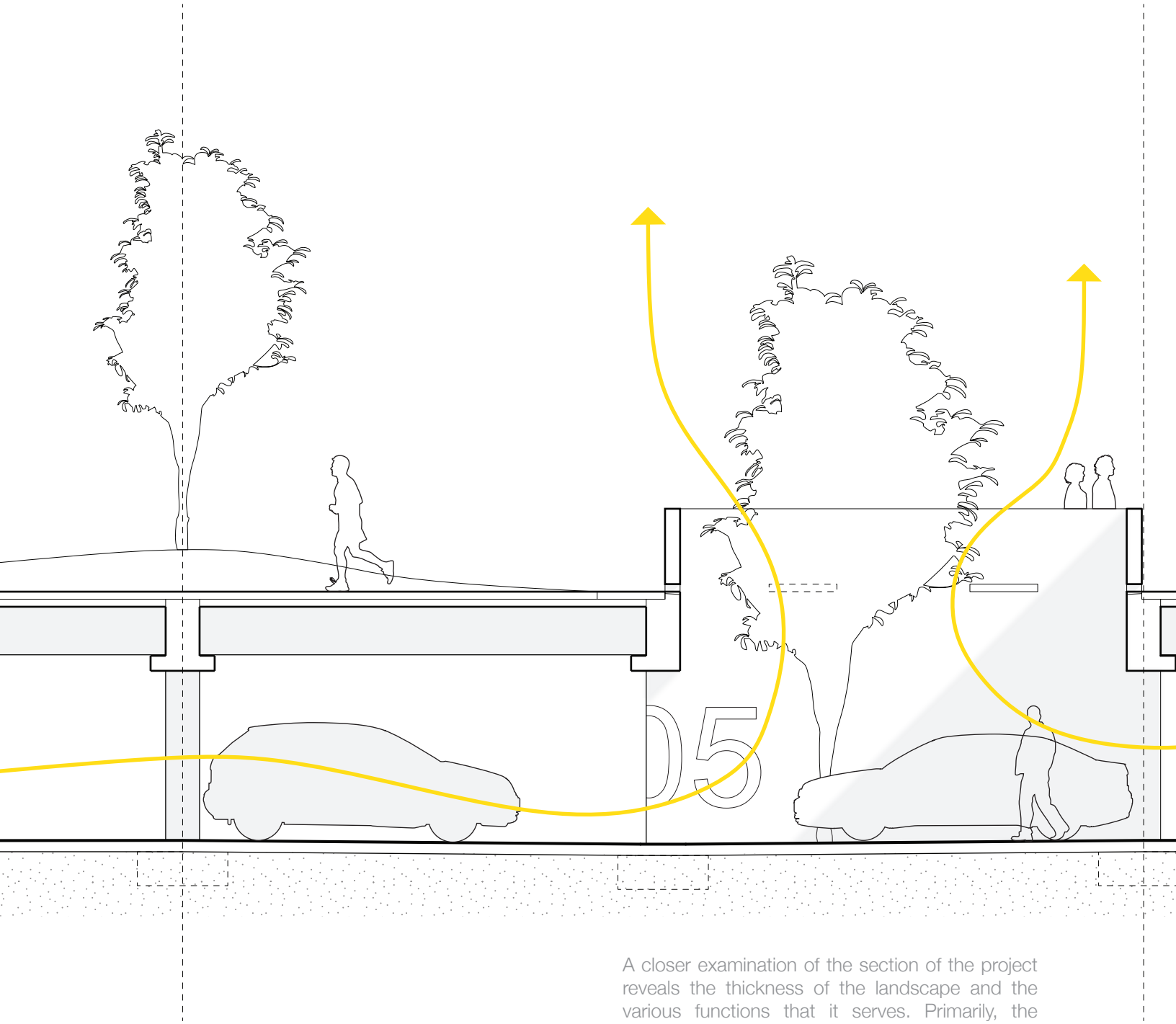
also set above the parking, allowing residents of the townhouses to enjoy their own private parking stalls.

As one moves horizontally through the site section, different types of spaces begin to emerge. The rows of facing townhouses along the left side of the drawing flank a smaller street dedicated to pedestrian traffic. As one moves past the townhouses and into the courtyard, the space becomes slightly more secluded and entirely separated from auto traffic. However, openings in the perimeter of the courtyard buildings house open, public stairs that provide access to the street below and also serve as gathering or meeting places. Because each of the vertical depth or thickness of the plinths, each courtyard must be access via one of these stairways. A rendering of how this stair might be detailed appears on the following pages.

5.4 Detail Rendering

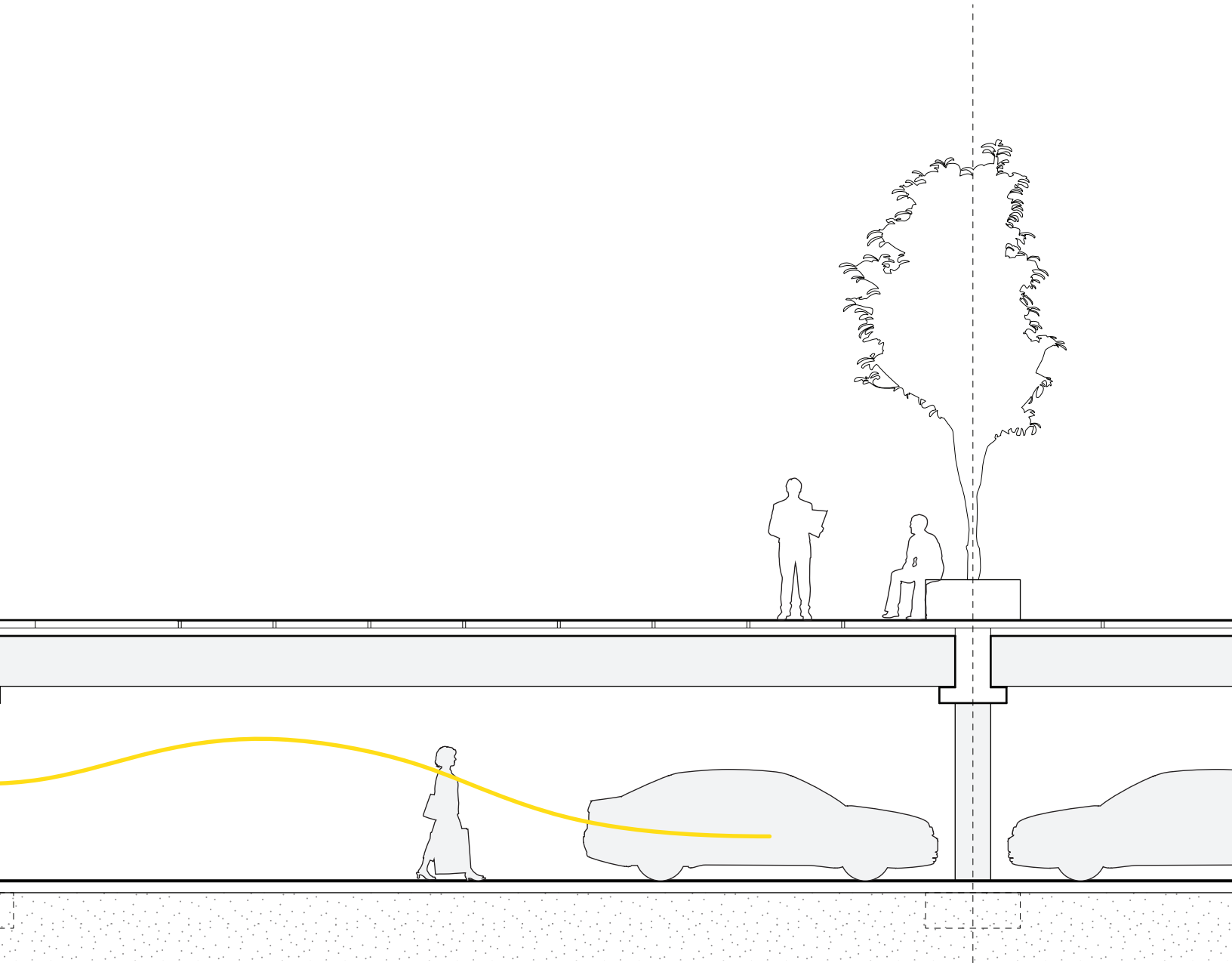


The grand public stairs consist of an accessible concrete ramp that winds its way through a series of seat-like treads. Some of these treads also contain strips of grass, providing the stairs with an interesting mix of materials and textures.

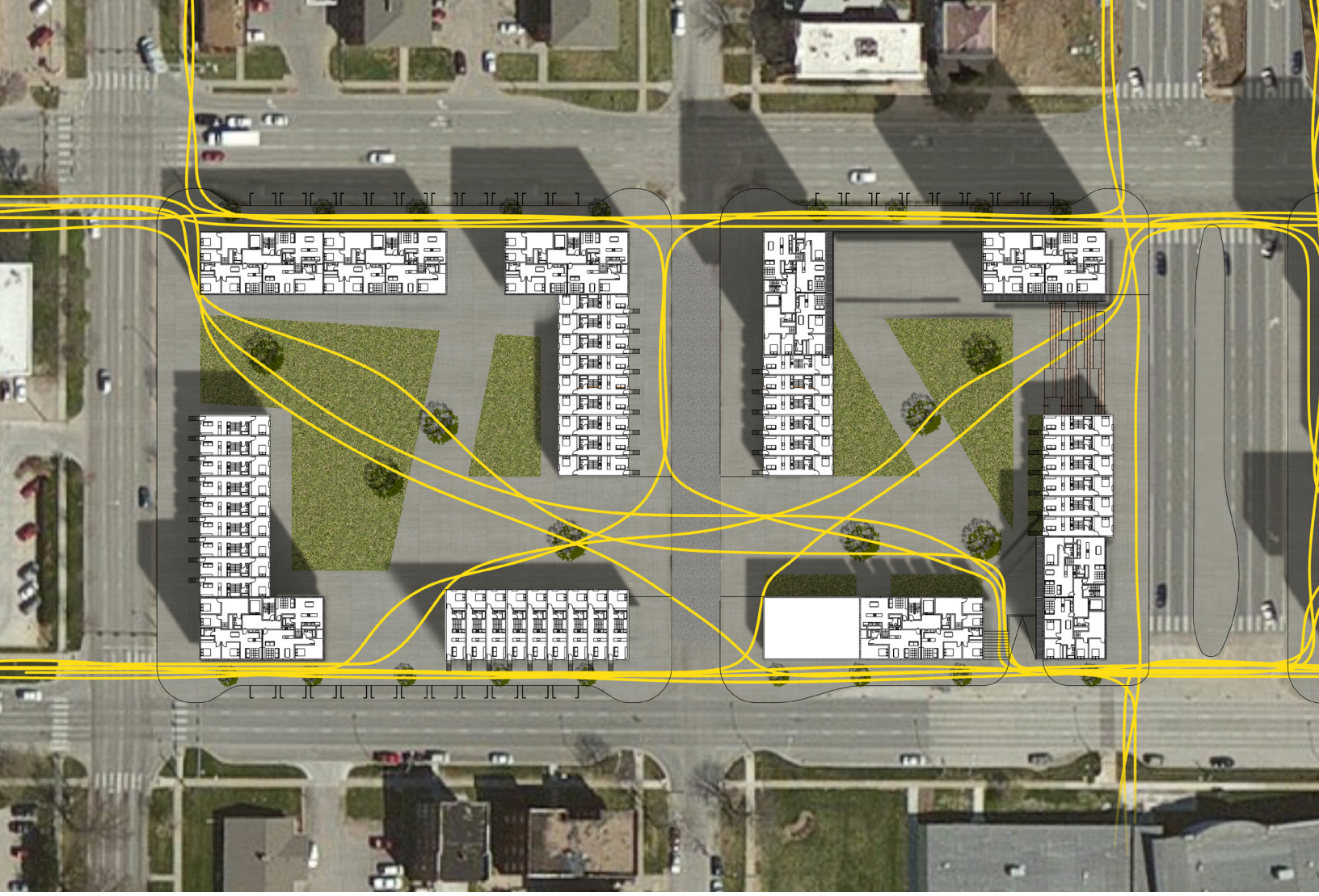


A closer examination of the section of the project reveals the thickness of the landscape and the various functions that it serves. Primarily, the accessible deck serves to cover the parking lot, protecting vehicles and passengers from the elements. Openings in the deck allow exhaust to be ventilated from the enclosed parking space, and they also provide an opportunity for vegetation to extend through the deck and into the courtyard.

5.5 Detail Section Drawing



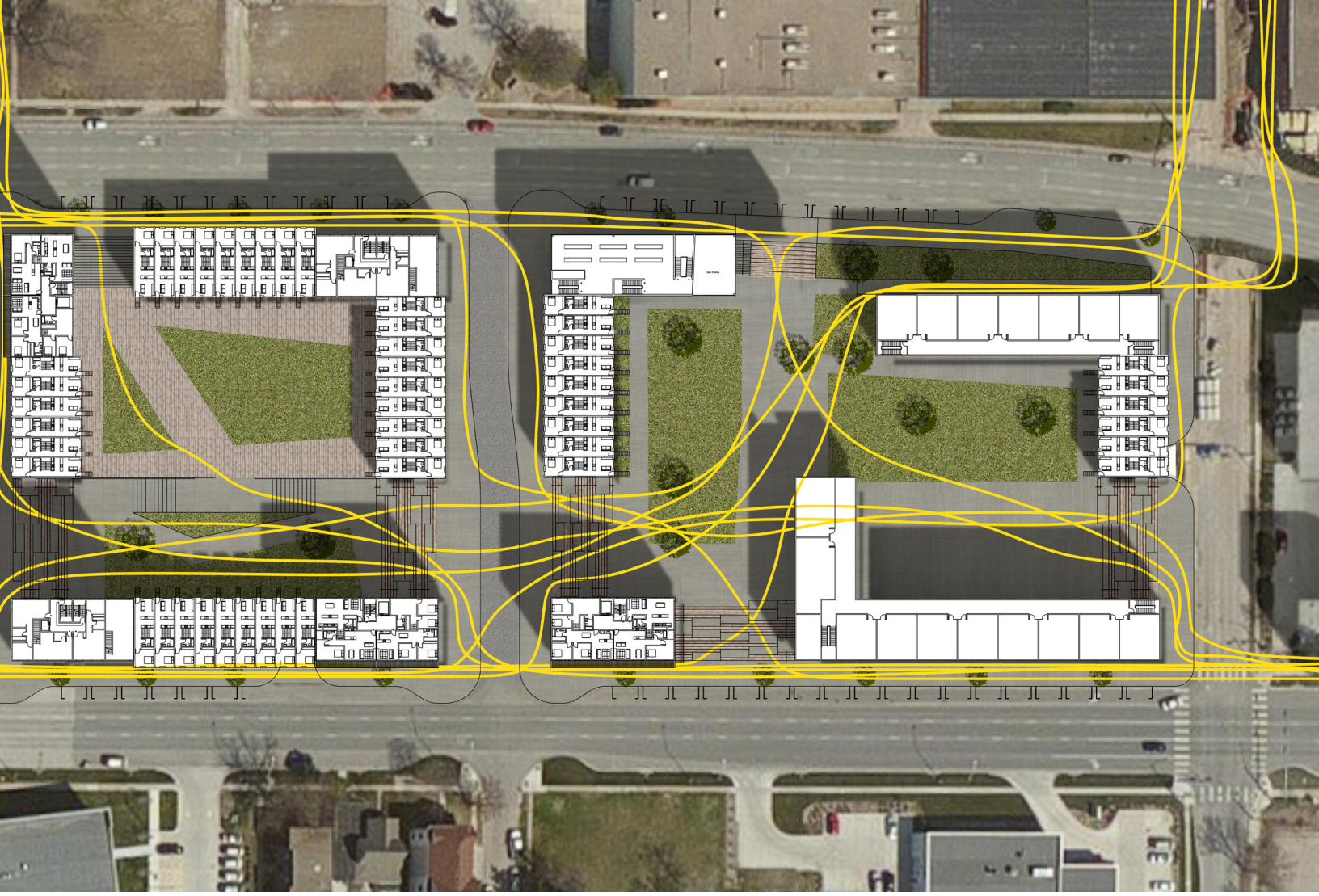
The vegetation located at the openings of the deck help to filter and clean the exhausted air as it leaves the parking lot. This helps to ensure that those enjoying the open spaces of the public courtyard above are not affected by harsh fumes or chemicals. Yet, the trees planted at grade are not the only examples of large vegetation included in the design. Additional trees or shrubs are also included on top of the roof deck. These trees, however, are slightly shorter than the trees placed within the parking lot, and they are placed directly above the columns of the parking lot to ensure that dead loads and wind loads can be safely transfered to the ground. In this way, the orthogonal nature of the parking lot's structural grid asserts a strong influence over the design and construction of the public landscape.



In addition to the porosity of the design in section, however, the entire site also exhibits a considerable amount of porosity in plan. The drawing above illustrates a number of the possible routes a pedestrian might take as he or she works their way through the site. As the drawings shows, pedestrians are not forced to stay on the sidewalks immediately adjacent to the streets. Instead, the porosity of the site allows pedestrians to cut through the interior of each block, cutting corners and, in some cases, reducing travel time considerably.

Yet, creating short cuts is not the primary aim of the site's porous design. Rather, the extreme porosity of the site allows the public to gain access to a greater portion of each block. The street life along the edges of the blocks can remain intact, yet the open green space on the interior of each block allows public life to spill into the center of the site as well. This creates opportunities for new types of space to develop and for a hierarchy of different types of public spaces to exist on the same site.

5.6 Site Porosity Diagram



In addition to simply being open or porous individually, each block also attempts to connect with the block next to it. As a result, openings in one block tend to correspond with openings in an adjacent block. This ultimately creates a serires of wide internal corridors that funnel pedestrian traffic through the open park and recreational spaces of the interior courtyards. Furthermore, these openings provide visual access both into and through entire portions of the site. One is able to stand at the easternmost entrance of the site along 21st Street and look through the interior courtyard all the way down to 19th Street. Even more impressive than this open vista, however, is the fact that it is achieved in an environment that exhibits a density of between 30,000 and 40,000 people per square mile. That is a density roughly ten times greater than Lincoln's average density. Despite the high density and the multiple uses found on the site, it is able to remain open and porous through the utilization and careful placement of openings in the perimeter block.

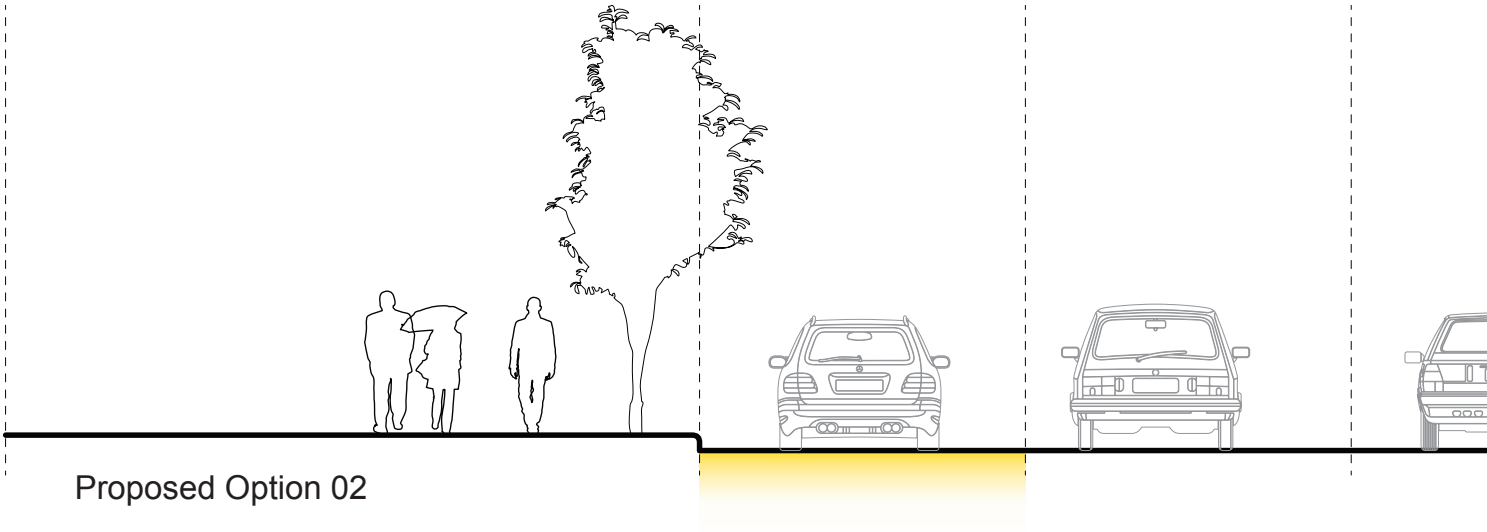
Ultimately, however, the success of these open, public courtyards depends not only on the quantitative aspects of openness and size, but also on the quality of space that exists within them. The following pages contain a number of renderings that attempt to provide a glimpse of these interior spaces, the quality of materials and light present in the spaces, and the way in which the openings in the perimeter buildings begin to frame views of the surrounding urban fabric.

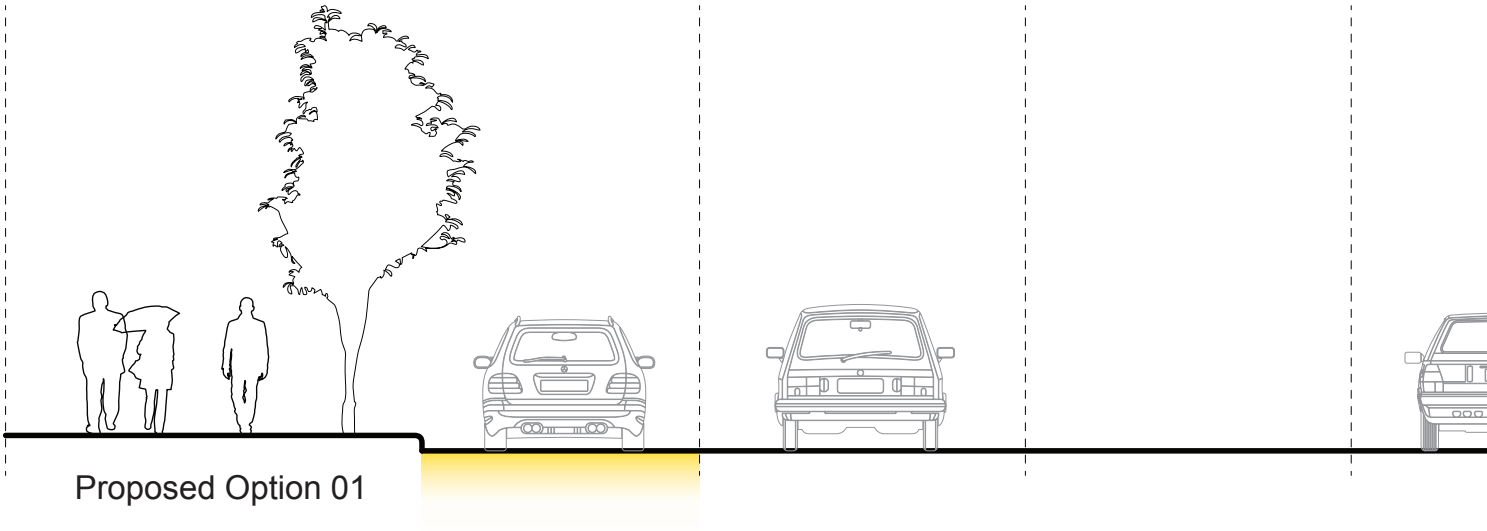
5.7 Exterior Perspective Montage

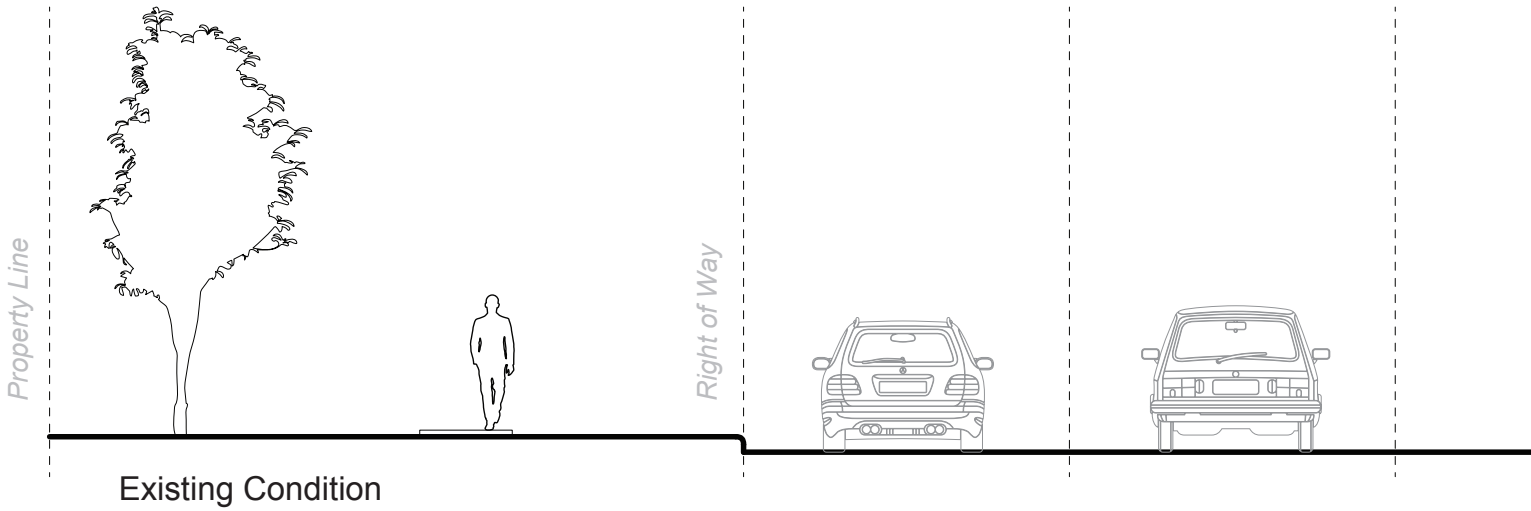
The buildings hold the urban edge while still remaining porous, opening up at key points to fram views of surrounding urban fabric. Here, two wings of the focus program school frame a view of the capitol while allowing access to the green space on the interior of the block.

5.8 Exterior Perspective Montage

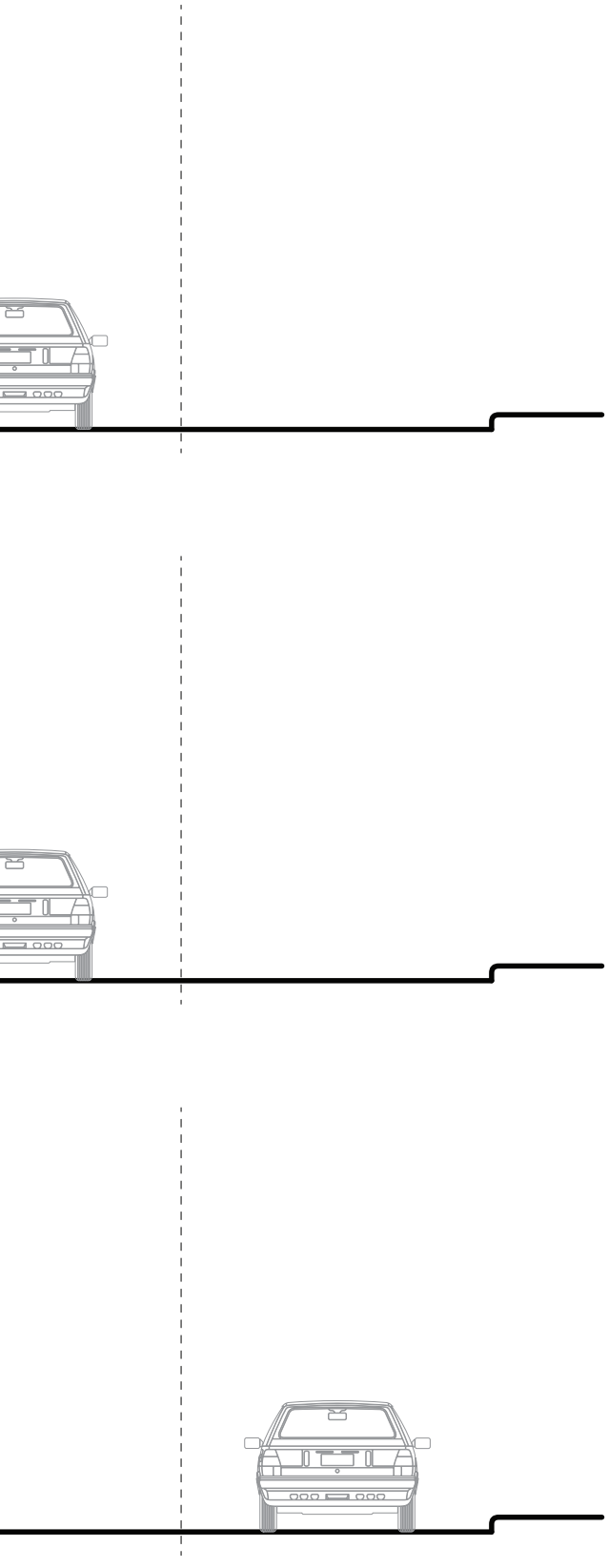
The openings in the perimeter buildings also begin to frame views from within the courtyard spaces. Here, the buildings frame a view of the intersection of L Street and Antelope Valley Parkway, one of the major intersections along the project boundaries.







5.9 Pedestrian Street Proposed Street Sections

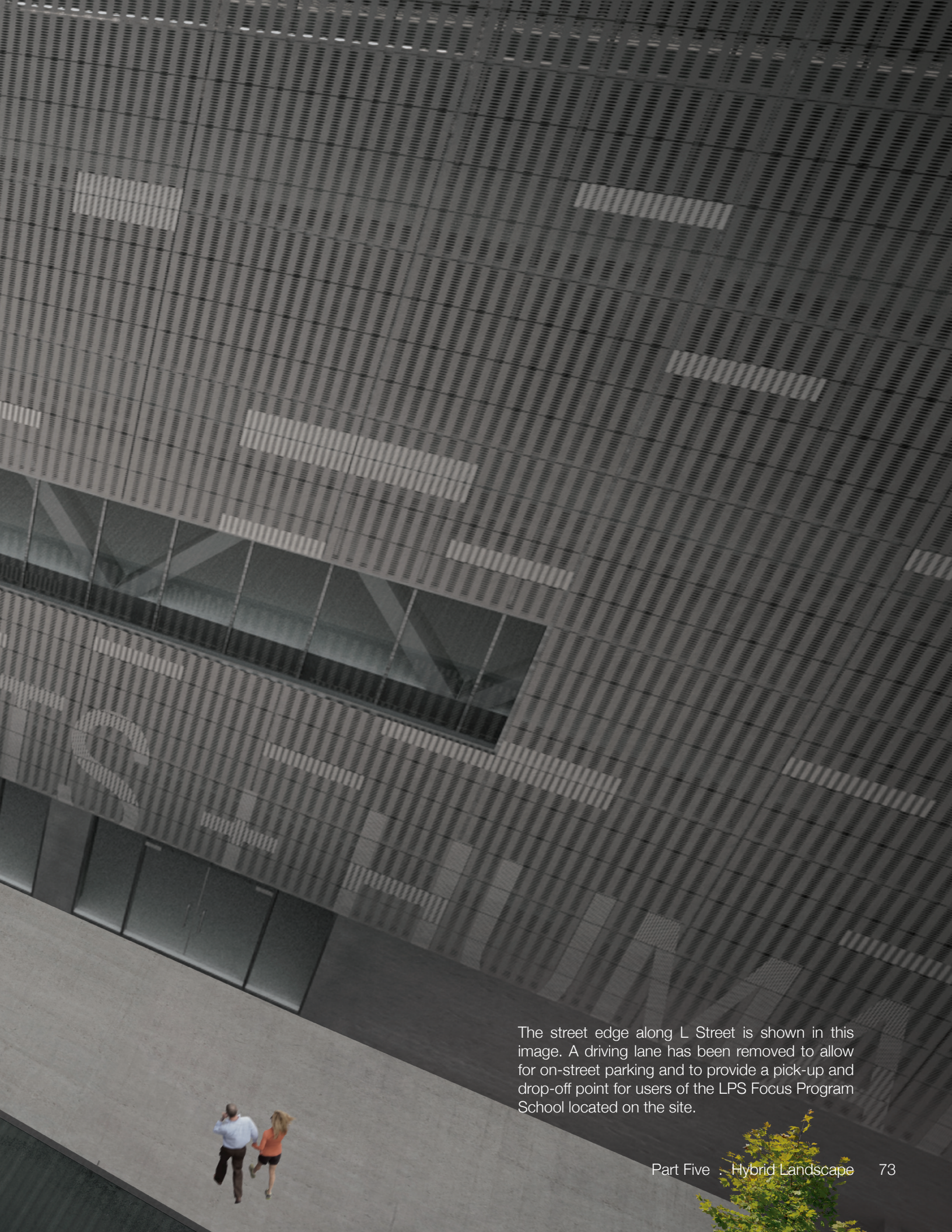


However, although the quality of the interior courtyard space may be adequate to support or encourage plenty of activity, their success as active public spaces depends on the ability of pedestrians to access them safely.

As a result, the design of the sidewalk space and street section along K and L Street become vital for the success of the project. As the diagram at left illustrates, the sidewalks along K and L Streets are currently narrow and placed in close proximity to the street. Because both K and L Streets are streets that see heavy traffic, and because the speed limits on both streets is 35 mph, the environment along these two streets feels anything but safe.

In an attempt to address this issue, the design for the project calls for the inclusion of on-street parking along these major auto routes. By introducing on street parking, one is able to increase the space between the pedestrian and the street and possibly provide a barrier whenever a car is parked along the street. For this specific site, on-street parking can easily be integrated into the existing street design by either decreasing the width of the right-of-way and including parking within the set back or by simply designating one of the driving lanes as a parking lane.

5.10 Exterior Street Perspective Montage



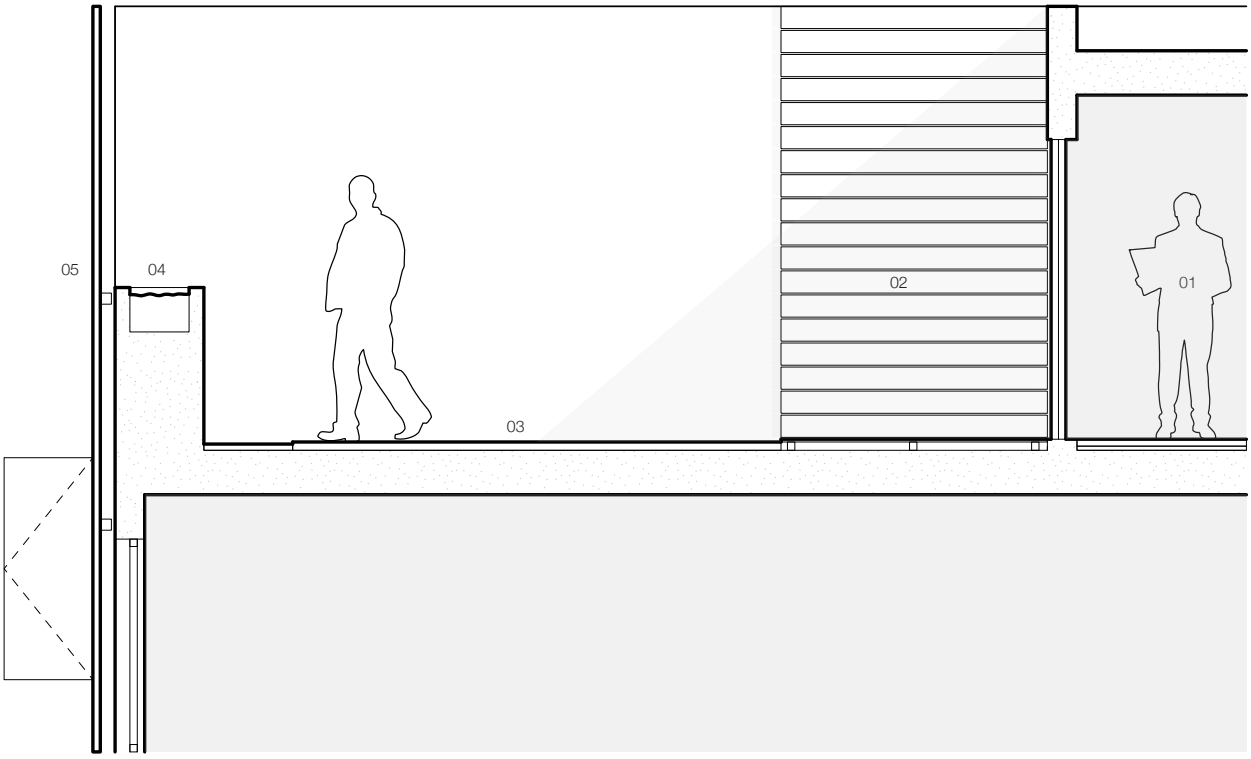
The street edge along L Street is shown in this image. A driving lane has been removed to allow for on-street parking and to provide a pick-up and drop-off point for users of the LPS Focus Program School located on the site.

5.11 Typical Townhouse Floor Plan (Above)

01 Entry
02 Living Room
03 Kitchen
04 Stairs
05 Bathroom
06 Bedroom

5.12 Townhouse Roof Deck Detail Section (Right)

01 Master Bedroom
02 Wood Decking (Patio)
03 Artificial Turf (Yard)
04 Garden Planter (Railing)
05 Metal Mesh Screen



In addition to using ideas of depth and thickness to provide pedestrians with a sense of security on the sidewalk, they can also be employed to give residents a greater sense of privacy within their own homes.

Because the project seeks to increase the proximity and density of dwelling units on the site, issues of privacy are a clear concern. Furthermore, because many of the townhouses abut or are adjacent to large public courtyards, many residents may desire some way of sheilding the interior spaces of their homes from the eyes of the general public.

As a first step toward providing a sense of privay, the townhouses are set five feet above grade (in this case, grade being the top of the large roof deck above a parking lot). As the drawings on the opposite page show, this five foot increase in elevation allows the main living spaces of the townhouses to extend above the typical eyeline of a passing pedestrian. In addition, by facing this portion of the townhouse toward the courtyard, the bedroom spaces are able to face the street. This conditoin is preferrable because, along the street, the townhouses sit above a series of retail shops or office spaces. This means the bedrooms are set approximately fifteen feet above the street, well above the eyes of the general pubilc.

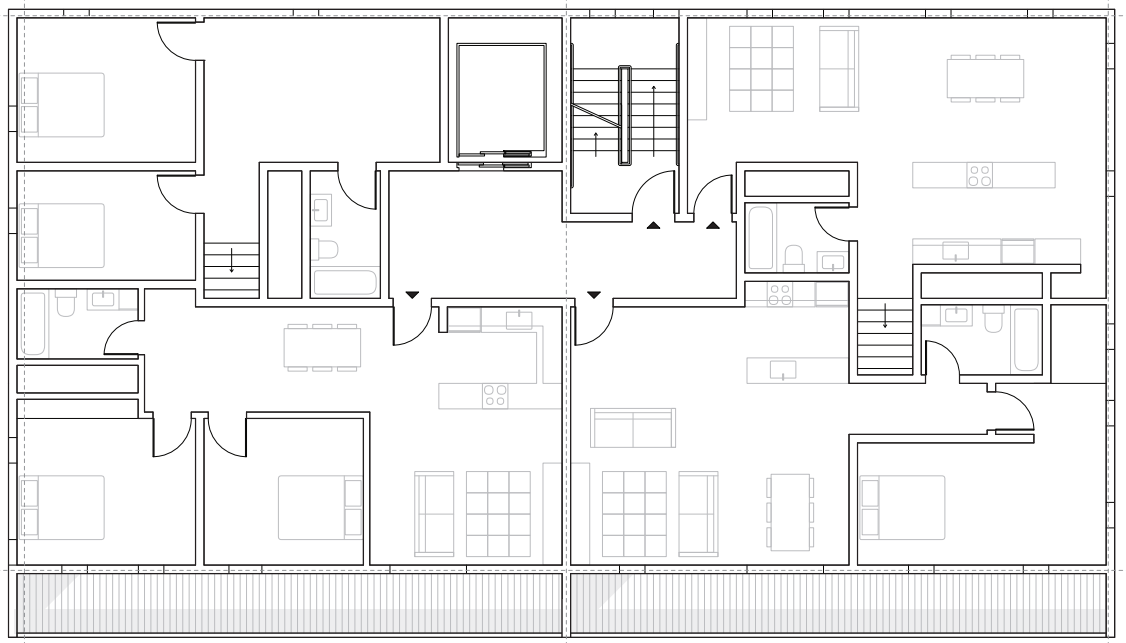
However, in order to ensure the townhouses do not feel too enclosed, each unit has an accessible roof deck on the third level. This roof deck contains a small patio area, a small yard, a plantable garden railing, and a metal mesh screen that adds a sense of privacy. The drawing above identifies each of these elments, and the images on the following pages attempt to provide a sense of what the townhouse units might look like.

5.13 Interior Townhouse Perspective Montage

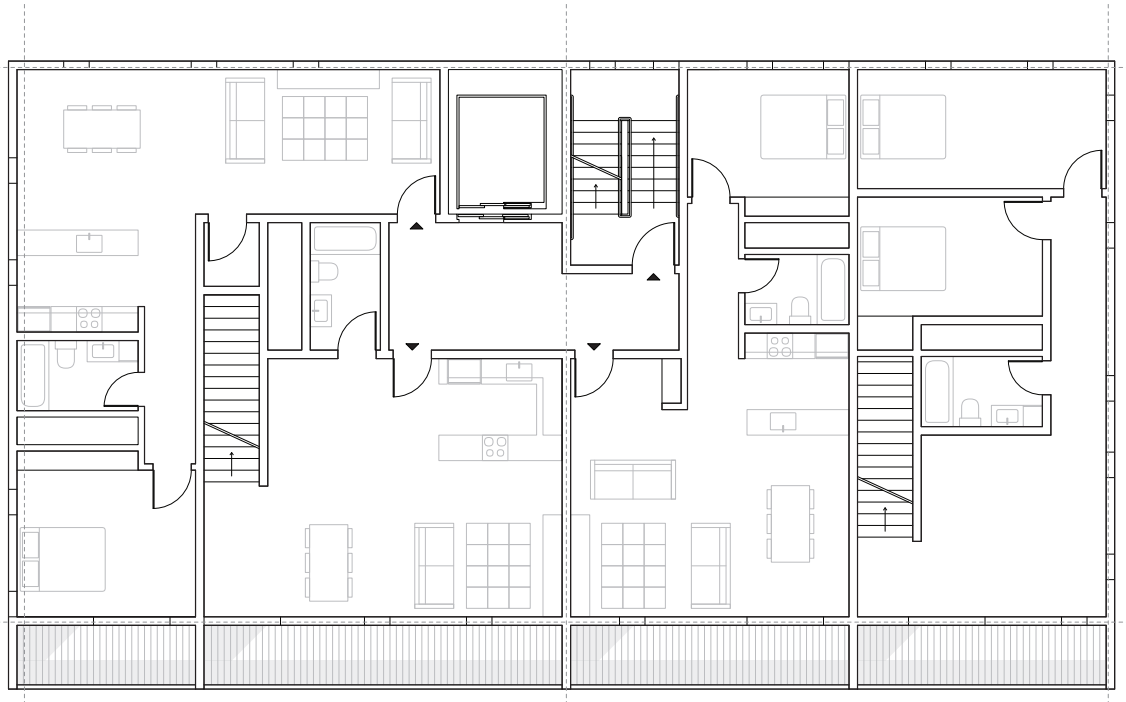
Each townhouse unit has a third-floor roof deck that is accessible from the master bedroom. The deck has a small yard and patio, and it is partially enclosed by a screen made of metal mesh panels.

5.14 Exterior Townhouse + School + Courtyard Perspective Montage

This image shows the pedestrian “street” that runs in front of the townhouse entrances as well as the school and public courtyard that also make up this particular block.

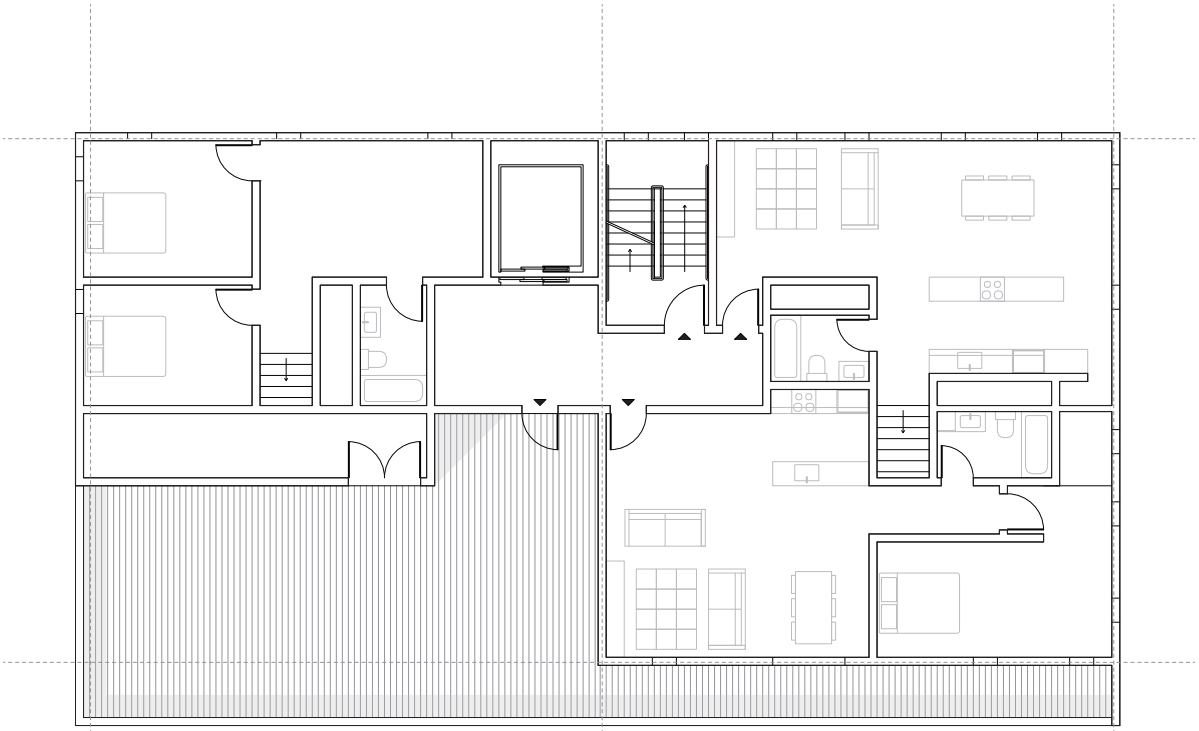


Sixth Floor - Configuration 01



Fifth Floor

5.15 Typical Apartment Floor Plans



Sixth Floor - Configuration 02

Similar to the townhouse units, the apartment units also make use of the idea of thickness to establish a sense of privacy and create a hierarchy of outdoor spaces. The drawings at right illustrate the typical configuration of the apartment tower floor plans. Four apartment units are accessed via a point-load corridor. Three units are accessible on each floor, with the forth unit being a loft that can be accessed from the floor below or above. This stacking and weaving together of the apartment units mirrors the weaving together of the multiple programs on the site.

Although the dimensions vary from unit to unit, each apartment has direct access to an outdoor loggia space. This space is enclosed by a metal mesh screen that shades the outdoor space and provides residents with additional privacy. Individual panels within the mesh screen can be opened or closed at will, allowing residents to control the amount of lighting or privacy the screen provides. However, in addition to its functional purposes, the mesh screen gives depth to the facade of the apartment towers. Its presence allows the facade to appear smooth and continuous. Yet, when a opens a panel, the thickness of the facade is revealed, and the bright yellow color of the exterior walls emerges from behind the gray of the mesh screen. The nature of these spaces and the "thickness" of the facade are illustrated on the following pages.

In addition to the loggia spaces, some of the apartment towers also contain a shared, semi-private outdoor space. This space replaces a living unit on the sixth floor of each apartment tower. This allows residents to have access to a semi-private outdoor space suitable for relaxing or for enjoying views of the surrounding city. In fact, the height of these spaces is actually dictated by the surrounding urban context. A height limit of 57 feet (set at that height to match the 57-foot-tall walls of the capitol building's base) exists on the site. However, the design challenges this height limitation, opting instead to push beyond it while incorporating these outdoor spaces at a height of 57 feet. The voids these spaces create in the facade of the apartment towers registers this height limit as a continuous datum line that runs through the entire site and connects the project with the surrounding context.

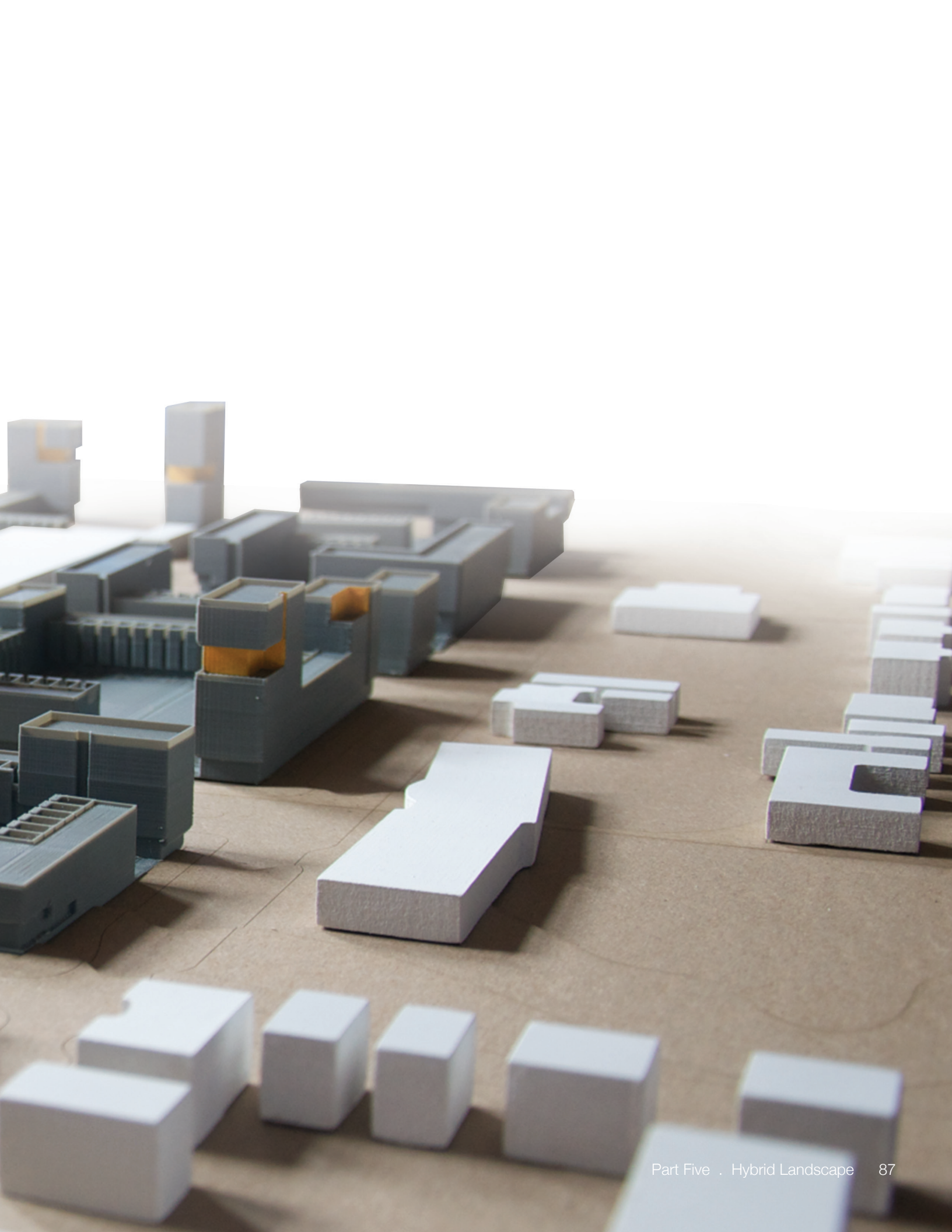
5.16 Exterior Apartment Roof Deck Exterior Montage

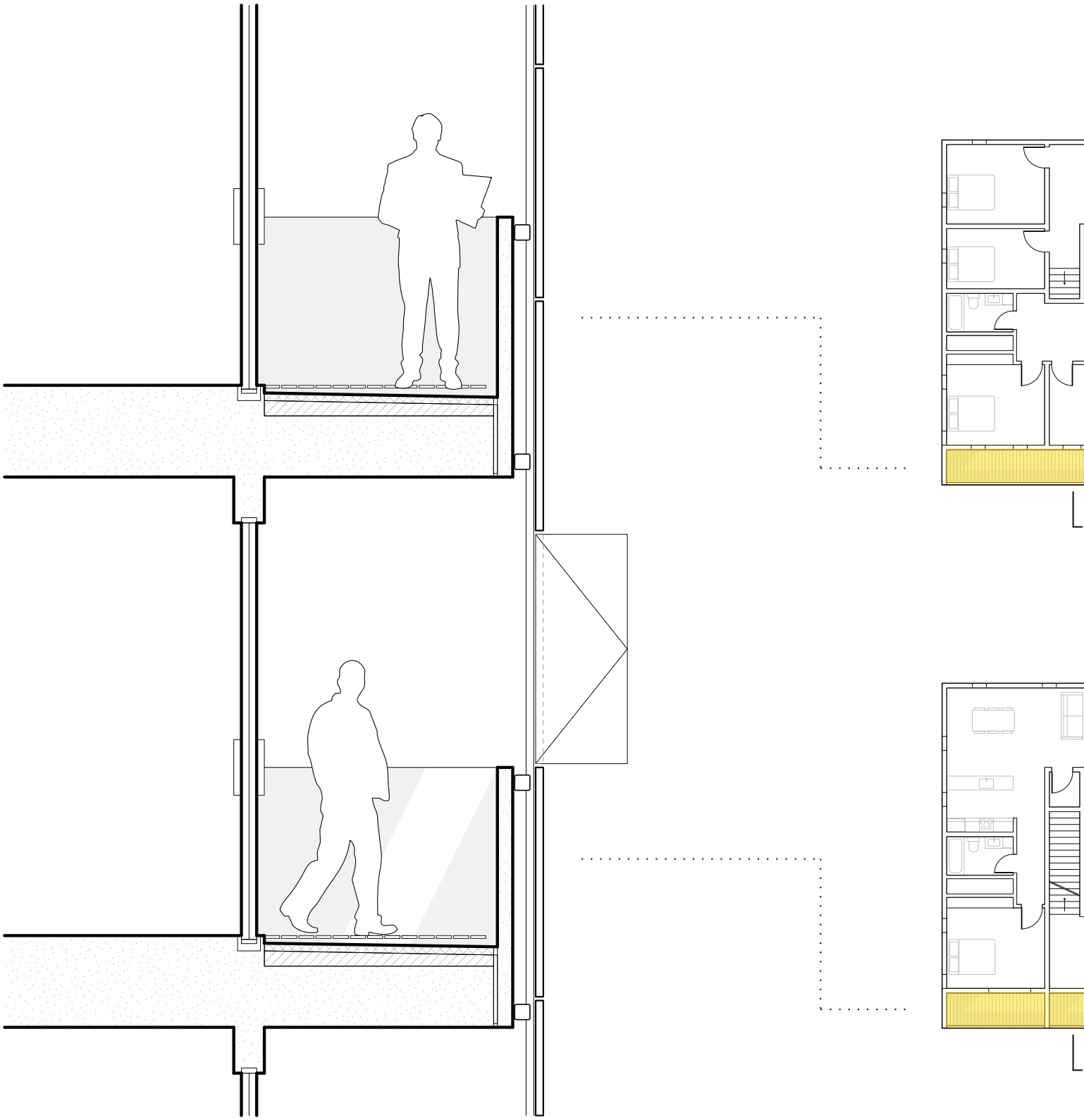
Seen together from street level or from one of the decks, the shared roof deck spaces in the apartment towers serve to index the 57-foot height limit formerly imposed on the site.

5.17 Exterior Apartment Roof Deck Exterior Montage

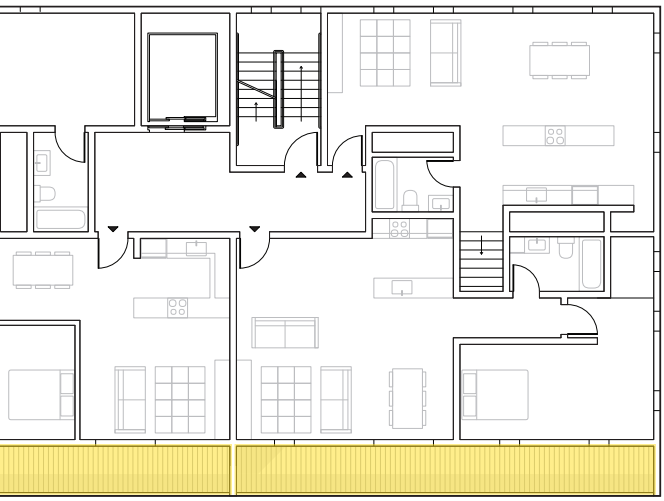
Seen together from street level or from one of the decks, the shared roof deck spaces in the apartment towers serve to index the 57-foot height limit formerly imposed on the site.

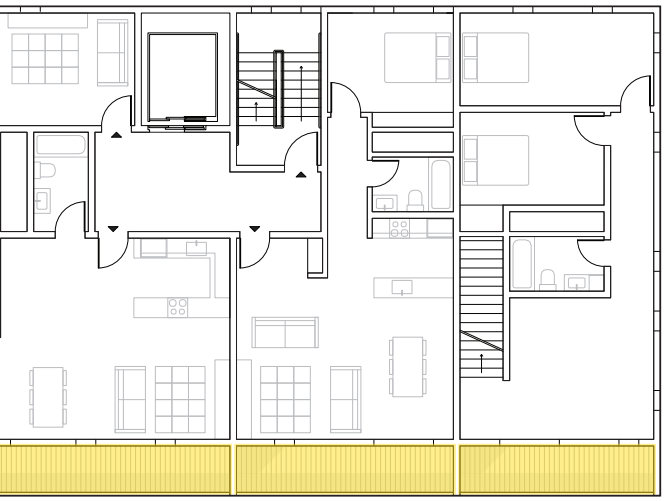
Physical Model Photograph



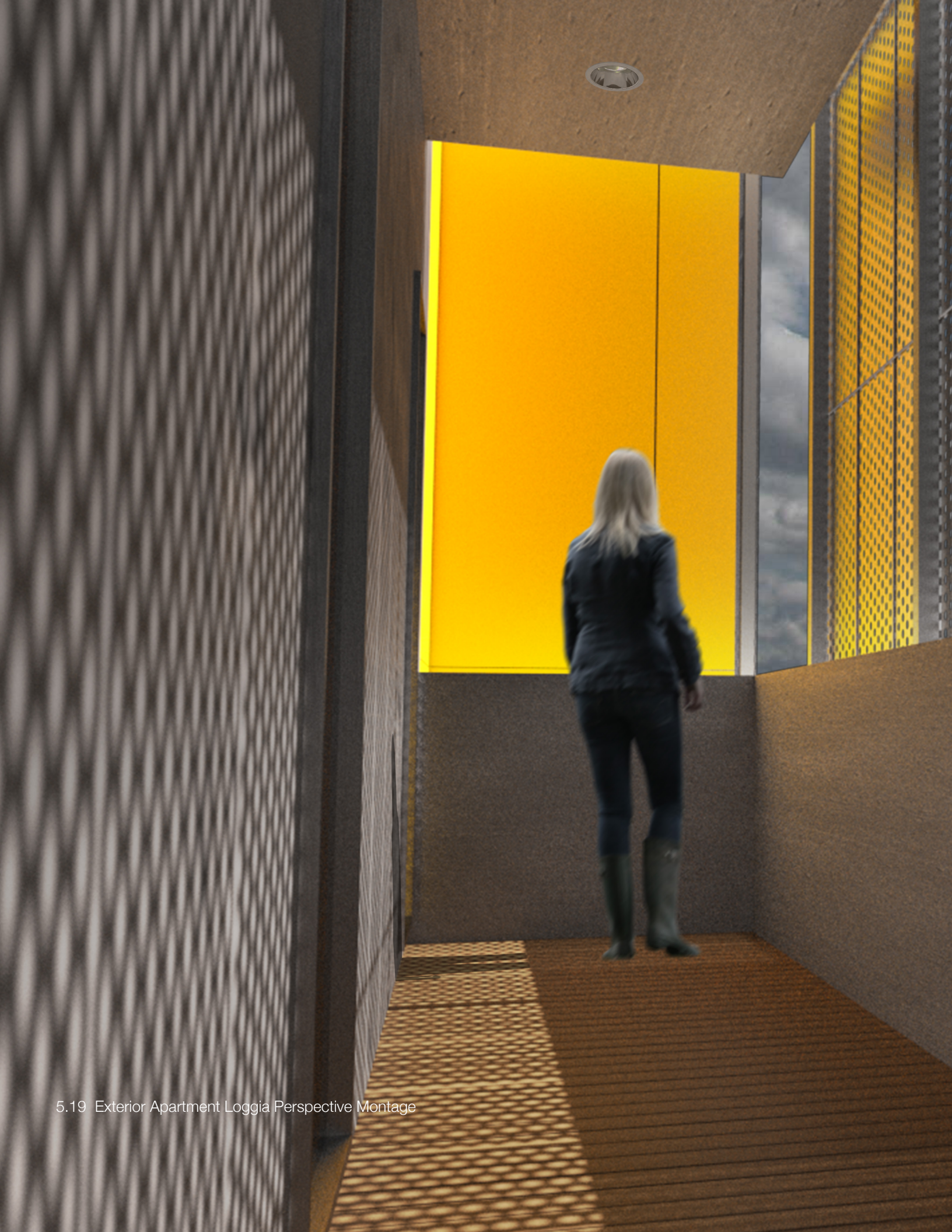


5.18 Apartment Loggia Detail Section

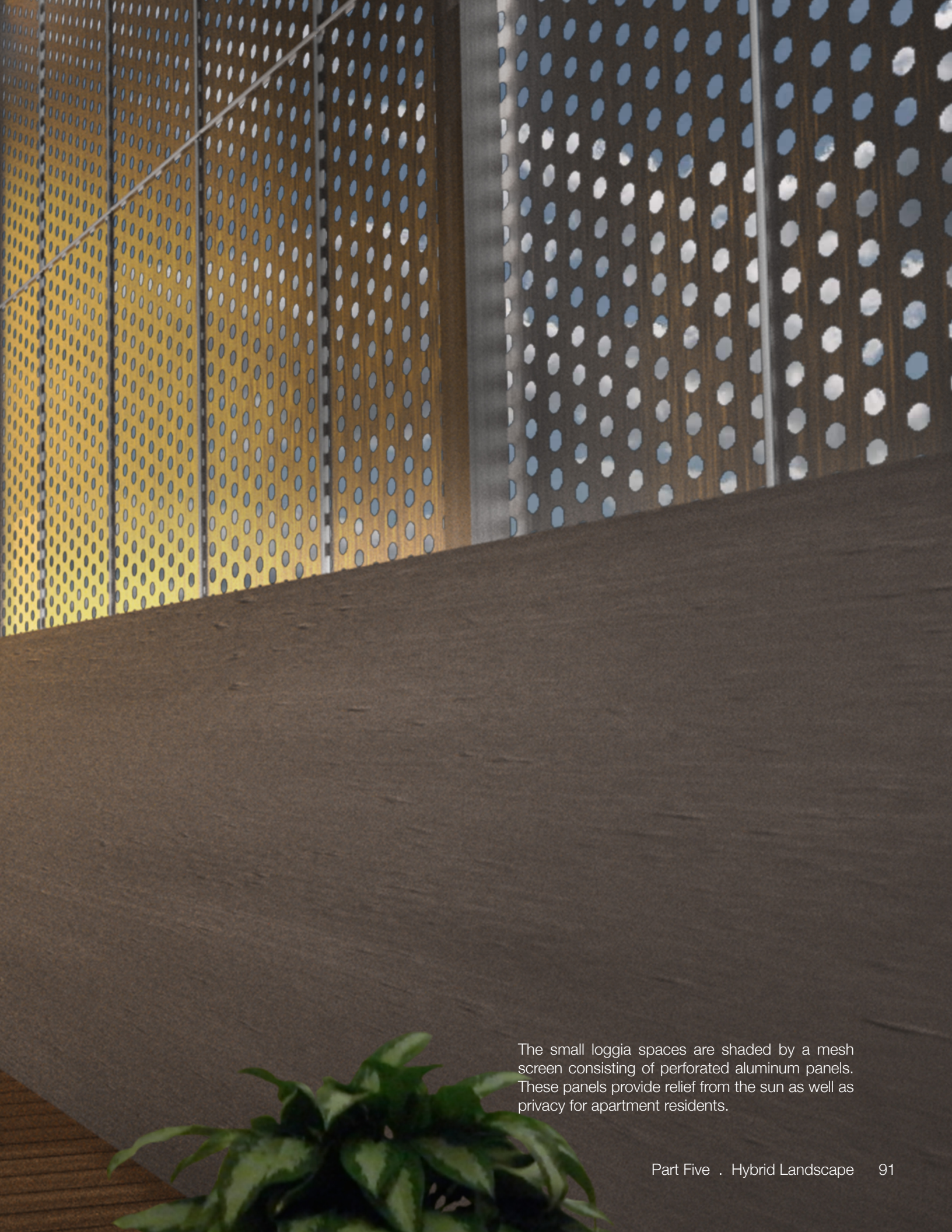




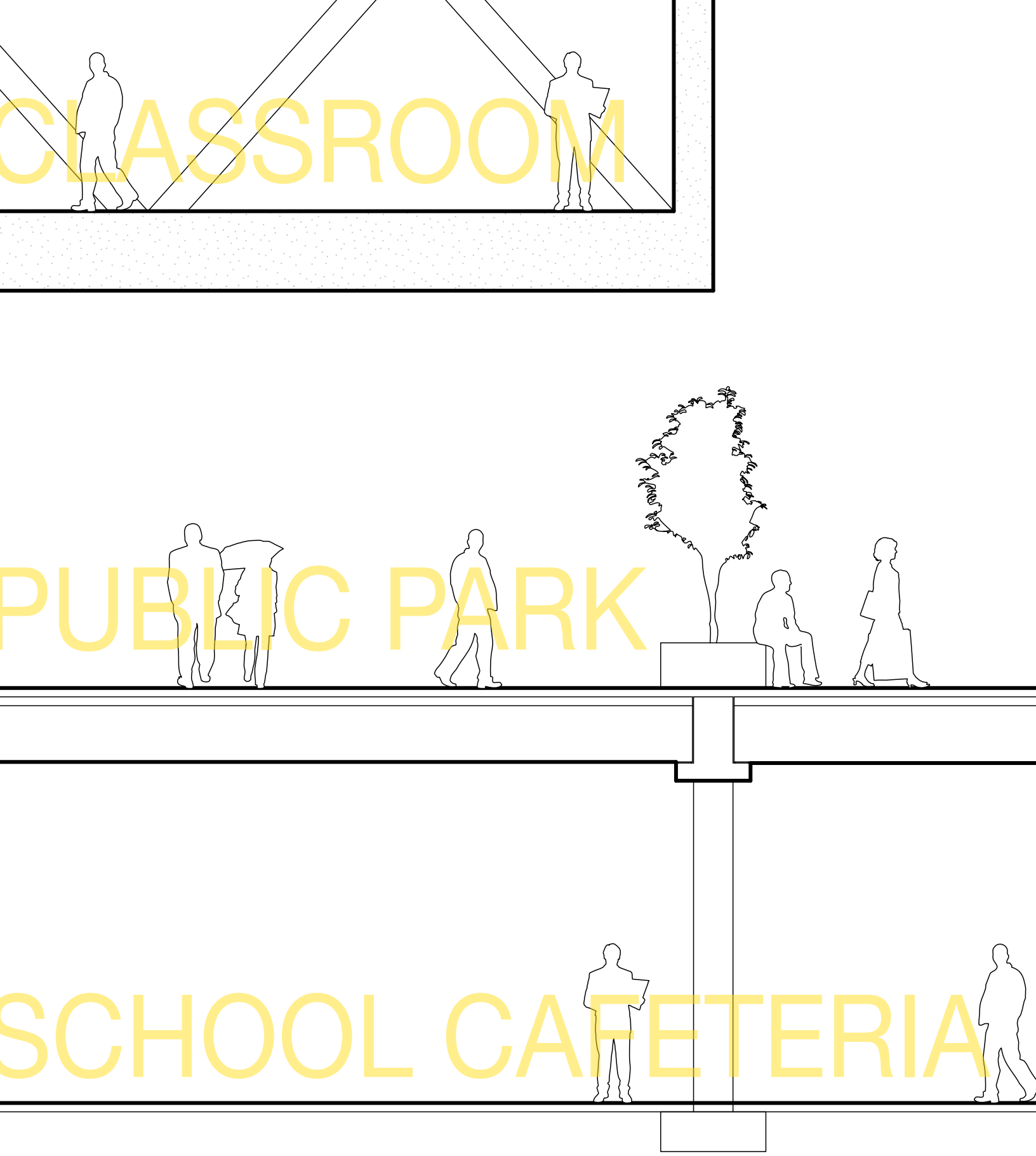
The drawings at left provide a further understanding of the loggia and its construction. The loggias provide thickness to the facade that allows for more effective shading of the building and enhanced privacy for residents. The location and relative depth of the loggias compared to the overall apartment units can be seen in the floor plans above.



5.19 Exterior Apartment Loggia Perspective Montage



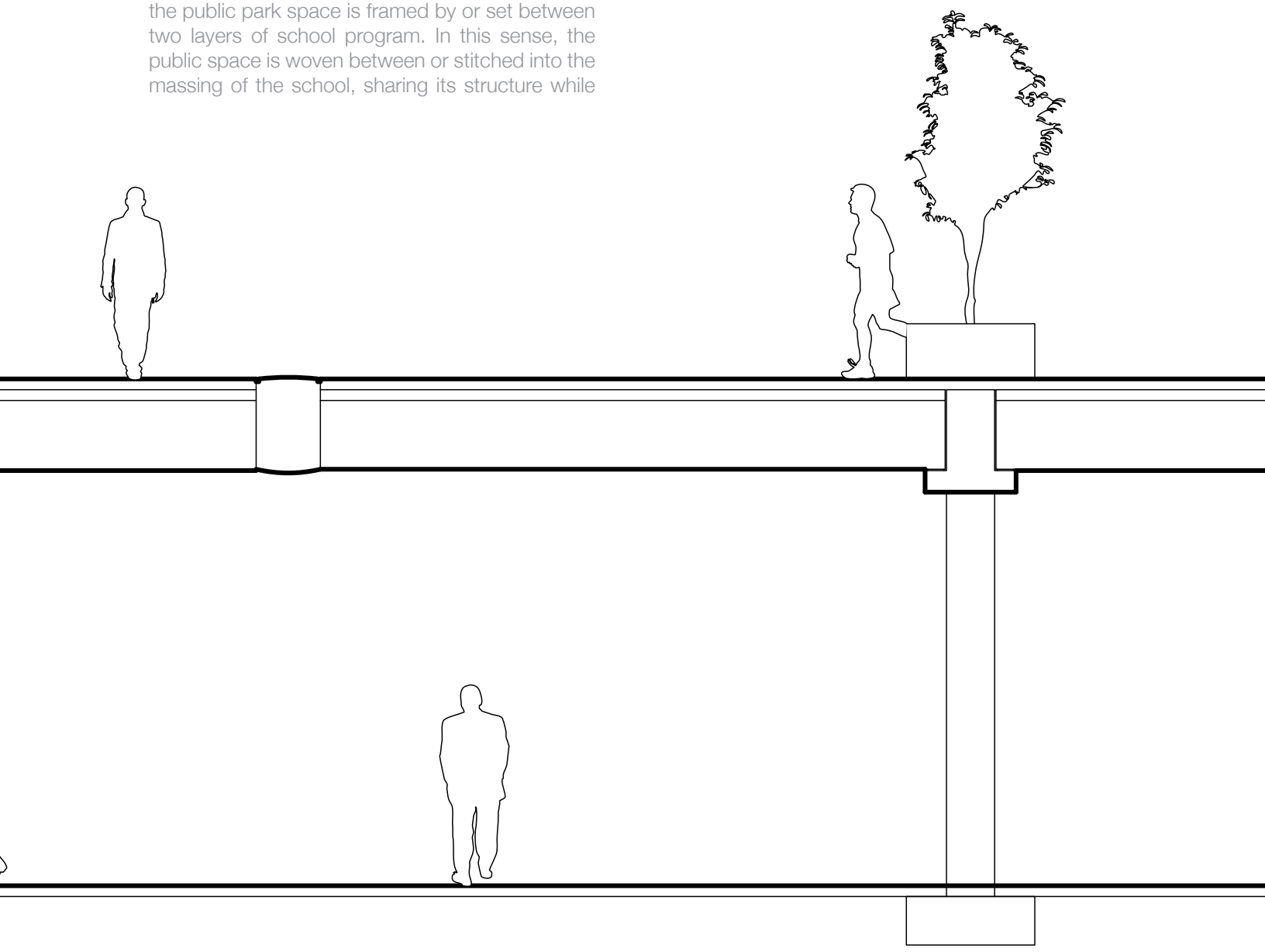
The small loggia spaces are shaded by a mesh screen consisting of perforated aluminum panels. These panels provide relief from the sun as well as privacy for apartment residents.

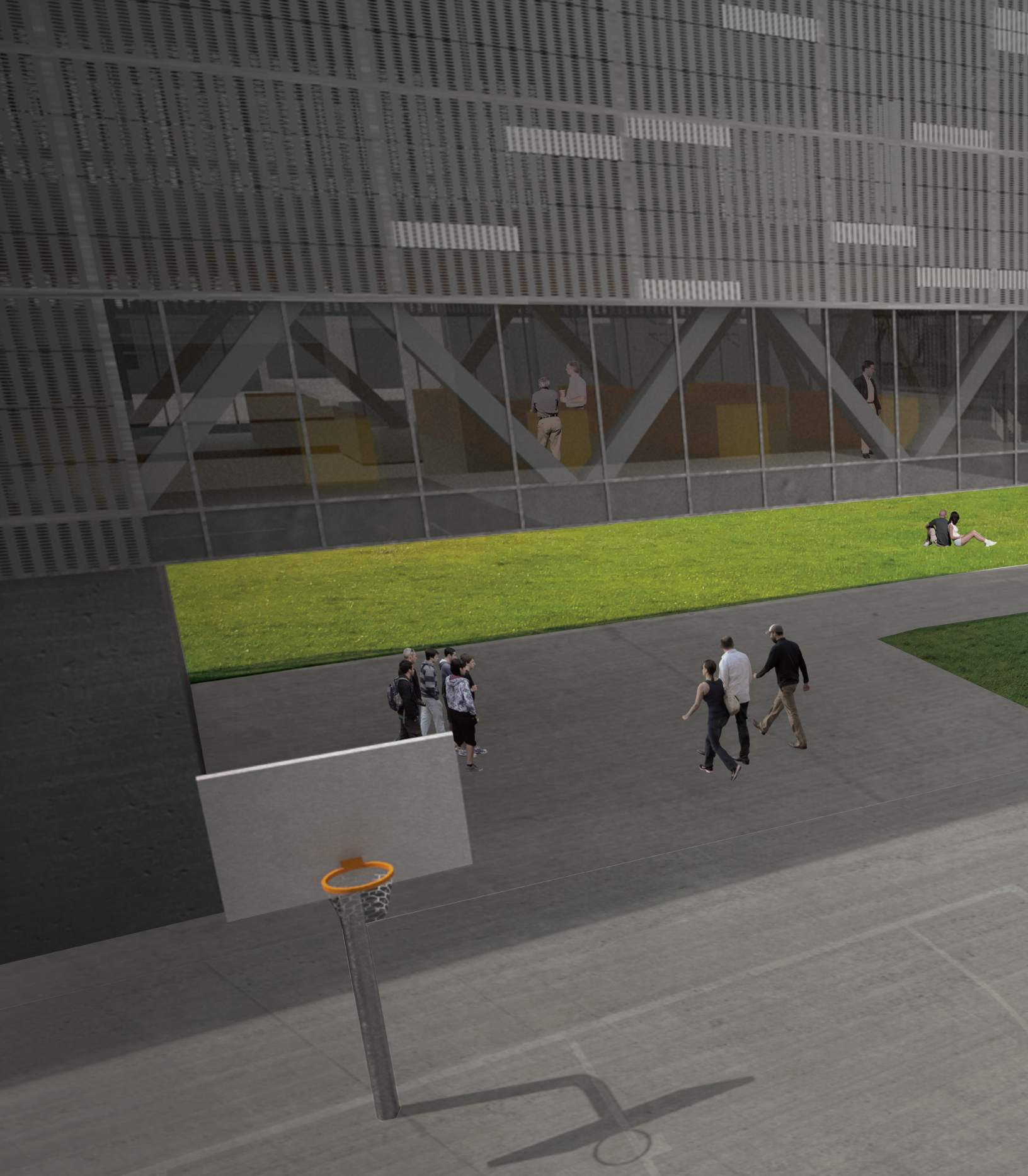


5.20 School Block Section Diagram

Ultimately, the best demonstration of the organizational potential of the “thick” landscape comes from an understanding of the section through the focus program school and the adjacent courtyard space.

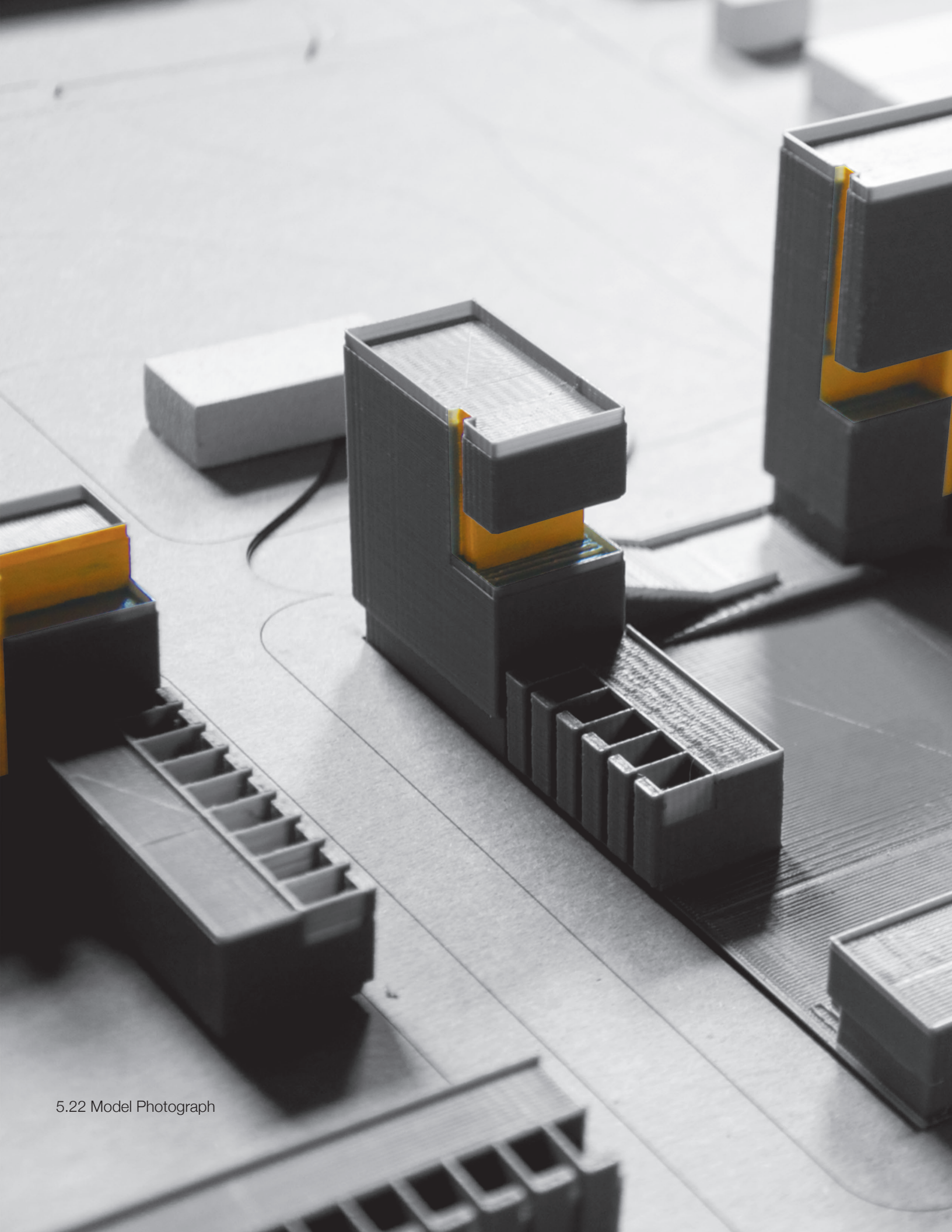
As the section diagram below illustrates, the public courtyard space, which houses a public plaza and multiple sports courts, is supported from below by the school’s cafeteria and other large support spaces. At the same time, however, the school also extends above the public courtyard, with the towers containing classrooms and computer labs being cantilevered over the public park. In section, the public park space is framed by or set between two layers of school program. In this sense, the public space is woven between or stitched into the massing of the school, sharing its structure while remaining separate in terms of accessibility. This intense proximity and maintained separation between these two different spaces - i.e. the public park and the school - highlights the potential benefit of a high-density development is conceived as a constructed landscape. Through such an approach, disparate uses are able to share the same structural or mechanical resources and to have visual access between one another while still remaining entirely separate from each other.





5.21 Exterior School + Courtyard Photo Montage

This image shows the open public space set above the school's cafeteria and below its three towers, which contain the primary classrooms and computer labs for the school.



5.22 Model Photograph

06

Conclusions
Part Six

Ultimately, the project is successful in achieving its goal of creating a network of public open spaces within a dense urban environment. The proposal combines a multitude of uses into a single site, increasing the intensity of use while simultaneously providing enough housing for approximately 40,000 people per square mile. Furthermore, the project is able to demonstrate the feasibility of this type of development while still injecting a vast system of public park space into the existing urban fabric.

However, the project's value goes beyond its ability to achieve its original goal. While the project was designed with a particular goal in mind, the ability to reflect back on the project after having completed it has allowed me to uncover a number of other ways in which the project has expanded beyond its initial boundaries and begun to raise questions outside its initial scope. The pages that follow attempt to outline these questions and provide the project with a valid and significant conclusion.

6.1 Aerial Photograph of Central Park, New York City, NY

The image on the preceding page shows an aerial view of New York City's Central Park. Similar to my own project, Central Park is a constructed landscape, a fabricated park set within the dense urban environment of Manhattan. There is, however, one way in which my own project differs from Central Park, and it is this single different that is most important to understand for anyone seeking to identify the real value or intrigue behind my project.

Unlike Central Park, which establishes a clear boundary between itself and the city, my project attempts to merge the city and the park into a single entity. The open park space in the project is not created through an absence of the city or through a removal of the city (as with Central Park), but is instead created through an intensification of the city. This seeming contradiction in terms is what I find most intriguing about the final proposal. Rather than understanding the urban park as a release or an escpae from the city, the project establishes the park as part of the city - in fact, as a direct *result* of the city. In the end, the project demonstrates that an intensification of urban conditions has the potential to create new types of open space that may not be possible under lower-density conditions.

The project also raises a number of questions that, although interesting and relevant, I have been unable to explore fully. These include questions concerning the role of public space in the city and its impacts on social, economic, and political discourse and actions; the role of the public school in the city and its integration into or separation from the general public; and the impact that large urban park lands might be able to have on mitigating urban stormwater runoff. Each of these areas of inquiry have been introduced through the development of the project, but none have been fully explored. Additional exploration in these areas could not only be valuable in its own right but could also increase the validity and value of my own project as it currently stands.

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