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## Adaptive Housing: Transformation and Growth in the Urban Environment

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# ADAPTIVE HOUSING

## Transformation and Growth in the Urban Environment

**Kevin J. Mowatt**

Master of Architecture

School of Architecture, Art and Historic Preservation

Roger Williams University

Fall 2009



# ADAPTIVE HOUSING

## Transformation and Growth in the Urban Environment

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Date







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Adapt or perish,  
now as ever,  
is nature's inexorable imperative.

H. G. Wells

# ABSTRACT

The proposal for an adaptive housing project and its chosen location arose from two obstacles that all modern cities, and the world as a whole, face. The urban environment is revered for its cultural amalgam of people and wide range of demographics; however with this density and diversity comes a shortage of one type or another of commodious housing. Additionally and consequentially, the city must expand and build new buildings, leaving older, unsuitable building vacant. An adaptive architecture would allow families to grow and demographics to shift within the established community, all the while reinvigorating that second obstacle the city and the world is facing today - the disconnect from our natural world. Adaptable housing that also displays its adaptive forces in its form and texture, as responses to environmental conditions, would raise public awareness of the forgotten lessons that nature has to teach our modern society.



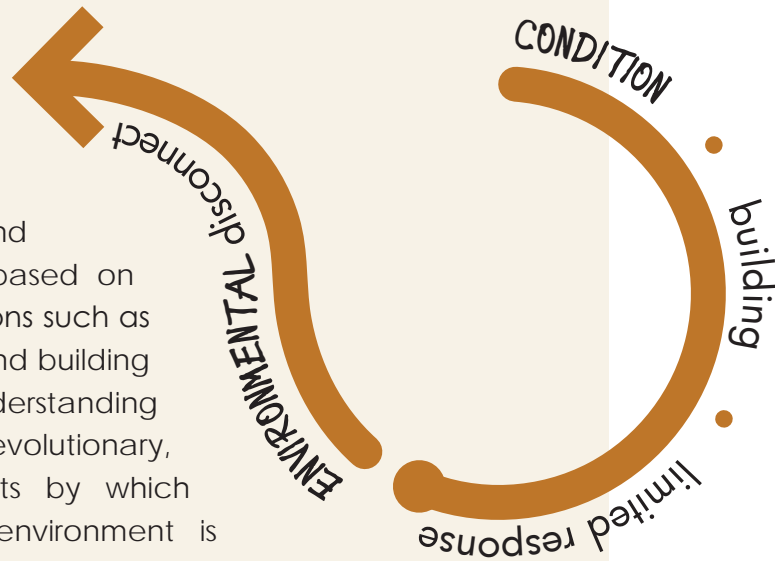


# PROBLEM STATEMENT

Our society calls for an architecture that is derived from **TIME-BASED ALGORITHMS AND PLANNING STRATEGIES**. The question no longer lies in proximity of uses and program elements but in WHEN a space is intended to be used. This relates to the time of day and the people who are using the space at that given moment in time. What results is a user-driven space that is expressive both of its use and the external conditions that its context applies on it. Architecture is transformative; it transforms the site, changing its relation to its given specific moments in time (i.e., weather conditions and cultural events), and must be actively transformed throughout the course of time to adapt to the user's changing expectations and needs.

A building that can adapt and change to become useful for not only today's society but for generations to come is one which references biological and evolutionary processes. In essence, the need for a transformative architecture that can sustain an active dialogue with its inhabitants results in a **REUNIFICATION OF HUMANITY AND OUR TIME-SENSITIVE, RESPONSIVE NATURAL HABITAT**. In the search for basic human necessities, architecture became the creative process by which humanity could provide itself with a sense of comfort and security; however, what have resulted in the growth of modern urban centers are static objects that are decontextualized, above the laws

of nature which should continue to influence them as they had at the very beginning of architectural creation. What it means to be human—to be a **part of nature's continuous flux**—has been lost to the technology of our modern times. The crisis that the planet is experiencing, whether humanity is to blame for global warming and ecosystem imbalance or that we are adding to an already naturally occurring cycle, proves that despite their benefits technology and industry have crippled our relationship with our ultimate, natural habitat. Through the course of time, humanity has increasingly disregarded the very change, variation and adaptive forces that both make us human and keep the Earth in harmony with its climates, ecosystems and resources. An architecture based on temporal, fluctuating conditions such as night and day, the seasons and building function would restore our understanding of the natural continuum (the evolutionary, harmonizing series of events by which the state of the natural environment is determined, as its resources are recycled and its organisms and ecosystems are **TRANSFORMED**). Such a building would actively engage its immediate surroundings, producing culturally rich environments that are appropriate now and into the future. Visitors and inhabitants would be able



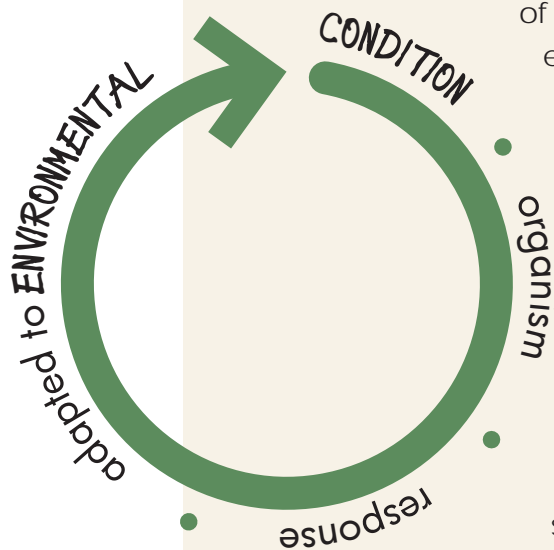
## Urban DISCORD

to witness physical change, an animation of the built environment that is in striking contrast to the existing urban landscape. Thus, can architecture play a humbling role in reuniting us with our universal context?

I commend today's major cities, such as Portland and Boston, for their commitment to public health, recreation and community interaction through the integration of nature, in the form of park systems and greenways, throughout their urban cores. This kind

of development is critical for the continued evolution of the architecture that currently defines, but desires to entwine itself with, these expanses of urban parkland. Mixed-use housing that promotes pedestrian use and resident interaction, adjacent to or placed sensitively within a city's park system is required for an architecture based in temporal conditions to enrich, enliven and foster cultural development.

Communities that are placed within a direct symbiotic relationship with urban green spaces will make such a space their own; if user groups grow and change over time as families increase in size or socio-economic groups come and go, then the architecture with which they interact must be able to adapt. Great care must be taken to prevent extensive urban "green" spaces from becoming as static as the buildings



HARMONY  
in Nature

around them. They are tied to their surrounding built landscape, changing in character and dynamic only as much as the buildings that should in turn actively and perceptively define their edges. Architecture thus must be respond to and be informed by the life of the city—the people that circulate through its interstitial spaces—and adapt to varying degrees of desired porosity or solidity. These degrees of adaptable connection with a building's context are what keep a building in harmony with that context. There must exist an uninhibited flow between the life of the city and the community that develops within a building. Architecture desires the ability to respond to, nurture and participate in the kaleidoscopic array of experiences found in the city—in its streets and public parks.

If adaptation is the response to conditions that require natural evolution for organisms to survive, then it is therefore the algorithm by which buildings should abide by to become entwined in the natural environment.

Through several forms of technical innovation, all of which are adaptive responses to external and internal conditions, architecture must become kinetic, physically moving into place certain components that are arranged to better suit the specific conditions acting on that component, unit or overall building form and internal environment.

Architecture, though it must act like an organism to be an object unified with its context, cannot generate new materials but existing components can be rearranged to better suit conditions of light, temperature, air quality, weather, and other conditions imposed by inhabitants. It is in the act of adapting, in physically changing the organization of given components that architecture becomes a growing, living entity that can sustain its own future.

# PROJECT STATEMENT

At the outset, my proposal is based on the idea that the built form can adapt and transform in response to both the user's desire for individuality, privacy and the general need for change, as well as to certain natural phenomenon. The link between practical architectural adaptability and nature lies in the world's major metropolises, where new greenscape projects have the potential to entice a wider range of users, from families to single entry-level workers. Well-designed, affordable housing that can be engaged—initially universal or modular and ultimately adaptable—would suit a community's needs, especially when combined with much needed community amenities. The North End in Boston is one such community that is focused on the needs of its residents. Attracting ample visitors through its close proximity to Faneuil Hall, its historical significance as one of the first neighborhoods of Boston and its famous Italian cuisine, the North End desires above all else more housing for its restaurant entrepreneurs, shop owners and pasticceri.

I propose, as part of an urban design strategy, a mixed-use housing project that is entwined with the Rose Kennedy Greenway in Boston. Situated on the Greenway at Parcel 11B, which is currently a parking lot on the same block as the North End Rehabilitation and Nursing Center, the necessity for a new model of urban housing, one of

adaptation and transformation, becomes linked to the important role that nature must play in the city. I intend for the adaptive features, inside and out, of my proposal to integrate with the Greenway and to enhance its presence as a natural force that has been allowed to emerge through the cracks of the urban environment.

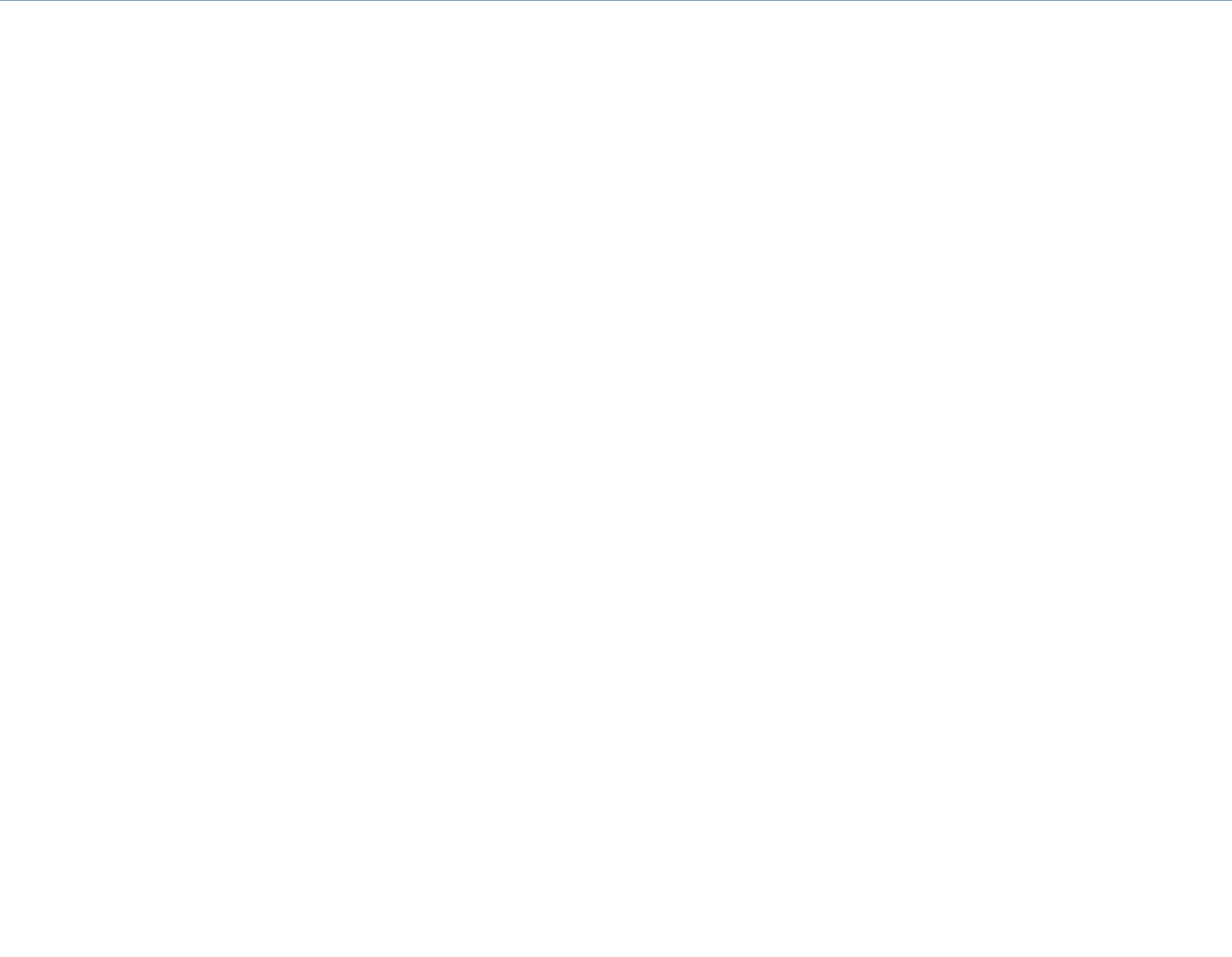
This Adaptable Housing project is both a pragmatic and didactic model for urban housing that is in tune with natural processes, implying subsequent application in other neighborhoods and communities throughout Boston and in other cities, but it also strives to be a specific solution for the residents' needs of the North End. The high concentration of public attention centered on the chosen site location, in a famously historical neighborhood along the new Greenway, would emphasize the significance of this housing typology in the city.

In regards to housing, the modularity and adaptability of the units would allow for internal flexibility of spatial relationships, given family structures that may demand such flexibility or artisans who wish to not be limited by their spatial constraints. Easily transformable, the housing units would be designed for long term residence, as needed by the North End neighborhood. This notion produces modules with the potential to become porous -- public in some locations and private where needed-- actively adapting to temporal conditions, such as night and day and family occasions. Community is fostered, lines between public and private are blurred and the green spaces of the city are allowed to flow into and become a part of the development; architecture as landscape is introduced. I intend

for the housing to express the continuous change that must be embraced in the city, developing the site to maximum capacity but presenting the design as a process that begins with several units and has the ability to grow over time. It asks the question: what role does pre-fabricated, modular housing have in the city, which is characteristically diverse in many different ways? How can it in fact instill notions of nature, which are both necessary for our own peace of mind and the future of the contextualized human condition?

It is especially important that the proposal for Adaptable Housing in the North End feature certain community amenities, suggested by neighborhood activist groups such as the North End/Waterfront Residents' Association. Given the North End's high saturation of visitors, residents need and would welcome several cultural facilities that can be thought of as strictly their own. Community meeting and function space and a small performing arts space or community theater are two programmatic needs of the neighborhood. Together with outdoor space that blends with and mends the gap in the greenway caused by ramp parcel 12 and retail space on key street frontages, the new North End Housing and Community Theater Complex would preserve the role of the greenway and sustain the growth and well-being of North End residents.





# PROGRAM OUTLINE

## Program Narrative

With the intention of giving back to the North End community, the upper levels of this Adaptable Housing community project are entirely devoted to residents. Bridges link areas of the apartment units together and green spaces are disbursed throughout the upper levels, offering excellent views of the city as well as amiable an overall healthy and robust environment. Here, nature is pulled up into and on top of the built landscape. The texture of the building evolves. As families grow, the building grows. Units are attached to the outside of existing apartments, producing a living architecture similar to the growth of a coral reef perhaps.

The ground floor, while mostly open to the public, provides residents and others from the greater neighborhood with a community theater, temporary exhibit space and desperately needed meeting space for North End activists. A dramatic link between the upper levels and the ground floor, where public-resident convergence occurs, is felt as residents and the public alike begin to move through the building at the ground level, underneath the textured array of growing apartment units with green patios and balconies, on their way along an inviting ascension into the North End.

Most importantly, the residential complex is a home, in a city

where unit sizes limit permanent settlement. Community is fostered, the richness of which envelopes the functionality of the temporary spaces and performance space below, by way of the sustainability of the original adaptable design intentions. Families are allowed to grow without having to move away and disrupting or leaving behind the congeniality of their community.

## USER GROUPS:

### General Public

Residents of nearby neighborhoods, including the North End, visiting friends and family who live in the on site housing

Performers and Exhibitors

Shoppers at the few retail stores along the Greenway and Fulton St.

### Private Residents\*\*

Designed for change, the **residents are lessees rather than owners** and benefit from the affordability and adaptable possibilities of space that would typically be enjoyed by owners.

### Community Activists

Attend meetings with residents

**\*\*SEE APPENDIX** for information provided by NEWRA (North End/ Waterfront Residents' Association) in response to my inquiry regarding cultural amenities and user groups that would be most appropriate for the site, located at the important junction between the North End and the Greenway.

## PROGRAM OUTLINE

SPACE	SQUARE FEET
<b>Modular Units (typical program elements)</b>	
Bedrooms	195 ea.
Living Space with Dining Area	435
Kitchen	80
Bath	40
Service	
Closets	18 ea.
W/D	18
<b>Modular Units (optional program elements)</b>	
<b>User-Defined Space</b>	150 ea.
Studio Space	
Additional Bedrooms	
Work/Office Space	
Entertaining Space	
<b>Total Net SF for One Bedroom Unit with Optional Multi-Purpose Space</b>	936 SF
Gross SF: Structure and Circulation Multiplier 1.15	<b>1,076 SF</b>

At 39,994 SF, the site at Parcel 11B could accommodate **70 units** on 3 upper levels (before taking into account circulation and upper level **communal/resting/lounge spaces**). This is also discounting the possibility of adding more units above the maximum building height of 55' as well as the portion of the building that may extend over the Callahan Tunnel emergency on-ramp (see page 33 and 34).

The **GROUND FLOOR** is left open for the following programs, but not limited to:

SPACE	SQUARE FEET
<b>Ground Program (permeable, public, interactive)</b>	
<b>Community Space</b>	
Meeting Spaces (2)	4,000
Restrooms	400
<b>Community Theater</b>	17,500
Auditorium	
Stage	
Greenroom	
Storage	
<b>Resident Services</b>	
Lobby	600
Exterior Communal Space	800
Fitness Center	800
Bike Storage	400
<b>Temporary Space</b> (Exhibit, Performance, Community gathering, etc.)	2,000
<b>Total Net SF for Ground Floor</b>	26,500 SF
Gross SF w/ Structure Multiplier 1.1	<b>29,150 SF</b>
<b>Outdoor Space</b> (25% of Site)	<b>10,844 SF</b>

# ARCHITECTURAL THEMES

**Structural System as a Basis for Design:** Structure is considered as an integral part of the design, beginning its development at the outset of the process. Thus, structure and form become one and the same, emphasizing the potential and ease of future growth and expansion.

**Porosity:** Open relationship between the building and its site. Rejection of the wall as an immobile, defining and restrictive element of the city's boundaries.

**Kit of Parts Design:** Utilize a set of components that are allowed to interact in various ways to come together and create unique spaces for unique situations.

**Architecture as Landscape:** what comes with a new typology is a new way that buildings, particularly in the urban environment, relate to their context. Walls, facades, the envelope are obliterated to create an urban field, a landscape, with which pedestrians and all other modes of transportation can mingle. There is no building but a seamless succession of spatial constructs that unify, transform, and characterize a region.

**Unfolding of Space:** "I was there, I am here, and that is where I am going." Unfolding, however, implies one does not know where one is going; the organization is clear but certain elements are left to attract a level of sensory intrigue. This is what draws one through the spatial field; let's not call it a building with four walls.

**Nature as a Model:** Integration of Natural Processes should be an integral part to any new building. We inherently understand and have specific emotions towards that which is natural. Not only does sustainability unite us with our common heritage but it improves our quality of life. True to my theoretical intentions of time-based planning strategies, nature is the epitome of a transformative system that is allowed to adapt to a given set of conditions at a moment in time (seasons, time of day, etc.)



# SITE: ROSE KENNEDY GREENWAY

When Boston's Big Dig project plunged previously elevated roadways underground, the city found itself rich in prime urban land. Community and political leaders seized the opportunity to enhance Boston's city life by providing additional parks and gardens to connect some of its oldest, most diverse and vibrant neighborhoods. One of the most important public projects in Boston's history, the Greenway challenged designers to balance natural beauty and landscaped grace with the vitality and dynamism of a 21st Century city.

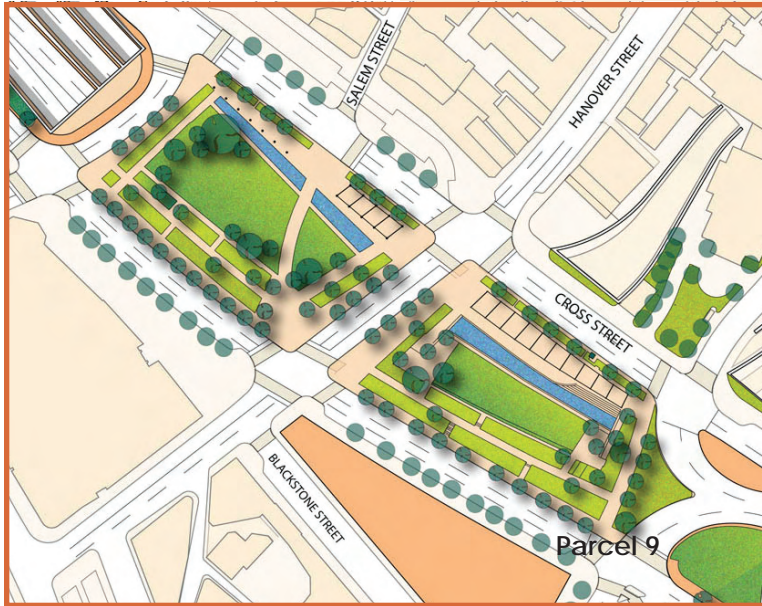
The Rose Fitzgerald Kennedy Greenway encompasses gardens, plazas, and tree-lined promenades. Offering beautiful places for relaxation within the rhythm of the urban environment, the Greenway is a key feature of the modern reinvention of Boston, Boston Harbor, the South Boston Waterfront, and the Harbor Islands.

The Greenway is a series of four parks within a curvilinear corridor of land extending approximately one mile through downtown Boston. Intersecting streets and parallel tree-lined boulevards with wide sidewalks frame parks and plazas. The North End, Wharf District, Dewey Square and Chinatown Parks opened in 2007 and 2008. Boston and thousands of visitors came together with an Inaugural Celebration on October 4, 2008.<sup>1</sup>

1 [rosekennedygreenway.org](http://rosekennedygreenway.org)

"Rose Kennedy Greenway"  
by Crash575 on Flickr.com





## Parcel 9

**Area:** 29,341 square feet (0.67 acres)

**Master plan calls for:** Building, visitor facilities

**Zoning:** Residential or retail uses are allowed.

The Site has been noted as being an ideal location for housing. Zoning restricts any building placed on the site to 55 feet in height.<sup>2</sup>

## Parcel 11B

**Area:** 39,994 square feet (0.92 acres)

**Master plan calls for:** Low-scale buildings

**Zoning:** Residential uses allowed.

**Notes:** Planners say low-scale buildings on this parcel will help provide a visual edge and an active street life to the adjacent parks. In addition, buildings will help screen the open ramp areas of Parcel 12.<sup>3</sup>

Current parking lot would be eliminated but there is the **potential for a subsurface parking structure** on this parcel.

<sup>2</sup> [boston.com/beyond\\_bigdig/](http://boston.com/beyond_bigdig/)

<sup>3</sup> [boston.com/beyond\\_bigdig/](http://boston.com/beyond_bigdig/)

## Parcels 1 and 2

Master plan calls for buildings which “reflect the historic patterns and contemporary city needs, with multiple pedestrian routes along city streets from North Station, FleetCenter, the Charles River parks and Portal Park into the new places of the Artery Corridor.”<sup>1</sup>

Development of this parcel is intended to “knit together” the historic neighborhoods which have been divided by the central artery.

## Parcel 6

Area: 38,542 square feet (0.88 acres)

Master plan calls for a mixed-use building of up to five stories designed to be compatible with the neighborhood.

Based on Zoning: Recreation or community uses are allowed.

This ramp parcel adjacent to the MBTA’s Haymarket Station is highly prized because the design of the underground Central Artery includes



<sup>1</sup> [boston.com/beyond\\_bigdig](http://boston.com/beyond_bigdig)



Above: **Proposal by Cambridge Seven for the Boston Museum**  
On Parcel 9  
(bostonmuseum.org)

foundations to support a large structure here. One organization in particular, The Boston Museum Project (see update below), has stepped forward to propose an \$80 million-plus Boston History Museum for the site, which the Central Artery Corridor Master Plan calls “the northern anchor to the new North End park.” The Boston Museum Project is propelled by \$1.5 million in planning funds from 54 groups and prominent individuals. It has

a strong partner in the National Park Service, which tentatively plans to lease space in a proposed five-story, 200,000-square-foot structure (about half the size of the Museum of Science).

Article 49 of the city’s zoning code refers to Parcel 6 as a “critical point of pedestrian connection and transition between the North End, Government Center, and the Bulfinch Triangle.” Among other things, it calls for preserving the views to the Custom House Tower from New Haverhill Street in the Bulfinch Triangle.<sup>2</sup>

**Update:** The Boston Museum Project has proposed Parcel 9 as the new site for the Boston Museum, designed by Cambridge Seven Architects, linked to the Greenway via a pedestrian bridge which will cross Ramp Parcel 12 (see right).

<sup>2</sup> [boston.com/beyond\\_bigdig](http://boston.com/beyond_bigdig)



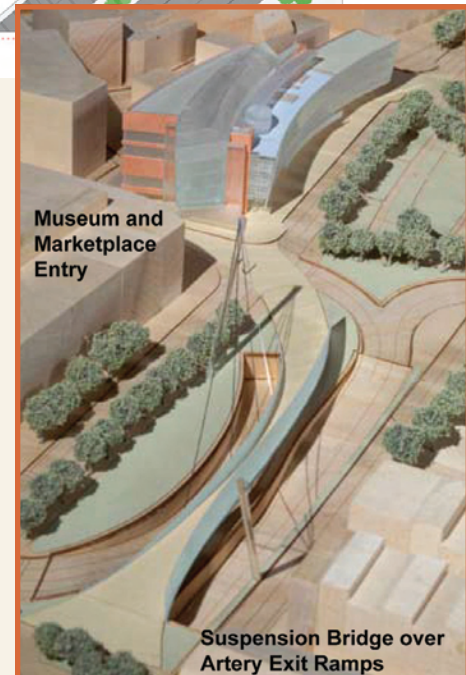
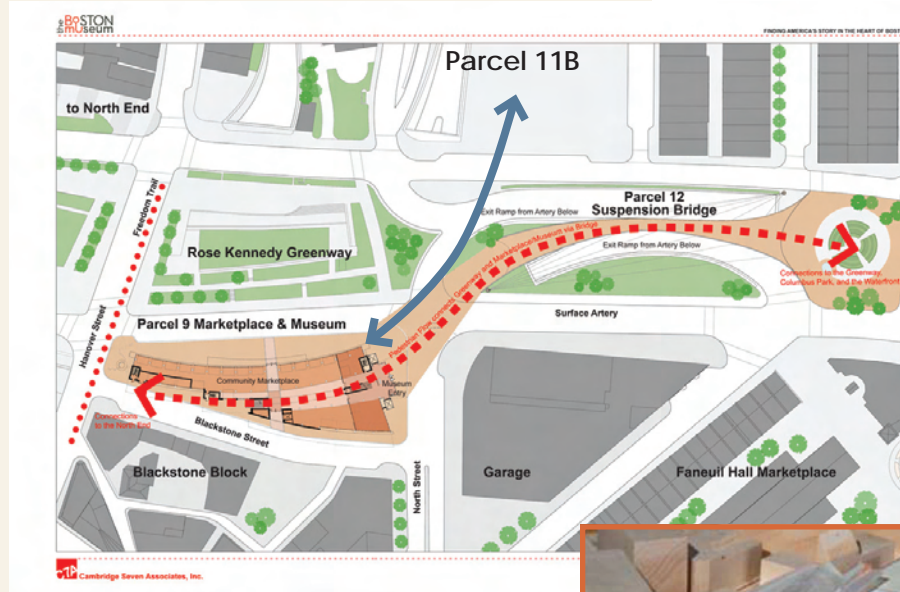
## Parcel 12

The area around and above the ramps that provide access to the underground expressway could possibly serve as an extension of the development on Parcel 11B or 9. The master plan for the Greenway calls for a **mixed-use building** that would act as an important link between downtown and the North End.

The Artery Business Committee calls for residential, community center, museum/gallery, and non-profit office programs. A community group, the North End Central Artery Advisory Committee conducted a study that rejects building on the site other than park space that covers the ramps.

Varitey of uses allowed based on zoning: residential, community, cultural, retail, and park space.

To preserve the continuity of the Greenway, the BRA is not recommending or allowing building development on Parcel 12.





Above and Right:  
Renderings of the  
**Armenian Heritage  
Park.**  
[armenianheritage  
park.net](http://armenianheritagepark.net)

## Parcel 13

Sponsored by the Armenian Heritage Foundation, Parcel 13 at the southern end of Parcel 12 has been designed as the Armenian Heritage Park. It will be completed in 2010. It's features include:

**An Abstract Sculpture:** A twelve-sided split dodecahedron, sits atop a reflecting pool its waters washing over the sides. Annually, the Sculpture will be reconfigured to commemorate the immigrant experience and to celebrate all who come to these shores and reinvent themselves in new and different ways. The sculpture is dedicated to lives lost during the Armenian Genocide of 1915 and all genocides that followed.<sup>3</sup>

\*\* The concept of transformation with the progression of time and its evolving contextual conditions is ironically hinting at the intentions of my proposal for an Adaptable Housing scheme for North End residents.

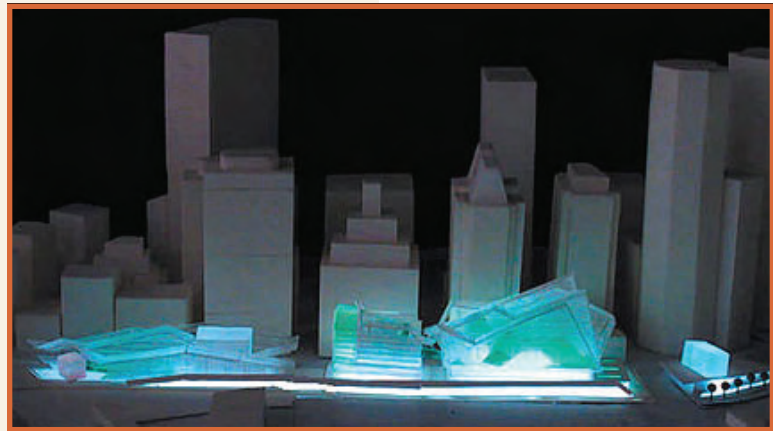
**A Labyrinth:** The circular winding path in grass and inlaid stone, celebrates life's journey. A single jet of water at its center represents hope and rebirth.<sup>4</sup>

<sup>3</sup> "Armenian Heritage Park," Armenian Heritage Foundation, <http://armenianheritagepark.net>.

<sup>4</sup> Ibid.

## Parcel 19

The Massachusetts Horticultural Society has proposed a “Garden Under Glass” for Parcel 19, as well as additional landscaping and horticultural plans for **Parcels 21 and 22**.



Above: Koetter Kim & Associates Proposal for the “Garden Under Glass” Rendering and Conceptual Model for Parcels 19, 21 and 22





Parcel 17 by the  
Boston Harbor Hotel  
Amar Raavi, Flickr.  
com





U.S.  
COAST  
GUARD

COPP'S  
HILL  
BURYING  
GROUND

OLD  
NORTH  
CHURCH

PAOLI  
REVERE  
MALL

FUTURE HOME OF  
THE YMCA

NORTH END PARKS

FUTURE HOME OF  
THE BOSTON MUSEUM

Parcel 11B

Parcel 9

HAYMARKET  
STATION

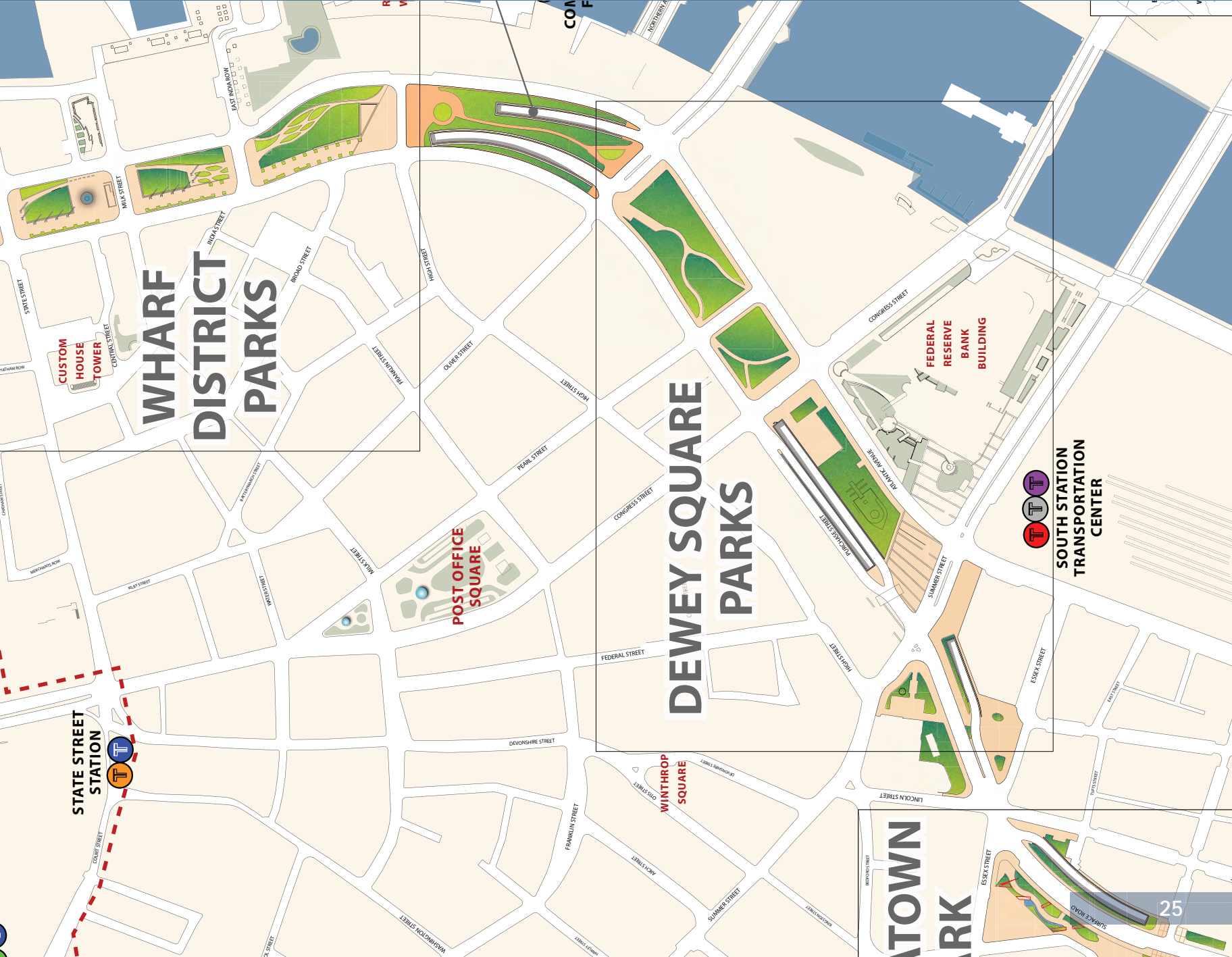
C. COLUMBUS PARK

FANEUIL HALL  
QUINCY MARKET

BOSTON  
CITY HALL

AQUARIUM  
STATION





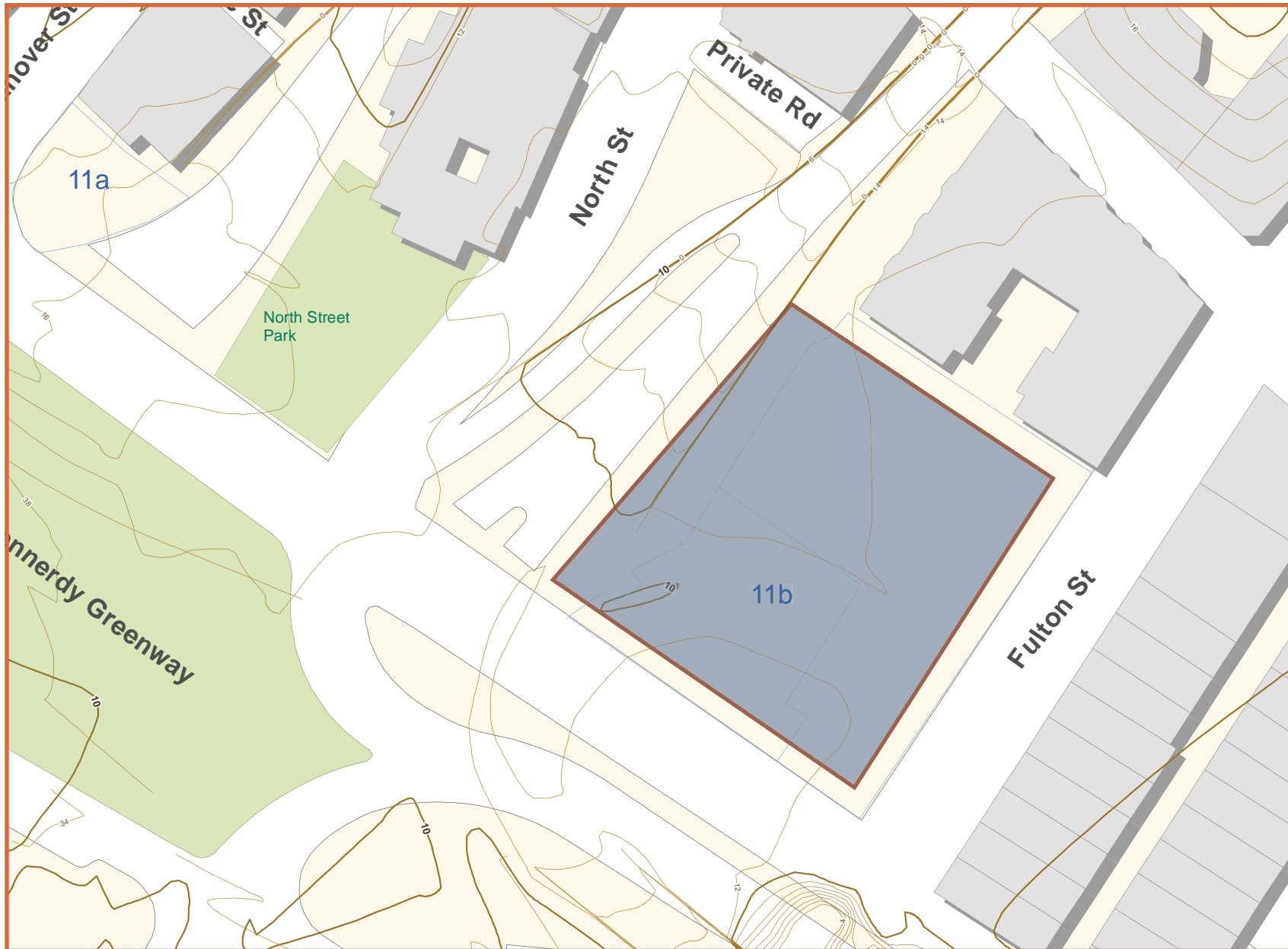
# WHARF DISTRICT PARKS

# DEWEY SQUARE PARKS

**SOUTH STATION  
TRANSPORTATION  
CENTER**

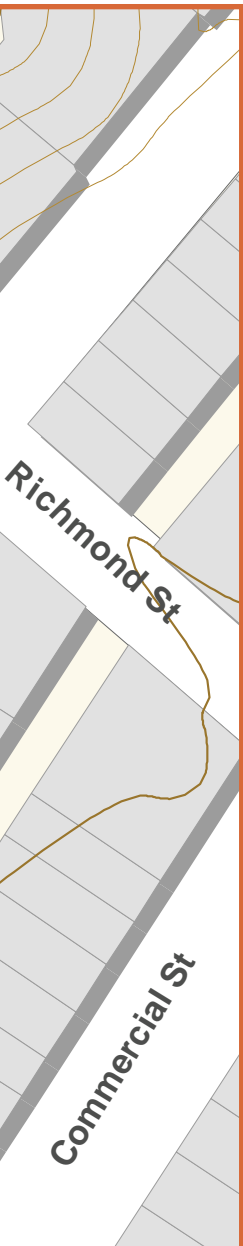
**STATE STREET  
STATION**

**TOWN  
PARK**



Provided by Carolyn Stremple Bennett, Manager of the Office of Digital Cartography and GIS, BRA





**Topographical Data** 3'-0" Contours in **Blue**, Primary Contours (not highlighted) at 15'-0"  
 MassGIS, [www.mass.gov/mgis/mapping.htm](http://www.mass.gov/mgis/mapping.htm)



## History of the North End and the Neighborhood's Future

As Presented by the Mass Turnpike Authority, RFP for Parcel 9, pages 31-32



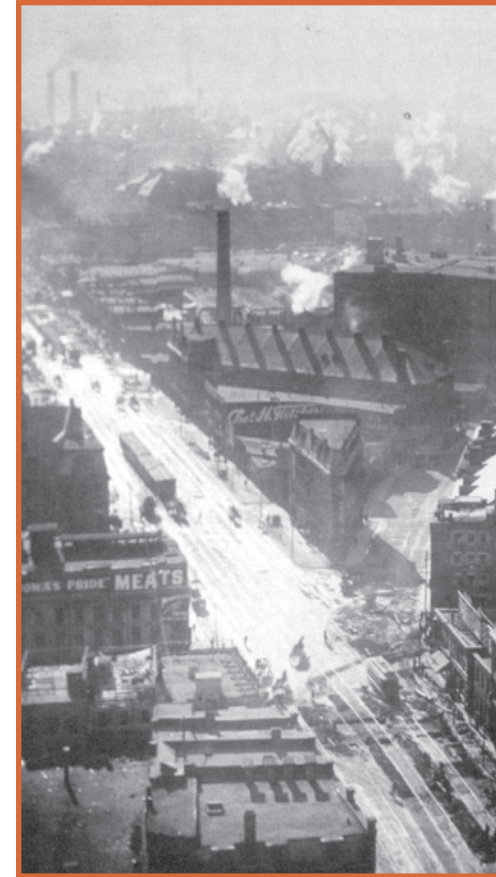
Riccio, Anthony V., [Boston's North End](#)

The Central Artery Project provides an opportunity to expand the boundaries of Boston's North End neighborhood and to reconnect it with the rest of Downtown. In so doing, opportunities will be provided for North End residents to

participate in the development of the additional affordable housing, community and recreational facilities and open space which is desperately needed in this densely populated neighborhood.

The North End has fought to maintain its character as a family neighborhood, struggling against gentrification and escalating real estate values which have driven away many middle-income families. At the same time, the North End's elderly population has increased from eight to 15 percent in the last 30 years. The need for housing for this population continues; only 224 units of elderly housing exist in the entire neighborhood. As with the City as a whole, there is a critical demand for family housing, especially housing affordable to working people, and for recreation and other services sought by seniors.

The North End is the second most densely populated neighborhood



Overview of Commercial Street, 1900

Riccio, Anthony V.,  
[Boston's North End](#)



in the City, With an open space ratio of only 1.9 acres per 1,000 residents, well below the widely-accepted urban standard of 2.5 acres. Only 17 acres of open space are available in the neighborhood, including the North End Playground and Waterfront Park, both of which are located at its periphery.

Also limited are the neighborhood's indoor recreation areas, making it difficult for young residents to participate in sports during the cold winter months. As with any densely populated neighborhood, space for community meetings and resident gatherings is in short supply.

The availability of land created by the Artery project presents a unique opportunity to preserve this residential neighborhood for families in the heart of Downtown.

## History

The North End was originally a hilly pasture for the grazing livestock of the City's first settlement. It prospered and grew during the first century of the City's development until the American Revolution, when Boston's wealthier citizens moved elsewhere. It later became home to Boston's African-American community, and to merchants, tradesmen and artisans.

In the 19th Century, immigrants who fueled America's industrialization populated the North End, and new tenements were built to house successive waves of newcomers, including the Irish, Eastern European Jews and Italians. By the 1920s, when the last major tenements were completed, 35,000 people lived in the North End. In contrast, the population of the North

End at the 1980 Census reported only 9,000 people, primarily Italian Americans and young urban professionals. This dramatic decline is largely the result of the loss of large parts of the neighborhood to the construction of the Artery and to the urban renewal program of the 1960's. These forces severed the neighborhood from the City and limited its potential for growth.

## The Plan for the North End

Continued from RFP for Parcel 9, page 32.

The neighborhood must be strengthened with new housing. Fanning a new neighborhood edge, Artery Parcels 9, 11 and 11A are ideally located for the development of 250 to 350 residences for both families and seniors. The community itself will help determine how its needs might best be served in the distribution of new units between family, elderly, and affordable housing.

The new open space system is designed for the needs of the adjacent residential community. A park and playground totaling over three acres spanning Artery parcels 8 and 10 on either side of a reconnected Hanover Street is proposed. The space will include tot lots and sports facilities to be used by residents of all ages. The park will feature trees, flowering shrubs, and seasonal flowers.

Green areas of the park will contain broad lawns and generous tree plantings. These areas will be filled with benches resting in the dappled sunlight of mature shade trees. One can imagine colorful seasonal flowers, the sound of a fountain, and the noise of children

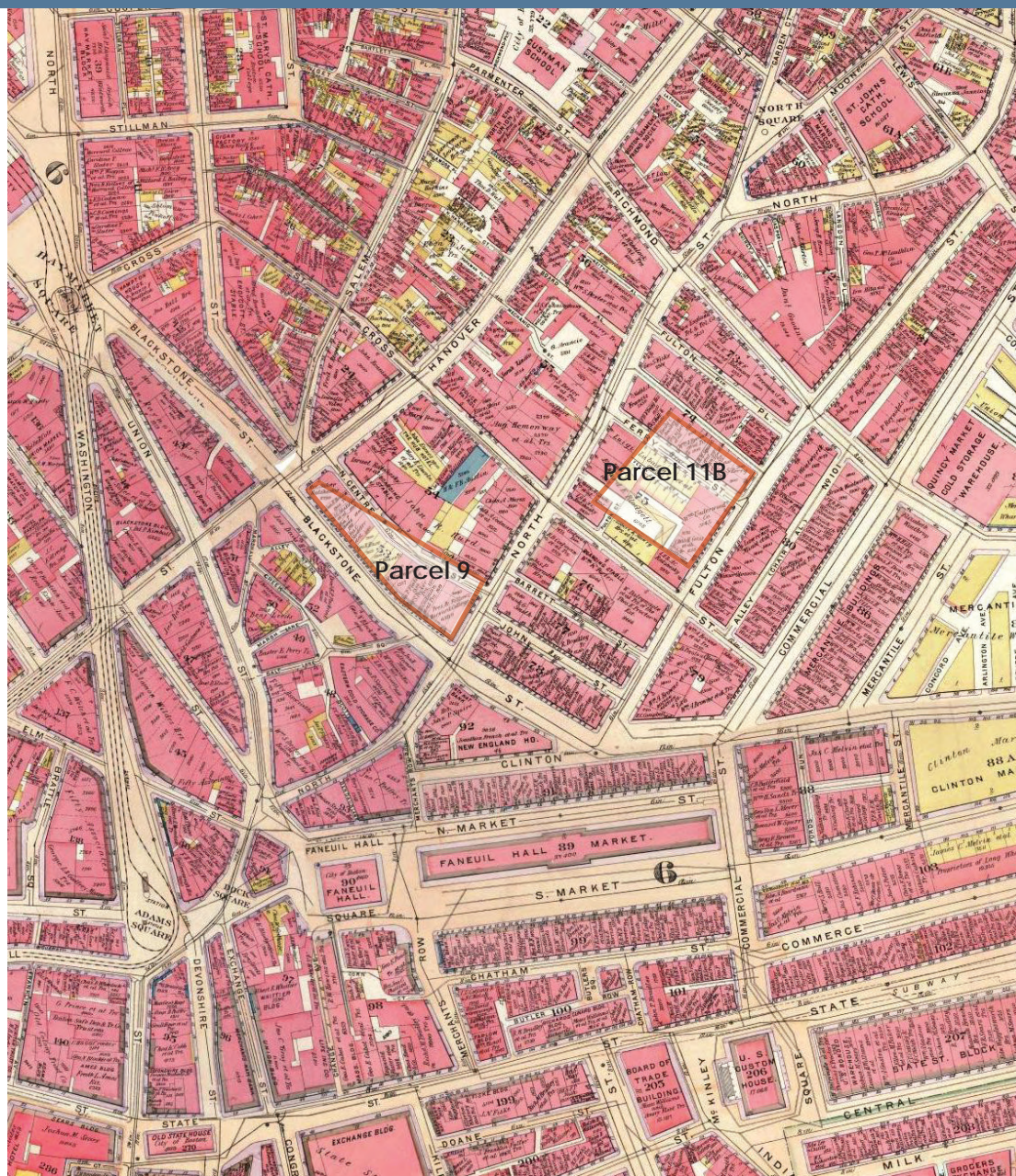
playing combining to create the character of this urban space. Small pocket parks on parcels 4 and 5 will add to the open space character of the area and symbolically link the North End to the larger Artery parks scheme.

Sports facilities, such as basketball and other courts, are proposed for the northern end of the community park including a series of outdoor decks over the ramp portals between New Chardon and New Sudbury Streets (Parcel 6). This parcel can include a pedestrian overpass extending across the highway entrances and exits that occur here.

A community hall is also needed in the North End. Such halls have long been centers of community activity, places to host meetings, share news, or post events, much as Faneuil Hall served early Bostonians. Establishing one on Artery Parcel 12 will facilitate community participation and activism, a hallmark of and source of pride to the North End. The proposed housing, community facilities, and open space planned for the Artery parcels are a response to the community's concern that the North End remain attractive to middle-income families while accommodating its growing elderly population.

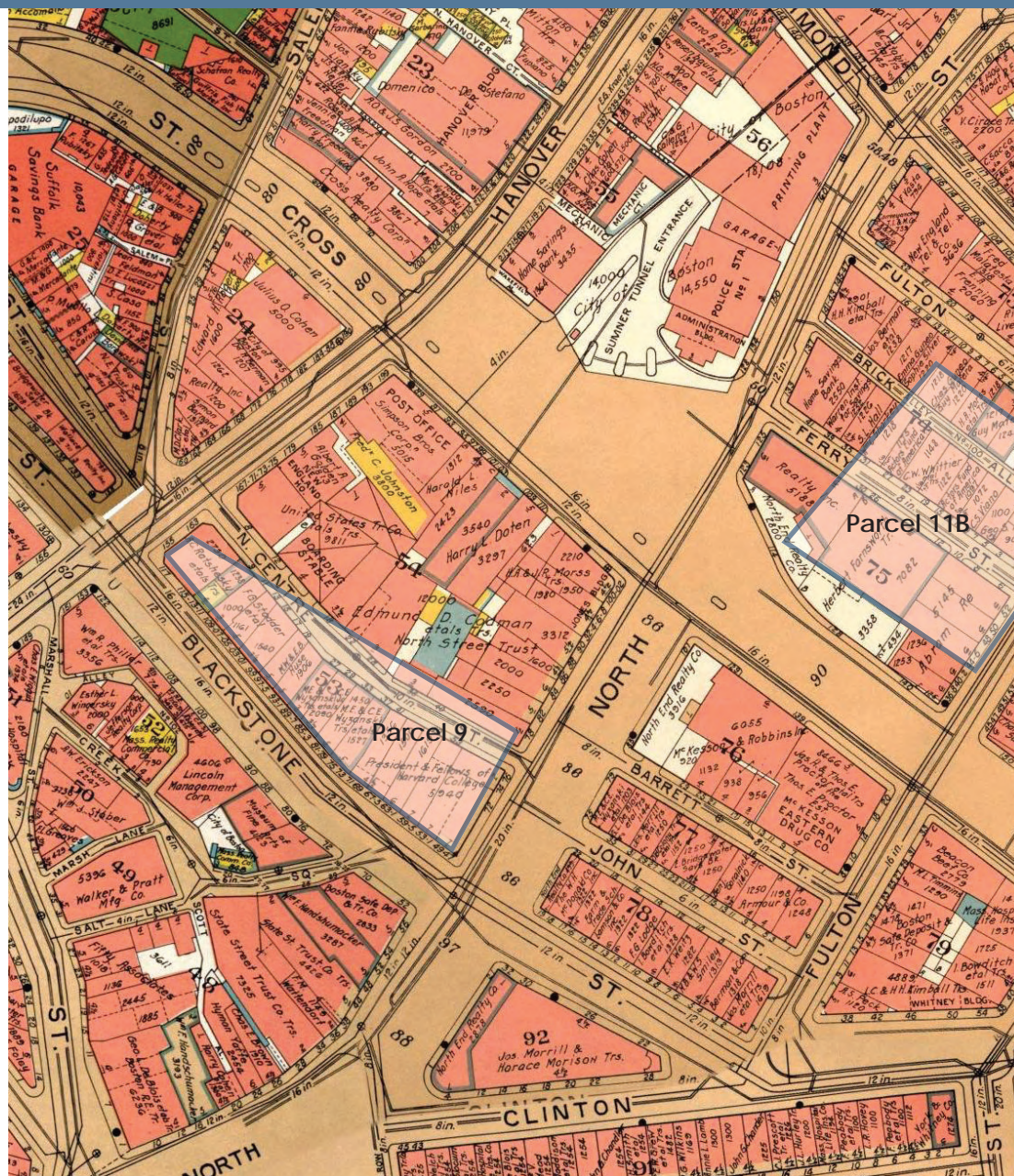
The Artery Project will also provide the opportunity to reconnect the North End to the Downtown. North and Hanover Streets will be extended through the new parcels to restore the historic streets that link the North End with the rest of the City. A plaza centering on the newly reconnected Hanover Street—a new Haymarket Square—will signal the entrance to the North End.





1902 Map of  
 Downtown/  
 Government Center





1938 Map

Cross Street begins to widen.

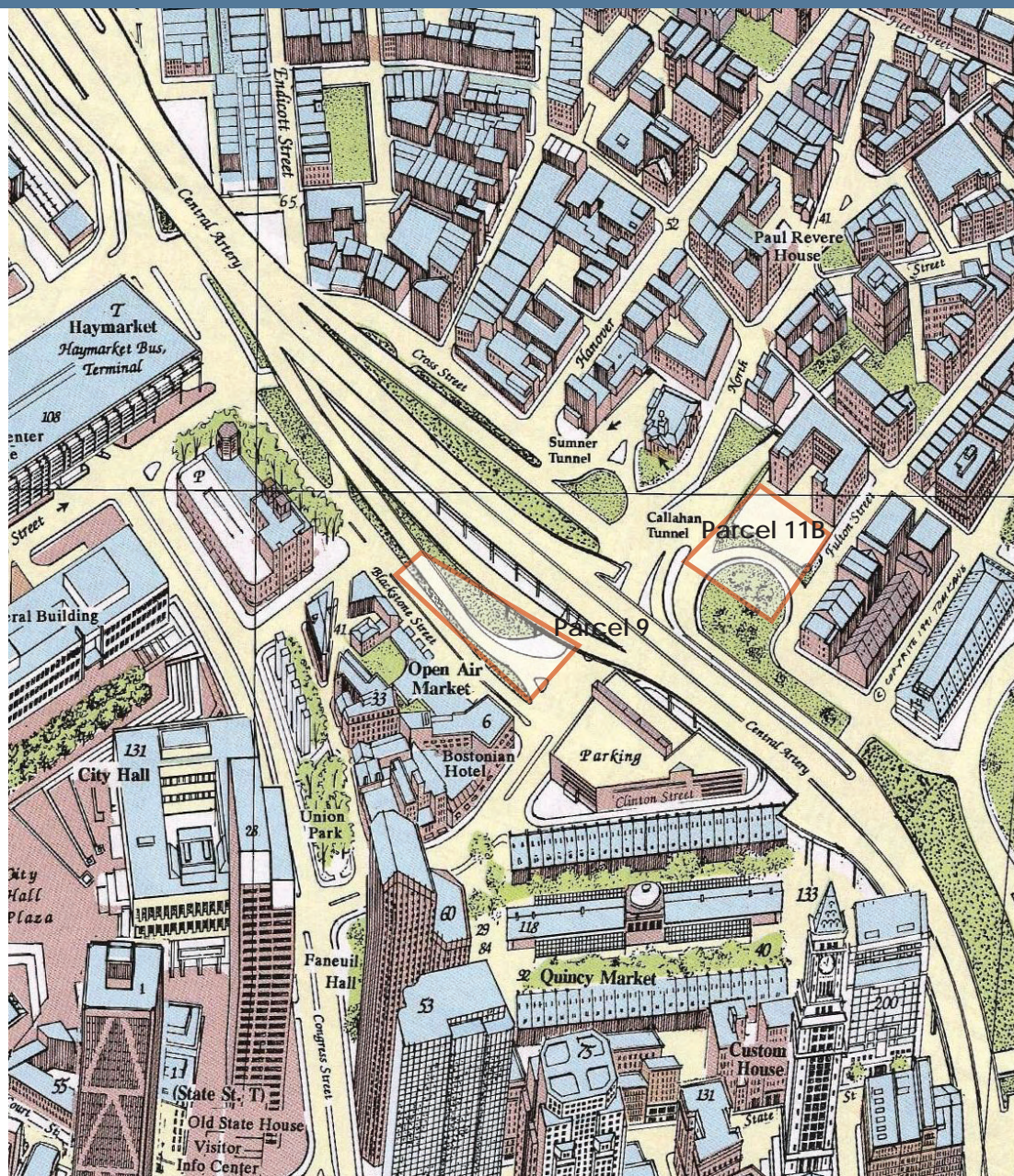




1954 City Planning Map

Parcel 9 at center, adjacent to central artery proposal





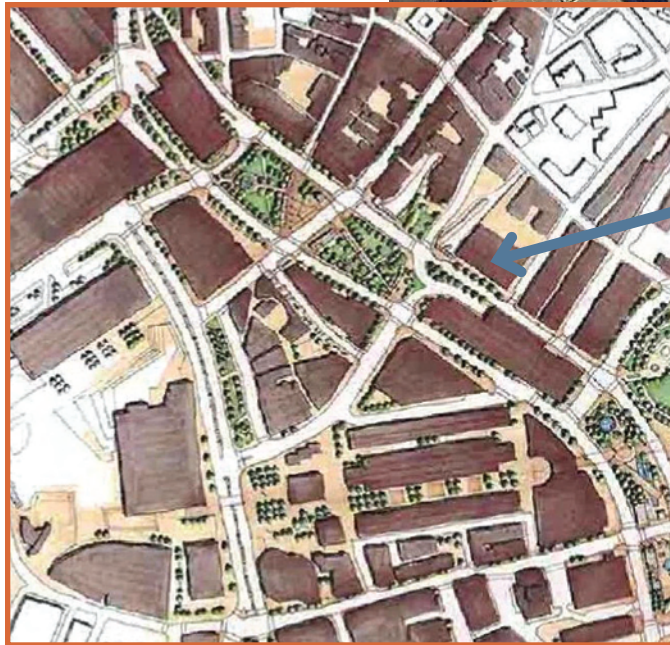
1994 3D Downtown  
Diagram





1995 Aerial





**2005 Aerial:** Rose  
Kennedy Greenway  
Construction  
underway

Above: **2006 Bid Dig  
Master Plan** with  
Parcel 9 at Center







Current 2009 Aerial  
from Google Earth



- Market/Retail
- Parking Garage
- Apartments/Condos
- Mixed Use Residential



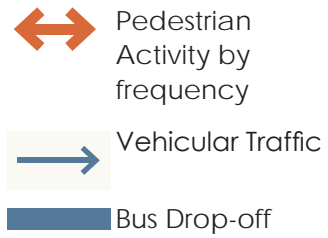
Current 2009 Google  
Earth Aerial with  
Residential Overlay



## Government Center/ Bulfinch Triangle/Haymarket Downtown





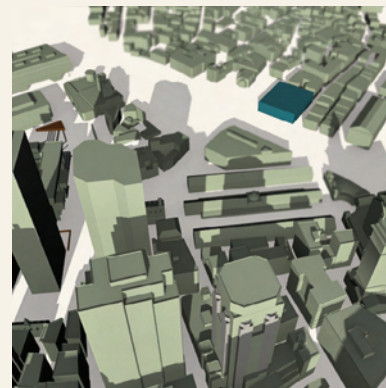
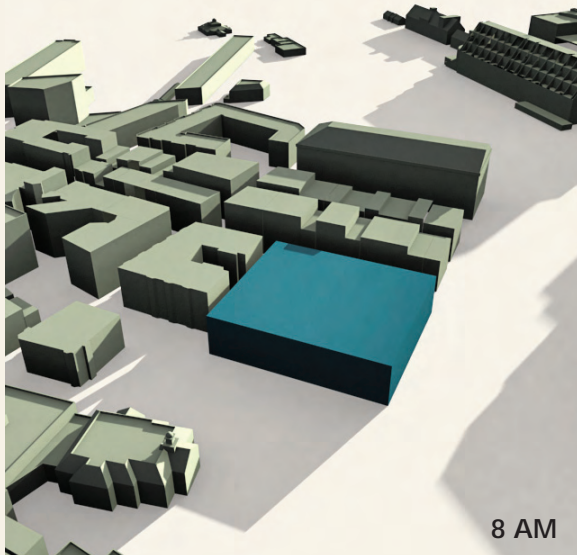
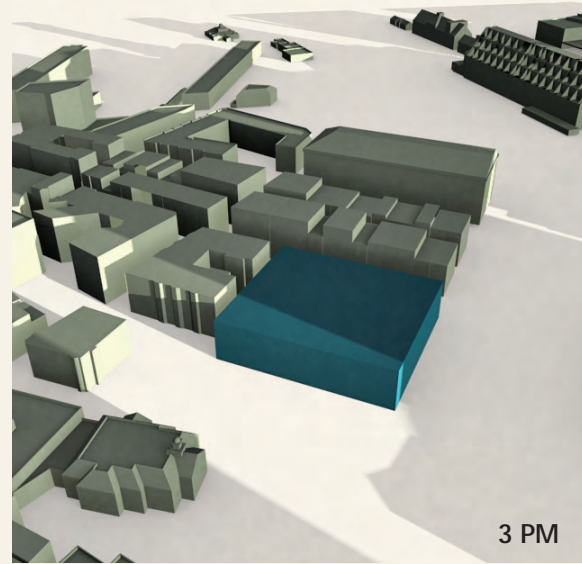
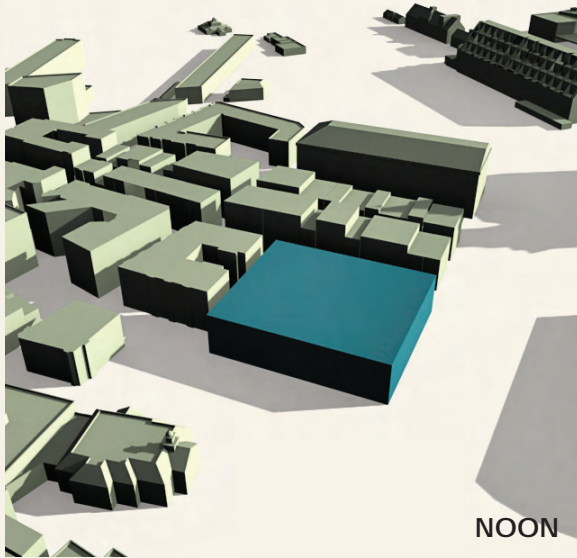


Circulation paths across Greenway and around proposed site: Parcel 11B.

Fulton St., east of the site, has little to no pedestrian traffic. It is a lost connection into the North End, lacking public amenities.

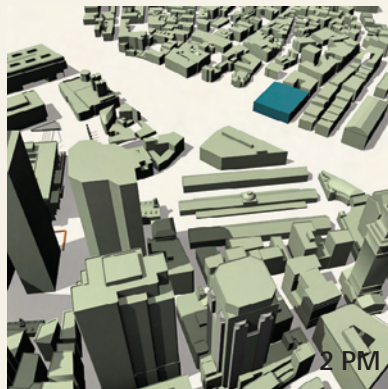
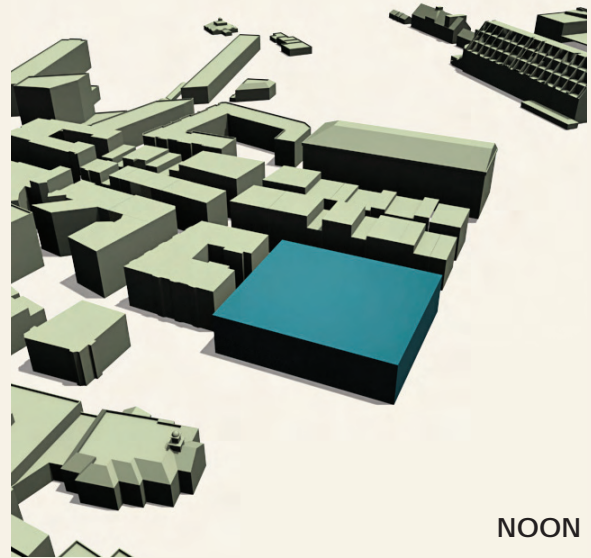
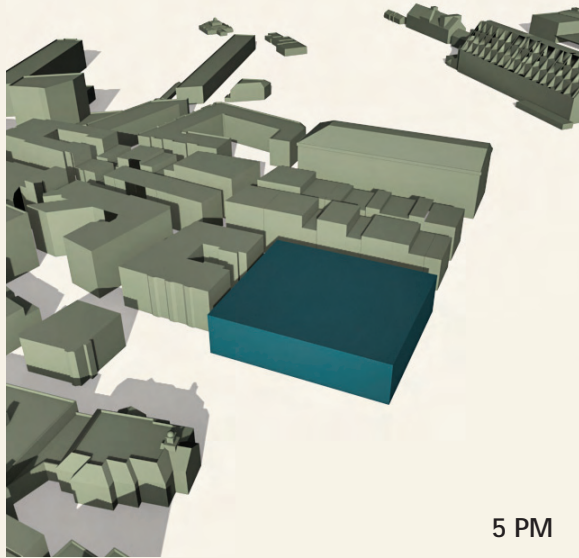
Ramp Parcel 12, breaks up the greenway and doesn't offer any inviting park space, an issue which could be solved with an extension of the public space on the proposed site.



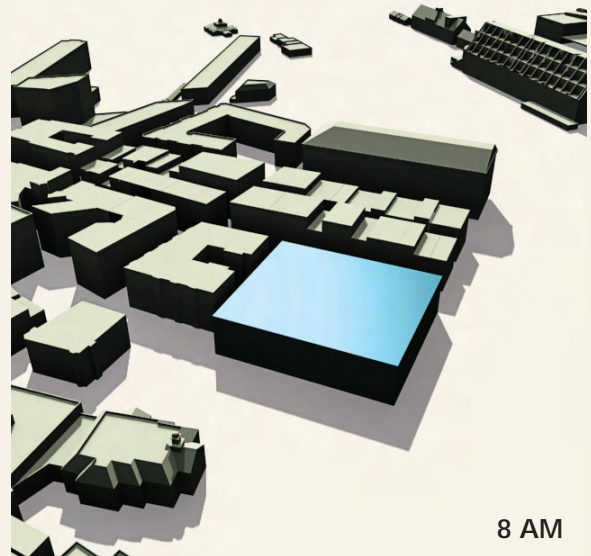


**December 21**, Winter  
Solstice

Bottom Right: Overview of  
Downtown at Noon, north is  
straight ahead

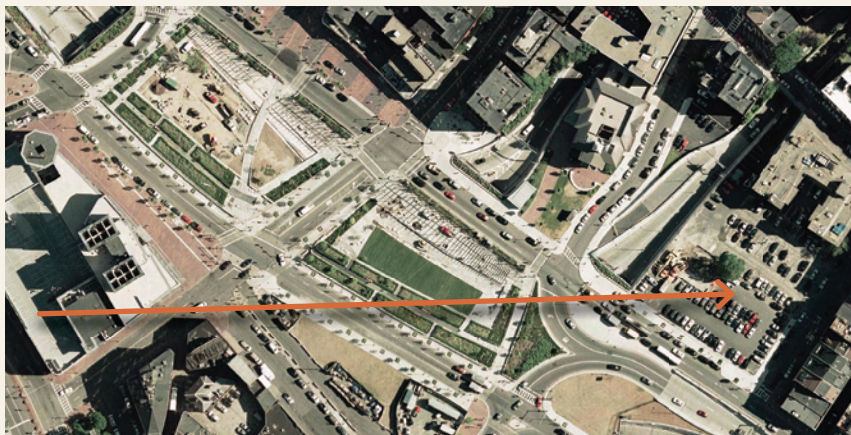
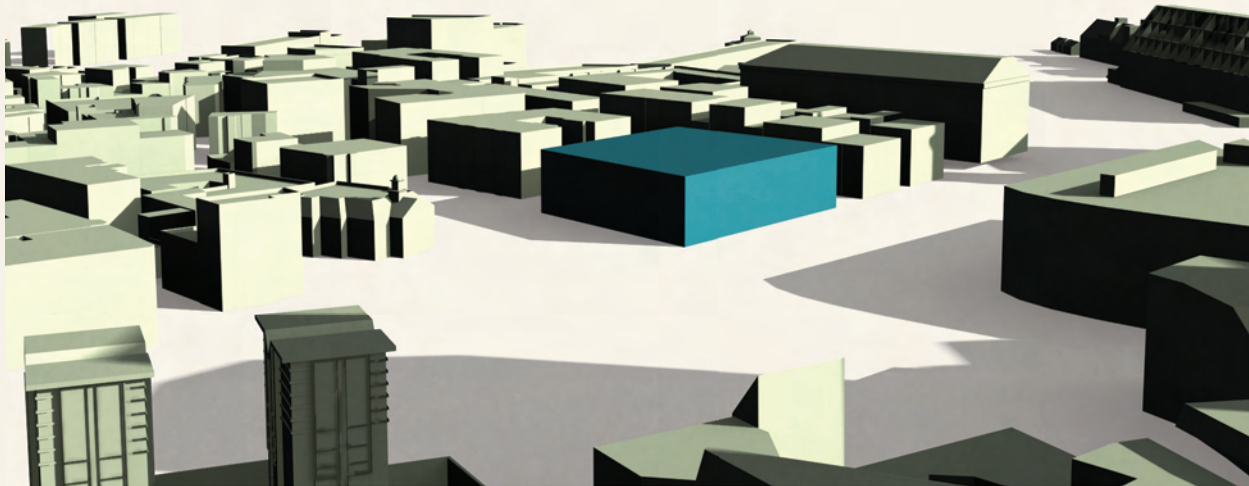


**June 21, Summer Solstice**  
Bottom Left: Overview of  
Downtown at 2 PM, north is  
straight ahead





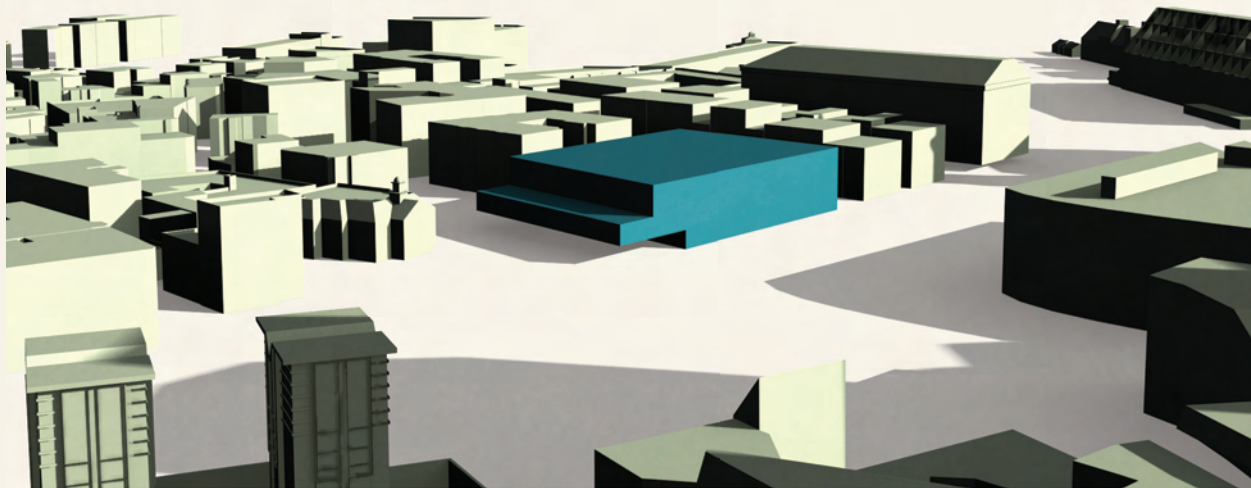
Massing Diagrams rendered at Noon on December 21



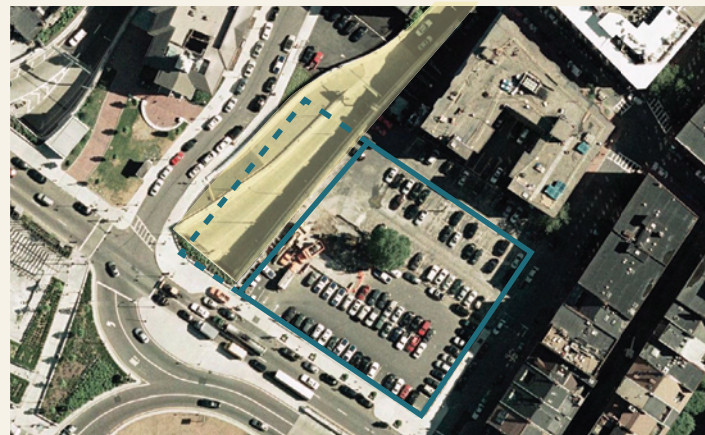
This generic massing takes into consideration current sidewalk setbacks and the height restriction by zoning code of 55'.

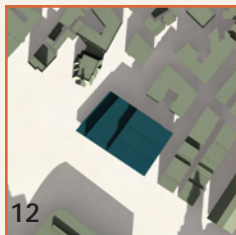
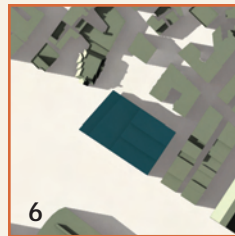
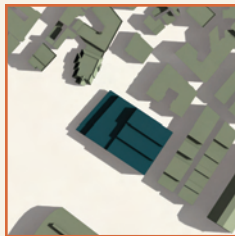
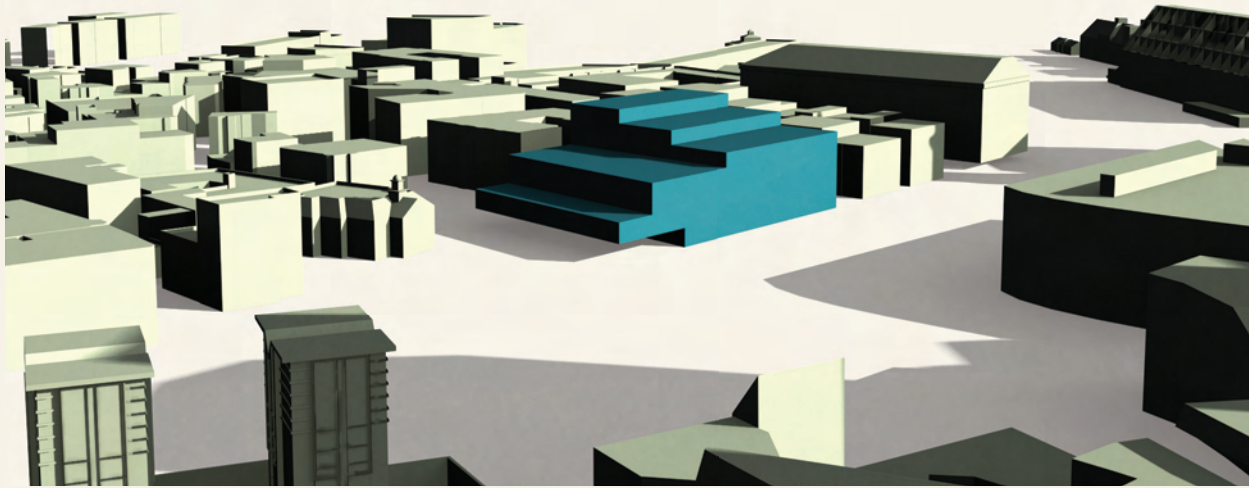
The bottom left image diagrams the view of the above rendering (looking approximately due east).



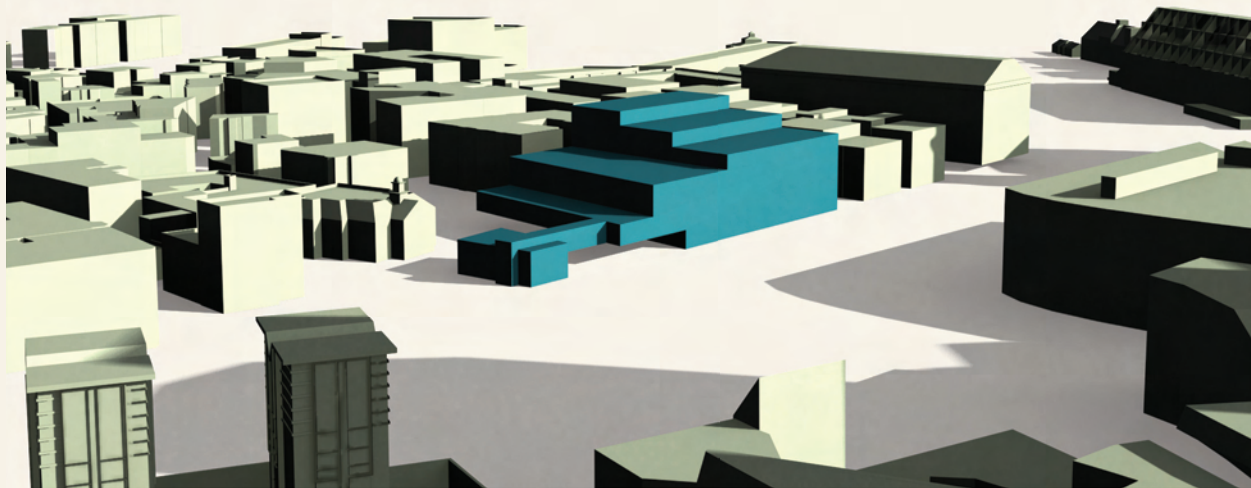


There is the possibility of cantilevering or simply extending part of the building over the **Callahan Tunnel Emergency On-ramp**, highlighted in yellow on the right.

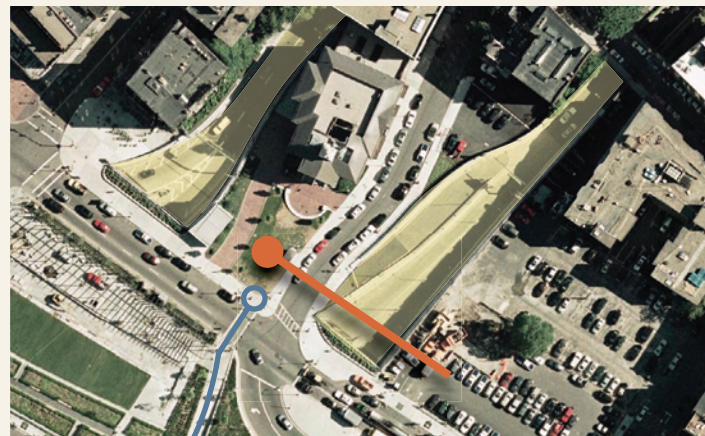




Not entirely true to my intentions, this tiered massing strategy would allow for a greater number of units while preserving the character of the neighborhood in its various building heights. The final solution may involve greater variety and diversity of formal arrangements. Left: **Top view shadow studies.**



Parcel 11 continues to Parcel 11A, across North Street, where the Sumner Tunnel is revealed below grade similar to the Callahan Tunnel on 11B. The building could continue across this street to become an easily accessible entry node for residents and visitors.



↓ To Faneuil Hall, Parcel 9  
(Boston Museum)





**Parcel 11B** from North St.  
looking over the Callahan  
Tunnel

**Parcel 9**  
From Open Park space on  
Parcel 10











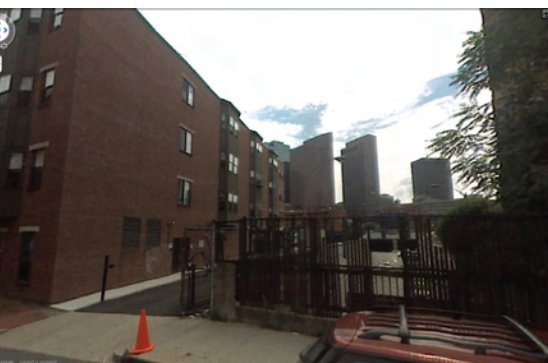
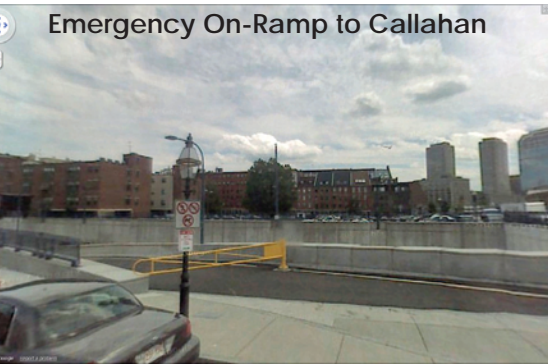
Distinct Greenway Site  
Furniture







## SITE: SEQUENCE OF PHOTOS AROUND PARCEL 11B









## CREATIVE COMMUNITY CONVERSATIONS

The following sets of design intentions<sup>1</sup> are the result of a public forum centered around the completion of the Big Dig and the construction of the new Central Artery park system that now beautifies Boston's downtown. Roughly 350 members of the general public took part in several brainstorming sessions on April 14 and May 11, 2002, sponsored by the Boston Foundation and the Boston Society of Architects. The ideas that were generated respond to the potential uses of the present Rose Kennedy Greenway and the methods by which visitors would be attracted to parks.

This information is exceptionally important in my understanding of what Boston residents and workers expected from this new environment, as well as being influential in developing well-suited uses and frontages. While the ideas mostly concentrate on the open park spaces, it is imperative that my proposal actively interact with its context, giving the following ideas great weight.



Photos courtesy of  
**Thomas Piper** of  
MIT's Dept. of Urban  
Studies and Planning,  
and Marc Margulies  
of Margulies &  
Associates

<sup>1</sup> "Beyond The Big Dig / Community Conversations," The New York Times Company: 2002. 13 Aug. 2009. <[http://www.boston.com/beyond\\_bigdig/conversations/](http://www.boston.com/beyond_bigdig/conversations/)>.



## Selected Ideas from Group Brainstorming Sessions

April 14, 2002: Boston Harbor Hotel

### #1: SOMETHING FOR EVERYONE -- DAY AND NIGHT

Something for everyone -- daily workers, kids, families, visitors -- day and night:

- Recreation for kids
- Flowers: growing flowers and grass, as well as having flower vendors
- Inspiring sculpture and modern art
- Benches, at least 2-3 fountains, curved and covered pathways
- **Vendors along sidewalks**, food kiosks
- Bathrooms, security
- **Quiet area, raised sides**
- Great, cool night lighting as on the Zakim bridge
- **Performance area** with raised sides

### #2: ABILITY TO KNIT

The group focused on parcels in the **North End** and Wharf District and the **concept of TIME**

- Land to 'knit' city back together
- **Vision of edges as critically important to the parks**, the idea of the park is extended out to the building edge
- Pieces are placed according to issues of light and the **time of day**

- Treatment of parcels is based on **who visits the parks and when**
- Parks remain open till midnight

They offer places for a diversity of people:

- Watching kids play
- Revolving exhibits
- Places for exercise
- Concerts

### **#3: A DAY OF TRANQUILITY IN THE CITY**

Focus was on **times of the day** -- weekdays and weekends (though the group ran out of time before discussing weekends). Early AM: walkers, joggers, elderly. Lunch time: office workers and tourists. Evening: For all

- Green, open space, providing calm and respite from urban hustle and bustle
- Walking areas with benches, trees
- Well-lit, safe spaces with public art
- **Revisit parcels 12 & 13 as potential open space**
- No tourist buses, Traffic: transit bus and more resident parking
- Local residents are at the table
- 

### **#4: REUNION PARK**

With the aim of knitting the North End and Downtown back together and creating a destination spot, this group proposed:

- **Parks, historic uses, a cultural center, music, artists display**

- Locally owned and operated **multi-use facility with outdoor amphitheater and a major water feature**
- Low building with a **dance hall -- no hard building lines**
- Trolley, “petty cabs”
- Lots of detail and texture -- creating elements of surprise! Ideas of inscribed bricks, smaller gardens for seniors or kids and schools
- **Book vendors** -- lots of book browsing opportunities
- Open space between buildings and park, with curving streets to slow down traffic

### **#5: EMERALD BRACELET (OR MOOSE PASTURE!)**

Injecting fun and playfulness into the day, the group suggested, in the absence of clear consensus, the development of a unique element -- a moose pasture, with moose trucked into Boston every day. To ensure safety, the group decided that it would not allow elements such as snowmobiles and crossbows. Members proceeded to define an interesting journey through the City’s open spaces by creating connections to surrounding communities.

- Starting out at the Forest Grove and the water feature, exploring Boston’s history -- taking the Silver Line from the neighborhoods to the ICA on Fan Pier -- to the Harbor Islands and arriving at the Greenway.
- Visiting Mass Horticultural society’s botanical gardens, watching kids, fountains, sculptures, mimes
- **Band playing hip-hop/jazz in an amphitheater**
- People sitting and watching, strolling



- Bathrooms, visitor center
- The park is seen as non-linear with **central-perpendicular/cross street-connections as being important**

## #8: GATEWAYS

The group focused on two sections of the Artery: North End and the Wharf District:

### North End

- Converted Haymarket
- Large covered market with rollback roof
- Connections to Salem Street
- **Connect North End to Haymarket**
- Space for seasonal outdoor cafés, plaza, green -- with incentives to North End businesses to extend outwards

### Wharf -- Pavilions in the Park

- Series of parks -- 4 parks with 4 pavilions
- Thematic, like Freedom Trail
- Connection to waterfront
- Like the Ringstrasse in Vienna
- "Pavilions in the Park," each themed, for example history

## #9: NORTH END

Focusing on a distinct aspect of the Artery, this group proposed the concept of inviting, welcoming, healing, clean spaces that influence how people act.

- Greenspace Hills with plenty of greenery and water features/ fountains using recycled water
- Extending Commercial Street corridor to connect with parks
- Active spaces -- sloping landscapes for kids
- Densely green
- Tunnels covered with sculptured landscape
- Monitored and secured with no traffic conflicts
- Access to bathrooms

### #13: A PERFECT 18-HOUR DAY

The group focused on **creating a cyclical pattern around the day, the week and the seasons and a place for people -- neighbors, commuters, kids, youth.** It proposed making sure that the quality and treatment of spaces reflect needs of the users:

- Places for cyclists
- **Activity spaces for tai-chi, joggers, dog walkers**
- Places for people taking their lunch break
- Little kid places along pathway, eg. play turtle -- and places for mothers
- Spaces that allow for speed -- fast and slow walks, resting places, meandering paths
- **Spaces that respond to nature and the seasons -- open and closed spaces**
- Vibrant and friendly feeling

### #16: THE ZIPPER

The theme of “blend and connect” guided this group, which developed proposals for **knitting the area back together** by:

- A system of buildings, streets, and ‘parklets’ to meet abutter needs
- Rejecting a ‘linear park’ notion and focusing on community connections
- Spaces that appeal to all **5 senses**
- Connections to Harborwalk
- Markets, dining
- **Approach: evolutionary, develop temporary/interim uses**

### **#21: LA VIDA (NORTH END)**

With an interest on ensuring there were “no empty, open spaces” the group focused on the joy of life, and encouraged:

- Connecting North End to the City, with North End streets as pathways into the parks
- Heavy pedestrian activity
- Clean, green spaces with benches, structures for cafés, ice cream, book stores, flower vendors
- **Expanded push cart vendors, Haymarket**
- Buffer between business and residential district
- Ongoing though small police presence

### **#22: CULTURAL PEARL NECKLACE**

Emphasizing social activity the group thought of calling their scenario

"Socio-paths" but changed their minds to make sure their concept was not misunderstood. They highlighted Boston's cultural richness to propose:

- **A string of civic, public, open and cultural activities and spaces**
- Create a narrative linking neighborhoods to tell the cultural history of Boston
- Cultural center -- sheltered but under cover
- Children's space, **seasonal and for times of day**



# REGULATORY ENVIRONMENT REPORT

## Parcel 11, 11A and 11B

### Specific Design Restrictions for Parcel 11B:

#### Use Regulations

Allowed uses on Parcels 11 and 11A are Residential Uses and Local Retail/Service Uses.

#### Dimensions

On Parcels 11 and 11A, the maximum allowed FAR is four (4), and the maximum allowed building height is fifty-five (55) feet. Any building on Parcel 11 or Parcel 11A is subject to the provisions of Section 54-18 (North End Neighborhood District - Roof Structure and Building Height Restrictions).

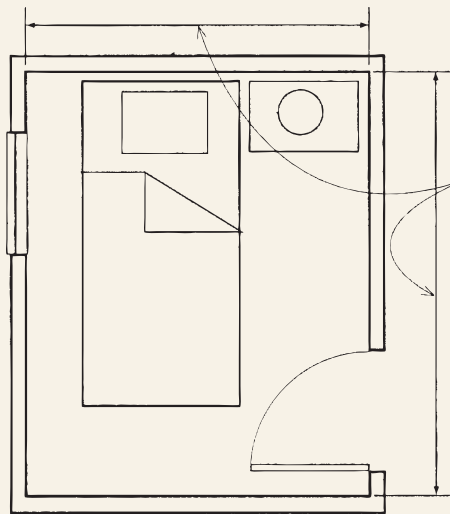
#### Design Guidelines

- Infill residential buildings on these parcels in the North End should be located at the back edge of the sidewalks and plazas to form an enclosure to the park on Parcels 8 and 10 and to reinforce visually the existing Street Wall of the North End. Where possible, the facades generally should align with the facades of existing adjacent buildings and with buildings on adjacent streets.
- **Ground-level Local Retail/Service Uses should occupy**

those areas of any building which abut City sidewalks and streets.

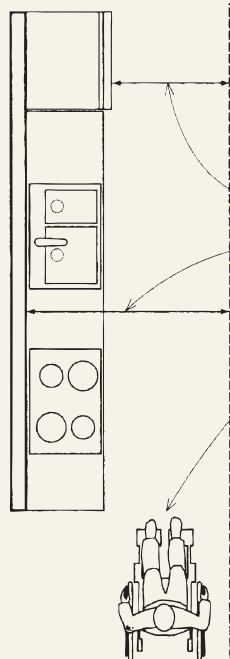
- Average sidewalk width along the existing Cross Street and its Boulevard extension between North Street and New Chardon Street should not exceed twenty-five (25) feet.
- Any proposed building design for Parcel 11A should incorporate into its design the emergency access ramp which will be located along North Street.
- No structure on Parcel 11 should obstruct the view corridor from Tremont Street to Old North Church.





**Room Width**

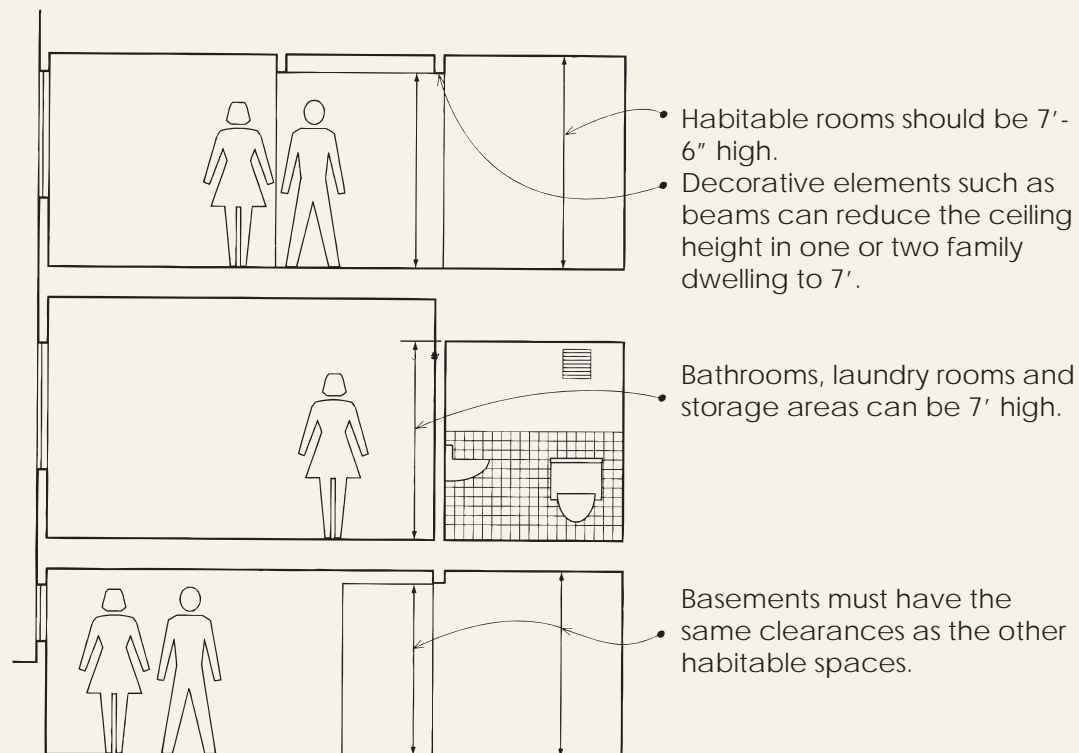
- No room, other than a kitchen, is to be less than 7' (2134) in any plan dimension.

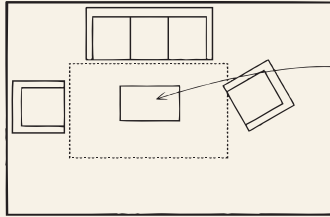


- Kitchens are to provide at least 3' (914) of clear passage area.
- Thus a single-sided kitchen with typical cabinetry will be at least 5' (1524) in width, or wider if the refrigerator is standard depth and clearances are maintained.
- Note that these minimums do not necessarily provide clearances for access for people with disabilities. Applicable disabled-access criteria will always take precedence over these minimums.

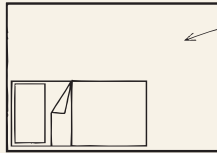
2006 International  
Building Code  
information from  
Building Codes  
Illustrated by Francis  
D.K. Ching







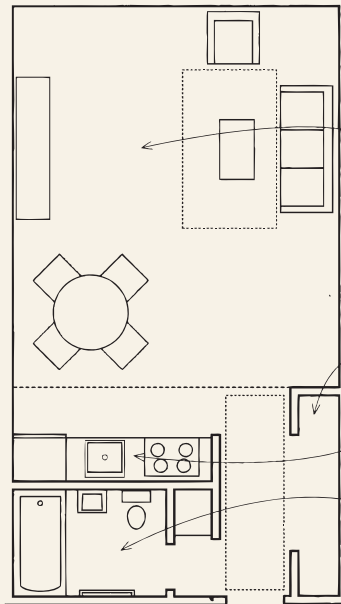
- Each unit must have at least one room of 120SF in **net** area.
- Other rooms (except kitchens) = minimum 70SF



- Bedrooms must be at least 10' x 7'.

#### EFFICIENCY DWELLING UNITS:

Low or moderate income and senior housing; small units that meet minimum requirements; studio apartment would contain:



- Living/Dining Sleeping Room: 220SF required for each occupant if more than two

- Separate Closet

- Cooking Area with 30" of clear space in front.

- Bathroom

- Must meet Ventilation and Natural Light codes

## Occupancy Groups

### Residential Group R

**Group R-1:** transient; sleep in building for less than 30 days (hotels and boarding houses); occupants are assumed to not be familiar with surroundings

**Group R-2:** permanent; sleep in building, which has more than 2 units, for more than 30 days; (apartments and dormitories); if less than 16 residents in building, must abide by R-3

**Group R-3:** permanent; do not meet requirements of R-1, R-2 or Group I; (single family residences and duplexes)

**Group R-4:** assisted living situations where there are more than 5 but less than 16 residents; must meet requirements for R-3



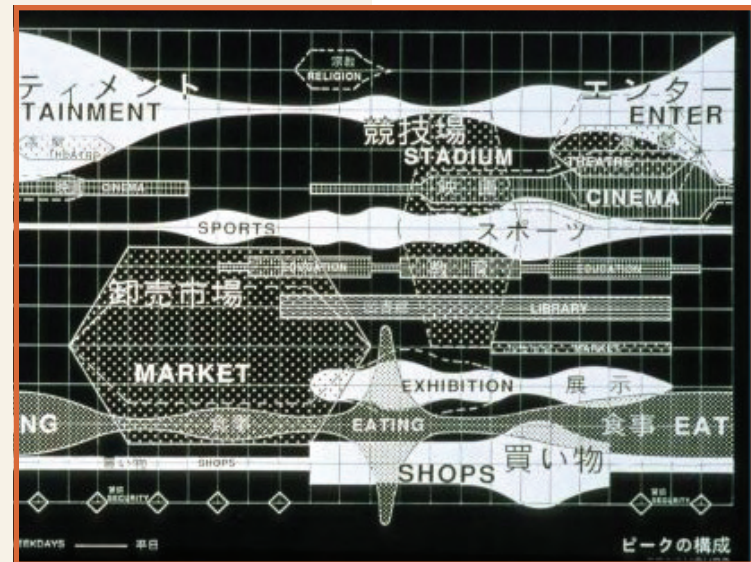
# PRECEDENTS

## Master Plan for the Urban Design Forum

YOKOHAMA, JAPAN

Koolhaas

"We have avoided designing buildings (with their inevitable limitations and separations): continuous and formless the project engulfs the site like a kind of programmatic "lava", three layers of public activity manipulated/ treated to support the largest possible amount of events with the minimum amount of permanent definition." (OMA's website)



## Strassgang Housing Project

GRAZ, AUSTRIA

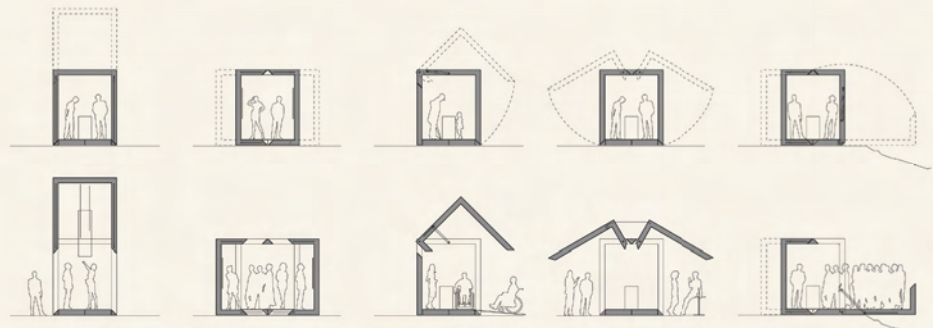
Riegler and Riewe

Room proportions did not suggest a function and occupants could insert their own personality on the space.

## Art Fund Pavilion Competition Entry

Karim Muallem, UK

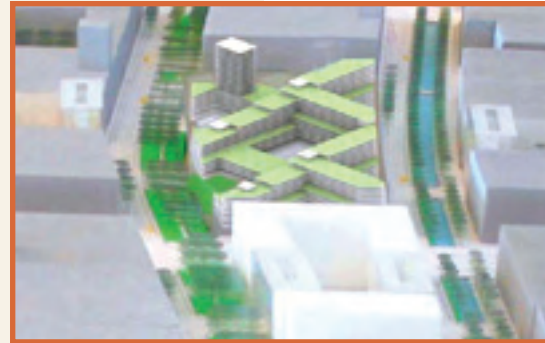
"Complexity in design need not be always in the complexity of the form but rather in the complexity of its responsiveness. Clever designs are not always about the elaborateness of the shape but rather in there adaptability. The idea was to start with a simple unassertive compact box, and through a process of responsive transformation triggered by crowd movement and function alterations end up with a highly adaptable and exiting form." - Karim Muallem



## Green House

### Mutopia: User-Focused Design Firm

"Green House dissolves the large scale of the typical enclosed block volume into a new xx structure, thereby creating an expressive and spatially varied building, which relates to the large scale of the surrounding urban fabric, while at the same time creating series of micro-environments such as courtyards, squares and plateaus with different degrees of openness. Green House creates synergy between inside and outside, between summing metropolitan life and landscape(d) space. Green House is a vision for a new urbanity of social and spatial exchange between private domain and public space which creates plus value for both parts, reinforces local connections, and enriches the public space."<sup>1</sup>



## Ecoville

### Office of Mobile Design/ Jennifer Siegal

Designed as community of low-cost, live-work modular units for artists. The standardization of the units, which lowers the cost of construction, does not limit the diversity of experiences from one unit the next. The units are stacked, making up many

<sup>1</sup> [www.mutopia.dk](http://www.mutopia.dk)



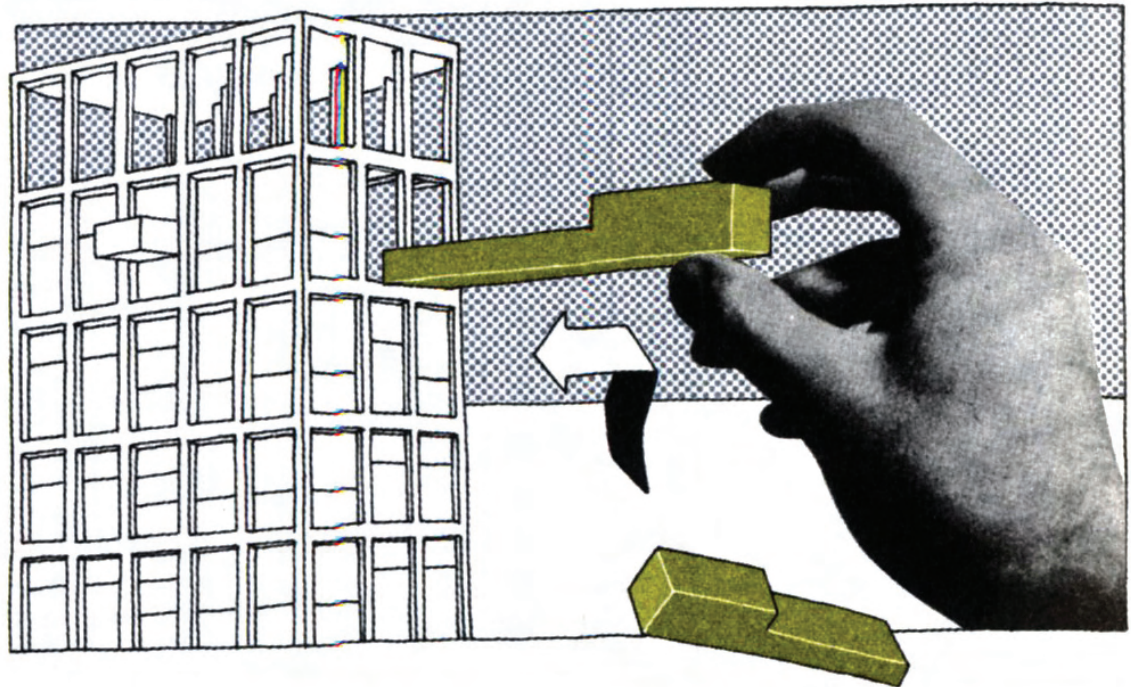


different combinations of compositions. Ground level modules are the work spaces while the upper modules are the living quarters. Communal modules connect units together to create a sense of community.

## Bottle Rack Principle

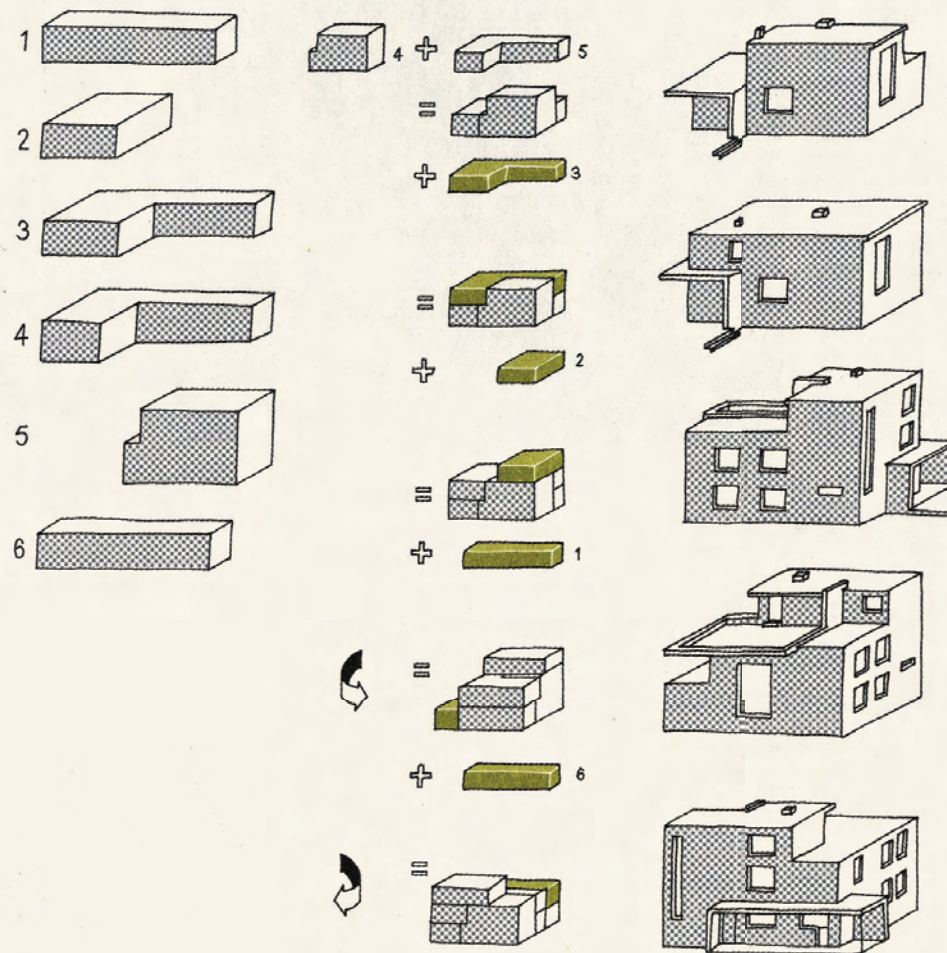
### Derived from Le Corbusier

A basic underlying structure allows for the removal and insertion of interchangeable components to suit a particular need at a specific time.



## Design as an Assemblage of Mass-Produced Components

Haus Auerback, Walter Gropius and Adolph Meyer, 1924



## COMPACT HOUSES

A study of houses with minimal floor area that are functional, efficient and well-designed through an interrelationship of multi-use and adaptable spaces.



### Slit Villa: 721 Square Feet

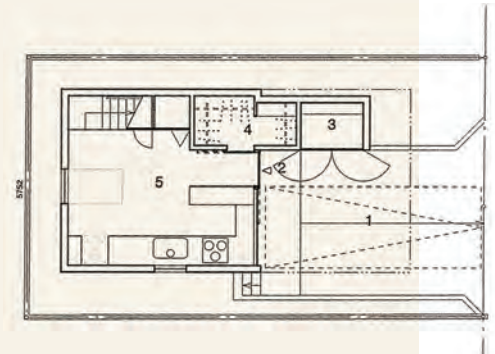
C. Matsuba/Tele-Design, Tokyo, Japan, 2002

Program elements and First Floor Plan:

The facade of this highly compact house

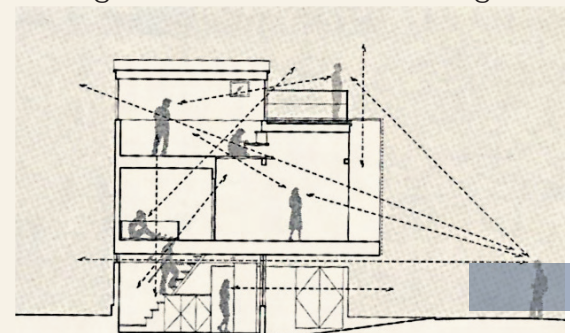
1 Bedroom, Living, Terrace

Kitchen, Dining



in an extremely dense residential district of Tokyo is composed of bamboo screens

that can be rolled in, **changing in response the residents' needs for lighting and privacy**. The translucency of the facade interior spaces creates visual connections throughout the house, maximizing its apparent size.

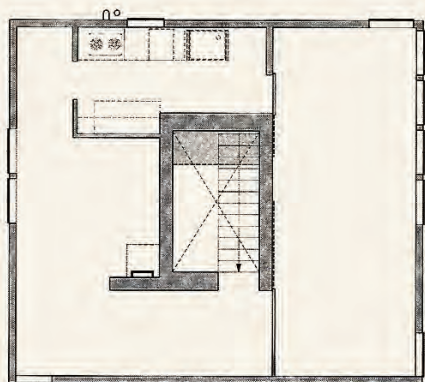
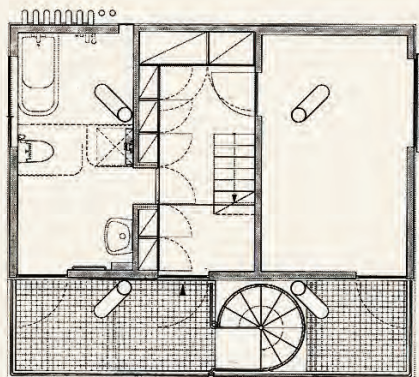
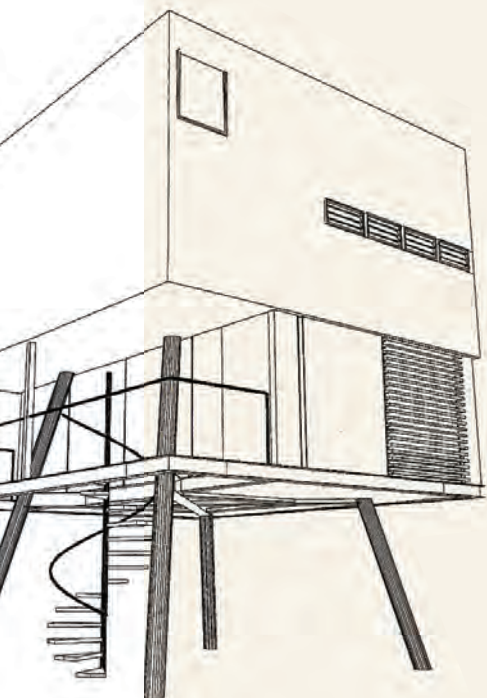




## Tavola: 840 Square Feet

Milligram Studio, Saitama, Japan, 2004

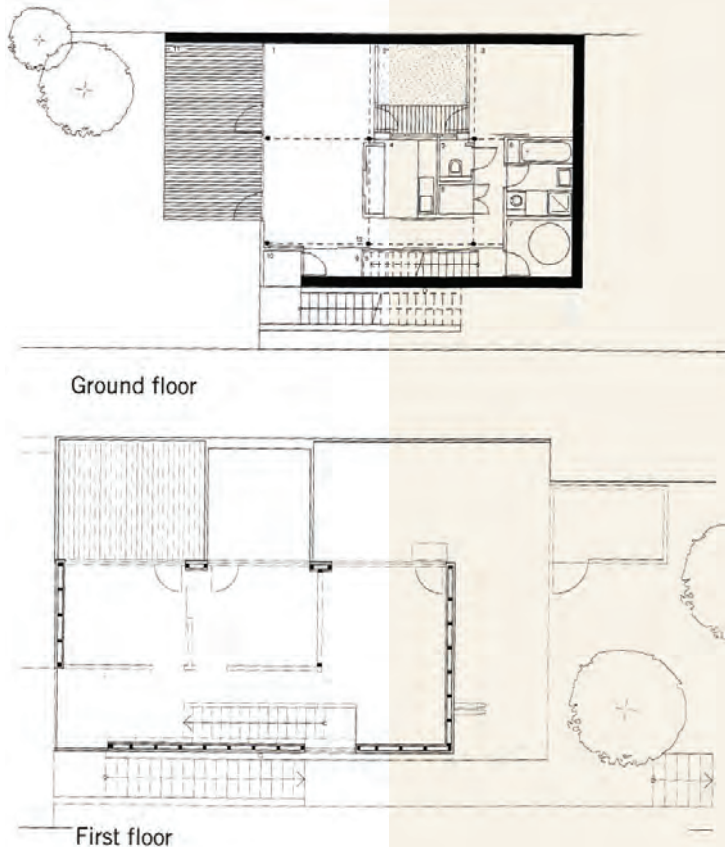
This compact housing scheme is located in another dense area of Japan, where the architects lifted the house on stilts, allowing for the flow of public traffic to continue underneath. The interior is light-filled on the bottom floor and almost completely white and devoid of furniture on the second floor, given its more opaque facade, to increase the feeling of spaciousness and light.



## Haus P: 1076 Square Feet

Thaler. Thaler Architekten, Vienna, Austria, 2002

This house was originally **designed for a family of four**. It makes great use of small space, such as in the kitchen, which centrally located and can folded up when not in use. Each room has at least one glass wall, increasing the house's spaciousness. A courtyard that cuts through the house brings in light and causes the interior spaces to seem more vast than they



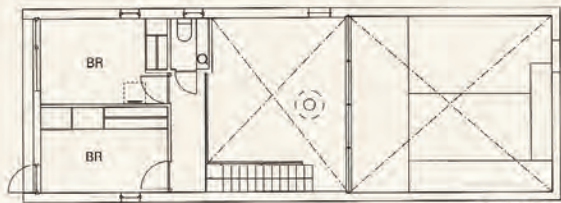
actually are.



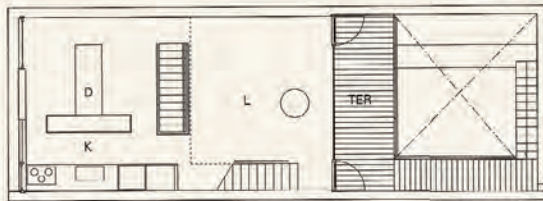
## Kassai House: 1249 Square Feet

Kiyoshi Sey Takeyama + Amorphe, Osaka, Japan, 2003

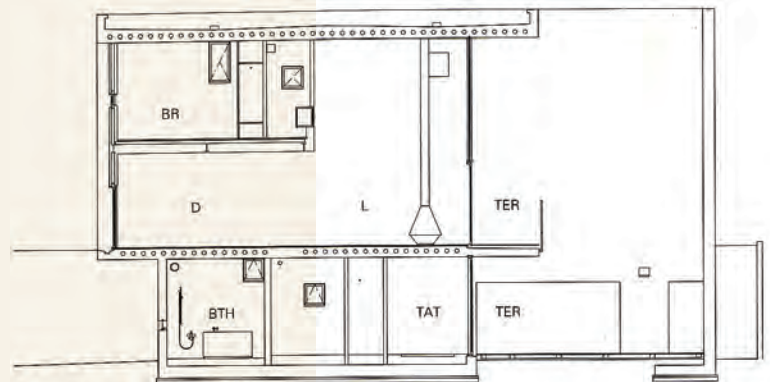
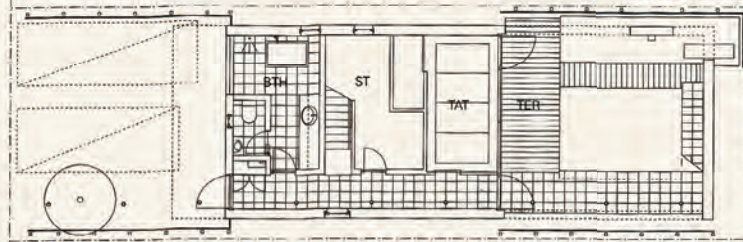
Two-bedroom house. Taking the form of a cube, the inner spaces are protected but are allowed to move freely inside of a concrete shell. Double height spaces are used to increase the apparent scale of the residence. An interior garden releases the confined space to the sky.



*Third floor*



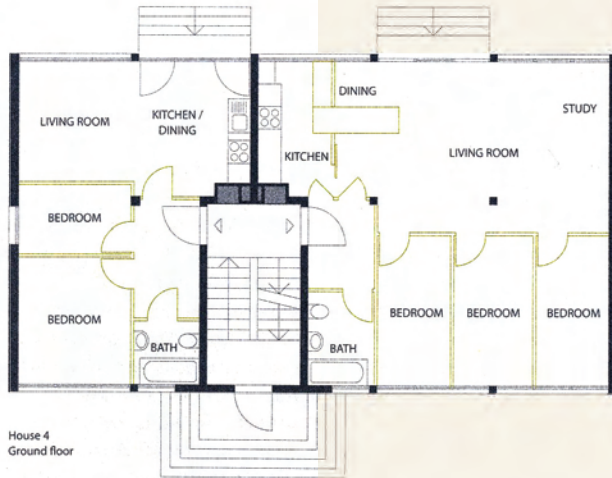
*Second floor*





## A HISTORY OF FLEXIBLE HOUSING STRATEGIES

Drawings from Schneider, Tatjana. *Flexible housing*. Oxford, UK: Architectural Press, 2007.

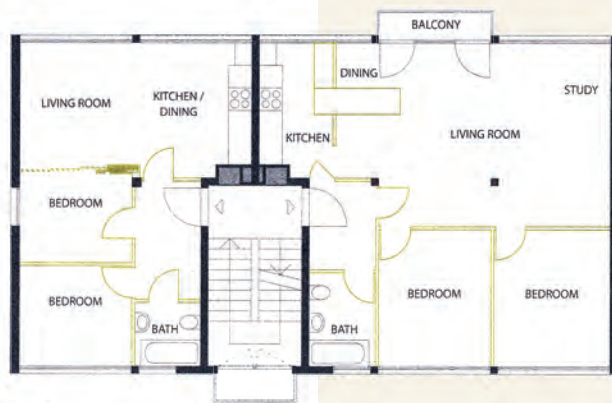


House 4  
Ground floor

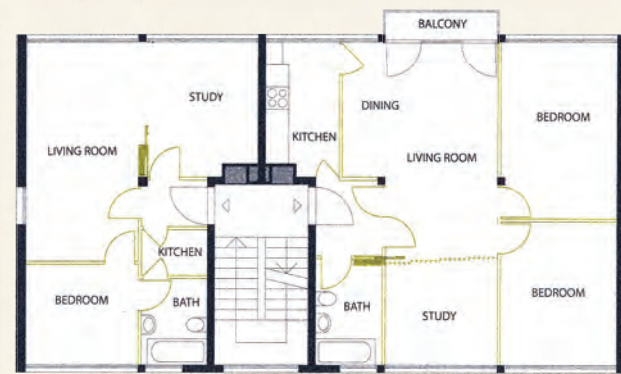
### Wohnzeile, Weißenhofsiedlung Ludwig Mies van der Rohe, Germany, 1927 Apartment Complex with 24 units

Bathrooms and utilities are adjacent to the stairwell. Structure remains the same between units but the partition wall change to create different units from a basic shell. This open plan with a core is reminiscent of the open office building where desks can be arranged to suit the business occupant. This project demonstrates the practicality of Mies' approach to flexibility.

Various architects worked on different units to produce unique solutions within the same framework, giving each inhabitant their own identity.



House 4  
First floor

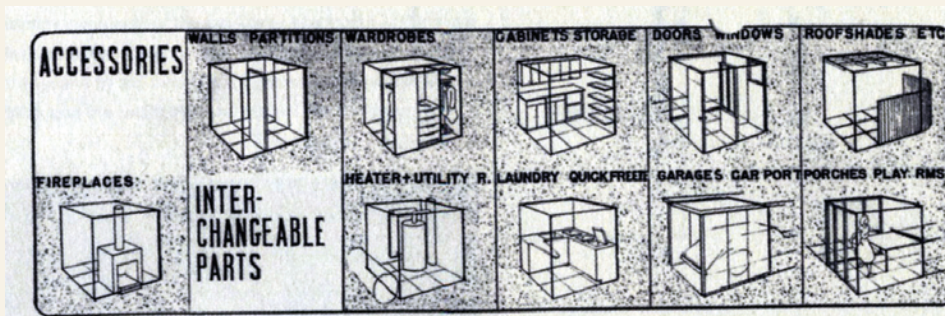
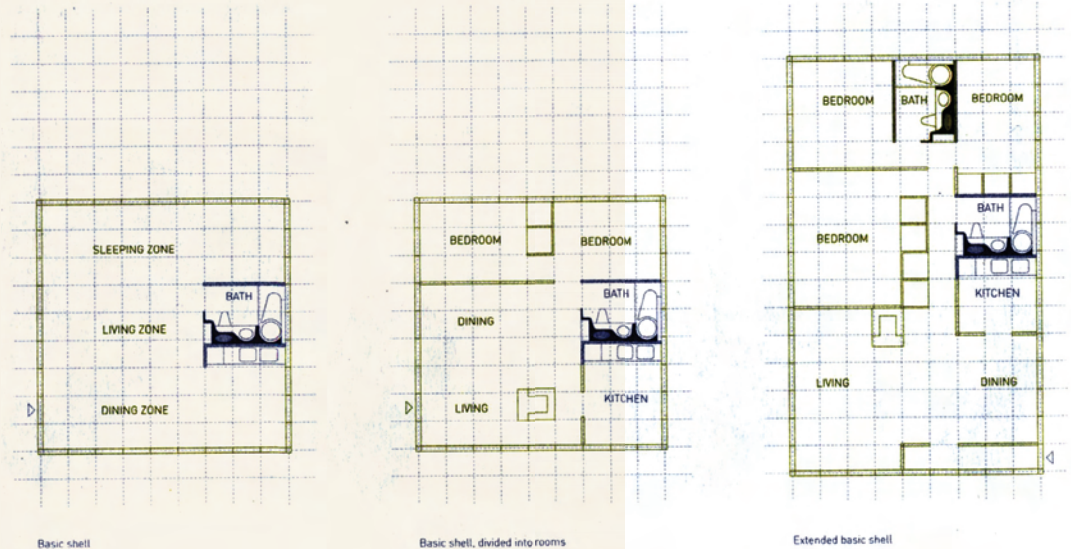


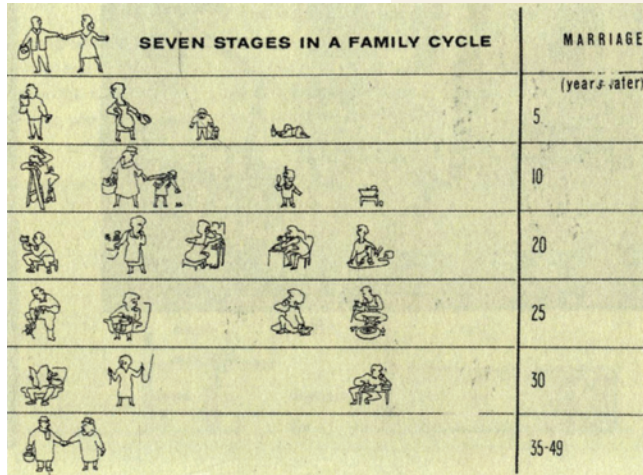
House 4  
Second floor

## "Prefabrication"

### Walter F. Bogner, USA, 1942, Unrealized Study

This project is Bogner's response to a competition given by the *Architectural Forum*, which asked for a design that could accommodate changes in occupancy as families grow. This a concern in today's cities as well where space is limited and growing families are forced to move into the suburbs. Bogner's design, based on an 8' x 8' grid, is broken down into four parts: groundwork, shell assembly, installations and accessories, and interchangeable parts. These elements are added on as needed throughout the lifetime of the unit, and most importantly of the family.

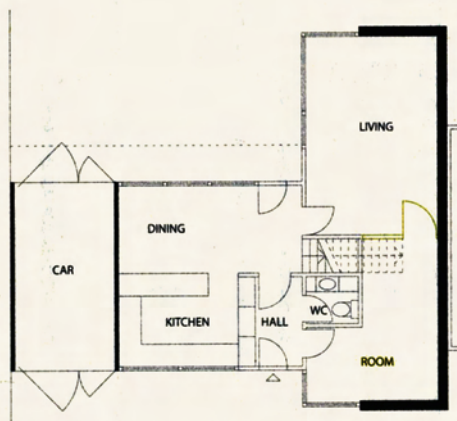




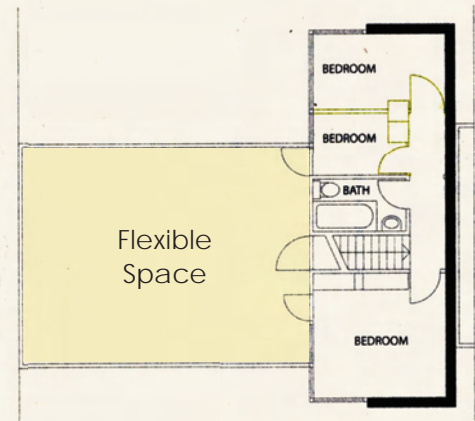
## The Adaptable House

Development Group of the British Ministry of Housing and Local Government, Britain, 1962, Study

The emphasis of this design is its changeability. It is representative of the stages of family life over a period of 50 years (see chart at lower left). Rooms can be subdivided over time to create more space and the various living spaces can serve many different purposes. A primary open space on the upper level is free enough to be used as needed.



Ground floor



First floor

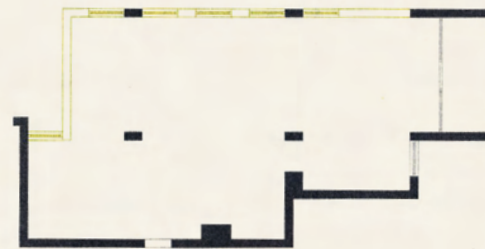


## Housing Group in Purkersdorf

Atelier P + F, Austria, 1976

72 Unit Apartment Building

Potential occupants were involved in the design process, after the initial structural scheme was established. Everything from basic layout and number and size of windows could be left at the discretion of the users. This is an example of pre-construction flexible design where most of the changes occur at the drafting table rather than throughout the lifetime of the building; however, such changes are possible. Additionally, the initial flexibility of the scheme caused the project to become expensive as space was wasted that the inhabitants deemed personally unnecessary. Full participatory design is beneficial but time-consuming when each unit is unique at the design phase.



Empty shell



Option 1: 4 bedroom apartment



Option 2: 3 bedroom apartment

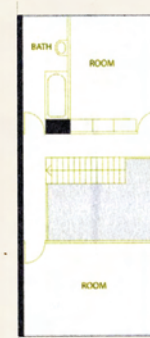


## Nemausus

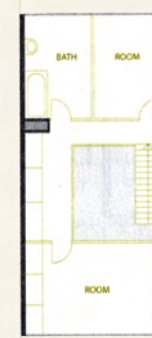
Jean Nouvel and Jean-Marc Ibos, France, 1985

### 114 Unit Apartment Building

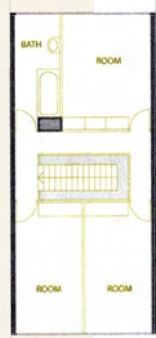
"Raw" open space is provided within the basic structure of the housing units to be adapted at will. The quantity of space was more important to the inhabitants than the degree of completion of the actual interior designs. The interior space is highly flexible given the simple structure. Water supply and returns are wall-mounted, making them easily accessible.



Upper floor  
Option 1



Upper floor  
Option 2



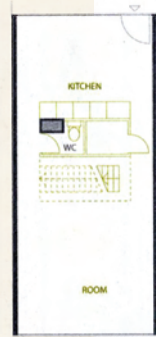
Upper floor  
Option 3



Lower floor  
Option 1



Lower floor  
Option 2



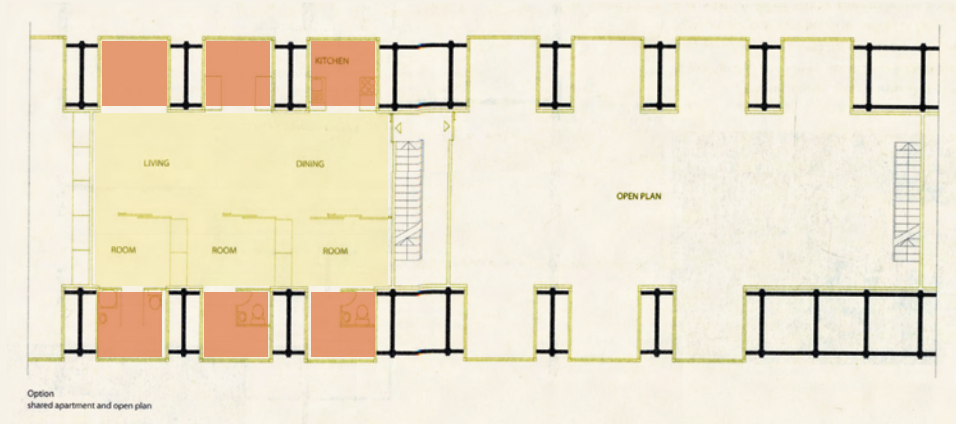
Lower floor  
Option 3

## Domino.21

J.M. Reyes, Spain, 2004

### Multi-Story Apartment Block

Domino.21 is a modular housing system by cubes can be combined vertically or horizontally to create units. There is a core space of the building itself onto which these cubes can be plugged. The cubes are mass-produced and are thermally insulated. The insulation and walls are moveable to connect spaces together.





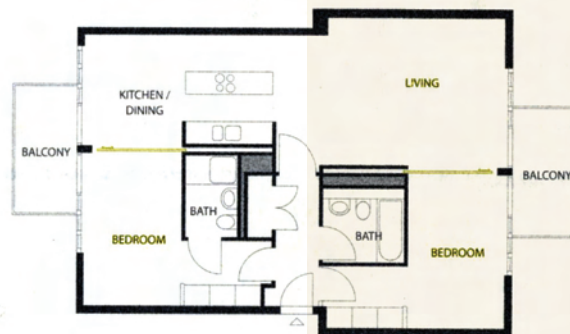
## Greenwich Millennium Village

Proctor 6 Matthews Architects, Britain, 2001

### 189 Unit Apartment Building

14 Live/Work Units and 47 Affordable Units

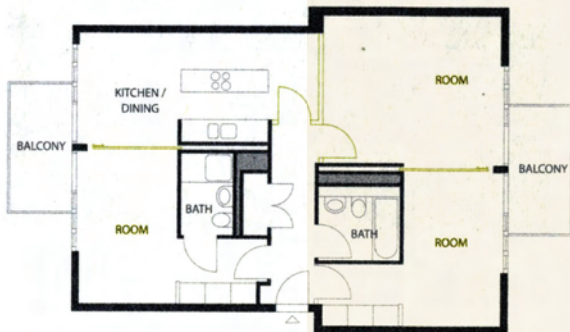
The plan allows for a variety of layouts, including multilevel apartments. Moveable walls slide into pockets of the central service cores. These sliding walls were designed to acoustically isolate the separated rooms. Below is a diagram of possible family types that utilize the same basic scheme.



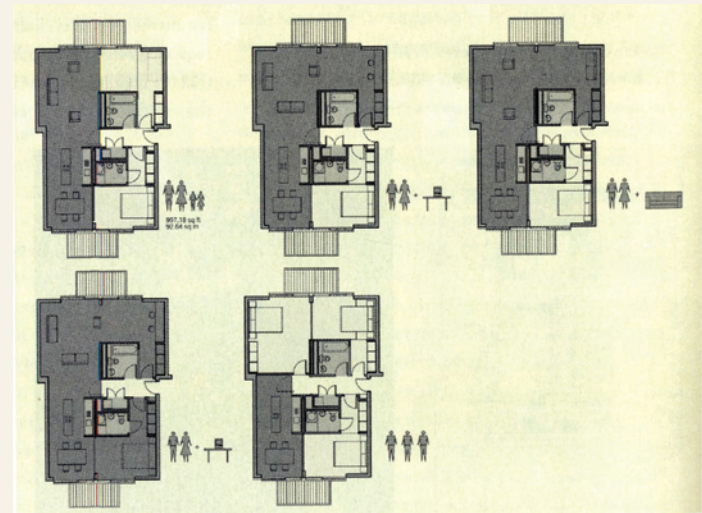
Option 1  
2 bedrooms, large living and dining area



Option 2  
1 bedroom, large living and dining area, study



Option 3  
3 bedrooms, kitchen



## FINAL DESIGN PRECEDENTS

### Masdar Sustainable City

United Arab Emirates

by LAVA

The building's interior court house what are called 'Petals from Heaven,' which "feature interactive umbrellas that open, provide shade, and capture energy during daylight hours; folding at night to release stored heat."<sup>1</sup> One of the key goals of this project is to demonstrate the benefits of sustainable technologies.



<sup>1</sup> Ethel Baraona Pohl, "Masdar Sustainable City/LAVA," ArchDaily, 2008-2009, [www.archdaily.com](http://www.archdaily.com)

Images from Archdaily.com, "Masdar Sustainable City"



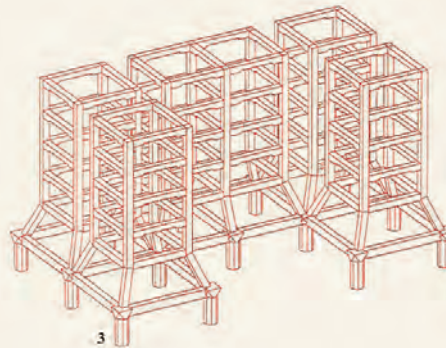


Seiji Sawada and  
Nicolaas John Habraken,  
“Experimental apartment  
building, Osaka, Japan,”  
*Domus*, 1999 Oct., n.819,  
p.18-[26]

## Next 21

### Osaka, Japan

Flexibility in this housing project exists due to the concrete frame structure, which allows for buildings parts to move independent of the structure. The Support/Infill approach to adaptable housing was taken further, separating the architectural team working on the structure from the firm designing the unit interiors.



#### **Key concepts that characterize Open Building are:**

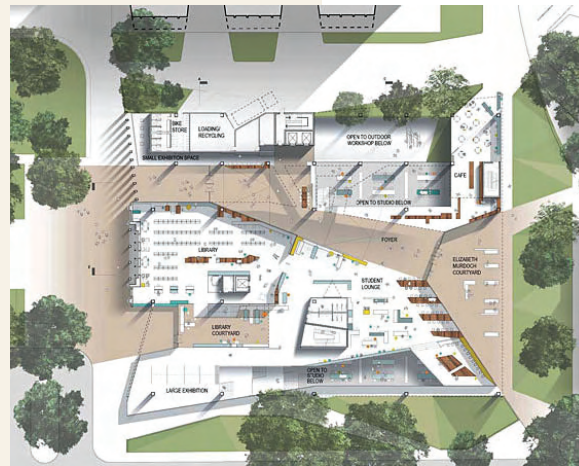
- *Three levels: Tissue (urban fabric), Support (base building), and Infill (interior).*
- *Adaptability: according to the changing preferences and requirements of the consumers/dwellers.*
- *Variety with efficiency: design and production of a variety of construction elements; efficiency is maximized by utilizing CAD in conjunction with industrial production.*
- *Subsystems disentanglement: to decrease confusion in construction and facilitate removal and installation of building parts.*
- *Sustainability: investment according to the life cycle of environmental assets for living. (S. Sawada)*



## Faculty of Architecture, Building and Planning building for the University of Melbourne

John Wardle Architects and Office dA  
Competition Winners

This particular precedent is interesting for its relationship to its site and its ability to move pedestrians through its ground floor. The permeability of its mass allows for maximum interaction both with the building and between people in various locations of the building's program. The resulting spaces seem to promote a strong sense of community.



Images from Archdaily.  
com, "University of  
Melbourne Announces  
Winners / John Wardle  
Architects + Office dA"

## Zamet Centre

Rijeka, Croatia

by 3LHD

In attempting to create a public plaza space on top of the theater in my final design, I found this project to achieve similar goals. The outdoor public experience is as important, if not more so, than the building program, providing elaborate stairs that peel up from the ground in a rhythmic pattern. The building masses themselves also rise from the ground, creating a humble building that is part of and entwined with its site.



Image by 3LHD from  
Archdaily.com, "Zamet  
Centre / 3LHD"

## Caixa Forum

Madrid, Spain

Herzog & de Meuron

The Caixa Forum appears to hover above the ground, perched above the site allowing pedestrians to circulate beneath it and enter the building from below. The theater is nestled into the ground and the roof of which is used as plaza space above.

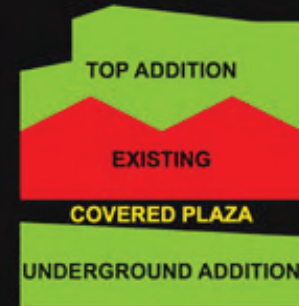


Image by evan.chakroff, "herzog & de meuron | caixa forum madrid," Flickr.com

Images © Herzog & de Meuron,  
arcspace.com



Image by leesaf, "Caixa Forum Madrid 03," Deviantart.com

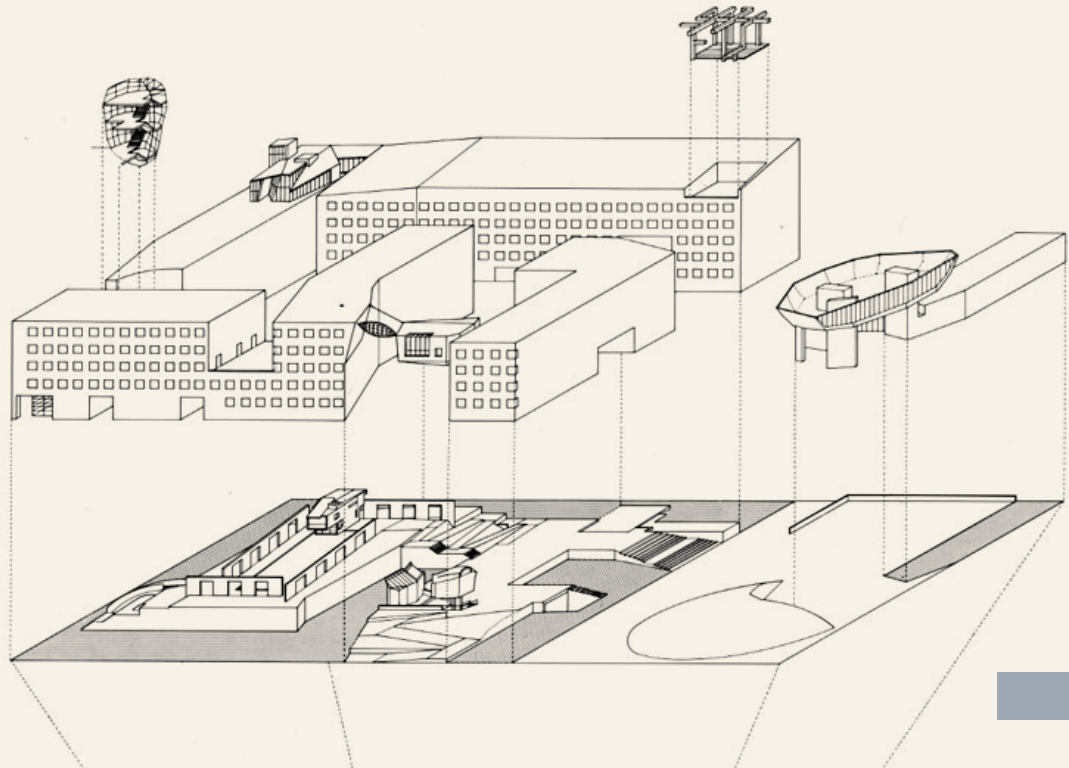


## MAKUHARI BAY NEW TOWN

Chiba, Japan

Steven Holl Architects

"The new town of Makuhari is sited on a dredged fill at the rim of Tokyo Bay. Our concept interrelates two distinct types: silent heavyweight buildings and active lightweight structures. The silent buildings shape urban space and passage with apartments entered via inner garden courts. The concrete bearing walls have thick facades and a rhythmic sequence of openings. Slightly inflected according to sunlight they gently bend space and passage. Celebration of natural phenomena is taken up by the lightweight "activist" forms."



Images and Description  
from "MAKUHARI BAY NEW  
TOWN," Stevenholl.com

## Facade Systems

### Baumschlager-Eberle

The translucent green-blue facade system used in many of Baumschlager-Eberle projects played a significant role in the development evolution of my design proposal and its final details that introduce notions of flux and adaptability. Below is the Sebastianstrasse housing project and, on the right, is the Eichgut Residences in Winterthur, Switzerland.



Image by jankovskya,  
"Sebastianstrasse," Flickr.com



Image from Winfried  
Nerdinger, ed.,  
Baumschlager - Eberle  
2002-2007 London :  
Springer, 2007



## Metal Shutter Houses

New York City

Shigeru Ban

This housing project's main point of interest, in terms of its presence, is the various phases of its facade at different times of day and based on user preference. The night time condition is strikingly distinctive from the daytime and especially closed condition. The building begins to address the transitory conditions in the urban environment didactically and dynamically.



Images from Archdaily.  
com, "Metal Shutter Houses  
/ Shigeru Ban"





# TECHNICAL INVESTIGATIONS

## Movable and Changeable Modular Systems

Through the categorical analysis of flexible housing precedents, I aim to develop a series of systems that can be interchanged to produce a highly adaptable housing scheme that requires the fewest resources, especially in terms of ease of adaptability and affordability.

## Responsive Cladding Systems

The exterior of the building is allowed to change over time based on the season, time of day, level of personal privacy required and site transparency. Like the bamboo shades of the Slit Villa, the cladding system is one that requires both technical complexity and material efficiency to be functional and affordable.

Similar to the movable spatial units (outlined below as an additional technical system to be investigated), the cladding system could be panels whose slats rotate to change the level of transparency or amount of light that is allowed to enter the housing complex. The cladding may also be panels that are interchangeable, unique to the individual family's needs, that feature different panel systems or aperture sizes.

## Location of Utilities

In a system that is potentially indefinitely impermanent, there needs to be some aspect of permanence into which the housing units are inserted. The interface between the units and the permanent municipal utilities is an important aspect that needs to be investigated.

## Structural System

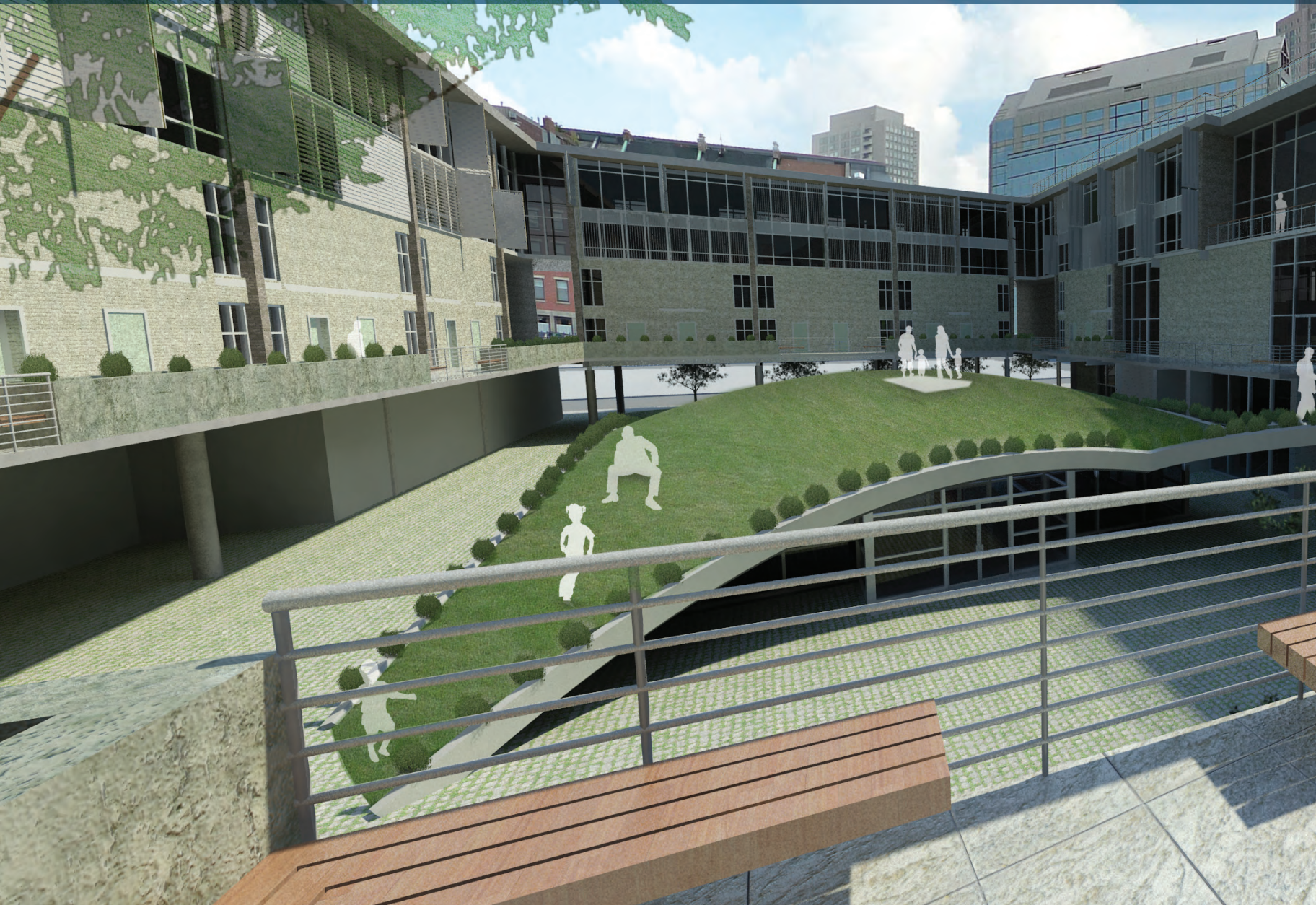
I would like the structure of the building, as that which is separate from the individual structure of the units, to govern the design. It is important for the structure to be manifested in the design at the outset of the project. Again, the permanent structure becomes in dialogue with the changeable units and thus that connection must be explored to allow for the most efficient changes to take place and to sustain the housing project into the future.

## Ecotect

I am looking into using Autodesk's Ecotect software to analyze and simulate building environmental performance.



# FINAL THESIS PROJECT PROPOSAL







The new housing block devoted to the North End community is organized as a perimeter bar scheme, paying attention to the traditional formation of blocks within this historic neighborhood. What is, in most cases, inaccessible space in the center of the block becomes the life of this strategy for adaptable housing and community formation. Located along the Greenway, adjacent to one of the least attractive park parcels Ramp Parcel 12, the new housing complex steals the attention, drawing the Greenway underneath its housing bar that fronts the street and elevates it to upper housing levels. This sloping continuation of greenspace blankets courtyard and plaza spaces on the ground level as well as becomes the undulating roof of the building's black box community theater. This performance space doubles as a much needed forum for meetings regarding concerns that rest at the heart of the nearby North End Residents' Association and its constituent members. To allow for a continued flux of diversity, the housing blocks are divided into two-unit wide bays that, within each bay, can be divided into either 8, 7, 6, 5, 4 or 3 units, acoustically insulated fold-up panels that are attached to the regular structural grid. Community is fostered by the various organizational possibilities offered to the housing complex's residents. Not only is a diversity of family types encouraged through design, but the frequency of relocation due to families outgrowing their living arrangements is potentially reduced. Finally, while the building sits on its site feeding off the established growth and development of the new Rose Kennedy Greenway, the presence of the building returns to educate those for whom it exists in the first place; the architectural language is adaptive, therefore it is constantly changing in response to its environmental conditions,



whether through automated processes or by the simple act of residents acclimating their space to desired conditions. The building strives to be a living organism and to reunite with its natural context, finding strength in the greenbelt that cuts through the heart of the urban realm.



Site Presence: View Along Greenway Street Frontage  
acrylic paint, ink on panel 2' x 3'











Ground Floor Plaza Entry from Greenway





Intersection of the  
Greenway (Cross St.)  
and Fulton St.



- A.** Rentable Restaurant/  
Function Space [5,181  
SF]
- B.** Kitchen [1,177 SF]
- C.** Function Room [1,252  
SF]
- D.** Theater Mezzanine
- E.** Thrust Stage
- F.** Main Stage
- G.** Theater Upper Lobby  
[1,039 SF]
- H.** Cafe/Lounge [1,268 SF]
- I.** Resident Lobby [887 SF]
- J.** Mailroom [573 SF]
- K.** Service/Deliveries [798  
SF]
- L.** Bike Storage

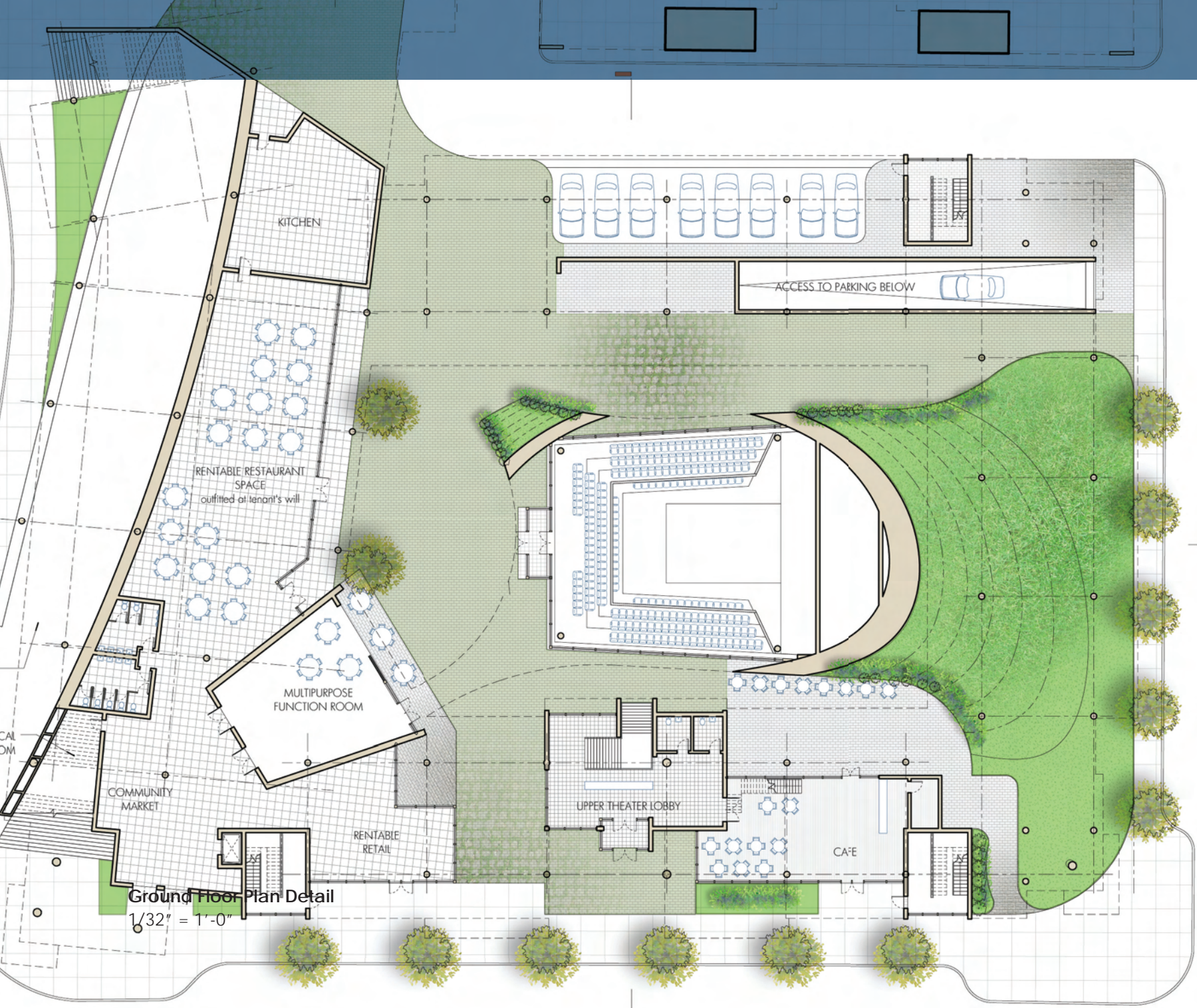
Total Ground Floor  
Square Footage:

**Approx. 18,500 SF**

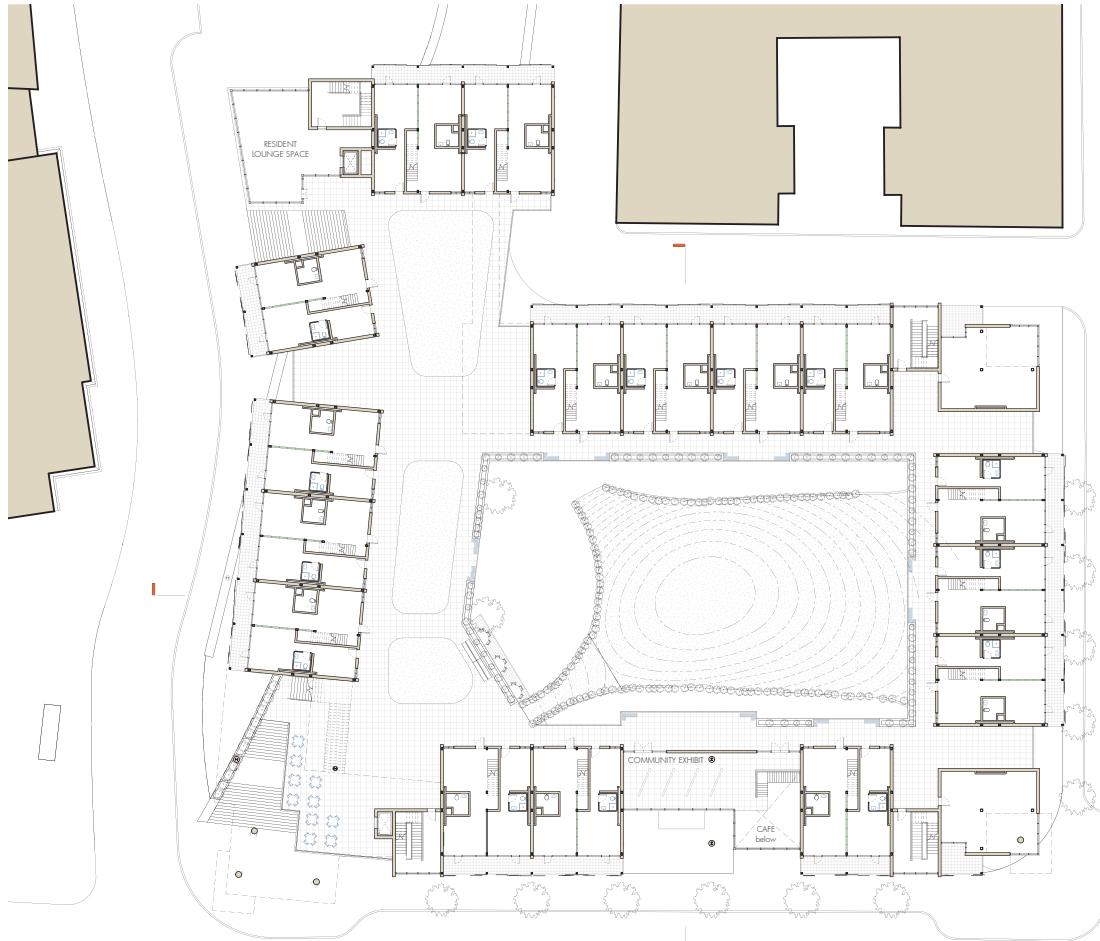


**Ground Floor Plan**  
1/64" = 1'-0"





Ground Floor Plan Detail  
 $\frac{1}{32}'' = 1'-0''$

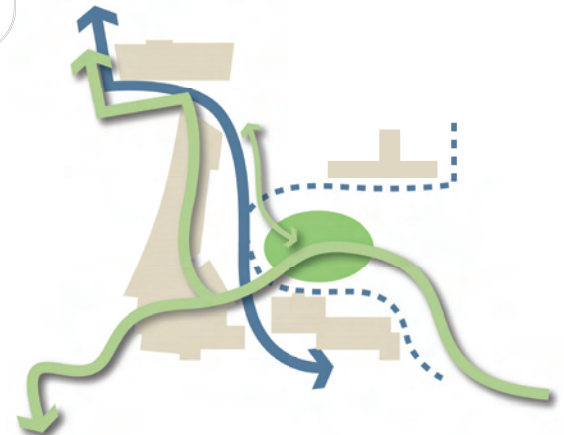


**First Housing Level Plan**

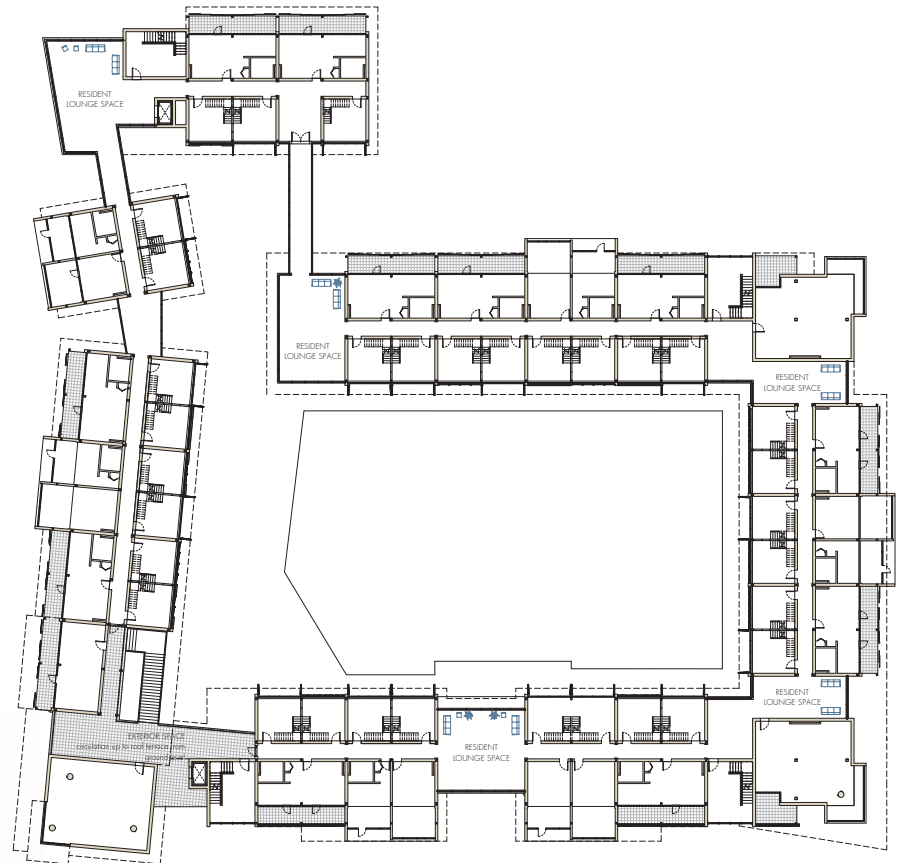
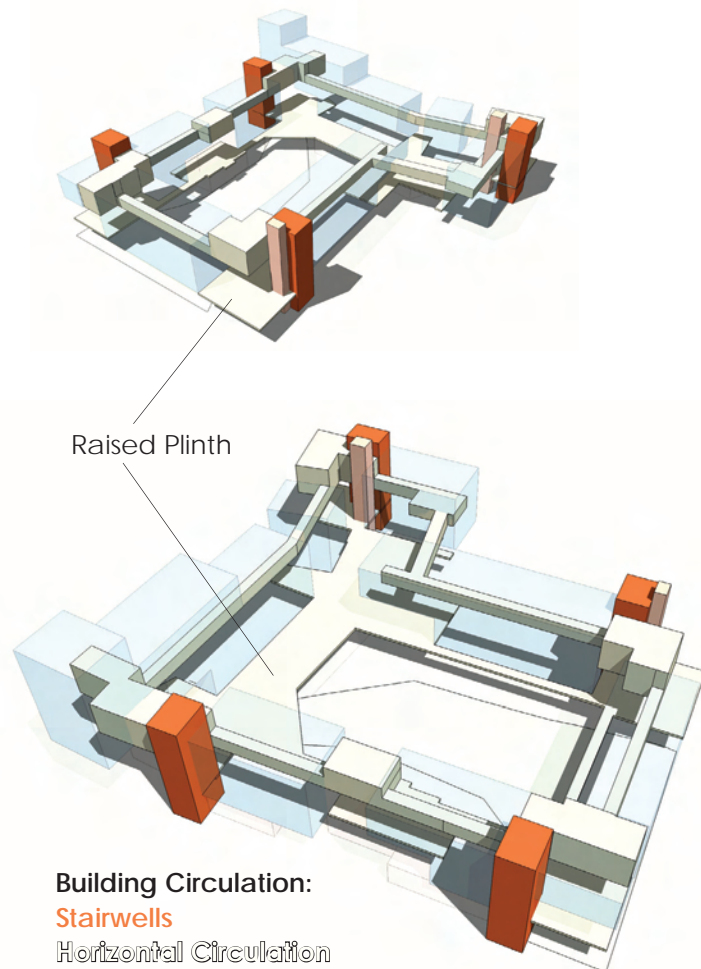
1/64" = 1'-0"

## Site Circulation

- Enclosed Ground Floor Program
- Movement from Ground onto "Mound" and up to First Housing Level
- Ground Floor Site Passage
- Secondary Site Circulation



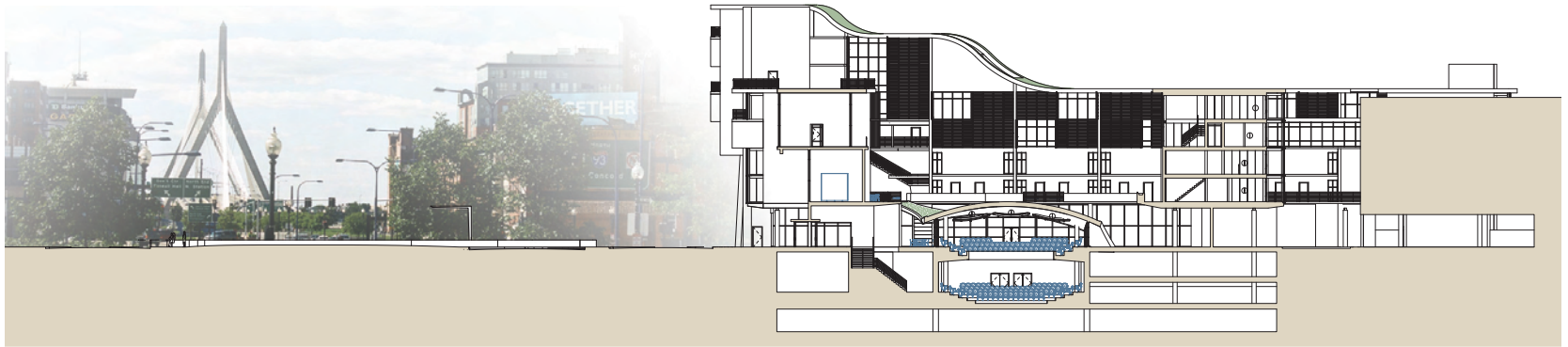
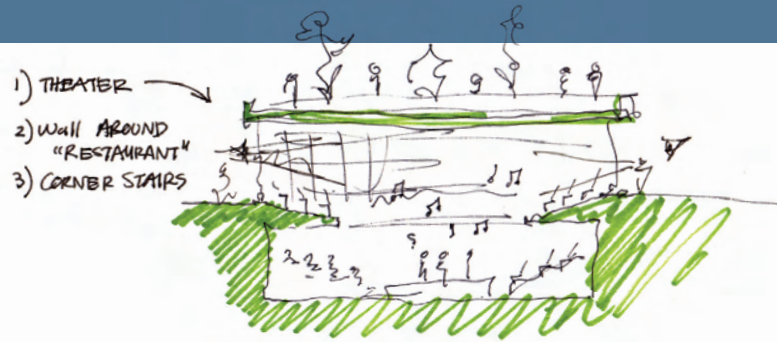




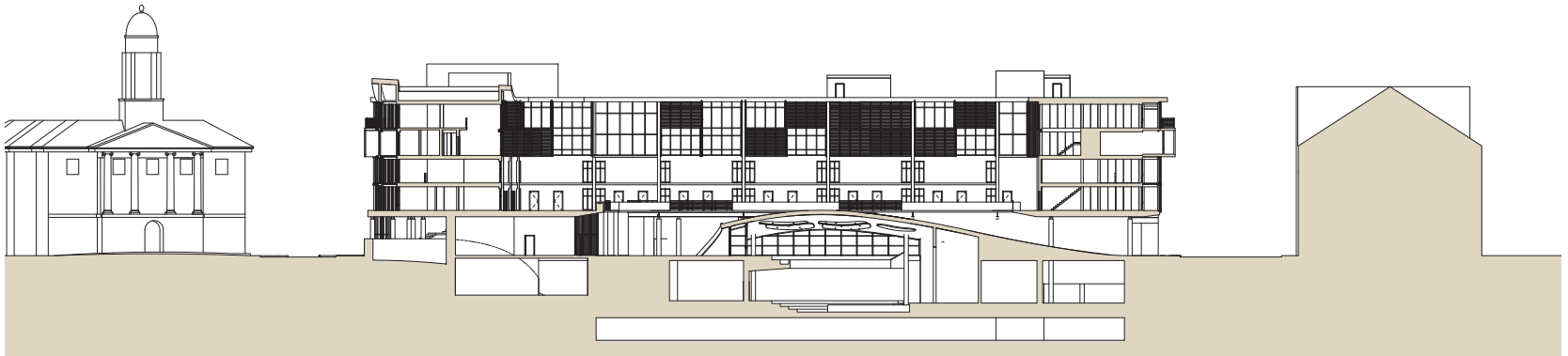
**Third Floor Plan**  
 Primary Horizontal Circulation (Corridor Level)  
 1/64" = 1'-0"



Sectional  
Theater Concept



Cross Section  
Scale 1/64" = 1'-0"



Longitudinal Section  
Scale 1/64" = 1'-0"



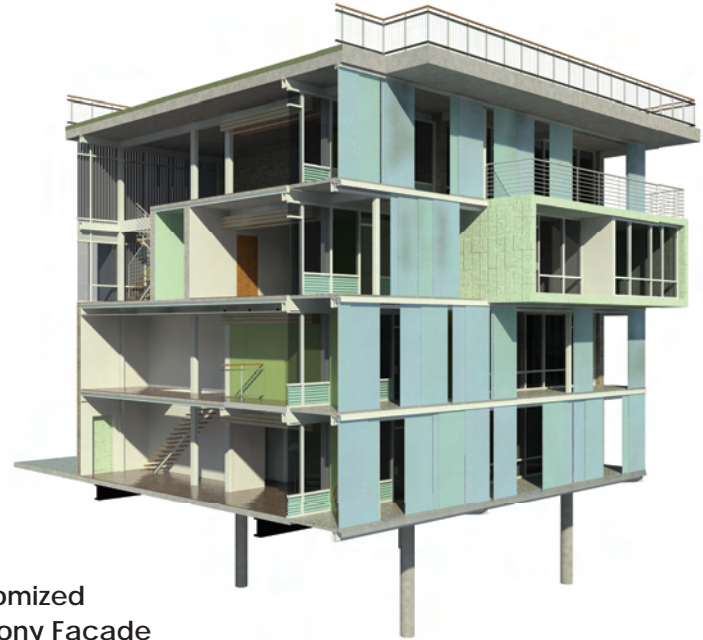
Theater from  
Mezzanine Level  
Accessed from  
Ground Floor Plaza





**Open  
Balcony Facade**  
Optimal Summer Condition

- depth of balconies helps to shade from direct sunlight
- open facade provides maximum ventilation potential through the depth of the single-loaded housing section



**Radomized  
Balcony Facade**  
Dynamic Experience and User-Controlled Environment

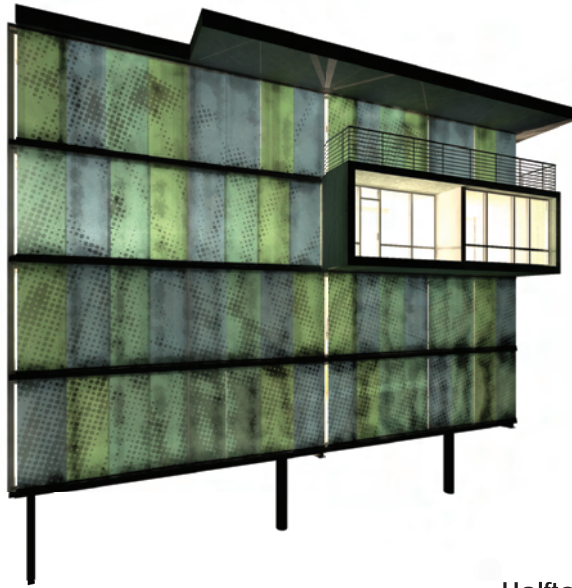
- users take responsibility of controlling interior climate through manipulation glass facade panels
- WINTER condition: User's have the ability to close off their facade, creating winter gardens that trap solar radiation after passing through the translucent panels; a buffer zone is thus produced, reducing heating loads



**Greenway Elevation** Shadows at Noon during Winter Solstice

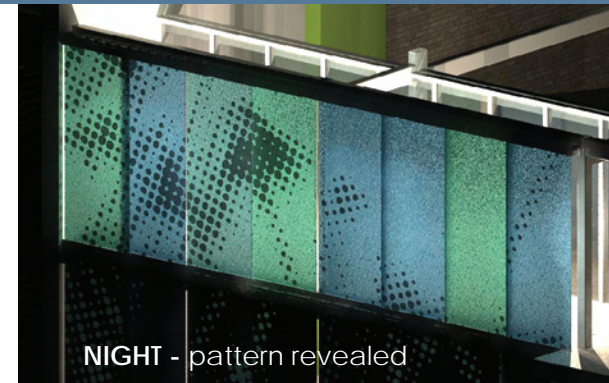
1/64" = 1'-0"





### Closed Balcony Facade

NIGHT condition: optimal privacy, reduction of light pollution, and adaptation of building PRESENCE as distinct from the daytime condition (Below Right)



### Halftone Frit Pattern

A continuous image spans across one housing bay, from the first floor to the fourth floor. Any image inspired by nature may be used, preferring that each bay has its own graphic to further randomize the facade and individualize groupings of units. This facade strategy is a hint of the organic that, in revealing itself at night and during the day for inhabitants, brings notions of growth and adaptive processes to the urban context.

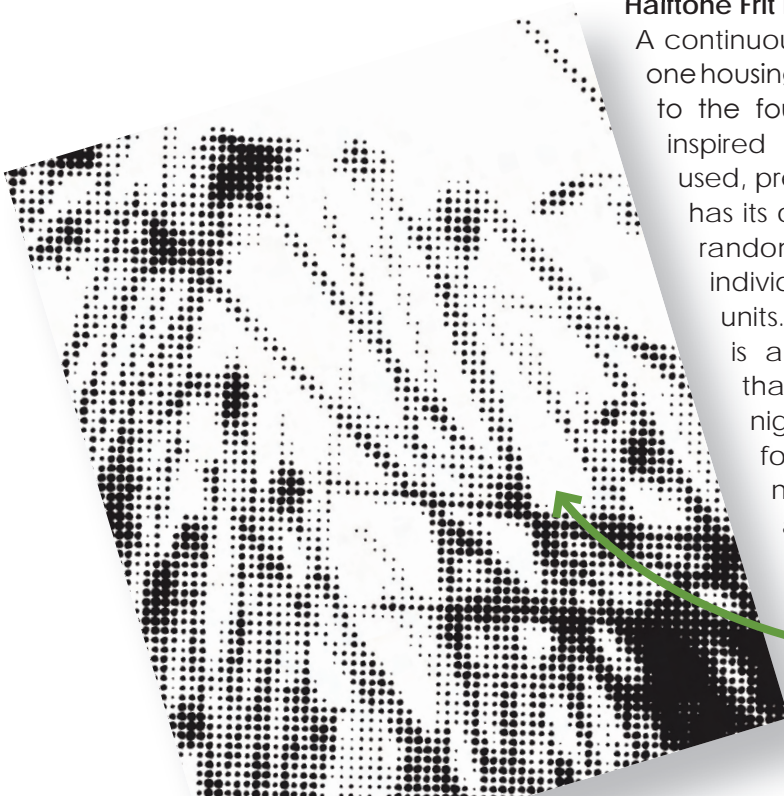
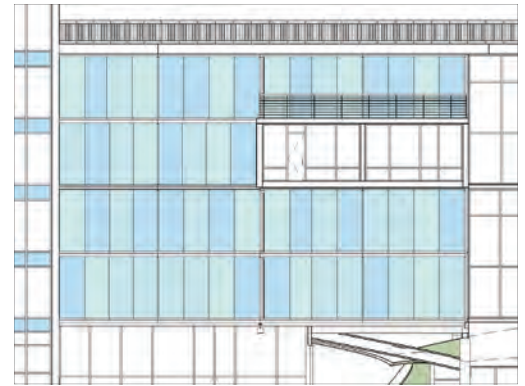


Photo by Kevin  
Mowatt

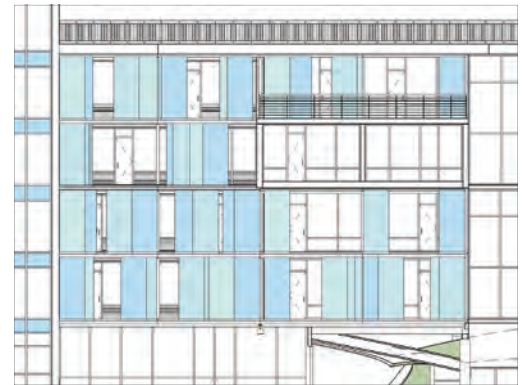




Elevational Detail showing frit pattern



Closed Facade



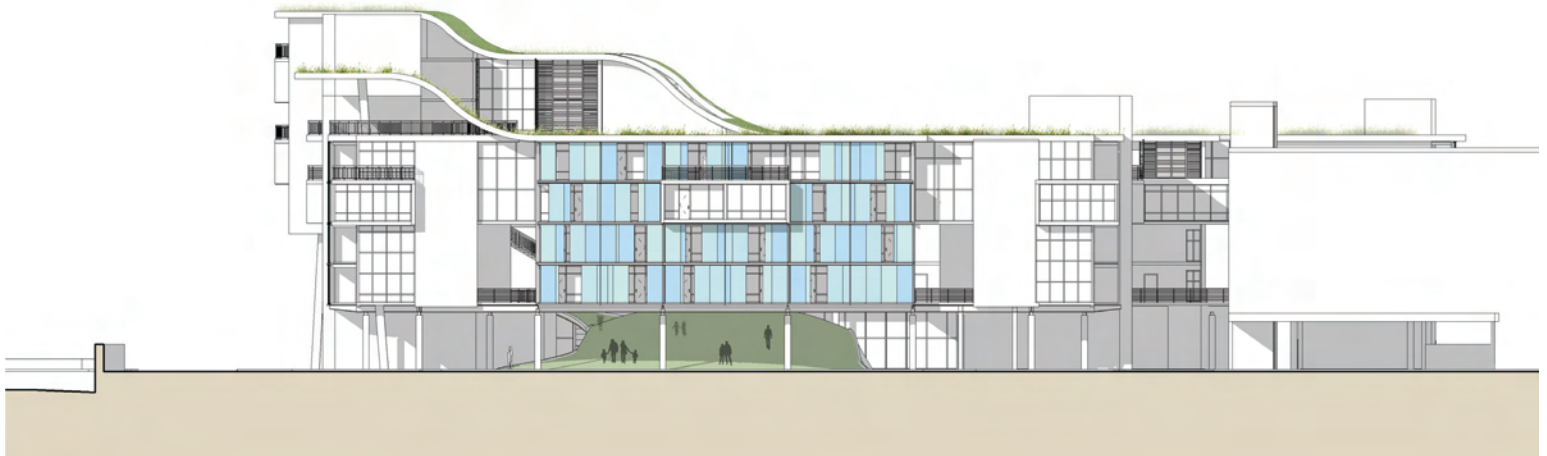
Randomized/Typical Facade



Open Facade



**North Street Elevation** Shadows at 4pm during Summer Solstice  
 $1/64" = 1'-0"$



**Fulton Street Elevation** Shadows at 11am during Winter Solstice  
 $1/64" = 1'-0"$



The following unit bay configurations are outlined below with the square footages for each respective unit within each bay. **There is a potential for 132 studio/ 1-Bedroom units**, after adapting each bay to its smallest constituent parts, with an additional 15 unique units in the building's corners. With 3 units per modular bay, **there could be a minimum of 50 adapted family units**, the cost of rent of which may be equal to the total rent of all small units (8 Unit Bay Configuration) combined in a single bay. Most units, at their smallest configuration, have a balcony of at least 90 square feet (not included in SF below).

### 8 Unit Bay Configuration

Unit #	1	2	3	4	5	6	7	8
SF	478	415	523	415	517	517	305	354

### 7 Unit Bay Configuration

Unit #	1	2	3	4	5	6	7
SF	478	415	523	415	<b>1250</b>	305	354

### 6 Unit Bay Configuration

Unit #	1	2	3	4	5	6
SF	900	948	517	517	305	354

## 5 Unit Bay Configuration

Unit #	1	2	3	4	5
SF	1403*	415	517	517	409

\* Unit 1 has an optional double height living space. With the addition of movable floor panels, this space could be replaced with 126 SF of space on the second floor.

## 4 Unit Bay Configuration

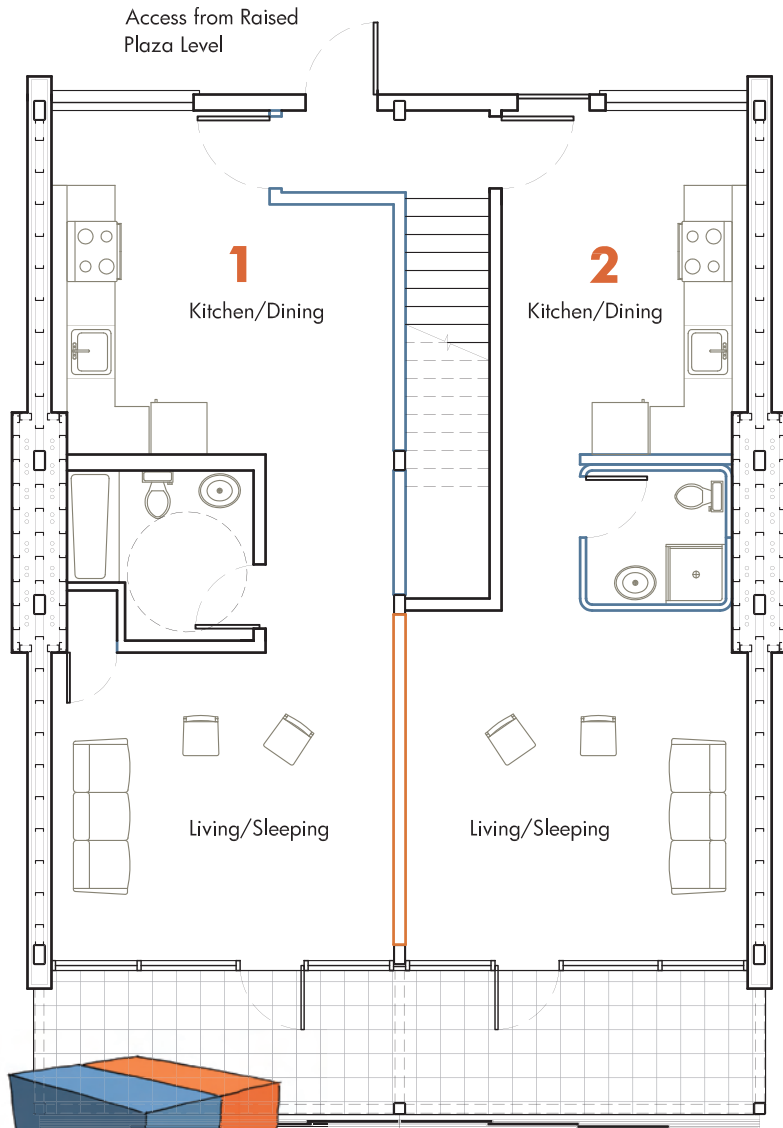
Unit #	1	2	3	4
SF	900	948	1250	409

## 3 Unit Bay Configuration

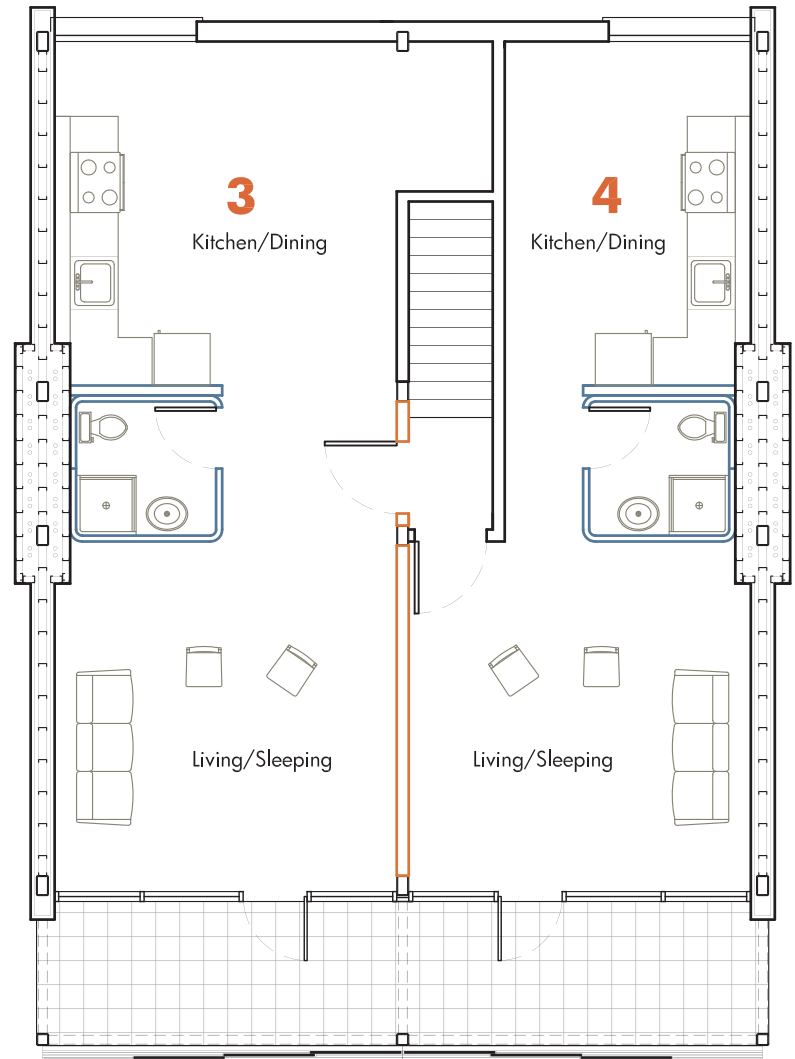
Unit #	1	2	3
SF	1707*	1250	409

\* Unit 1 has an optional double height living space. With the addition of movable floor panels, this space could be replaced with 256 SF of space on the second floor, or 126 SF of space and a half-bay double height space.

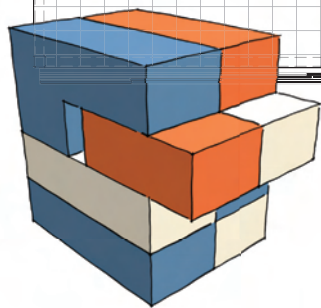
# UNIT PLANS



First Floor



Second Floor

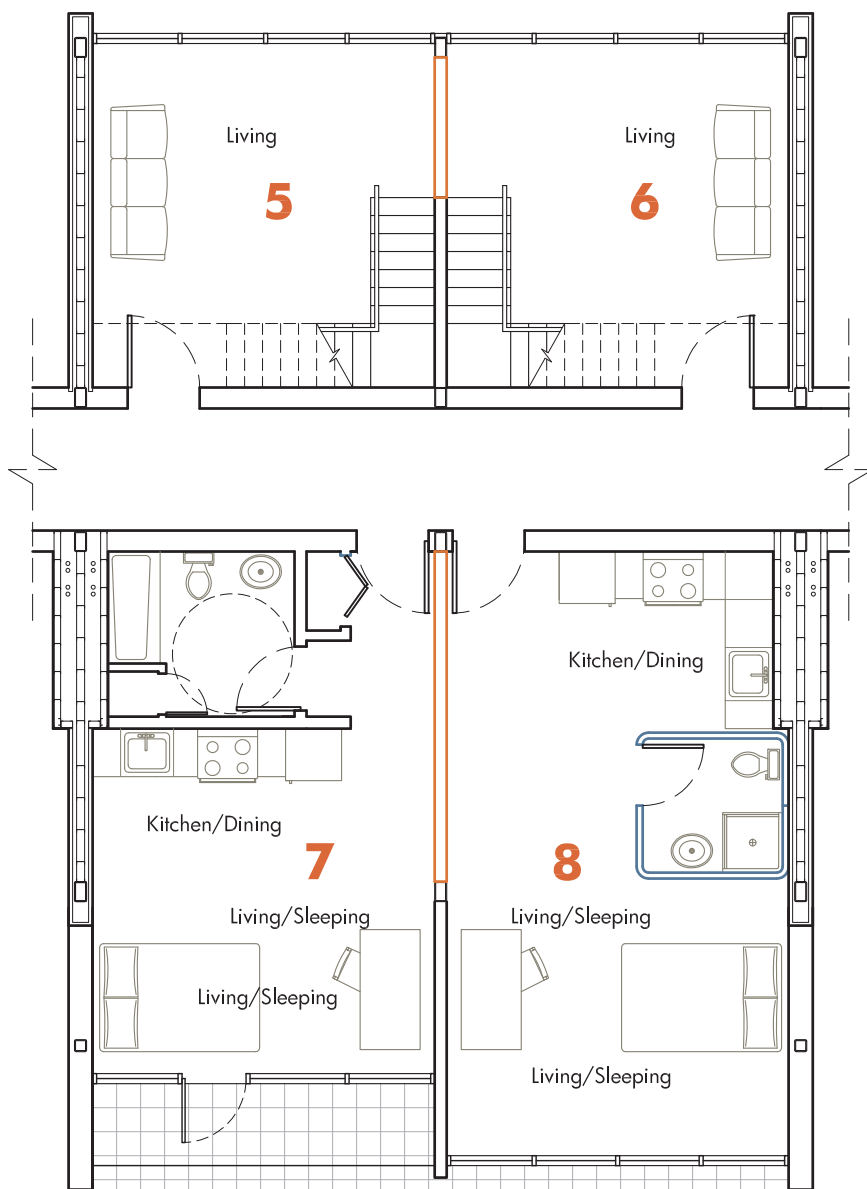


## 8 Unit Bay Configuration

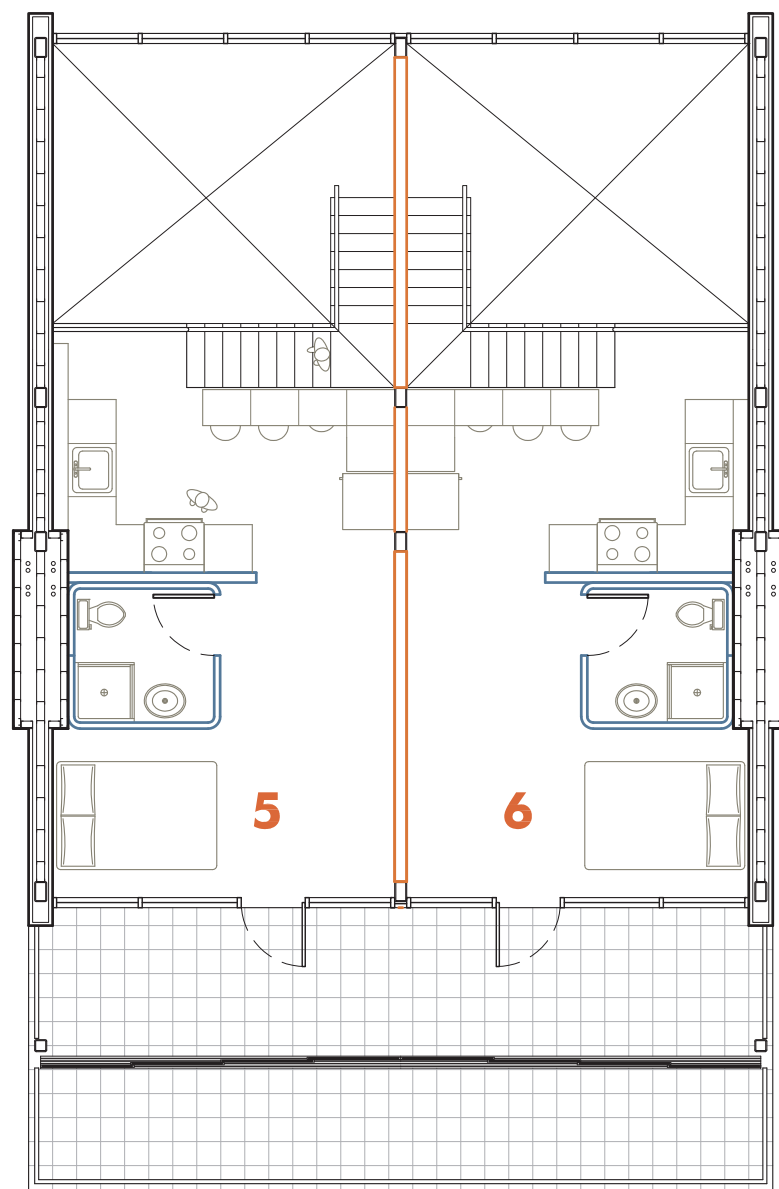
Scale 1/8" = 1'-0"





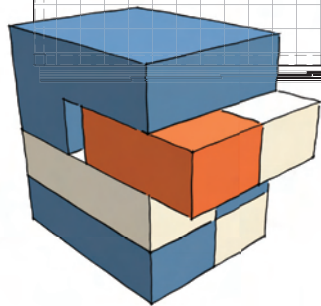
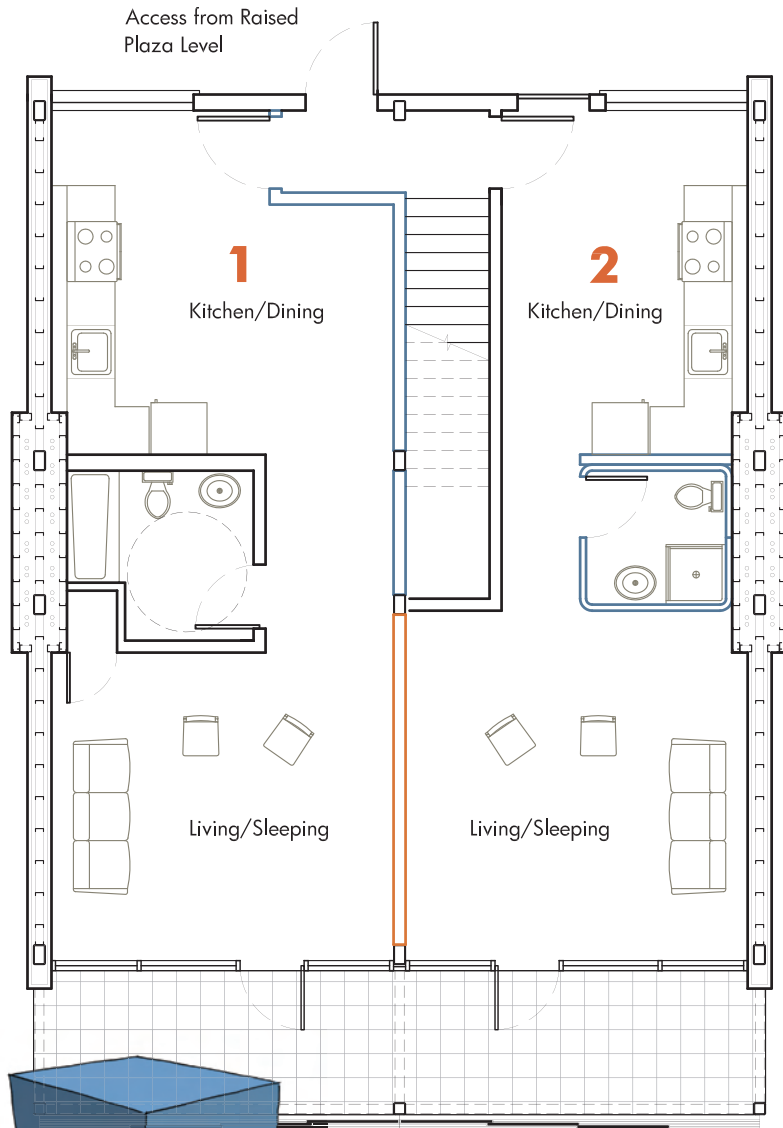


Third Floor

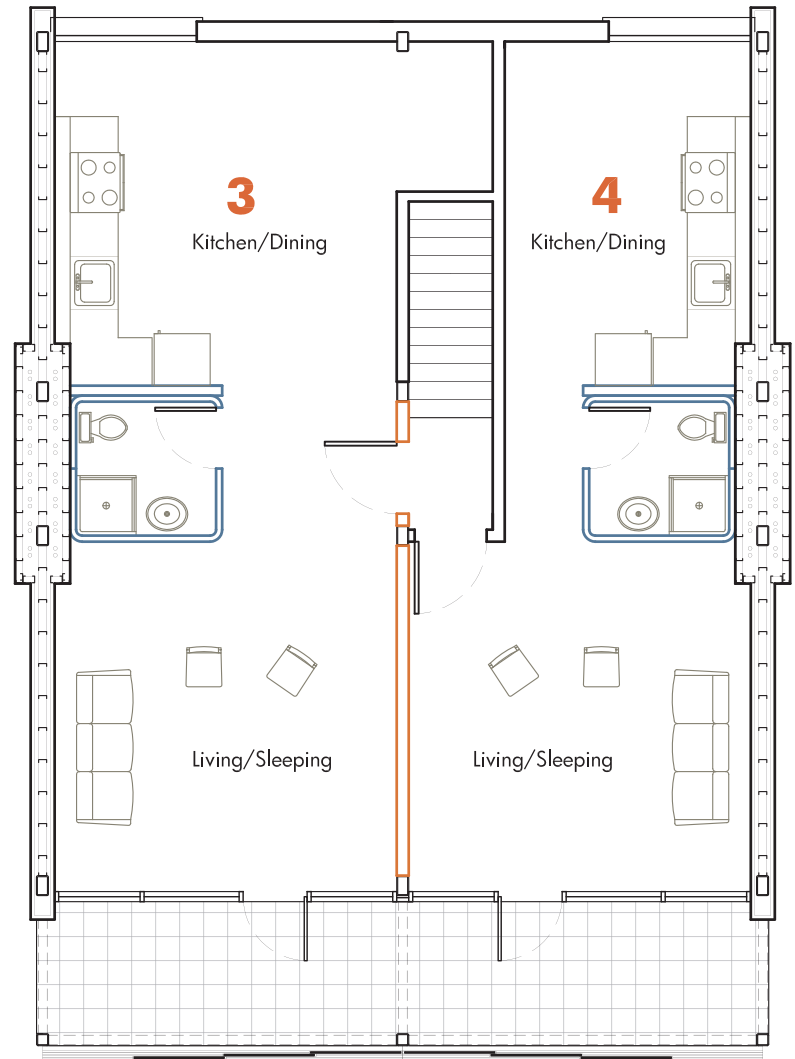


Fourth Floor

# UNIT PLANS



First Floor

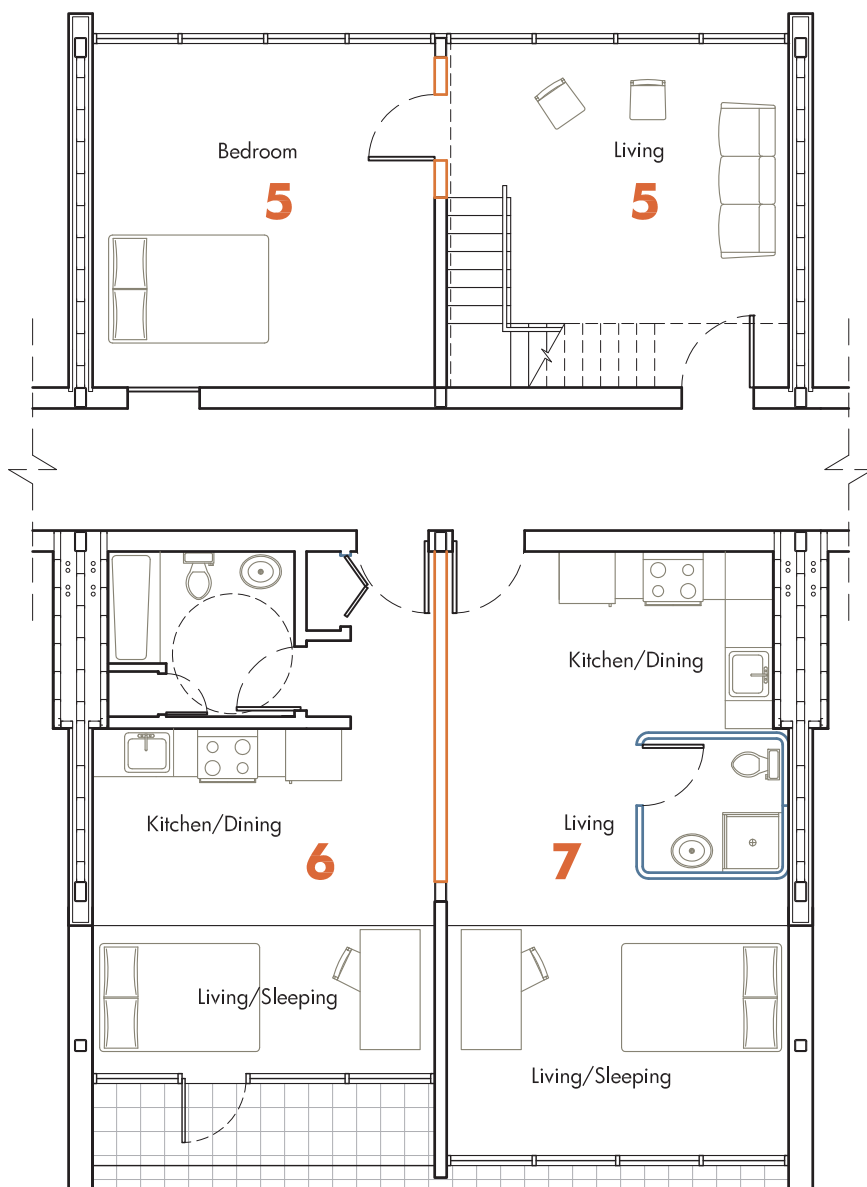


Second Floor

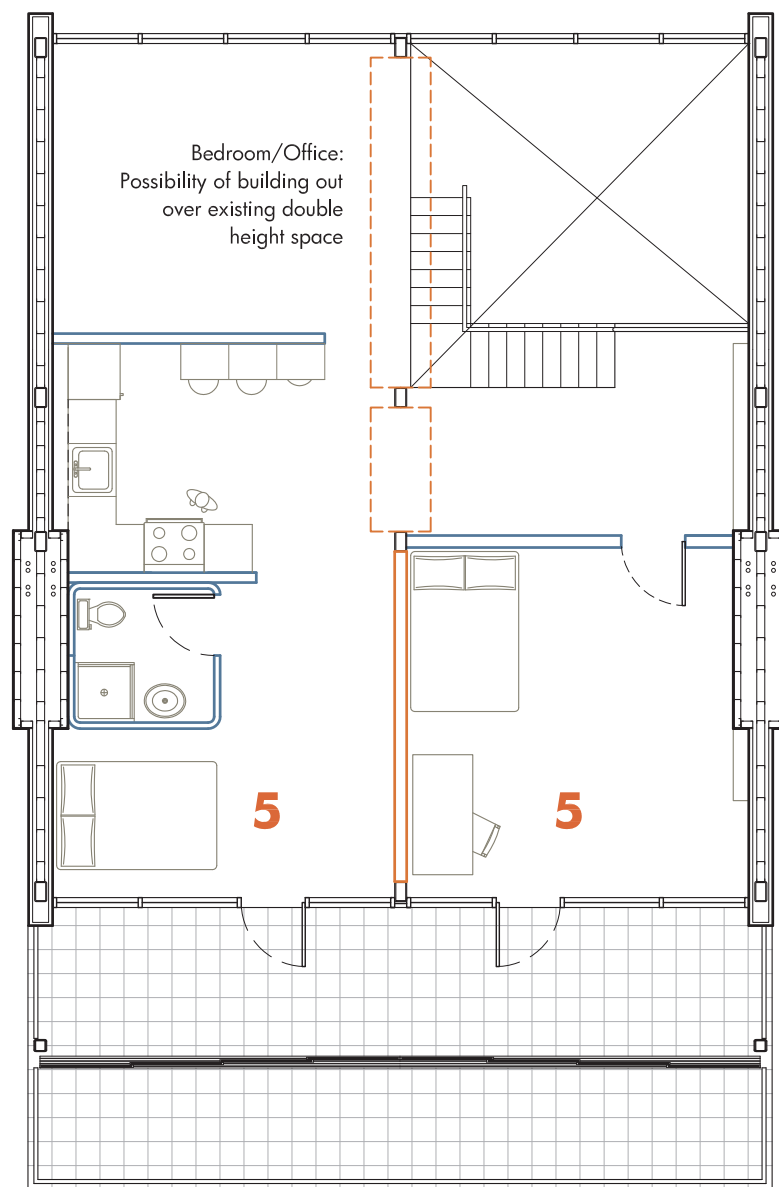
## 7 Unit Bay Configuration

Scale 1/8" = 1'-0"





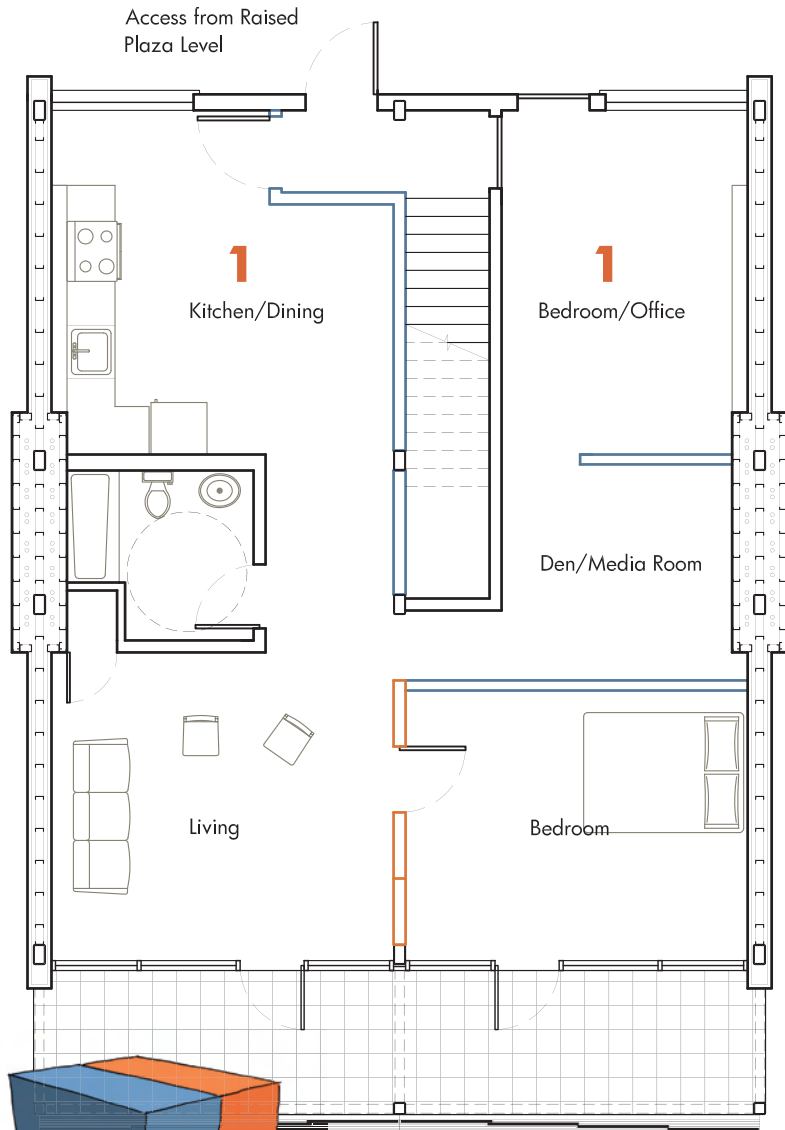
Third Floor



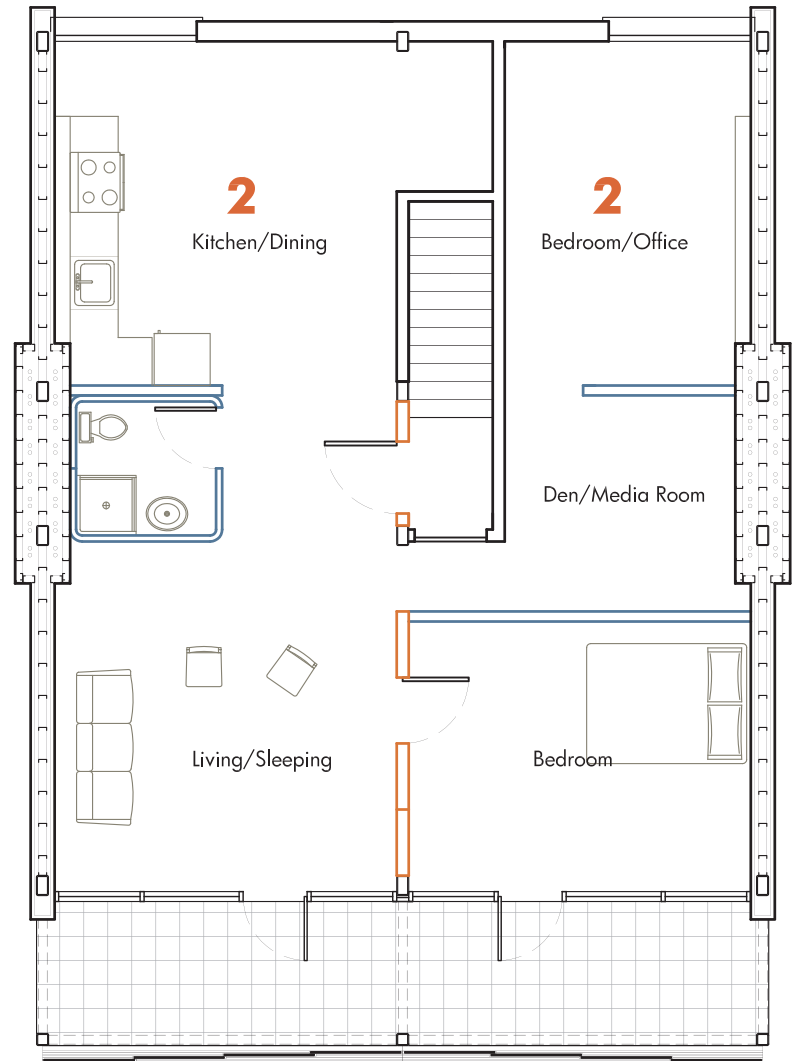
Fourth Floor



# UNIT PLANS



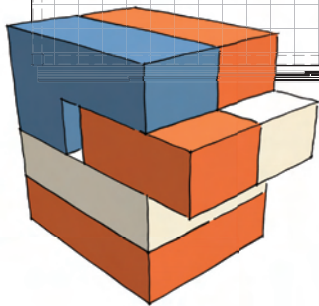
First Floor

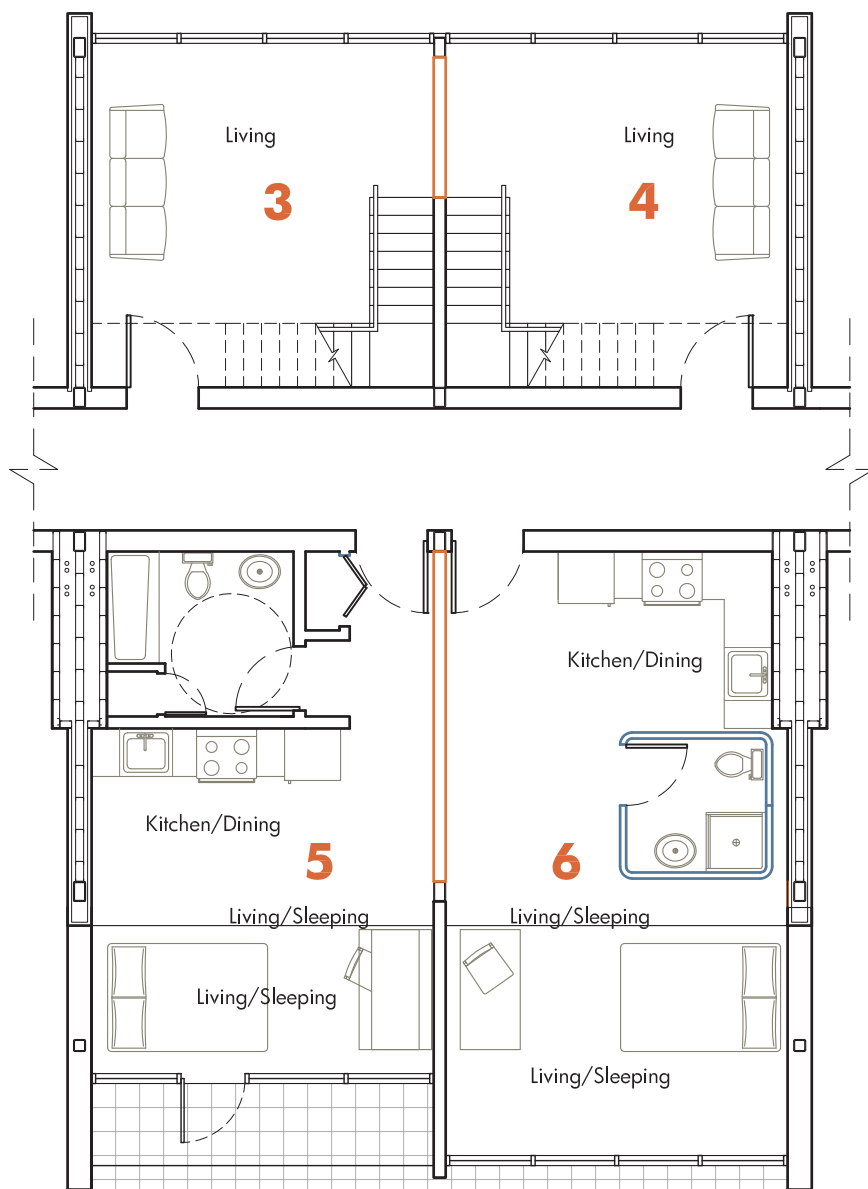


Second Floor

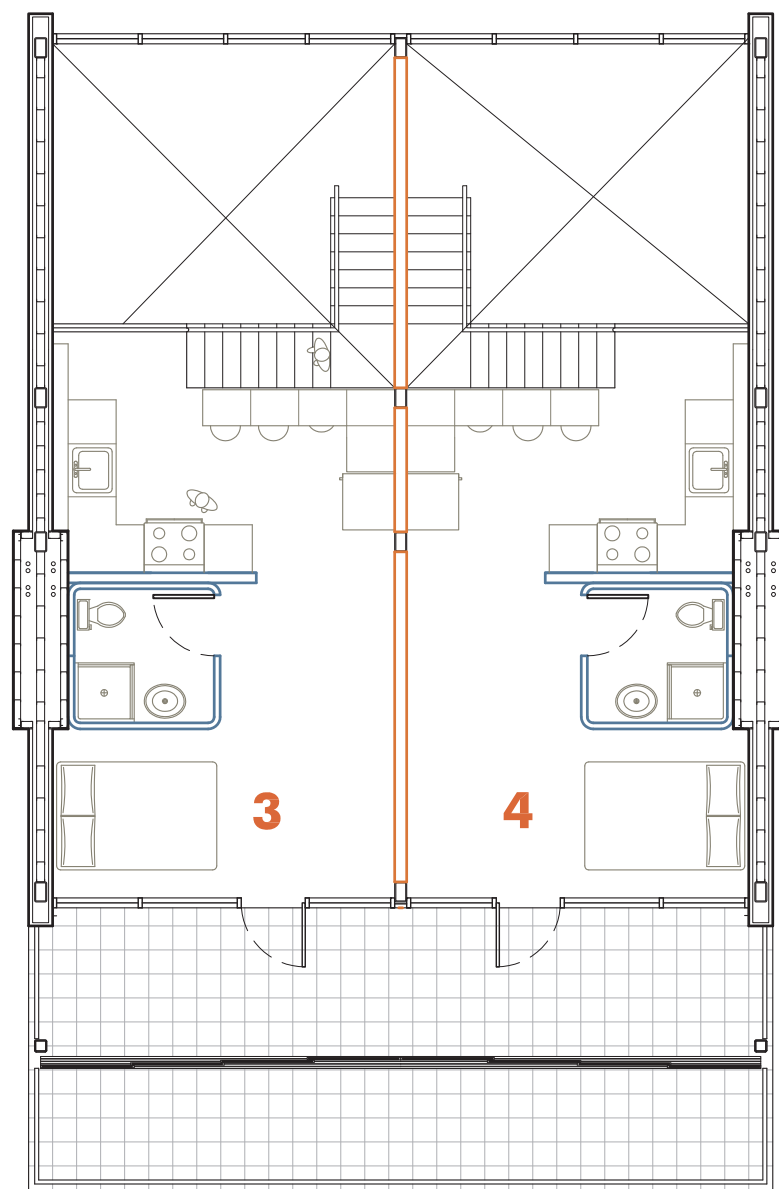
## 6 Unit Bay Configuration

Scale 1/8" = 1'-0"



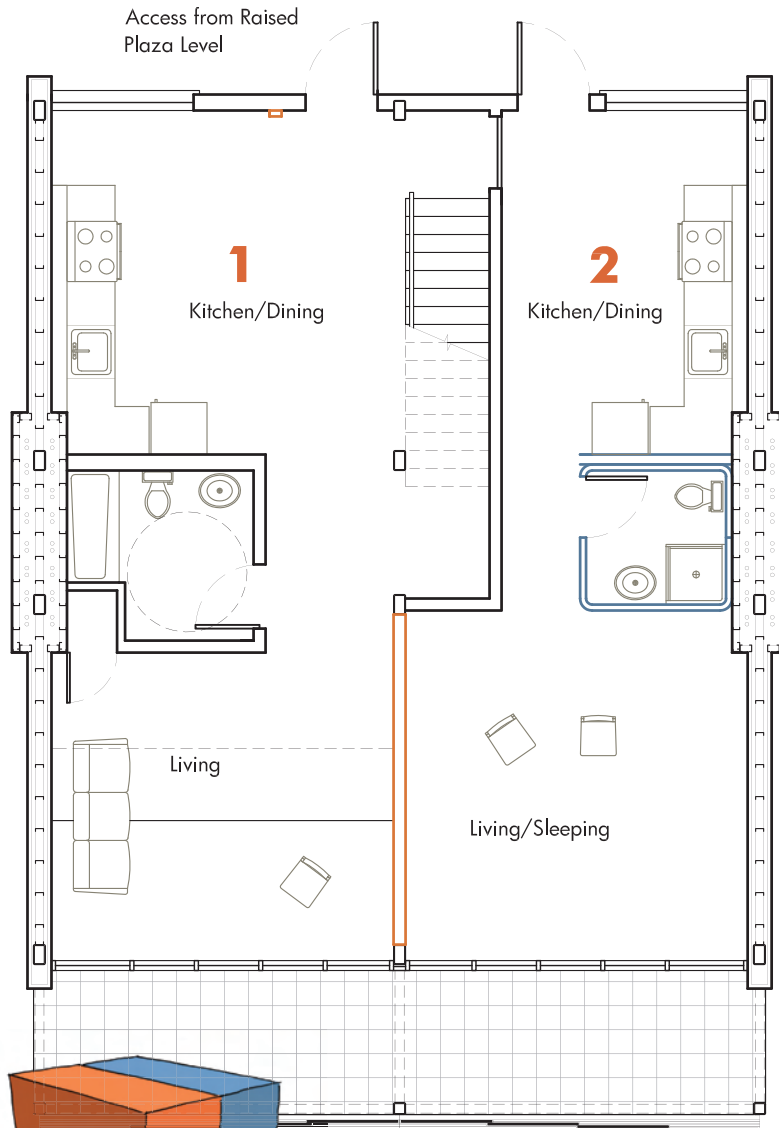


Third Floor

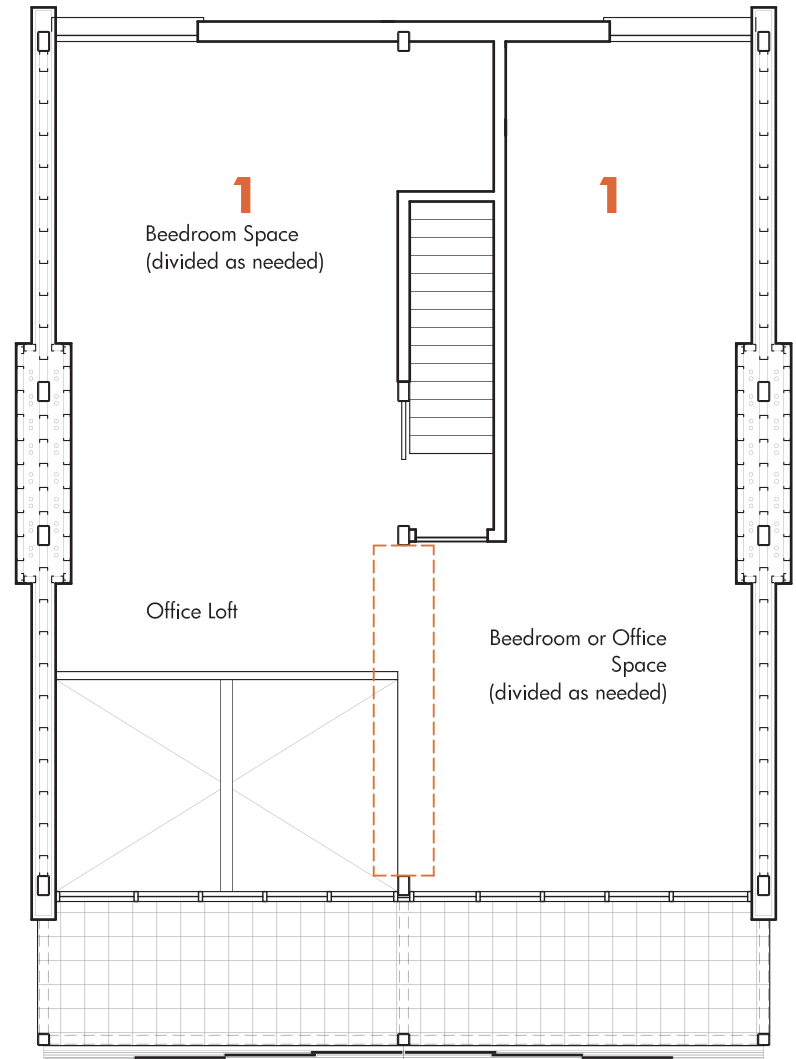


Fourth Floor

# UNIT PLANS



First Floor



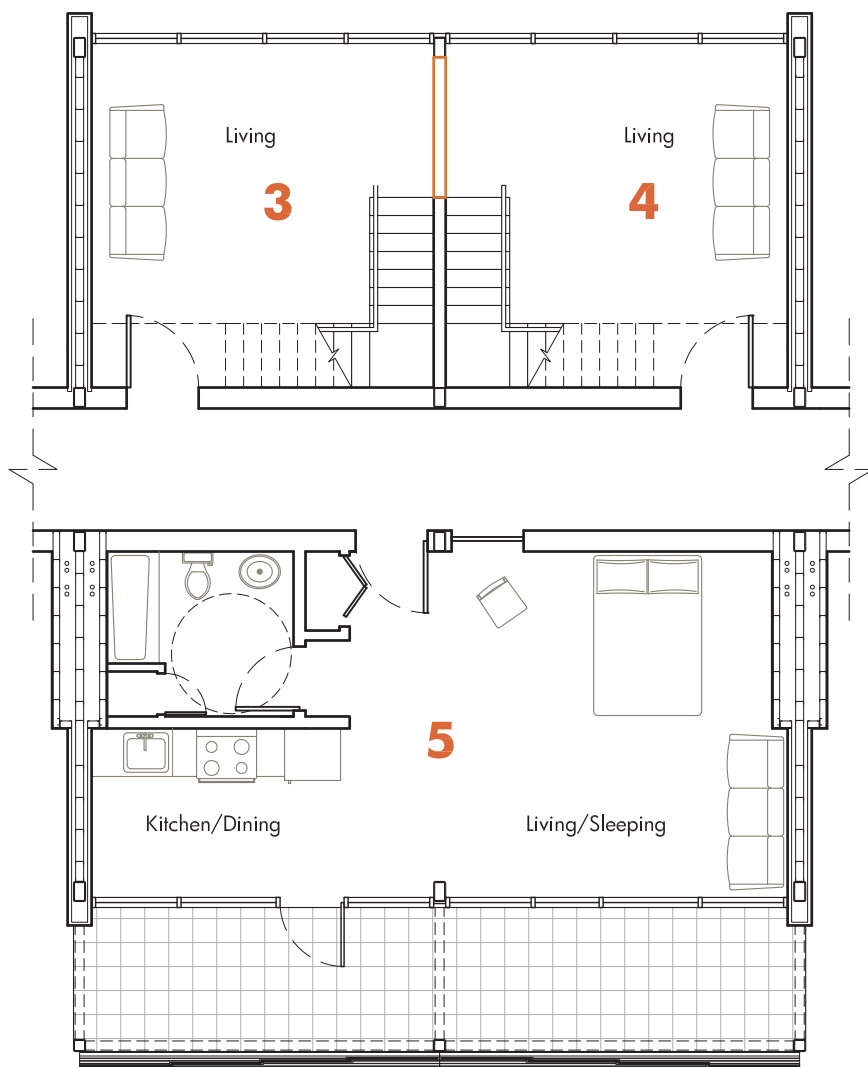
Second Floor

## 5 Unit Bay Configuration without Box Extrusion

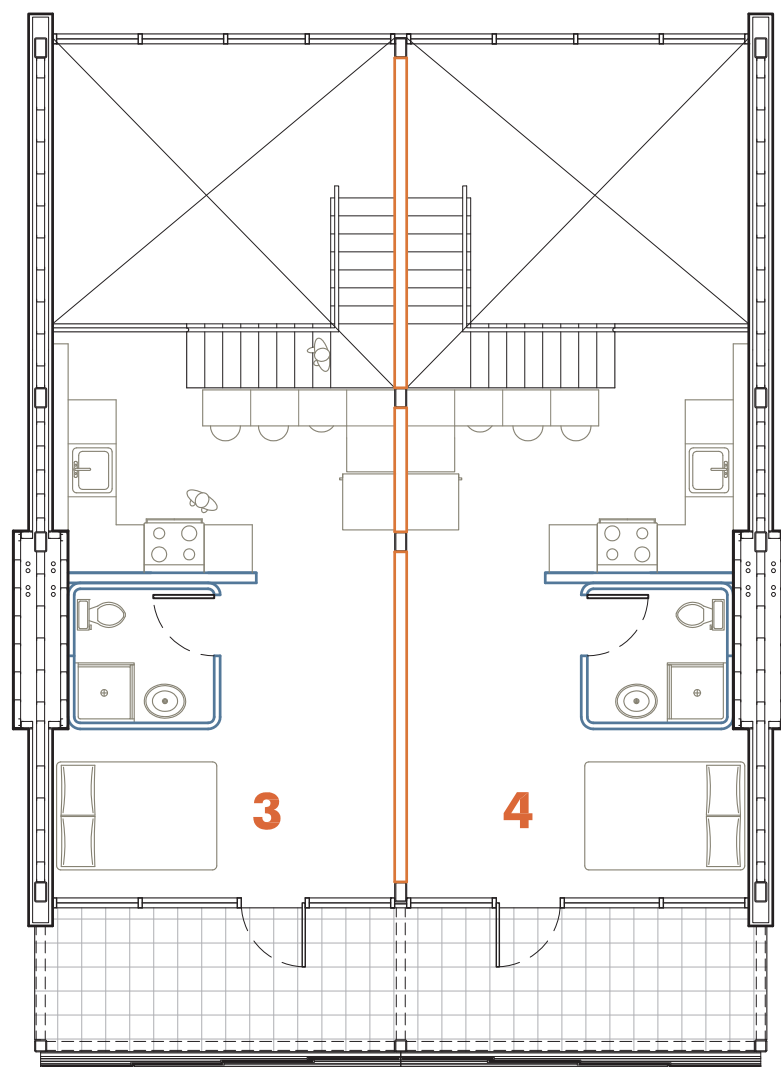
Scale 1/8" = 1'-0"





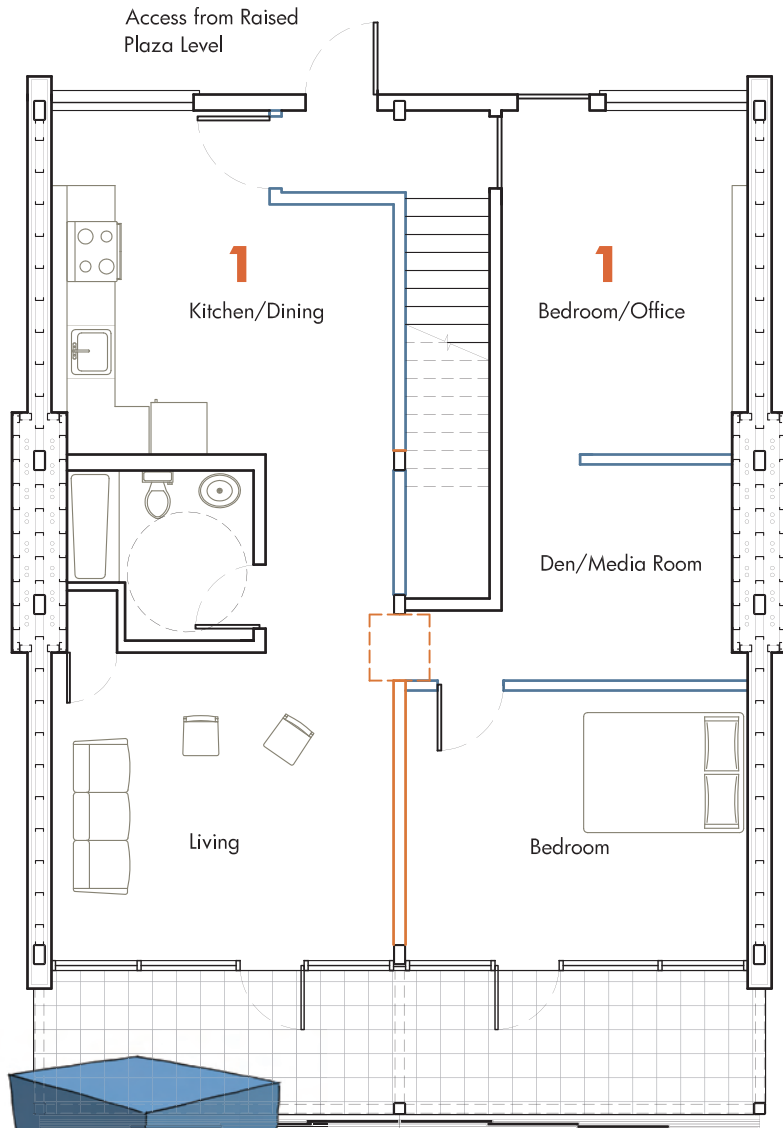


Third Floor

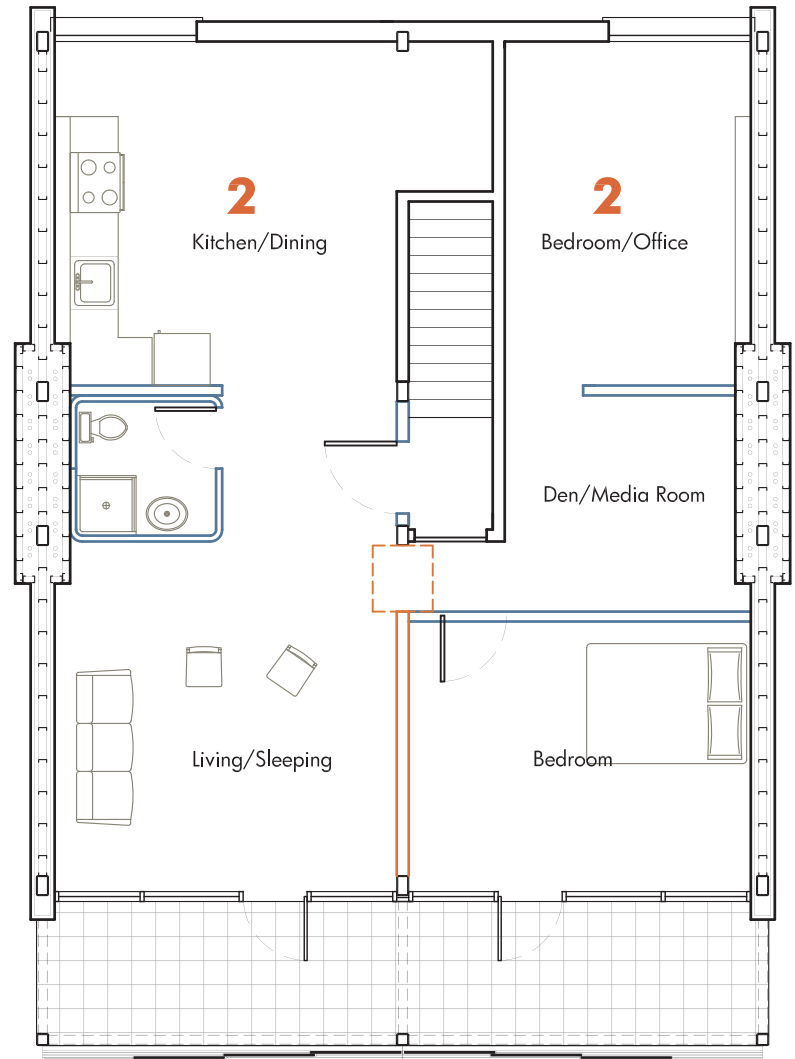


Fourth Floor

# UNIT PLANS



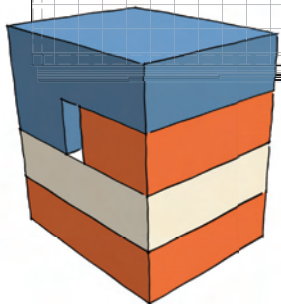
First Floor

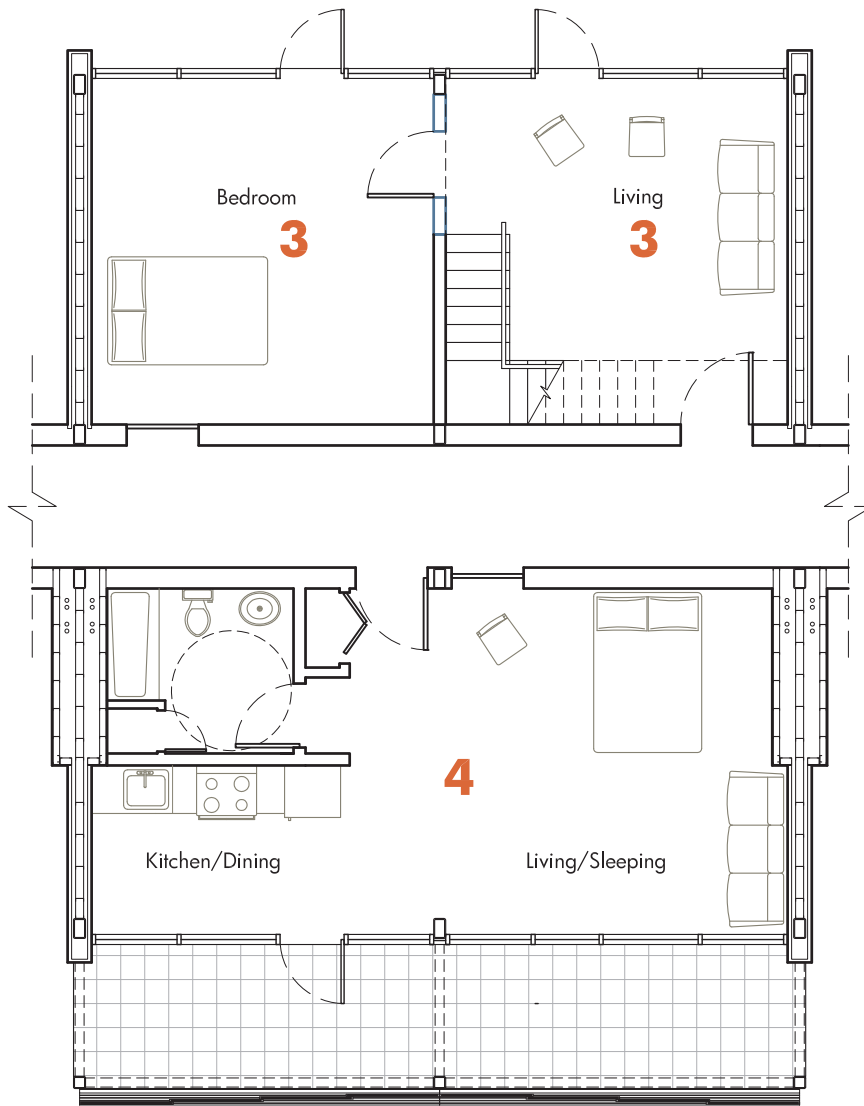


Second Floor

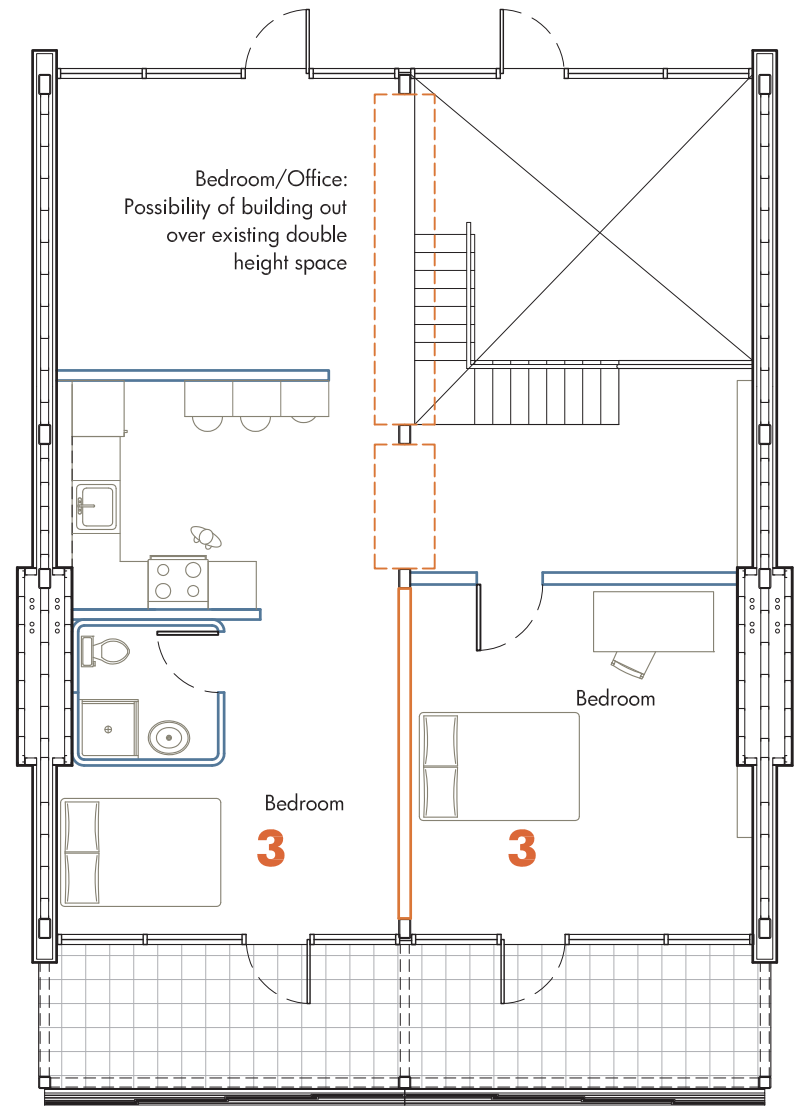
## 4 Unit Bay Configuration without Box Extrusion

Scale 1/8" = 1'-0"





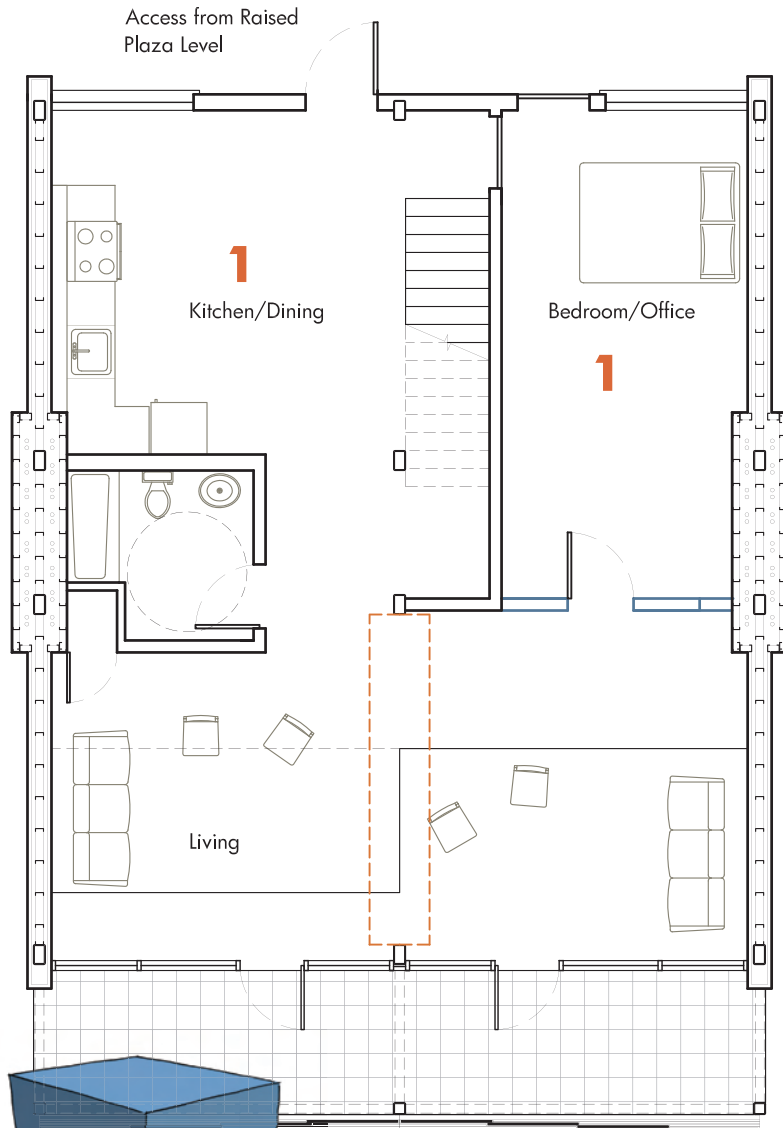
Third Floor



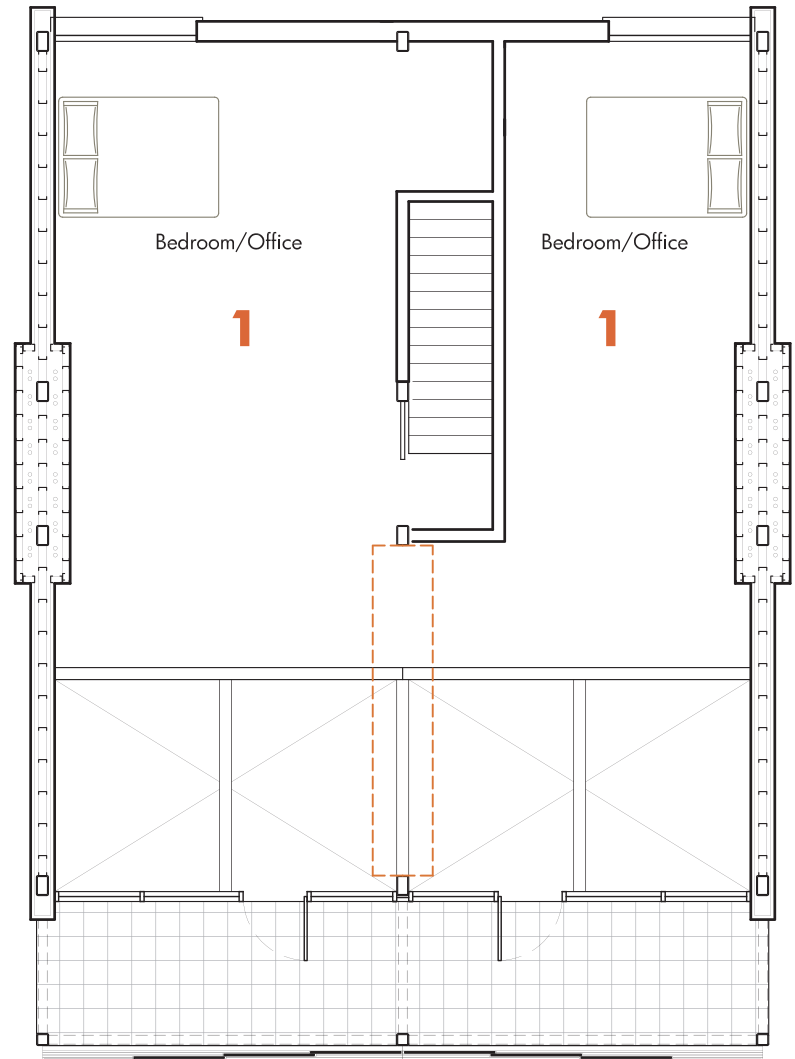
Fourth Floor



# UNIT PLANS



First Floor

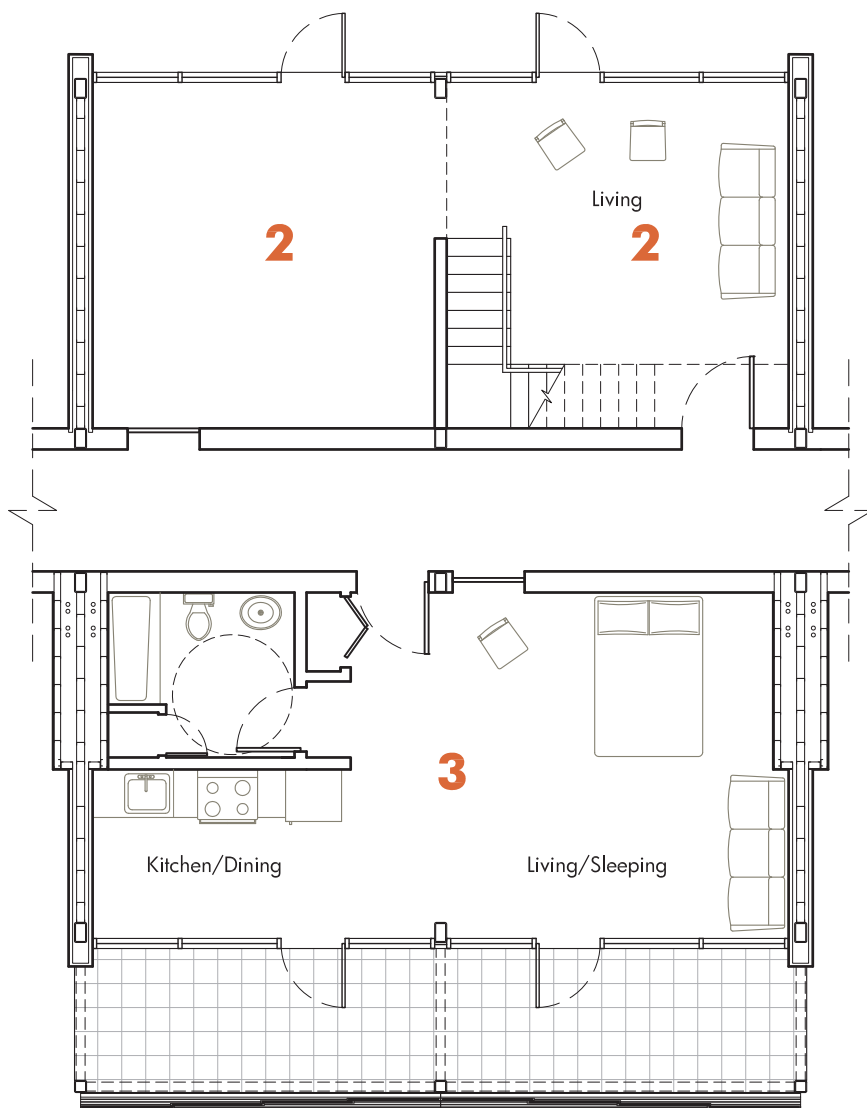


Second Floor

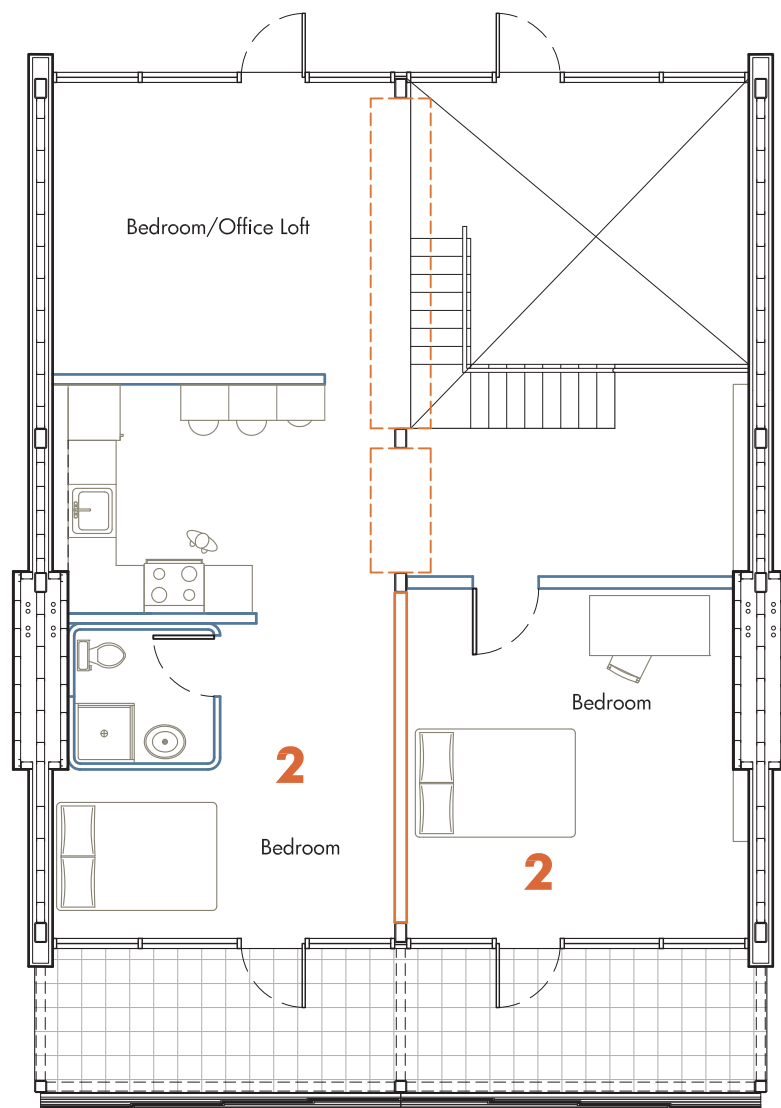
## 3 Unit Bay Configuration without Box Extrusion

Scale 1/8" = 1'-0"





Third Floor

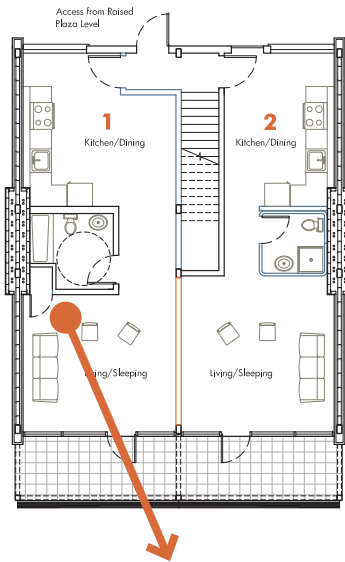


Fourth Floor

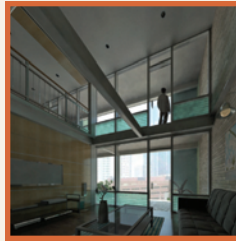


Winter Day: Noon



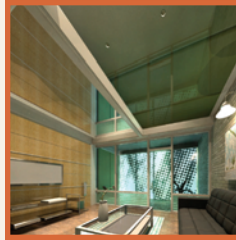


The images on the following pages are adapted versions of same apartment unit shown on the left, the balcony of which fronts the Greenway. See previous Unit Plans for layout details.



## L-Shaped Unit with Double Height Living Space

5 Unit Bay Configuration



## Stacked Unit

Not shown in unit configurations but possible if adjacent unit incorporates an additional stair, as the unit shown utilizes the previously common stair to access the second floor.



## Single Story Half-Bay Unit

7 or 8 Unit Bay Configurations



## Single Story Wide Unit

3, 4 or 6 Unit Bay Configurations

Incorporate wide unit above and remove floor panels to create a two-story unit with a double height living space.

## L-Shaped Unit with Double Height Living Space

5 Unit Bay Configuration



June 21: 3pm, Open Facade and Closed Wall System on first floor to create an L-Shaped Unit in Section





**December 21:** 3pm, Closed Facade, Closed Wall System and Optional Floor Panels to access upper balcony



## Singe Story Half-Bay Unit 7 or 8 Unit Bay Configurations



December 21: 3pm, Open Facade, Added Floor Panels and Closed Wall System



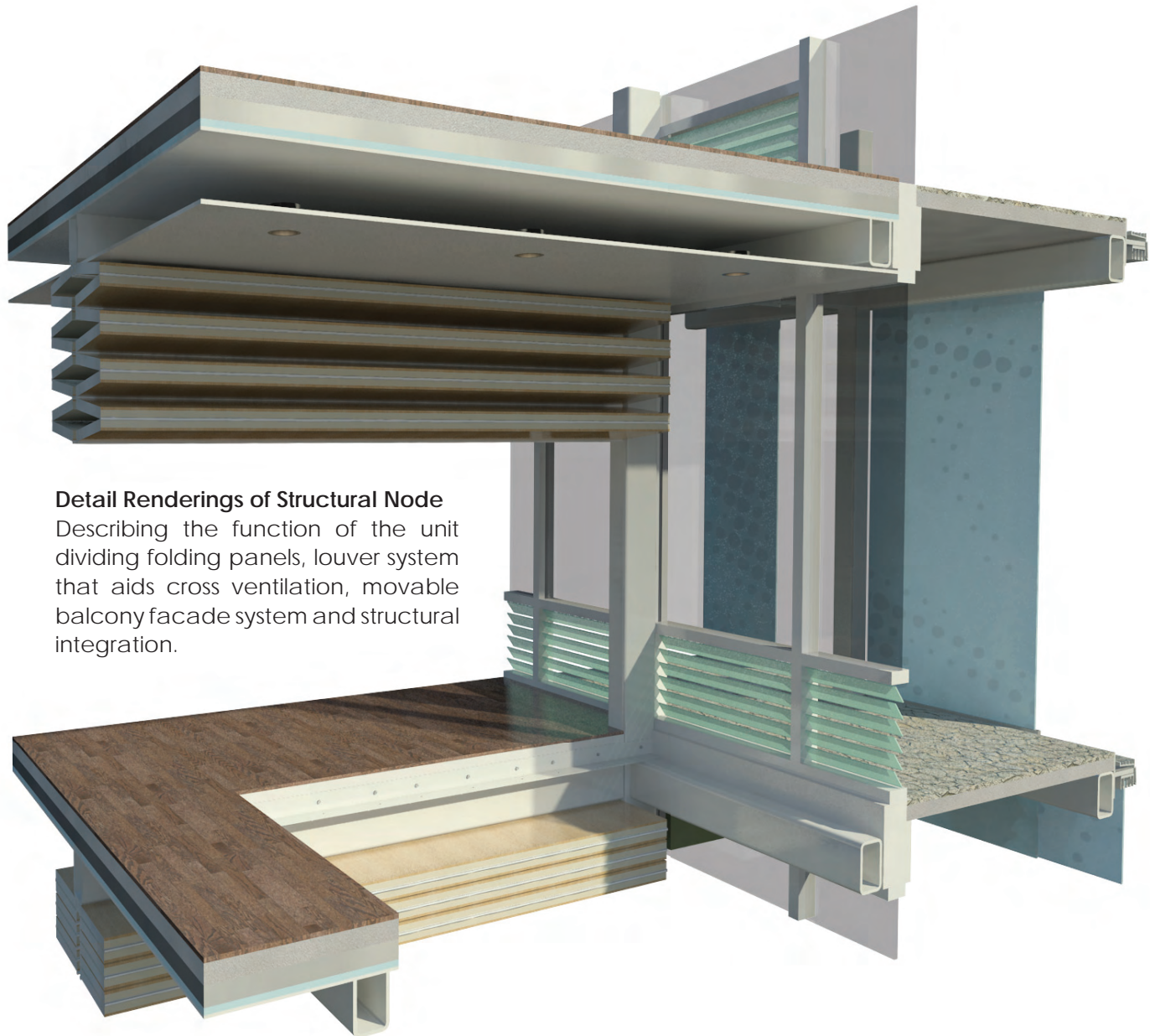
## Single Story Wide Unit

3, 4 or 6 Unit Bay Configurations

Incorporate wide unit above and remove floor panels to create a two-story unit with a double height living space.

December 21: 3pm, Closed Facade, Added Floor Panels and Open Wall System

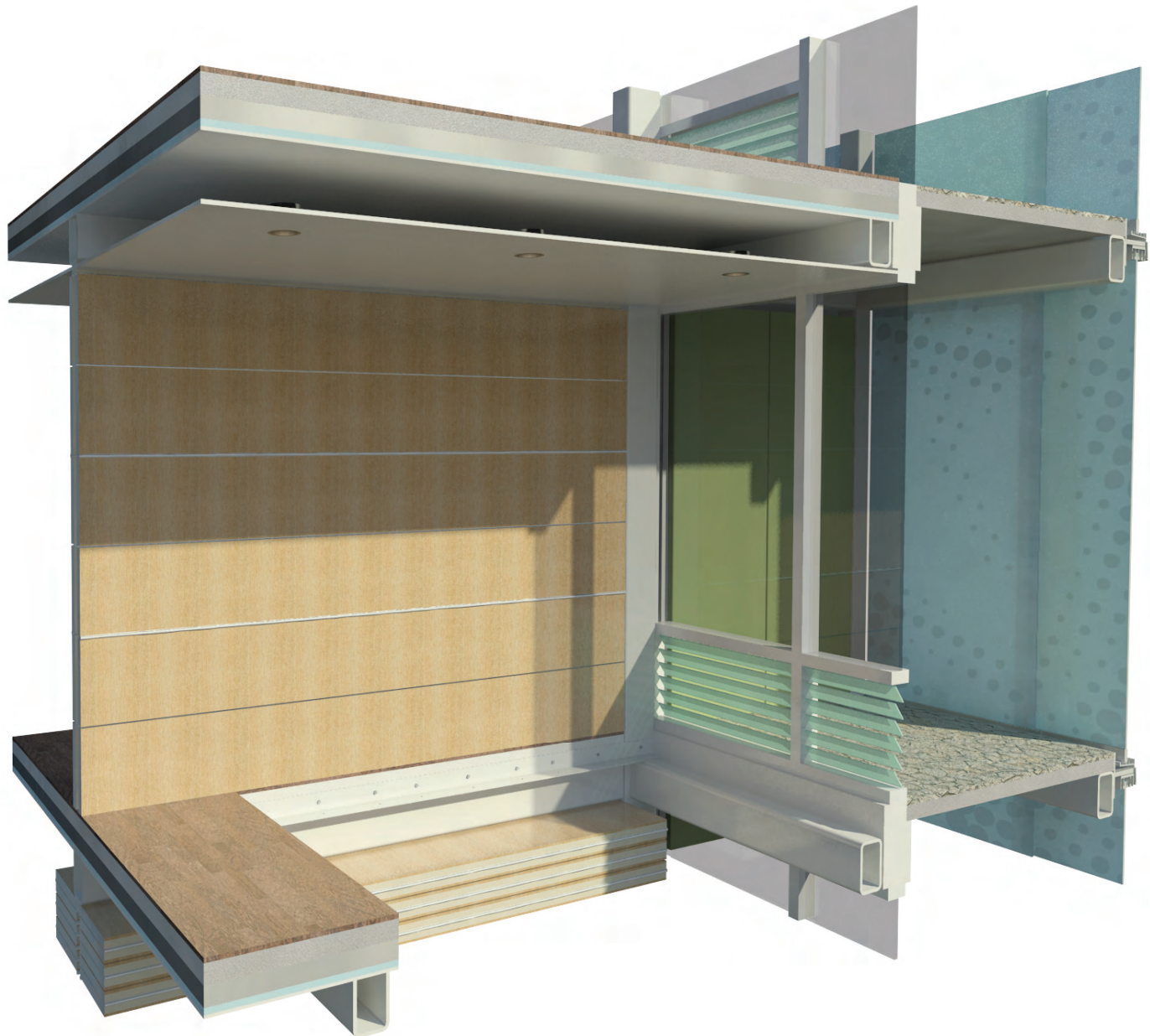




### Detail Renderings of Structural Node

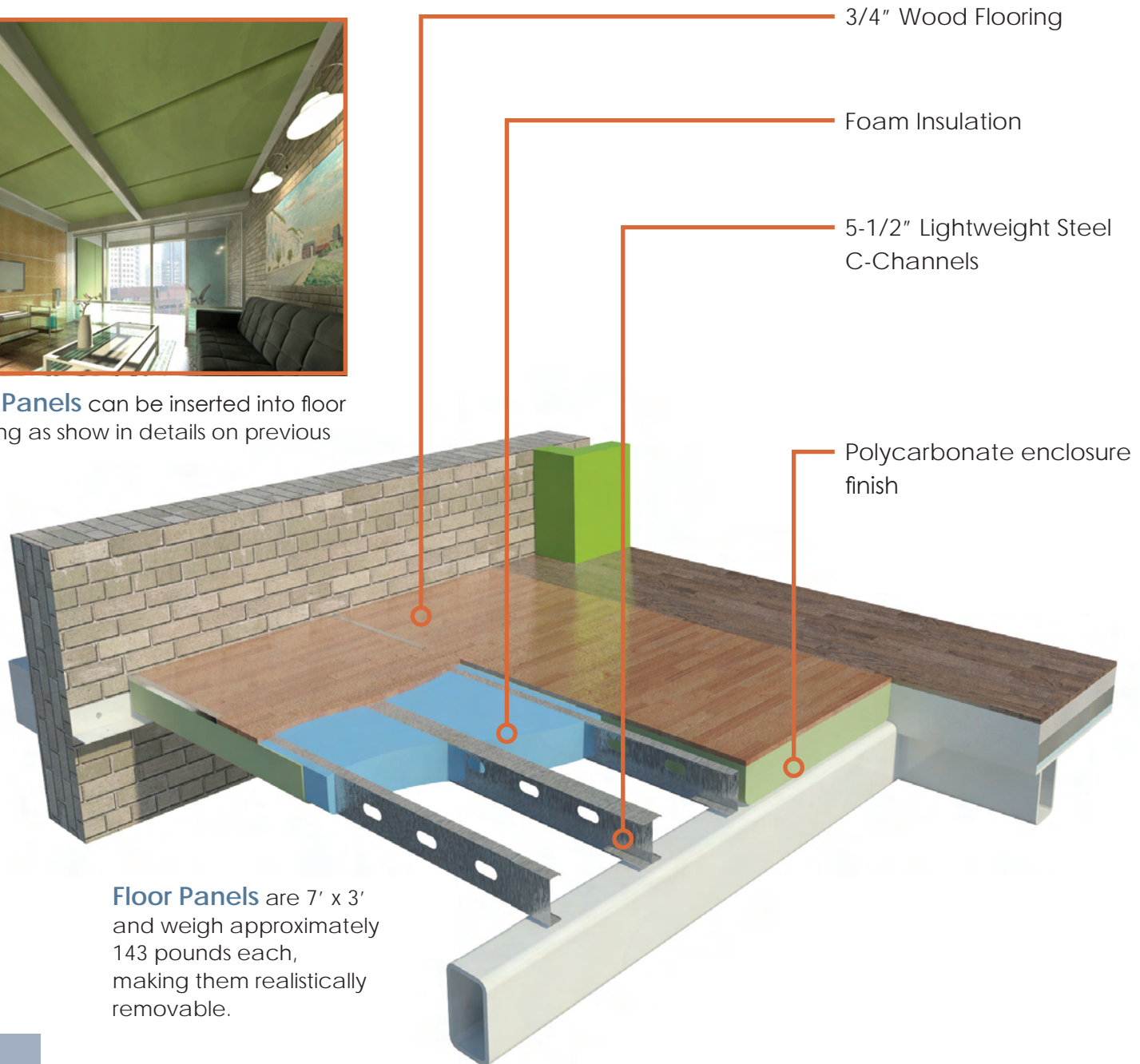
Describing the function of the unit dividing folding panels, louver system that aids cross ventilation, movable balcony facade system and structural integration.







**Floor Panels** can be inserted into floor opening as show in details on previous page.

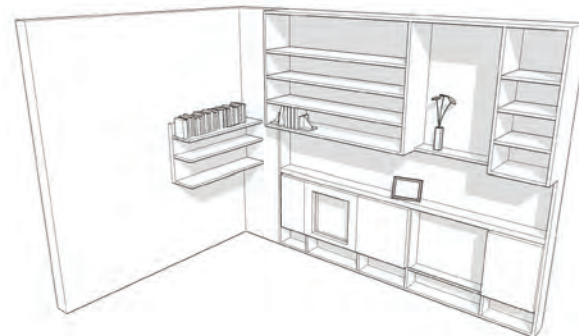
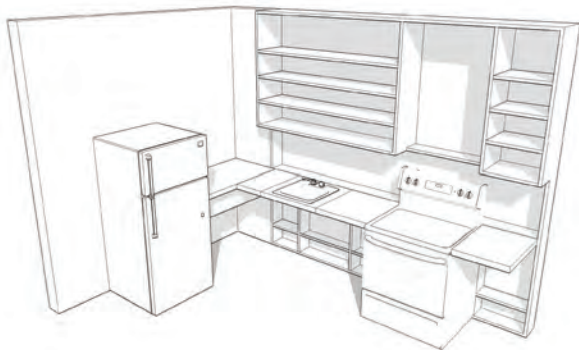


**Floor Panels** are 7' x 3' and weigh approximately 143 pounds each, making them realistically removable.



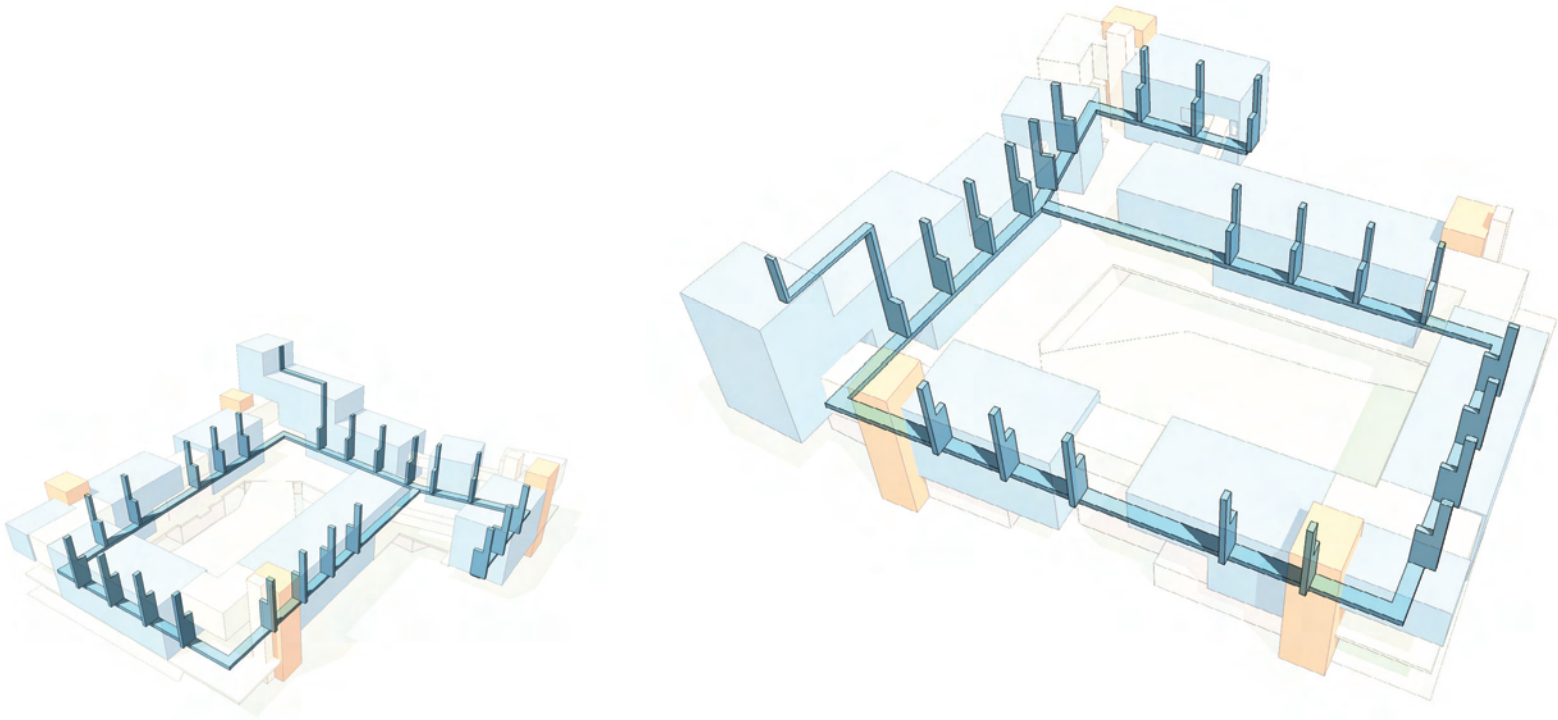
## Additional Component Systems

**Bathroom Module** couples permanent, ADA acceptable bathroom (each floor has one removable module that can be divided into two 3' deep halves and one permanent bathroom) for when a second bathroom is not needed



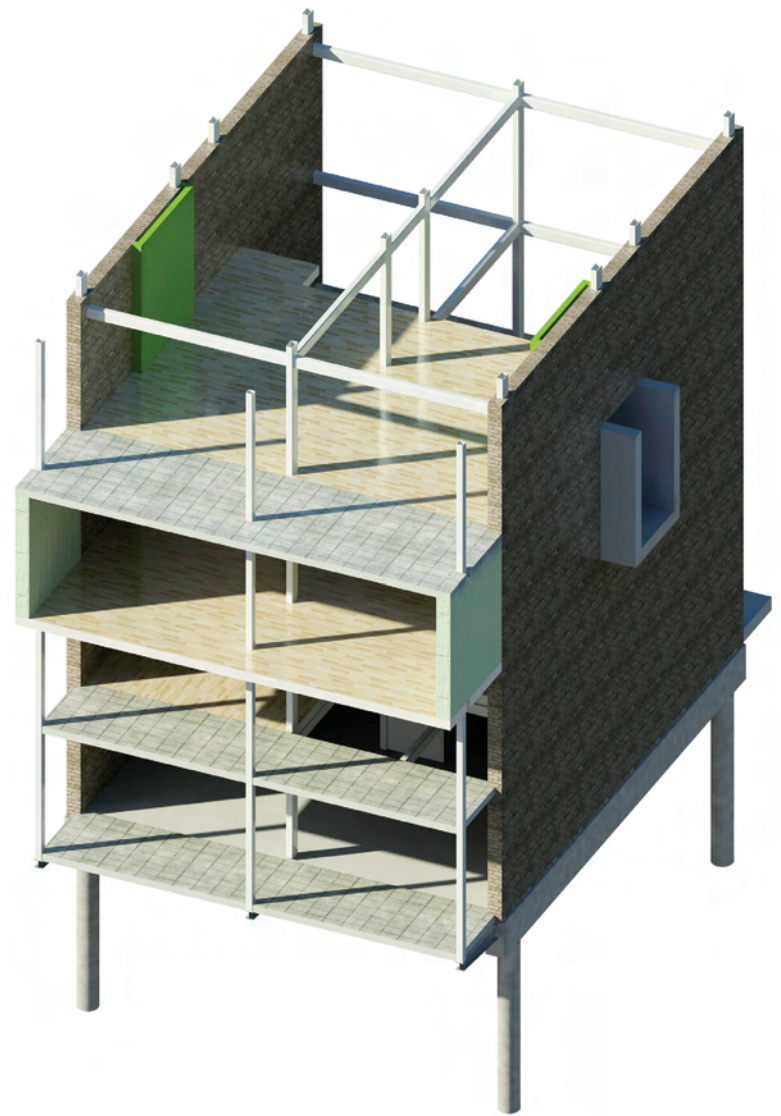
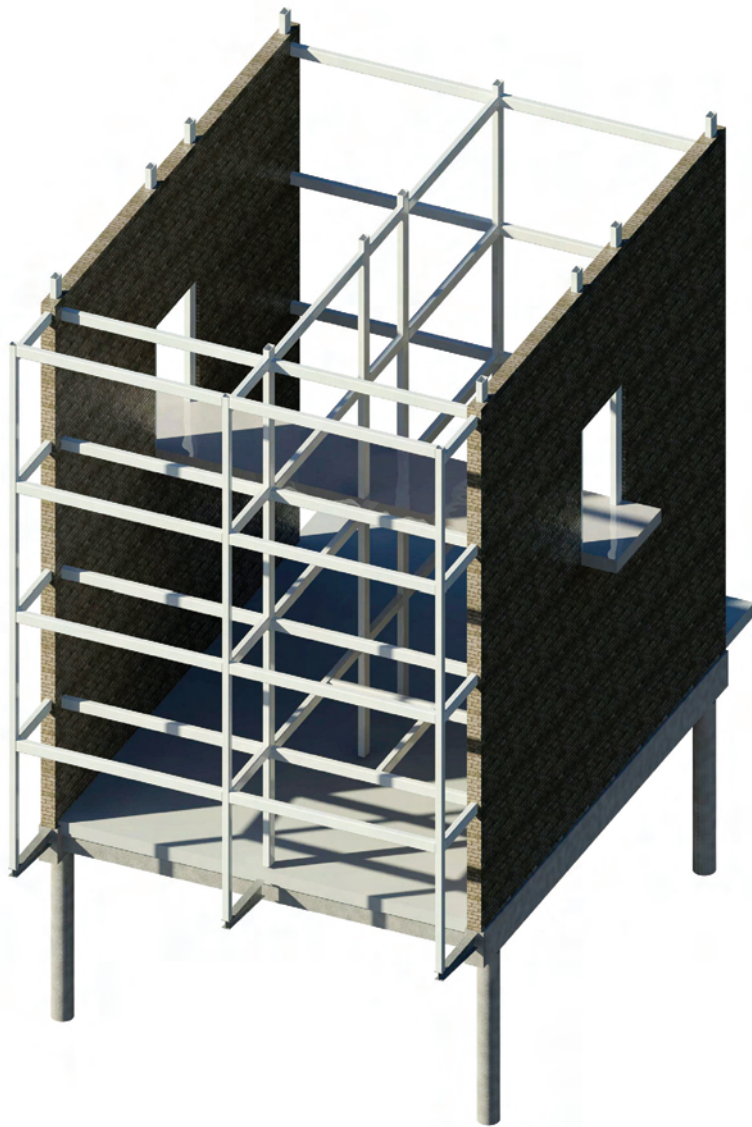
**Kitchen System** can be converted when expanded unit is no longer in need of the acquired second kitchen; appliances are simply removed and counters transform into storage





**Mechanical Systems Integration Diagram:** Central All-Water System using Fan-coil Terminals

- Vertical distribution occurs in wall chase of housing bay dividing wall
- This type of mechanical distribution reduces to dimensions of all chases
- The fan-coil terminal can be hung from the ceiling to provide a continuity of space between unit interiors and balconies.









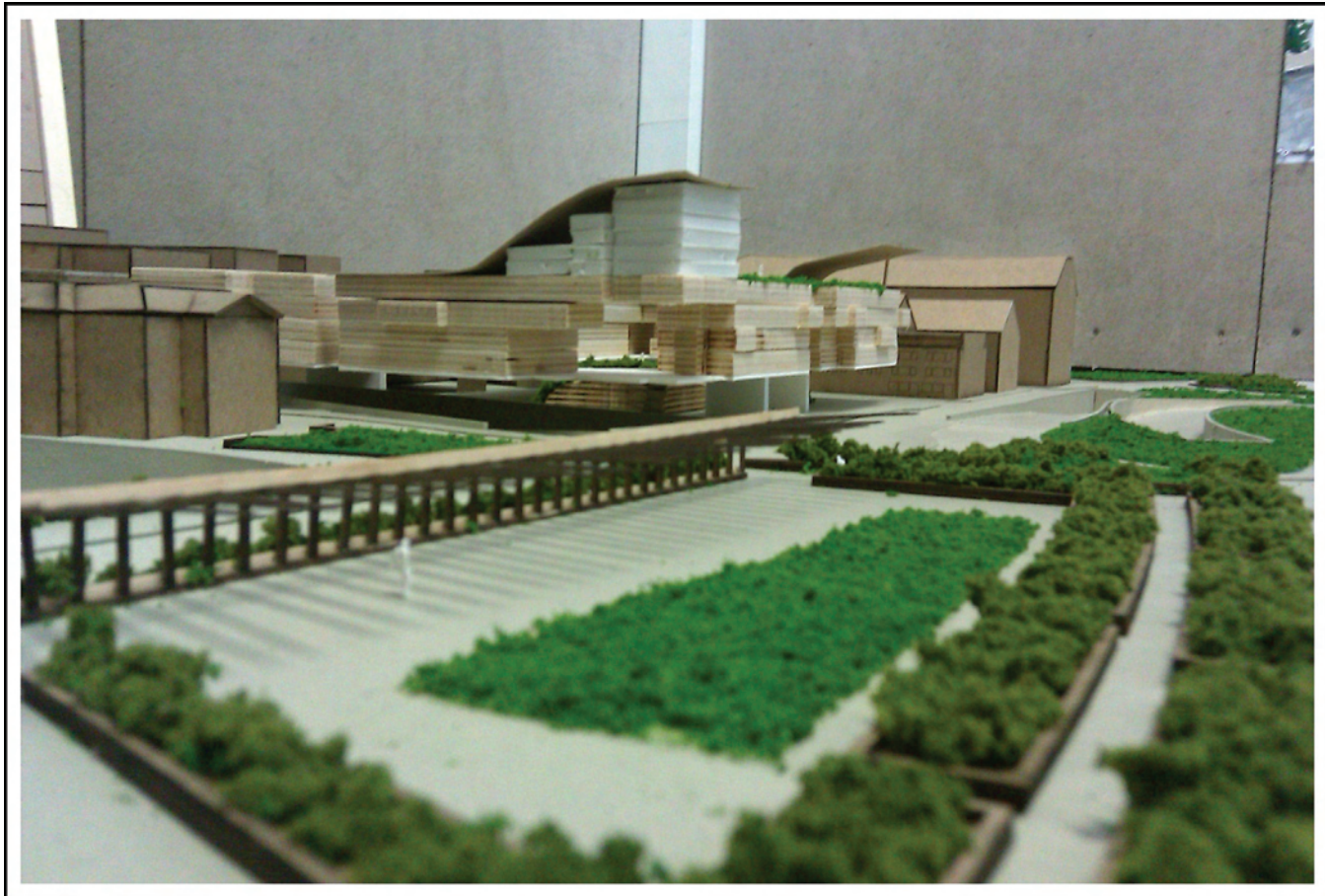


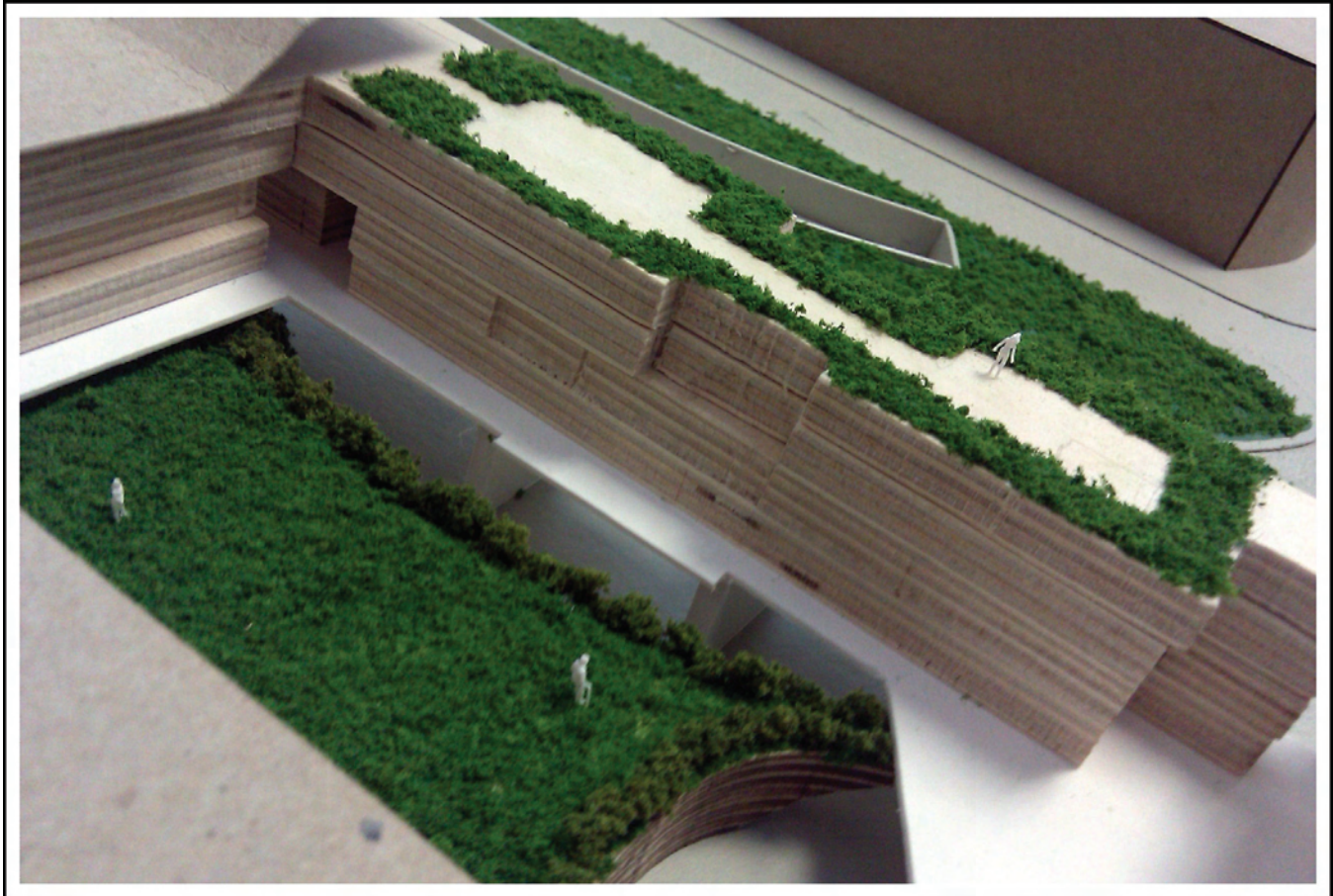




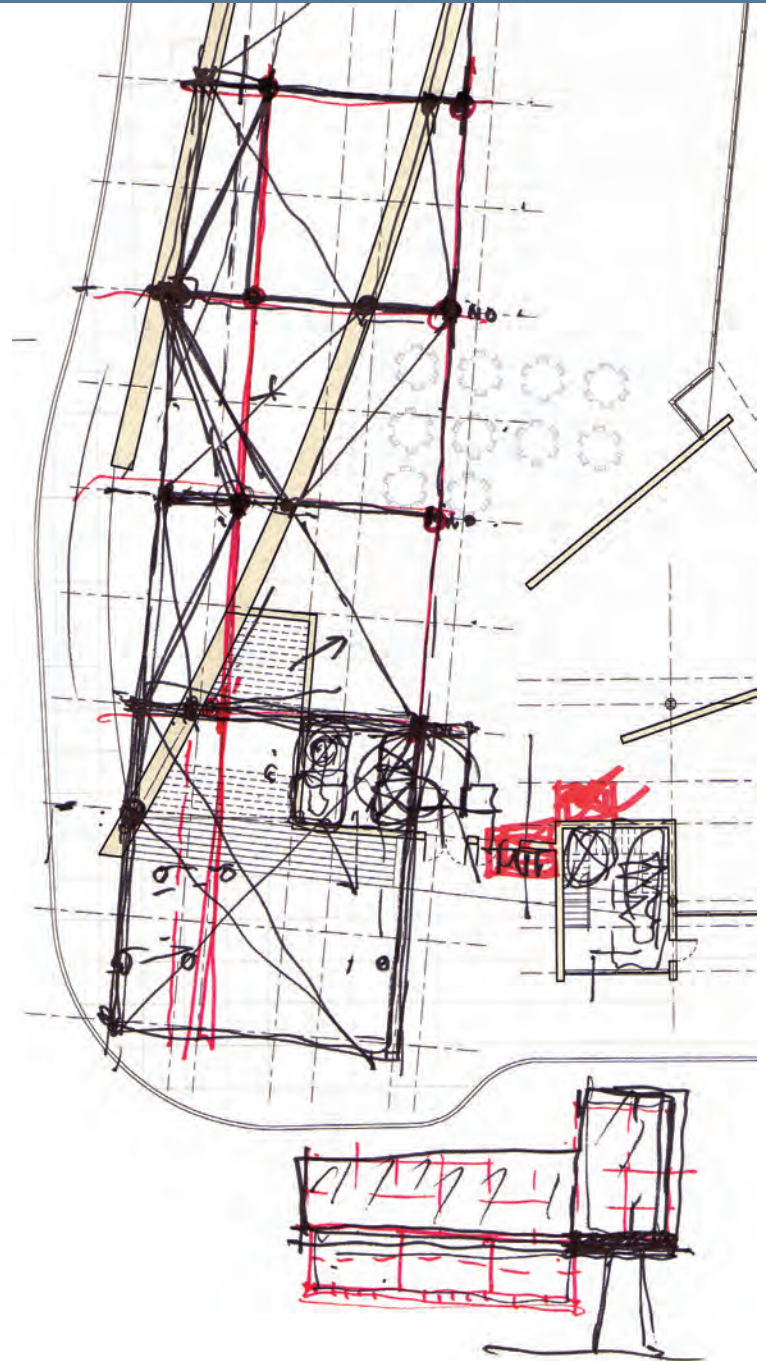
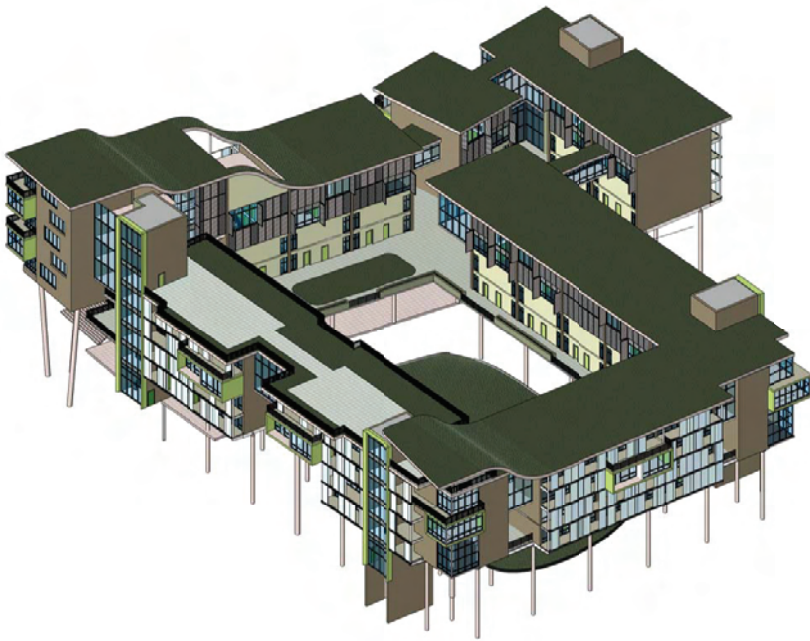




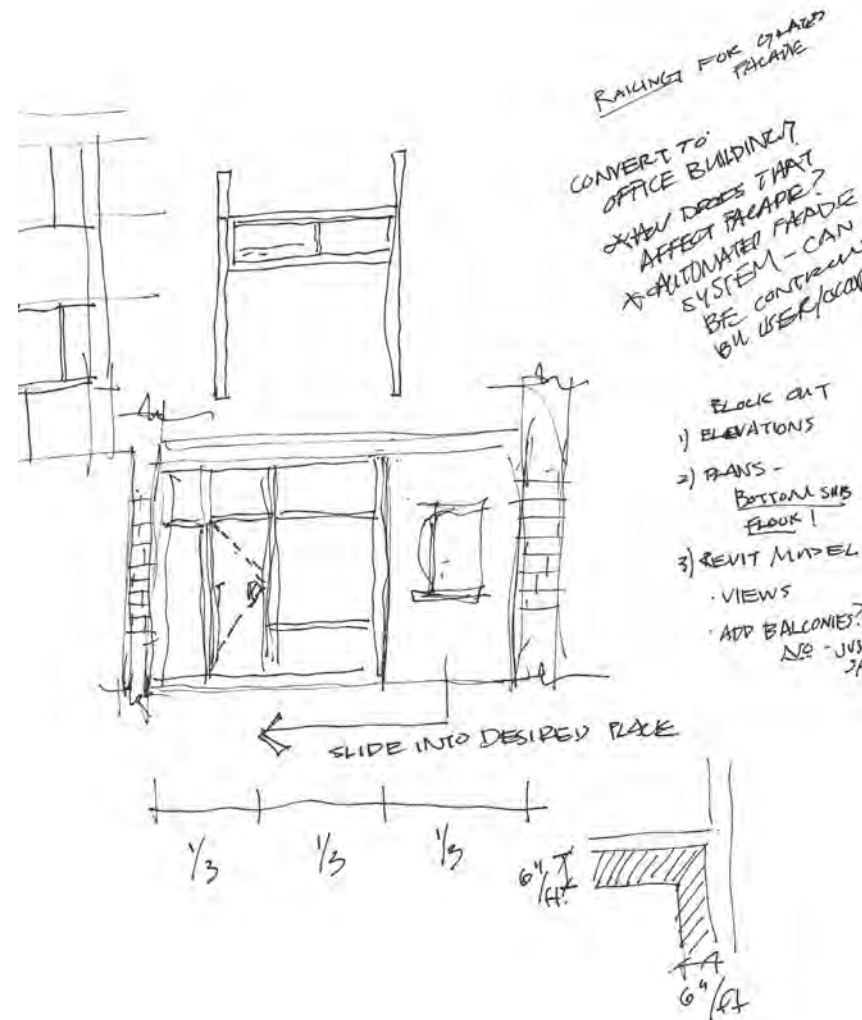
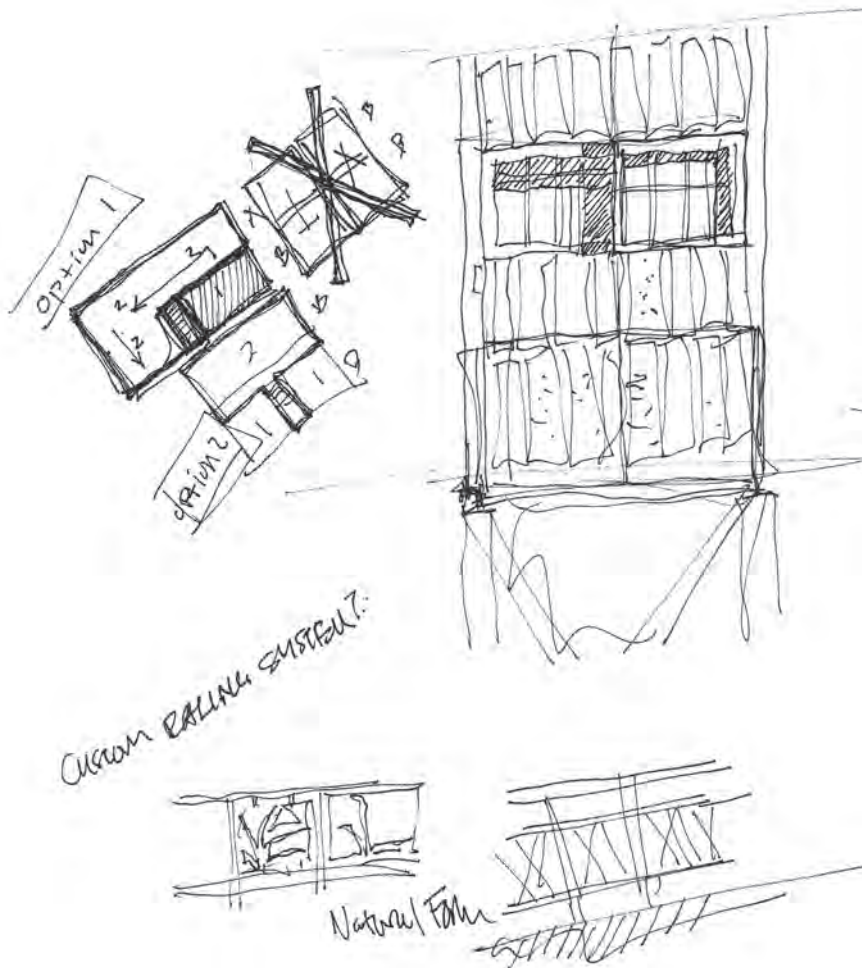












Facade Studies

# ADAPTIVE HOUSING:

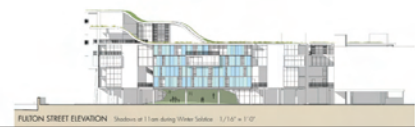
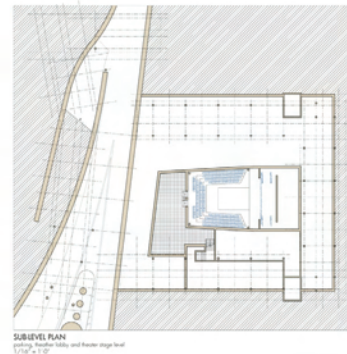
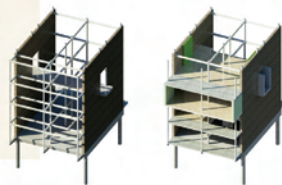
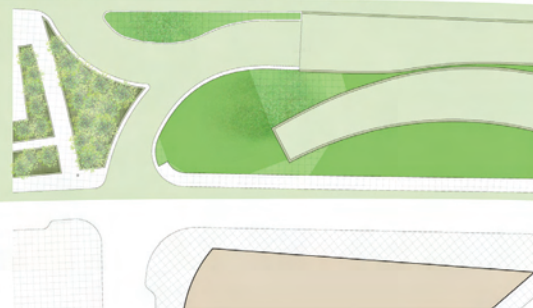
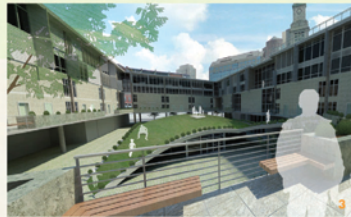
TRANSFORMATION AND GROWTH IN THE URBAN ENVIRONMENT

NORTH END, BOSTON  
ALONG THE ROSE KENNEDY GREENWAY

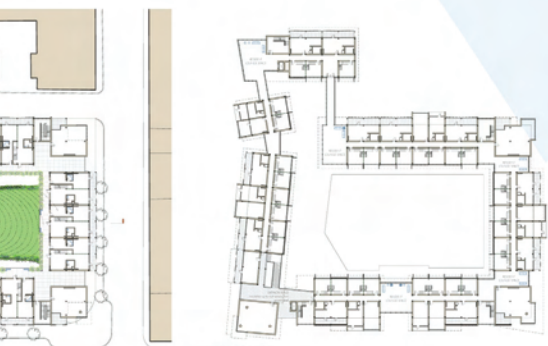
KEVIN MOWATT  
GRADUATE THESIS PROJECT : FALL 2009



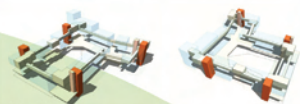
The new housing block devoted to the North End community is organized as a partner bar scheme, paying attention to the traditional formation of blocks within this historic neighborhood. What is, in most cases, inaccessible space in the center of the block becomes the life of this strategy for adaptable housing and community formation. The building is organized around a central courtyard, which is a key element in the design. Bringing the Greenway underneath its housing bar that fronts the street and elevates it to upper housing levels. The building is organized around a central courtyard, which is a key element in the design. Bringing the Greenway underneath its housing bar that fronts the street and elevates it to upper housing levels. The building is organized around a central courtyard, which is a key element in the design. Bringing the Greenway underneath its housing bar that fronts the street and elevates it to upper housing levels.







THIRD FLOOR PLAN  
Overall floor level  
1/12" = 1'-0"



CIRCULATION  
First floor, outside and first housing floor access to garden site spaces

**PARTI DIAGRAM**  
green wall and primary program element (the  
heart) in the center of the housing, which is a  
primary bar element  
housing form for urban scale, protecting and  
housing community value



SITE CIRCULATION: EXTENSION OF GREENWAY  
INTO CENTRAL COURTYARD

## POSSIBLE UNIT CONFIGURATIONS

8 UNITS



7 UNITS



6 UNITS



5 UNITS



4 UNITS

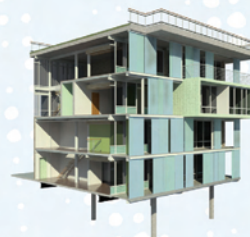


3 UNITS



## OPEN

optimal summer condition  
depth of balconies helps to shade from direct sunlight  
open facade provides maximum ventilation potential through the depth of the neighborhood housing units



## RANDOMIZED AT USER PREFERENCE

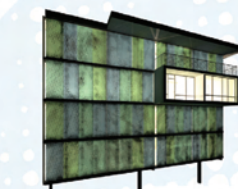
flexible experience across facade  
open side adaptability in controlling interior climate through manipulation of the  
quality and level of natural ventilation/lighting  
100%STC condition: User's have the ability to close off their facade, creating winter  
profiles that they value isolation after passing through the neighborhood park, a buffer  
zone in this produce, reducing heating loads

## ADAPTIVE FACADE SYSTEM



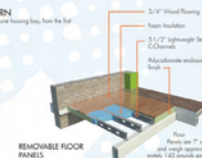
## HALFTONE FRIT PATTERN

continuous fringe that spans across one housing bay, from the top  
floor to the first floor

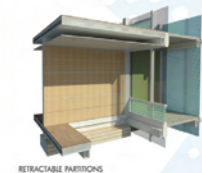


## CLOSED

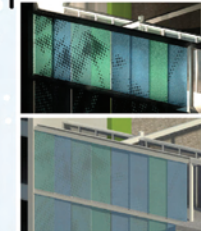
100%STC condition: optimal privacy, reduction of light  
pollution, and environmental shielding (WEC) as desired from the daytime condition



## REMOVABLE FLOOR PANELS



## RETRACTABLE PARTITIONS



## ADDITIONAL COMPONENT SYSTEMS

KITCHEN SYSTEM that can be  
converted when expanded and is no  
longer in need of the suspended second  
floor, equipment can simply be moved  
and stored horizontally in storage  
panels. KITCHEN module  
panels have one removable module  
that can be divided into two 3' deep  
bays and one permanent bathroom  
for when a second bathroom is not  
needed



## MECHANICAL SYSTEMS INTEGRATION DIAGRAM: CENTRAL ALL-WATER SYSTEM USING

RADIANT TERMINALS  
radiant distribution system to all show of housing bay dividing wall structure  
reduce dimensions of distribution shaft. Vertical terminal can be hung from the ceiling to free up visual connection to  
exterior balconies



LONGITUDINAL SECTION A  
1/12" = 1'-0"



WINTER SOLSTICE  
Sun, Closed



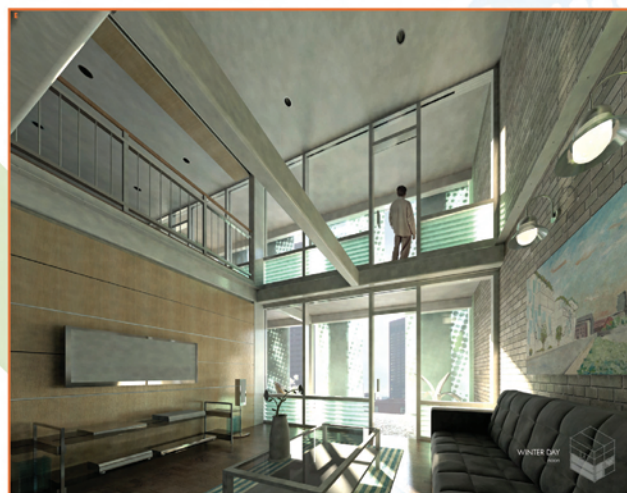
SUMMER SOLSTICE  
Sun, Open Facade



WINTER SOLSTICE  
Sun, Open Facade



SUMMER DAY  
Sun



WINTER DAY  
Sun

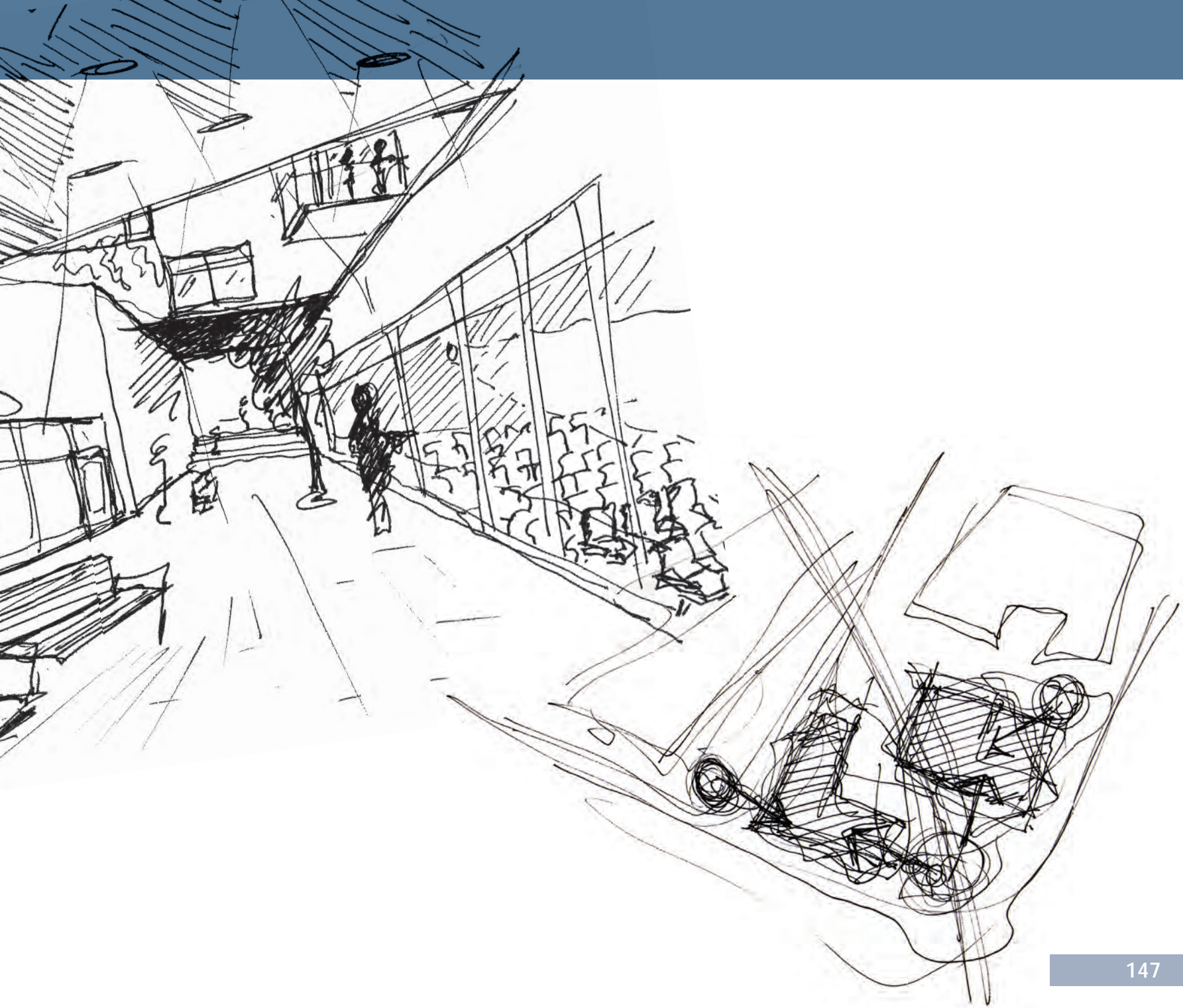


# DESIGN PROCESS DOCUMENTATION

## Process Summary

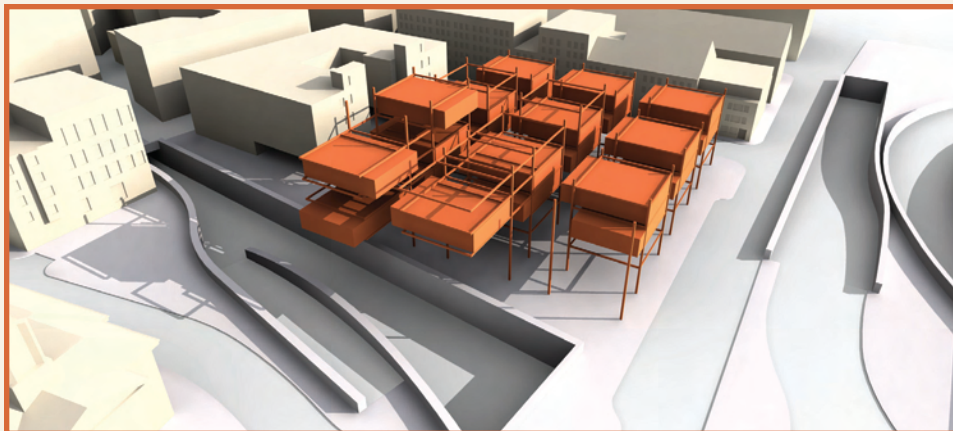
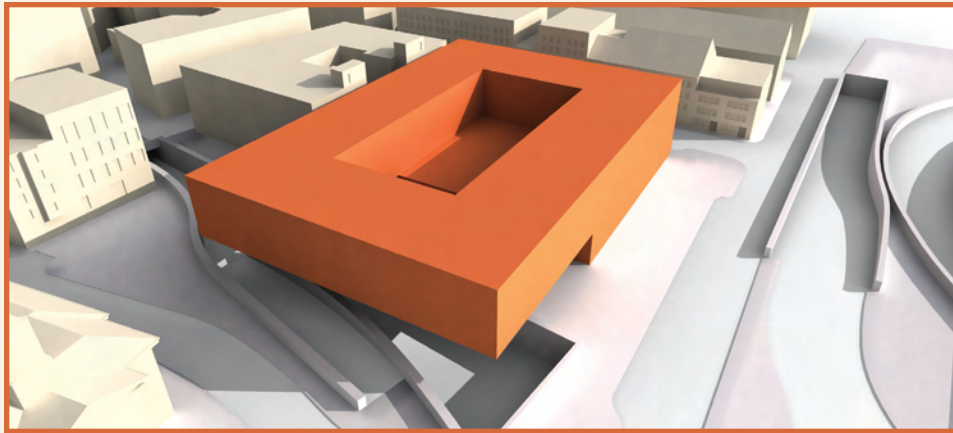
Conceptual sketches in form, space and detail were carried out prior to testing each initial scheme through three dimensional modelling. Physical models were rough and quick while computer modelling formed the basis for most of the design process and testing. Options were weighed and either discarded or nurtured as they aided in producing an adaptive architecture; several options proved unfeasible and costly, such as the addition of removable component boxes, while others maintained the idea of modularity and changeability by utilizing elements that remain in place and are simply reconfigured. Overall, the process of designing an architectural statement about existing stagnant building that fail to address natural processes and cultural evolution was not an easy task. Such a statement involves the design of an organic system that has the ability to perceptually grow and adapt, within the physical and institutional framework that inherently concerns itself with the static. Thus, compromises were made and, in the end, it has become the users and resident's prerogative that guides the evolving response that the building has to its context. Much attention was paid to the design of the facade system, by which residents are allowed to assert their control.





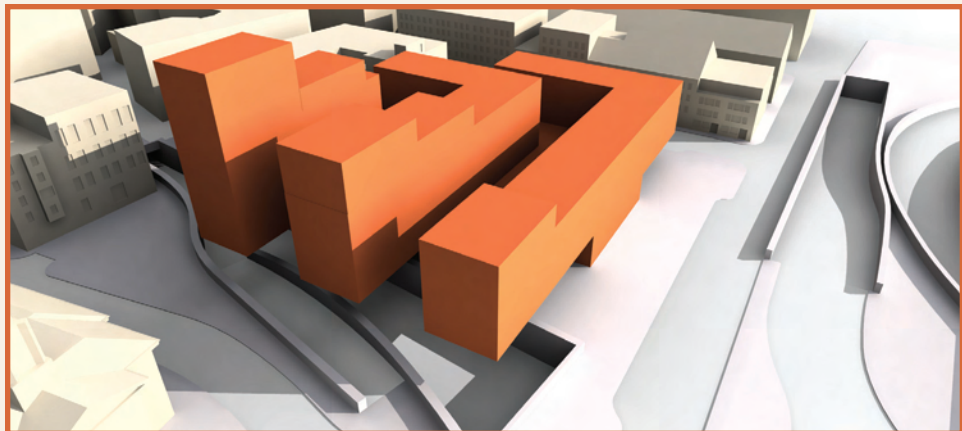
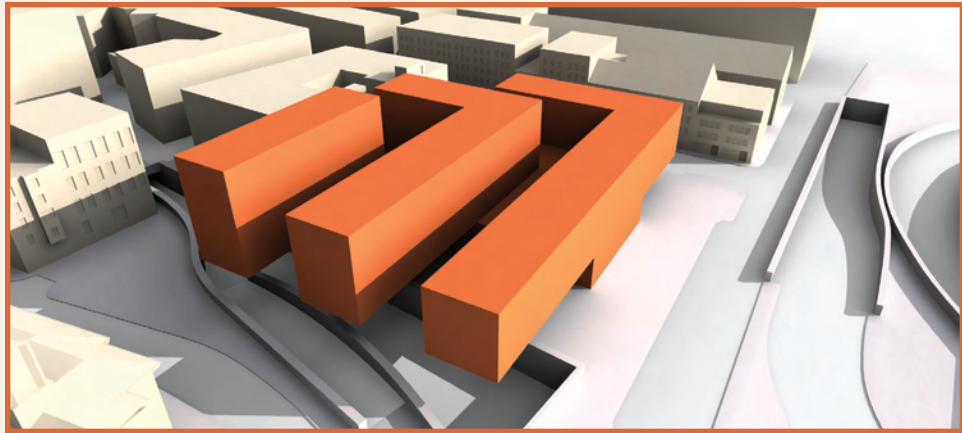
## Preliminary Design Strategies

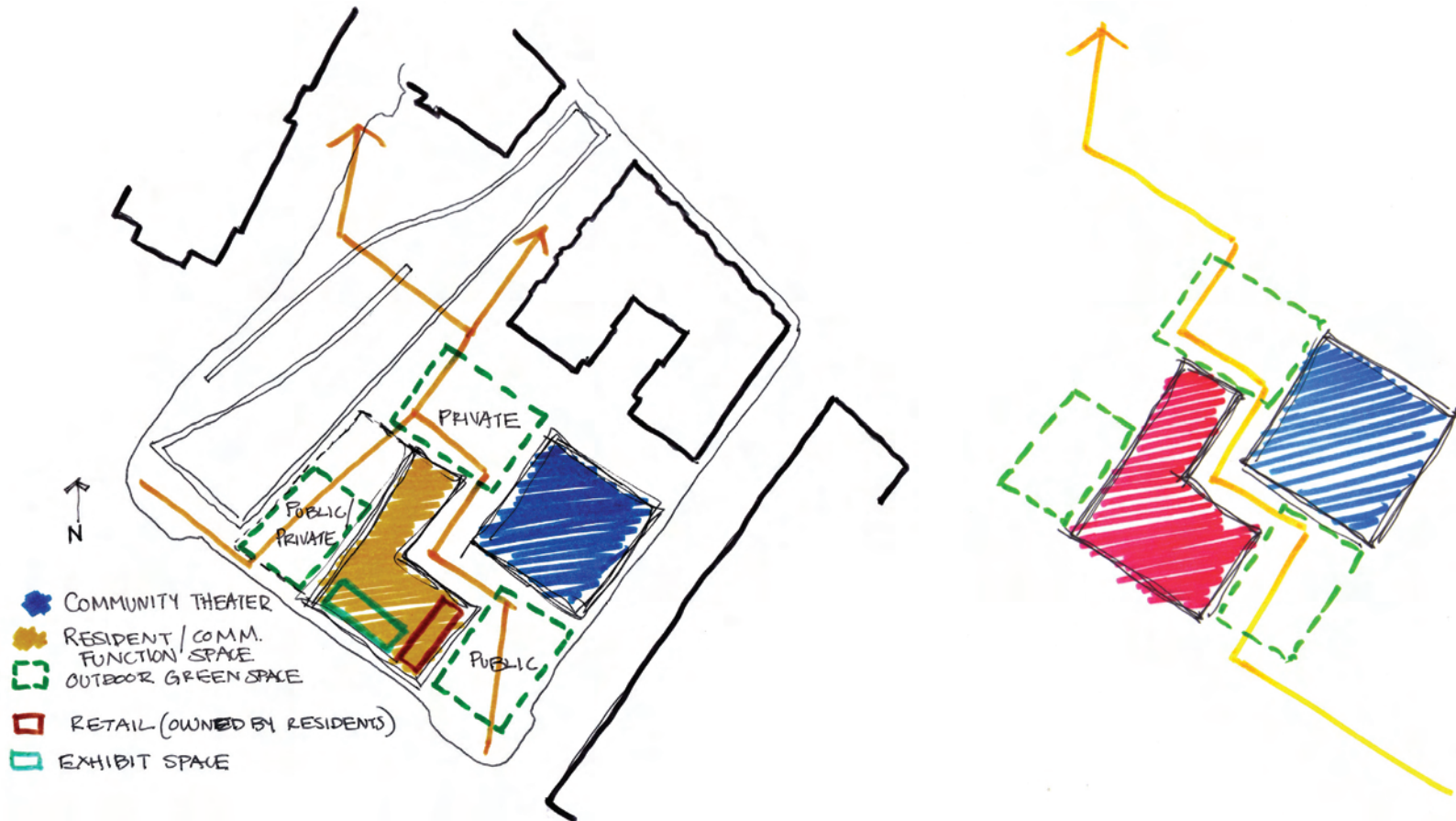
The first step that I took in developing a site strategy and building massing concept was to investigate several housing type alternatives. These trial massings included a perimeter block scheme (below top), which I rejected in the following Conceptual Design phase only to





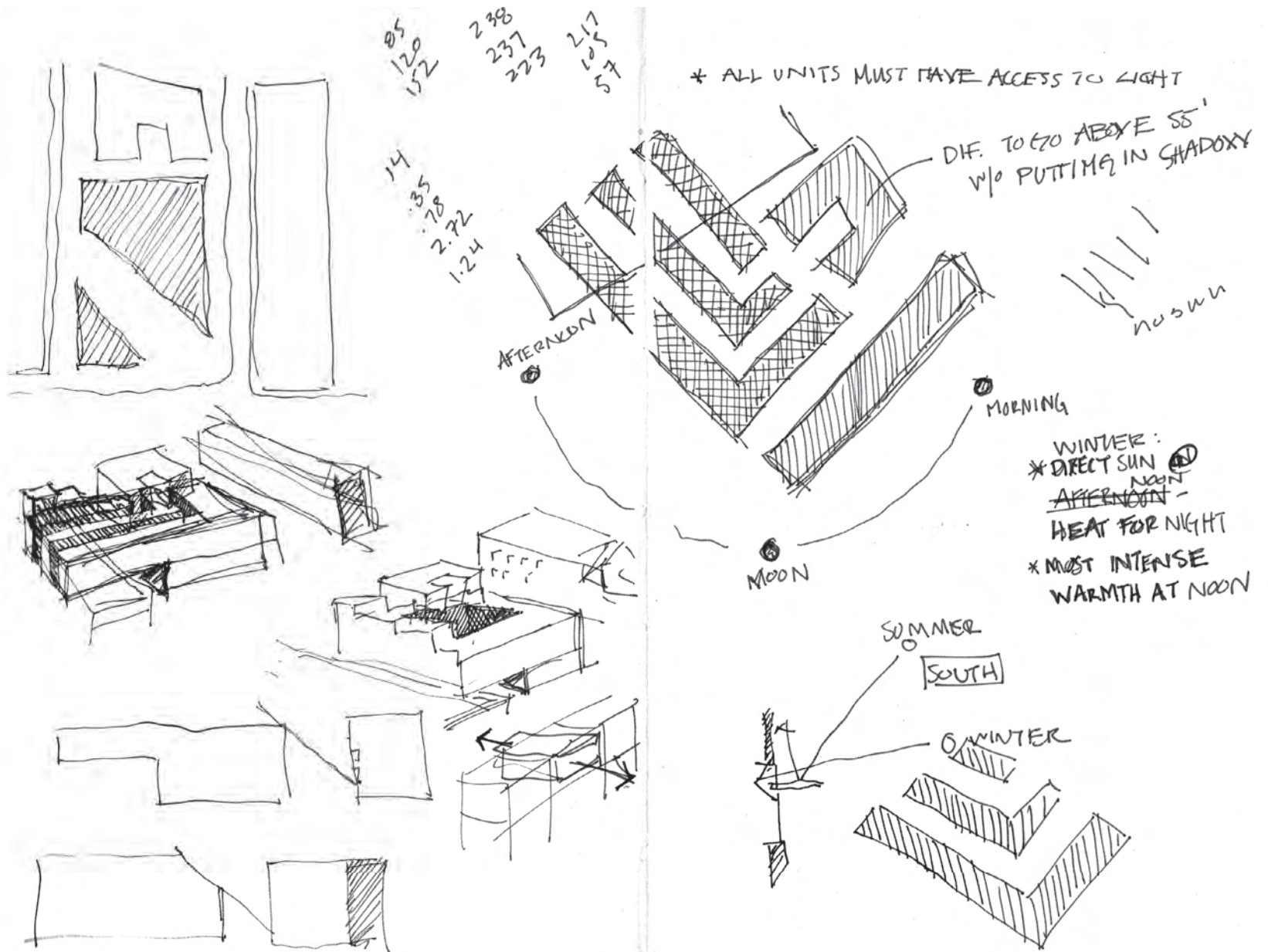
revisit it for my final iteration, a conglomeration of modular boxes (left bottom), and several schemes involving the skewing and spacing of a series of housing bars raised above disassociated ground floor program (below). All schemes were intended to provide cross-site pedestrian circulation and to utilize the air-rights above the adjacent Callahan Tunnel to maximize unit density.





### Diagrammatic Intentions for Site Circulation

The site and building at ground level are permeable and accessible to North End residents who wish to move from the new housing community into the greater community immediately to the north of the site. The ground floor program is transparent and broken up by both semi-private (resident) and public greenspace.

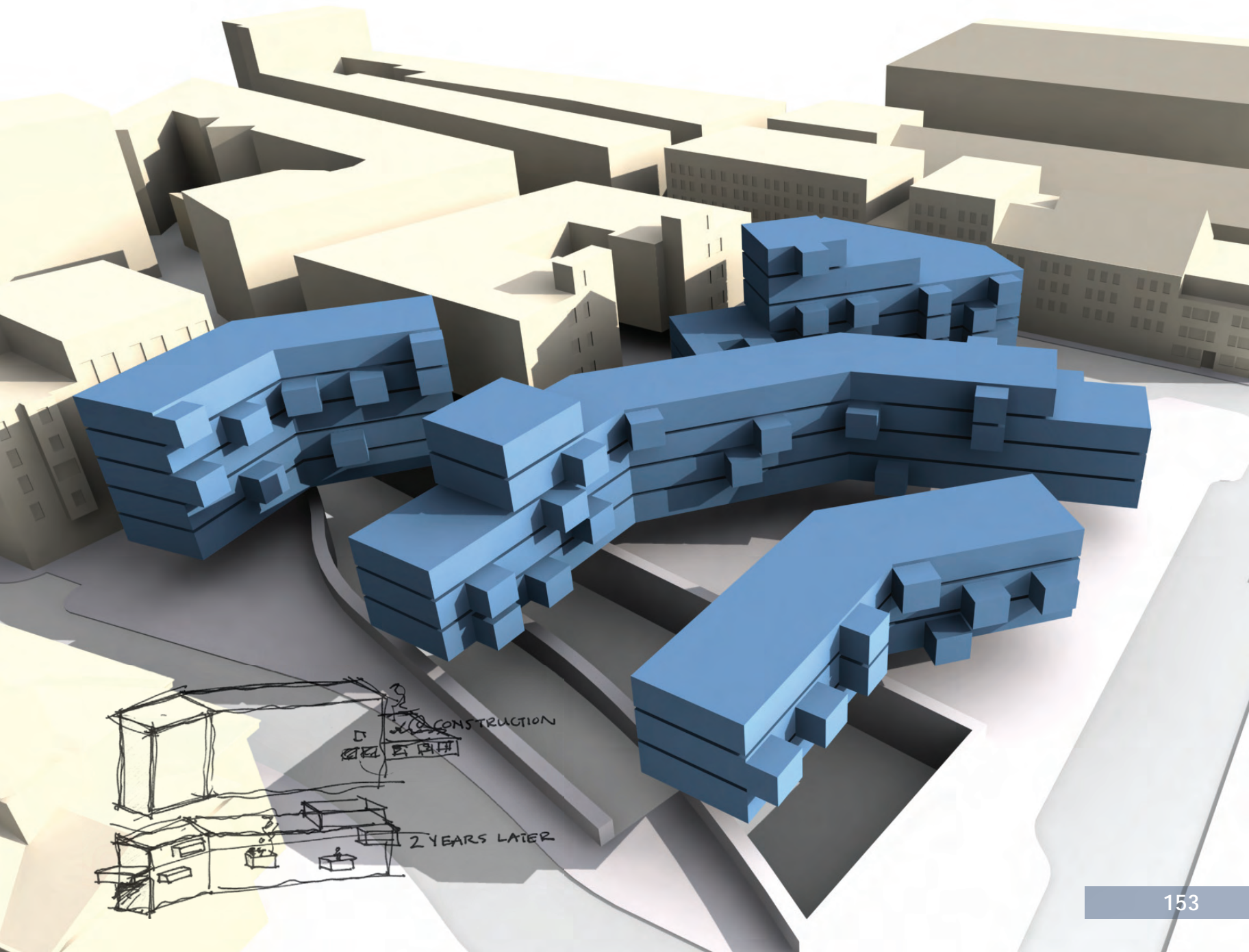


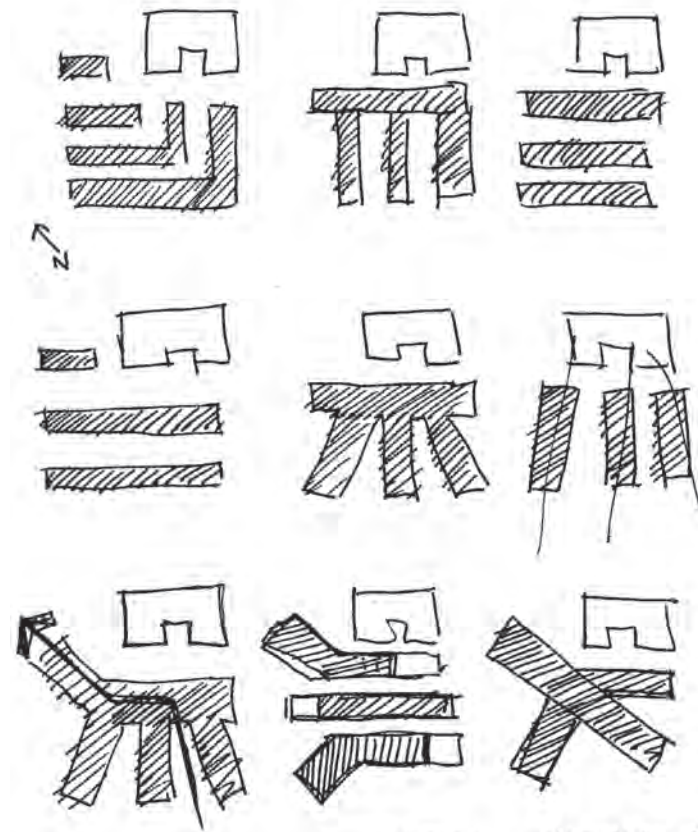


## Conceptual Design

In the Conceptual Design phase of the project, I began to develop and work towards a strategy consisting of bars of housing, as shown on the right, that optimize each singularly loaded units' access to light, the number and variety of interstitial outdoor community spaces and unit density. The height and orientation of each bar were analyzed and reconfigured to maximize these conditions. Special attention was paid to the building's presence in relation to the Greenway and surrounding existing buildings. A strategy of keeping the building lower adjacent to the Greenway and allowing the housing bars at the back of the site and above the Callahan Tunnel to be taller, as conceptualized in Scheme 1 on the following pages.

Certain design decisions remained constant throughout each proposed scheme, such as the use of single loaded housing bars to utilize the beneficial effects of solar gain in the winter and the proposed idea of modular "boxes" that could be added onto or extruded from the bars to increase or decrease square footage as desired. These add-on components, which developed into stair units and full and half-bay component "boxes," were ultimately removed from the final design and replaced with permanent extrusions that provide an additional layer of three-dimensionality. Throughout the initial phases of the design process, questions were raised about the feasibility of components that could only be removed or added by crane and the frequency of these changes, as they may disrupt other residents. This is only the beginning of the problems that arose in designing an Architecture that desires the didactic ability to mimic nature, adapting and growing over time.





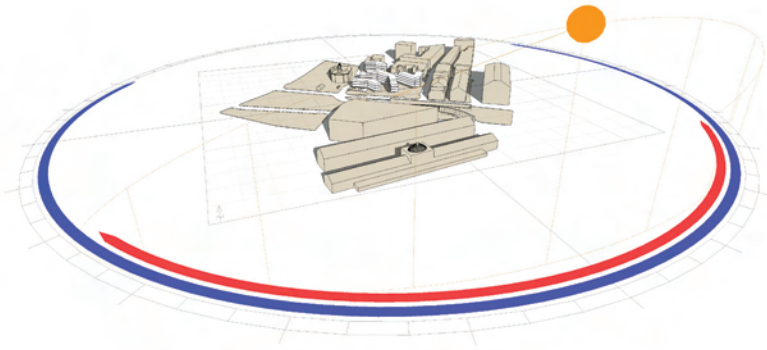
• POTENTIAL FOR FUTURE "NATURAL" GROWTH

COMPARE: • VERTICAL CIRC.

- # OF APARTMENTS
  - SF OF BARS
  - INTERFACE W/ GROUND FLOOR
  - QUALITY OF LIGHT
  - UNIGUESS OF VIEWS
  - POSSIBILITY OF PUBLIC GREEN
- V.S. PRIVATE RESIDENT GREEN COMMUNITY SPACE

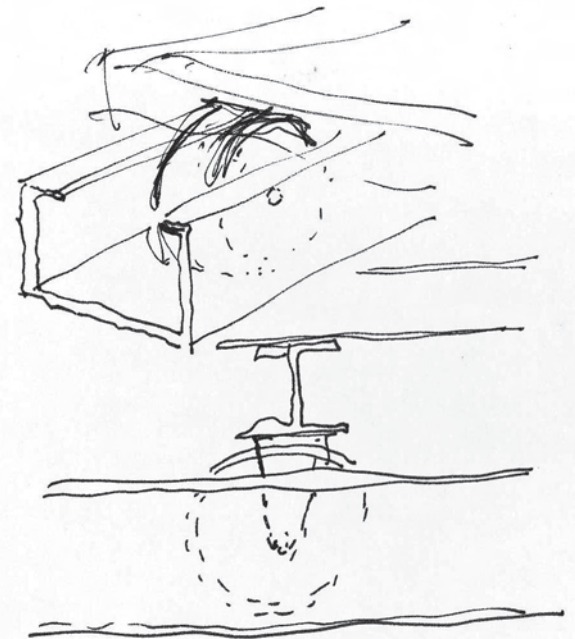
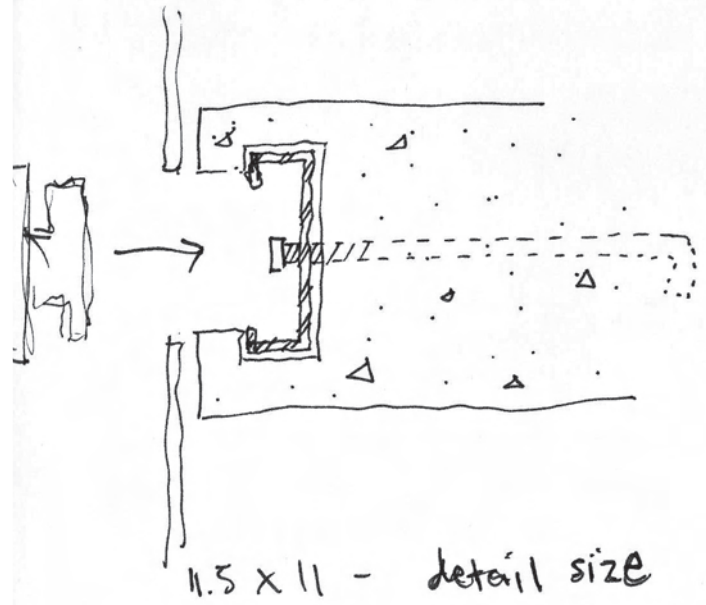
**Bar Scheme Organizations**  
Options and important points of comparison

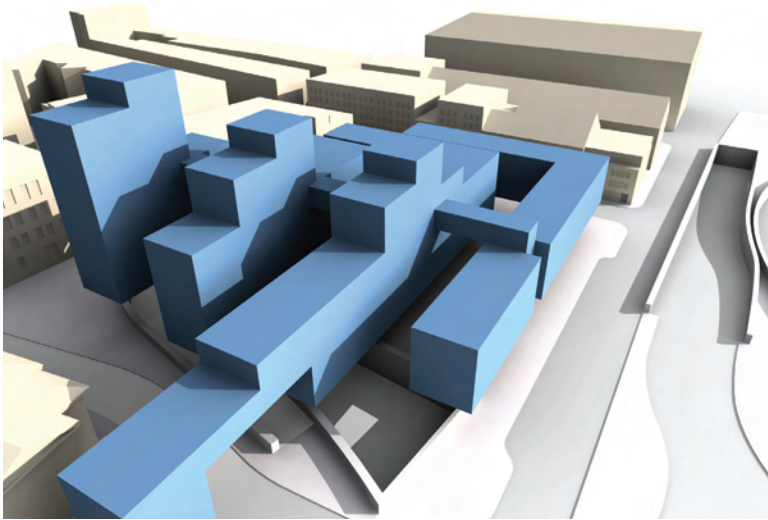




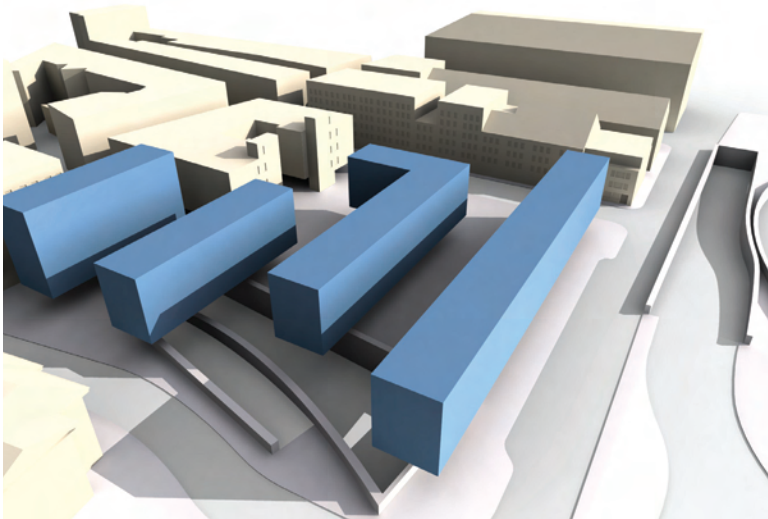
Solar Study (above)

Detail Concepts  
(right) for Add-on  
Facade "Boxes" and  
Movable Wall Systems



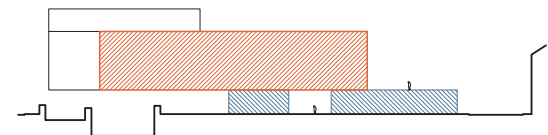
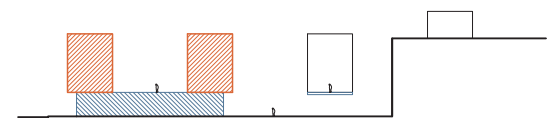
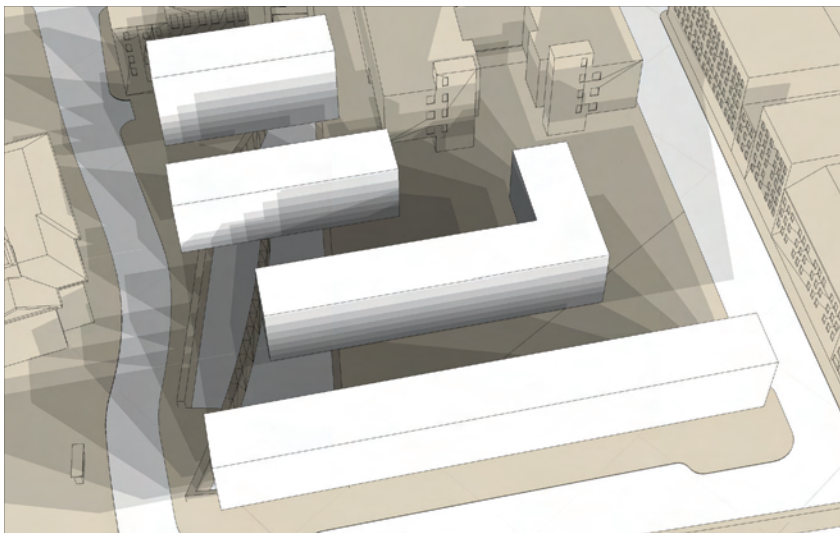
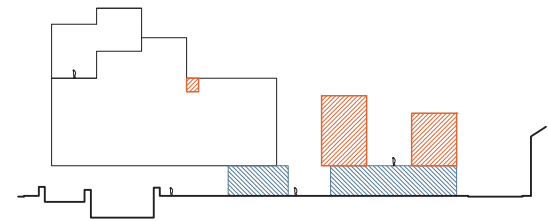
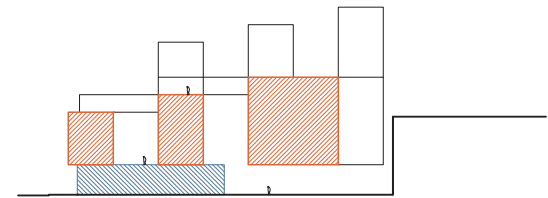
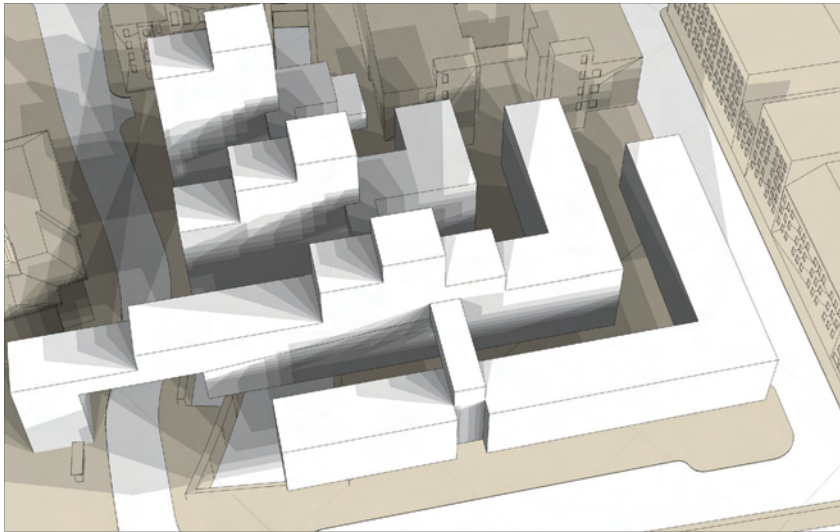


**Scheme 1** 141 Units

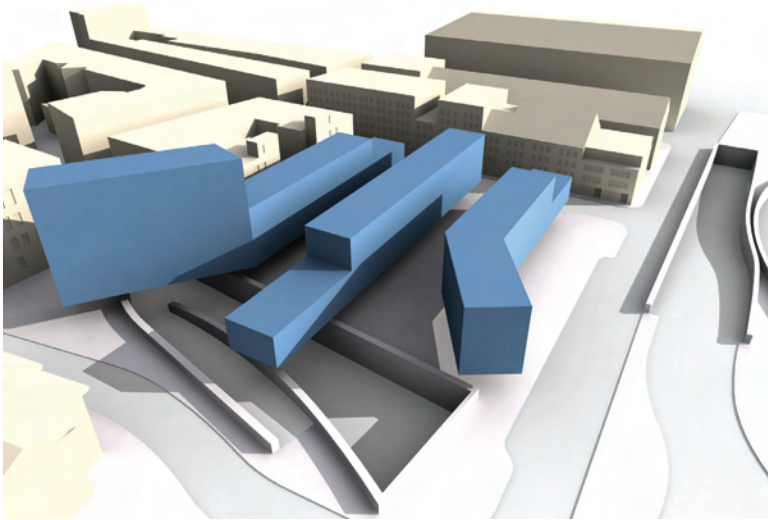


**Scheme 2** 98 Units

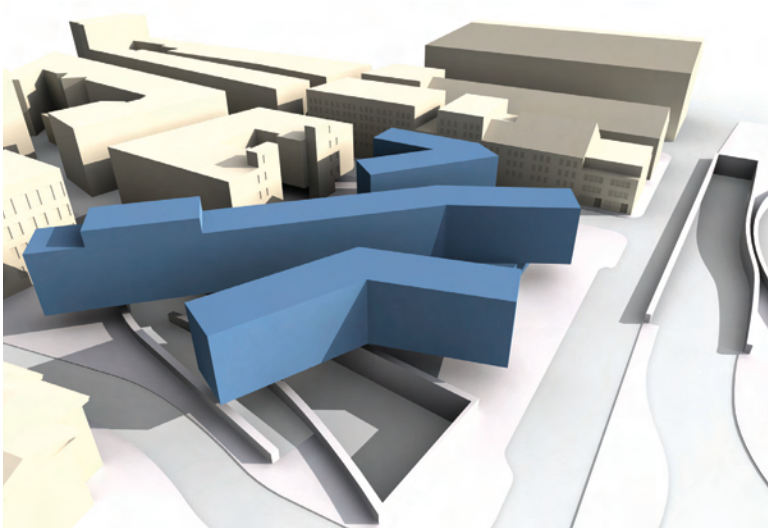
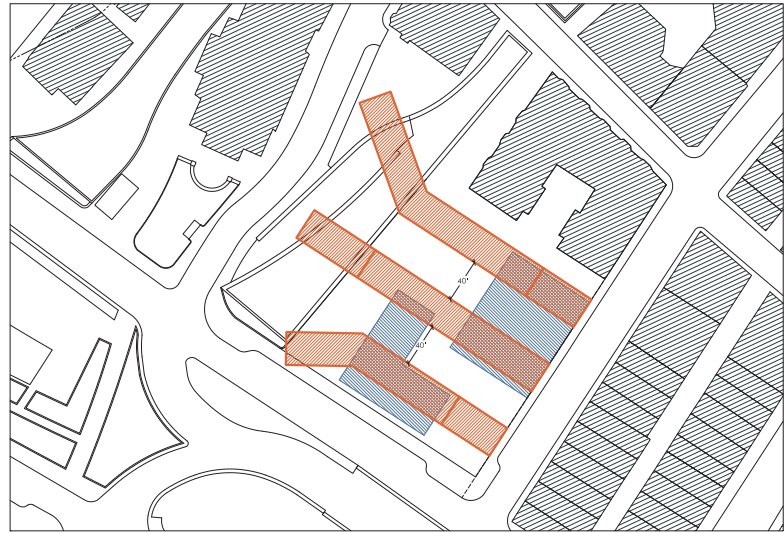






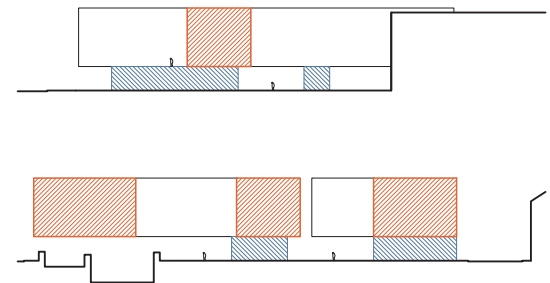
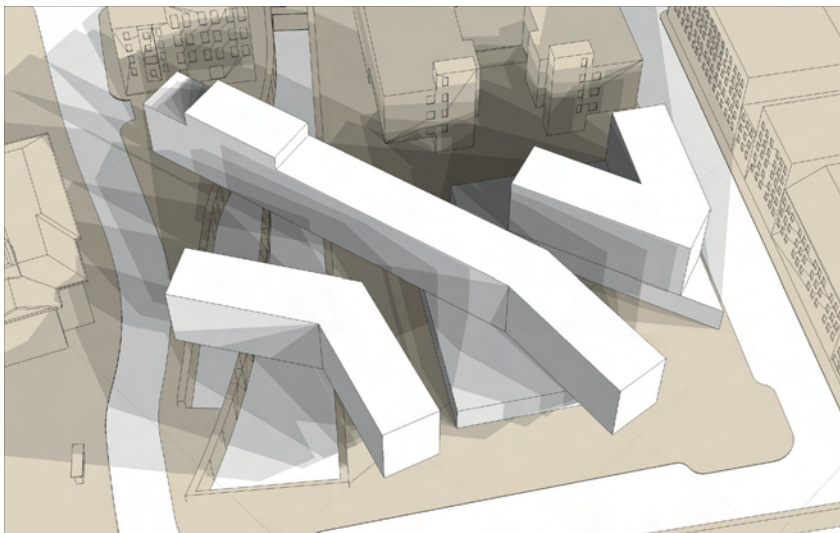
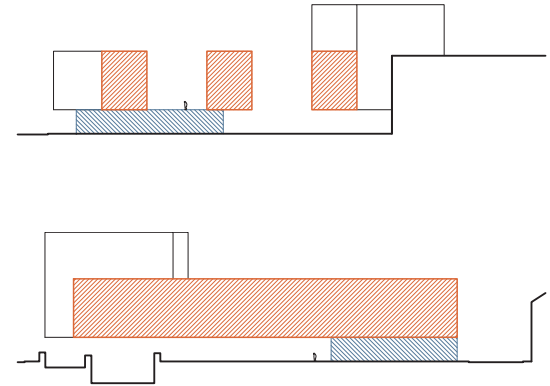
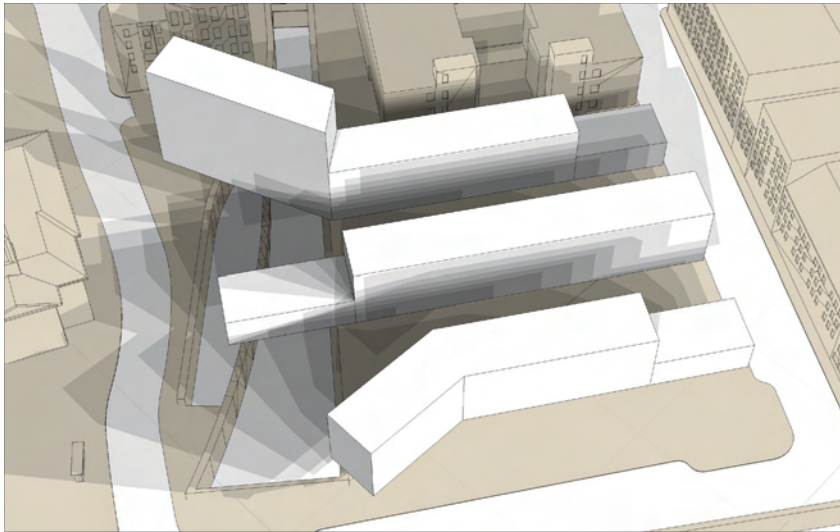


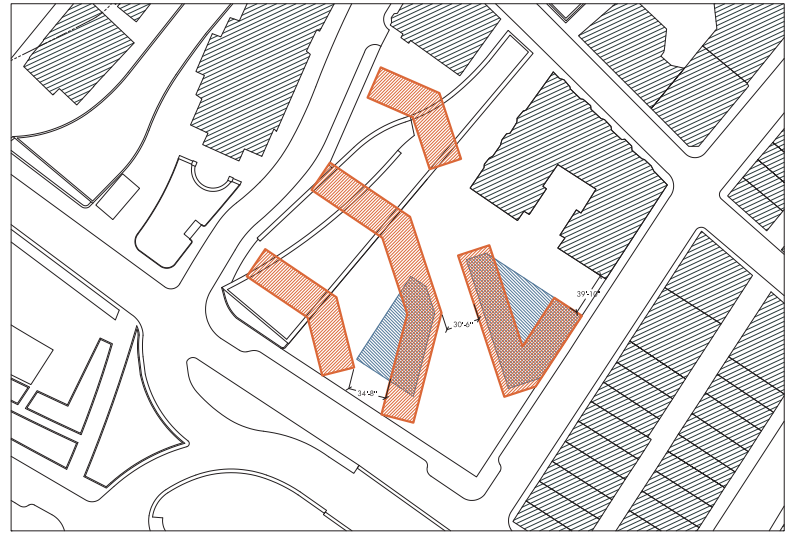
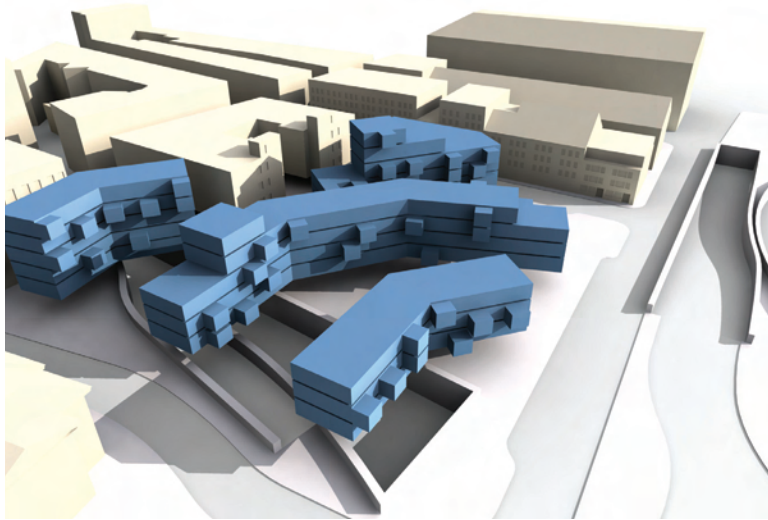
**Scheme 3** 40 Units



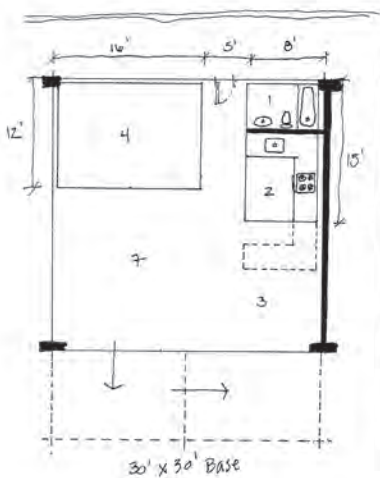
**Scheme 4** 66 Units



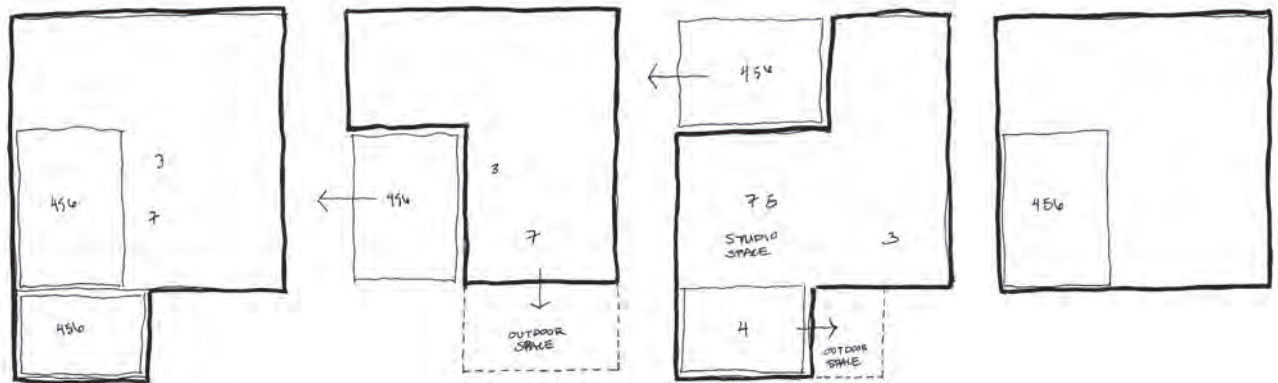




**Scheme 5** 95 Units

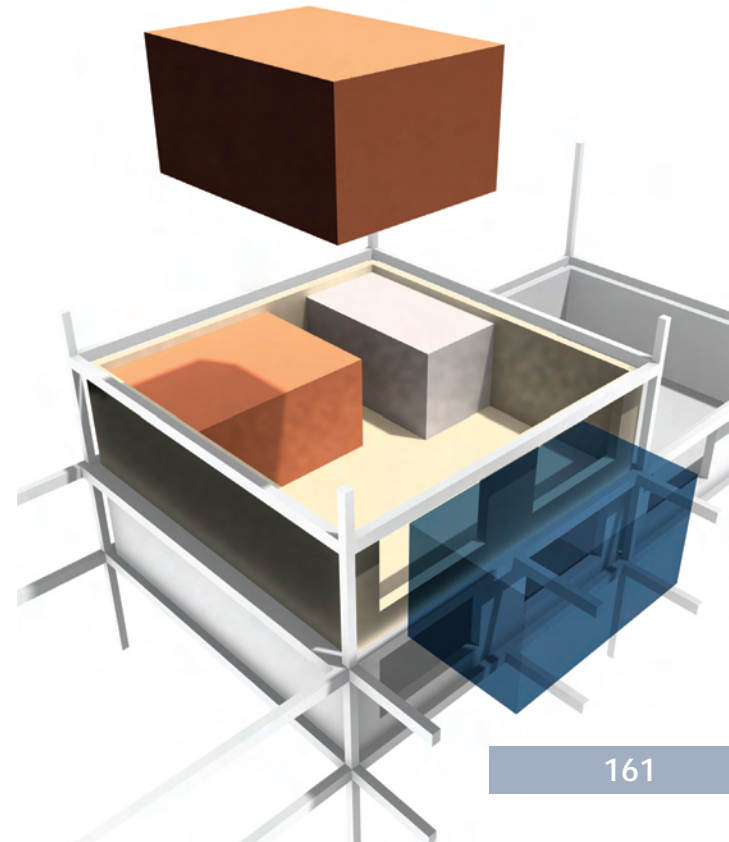
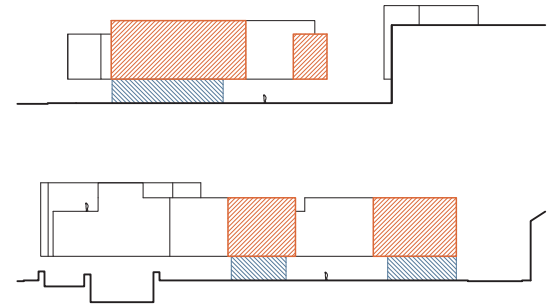
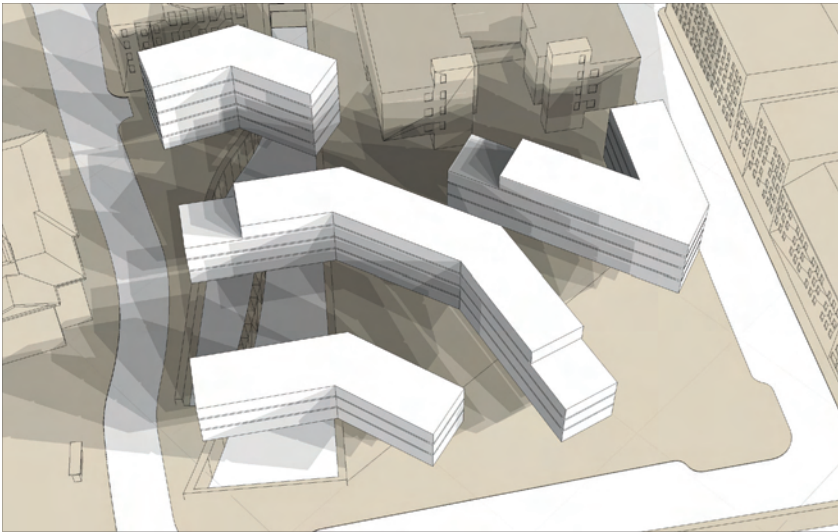


**Adaptive Layout Concept**



- |             |                |
|-------------|----------------|
| 1. Bathroom | 5. Office      |
| 2. Kitchen  | 6. Family Room |
| 3. Dining   | 7. Living Room |
| 4. Bedroom  |                |



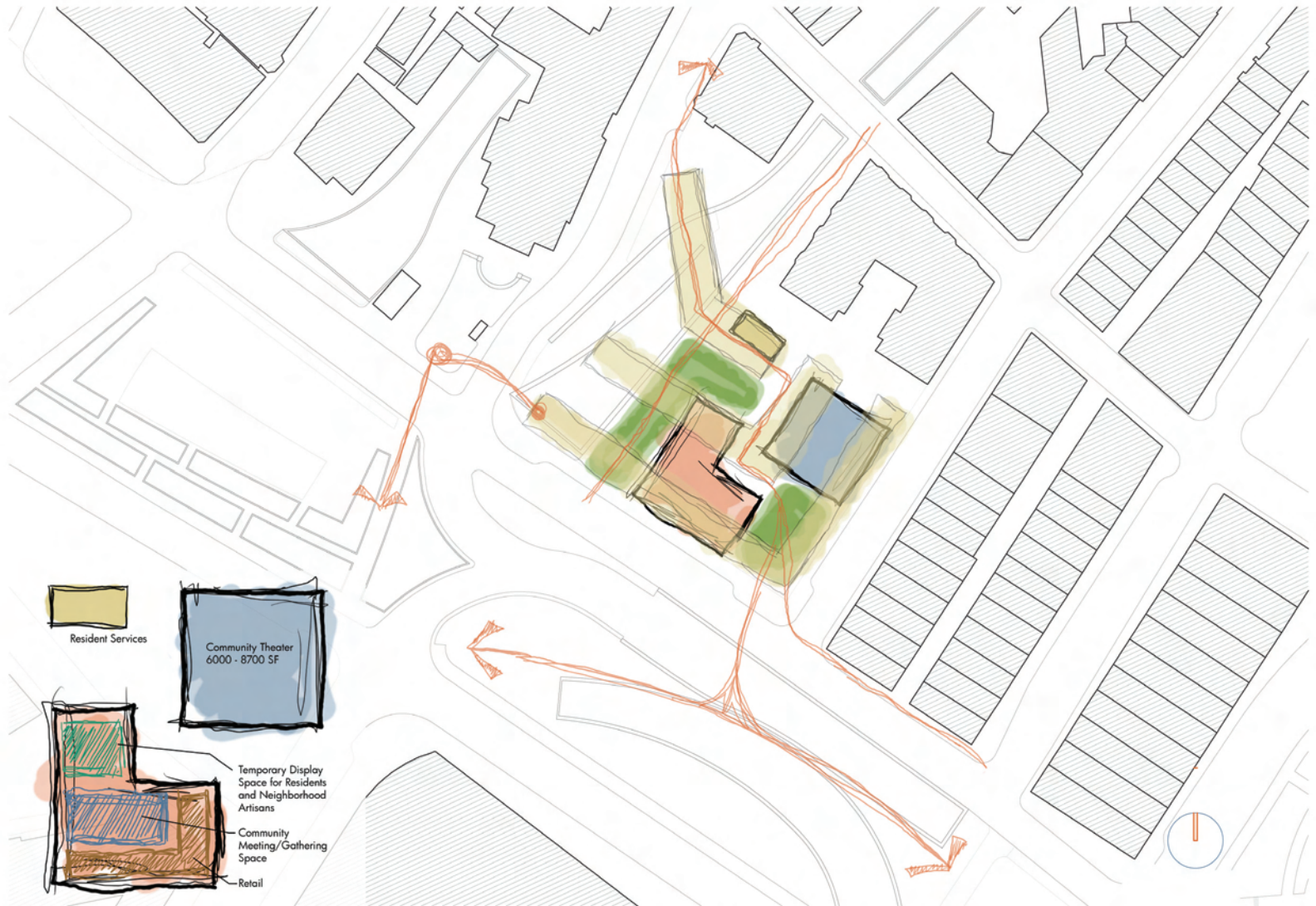




**Charcoal Drawing of Proposed Concept for Spatial Relationships**

The building is porous at ground level, with public solid program forming void paths that wind through the site and have a continuous visual connection with the bars of housing above.





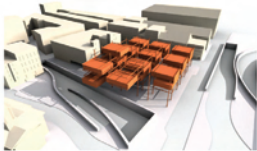
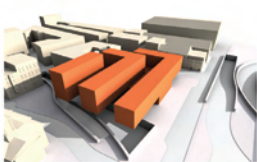
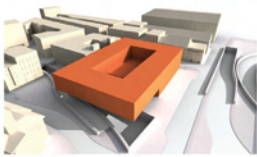
Site Strategy



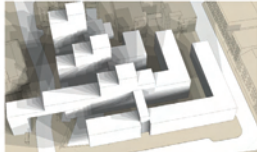
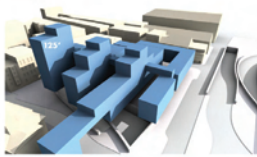


Site Strategy

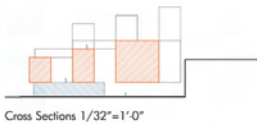
## Initial Massing Strategies



## SCHEME 1



141 units

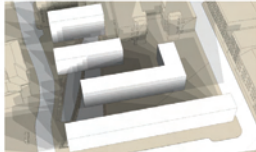
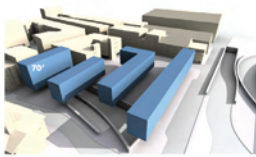


Cross Sections 1/32"=1'-0"

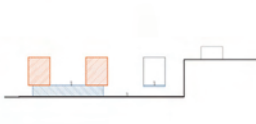


Long Sections 1/32"=1'-0"

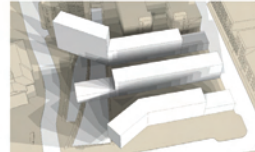
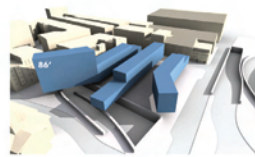
## SCHEME 2



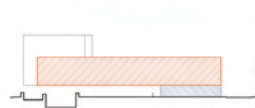
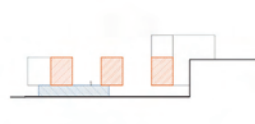
98 units



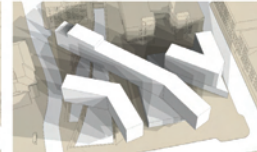
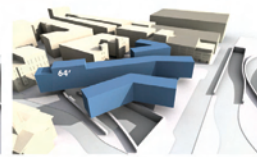
## SCHEME 3



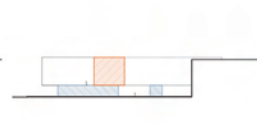
40 units



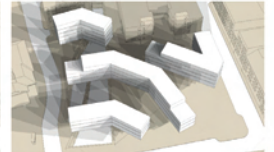
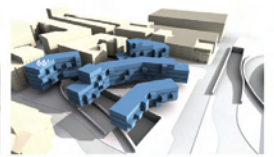
## SCHEME 4



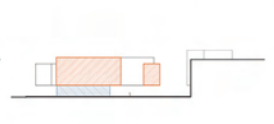
66 units



## SCHEME 5

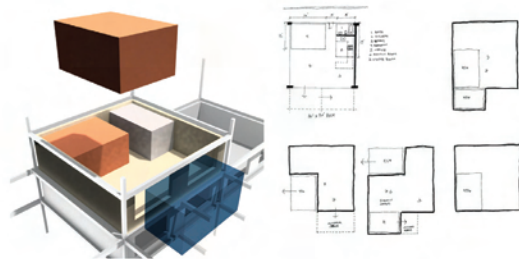
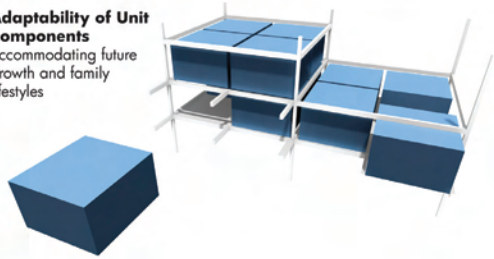


95 units



## Adaptability of Unit Components

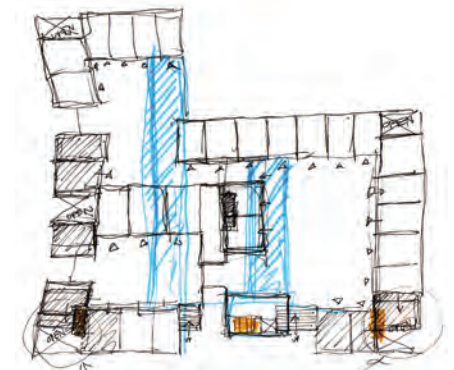
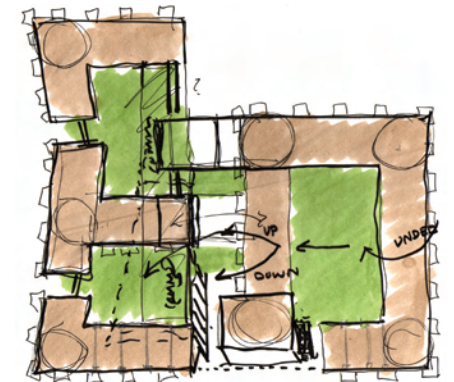
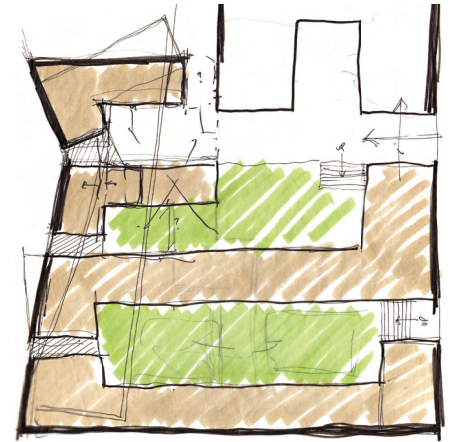
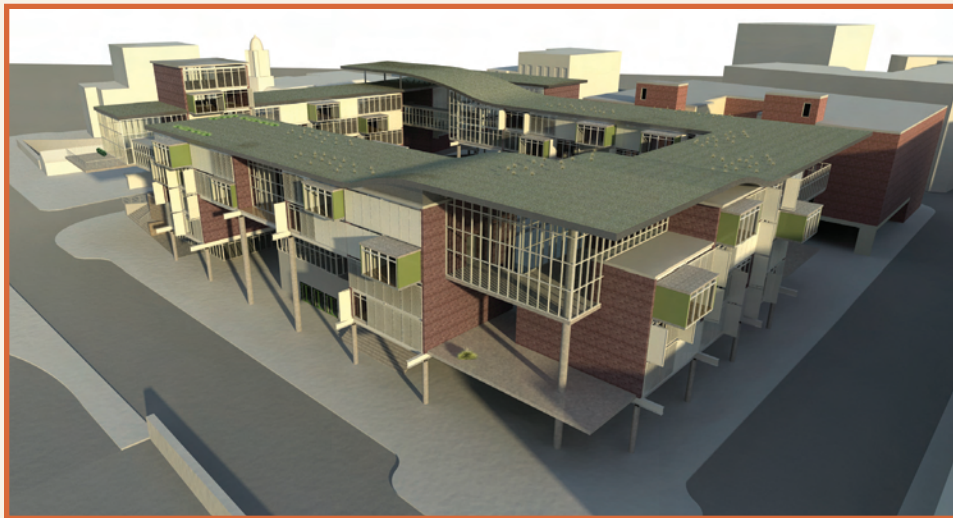
accommodating future growth and family lifestyles



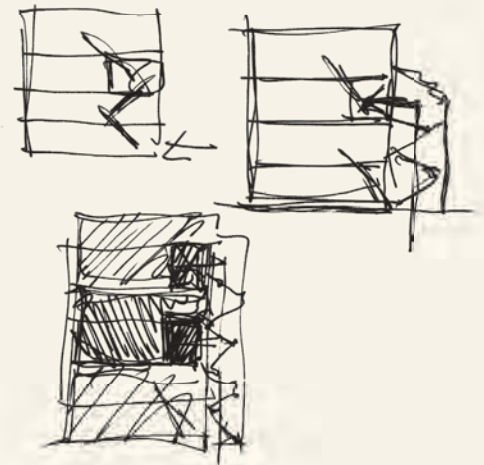
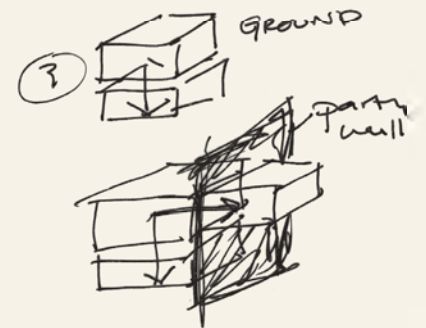
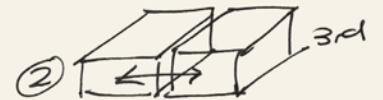
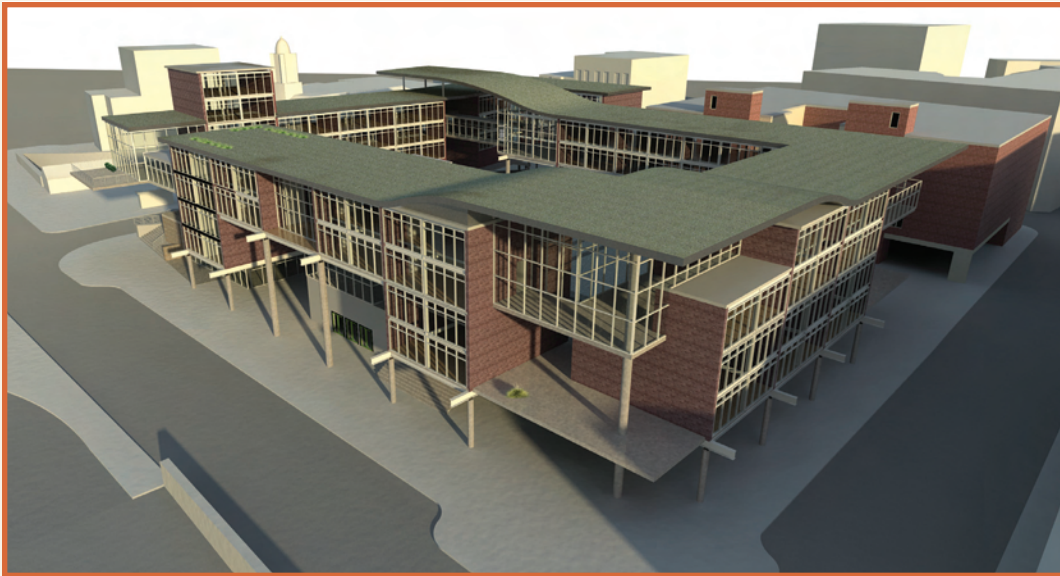


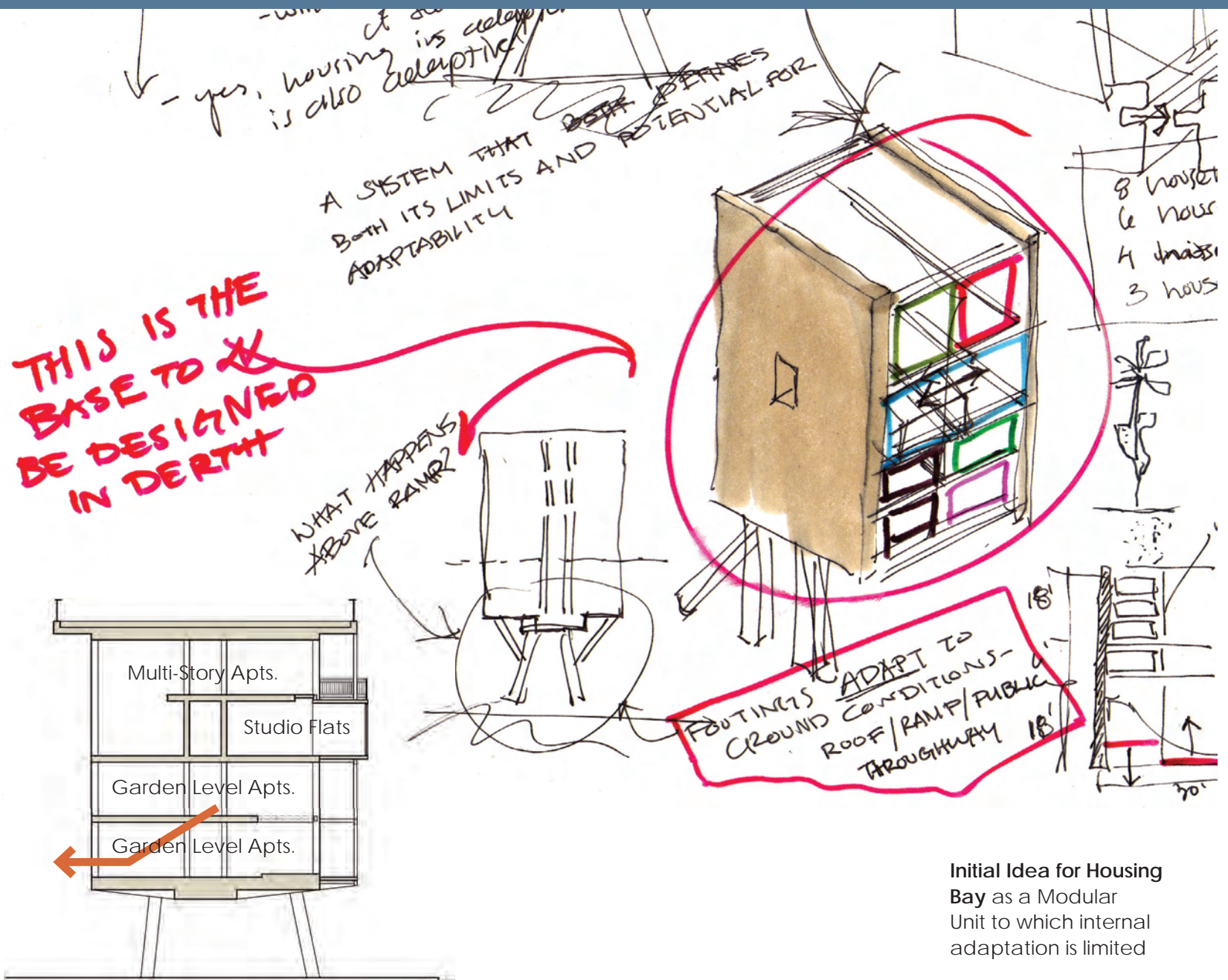
## Mid-Review of Schematic Design in Site, Space and Detail

Between the Conceptual Design Review and the Mid-Review, early schemes were discarded and others were reworked to produce a site and building strategy that would place a greater emphasis on the internal community courtyard spaces. The formal massing of the building desired to be more urban than the skewed bar schemes presented in the conceptual phase. Each iteration leading up to the Mid-Review included an attention to the four unique facade conditions and to providing the street face with a hard urban edge (right), allowing the interior to be an unique experience for the residents. Ultimately, the initial perimeter bar scheme with a single interior courtyard was chosen to simplify the overall building form.



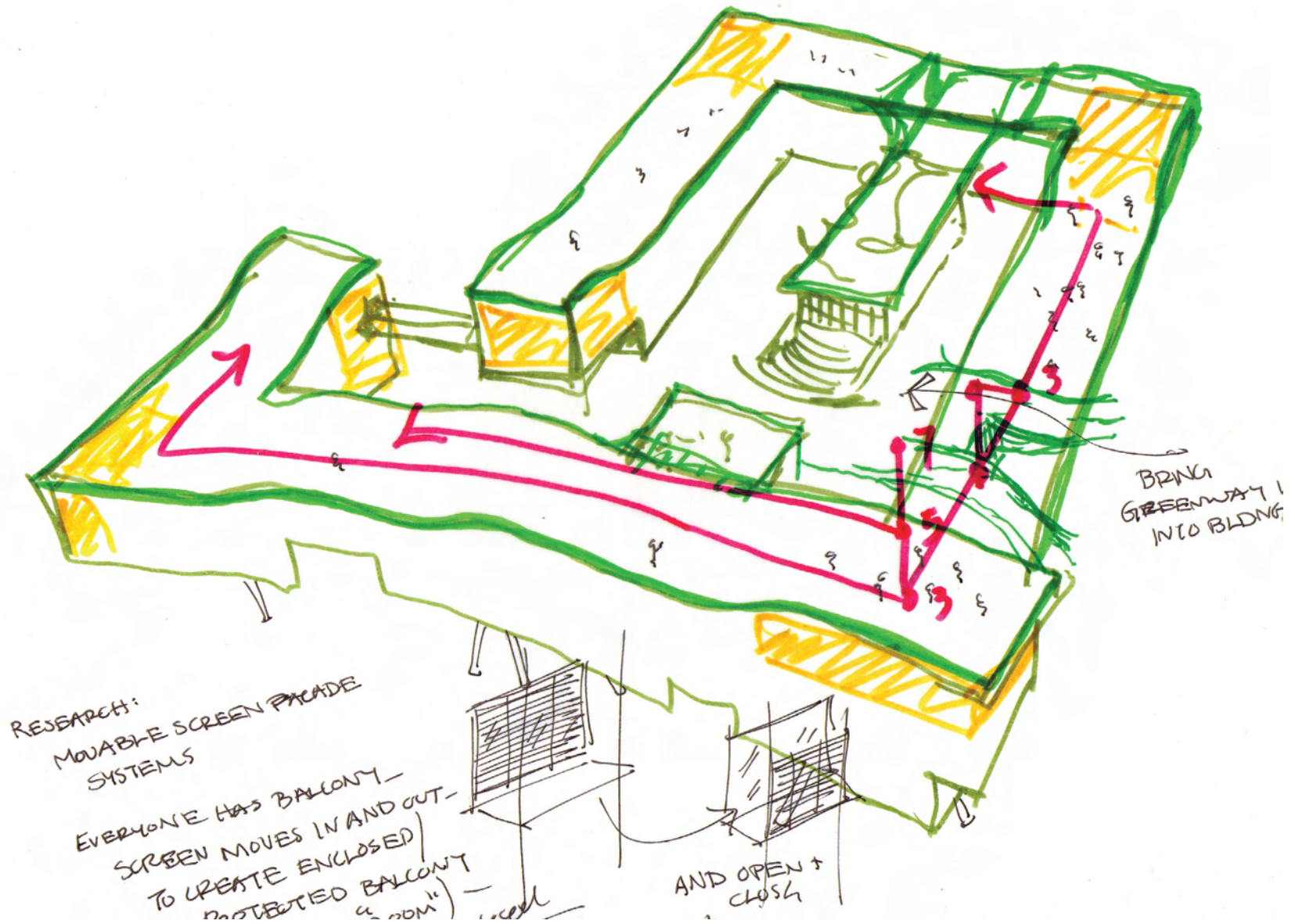






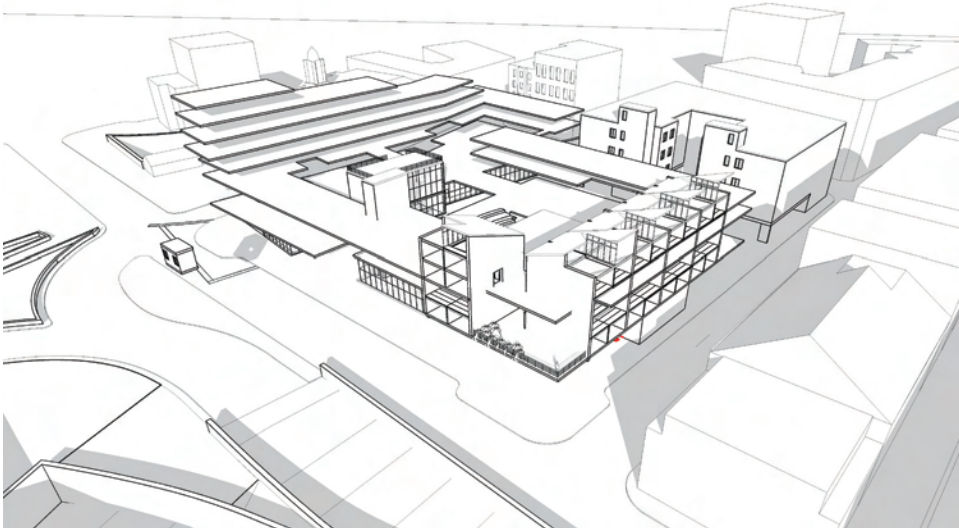
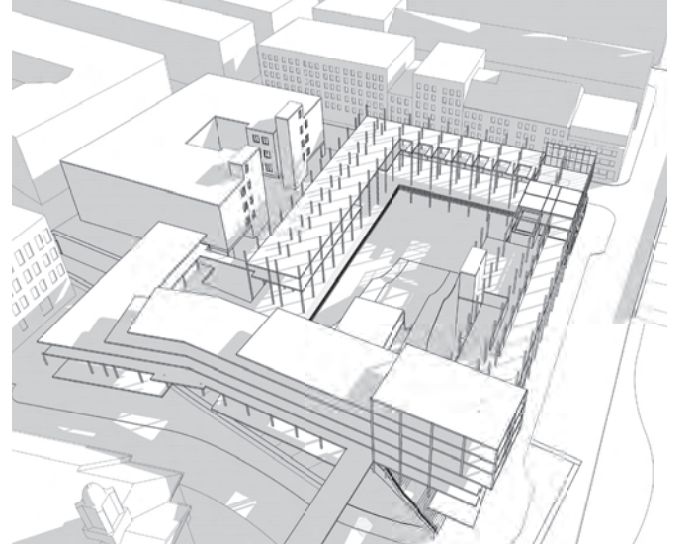
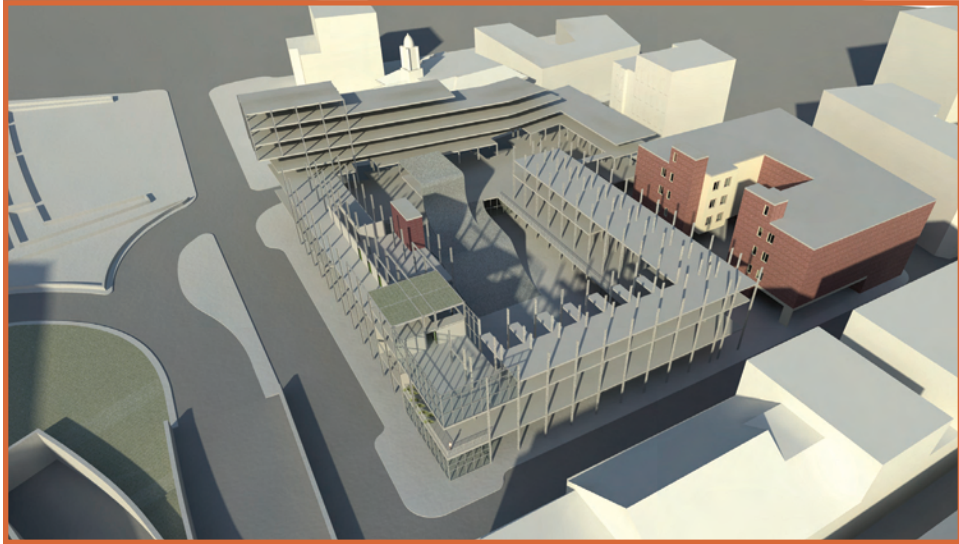
Initial Idea for Housing Bay as a Modular Unit to which internal adaptation is limited



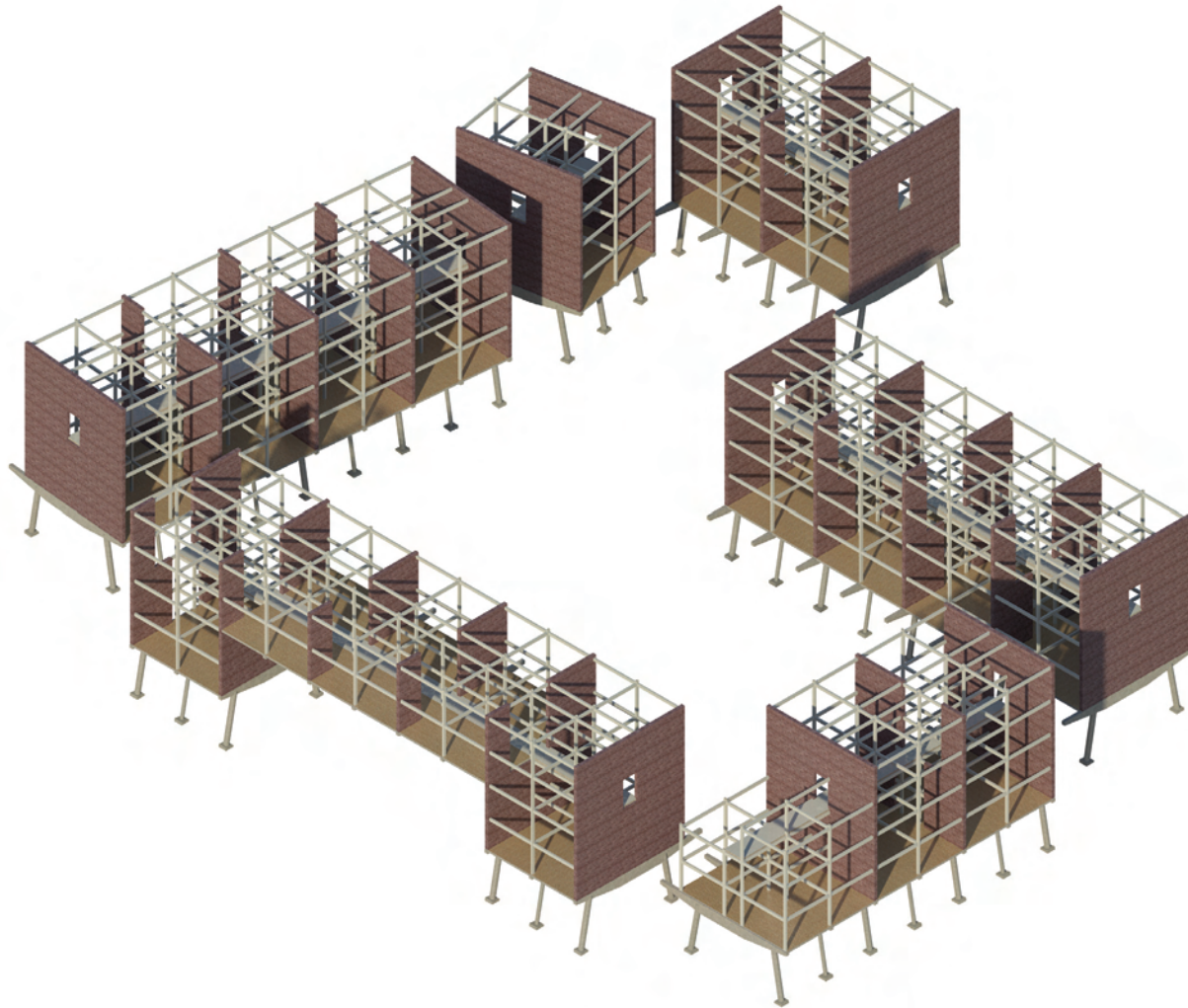


Roof Greenscape



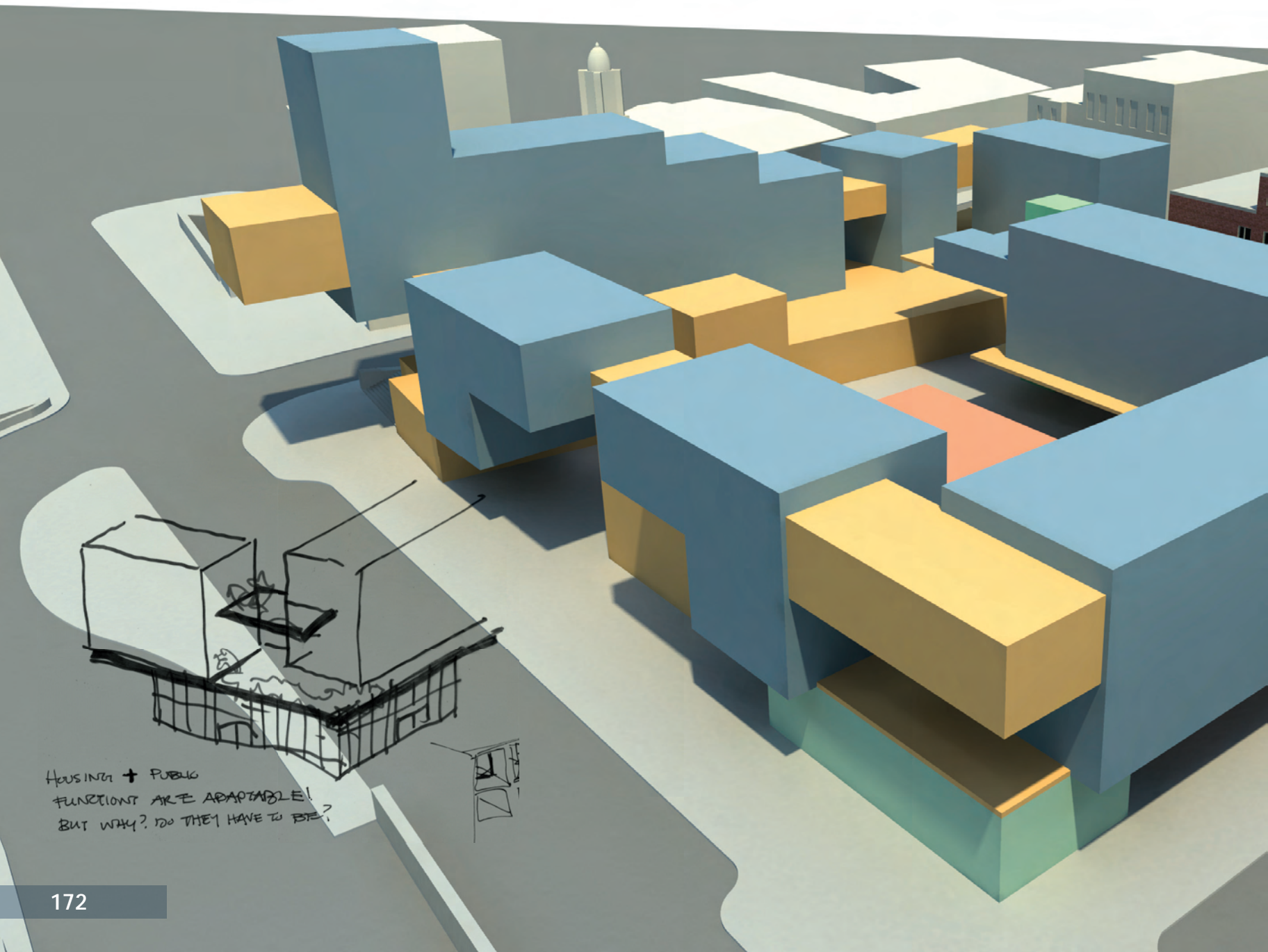


Initial Massing of  
Perimeter Bar Scheme



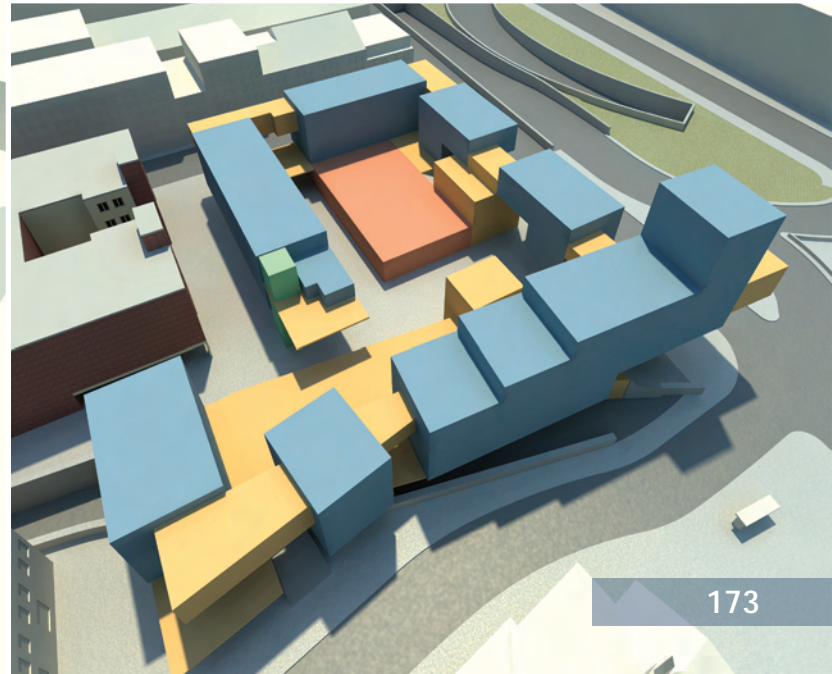
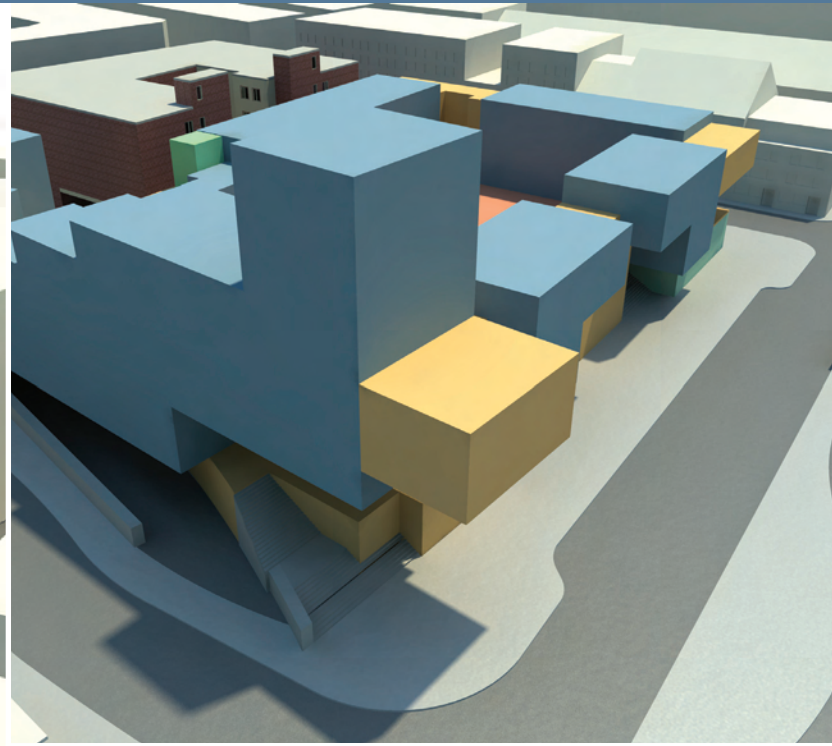
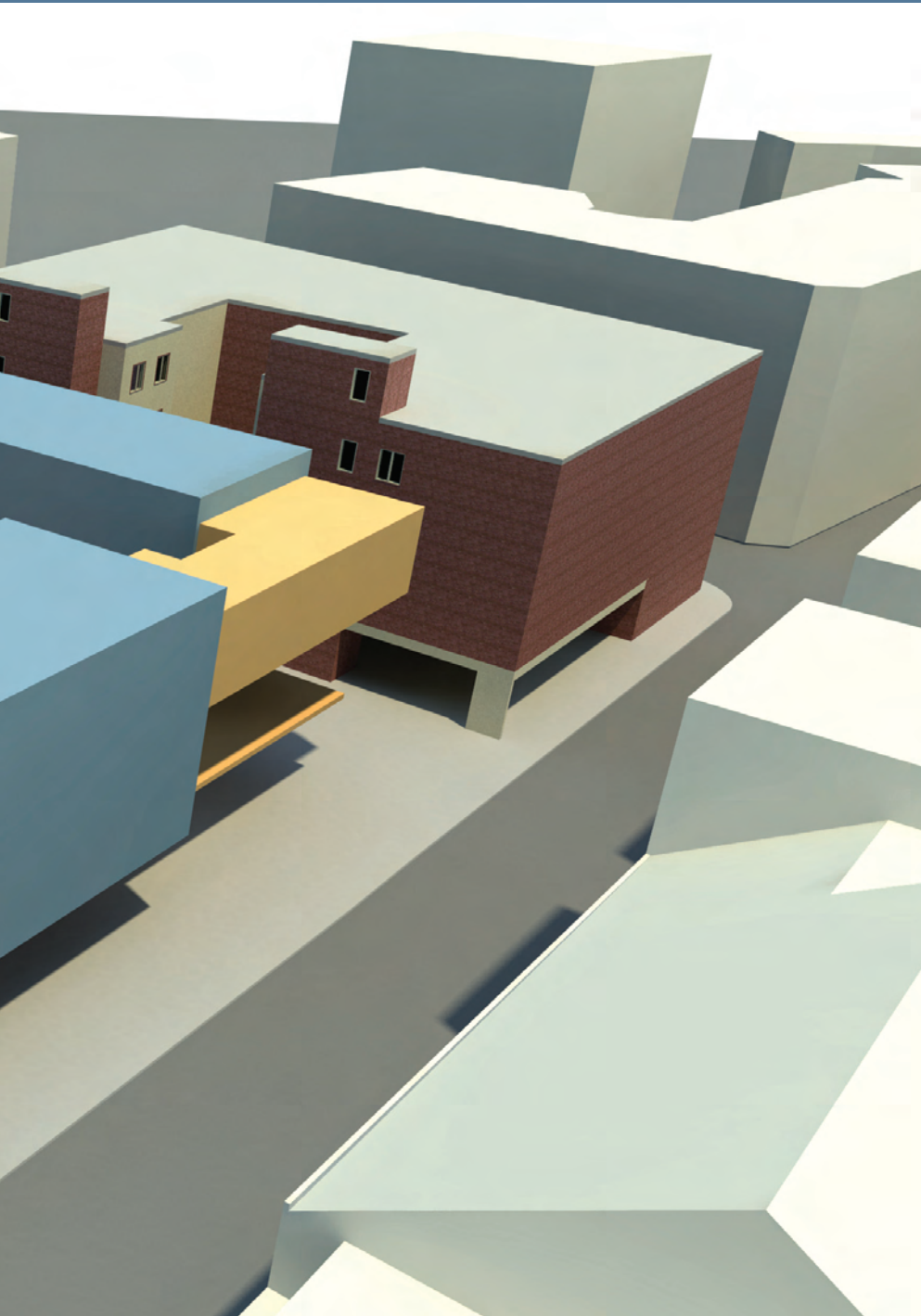
Generic Structural  
Axon with Housing  
Bay Divisions

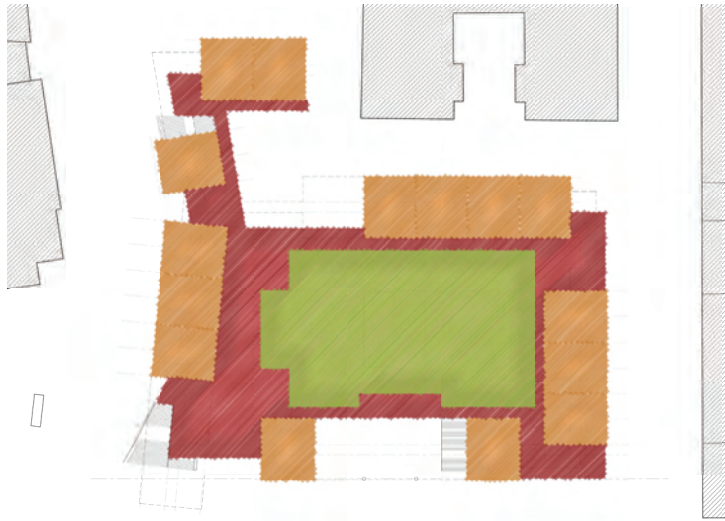




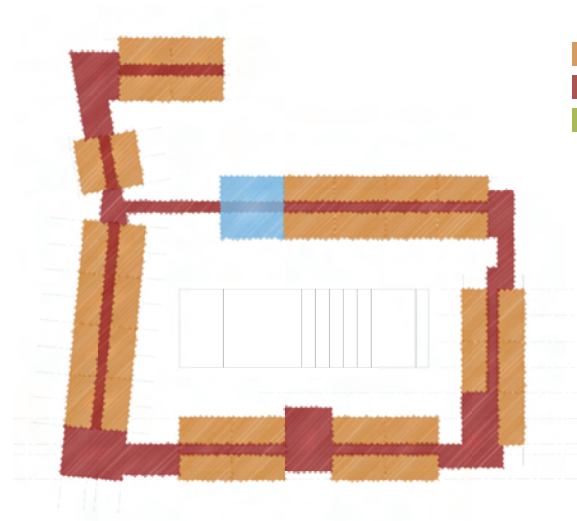
HOUSING + PUBLIC  
FUNCTIONS ARE ADAPTABLE!  
BUT WHY? DO THEY HAVE TO BE?





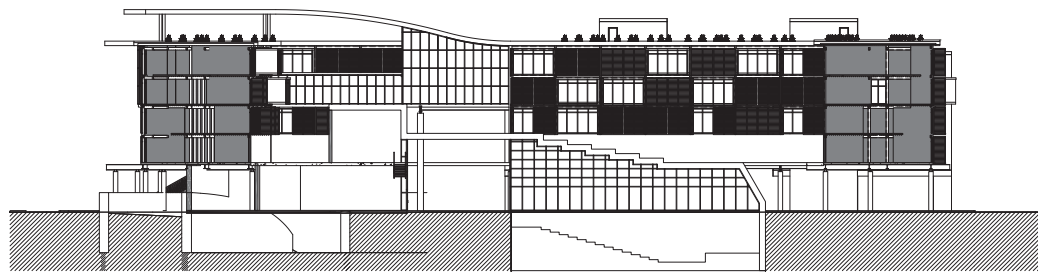


First Housing Level Diagram

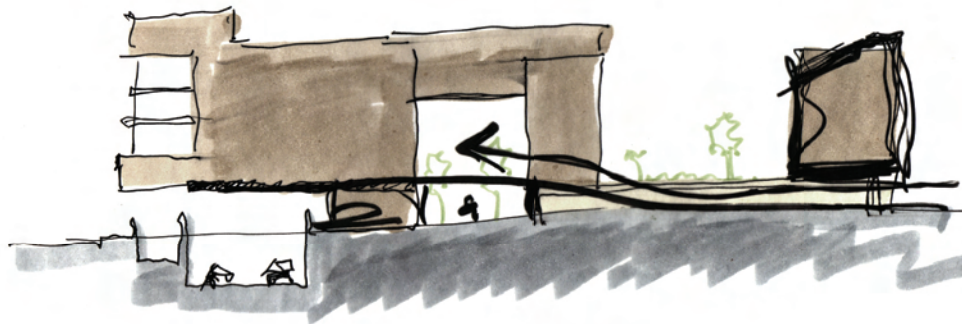


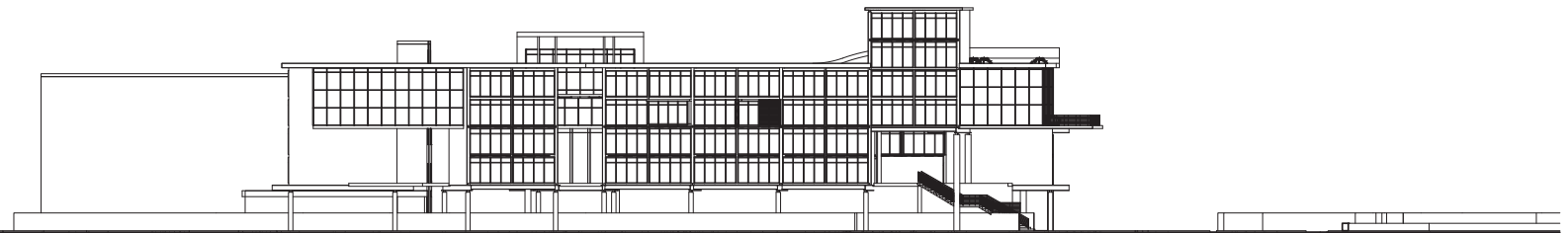
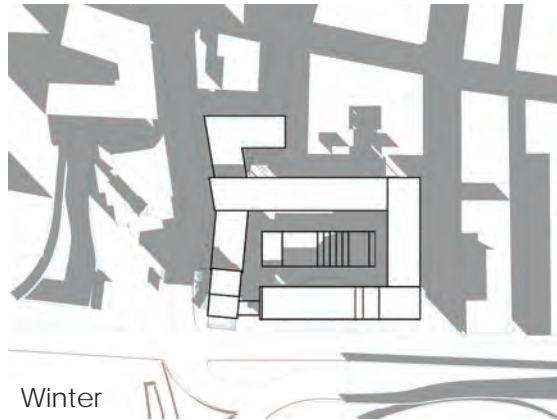
Third Housing Level Diagram

- Units
- Circulation
- Sunken Greenspace open to Ground Level



Longitudinal Section

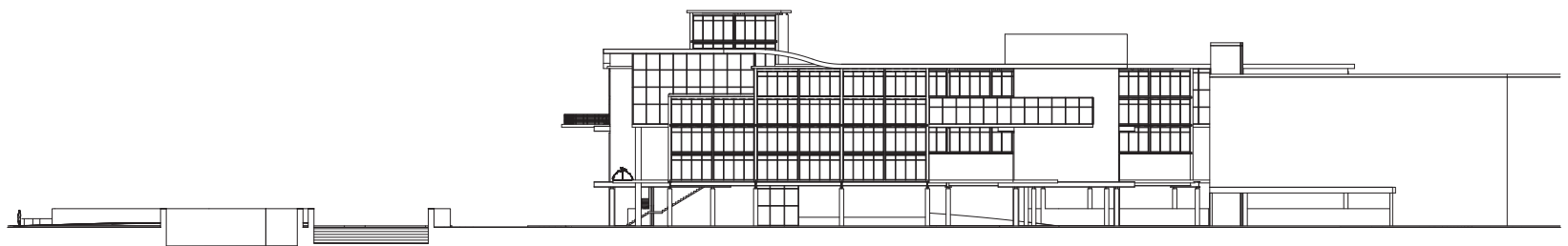




West (North Street) Elevation

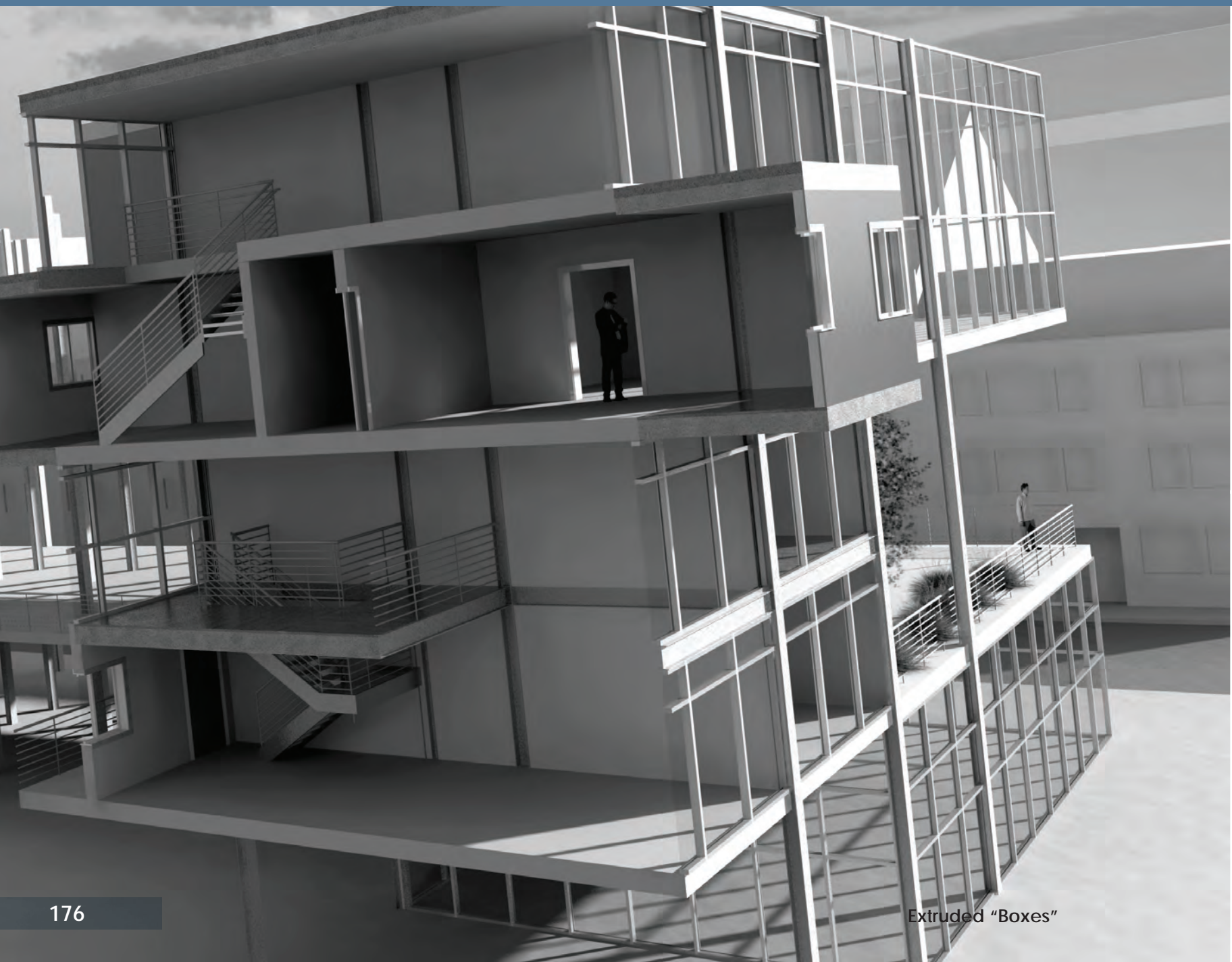


South (Greenway) Elevation



East (Fulton Street) Elevation









Structure



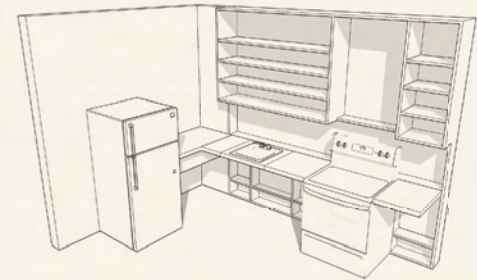
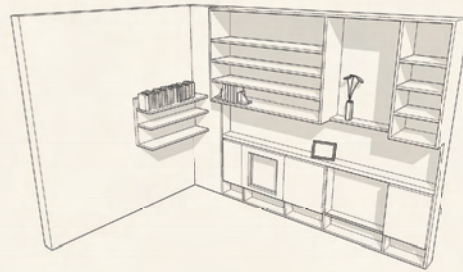
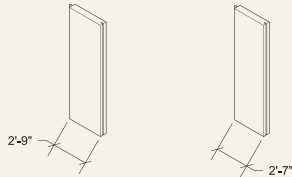
Enclosure



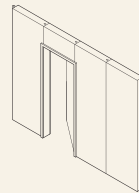
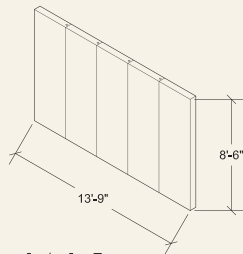
Louvered Screening System

Provides texture and an adaptive presence over time

W:a1 W:a2

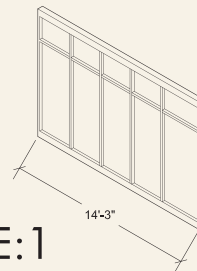


**Built-in Kitchen Components**  
Adapt to the use of the space

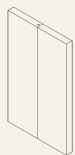


W:1

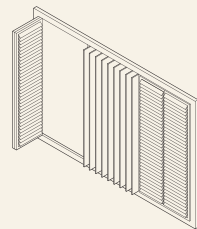
W:2



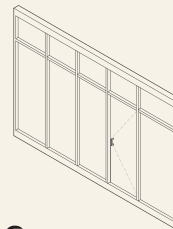
E:1



W:3

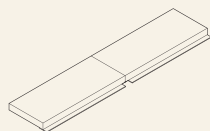
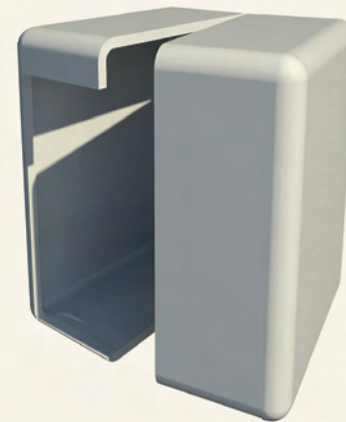


Wall Panels



E:2

Enclosure Panels

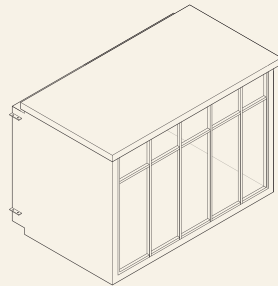
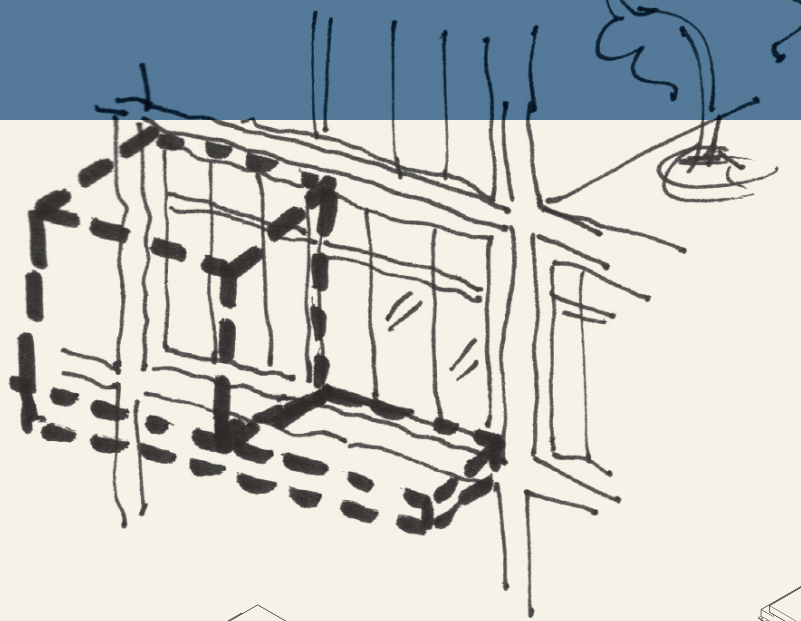


F:a

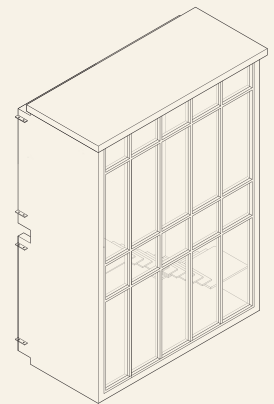
Floor Panels

**Modular/Removable  
Components**

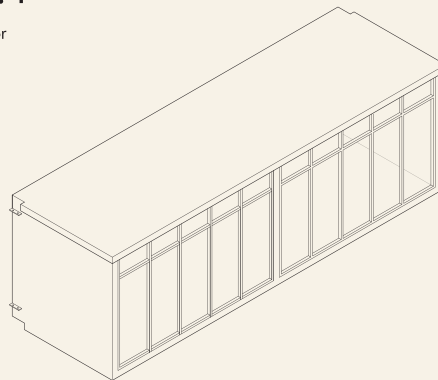




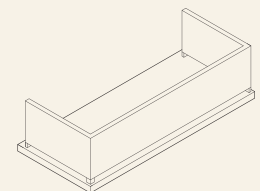
AO:1  
Third Floor



AO:3  
Between First and Second Floor



AO:2  
Third Floor

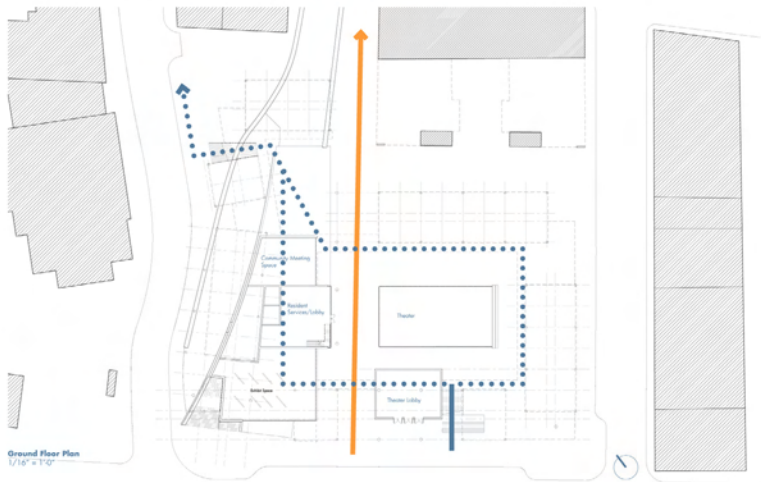
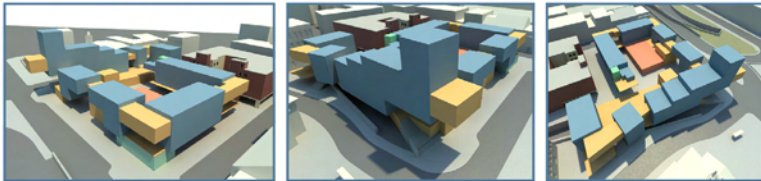


AO:4  
Balcony for All Levels

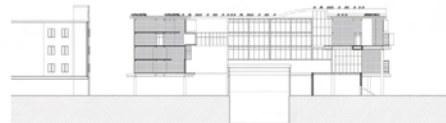
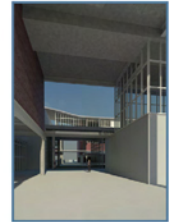
## Component Add-on Boxes

## ADAPT-able/-ive Housing

Kevin Mowatt  
Thesis Mid-Term Review  
Fall 2009



**Longitudinal Section**  
Through Theater and Housing Bars on North and Fulton  
1/16" = 1'-0"



**Cross Section**  
Through Nursing Home  
1/16" = 1'-0"



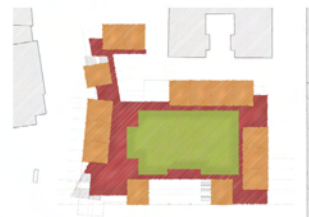
Fulton Street Elevation  
1/16" = 1'-0"



**Greenway Elevation**  
1/16" = 1'-0"

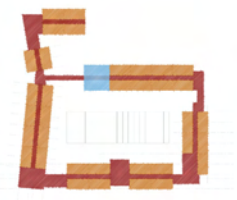


**North Street Elevation**  
1/16" = 1'-0"



### First Housing Floor

#### Housing Blocks vs Outdoor Raised Circulation



### Third Housing Floor

Housing Blocks vs Enclosed Circulation

# Unit Plans

3/16" = 1'-0"



8 Units



7 Units



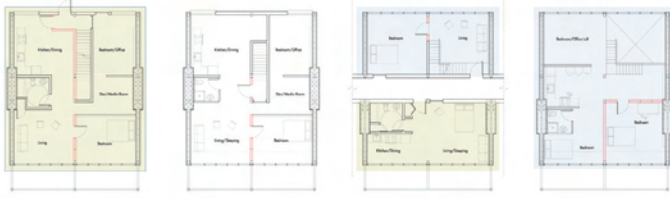
6 Units



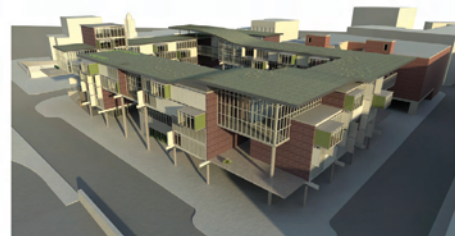
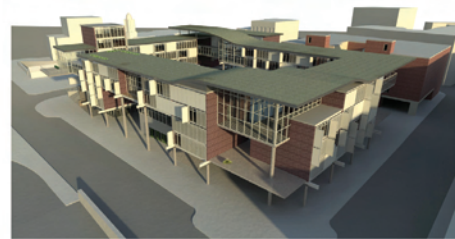
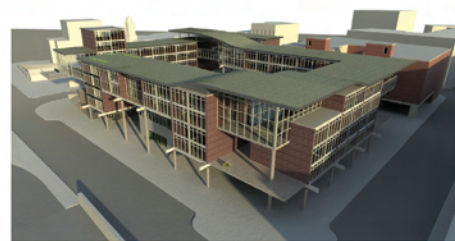
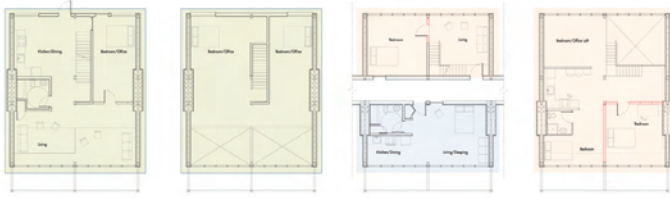
5 Units



4 Units



3 Units



W:a1 W:a2



**Fold-up Kitchen**  
For potential expansion into a unit with an unneeded kitchen.

W:1 W:2



E:1



W:3



E:2



F:a

**Kit of Parts**  
3/16" = 1'-0"



AO:1  
First Floor

AO:2  
First Floor



AO:3  
Between First and Second Floor

AO:4  
Between First and Second Floor



## Gate Review

### Development of Building Order

#### Site Strategies

- create a permeable building that draws people through it at various levels
- make use of building over the Callahan Tunnel to bring people across the tunnel and into the North End
- front the street with the housing blocks, leaving the central courtyard open for community development
- at the street and sidewalk level are both community and public amenities, including retail, community market, a cafe/lounge, and entry to the community performance space

#### Building Strategies

- in general, the building is raised off the ground to increase permeability and to allow for the Greenway to begin to seep underneath and into the central courtyard space; this strategy also comes from being elevated above the existing tunnel on site and this was brought throughout the building
- housing block are divided into two-unit wide bays that limit the level of adaptability to strictly these individual bays
- egress occurs near the corners of the building's perimeter bar; it is also here that space for resident interaction is provided for, as well as featuring views out to the Greenway

**First Floor Apartment**  
**Summer Solstice, Noon**  
Floor panels removed to create an  
L-shaped unit in cross section.  
View out to skyline, looking across  
Greenway.



**Same View as Above**  
**Winter solstice, Noon**



- mechanical systems, including the in-floor hydronic fan-coil system, are served by a horizontal chase that runs around the perimeter of the building, feeding into vertical chases in the bearing walls between the unit bays

### Detail Strategies

- details and materials are chosen to fit in the context of Boston, specifically the North End
- details are more mechanisms than construction details, as they will hold great significance in the adaptability of both unit walls and overall building form and presence

### Things to be developed for the FINAL:

**Central Greenscape** (extension of Greenway under and through building) – designed for public use and recreation

- Covered Court area – lightwells that puncture through...changing light quality throughout the day?
- Connect across North and Cross St. Intersection with a bridge?

### Units:

- Western Corner Housing Tower – Unique Housing units with 360 degree view of Greenway, North End
- Add units in corners

### Theater Plan:

- Parking levels



- Lower theater lobby access and amenities
- Bathrooms

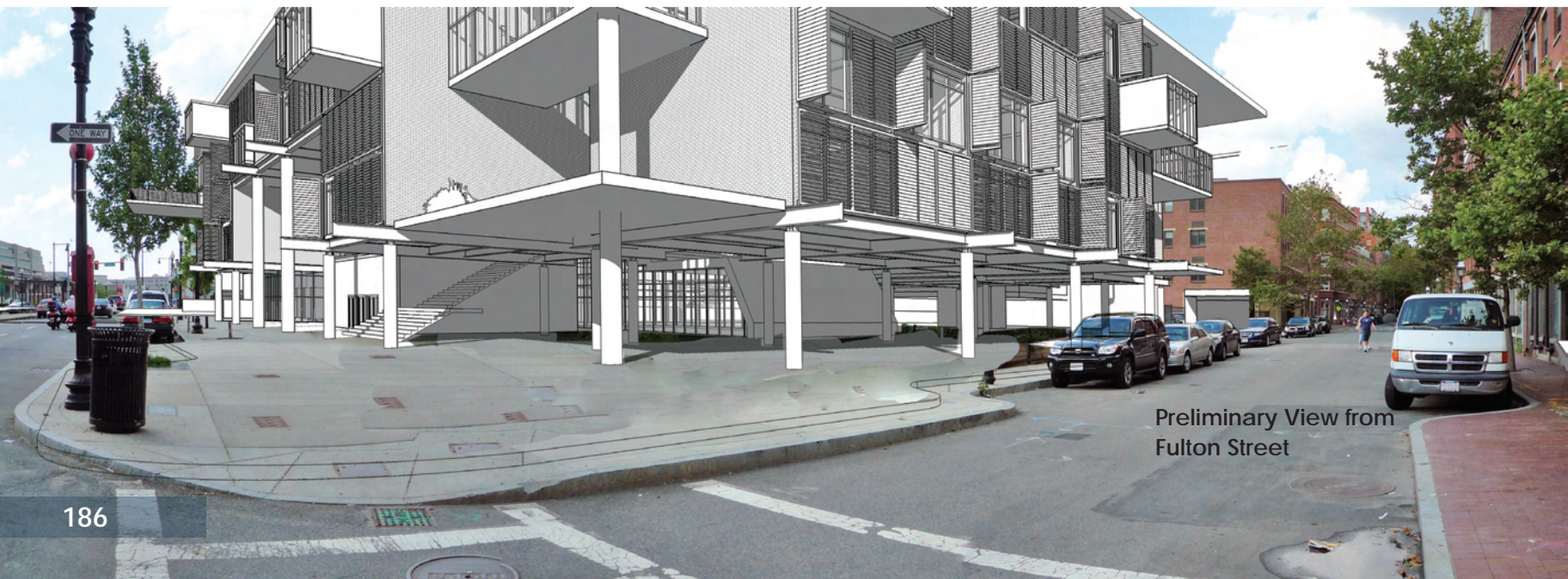
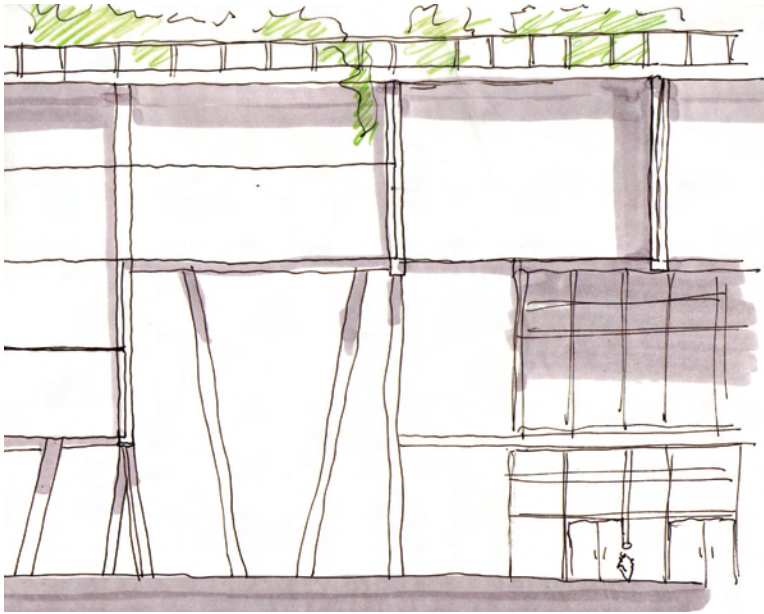
**Façade screen** – frit translucent glass panel systems

- Detail components of façade that allow for the “feeling” of changeability and transformation
- Will be diagramed as individual housing bay axons, rendered at four distinct conditions in time: NIGHT, DAY, SUMMER, and WINTER

**Details of interior systems:**

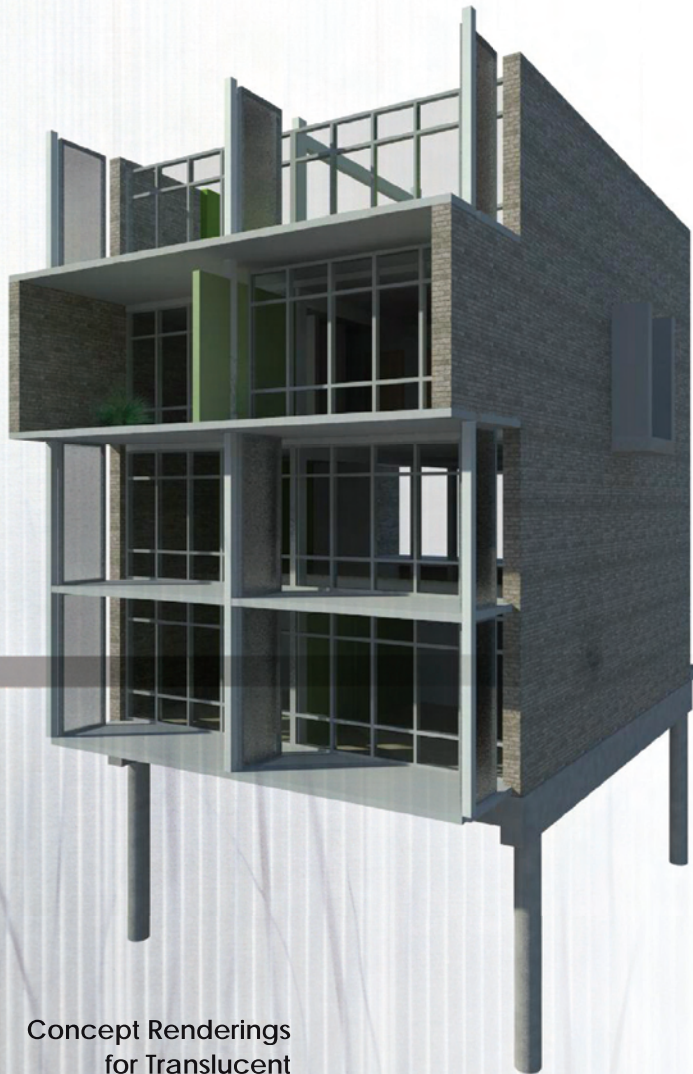
- Kitchens
- Bathroom module
- Connection of movable panels to structure – ACOUSTICAL considerations
- ALL WALL SYSTEMS ARE PRESENT @ CONSTRUCTION

Roof System and access to roof – CONTINUATION OF GREENWAY  
Public vs. Private roofscape



Preliminary View from  
Fulton Street





Concept Renderings  
for Translucent  
Glass Balcony  
Facade System  
Using Baumschlager-  
Eberle facade  
systems as references



## GATE REVIEW PRESENTATION BOARDS

## ADAPT-ABLE/-IVE HOUSING FOR THE NORTH END

On the Rose Kennedy Greenway, Boston, MA  
KEVIN MOWATT : Graduate Thesis : GATE REVIEW : Fall 2009

### Statement of Architectural Intentions: Part and Site, Building, and Detail/Interior Strategies

Parti

The new housing block devoted to the North End community is organized as a perimeter bar scheme, paying attention to the traditional formation of blocks within this historic neighborhood. What is, at most cases, inaccessible space in the center of the block becomes the life of its strategy for adaptable houses and communal spaces.

"The building's footprint follows the street grid," says HKS' Thomas J. Smith, "drawing the housing underneath its housing bar that fronts from the street and elevates it uppper housing levels."

In addition to the existing housing blocks, the new development will allow for a continued mix of diversity; the housing blocks are divided into two-story townhomes, four-story garden apartments and three-story row houses. The units vary in size, with each bay can be divided into either 8, 7, 6, 5, 4 or 3 units, through the removal or addition of temporary SIFs.<sup>1</sup> The shared laundry facilities are located on the ground floor, while the building sits on its own seeping off

the established growth and development of the new Roxa Kennedy Greenway, the presence of the buildings returns to educate those for whom it exists in the first place; the architectural language is self-explanatory—this is a building designed to last.

The building strives to be  
a living organism and to reunite with its natural context. Today being in the greatest luck to have

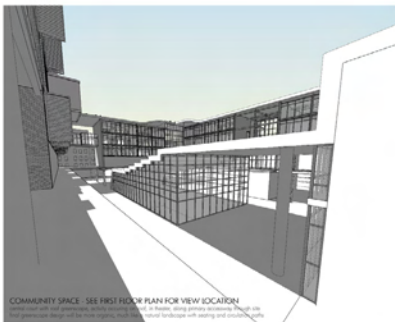
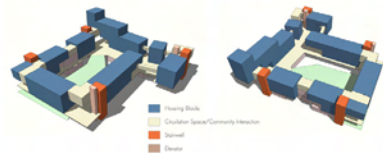
### Site Strategies

### Building Strategies

- In general, the building is made of the goal to increase permeability and to allow for the permeability to change in any underground and into the central courtyard space. The building also system that being designed along the existing form of site and the site through throughout the building
- Accessible and not divided into formal corridors but the best of adaptability to work, home individual level
- Space access into the system of the building permeable too, it also have that space for another structure is provided too, as well as building into use in the structure
- Architectural system, including the urban landscape structure system, are usually a horizontal plane that was used the permeability of the building, building into urban form in the building itself between the site too

### Detail Strategies

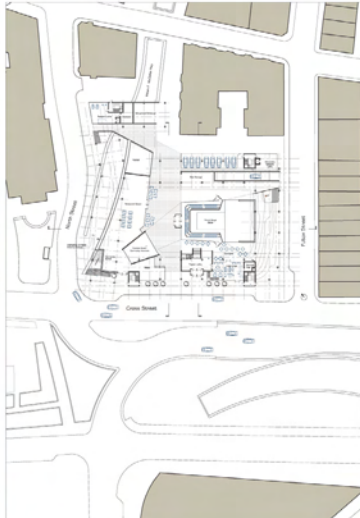
- the capacity and language of the place, available for some speech in the sense that the building seems to come alive, being generated by the people who use it



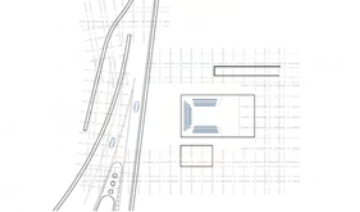
THIRD FLOOR PLAN - PERIMETER CORRIDOR LEVEL  
 Scale: 1/4" = 1'-0"



FIRST FLOOR PLAN - GARDEN APARTMENT LEVEL  
rooms in list and second floor apartment have shared stairs



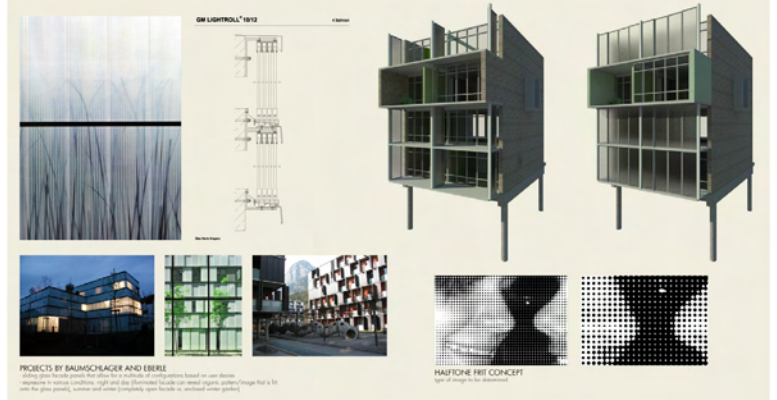
### GROUND FLOOR PLAN



**SUB-LEVEL PLAN**  
 Street Level: Upper Lobby

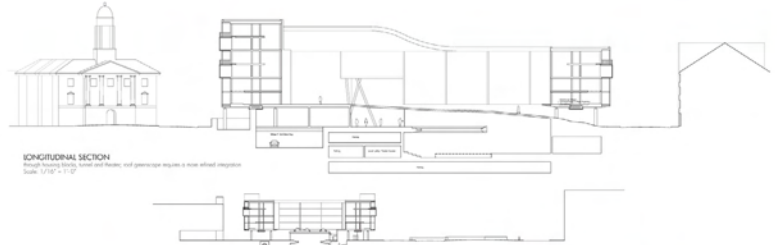


**GREENWAY ELEVATION**  
with above ground work in depth



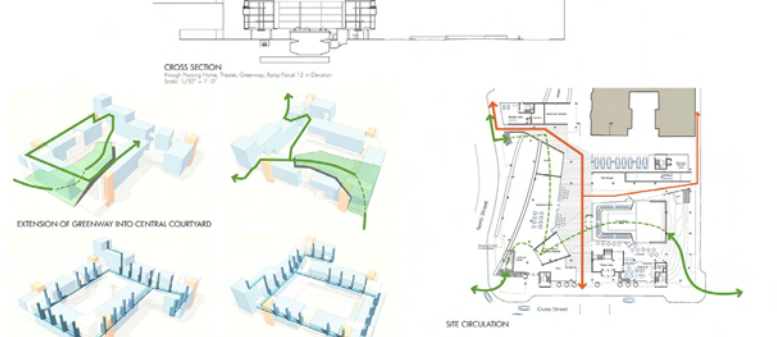
**PROJECTS BY BAUMSCHLAGER AND EBERLE**  
sliding glass facade panels that allow for a multitude of configurations.

<sup>a</sup>Impurities in various conditions, in light and dry (illuminated inside can spread organic pattern/ image that is fit into the glass parallel, summer and winter (completely open inside or enclosed winter garden)



**LONGITUDINAL SECTION**  
Through living birds, nasal and the

Scale: 1/16" = 1'-0"



EXTENSION OF GREENWAY INTO CENTRAL COURTYARD

MECHANICAL SYSTEMS INTEGRATION DIAGRAM: CENTRAL ALL-WATER SYSTEM USING FAN-COIL TERMINALS

whereas dimensions of distribution (shape, size and location) can be hung from the ceiling to line up visual connections to sensory behaviour



**CIRCULATION**  
Read free online and free

SITE CIRCULATION

## COMPONENT SYSTEMS

# Unit Plans

3/16" = 1'0"



8 Units



7 Units



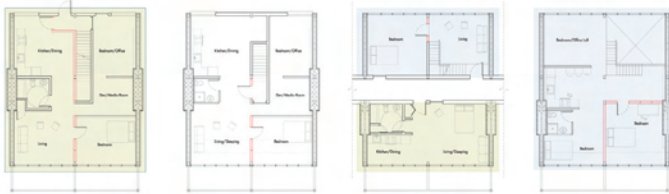
6 Units



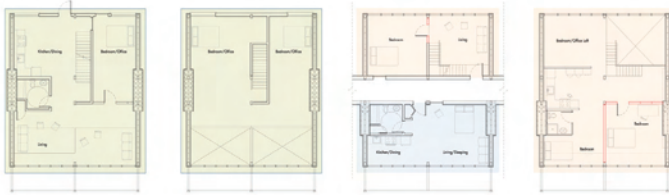
5 Units



4 Units



3 Units



FIRST FLOOR APARTMENT - SUMMER SOLSTICE LIGHTING STUDY, NOON

Two people are shown in the apartment to illustrate scale and to show how the space is used. The plan is shown in the background.

(See plan in background, windowing in Figure 1)



SAME VIEW AS LEFT - WINTER SOLSTICE, NOON



AERIAL OVERVIEW OF BUILDING FORM

Planning: Because the building is a mixed-use development, balconies to increase usable space per unit and add depth and variety to the facade, and green roof space to be integrated.



CROSS SECTION OF HOUSING BAY



STRUCTURAL DIAGRAM



PERMANENT SYSTEMS

Permanent systems are permanent and serve as the base for the building.



VIEW FROM THE CORNER OF THE GREENWAY AND THE 10TH STREET



# CONCLUSION

As an investigation into an adaptive architecture and one that has the power to reassert our understanding of the natural world, I pause this design proposal with much more research left to be conducted. The current building's presence or 'feeling' could be much more prolific, more enticing, incorporating a multifaceted array of layered elements that unite adaptive details with an organic form. This hope might entail working backwards and asking the same questions again. What is important for our society and how is an architecture of adaptation and growth a step in a more altruistic direction? Is adaptation part of a larger picture and is it one aspect of this world's natural processes in which new construction should or needs to be rooted? One thing is certain, that the world is constantly changing and we must embrace those changes; however, what have made this design proposal most difficult are traditional building methods and superficial 'green' technologies. The current mold must be broken to arrive at a truly integrated design and approach to construction that is more responsive to the human and environmental condition. Thus, much extensive research and development must be carried out to achieve a proposal, such as this, that further satisfies its own ends.



**Special Thanks to:**

The support of family and friends

Andrew Cohen

Patrick Charles

Ulker Copur

Dave Kubiak, Co-Chair, NEWRA  
Zoning, Licensing and Construction Committee

Matt Conti, NEWRA

Peter D. Gori  
Senior Manager, Public Realm Projects  
Project Manager, Crossroads Initiative  
Boston Redevelopment Authority

Carolyn Bennett  
GIS Manager  
Boston Redevelopment Authority

# REFERENCES

## Adaptability and Flexibility

"Flexible Housing". <http://www.afewthoughts.co.uk/flexiblehousing>

Bahamon, Alejandro. Prefab Adaptable, Modular, Dismountable, Light, Mobile Architecture. New York: HarperCollins, 2003.

Kunz, Martin Nicholas. Best Designed Modular Houses. Boston: Birkhauser, 2005.

Lerup, Lars. Building the unfinished: Architecture and human action. Beverly Hills, Calif: Sage Publications, 1977.

Schneider, Tatjana. Flexible housing. Oxford, UK: Architectural Press, 2007.

## Housing Developments and Compact Houses

Lapuerta, Jose Maria. Collective Housing A Manual. Barcelona: Actar, 2007.

Valle, Cristina Del. Compact Houses Architecture for the Environment. New York: Universe, 2005.

## Responsive Environments

+RAMTV, Alijosa Dekleva, Manuela Gatto, Tina Gregoric, Robert Sedlak, and Vasili Stroumpakos. Negotiate my boundary!: Mass-Customisation and Responsive Environments. London: Architectural Association, 2002.

## Architecture in Contemporary Society

Tschumi, Bernard. The State of Architecture at the Beginning of the 21st Century (Columbia Books of Architecture). New York: Monacelli, 2003.

## The Urban Environment

Brayer, Marie-Ange, Jane Alison, Frederic Migayrou, and Neil Spiller. Future City Experiment and Utopia in Architecture. London: Thames & Hudson, 2007.

Temporary Urban Spaces Concepts for the Use of City Spaces. Boston: Birkhäuser Basel, 2006.

## Human-Nature Connection in an Architecture based on the context of Time

Kellert, Stephen R. Building for Life Designing and Understanding the Human-Nature Connection. New York: Island P, 2005.

Kellert, Stephen R., Judith Heerwagen, and Martin Mador. Biophilic Design The Theory, Science and Practice of Bringing Buildings to Life. New York: Wiley, 2008.

## Biomimicry: Using Nature as a Model for Adaptation in Architecture

Benyus, Janine M. Biomimicry: Innovation Inspired by Nature. New York: William Morrow and Company, Inc., 1997.

## Site Information and Codes

"Beyond The Big Dig." Boston.com. 20 May 2009 <[http://www.boston.com/beyond\\_bigdig/](http://www.boston.com/beyond_bigdig/)>.

"Boston city, Massachusetts - Households and Families." American FactFinder. 20 May 2009 <<http://factfinder.census.gov>>.

"Building Code 780 CMR." Mass.Gov. 20 May 2009 <<http://www.mass.gov>>.

Ching, Francis D. K., and Steven R. Building Codes Illustrated A Guide to Understanding the 2006 International Building Code (Building Codes Illustrated). New York: Wiley, 2006.

"Housing." The Boston Indicators Project. 20 May 2009 <<http://www.bostonindicators.org/IndicatorsProject/Housing/Default.aspx>>.

MetroBoston DataCommon. 20 May 2009 <<http://www.metrobostondatacommon.org/datatypes/municipality.htm>>.



"MTA - North End Parks." Massachusetts Turnpike Authority - Home. 20 May 2009 <<http://www.masspike.com/bigdig/parks/nendpark.html>>.

"Neighborhood Housing Development - City of Boston." Welcome to the City of Boston. 20 May 2009 <[http://www.cityofboston.gov/dnd/1\\_Hsg.asp](http://www.cityofboston.gov/dnd/1_Hsg.asp)>.

"North End - Profile of Boston's North End Neighborhood." Boston Massachusetts. 20 May 2009 <<http://boston.about.com/od/neighborhoods/p/northendprofile.htm>>.

Rose Fitzgerald Kennedy Greenway Conservancy. 20 May 2009 <<http://www.rosekennedygreenway.org/index.htm>>.

## North End History and Character

De Marco, William M. Ethnics and Enclaves: Boston's Italian North End. Ann Arbor, MI: UMI Research Press, 1981.

Riccio, Anthony V. Boston's North End: Images and Recollections of an Italian-American Neighborhood. Guilford, CN: The Globe Pequot Press, 1998.







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## PERTINENT BOSTON ZONING CODES

### ARTICLE 13

SECTION 13-4. Dwellings in Nonresidential Districts. Any dwelling in an L, B, M, I, MER or W district shall conform to the lot area, lot width, usable open space, and yard requirements for the nearest S, R or H district, or in the case of any dwelling in a B-8 or B-10 district, to the lot area, lot width, usable open space and yard requirements for the least restricted residence district; provided however, that if the nearest S, R, or H district, or the least restricted residence district does not specify a minimum lot width, any such dwelling shall have a minimum street frontage of not less than 50 feet.

### ARTICLE 16

SECTION 16-8. Restricted Roof Structure Districts. In a restricted roof structure district, no roofed structure designed or used for human occupancy, access (except as allowed in following paragraph), or storage, and no roof structure, headhouse, or mechanical equipment normally built above the roof and not designed or used for human occupancy, shall be erected or enlarged on the roof of an existing building if such construction relocates or alters the profile and/or configuration of the roof or mansard, unless after public notice and hearing and subject to Sections 6-2, 6-3 and 6-4, the Board of Appeal grants a conditional use therefor.

An open roof deck may be erected on the main roof of a building with a flat roof or a roof with a slope of less than five degrees providing that (a) such deck is less than one foot above the highest point of such roof; (b) the total height of the building, including such deck, does not exceed the maximum height specified in Table B of Section 13-1 or specified on the zoning maps, the Zoning Districts City of Boston, as they may be amended from time to time; and (c) access is by roof hatch or bulkhead no more than thirty inches in height above such deck unless, after public notice and hearing and subject to Sections 6-2, 6-3 and 6-4, the Board of Appeal grants permission for a stairway headhouse; and (d) an appurtenant hand rail, balustrade, hatch or bulkhead is set back horizontally, one foot for each foot of height of such appurtenant structure, from a roof edge that faces a street more than twenty feet wide.

Roof structures, headhouses, and mechanical equipment normally built above the roof and not designed or used for human occupancy shall be included in measuring the height of a building if the total area of such roof structures, headhouses, and mechanical equipment exceeds in the aggregate: (a) 330 square feet if the total roof area of the building is 3,300 square feet or less; or (b) ten percent (10%) of the total roof area of the building if such total roof area is greater than 3,300 square feet.

In the restricted roof structure districts mapped in the South End, Bay Village and along St. Botolph Street, the above restrictions shall apply only to residential structures or to structures originally built for residential use. In reaching its decision, the Board of Appeal shall consider whether such roof structure has the potential of damaging the uniformity of height or architectural character of the immediate vicinity.

In the restricted roof structure district mapped in the North End, the above and the following restrictions

shall apply to all buildings. The height of any building existing as of the effective date of this regulation shall determine the allowed height on that site subsequent to total or partial demolition or destruction of said building. Any proposed construction on the site that would exceed the prior height would require Board of Appeal approval, and would be subject to the restricted roof structure district regulations and any height limits in place in the district. In making its decision, the Board of Appeal shall consider whether such roof structure has the potential for significantly restricting light and/or air flow to adjacent structures and/or significantly restricting views from roofs, windows, doors, or balconies. Notwithstanding anything in clause (22) of Section 2-1, respecting the definition of the term “grade,” if a building abuts more than one street, “grade” is the average elevation of the street with the lowest elevation.

## ARTICLE 49

SECTION 49-5. Relationship to Other Districts. Parcels within the Central Artery Special District shall also be deemed part of adjacent zoning districts for all purposes under this Code, as follows:

1. Bulfinch Triangle District (Article 46): Parcels 1, 1A, 2, 2A, 3.
2. North End Neighborhood District (Article 54): Parcels 4, 5, 6, 8, 10, 11, 11A, 12.
3. Government Center/Markets District (Article 45): Parcels 7W, 7E, 9, 13, 14, 15, 16, 17N, 17S.
4. Financial District (prospective): Parcels 18N, 18S, 19, 21, 22N, and 22S.
5. South Station Economic Development Area (Article 40): Parcel 23N.
6. Fort Point Channel District (prospective): Parcel 20. On Parcel 20: (a) the provisions of Article 27D, Downtown Interim Planning Overlay District shall not apply to any Proposed Project, notwithstanding any contrary provision of said Article 27D; and (b) any Proposed Project for which a license is required pursuant to M.G.L. Chapter 91 and its implementing regulations shall be subject to the Tideland Regulations of the Harborpark District - North End/Downtown Waterfront, as set forth in Section 42A-5, other than the provisions of subsection 7 of said Section 42A-5 (Provision for Cultural Uses in the Downtown Waterfront Subdistrict).

Parcels identified by the MDPW as numbers 23 (southern portion), 24, 25, 26, 26A are within the Chinatown District, subject to the provisions of Article 43. These parcels are included in the Chinatown Gateway Special Study Area and two Recreation Open Space (OS-RC) Subdistricts.

SECTION 49-8. Design Guidelines Applicable Generally in the Central Artery Special District. In order to ensure that the restoration of the surface parcels, Boulevards, and Cross Streets of the Central Artery Special District are of a high-quality design that benefits the City of Boston, the following design guidelines are applicable generally to all Proposed Projects in the Central Artery Special District.

1. Interim Restoration Design Guidelines Applicable Generally in the Central Artery Special District. In order to protect the safety and health of the public, enhance the visual character of the District and adjacent uses, and protect the physical integrity of adjacent parcels and uses during the reconstruction period



of the surface Boulevards, Cross Streets, and reuse parcels, the following guidelines are applicable after the completion of work in connection with the Central Artery depressed roadway construction project in a given parcel and prior to the commencement of work on the permanent surface use of said parcel.

- a. To the extent practicable, such parcels should be landscaped and maintained to permit safe, convenient public access.
  - b. Use of such parcels for parking, for storage of equipment or materials (other than for the Central Artery Project), or for high-intensity uses such as pushcart vending is strongly discouraged.
  - c. During any such interim period, parcels should be graded in conformity with adjacent grades and should be engineered and landscaped so as to prevent the accumulation of water, avoid damage to neighboring foundations of buildings and/or the tunnel structure and its appurtenant structures, and protect public safety and welfare.
2. Consistency With the Central Artery Special District Plan. Any Proposed Project within the Central Artery Special District shall be reviewed, pursuant to Large Project Review or Small Project Review, for consistency with the conceptual design and programming objectives and specific recommendations set forth in the Central Artery Special District Plan, and for consistency with the overall objectives set forth in the Plan for the provision of public open space within the District.
  3. Design Particularity and Continuity. The primary design organization for the overall District should recognize that each of the five adjacent districts (Bulfinch Triangle District, North End Neighborhood District, Government Center/Markets District, Financial District, and South Station Economic Development Area) of the Central Artery Special District has a distinct character that should be reflected in parcel design and Cross Street design. At the same time, it should recognize that the districts are connected by the north/south Boulevards and sidewalks which define the edges of the overall Central Artery project and that the design should provide for continuity among the districts and transitions from one district to the next.
  4. Quality Standards for Parks, Open Space, Sidewalks, and Streets. The quality of design and construction for open areas within the Central Artery Special District, including landscaping, paving materials, street furniture, light standards, amusements, and decorative elements, should be consistent with that of the major public and private downtown open spaces of Boston including Christopher Columbus Park, Post Office Square, Copley Square, the public spaces of Faneuil Hall/Quincy Markets and Rowe's Wharf, and the streetscapes of successful pedestrian streets such as Washington Street at Downtown Crossing and Charles Street.
  5. Establishing the Boulevards. The design and construction of each Proposed Project should develop and reinforce the character of the northbound and southbound surface Boulevards as tree-lined streets connecting the parcels and subdistricts of the Central Artery and providing a sense of continuity for the District as a whole. These Boulevards will provide new, stronger links to existing and proposed downtown developments. In addition, the Boulevards will reconnect the downtown neighborhoods of Chinatown and the Old West End to the Waterfront and will also create new north/south pedestrian connections between those neighborhoods which do not exist presently.

Trees, evenly spaced approximately twenty-five (25) feet on-center in either single or double rows, sidewalk paving, street furniture, and lighting along the Boulevards should provide the primary organizational design elements for the Boulevards and should be reinforced through the infilling and rehabilitation of buildings along the corridor. Trees should be selected from a variety of tree forms and types suitable for streetscape plantings. Trees should be at least four-inch (4") caliper upon initial planting. Wherever technically feasible, Boulevards and their Cross Streets between Causeway Street and Kneeland Street should be planted on both sides with at least a single row of street trees along each of the sidewalks, unless otherwise specified in the Central Artery Special District Plan or in design review. Each sidewalk and its street crossing of the Boulevards or Cross Streets should be delineated by special paving materials such as granite or brick pavers, and the crossing should continue the width of the sidewalk which it is extending or connecting.

7. District Open Space Form. Parcels 13 through 17S and Parcels 18N through 22S form two long north/south axes that should be designed to enhance the linear organization down the center of the parcels. The central axis may be a view corridor, a pedestrian or activity area, architectural elements or circulation path within a building, or an overall design concept which visually connects the parcels of the gateway plaza at Dewey Square to Rowe's Wharf/High Street and visually connects Rowe's Wharf/High Street to Christopher Columbus Park/Faneuil Hall. For the neighborhood Parcels 8 and 10 in the North End and Parcel 23S at South Station, an equal effort should be developed to reinforce the diagonal crossing of the parcel as well as the Cross Streets of Hanover Street, North Street, Sudbury Street, Atlantic Avenue, and Beach Street. The internal paths within the North End and South Station parcels may be more flexible than in the Downtown Waterfront and Financial District parks and should, in fact, reinforce the diagonal pedestrian cross-parcel movement.
8. Design Guidelines for Cross Streets. As an integral element of the overall Central Artery Plan, the Cross Streets will serve to reconnect Boston's historic streets to Boston Harbor. The Plan provides for the reconnection of seven historic streets across the Central Artery toward the waterfront. These streets include Traverse Street, Hanover Street, North Street, Atlantic Avenue, Broad Street, Oliver Street and Pearl Street. All these streets except North Street extend the downtown pedestrian and vehicular network across the Artery. North Street provides for only a direct pedestrian connection. Wherever technically feasible, the layout and design of the intersections between the Boulevards and the Cross Streets should be typical right-angle intersections with a pedestrian phase signal and cross walks for each of the four directions except where exit or entry ramps prohibit such a pedestrian crossing. The entire section of Hanover Street, State Street, High Street, and each of the Cross Streets within the waterfront area between State Street and High Street should also be paved with special feature pavement in order to reduce the visual separation between the parcels. The raising of the street grades for Milk Street and India Row should be considered in order to further enhance the connection between the waterfront parcels.
9. Design Guidelines for New Infill Buildings and Boulevard Public Buildings. Any new buildings on Parcels 1, 1A, 2, 2A, 5, 7, 9, 11, and 11A and rooftop additions on Parcel 20, as well as facade renovations, should be designed so that the exterior proportions, scale, massing, window treatment, materials, colors,

and architectural detailing are compatible with the observable architectural character of the existing structures in the adjacent neighborhood. Any new public buildings on Parcels 6, 12, 17N, 19, and 21 should be designed so that their exterior proportions, scale, massing, window, treatment, materials, colors, and detailing establish a unique building design vocabulary that sets these public buildings apart from their surrounding district buildings. These buildings should establish a visual presence along the corridor both day and night through the use and incorporation of lights and transparent glazing.

10. Sidewalk Dimensions for the Boulevards and Cross Streets. Except as otherwise expressly provided in design guidelines for individual parcels, sidewalk width for the Boulevards, the parcels which parallel the Boulevards, the Cross Streets, and the pedestrian crossings shall follow generally the dimensional requirements outlined below.
  - a. The width of the outer Boulevard sidewalks (east side of the northbound Boulevard, west side of the southbound Boulevard) may vary from parcel to parcel because of the existing buildings which face the corridor. However, the minimum dimension generally should not be less than twelve (12) feet unless restricted by existing buildings, and the maximum dimension should not exceed twenty-five (25) feet except as follows:
    - (i) along the northbound Boulevard between Hanover Street and Endicott Street, width should not exceed thirty-five (35) feet.
    - (ii) The sidewalk width should be at least twenty-five (25) feet in front of Marketplace Center, the Long Wharf Marriott Hotel, Rowe's and Foster's Wharfs, and the Federal Reserve Bank building.
    - (iii) A plaza space of approximately forty-five (45) feet in sidewalk width should be developed in front of the Government Center Garage for the entire length of that block.
  - b. The width of the inner Boulevard sidewalks (west side of the northbound Boulevard, east side of the southbound Boulevard) should not be less than seven and one-half (7-1/2) feet nor more than twelve (12) feet, except as follows:
    - (i) On Parcels 19, 21, 22N, and 22S the sidewalk width should not exceed twenty (20) feet.
  - c. The sidewalks along the Cross Streets should not exceed fifteen (15) feet in width along the entire Central Artery corridor except as follows:
    - (i) On State Street and the southern sidewalk of Pearl Street, the sidewalk width should not exceed thirty (30) feet.
  - d. The width of pedestrian-only crossings which extend adjacent streets or pedestrian pathways across the Central Artery corridor should not exceed thirty (30) feet. These crossings include the following:
    - (i) Salem Street extension
    - (ii) North Street extension, as the southerly portion of Parcel 10
    - (iii) Walk-to-the-Sea extension
    - (iv) Broad Street extension
    - (v) Dewey Square, as the extension of Federal Street

SECTION 49-10. Regulations Applicable to the North End/Central Artery Area. The purpose of zoning regulations



applicable within the North End/Central Artery Area is to permit the construction of a significant amount of family, elderly, and affordable housing. The creation of parks, playgrounds, sports facilities, and passive recreational areas adjacent to the residential community of the North End shall be designed specifically for the benefit of the neighborhood's families and elderly population. The open space should provide a front yard for the community and a buffer between Government Center and the residential area. Community facilities for neighborhood recreational use shall be established, including a community recreational building intended to serve as the center of community activity and meetings.

The design of any development in the North End/Central Artery Area should respond to the open space, residential, and service needs of the adjacent community. In addition, the design should consider the historic resources of the adjacent North End, Fulton-Commercial Street, Blackstone Block, and Faneuil Hall/Markets areas which merit protection and public interpretation. These areas are characterized by some of the earliest and most historically significant buildings in Boston. The North End retains the historic street pattern and street names of Boston's Colonial period and includes Boston's Freedom Trail.

#### Parcel 6

- a. Open Space Designation. Parcel 6 is hereby established as a Recreation Open Space (OS-RC) Subdistrict, subject to the provisions of Article 33 applicable to OS-RC Subdistricts in addition to the provisions of this Article. In the event of a conflict between Article 33 and this Article, the provisions of this Article govern.
- b. Use Regulations. Allowed uses on Parcel 6 are those uses allowed in Recreation Open Space Subdistricts pursuant to Sections 33-10 and, in addition, Community Uses.
- c. Dimensional Regulations. For a Community Use on Parcel 6, the maximum allowed FAR is four (4), and the maximum allowed building height is fifty-five (55) feet above the top of the ramp structure. There is no Lot Coverage restriction for Parcel 6; Lot Coverage shall be determined through design review.
- d. Design Guidelines. This paragraph establishes design guidelines applicable to any Proposed Project on Parcel 6 subject to design review pursuant to Section 49-7.
  - i. Any building proposed for Parcel 6 should include Community and Cultural Uses and recreational uses above the access ramps to the Central Artery Tunnel. An open space forecourt and/or paved recreational area which could include outdoor ball courts should be included in the parcel. The urban design of the public building should recognize the significance of Parcel 6 as a critical point of pedestrian connection and transition between the North End, Government Center, and the Bulfinch Triangle. Careful attention should be given to the orientation of the building to each of these neighborhoods.
  - ii. The community facility for recreational and cultural activities proposed for Parcel 6 should be designed to mitigate the visual impact of the tunnel ramps on this parcel. If a building is not built, a series of terraces enclosed by fences and/or walls should be provided to accommodate active recreational uses such as basketball or volleyball courts.
  - iii. The proposed community building's southern facade, facing Parcel 8, should help create a sense of enclosure for North End neighborhood parks (Parcels 8 and 10) and present a facade that conveys the civic character of an important neighborhood facility. The east and west facades located

- along the two boulevards and the north facade should be designed and organized in response to programmatic and infrastructure demands of the tunnel ramps and should be compatible with the architecture of the adjacent buildings. The design of the north facade should reflect its importance as the gateway portal into the subsurface artery tunnel.
- iv. Primary pedestrian access to the community facility should be provided at ground level or at a raised plaza located in front of the southern facade. The building should provide an adequate space to serve as an exterior arrival plaza and vehicular drop-off along the southern facade. Additional access points through an above-grade pedestrian bridge which connects to adjacent Parcel 5 and the Government Center Garage area are encouraged and should be located on the northern facade.
  - v. An emergency sidewalk with a minimum width of two and one-half (2-1/2) feet should be constructed along the two Boulevard sides of the structure; a sidewalk approximately fifteen (15) feet wide should be incorporated into the plaza design at the southern end of the building. Because of the proposed ramps, no access is recommended at grade for the north elevation.
  - vi. The service access to Parcel 6 should be designed to be an integral element within the architecture of the building, and not impact the sidewalk or the proposed entry plaza.
  - vii. Views to the Custom House Tower from New Haverhill Street in the Bulfinch Triangle should be preserved.

#### Parcels 11 and 11A

- a. Use Regulations. Allowed uses on Parcels 11 and 11A are Residential Uses and Local Retail/Service Uses.
- b. Dimensional Regulations. On Parcels 11 and 11A, the maximum allowed FAR is four (4), and the maximum allowed building height is fifty-five (55) feet. Any building on Parcel 11 or Parcel 11A is subject to the provisions of Section 54-18 (North End Neighborhood District - Roof Structure and Building Height Restrictions).
- c. Design Guidelines. This paragraph establishes design guidelines applicable to any Proposed Project on Parcel 11 or Parcel 11A subject to design review pursuant to Section 49-7.
  - (i) Infill residential buildings on these parcels in the North End should be located at the back edge of the sidewalks and plazas to form an enclosure to the park on Parcels 8 and 10 and to reinforce visually the existing Street Wall of the North End. Where possible, the facades generally should align with the facades of existing adjacent buildings and with buildings on adjacent streets.
  - (ii) Ground-level Local Retail/Service Uses should occupy those areas of any building which abut City sidewalks and streets.
  - (iii) Average sidewalk width along the existing Cross Street and its Boulevard extension between North Street and New Chardon Street should not exceed twenty-five (25) feet.
  - (iv) Any proposed building design for Parcel 11A should incorporate into its design the emergency access ramp which will be located along North Street.
  - (v) No structure on Parcel 11 should obstruct the view corridor from Tremont Street to Old North Church.

## Parcel 12

- a. Use Regulations. Allowed uses on Parcel 12 are Residential Uses, Community Uses, Cultural Uses, and Local Retail/Service Uses. Allowed uses should accommodate a bus and trolley drop-off and ticketing facility.
- b. Dimensional Regulations. On Parcel 12, the maximum allowed FAR is four (4) and the maximum allowed building height is fifty-five (55) feet. Any building on Parcel 12 is subject to the provisions of Section 54-18 (North End Neighborhood District - Roof Structure and Building Height Restrictions).
- c. Design Guidelines. This paragraph establishes design guidelines applicable to any Proposed Project on Parcel 12 subject to design review pursuant to Section 49-7.
  - (i) Any proposed building for Parcel 12 should allow for a bus and trolley drop-off and ticketing facility as a ground-level use. Other ground-level uses could include Local Retail/Service, Cultural, and Community Uses. Above this facility, an optional mixed-use development of Office, Retail and/or Residential, or Cultural and Community Uses could be provided.
  - (ii) The design and massing of any building on Parcel 12 should be programmed to accommodate and complement the activities of the adjacent North End and Quincy Markets areas and designed to be compatible with the physical character of the adjacent areas.
  - (iii) The proposed massing and facade of the buildings should reinforce the spatial enclosure of the North End neighborhood parks. The southern facade facing the waterfront area should appear to extend the Atlantic Avenue streetwall and further enclose the Waterfront Park. The facades which face the Boulevards should respond to the programmatic and functional requirements of the Boulevards and the ramps and below-grade infrastructure demands, as well as be compatible with the architectural character of the adjacent buildings.
  - (iv) Primary access to any building should be provided at ground level at both the northern and southern ends of the parcel. An above-ground passageway from the Quincy Markets area and into a small structure in Parcel 10 may be considered if it is appropriate for accommodating high pedestrian flows and relieving potential conflicts with ground-level bus operators. In addition, the view corridors down Commercial Street should be preserved or, if that is impractical, reflected in the massing and/or elevation of the building and not as an actual ground-level opening. The view corridor down Clinton Street to Christopher Columbus Park should be preserved.
  - (v) Service access to Parcel 12 should occur at grade from the southbound Boulevard. The access should be designed to mitigate its impact on the street and the pedestrian environment.
  - (vi) A maximum sidewalk dimension of fifteen (15) feet should be observed along the north, south, and west sides of the parcel. Along the eastern side where constraints exist, a minimum sidewalk dimension of two and a half (2-1/2) feet should be observed.

SECTION 49-11. Regulations Applicable to the Government Center/Central Artery Area. The purpose of zoning regulations applicable within the Government Center/Central Artery Area is to promote additional open space and parkland in the downtown, increase cultural and recreational uses for the benefit of residents and visitors in the downtown area, enhance the pedestrian environment of the downtown and waterfront areas, and improve



the pedestrian connections to the waterfront and expand opportunities for waterfront-related recreational activities. A winter skating rink and urban gardens and other features such as a sculpture garden, pushcart retail area, and cultural exhibits should provide an opportunity for lively pedestrian activity in the Government Center/Central Artery Area.

The design of any development in the Government Center/Central Artery Area should respond to the open space, residential, and service needs of the adjacent community. In addition, the design should consider the historic resources of the adjacent Government Center/Markets and waterfront area which merit protection and public interpretations. This area is significant as the central commercial space of Boston dating to its earliest period, as well as for its nineteenth-century granite style and early twentieth-century Beaux Arts architecture. Long Wharf of 1710 is a major historic element, with its nineteenth-century Custom House Block and Chart House and historic vista to the Old State House. The Broad Street area has historic significance for its 1805 commercial district plan by Bulfinch and the views down Broad Street toward Rowe's Wharf.

#### Parcel 9

- a. Use Regulations. Allowed uses on Parcel 9 are Residential Uses and Local Retail/Service Uses.
- b. Dimensional Regulations. On Parcel 9, the maximum allowed FAR (ratio of total building floor area to the area of its zoning lot) is four (4), and the maximum allowed building height is fifty-five (55) feet. Any building on Parcel 9 is subject to the provisions of Section 16-8, Restricted Roof Structure Districts, applicable to the North End.
- c. Design Guidelines. This paragraph establishes design guidelines applicable to any Proposed Project on Parcel 9 subject to design review pursuant to Section 49-7. In addition, the Boston Redevelopment Authority shall consider the design guidelines set forth in the Government Center Urban Renewal Plan for the historic Blackstone Block.
  - (i) The proposed development should include Ground Level Uses and should extend the Street Wall enclosure of the North End Neighborhood Park (Parcels 8 and 10) while also allowing the Haymarket pushcart/food vendor activities to continue to occur along Blackstone Street.
  - (ii) The Street Wall setback of the proposed building facades and massing and heights along the Blackstone Block and on each of the adjacent streets should be consistent with the character of the overall block pattern and architectural scale and massing of the Blackstone Block historic area and the North End.

## DEFINITIONS FOR ARTICLE 49

For the purposes of this Article only, the following words and phrases, when capitalized, have the meanings indicated.

1. "Arboretum", an outdoor facility for the display of a diverse collection of plant materials, including trees, shrubs, and flowers, in a harmonious design, with educational and cultural uses such as a children's demonstration garden and plant display garden, and accessory structures not to exceed six thousand (6,000) square feet each for storage and administration uses associated with such Arboretum.
  2. "Botanical Garden/Conservatory", a structured facility for the display of a diverse collection of plant materials from different climate zones around the world; environmental research, educational, and cultural uses associated with such facility; and accessory uses such as office, retail, restaurant and storage uses associated with the facility.
  3. "Boulevards", the northbound and southbound pair of one-way streets to be built above the depressed Central Artery from Dewey Square to Causeway Street.
  4. "Cafe", an eating establishment with a floor area of less than approximately fifteen hundred (1,500) square feet with table service serving food and drinks to the public for on-premises consumption.
  5. "Central Artery Special District", the area defined in Section 49-3.
  6. "Central Artery Special District Plan" has the meaning set forth in Section 49-2.
  7. "Community Uses", an indoor recreational building including ball courts; gymnasium; play areas; community meeting rooms for educational or craft activities; day care center or social service uses for the local community; exterior play areas including ball courts, tot lots, and seating areas; community health center or clinic or other social service uses; and accessory kitchen uses.
  8. "Cross Streets", streets which cross through the Boulevards between parcels.
  9. "Cultural Uses", museum, theatre (not including motion picture theatre), music hall or opera house, indoor or outdoor performance space, public art display space, exhibition space for educational or cultural purposes, accessory uses such as office, retail, or restaurant associated with such use.
  10. "Historic Building", any building listed in the Boston Landmarks Commission comprehensive survey of Boston as a Category One, Category Two, Category Three, or Category Four building.
  11. "Local Retail/Service Uses", limited to stores primarily serving the local retail business needs of the neighborhood; art supply store; grocery store; barber shop; beauty shop; gift shop; shoe repair shop; retail bakery; restaurant; self-service laundry; newsstand; or vending kiosk.
  12. "Lot Coverage", the percentage of the Lot Area excluding sidewalks abutting the Boulevards and Cross Streets, covered by the total footprint area of one or more buildings on the Lot.
  13. "Office Uses", limited to offices of cultural groups; offices of community service organizations; business or professional offices; real estate, insurance, or other agency or government office; office building; post office; bank (other than drive-in) or similar work space.
- (;As amended on July 31, 1997.)
14. "Proposed Project", the substantial demolition, erection, or extension of any structure or part thereof, or the change of use of any structure or land, or the creation of open space uses permitted under Article 49, for which the Applicant is required to obtain a building or use permit.
  15. "Residential Uses", limited to multifamily dwelling, lodging or boarding house, temporary housing shelters, and Group Residence Limited. Residential uses include any Affordable dwelling units, including but

not limited to Affordable dwelling units which are rental units, condominiums, or limited equity share cooperatives.

16. "Restaurant Uses", restaurant, lunch room, cafeteria, Cafe, or other place for the service or sale of food or beverages to the public for on-premises consumption.
17. "Seasonal and Festival Uses", pushcart vendors; temporarily installed structures such as kiosks, pavilions, farmers' market stands and similar minor structures intended to accommodate pedestrian retail needs, removed from a site on either a daily or a weekly basis; and temporary performance space.
18. "Street Wall", the exterior wall or portion of the exterior wall of a Proposed Project that faces a street on which such Proposed Project is located, and is below the height at which a setback of a wall is required.
19. "Thematic Garden", an outdoor space enclosed by low walls, fences and buildings or other architectural features permitted in the OS-R area which provides a unique cultural and/or recreational activity within the space. Thematic garden could include such specialty uses as: an Asian or Chinese garden, a wind chime garden, demonstration garden, sculpture garden, or other similar activities.
20. "Underlying Zoning", all zoning regulations, with the exception of this Article, which are contained in the code.
21. "Zoning Relief", any zoning variance, exception, conditional use permit, interim planning permit, or zoning map or text change, or any other relief granted by the Zoning Commission or the Board of Appeal.





## REGULATORY ENVIRONMENT REPORT: NEARBY PARCELS

### PARCEL 9

Parcel 9 must abide by the Government Center Market District stipulations in Article 45 as well as the Central Artery Special District stipulation in Article 49.

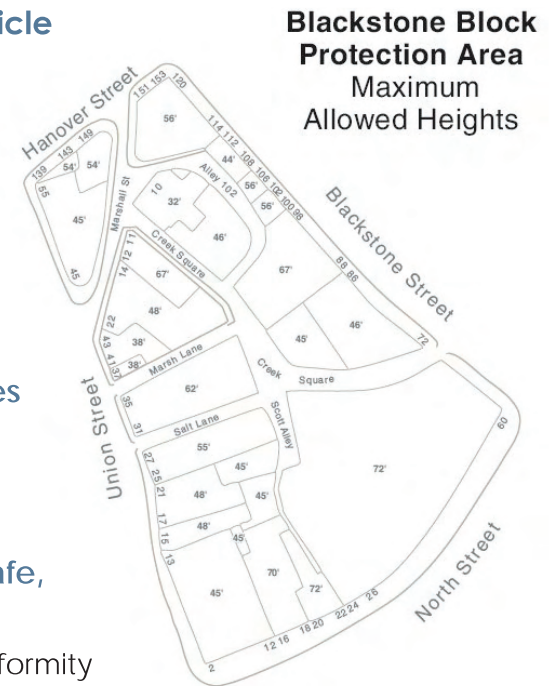
**The Central Artery Special District Plan, as that term is defined in Article 49, shall be part of the general plan for the Government Center/Markets District as it applies to the Government Center/Central Artery Area. (Article 45, Section 45-8)**

#### Design Restrictions:

**Blackstone Block Protection Area:** Maximum building heights are as indicated on the left, and a maximum FAR of three (3) is allowed. **The purpose of these varying heights is to protect certain historic sites and structures.**

#### General Guidelines for the Central Artery Special District:

- Parcels should be **landscaped** and maintained to permit **safe, convenient public access**.
- During any such interim period, parcels should be graded in conformity with adjacent grades and should be engineered and landscaped so as to prevent the accumulation of water, avoid damage to neighboring foundations of buildings and/or the tunnel structure and its appurtenant structures, and protect public safety and welfare.
- The primary design organization for the overall District should recognize that each of the five adjacent districts (Bulfinch Triangle District, North End Neighborhood District, Government Center/Markets District, Financial District, and South Station Economic Development Area) of the Central



Artery Special District **has a distinct character that should be reflected in parcel design and Cross Street design.**

- Districts are connected by the north/south Boulevards and sidewalks which define the edges of the overall Central Artery project and that the **design should provide for continuity among the districts and transitions from one district to the next.**
- The quality of design and construction for open areas within the Central Artery Special District, including **landscaping, paving materials, street furniture, light standards, amusements, and decorative elements**, should be consistent with that of the major public and private downtown open spaces of Boston including **Christopher Columbus Park, Post Office Square, Copley Square, the public spaces of Faneuil Hall/Quincy Markets and Rowe's Wharf, and the streetscapes of successful pedestrian streets such as Washington Street at Downtown Crossing and Charles Street.**
- The design and construction of each Proposed Project should develop and reinforce the character of the **northbound and southbound surface Boulevards as tree-lined streets** connecting the parcels and subdistricts of the Central Artery and providing a sense of continuity for the District as a whole. **Trees, evenly spaced approximately twenty-five (25) feet on-center in either single or double rows, sidewalk paving, street furniture, and lighting along the Boulevards** should provide the primary organizational design elements. Each sidewalk and its street crossing of the **Boulevards or Cross Streets should be delineated by special paving materials such as granite or brick pavers**, and the crossing should continue the width of the sidewalk which it is extending or connecting.

### **Specific Design Restrictions for Parcel 9:**

The purpose of zoning regulations applicable within the Government Center/Central Artery Area is to **promote additional open space and parkland in the downtown, increase cultural and recreational uses for the benefit of residents and visitors in the downtown area, enhance the pedestrian environment of the downtown and waterfront areas, and improve the pedestrian**



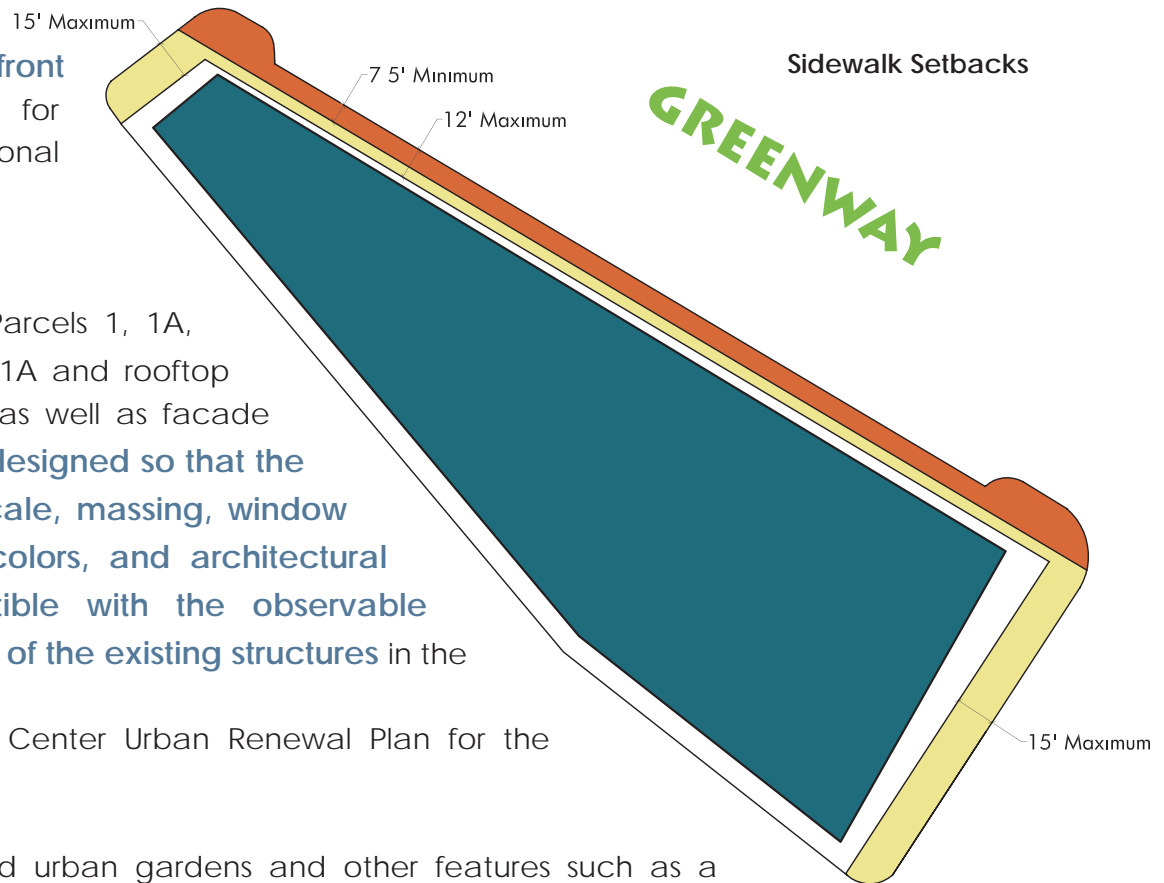
connections to the waterfront and expand opportunities for waterfront-related recreational activities.

### Character of Design

- Any new buildings on Parcels 1, 1A, 2, 2A, 5, 7, **9**, 11, and 11A and rooftop additions on Parcel 20, as well as facade renovations, **should be designed so that the exterior proportions, scale, massing, window treatment, materials, colors, and architectural detailing are compatible with the observable architectural character of the existing structures** in the adjacent neighborhood.
- Subject to Government Center Urban Renewal Plan for the historic Blackstone Block.

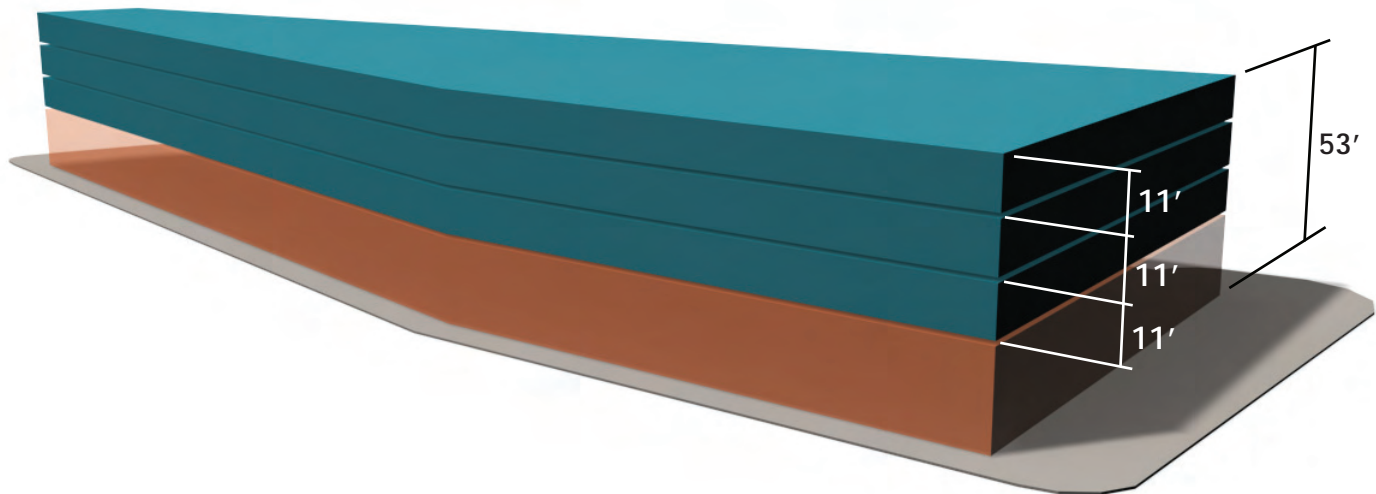
### Open Space and Public Use

- A winter skating rink and urban gardens and other features such as a sculpture garden, pushcart retail area, and **cultural exhibits should provide an opportunity for lively pedestrian activity** in the Government Center/Central Artery Area.
- The design of any development in the Government Center/Central Artery Area should respond to the open space, residential, and service needs of the adjacent community.** In addition, the design should consider the historic resources of the adjacent Government Center/Markets and waterfront area which merit protection and public interpretations.
- The proposed development should include **Ground Level Uses and should extend the Street Wall enclosure of the North End Neighborhood Park** (Parcels 8 and 10) while also **allowing the Haymarket pushcart/food vendor activities to continue** to occur along Blackstone Street.



### Dimensions

- Maximum allowed FAR is four (4), and the maximum allowed building height is fifty-five (55) feet.
- The **Street Wall setback** of the proposed building facades and massing and heights along the Blackstone Block and on each of the adjacent streets should be consistent with the character of the overall block pattern and architectural scale and massing of the Blackstone Block historic area and the North End.
- See Appendix, **Section 16-8** in the Boston Zoning Codes, for Restricted Roof Structure stipulations.



## NEWRA (North End/Waterfront Residents' Association) RESPONSES

### ORIGINAL INQUIRY SENT TO NEWRA

To Whom it May Concern:

I am currently in the process of developing my thesis project for the Graduate Program in Architecture at Roger Williams University in Rhode Island. I am seeking information regarding my site location, as it pertains to the neighborhood development.

My project is a housing/cultural center proposed for Parcel 11B on the Rose Kennedy Greenway. My aim is to activate the Greenway by incorporating, in addition to housing, other cultural programs that would draw people to this great park system that has so much potential for the city. My concept for the housing portion of development is that of a time-based architecture, one which changes and adapts to the various user groups (family types, cultures, live-work scenarios) that may live in and activate the space of the Greenway. The project could potentially become a prototype for affordable housing schemes that could be easily plugged into areas of the city in need of such housing; it would easily adapt (through my pending design) to both location and inhabitants (family size over time, ethnicity, other cultural background).

I am writing to shed some light on the user groups that would be most appropriate for the site (located at the intersection of North St. and the Greenway, in the existing parking lot adjacent to the North End Nursing and Rehabilitation Center), whether they be families who can adjust their spaces as they become more financially established. I am most curious about the cultural attractions/facilities that would be most appropriate for the families or others who would live at the location stated above. Are there particular needs, in terms of housing, amenities or venues, that the North End community along the Greenway desires or demands?

I understand this is a lot to digest, but any help you may be able to provide will hopefully go a long way in my architectural proposal of this exciting opportunity for the city.

Thank you,

Kevin Mowatt  
Graduate Student at Roger Williams University



## RESPONSE FROM DAVE KUBIAK

It is my experience that affordable housing proposals of any kind (families, seniors, disabled, etc.) are well received by North End residents. What is not well received and is a continuous concern is short-term residence, meaning, I think, less than five years. It is important for a neighborhood that residents have a sense of ownership and empowerment and consider the neighborhood their home for the long-term. Your plan to design the building and its units to morph over time should have a longer timeframe for change, say five to ten years, and not be a way to enhance the building's success with short term residents.

The two North End Greenway parks (Parcels 8 and 10) were provided and designed to be primarily for use by the North End community, not by tourists. If one wanted to "activate" these two parks, which may not be necessary considering how much use they've seen this summer, one should ensure that the parks provide maximum accommodation and comfort for North End and nearby residents, workers and visitors. Build and maintain a good park, and they will come.

Your statements seem to take an opposite approach, which I do not support, that the neighborhood should change to bring more use to the parks. This neighborhood has reached the saturation point, especially in terms of tourists, diners, shoppers and other visitors. Bringing more crowds into our neighborhood will create more conflict than benefit. There are other neighborhoods that sorely need more visitors, businesses and cultural activities. Why are they ignored by City Hall and city planners. The North End likely has more visitors of all kinds than any other Boston neighborhood. Again, we've reached saturation.

I want to repeat, the way to activate the parks is to make the parks attractive, not attract even more people to the neighborhood.

Having said that, I'll offer a few ideas for "cultural" facilities I believe North End residents would welcome, and they don't include another museum. This neighborhood needs a community center and community meeting space. This neighborhood needs performance facilities, at a neighborhood scale, not a city scale. This neighborhood would benefit from more institutions like the North Bennet Street School, which, by the way, needs new and larger space if it is to survive in the North End. Also, the YMCA proposal was generally well received.

Others may have different ideas, and I hope they also respond to your request.

Dave Kubiak, Co-Chair  
Zoning, Licensing and Construction Committee

NEWRA

## RESPONSE FROM MATT CONTI

Hello Kevin,  
Thanks for writing to NEWRA and I hope you receive a some thoughtful input.

The folks that live in the North End/Waterfront neighborhood tend to support most residential projects. The neighborhood has a history of constant change which is not necessarily a bad thing, but lately the balance has been shifting away from the needs of residents toward tourist and late night activity. The neighborhood is saturated with restaurants, bars and visitors so any project serving the interests of residents would receive the greatest interest.

Please don't fall for the trap of officials trying to "Activate the Greenway". If you've been there lately, it is swamped mostly with visitors despite the need for more open space for the people that live here.

I saw David Kubiak's response to you and agree with most of his suggestions for civic uses. The neighborhood has lost several community centers where neighbors used to meet. That specific parcel has different environments on each of its four sides (some more residential, some more commercial). I think you can incorporate the surrounding blocks to put together a project that would fit in nicely.

Lastly, I would shamelessly refer you to my neighborhood blog, [www.northendwaterfront.com](http://www.northendwaterfront.com) to get an idea of the issues taking place around that parcel.

Good luck.  
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# JEAN-NICOLAS-LOUIS DURAND'S INFLUENCE ON THE DEVELOPMENT OF AN ARCHITECTURE OF ADAPTATION

by  
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Before Jean-Nicolas-Louis Durand (Portrait, Figure 1) appeared in the chronological history of architectural thought and theory, architecture seemed primarily static, permanent, and functionally defined by distinct styles and tradition, implying that buildings of an opposite effect began to take shape, at least in theory, within Durand's revolutionary writings. In terms of design, an opposite of that which is static, as exemplified by the monumentality and sterility of classical architecture, is an architecture of dynamism and variability. Entrenched in concepts of efficiency, expense, and usefulness, the idea of the potential for adaptation and variability in design was first formulated, quite literally, by Durand. His *Précis des leçons d'architecture données à l'Ecole polytechnique* (1802-05) presents a systematic approach to design that explores the efficiency of form and the variability of plans based on a grid. This revolutionary turning point in architecture at the end of the eighteenth century, marked also by his contemporaries Soane, Boullée and Ledoux, has far reaching implications for the nature of architecture today.

Influencing architectural theory through to the present day, Durand's lessons in architecture must first be put into context, in terms of both his relationships and the state of society at the time. It is in this context that we may recognize that pertinent aspect of his lasting influence, whether it be his methods or strictly his constructional theory, as well as the true reasons for the development of his ideas from which we may understand today's impetus and unique possibilities for a method of architectural design that is economical, adaptable and most importantly sustainable. Studying architectural theory of the early 19th century is not looking to the past to solve problems of the present, but it is rather studying a period of time when architecture began to account for itself; architects began to look to the future by striving to derive something new from the present. It is with this mindset that architecture began to take on, and continues to take on, a transformative and responsible role in society.

## **DURAND'S ARCHITECTURAL THEORY: THE RATIONAL, PRACTICAL GRID**

Durand's architectural doctrine must be explored before exploring the insight that future architects gained from his groundbreaking ideas. The lessons that Durand gained from his teachers, specifically Etienne-Louis Boullée and Jean-Rodolphe Perronet, will bear greater significance after

an objective understanding is reached of what architecture is and should be, according to Durand. Despite the significance of his *Recueil et parallèle des édifices de tout genre, or Parallèle*, (1799-1801) in its rational comparison of building types based on drawings each of the same scale, his *Précis des Leçons d'Architecture* provides a more meaningful and substantial outlook on his similarly rational, theoretical goals for architecture.

Taken from the introduction to *Précis*, Durand's idea of the goal of architecture is that which is suited to public and private usefulness, or an architecture that provides comfort for the activities to be carried out within it. Thus, appropriateness and economy (of money and resources) are the means to the end—achieving the true goal of architecture as stated above. These ideas make way for new principles of design that take into account efficient, economical methods and an essentially functional organization. Though well before Louis Sullivan's time, the idea of form follows function sees its inception into architectural thought with Durand, who states,

*If you layout a building in such a way that it is suited to its function, surely it will differ appreciably from one with another function? Will it not naturally have character, and what is more, a character of its own?*<sup>1</sup>

Durand wonders if architecture desires decoration in order to fulfill its goal of providing the necessary pleasure for its inhabitants and whether appropriate, functional design is enough to provide this pleasure and a character of form. He states this it is necessary to determine whether decoration "does in fact produce the anticipated pleasure, or at any rate if this pleasure is worth the unavoidable outlay."<sup>2</sup> Breaking with tradition through his rejection of decoration and his demand for appropriate design, Durand attempts to prove that the decoration of the Greeks was wrongly based on the human body and the primitive hut. Greek architecture cannot be based on the human body because the proportions are incorrect and thus cannot reference the primitive, humanly scaled hut, which does not display any notion of the orders in its architecture based on necessity. Since, then, the orders and their

1        Jean-Nicolas-Louis Durand, "Summary of the Lecture on Architecture," in *From the Classicists to the Impressionists: Art and Architecture in the 19th Century*, ed. Elizabeth Gilmore Holt (New Haven and London: Yale University Press 1986): 208.

2        Ibid, 204.

false sense of pleasure were never the true goal of architecture, Durand sets out on the development of new architectural method that would focus on appropriateness and economy—finding their manifestation in the grid.

Of the many image plates in *Précis* that emphasize the grid as a organizing factor, most have an air of classicism in the building elements' symmetry and use of columns that is difficult to disconnect from Durand's foreword-thinking and practical theories (Figures 2 and 3). This observation is understandable since Durand did not necessarily create a new style (his own designs often did not display his own theories) but a new way of thinking about architecture. That being said, Plate 20 from Volume I, Part II of *Précis* (Figure 4) exhibits a level of abstraction that allows Durand's true architectural ideals to come through, especially in terms of the importance that he would have for the future of adaptable, function-driven spaces. Similar to the organization of spaces in Figures 2 and 3 but dissimilar to their formal design characteristic, this plate diagrams the generic evolution of the plan based on the arrangement of basic shapes—the square, rectangle and circle. Overall, the grid is an underlying design factor that allows, as evident in Figure 4, for a multifaceted array of design possibilities that appear modern in their abstracted presentation. Durand must have understood the economic repercussions of this modular method of design, given the use of the grid in his time-sensitive engineering classes which he taught at the Ecole Polytechnique and his response to the state of society at the time.

## CREATION OF THE MAN BEHIND THE IDEAS

The political and economical state of France in the early 19th century was deplorable, having just suffered through the French Revolution. Durand quite obviously was responding to these conditions when he began theorizing cost-effectiveness in regards to architectural design. His notions of constructional efficiency also stem from the idea that labor costs money. The societal impetus for a method of design that Durand proposed is striking because it drew a distinct line between architecture of the past, governed by anti-contextual universal tradition and blind aesthetics of ornament, and architecture of the future, driven by society's needs. In this way, architecture became moldable and impressionable; in essence, functional design is adaptable, in the sense that a building is designed with the use in mind.



In a society that was in economic instability, Durand strove for the goal of architecture to be “none other than public and private usefulness, the preservation and the happiness of individuals, of families and of society.”<sup>3</sup> Whether this goal for architecture was in response to the hardships experienced in the country, the truth remains in the fact that Napoleon, beginning his reign over France in 1804, despised architects and their apparent greed. He is quoted as having said of architects, “they ruined Louis XIV. They should have been made responsible when they exceeded their estimates and put into debtors’ prison for payment for this excess. They are the scandal of my reign.”<sup>4</sup> It is possible that Durand’s ideas of economy in construction methods and appropriateness are linked to Napoleon’s desire to build up his empire while demanding economic stringency, in a time of social turmoil. The spirit of the time to which Durand was responding produced an entirely new and practical way of looking at architecture. Engineering became important to the development of a rational, scientific design strategy that would produce efficient and economical buildings. Teaching at the Ecole Polytechnique, Durand was at the forefront of the engineer’s revolution. “Now begins, for architectural history, the very significant emancipation of engineers from the artistically oriented architects.”<sup>5</sup> The practice would remain forever changed, especially considering the universality of Durand’s notions; his aim was not to produce a traditional nationalistic architecture to regain people’s hope in their country but to develop a new meaning for the built environment that would improve humanity as a whole.

Durand’s teachers were probably most crucial to the development of his ideas, as they taught him certain ways of looking at architecture that would allow him to develop his own methods in relation to the state of society. Durand studied under Pierre Panseron and worked for Etienne-Louis Boullée, beginning in 1776. He was also influenced by professor and architect Julien-David LeRoy at the Académie Royale d’Architecture, as well as Jean-Rodolphe Perronet, under whom Durand completed several competitions. Both Le Roy and Boullée trained under Blondel, one of the leading French theorists of the time. It appears that Boullée played the most significant role in Durand’s theoretical development, having spent much time working under Boullée as he most probably struggled with the practicality of design. Rand Carter points out that “Boullée discerned in both the human organism

3 Ibid, 202.

4 Antonio Hernandez, “J.N.L. Durand’s Architectural Theory: A Study in the History of Rational Building Design,” *Perspecta*, Vol. 12 (1969): 154.

5 Ibid.

and the physical universe geometrical volumes that form the basis for beauty with their regularity, symmetry and variety.”<sup>6</sup> Boullée deemed the sphere to be the most agreeable form (Figure 5), in terms of light and the possibilities for variety within, given the rational design that is nature and its creation of highly diverse array of organisms; however, Durand took this idea further to supply it with a notion of appropriate design based on this rational order, possibly due to his background in engineering and his understanding of the practical needs of French society at the time. Antoine Picon also asserts Boullée’s influence over Durand, in Durand’s provision of a “scope for a methodological examination of the nature of the architectural project.”<sup>7</sup> Striving for a regular, symmetrical and simple architectural design solution, Boullée influenced Durand’s similar notions, which he manipulated to present them as beneficial to the economy of design.<sup>8</sup> What Picon calls the “poetry of art,” which Boullée practiced, died with the revolution of the engineers. However, Durand’s new methodological approach to architecture as inspired by Rousseau’s resurfacing ideas of social progress, coupled with his having gained some of Boullée’s insight, produced a provocative and useful architecture for his and future societies.

## LASTING INFLUENCE

Working backwards, a better grasp on the push that Durand gave architectural theory can be gained upon considering this question: if not Durand, to whom can architects of the 19th century, the modern era, and our post-modern society pay homage for taking architecture in a new direction? According to Peter Collins, the design method for which Durand is extolled—utilizing the geometric order of the grid as overlaid on graph paper—was nothing more than a practical teaching strategy by which

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6 Rand Carter, “Boullée, Etienne-Louis” in Grove Art Online, Oxford Art Online, <http://www.oxfordartonline.com/subscriber/article/grove/art/T010482> (accessed May 7, 2009).

7 Antoine Picon, “From ‘Poetry of Art’ to Method: The Theory of Jean-Nicolas-Louis Durand,” introduction to *Precis of the Lectures on Architecture*, by Jean-Nicolas-Louis Durand (Los Angeles, CA: Getty Research Institute, 2000), 54.

8 Ibid, 34.

he could more efficiently squeeze his lessons at the École Polytechnique into the time allotted.<sup>9</sup> Is there an aspect of this method that is relevant to the revolutionary changes that occurred in architecture and remains to be influential today? The grid, by its very nature, is rational; however, a great level of variability exists within the confines of the grid, which can be thought of as the first modular system of construction. As in the natural environment, a level of order is present which can be randomly rearranged and put back together to create entirely new entities. This connection to the rationality of natural, efficient systems, and thus the universality of Durand's ideas, is what has endured through the last two centuries, sparking the explorations, and struggles, of such modernists as Walter Gropius and Le Corbusier. The grid is a single element in the pursuit of an architecture that is appropriately suited to humanity's needs: to "extract the maximum advantages... in the least arduous and also in the least costly manner."<sup>10</sup> Therefore, the grid—his method—is as important as his theories, in providing the future of architecture with notions of adaptability and an efficient modularity of design.

## CONCLUSION and FUTURE APPLICATION

Whereas a design that is functional is in all practical senses capable of being adapted in the initial schematic phase, recent studies have begun to develop construction methods by which the built environment becomes mobile; it is allowed to dynamically change to accommodate time-based needs rather than limiting change and flexibility to the methodology of design.<sup>11</sup> Here, Durand's notions of economy and efficiency come into play, especially in his formal desire to maximize the spatial construct while limiting materials. In a dynamic architecture, spaces can be used for multiple purposes at different times; that which is or is not needed is easily interchangeable, or so is my personal hope for the future. The initial drive to create such an architecture is seen in Durand's theoretical necessity for appropriateness and utility as well as his methods based on the grid, by which simple forms can be easily manipulated and transposed. Despite the subjectivity of such a hope or the level of advanced

9 Peter Collins, *Changing Ideals in Modern Architecture* (Kingston and Montreal: McGill-Queen's University Press, 1967), 221.

10 Jean-Nicolas-Louis Durand, "Summary of the Lecture on Architecture," 203.

11 Tatjana Schneider and Jeremy Till, *Flexible Housing* (Oxford, UK : Architectural Press, 2007)



technology that would be required, the influence that Durand has had on the amount of beneficial change that architectural methods can enact on a society and the variability of functional grid-based forms has been significant since the publication of his *Précis* over two centuries ago. The result of having picked up where his teachers, such as Boullée, left off would not have produced the ideas that surround architectural design today if it were not for the state of French society and the necessity to put his predecessors' ideas into practical theoretical action.

## Bibliography

Carter, Rand. "Boullée, Etienne-Louis," in Grove Art Online, Oxford Art Online.

<http://www.oxfordartonline.com/subscriber/article/grove/art/T010482> (accessed May 7, 2009).

Durand, Jean-Nicolas-Louis. "Summary of the Lecture on Architecture," In *From the Classicists to the Impressionists: Art and Architecture in the 19th Century*. Edited by Elizabeth Gilmore Holt. New Haven and London: Yale University Press (1986): 202-212.

Hernandez, Antonio. "J.N.L. Durand's Architectural Theory: A Study in the History of Rational Building Design." *Perspecta*, Vol. 12 (1969): 153-160, in JSTOR. <http://www.jstor.org/stable/1566963> (Accessed 07/05/2009).

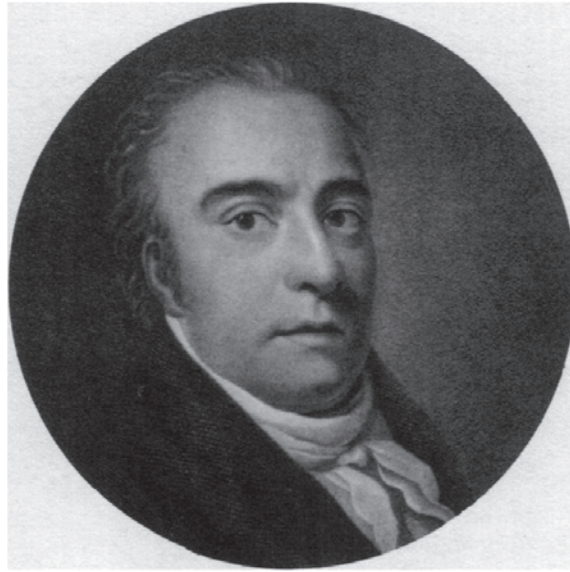
Madrazo, Leandro. "Durand and the Science of Architecture" *Journal of Architectural Education* (1984), Vol. 48, No. 1 (Sep., 1994): 12-24, in JSTOR Database. <http://www.jstor.org/stable/1425306> (Accessed: 07/05/2009).

Madison Digital Image Database (MDID). James Madison University (1997-2007).  
<https://did.cit.jmu.edu/Default.aspx>

Schneider, Tatjana and Jeremy Till. *Flexible Housing*. Oxford, UK : Architectural Press, 2007.

Szambien, Werner. "Durand, Jean-Nicolas-Louis." In Grove Art Online. Oxford Art Online, <http://www.oxfordartonline.com/subscriber/article/grove/art/T024153> (Accessed May 7, 2009).

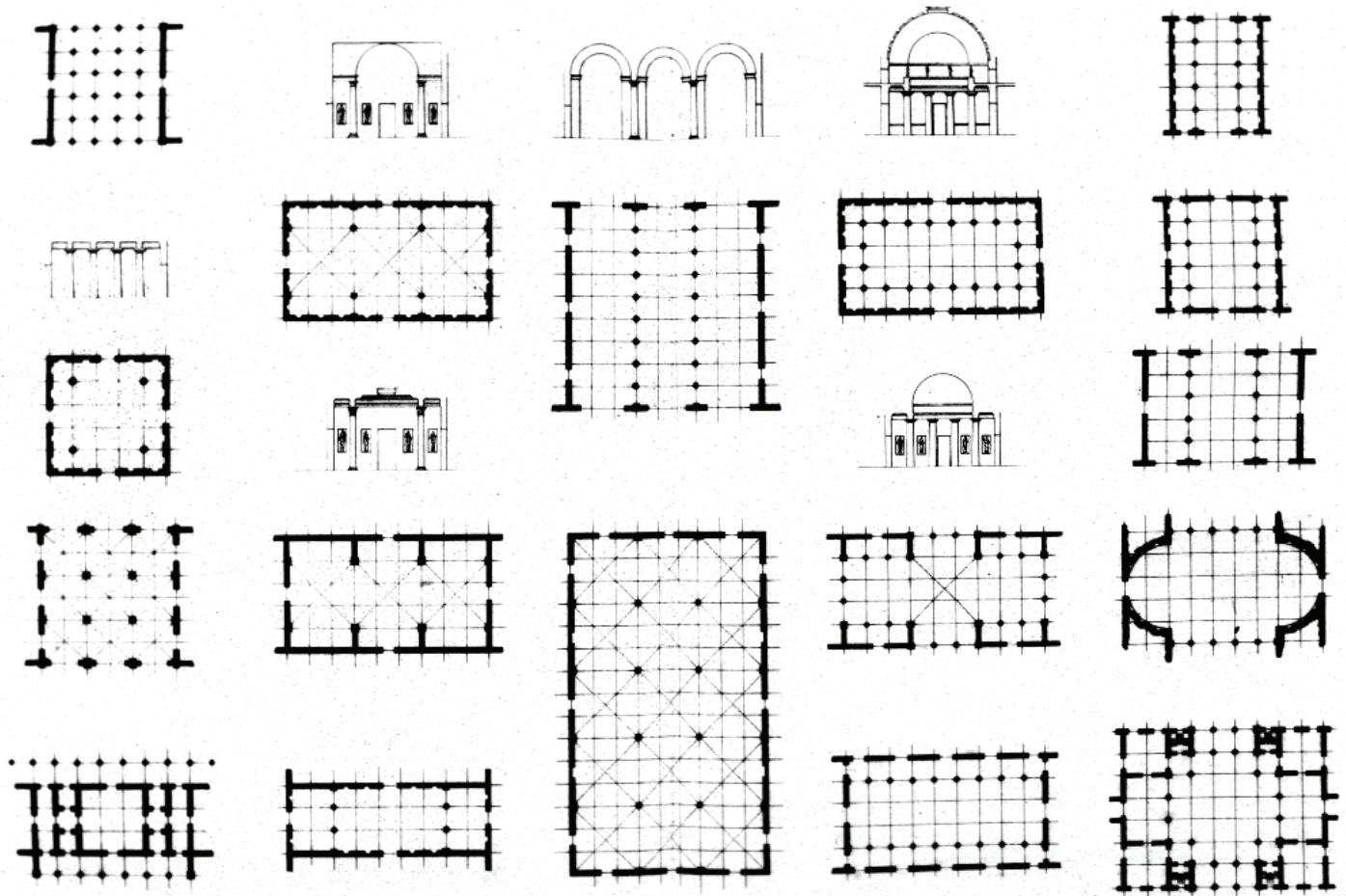
Picon, Antoine. "From 'Poetry of Art' to Method: The Theory of Jean-Nicolas-Louis Durand," introduction to *Precis of the Lectures on Architecture*, by Jean-Nicolas-Louis Durand. Los Angeles, CA: Getty Research Institute, 2000.



**Figure 1** Portrait of Jean-Nicolas-Louis Durand 1760-1834

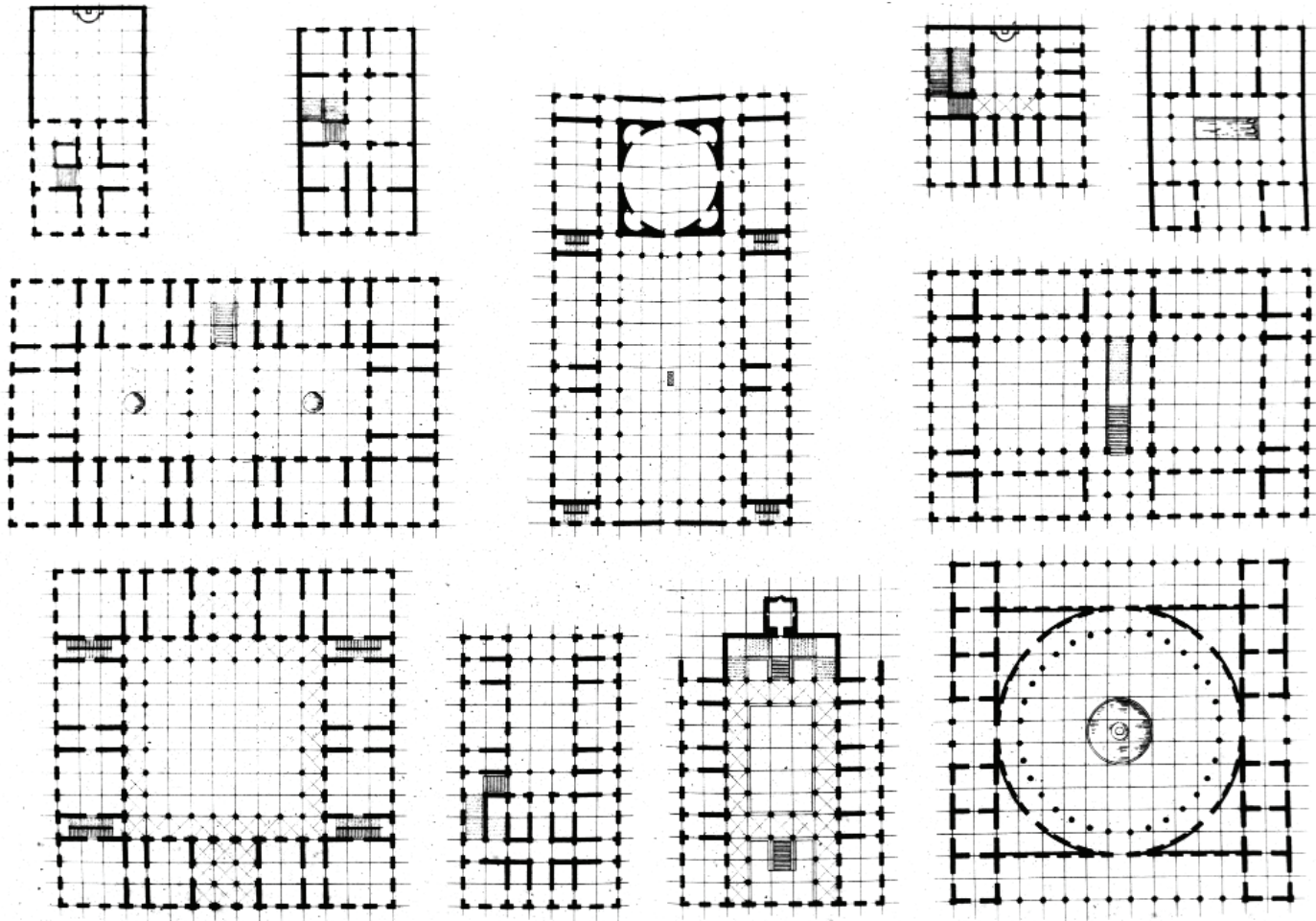
Antonio Hernandez, "J.N.L. Durand's Architectural Theory: A Study in the History of Rational Building Design," *Perspecta*, Vol. 12 (1969): 153.





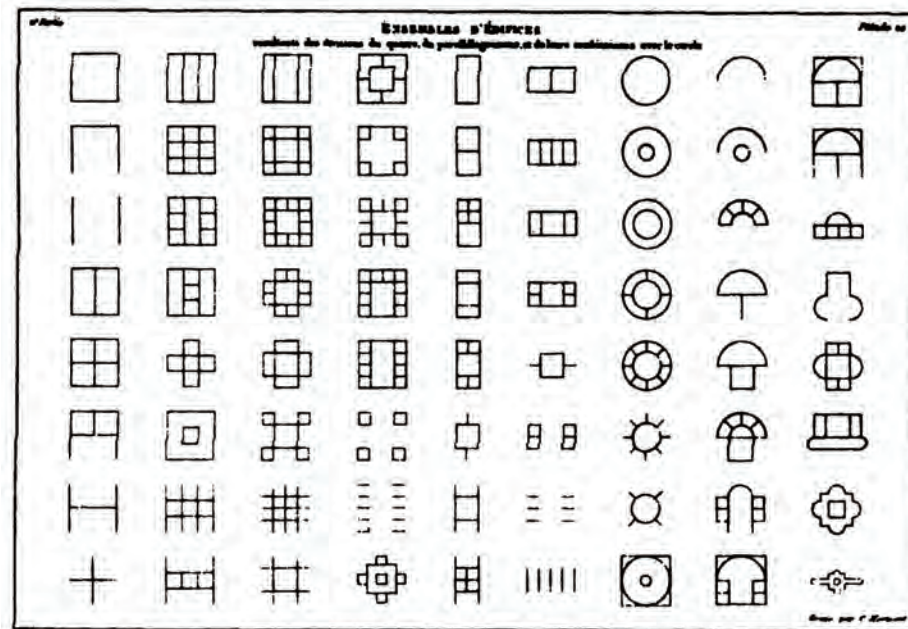
**Figure 2** Plate 11, Vestibules, from *Précis*, Volume I, Part II, 1802.

Jean-Nicolas-Louis Durand, *Precis of the Lectures on Architecture* (Los Angeles, CA: Getty Research Institute, 2000).



**Figure 3** Plate 16, Cours (Courtyards) from *Précis*, Volume I, Part II, 1802.

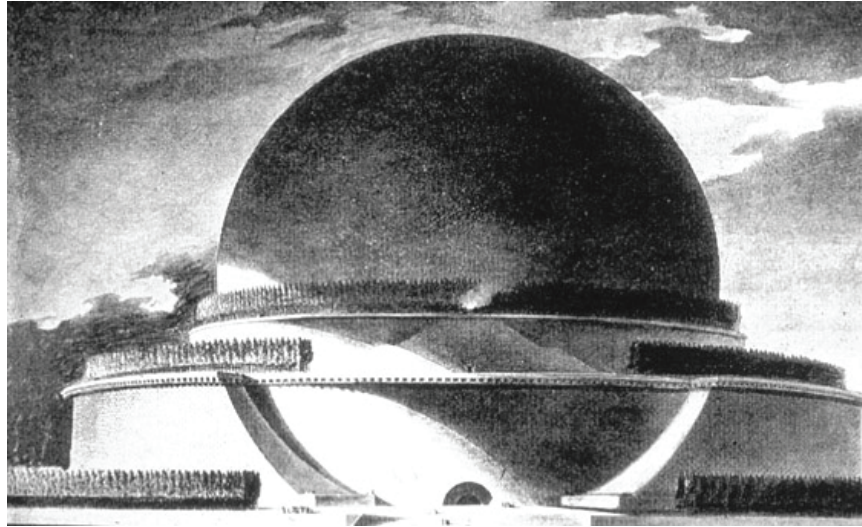
Jean-Nicolas-Louis Durand, *Precis of the Lectures on Architecture* (Los Angeles, CA: Getty Research Institute, 2000).



**Figure 4** J.N.L. Durand, *Ensembles d'édifices résultants des divisions du carré, du parallélogramme et de leurs combinaisons avec le cercle*, (Building organizations resulting from division of the square, rectangle and their combinations with the circle) *Précis*, Volume I, Part II, 1802.

Jean-Nicolas-Louis Durand, *Precis of the Lectures on Architecture* (Los Angeles, CA: Getty Research Institute, 2000).





**Figure 5** Boullée, *Cénotaphe a Newton*, 1784.

Boullée, *Cénotaphe a Newton*, 1784. From <http://en.wikipedia.org>. Uploaded by User: ChrisO.



