



**DESIGN THESIS** submitted to  
the faculty of Virginia Polytechnic  
Institute and State University in  
partial fulfillment of the requirements  
for the degree of

## Master in Architecture

Approved

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Greg Hunt  
Chairman

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Eric Jenkins

# Urban Housing

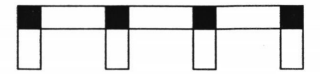
by

Robert P. Goss, Jr.

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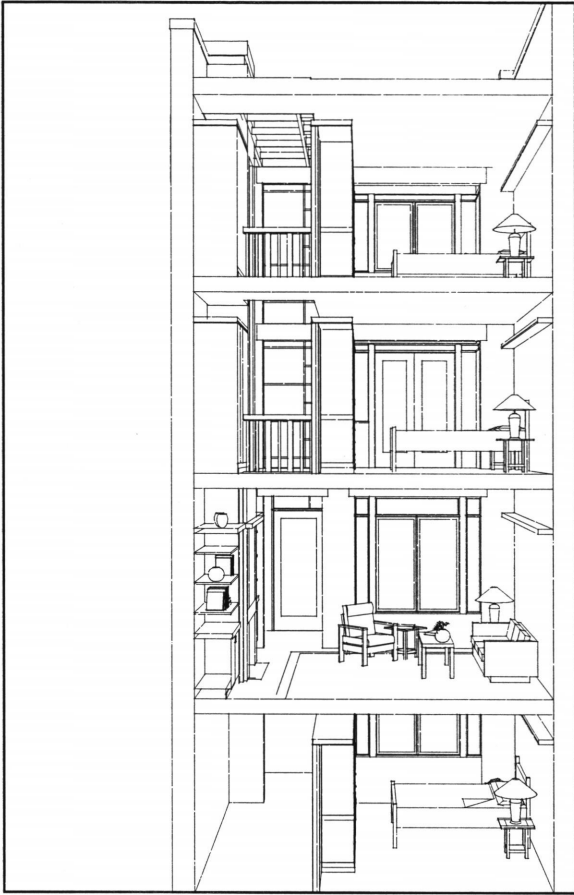
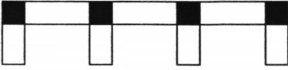
Susan Piedmont-Palladino

June 1993  
Alexandria, Virginia



## Abstract

As described in Christian Norberg-Schulz's Genius Loci-Towards a Phenomenology of Architecture, urban architecture requires a clear division between public and private. In this case, a desire for privacy when living so closely together inspires the idea to articulate the places of the private realm. Furthermore, such tight places need strict rules to guide the design. The rules of design employed have established a pattern both harmonious and practical; economical, yet relative. This pattern of place allows not only the sections of the design to relate to the whole, but the details relate to the sections, the sections to the unit and the unit to the whole. Finally, if the rules governing the design of one unit type are valid, that matrix can drive the design of similar units.

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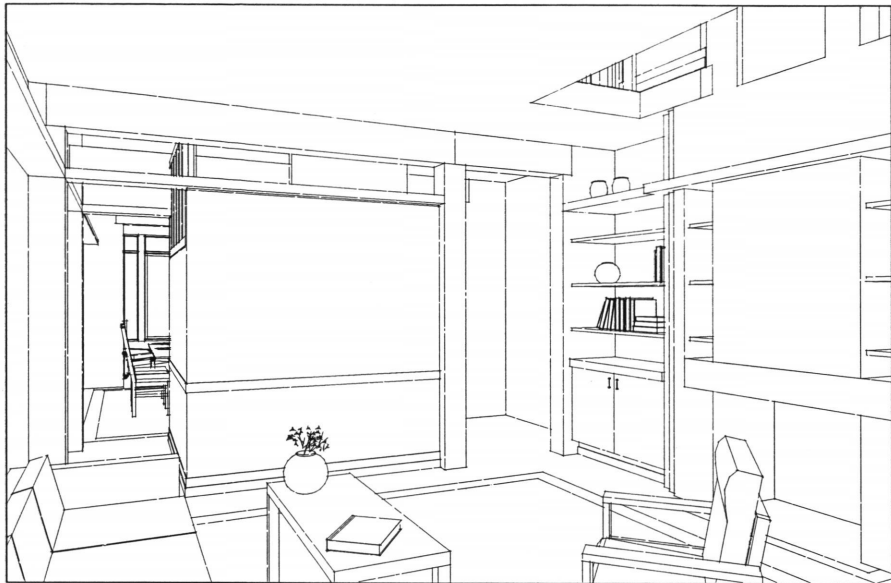
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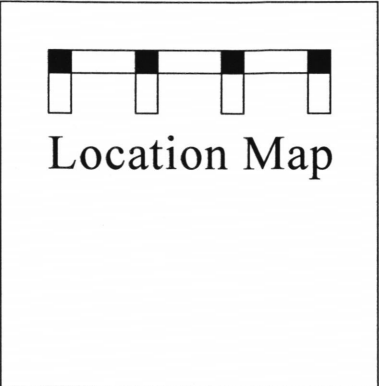
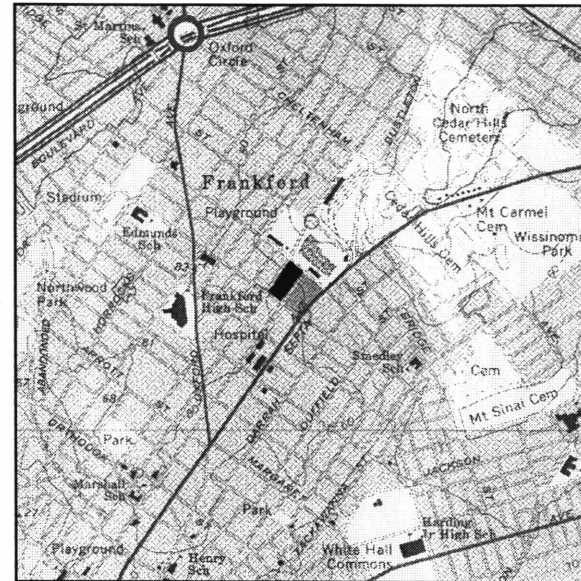
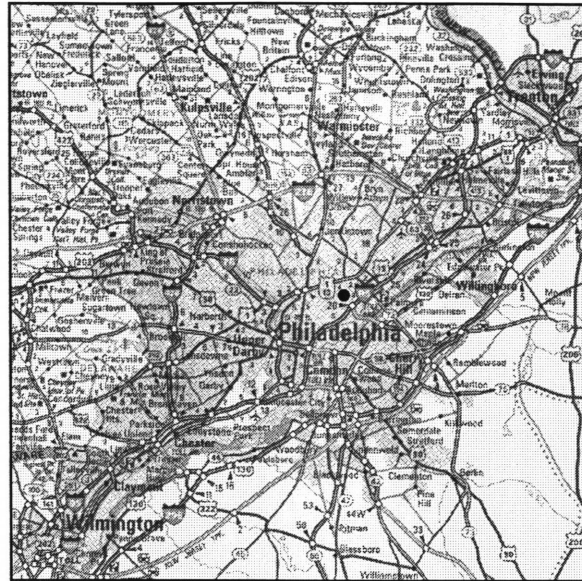
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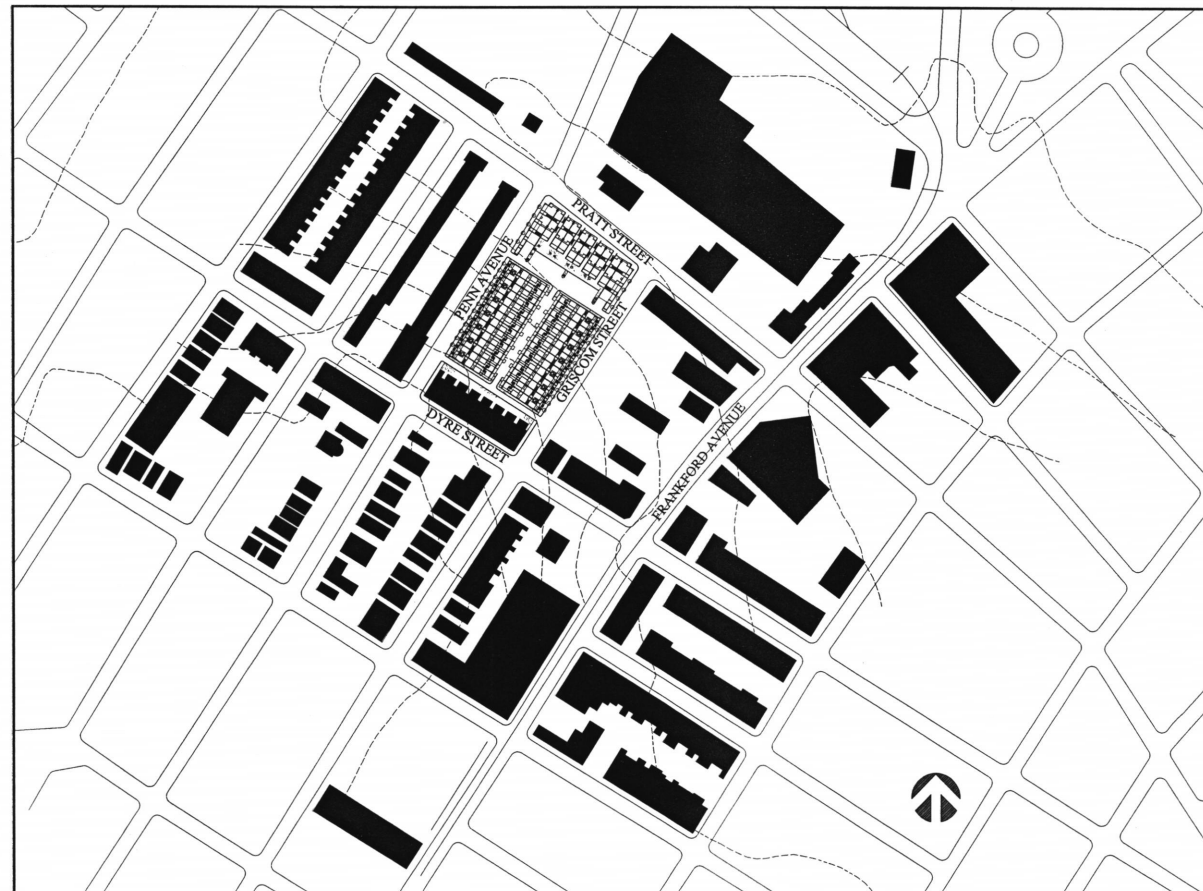
## Introduction

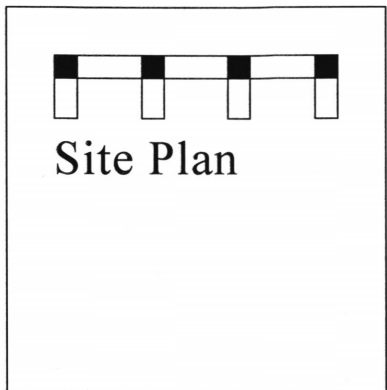
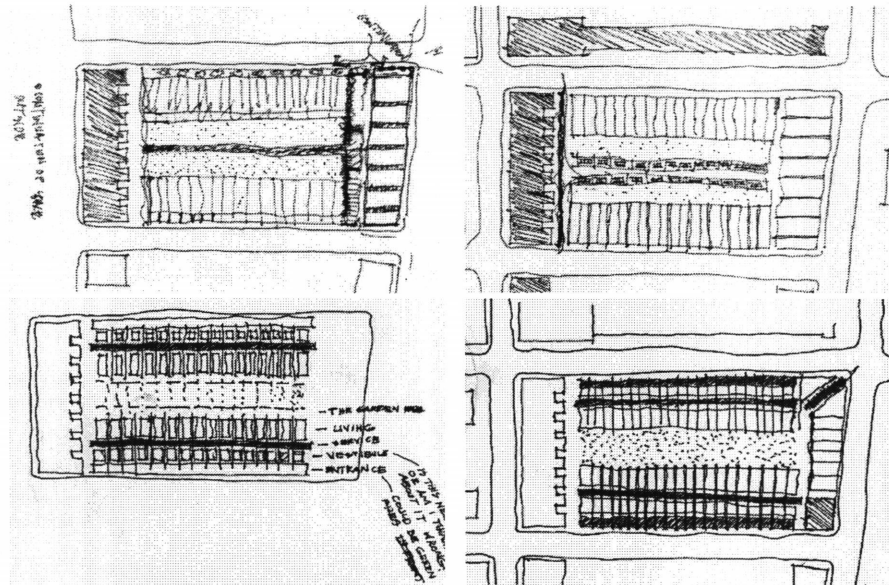
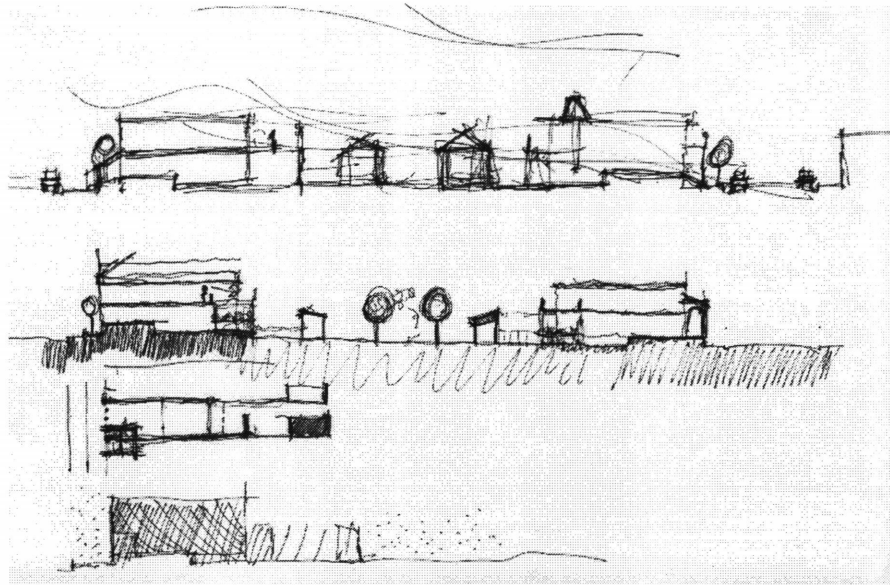
*Every house worth considering as a work of art must have a grammar of its own. "Grammar," in this sense, means the same thing in any construction -- whether it be of words or of stone or wood. It is the shape-relationship between the various elements that enter into the constitution of the thing. The "grammar" of the house is its manifest articulation of all its parts. This will be the "speech" it uses. To be achieved, construction must be grammatical.*

Frank Lloyd Wright



This particular site in the Frankford section of northeast Philadelphia was chosen for many reasons. First, the city of Philadelphia was selected for its rich history in urban housing and specifically the rowhouse. Second, the site would support retail use as well as housing, an important test for certain ideas in urban planning. Finally, accessibility to public transportation could be incorporated, an important aspect of urban living.

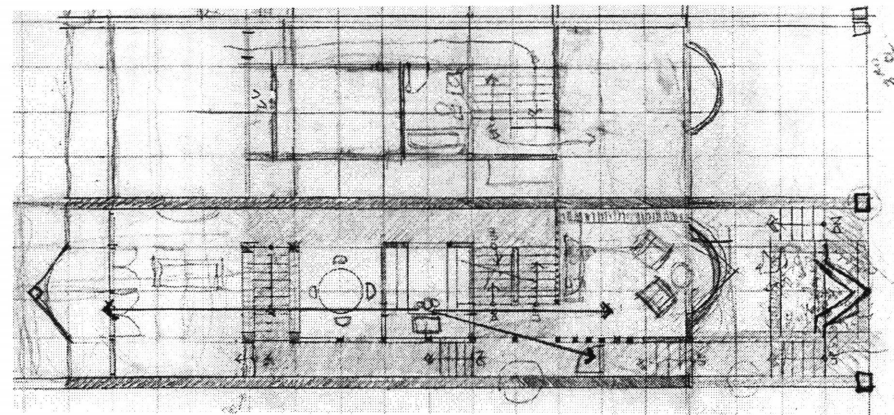
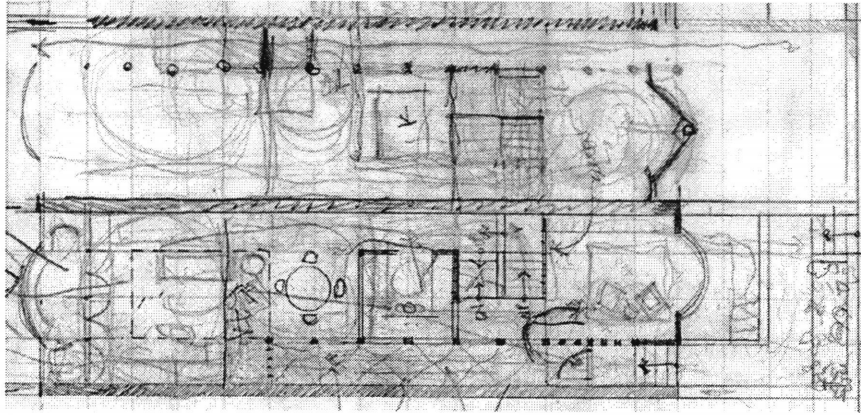


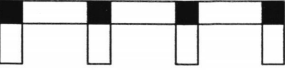


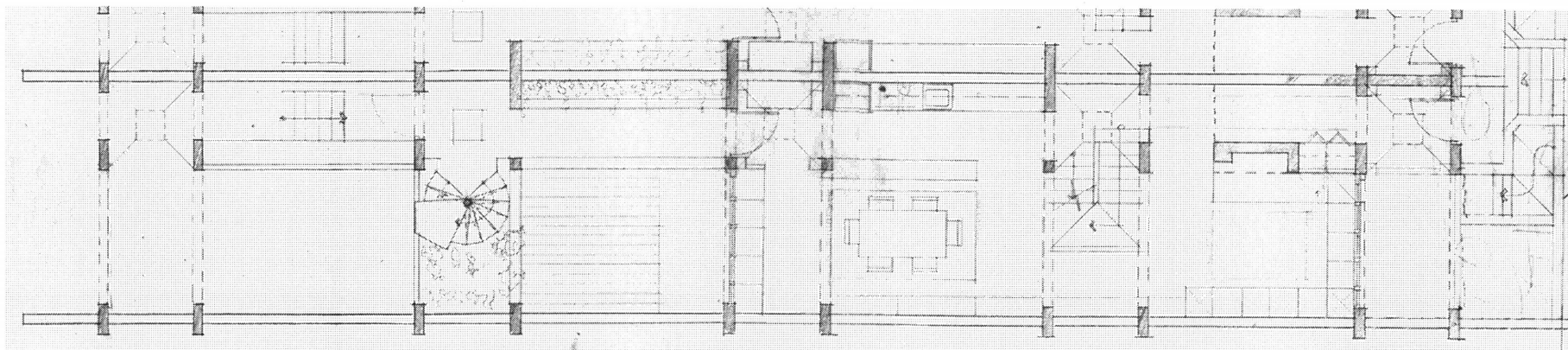
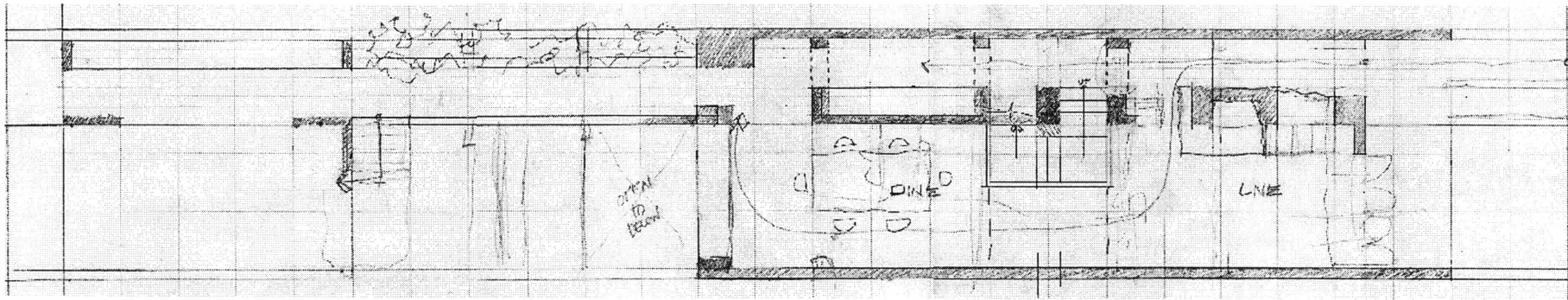
The typical row house is the primary unit of this project which is located on Penn Avenue and Griscom Street. The rules and ordering system laid out in this unit are modified only slightly to determine the form of all other units.

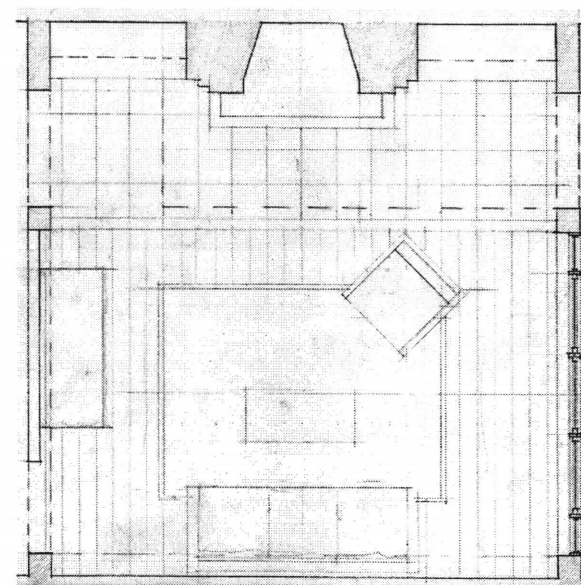
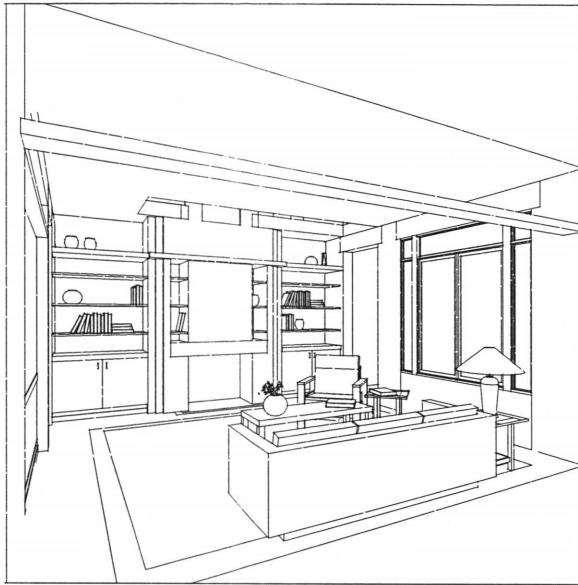

The units are set up as a row house group with each unit a mirror image of the adjacent one. Each unit contains one main living floor, two bedroom floors above, and one floor a half level below grade for an apartment or additional living space. To maximize "domain", the entrance in the front and the carport in the rear are located as close to the edges of the lot as possible. This results in a private garden court in the rear. Each unit is sixteen feet wide and is divided transversely into a six foot wide zone along the party wall for machines and circulation with the remaining ten feet reserved for living space. Along the longitudinal section, the unit is divided into alternating six foot and sixteen foot wide spaces. The stairs' location is the exception to the rule of the location of circulation, crossing the living space.





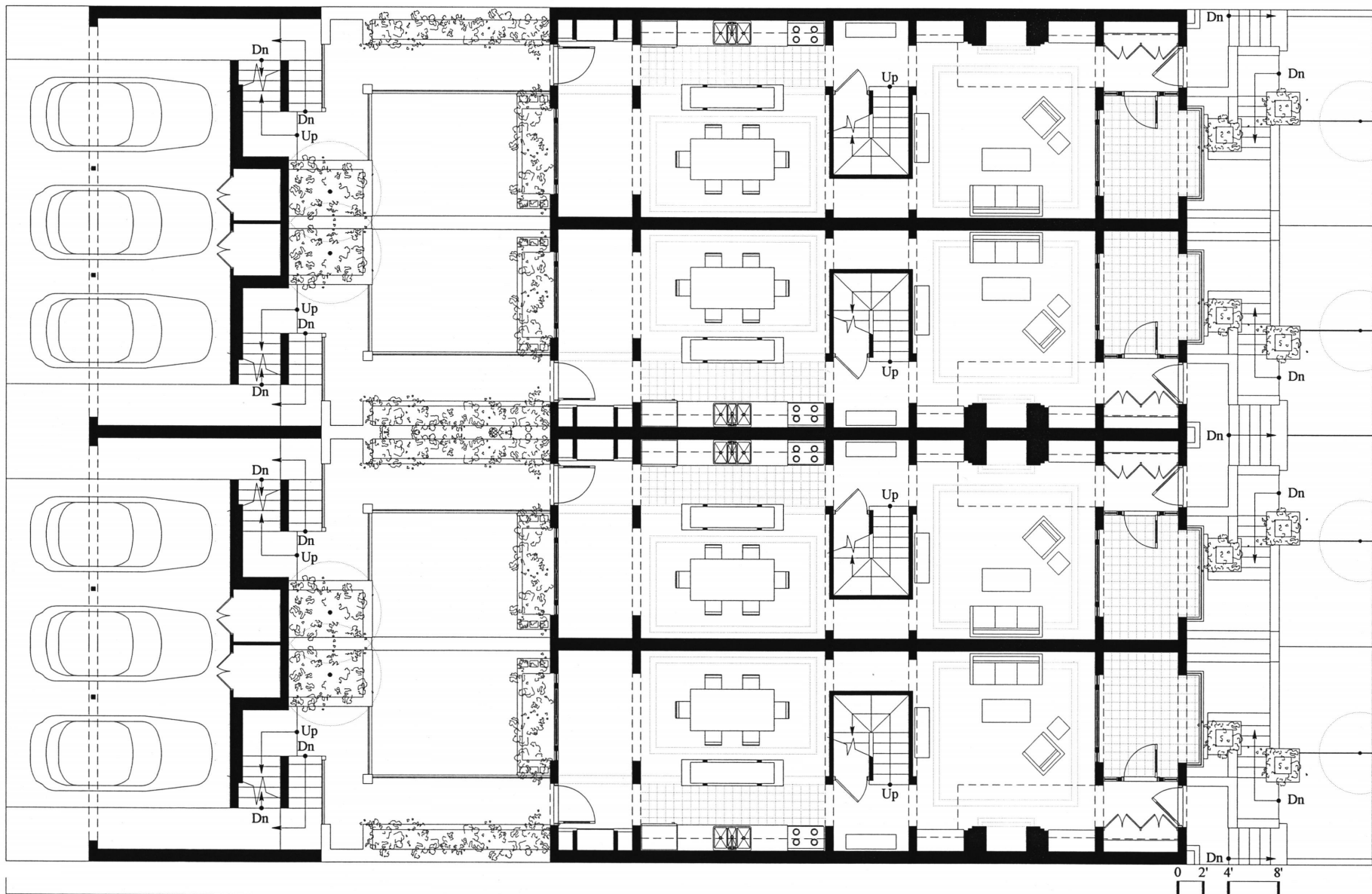
  
Plan  
Development



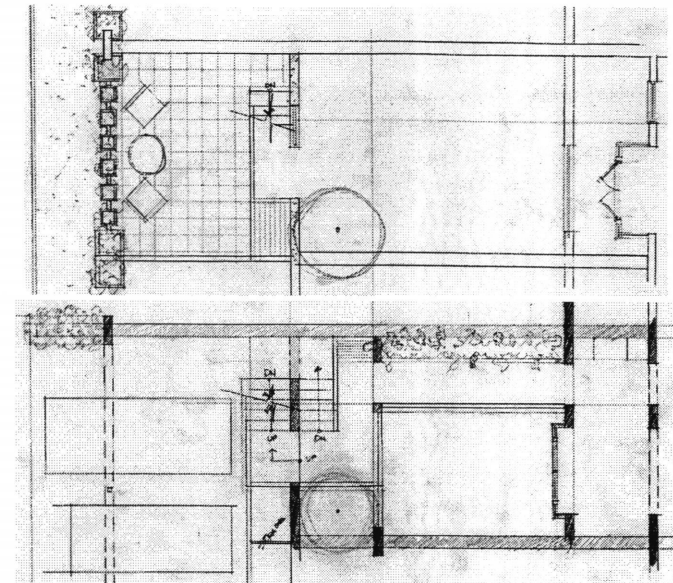



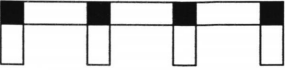
## First Floor Plan

The longitudinal path of circulation contains regular intervals of a threshold where a choice of continuing along the path or entering another is offered. Upon entering, the first threshold is encountered. One has the choice of continuing straight into the main living space, or turning onto the porch. Continuing along the main axis, one enters the living room. The ceiling is open to reveal the floors above and a skylight. A fireplace is located along the party wall and the main living space opens opposite. Proceeding along the main axis, the next threshold is met with a choice of turning to take the stairs to the next floor or continuing into the kitchen. The galley kitchen contains the machines along the party wall and a cabinet for dishes and silverware serving as a screen to the dining room on the other side. Beyond the kitchen, the next threshold marks the edge of the main building of the unit where one may either turn to a space overlooking a courtyard or continue along an outdoor bridge connecting the carport and garden terrace to the main building.

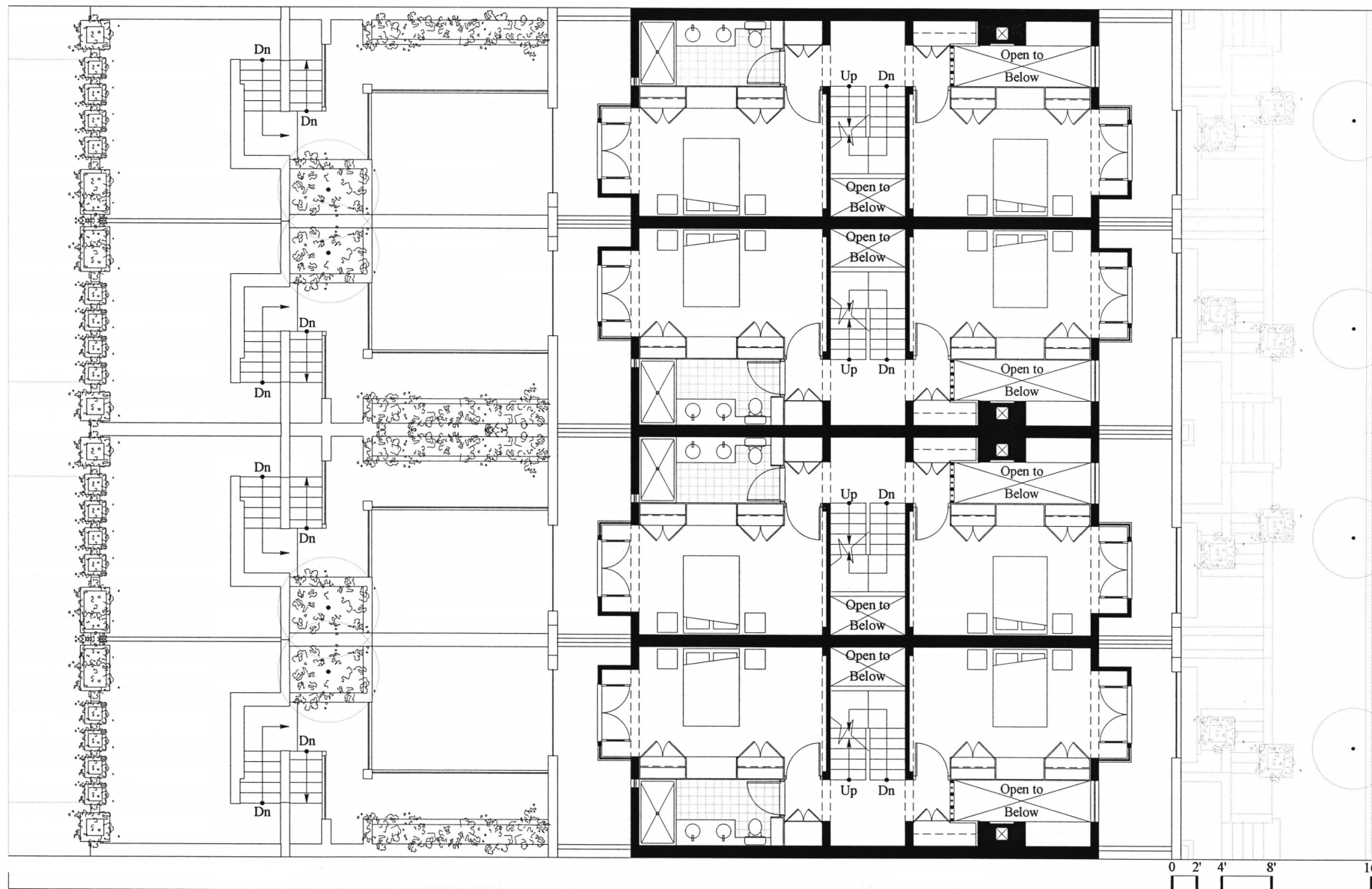


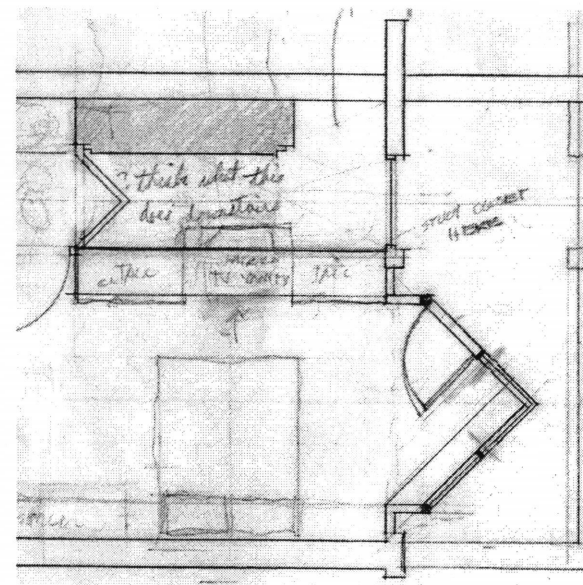
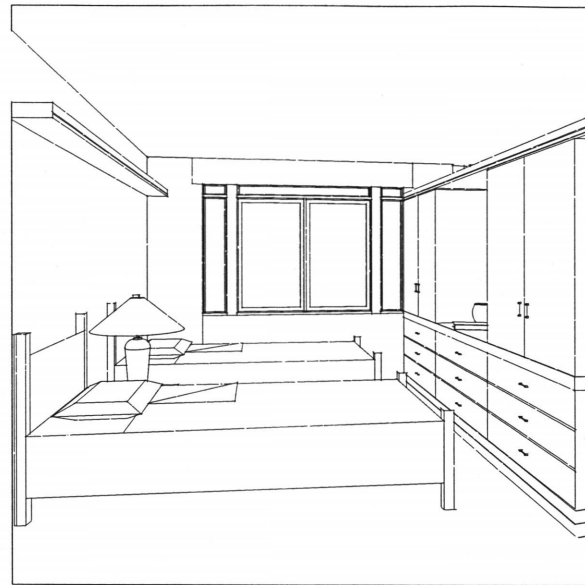
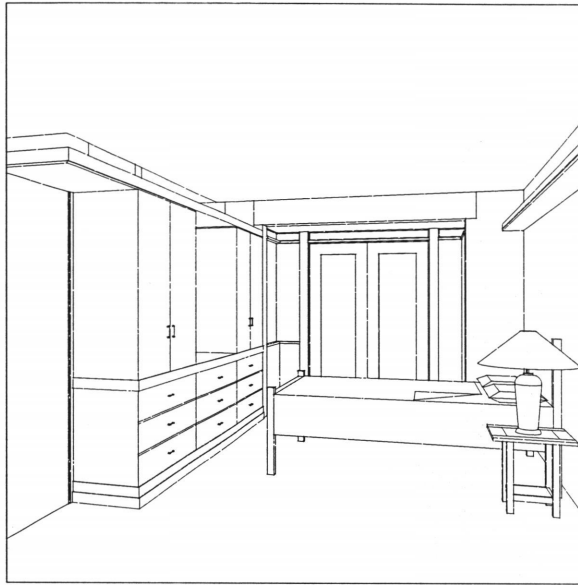




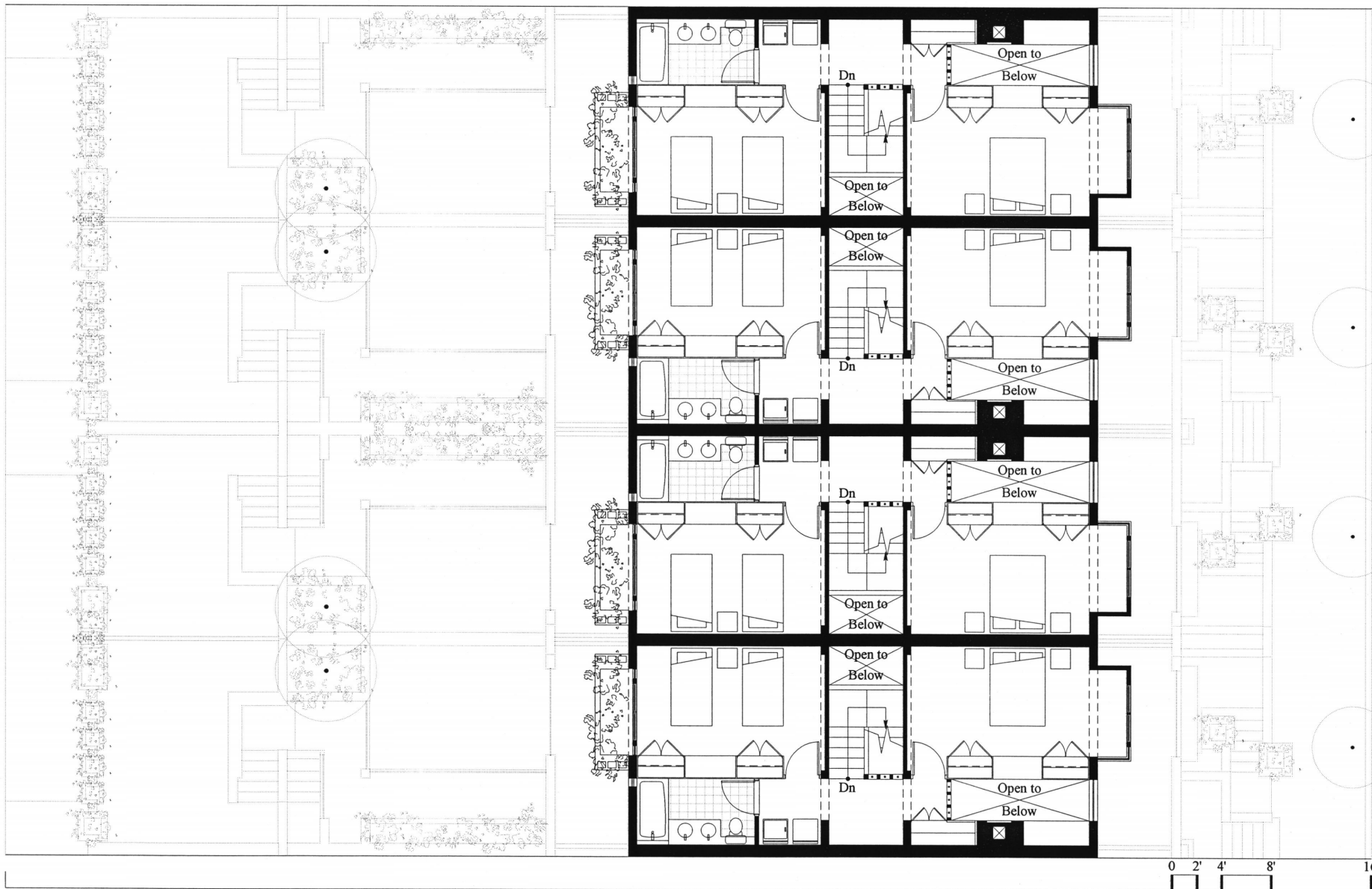
  
**Second Floor**  
**Plan**

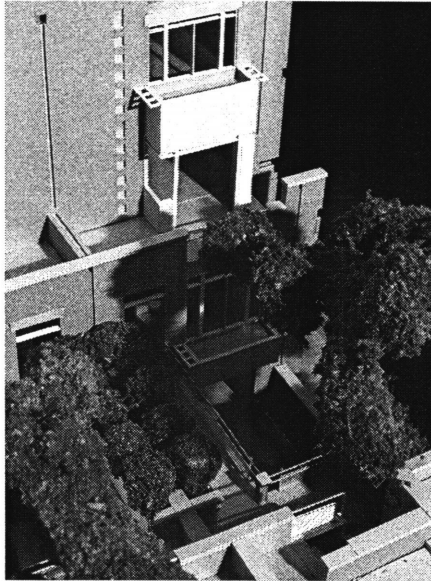
The two bedroom floors are identical except for walk out balconies and a larger bathroom on the second floor. The threshold point for each bedroom floor is centrally located and offers the choice of entering a bedroom, the bathroom, or taking the stair to another floor. Each bedroom is screened from the functional zone by a built-in wardrobe and dresser which replaces the need for additional pieces of furniture.

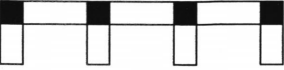




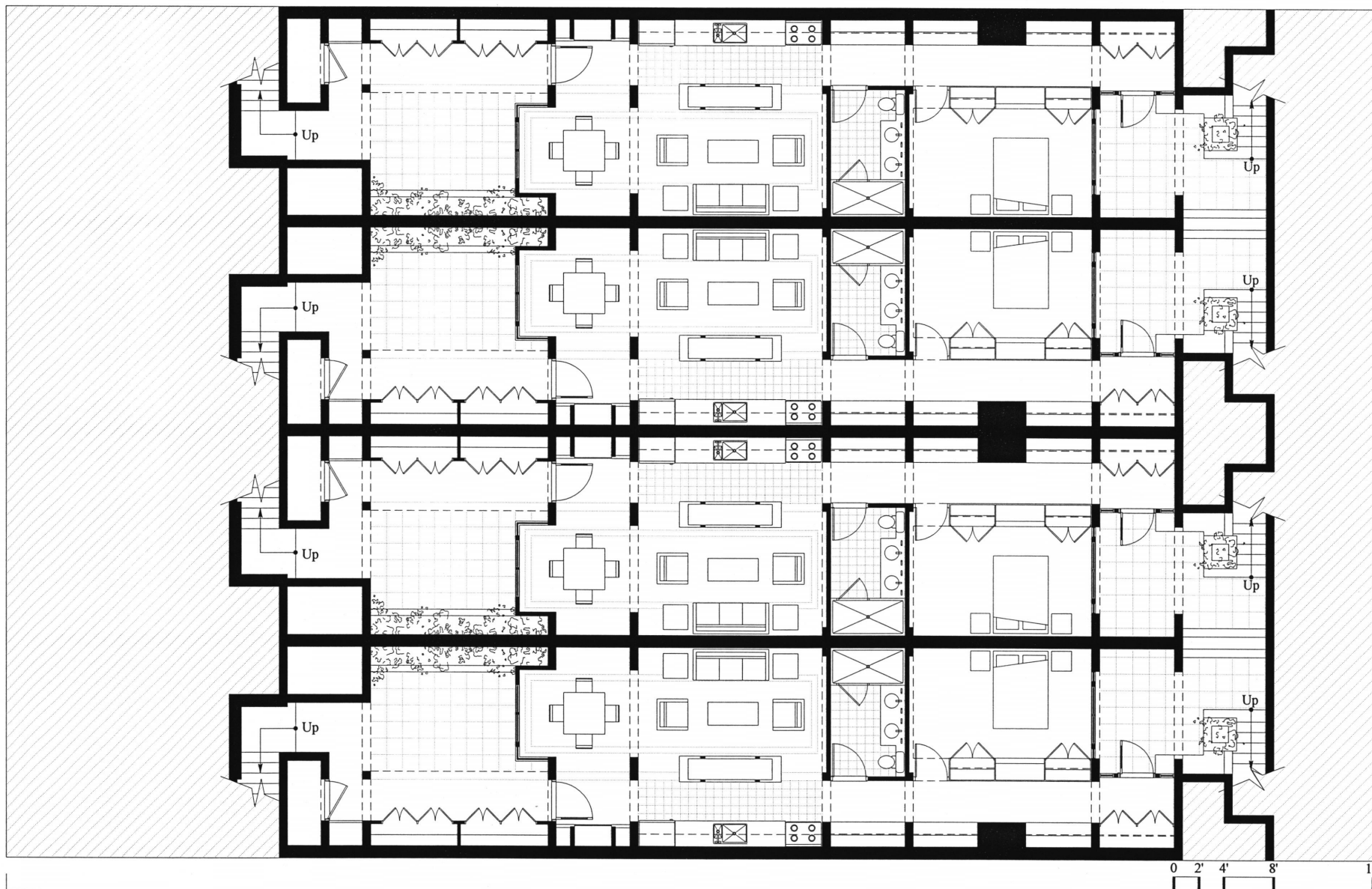
  
**Third Floor  
Plan**

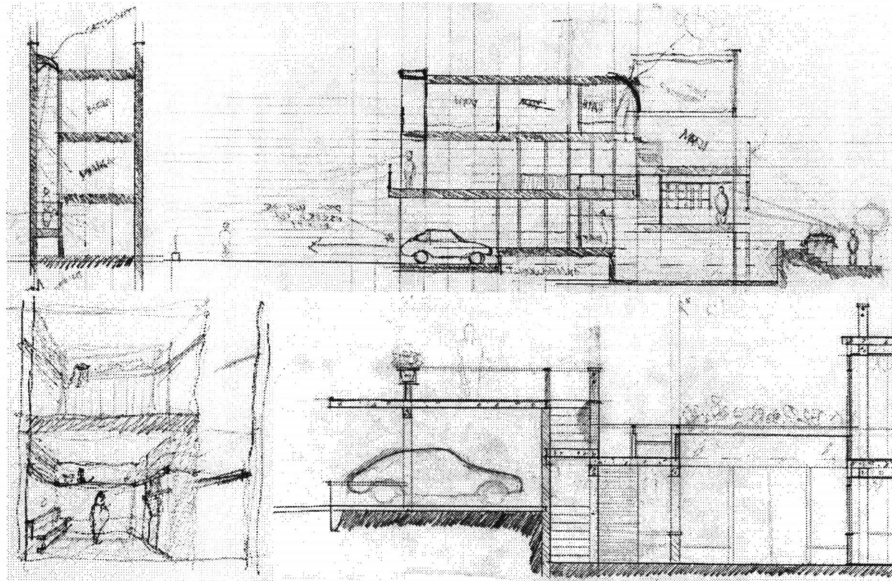
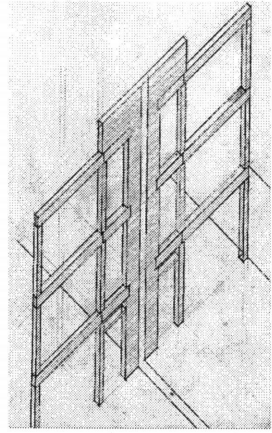
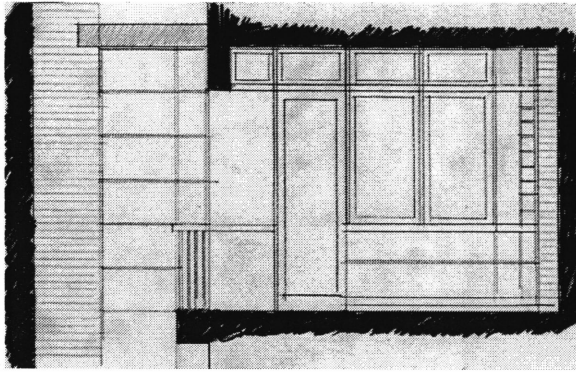




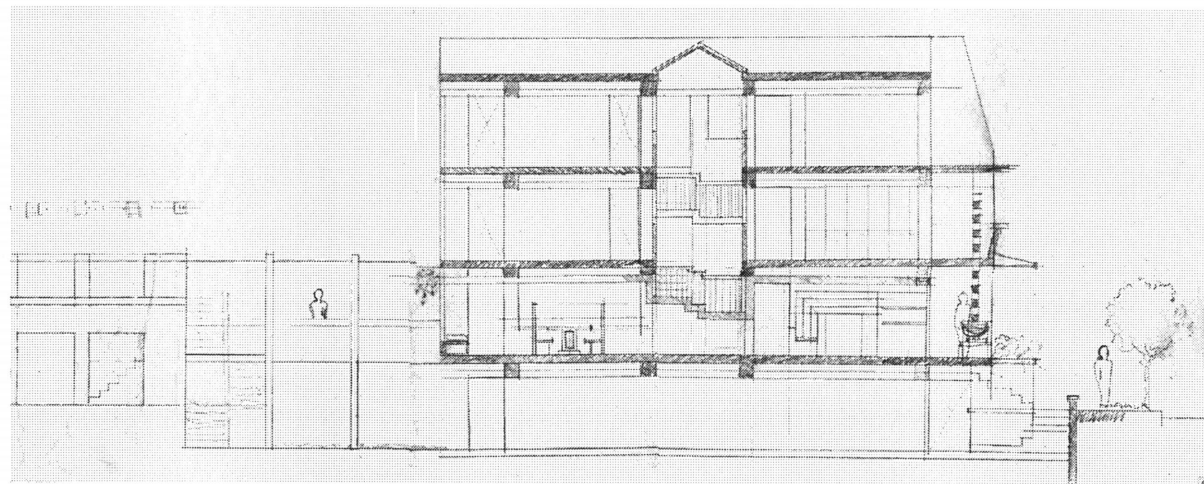
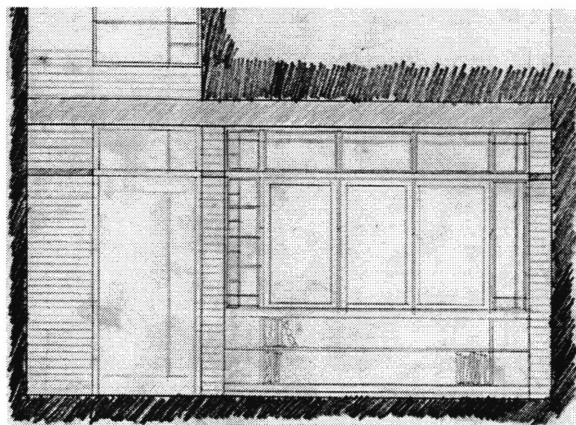
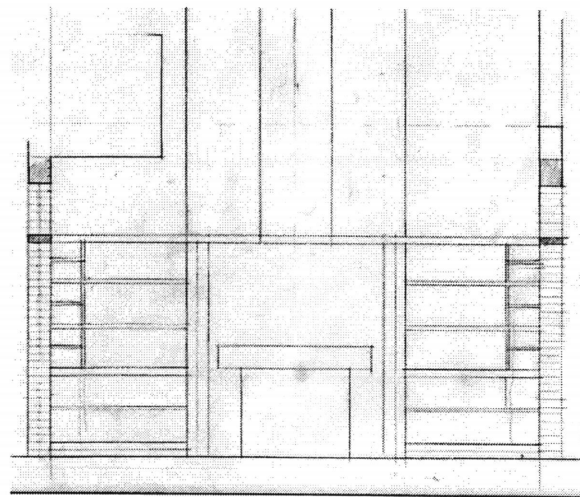
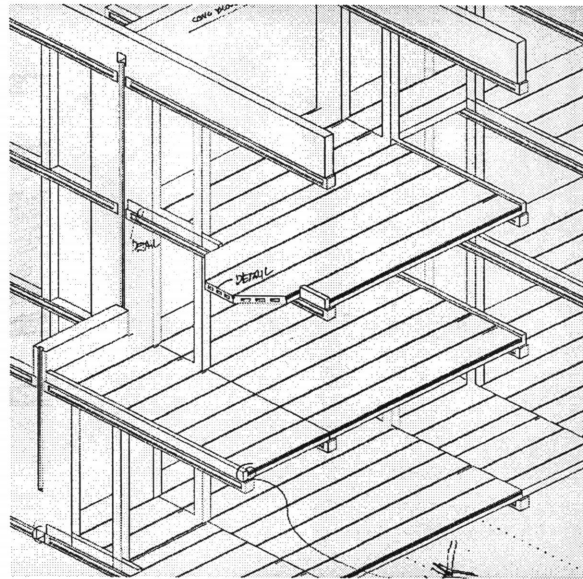
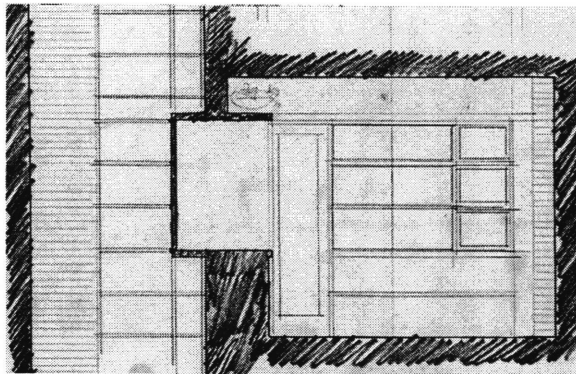
  
**Basement  
Apartment  
Plan**

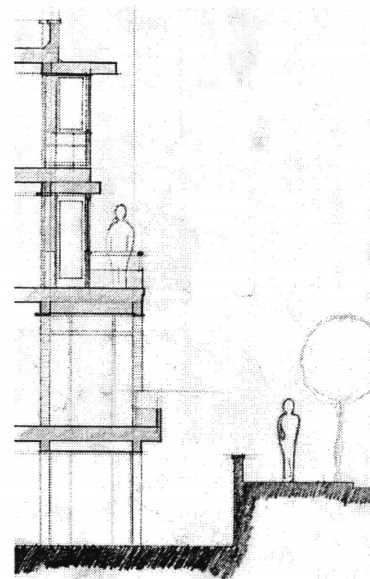
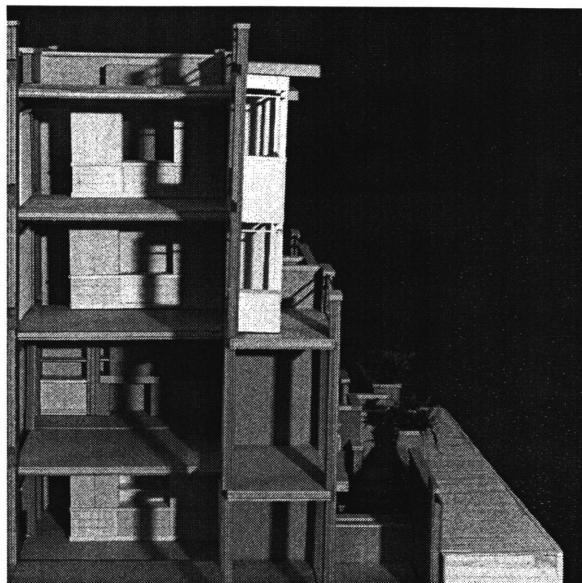
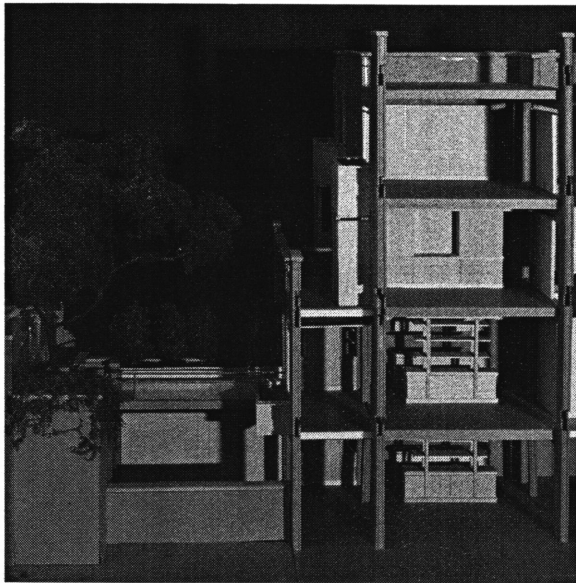

The ground floor is represented as an apartment which the unit owner would rent out. This floor contains the same sequence of thresholds, but the use of the spaces has changed. The bedroom is located in the front of the unit, screened by the same wardrobe used in the bedrooms above. The bathroom is centrally located in the space used for the stairs above. The kitchen is identical, but it is now opposite to the living room. The dining space is located in the final zone and offers both a bay window and access to the courtyard by offering outdoor space separate from others. The outdoor courtyard acts as the final living space. It adds an important amenity to the whole apartment. This apartment layout is used as a template for the apartments found in the other units.





Section  
Development

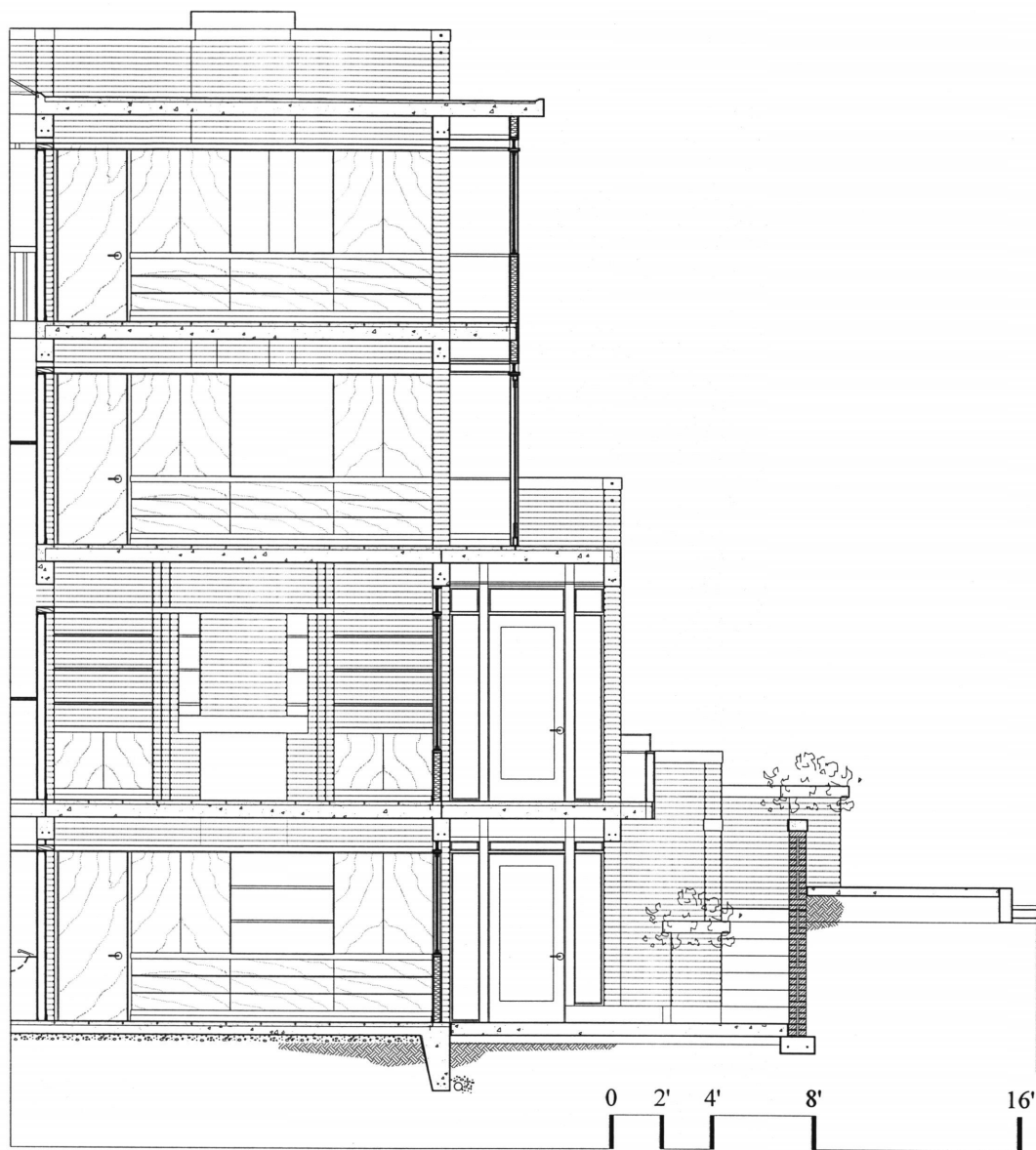
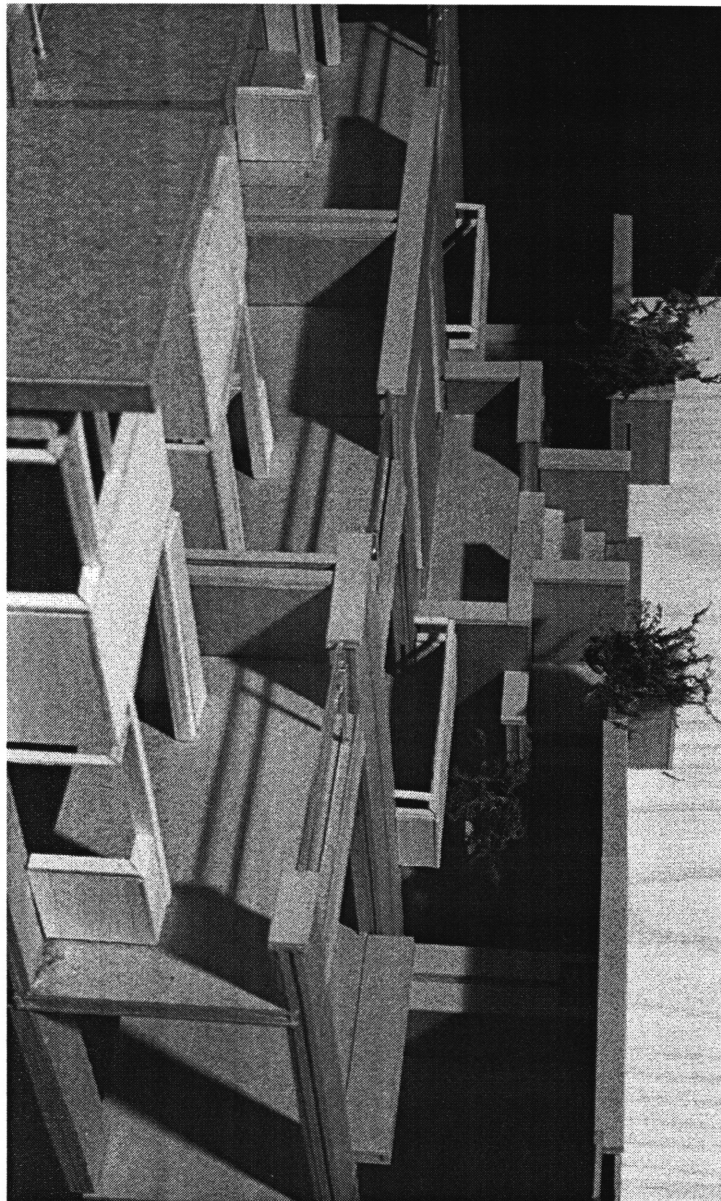


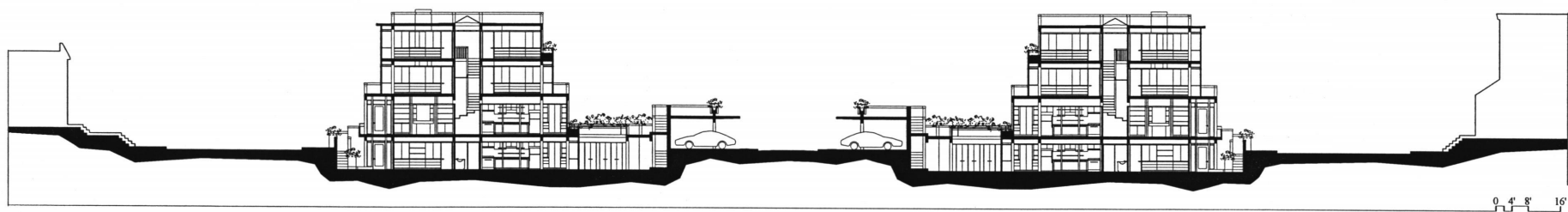
## Longitudinal Section

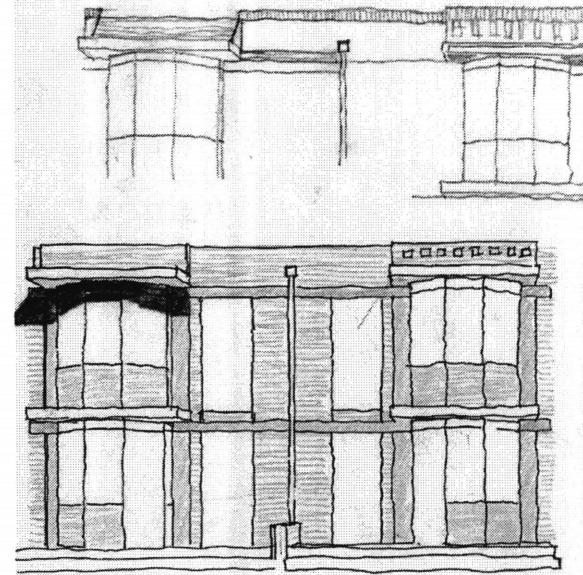
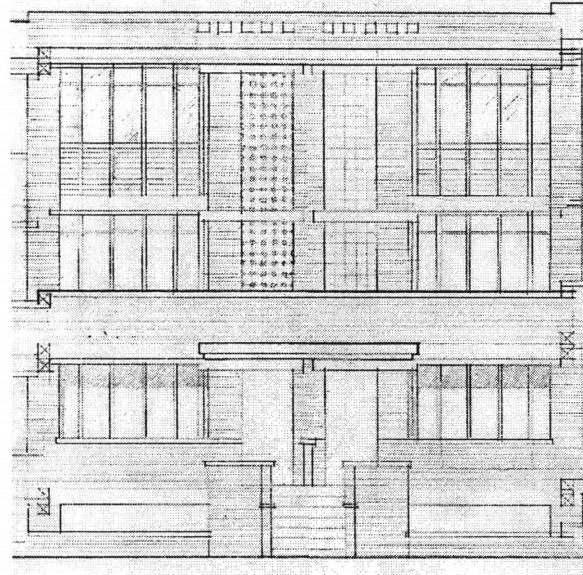
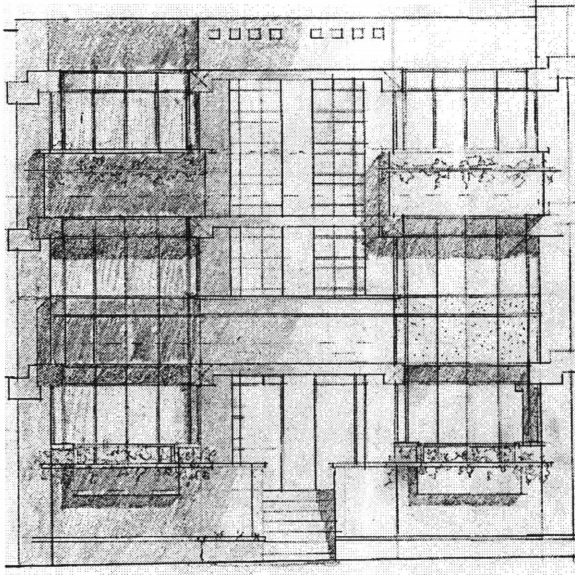
Each floor in section is eight feet tall except for the main, which is nine feet four inches. This indicates the importance placed in the main level where the majority of living will occur and thus is expressed differently. The apartment level is a half floor below grade with an open well in front and the courtyard in the rear to allow the maximum amount of light possible into this unit. This organization places the main living floor of the unit one half floor above the sidewalk, providing privacy from the street. The transition back to grade from the main level in the rear occurs at the threshold point of the end of the bridge. This places the carport at grade and now the garden terrace is one full floor above the alley, allowing for additional privacy. The rhythm first expressed in plan is reinforced in section. The walls located parallel to the street are used to order the spaces in plan, and also offered another opportunity to order spaces in the building section. These parallel walls support the floor slabs which in turn rest on beams that cross two spaces. The center of the main building holds the long vertical space of the stairs. This space contains a skylight that brings light to the darkest area of the unit. A datum line at seven feet four inches runs continuously throughout to unify each space.

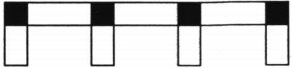


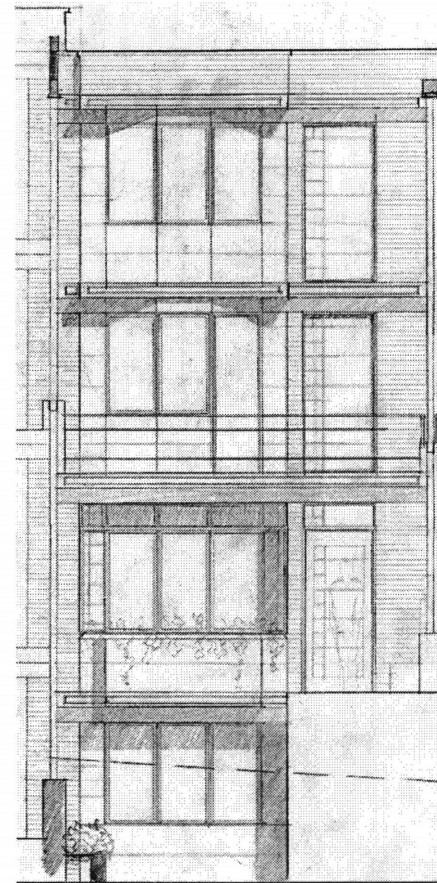
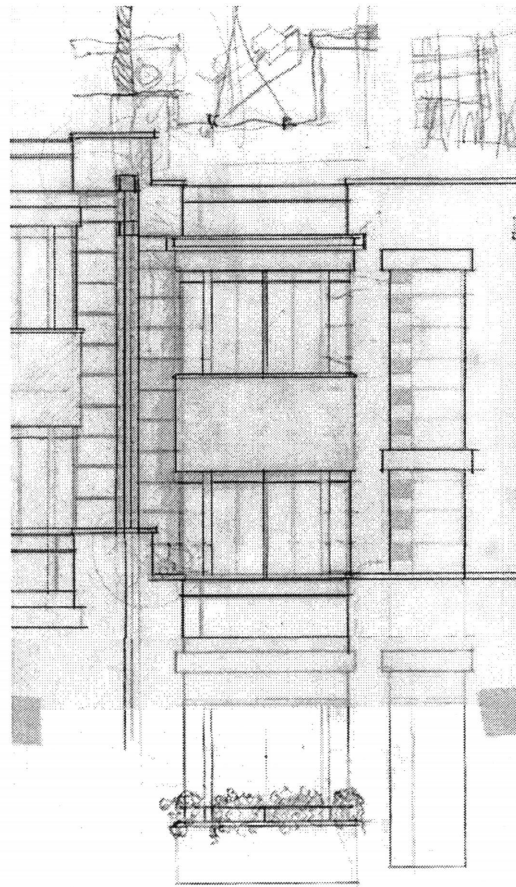
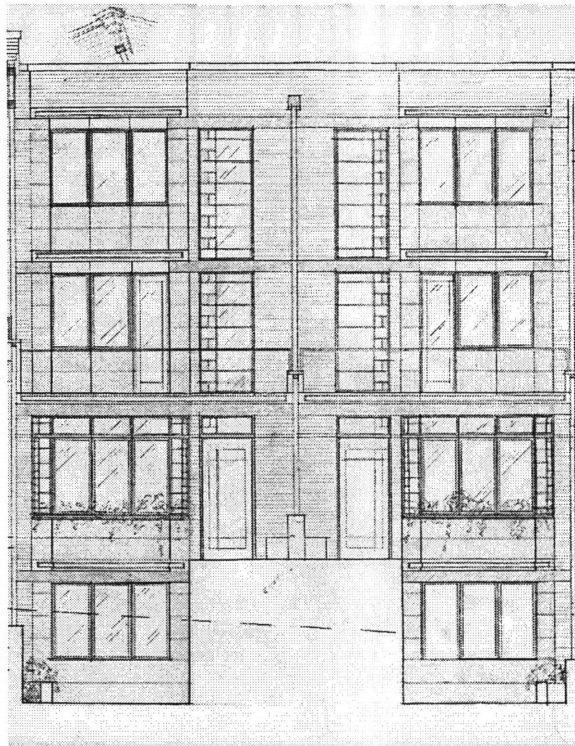


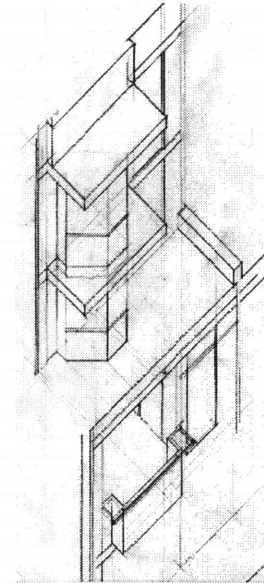
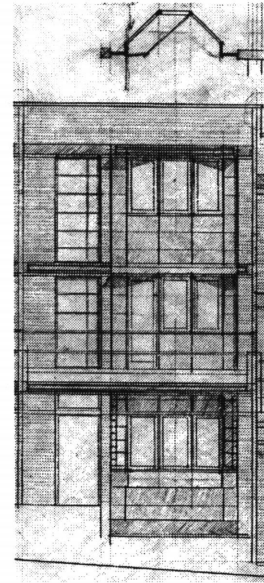
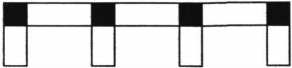
Site and Enlarged Sections





  
Elevation  
Development



Front  
Elevation

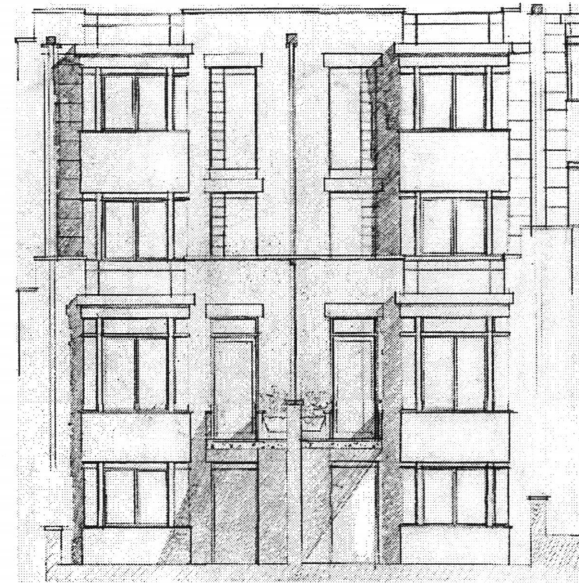
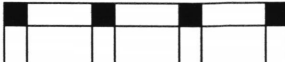
The sense of the wall and of the room within are the primary elements that relate the elevation to the plan and section. The units step down along the site with the sense of the parallel ordering wall clearly felt. A shorter wall for the entrance and porch stands in front of the main wall. The elevation is stepped back from the sidewalk so as not to be too imposing and to adjust the scale of the unit to the street. Bay windows, balconies and rails provide variation and complexity to the whole.

Viewed between each two unit step, the elevation may be interpreted two different ways, either as one unit or as a double house type of row house. The generous common entrance stairs shared by both reinforce the sense of one unit. The mirrored layouts provide symmetry to the elevation, while a single unit is asymmetrical.

Looking at one unit's elevation, the functional zone and the living zone are expressed clearly on the elevation. Additionally, the multistory space in the living room is expressed on the elevation by the fenestration. Also, the asymmetry of the elevation is reinforced in the bay windows by placing glass on one side only. This also provides privacy from the adjacent unit. The datum line running throughout the interior is picked up on the elevation by the line above the doors and windows. Finally, each unit is defined along its elevation by the reveal used to carry water from the roof to the ground.





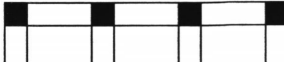



Rear  
Elevation

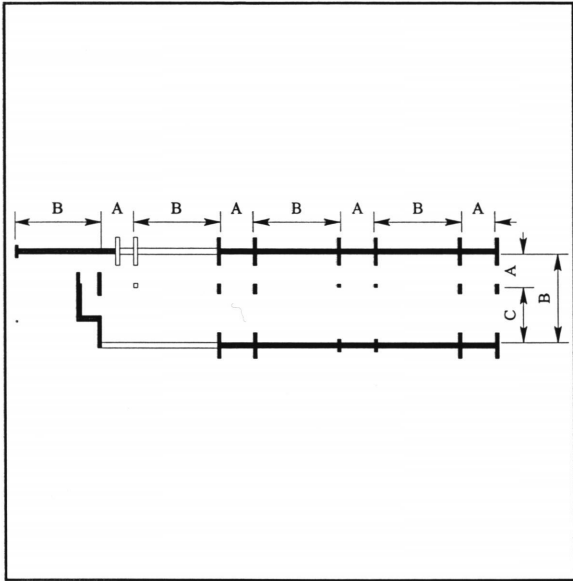
The rear elevation contains the same vocabulary of elements as the front with some adjustments driven by the different spaces in the rear of the unit. The large section of fenestration that reflects the multistory space in the front is replaced by 8" x 8" glass block sections in front of the bathrooms. The porch is replaced by an enclosed space and some bay windows are now sill height planter boxes.



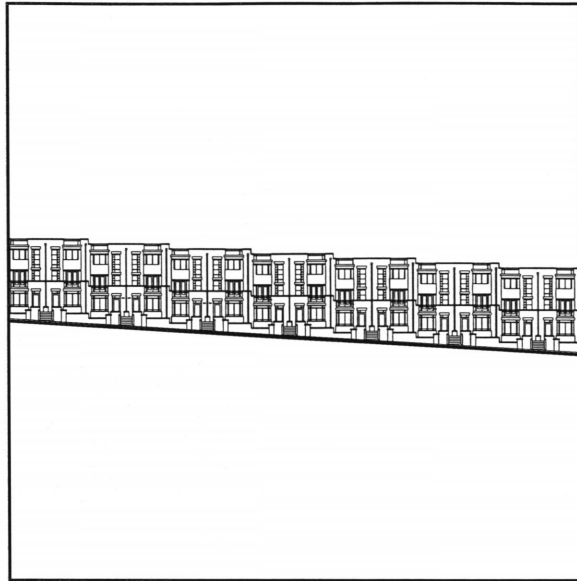


  
Street and  
Enlarged  
Elevations

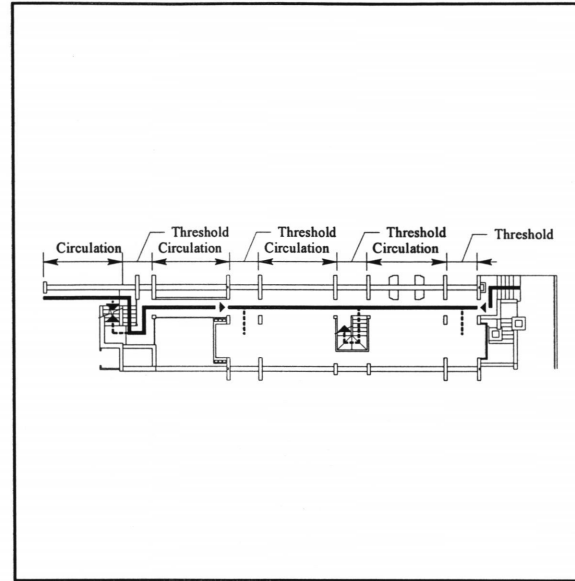




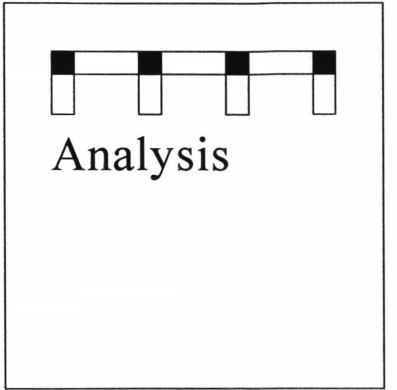
Rhythm & Repetition



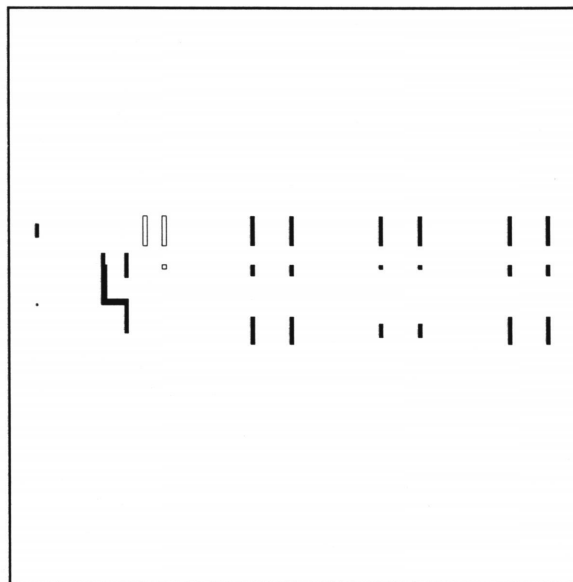
Rhythm & Repetition



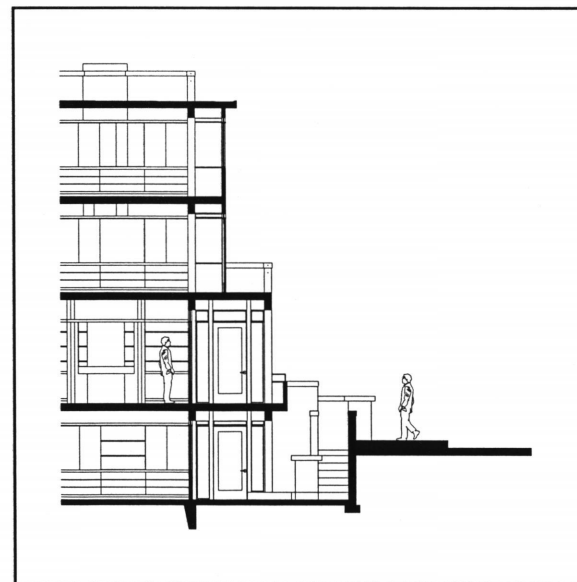
Circulation



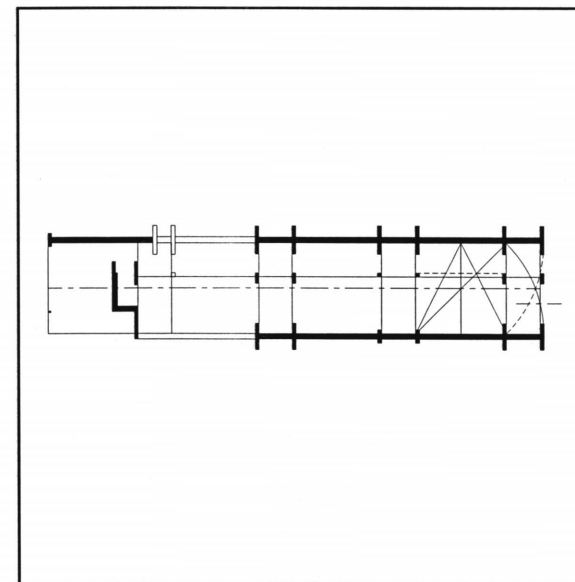
Structure

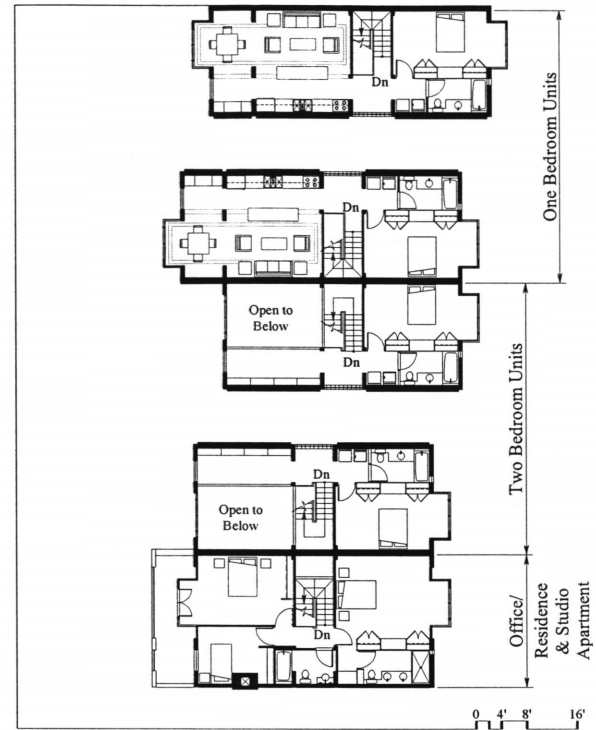
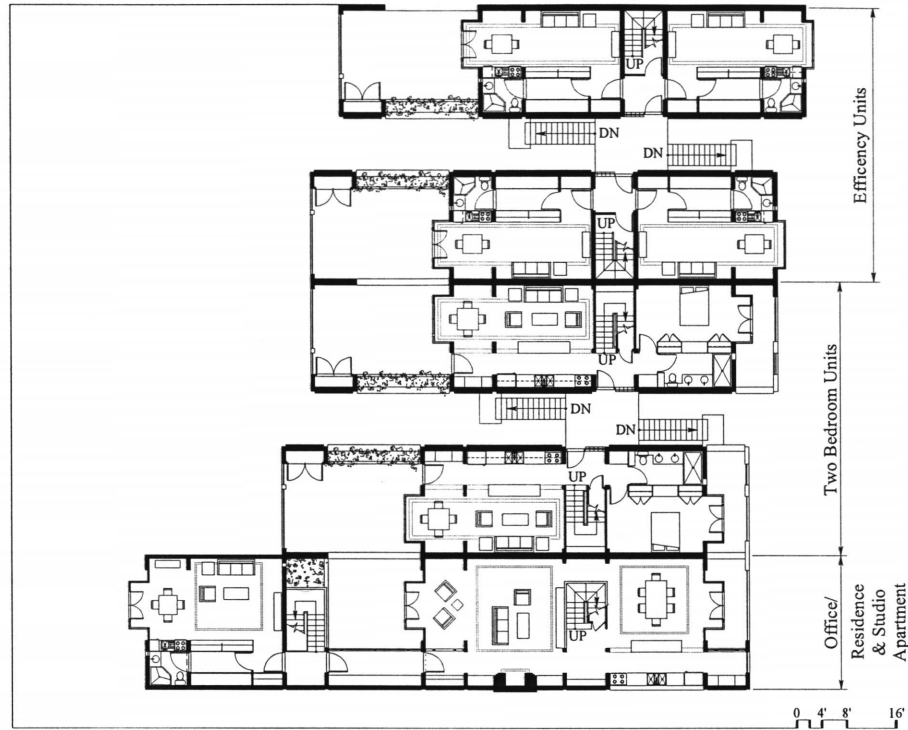


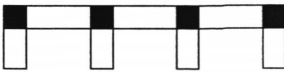
Prospect & Refuge



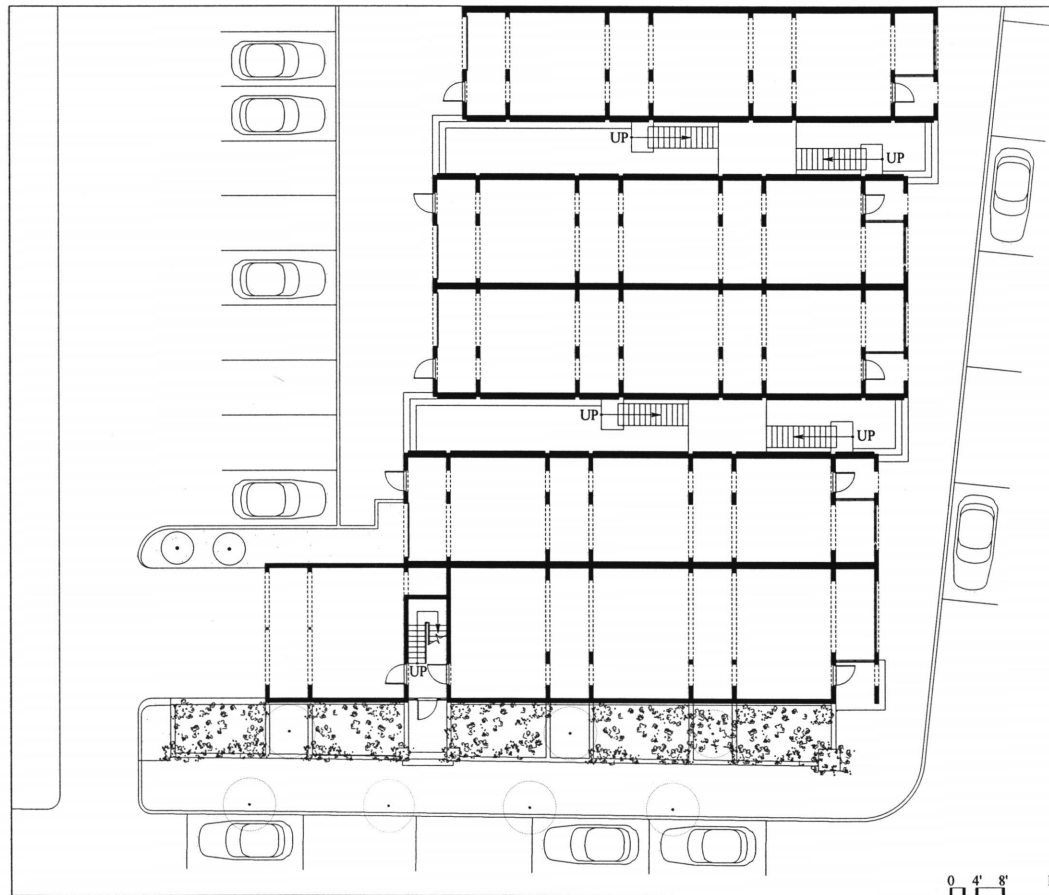
Proportion

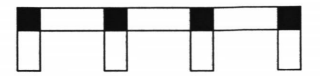
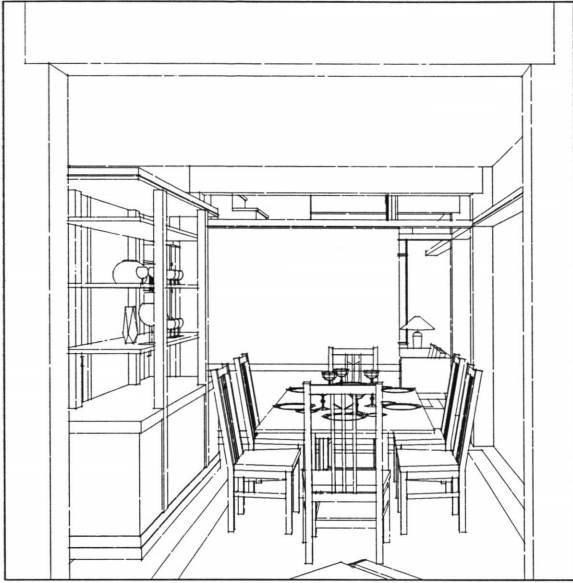




  
**Additional  
Units:  
Testing the  
Idea**

Apartments and retail units are located along Pratt Street. A separate system was not developed for this housing type. As part of the thesis, the system was tested to adapt to a new housing type. A distinct difference between the types is the treatment of the entrance. A distinction between the public and the private entrances is an important aspect of this design, but the 6' circulation zone could not accommodate two types of entrances. The solution was to separate the units at the 6' zone and create a new 8' zone for the private entrance. This variation works because the entrance to the apartments occurs at the center threshold point of the system and reduces the need for internal circulation. Although the rules of the system are defined by the original unit, variety is still possible.





## Postscript

I would like to thank my family, especially my wife and my children for their support, patience and encouragement.

This book was laid out in Adobe Pagemaker® 6.0. Photographs and sketches were edited in Adobe Photoshop® 3.0. Drawings were drawn using AutoCAD® R14.

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the scanned document**