UNIVERSITY OF DETROIT MERCY
GRADUATE SCHOOL
MASTER'S PROJECT

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR
THE DEGREE OF MASTER OF ARCHITECTURE

TITLE: Patterns: Economical Inhabitations

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5/17/04
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CRITICAL POSITIONS

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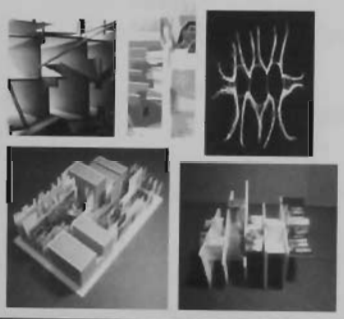

'PATTERNS: ECONOMICAL INHABITATIONS'

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23 April 2004

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23.04.04

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ABSTRACT

The central premise of this thesis is about providing housing for low-income individuals that meets the requirements of a high quality of living, security and privacy while still allowing inhabitants to interact with neighbors and the city. Another important was allowing pedestrians and the residents of the city to interact with this project. The project was to find solutions that were economical and tasteful simultaneously, and not to allow the project to feel inferior to market-rate housing. The essential problem is to create an architecture for multi-family housing that allows tenant to remain as individuals, which is usually difficult in apartment-like buildings. The project strives to encompass energy saving techniques with the use of natural materials, lighting and ventilation in a creative manner. The thesis asks questions such as 'what is the role of architects in the realm of social responsibility' and 'how do architects design for a charitable clientele' in order to support the project. Research on low-income families and individuals has lead to conclusions on some of the things that should be provided for this client. Secure environments for watching children, child-care services nearby, quality and durable materials with low maintenance and community spaces became an integral part of the project, as well as an abundance of amenities that could make a small apartment feel like a home. Providing plenty of outdoor space for children as well as adults was a major factor in the design.

Patterns: Economical Inhabitations

PROJECT SUMMARY

The act of dwelling entails many things. It is more than just having a mere shelter, or warmth from the cold, but it is necessary to living a healthy life. There are some individuals who can barely afford to find shelter let alone to really dwell. How does society respond to this problem? As architects, what obligation do we have to create environments for people that allow them to prosper, whether they have the means to pay for it or not. The architect must exert professional leadership where possible in order to push for innovative ways to create housing for a lower-income.

Low-income individuals differ in needs from other groups in society, but still need the comforts of a dwelling just as wealthier individuals do. In designing for this particular group of people, there are certain guidelines that may be followed in terms of density and permanence, but every effort should be made to build residences that are of no difference in quality to that of market-rate housing. For instance, other functions besides housing can be included in the design to aid the residents in their everyday lives. Privacy and security should be maintained, but how do architects respond to this problem at a medium-density development?

What is important in dwelling is a control over one's personal space, and a way to identify with it. However, usually in building any multifamily housing, the architect is not given the opportunity to design the dwellings for a specific client. How can the design lend itself to adaptability, and at the same time not employ a feeling of impermanence or detachment? What materials and methods should be included in the design that exudes both a sense of individuality and economy? What materials can be reused or recycled, in keeping with ecological concerns? What other ways can the homes be more affordable, whether it be cheaper construction costs, less expensive materials, smaller (but higher quality) spaces? The architect has a responsibility to find the most creative means possible in order to address all of these issues while still creating a prospering environment.

The circumstance includes housing for low-income individuals as well as a small percentage of other inhabitants. The architectural project will not just include housing but a wide range of functions such as sports and exercise facilities, garden and outdoor terraces, a range of retail units that are usable by both the city and the inhabitants, and many spaces for children to play, families to collect, and individuals to retreat. Emphasis will be placed on these communal spaces and the interaction between inhabitants, apartments and movement.

To Dwell:

What exactly does it mean to dwell? Does it mean simply having a roof over one's head, a shelter from the elements, or a place to sleep? To dwell really means more than all of these things. It means having a place of our own, a small chosen world that expresses one's self. The place of dwelling should be one that is a private retreat where the individual can prosper. To dwell can mean to establish a "meaningful relationship between man and a given environment" (Norberg-Schultz 13). The occupier of the dwelling must identify with it, have a grasp of its orientation in the world. When these objectives begin to be fulfilled, the transformation of a house to a home is recognized. The home should not only express the way the dweller lives, but inspire them as well.

Historically as well as in present times, there have always been those who cannot afford a place of dwelling, or in the very worst case, even a roof over their head. Those who can afford to live comfortably, in most cases cannot afford to hire an architect to design a home to his or her needs and specific qualities. As a result, most people tend to live in either a house or apartment designed completely objectively, without regard for the person who will be immediately residing there, or for one that might someday be living there. In the interest of economics and time, the ordinary house looks just like the one next to it, just like the one down the street from it, and just like the one in every town in North America.

So is it possible to 'dwell' in one of these homogenized places? Every person can manage to turn the inside of a standard house into a home, with their personal belongings, decorations, and so on. But often we find today a situation in which the space that we have purchased as our house doesn't really suit our needs; spaces that we use frequently are too small, where other spaces that we will never use still must be paid for. Today, houses in the suburbs keep getting bigger and bigger, while the detail and materiality diminishes. It is a condition where quantity is overpowering quality. It is summed up in a quote by Albert Einstein: "Not everything that can be counted counts, and not everything that counts can be counted."

It can be argued that *most* people are housed inadequately due to the poor quality of the spaces that are designed for us. But this investigation will focus on those who can barely afford to make ends meet, those who cannot even live comfortably, and those without decent living conditions. If housing is partially a question of ethics, every human being has a right to a home, not just a shelter, but a private and secure place to reside at a cost that is affordable to them (MacDonald 7). It is estimated that at least one-third of American households spend so much income on rent that there is little left over for other necessities. Although every country in the world has problems housing lower-income individuals, some countries are able to deal with it better, whether it is due to government policy or the abundance of funds. The United States seems to be lacking in this department, with less emphasis on social housing and well-being and more on capitalistic ideals. However, non-profit groups, government grants and fund-raising have made subsidized housing possible even if it is on a smaller scale. The question becomes what is the architect's role and obligation in this equation? (Fox 178)

Ethics and the architect:

Architecture is a profession, and the architect is a professional. He has a job, and that is to design, develop and see that a building is built. But is the architect an artist also, or just a simple engineer or builder? Do we actually have the right or the responsibility to question the aesthetics of buildings? (Fox 195) Perhaps it is reaching to state that the architect has every obligation to create aesthetically pleasing or at least pleasant buildings, structures and environments. Architects are, in part, socially responsible for the shaping of the environment, and therefore should have some responsibility towards creating one that reflects the society that occupies it, and one that lends itself towards being comfortable and satisfying. "We architects also have a responsibility to do everything we can to create a more human society. When there is want and suffering due to lack of housing, we should apply our skills toward finding remedies...we can exert professional leadership by showing what can be achieved" (MacDonald 9). It is inevitable that many people including architects are driven by economics and the notion of acquiring as much money as quickly as possible. Unfortunately, in our society, attempting to build affordable housing is both time consuming and not always well-paid for.

A little history:

Throughout the late nineteenth and early twentieth centuries, housing reform and the attempt at creating affordable and livable units for individuals consisted mostly of providing safety and health to its tenants. The major concerns were fire protection, sanitation and ventilation, rather than pushing for creative designs. Architects and planners worked out models that would provide tenants with ample light, air and means of egress, and in turn attempted to master a puzzle of tightly organized spaces (Davis 8). It was until the late 1970's that the mainstream approach to building high-density affordable housing was large institution-like projects, crowding as many units as possible into a small space in an effort to save money. Some of these projects, by more well-know architects, even won design awards. However, the tenants themselves certainly weren't praising the projects, which lent themselves to crime and vandalism. One particular project, called Pruitt-Igoe in St. Louis, built around 1957 by Minoru Yamasaki, consisted of 43 eleven story buildings in a park-like setting. It was demolished fifteen years after completion (MacDonald 13). Oscar Newman, in 1972, stated that the relation between building form and the pathology these types of housing projects makes high-rise housing inappropriate for poor families (Davis 17). From this point on a more favorable approach to low-income housing development has been one of low to medium density (with about 50 units per acre).

St. Louis – Pruitt-Igoe Housing Complex by Minuro Yamasaki

The low-income family:

Very low-income families, particularly those working for minimum wage or at wages close to it, have immense difficulty finding both safe and adequate housing. The housing that is available is usually in areas where poverty is very concentrated, making for an unpleasant environment in most cases. In the case of family well-being, constantly worrying about finding the means for rent and maintenance of a residence can have a devastating affect on marriages, relationships and

children. Parents under economic stress are frequently unable to provide adequate physical care, including nutrition. Because even two parents working at minimum wage can hardly provide enough money for rent along with food, clothing and health care, parents may be too preoccupied to provide the nurturing and support children need, especially at young ages ("Affordable Housing and Family Well-Being" 2).

Abuse and neglect tend to increase when the parents are under extreme stress. Studies have shown that a connection is found between economic stress and negative behaviors such as alcoholism. Inadequate housing often poses health risks for children who live there, such as asthma, allergies, and increased infections. When children and parents are forced to live in shelters or unsafe conditions, chances of missing or dropping out of school, aggression and anti-social behavior are increased. Parents struggling to provide means of support are often too busy to tend to other issues of support (Children's Defense Fund 3-4).

Designing for low-income families:

After knowing about the situation of low-income people, are there specific design strategies that can be applied in order to assist the residents in a healthier lifestyle and a more pleasant environment? What are the differences in designing for this particular group of people as opposed to any other group of people? Regardless of income, a true home has three qualities: it must afford the occupants as much individual privacy as possible, it must offer a sense of security, and it must be agreeable to one's outlook on life. A difficult task in the question of economic housing is the balance between ease and economy of production and that of livability and individualization that one would hope to achieve based on these three goals.

Density:

There is a question of what scale of density is appropriate in this scenario. It has already been established that high-rise, high density construction invites disaster at the level of low-income individuals. Although other housing forms are acceptable and even favored in other countries, in American society, the single-family detached house is an obsession. Therefore, multifamily housing

is usually seen as second rate. Ecological concerns however, push us in the direction of a somewhat higher density development as a viable solution. With multifamily housing, usually the collective form dominates, rather the individualistic components of the units. There is normally little attempt to reveal, emphasize or even recognize the individual dwellings within the greater whole. The definition of a single element within a larger pattern where both scales are recognizable provides for an interesting problem (Davis 84). Perhaps an elegant solution is to treat multifamily housing as a conglomeration of single family houses, each with its appropriate amenities. Another type of resolution would be to create attached housing, which is more simply the single family house attached to its neighbor. Densities of these 'rowhouses' can be quite high, but what is the balance between the identifiable dwelling and the integral whole (Davis 85)?

Because of the type of families that are being designed for here, density is a debatable question. It has already been stated that families with low-income are usually struggling to provide adequate comforts to their families. With the stress of trying to earn enough means, and care for children, the task of maintaining a house or apartment on top of that can be a challenge. A higher density of housing eliminates the worry of caring for the exterior of a house, and being responsible for the maintenance of certain systems. A denser arrangement may serve its tenants with less stress, and allow them to focus on the more important things. However, there is always a delicate balance of depriving someone of certain things in order to make life easier. The feeling of a lack of ownership of a residence may have negative connotations for the resident. There must be a careful articulation of each unit within a larger context in order for there to be some feeling of possession over one's place of dwelling. To the outside world, the home represents the level of affluence achieved by the family living there (Bosma et al 18). Any person, low-income or high-income, generally wants to be noticed from within the crowd, and wishes their dwelling to express their character and individuality. Medium density housing can be achieved successfully as long as other factors are considered, such as public and green space, and uniqueness to an individual unit.

Privacy vs. Publicity:

Privacy in a residential unit should not be compromised at any cost. The home is ultimately *the* private place, where one goes to be alone, to be by himself, and to share time with family away from the outside world. In dense housing situations, privacy is sometimes lost due to the amount of units crowded into a small space, thin walls, public entrances and other community spaces. One simple solution to this would be to insert thick walls between units, insulating sound from neighbors. But also, it is important to have a sense of community and togetherness. Support can be given from neighbors, and adults and children can grow, play and interact by living in proximity to each other. Because the housing will have economic constraints of some sort, community and shared spaces will become important in providing many functions in a less expensive way. But again, a careful balance must be drawn between the two.

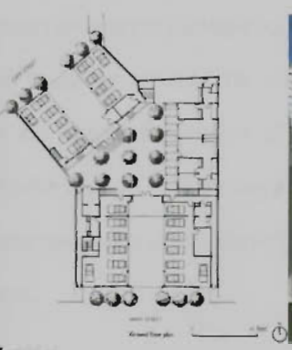
Security:

In low-income housing, security of the residents can be a viable problem. Residents generally have issues concerning the ability to watch their children outside as well as a safe entry way into the building and their private apartment. Courtyard housing has been a popular form throughout the world and is a popular form of affordable housing. The courts are used to create a comfortable and secure community as well as offer some private open space for residents. In some cases the individual units are accessed from the courtyard, creating both a place for community and social interaction as well as security. Additionally, it is the spaces between buildings, the leftover spaces, than can create opportunities for excitement and communication (Ford 3). To help make residents feel secure, such methods as "grouping dwelling units to reinforce associations of mutual benefit; by delineating paths of movement; by defining areas of activity for particular users through their juxtaposition with internal living areas; and by providing for natural opportunities for visual surveillance" are outlined by Oscar Newman in what he calls defensible space design (MacDonald 19). Les Chartrons Residence and the Maastricht Historic Quarter both use courtyard configurations successfully creating both a secure living environment and an interesting place of meeting.

Les Chartrons Residence by Marzelle, Manescau, & Steeg

Maastricht Historic Quarter Apartments by Mecanoo

One design that successfully uses courtyard design is the Del Carlo Court by Daniel Solomon and Susan Haviland. The building is shaped along the street which creates a continuous urban wall and a private interior space that does not compete with the congestion of the city (Buki 2). The courtyard is described as a meeting and passing place, where people cross the court to do laundry, to retrieve mail, to visit neighbors and to access the garages. High quality materials were used on the exterior and while this strained the budget for the interiors, an alternative approach was invented. The director of the project found items from junk shops and thrift stores that could be reworked and used to make the building beautiful.



Del Carlo Court by Daniel Solomon

Multi-use:

Building higher-density buildings speaks to ecological design, but what other functions can we integrate into this building that will not only assist the people living there, but decrease the amount of energy that would normally be used to travel to these functions? What other uses can the project have besides housing? Since lower-income individuals may not always own a car or have an easy means of transportation, what are the necessary services that can be provided close to

an individual's living quarters? Shops that provide groceries, pharmacies, medical services, childcare, education facilities, and other retail and offices that would reduce unnecessary travel and also provide employment close to home would be a positive approach in integration.

Individuality:

Housing, whether it be affordable or not, must be seen as a continuous part of the urban fabric, and for the residents sake, it must be part of a broader context rather than a separate enclave that can be isolated or stigmatized (Davis 98). However, each individual in the crowd must be recognized. The ideal would be to build each home in accordance with the specific needs of the user, but in most multifamily residences, the architect does not know who that will be, nor is the permanence of the resident very certain. Economic constraints usually restrict the amount of differences one can design between individual units, but nonetheless, every effort should be creatively made to differentiate one person's home from the next.

A place to begin would be to conduct interviews of a wide range of the *types* of people that will be living in the project. This may not mean interviewing the exact person that will live in a particular unit, but the purpose is rather to get an idea of the qualities of a particular group. How does one design a specific home for an unspecific client? The qualities extracted from interviews and general research into a particular culture can be used as a basis for general design. The architect should make moves to incorporate many users' personalities into a greater context, but do so in a somewhat economical fashion.

A building enclosure can function as more than just shelter from the elements. The materiality of this enclosure can speak about many issues, such as the activity taking place in the interior, who is occupying the interior, the permeability of certain spaces in themselves or in relation to others or even the nature of the building itself. The materiality of the building should not only be durable and secure, but add a rich quality and texture to the building. Perhaps a somewhat economical means to presenting differences among separate units is using a few different materials to clad the exterior of a building. Since it is not practical to design fifty units with completely different materials,

the method in which the materials were constructed, placed or presented would have to vary in order to successfully achieve distinctiveness. One strategy that might aid in this would be an articulation of the facades in which these materials are placed. If a single façade or elevation starts to vary between units, the materials placed upon them, even if they are similar, will not seem quite so routine. A fragmentation of design will be the only way to reflect the diversity of people and goals, economic individualism and social and physical mobility. A variety of forms, spatial relationships and materials will achieve a purposeful chaos within a specific order (MacDonald 25). Also, are there specific materials that can be used in creating a building less expensively? If so, those materials should be used only if it can be done in a manner to bring quality and richness to a building.

Materials: selected examples

A project by Steven Holl begins to illustrate individual units within a larger context in a simple and elegant fashion. Although the apartment complex is only 28 units, 18 different variations of apartment types were designed to interlock while being articulated on the exterior of the facades. The construction joints and detailing in the concrete walls hint at what is happening within the building. The spaces within vary greatly, with changing levels and movable walls and panels that allow for the individual tenant to change and adapt the space as they see fit.

Steven Holl: Hinged Space/Void Space Fukuoka, Japan

Ecological concerns:

Ecological designing techniques can be applied to save money for the residents in the long-term. This strategy might bring forth a higher initial cost, but will save tenants money when paying for electric, heating and cooling bills. Even simple, passive ecological strategies such as designing for proper thermal heat gain and mass, adequate ventilation, and sufficient insulation will be helpful for saving money. If the budget could allow, active solar systems can be employed. These practices can have other benefits as well. For the occupants, the ecologically designed building can exude an atmosphere of well-being through the presence of light, water, greenery and materials (Fox 107).

Recycled materials can be both energy efficient as well as less expensive, and probably have more character than a standard factory produced material. Recycled paper materials can be transformed back into wood products, while old soda bottles, rubber, nylon and discarded carpet can be remade to form flooring materials and other products (Susanka 188). Materials with a past life may prove to be more comfortable and qualitative than brand new materials. What makes a home a home is the memories, the history of what has happened there, and the feeling of life in the building. Using materials that are brand new sometimes takes away that feeling, as if starting from scratch. Often residences built brand new today are built so quickly and standardized that it is devoid from a sense of place, time and history. Recycled materials might help residents feel a connection to the past.

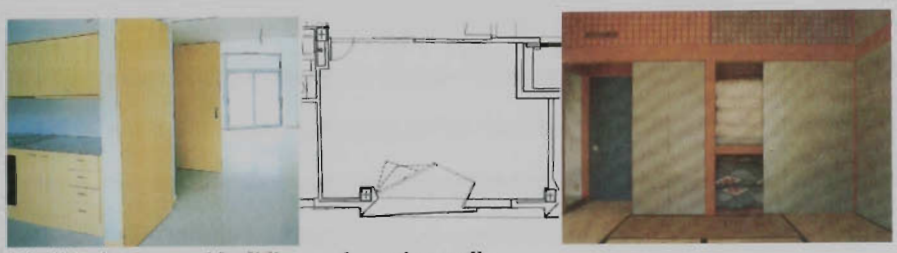
Permanence and flexibility:

What is really the purpose of affordable housing? We know it is to provide adequate homes for people who cannot afford them. Most people hope that in giving low-income families something to start with, it will enable them to slowly be able to move out of subsidized housing into a regular situation. Therefore most people see affordable housing as only a stepping stone, as something impermanent and temporary. It has already been said that temporary shelters and constant moving around is not very healthy for children or families because it allows them to become unattached to a place of dwelling. So even though it is hoped that low-income families eventually rise above this situation and provide better lives for themselves and their families, perhaps the architecture that surrounds them is a more permanent and stable situation. The thought of owning a home, condominium or townhouse could have very positive effects on a person who feels hopeless about their situation. In many cases, affordable housing can begin as a rental with the option to buy after so many years. This incentive not only provides the motivation to care for and invest money into a place of dwelling, but also the encouraging feeling of creating a home with memories and experiences.

How does an architecture begin to create these feelings of permanence and stability, a place where a family can live, grow, play, learn, relax, share and feel comfort? What happens when the architect is dealing with an unknown client? What opportunities does the architecture have to engage the dweller in making that house into a home that will encourage these activities?

Because our purpose is still to create a living space that is tailored to the needs of the user, a method for making that space flexible and adjustable will be the best solution when working with an unknown client. Since we can not design multi-unit housing to suit everyone's specific needs, allowing the user himself to change and adapt the space as they see fit is the most apparent answer. Different sizes of apartments will be necessary for different sizes and types of families living in this building, so in what ways can the architecture respond to that? Some possibilities include providing movable walls, whether it is sliding doors, walls, partitions or unattached screens. Using this strategy will allow the resident to make spaces larger or smaller as they see fit, and change

their own space as time passes and family size either increases or decreases. For example, parents with children who have moved away can transform a private bedroom into a larger living space or a study or exercise room. If a new member of a family is added, a private study can be transformed into a nursery and so on. This allows families to become attached and comfortable in a place as time passes, rather than having to move every time their situation changes. Because it is unknown who will live in each apartment beforehand, the space becomes flexible enough to handle a wider variety of clients, therefore making the project more appealing to a larger group, and possibly even saving money in doing so.



Flexible Spaces – with sliding and rotating walls

This process lets an apartment be adaptable to just about anyone, and therefore families don't have to be turned away when the correct size apartment is not available. The idea of flexibility also gives the renter a high degree of independence and control over their own space which is so important in dwelling. This may even continue from the interior to the exterior. Even the simple act of pulling the shades to either block or allow light or to insure privacy or publicity are things that give control over a specific space. What other acts such as this can enable the user, from interior or exterior, to manage their needs and preferences? Perhaps a building material becomes like a window shade that we apply or remove depending on what the day entails. A space like this allows the resident to interact with the building and grow attached to his or her surroundings. This attachment is what motivates people to care for their surroundings.

An example of flexibility is shown in the Diagoon Houses in The Netherlands. They are in principle, incomplete by design. The plan is that the occupants themselves decide where they will sleep and eat. Each part of the unit can be divided off to make a room, and the rest of the space is a living area that runs throughout the house. There is a framework that holds constant in which glass or opaque panels can be adjusted (Hertzberger).

Diagoon Houses by Herman Hertzberger (the Netherlands)

Another scheme is stated by Janek Bielski from Six Housing Prototypes from Los Angeles. In this case, the proposal maximizes the useable space between private property, with the assumption that interaction can occur on more levels than solely "public" or "private." At one extreme, residents may choose to maximize their own private space while at the other; they may choose to develop more communal functions which may entail recreation, day-care, workshops or even parking. This project also challenges typical housing forms and typologies by using a hybrid housing type and eliminating wasteful side yard conditions and changing front and back setbacks. The result is a solid-void configuration, the voids which become gardens and outdoor space. The houses themselves may expand, contract or be shared with neighbors, offering a wide variety of lifestyles to tenants (Bielski 29).

In observance of users being allowed to make changes themselves, Frank Lloyd Wright developed a way to "build-it-yourself" in his Usonian Automatic Houses. Anyone with little skill and a lot of patience could in turn design and build a house that fit their own needs. It required only a form work, concrete and light metal rods to pull everything together. Although this build-it-yourself concept is attractive in many ways, it proved difficult for someone with an 8-hour a day job, along with the complications of handling concrete. However, the principal remains constant; the idea of the standardized unit with "do-it-yourself" changes is practical.

Affordability and Size:

The issue of reducing cost requires a thorough examination of our typical ideals about housing and how much space we need to live. First we can move away from the idea that every space must have an assigned function. Many spaces can be used for more than one function, and in the

extreme, a large space can be used for living in the day, and for sleeping at night with a series of dividing partitions. Codes and regulation make this idea harder to put into practice. The design should start with the maximum amount of space that can be provided for the given budget, rather than what the minimum required square footage should be. But how much space is enough? Le Corbusier found "that a human cell of fourteen square meters per inhabitant could provide a basis of calculation..." (MacDonald 28). Le Corbusier then designed apartments for working class families on this basis, but he admitted himself that "the one person that won't want to live in them is *the worker!*" But the goal in architecture should not be to force such space constraints upon anyone, because we cannot say how much space is needed from one person to the next.

In what ways can space be reduced to save money? Although we do need enough space to perform our daily rituals peacefully, careful planning will allow excess square footage to be reduced. One plan is to reverse the typical two-story home layout and place the living space upstairs. This allows the living area to span the length of the house and reduce plumbing cost by placing the bathroom on the first level (Davis 103). Simple lofts can also be constructed in order to add more sleeping space in a room, without the added cost of increasing the exterior envelope. Following this move, what can be done architecturally to make a small space feel larger? Vaulted ceilings on a second level can not only make a small space seem airy and light, but it also makes use of an otherwise unused attic space. Eliminating interior walls where possible, especially in living areas leaves space unobstructed and therefore emits a larger feeling. Large windows that allow for as much light as possible to enter every dark corner of a room may also enlarge a space (Davis 105). Eliminating hallways or at least limiting space dedicated to hallways will aid in a better use of precious space as long as circulation is adequately provided for. When hallways are unavoidable, widening them to create storage or doubling their use with a nook or sitting space will make this portion of the square footage seem useful and significant.

The Cost of Design:

One important element of low-income housing is that the building not appear to be low quality. When it comes to selecting materials, developers need to select materials that are long lasting and

sturdy as well as beautiful, and embellishments such as decorations, awnings and flower boxes, while they may be deemed unnecessary, really are imperative in making a place livable and distinguishable (Davis 64). Because efforts are made to individualize design, this often means providing outdoor space and separate entrances, but because of the square footage added, the approach means more dollars. Because affordable housing should appear to be just as high in quality as market-rate housing, the costs of designing and construction will probably not differ too much. Ideally, extra costs would be subsidized, but in any government or privately funded project, there is always a tight budget. The design should use the most economical means possible in order to end with the highest quality of dwelling.

Construction Costs:

Multifamily housing of low-density or townhouse type is now preferred with affordability issues because the cheapest materials are studs and sheathing or masonry construction. This process is a highly labor intensive placement of small items, but building methods have become streamlined. Lumber in standard sizes, power-nailers, construction adhesives, pre-manufactured connectors and pre-made windows have allowed builders to save time and money (Davis 67). Careful attention however, must be given to the way these materials and methods are construction in order to not fall into the same traps of a homogenous building that has saved time by doing only what others have done before. If money can be saved in the construction efforts, a greater percentage of the funds available can be used in a greater quality of materials and more space. If square footage can be reduced so that it is still comfortable, then the construction of spaces can be better designed.

Is there a way to cut construction costs further? It is a hopeful idea that the residents of the future housing complex could aid in building it, but as seen in Frank Lloyd Wright's Usonian Houses, this is not as practical as we would like it to be. Also, in creating a medium density building that may include three to four or even more levels, the construction of this becomes too dangerous for a non-experienced person. Having residents construct their own home would work better in the building of single-family housing, where the construction is on a much smaller scale, such as the

case with Habitat for Humanity projects. It is probably safe to say that a project of this size would have to be built by professions construction workers.

Charity:

What is it that inspires us to help those in need, or that allows the means for us to do so? Although some could argue "every man for himself," why feel a responsibility to those around us who have less means? To merely survive, a human being needs shelter, clothing, food, warmth and medical care, but what a person really needs to *live* is much more than this. Michael Ignatieff states that "need is a vernacular of justification, specifying the claims of necessity that those who lack may rightfully address to those who have" (27). What is it exactly that binds those with more to help those with less? In the end all human beings have a common identity with the feeling of hunger, thirst, cold, exhaustion, or loneliness. Beneath the differences of income, there is a mutual responsibility (Ignatieff 28). My project, above all, strives to find a solution which allowing inhabitants to live a productive and comfortable life within a diverse environment.

Precedent Study
WoZoCo HOUSING for the ELDERLY
29.09.03

The outskirts of Amsterdam, built in the 1950's – 1960's, are confronted with immense enlargement in density that continues to threaten their open green spaces, the most important part of this part of the city. The WoZoCo Housing block is located in this vicinity.

WoZoCo stands for 'operations for senior citizens that will be transformed for the young.' The population of the elderly has also been increasing and a demand for adequate dwelling units for this demographic was brought forth. Proposed was a block of 100 apartments for residents over the age of 55, which could be seen as an extension of the existing typologies of housing for the elderly. The intention of this project was to provide living units that would offer its inhabitants a high degree of independence. Another prerequisite was that once the 'grey wave' dwindled, the dwellings could comfortably accommodate a younger assembly as well. MVRDV, a Dutch architectural firm was to be the architect of the project for the client Het Oosten Housing Association.

Analysis: In choosing to offer inhabitants a high degree of independence, the housing units are able to articulate a greater amount of individuality and distinctiveness. In this case, the architecture allows for the expression of uniqueness in an inhabitant and gives each unit assorted and separate views from both inside and out. In the spirit of conservation, the project allows itself to be transformed and adapted in the future for a different function. Also, by designing partly for a young crowd, the older residents felt as if they were in a modern space, one fit for a youthful type, hopefully making them feel younger in the process.

The Netherlands AUP regulations require adequate sunlight to be allowed into buildings surrounding the project, giving the housing block certain height, length and width dimensions. Using these dimensions, only 87 of the 100 apartment units could be contained in the block. If the remaining 13 units were put elsewhere on the site, then the green space would be further reduced. A deeper block with narrower units was not possible to allow enough sunlight into the units themselves. It was not possible to build North-facing apartments in Amsterdam due to the climate. As a result, the decision was made to cantilever the remaining units from the North façade, giving them an East-West orientation and keeping the ground level free. The North façade is dedicated to circulation and entering individual apartments.

Analysis: Not only was MVRDV able to give these 13 units and the entire building a dynamic appearance, but the ability to inspire. Would the elderly dare to live in such suspension? As it turned out, the residents of these apartments were particularly excited about it. One woman was thrilled by the fact that her apartment shifted vertically while jumping on it.

The cantilevered units are literally left suspended in the air. This allows for a welcome expression of the street. An economic layout of the main block was able to save about 10% of the total cost, which was enough to compensate for the 50% increase in structural costs due to the cantilevers. The party walls were constructed 8 cm thicker than structurally necessary which provided sound insulation and also allowed for the connection of the cantilevered trusses without actually forcing

an increase in the weight of the load-bearing walls. And as it turned out, the budget actually ran out, leaving some of the interior walls unfinished.

Analysis: By saving money on one element of the design (a uniform block), MVRDV was able to invest the savings into a dynamic, representative factor which completely changes the character and feel of the building. The unfinished interior turned out to be a happy accident. The residents thought of the spaces as modern ones with partitions and screens, rather than space lacking walls. This also allowed them to feel as if they were in a house for the young.

Because the block was fairly uniform, something had to be done to distinguish one unit from another. The flats themselves are fairly similar in plan and section. But each flat begins to be defined by altering the window patterns in each unit, allowing for unique views and vision. The balconies that extend from each dwelling are different sizes, and are clad in different materials. Those balconies clad in glass are given different colors. This strategy makes for an interesting elevation and identifies a particular unit in the crowd.

Analysis: Simple moves such as these are able to bring beauty and a pleasing feel to the building without too much added cost. A dense housing project is able to be articulated in such a way that makes the atmosphere not so dense.

WoZoCo Housing for the Elderly

Stats:
Architect: MVRDV
Site: Ookmeerweg St.
- Amsterdam
- The Netherlands
Completed: 1997
Size: 10,000 square meters
Program: To house 100 units for the elderly that may someday be transformed for a younger age group.
Site conditions: Due to codes in The Netherlands, the project could only be so tall and wide in order to allow sunlight into surrounding buildings. Therefore, only 87 of the units could fit into the block. The architects wished to keep as much open/green space as possible surrounding the building due to the increasing density of the area. MVRDV decided to cantilever the remaining units from the North facade.
The Units: Floor plans and sections are kept very similar in all of the units. Individual units are articulated through the use of window pattern, and balcony size, color & material.

ANALYSIS:

The apartments are literally left suspended in the air. Would the elderly dare to live in suspension? Fortunately it turned out to be a positive move. One resident was particularly excited about the fact that her apartment was like a springboard when jumping on it.

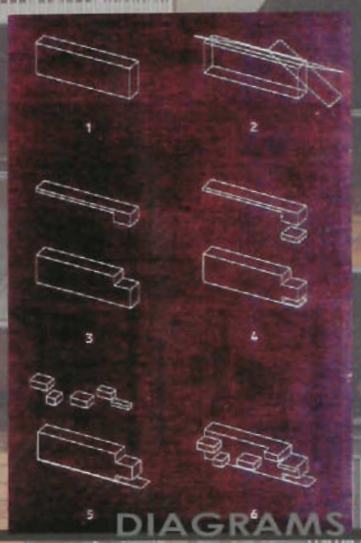
The building is planned with anticipation of the future. Hopefully this project will be able to be transformed in the future when a need arises for it. At the least, this strategy conserves materials and energy. Also, by designing with sensitivity for more than one demographic, some interesting consequences came about. The current elderly residents felt as if they were in a space for younger people, both on accident and with intention.

This project sucessfully takes dense multi-familiy housing and gives each unit its own identity from the exterior, as well as the from the interior. The economic layout of the block allowed for funds to be invested in the aesthetically pleasing cantilevers.

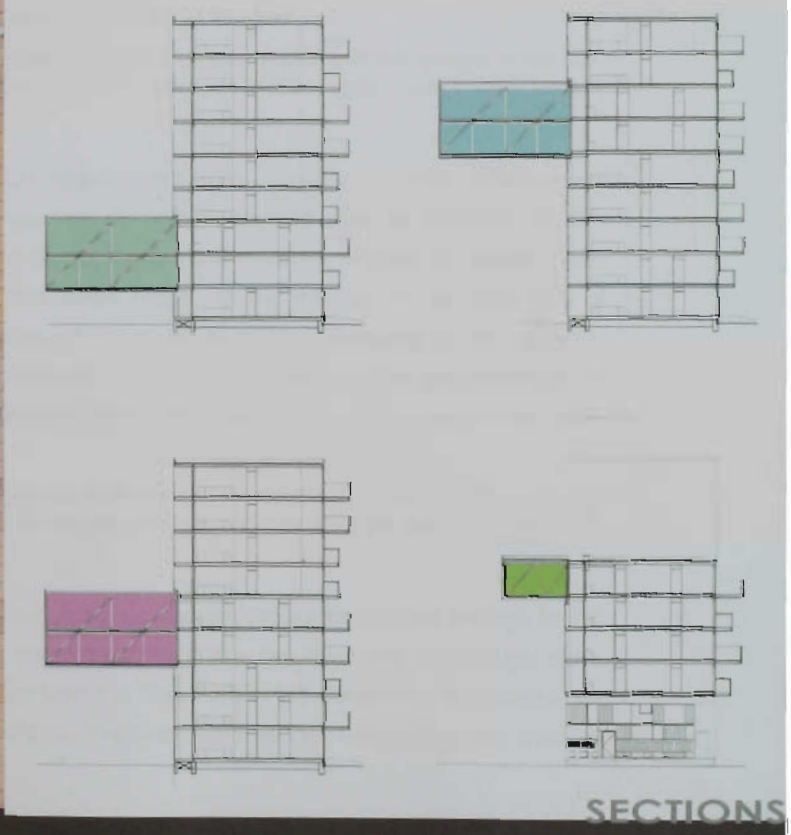
RECEDENT STUDY

WoZoCo Housing for the Elderly

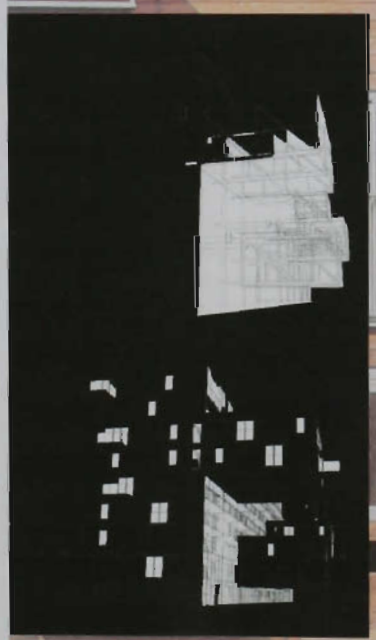
ELEVATION



DIAGRAMS



SECTIONS



Precedent Study
VOID SPACE/HINGED SPACE
29.09.03

The Nexus World Kashii project in Fukuoka, Japan consisted of two housing towers surrounded by low-rise condominiums designed by Steven Holl, Rem Koolhaus, Mark Mack, Osamu Ishiyama, Oscar Tusquets, and Christian de Portzamparc. Nexus stands for the link between the present and the future, or next world. The developers see this community as a cultural link between rapidly Westernizing Japan and the Western world. The six condominiums are comprised of 192 units in a new town with an orderly site, rather than an overcrowded Japanese city.

Analysis: The developers chose to employ 6 well known architects to design for these condominiums. A sense of competition and coherency is evident throughout the expanse of the project. The result was a very high-quality set of dwelling units (in part due to the careful construction that is well known in Japanese contractors).

The building form in this case echoes the curve of the street as evident in the shops at street level as well as the building's spine. The building is comprised of 5 basically uniform blocks that are laid out around 4 South-facing courts, the floors of which are pools of water. The courts offer to the people walking along the spine constantly changing views and an opportunity to socially interact or reflect. Sited in Japan, Holl chose to use reflection/meditation pools as a source of unity between the units. All of the units have sight of these places for contemplation. Three corridors run the length of the spine, the first at the level of the pools, another on the second level that provides access to the homes, and one on the top level that opens to the sky.

Analysis: Holl attempted to accommodate a specific lifestyle and cultural characteristic specific to this site. Holl successfully provides a high level of privacy within the units, while allowing for a comfortable amount of interaction between neighbors.

The project is simple and minimalist in nature, reflecting a monastic quality responsive of Japanese life. The articulation of the units breaks away from simplicity to form 18 different typologies for the 28 units. The elevations on the ends of the blocks are key-like in nature: notches of different sizes offer clues to the spatial composition that takes place on the interior. Further hints at the complexity within are evident in the pattern of concrete joints along the walls on the exterior. Aluminum carefully set into the concrete expresses the interlocking nature of the units. Nearly all of the units occupy two levels, and many are further exploded in section to create many levels within one.

Analysis: Even through the simplicity of the forms, Holl was able to express the nature of the variety of housing types within the project. In this case, the interiors are very different from the next units, while it is not apparent immediately from outside.

The project is based on the Golden Section, giving it a rigorous proportion carried through to the individual units, placement of windows, the corridors and the first level shops. Although Holl's project appears serene and straightforward from the street, it is in the details that the playfulness and complexity is hinted at from the exterior. The stark volumes are relieved by the window

patterns that are as diverse as the spaces within. The concrete bearing walls and structure are softened by interior elements. Floors, doors, cabinets and hinged elements in colored wood begin to bring warmth to the interior. The colored hinged wood partitions swing in an arc somewhat untraditionally to ordinary Japanese movable screens. This element provides for the opportunity to change and manipulate spaces as the user sees fit.

Analysis: Again, the architect incorporates a technique very unique to the culture with moveable panels. This allows for a change in tenant while allowing for that space to become characteristic of whoever is living there at the time. Through simplicity, this project begins to make a rental unit feel like a home.

Void Space/Hinged Space

Stats:
Architect: Steven Holl
Site: Fukuoka, Japan
Size: 28 Units
Completed: 1991
Program: One of 5 new housing units in this relatively undeveloped city.
Design Strategies: The project consists of 5 basically uniform blocks laid out around 4 South facing courts, the floors which are stretches of water. Being in Japan, Holl designed these 'void' spaces for meditation, in isolation from the everyday lives of the houses.

DESCRIPTION & ANALYSIS:

Three corridors run the length of the block, one on the level of the pools, one that opens up to the sky on the top level, and last that provides access to the home on the second level. The corridors are used by the residents as a common area for social interaction.

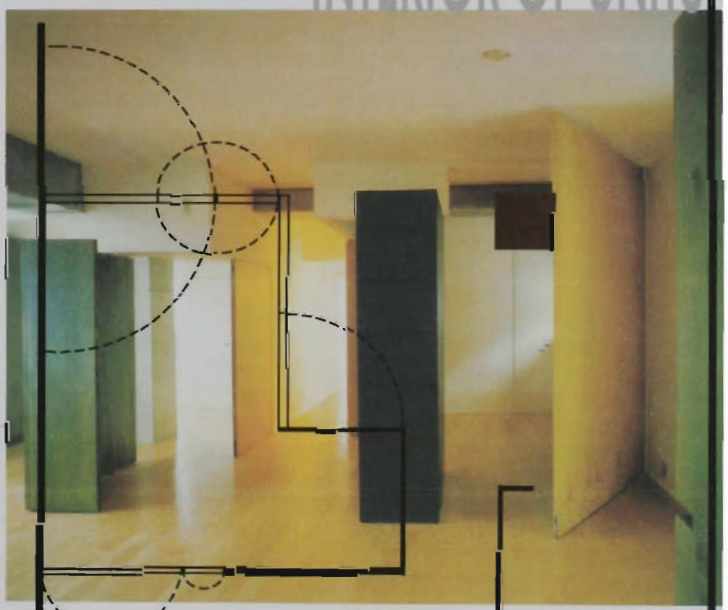
Holl uses the concept of multifunctionality for the individual units, which is characteristic of Japanese houses. Moveable screens, cupboards, and pivoting panels adapt the configuration of the house to suit the owner. Even though there are 28 units, there are 18 variants on 5 different typologies. The assembly of these variants in turn affects both the ground plan and section. This gives each unit a different character on the interior, but also, this character is expressed on the exterior of the building. Clues to the complex arrangement of the interior appear within the joints in the concrete on the exterior. Holl's stark volumes are relieved by the windows, whose patterns are also diverse as in the last project. Even the though the majority of the building is made from somewhat cold-feeling concrete, the interiors are softened with floors, doors, and hinged elements of colored wood.

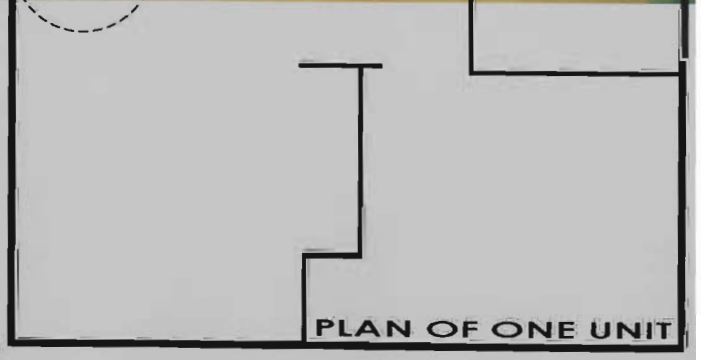
Void Space/Hinged Space

EXTERIOR WALKWAY

INTERIOR OF UNITS

BUILDING SECTION





PLAN OF ONE UNIT

Precedent Study
Comparison of Precedents / Relation to thesis
29.09.03

Holl does a successful job of providing an apparatus that combines meditation and privacy with interrelation and communication. Architecture in this case is seen as a mechanism to facilitate the various requirements of life, material as well as spiritual, rather than creating imposing conditions which is so important when designing places of residence. Holl takes into account the characteristics of those he is designing for, even without a specific client. The assembly of the 18 unique housing patterns affects both the ground plane and section, evident from interior and exterior. Consideration is taken to articulate the individuality that comes with living in a specific place.

MVRDV's design strategies are more rooted out of necessity due to code and site issues. The results however are a dynamic and exquisite presence within a sea of multifamily housing. Rather than designing for the specific group/client, the architects project and define with architecture an implied way of living. This project also expresses individuality of the units, perhaps more bluntly. The economic implications are also interesting and helpful as a study, since my project will hope to challenge the economic conditions.

"It isn't an exercise in the way people can live or be housed, there's no money for that. It's about humanism and the way it can be managed. Its an image of a 3-dimensional life in a space, that is to say, the apartments are actually connected in all 3 dimensions, with a hub of life along the gallery as well." – Winy Maas of MVRDV

Both projects do a successful job of designing for an unknown client, or rather a group of unknown clients, which will be the case with affordable housing. Both show the individual's right to express themselves within their place of dwelling, or at least be expressed through means of architecture.

Program Precedent

Unite d'Habitation: by Le Corbusier

'...I have decided to make beauty by contrast. I will find its complement and establish a play between crudity and finesse, between the dull and the intense, between precision and accident. I will make people think and reflect, this is the reason for the violent, clamorous, triumphant polychromy of the facades.'

-Le Corbusier

FACTS:

- The commission was given in 1945, and construction began in 1947, taking 5 years to complete.

Up to 1600 people live in this a single-slab 'vertical village', complete with an internal shopping street halfway up, a recreation ground and children's' nursery on the roof, and a generous surrounding area of park land made possible by the density of the accommodation in the slab itself.

LeCorbusier addressed some of the problems of middle-income housing:

- different types of apartments corresponding to different needs: bachelors, couples, families with 2, 4, 6 or more children, etc.
- an independent structural frame
- question of lighting and sunshine
- extensions of the dwelling

STRUCTURE/FORM:

-The pilotis raise the building 8 meters above the ground, leaving it free.

- Le Corbusier capitalizes on the roof terrace as usuable outdoor space, and thought that it was an important element in the social function of the apartment block.
- Interior streets on the 7th and 8th floors house shops and the roof terrace has a nursery school, gymnasium, a running track, a small tiered theater and artificial hills for young children.
- The structural framework is of reinforced concrete, and the floors, ceilings, and walls of the apartments are independent of this framework which makes the soundproofing perfect. This is part of the sucess of this building, providing privacy with communal living.
- Between the load-bearing walls, the space is a free volume.
- In an ingenious use of space, two-story apartments interlock, so that an entrance corridor and elevator stop are required only at every third level.
- As a result, apartments typically combine bright, double-height sitting rooms on one level, with long, narrow bedrooms on the other.
- Twenty-three different apartment configurations were provided to acccommodate single persons and families as large as ten with deep balconies that form the major external feature.
- The deep balconies provide the opportunity for sun louvers which was well studied by Le Corbusier.
- On one side of the corridor you may enter an apartment's lower level, taking up one side of the building, and climb the stairs within the apartment to a double-aspect floor of bedrooms above; on the other side of the corridor you may enter the neighboring apartment's upper level, and descend to the double-aspect floor below.

"This is the most inspiring part of the building. It is the perfect place to meditate, walk and dream, high in the sky amid sculptural forms. It was designed as a meeting place yet one can also find exquisite solitude here, it allows a remarkable synthesis of exchange and contemplation."

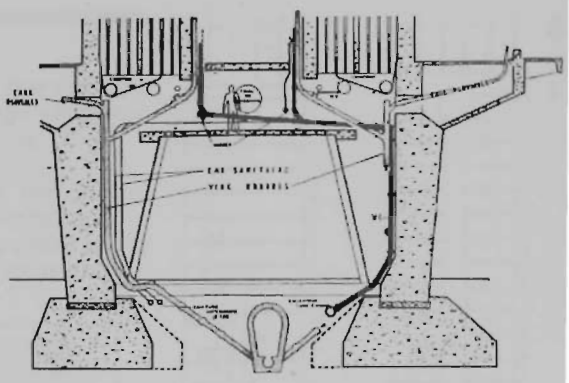
- Eric Broquere, a resident

Program Precedent

Unite d'Habitation: by Le Corbusier

SYSTEMS:

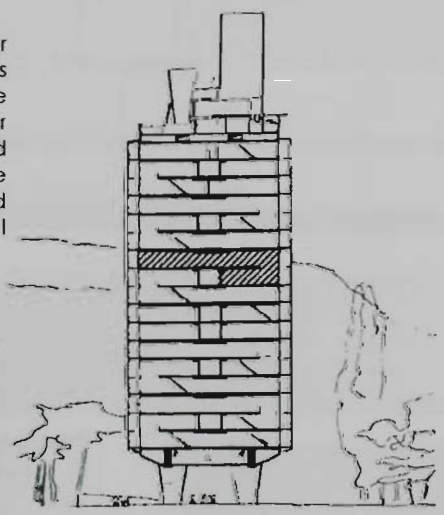
- A double row of pilotis supports the reinforce concrete framework, below this is a subsidiary service floor. The pilotis contain drainage and waste disposal shafts. This space underneath the building also contains the air-conditioning plant, elevator machines and diesel generators.
- The artificial ground level is divided into 32 spaces which house technical installations: to the left, the artificial ventilation machinery and right, branching off of air ducts to the individual floors, also the collecting sewerage line.
- The entire piping and duct system is visible and can be easily repaired in case of breakdown. All the utility lines were laid in place before the concrete was poured. The piping chase columns and rainwater pipe columns are united in the artificial ground level.
- Although the apartments are deep, they are well-lit and the lighting is carefully controlled.
- The plumbing system is meticulously planned.
- Each apartment is air-conditioned.



THE SITE:

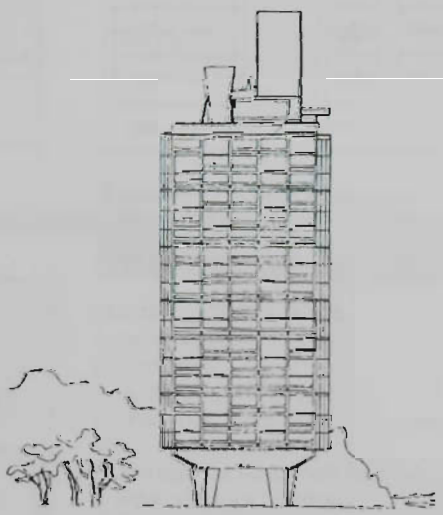
- The building is situated in a large park, its main elevations facing East and West. The North elevation is completely closed (without fenestration) due to the cold winds from that side. The building 165 meters long, 24 meters deep and 56 meters high, containing a total of 19 floors.

In the section, the interior streets are evident as well as the configuration of the apartments with each other vertically. The building is lifted off the ground with massive sculptural columns, and topped with a sculptural garden on the roof.



La coupe transversale

Transverse Section



La façade sud

South Elevation

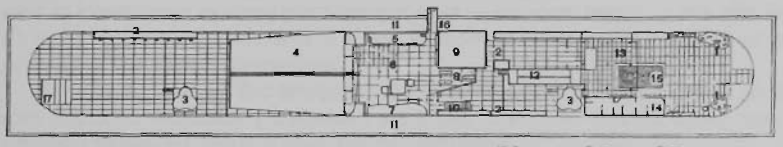
Le Corbusier uses the means of egress as a sculptural form once again when designing the fire stairs. They are poured in concrete and pulled away from the building as a separate form.

Program Precedent

Unite d'Habitation: by Le Corbusier

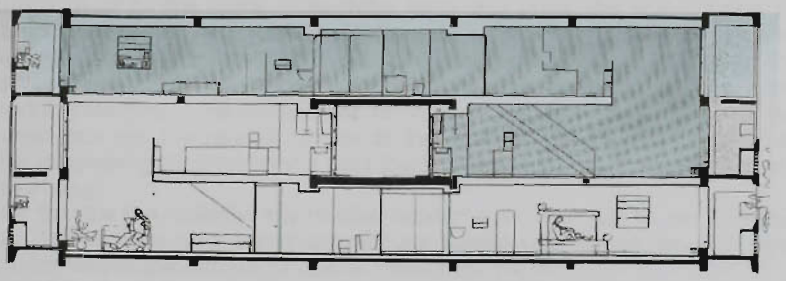
PLANS/ALLOTED SPACES:

- There are 337 apartments located on 17 floors.
- There are 23 types of apartments.
- Each apartment contains two floors connected with an interior staircase. The living space with a height of 4.8 meters extends over 2 floors. A large window of 3.66 meters x 4.8 meters allows a full view of the surrounding landscape.
- The interior streets/circulation spaces only occur every third floor.
- Other spaces that occur within the building are a running track, gymnasium, garden, swimming pool, a bakery and fruit stand, a hotel, a bar-restauraunt, a florist, butcher, and hairdresser, a nursery school and a small theater taking place either on the roof, or within the interior streets on the 7th and 8th floors.

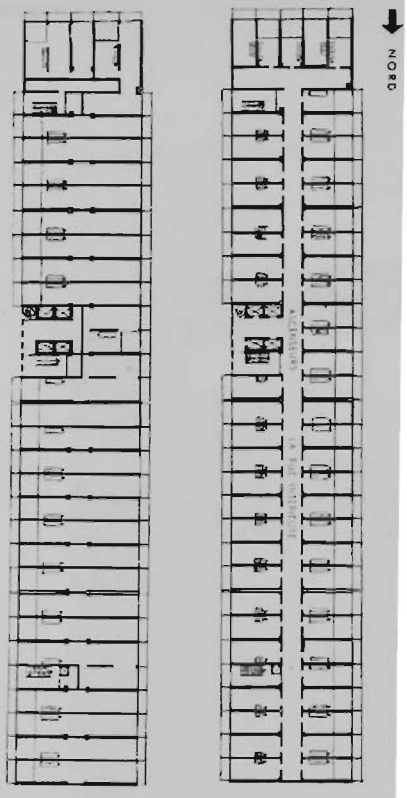


Plan du toit-terrasse

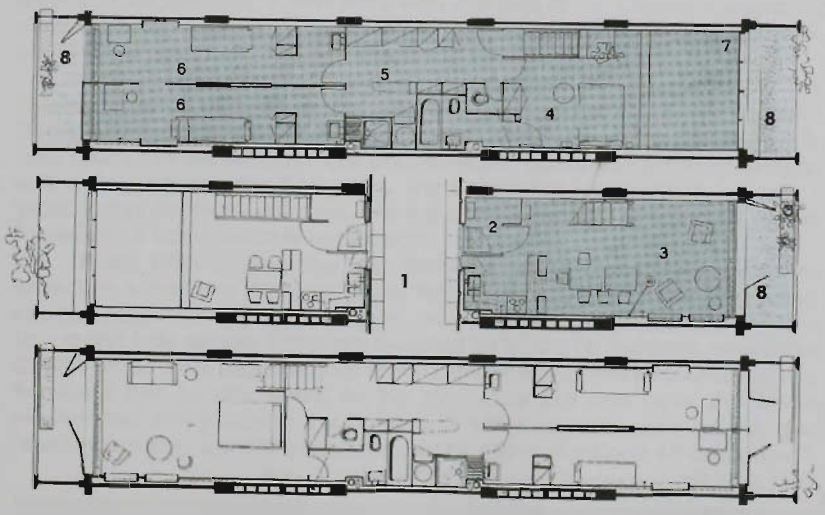
Plan of Roof Terrace



Section of 2 interlocking apartments



Plan of 2 typical floors



Plan of Individual Units

PLANS/ALLOTED SPACES:

1. Interior Street
2. Entrance
3. Living Room with Kitchen
4. Parent's Bedroom with Private Bath
5. Storage for Children's Rooms
6. Bedrooms for Children
7. Communal Spaces
8. Balconies

Program Precedent

Unite d'Habitation: by Le Corbusier

A typical week at Unite d'Habitation:

"**Monday, 6:30AM:** The third floor bakery opens for business and the building stirs sleepily. Children in pajamas are sent to buy croissants, early dog-walkers head out of the lobby and the night security guard clocks off his shift. Little by little Le Corbusier comes to life. The first class of the day begins in the roof-top gym and grocer Bernard Perret sets up his fruit and vegetable stand.

A couple of tourists are breakfasting in the bar-restaurant after a night in one of the hotel's 25 rooms, which offer an authentic experience in cell-like, plain Corbusian living but are sadly devoid of original furniture, all stolen over the years and replaced by grim melamine. The hotel guests are mostly architects and students, and as they photograph and note each facet of the building, it's open to question whether it is the inhabitants who play the part of zoo animals or the visitors themselves.

Monday Afternoon: Eric Broquere, a pharmacist and writer, is alone on the roof terrace, wandering between sculpted concrete funnel vents and a stepped stage. His quote is seen on the first page.

Tuesday AM: Martine Ricoux, head teacher at a private Catholic school, is enjoying a day off at home. Before she first entered Le Corbu, she had no desire at all to live there. Marseillaise born and bred, she knew it only by reputation, and its architectural significance was of scant interest. But after visiting a friend, she was converted. 'It hit me immediately: the warmth, the atmosphere, neighbors dropping by. It felt special, a world away from the curtain-twitching small-mindedness of other apartment blocks. I loved the wood floor and fittings and, above all, the fantastic view. When I look out at the shimmering Mediterranean and the little white boats, it truly makes my heart sing.'

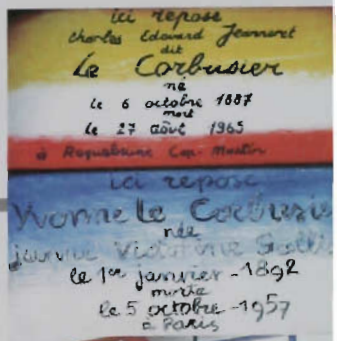
Her flat, like the majority, has double aspect: over both hills to the East and sea to the West and enjoys spectacular sunrise and sunset views all year round - one of the architect's appreciated inspirations.

Tuesday Afternoon: Clearing tables after a hectic lunch session, Jean-Marc Sialelli is tired but in good spirits. He and his wife Brigette took over the bar-restaurant in January and have revitalized it. Cheerless and empty under previous management, it now hums with activities like a Chinese calligraphy class, couscous soirees and something Le Corbusier, no matter how visionary, could never have foreseen: break-dancing sessions.

Friday 11AM: Margot Marananchi explains how she squeezed her four children, now aged eight to nineteen, into Le Corbu: she and her husband Dominique bought two neighboring flats and demolished the dividing walls. They now have an extraordinary double-width, double-height living area as well as four narrow kids' bedrooms. The conversion was carried out over 9 years, losing the extra staircase, altering bathrooms and stripping off plaster to reveal the bare concrete underneath.

Friday 5PM: Evelyne, the gym instructor whose classes resemble army work-outs, is taking a lethargic group through their paces. There are regular exercise sessions in the roof-top gym, as well as body-building apparatus, a sauna and judo classes. Rates are reduced for Le Corbu residents, who arrive by lift with no extra exertion, but a 300-metre running track around the roof terrace is free for all-comers. As the gym class pull and push, the Mistral whistles ferociously around the building. It will be a noisy night as the wind howls incessantly, battering windows and knocking plant pots off balconies. "

from "Le Corbu" Architectural Review vol. 201 June 1997



Interiors of Apartments

[re]LOOKING
SELECT – **REFLECT** – DISSECT
10.09.03

project description:
1. Select a man-made object that physically or experientially amplifies the body.
2. Craft a written essay which describes the selected object without stating what it is specifically.
3. Develop a series of dissections through the object that re-present tangibly what was written.

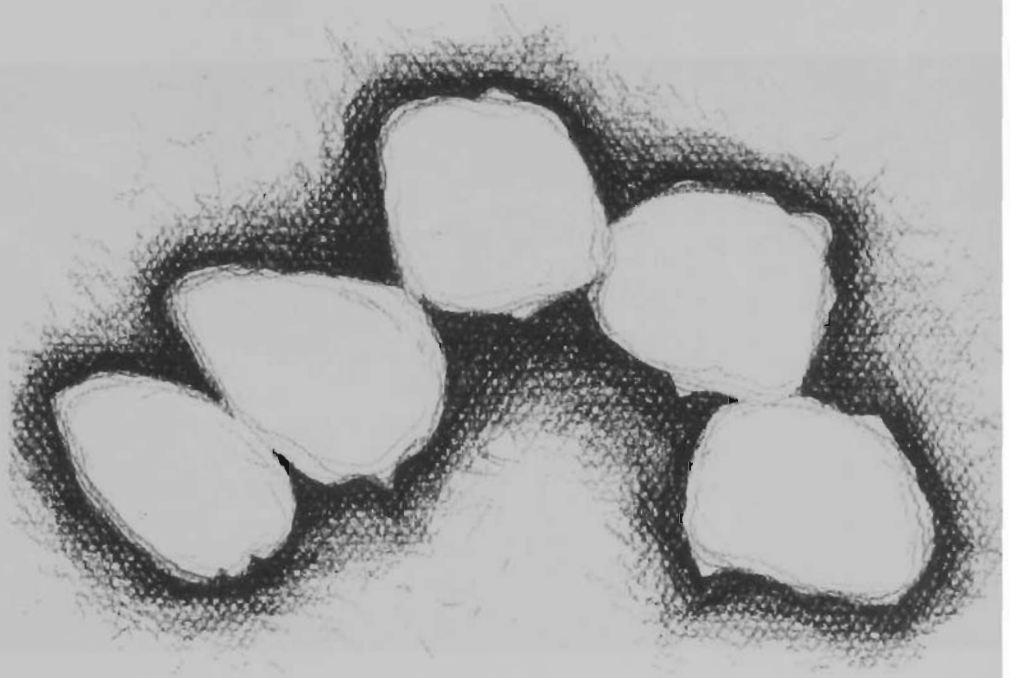
enter:
The body is inside. It is suddenly warm and surrounded. It is not constricted yet though. It is free to roam and explore. Light enters with the body, but disintegrates as it moves away from the one opening. Darkness is all that is left. As the body moves forward, there are many decisions to make! Which path to choose? A cavity disperses and becomes new trails for the body to investigate. The body is guided towards its correct path. The body begins to fill the object completely now. It is stopped at the edges. The object is tight against the skin now.

occupy:
The body begins to heat. It is surrounded and enclosed. A barrier. A buffer. The body is now protected from everyday life, from the outside world. All reality of exterior is lost. Detail is lost. Texture and sharpness are lost. Temperature is lost. The object fits against and around the body, taking its shape quite literally. It moves with and because of the body. But perception is altered as the object slows the body's movement and change. With it comes a kind of heaviness and clumsiness.

physical state:
The exterior is a direct reflection of the interior, which is a direct reflection of the shape of the body. Detail and articulation of joints and structure are lost however, in the thickness of the material. Surfaces that touch the body are smooth and comfortable, while surfaces that touch the world are rough and scratchy. Light is absorbed in the texture while shadows are lost in the thick grain. The fabric is produced in a weaving manner, lending strength and durability. Surfaces are continuous and without edges or stops. Only one opening is provided to the exterior but many thresholds exist inside. It is in these that the object is definable.

SELECT - REFLECT - **DISSECT**

an object that amplifies the body



temperature
shape
touch
feel
warmth
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negative
perception
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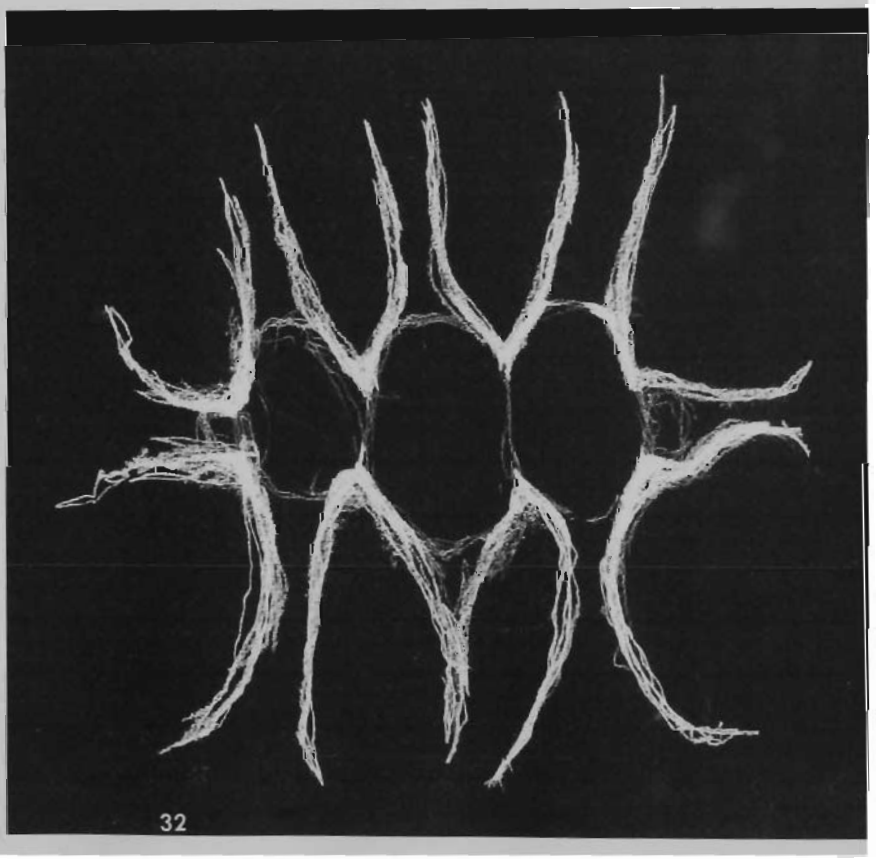
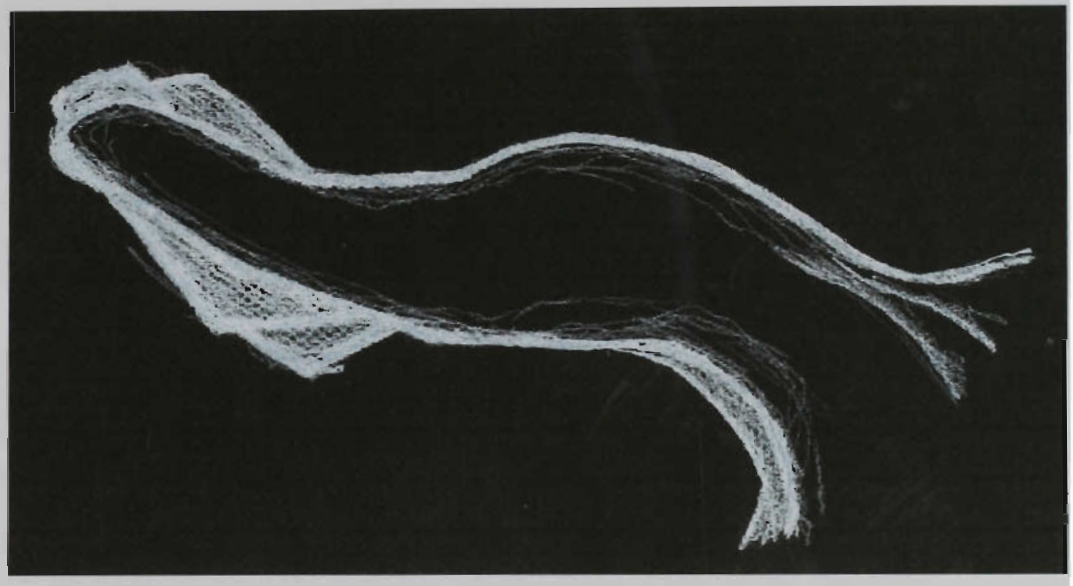
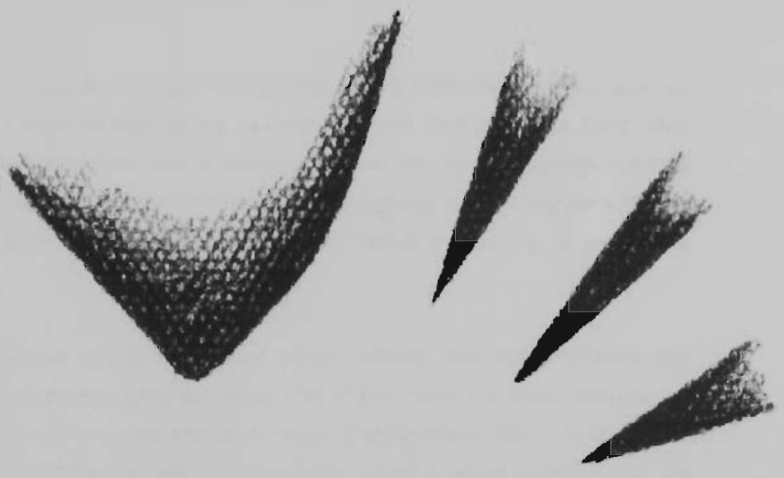
texture
movement
around
dark
cavity



SELECT - REFLECT - **DISSECT**

to reveal something etymologically





to amplify what is percieved to seek to see to uncover and reveal to dissect and represent to capture

[design] thinking
HOPE CHEST
10.10.03

project description:
given: Select a stranger and through conversation discover what is of greatest value to this person. This person will be transported to a strange and beautiful land where all one might need could fit inside a toy chest that they would bring with them from place to place.
search: Collect materials that have been discarded by others & transform them into a new state of being.
inhabit: Construct a full scale vessel that will provide well being for the stranger in their travels.

Value. Importance. Favorites. Happiness. Enjoyable. What brings my stranger these things? The world around him. The people around him. People. Interaction and engagement in conversation, in sharing. His friends, his loved ones, his family. He entertains, he socializes, he spends most of his time with those around him.

The objects collected were transformed into shapes unrecognizable of their original state. The objects discarded by others are no longer discarded. They are new, with little residue of the past. They are only strips, fragments, shells of what they used to be. How to take these fragments and build a vessel with them!

How would this stranger take his valued friends along with him for the ride? How would they be remembered in this strange and beautiful land? How will this suitcase of sorts convey what is important to him?

Why? Why is it that his family and friends are important to him? Why is it that friends are important to us? What do they do for us? How do they shape us and our lives? That is just the thing. They shape our lives. Everyone we meet somehow has an effect on us, on our own personality. We take from everyone we know some characteristic, some part of their being and make it our own. We do the same for them, intentionally or not. We are as individuals, merely a weaving of everything around us.

Strips of material. They are weaved into a vessel that wraps nothing, that holds nothing. The weaving of material reflects the stranger's greatest value. Part of the vessel is a blank canvas. It is unfinished, waiting for that right moment to add another piece. The fragments reach to the sky, in anticipation, searching for what will be. He will not necessarily know it when more pieces are added. He will realize later though. He carries it with him and remembers the past, probably oblivious to what the future holds.

HOPE CHEST
In relation to thesis:

The stranger with whom I conversed with was my client for the vessel I was to construct. My task was to design something that was characteristic of this person's personality. But in my architectural project, I will have no set client, as I will be designing for a changing crowd. Perhaps this was the purpose of a stranger: to take someone's values [anyone's values] and create an inhabitable space for them, but let it be adaptable enough for another to take over. Conceivably, this particular stranger's values were not so important, but only that there were a distinct set of values implied in the vessel. The vessel's intention was that of a changing object, in which layers could be added, subtracted or reformed.

Materiality: I was given the difficult task of making something out of nothing (or so it would seem). Collecting other people's used materials and transforming them somehow would be difficult if constructing a designed piece [*of architecture*]. Some materials were in a state of non-repair (or dirtiness) and others were more acceptable to be passed on to a *client*. My intention was to make these items presentable and unrecognizable from their previous state. The end result was a product that had little memory of the past, at least from the macro scale. From a micro scale, the material was clearly from a variety of sources and locations, and the fact that they had a previous purpose was shown. But would it be acceptable that to the passerby, the 'house' was not recognizable as second-hand? How much "roughness" should be allowed? Perhaps these materials would be well suited for interior skins or additive elements. Should a housing project, in turn, be obvious that it is constructed of reused materials? Should the material's other life be present in what it makes in this one? Will the inhabitant of the vessel (or house) appreciate that the material's past life is evident? Will they understand the significance of it? Or would they prefer to not know? How will the material of the inhabitation present the inhabitor to the community?

The vessel's structure was constructed of a used wire, making a frame for a material to be applied to it. Should there be a control in the project, a framework that remains stable for a separate material to intervene atop of it? Or should the framework be just as integrated into the weaving of the applied material for it only to act as a practical, sturdy structure? In all practicality, there must be some guidelines that continue throughout, and it is in the articulation of the additional enclosure that the form begins to break away from the standard. Perhaps the framework however is not of a completely different nature than that of the applied material. The stabilizing element may not be able to stand on its own; perhaps it is dependent on the non-stabilizing elements.

HOPE CHEST

to make something uncommon

GIVEN SEARCH INHABIT

HOPE CHEST

empathize

see

imagine

create

shelter

transporter

recieve

need

function

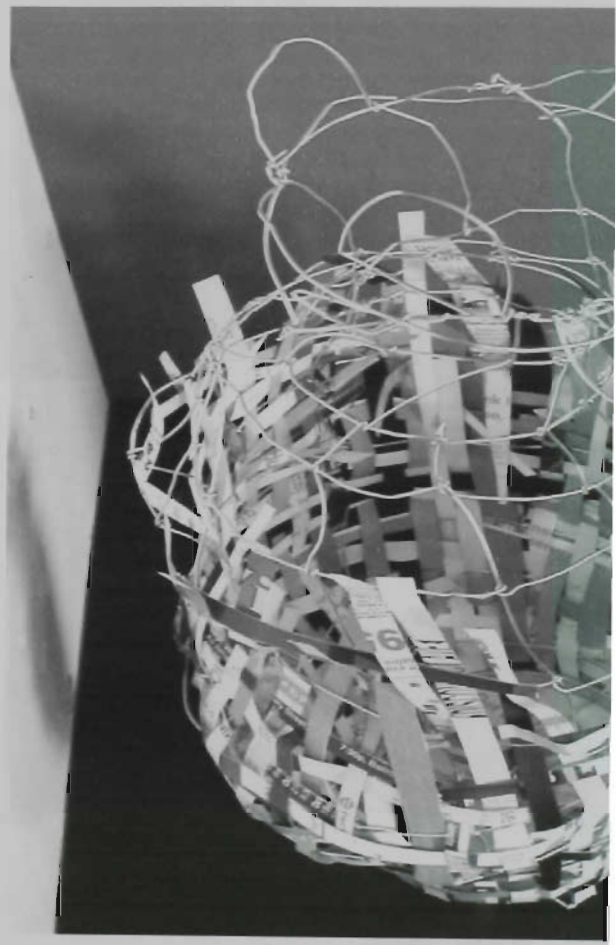
material

literal

figurative

value

unexpected

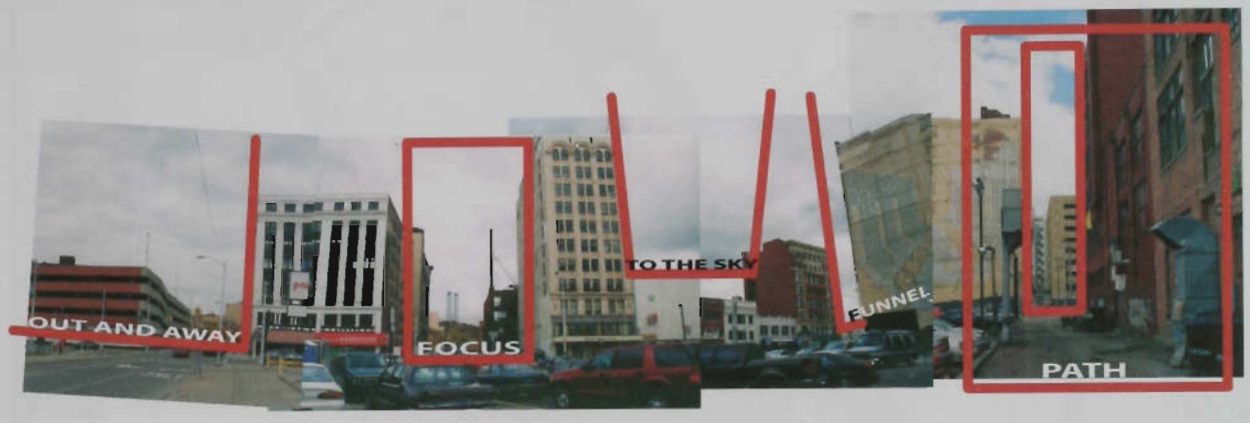


EXCEEDING THE SUM OF ITS PARTS

detroit - downtown - *broadway & grand river*

[on-site] photography

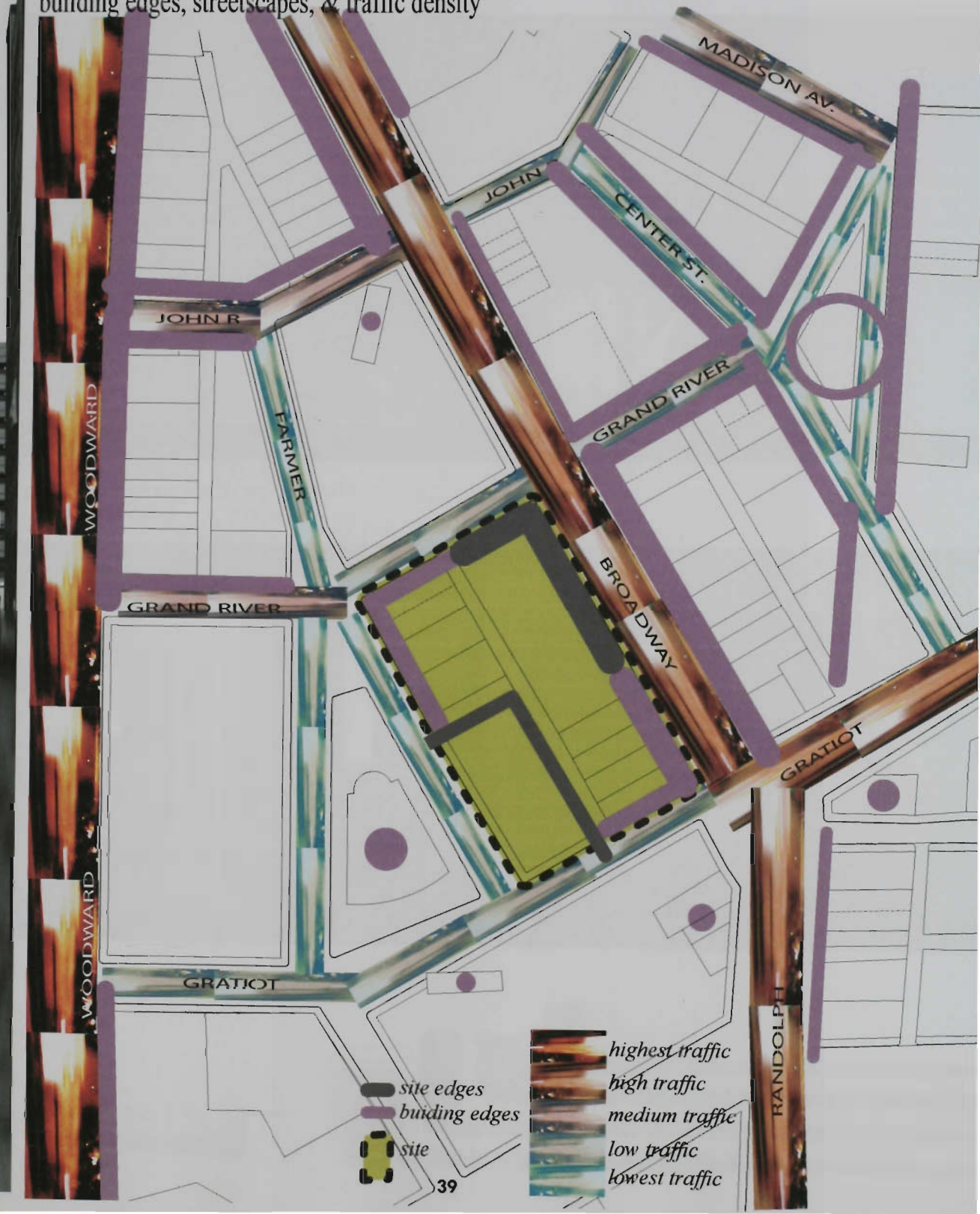
a record of human settlement - processes - context - occupation - connections - fabric



The site lies within the boundries of the historical theater district in what is now called Harmonie Park on the corner of Broadway and Grand River. As far as Detroit is concerned, it is one of the more populated districts of the city, with most of its traffic focused on either business purposes or the thriving nightlife. The residential units in the area mostly consist of upscale lofts or apartments as one might expect in a downtown setting. Placing this project in the city is an attempt to avoid another island of low-income housing projects which become socially, economically and architecturally cut off from the surrounding communities. The chosen site is an attempt to integrate this type of project into an already established neighborhood of all economic and ethnic backgrounds, as not to compel the inhabitants that would theoretically use this project to feel detached and alienated.

detroit - downtown - *broadway & grand river*

building edges, streetscapes, & traffic density



detroit - downtown - *broadway & grand river*

contextual [analysis]

what exists surrounding the site:

The existing buildings consist mostly of medium to high density structures built in the early part of the 20th century. These buildings are usually clad in brick or stone, most likely with steel structures and puncture windows. New architecture such as the Compuware Center also is scattered in the surrounding areas. Some residential and commercial buildings have been renovated recently creating an interesting character.

details - details - details - details

history - what exists - the material mass of the city - objects - institutions - layers - proportion - rhythm - relationships - juxtoposition - adjacencies - experience - centers - edges - connections - correlations - substance - physicality - trends - values - geometry - urbanness - hierarchy - links

contextual surroundings

building characters

texture of materials

legend

for next page

Proposed Site

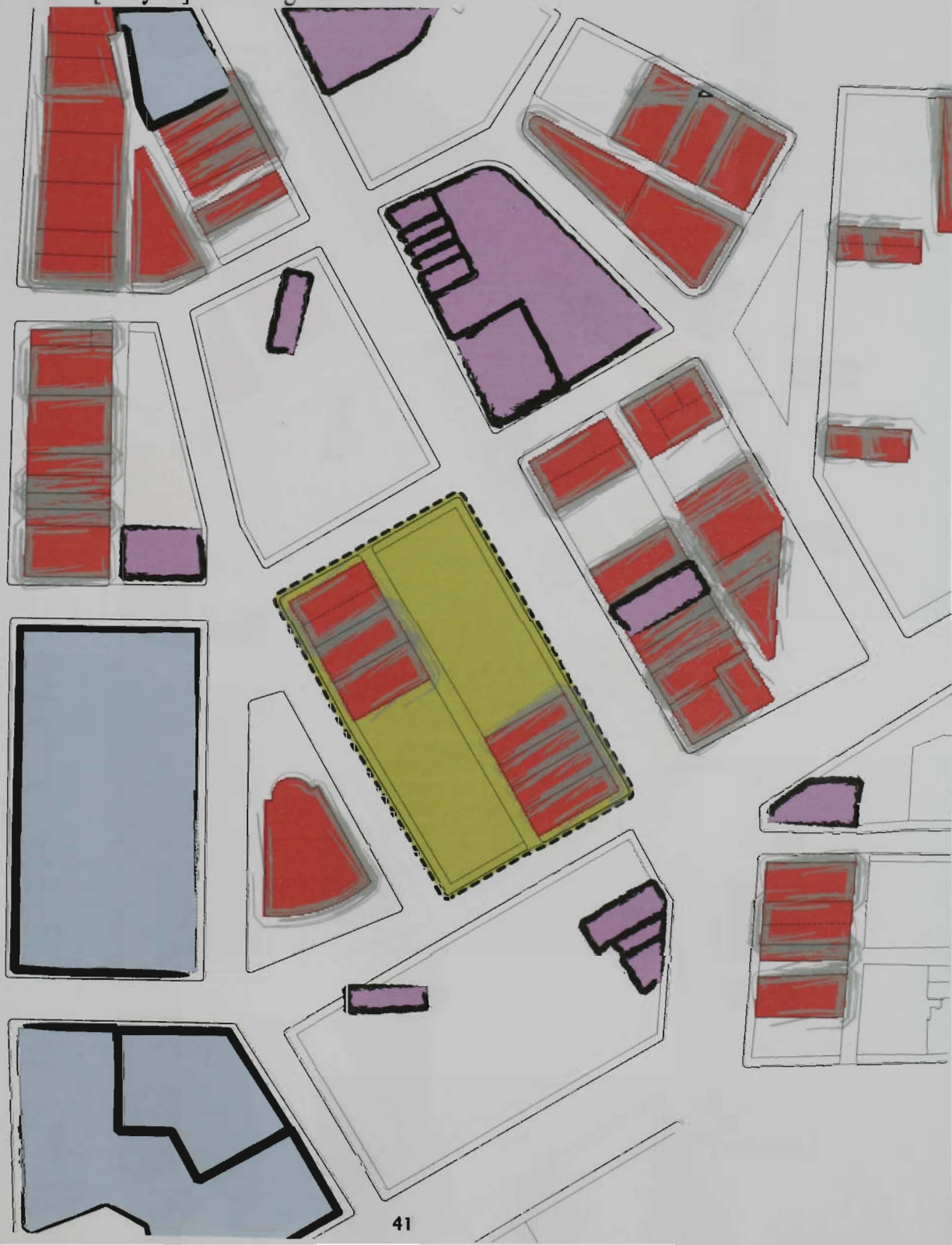
Newer or renovated buildings - modern textures

Slightly older buildings with little or smooth texture

Older buidlings with high degree of texture

detroit - downtown - *broadway & grand river*

contextual [analysis] - building character/texture



detroit - downtown - *broadway & grand river*

building use map

detroit - downtown - *broadway & grand river*

[on-site] density

DENSITY STUDY *daylight hours*

MORNING (8:30 - 9:30 am): *typical week day*
vehical traffic - light at site, heavier around site, especially on Gratiot & Woodward.
pedestrian traffic - moderate to light, mostly individuals.

LUNCH (11:30 am - 1:00 pm): *typical week day*
vehical traffic - moderate and getting heavier throughout the lunch period. Broadway has the most traffic next to Gratiot and Woodward.
pedestrian traffic - small and large groups walk from offices to restaurants.

LATE AFTERNOON/AFTER WORK (4:30 pm - 7:00pm): *typical week day*
vehical traffic - traffic is moderately heavy, increasing to heavy as the afternoon becomes later and dying down around 6 pm.
pedestrian traffic - there is a rush of people coming out of work and heading for their cars. A few stop for dinner or drinks.

DENSITY STUDY *after hours/weekends*

EVENING/NIGHT(after 7:00pm): *typical week day*
vehical traffic - fairly light to moderate most of the time. Gratiot and Woodward consist of the most populated streets for cars.
pedestrian traffic - traffic is light except for a few individuals wandering and some visiting bars / restaurants.

AFTERNOON (noon - 4:00pm): *weekend*
vehical traffic - usually light unless there is an event, in which case the traffic is heavy, and then the parking lots are occupied.
pedestrian traffic - also light, mostly individuals, except in cases of events where larger groups are heading to and from venues.

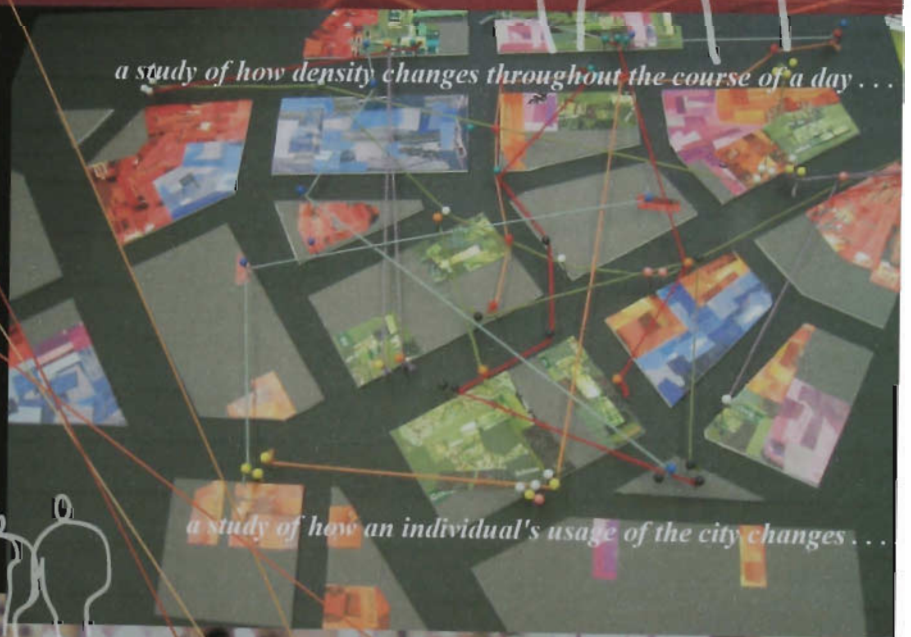
EVENING/NIGHT (6:00pm - 2:00am): *weekend*
vehical traffic - traffic begins to increase around 6 pm and continues until midnight or so.
pedestrian traffic - a variety of activities are taking place which draws a diverse crowd, consisting of small to large groups of people.

detroit - downtown - *broadway & grand river*
[three-d] density model

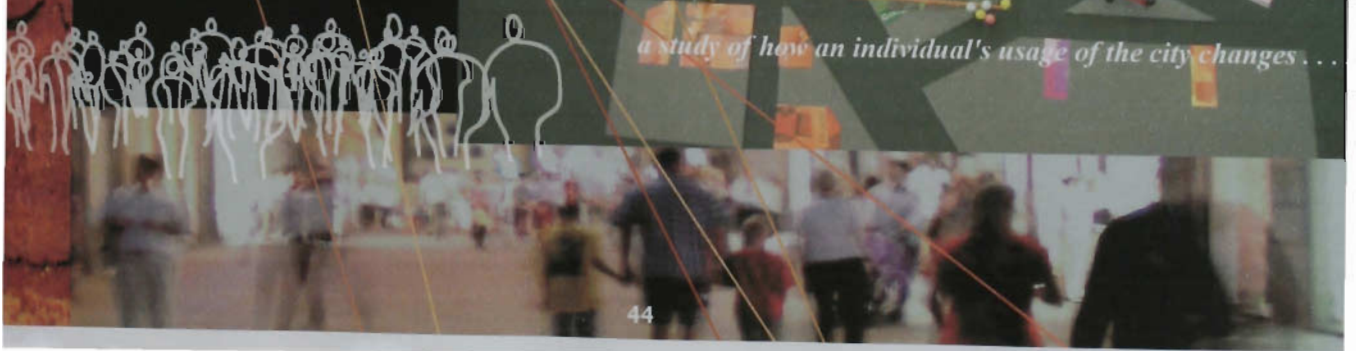
SITE ANALYSIS MODEL

a study of where people move through the site (city) . . .

a study of how density changes throughout the course of a day . . .



a study of how an individual's usage of the city changes . . .



Pattern: Economical Inhabitations
PROGRAM DOCUMENT
23.04.04

Project Program:

A. The nature of the site:

1. Size:
   a. In square feet: Usable: 47,500
      Alley space: 7,500
   b. In acres: Usable: 1.09 acres
      Alley space: 0.172
2. Topography:
   a. The topography of the site is completely flat with no variation.
   b. Detroit lies at an elevation between 568' and 580 feet above sea level.
3. Pedestrian and Vehicular Access:
   a. The entire site is cut by a 20' alley that runs the length of the site. This alley is commonly used for service if necessary. There are two major parts to the site, one which faces Broadway and Grand River, and the other which faces Gratiot and Farmer. Both of these sections have vehicular access, although the Broadway section has heavier traffic while the other section is quite isolated.
   b. At the pedestrian level, the site is accessible on both sides, but feels safer and more open on the Broadway side.
4. Views: (also see graphics)
   a. From the Broadway side looking out, a view of the Opera House Parking Garage is most apparent, with a city streetscape directly across the street. A parking lot sits across the street on Grand River with a view of the people mover station and in the distance is Grand Circus Park. Looking in, a view of the Compuware structure is visible as well as the rest of downtown.
   b. Looking out from the Gratiot side, the Compuware building is even more apparent, as well as the historic Detroit Public Library directly across Farmer St. Views of the dense fabric of Woodward Ave can be seen from this location.
5. Site Context: (see site analysis for description and graphics)
6. Sun Data: Azimuth and Altitude by Month and Time of Day

Month	9:00 am		Noon		3:00 pm	
	Azimuth	*Altitude*	*Azimuth*	*Altitude*	*Azimuth*	*Altitude*
January	42.31	13.39	0	25.63	-42.31	13.39
February	46.27	19.22	0	32.59	-46.27	19.22
March	52.51	27.44	0	42.60	-52.51	27.44
April	61.62	37.11	0	54.95	-61.62	37.11
May	70.89	44.38	0	65.05	-70.89	44.38
June	77.13	48.09	0	70.73	-77.13	48.09
July	76.46	47.73	0	70.16	-76.46	47.73
August	69.30	43.30	0	63.47	-69.30	43.30
September	59.28	35.18	0	52.41	-59.28	35.18
October	51.11	25.70	0	40.46	-51.11	25.70
November	44.86	17.19	0	30.15	-44.86	17.19
December	41.87	12.72	0	24.83	-41.87	12.72

7. Utilities should be existing on site, and every attempt to use them should be made.
8. Drainage should also be existing, although some adjustments will probably have to be made.

B. Climatic Conditions for Detroit, Michigan:

Month	Normal Degree Days Base 65 Degrees		Relative Humidity Percentage				Wind		
	Heating	Cooling	hr 01	hr07	hr13	hr19	Mean Speed M.P.H.	Prevailing Direction	Fastest Mile Speed M.P.H.
January	1225	0	75	78	69	73	11.6	W	40
February	1067	0	75	78	65	71	11.5	NW	40
March	918	0	74	77	60	66	11.5	NW	40
April	507	0	70	73	53	58	11.1	NW	37
May	238	33	71	71	51	56	9.9	S	33
June	26	149	75	74	53	57	9.1	S	40
July	0	261	75	75	51	55	8.3	S	40
August	11	225	78	80	53	60	8.1	N	46
September	80	65	79	83	54	64	8.9	S	36
October	342	10	76	81	55	65	9.5	S	35
November	717	0	76	79	64	70	11.3	SW	35
December	1097	0	76	79	70	74	11.3	SW	43

Month	Percentage of Possible Sun shine	Average Snowfall in Inches	Average Precipitation in Inches	Average Temperature in Degrees		
				Mean	Max	Min
January	32	7.9	2.08	25.3	31.6	18.9
February	43	7.7	2.05	25.8	32.6	19
March	49	5.4	2.42	34.5	42	27
April	52	1.1	2.72	46.7	55.6	37.7
May	59	0.1	3.29	58.1	67.7	48.6
June	65	0	3.32	68.2	77.6	58.7
July	70	0	3.16	73	82.4	63.6
August	65	0	2.86	71.1	80.2	62
September	61	0	2.65	64.2	73.1	55.3
October	56	0.1	2.39	53.1	61.3	44.8
November	35	2.5	2.31	40.1	46.5	33.7
December	32	7.1	2.24	29.5	35.2	23.8

1. The long part of the site faces East/West, so utilizing solar heat gain might be difficult but not impossible. Solid building elements may be able to be used where wind patterns are severe. Shading devices on the East/West exposure of the building will probably be utilized and could become critical to saving energy.
2. Light wells in the center of the units will be utilized in order to bring light and ventilation into the deeper parts of the building.

C. Program Quantitative Summary:

1. **Residential Units:**
   a. 82 Units Total maximum
   b. Approximately 8 floor building, 6 levels of units
   c. Square feet total of units =
   d. 12 Unit Sizes:
      - 7 units @ 1430 square feet = 10,010 total square feet
      - 5 units @ 1350 square feet = 6,750 total square feet
      - 9 units @ 1340 square feet = 12,060 total square feet
      - 10 units @ 1040 square feet = 10,400 total square feet
      - 2 units @ 960 square feet = 1,920 total square feet
      - 6 units @ 885 square feet = 5,310 total square feet
      - 1 unit @ 860 square feet = 860 total square feet
      - 18 units @ 760 square feet = 13,680 total square feet
      - 7 units @ 675 square feet = 4,725 total square feet
      - 3 units @ 620 square feet = 1,860 total square feet
      - 9 units @ 470 square feet = 4,230 total square feet
      - 4 units @ 380 square feet = 1,520 total square feet

      TOTAL OF: 73,325 Square Feet for Units

   e. Total usable square footage on site for 8 levels:
      - 47,500 square feet x 8 = 380,000 square feet (volume)
   f. Total leftover space after units: 380,000 – 73,325 = 306,675 square feet.
   g. Parking @ 300 square feet per unit: 300 x 82 = 24,600 square feet for parking. Parking for retail units: 300 x 11 = 3,300 square feet for a total of: 24,600 + 3,300 = 27,900.
   h. Open/Green/Social/Community Space, as defined below, amounts to = 50,330 square feet
   i. Units (73,325) + Designated Open Space (50,330) = 123,655 square feet total.
   j. 123,655 sq. ft. x 4.8% (area of corridors and foyers) = 6,370 square feet
   k. 123,655 sq. ft. x 1.6% (area of stairways) = 2,000 square feet
   l. At least 3 passenger elevators should be provided, along with 3 fire egress stairways.
   m. Area occupied by 3 passenger elevators is approximately 220 square feet.
   n. 123,655 sq. ft. x 0.1% (area occupied by elevator machine rooms) = 125 sq. ft.
   o. 123,655 sq. ft. x 0.23% (area occupied by electrical rooms) = 285 sq. ft.
   p. 123,655 sq. ft x 2% (area occupied by mechanical shafts) = 2,470 sq. ft.

   q. **TOTAL SQUARE FOOTAGE for PROJECT:**

73,325	UNITS
27,900	PARKING
50,330	COMMUNITY SPACES
6,370	CORRIDORS
2,000	STAIRS
220	ELEVATOR SHAFTS
125	ELEVATOR MACHINE ROOMS
285	ELECTRICAL
2,470	MECHANICAL

19,040 RETAIL

182,065 PROPOSED SQUARE FEET

380,000 – 182,065 = 197,935 square feet empty volume

2. **Retail and Other functions on Ground Level:**
   a. There will be 11 retail stores located at street level. The retail spaces will face both Broadway and Library St.
   b. Spaces that will be located within the building, away from street level will be the child care center and educational class. The child care center will be located both at street level and will include play spaces on the third level. Classrooms are located on the fifth level.
   c. **The retail spaces that will be included are**:
      - Grocery store = 4060 square feet
      - Pharmacy/Convenience store = 1520square feet
      - Bank = 1520 square feet
      - Small Medical Office + Small Dental Office = 3140 square feet
      - 2 Restaurants/Cafés/Delis = 4700 square feet
      - Coffee Shop = 1520 square feet
      - Clothing Retail Shops = 1520 square feet
      - Hardware Store = 3140 square feet
      - Child Care = 1520 square feet

   TOTAL SQUARE FEET OF RETAIL ON FIRST LEVEL: **19,040 square feet**

3. **Courtyard spaces – Community Spaces:**

   a. **First Level** Includes:
      - 2 seating areas for the restaurants
      - 2 public seating areas
      - 8 public entrances through building containing seating
      - 3 green areas

      TOTAL SQUARE FEET: 26,230 square feet for public functions

   b. **Third Level Includes**:
      - 2 INDOOR Children's Playgrounds = 1,800 square feet
      - 2 OUT DOOR Children's Playgrounds = 2,600 square feet
      - 1 Garden = 1400 square feet
      - Laundry and Snack Bar = 2,100 square feet
      - Additional Greenspace – Outdoors = 12,000

      TOTAL SQUARE FEET: 18,100 square feet shared space

   c. **Fourth Level Includes**:
      - Indoor Weight Room = 2,000 square feet
      - Indoor/Outdoor Open Exercise = 1,100 square feet
      - Internet Room = 560 square feet
      - Small Study Space = 560 square feet
      - Green Spaces = 2,000 square feet

      TOTAL SQUARE FEET = 6,220 square feet

   d. **Fifth Level Includes**:
      - OUDOOR Children's Playground = 2,200 square feet
      - Outdoor Lounge (seating) = 2,100 square feet
      - Internet Room = 350 square feet
      - 1 Classroom + Other Study Space = 1,300 square feet
      - Private Childcare/Multi-Purpose Room = 850 square feet

      TOTAL SQUARE FEET = 6,800

   e. **Sixth Level Includes**:
      - 2 Gardens = 2,900 square feet

- Multi-Purpose Community Room = 800 square feet
- Greenery = 2,200 square feet
TOTAL SQUARE FEET = 5,900 square feet

f. **Seventh Level Includes:**
- Laundry Room = 900 square feet
- Internet Room/Snack Bar = 660 square feet
- Outdoor Seating Lounge = 900 square feet
- OUTDOOR Children's Playground = 700 square feet
- 2 Gardens = 1,800 square feet
- Greenery = 1,500 square feet
TOTAL SQUARE FEET = 6,460 square feet

g. **Eighth Level Includes:**
- Community Room = 530 square feet
- BBQ & Seating Area = 1,100 square feet
- Garden/Greenery Spaces = 5,220 square feet
TOTAL SQUARE FEET = 6,850 square feet

TOTAL SQUARE FEET FOR COMMUNITY SPACES ON LEVELS 1-8 = 50,330

Since most of these spaces are outdoors, and not enclosed, the actual square feet of enclosed space is much smaller. Major corridors are not accounted for in this section, but rather in conjunction with the unit square footage. The square footage on the 1st level is public space rather than residential space.

D. Space Details Sheet:

Notes: bedrooms will be smaller than average (in market-rate housing, especially the children's bedrooms). This lost space will be made up in the many communal spaces, both indoor and outdoor. This will hopefully encourage children to spend time outside of the bedroom or living room, interacting with other children and participating in physical activity. Although the apartments will be only large enough as needed to live comfortably, activities that cannot be performed within the home (such as exercise or carpentry work) will be able to take place in the many allotted spaces designated outside the apartment. This feature is not only practical, but will also create opportunities for neighbors to interact and share part of their lives with others. Again, a high standard of living will not be compromised by the sizes of the spaces.

Apartment Sizes:

	Gross Size in Square Feet			
UNIT TYPE	**HUD minimum**	**Medium**	**High**	**My UNITS**
Efficiency	380	525	600	380 - 470
1-Bedroom	580	750	900	620 - 675
2-Bedroom	750	1150	1250	760 - 885
3-Bedroom	900	1400	1600	960 - 1040
4-Bedroom				1340 - 1430

Each bedroom implies one per person bedroom, but my units would be able to house 2 people in each bedroom, when necessary, and the bedrooms would be large enough to do this. This means that a four bedroom unit could hold up to 8 people if necessary, while standard apartments suggest only 4 or 5 people.

1. 380 / 470 square foot unit:
    a. 1-2 people actually living here

b. Provide adequate space for cooking, eating, living, sleeping, bathing & storing for 2 people comfortably. Preferable if the 2 people share the same sleeping space.
c. Relationships: Sleeping space(s) and bathroom should be kept away from front door, as private as possible. Cooking space can be adjacent to entry and living space will serve as an intermediary. Storage should be provided for all types of spaces, perhaps built in to structure.

2. 620 / 675 / 760 square foot unit:
    a. 2-4 people living here
    b. Adequate space should be provided for 3 or 4 people to live comfortably. This apartment is ideal for a single parent with 2 children, or 2 parents with one child. This apartment will give adequate space for at least 2 bedrooms, perhaps with partition wall or dividers for a 3rd. Dining area should accommodate 3 or 4 comfortably as well as the living space.
    c. Relationships: Same as above. Perhaps further privacy is needed between the 2 bedrooms (parents and child(ren), but this is more likely done with the wall type than the spatial relationship. There will only be a single bathroom, but large enough to accommodate 2 people at once if necessary.
3. 860 / 885 / 960 square feet unit:
    a. Approximately 4 people living here.
    b. This apartment is ideal for a family of 4, basically having 3 bedrooms.

4. 1040 square foot unit:
    a. 3-5 people living depending on the ages
    b. This apartment is ideal for 4 people, but will be adequate if there are very young children involved. These bedrooms will be flexible so that the number can be adjusted per apartment, but adequate space for 3 will be provided (for example it would be possible for 3 small children to be sleeping in 1 large bedroom while another bedroom was designated for parents). Privacy issues as above.
    c. Living spaces will be larger here and therefore more adaptable to change as the tenant sees fit. Storage will also grow with this added square footage. If a resident wishes to make part of a living space or dining space a library or study, the opportunity will be provided.
5. 1340 / 1350 / 1430 square foot unit:
    a. 5+ people living here.
    b. This apartment will be provided with the means to have 4 comfortable bedrooms and adequate living space. Two full baths should be provided. Five people will comfortably fit in this space, although more is possible. A dining room to accommodate 6 - 8 people adequately should be in this space.
    c. Same as above.

6. Note: At any given time, it is possible that the residential units are being occupied by up to 585 individuals maximum. But a more likely count would be that an average of 475 people would live in these units when they are all occupied.

7. Laundry rooms:
    a. There will 2 laundry rooms provided, one large on the 3rd level, and a small one on the 7th level.
    b. The laundry on the 3rd level will consist of 20 washers/20 dryers. The laundry room will be used by the majority of the residents. The laundry on the 7th level will consist of 8 washers/8 dryers and will be used primarily be the tenants on floors 7 and 8.

c. The laundry room will also consist of an area for internet access, and a small coffee/snack bar. This will provide the residents with activities while they are waiting for their laundry. There will be plenty of lounge space and seating supplied, and an area for children to play that is in proximity to this area so residents can bring their children with them.
d. Ventilation and drainage must be considered since the laundries are provided on each floor.
e. An opportunity for the laundry room to be located near other amenities is provided. While residents wait for their laundry, they can be using exercise facilities, for example.

8. Mail Room:
    a. This facility will have an open program and may be combined with another part of the program.
    b. There will be a mail wall located on each floor near the central vertical circulation core, with an adequate number of mailboxes the number of units. This will reduce the travel for the resident to get their mail, especially if they are parking in the structure, and going directly to their apartment.

9. Lobby/Reception:
    a. Near the main entrance or where many corridors meet, will be a main lobby space on the ground level. This will contain a small reception desk, where leasing inquiries can be taken, as well as larger packages delivered to.
    b. The lobby space will contain some lounge furniture but will be rather small, as most of the socializing spaces will be above ground level.
    c. Building maintenance and management offices will be located in this area also, within the depth of the building on the first floor.

10. Retail:
    a. Approximately 11 retail units will be provided, all having different functions.
    b. Only the general layout of these spaces and the exterior will be designed, and about 1520 square feet per store will be offered.

TECHNICAL SYSTEMS:

Building Use/Occupancy Group = **APARTMENT HOUSES / R-2**
= **Retail or Wholesale Stores / M**
= **Parking Garage – Open / S-2**
Using the most stringent of the fire-ratings, 3-Hour Walls will be used in the project.

E. Structure:

1. Generally, a structural frame has to be designed so that it is the most economical to produce, whether in reinforced concrete, structural steel, pre-stressed concrete, aluminum or any other material.
2. The larger the floor area, the more economical is the concrete frame.
3. A T-shaped or H-shaped building will provide more wind resistance.
4. Factors that will influence the selection of a structural frame include:
    a. Shape of building
    b. Use of space at ground level and below grade
    c. Garaging within the building
    d. Exterior treatment, exposed elements
    e. Open plazas
    f. Siting

5. Some structural frames that are common in multi-residential buildings are:

a. Reinforced concrete frame:
   - Most columns are located on grid lines of uniform spacing
   - The cost of the concrete frame is increased by the modular arrangement.
   - When the spans are greater, the slab becomes thicker and the reinforcing steel is increased.
b. Flat plate:
   - Since columns can be placed where desired, there is more flexibility.
   - Partitions can be placed without hindrance, and beams do not project below the slab soffit.
   - Speed of construction is increased.
   - Electrical conduits can be embedded in the slab.
   - Reduces floor to floor height by 8 to 12 inches, cutting costs.
c. Lift slab:
   - All structural materials are handled at ground level.
   - No formwork is required
   - The slabs can be poured in any temperature
d. Slip-form construction:
   - Generally used for tall, slender buildings
e. Two-way grid:
   - Offers total design efficiency, can carry up to a 36 foot span
   - It is a functional modular system
f. Structural Steel Frame:
   - Performs best when spans are less than 30' or less
   - If the bay is longer in one direction than the other
   - Fast erection
   - Multiple stories with a low dead load

6. Typical Economical Spans:
   a. Pre-cast Units:
      - Solid Flat Slab: 12' - 24'
      - Hollow Core Slab: 12' - 40'
      - Single Tees: 30' - 120'
      - Double Tees: 30' - 100'
      - Beams: 15' - 75'
   b. Concrete Slabs:
      - One-Way Joist Slab: 15' - 36'
      - Two-Way Slab and Beam: 15' - 40'
      - Two-Way Waffle Slab: 24'-54'
      - Two-Way Flat Plate: 12' - 24'
      - Two-Way Flat Slab: 20' - 40'
   c. Structural Steel Systems:
      - One-Way Beam System: Long spans
      - Two-Way Beam System: 20'
      - Triple Beam System: Long spans
      - Open Web Steel Joists:

The structure that was ultimately used was a **reinforced concrete frame**, which was chosen for its strength, aesthetics and the uniform layout of the building. **Hollow core flat slabs** construct the floors of the units themselves. For the partition walls between the units, which are non-structural, a system of concrete block, faced on either side with reclaimed brick was used. The materials chosen also reflect the desire for the building to remain durable for many years, as well as low-maintenance. Interior partition walls within the units are constructed simply of drywall and metal studs, for convenience of the tenants (most people like to paint their walls the color of their choice). Reinforce concrete columns must be at least 12 inches thick, and hollow core slabs must be at least 8 inches thick for a 3-Hour rating. The concrete block must also be at least 8 inches thick for this fire rating.

F. Mechanical Systems Requirements:

1. HVAC: Appropriate Systems:
    a. 2-Pipe System:
        - One supply and one return pipe carrying hot or cold water.
        - The change from heating to cooling is made at a central plant
    b. 3-Pipe System:
        - Separate pipe for supply hot and cold water, and one common return
        - Occupant's choice of heating or cooling at any time
        - Wasteful fuel consumption and separate pipes are required.
    c. 4-Pipe System:
        - Separate supply and returns, which eliminate wasteful fuel condition
        - Higher costs and larger pipe chases
    d. Combined Central System:
        - Quiet because there is no compressor
        - Low maintenance costs and lifespan of 20 years
    e. Radiant Heating:
        - Eliminate all visible pieces of heating apparatus from room
        - More expensive and must be carefully designed
        - Response to outdoor conditions is slow
    f. Central 2-pipe fan coil unit:
        - Quiet, compact and has a long life
        - Inflexible, choice of heating or cooling by building, not tenant

A Central All-Water System was used in the building, utilizing a Closed-Loop Heat Pump. This system provides the space with heating, cooling and fresh air. Control valves allow the water to be used in the cooling tower in the summer, and a boiler in the winter, and in the fall and spring, can pass by both applications when both heating and cooling may be needed. The major components include a Heat Pump, a Boiler Room (with a Chimney) and a Cooling Tower.
This system requires a lot of maintenance, but can result in high energy savings.
Other advantages include

1. The operating costs are minimized.
2. Residents have maximum control over the temperature of their rooms.
3. The floor space for heating and cooling is minimized.
4. The floor-to-floor height can be minimized.

Heating, Cooling and Ventilation:

My project has taken advantage of some passive heating, cooling and ventilation techniques which will further reduce the cost of operating for the residents. The units are provided with full glass wall at either end of the apartment, for natural lighting. The floor-to-ceiling height is 10 feet for added light. The glazing in both the kitchens and bedrooms are operable, for natural ventilation in the summer. Since the building is facing East/West, it takes advantage of vertical shading devices, which block sunlight and therefore heat in the summer, but allow it in the winter.

G. Life Safety Requirements

1. Maximum travel distance from Most Remote Point to Nearest Exit Enclosure:
    a. R-2, Residential; Multi-family = 200 ft unsprinklered /250 ft sprinklered.
    b. M, Mercantile = 200 ft unsprinklered / 250 ft sprinklered
    c. S-2, Parking Garages = 300 feet unsprinklered / 400 ft sprinklered
2. Maximum Length of Dead-End Corridor
    a. R-2 = 20 ft.
    b. M = 20 ft.
    c. S-2 = 20 ft.
3. Minimum Clear Corridor Width
    a. R-2 = 44 inches for more than 50 occupants, 36 inches for 50 or fewer occupants, 36 inches within dwellings.
    b. M = 44 inches for more than 50 occupants, 36 inches for fewer than 50 occupants.

c. S-2 = 44 inches for more than 50 occupants, 36 inches for fewer than 50 occupants.

4. Minimum Stair Width =
   a. R-2 = 44 inches for more than 50 occupants, 36 inches for fewer than 50 occupants.
   b. M = 44 inches for more than 50 occupants, 36 inches for fewer than 50 occupants.
   c. S-2 = 44 inches for more than 50 occupants, 36 inches for fewer than 50 occupants.

program statement

Project Identification:

1. The program will include housing units for lower-income families who potentially cannot afford "decent housing." The number of the units will be determined by the site size. These units will be fully functioning apartments including adequate living, cooking, dining and sleeping space. Private outdoor space will be provided, as well as community interior and exterior spaces.
2. Also, other uses within the building will be included, such as child-care, classrooms, pharmacy facilities, grocery shop, and a general medical office and other retail space. The retail will be located at street level for non-residents to use and wil be also accessible from the alley space.
3. The project is located in downtown Detroit, in a fairly populated area which includes upscale residential, business, entertainment, and some retail facilities. It is important that the project add density to the context and define an urban streetscape.

Articulation of Intent:

1. The goals of the intervention are to combine dwelling units with functions that will assist residents in their everyday lives and also to give residents an exceptional home that will enable them to feel safe, secure and happy. Although the project will be subsidized, it should not in anyway be inferior to market-rate housing in quality or appearance, but rather, should have a rich texture and character.
2. The project will both compliment as well as contrast existing building and neighborhood typologies. The site is located within downtown near the theater district in a context of historic, brick medium-rise buildings. The projects intention is to be sensitive to the historic district but not try to mimic existing typologies or inhibit modern technologies, materials or methods of construction.
3. The project will use economical and ecological systems and materials in such a way that they improve, rather than deter from the appearance. The project will also improve the condition of the surrounding neighborhood or city, adding both new residents to the area as well as retail and office functions, not only serving those in the building, but the surrounding and existing inhabitants of the area.

Enumeration of Actions:

VERBS: These verbs do not necessarily take place separate from each other. Some must be performed in more than one place, and some that we think of occupying separate places may be combined into one space. Certain verbs require more privacy such as those in connection with bathing and so on, and some are required to be more social, such as eating, cooking or watching.

indoors:

Entering [quickly, 1 minute]
Removing (shoes) [quickly, 2 minutes]
Hanging (coat, etc) [quickly 1 minute]
Walking [short distance]
Standing, observing, greeting, hugging [a few minutes]
Departing [quickly]
Conversing [several minutes]
Locking/unlocking (door) [quickly]
Setting (objects down) [quickly]
Cooking [from a few minutes to several hours]
Washing [from a few minutes to an hour]
Storing (of food/dishes) [quick process that happens often]
Cleaning [up to an hour/more]
Eating [10 minutes to 2/3 hours]
Standing [up to more than an hour]
Sitting [quickly up to several hours]
Conversing, gathering, socializing, drinking, relaxing [quickly to several hours]
Walking [quickly]
Looking/watching (outside/inside) [for short periods, often]
Playing [30 min +]
Baking [hour +]
Teaching, learning [indefinite]
Studying [30 min +]
Thinking [indefinite]
Reading (paper?) [10 min +]
Reaching [short times, often]
Sitting [30 min to several hours]
Watching (TV/people) [quickly to several hours, all day]
Listening (to music/people) [long, simultaneous to other activities]
Lying/sleeping [10 min to 8 hours]
Conversing [10 minutes to hours]
Playing [indefinite]
Gathering [several hours]
Eating/drinking [30 minutes]
Studying [30 + min]
Observing [indefinite]
Learning [indefinite]
Socializing [30 min + to hours]
Caring for [indefinite]
Walking [quickly]
Standing [quickly]
Relaxing [long period]
Enjoying [indefinite]
Thinking [indefinite]
Reading [30 min +]
Bathing [30-60 min]
Showering [15-30 min]
Standing [10-20 min] sitting, using (toilet) [1 - 30 min]
Shaving [5-10 min]
Applying (makeup, etc) [5-20 min]

program statement

indoors (cont.):

Brushing (teeth/hair) [1-5 min]
Looking, observing, watching [indefinite]
Weighing [1 min]
Relaxing [1-60 min]
Thinking [1-60 min]
Reading [30 min]
Listening (to music) [1-60 min]
Sleeping, lying [10 min to 10 hours]
Sitting [up to 2 hours]
Studying, reading, watching (TV) [10 min - 5 hours]
Talking, thinking [indefinite]
Playing [minutes to hours]
listening [minutes to hours]
Learning [indefinite]

All of these spaces need a large amount of natural light, as well as artificial task and overall lighting. Cooking spaces need more light than others, as well as spaces for shaving/applying makeup. Sitting/sleeping spaces need less overall lighting, low-lighting will be more sufficient. In these spaces, the tallness of spaces need be enough to accommodate a person's height and appropriate furniture, and no taller. These spaces should be somewhat isolated from outside sources of sound. Privacy should be ensured by others outside of the home not being able to hear in. Temperature should always be comfortable, warm in winter and cool in summer, with spaces adequately ventilated. Spaces should feel close, welcoming, inviting and comforting. Colors should be bright and colorful, rather than blank; materials should be warm, sturdy, clean and snug. Elements should be simple and clean, yet soft.

outdoors:

Eating/drinking
Playing
Watching
cooking (barbequing)
observing
gathering
socializing
seeing
conversing
exercising
meeting
greeting
sitting
walking
swimming
relaxing
sunbathing
working
catching/throwing [indefinite]

Feeling of open space and gardens should be apparent as well as a quiet urban getaway. Natural light with adequate night lighting is necessary, along with space open to the sky. A mixing of sounds, smells, and colors will be important as well as unavoidable. Some of this space will be dedicated to the private family, while the other dedicated to public functions. Temperature is whatever the natural temperature is outdoors.

retail:

Buying
Shopping
selling (30 min +)
sitting, standing (30 min+)
walking
talking
meeting
examining
caring for
watching
teaching
learning
playing
looking
searching
making
writing
reading
load/unloading
enter/exiting

adjacencies:

a. A close relationship to the street/sidewalk. An entrance to living units off street as well as a more private one. Residents interacting with the urban condition (low or high density)
b. A place where all residents can do laundry. A meeting place that may double as a gathering space or one to getaway from the house, such as a place to read or write, play with children, watch children, etc.
c. A place to pick up mail, near entrance, also a meeting place for residents, safe from the street but near it
d. A place where children can be cared for while parents are away, inside and out, and where parent can come to play with their children outside the home as well as have them interact with other children, while meeting other parents.
e. A place where each unit can have some outdoor space, to sit, cook, relax and be alone outside with family or self.
f. The entrance of a unit should be a semi-private affair. Enough privacy should be given in order to ensure safety and retreat, but the entrance can also serve as a communal function/meeting space. Entrance should be indoors if it is not connected to the first level. Individuals/families should have privacy from the retail shops below or adjacent to them.

program statement

programming spaces:

During the warmer months, a mother can cook dinner in daylight after work. The children must keep occupied, so they play outside in a closed off space while the mom looks after them from the window. Daylight floods the kitchen, providing enough illumination for the task of cutting and frying, which keeps the space cool. The restless children track from the interior to the exterior spaces that really feel like one continuous space anyway. One child is bored with his siblings; he peeks down over the ledge through green and sees a few neighbors of his age huddled together. With permission he travels downstairs, with glimpses of the neighbor's green cluttered balconies, the late sun in his eyes, gripping the handrail. Sounds and smells of the other parents cooking meals allows him to think about dinner finally, and he is wondering why his mom is making meatloaf again.

A young man steps down from the bus onto the brick pavement on Woodward, cold already, making a beeline for his front door, a whole 2 blocks away. Only 5:30 and already getting dark, he doesn't feel like making dinner tonight, so he grabs a few hot dogs from the café on John R. Keys in hand, he enters the back way through the gate, into a space still cold, where he sees through the glass an old man grabbing his paper and mail, decides to get his later, but the old man stops him to for a chat. Bored, he runs his hands along the tattered brick wall of the next building, feeling for holes and thinking about his hot dogs growing colder. He heads for the elevator instead of the stairs today, partially because the old man is still with him. He watches his change in elevation as the windows of others fly by, trying to catch a glimpse, but the shades are mostly pulled. He is emptied out into glowing space of yellow light mixing with the city profile outside. A squarish room with 5 doors is surrounding him and he ascends a few steps to his, unlocks it and is finally home.

It is just starting to get warm out again and things are getting greener. We can open the windows now. The street is quiet at night, with only a few occasional disturbances, at least on week nights. Friday begins the energy of more travel on the streets below, taillights backed up during ball games, people passing by underneath. I can see into the windows across from me, they are not so far away, especially at night with the lights on. Little activity goes on over there; maybe someday there will be more. It is bedtime and we are out of milk again. I run downstairs and through the main door, into a little cove of light, and across from me is the grocery store door, about to close. I run in quickly, say hi to the man who lives below me. He is buying cigarettes again but at least he smokes quietly. I can sometimes hear the children outside playing in the courtyard, since I am only one above it. Although I can stand at my window and hear the city, from deep inside all I can hear is the stereo bouncing off the red, textured walls, enveloping me, and the hum from outside only puts me to sleep.

In the mornings, the couple is always in a hurry. They always wake up early but like to read the paper cover to cover before work at the kitchen table. One is making coffee while the other is in the shower. Then they are both in the bathroom, each at their respective sinks, either shaving or inspecting in the mirror. She prefers the natural light to apply makeup in, which somehow seems to flood the room even though she cannot see outside clearly. He obviously doesn't care about the lighting, just that she is not pushing him out of the way of the sink to brush her teeth. They are happy they can coexist now since they won't see each other again today. Together they walk out the backdoor towards the parking lot, around the edge of it first to enjoy some of the sunlight while they can.

The father waits for his 8 year old at the gated entrance. He always does even though the son will walk in with the other children coming off the bus, but he sits on a bench anxiously anyhow. He doesn't mind the fresh cold air but he is glad that he is sheltered from the wind today, because he can see the gloomy gray sky and a few trees swaying furiously. It is only 3 o'clock but it looks later with the dark weather. The space he sits in is small and cozy and light, even thought it is outside. He could easily sit in the indoors and watch for the bus there, but here he is closer to the entrance. Finally a rush of 8 or 9 children head for the door, and a few other parents have gathered behind him to meet their children as well. A funnel through the door and then everyone is inside and moving through the stairwells like circulating blood.

An old couple is having their children and grandchildren over for a Fourth of July feast. The apartment they have here is just big enough for the two of them, so they decide to hold the party outside on the roof. This space is open for all residents but many are away on vacation anyway. The woman is barbequing while her husband sets up the tables with dishes and appetizers. The roof space is partitioned with screens and plants so that this eating space has some feeling of privacy, since others are beginning to use the roof also. The family arrives and after dinner the children run off away from the parents to another section while the parents stay seated to chat. As the sun sets, one side of the city is visible from up there, while the other is screened for privacy. Neighbors come to chat with the family, since all of their children are preoccupied with each other.

beginning concepts







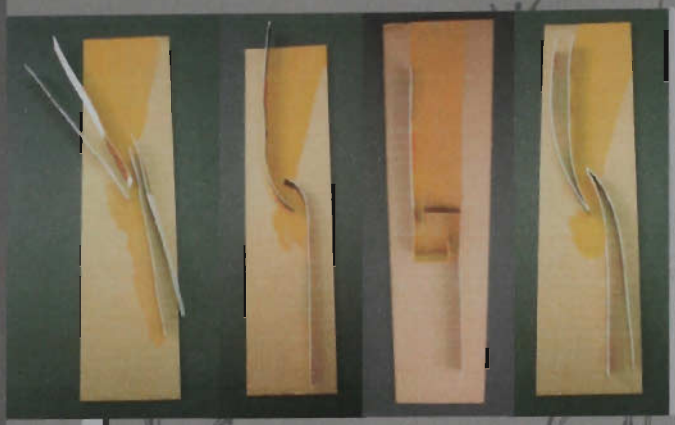
degrees of seperation

The three most important aspects of designing multi-family housing are providing adequate privacy, a sense of security, and allowing the design to be agreeable to each inhabitants outlook on life. The very first concept was providing an obvious architectural element that functioned as a soundproofing element as well as a visual separation between the units. The choice to make them vertical came from the surrounding context, as the existing buildings have a strong vertical character. Many variations of this concept were explored, from different size "fins" to the variation of what happened in between the fins. The first model appeared complicated and dynamic while the later models became more simplified. The final model in this series was an attempt to not separate the units quite as much, but tie them together and integrate them.





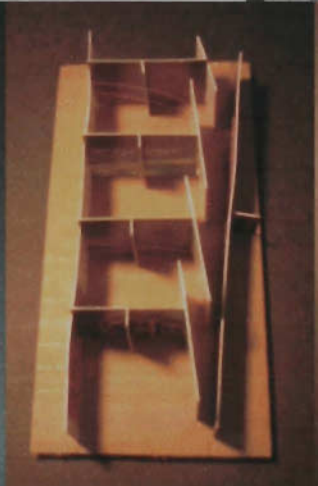

beginning concepts



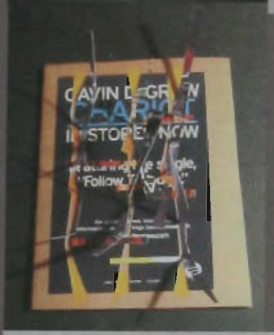
Another concept that was explored was how to bring light into the depth of the apartments. The models shown can be thought of as either in plan or section, and might be how two units fit together vertically as well as horizontally. The studies show which of the sections bring the most light is as well as provide the most separation or integration between parts.

light well studies

The models below show the way that the light well studies could be implemented in the design of an entire building, or many units combined together. The important concept is to provide as much light into the units at the same time as providing privacy in these very close-knit courtyards. A section was devised that allows no visual connection between the units.

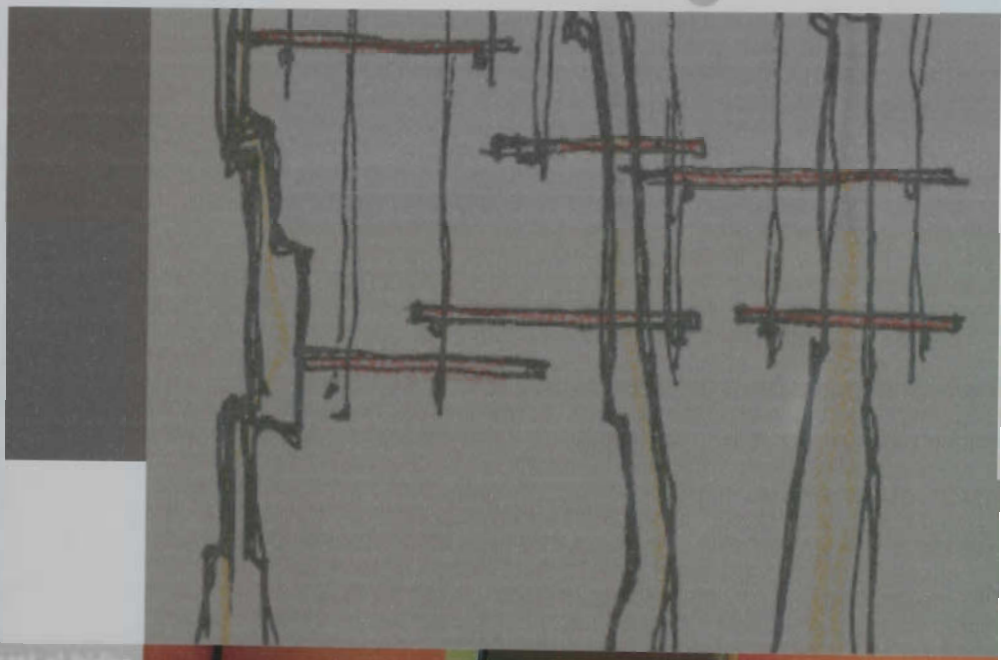


beginning concepts



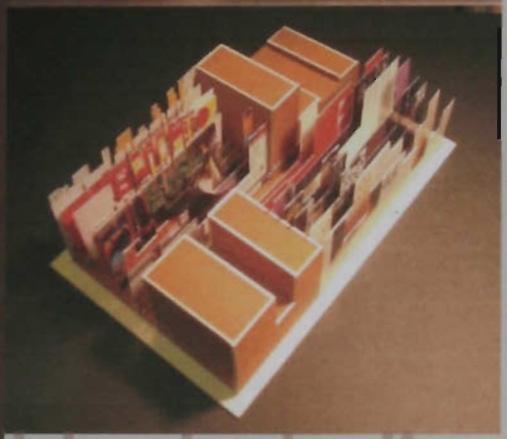
This model and sketch show the initial concept for the light well and how a building might form around it.

unit/building studies



These models show the concept of folding planes onto one another, something that promotes a blending and merging of lines and characters with the scale of multifamily housing.

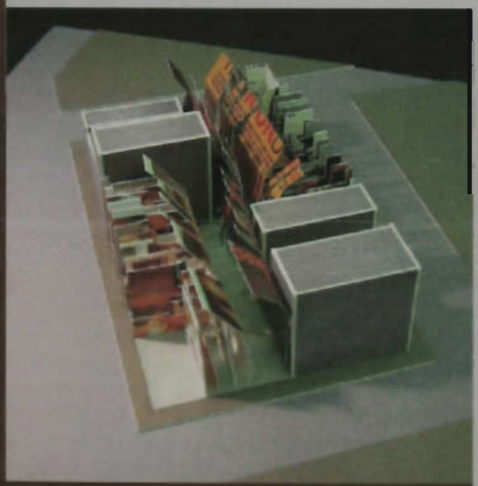
beginning concepts



These two models show a start at designing the entire block. By keeping a strong edge against the street it creates a continuous entity that fills in what empty space is available on the site as well as making this city block seem whole again by integrating the new construction with what is existing.

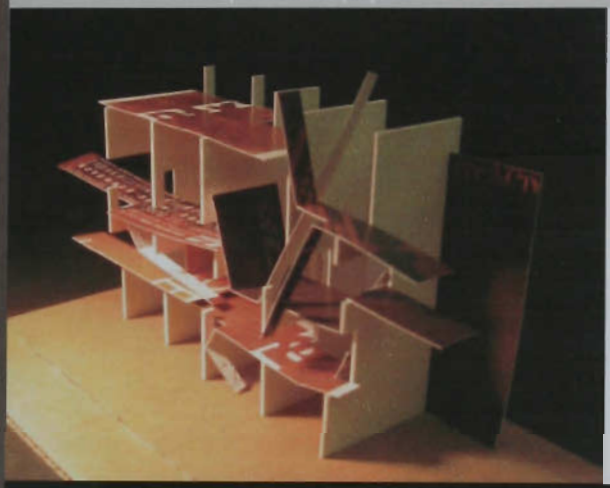
block studies

The studies show a configuration from the edge of the street through the building into the courtyard from ground plane to sky. This was the first concept of what an entire project might feel like with the designation of where units are to where circulation may happen. Two different methods were used in creating the models, one using vertical planes and the other using horizontal planes.

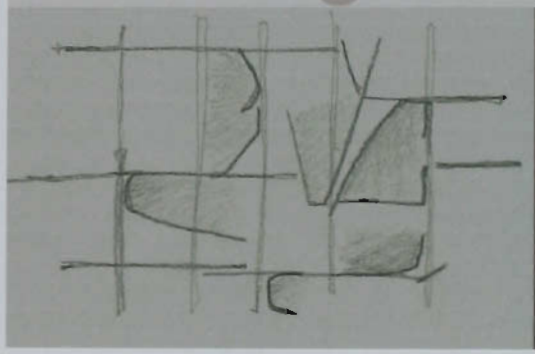


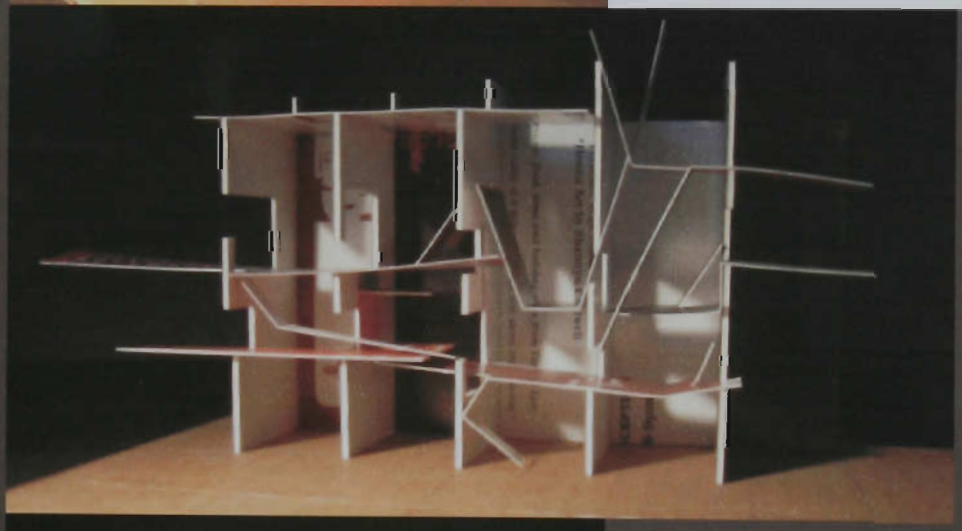
intermediate concepts

This model begins from the idea of the vessel for a stranger, and the concept of the integration of life from those who surround us. The notion that the project could be a merging of the inhabitants personalities both literally through the adaptation of their own unit and also metaphorically with the uses of architectural elements that visually and experiencially weave the apartments together, weave the apartments with the community spaces and weave all of the program with the circulation. The model represents only the idea of integration and is not meant to be the literal spaces in the project.



weaving study



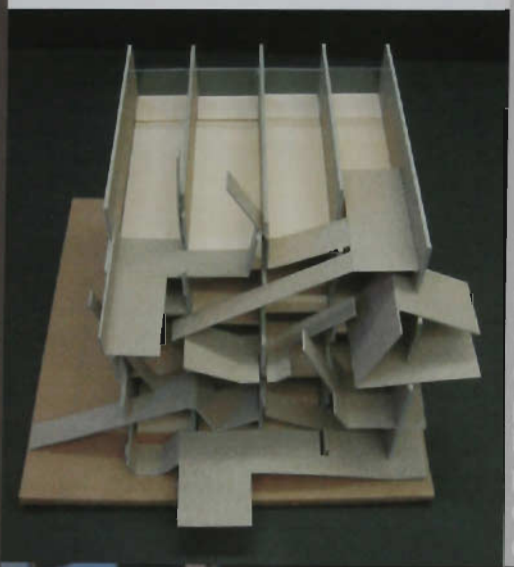


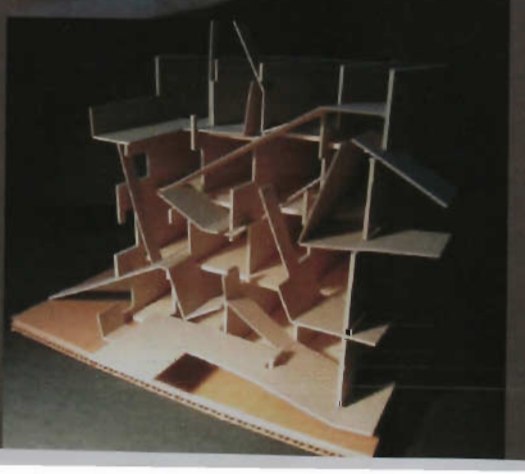
The model focused on here shows the weaving of several units together on several levels. The model can also be thought of at many different scales, where the next model shows a more defined scale

intermediate concepts

weaving the units

This model was done as a more careful exploration into the the notion of weaving the building together. Here the pieces that are weaved are seperate from the actual units themselves, creating two different systems that are apparent. There is an obvious hierarchy of what is concrete and regulated from what is allowed to intertwine with other pieces. The concept creates an intersting dialogue between what would probably be circulation and what is defined as the units, the gesture proves to be too complex and arbitrary, although parts of this concept will be used later on.



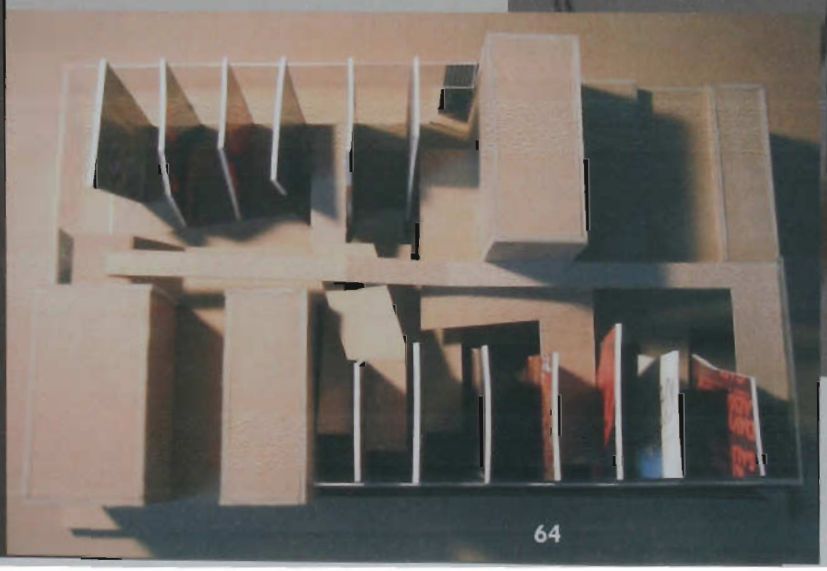


This model was at the scale of only a few units, showing the dimension mainly of circulation and pedestrian activity. The next model experiments with the concept at the scale of the entire project, integrating units with circulation and community space.

intermediate concepts

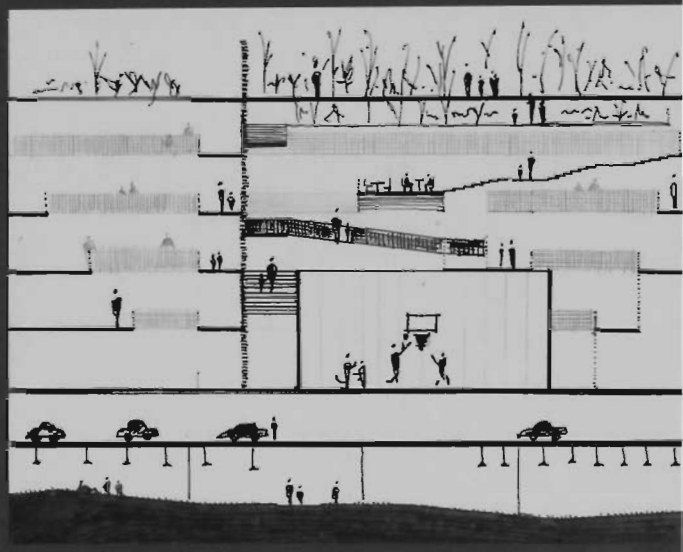
weaving the block

This was the first attempt at tying the entire architectural gesture together, with the focus on how the central circulation spaces and community spaces would be connected together. It also addresses how the ground level might meet the street and what the materiality could be. This provides for a variety of dimension and functions in a dynamic movement.

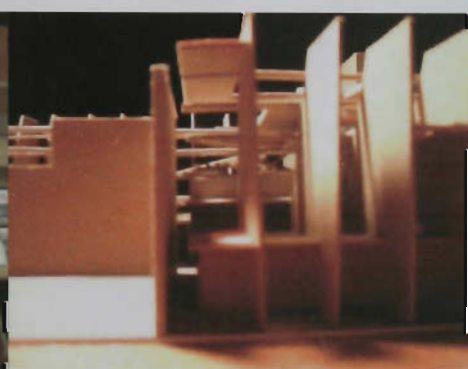


intermediate concepts

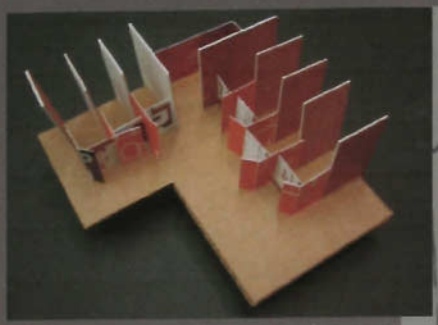
assemblage of space

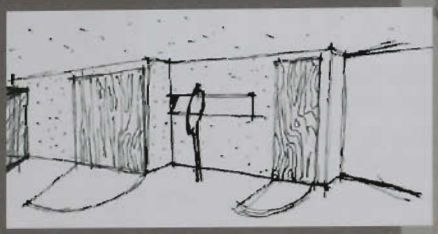


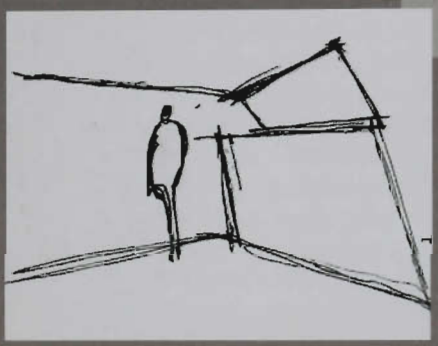
This design is an attempt to make the previous concepts into an architectural program. The main focus is the central courtyard and communal spaces, but the units are also kept intact and expressed. Several schemes were experimented with for the corridor design before this model was created. What is shown is a culmination of the ideas of integration and weaving into the units and through the entire project. The sketch shows a cross section through the middle of the buidling where the two parts of the building intersect and many paths are crossed.

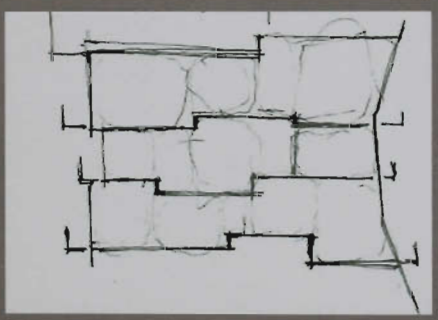


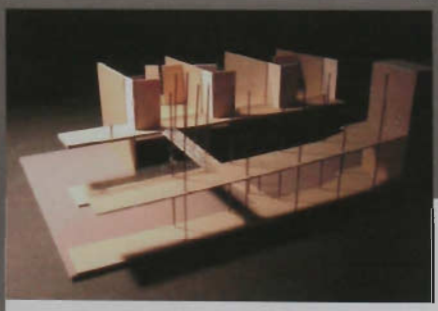
intermediate concepts

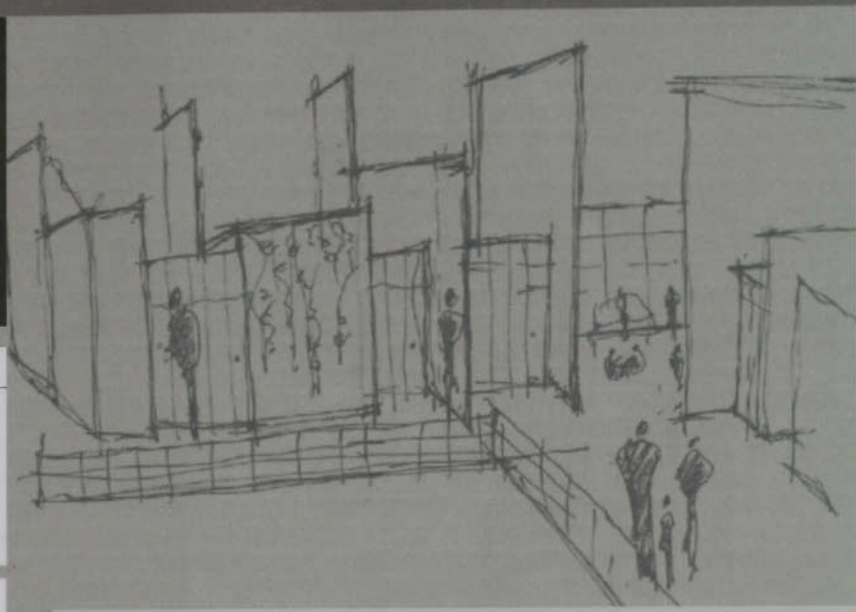






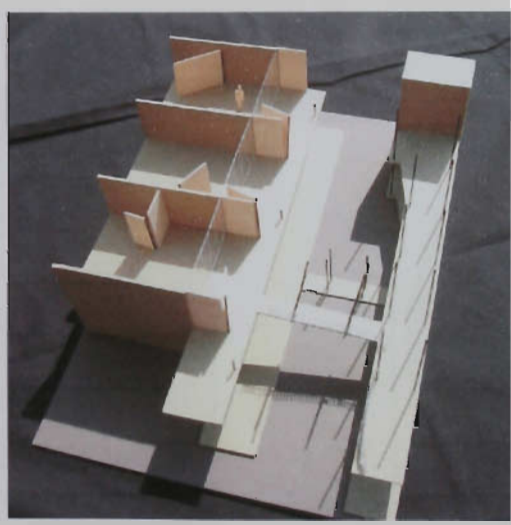






unit connection studies

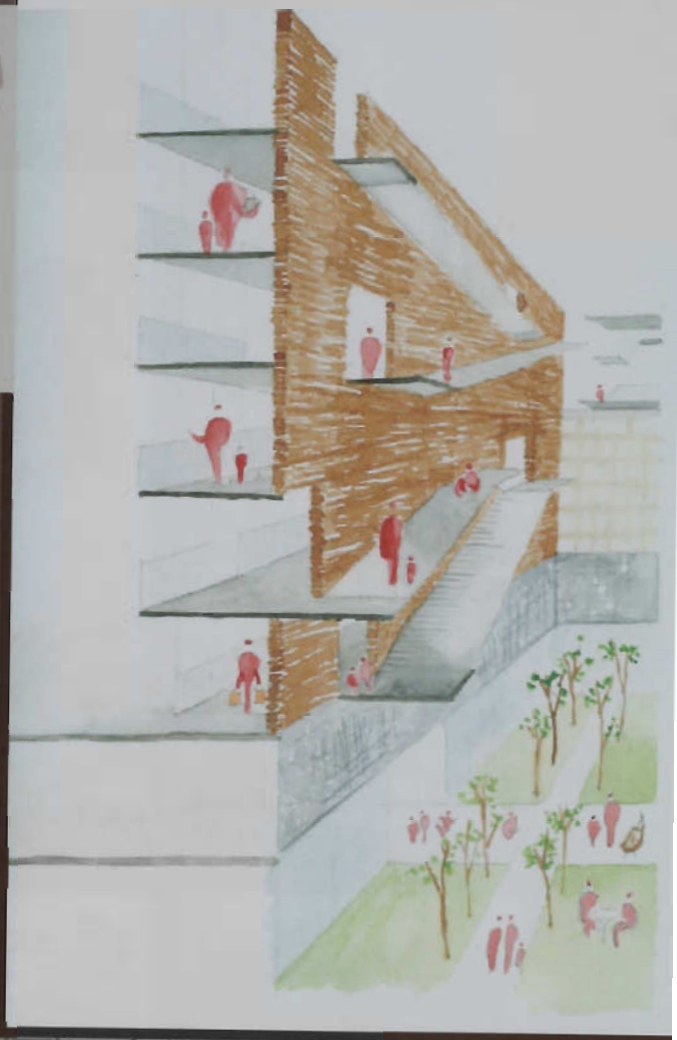
These studies were done to explore the connections that the individual apartments have with each other, with the exteral spaces and the quality of the interior spaces. The sketches explore How units fit together in section and in plan, and how the light wells begin to take shape from an inhabitants point of view.

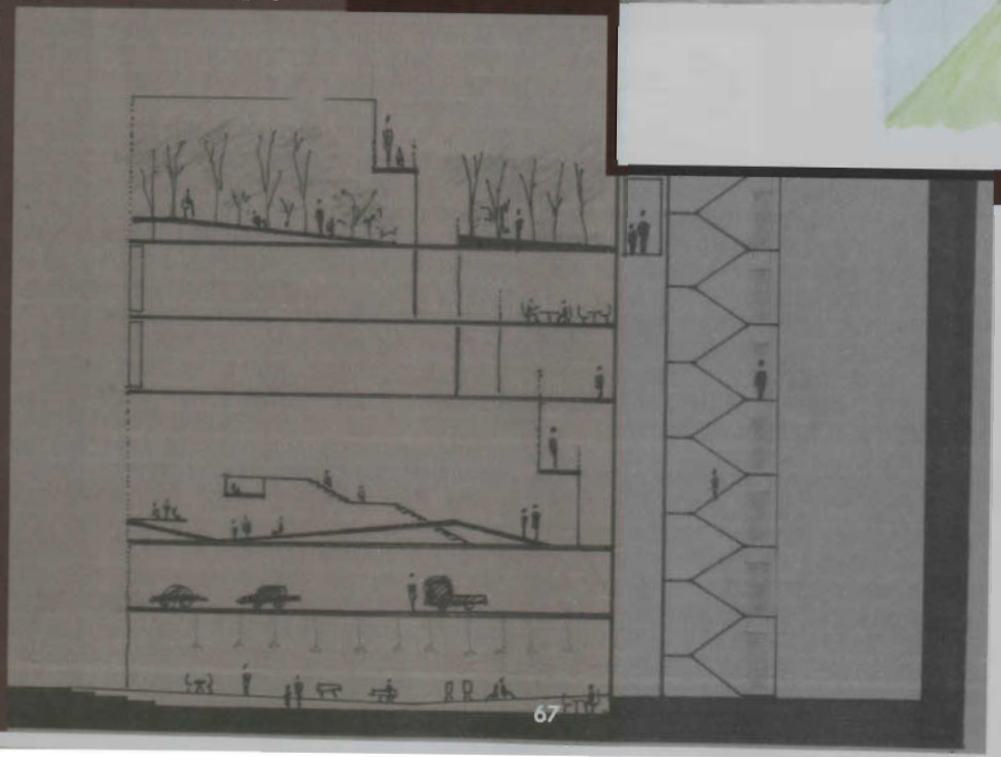


architectural concepts

experience space

These sketches begin to show the quality of space that is beginning to take form. Below is a section of the edge of the building, showing a range of activities: from the units to the rooftop garden terrace to the play spaces for children. The spaces are a series of tilted planes and ramps which merge one space continuously with another. To the right is a section of the main corridor space, a central node where movement is the main focus, on one side of the pourous wall is functional circulation, while on the other is leisurely circulation and gathering spaces.

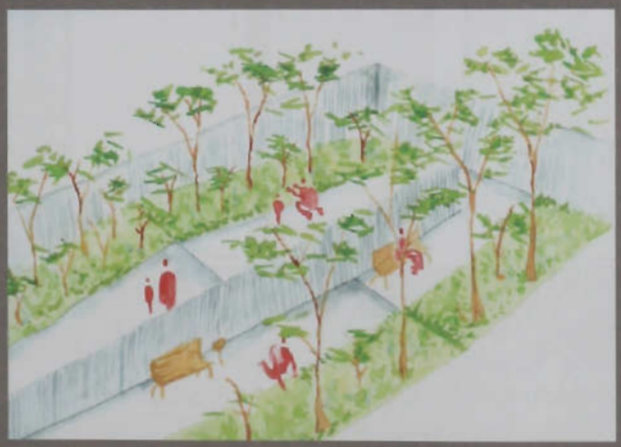




architectural concepts

experience space

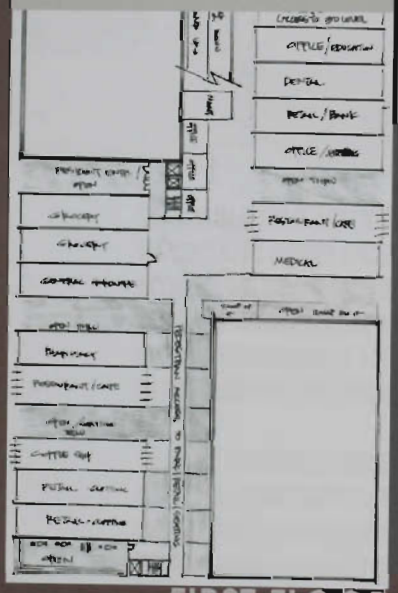
These water colors show a variety of spaces where people commune together. To the left is some of the circulation areas combined with play ramps for children. The staircase in this case is more for gathering than egress. Directly below shows a view into the laundry room, which is combined with internet access tables and a small snack or coffee bar, with chairs/couches for seating while waiting for laundry. In the corner is a view of one of the garden terraces, which are useful for either just relaxing or personal gardening if one desires.



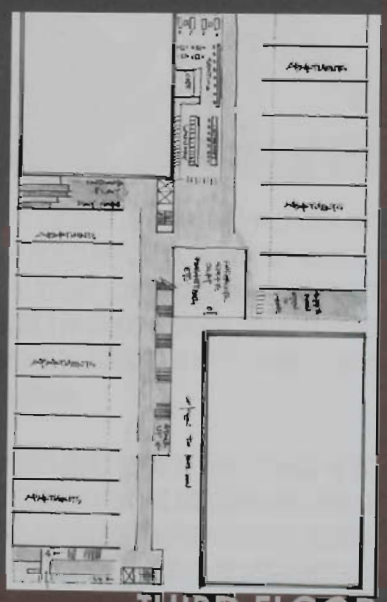
architectural concepts

BROADWAY ELEVATION

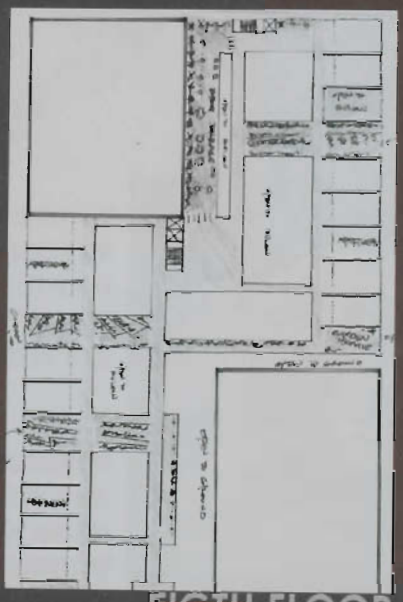
forming an architecture



FIRST FLOOR



THIRD FLOOR

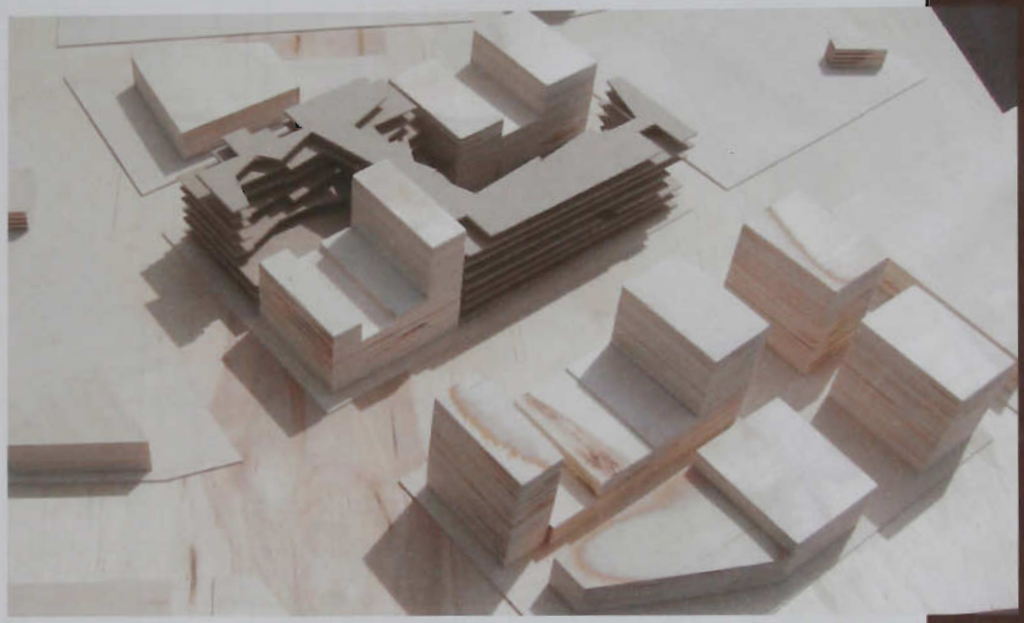


EIGTH FLOOR

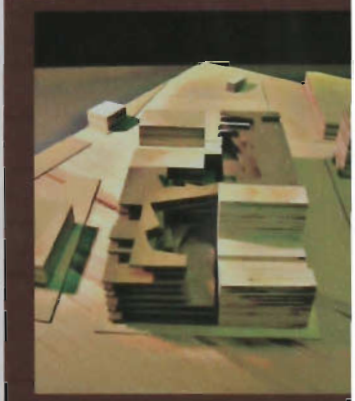
Here the floor plans begin to form and the programmed spaces are placed more definitely. The concept of weaving is still carried through into the plans. The elevations shows where the units are placed and where the voids are taking place, at sparadic intervals so each unit is in proximity to a community space. From the street, a unit can be identified at the least, from its closeness to one of these voids.

final project

site plan



site model



GENERALLY THE CENTER OF A CITY IS RESERVED FOR LUXURY LIVING UNITS ONLY, WHILE LOWER-INCOME DEVELOPMENTS ARE PUSHED TO THE OUTSKIRTS. PLACING THE PROJECT WITHIN THE CITY IS AN ATTEMPT TO AVOID AN ISLAND OF LOW-INCOME HOUSING PROJECTS WHICH BECOME SOCIALLY, ECONOMICALLY, AND ARCHITECTURALLY CUT OFF FROM THE SURROUNDING COMMUNITIES. THE CHOSEN SITE IS AN ATTEMPT TO INTEGRATE THIS TYPE OF PROJECT INTO AN ALREADY ESTABLISHED NEIGHBORHOOD OF ALL ECONOMIC BACKGROUNDS, AS NOT TO COMPEL THE INHABITANTS THAT WOULD USE THIS PROJECT TO FEEL DETACHED AND ALIENATED.

THE PROJECT SITUATES ITSELF IN THE SITE SO THAT IT NEARLY COVERS THE ENTIRE VACANCY. THE SITE IS NEAR HARMONIE PARK AND THE HISTORIC THEATER DISTRICT. LOCATED NEARBY IS THE NEW COMPUWARE CENTER, GRAND CIRCUS PARK, THE OPERA HOUSE AND WOODWARD AVENUE. BOTH THE PEOPLE MOVER AND BUS STOP ARE JUST A SHORT WALK FROM THE BUILDING, AS WELL AS MANY OTHER BUSINESSES AND RETAIL OUTLETS. THE SURROUNDING AREAS ARE FAIRLY QUIET DURING THE DAY AND EVENING, BUT PICKS UP SOMEWHAT AT NIGHT, ESPECIALLY WEEKENDS. SOON, A NEW SKATING RINK WILL BE BUILT ONE BLOCK AWAY WHICH ADDS TO THE VARIETY OF ACTIVITIES TAKING PLACE HERE. THE RETAIL PROVIDED BY MY PROJECT WILL ADD TO THE PEDESTRIAN TRAFFIC AS WELL.

THE FOLLOWING PAGE (71) SHOWS A SITE PLAN OF THE SURROUNDING AREAS, AS WELL AS A ROOF PLAN OF THE PROJECT WITHIN THE SITE.


DETROIT OPERA HOUSE
SURFACE PARKING FOR OPERA HOUSE
SURFACE PARKING
LENOX - MADISON HOTEL
MILNER - ROYAL HOTEL
CENTER ST. PUB
CENTER ST.
OPERA HOUSE PARKING STRUCTURE
PAINT SUPPLY
GNC NUTRITION
STAFFING SERVICES
Vacant Retail
MOE'S PHOTO
Vacant Retail
HARMONIE PARK
STUDIOS CROSSWINDS
SURFACE PARKING
PEOPLE MOVER STATION
SURFACE PARKING
GRAND RIVER AV.
MANHOOD BARBERS/SPA
MEN'S CLOTHING
SURFACE PARKING
Vacant Retail
SPECTACLES
Vacant Retail
SURFACE PARKING
INTERMEZZO
HUNTER HOUSE
CAYENNE
Vacant Retail
LIQUOR STORE
Vacant Retail
Vacant Retail
Vacant Retail
STUDIO FOR ARCHITECTURE
RANDOLPH
GRATIOT AV.
PAWN SHOP
MACOMB
MEN'S CLOTHING
BALTIMORE LUNCH
THE WELL
BARBER
MEN'S CLOTHING
MONROE
WITHERELL
UNDER CONSTR. FUTURE 'POST BAR'
JEWELERS
DETROIT BEER CO.
SMALL PLATES
Vacant Retail
ANSELMO BLDG.
METROPOLITAN BLDG.
JOHN R
BROADWAY
MADISON
WOODWARD AV.
'OSLO'
CAFE
LOFT ENTR.
Vacant Retail
Vacant Retail
WIGS AND HAIR
GATED PARKING FOR LOFTS
DETROIT PUPPET THEATER / ART GALLERY
FARMER
GRAND RIVER AV.
REGISTER OF HISTORIC PLACES
1ST GALLERY
CAFE DE TROIT
Vacant Retail
BROADWAY
Vacant Retail
BERT'S ON BROADWAY
HARRY THE HATTER
Vacant Retail
UNDERGROUND PARKING
FARMER
LIBRARY
DETROIT PUBLIC LIBRARY
GRATIOT AV.
PEOPLE MOVER STATION
SURFACE PARKING
RANDOLPH
COMPUWARE PARKING STRUCTURE
COMPUWARE HEADQUARTERS
MONROE

SITE PLAN

final designs

floor plans

FIRST FLOOR

THE FIRST LEVEL INCLUDES RETAIL STORES AS WELL AS AMPLE SEATING AND PUBLIC SPACE. THE SHOPS INCLUDED ARE A GROCERY STORE, A CAFE, A RESTAURANT, A COFFEE SHOP, MEDICAL AND DENTAL OFFICE, A BANK, PHARMACY, CHILD CARE SERVICES, A HARDWARE STORE, AND A CLOTHING STORE. THESE AMENITIES ARE PROVIDED FOR BOTH THE RESIDENTS ALONG WITH THE PUBLIC. THE FIRST LEVEL PROVIDES 8 PUBLIC OPENINGS IN WHICH PEOPLE ARE ALLOWED TO CIRCULATE THROUGH THE GROUND FLOOR OF THE BUILDING FREELY. THE SHOPS ARE ACCESSED FROM THE EXTERIOR OF THE BUILDING ALONG THE STREET AND ALSO FROM THE COURTYARD SIDE WITHIN THE BUILDING. THIS SETTING CREATES A POROUS ENVIRONMENT IN WHICH PEOPLE ARE WELCOME INTO THE BUILDING AND ALLOWED TO MOVE FREELY. GRASS AND PLANTS ARE PROVIDED WHERE POSSIBLE, ALONG WITH TABLES AND CHAIRS. THERE ARE THREE POINTS OF ENTRY FOR A RESIDENT OF THE BUILDING: ONE AT EACH END ALONG WITH ONE IN THE CENTER. THESE VERTICAL ENTRANCES ARE NOT ACCESSIBLE BY THE PUBLIC FOR THE SECURITY OF THE RESIDENTS. THE GROUND LEVEL ALSO INCLUDES OFFICES FOR THE BUILDING MANAGEMENT AND MAINTENANCE.

SECOND FLOOR

THE SECOND LEVEL CONSIST PURELY OF PARKING, WHICH IS PROVIDED FOR THE RESIDENTS AND THE EMPLOYEES OF THE RETAIL STORES. THE ACCESS RAMP IS LOCATED ALONG GRATIOT AVENUE. VERTICAL CIRCULATION AND ACCESS IS LOCATED IN THREE PLACES FOR THE CONVENIENCE OF THE INHABITANTS. SOME GREENSPACE IS PROVIDED FOR A RELIEF FROM THE MONOTONY OF A PARKING DECK.

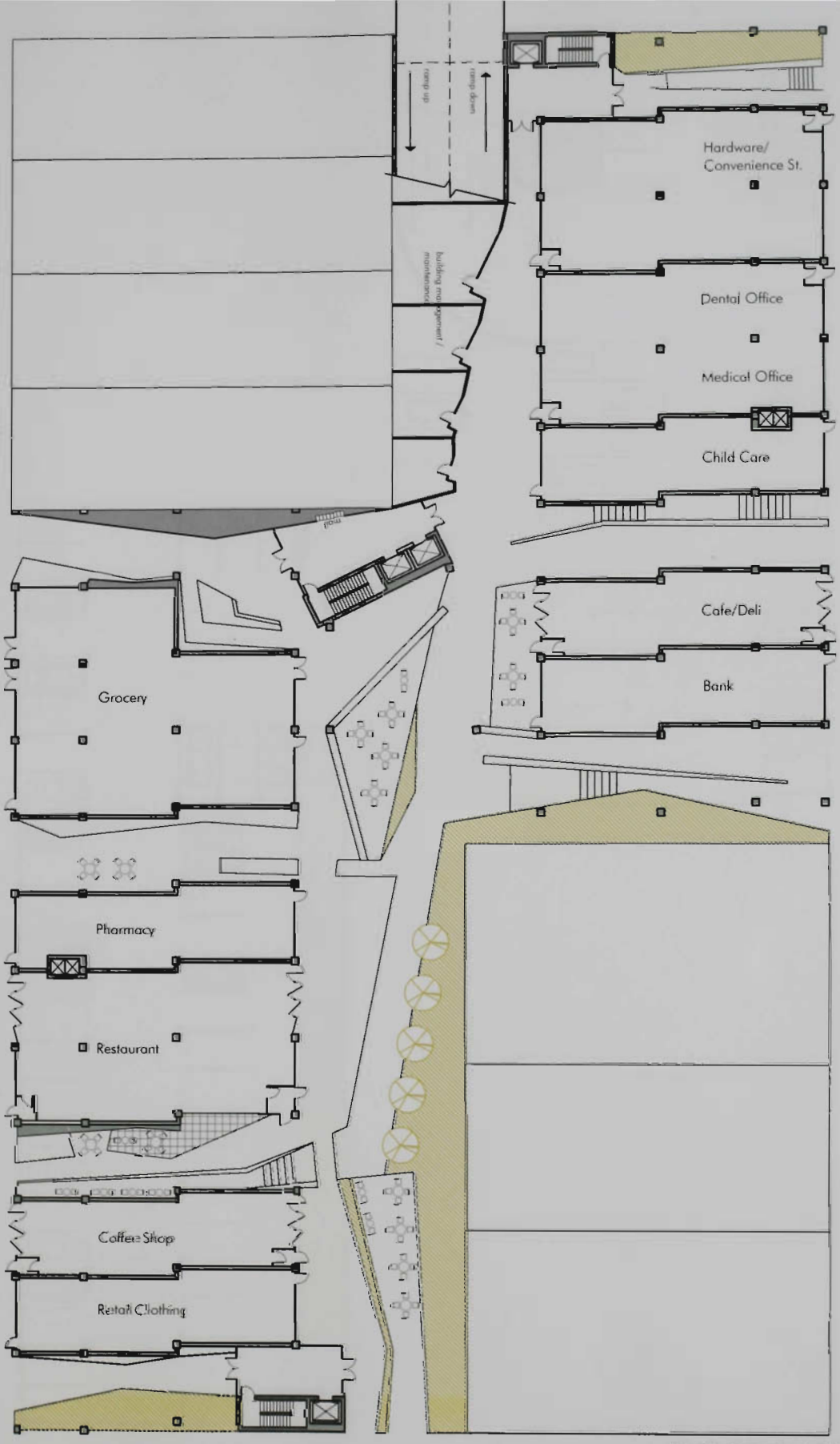
THIRD FLOOR

THE THIRD LEVEL IS WHERE THE RESIDENCES BEGIN, AND THE LARGEST ONES ARE PLACED HERE. THIS FLOOR CONTAINS BOTH 1430 SQUARE FEET APARTMENTS AS WELL AS 1040 SQUARE FOOT UNITS. THE LARGER OF THE 2 LAUNDRY ROOM IS LOCATED IN THE CENTER OF THE BUILDING, ALONG WITH A SMALL SNACK BAR, THAT IS POSSIBLE RUN BY A RESIDENT OF THE BUILDING. THIS FLOOR ALSO CONTAINS A GOOD DEAL GREENSPACE, BOTH BECAUSE IT IS THE LARGEST FLOOR AND ALSO BECUASE THIS IS WHERE THE LARGEST FAMILIES WOULD BE LIVING. THERE ARE TWO OUTDOOR CHILDREN'S PLAY AREAS, ALONG WITH 2 INDOOR. IN ADDITION, THERE IS A GARDEN WITH TREES LOCATED AT THE CORNER OF THE BUILDING, FOR ALL AGES. THE RAMPS AND STAIRS LOCATED ON THE EXTERIORS PROVIDE FUN MEANS OF TRAVEL THROUGHOUT THE BUILDING, FOR ADULTS AND CHILDREN. EACH RESIDENTIAL FLOOR HAS MAILBOXES LOCATED NEAR THE CENTER STAIR CORE. MANY OF THE SPACES WITHIN THE BUILDING AT THIS POINT TRANSGRESS MORE THAN ONE FLOOR, AND SOME ARE EVEN THREE STORIES TALL. AGAIN, PLENTY OF SEATING AND SPACE OUTSIDE THE APARTMENT IS PROVIDED SO RESIDENT CAN BE AWAY FROM THEIR HOMES BUT WITHIN THE COMFORT OF THE BUILDING.

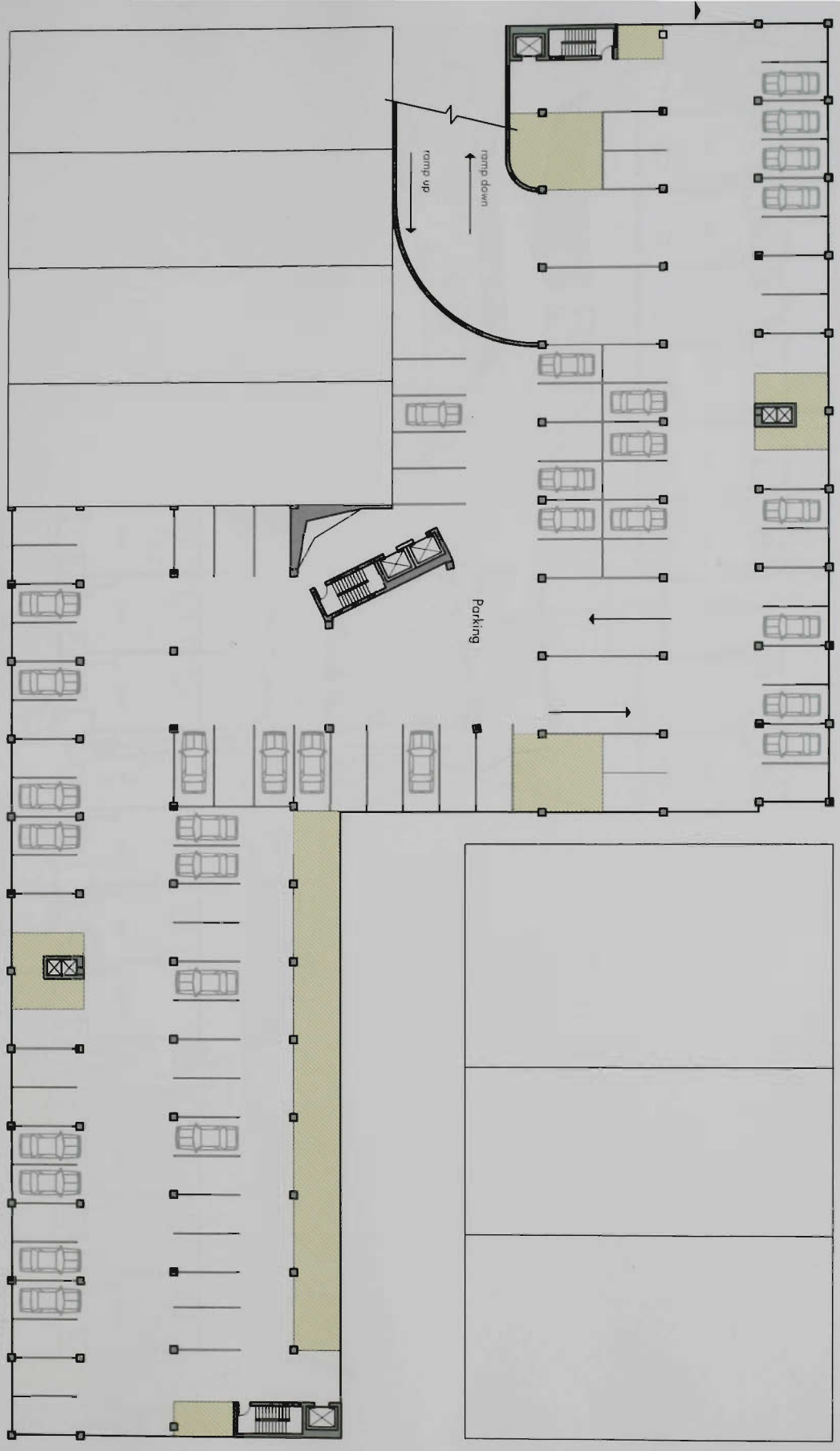
FOURTH FLOOR

THE FOURTH LEVEL CONTAINS THE FOLLOWING SIZE APARTMENTS: THE SECOND LEVEL OF THE 1430 SQUARE FOOT UNIT, THE FIRST FLOORS OF A 1340 AND 1350 SQUARE FEET APARTMENT, AND 960 SQUARE FOOT APARTMENT. THIS FLOOR, THEREFORE, WILL ALSO HOLD LARGE FAMILIES AND MANY CHILDREN. DIRECTLY ABOVE THE LAUNDRY ROOM ON THE THIRD LEVEL IS A INDOOR WEIGHT ROOM FOR THIS FLOOR, ADJACENT TO WHICH A INDOOR OPEN EXERCISE ROOM IS LOCATED ALONG WITH INTERNET ACCESS NEARBY. BALCONIES ARE PLACED TO LOOK DOWN ON THE PLAY SPACES THAT ARE LOCATED BELOW. SMALL STRIPS OF GRASS AND PLANTS BEGIN TO LINE THE WALKWAYS AND GIVE DEFINITION TO THE PLACEMENT OF THE UNITS. NON-EGRESS STAIRCASES ALLOW PEOPLE TO TRAVEL BETWEEN THIS LEVEL AND THE ONE ABOVE. A STUDY ROOM IS LOCATED ON THIS FLOOR WHICH PROVIDES A QUIET SPACE OUTSIDE OF THE HOME TO WORK OR DO HOMEWORK.

THE FOLLOWING PAGES (73 - 76) CONTAIN FLOOR PLANS FOR LEVELS 1-4.


ramp up
ramp down
building maintenance / management
Hardware/
Convenience St.
Dental Office
Medical Office
Child Care
Cafe/Deli
Bank
Grocery
Pharmacy
Restaurant
Coffee Shop
Retail Clothing

FLOOR PLAN 1



FLOOR PLAN 2


Children's Play
& Garden
1430
1040
1430
1040
1040
1040
ramp down
up
mail boxes
2 bench
Laundry
Cafe
2 bench
Children's Play
Indoor
ramp up
ramp down
1430
1040
Children's Play
Indoor
1040
1430
1040
stair down
stair down
ramp down
Children's Play
Outdoor
stair
up
1040
1040
1430
Garden

FLOOR PLAN 3

Internet Access
Indoor Weight Room
Indoor Open Exercise
Study Spaces
Open to Below
Balcony for Parents
Open to Below (Children's Outdoor Play)
ramp up (balcony)
Open to Below (Garden)
1340
1350
960
1480

FLOOR PLAN 4

final designs

floor plans

THE FIFTH LEVEL ALSO HAS A WIDE RANGE OF APARTMENT TYPES INCLUDING: THE SECOND FLOORS OF THE 1350 AND 1340 SQUARE FOOT UNITS, A SMALL UNIT CONSISTING OF ONLY 470 SQUARE FEET AND A MODERATE UNIT OF 860 SQUARE FEET. THIS FLOOR PROVIDES A CLASSROOM AND MORE PRIVATE STUDY SPACES, AS WELL AS AN OUTDOOR CHILDREN'S PLAY AREA WITH A SANDBOX. ALSO INCLUDED IS AN INDOOR, MULTI-PURPOSE ROOM THAT CAN BE USED FOR CHILDCARE AS WELL. A DESIGNATED OUTDOOR SEATING LOUNGE IS LOCATED WITHIN THE CENTRAL CORE OF THE BUILDING THAT CONTAINS TABLES AND CHAIRS. THIS SPACE IS LOCATED 2 FEET ABOVE THE MAIN FLOOR, AND IS ACCESSIBLE BY RAMPS AND STAIRS. MORE GREENSPACE IS PROVIDED, ALONG WITH BENCHES AND ANOTHER NON-EGRESS STAIR UP TO LEVEL 6.

FIFTH FLOOR

THE SIXTH LEVEL IS MUCH SIMPLER THAN THE PREVIOUS LEVELS. THIS FLOOR CONSISTS OF ONLY ONE APARTMENT TYPE WHICH IS THAT OF THE 760 SQUARE FOOT UNIT. THERE IS A LARGE GARDEN ON THE CORNER OF THE LIBRARY STREET SIDE, WHICH IS OPEN TO ABOVE, AND ANOTHER GARDEN WITHIN THE CENTER OF THE SAME SIDE. A MULTI-PURPOSE COMMUNITY ROOM IS LOCATED ON THE OPPOSITE SIDE OF THE BUILDING WHICH COULD FUNCTION AS A PLACE FOR LARGE GATHERINGS, PARTIES, OR CLASSROOMS. THE CENTRAL SPACE CONTAINS ONLY GRASS, PLANTS AND FLOWERS, A PLACE WHERE RESIDENTS COULD DO COMMUNITY GARDENING. A LONG RAMP SERVES AS A MEANS OF TRAVEL BETWEEN THIS LEVEL AND THE ONE ABOVE, AND SMALL STRIPS OF GREENSPACE ARE ALSO PROVIDED NEAR ALMOST EVERY RESIDENT'S UNIT.

SIXTH FLOOR

THE SEVENTH LEVEL CONTAINS TWO DIFFERENT APARTMENT TYPES AS WELL AS MANY COMMUNITY SPACES. THE APARTMENTS ON THIS FLOOR CONSIST OF THE FIRST FLOOR OF THE 885 SQUARE FEET APARTMENT AND A SMALLER 675 SQUARE FOOT APARTMENT. THERE ARE 2 GARDEN SPACES, INCLUDING PLANT-YOUR-OWN OPPORTUNITIES, AN OUTDOOR CHILDREN'S PLAYGROUND, A SMALL OUTDOOR SEATING AREA, AND AN INTERNET ACCESS ROOM. AGAINS, SLICES OF GRASS AND PLANTS LINE THE WALKWAYS THAT THE RESIDENTS USE TO TRAVEL FROM THEIR APARTMENTS TO THE MANY COMMUNITY SPACES, OR TO THE ELEVATOR/STAIR CORES. THE SECOND LAUNDRY ROOM IS LOCATED ON THIS LEVEL, WHICH IS SMALLER AND USED BY SMALLER FAMILIES. THERE ARE TWO STAIRCASES LEADING FROM THIS LEVEL TO THE EIGHTH, WHICH ARE NOT PART OF THE VERTICAL CORES. BALCONIES OVERLOOK THE GREENSPACES WHICH FALL BELOW THIS LEVEL.

SEVENTH FLOOR

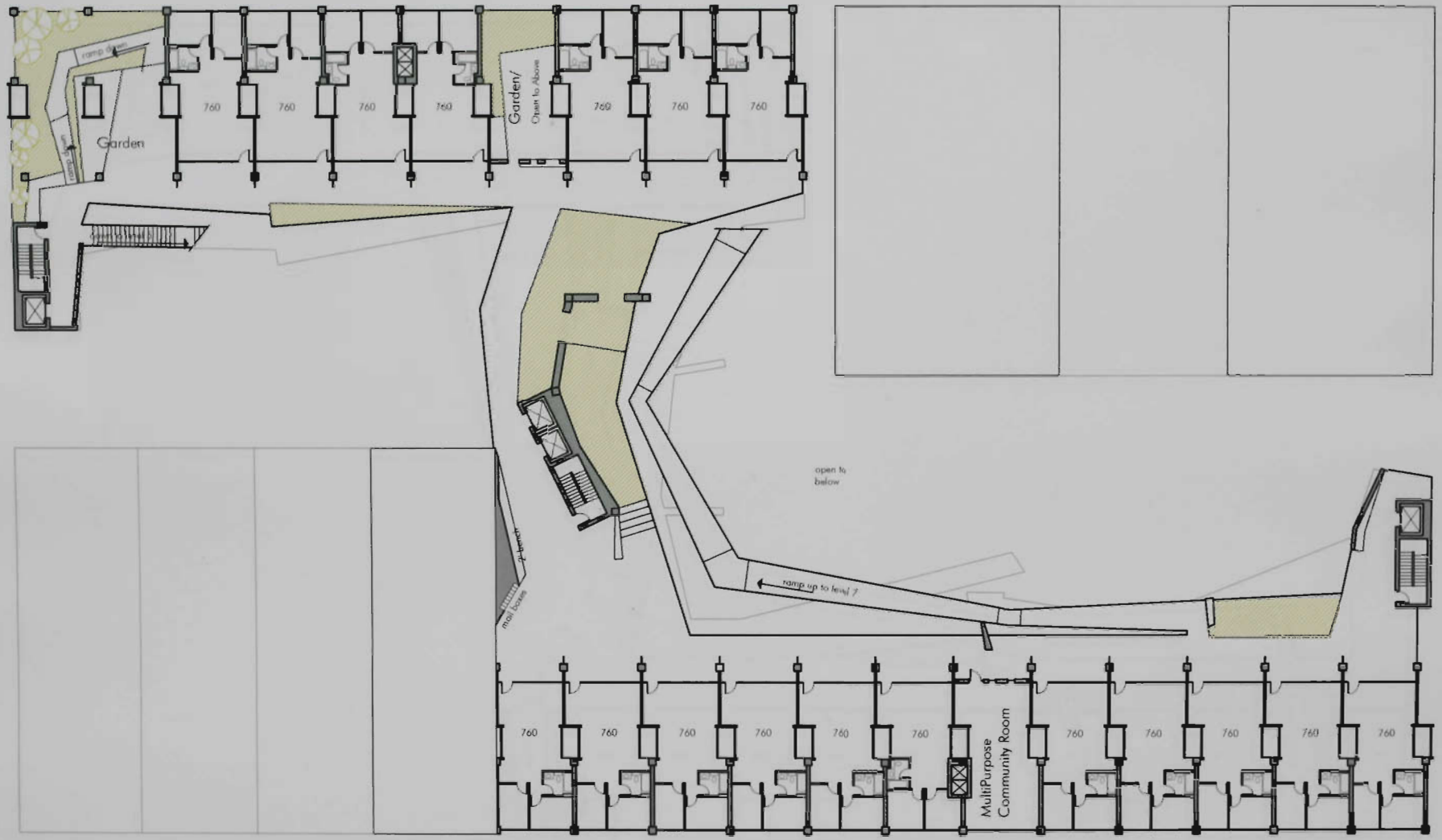
THE EIGHTH FLOOR CONSIST MOSTLY OF OPEN SPACE AND FEW APARTMENTS. THE APARTMENTS HERE ARE MADE UP OF THE SECOND FLOOR OF THE 885 SQUARE FOOT UNIT, A 380 SQUARE FOOT UNIT, AND A 620 SQUARE FOOT UNIT. MUCH OF THE SPACE IS OPEN TO THE GREENSPACES BELOW. A LARGE OPEN BAR-B-QUE AND SEATING AREA IS PROVIDED ALONG WITH AMPLE GRASS AREAS AND TREES, AS WELL AS AN INDOOR COMMUNITY ROOM. THIS LEVEL IS MEANT TO HAVE THE FEELING OF A ROOFTOP TERRACE, SO AS MUCH GREENERY AND PLANTLIFE IS PROVIDED AS POSSIBLE. ONLY THE UNITS ON THE BROADWAY ELEVATION ACTUALLY HAVE THEIR ENTRANCES ON THIS FLOOR, SO MOST OF THE LIBRARY SIDE IS LEFT FOR COMMUNAL GATHERINGS. THE LIGHT WELLS PROTRUDE AND ADD A SCULPTURAL QUALITY HERE, FROM BOTH THE STREET LEVEL AND THE PERSPECTIVE FROM THIS FLOOR.

EIGHTH FLOOR

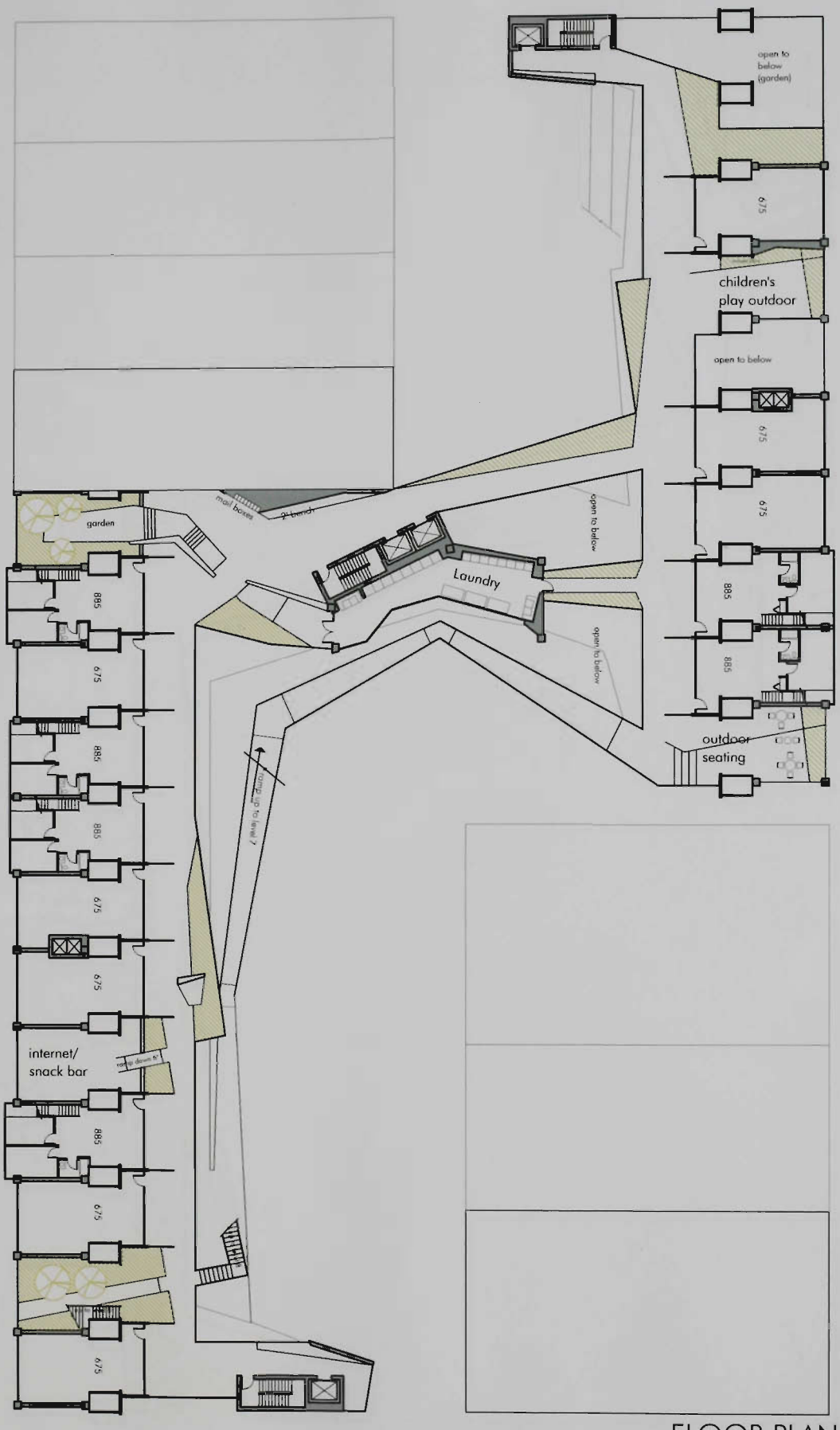
THE FOLLOWING PAGES (78 - 81) CONTAIN THE FLOOR PLANS FOR LEVELS 5-8.

FLOOR PLAN 5


1340
1350
470
860
Indoor Child Care/ Multipurpose
Internet Access
Class Room
private study
open to below
up to level 6
down to level 4
ramp up 4"
Outdoor Lounge
2'-0" above Level 5
ramp up 1"
ramp down 1"
mail boxes
Children's Play Outdoor
sand box


Garden
760
760
760
760
Garden/
Open to Above
760
760
760
open to
below
ramp up to level 7
760
760
760
760
760
760
MultiPurpose
Community Room
760
760
760
760
760

FLOOR PLAN 6


open to below (garden)
675
children's play outdoor
open to below
675
675
885
885
outdoor seating
open to below
open to below
Laundry
garden
mail boxes
2 bench
885
675
886
885
675
675
internet/ snack bar
885
675
675

FLOOR PLAN 7

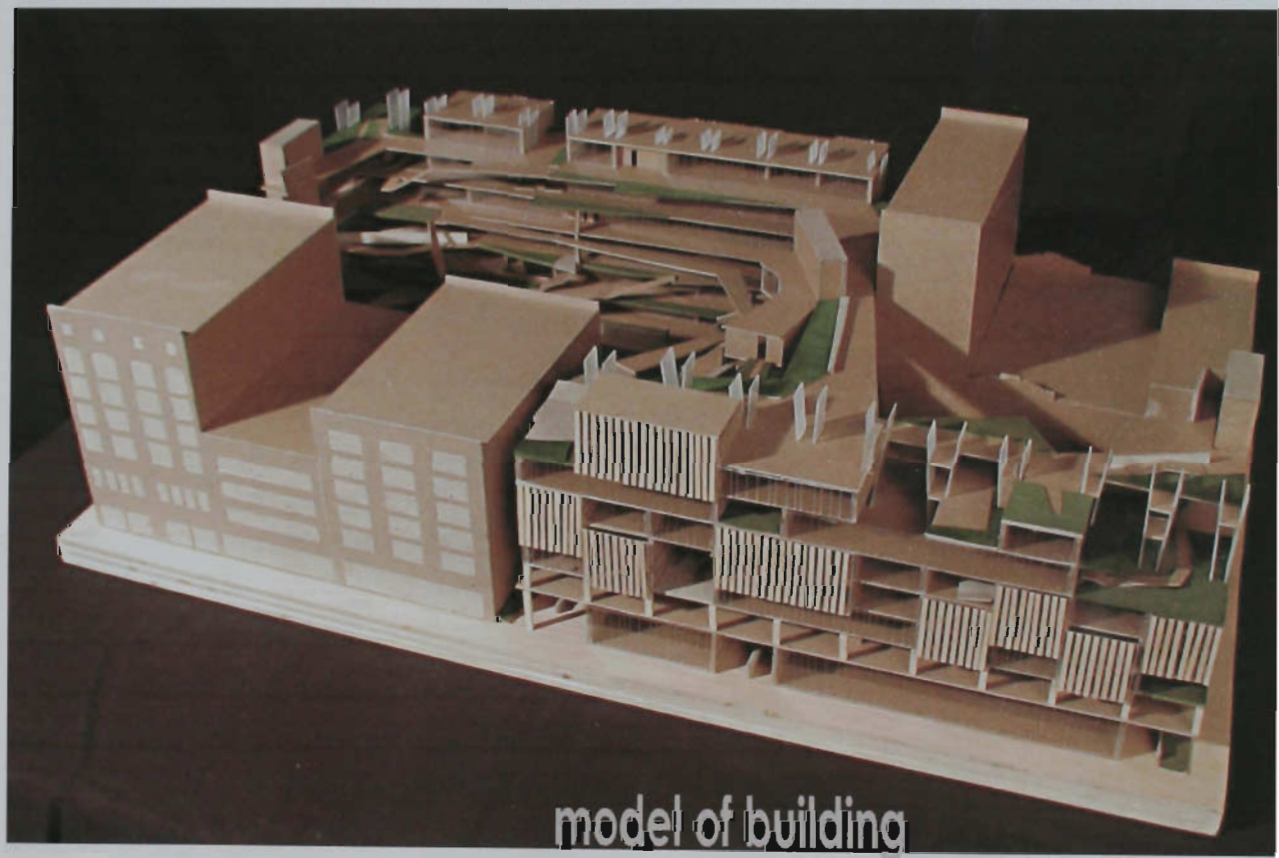
FLOOR PLAN 8


open to below
garden
open to below
BBQ &
seating
open to below
bench
bench
mail boxes
down to level
garden
open to
below
(garden)
380
620
380
380
Community
Room
620
380
620
885
885
885
885
open to
below
(garden)

final designs

final design concept

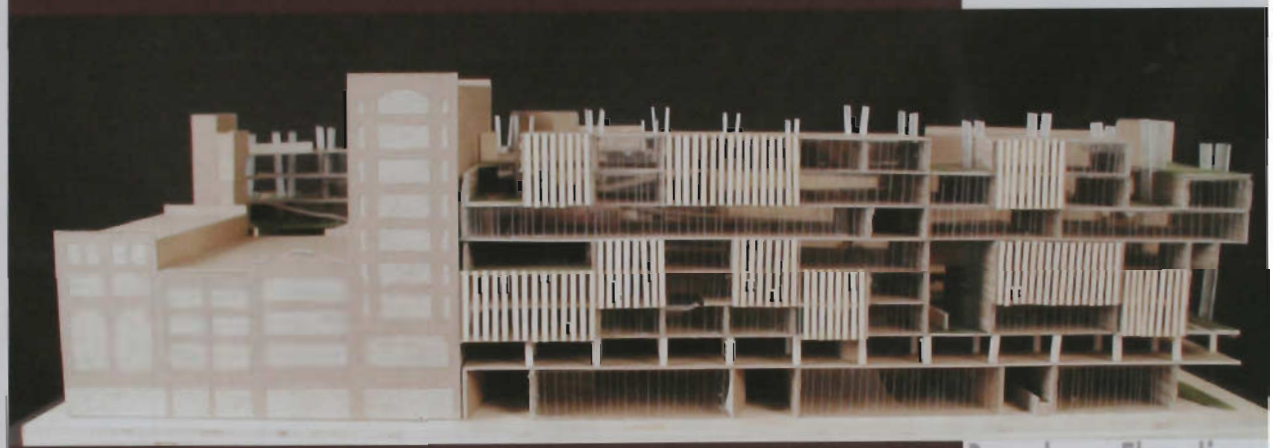
THE PROJECT IS MEANT TO BE A PERMANENT SOLUTION TO LOW-INCOME FAMILIES AND INDIVIDUALS. THE FORM OF THE BUILDING COMES FROM A SIMPLE STRUCTURAL GRID IN WHICH THE UNITS ARE PLACED WITHIN. THE GRID IS OCCASIONALLY BROKEN WITH THE INTRODUCTION OF TWO STORY UNITS, AND OTHER DOUBLE HEIGHT OR WIDTH COMMUNITY SPACES. THE EXTERIOR COLUMNS CLEARLY SEPARATE ONE UNIT FROM ANOTHER AND THE THICK PARTY WALLS ARE CARRIED THROUGH THE BUILDING. THE WALL BECOMES THINNER AS IT TRAVELS THROUGH FROM EXTERIOR TO INTERIOR, WHERE THE SEPARATION BECOMES BLURRED. A LIGHT WELL IS INSERTED BETWEEN EACH UNIT FOR ADDITIONAL LIGHT INTO THE DEPTH OF THE SPACES. THE LIGHT WELLS BECOME ARTICULATED ON THE ROOF OF THE BUILDING AS SCULPTURAL ELEMENTS. ONE CAN IDENTIFY THEIR UNIT IN RELATION TO THE TWO-STORY UNITS OR COMMUNITY SPACES THAT ARE ARTICULATED ON THE EXTERIOR OF THE BUILDING.



model of building

final designs

elevations



Broadway Elevation

THE TWO STORY UNITS SKINNED IN VERTICAL WOOD SHADING DEVICES ARE EXPRESSED ON THE EXTERIOR. THE ROOFTOP GARDENS CAN BE SEEN FROM THE STREET AS WELL AS THE THE LIGHT WELLS PROTRUDING FROM THE TOP FLOORS. THE CONTINUOUS FACADE OF THE BUILDING COMPLETES THE BLOCK SO THAT IT IS NOT BROKEN.

Library Elevation

THE DRAWINGS ON THE FOLLOWING PAGES (84 - 86) MORE CLEARLY SHOW THE DETAILS AND SHADES OF THE ELEVATIONS.

BROADWAY ELEVATION

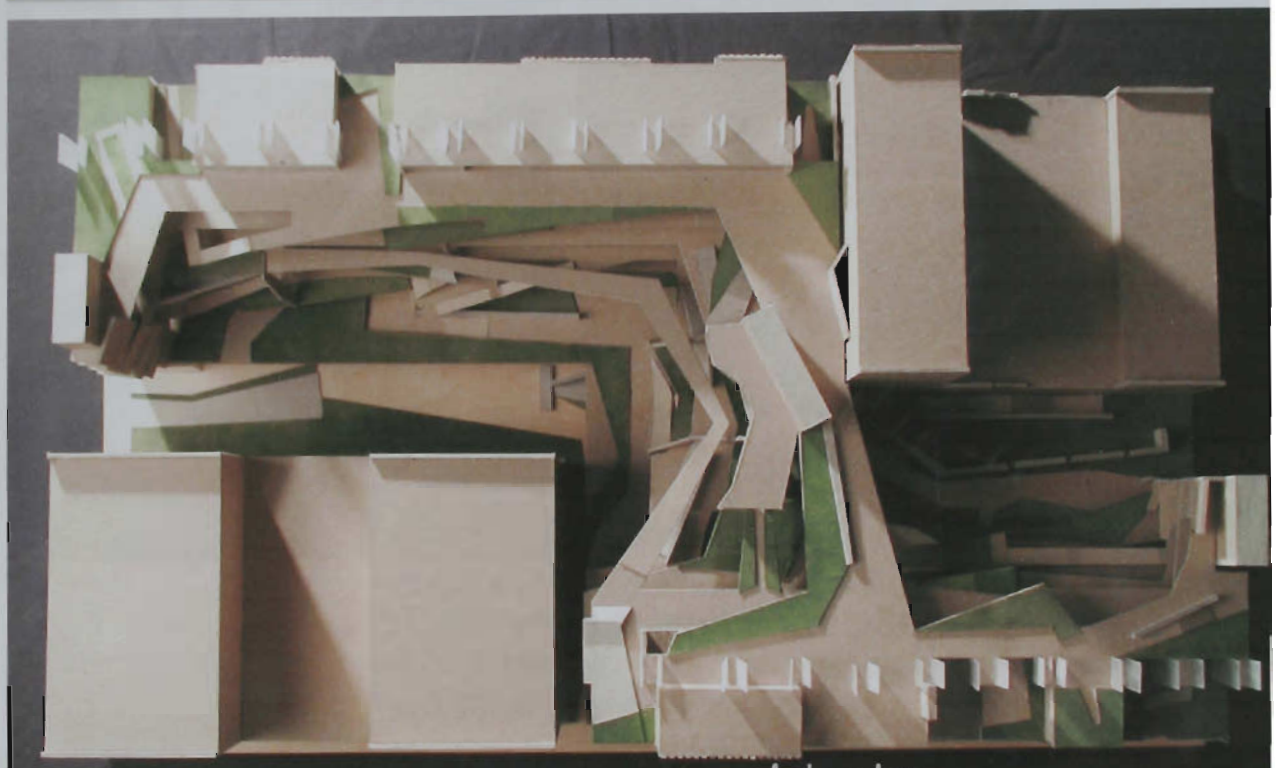
LIBRARY ELEVATION

GRAND RIVER ELEVATION


COMERICA
ALI BABA's deli
kids play

final designs

internal courtyard



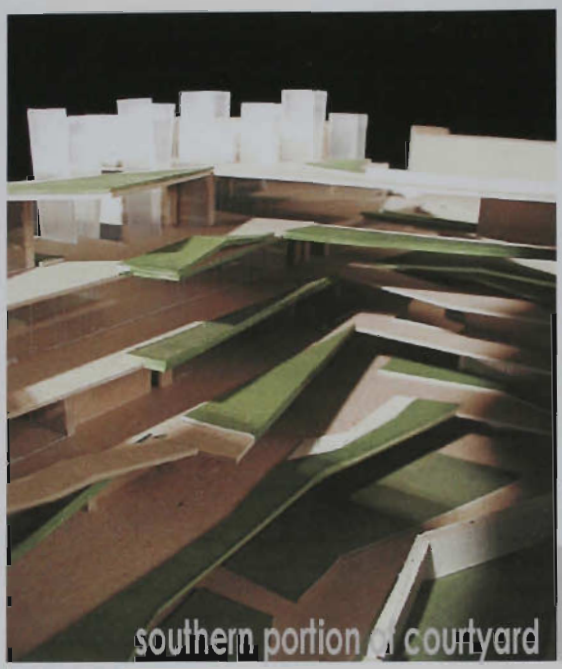
roof plan view

WITHIN THE BUILDING, THE COURTYARD IS WHAT BECOMES THE CENTRAL FOCUS POINT WHICH HOLDS THE MANY COMMUNAL SPACES WITHIN THE BUILDING. THESE SPACES INCLUDE A VARIETY OF FUNCTIONS FROM THE MAIN VERTICAL CIRCULATION, THE LAUNDRY AND EXERCISE FACILITIES, SEATING AND LOUNGE SPACE AND GREENERY. THE REMAINING COMMUNAL SPACES THAT TAKE PLACE IN OTHER PARTS OF THE BUILDING INCLUDE INTERNET ACCESS, CLASSROOMS AND STUDY SPACES, MULTI-PURPOSE ROOMS, A SNACK BAR, INDOOR AND OUTDOOR PLAYGROUNDS FOR CHILDREN, VARIOUS INDOOR AND OUTDOOR SEATING AREAS AND PLENTY OF GARDENS AND GREENSPACES. THE ANGLES OF THE CIRCULATION CORRIDORS CONCENTRATE ON THE CENTER WHILE CREATING INTERESTING SPACES FOR PEOPLE TO OCCUPY.

view from Grand River

final designs

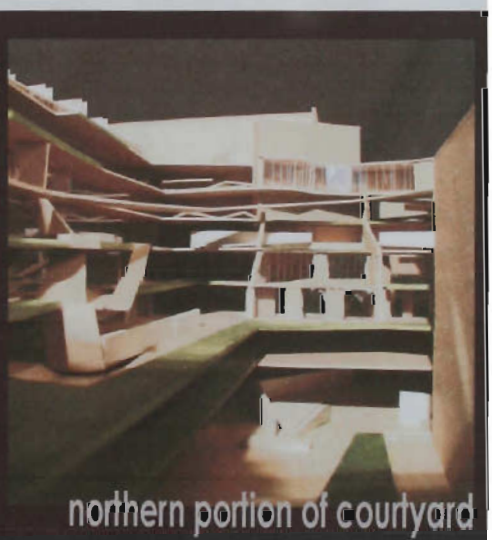
THE DRAWINGS ON THE FOLLOWING PAGES ARE SECTIONS WHICH SHOW THE QUALITY OF THE SPACES IN THE COURTYARD. THE FIRST SECTION (PAGE 89) IS ONE LOOKING UNITS IN ELEVATION ON THE COURTYARD SIDE. THE NEXT SECTION (PAGE 90) IS CUT THROUGH THE LIBRARY SIDE OF THE UNITS. THE FINAL SECTION (PAGE 91) CUT IS THROUGH THE SHORT SIDE OF THE BUILDING IN THE CENTRAL CORE.



southern portion of courtyard

a space for everyone

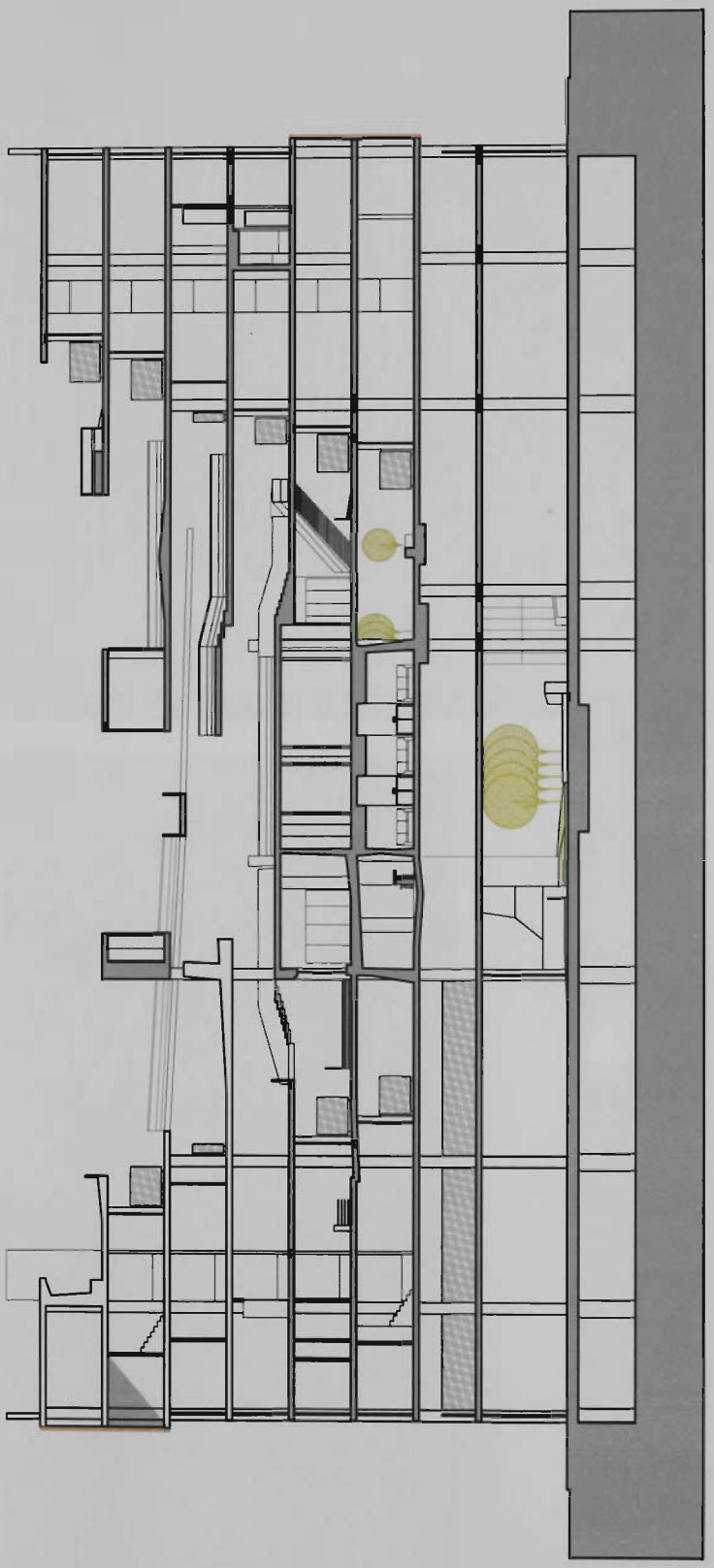
THE MANY SMALL SPACES CREATED BY THE ANGLES PLACED CREATE **A SPACE FOR EVERYONE.** THE VARIETY OF **RAMPS, STAIRCASES, PATHS, WALKWAYS AND SPACES IN BETWEEN** CREATE **NOOKS FOR ANYONE** OF ANY AGE TO FIND A PLACE OUTSIDE THEIR APARTMENT TO SPEND TIME. THE **CIRCULATION** SPACES PROVIDE BOTH FUNCTIONAL MEANS OF TRAVEL AS WELL AS ALTERNATIVE MEANS AS A **PLAYFUL GESTURE** FOR CHILDREN ESPECIALLY. THESE RAMPS, PATHS AND IN BETWEEN SPACES **CONNECT** THE MANY COMMUNITY SPACES IWTH THE CORRIDOR AND THE CENTRAL CORE IN A CONTINUOUS MANNER. THESE **SPACES OUTSIDE THE APARTMENT** PROVIDE A MEANS FOR NEIGHBORS TO **INTERACT** WITH EACH OTHER RATHER THAN ISOLATE THEM WITHIN THEIR HOMES.



northern portion of courtyard

SECTION

SECTION



SECTION

final designs

exterior

apartment design

perspective of detail model

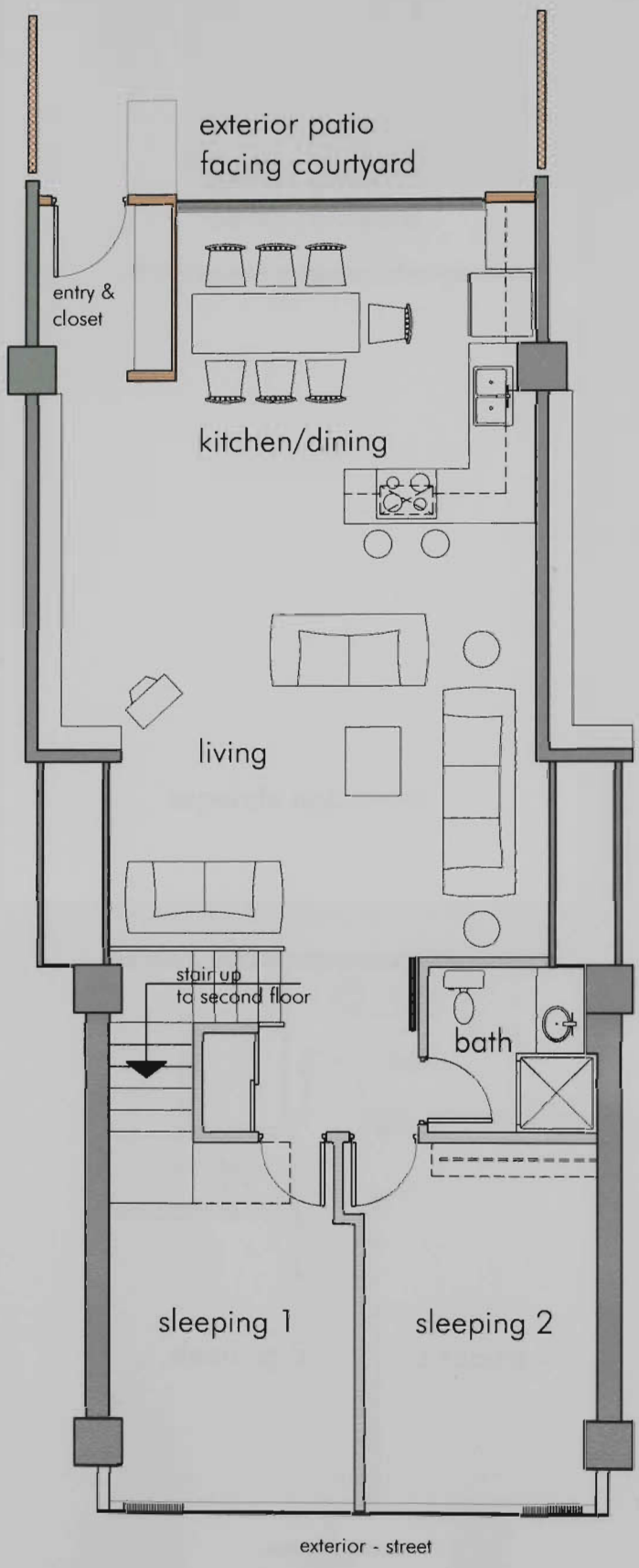
final designs

2 apartment entrances

THE FOLLOWING PAGES SHOW DETAILED PLANS OF 2 DIFFERENT SIZE UNITS. PAGE 95 - 96 CONTAINS A 1430 SQUARE FOOT UNIT, WITH 2 BATHS AND 4 BEDROOMS. THE DINING ROOM HOLDS 7 PEOPLE WITH AN ADDITIONAL TWO AT THE BAR AREA. PAGE 97 SHOWS A 470 SQUARE FOOT STUDIO APARTMENT CONTAINING A HALF-BEDROOM AND ONE BATH. THE DINING AND LIVING SPACES ARE FLEXIBLE FOR THE TENANT TO CHANGE TO HIS/HER NEEDS. THE APARTMENT IS SHALLOW ENOUGH SO THAT THE SLEEPING AREA CAN BE PENETRATED BY LIGHT EVEN THOUGH THERE IS NO DIRECT WINDOW.

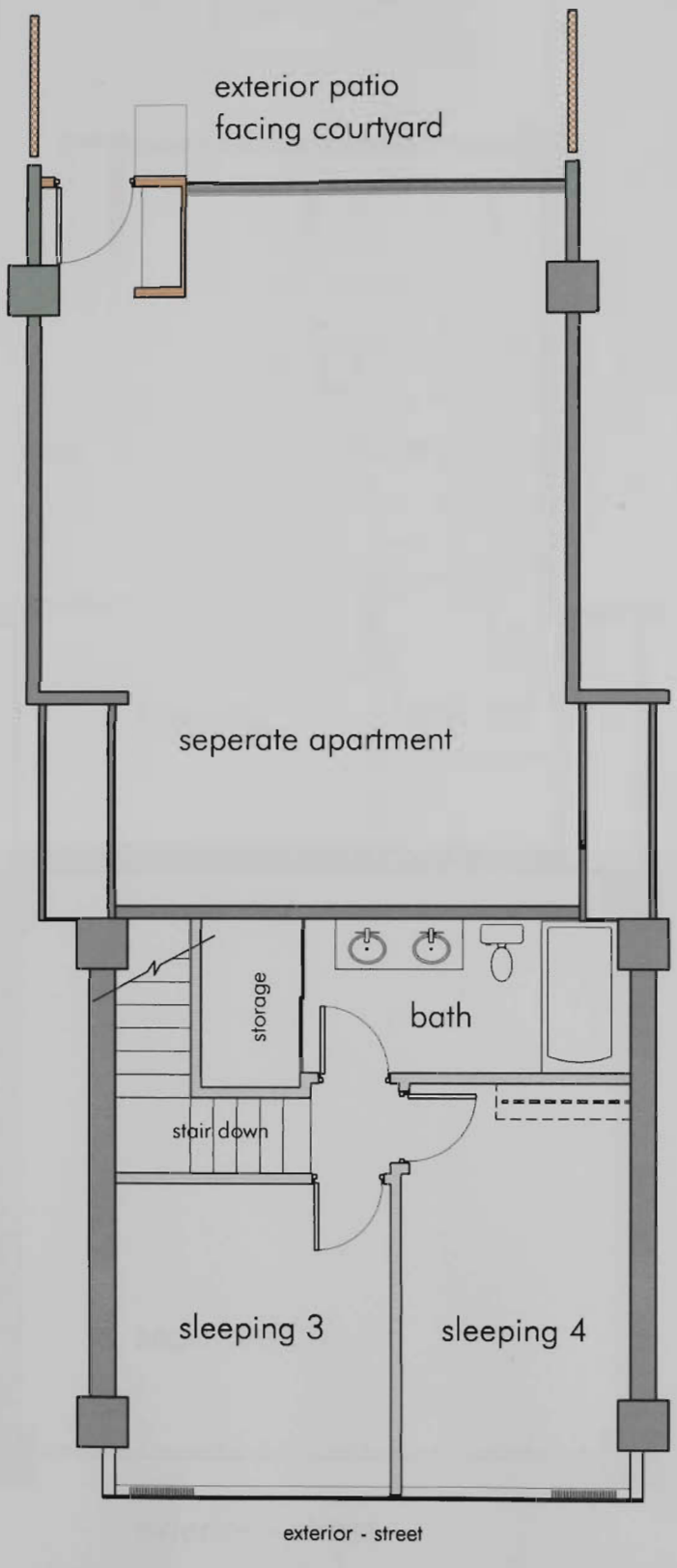
apartment design

PAGES 98 AND 99 CONTAIN DRAWINGS OF DETAILED SECTIONS AND ELEVATIONS OF THE ARRANGEMENT OF THE APARTMENTS, FROM THE STREET TO THE INTERIOR CIRCULATION CORRIDORS.



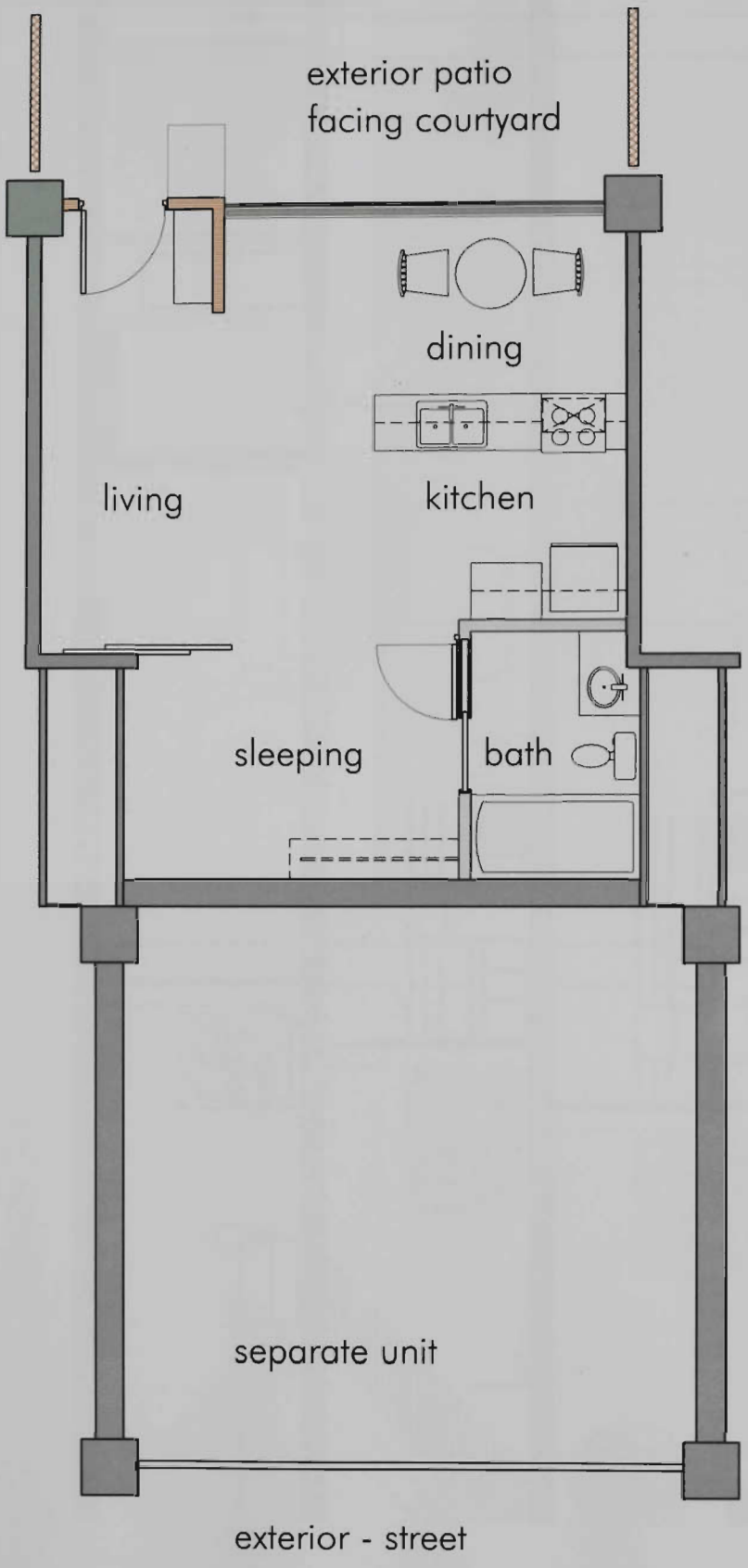
LARGE APARTMENT - 1430 sq. ft.

FIRST FLOOR



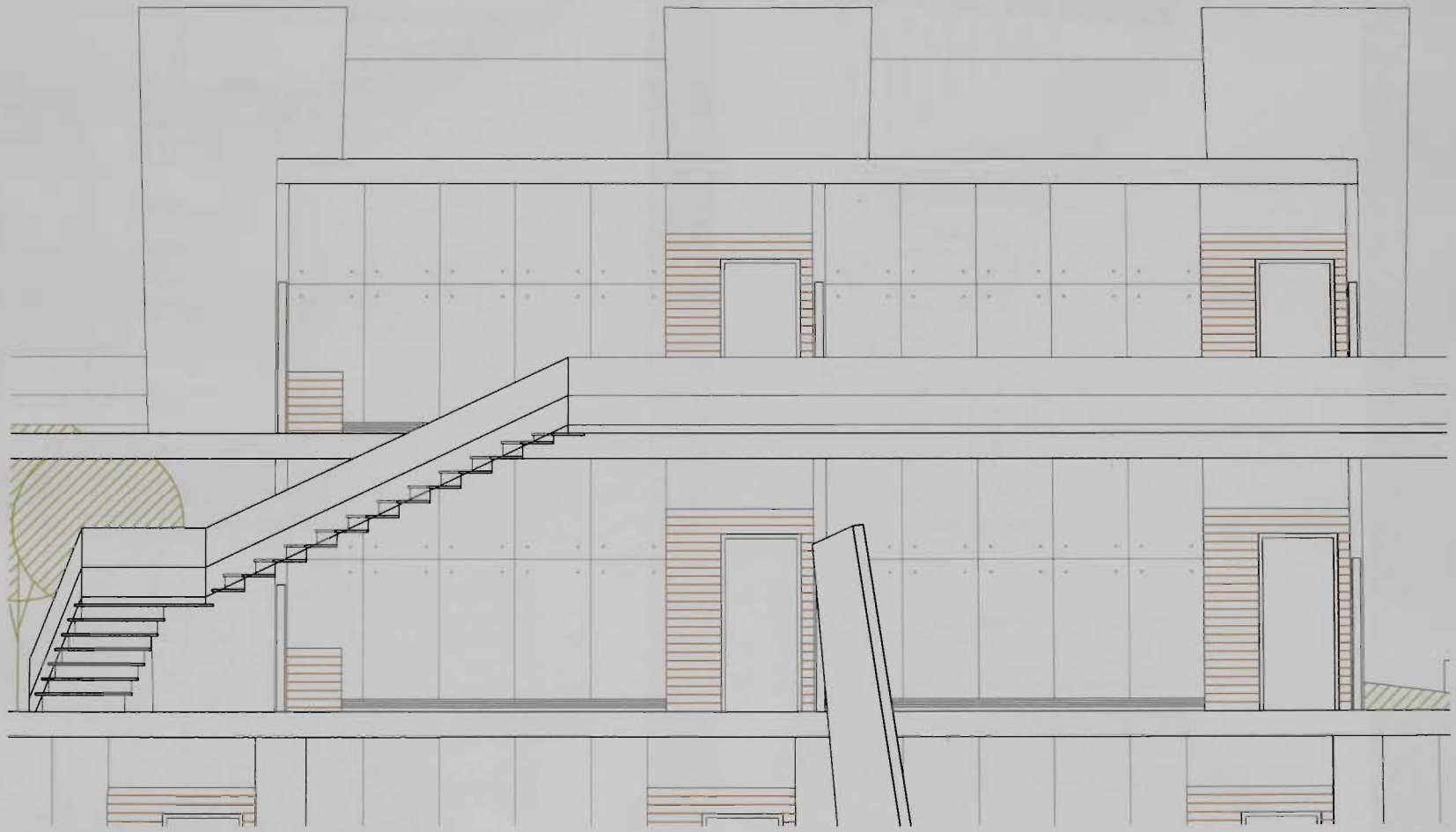
LARGE APARTMENT - 1430 sq. ft.

SECOND FLOOR



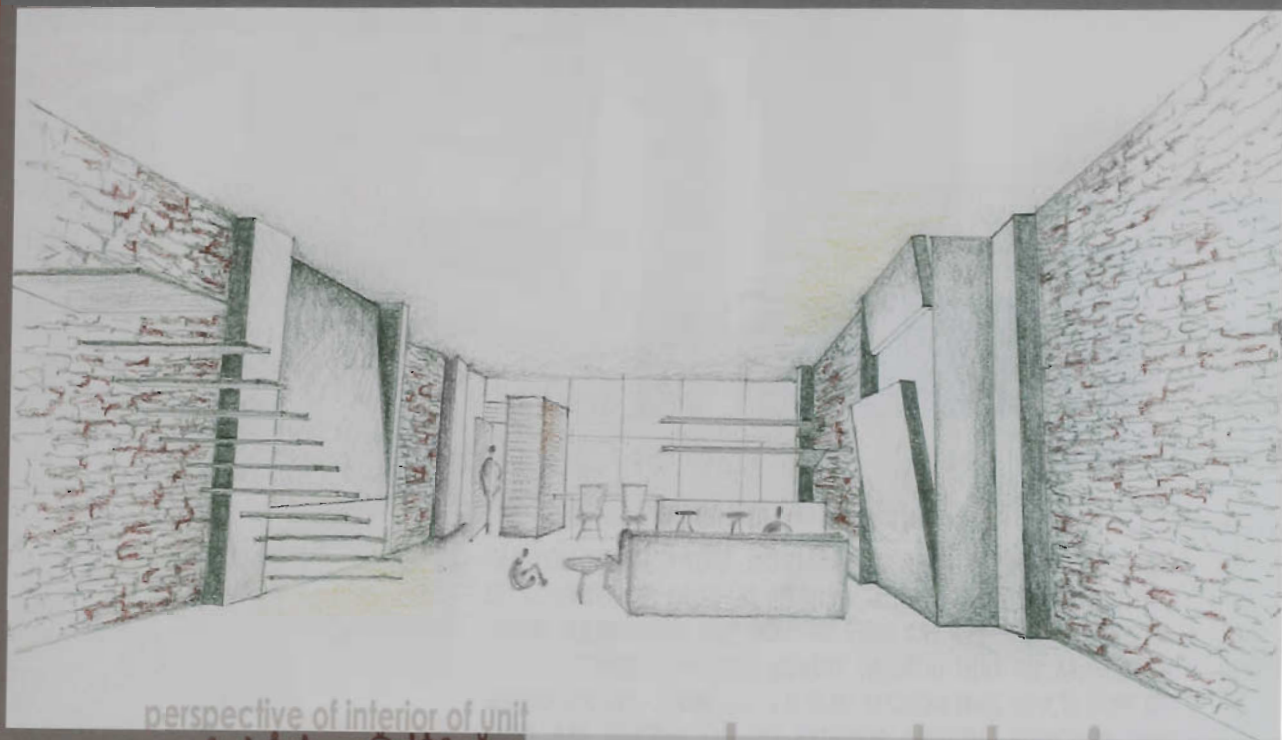
Studio Apartment - 470 sq. ft.

SECTION THROUGH THREE UNITS

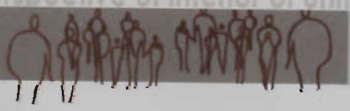


COURTYARD ELEVATION OF APARTMENTS

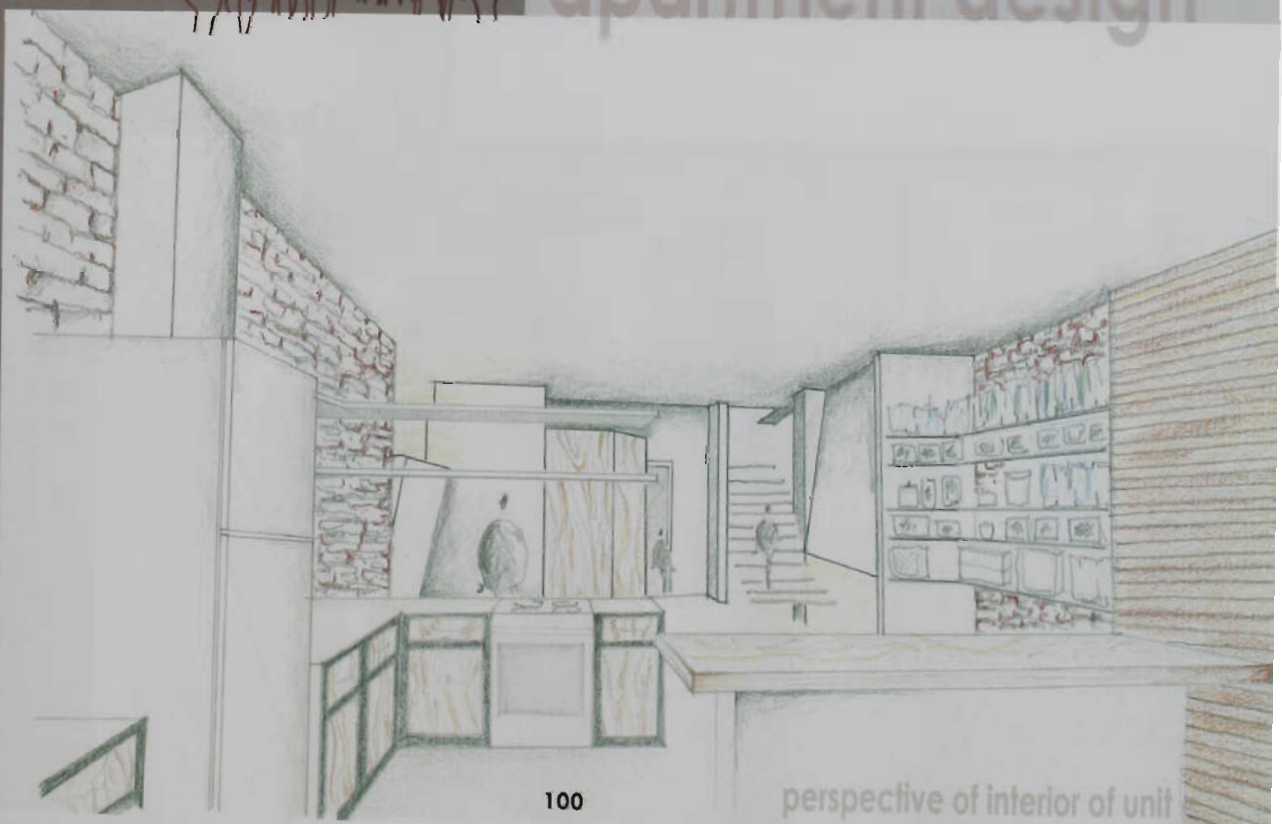
final designs



perspective of interior of unit



apartment design



perspective of interior of unit

final designs

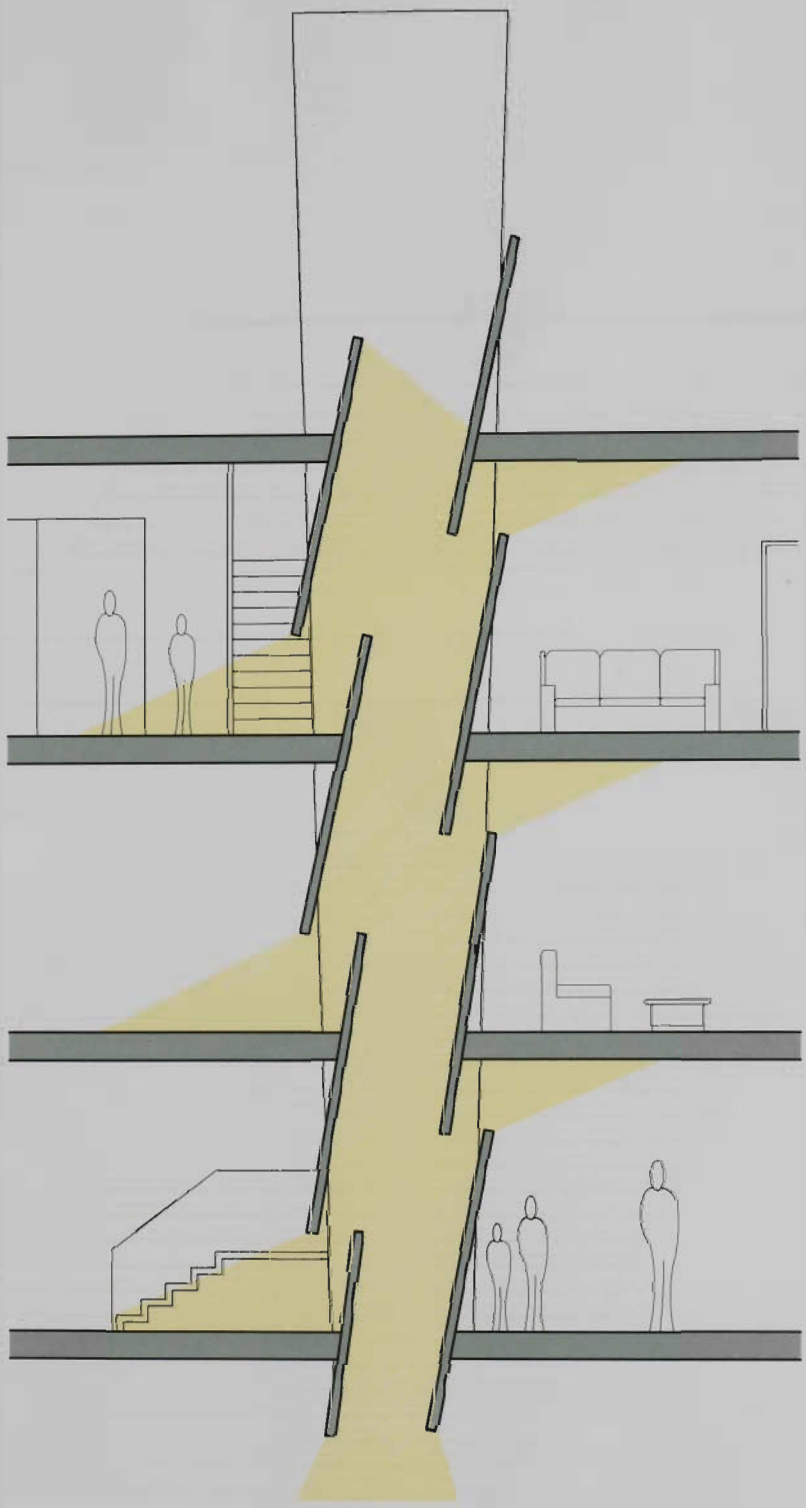
interior view of light well

wall sections

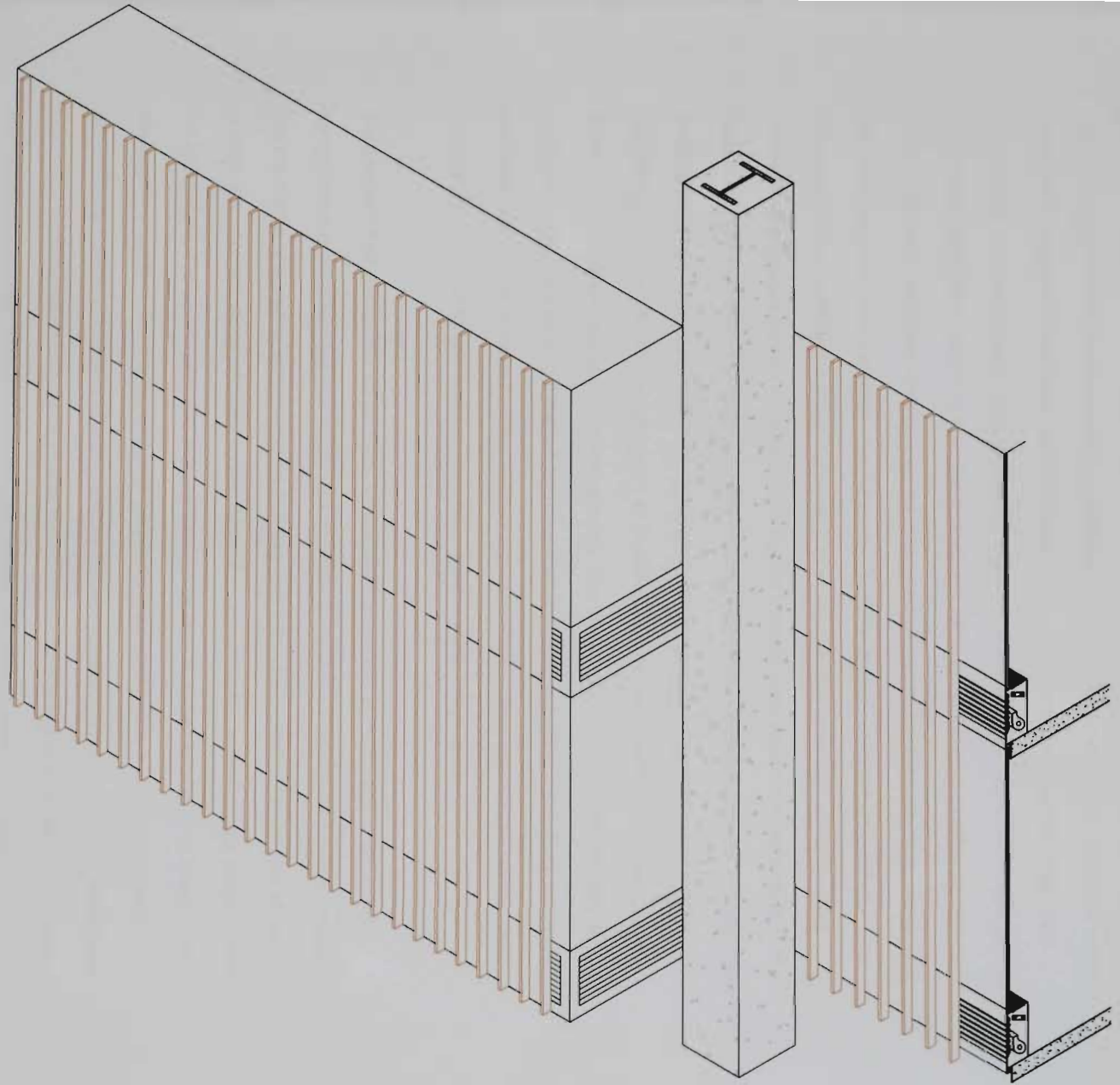
interior view of light well

THE FOLLOWING PAGES CONTAIN DRAWING REPRESENTING WALL SECTIONS DETAILS. PAGE 102 DETAILS A SECTION THROUGH A LIGHT WELL WITHIN THE BUILDING, AND HOW THE UNITS ARE ARRANGED AROUND IT. IT ALSO DEMONSTRATES THE QUALITY OF LIGHT THAT THE APARTMENTS WOULD RECEIVE. PAGE 103 IS A WALL SECTION THAT DIPICTS HOW THE UNITS ARE SKINNED ON THE EXTERIOR AND THE STRUCTURE THAT SUPPORTS THEM. THE DRAWING SHOWS THE VERTICAL SHADING DEVICES AS WELL AS THE MECHANICAL UNITS PROVIDED FOR EACH APARTMENT.

detail of protruding units



SECTION THROUGH LIGHT WELL



WALL SECTION THROUGH EXTERIOR OF APARTMENT

CONCLUSION
23.04.04

Throughout the design process of this project, I realized how hard it is to design successful multi-family housing, especially at the scale I chose. My initial intent during the formulation of the thesis was to have apartments that were like a conglomeration of single family houses, but at the scale I chose, that design was impossible. Instead I began at a much simpler point, of fitting the units within a grid, and then manipulating them from there. The number of units somewhat deterred me from making very many variations from the typical grid, although in the end, 12 different unit sizes were established. The apartments also varied in section sometimes; the two story units interlocking with other two story units and some one story units. From the exterior, units are articulated in two ways: one is if an apartment is a two-story unit. These units are clad in vertical wood shading devices that are expressed on the exterior of the glass façade. Also, these units protrude from the face of the building at varying degrees. There are also many open spaces within the façade of the building which are expressed, and these places may be gardens or other communal spaces occupying from 1 to 3 floors in height and 1 or 2 units wide. One can identify a particular unit in relation to these open spaces or two-story spaces. Also, the interior of the units do not vary as much as I would have liked, but there is still some flexibility designed within them. Each unit has at least one flexible wall or panel that the resident can maneuver as they see fitting. Overall, I think the elevations are not as successful as the interior spaces within the project.

The concept that guided the project was formulated somewhere in the middle of schematic design, when a sketch model was made that had reference to the Hope Chest project. I chose to use the theme of weaving, both within the building and within the potential inhabitants of the project. This concept works on many scales: within the city, within the entirety of the project, within the arrangement of apartments and the adjacencies of units to public space. All of these scales are equally important, but the dynamics of the interior courtyard space is the most evident. Although the exterior corridors and public spaces appear somewhat hectic and busy, the infinite number of small moments and spaces is was the intention of complications. Ramps, paths, stairs and other angled walls, both in plan in section, creates a space for everyone to enjoy and use outside of their homes.

shorter facades in which I don't think they completed addressed the street and were not thought out completely. Also, the workings of the parking structure: although the square footage seemed to be enough for the parking space needed, the layout of the site subtracted from the efficiency and I believe there is a more effective way to provide enough parking. I also think my design process as a whole was too broken up and even though there were many parts of the project that were successful, I feel they never really came together completely, maybe due to the fact that I never had a complete vision of how the project would look. I would also re-look at materials for the exterior facades and the arrangement of them, for a more complete appearance.

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