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I am submitting herewith a thesis written by Joshua Loren Rechkemmer entitled "Permanence and Adaptability in Urban Architecture." I have examined the final paper copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Architecture, with a major in Architecture.

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Permanence and Adaptability in Urban Architecture

A Thesis
Presented for the
Master of Architecture
Degree
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Joshua Loren Rechkemmer

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Abstract

Cities have continued to exist and thrive despite constant change and turmoil due to their dynamic quality to adapt over time. By adapting to new needs and functions, the city assures its longevity, its permanence. Today's urban environments face increasing pressures on their physical, environmental, and social well-being. To respond to these new difficulties, the urban environment must continue to resolve its past with present and future problems. This thesis explores how urban architecture might remain vital to future use and functions by considering and employing proactive, adaptable design methods in a dynamic mixed-use project today.

Table of Contents

Section		Page
1.0	Statement of Thesis	1
2.0	Background	3
3.0	Architectural Issues	6
3.1.	Scale/Pattern	6
3.2.	Access	7
3.3.	Orientation	8
3.4.	Time	9
3.5.	Materiality	10
3.6.	Technology	10
3.7.	Experience	10
3.8.	Place	11
3.9.	Sustainability	12
3.10.	Open Building	12
4.0	Site	13
4.1.	Introduction and Background	14
4.2.	Master Plan Summary	16
4.3.	Site Selection	22
4.4.	Site Analysis	33
5.0	Precedents	37
5.1.	Riehenring Development	37
5.2.	Banner Building	42
5.3.	Makuhari Housing	44
6.0	Program	47
6.1.	Program Background	47
6.2.	Demographic Analysis	50
6.3.	Unit Types	52
6.4.	Building Program	53
7.0	Design Diagrams and Drawings	57
	Bibliography	78

Appendix 82

Vita 92

List of Figures

Figure		Page
1.1	Definitions	2
4.1	Map of Nashville and Davidson County	15
4.2	Final Concept Plan, Subarea 9 Master Plan Update	17
4.3	Proposed Figure-Ground Bicentennial North Nashville Master Plan	18
4.4	Proposed Figure-Ground Bicentennial Mall Urban Master Plan	18
4.5	Active Rooftop With Hidden Space Above	23
4.6	Aerial View, Bicentennial Mall Area	24
4.7	Photo, Germantown Residence	25
4.8	Photo, View of Capitol From Bicentennial Mall Amphitheater	25
4.9	Photo, Farmer's Market	27
4.10	Photo, View of Downtown From Fifth Avenue	27
4.11	Photo, Housing Re-development Along Cumberland River	29
4.12	Photo, View Along French Lick Greenway	29
4.13	Existing Site Conditions	30
4.14	Photo, View Across Site Towards Southeast From Fifth Ave.	32
4.15	Photo, View of Site From Railroad Trestle to South	32
4.16	Diagram, Existing Block Pattern	34
4.17	Diagram, Proposed Block Pattern	34
4.18	Diagram, Avenues and Streets	35

4.19 Diagram, Grid to Irregular 35

4.20 Diagram, Proposed Figure-Ground, Urban Scale 36

4.21 Diagram, Proposed Ground-Figure, Urban Scale 36

5.1 Riehenring Street Facade 38

5.2 Riehenring Site Plan 38

5.3 Riehenring Courtyard Perspective 39

5.4 Riehenring Rooftop Perspective 39

5.5 Riehenring Typical Unit Plan 39

5.6 Riehenring Diagram, Part to Whole 40

5.7 Riehenring Diagram, Facade Differentiation 40

5.8 Riehenring Diagram, Building Typologies 41

5.9 Banner Building Section, Plan 43

5.10 Banner Building, Flexible Space to Structural Framework 43

5.11 Makuhari Interior Courtyard 45

5.12 Makuhari Site Drawings 45

5.13 Makuhari Silent and Active Buildings 46

5.14 Makuhari Project Diagrams 46

6.1 Infrastructure/Service Core Preliminary Study 48

6.2 Unit Matrix to Structure Study 49

6.3 Proposed Site Location and Dimensions 55

7.1 Rendering, Proposed Massing of Thesis Site 58

7.2 Diagram, Preliminary Massing Sketch 59

7.3 Diagram, Adaptable Ramp 60

7.4 Diagram, Circulation to Courtyard 61

7.5 Diagram, Vehicular Circulation 61

7.6 Diagram, Vertical Pedestrian Circulation 61

7.7 Diagram, Layering 62

7.8 Diagram, Permanent Edge/Adaptable Interior 62

7.9 Existing Figure-Ground, Bicentennial Mall/ French Lick District 63

7.10 Bicentennial Mall Urban Master Plan Proposal 64

7.11 Proposed Master Plan, Site Aerial 65

7.12 Existing Site Plan, Urban Quadrant 66

7.13 Proposed Site Plan, Urban Quadrant 67

7.14 Proposed Floor Plan, Basement Level 68

7.15 Proposed Floor Plan, Ground Level 69

7.16 Proposed Floor Plan, Second Floor 70

7.17 Proposed Floor Plan, Third Floor 71

7.18 Proposed Floor Plan, Fourth Floor 72

7.19 Proposed Floor Plan, Penthouse/Roof 73

7.20 North Elevation of Proposal 74

7.21 South Elevation of Proposal 74

7.22 East Elevation of Proposal 75

7.23 West Elevation of Proposal 75

7.24 North/South Section Through Garage Looking West 76

7.25 Section Through West Penthouse Unit 77

A1 Proposed Massing Axon 83

A2 Diagram, Quarter-Mile District 84

A3 Master Plan Sketch 85

A4 Diagram, Figure-Ground Alternative 85

A5 Photo, Downtown Nashville Along First Avenue 86

A6 Photo, Railroad Bridge Near Site 86

A7 Photo, First Avenue in Nashville 87

A8 Photo, Abandoned Industrial Building, Nashville 87

A9 Urban Utilization Mix Building 88

A10 The Adaptable Facade 88

A11 Spangen Quarter Axonometric, Michiel Brinkman 89

A12 Spangen Quarter Plans, Michiel Brinkman 89

A13 Housing Block, Philippe Gazeau 89

A14 Fukuoka Housing Interior Open, Steven Holl 90

A15 Fukuoka Housing Interior Closed, Steven Holl 90

A16 Fukuoka Housing "Hinged Space" Closed, Steven Holl 90

A17 Fukuoka Housing "Hinged Space" Open, Steven Holl 90

A18 Fukuoka Housing, Service and Circulation, Steven Holl 90

A19 KNSM Block Perspective, Hans Kollhoff 91

A20 KNSM Block Storefront, Hans Kollhoff 91

A21 Fukuoka Housing Exterior Block, Steven Holl 91

A22 Fukuoka Housing Facade Detail, Steven Holl 91

List of Tables

Table		Page
6.1	Population/Program Matrix	51
6.2	Building Program Summary	56

1.0 STATEMENT OF THESIS

The city is a complex fabric that is woven together over time. The threads that bind the city - its districts, neighborhoods, spaces, and structures – are diverse in nature, often organized by an inherent or underlying order. While certain elements of the city remain more or less the same - enduring and providing continuity to its reading over time - there are, conversely, elements which are quite adaptable - changing to meet new conditions and times. This reciprocal relationship between the permanent and the adaptable provides necessary balance, variety, and interest to the city. The permanent tends to organize and stabilize the adaptable. The adaptable lends variety and interest to the permanent. To propose an architecture for today's world, this thesis explores a synthesis of the concepts of permanence and adaptability (Fig. 1.1) in the urban environment.

per·ma·nent *adj.* **1. a.** Continuing or designed to continue indefinitely without change; abiding, lasting, enduring; persistent. Opposed to *temporary*.

per·ma·nence *n.* **1.** The fact, condition, or state of being permanent; continued existence or duration; continuance, abiding. **2.** The quality of being permanent; permanency, abidingness.

a·dapt *v.* **1.** To fit (a person or thing *to* another, *to* or *for* a purpose), to suit, or make suitable. **2. a.** To alter or modify so as to fit for a new use. **b.** To construct or produce by adaptation *from*. **3.** *intr.* To undergo modification so as to fit for a new use, etc. Const. *to*. Also *absol.*

a·dapt·a·bil·ity *adj.* **1.** The quality of being adaptable; capacity of being adapted or of adapting oneself; potential fitness. Const. *to, for*.

Fig. 1.1 – Definitions
Source: *The Oxford English Dictionary*, 2nd ed.

2.0 BACKGROUND

American cities have endured dramatic and constant change throughout our country's brief history. From colonial settlements to westward expansion, the industrial revolution, world wars and the post-war economy, and finally the current technological revolution, American cities have grown, responded, and adapted to ever-changing needs and demands. At the same time, our capitalist economy has generated certain phenomena to the detriment of the urban as well as rural environment, most notably pollution, decentralization and sprawl. In an effort to combat such deleterious effects, renewed focus has been directed towards reinvigorating urban areas that have been neglected and left to decay. It is through aggressively addressing the deficiencies in our urban environments that we can hope to stem the exodus to suburbia and maintain and enhance our existing cityscapes.

> We fail to recognize that cities and towns by their very conciseness and economy are great acts of conservation and deference, and that they alone offer any hope of protection of the land. We fail to realize that good cities have distinct edges, whether natural or designed, that the placement of cities, their allegiance to the natural setting, is as important as that of the built form. Like the mill on the stream, a city must engage its place and make it better (Jensen, 12).

The goal of this thesis is to initiate the reurbanization of a neglected neighborhood that has been previously scarred by the effects of urban renewal but which has recently witnessed an increased interest in its redevelopment. By introducing a certain pattern and scale of development, specifically that of the

block, street, and public realm as they are linked to building, it is hoped that this proposal will establish a sense of stability and serve as a keystone or catalyst for future improvements of a similar scale and manner.

The building, the street, the block, and the public realm are essential building blocks of the man-made city. These building blocks create neighborhoods, comprise the city's physical essence, and begin to define its spatial characteristics. At a more fundamental level, they create permanence by establishing an organizing, enduring, and stabilizing language. Conversely, permanence can also be created through adaptability. The more adaptable a community or structure is, the more likely it is to endure and grow.

Of the aforementioned building blocks, the building has, perhaps, the most potential for adaptability. The street is a relatively permanent and stabilizing component – linking and stitching together – while the building must grow and change with those who inhabit it. The public realm is where the individual and the collective meet. Defined by the building and the block, the street becomes part of the public realm – an urban living room.

> ...Streets are places of social and commercial encounter and exchange. They are also where you meet people. Which is a basic reason to have cities in any case... The street is movement: to watch, to pass. Movement, especially of people: of fleeting faces and forms, changing postures and dress... It is possible to stand in one place or to sit and watch the show (Jacobs, 3).

As a point of departure, the notions of permanence and adaptability are intended to enrich and guide the proposed architectural exploration. These notions are not intended to inform a program with an obvious historical context (such as adaptive reuse, renovation, or modification to an existing structure), rather they are intended to inform the design of something completely new. This proposal seeks to explore the interrelationships between these two notions from the macro-scale (in this case neighborhood, street, and block) to the micro-scale (building, dwelling).

3.0 ARCHITECTURAL ISSUES

To explore how permanence and adaptability might inform an urban architecture and to illustrate how the thesis intentions can be realized through built work, a set of architectural issues has been established. Within each of the identified issues is an expanded architectural vocabulary which addresses that specific issue. The issues presented intend to direct the design exploration in a more focused manner.

It is unavoidable and, in fact, desirable that overlap occurs between and among these issues. Like the fabric of the city, these issues become interwoven – expanding, redirecting, and strengthening each other. The collective proposal or whole becomes stronger as a result of the exchange between the individual issues or parts.

3.1 *Scale/Pattern*

Establishing a scale and pattern is critical to linking the fragmented neighborhood back into the urban fabric and to establishing the individual within the larger realm of the city. At the urban level, re-linking disparate pieces and undifferentiated spaces restores legibility within the immediate surroundings as well as to the larger whole. The act of linking illuminates meaning, signifying the roles of various elements within the urban hierarchy.

At the level of the individual, scalar references act to mediate one's experience of a space as they move through it. Scale, pattern, rhythm, and proportion provide such a reference or registration for the individual within the hierarchy of the city from neighborhood to block and streetscape to building. The human form serves as reference against which a built work can be organized. The individual gains welcome meaning from an environment scaled down from the vastness of the city to that of the human form.

3.2 *Access*

Like scale and pattern, clear access to disparate elements within the neighborhood and city strengthens urban meaning. Links between the hierarchy of building, block, neighborhood, and city underscore the continuous nature of our being. Within the neighborhood, access to amenities and uses should be capitalized on. Walkability, pedestrian scale, and links to various modes of transportation ensure that the urban network works efficiently.

Similar to the hierarchical configuration of the city, a hierarchical organization of roadways signifies meaning. The nature of activity and uses along a local street differs significantly compared to a busy avenue connecting a neighborhood to the greater city. Streets internal to a neighborhood are typically less intensely and densely developed than streets that collect traffic. Therefore, local streets are more amenable to smaller scale structures and residences than faster paced

avenues. Regardless of the type and function of a given roadway, certain precautions can and should alleviate undesirable problems. On-street parking, traffic-calming devices, and alleys alleviate pedestrian conflicts and address parking concerns. Development of the surrounding streetscape is a further, necessary step to establish a buffer between moving traffic, the parked car, and the pedestrian.

At the scale of the building, circulation infrastructure provides the link between the public street and the private dwelling. Like the structure that supports a building, circulation is a constant that remains more or less permanent throughout the life of a building. To maximize a building's potential for longevity and functionality, careful consideration should be given to the organization of circulation, access for vehicles and pedestrians, as well as circulation requirements for different users and uses.

3.3 *Orientation*

Like scale and access, orientation is a further means to register an individual and/or building within the city. The orientation of a building to the block, street, public realm, or private realm signifies the degree to which it engages and responds to its environment. As briefly alluded to above, the location of structures, uses, and activities should be appropriately designated based upon their orientation to means of access.

Further guiding implications for the design of the proposal deal with opposing orientations – front and back, inside and outside, public and private, ground and sky. This vocabulary alludes to a potential zoning or hierarchy within the project which might also inform both the treatment of materials and architectonics – the expressive manner in which structure or building relates to the local context (Frampton, 59).

At the scale of the individual, the issue of orientation provides many clues for enriching the architectural experience. For example, certain rooms and/or uses are better oriented to corresponding solar conditions. Natural light might also be used to clarify circulation or provide emphasis. East or west, inside or outside, thoughtful deliberation should be given to the orientation of spaces and means of access between them.

3.4 *Time*

The issue of time is an extremely relevant one in the context of this proposal. The establishment of permananence can only occur through and with respect to time. Adaptability and accretion are processes which occur in response to the passage of time. The establishment of permanence is intended to transcend time while adaptability is a means to deal with change wrought by time. It is essential that the design proposal address the manner in which it might adapt over time to users, change, and new development.

3.5 Materiality

The use and manipulation of materiality is envisioned as a way to further reinforce the interplay between the permanent and the adaptable. Interplay between surfaces of differing finishes and textures is a means of exploring this issue. For instance, a dialogue between modern materials such as concrete, glass, and metal and more traditional materials such as brick, stone, and wood might be engaged to enrich the project and highlight the project's aforementioned temporal qualities.

3.6 *Technology*

Technology has become an extremely important and guiding force in the development of our ever-evolving society. Technological advances have allowed us to design and construct in ways once unimaginable. Issues such as structure, infrastructure, and systems approaches should be examined and incorporated into the design to create an architecture that can integrate and adapt to technologies not yet imagined.

3.7 *Experience*

Architecture separates itself from mere building in numerous ways – experience is but one example. Architecture has the power to engage the senses and emotions of those who experience it – perhaps affording the user an insightful

glimpse of the care and deliberation in which the design proposal was conceived and realized. Beyond the actual making of architectural space lies the realm of art in architecture – poesis. This exploration seeks to explore the interrelationships between qualities of space, light and materiality as they might enhance and/or reinforce the experience of an adaptable and permanent architecture.

3.8 *Place*

A site's sense of place should be the foundation upon which a dialogue between built form and context is engaged. Given man-made and natural surroundings of distinct character, the design proposal should respond in a manner which recognizes varying readings and scales of place while establishing a new, meaningful place. Where relatively undifferentiated space occurs, the proposal should seek to enhance existing, natural features of the site.

> Architecture is bound to situation. Unlike music, painting, sculpture, film, and literature, a construction (non-mobile) is intertwined with the experience of a place. The site of a building is more than a mere ingredient in its conception. It is its physical and metaphysical foundation (Holl, 9).

3.9 *Sustainability*

Issues regarding the interrelationship(s) of human society to the environment are as complex and ever-changing as our perceptions of them are. Regardless, it is difficult to ignore evidence of the use, misuse, and abuse of our natural environment which nevertheless continues to the detriment of nature's natural flows and cycles. It is imperative that new development, especially urban development, occur in a much more sustainable manner to reverse this detrimental trend and to preserve resources for future use. For instance, the redevelopment of brownfield sites and the design of urban development at higher levels of integration and density is much more preferable than greenfield development and urban sprawl.

At the scale of the building, much more specific design direction is needed. Aside from the deliberate orientation of the building to maximize wind and solar conditions, the design should incorporate local and sustainable materials (Swennsson, 57-59). Most importantly, careful and deliberate consideration should be given to the design of a functional and adaptable architecture to ensure its future viability.

> The requirement that a building shall remain relevant and functional for as long as possible is an important consideration for green architecture. One way to achieve longevity and avoid demolition is to design buildings that are capable of adapting to the users' changing needs (Vale and Vale, 116).

3.10 *Open Building*

The concept of open building holds further potential for informing the project from a more sustainable point of view. Open building is a strategy that has only recently (in the last 20 years) been tested in the residential market but which seems to find its roots in commercial building and construction. In essence, a framework is provided into which individual users can develop raw space which is outfitted minimally with unfinished surfaces and access to utilities. While this thesis proposal seeks to primarily explore architectural issues, open building as a concept does illustrate some unique lessons that are quite relevant to the concept of adaptability - specifically with regards to the placement of utilities, cores, services, and circulation.

4.0 SITE

4.1 *Introduction and Background*

Nashville, site of Tennessee's State Capitol, is located in the heart of Tennessee as well as the center of a vast and vibrant metropolitan area covering eight counties including Cheatam, Davidson, Dickson, Robertson, Rutherford, Sumner, Williamson, and Wilson (Fig. 4.1). Since 1963, Nashville and Davidson County have operated under a joint city/county government – one of the first such models in the country. This progressive step was taken to improve the overall efficiency of government services for the vast metropolitan area by eliminating duplication of services and improving an eroding tax base caused by the flight of residents to the suburbs.

The Nashville Metropolitan Statistic Area (MSA) has grown tremendously over the past 20 years. The population has expanded from approximately 700,000 in 1970 to nearly 985,000 in 1990 – a 41% increase (Subarea 9 Plan). A decade later this figure is projected to have reached 1.1 million. While the MSA and the region continue to expand, Nashville as an urban core has not reaped the full benefits of urban growth and progress. Primarily for economic reasons, "hotspots" of development have tended to shift towards and outside the periphery of the county in the direction of undeveloped land.

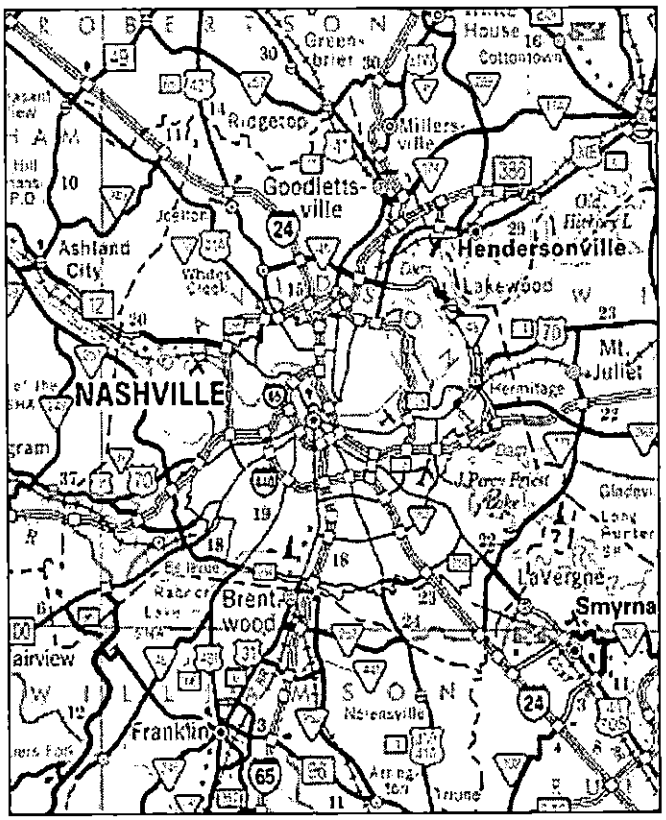


Fig. 4.1 – Map of Nashville and Davidson County

This obvious and evident trend of sprawl has continued its spread across the country over the last 50 years – including Nashville. Given current patterns and trends in development, it is unlikely to change. Similar to other urban areas that are experiencing the negative effects of urban sprawl, Nashville must focus on the reinvigoration of neglected urban areas as a tactic to counteract sprawl's deleterious effects.

The proposed site is located just north of downtown Nashville, Tennessee in an area that is intimately tied to the history of the city and one that has been defined by transition. The neighborhood, former site of one of the nation's first urban renewal projects, is located within a redevelopment area which is envisioned by the existing master plan and subarea plan to transition into a mixed use, perhaps cultural district (Fig. 4.2).

4.2 *Master Plan Summary*

Due to its immediate proximity to key sites near the urban core of Nashville, the Bicentennial Mall area has witnessed a substantial amount of study, activity, and development over the past decade including two master plans - the Bicentennial North Nashville Master Plan (Fig. 4.3) and the Bicentennial Mall Urban Master Plan (Fig. 4.4). The first study was completed in 1995 by Graduate Students in Architecture at the University of Tennessee in conjunction with the State of Tennessee. The Bicentennial North Nashville Master Plan was intended

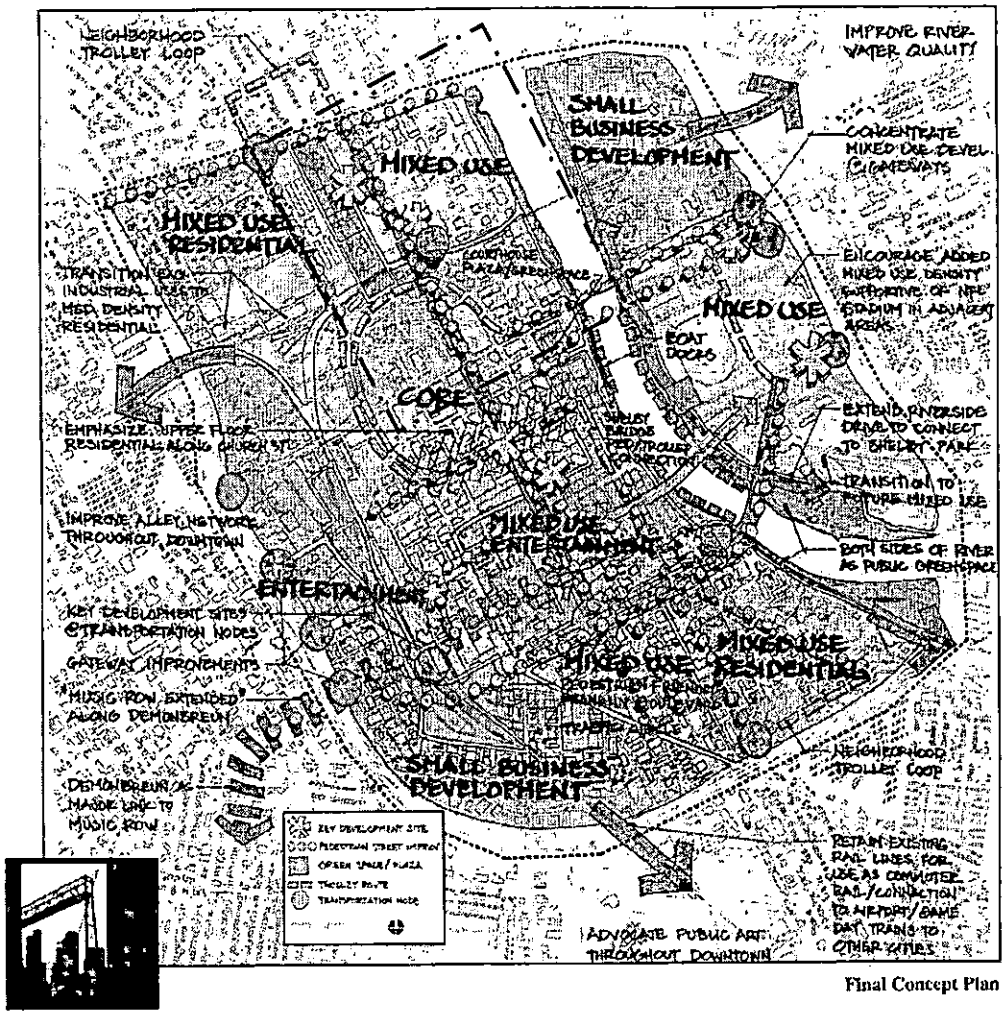


Fig. 4.2 – Final Concept Plan
Source: Subarea 9 Master Plan Update, Final Report

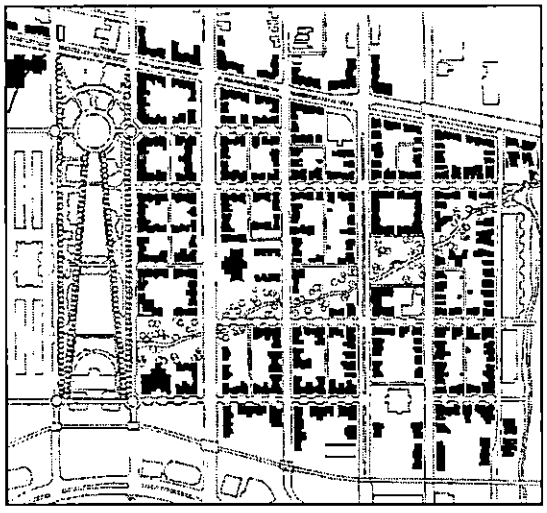


Fig. 4.3 – Proposed Figure-Ground
Bicentennial North Nashville Master Plan

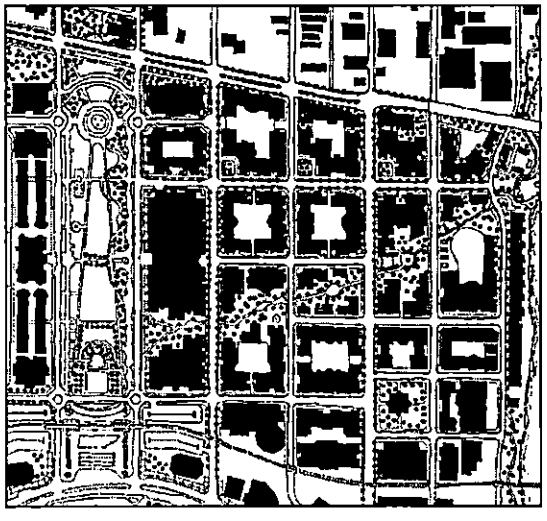


Fig. 4.4 – Proposed Figure-Ground
Bicentennial Mall Urban Master Plan

to generate a variety of student proposals for the neighborhood as well as residential areas to the north and west.

The second plan, the Bicentennial Mall Urban Master Plan, was again developed for the State with assistance from the University and led by the Nashville Architecture firm, Earl Swensson and Associates. The latter focused more specifically on the area between the mall and the Cumberland River, the Capitol and Jefferson Street. The plan was generated in response to the development of the Bicentennial Mall and the opportunity to link the State's newest honorific civic space with the State government district, neighborhood, and city while outlining a new and dynamic vision for the area. The objective of the plan was to provide a framework or guide for future development in a manner that might illustrate enough specific and appropriate direction while maintaining a somewhat loose quality to respond to and grow with change.

> ...the plan recognizes the fluid nature of such planning and the necessity to create good city form which can adapt to and accommodate any number of functions over time (Swensson & Associates, 5).

As a response to and critique of the Bicentennial Mall Urban Master Plan, this thesis proposal largely affirms the guiding principles of the document while reinterpreting and exploring alternative configurations of urban form and spatial sequence. In order to create architecture with long-term viability, one must first

create a strong vision for the community immediately surrounding it. Therefore, the focus of this proposal is twofold: one, to create a dynamic urban design that connects within its diverse surroundings and, two, to propose an architectural design which logically flows from principles of the urban proposal. As an extension of the latter, the design of the dwelling should also be informed by urban and architectural decision-making. Most importantly, all decision-making must constantly reinforce and refer to the creation of permanence and adaptability in architecture.

The Master Plan serves as an excellent foundation of principles from which the design proposal can move forward in exploring permanence and adaptability. Foremost among these issues is the deliberate flexibility and adaptability of the plan. The plan recognizes the dynamic nature of the city and the need to create enough built-in flexibility to accommodate today's needs while considering future change. Therefore, this proposal, at a minimum, shall be designed with longevity in mind and the goal of accommodating numerous functions during its lifespan.

Clarifying meaning through a language of the city is a further means in which the plan seeks to engage and establish connectedness with the public. Districts, neighborhoods, streets, corridors, open spaces, and nature are part of such a language that is meant to construct a "physical reality that will educate". Each element within this language constitutes a part of the greater design hierarchy.

The thesis proposal recognizes the established language and its intent and seeks to reinforce the creation of a clear hierarchy.

Establishing interconnectedness is critical to reunifying a neighborhood. The Plan recognizes the need to connect to existing neighborhood patterns such as a street and block structures where the block defines the edge of the street and the buildings define the block. Service functions and infrastructure should be located internal to the block to accommodate pedestrian activities around the block perimeter. The plan also recommends a hierarchy of avenues and streets which serve different roles in conveying vehicular traffic within the neighborhood:

- Avenues run north/south connecting the city and surrounding neighborhood.
- Streets run east/west and are internal to the neighborhood.
- Avenues have a greater intensity and density of uses.
- Streets accommodate a lower intensity of uses.
- The proposed greenway is recognized as an alternative street or path – of nature.

To promote permanence and establish neighborhood vitality, the plan recommends a mixture of uses and activities within a district including dwelling, shopping, working, and recreation. A walkable district of ¼ mile radius is illustrated as a means to activate streets and public places. Activation of the

ground plane with pedestrian activity as opposed to primarily vehicular activity contributes much to the social, economic, and physical vitality of the district.

More specific design direction of particular relevance to the thesis proposal is offered with regards to dimension, orientation, and organization. The plan encourages sustainable design practices and the respect of natural conditions. Buildings are recommended to maintain a maximum depth of 50 feet for natural light and cross ventilation while utilizing local, environmentally responsible materials.

The concept of the "fifth facade" is also mentioned due to the high visibility of the neighborhood's roofscape from the Capitol. Particular attention and care should be exercised in the design of the roof. An active rooftop (Fig. 4.5) of light and varied structures is recommended to create an animated fifth facade.

4.3 *Site Selection*

As mentioned previously, the Master Plan area is uniquely situated between a variety of uses, amenities, natural features, and scales of development (Fig. 4.6). It is bounded to the north by the Germantown residential district (Fig. 4.7), a neighborhood which has also witnessed recent interest in redevelopment, and to the west and south by the Bicentennial Mall and State Capitol (Fig. 4.8).

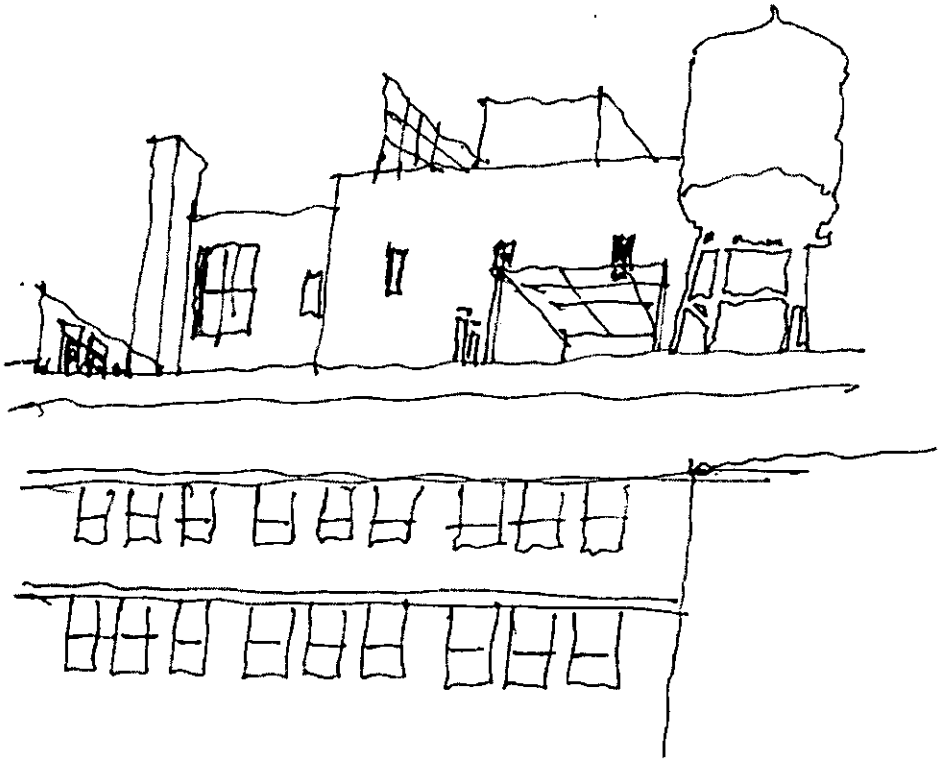


Fig. 4.5 – Active Rooftop With Hidden Space Above
Source: Author

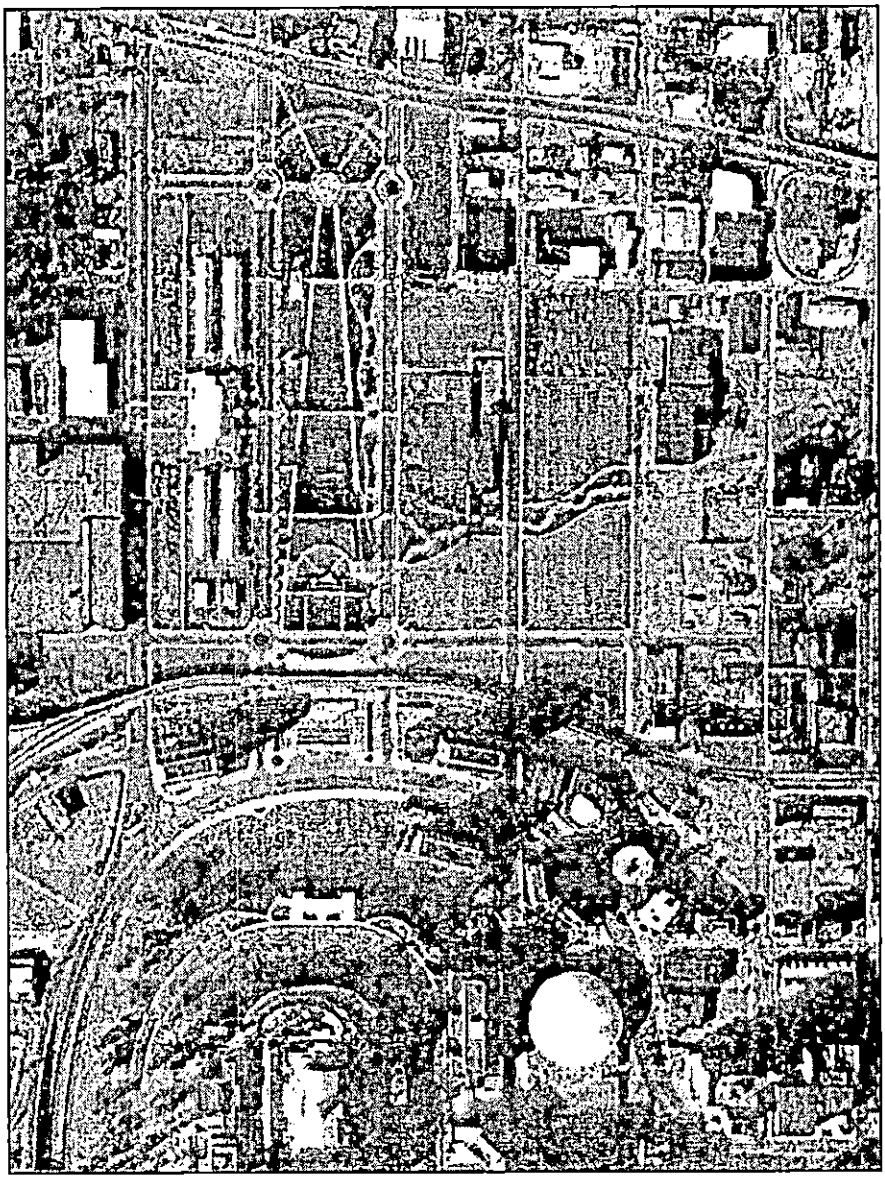


Fig. 4.6 – Aerial View, Bicentennial Mall Area



Fig. 4.7 – Photo, Germantown Residence

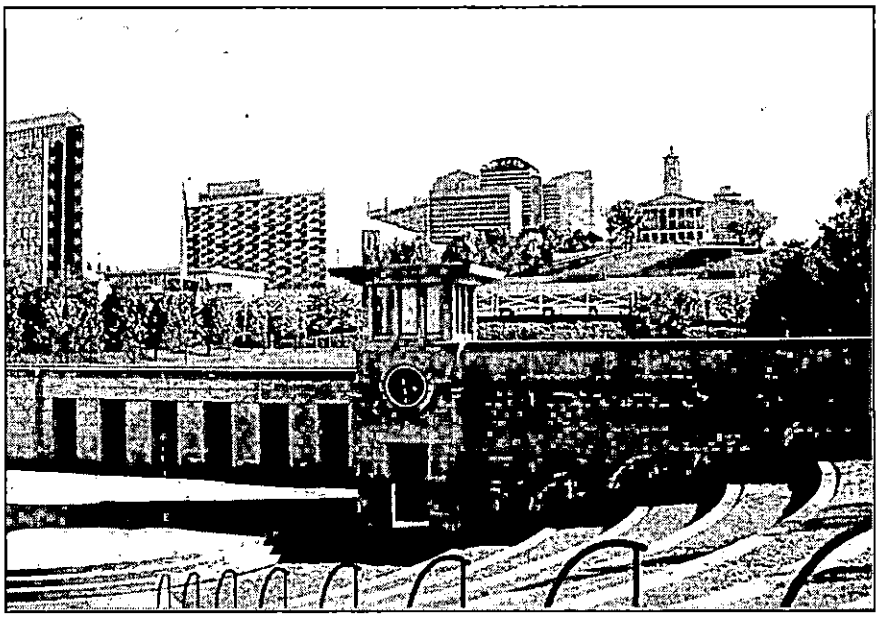


Fig. 4.8 – Photo, View Of Capitol From Bicentennial Mall Amphitheater

As its name implies, the Germantown neighborhood was initially home to a large immigrant population that worked in the factories and warehouses along the Cumberland River. Today, the neighborhood is experiencing a moderate amount of gentrification as higher income individuals move in to renovate the neighborhood's quaint structures.

To the west of the Bicentennial Mall lies the Farmer's Market. Both were completed in the early 1990s and are largely responsible for the area's resurgence. The Mall was created to open up and preserve views to the Capitol while creating an educational civic space honoring the State's two hundredth birthday. The farmer's market is widely utilized week round for the sale of local produce and goods and is a uniquely valuable asset for the neighborhood and city (Fig. 4.9).

The neighborhood is bounded to the south by the downtown, Capitol, and State Office Complex (Fig. 4.10). The scale and materiality of the downtown stands in stark contrast to that of the development to the north. The Master Plan area is also located topographically lower than the buildings of northern downtown, a feature that creates somewhat of a boundary between the two areas. The boundary is further accentuated by a set of railroad tracks running from west to east at the south edge of the Master Plan area.

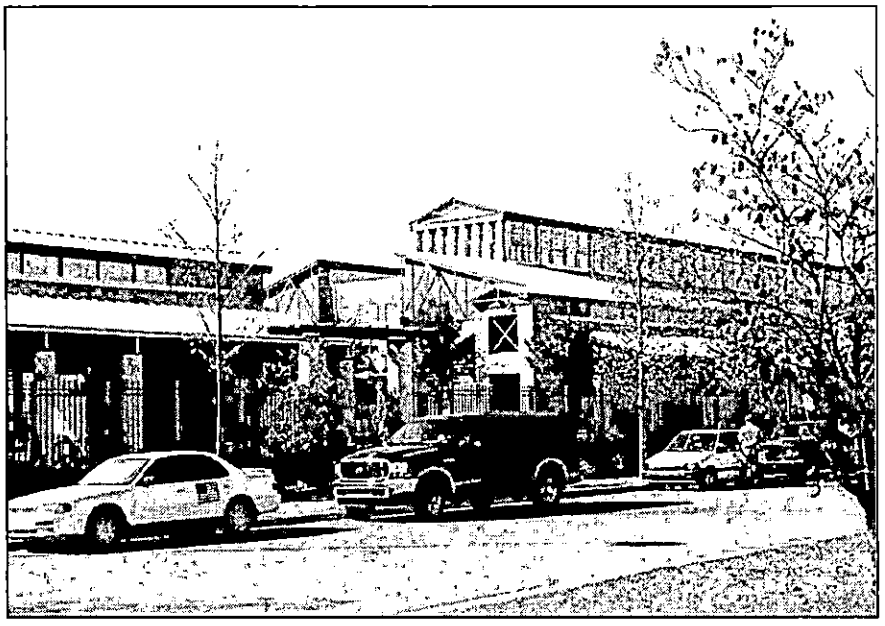


Fig. 4.9 – Photo, Farmer's Market

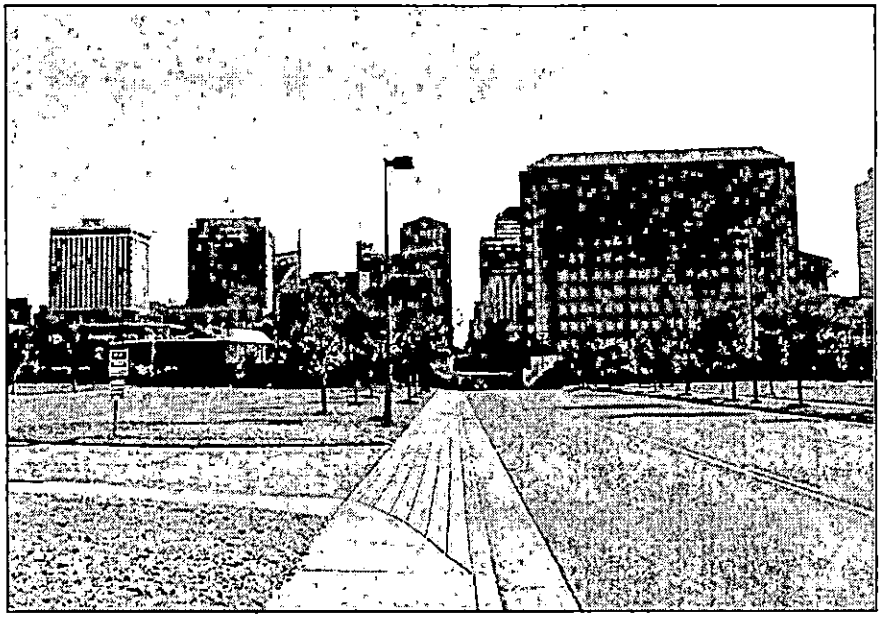


Fig. 4.10 – Photo, View of Downtown From Fifth Avenue

The area is bounded to the east by the Cumberland River. The riverbank drops steeply along the edge of the Master Plan area and is dotted with a variety of warehouse and utilitarian structures, including a long shed within which housing units and parking have been inserted (Fig. 4.11). The remainder of the Master Plan area is occupied primarily by small commercial and/or light industrial structures in poor condition with little apparent architectural or historic significance, commercial warehouses, and surface parking lots for State employees.

The first components of the French Lick Greenway (Fig. 4.12) serve as one of few remaining reminders of the site's natural history. The greenway's curvilinear form echoes the lines of an underlying creek whose flow has long since been channeled in a 15' diameter brick tunnel to alleviate flooding in the low-lying area. The French Lick was once a gathering place for animals and Native-American hunters before serving as a camp for Nashville's earliest settlers. The greenway is proposed to extend northeast to the Cumberland River and then south along the top of its banks to Riverfront Park. An existing 45' wide easement, under which the brick tunnel still runs, prohibits substantial surface development (Fig. 4.13).

The site proposed for thesis development is primarily void of any building. It is bounded to the west by Fifth Avenue, to the south by Harrison Street, to the east by Fourth Avenue, and to the north by the proposed extension of Stockyard

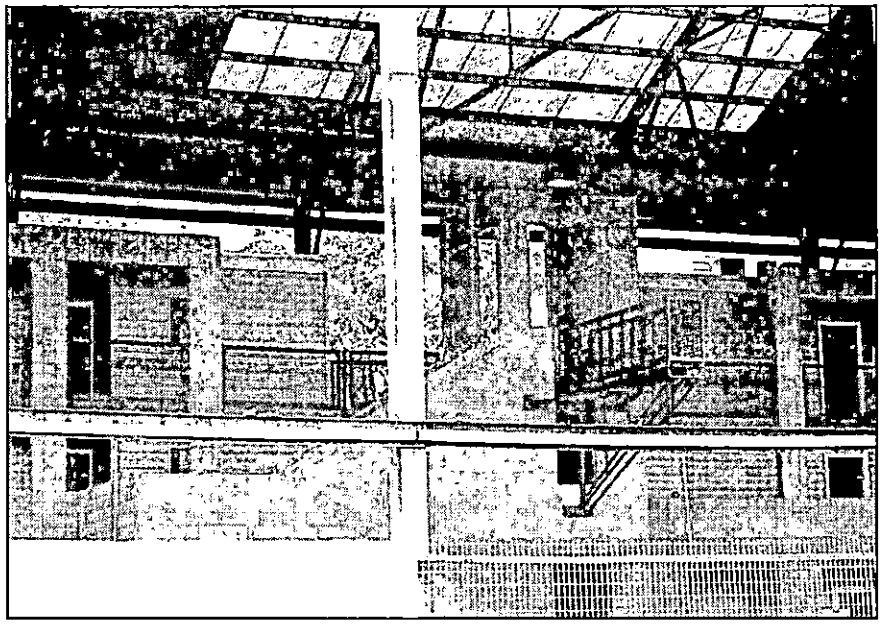


Fig. 4.11 – Photo, Housing Re-development Along Cumberland River

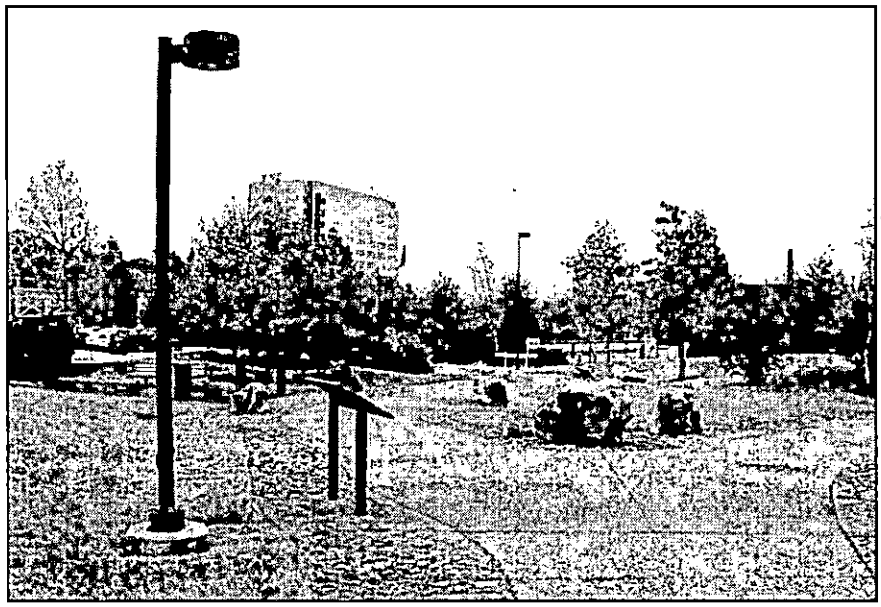


Fig. 4.12 – Photo, View Along French Lick Greenway

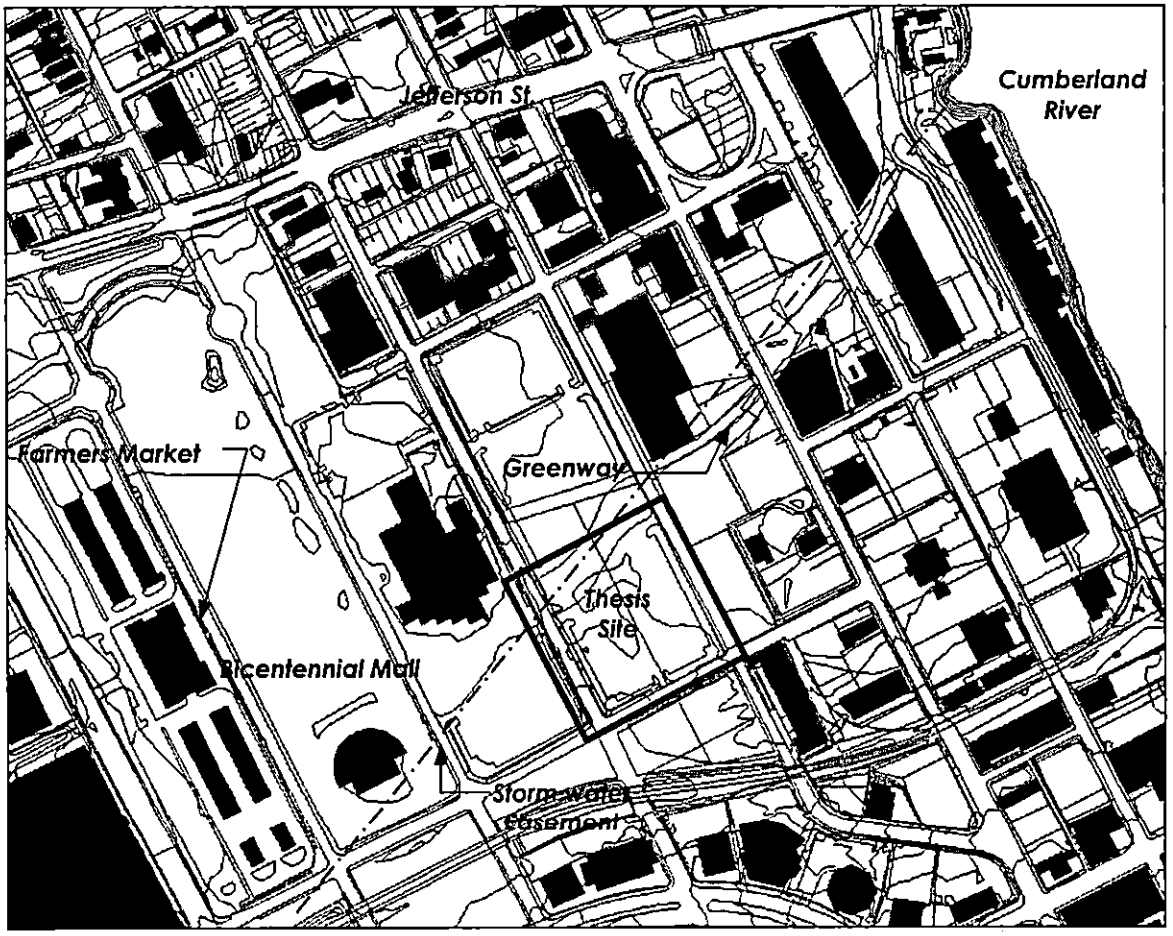


Fig. 4.13 – Existing Site Conditions

Street. The site's sole current use is for surface parking for downtown commuters (see figures 4.14, 4.15).

Within the Master Plan proposal, the site is advantageous due to its close proximity to Fifth Avenue, a primary north/south avenue and cultural street, and the greenway. The site is also adjacent to the proposed State Museum site as well as a potential intermodal transportation center.

Proximity to Fifth Avenue and the greenway would be vital to the success of a mixed-use program such as the one that this thesis proposal is exploring. Pedestrian activity would likely be concentrated the most in this area and would contribute to the viability of a moderately dense mixed development. The potential for development of varied types along the east/west streets lends further interest to its development.

The choice of this site creates opportunity for a dialog between the orthogonal nature of the gridded block development and the curvilinear qualities of the greenway. It is also at this site where an important transition from the hierarchically most-important, axial civic space of the mall to the meandering path of the greenway occurs. Where the greenway diverges from the mall near Fifth Avenue and turns east, a new sequence through the master plan neighborhood begins. The thesis proposal intends to explore and take advantage of these opportunities as discussed.



Fig. 4.14 – Photo, View Across Site Towards Southeast From Fifth Ave.

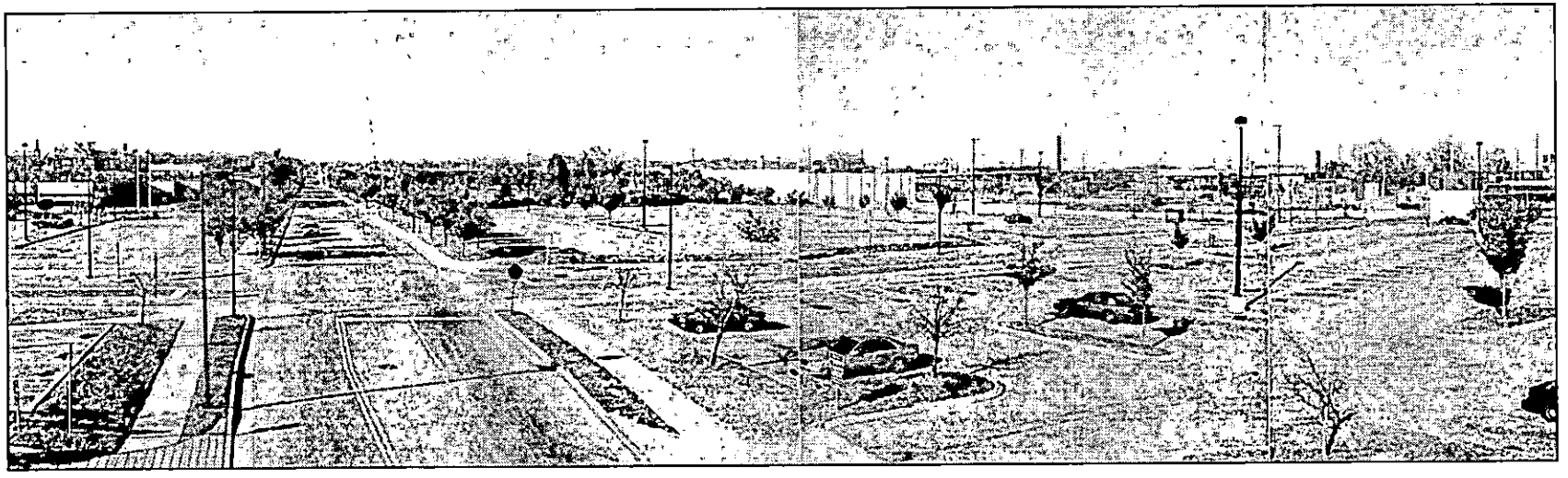


Fig. 4.15– Photo, View of Site From Railroad Trestle to South

4.4 *Site Analysis*

The following diagrams illustrate analysis of existing urban site conditions as well proposed changes based on issues discussed thus far. The first diagram (Fig. 4.16) illustrates the existing block pattern in the Master Plan area. The existing block pattern lacks a coherent structure of roadways re-linking the neighborhood together. The second diagram (Fig. 4.17) illustrates the extension of certain east/west streets to create a more definite and organized pattern of blocks. Figure 4.18 depicts the hierarchy of north/south avenues and east/west streets as they link into the road network. Figure 4.19 shows the relationship of the regular grid of the city to the irregular flow of the greenway.

The remaining site diagrams investigate conditions of urban figure and ground. Figure 4.20 depicts buildings as figure (dark) and the space between as ground (white) while figure 4.21 depicts the reverse. The first diagram indicates the proposed spatial sequence along the greenway. Beginning in the lower left side of the diagram at the State Museum and Fifth Avenue, a progression continues through a series of diagonal movements across thresholds into successive public spaces before finally culminating at the river. The second diagram illustrates the potential for multiple readings of the ground-figure relationship.

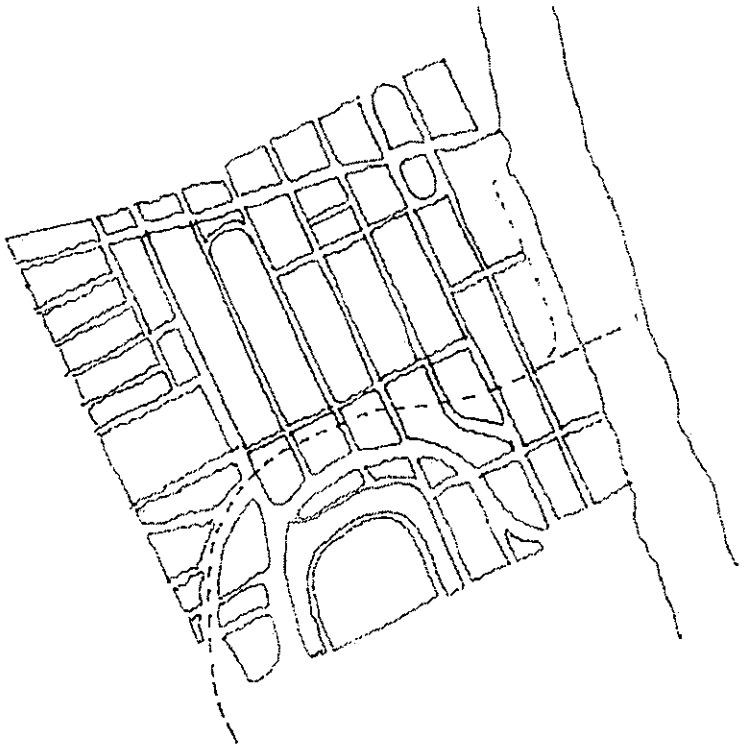


Fig. 4.16 – Diagram, Existing Block Pattern

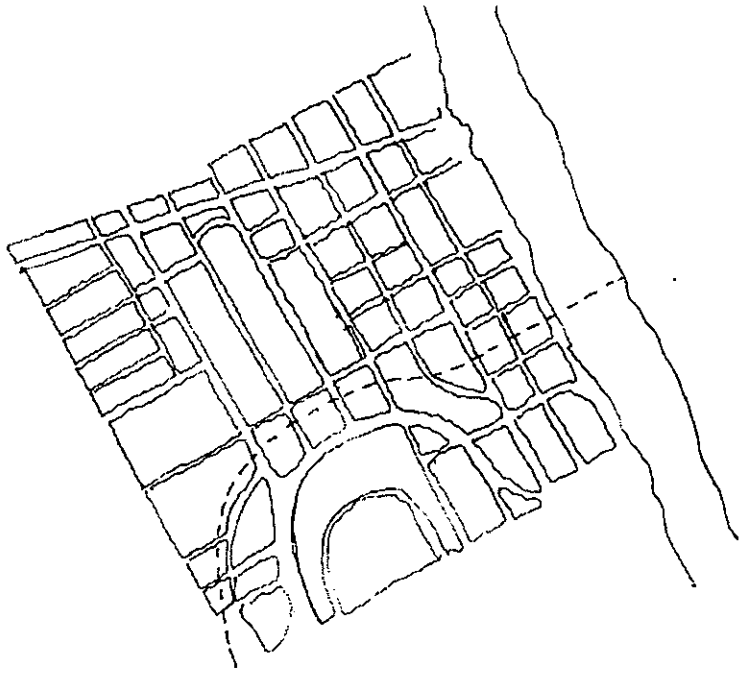


Fig. 4.17 – Diagram, Proposed Block Pattern

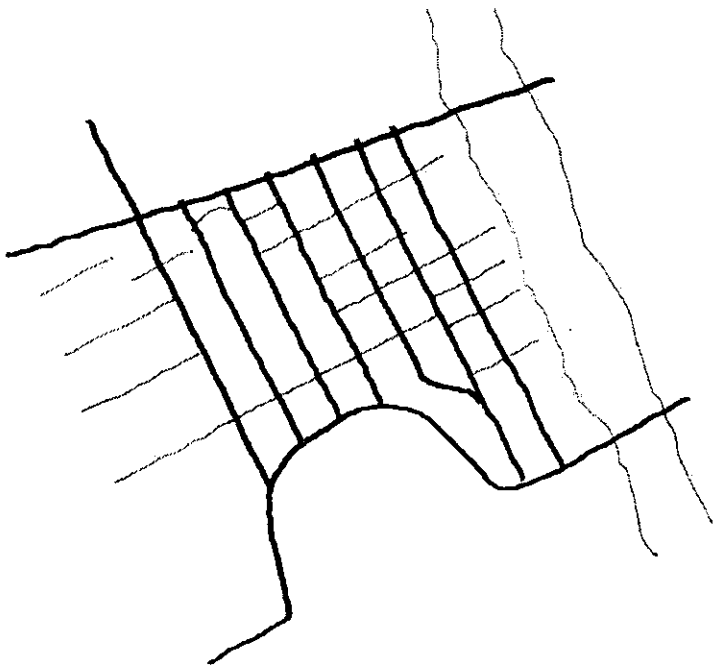


Fig. 4.18 – Diagram, Avenues and Streets

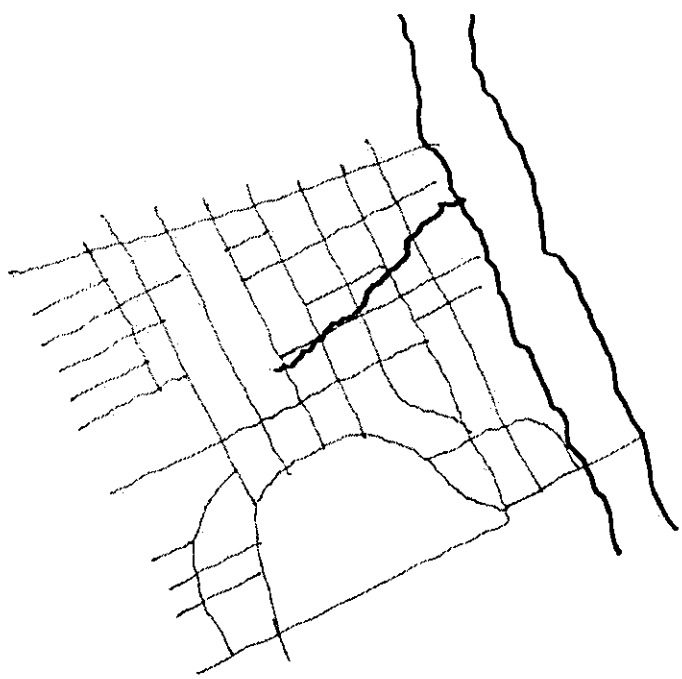


Fig. 4.19 – Diagram, Grid to Irregular

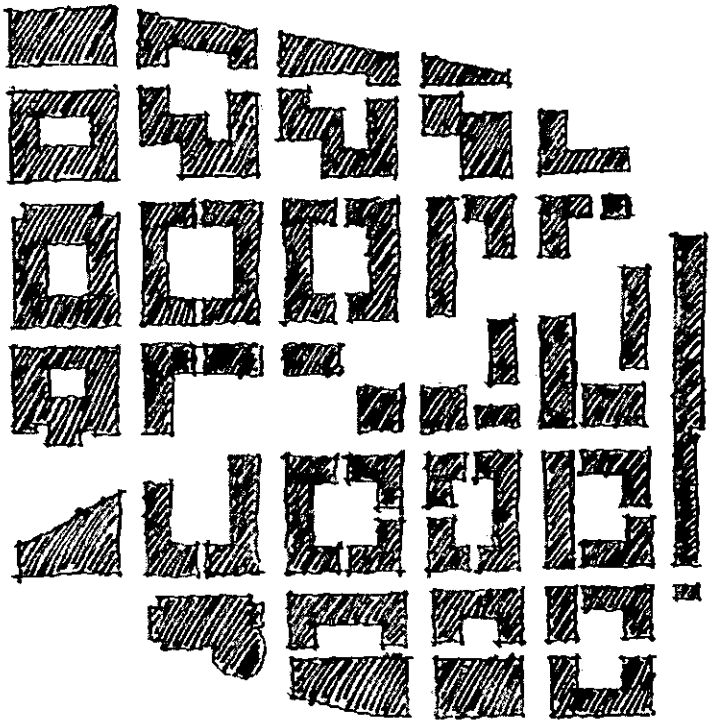


Fig. 4.20 – Diagram, Proposed Figure-Ground, Urban Scale

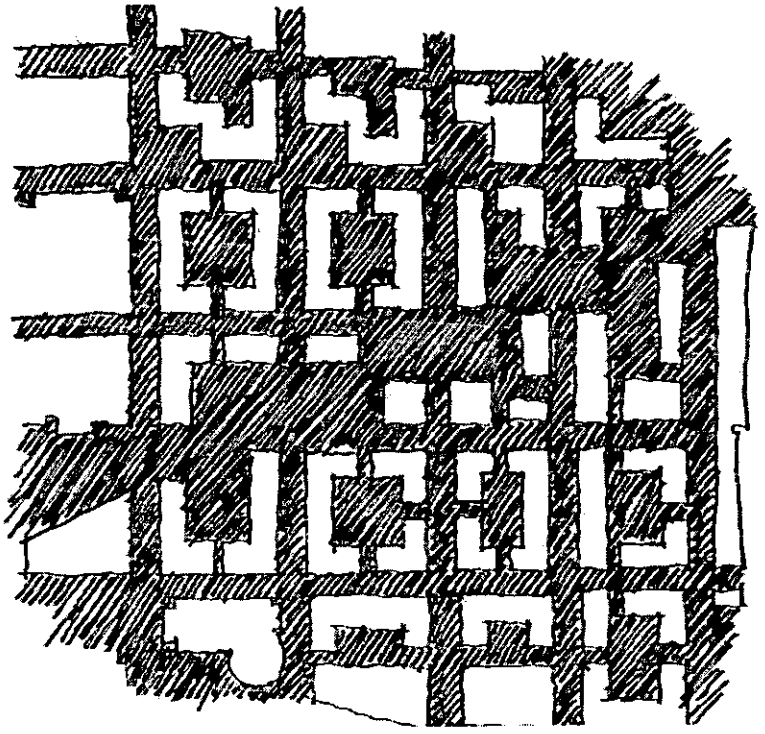


Fig. 4.21 – Diagram, Proposed Ground-Figure, Urban Scale

5.0 PRECEDENTS

5.1 *Riehenring Development*

Housing and Office Complex
Basel, Switzerland
Diener + Diener
1982-85

Located in an industrial sector of Basel, the Riehenring Development is composed of a variety of uses. The program for this project not only includes housing but corner offices, ground-floor shops, covered parking, and a useable rooftop (see figures 5.1 – 5.5). Of particular relevance to this thesis proposal is the scale of the project from the specific or local context to the general or urban context (Fig. 5.6), the differentiation of facades to varied street and contextual conditions (Fig. 5.7), and the variation of typological strategies utilized (Fig. 5.8).

While the project establishes an urban scale, becoming part of a greater whole, it also responds to immediate context. Both facades and building types express immediate or local conditions. Public circulation occurs to the exterior of the block while private circulation occurs within the courtyard, linking to a larger pedestrian network through the district. Unit interiors express openness and can be altered to fit different inhabitant's lifestyles.

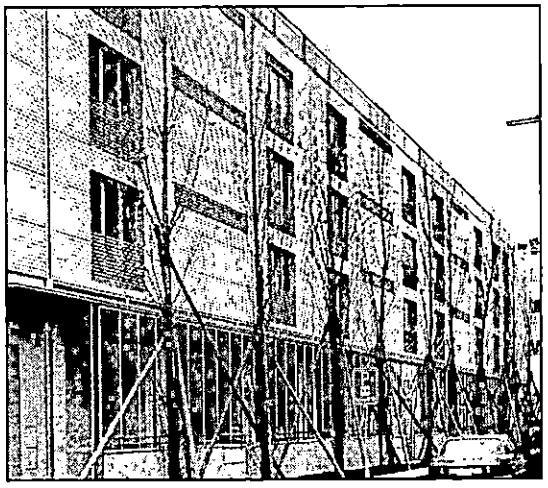


Fig. 5.1 – Riehenring Street Facade
Source: Diener + Diener, 91

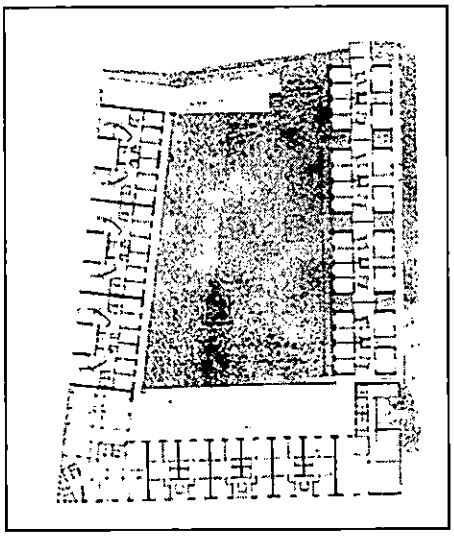


Fig. 5.2 – Riehenring Site Plan
Source: Diener + Diener, 91

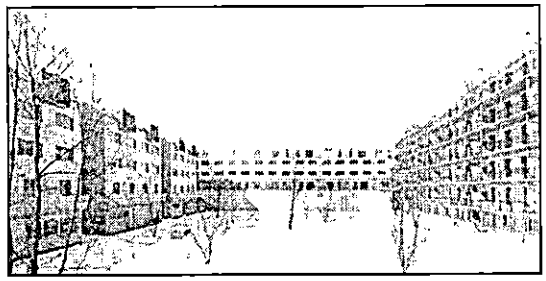


Fig. 5.3 – Riehenring Courtyard Perspective
Source: Diener + Diener, 90

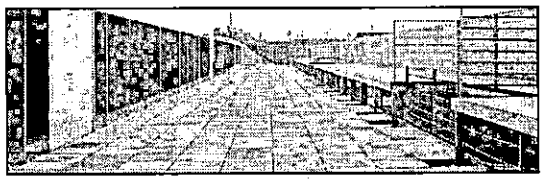


Fig. 5.4 – Riehenring Rooftop Perspective
Source: Ravetllat Mira, 86

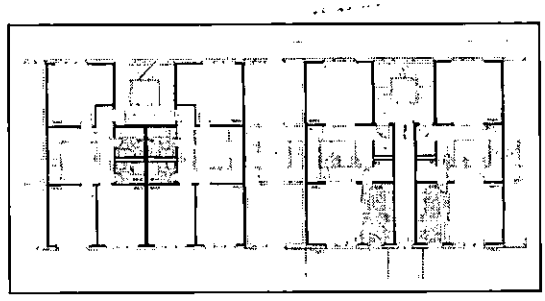


Fig. 5.5 – Riehenring Typical Unit Plan
Source: Diener + Diener, 92

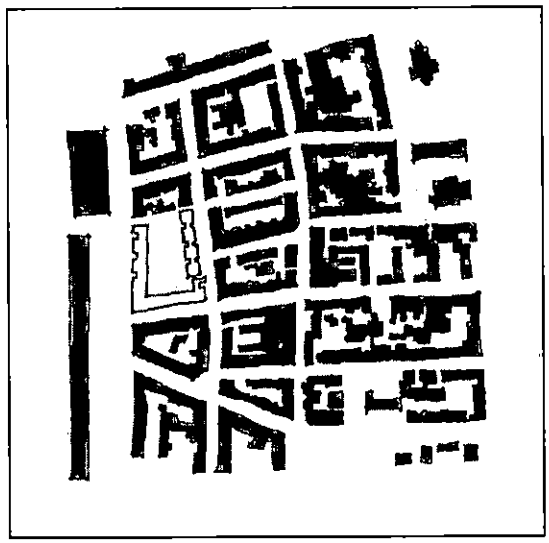


Fig. 5.6 – Riehenring Diagram, Part to Whole
Source: Author

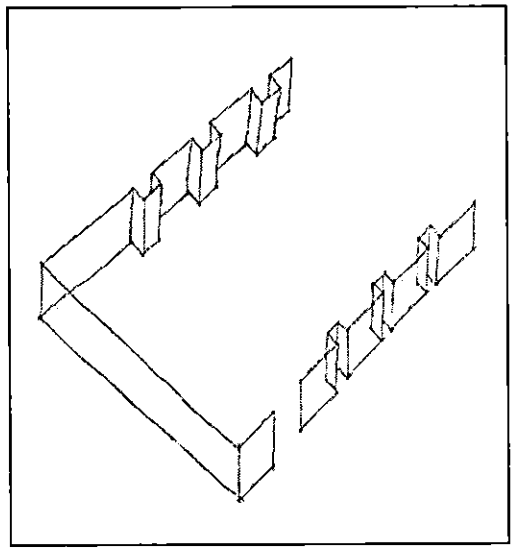


Fig. 5.7 – Riehenring Diagram, Facade Differentiation
Source: Author

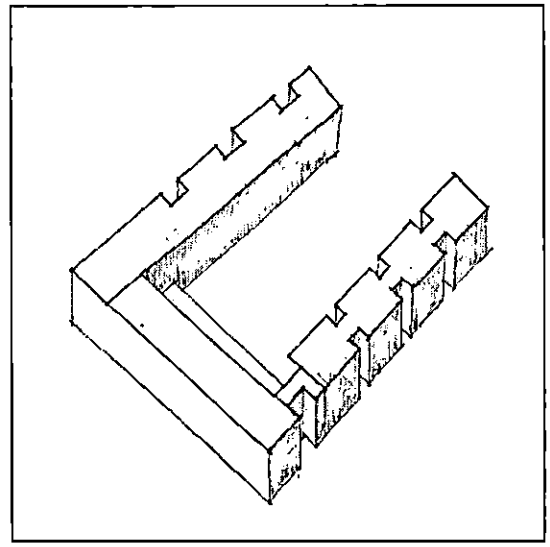


Fig. 5.8 – Riehenring Diagram, Building Typologies
Source: Author

5.2 *Banner Building*

Mixed Use Building
Seattle, Washington
Weinstein Copeland Architects
1993-94

Located along the waterfront in Seattle, the Banner Building is composed of a multilevel base containing commercial uses and parking with a mid-rise tower containing 14 two-story live/work units (Fig. 5.9). The building is characterized as a combination of the old industrial loft and the new office tower. While the materials used recall the historic industrial past of the neighborhood in which it is located, its functional design represents a new trend in building design and construction – open building.

The Banner Building and "open building", in general, provide new physical and economic possibilities not typically available in the construction market. The Banner Building provides a basic framework within which units can be fitted out (Fig. 5.10) as well as a general design language for the whole project. Units are purchased as raw space including concrete floors and utilities running through the walls (Pearson 84). This allows greater project efficiency and customization in individual units while speeding up the overall time it takes to complete the project.

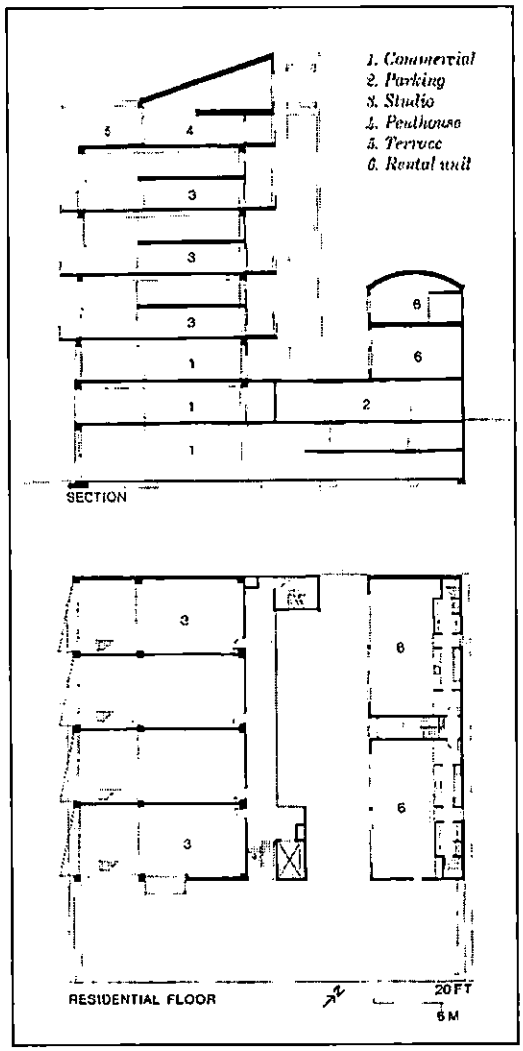


Fig. 5.9 – Banner Building Section, Plan
Source: Pearson, 89

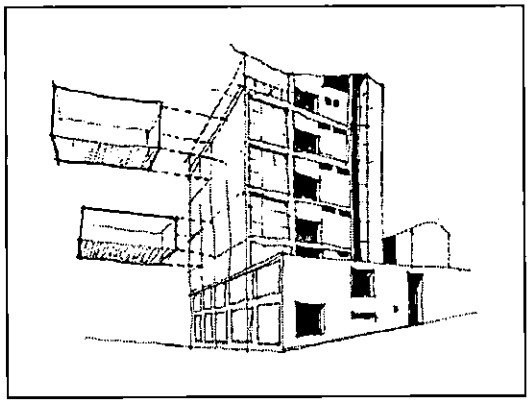


Fig. 5.10 – Banner Building, Flexible Space to Structural Framework
Source: Author

5.3 *Makuhari Housing*

Housing Development
Chiba, Japan
Steven Holl
1992-96

Steven Holl's Makuhari housing project was built within a new town where the infrastructure had already been laid in place. Given strong local planning guidelines, the project's dynamic nature arises from its spatial qualities (Fig. 5.11), building narrative, craft and finishing, and varied unit types (Fig. 5.12).

The architect devised two types of structures – active and silent (Fig. 5.13). Active buildings are light, small, individual, and associated with sound while the silent buildings are heavy, thick, and more general. The silent buildings form urban space and direct passage through the project while the active buildings provide animation.

Variety was determined to be essential to breaking up the repetition of the large-scale. As a result, nearly 90 different unit types out of 190 total units were designed. The folding and inflection of building forms was calculated according to sun angles and further enhances the perspective of the project (Fig. 5.14).

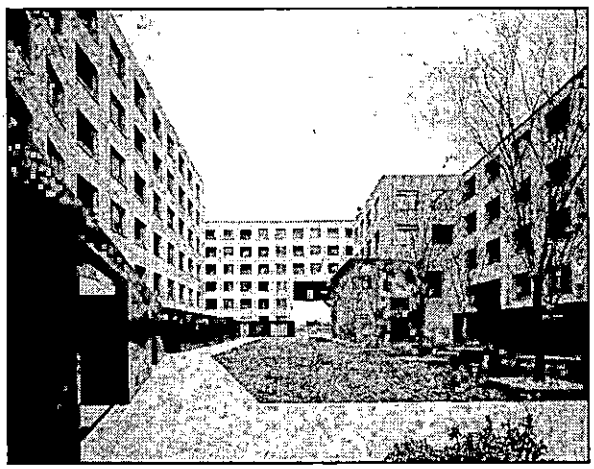


Fig. 5.11 – Makuhari Interior Courtyard
Source: El Croquis, 157

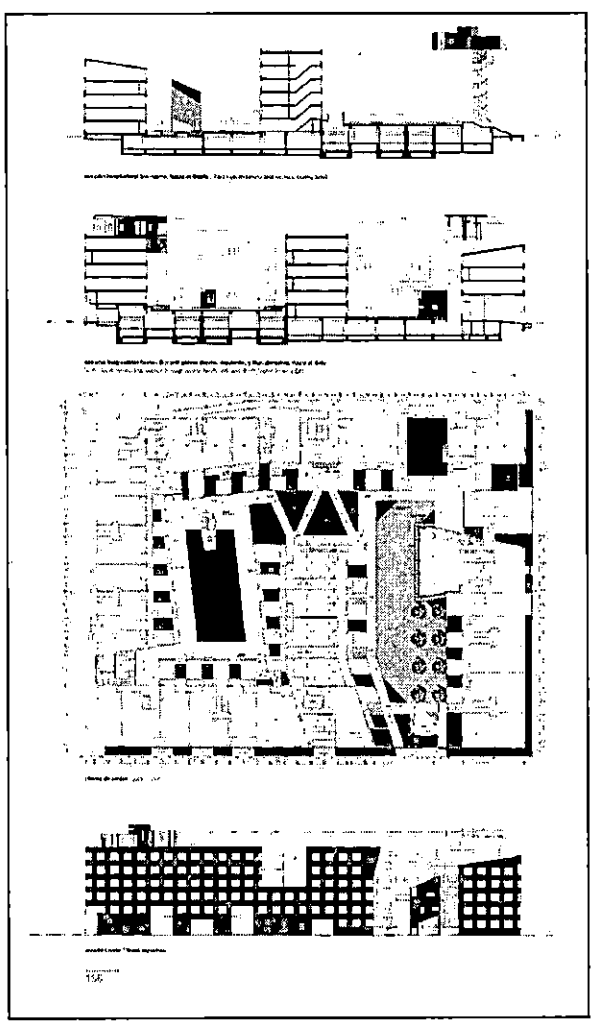


Fig. 5.12 – Makuhari Site Drawings
Source: El Croquis, 156

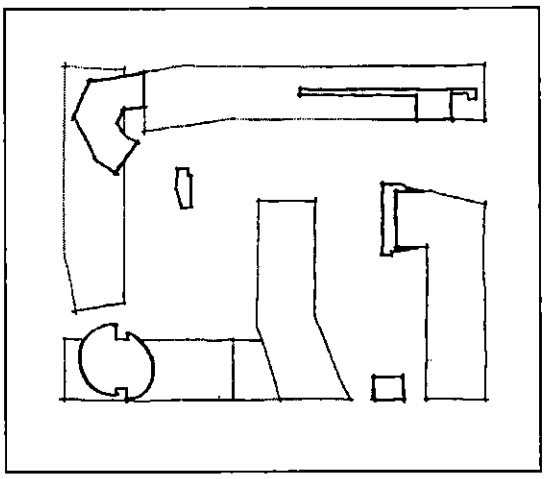


Fig. 5.13 – Makuhari Silent and Active Buildings
Source: Author

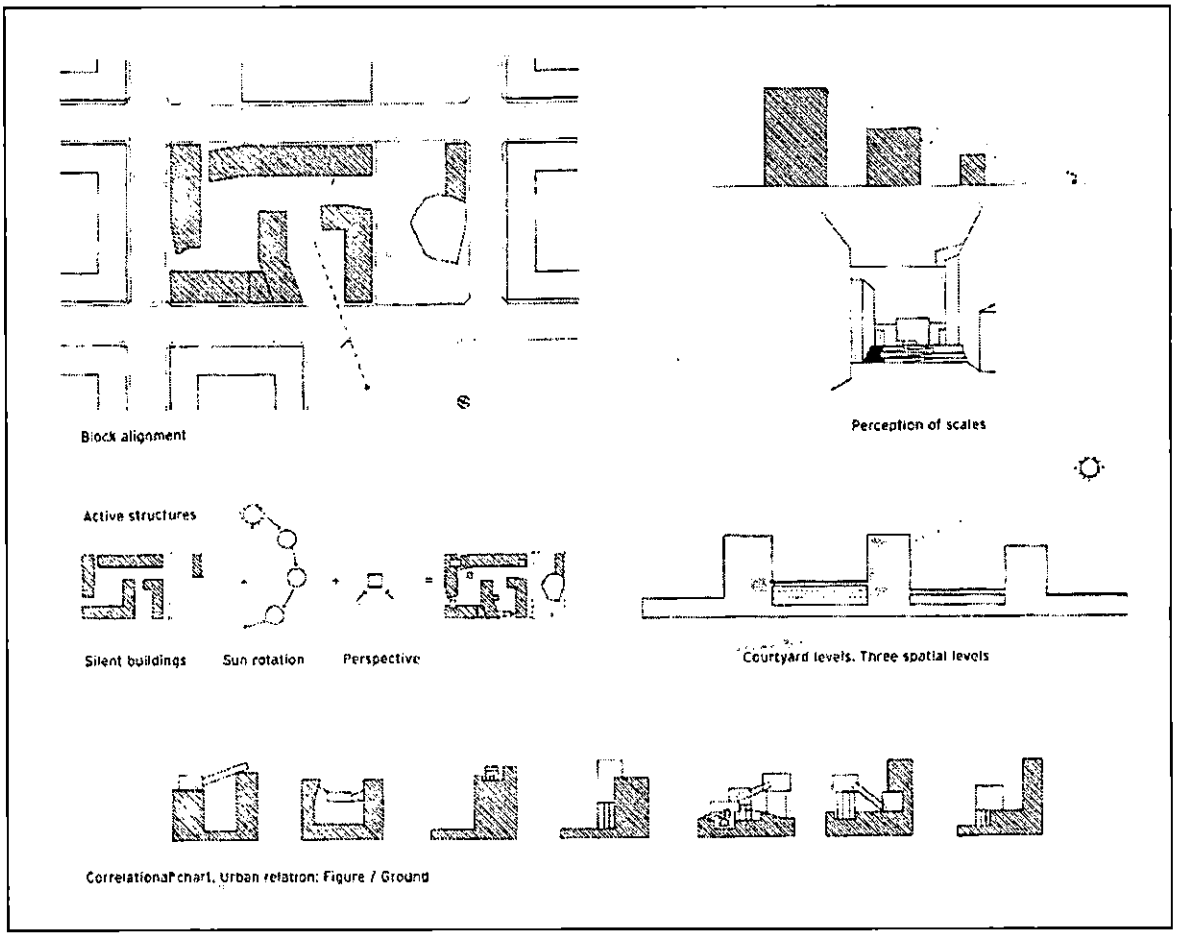


Fig. 5.14 – Makuhari Project Diagrams
Source: Gausa, 207

6.0 PROGRAM

6.1 *Program Background*

The program for this proposal consists of a mixed-use perimeter block structure attached to an infrastructural core of services and circulation interior to the block. Conceptually, the structural framework, service cores, circulation towers, and parking garage would be built first with the remainder of the development attached to the support framework (Fig. 6.1). This proposal contends that such functional service elements have the most potential to last over time and should, therefore, be designed thoughtfully to accommodate adaptation.

As an adaptable work of architecture, the building proposal is intended to accommodate a wide variety of uses and inhabitants. Therefore, structural components, building dimensions, room dimensions, corridor layouts, and regulatory issues should be designed to accept multiple and varied uses over time. However, the design proposal should address general use issues at the outset to avoid the creation of a vague and non-committal work.

Like the Bicentennial Mall Urban Master Plan, this proposal recognizes the need for commercial activity at the ground floor to maintain an active and vibrant streetscape. It is also appropriate to explore the provision of flexible office space as well as a variety of housing options (Fig. 6.2). Units should be designed to be flexible and adaptable to changes in inhabitants as well as daily activity.

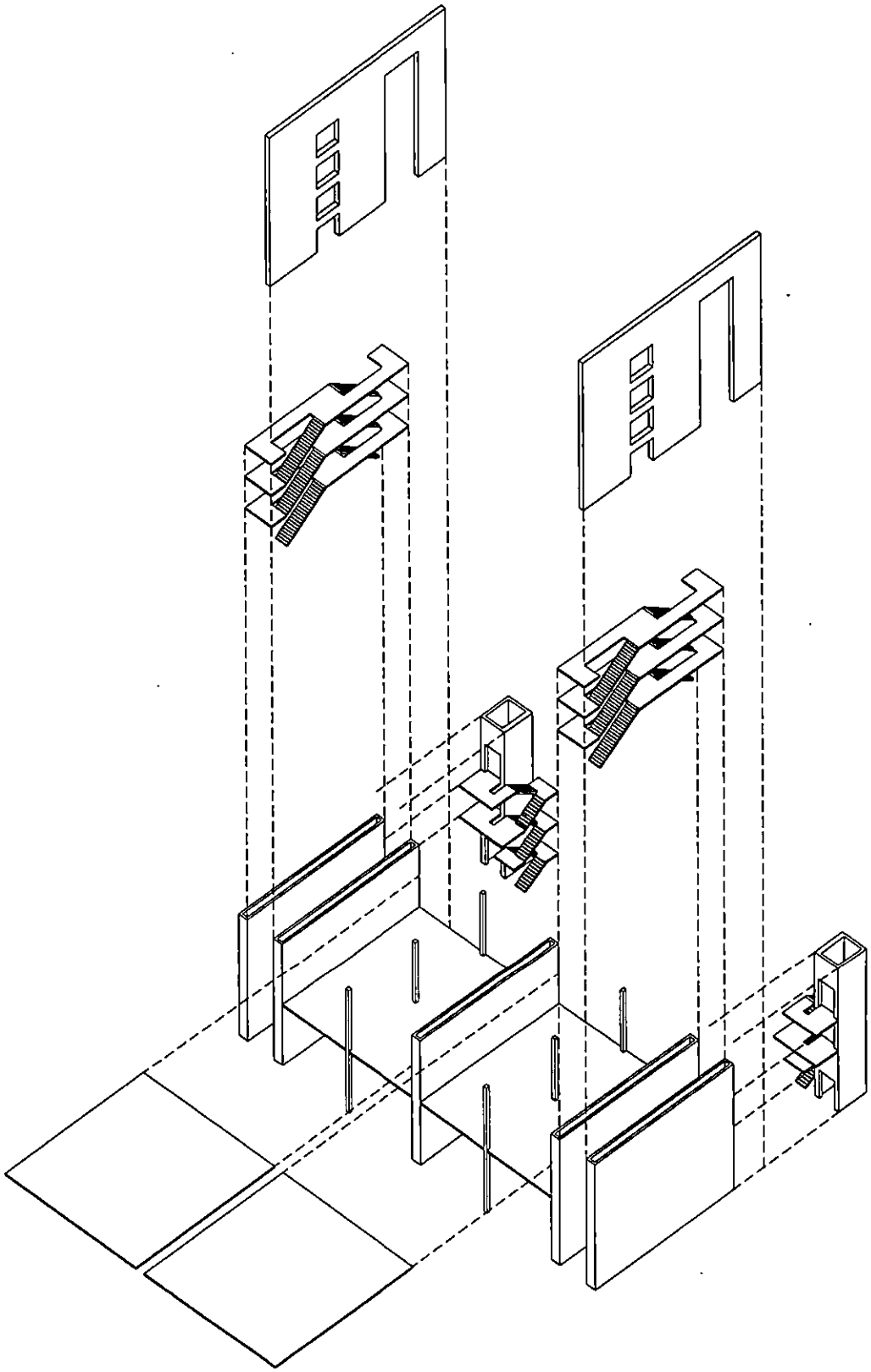


Fig. 6.1 – Infrastructure/Service Core Preliminary Study

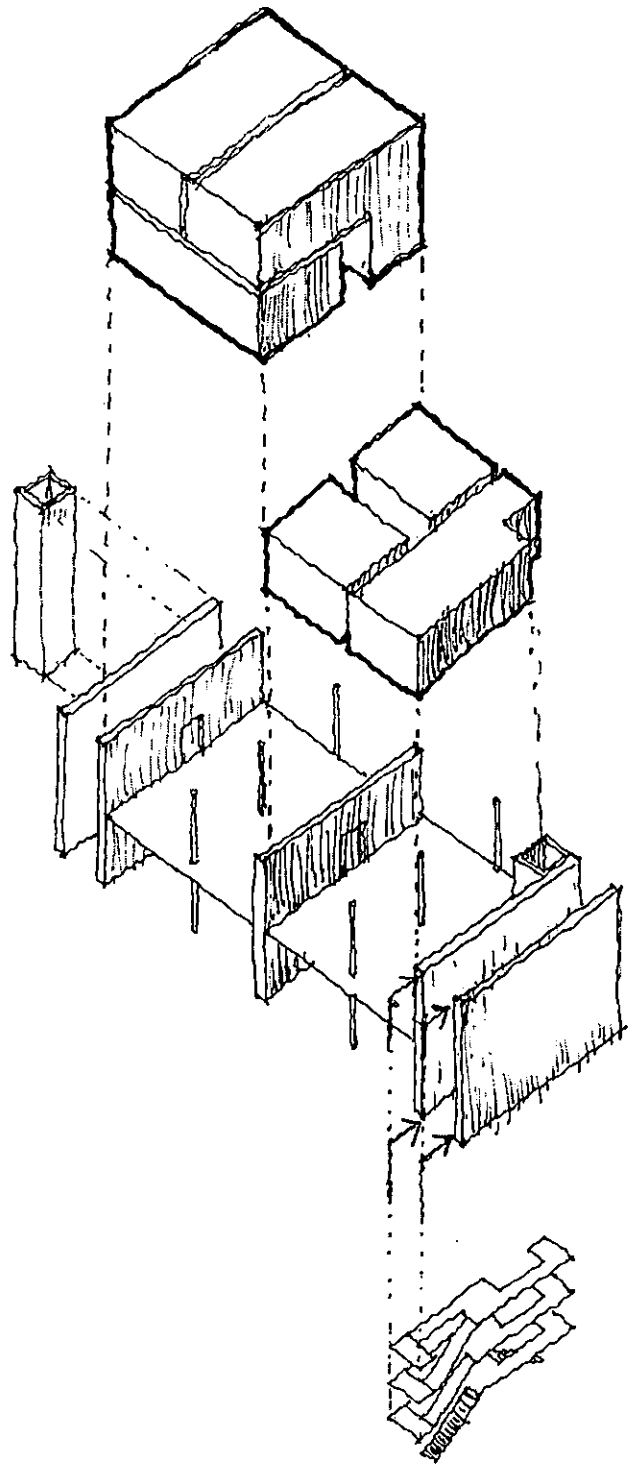


Fig. 6.2 – Unit Matrix to Structure Study
Source: Author

6.2 *Demographic Analysis*

Within the proposed study area, there is currently little to no residential development – or development of any significant kind for that matter. As previously mentioned, the Subarea Plan and existing Masterplans envision this as an area that should transition into a mixed-use district (Fig. 4.2). The study area holds tremendous potential with regards to its proximity to important adjacent districts and amenities. The character of the area can be described as an "in-between" condition – between the mid- to high-rise development of the downtown and the lower-scale residential development of the Germantown neighborhood to the north. Given the site's proximity to the Central Business District, the farmer's market, the Bicentennial Mall, the State Office Complex, existing housing, and industry the study area holds the potential to become a key transitional district among these varied uses.

Therefore, it is vital that a broad spectrum of potential users be considered in proposing an appropriate mix of development. Table 6.1, on the following page, illustrates a projected demographic group for the study area as well as possible amenities that might be appropriate for the proposed project. The matrix also projects a logical mix of unit types given the potential users. The matrix illustrates a somewhat stronger demand for smaller (efficiency/study, 1-BR) and more flexible unit types (such as live/work units). Potential unit types will be described and illustrated further in the following section.

Table 6.1 – Population/Program Matrix

	Potential Users									
	Artists	Small Business Owners	Students	Singles	Couples (without children)	Families (with children)	Single-headed families (with children)	Handicapped Individuals	Elderly	
Amenities										
Communal Indoor Facilities	■	■	■	■	■	■	■	■	■	
Communal Outdoor Facilities	■	■	■	■	■	■	■	■	■	
Private Yard		■				■	■			
Parking	■	■	■	■	■	■	■	■	■	
Elevators		■						■	■	
Daycare						■	■			
Commercial/Retail	■	■	■	■	■	■	■	■	■	
Workspace	■	■								
Unit Types										
Efficiency/Studio	■		■	■	■			■	■	19.5%
1-BR	■		■	■	■			■	■	19.5%
2-BR		■			■	■	■			13%
3-BR						■	■			6%
Communal			■	■				■	■	13%
Loft	■		■	■						9.5%
Live/Work	■	■		■	■	■	■			19.5%

6.3 *Unit Types*

A wide variety of unit types are briefly discussed and illustrated in the following section. Changing demographics and households across the country point to the need for new and diverse types of housing. In a proposal that is designed to adapt over time, options for individuals who may choose to reside within the relative permanence and stability of a neighborhood should be varied so that they might not have to leave that neighborhood to fulfill their changing needs.

Efficiency/Studio: Minimal apartment with combined living, dining, and sleeping areas as well as bathroom and cooking facilities. Minimal storage. Typically occupied for short periods of time. Occupied by one to two persons.

One-Bedroom: Smallest unit with separate sleeping and living accommodations. Also contains adequate dining and cooking facilities. Living, dining, and kitchenette typically combined. Occupied by one to two persons.

Two-Bedroom: Contains adequate space for family living. Full cooking and bathing facilities included. Adequate storage space required. Occupied by three to four persons.

Three-Bedroom: Unit for average-sized family. Contains private living space, bedrooms, bathroom, storage, and kitchen. Occupied by four to six persons.

Loft Apartments: Unit with amenities contained within a larger building – typically created from buildings originally designed for commercial rather than residential use. Suited for overlapping work and living – particularly gallery space. Often characterized by open space, free of walls.

Live/Work Units: Units which allow living and working within the same property. The predominant use of this unit type is typically residential while the work or commercial component is typically secondary (due to noise, sound, traffic concerns). Unit likely has a private entry. Equipped with facilities similar to other residential units with additional requirements for commercial work. Ideally located along busy street fronts with commercial uses.

6.4 *Building Program*

Figure 6.3 illustrates the thesis site in relation to existing conditions. With the extension of Stockyard Street west to Fifth Avenue, a typical block condition with the dimensions 360' by 380' is created. The area of the site encompasses 136,800 square feet or 3.14 acres with 339, 250 square feet of development. The proposal will rise four stories along Fifth Avenue and three stories along Fourth Avenue to create a gradual transition in density as one moves east towards the river. The proposal will contain one level of parking below grade with a raised courtyard above. Rooftop terrace space will also be provided along with

penthouse units to create an animated roofscape. The specific programmatic breakdown by floor level is summarized in Table 6.2.

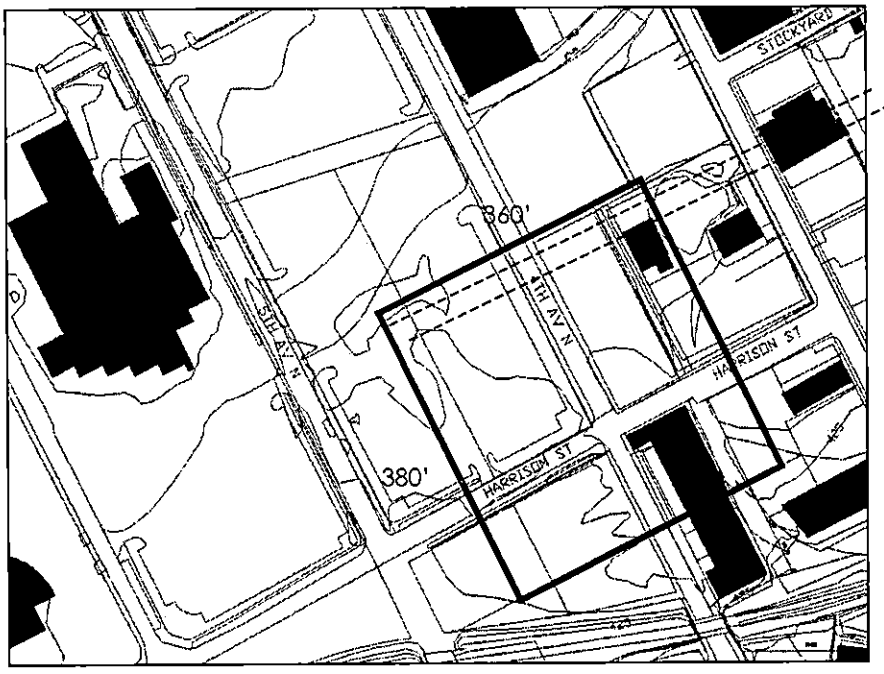


Fig. 6.3 - Proposed Site Location and Dimensions
Source: Author

Table 6.2 – Building Program Summary

Basement Level	
Parking – one level (@128 spaces)	55, 500 s.f.
Mechanical/Utility/Service	8,500 s.f.
Circulation	2,000 s.f.
Subtotal	**66,000 s.f.**
Ground Level	
Parking (@60 spaces)	37,000 s.f.
Loading	2,000 s.f.
Utility/Service	6,000 s.f.
Circulation	4,000 s.f.
Commercial	34,000 s.f.
Live/Work (6 units)	8,500 s.f.
Subtotal	**91,500 s.f.**
Second Level	
Circulation	4,000 s.f.
Raised Courtyard	50,000 s.f.
Office	27,000 s.f.
Residential (9 units)	10,500 s.f.
Subtotal	**91,500 s.f.**
Third Level	
Circulation	5,500 s.f.
Residential (34 units)	36,000 s.f.
Subtotal	**41,500 s.f.**
Fourth Level	
Circulation	4,000 s.f.
Roof Terrace	16,500 s.f.
Residential (19 units)	17,000 s.f.
Subtotal	**37,500 s.f.**
Fifth Level	
Circulation	1,250 s.f.
Roof Terrace	6,000 s.f.
Residential (3 units)	4,000 s.f.
Subtotal	**11,250 s.f.**
TOTAL DEVELOPMENT	**339,250 s.f.**
SITE AREA	**136,800 s.f.**

7.0 DESIGN DIAGRAMS AND DRAWINGS

Design diagrams and drawings are presented in figures 7.1 through 7.25.

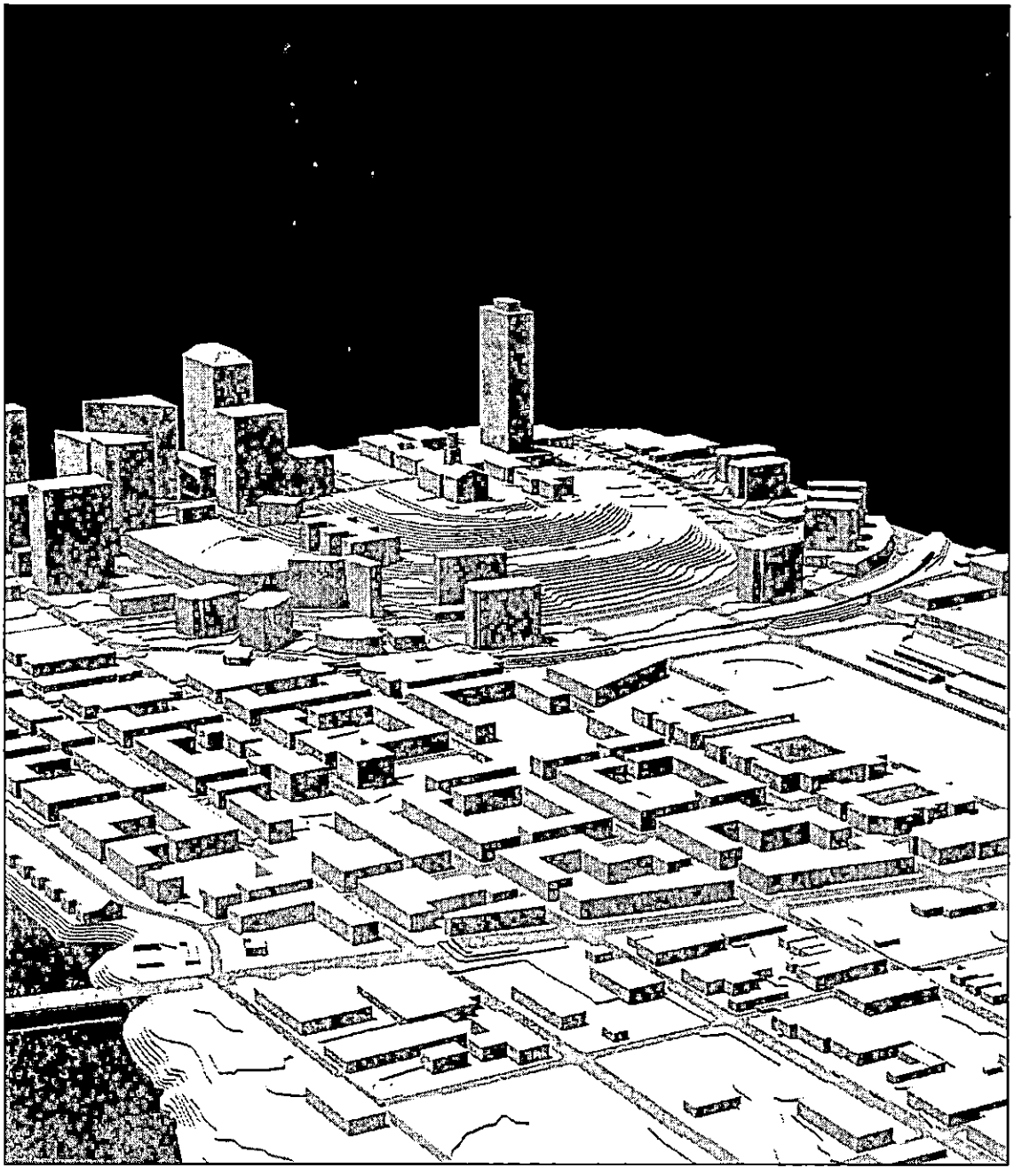


Fig. 7.1 – Rendering, Proposed Massing of Thesis Site
Source: Author

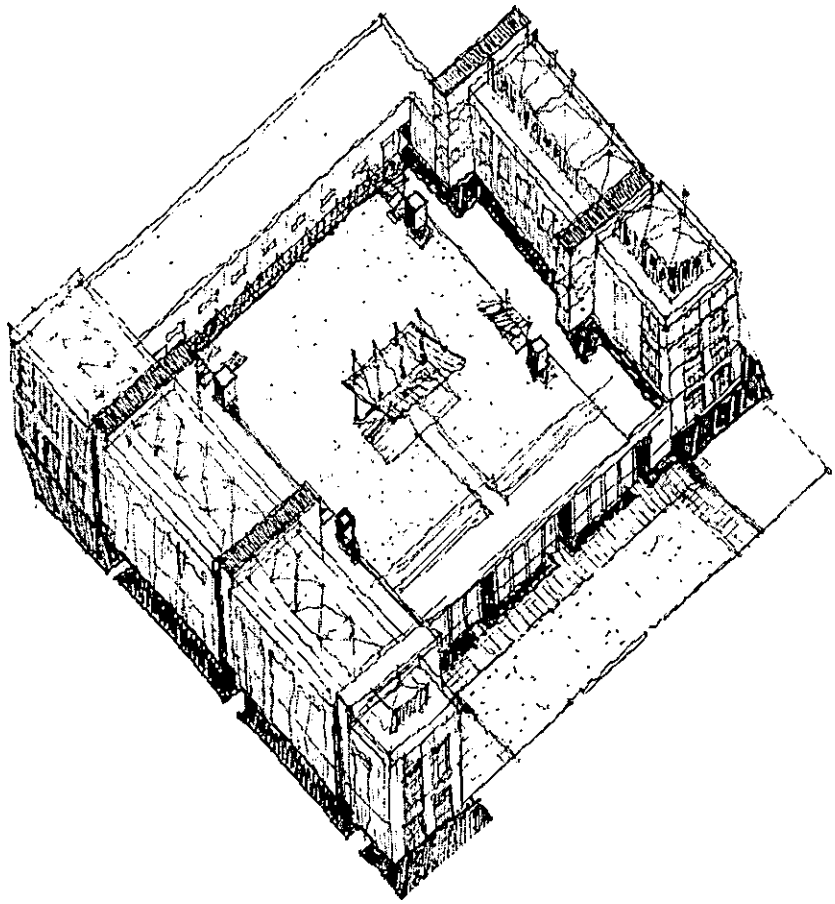


Fig. 7.2 – Diagram, Preliminary Massing Sketch
Source: Author

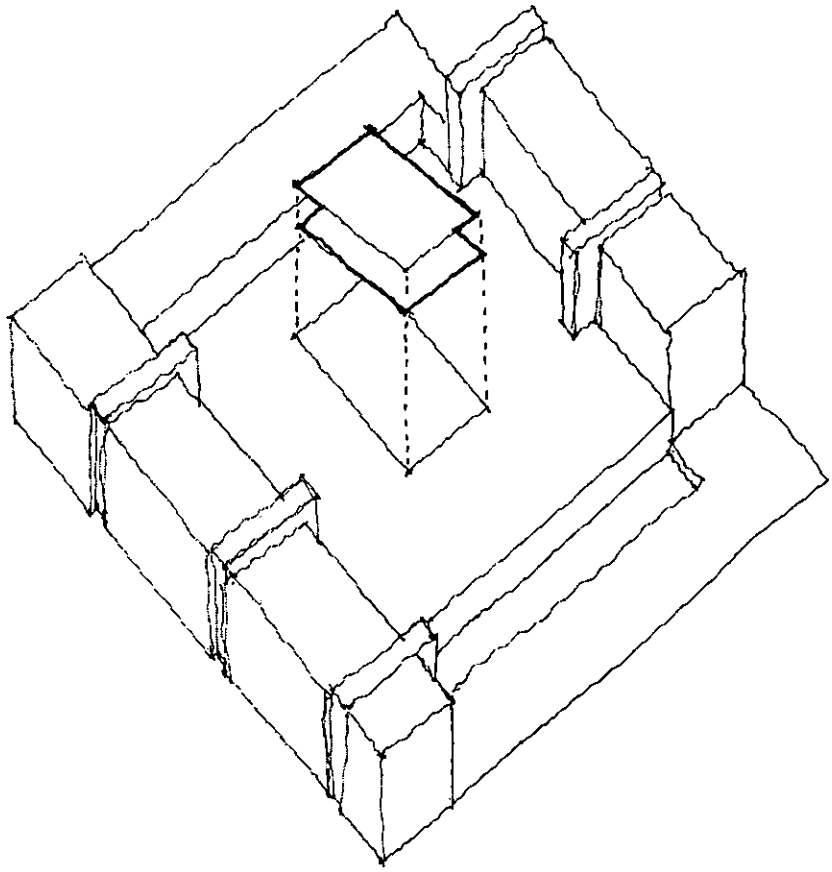


Fig. 7.3 – Diagram, Adaptable Ramp
Source: Author

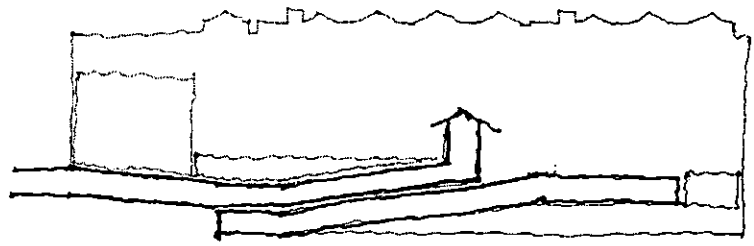


Fig. 7.4 – Diagram, Circulation to Courtyard
Source: Author

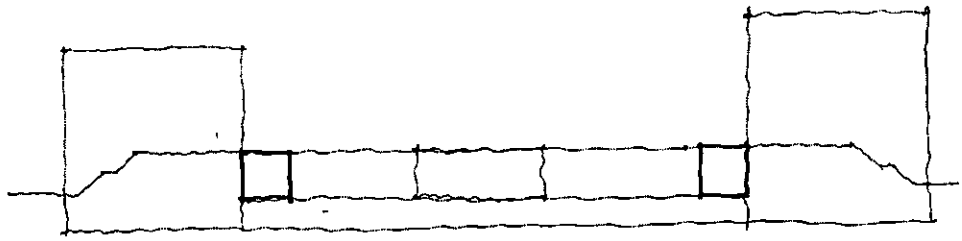


Fig. 7.5 – Diagram, Vehicular Circulation
Source: Author

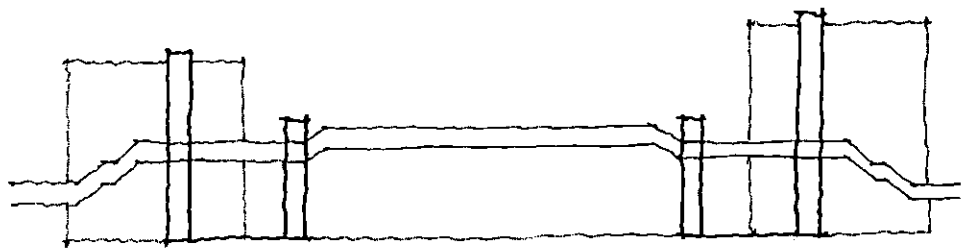


Fig. 7.6 – Diagram, Vertical Pedestrian Circulation
Source: Author

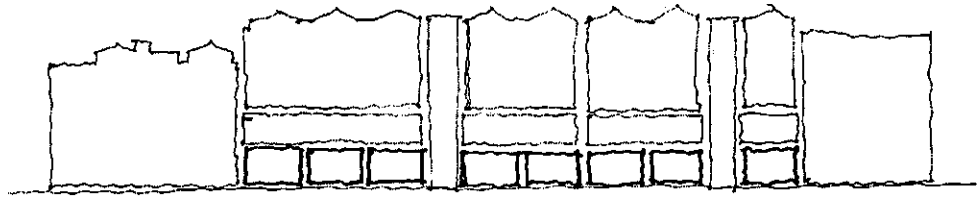


Fig. 7.7 – Diagram, Layering
Source: Author

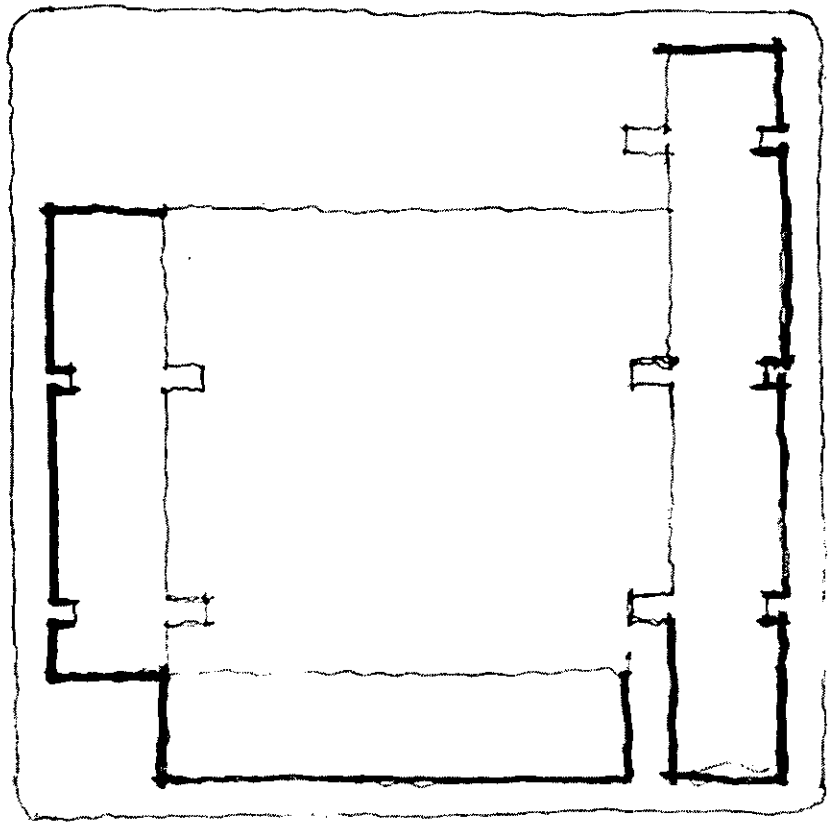


Fig. 7.8 – Diagram, Permanent Edge/Adaptable Interior
Source: Author



Fig. 7.9 – Existing Figure-Ground, Bicentennial Mall/French Lick District



Fig. 7.10 – Bicentennial Mall Urban Master Plan Proposal

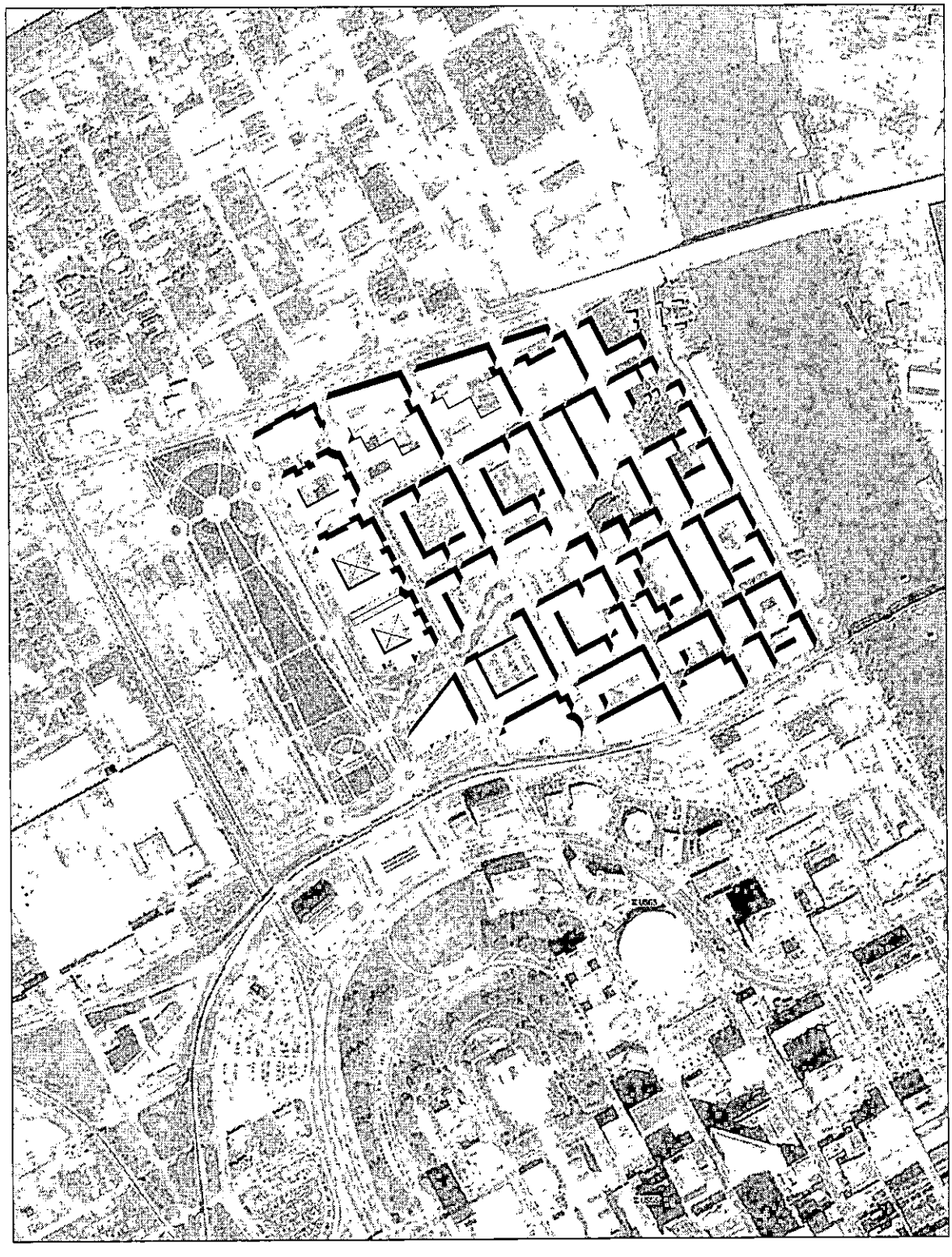


Fig. 7.11 – Proposed Master Plan, Site Aerial

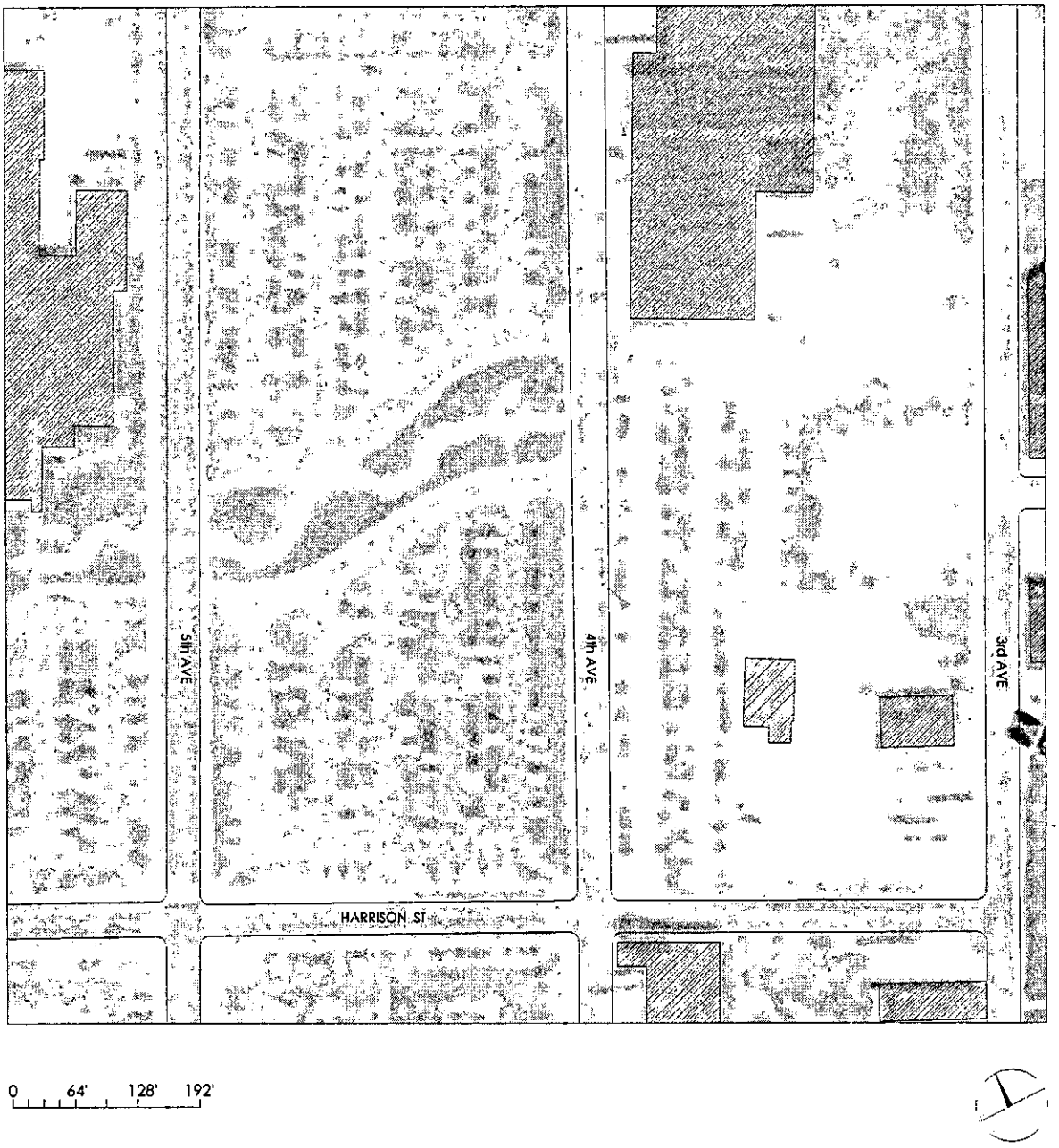


Fig. 7.12 –Existing Site Plan, Urban Quadrant

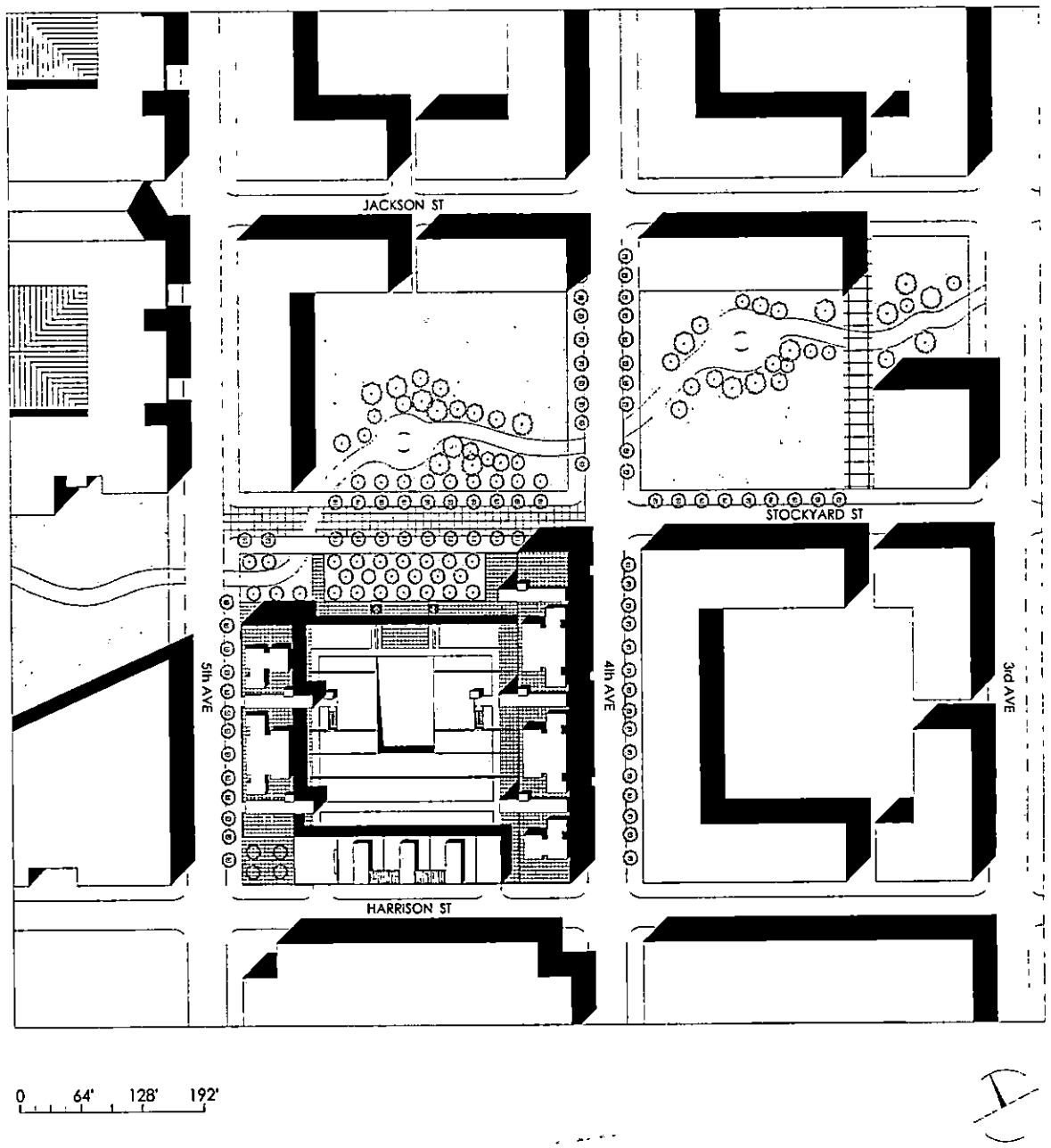


Fig. 7.13 – Proposed Site Plan, Urban Quadrant

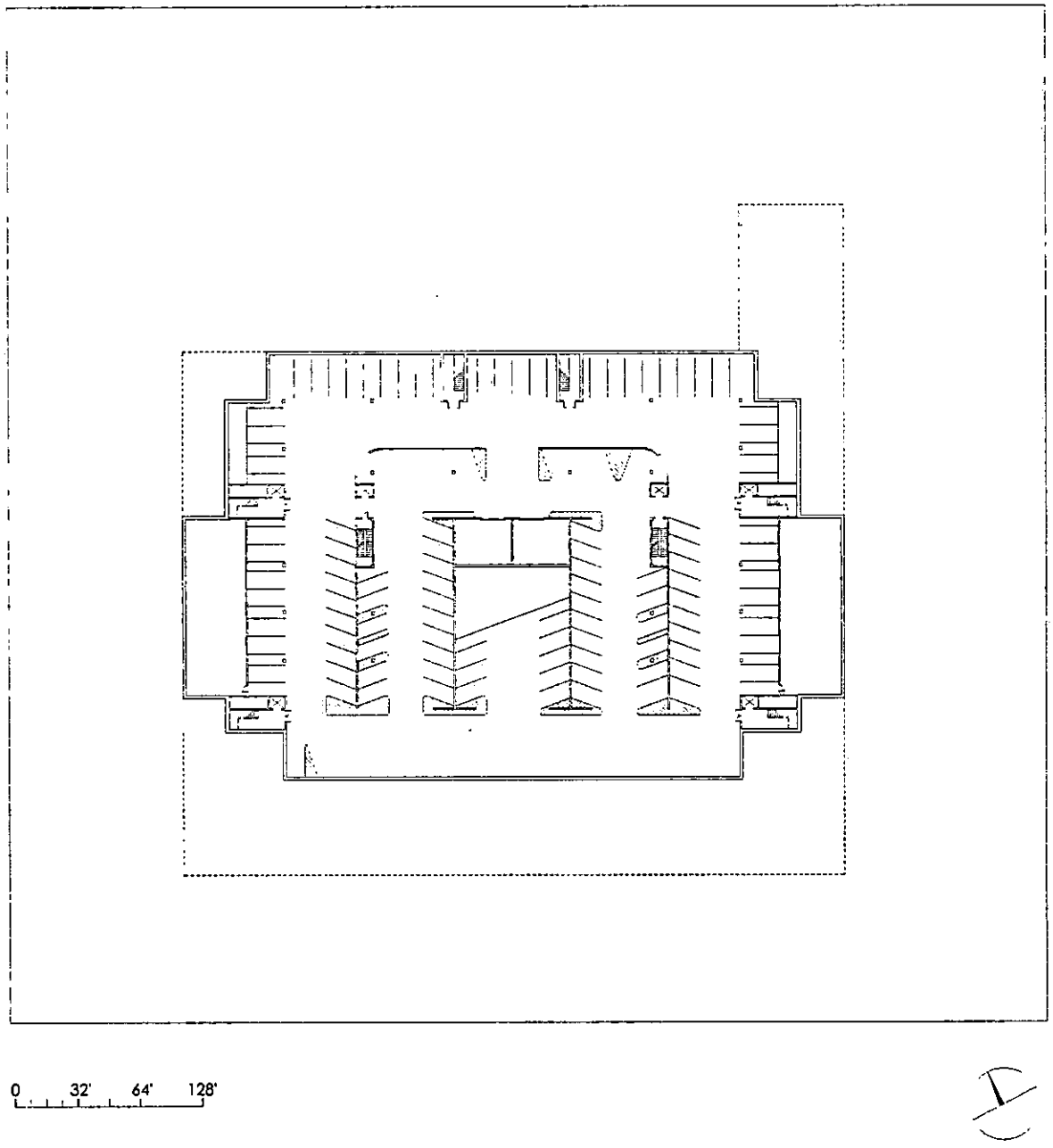


Fig. 7.14 – Proposed Floor Plan, Basement Level

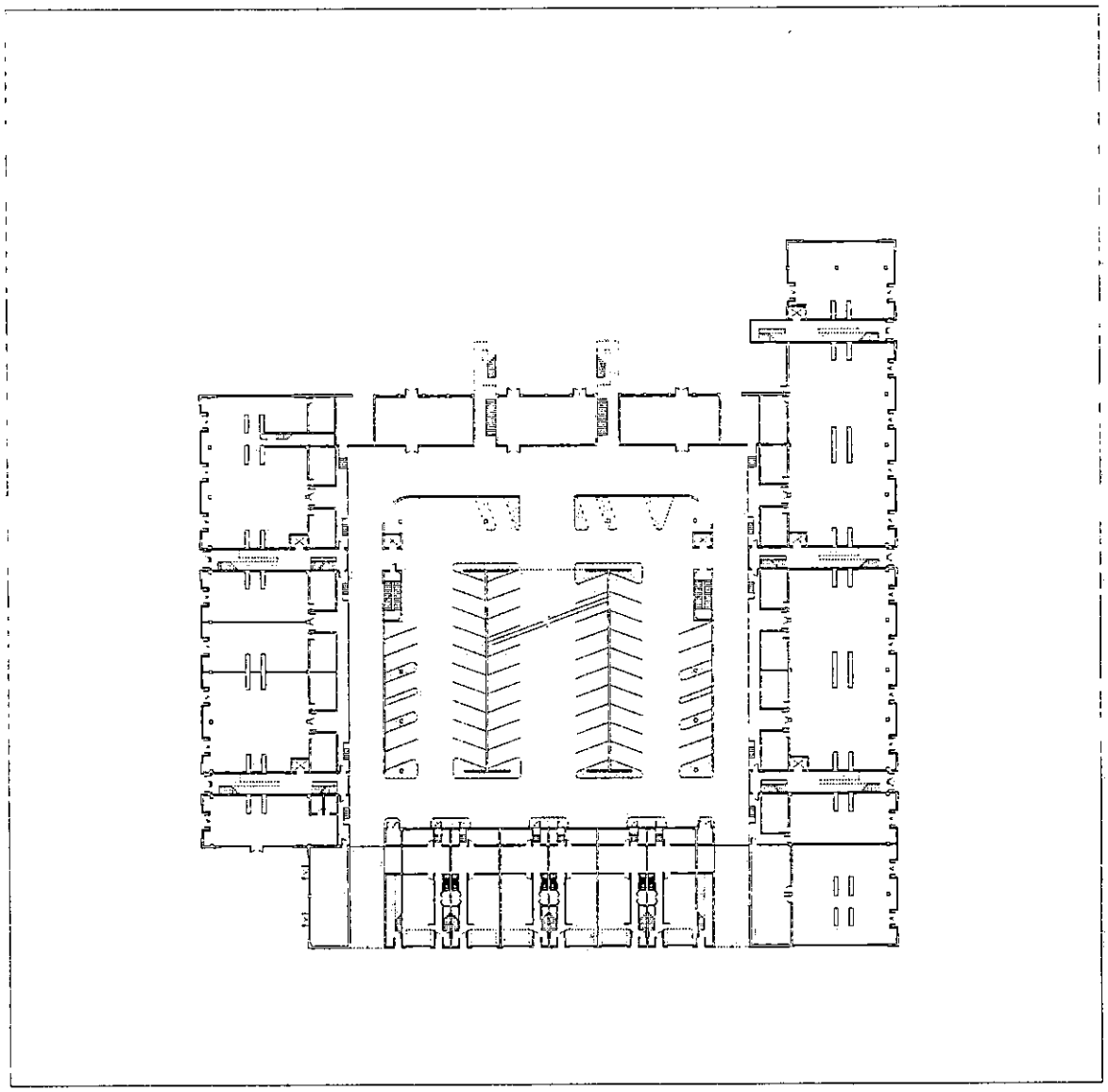


Fig. 7.15 – Proposed Floor Plan, Ground Level

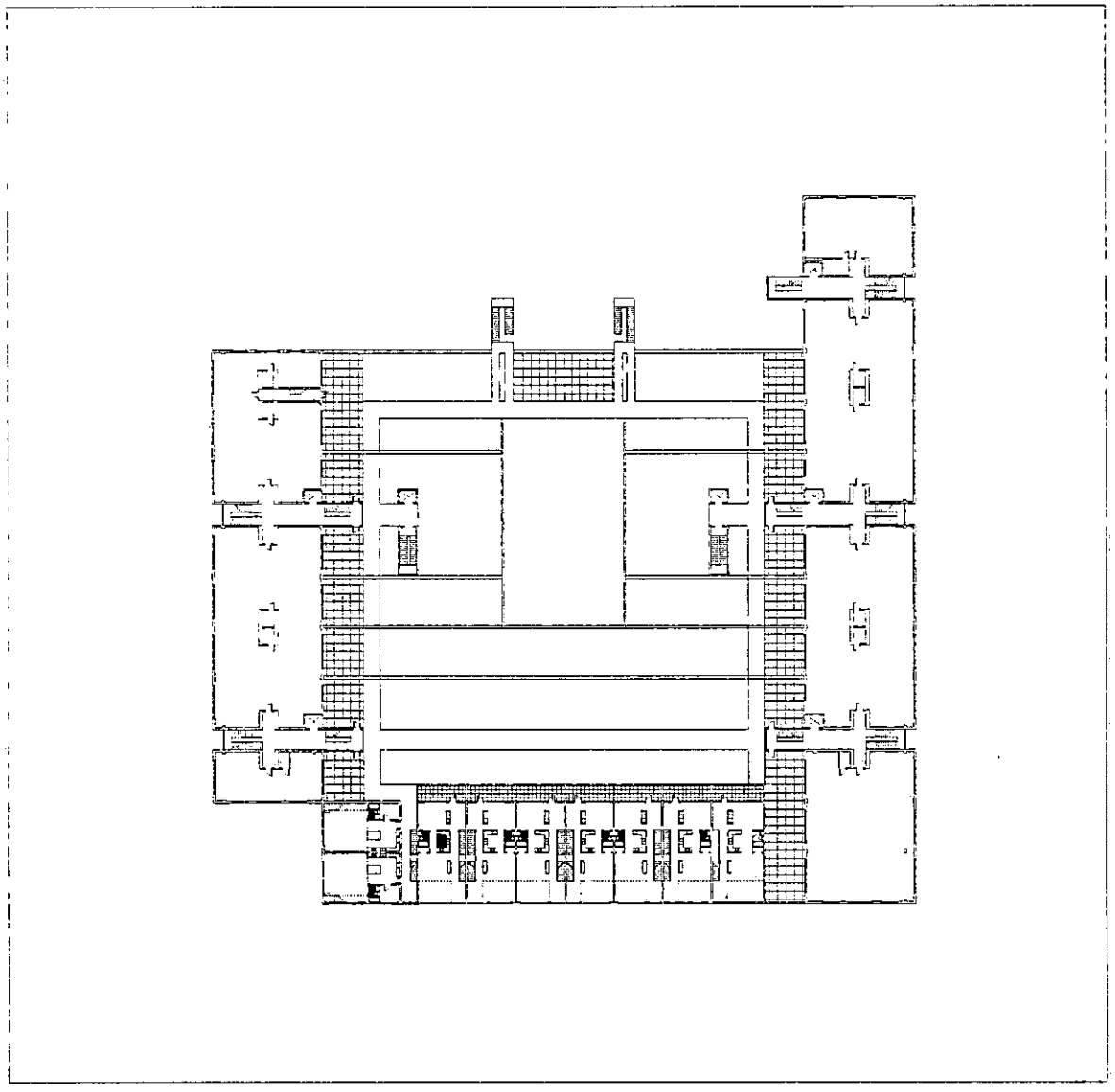
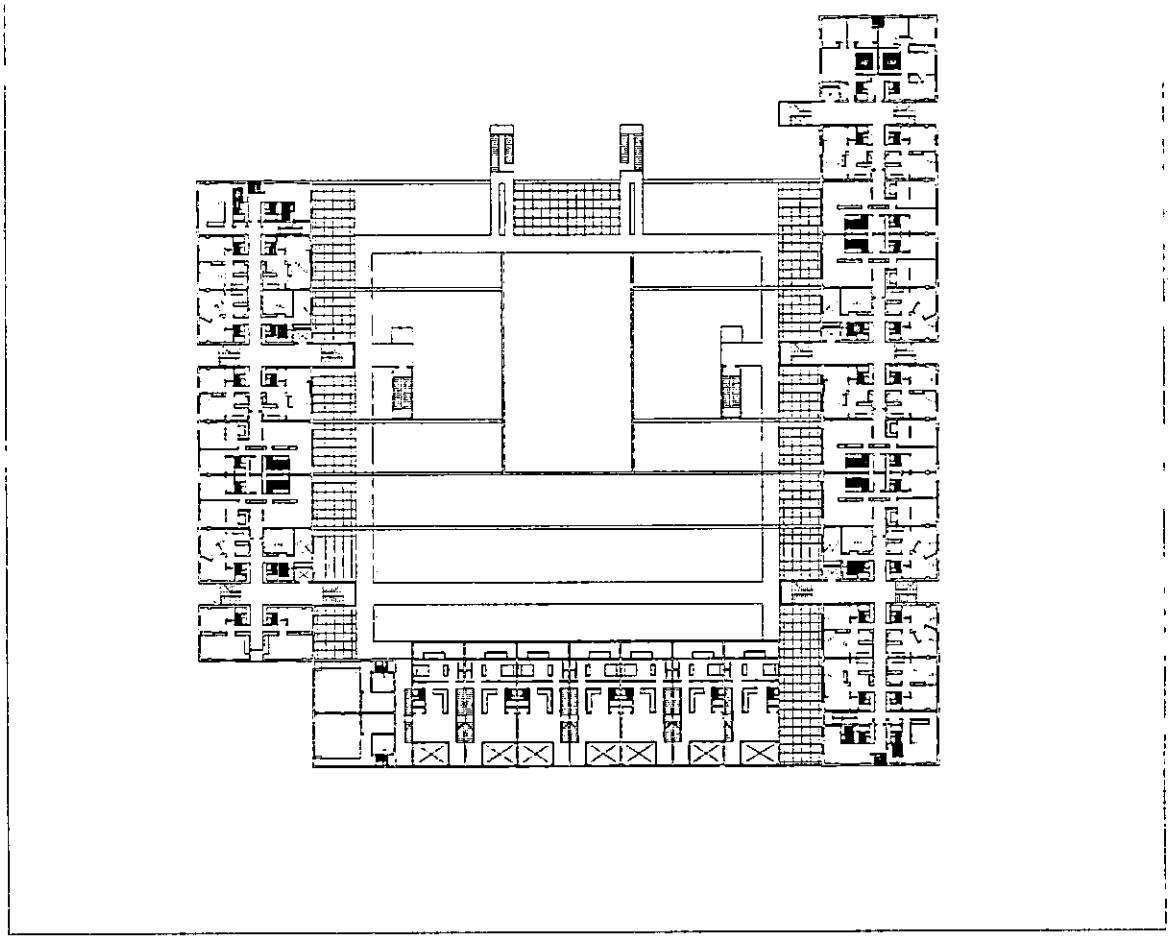


Fig. 7.16 – Proposed Floor Plan, Second Floor



0 32' 64' 128'

Fig. 7.17 – Proposed Floor Plan, Third Floor

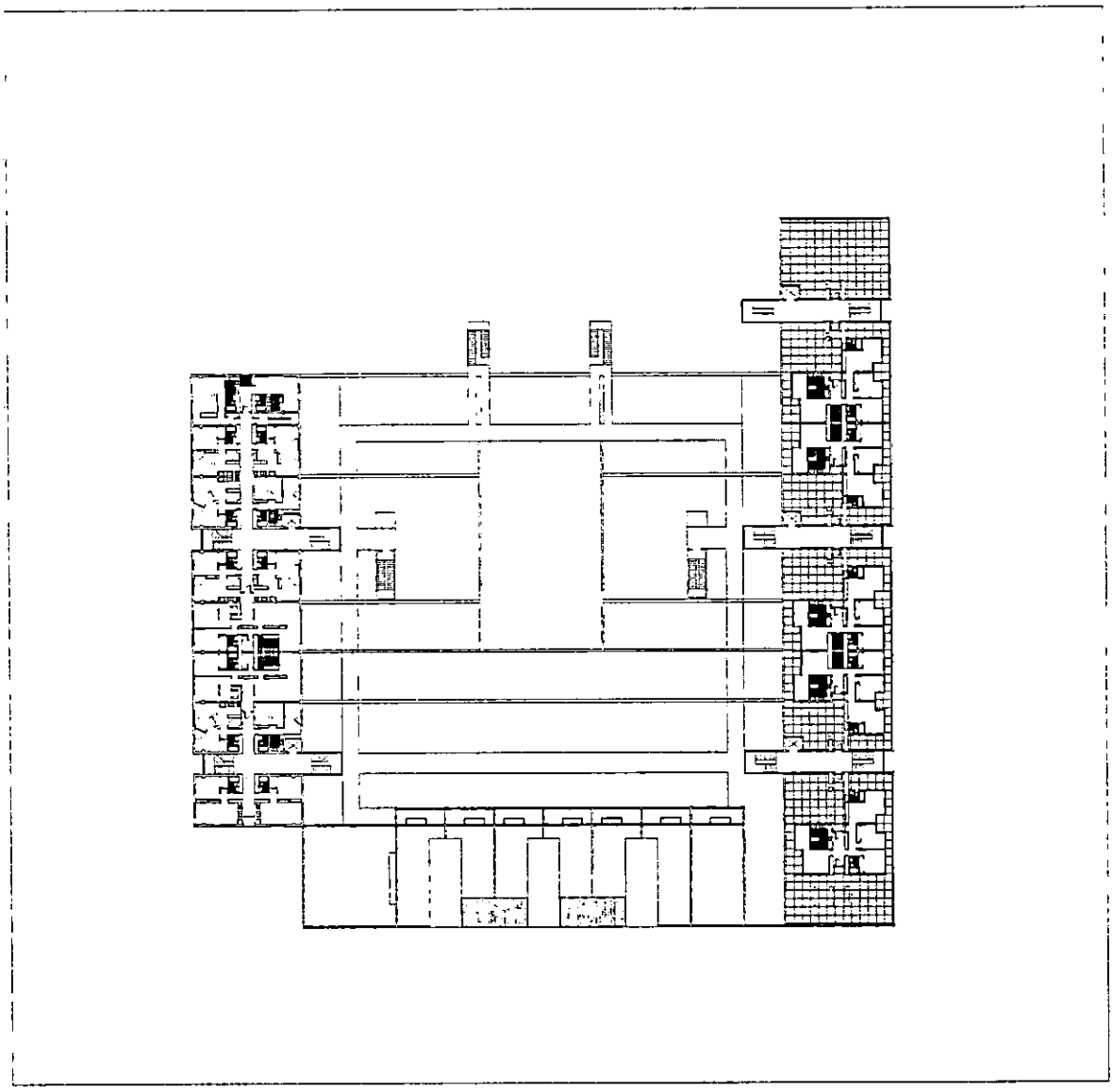


Fig. 7.18 – Proposed Floor Plan, Fourth Floor

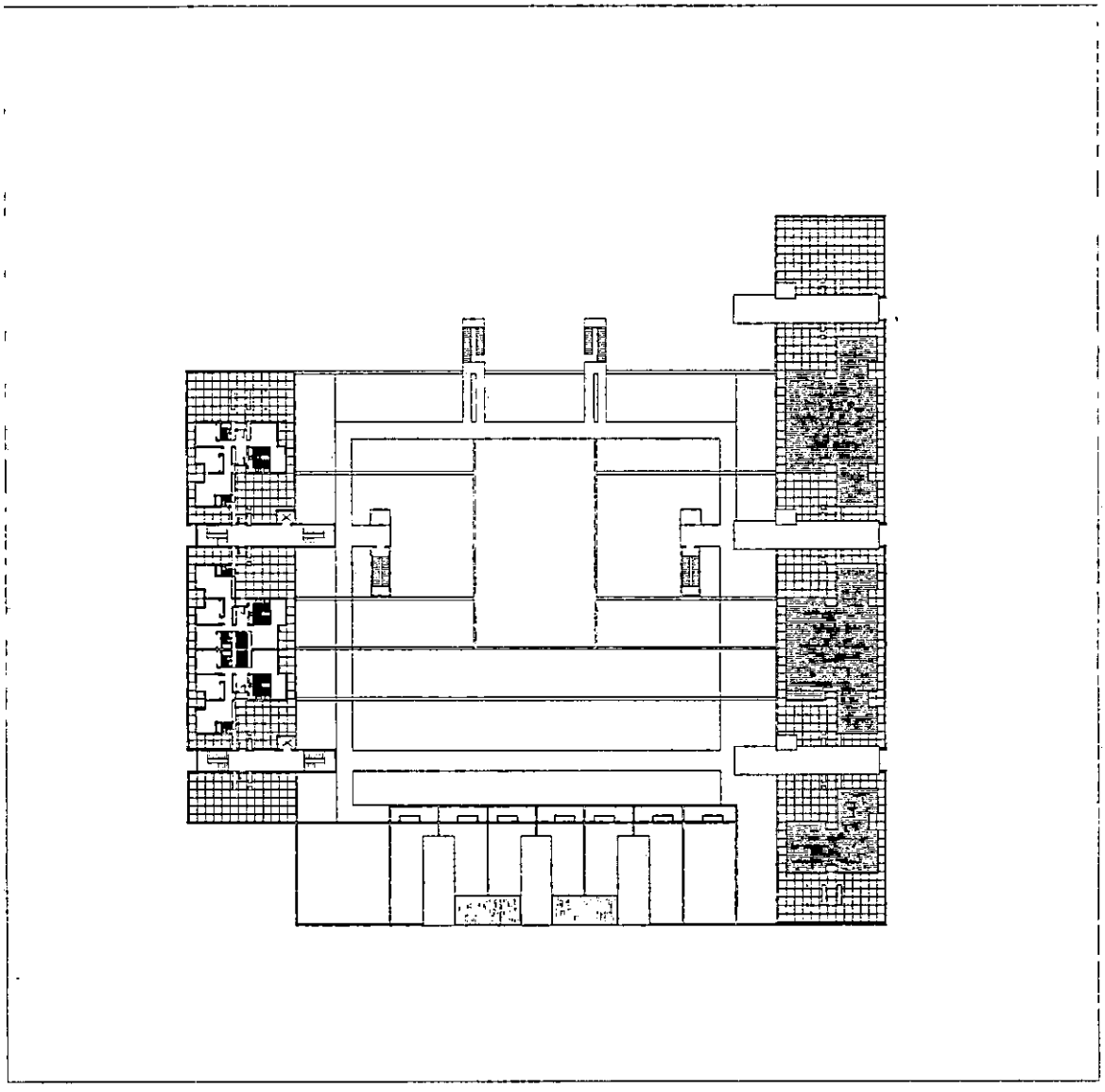


Fig. 7.19 – Proposed Floor Plan, Penthouse/Roof

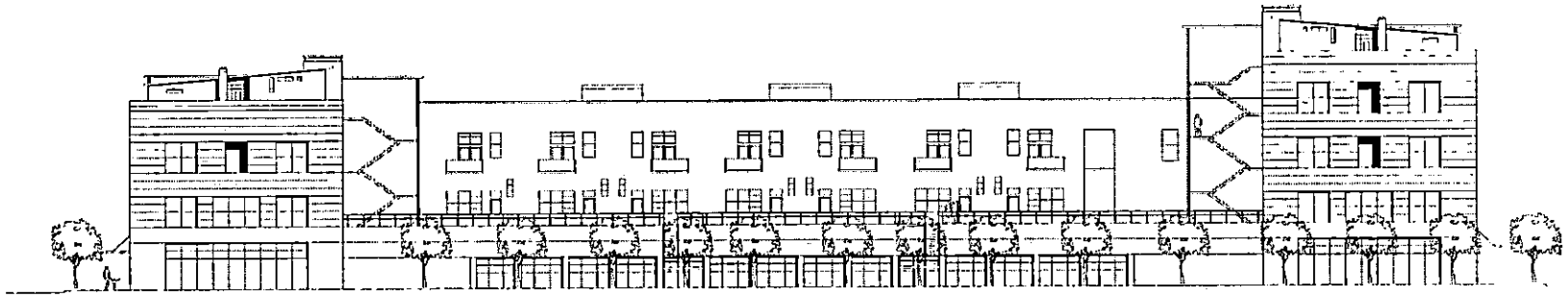


Fig. 7.20 – North Elevation of Proposal (Stockyard Street)



Fig. 7.21 – South Elevation of Proposal (Harrison Street)

0 32' 64' 128'



Fig. 7.22 – East Elevation of Proposal (Fourth Avenue)



Fig. 7.23 – West Elevation of Proposal (Fifth Avenue)

0 32' 64' 128'

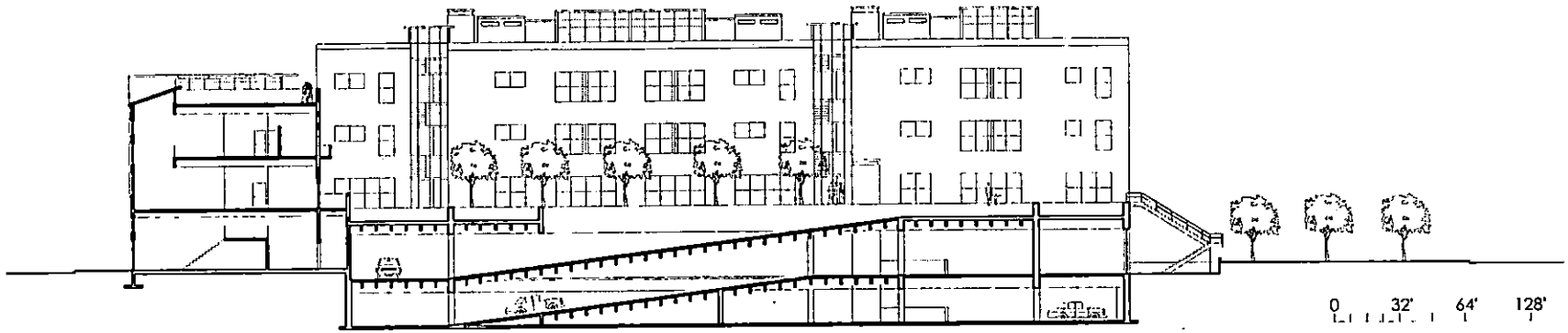


Fig. 7.24 – North/South Section Through Garage Looking West

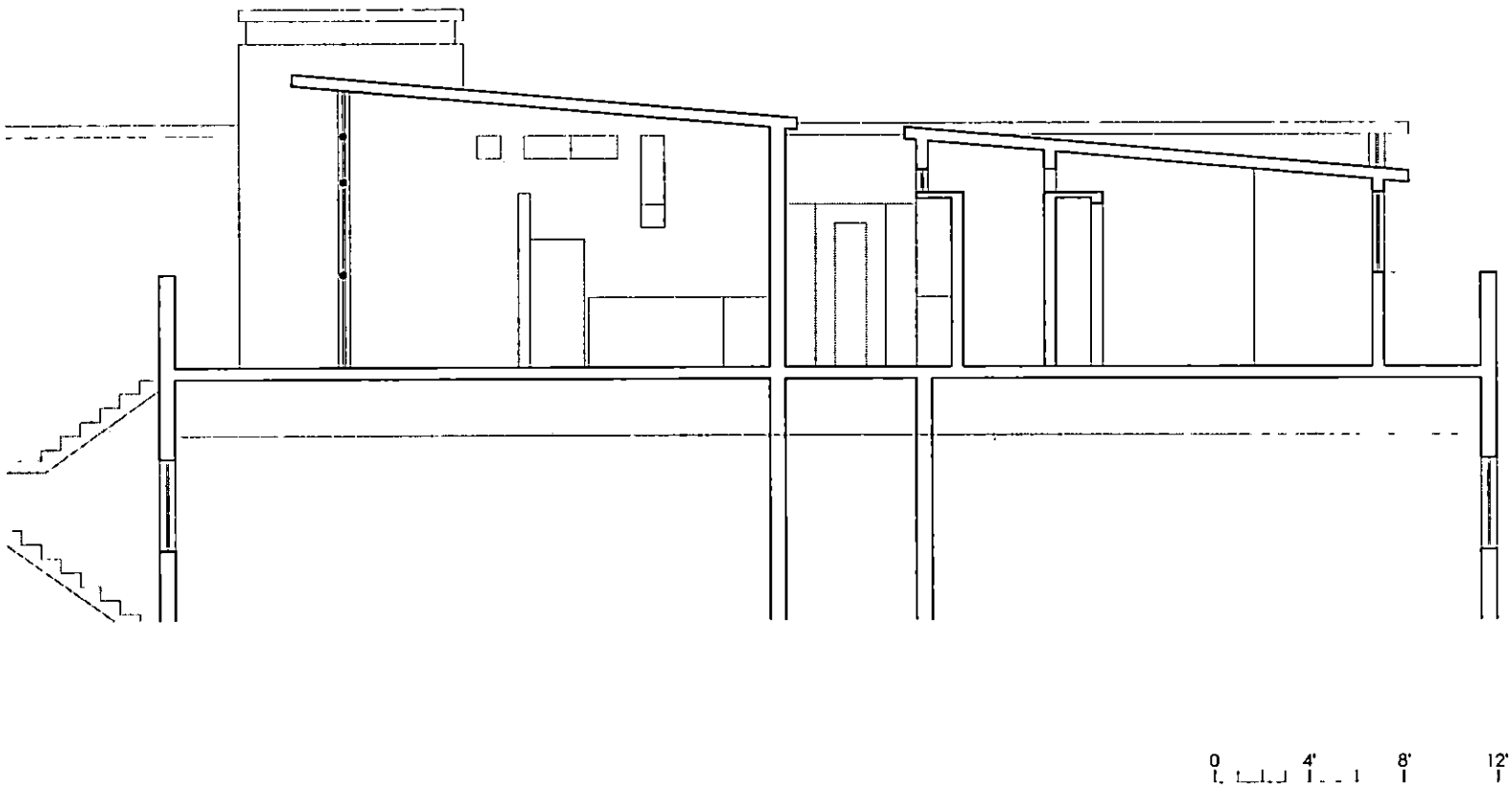


Fig. 7.25 – Section Through West Penthouse Unit

BIBLIOGRAPHY

BIBLIOGRAPHY

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APPENDIX

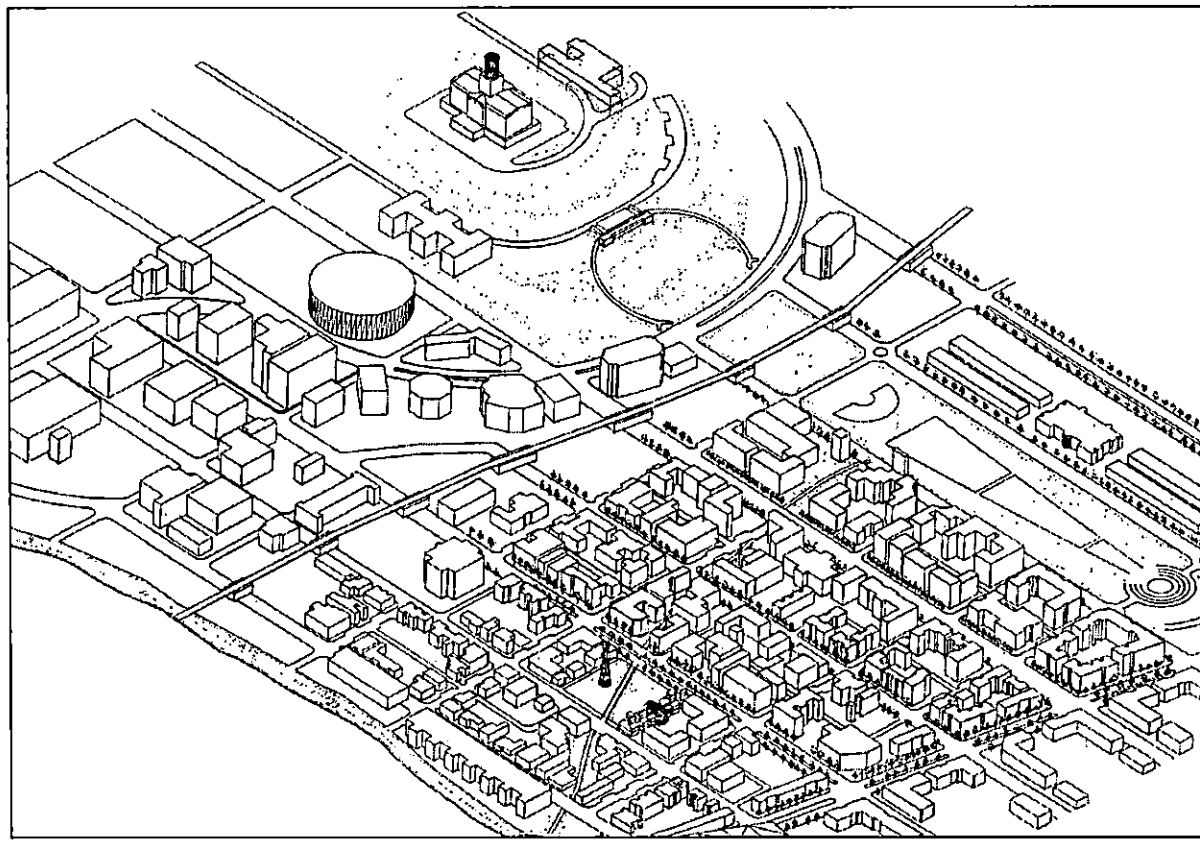


Fig. A1 – Proposed Massing Axon
Source: Bicentennial North Nashville Master Plan

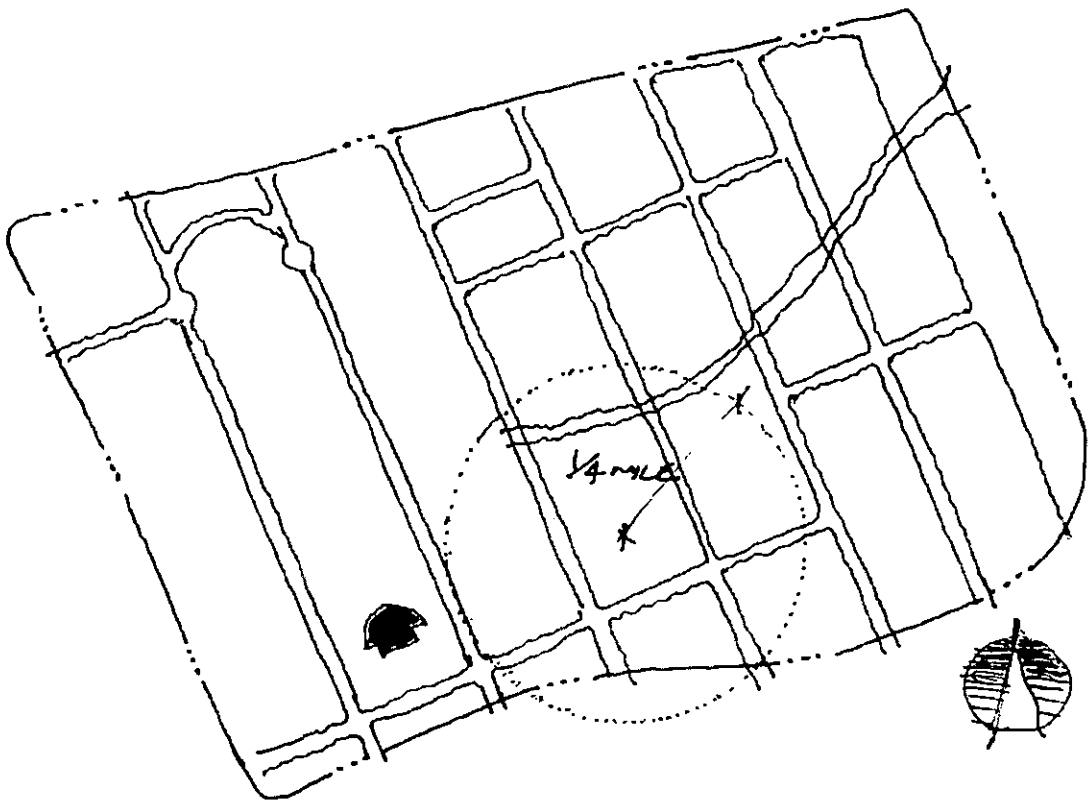


Fig. A2 – Diagram, Quarter-Mile District
Source: Author

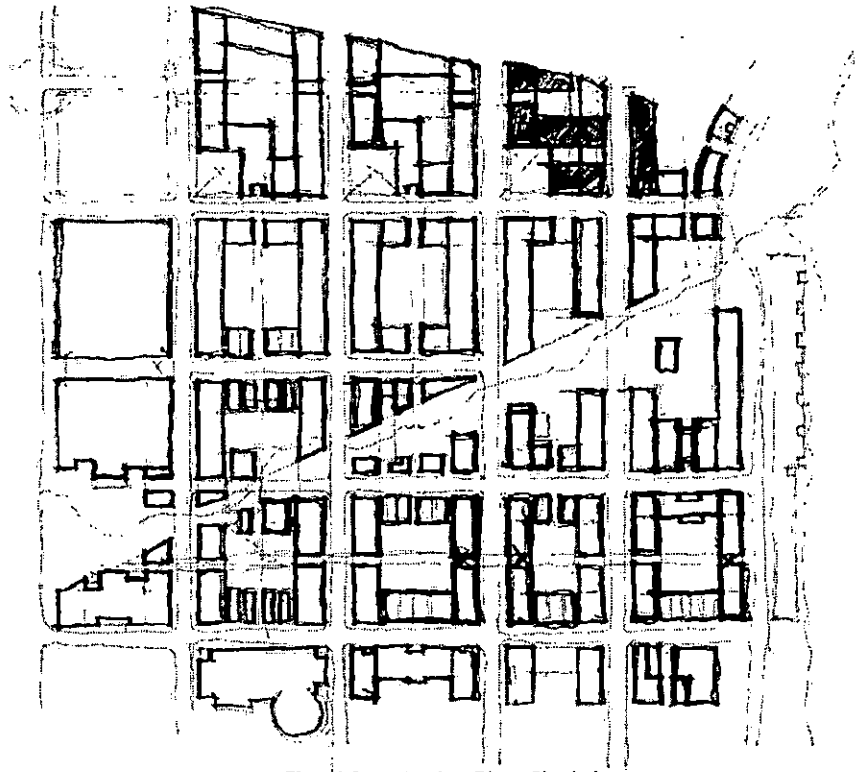


Fig. A3 – Master Plan Sketch
Source: Author

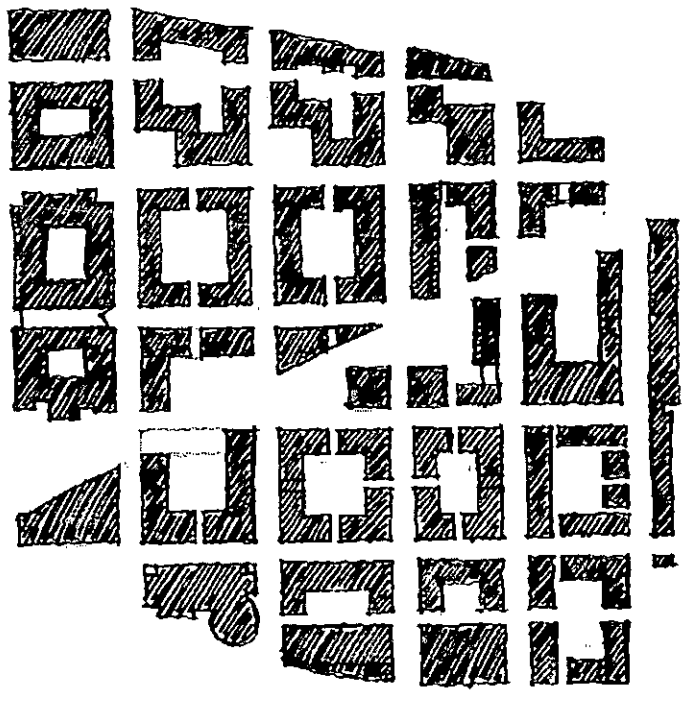


Fig. A4 – Diagram, Figure-Ground Alternative
Source: Author

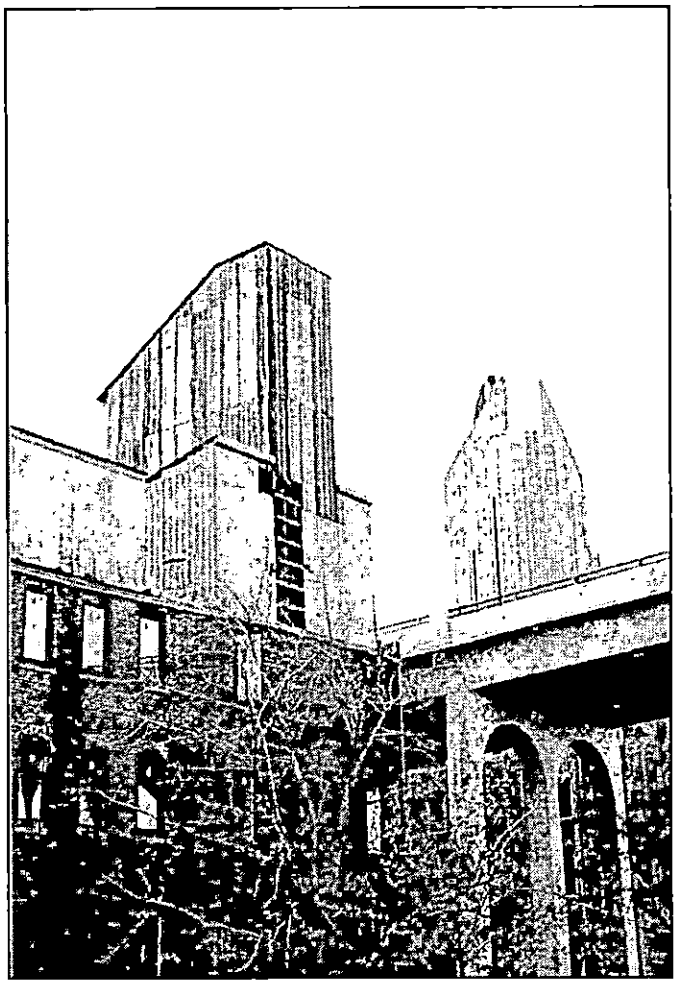


Fig. A5 – Photo, Downtown Nashville Along First Avenue

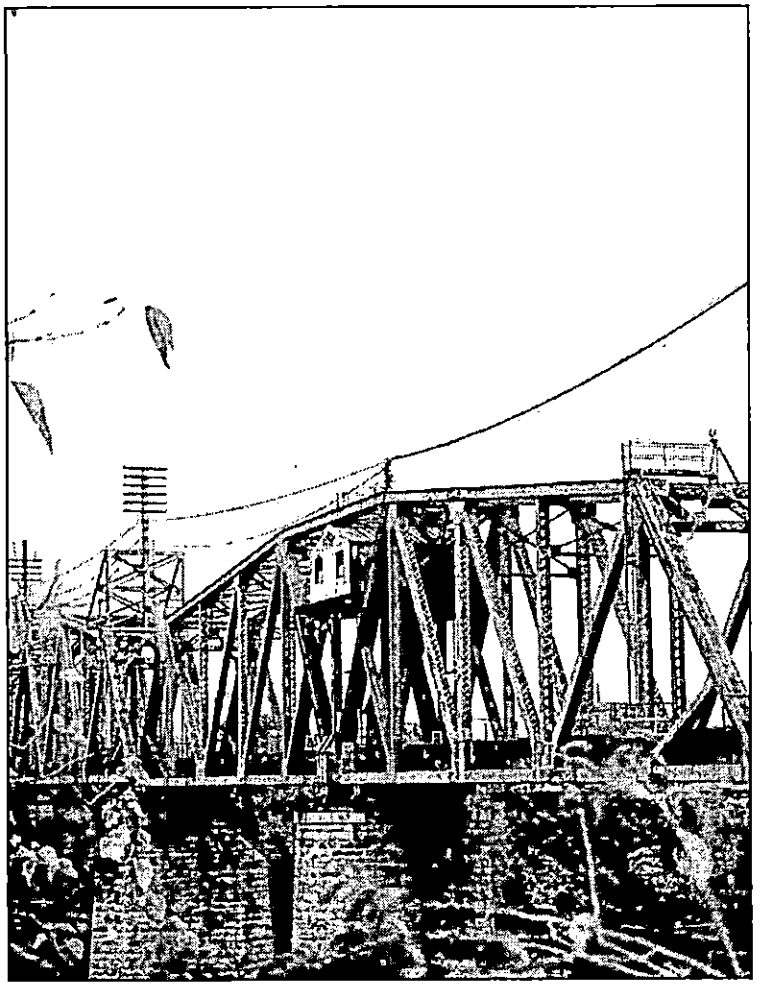


Fig. A6 – Photo, Railroad Bridge Near Site

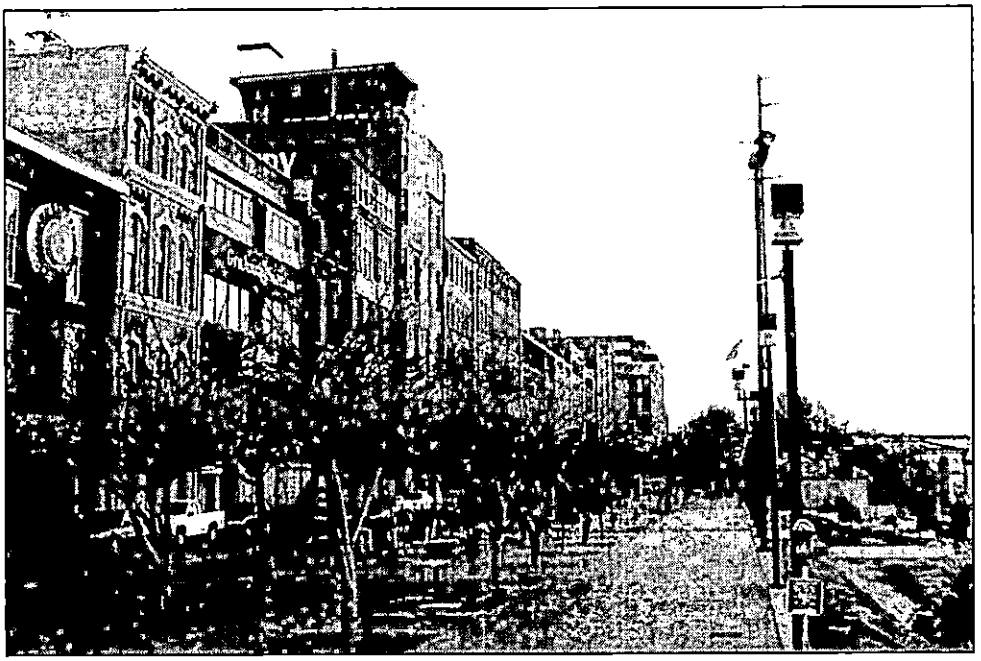


Fig. A7 – Photo, First Avenue in Nashville

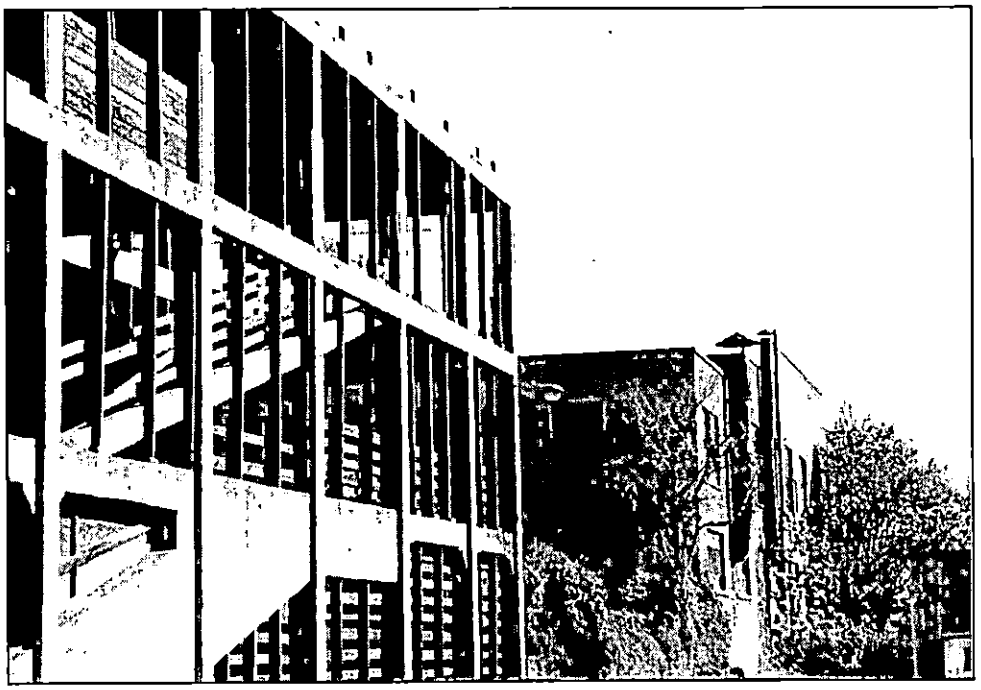


Fig. A8 – Photo, Abandoned Industrial Building, Nashville

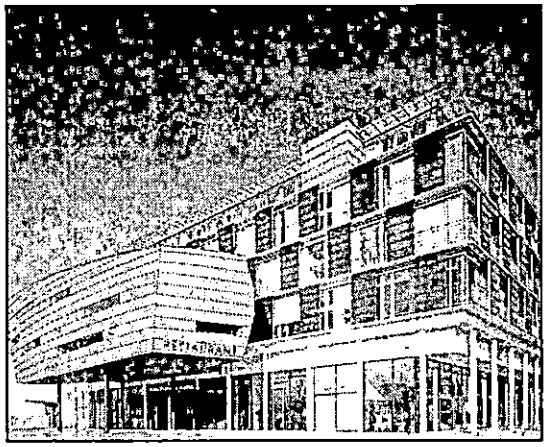


Fig. A9 – Urban Utilization Mix Building
Source: Waechter-Böhm, Liesbeth, 145

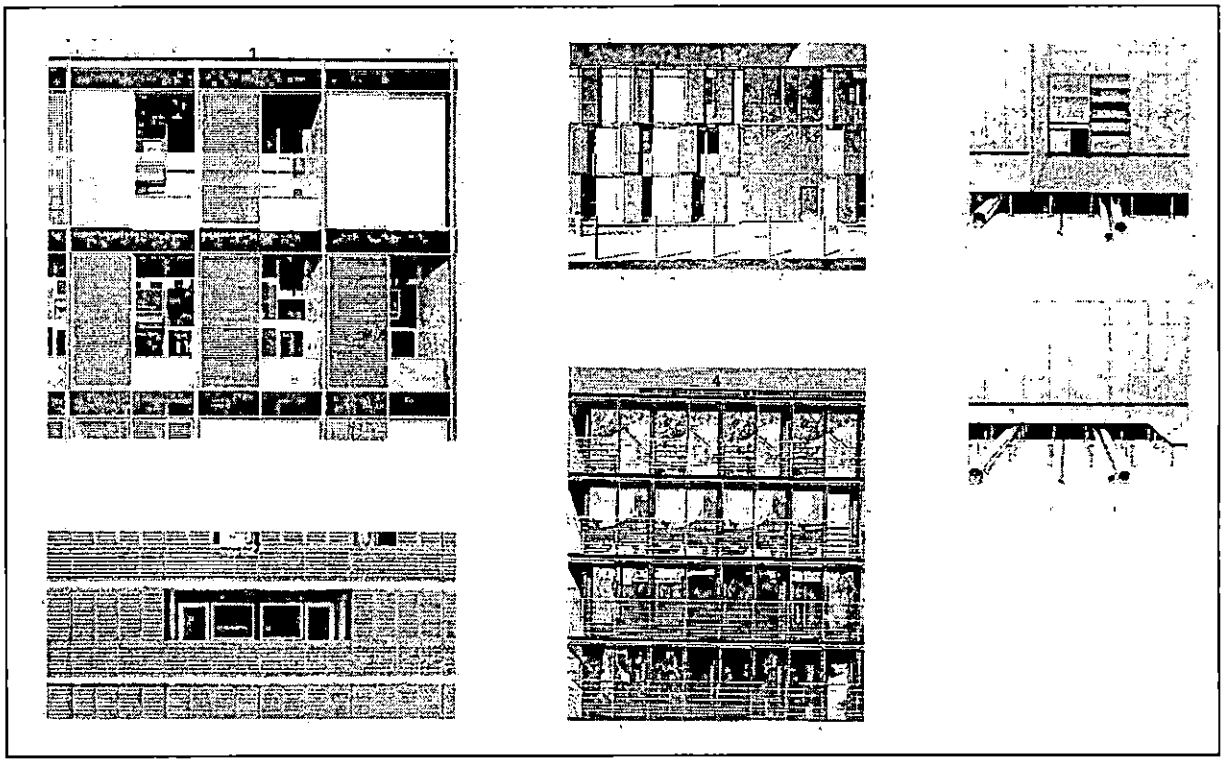


Fig. A10 – The Adaptable Facade
Source: Gausa, 32

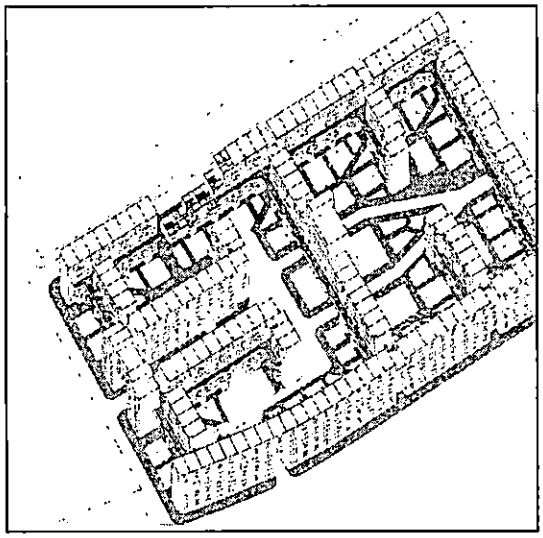


Fig. A11 – Spangen Quarter Axonometric, Michiel Brinkman
Source: Sherwood, 100

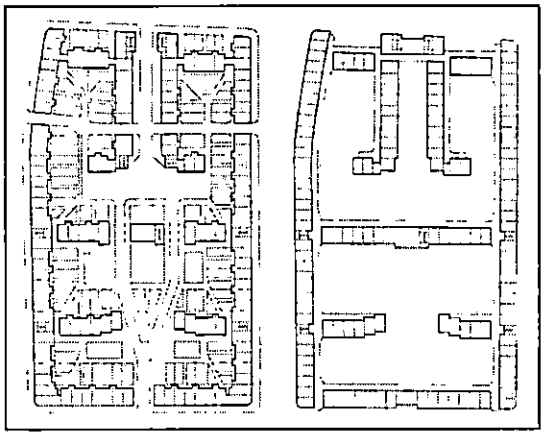


Fig. A12 – Spangen Quarter Plans, Michiel Brinkman
Source: Sherwood, 100

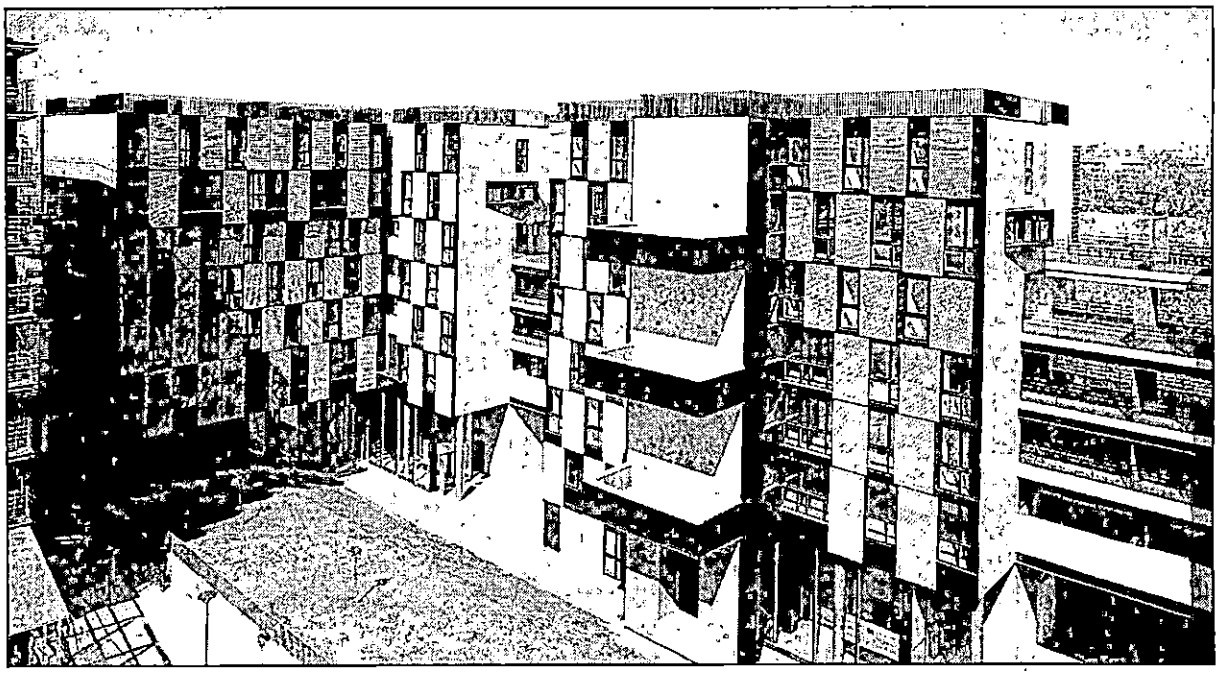


Fig. A13 – Housing Block, Philippe Gazeau
Source: Gausa, 195

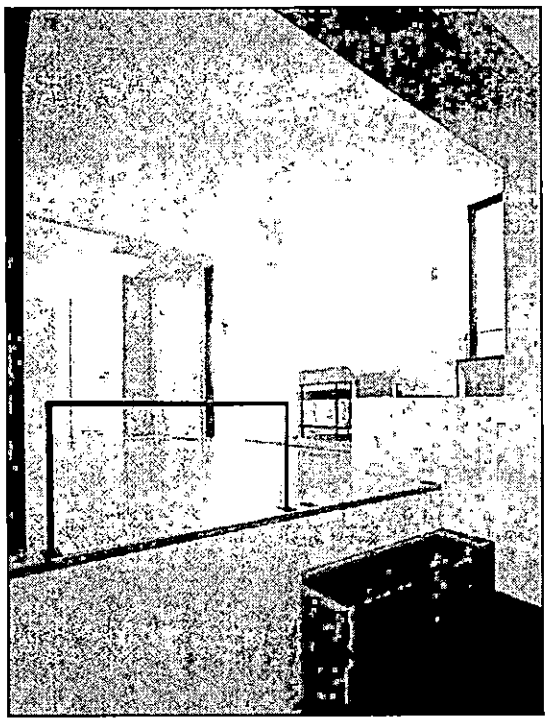


Fig. A14 – Fukuoka Housing Interior Open, Steven Holl
Source: El Croquis

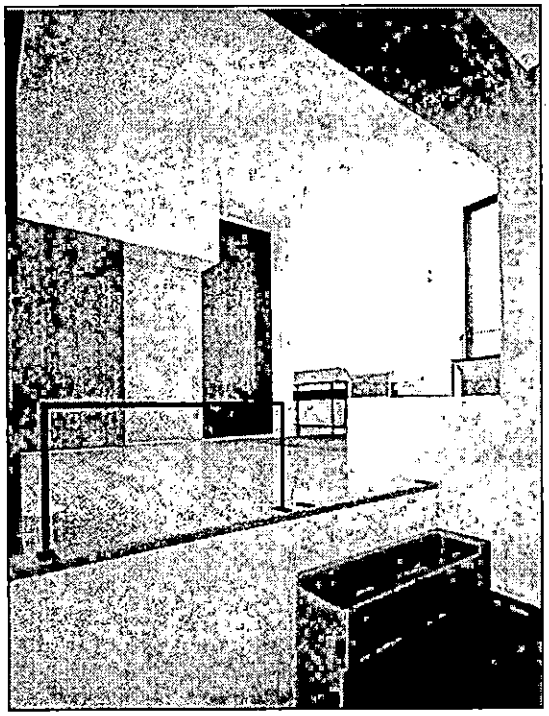


Fig. A15 – Fukuoka Housing Interior Closed, Steven Holl
Source: El Croquis

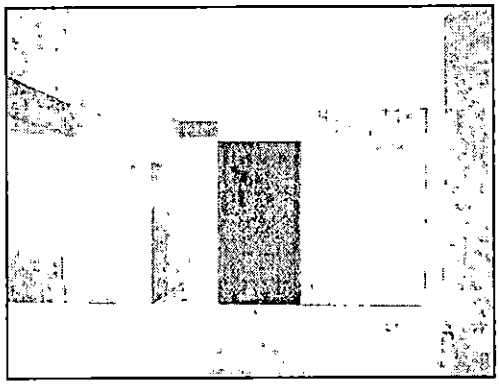


Fig. A16 – Fukuoka Housing "Hinged Space" - Closed, Steven Holl
Source: El Croquis

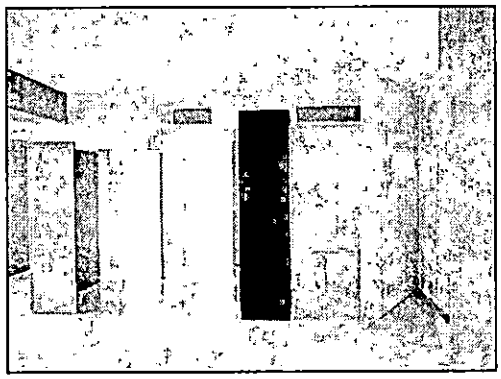


Fig. A17 – Fukuoka Housing "Hinged Space" - Open, Steven Holl
Source: El Croquis

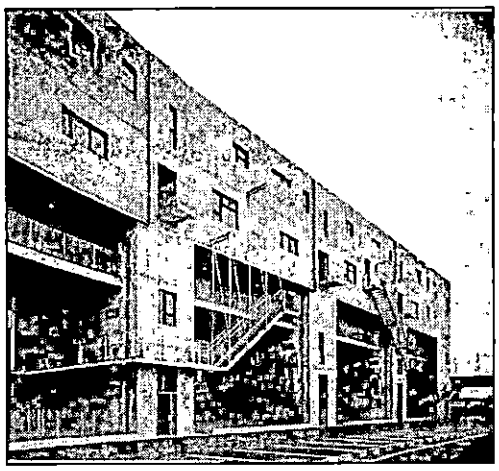


Fig. A18 – Fukuoka Housing, Service and Circulation, Steven Holl
Source: El Croquis

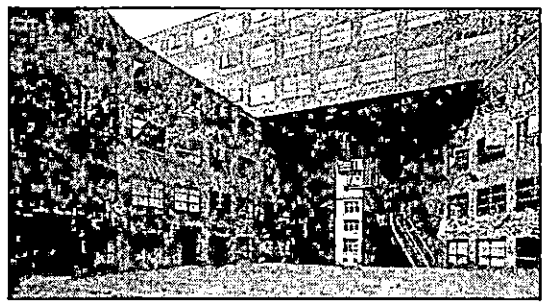


Fig. A19 – KNSM Block Perspective,
Hans Kollhoff
Source: Gausa

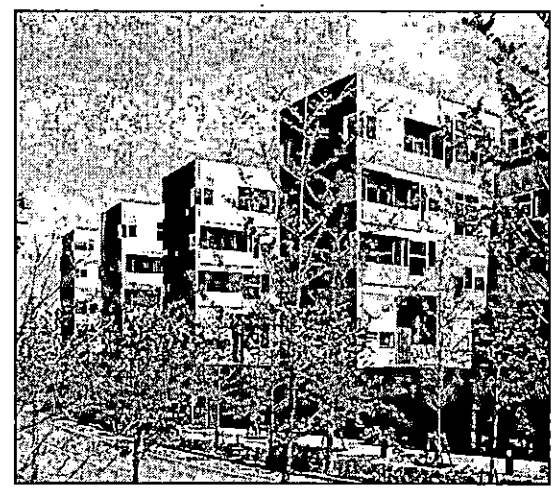


Fig. A21 – Fukuoka Housing Exterior Block,
Steven Holl
Source: El Croquis

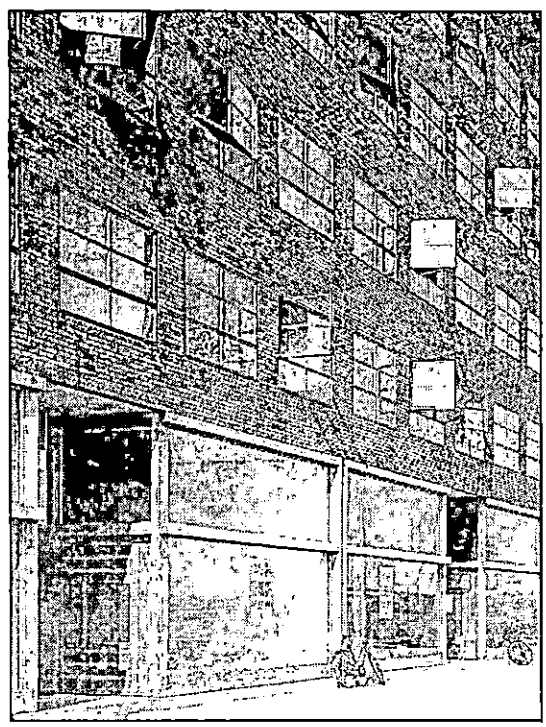


Fig. A20 – KNSM Block Storefront,
Hans Kollhoff
Source: Gausa



Fig. A22 – Fukuoka Housing Facade Detail,
Steven Holl
Source: El Croquis, 189

Vita

Joshua Loren Rechkemmer was born in Maynard, Iowa on August 13, 1973. He graduated from Waverly-Shell Rock High School in May of 1991 before attending Iowa State University in Ames, Iowa. He explored several programs (including graphic design and art) as well as schools (Wartburg College and the University of Northern Iowa) before returning to Iowa State to continue his undergraduate degree. While completing coursework in the pre-professional program of architecture at Iowa State in the spring of 1993, he decided to pursue an interest and degree in Community and Regional Planning (CRP). He received his Bachelor of Science degree in CRP in December of 1996 and was married to Molly Kirkpatrick on May 23, 1997. He began his planning career with a planning internship in Fort Meyers, Florida with the Lee County Planning Commission shortly after. He and his wife then moved to Tennessee in the fall of 1997. He accepted a planning position with the Metropolitan Planning Commission of Nashville and Davidson County in March of 1998. The following spring, he decided to follow his goal of obtaining a Master of Architecture Degree and was accepted at the University of Tennessee. While at UT, he had the opportunity to: become a graduate assistant in both drawing and architectural history, intern at a local firm during the summer, study in Berlin and travel throughout Italy, and - most importantly – become a father (twice). Upon graduation, he and his family will return to Iowa where he has accepted a position with an architectural firm in Iowa City, Iowa.

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