

**/DESIGNING A RESPONSIVE ENVIRONMENT ON THE SOUTH 4TH STREET
CORRIDOR, DOWNTOWN MANHATTAN, KANSAS/**

by

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B.S., Southwest JiaoTong University, China, 1996

A THESIS

submitted in partial fulfillment of the
requirements for the degree

MASTER OF ARCHITECTURE

Department of Architecture
College of Architecture, Planning and Design

KANSAS STATE UNIVERSITY

Manhattan, Kansas

2004

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ABSTRACT

This thesis applies the architectural and urban design ideas of *Responsive Environments* (Bentley et al., 1985) to an actual design proposal for the South 4th Street Corridor, a declining commercial district in downtown Manhattan, Kansas. As an alternative approach to urban design, *Responsive Environments* aims to maximize the degree of choice available to end-users of a built environment by offering seven design qualities: *permeability, variety, legibility, robustness, visual appropriateness, richness and personalization*. The purpose of this thesis is to examine how effective the seven qualities may be in creating a sense of place as applied to a declining downtown commercial district of Manhattan.

Following the structure of *Responsive Environments*, the author first analyzes the specific site in terms of the qualities of *permeability, variety* and *legibility*. The analysis outline, which identifies the weaknesses and physical potential of the site, then leads the author through the design process which again is guided by the three qualities step by step.

After determining the overall structure of the site, the author then further develops the site in terms of the remaining four qualities of *Responsive Environments: robustness, visual appropriateness, richness and personalization*. By this stage, the individual buildings on the site are tested and an architectural design proposal is provided to help complete the site as a whole.

At the end of the thesis, the author uses the design outline to summarize the value of *Responsive Environments* as applied to a specific site in the United States. After comparing the original goal of the South 4th Street Corridor and the resulting design proposal, the author concludes that *Responsive Environments* is a powerful design approach in that it helps designers identify the underlying elements and relationships of a built environment and keep general aims in mind as actualizing design details. And at same time, under the guidance of *Responsive Environments*, the resulting design proposal for the South 4th Street Corridor, with its higher density and various attractions on a pedestrian scale, provides an alternative vision of the redevelopment of the downtown commercial areas in the Midwest region.

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ACKNOWLEDGEMENTS

I am very grateful to my major advisor, Professor Marina Pecar, for her constant guidance and support in making this study a reality. During the past two and half years, I have learned a great deal from her scholarship. It has been my greatest pleasure to work with her.

I am also deeply indebted to Professor James Jones and Professor Ray Weisenburger for their concerns, advice and encouragement in every possible way throughout my study.

Special thanks go to my host-family: Lois Redman, Carol Ann Holcomb, and Wynette Hardy. Without their encouragement and support, I could not enjoy my life and study in the United States.

A word of thanks goes to Dr. Dixie West and Professor Naomi Ossar for their painstaking editorial work.

Finally, I thank my husband, Roy, for gently encouraging me to do my best and supporting me in the completion of this work.

Chapter 1

INTRODUCTION

For over a century, architects and urban designers have constantly been searching for alternative forms for urban environments. Reacting to the seemingly uncontrolled and disorderly development of the modern city, Ebenezer Howard set forth the idea of *Garden City* in 1898. In his view, the Garden City--the isolated self-sufficient satellite city surrounding the central city--was an ideal way to halt the growth of big cities and contribute to the reconstruction of the decaying countryside. Within the self-contained community, Howard used zoning to set up order. He separated the land according to the use for agriculture, industry, housing and commerce, putting them in planned districts, which were to be considered permanent.

Although initially Howard's Garden City was conceived as an anti-urban agrarian approach to city development, its underlying principles greatly influenced modern city planning. The ideas of the planned economy, single-use zoning and the decentralization of land uses were widely accepted by modern city planners and architects.

Sharing Howard's view of the need for planned economy and single-use zoning, CIAM (International Congress for Modern Architecture) in 1928 proclaimed that the key to solving contemporary urban problems was functional order. In the Athens Charter (1933), its most important document, CIAM put

forward the concept of the *Functional City*, in which the city was classified into four basic functions: dwelling, work, recreation and circulation. Under such a system, each function was distinct and separate. This idea was soon accepted universally and pervaded modern architecture.

One result of this dominating planning strategy was that the city soon became the domain of traffic engineers, whose primary goal was to connect one single-use zone to another by highway systems. The small perimeter blocks, which used to be the basic unit of urban design, were replaced by super-blocks with isolated single family houses or free-standing tall buildings. Thus, the intricate and close-grained city diversity was lost and along with it, people's loss of community. People suffered from isolation, loss of meaning, and a variety of other symptoms due to the single zoning and hierarchical layout. They began to recall the charming traditional towns of the pre-industrial era and wondered if there was any possibility of solving the contemporary urban problems.

Since the 1950s, the relationship between the physical design and its social effect has been reconsidered and much discussed. The principles that had shaped the modern, orthodox city planning came under attack. There has been a steady stream of research done on the new approach to architecture and urban design. The complicated social and economic issues of the city have been paid great attention.

In her book, *The Death and Life of Great American Cities*, Jane Jacobs

(1961) criticizes the profession of modern planning and architecture as an elitist institution out of touch with people's real needs. In her view, the essence of urban life lies in the intricate and close-grained diversity of uses on the street. She argues that to generate such exuberant diversity, the following four conditions are necessary: a diversity of uses, small blocks, aged buildings and higher density. As one of the most important theoretical writers on urban planning, Jane Jacobs shows us a new understanding of how a city works in real life.

Kevin Lynch's *The Image of the City* is another important work on the perception of cities published in the 1960s. Lynch is interested in the way the city is perceived. He identifies five key elements of the urban structure which make the city legible: *paths, nodes, edges, landmarks and districts*. He argues that these five elements play a key role in the content of people's city image. Perhaps the most important contribution of Lynch's theory for urban design is that he provides a practical means for designers to grasp the city structure quickly and effectively.

During the last decade of the twentieth century, Bill Hillier's *theory of space syntax*, an important work, considerably affected urban design. In Hillier's view, the physical-spatial environment plays an integral part in sustaining active streets and an urban sense of place (Seamon, 2004). He argues that the pathway systems have the integrative power to make cities effective places for contact and exchange, and thus should be considered in the very beginning of the urban

design process.

Christopher Alexander is among the most productive writers on architecture and urban design. His early paper, "*The city is not a tree*," is a well-argued critique of the current planning concepts for the hierarchical layout and single-use zoning. He points out that the real city life lies in the complicated and diverse connections between different activities and functions. When these essential connections are lost, the city becomes inhumane and dead. In his later work, *A Pattern Language*, Alexander further seeks to establish a natural or organic way of designing and building. He establishes a set of 253 patterns, arranged from a larger to a smaller environmental scale. For example, patterns begin with the very largest, for regions and towns, then slowly move down to neighborhoods, buildings, rooms and finally end with details of construction. In Alexander's view, designers and users, armed with this set of patterns, are able to find the essential concerns of a building or a place in the midst of life's complexity and confusion, thus capable of making the place alive.

Deriving directly from the above works of Jane Jacobs, Kevin Lynch, Bill Hillier and also indirectly from that of Alexander, the book *Responsive Environments* attempts to offer an alternative approach for architectural and urban design. The authors, Ian Bentley, Alan Alcock, Sue McGlynn, Paul Murrain and Graham Smith, start from the idea that "the built environment should provide its users with an essentially democratic setting, enriching their opportunities by

maximizing the degree of choice available to them"(p.9). They develop seven qualities: *permeability, variety, legibility, robustness, visual appropriateness, richness and personalization* to help foster such environments, which they call *responsive*.

In broad terms, this thesis attempts to understand the theory of *Responsive Environments*, especially how it works as an alternative design approach to help develop humane built environments. As evidenced from the above discussion, the aim of *Responsive Environments* is to establish a positive relationship between the built environment and its end-users. It speaks of a vibrant city life, which has been lost in many downtowns in the Midwest region in the United States.

Here, in the Midwest region, the downtown has traditionally been the focus of local activities. It usually holds the earliest commercial structures of the town, giving a sense of identity to its residents. However, during the last 50 years, it has been experiencing a decline in the number of businesses and residents and a rapid rise in its vacant lands. Therefore, the main objective of this thesis is to examine the ability of *Responsive Environments* in helping revitalize one declining downtown commercial district in the Midwest region: the South 4th Street Corridor, downtown Manhattan, Kansas. Especially, I will look at how effective the seven qualities may be in creating a sense of community as applied to the study site.

Methodology and Outline of the Thesis

Located in the city of Manhattan, Kansas, the South 4th Street Corridor

includes 4th Street and the buildings along its both sides, from Houston Street to Fort Riley Boulevard. In addition to its geographic convenience for study, this specific site was chosen because with its lower-density, deferred building maintenance and increased vacancies, it has a representative quality in regard to most of the declining downtown commercial districts in the Midwest towns in the United States. This thesis uses a case study method to evaluate how effective *Responsive Environments* may be in helping revitalize the study site into a more livable environment.

Generally, this study can be organized into four main phases. First, to better understand the theory and how it works, I review *Responsive Environments* and its related urban design theories. Second, the study site is surveyed in terms of its history, current physical characteristics and the recent redevelopment efforts. By this stage, a vision of the future redevelopment of the study site is identified with regard to two important local works: *Downtown Tomorrow* (2000) and *Housing Manhattan* (2000).

In the third phase, the seven qualities of *Responsive Environments* are first applied to analyze the study site. During the analysis process, to get intimate knowledge of the study site, I walk through and around the site at different times of weekdays and weekends. Sketch maps, filed notes and photographs are used to record the physical characteristics of the site and its surroundings. At the same time, local sources, such as the recent *Downtown Redevelopment Plan* (2004)

are also referred to in order to get the first-hand information about the city's current planning strategies and the social demand on the study site. The analysis outcome, which identifies the weaknesses and the physical opportunities of the site, then leads to the redesign process, which again is guided by the seven qualities step by step.

At the fourth phase, I first summarize the design proposal obtained in the third stage. Then, by comparing the design outcome and the initial vision of the redevelopment of the study site, I examine the ability of *Responsive Environments* to create a sense of place as applied to the study site. Further, as the study site resembles many declining downtown commercial areas in Midwest towns, it is reasonable to conclude that if the study site achieved the proposed initial vision in the final design proposal through the means of *Responsive Environments*, then *Responsive Environments* may be also useful to help revitalize other declining downtown commercial areas in the Midwest towns of the United States. And this opens up possibilities for further studies.

The chapters of the thesis are organized around the four phases just described. Chapter 2 introduces and reviews *Responsive Environments* and the related urban design theories. Chapter 3 provides a background description of the South 4th Street Corridor and identifies an initial vision of its future redevelopment. Focusing on the large-scale issues, Chapter 4 analyzes and redesigns the study site in terms of the first three qualities of *Responsive Environments*: permeability,

variety and legibility. Next, dealing with the small-scale issues, Chapter 5 analyzes and redesigns the study site in terms of the remaining four qualities of *Responsive Environments*: robustness, visual appropriateness, richness and personalization. Chapter 6 then summarizes the design outcome and evaluates the value of *Responsive Environments* in helping revitalize the study site. Finally, Chapter 7 presents an overall evaluation of the value of *Responsive Environments*: its importance in guiding an actual design on the study site, its ability to help revitalize the declining downtown commercial area in Midwest towns in the United States and its contribution to education.

Chapter 2

A REVIEW OF RESPONSIVE ENVIRONMENTS

In the book *Responsive Environments*, the authors: Ian Bentley, Alan Alcock, Sue McGlynn, Paul Murrain and Graham Smith, seek a way to create a humane built environment. They argue that “the built environment should provide its users with an essentially democratic setting, enriching their opportunities by maximizing the degree of *choice* available to them” (p.9). Places, which have this quality, are called *responsive*. In their view, the man-made physical environment is already a social behavior. Its vitality depends as much on the right kind of architectural and urban forms as on the right kind of humanity. By promoting a variety of circumstance for human interaction, a responsive environment has a positive relationship with its end-users, thus evoking a sense of place. According to the authors, a responsive environment can be engendered by the following seven qualities:

1. **Permeability**, the quality of a built environment that can provide easy access from one place to another.
2. **Variety**, which implies a quality of a place that has a mix of use, resulting in different building types and varied forms, and therefore attracting a diversity of people at different times of the day and night.
3. **Legibility**, the quality which makes a place graspable.
4. **Robustness**, the quality of a place that has a flexible use, not limiting a single fixed use.

5. ***Visual appropriateness***, a quality that creates meanings in people's mind and conversely support other qualities.
6. ***Richness***, the quality that increases the variety of sensory experiences.
7. ***Personalization***, the quality of a place in which people can personalize the existing settings.

These seven qualities act as a practical method whereby architects and urban designers can identify the underlying relationships in a built environment and develop responsiveness in the environment.

Permeability

Permeability is a key quality used to measure the built environment's responsiveness. This concept is derived from Jacobs' (1961) *The Death and Life of Great American Cities* and Hiller and Hanson's (1984) *The Social Logic of Space*. In her discussion of the necessity for small blocks, Jacobs (1961) points out that for a neighborhood to support a number of small commercial services, there is a need for a multiple alternative routes, permitting pedestrians choice and variation in their journeys. Criticizing the treelike systems of segregated pathways in most twentieth-century cities, Hiller and Hanson (1984) reexamine the relationship between society and its architectural and urban forms, or more precisely, "the social logic of space and the spatial logic of society" (Hiller & Hanson, 1984, p.26). In their view, for a place to be alive, an integrated pathway system well connecting with the large urban whole is essential. They argue that by facilitating movement and the related pattern of events such as the social

contact and chance encounters, the pathway system plays a significant role in urban life, and thus should be considered in the very beginning of the urban design process.

Bentley et al. (1985) follow these ideas and refine them in their concept of permeability- the quality of a community that can provide easy access from one place to another. According to Bentley et al. (1985), this quality can be analyzed at two levels: public permeability and permeability between public/private spaces.

1. Public permeability.

The issue of public permeability is one of the most important factors that influence the layout of streets in the cities. Bentley et al. (1985) argue that the extent of public permeability “depends on the number of alternative routes it offers from one point to other” (p.12). In their opinion, small blocks, multiple alternative routes, and avoiding built-in segregation will both physically and visually encourage public permeability. And if a place has a number of access points which connect it to its immediately surrounding area and the city as a whole, then it has the possibility to achieve high permeability.

While this idea implies a return to the spirit of urbanism that characterizes lovely traditional towns and cities, the idea of permeability is also a strong rejection to modernism design philosophy, which concentrates on super-blocks and hierarchical layouts. According to Jacobs (1961), in the case of super-blocks, people have few choices of routes; they have to walk an always-the-same-path to a given point, which would reduce the opportunity for retail and commercial facilities to make use of corner sites.

Opinions about the number of alternative routes vary. Bentley et al. advocate “the more the better”, but do not specify how many are appropriate in relation to the urban maintenance and the intensity of pedestrian activity on streets. The idea of maximizing pedestrian choice through increasing a number of alternative routes may sometimes cause potential conflicts with urban maintenance, because more routes mean more utility systems cost such as drainage, water supply, street lighting and so forth. And at a certain point, too many might dilute pedestrian activity and confuse people. Thus the issue of permeability is a relative one, which needs to be assessed together with other related components in specific project.

2. Permeability between public and private spaces.

Bentley et al. declare that the permeability between public and private space will be encouraged by so-called perimeter block development, with the advantages of front/back distinction and many entrances located round the edges of public spaces (Figure 2.1).



Figure 2.1 Perimeter block development

The degrees of definition of fronts and backs of buildings provide important psychological cues to guide pedestrian movements and behavior on the street. According to Bentley et al., if a public space has buildings of clearly defined fronts and backs, and a number of entrances located around its edges, then it will foster an intensity of public activity, leading to a rich social interaction

on the public street. This can be witnessed in traditional towns and cities, where all private buildings have their public face clearly defined and marked with entrances fronting on to streets, forming a focus of social life (Robert & Lloyd-Jones 1997, p.156).

With regard to the transitions between the public and private realms, Bentley et al. argue that instead of the architect giving priority to protect individual privacy by making permanent physical and visual barriers, the degree of permeability between public and private interface should be controlled by the private users. In other words, designers should create physical opportunities for social contact and leave the residents to control how much permeability they want (p.14). To achieve this, design issues will be discussed in detail later in the section on robustness in this chapter.

Variety

Based on her keen observation of cities, Jane Jacobs (1961) criticizes the town planning ideas of modernism, which focuses on single-purpose zoning and segregation of uses. She favors the traditional, natural cities, which have a great diversity. She argues that “to understand cities, we have to deal outright with combinations and mixtures of uses, not separate uses, as the essential phenomena” (p.144). Later, in his influential paper, “A City Is Not a Tree”, Christopher Alexander (1988) elaborates his ideas of how the physical layout and the way it functions in a city have influenced people’s daily life. In his view, while the structure of a natural city is like a semi lattice, consisting of a complicated network of overlapping units for different activities and functions, the organization

of an artificial city created by designers is like a tree, where no piece of any unit is ever connected to another. He argues that compared to a natural city, the artificial city lacks humanity, ambiguity, and richness. Sharing their view, Bentley et al. (1985) point out that not only the size and the scale of the block are important, but the extent to which it can be vertically subdivided for different uses is also significant. Thus, variety is the second key quality used to measure responsiveness.

According to Bentley et al., three main factors need to be considered to maximize variety: demand, affordable space, and positive interactions.

1. Demand.

The issue of demand can't be divorced from the questions of density. Higher densities can foster higher demand by providing better access and proximity to service and amenities like shopping, schools, and social facilities. Opinion about densities varies in terms of different cultural circumstances and different places. Jacobs (1961) suggests that the medium to high residential densities of 100-200 dwelling units to the net acre are ideal to achieve variety in big cities of America. In his discussion of small communities of America, Nelessen (1984) recommends that in small communities, especially the neighborhoods in commercial areas, the highest net density may be 15.0 dwelling units per acre. Friends and Earth (in Murrain, 1993) propose a net density of 20 dwellings per acre for towns and cities in Britain. They argue that with an appropriate mix of dwelling size, such density can provide each dwelling a private garden and direct access from the public street without sacrificing the

city diversity. Further, this density can keep buildings four stories high or less, resulting in structures well connected to the ground and to the fabric of the town, thus maintaining the social life.

Lynch (1962) in his book *Site Planning* provides a list of residential densities for a variety of building types including the single-family house, row house, 13-story elevator apartments and so forth. In his view, a net density of 4-7 dwelling units per acre is considered reasonable for single-family houses, 16-19 dwellings per net acre is practicable for row houses, and 85-95 per net acre is appropriate for 13-story elevator apartments (p.145). He points out that although the above proposed densities are not *magic* figures, they are reasonable in normal practice and may act as a general guide for urban designer. Bearing this in mind, I apply Lynch's idea of residential densities in the design of South 4th Street Corridor in Chapter 4.

2. *Affordable space.*

Bentley et al. argue that to encourage variety, one of the most prominent concerns should be the affordability of a space. One important way of doing so is by keeping suitable old buildings. These include not only those "museum-piece old" buildings, but also ordinary, low-value, old buildings. Their idea is based on Jane Jacobs's (1961) statement of the aged building. According to Jacobs, these aged buildings can provide a range of cheap rents and accommodate uses and users such as greengrocers and galleries, who would otherwise be driven out of an area by high rents. It is just these specialized uses that are often relatively unprofitable but contribute greatly to variety. Further, combining with new

buildings, these various types of old buildings of different ages also contribute to the community's ability to update itself and remain sustainable.

3. Positive interaction.

The key to variety is the concept of mixed uses. In her discussion of the need for mixed uses, Jacobs (1961) develops the concept of primary and secondary uses. Jacobs describes primary uses as "those which in themselves bring people to specific places because they are anchorages" (p.161). Offices, factories, dwellings, large stores and markets are all primary uses. They act like magnets, attracting people to the site. In contrast, secondary uses are enterprises that "grow in response to the presence of primary uses, and serve the people the primary uses draw" (p.162). They can be retail stores, coffee shops, and restaurants. The relationship between the primary and secondary uses is reciprocal: while the former produce the demand for the latter, the latter serve the former.

Jacobs (1961) also focuses attention on the need for mixed primary uses. She argues that not only the district must serve more than one primary function, but also that the primary use mixtures must be effective. This means they attract people at different times for different purposes. Only by doing so, the public realms can draw pedestrian flow throughout the day and night. This in turn contributes to street safety and pleasure.

In terms of the variety of secondary uses, Bentley et al. suggest the more the better. In the commercial area of a medium-sized town, as most intensively used street frontage is occupied by retail, there is a potential conflict between

the retail's frontage and the variety on the street. To attract pedestrians, retails prefer a maximum of street front display area, which relatively reduces the variety of uses on the street. Therefore, in his discussion of the commercial area within a small community, Nelessen (1984) suggests that to ensure variation, lot widths should be varied. Recommended lot widths range between 20 and 80 feet for retails and mixed-use buildings.

Arguments for mixed use also focus attention on vertical and horizontal mix of use in city block. Of all the mixed-use types, the combination of commercial and residential uses in a same building, in other words, housing above retails, is considered the most appropriate way to increase density in an urban neighborhood. However, this is achieved by sacrificing the independent access to dwellings, adequate light and air, and a private yard, which are considered essential characteristics of an ideal home. Dealing with the right for light, the access to dwellings and unit's outdoor private space in this kind of hybrid building become critical. I discuss this issue in detail according to the specific study site in Chapter 5.

Legibility

The third quality that contributes to a responsive environment is legibility. According to Bentley et al. (1985), legibility is the quality that makes a place graspable. (p.42). It can be understood at two levels: physical lay out and activity patterns.

In terms of the physical layout, Bentley et al. adopt Kevin Lynch's (1960) theory of "the image of the city." In Lynch's view, although different people have different images of a given environment, there seems to be a shared image, which contains certain sorts of physical features that have reappeared in various types of environments. These physical features play a key role in the content of the city image, and can be grouped into five key elements: paths, nodes, edges, districts and landmarks. Here I introduce these elements together with the activity patterns they may support.

1. Paths.

Among the five elements, paths are the most prominent. They are "the channels along which the observer customarily, occasionally, or potentially moves" (Lynch, 1960, p.47). Streets, transit lines, channels, and railroads can be seen as paths. Lynch suggests that to reinforce a path's legibility, the following three main qualities must be considered: identity, continuity, and direction.

The spatial dimension, the proportion, and the length of the street are critical to the identity of paths. The relationship of building height (H) to street width (W) defines the proportion of the street space. According to Nelessen (1984), H/W ratios from 1:1-1:2 are considered ideal. With this ratio, the path is easily identifiable, having a strong spatial dominance. Ratios between 1:4 and 1:3 are acceptable, but if beyond 1:5, the path will lack spatial enclosure, leading to weak legibility. This situation can be partly changed by planting trees to increase the sense of enclosure.

In Lynch's view, besides spatial dimension, the special use or activity on the street can also make place memorable. In this case, as seen in the section of permeability, the clear definitions of fronts and backs of buildings are very crucial to foster the intensity of public activity, and further enhance the street's legibility.

The issue of path legibility can't be divorced from the space continuity. People are generally willing to walk longer distances, if they are provided with a continuous and pleasure experiences on the street. Lynch suggests that as an important quality critical to path's legibility, the continuity can be created by the relative width of the street, the building façade, the use of the building, as well as the naming system. He points out that a sudden change of the path width or in the use of a building is very negative, because these factors will interrupt the space continuity and make people lose their clue of their location.

It is not only the identity and continuity that are important; the directional quality is also significant. In Lynch's view, paths with clear and well-known origins and destinations have strong legibility, capable of conferring a sense of direction to the observer. Clear, strategic terminal points such as the gateway, the entrance, or other elements that are visible near the end of a path can strengthen the directional quality.

2. Nodes.

Lynch (1960) states that "nodes are the strategic foci which the observer can enter" (p.72). They are typically the junctions of paths or concentrations of some characteristics, such as the square. In Lynch's view, the break-points of transportation, especially the points where the highway meets a city street, are

the most important places where people will feel a sense of arrival or departure and have a strong memory. He further points out that although such points can be important regardless of their physical form, they are much more memorable if the space has a distinguishable form.

With regard to the other type of nodes: the thematic concentration, Lynch declares that it can be a street-corner, a kind of concentration of some use or physical character, or cores, the focus and a symbol of a district, such as large city squares. The legibility of these places can be emphasized by specific forms, the concentration of activities, as well as unique individual buildings. Following Lynch's idea, Bentley et al. further discuss the way to reinforce the legibility of these places in detail. They point out the height/width ratios, the location of the entrance, as well as the forms of planting contribute to the identity of the nodes.

3. Edges.

Edges are "the linear elements not used or considered as paths by the observer" (Lynch, 1960, p.62). They can be water edges, walls or paths, which are inaccessible to pedestrians. According to Lynch, strong edges may lead to the impression of disorganization, by separating transitions from one place to another. He states that instead of separating two totally impenetrable regions, keeping some visual relation between two regions can mitigate the edge's disruptive effect on area.

4. Landmarks.

Compared to nodes, landmarks are another type of point-reference, where people experience from outside. Nodes can be buildings, signs, or mountains.

According to Lynch (1960), they help users to recognize where they are along the path and promote a sense of getting somewhere. A sequential series of landmarks makes a place more memorable by evoking people's anticipation from one to the next.

5. Districts.

Districts are the medium-large sections of the city and are recognizable as having some common, identifying character. Neighborhood, downtown area, or park can be districts. In Lynch's (1960) view, there are infinite elements such as texture, ornament, color, skyline, activity, and building types acting as clues in identifying major districts.

In general, while path, nodes, landmarks and edges establish the skeleton of the city image, the districts act as flesh to fill the skeleton. These five, key elements are patterned together to constitute the urban image. With Lynch's (1960) terminology, the designers can easily analyze the image-forming features of the site, which can range from a small part of the city to the whole city. With this in mind, I use these five elements as evaluation criteria to analyze the legibility of the study site in Chapter 4.

Robustness

Bentley et al. declare that a place which can be used for different purposes and can offer users a wide range of choices has the quality of robustness. A robust environment has a continual possibility for reinterpretation, reenactment, and recreation. It is equally important both indoors and outdoors.

1. Indoor robustness.

Indoor robustness can prevent buildings from being used and then destroyed like consumer items. By accommodating greater range of uses, robustness can make the building stand longer and save the energy in the long run. It is perceived as a valid tool for the attainment of sustainability.

In their discussion of indoor robustness, Bentley et al. pay high attention to issues of housing robustness. They declare that residential units should be flexible enough to meet people's changing needs during their entire lives. Sharing their idea, more recently, Manuel Gausa (1998) elaborates his redefinition of inhabited space from a multifunctional space to a strategic articulation between usage, technique, and space. Gausa points out that designers should focus on the exploration of new technical, spatial, and formal possibilities to make housing an open-ended, self-organic system. This issue will be further discussed in Chapter 5.

2 Outdoor robustness.

According to Bentley et al., designing concerns should also focus on issues of outdoor robustness both in public and private. By providing plenty of opportunities for public contact, such as neighboring and casual socializing, outdoor robustness helps solve one of our society's most serious social problems—isolation. Further, because public activities on the street themselves are the most important attractions to other people, they support the city's safety by providing efficient eyes on the street.

Arguments for the outdoor robustness in housing often focus attention on the transitional spaces between private units and public realms. These spaces influence the residents' ease in moving from one to the other, affecting the degree of social interaction among people. According to Bentley et al., the soft edge, the semiprivate area or garden patio between the front of the private dwelling and the common areas, can greatly encourage robustness. By providing opportunities for casual socializing, these soft edges foster a strong sense of community. Further, using setback from the sidewalk or level change, they play an important role to preserve privacy of the indoor activity. For example, when a porch is located in the front yard of a single-family house, this transitional zone provides an opportunity for people to sit or play immediately in front of their home and observe the community activities they may want to join. The front yard itself or sometimes with plantings can deter the flow of activity from the public realm to private units.

In terms of the robustness in public outdoor space, Bentley et al. mainly concern with the edge of the space. In their view, it is at the edge of the place that most activities take place. This makes it possible for gathering to occur naturally in public. The authors believe that to foster robustness, the public edge of the building should accommodate activities that can benefit from interaction with the public space; or can contribute to the animation of the public space itself (p.63). For example restaurants, bars, and shops that can contribute to these activities can be located on the ground floor and at the front of a building as much as possible. The authors' findings can be confirmed by observation in the

traditional old towns, where a variety of functions of daily living go on side by side at the edge of street space, fostering the street to be the core of the community (Figure 2.2).

Visual Appropriateness, Richness and Personalization

The authors of *Responsive Environments* argue that visual appropriateness, concerned more with detail appearance, can strongly affect people's interpretation of a place. These interpretations will in turn support a place's responsiveness at three levels: legibility, variety and robustness.

In their view, detailed appearance can reinforce a place's legibility and help people read the pattern of uses it contains. To achieve this, contextual cues such as vertical and horizontal rhythms of a building, wall details, and open space details in the specific site should be paid a high level of attention by the designers. Further, architectural appearance can also reinforce variety and robustness by making the image of the area seem appropriate as a setting for a wide range of different uses. In this case, use cues, which are interpreted as appropriate to the various use concerned, should be employed by the designer.

As far as the visual appearance has been discussed, the authors of *Responsive Environments* argue that there is still room for dealing with the smallest details of the project. In their view, richness is the quality that can "make the remaining discuss in ways which increase the variety of sense-experience



Figure 2.2 The positive edge of the street. The space under the veranda is a marginal zone where interior and exterior overlap.

which users can enjoy" (p.89). Because most of the information people handled is input through their eyes, the vision richness is the predominant sense among all of the sense experiences (Bentley et al., 1985). Compared to visual appropriateness, which focuses mainly on architectural consistency, visual richness pays much attention to visual contrast in order to provide more visual choices. Visual richness is concerned more with how visual elements and their relationships are affected by viewing time and distances.

The last quality used to evaluate community's responsiveness is personalization. Bentley et al. declare that even with the highest level of public participation, in most cases, people still want to personalize the existing environment with their own tastes and values. Therefore, to create a responsive environment, it is very important to consider the opportunities for personalization at the very beginning of a project. According to Bentley et al., besides the indoor and external surface, the most likely places where personalization occurs are the physical links between private and public domains, like a threshold or window. The authors point out that personalization in turn can greatly support legibility, especially in robust environments, by dressing the building and the site differently and making each use explicit.

Levitt and Sons demonstrated the importance of personalization in 1950s with their famous housing project: the Levittown. They believed that do-it yourself activities for the male homeowners were as important as architects' designs. Owners were encouraged to dress up their houses with porches, bay windows,

entry doors, awnings, patios and so forth. As a result, each house has its own identity.

In conclusion, these seven qualities cover the key issues in making places responsive. While the qualities of permeability, variety and legibility focus on the overall structure of a place, the other four qualities: robustness, visual appropriateness, richness, and personalization focus on the most detailed issues of the place. These seven qualities work together to help designers understand the intricate physical features of a place and develop responsiveness in the place.

Generally, the design of a responsive environment is a process of addition. The design begins with the quality of permeability, which focuses on the overall structure of a place at a global level. Based on that, the quality of variety is added and then followed by the quality of legibility and so forth. Each stage builds upon the previous stages, helping shape the site toward a responsive whole.

In chapter 4 and chapter 5, I will apply the seven qualities of *Responsive Environments* to an actual design proposal for the study site: the South 4th Street Corridor, Manhattan, Kansas.

Chapter 3

A BACKGROUND DESCRIPTION OF THE SOUTH 4TH STREET CORRIDOR, DOWNTOWN MANHATTAN, KANSAS

The city of Manhattan is located in the northeast of the State of Kansas. It is a medium-sized town and has a population of nearly forty-five thousand. It is the home to Kansas State University. Due to the large number of students and military families associated with Fort Riley, it has a relatively young population profile.

Stretching along Poyntz Avenue, Manhattan's downtown district refers to the area bounded by Bluemont Avenue, Fort Riley Boulevard, Juliette Avenue and Tuttle Creek Boulevard. Acting as a center for trade and entertainment and a provider of health care, the downtown is the historic core of the city, symbolizing the heritage of the community.

Located on the south side of the downtown, the South 4th Street Corridor includes 4th Street and the buildings on both sides, from Houston Street to Fort Riley Boulevard (Figure 3.1, Figure 3.2, and Figure 3.3). It is adjacent to highway K-177 and the Union Pacific Depot to the east and a traditional low-density single family neighborhood to the west. To its north, it is only one block from Poyntz Avenue, the main street of downtown Manhattan. To its south, besides the Union Pacific Railroad, there are the Kansas River, Fairmont Park, and Southeast Park, all of which are important natural sites in the city of Manhattan.

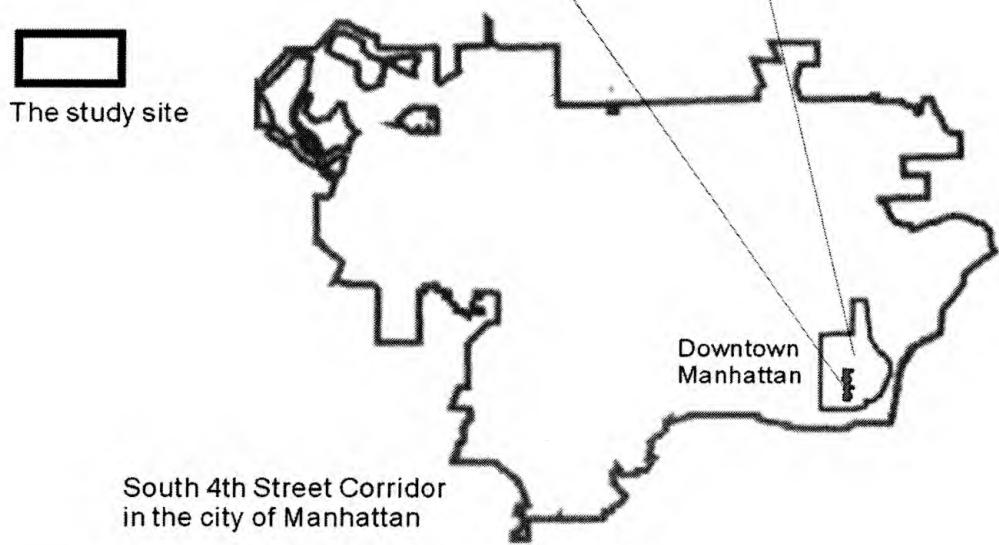
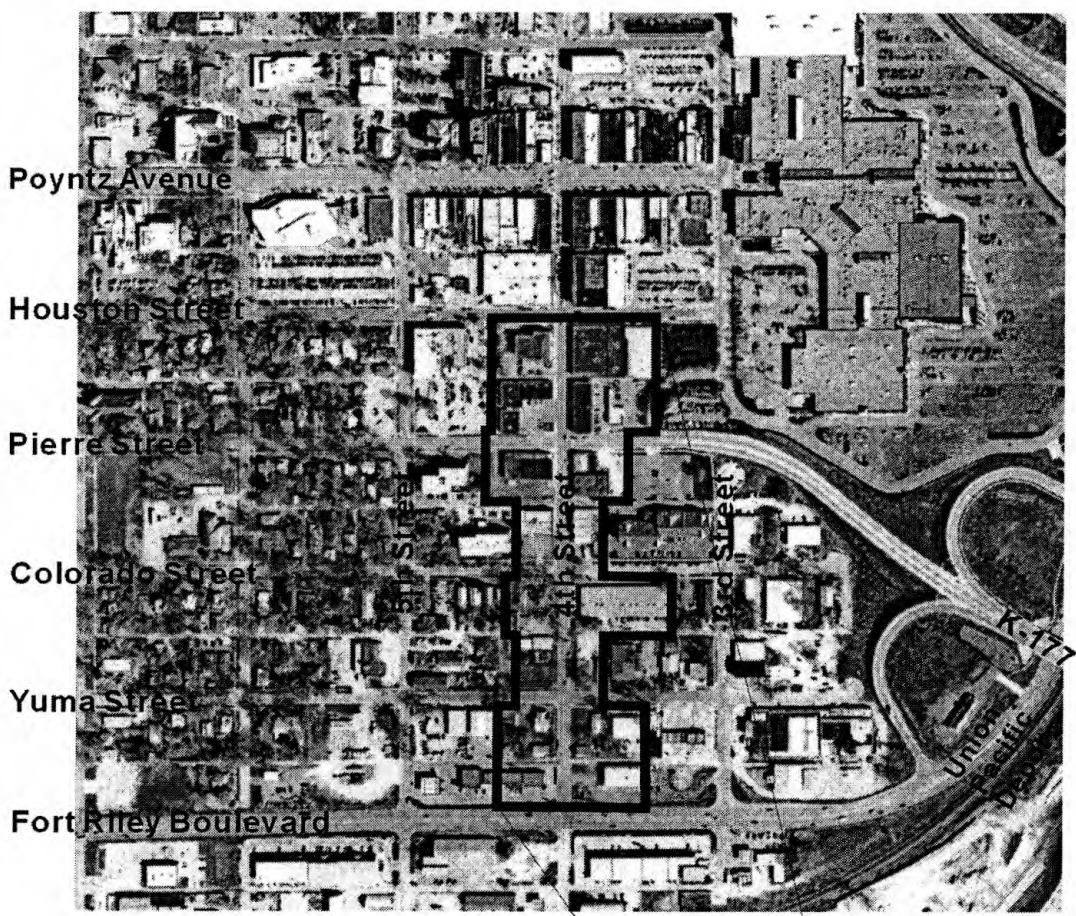


Figure 3.1 Aerial photograph of the South 4th Street Corridor and its surroundings

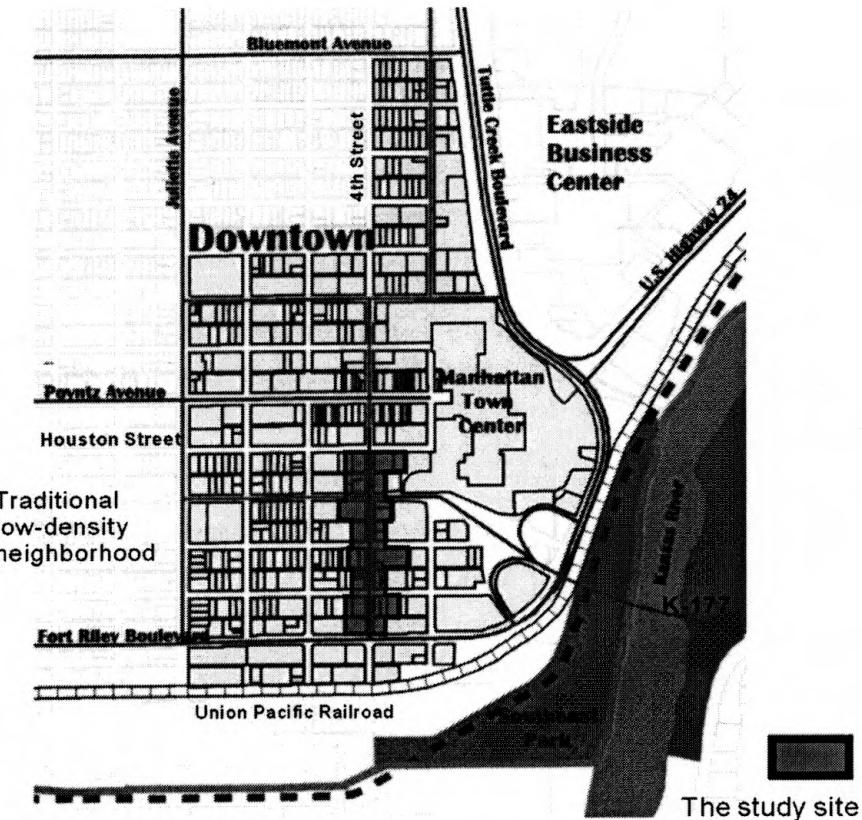


Figure 3.2 South 4th Street Corridor location map

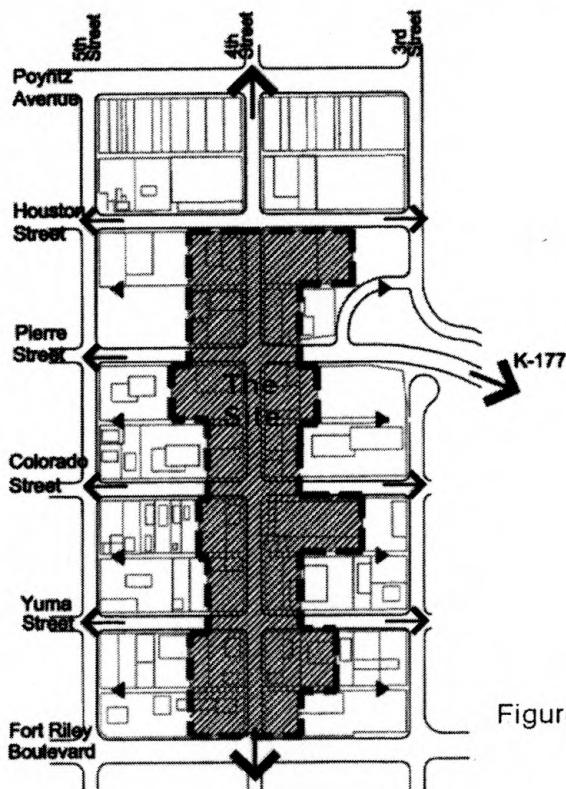


Figure 3.3 South 4th Street Corridor site map

According to Tyler (2000), to fully understand an older historic district, we must consider its current status within the context of time and look at both its past and its future. (p.15) Therefore in this chapter, to get a comprehensive understanding of the South 4th Street Corridor, I survey the site and its surroundings in terms of its history, current physical characteristics, and recent efforts at development.

The History of the South 4th Street Corridor

As an important part of downtown Manhattan, the history of South 4th Street Corridor is inseparable from the overall downtown history, which can be traced back to 1857, when Manhattan officially incorporated as a city. General stores started to develop on Poyntz Avenue, providing supplies needed by local residents and farmers, who made a long trip to Manhattan to sell their produce and to shop downtown. By the 1870s, the downtown had become a busy and prosperous place, a focus of social and trading activities. There were four blocks of businesses along Poyntz Avenue, including general stores for food, clothing, farm equipment, banks, as well as an opera house, all of which established a primary foundation of the downtown development (*Kansas State Collegian*, April 3, 2002). From 1909, when a public trolley was installed and acted as the main transportation tool running through Downtown and Aggieville until the early 50s, downtown accessibility was greatly increased. “There was just so much activity,” said Charles Elliot, owner of Reed and Elliot Jewelers, who has witnessed the downtown’s ups and downs for 60 years. He reminisced about hotels, restaurants and theatres which used to line Poyntz Avenue. He said the

downtown was everything to everyone at that time in the Manhattan community. "If you wanted to do anything, you came downtown" (*Kansas State Collegian*, Aug 31, 2001).

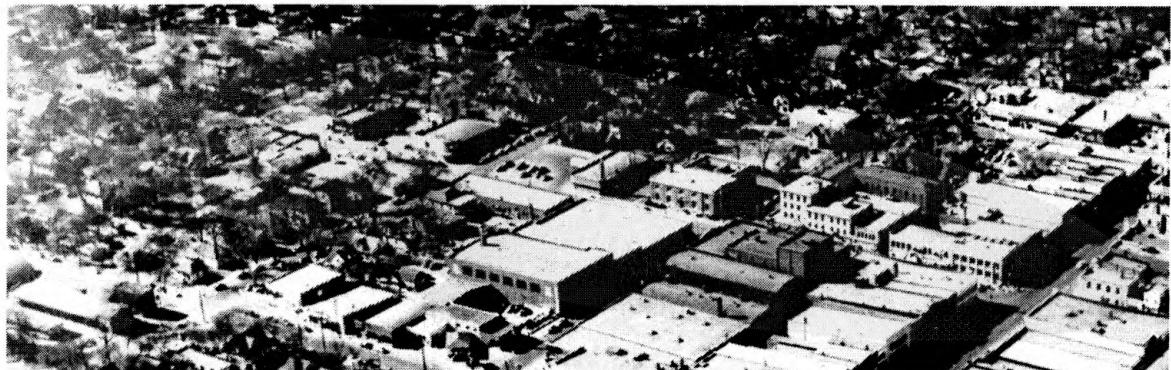


Figure 3.4 South 4th Street Corridor in the 1950s (Photo courtesy of the Riley County Historical Society)

Located at the south side of the downtown, as a mixed-use district combining commercial and residential uses, the South 4th Street Corridor shared the prosperity. Figure 3.4 presents the physical form of the study site in the 1950s. Benefiting from the commercial activities on Poyntz Avenue, businesses were mainly concentrated on blocks between Houston Street and Pierre Street. Residential use, characterized by single-family houses, became predominant toward the south. Taking advantage of easy access to a wide variety of products and services, these residences in turn supported the social and commercial activities in downtown Manhattan.

During the last 50 years, the downtown has been experiencing a decline. Due to the geographic constraint, the Kansas River to the east of the city, later residential development occurred mostly to the west. Following that, commercial development also shifted to the west relative to downtown (*Downtown Tomorrow*,

2000). Later, when the Rock Island Railroad closed its track in 1986, a southern arterial street was built to link Fort Riley Boulevard with Tuttle Creek and US-24 in 1987. By providing a direct east-west route across the city, it enables people to avoid driving through the downtown to get through the rest of the city. Further, along with this development, new businesses were built. Rather than in the traditional downtown core, they were located along the arterial streets, at the east edge of the town. When the commercial strip began competing with the downtown stores, many downtown businesses closed. Thus, the downtown was weakened. It is no longer the focus for local communities, which it was through much of its history. Empty storefronts and low volume of activity along Poyntz Avenue signal the downtown's deterioration.

As an important part of the downtown, the South 4th Street Corridor also failed. A few blocks of single-family houses at its south side have been lost. Besides the negative influence of the asymmetrical development pattern as mentioned above, the heavy traffic and poor physical environment along Fort Riley Boulevard would be part of the reason. As we compare the pictures taken in 1950s for the Sears Department Store (Figure 3.5) and the current Manhattan

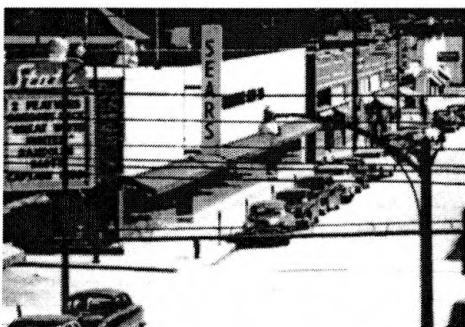


Figure 3.5 Sears Department Store in 1953



Figure 3.6 Manhattan Workforce Center in 2004

Workforce Center (Figure 3.6), it is easy to see that, affected by the deterioration of businesses on Poyntz Avenue, the commercial activities on 4th Street are also failing fast. The large area of vacant lots and low volume of activities along the street indicate the decline of the South 4th Street Corridor.

Current Physical Characteristics

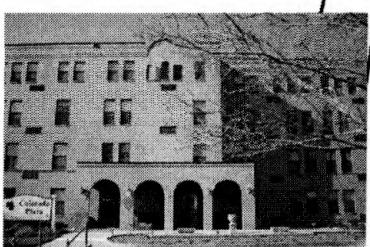
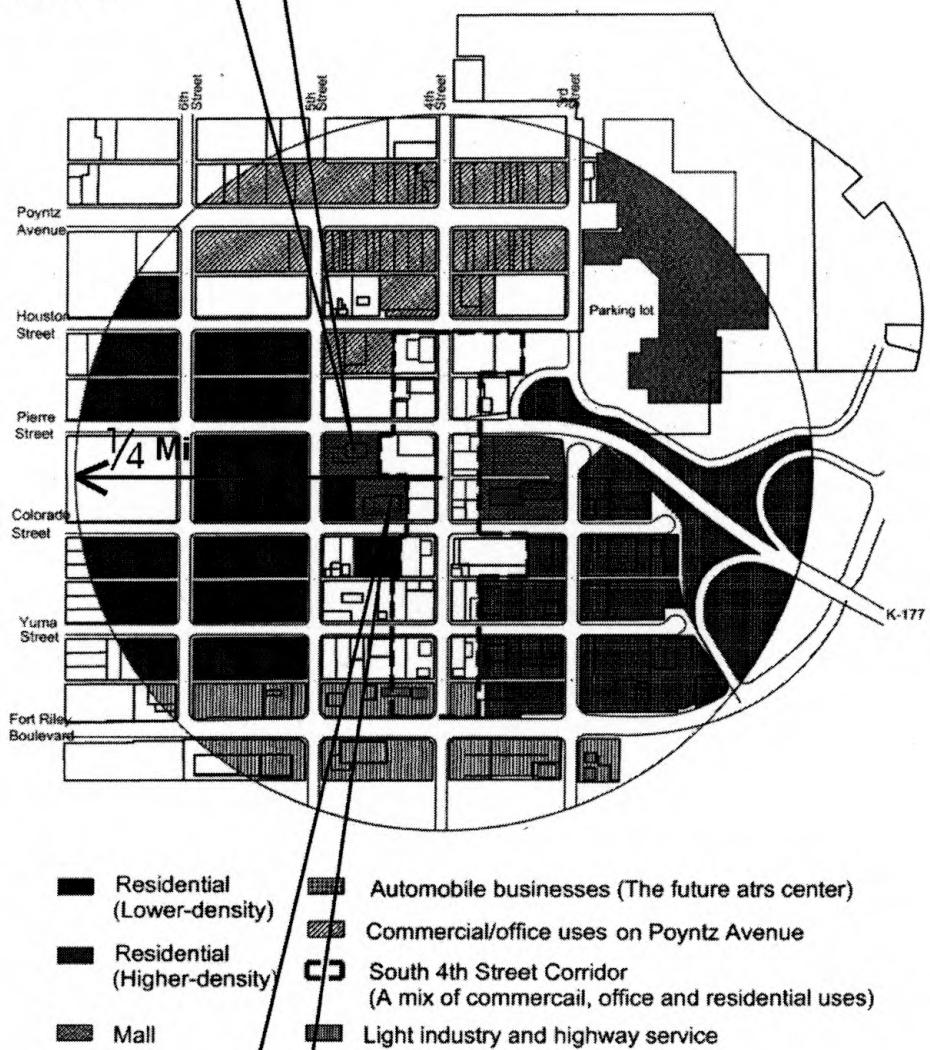
1. Land use

Figure 3.7 illustrates the land uses on the South 4th Street Corridor and the surrounding area within five-minutes walking distance of the study site. As shown, to the north of the site are the commercial and office uses on Poyntz Avenue, and to the south are the light industrial and highway service commercial uses along Fort Riley Boulevard. Residential use is mainly concentrated to the west of the study site. It includes the traditional low-density single family housing and the recent higher-density residential developments, such as the Colorado plaza and Carlson Plaza located between Pierre Street and Colorado Street. Taking advantage of the exposure to the higher volume of vehicular traffic, nearly all the lands to the east of the study site are for automobile businesses. According to *Downtown Redevelopment Master Plan* (2004), in the future, this part of the city will be redeveloped as an arts district with a discovery/visitor's center at the heart.

Benefiting from the commercial and office activity on Poyntz Avenue, most of the lands along South 4th Street are for commercial and office uses. At the south end of the site, there are a few single family houses scattered here and there. Most of them are in poor condition.



Carlson Plaza



Colorado Plaza

Figure 3.7 Land uses on the South 4th Street Corridor and its surroundings

Figure 3.8 provides information about the locations of the existing buildings on the South 4th Street Corridor. As shown, there are numerous lots vacant on the study site. Some of the empty lots have become informal parking lots; others are just full of weeds, leading to a negative effect on the surroundings.

2. Vehicular system and pedestrian environment

Following the traditional grid system, the street pattern in the downtown district is very clear and easy to follow. Accommodating a moderate number of vehicular trips, with a 20 mph speed limit, 4th Street is two-way with a 61-foot-wide right of way (including a 10-foot sidewalk width on each side).

Owing to its special location, which links downtown north and south, from Bluemont Avenue to Fort Riley Boulevard, 4th Street is considered as the main corridor and the major shopping street in downtown Manhattan. However, due to its impersonal pedestrian environment, the pedestrian flow on 4th Street is much lower. Pedestrians are separated from moving traffic only by on-street parking.



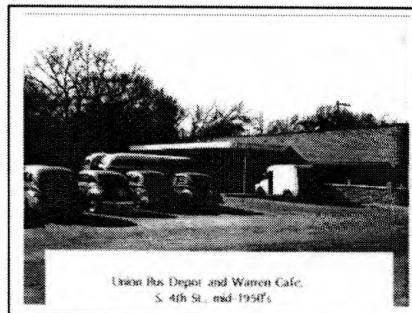
Figure 3.8 Buildings on the South 4th Street Corridor and its surroundings

On the west side of 4th Street, there is neither a planting nor a weather protection system. It is a ruthless environment for pedestrians, especially during Manhattan's dry and hot summers and its cold and long-lasting winters. Further, people can hardly find a place to have a rest when they are tired; there is no street furniture on the sidewalk.

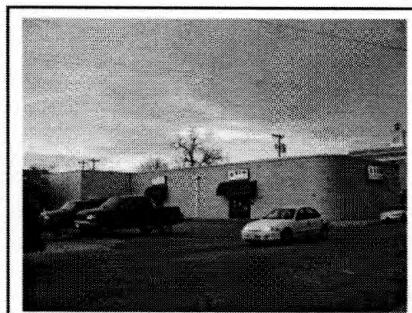
Besides 4th Street, Pierre Street is an important street in the south downtown district. Connecting to highway K-177, it is an essential street where the traffic grades from small to intense, from local to state. It provides tourists the first image of the city, which unfortunately is very negative today. Large parking lots are the primary land use along its both sides.

3. Streetscape

Figure 3.9 and 3.10 illustrate the streetscape of the South 4th Street Corridor. As shown, among the buildings along 4th Street from Houston toward the south, the Federal Building, with its historic image, is considered as the landmark on the study site. Located at the west corner of Houston Street and 4th Street, the Federal Building was built in 1910 and served initially as Manhattan's Post Office. With a classical expression, it is two story's high, covered by cream colored brick with white stone trim. As it becomes older, the richness of its beauty is enhanced, and the building is well regarded by the public.



Union Bus Depot



V.F.W. Plaza



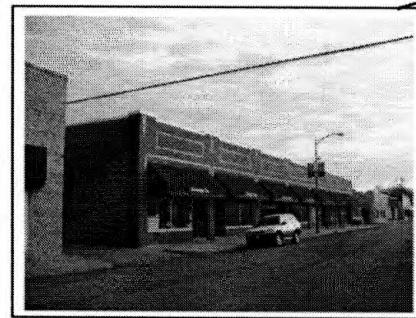
Federal building



West side of 4th Street



East side of 4th Street



Mixed-use building



Manhattan Workforce Center

Figure 3.9 Streetscape---north side examples

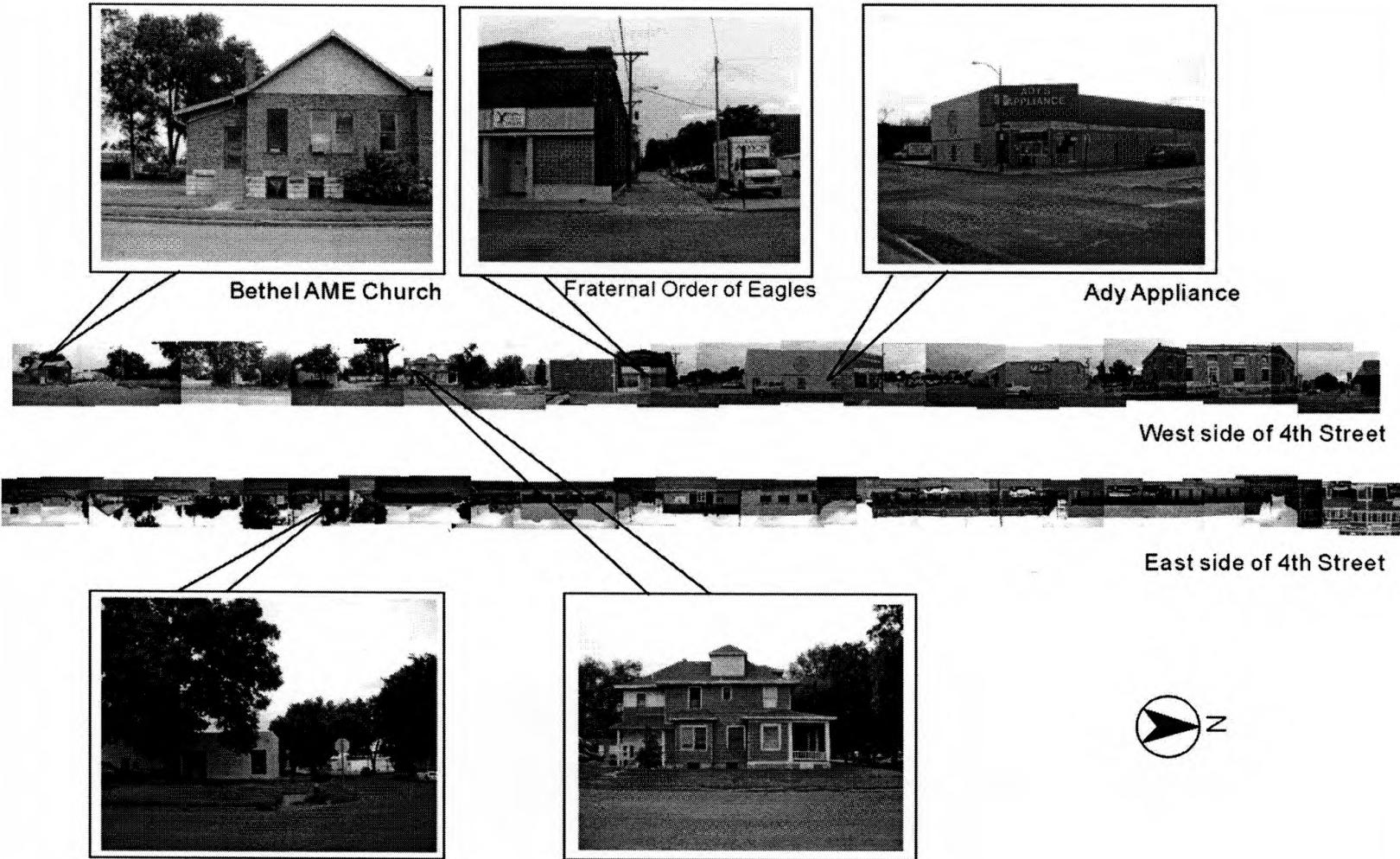


Figure 3.10 Streetscape---south side examples

Although the interior of the Federal Building has been modified, the exterior of the building remains untouched and is carefully maintained. That practice is not usual on the South 4th Street Corridor. The facade of its neighbor, the V.F.W. Building, formerly the Union Bus Depot of Manhattan, was originally covered by brick with ribbon windows. However, it has been now recovered with white stucco with no exterior windows. Moreover, with a retail building added later on its west side, the V.F.W. Building does not exist independently any more. It has become a part of an L-shaped building group. The former parking lot of the Union Bus Depot has been replaced by a rectangular plaza defined by the L-shaped building group. Unfortunately, the Plaza named V.F.W. is very impersonal with neither plantings nor furniture for sitting.

Opposite the V.F.W. Plaza and the Federal Building, across 4th Street are the Manhattan Workforce Center and a mixed-use retail/office building. With its narrow vertical windows, the former looks more private and solid; the latter is more public and light with its big show windows and low sill height. Both are one story high, simple, and with awnings above windows, which visually create a horizontal rhythm on the street. As Figure 3.5 and Figure 3.6 shown the Manhattan Workforce Center was formerly used as the Sears Department Store, characterized by a huge sign on the exterior. It was once covered with brick and stucco, which has now been partly replaced by aluminum panels.

Next to the V.F.W. Plaza, across Pierre Street are Ady's Appliance and the Fraternal Order of Eagles. The former is covered with stucco, and the latter is covered with brick and glass blocks. Neither of them is well maintained or

attractive. As illustrated in Figure 3.11, during the past 50 years, not only the façades of these two buildings remain untouched, the large parking lots beside them also remain unchanged, which lead to a very negative effect on 4th Street.

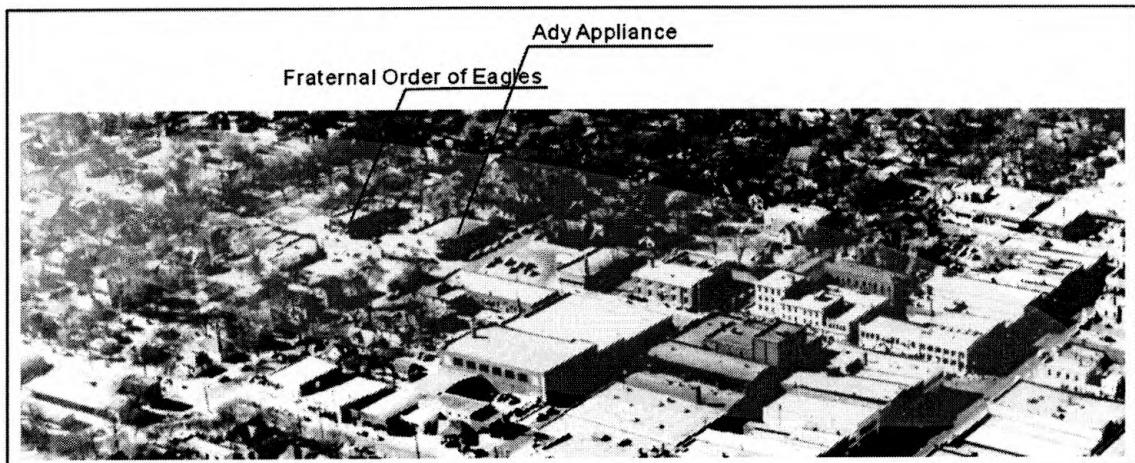


Figure 3.11 Ady Appliance and the Fraternal Order of Eagles in the 1950s (Photo courtesy of the Riley County Historical Society)

Looking south from Colorado Street, originally, this part of the site was for residential use with numerous single-family houses. Most of them are gone, and the remnants have fallen into disrepair. Large vacant lots have become the dominant land use in this area.

At the south end of 4th Street, many buildings have vanished, replaced by automobile businesses or large vacant lots. Still existing is the Bethel AME Church. Built in 1879, the church has a traditional appearance with crossing pitched roof, stone foundation and brick façade. It provides a feeling of roots for the local residents.

Based on the above discussion, it is easy to see that the South 4th Street Corridor is experiencing a decline in the number of residents and a rapid rise in vacant lots.

Recent Efforts on the Redevelopment of the South 4th Street Corridor

The South 4th Street Corridor has played a special role in the life of downtown Manhattan in terms of its long-term physical, economic and social effects. During its nearly 150-year history, it has offered a great diversity of services from the former Post Office, the Union Bus Depot to the current Workforce Center and a variety of retails. Its historic character presents us the heritage of the community. As living histories, the Federal Building and Bethel AME Church tell us about the past, where the community has been and where it is going. They attract tourists, enhancing both the local economy and the sense of community pride.

According to Tyler (2000), downtown residential use plays a prominent and important role in downtown revitalization. In terms of the South 4th Street Corridor, it has a great potential in housing development, especially meeting the needs of the changing social trends including increasing numbers of retired people and professionals who like to walk to work. Due to its special location and mixed-use nature, it not only offers job opportunities for its residents, but also provides a walking distance to a variety of products and services, which would provide convenience for residents, especially those with special housing needs or limited access to transportation (*Downtown Tomorrow*, 2000).

Thus, as an important part of the downtown, the South 4th Street Corridor is worth renovating to serve a vital role now and in the future in the city of Manhattan.

In recent years, a steady stream of efforts have been made toward the revitalization of the downtown district, such as the Manhattan Main Street Program, Tax Increment Financing, *Downtown Tomorrow* study, *Housing Manhattan* plan, and the *Downtown Redevelopment Master Plan*. Among them, the latter three are very important for the redevelopment of the South 4th Street Corridor (detailed information about the Main Street Program and Tax Increment Financing are provided in Appendix).

1. *Downtown Redevelopment*

Master Plan

Manhattan's current Downtown Redevelopment initiative is the result of the City of Manhattan in conjunction with the Manhattan Area Chamber of Commerce, committed to exploring opportunities to improve the downtown neighborhoods and associated retail/commercial corridor. In July, 2003, the City Commission approved the recommendation from the Downtown Redevelopment Steering Committee and appointed Dial Realty, RTKL, Inc., and Brent Bowman & Associates as the development/design team.

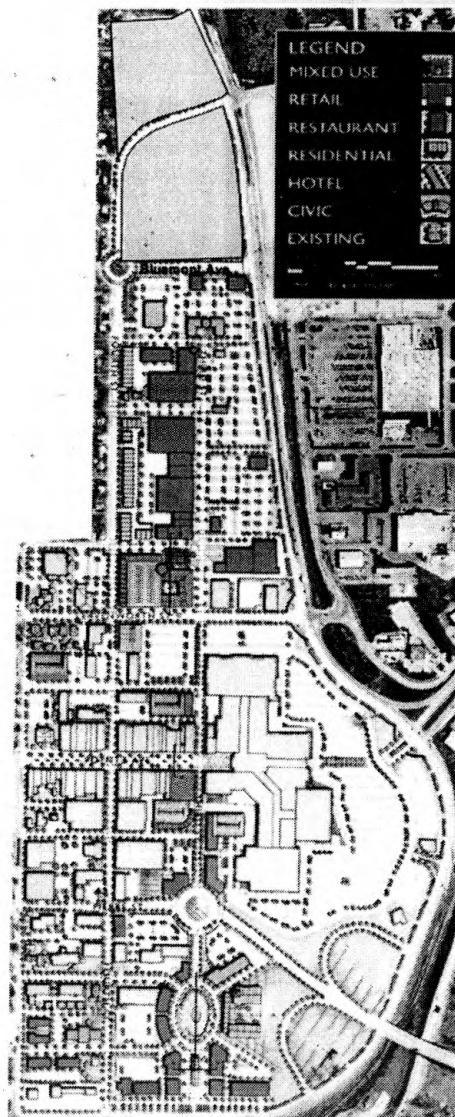


Figure 3.12 Downtown Redevelopment Master Plan (Concept drawings courtesy of Brent Bowman & Associates)

Focusing mainly on 3rd Street, the *Downtown Redevelopment Master Plan* (Figure 3.12) aims to revitalize the downtown area through mixed-use development. Different uses such as retail, residential, office and civic are introduced on the site to make the downtown a place both for living and playing. As one of the most important documents for downtown revitalization, the *Downtown Redevelopment Master Plan* is very helpful for my study. It provides the updated information about the city's planning strategies and has put me in touch with the community's needs and wishes. Its design for 3rd Street has influenced the overall structure of the downtown area, and has a direct effect on the South 4th Street Corridor.

2. *Downtown Tomorrow* study

In April 2000, the *Downtown Tomorrow* study, a redevelopment plan for downtown Manhattan, was adopted by the Manhattan City Commission and Planning Board. Aimed at providing a vision for a future downtown, this study identifies the goals, objectives and land use pattern of the downtown area. Combined with design guidelines and planning principles, it presents a special development plan.

In this plan, the South 4th Street Corridor is defined as a primary potential redevelopment district. Its east side is considered a prime future commercial/office redevelopment area. Due to its specific location, a mixed land use pattern is introduced on its west side to strengthen the transitional character between commercial/office uses to the east and the lower-density residential use to the west.

3. Housing Manhattan: Planning for the future

The Housing study for Manhattan, KS is another fundamental source for my study. Adopted on August 1, 2000, it was conducted by Hanna: Keelan Associates, P.C., a community planning and research consulting firm in Nebraska, with the assistance of a Housing Steering Committee and city of Manhattan Community Development Department. Completed in 2000, this study has covered many of the housing issues confronting Manhattan, Kansas

This study indicates that by the year 2005, the city should have an estimated population of 56,367. And this growing population would result in a need for more housing units: 1,968 rental housing units and 1,007 owner housing units. The housing demand is especially strong for the elderly, younger families, single-parent families and special populations, including persons with physical and /or mental disabilities and individuals/ families needing emergency or transitional housing.

This document identifies seven growth areas within the Urban Area that could be appropriate for specific types of housing. In terms of the South 4th Street Corridor, it is categorized in the East-central Growth Area. This area is identified as "a priority district for duplex and multifamily development, additional housing for older adults and persons with disabilities, the area of focus for new emergency shelters and the location of associated services for current and future residents" (p 4-25).

Generally, *Downtown Tomorrow* (2000) and *Housing Manhattan* (2000) have together provides an initial vision of the redevelopment of the South 4th

Street Corridor. While *Downtown Tomorrow* formulates a series of goals and guiding principles for revitalizing the site into a desirable mixed-use district, *Housing Manhattan* identifies the specific housing needs and appropriate housing types for the study site. Under their guidelines, the South 4th Street Corridor is envisioned as a safe, well-managed place with higher-density and mixed-use development.

Bearing this in mind, after applying the seven qualities of *Responsive Environments* to an actual design proposal for the South 4th Street Corridor in Chapter 4 and Chapter 5, I will examine in Chapter 6 whether the final design proposal has achieved this initial goal.

Chapter 4

ANALYZING AND DESIGNING THE SOUTH 4TH STREET CORRIDOR IN TERMS OF LARGE-SCALE ISSUES: PERMEABILITY, VARIETY AND LEGIBILITY

As described in Chapter 2, the seven qualities of responsive environment have covered the key issues in making places responsive. While the quality of permeability, variety and legibility deal with the urban site as a whole, the qualities of small-scale robustness, visual appropriateness, richness and personalization deal with specific design details. They work together to help designers approach the various layers that comprise a sense of place, keeping us in touch with the essential aims and needs of the specific site.

In this chapter, I examine the overall structure of the South 4th Street Corridor in terms of the first three qualities. For convenience and clarity, each quality is presented in the same format. First, the study site is described in terms of the given quality. Then the design concepts, which provide solutions to the problems stated in the first step and show possible future development for the South 4th Street Corridor, are presented. Finally, a design statement is developed to support the previous design concepts.

Permeability on the South 4th Street Corridor

According to Bentley et al., only places which are accessible to people can offer them choice. The quality of permeability, the extent to which an environment allows people a choice of access through it, is the basis for any democratic setting.

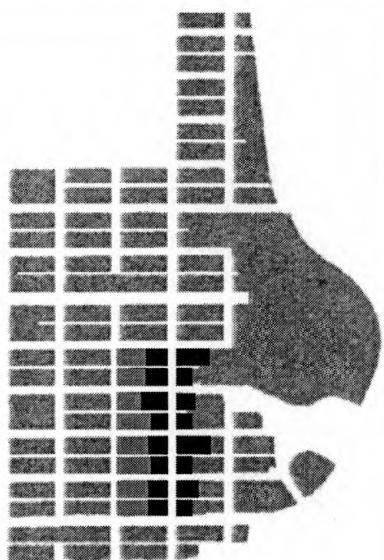
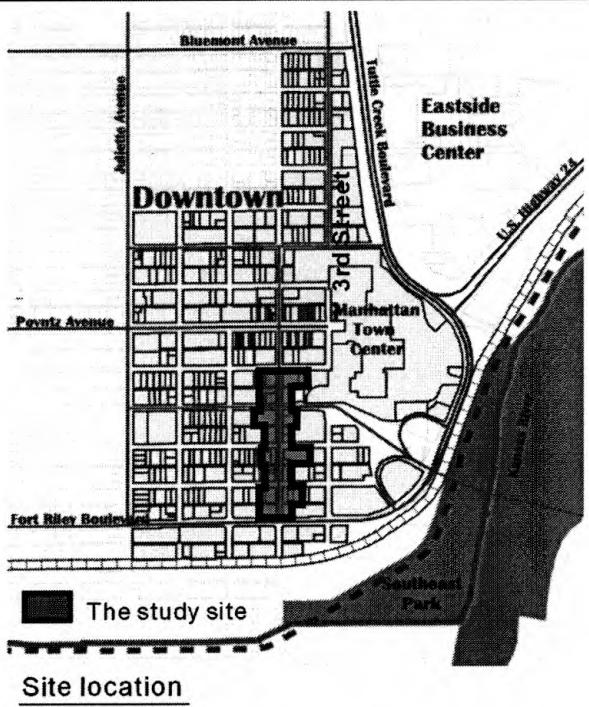
A higher degree of permeability, therefore, means more choices of alternative routes for users to and through the site, more opportunities for happenings and interactions to take place within the site, and therefore a more livable environment to be generated on the site.

Based on the discussion in Chapter2, the quality of permeability can be achieved at two levels: public permeability and permeability between public and private spaces.

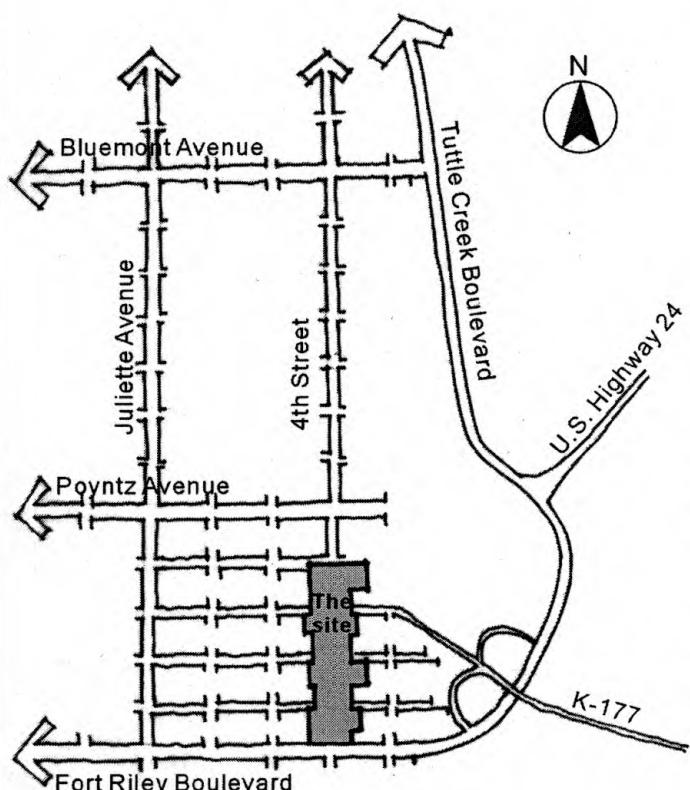
1. Public permeability

According to Bentley et al., the permeability of any system of public space depends on the number of alternative routes it offers from one point to another. The frequency of access points to the site and their spatial distribution throughout the site are essential to evaluate the degree of public permeability of a place. Potentially, the more frequent the access points onto the site, the more connected the site is to its surroundings, thus the higher the physical permeability. Furthermore, the easier it is to see from one access point to the others, the stronger people's awareness of the choices available, thus the higher the visual permeability.

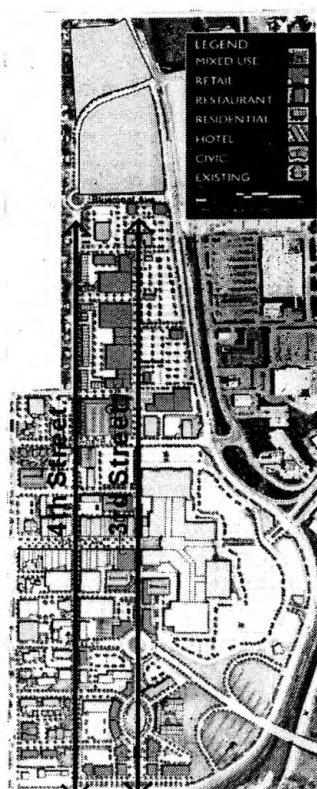
As shown in Figure4.1, through four local streets and four local alleyways, the South 4th Street Corridor is well integrated with the surrounding grid structure to its west. The frequent access points and the way in which they are distributed provide the shortest and most direct paths to and through the site.



The block system in downtown Manhattan



The existing system of links into and through the site from the surrounding area



Downtown Redevelopment Master Plan (2004)
Concept drawing courtesy
of Brent Bowman&Associates

Figure 4.1 The public permeability on South 4th Street Corridor

However, the South 4th Street Corridor is poorly accessible in relation to the surroundings to its east. It is segregated from the east part of the city with few routes feeding into it. Fortunately, this issue can be solved in the future. According to the recent *Downtown Redevelopment Plan* (2004), its immediate neighbor, 3rd Street will be developed as a major street in the city. Running through downtown from north to south, the future 3rd Street provides a strong link connecting the downtown to the east part of the city as a whole. With the advantage of this development, the permeability of the South 4th Street Corridor would be greatly increased.

2. *Permeability between public space and private space*

Based on the discussion in Chapter 2, it is clear that the permeability across public and private interface is largely a visual concern. Appropriate visual permeability between public space and private space can enrich the public domain while simultaneously protecting privacy. This can be achieved by the so-called perimeter block development, with the advantages of private open spaces at the back and public open space at the front. However, a positive street shape can not be achieved by merely placing building fronts onto it. It also depends on the quality of outdoor spaces shaped by buildings. Generally, if the outdoor space attracts people making them comfortable and willing to stay, then it has a positive effect on the street.

As shown in figure 4.2, on the South 4th Street Corridor, nearly all the buildings have their fronts directly onto the street. However, they are all independent from each other. Parking lots and vacant lots alternate around them. These spaces give no indication of either a private or a public character. In fact, they confuse the vital distinction between public and private altogether. For example, instead of allowing for private activities at the back, many buildings on the site, such as the Federal Building (Figure 4.3), Ady's Appliance (Figure 4.4) and Boys and Girls Clubs (Figure 4.5), use the outdoor spaces immediately beside them for service access and parking. These utilitarian activities interfere with public space, leading to a very negative effect on the street.

Figure 4.6 shows the location of front entrances along the South 4th Street Corridor. According to Bentley et al, the number of front entrances and the way in which they are distributed are good indicators of physical permeability between public and private spaces. Potentially, the more opportunities for access, the higher the level of activity around the edges of public spaces, enriching the public domain. As illustrated, the front entrances along the South 4th Street Corridor are loosely and unevenly distributed. The highest number of entrances is at the north part of the site from Houston Street to Colorado Street, indicating that more public activities could happen there.

It is not difficult to see that the permeability between public and private spaces is poor on the South 4th Street Corridor both physically and visually. And

along the street itself, the level of permeability drops down from Houston Street to Fort Riley Boulevard.

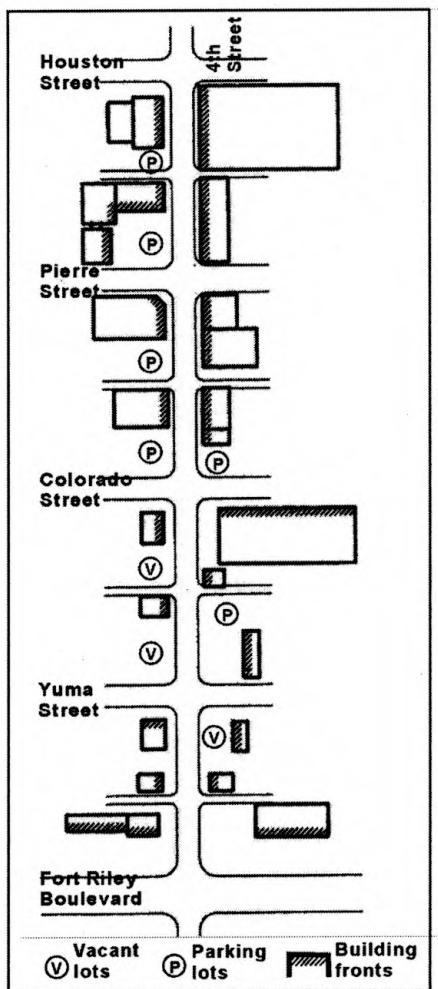


Figure 4.2 Building fronts along South 4th Street Corridor

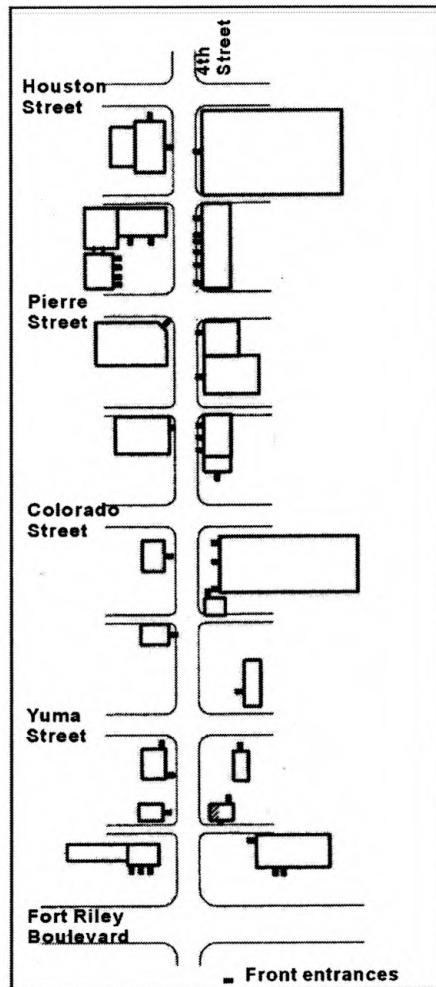


Figure 4.6 The location of front entrances along South 4th Street Corridor

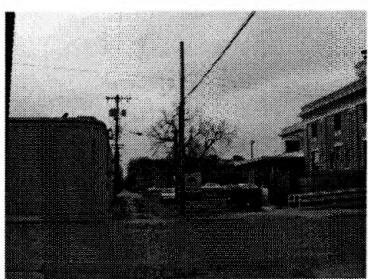


Figure 4.3 Federal building with its immediate outdoor space



Figure 4.4 Ady Appliance with its immediate outdoor space

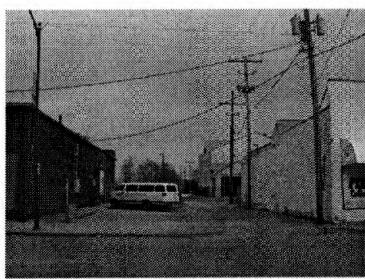


Figure 4.5 Boys and Girls Clubs with its immediate outdoor space

Design Concepts in Terms of Permeability

The South 4th Street Corridor is the major public place in the south downtown district. People come here to shop, work, study and meet. It must therefore have high public permeability, providing convenience for people to get to the site with great ease. Furthermore, in order to attract people rather than drive them away, it should have positive street shape to accommodate plenty of public activities. Therefore, appropriate permeability between public and private spaces is needed to encourage people to slow down and spend time on the site.

According to the preceding analysis, the South 4th Street Corridor has the potential to achieve high public permeability along with the future development of 3rd Street. However, it has very low permeability between public and private spaces. To improve it, therefore, the following six design strategies are offered for consideration:

- (1) Maintain the existing street pattern, including the alley systems, to provide as many access points onto the site as possible.
- (2) Consider infill development and construction in “gaps” along the street to eliminate negative areas between buildings.
- (3) Replace the unsuitable buildings by new connecting structures with clear front/back distinctions. This issue will be further discussed when we come to consider the quality of legibility and robustness in later sections.



Figure 4.7 Alleyway in Aggierville. It is used both as public pathway and outdoor cafe.

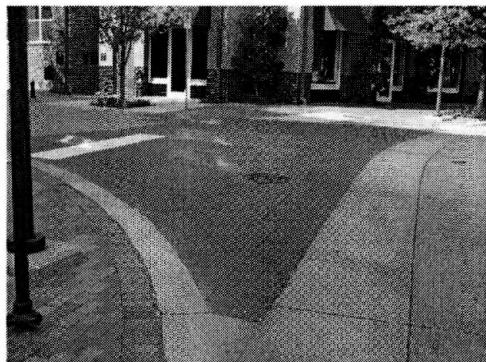


Figure 4.8 Sidewalk and crosswalk in Addison Circle, TX. They are both paved in brick, contributing to a continuous pedestrian environment.

(4) Use alleyways as public pathways or outdoor rooms. (See example in

Figure 4.7.)

(5) Design and build sidewalks and crosswalks with the same materials,

textures and color, which are markedly different than the street system.

This would generate a continuous pedestrian environment. (See

example in Figure 4.8)

(6) Locate parking lots or garages

at the back of the buildings, so that

cars and parking structures would

not interfere with the public

space in front. (See example

in Figure 4.9.) The issue of

parking will be further

discussed in the section on variety.

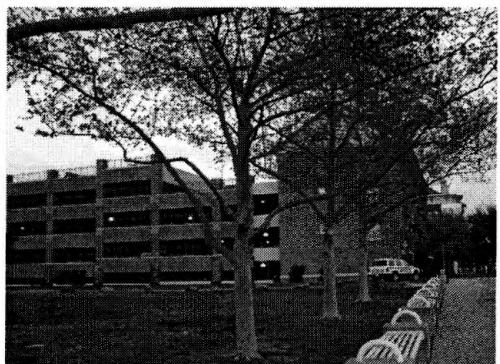
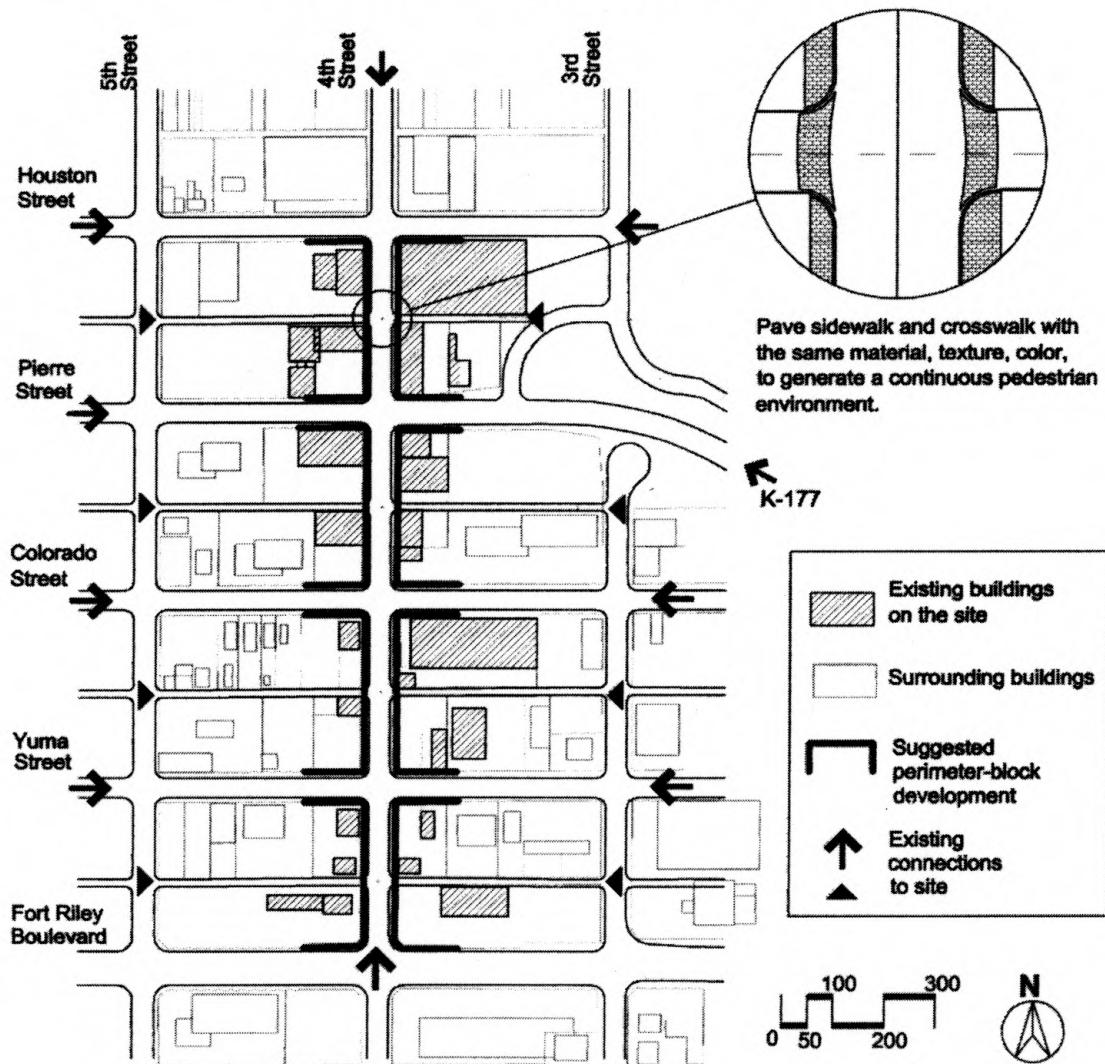


Figure 4.9 Parking garage in Addison Circle, TX. It is located behind each residential block, allowing residences and shops to open directly onto the street.

Design Statement in Terms of Permeability

The illustration in Design sheet 4.1 is an example of the above design strategies applied to the South 4th Street Corridor. Here, the street/block structure is the main concern. Since the uses in the scheme have not yet been decided, it is not possible at this time to decide which buildings on the site should be kept and which should be replaced. This will be addressed later in the section on variety.

Design sheet 4.1 -- The street/block system of South 4th street Corridor after considering permeability



The above design statement, together with design strategies, has provided some examples of how the South 4th Street Corridor can be improved according to the quality of permeability. Nevertheless, high level of permeability on the South 4th Street Corridor is not an end but a means toward an end: creating a responsive environment on the site. In other words, accessible places are only valuable if they offer experiential choice (Bentley et al., 1985, p.27). Therefore, in the next section, I move to examine the quality of variety in the South 4th Street Corridor.

Variety on the South 4th Street Corridor

As seen in Chapter 2, variety is the quality of a place that contains an appropriate mix of uses in relation to activity on public domain, capable of attracting different people at different times of day and night. For a community to have an essential variety, first it needs to contain a dense concentration of people to generate a critical mass of demand. Second, it should have a broad spread of affordable places to accommodate a variety of uses. Third, it requires a positive interaction between different uses to ensure an even spread of activity in public realms throughout the day and evening. Finally, functional feasibility issues, such as parking, also need to be carefully considered.

In the following discussion, I examine the quality of variety on the South 4th Street Corridor in terms of its density, building conditions, interaction between different uses, and parking issues.

1. Density

The idea of the need for a proper density in urban environment is from Jane Jacob's argument for the need for dense concentration of people. She makes the point that the presence of great number of people gathered together is one of the necessary conditions for flourishing city diversity. Especially for downtown districts usually dominated by commercial, cultural and retail uses, it has been proved that the more housing they contain, the more successful they become.

Figure 4.10 shows the amount, distribution and types of dwellings on the South 4th Street Corridor. As shown, the dwellings are very few on the site, with an approximate net density of 4.8 dwelling units/acre. It is too low to generate a critical mass of demand and help maintain sidewalk safety.

According to Jacobs, for flourishing city diversity, besides the number of dwellings, the variety within dwellings is also important. As illustrated on the study site, besides two duplexes, single-family housing is the only

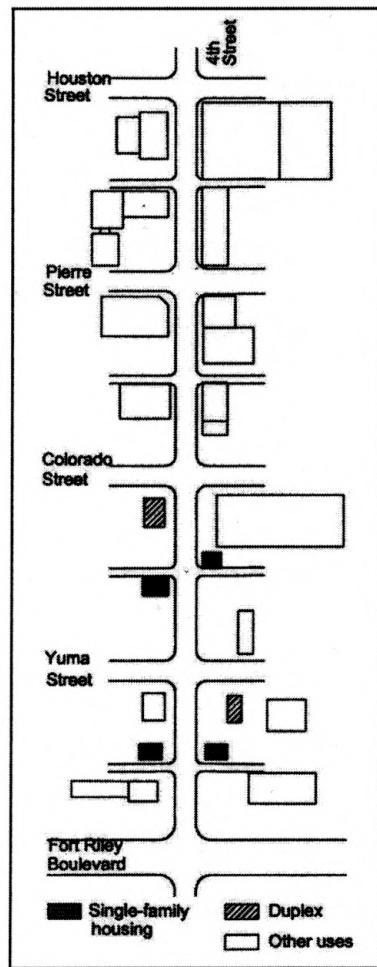


Figure 4.10 Dwellings on South 4th Street Corridor

other dwelling type. Lacking a range of housing sizes, types and prices to attract diverse population, the site has fewer opportunities to capture the market. Nevertheless, while concentrated population is necessary on the South 4th Street Corridor, on the other hand, according to the *Housing Manhattan Plan* (2000), the housing demand in the city of Manhattan is fairly strong, especially for persons in the age categories 19-34 and 65 and older. It is evident that to maximize variety, more dwellings with a mix of types, sizes and prices are required on the study site. Further, to meet the specific social needs of the city of Manhattan, alternative housing choices--for example, loft housing, two-story townhouse-type units and senior housing--need to be considered for the study site. While the former two may be appealing to the young market, the latter would be attractive for older adults.

2. Building condition

Old buildings are a necessary ingredient of city diversity. By providing more affordable rents, they help to attract newcomers with more choices. However, not all old buildings are suitable for keeping. On the contrary, according to Bentley et al, they must be carefully selected. And this has two implications: first, their structural and aesthetic conditions should be suitable for upgrading to a proper standard for uses concerned, at affordable costs. Second, their layouts need to be robust to accommodate a wide range of uses. By robust, here, Bentley et al. mean the ability of a building to offer more choices to ordinary users in the long

run. And buildings shallow in plan, with an ideal 9-13 meters (30-43 feet) depth, are preferred.

Table 4.1 A description of buildings on the South 4th Street Corridor

Building name or number	Structural condition	Aesthetic condition	Lay-out condition	Overall Condition
Federal Building	3	3	2	8
V.F.W. Building	3	2	2	7
Manhattan Workforce Center	3	2	1	6
211-223 South 4 th Street	3	2	2	7
Ady's Appliance	2	2	1	5
Fraternal Order of Eagles	2	2	1	5
301 South 4 th Street	2	1	2	5
315- 317 South 4 th Street	2	1	2	5
331 South 4 th Street	2	1	2	5
345-323 Colorado Street	3	2	1	6
326 South 4 th Street	1	1	3	5
325 South 4 th Street	2	1	2	5
401 South 4 th Street	1	1	2	4
414 South 4 th Street	1	1	1	3
506 South 4 th Street	1	1	2	4
Two abandoned houses	1	1	2	4

Index of layout condition

Numeric value	Condition	Remarks
3	Good	Building depth is between 30-43 feet
2	Fair	Building depth is between 43-53feet
1	Poor	Building depth is above 53 feet or below 30 feet

Index of aesthetic condition

Numeric value	Condition	Remarks
3	Good	Require no immediate restoration
2	Fair	Require minor or some restoration
1	Poor	Require major restoration

Index of structure condition

Numeric value	Condition	Remarks
3	Good	No obvious detracting problems
2	Fair	Require minor maintenance to bring it up to the good range
1	Poor	Needs major repair

Table 4.1 shows the structure, aesthetic and layout conditions of each building along the South 4th Street Corridor. Each building is categorized as good, fair or poor in terms of each condition. In order to qualify the data, a point system is used. Thus, good is classified as 3, fair as 2 and poor as 1. Once each building is ranked according to the three conditions, the value of its overall condition is obtained, which will be used for suggesting which buildings on the site are suitable for keeping. Generally, buildings with overall condition value equal to or above 6 are suggested to be kept. Having a proper condition, they could be either converted for new uses or remain untouched in terms of different requirements. Buildings with overall value below 6 are recommended to be replaced, since they

cost more to repair and restore than to replace (Figure 4.11). The only exception is the Bethel AME Church. Built in 1879, it is an essential cultural landmark in this part of the city. Although it is not well maintained and does not have a robust layout to accommodate other different uses, it does have high historic value and needs to be kept.

3. Interaction between different uses

As explained in Chapter 2, a positive interaction between different uses implies a good mix of primary uses, a variety of types of secondary uses and finally a mutual support between primary uses and secondary uses. To understand the interaction between different uses on the study site, the following two figures are provided. Figure 4.12 illustrates the mixture of uses and their actual locations. Figure 4.13 indicates each of the primary uses by specific functions and overall secondary uses.

As illustrated in Figure 4.12 and Figure 4.13, offices and residences are the two main primary uses on the South 4th Street Corridor. While offices draw people during

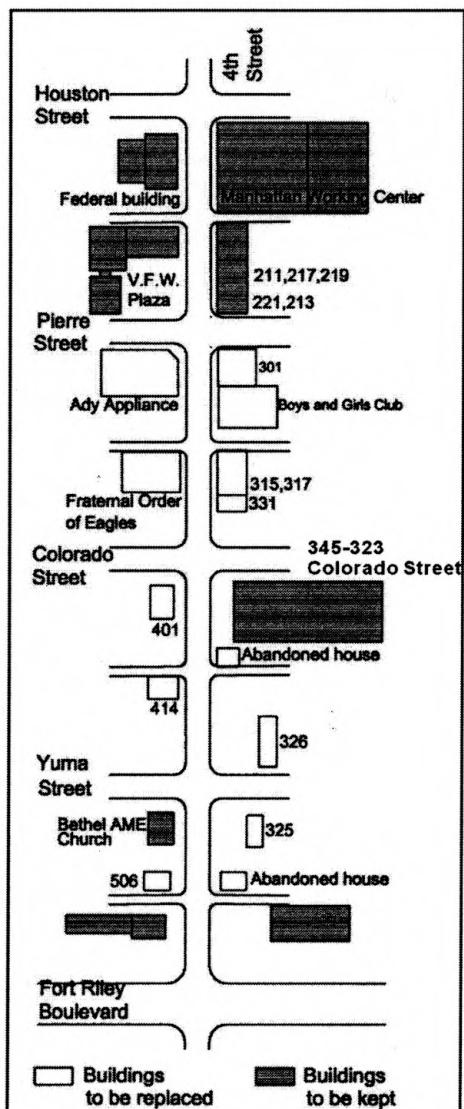


Figure 4.11 Existing buildings on the study site

daytime, the houses, scattered here and there, don't seem to be enough to ensure large numbers of people in the evenings and on weekends. Nevertheless, while the office uses concentrate at the north portion of the corridor, the residential uses, surrounded by large vacant lots, are dominant at the south, leading to an uneven spread of activity on the street.

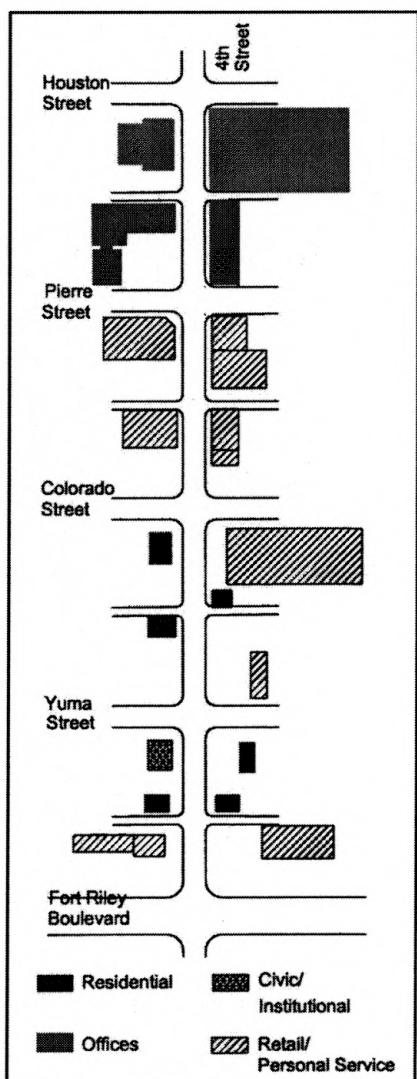


Figure 4.12 Mixture of uses on South 4th Street Corridor

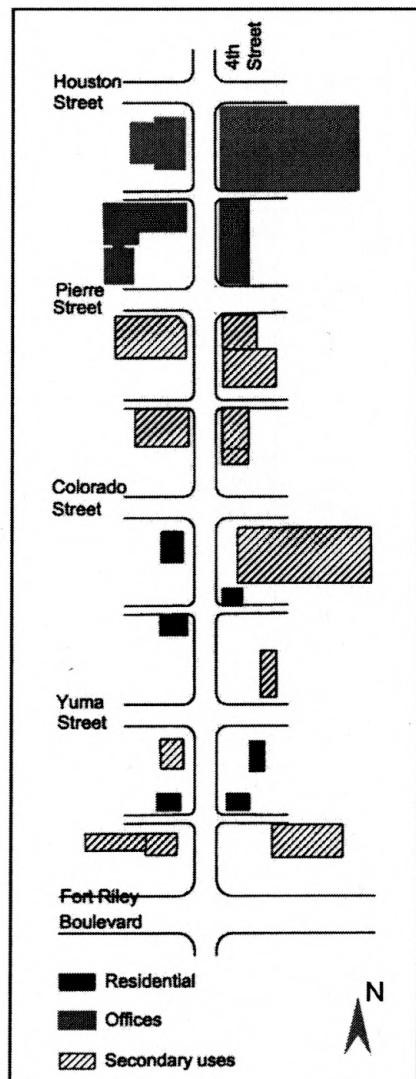


Figure 4.13 Primary uses by specific functions vs. Overall secondary uses

Such an inefficient mix of primary uses contributes nothing to generating secondary diversity. Indeed, on the study site, besides retail services, which are mainly confined to daytime uses, there are no evening social or leisure facilities, such as restaurants and coffee shops. Thus, in the evening, when all the retails are closed, the South 4th Street Corridor is likely to be dead. Further, along with the public activities declining from north to south, the number of retail services also decreases. Being insufficient, they in turn discourage diversity on the study site. As a result, even in daytime, the South 4th Street Corridor has a very thin pedestrian flow and too few activities. It suffers from the lack of mutual support between different uses.

4. Parking

Figure 4.14 indicates that, on the South 4th Street Corridor, nearly fifty percent of the land is used for parking. With too few people shopping here, currently, the study site seems to have enough parking spaces. However, according to the City of Manhattan, 4.5 parking spaces per 1000 square feet are recommended in shopping areas. As one parking space would

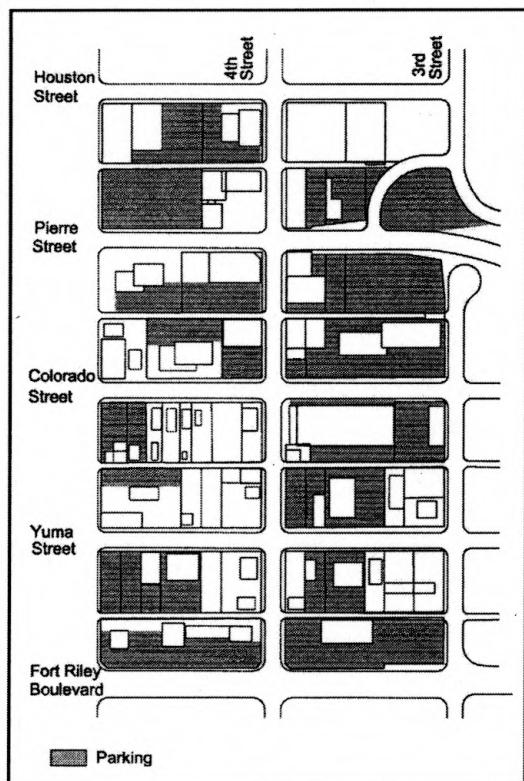


Figure 4.14 Existing off-street Parking on the site

consume about 350 square feet, such a ratio implies that in the South 4th Street Corridor, parking use would account for 60% of the gross building area. This means that along with future development, especially with the introduction of more residential and

commercial uses, the existing parking spaces would be inadequate.

Also as shown in Figure 4.14 and Figure 4.15, rather than being screened from the street, most parking lots on the South 4th Street Corridor are located directly next to the street. Containing no landscaping, they are inhumane and have destroyed the pedestrian continuity on the corridor.

Design Concepts in Terms of Variety

As a major commercial area of south downtown, Manhattan, the South 4th Street Corridor is a place where various transactions take place. Transactions, as MacCormac (1987) reminds us, include not only the exchange of commodities, but also other types of human exchanges, such as social contact on the street, conversation in coffee shops and restaurants and social and religious activities. To maximize these transactions, therefore, the quality of variety, which implies a fined-grained mixture of uses to support an intensity of activity in the public realm, needs to be maximized on the study site.



Figure 4.15 Parking lot beside Ady Appliance

According to the preceding analysis, the South 4th Street Corridor has a very low degree of variety. To improve it, positive interactions between different uses, dense concentration of people, and affordable spaces are required. And these may be achieved by the following strategies:

- (1) Develop a major project with parking structures above commercial uses at the east corner of Yuma Street and 4th Street to complete the south end and attract pedestrians. (See example in Figure 4.16)

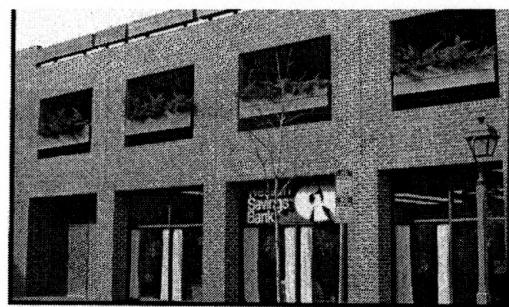


Figure 4.16 Two levels of parking above retail

- (2) Renovate Bethel AME Church and landscape its surroundings, making it more appealing to local residents.
- (3) Introduce a diversity of secondary uses, including those nighttime facilities to accommodate various needs of local residents. When this secondary diversity flourishes sufficiently, it could become a primary use itself, thus making the South 4th Street Corridor more attractive.
- (4) Enhance the corridor by encouraging as much residential use as possible. A higher residential net density of about 10-25 dwelling units per acre is suggested. This density is determined on the basis of Lynch's (1962) discussion of residential densities. According to Lynch,

10-25 dwelling units to the net acre is practicable for a range of housing types including the two-family house, row house and combined flats.

(5) A variety of housing types and prices are needed on the study site to bring more buying power to support local businesses. Some of the units may be for sale, some rental, some market-rate, and some subsidized housing. No visual distinctions should be made in the housing designs to signal the type of tenants.

(6) Consider providing alternative housing choices--for example, loft housing, two-story townhouse-type units and senior housing--on the study site to accommodate different housing demands in the city of Manhattan.

(7) It is suggested that housing be located above shops and offices. Such mixed-use pattern can maximize commercial services without sacrificing higher density. (See example in Figure 4.17.)



Figure 4.17 Housing above commercial uses, Aggieville Manhattan

(8) Maintain buildings suitable to be kept and replace those unsuitable by new infill developments (Figure 4.11). In terms of the businesses and families in those unsuitable buildings, consider moving them into new

infill structures. This is going to be negotiated with the city of Manhattan.

(9) Consider adding residential or office uses vertically on the top of two existing commercial use buildings (211-223 South 4th Street and 345-323 Colorado Street).

(10) Organize as much of the new infill building as possible into a 9-13 meter (30-43 feet) depth, keeping those uses which will not fit as separate as possible. In this way, at least the major part of the building would be robust to accommodate different subdivisions.

(11) Divide the ground retail into smaller spaces, with wider frontage limited to 80 feet. In this way, the site could accommodate a series of affordable spaces and offer a variety of attractions. (See example in Figure 4.18)

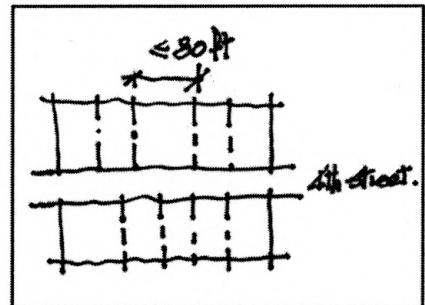


Figure 4.18 Street frontage subdivisions

(12) Maintain and improve existing on-street parking. Consider using parking meters to control long-term parking by residents and local employees.

(13) Shield, pave and landscape parking lots. Break parking into smaller lots where possible.

(14) Encourage parking lots to be entered from the perimeter approaches. Where practical, vehicles should exit at or near the same location.

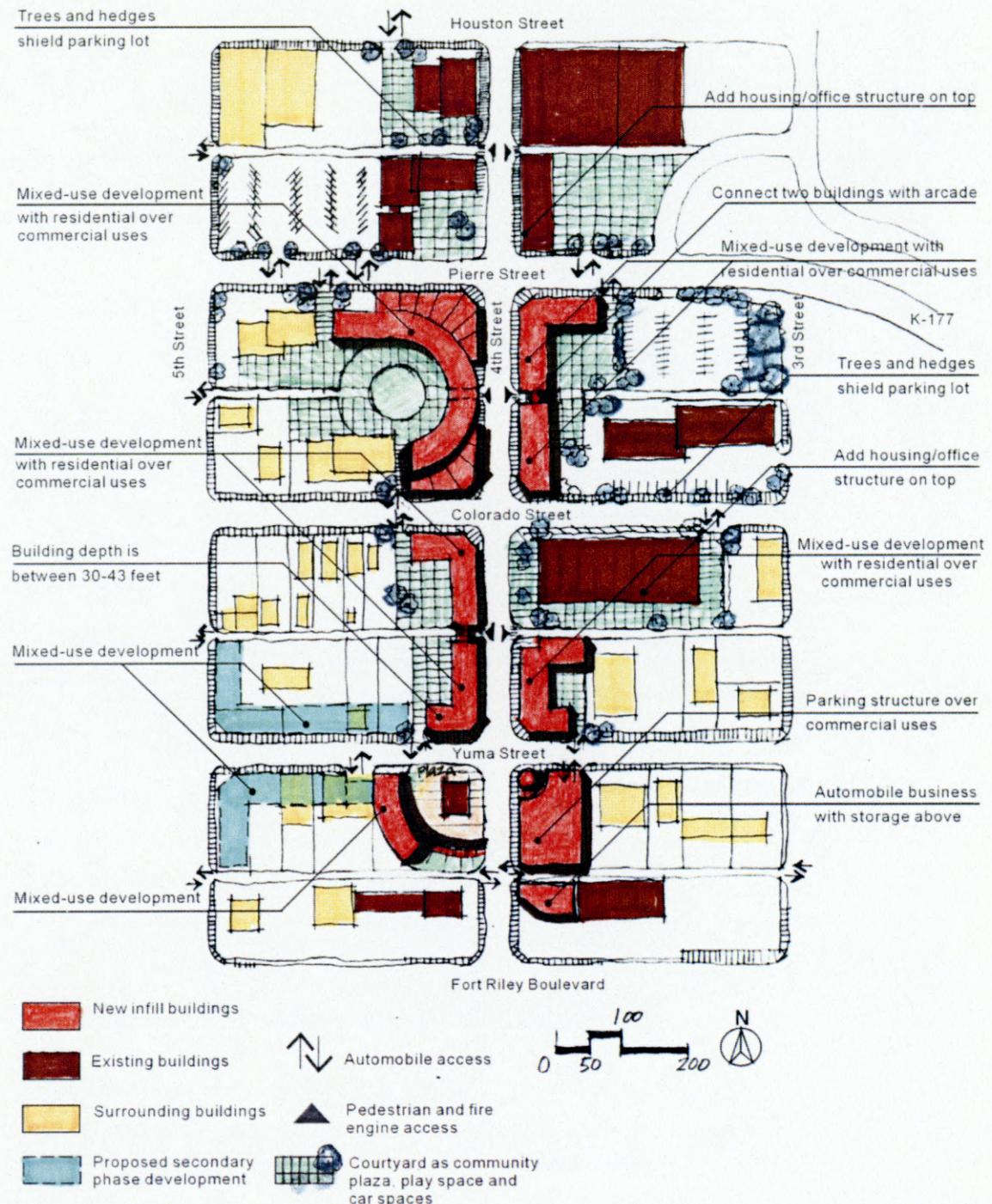
Exiting and entering from 4th Street through alleyways are discouraged.

The only exceptions are the alleyways located at the south end of 4th Street. They are used for automobile businesses.

Design Statement after Considering Permeability and Variety

By this stage, the layout, developed in the previous section of permeability, has been further developed to support the quality of variety. Different desired uses in specific areas are temporarily allocated. They may be further adjusted in terms of the economic feasibility of the project. This needs to be negotiated with the city of Manhattan and the future development agencies involved. Since the proportions of the streetscape have not yet been examined, it is not possible to decide the height and the number of stories of the new structures on the study site. They will be addressed later in the section on legibility. The plan in design sheet 4.2 summarizes the design decisions made so far.

Design sheet 4.2 -- The scheme after consider permeability and variety



Legibility on the South 4th Street Corridor

So far, we have discussed how to redevelop the South 4th Street Corridor in terms of permeability and variety. However, as Bentley et al. remind us, people can take advantage of the choices which these two qualities offer only if they can easily understand the layout and patterns of use of a place. In other words, a place needs to be legible to support its permeability and variety.

As discussed in Chapter 2, it is often helpful to use Lynch's checklist of

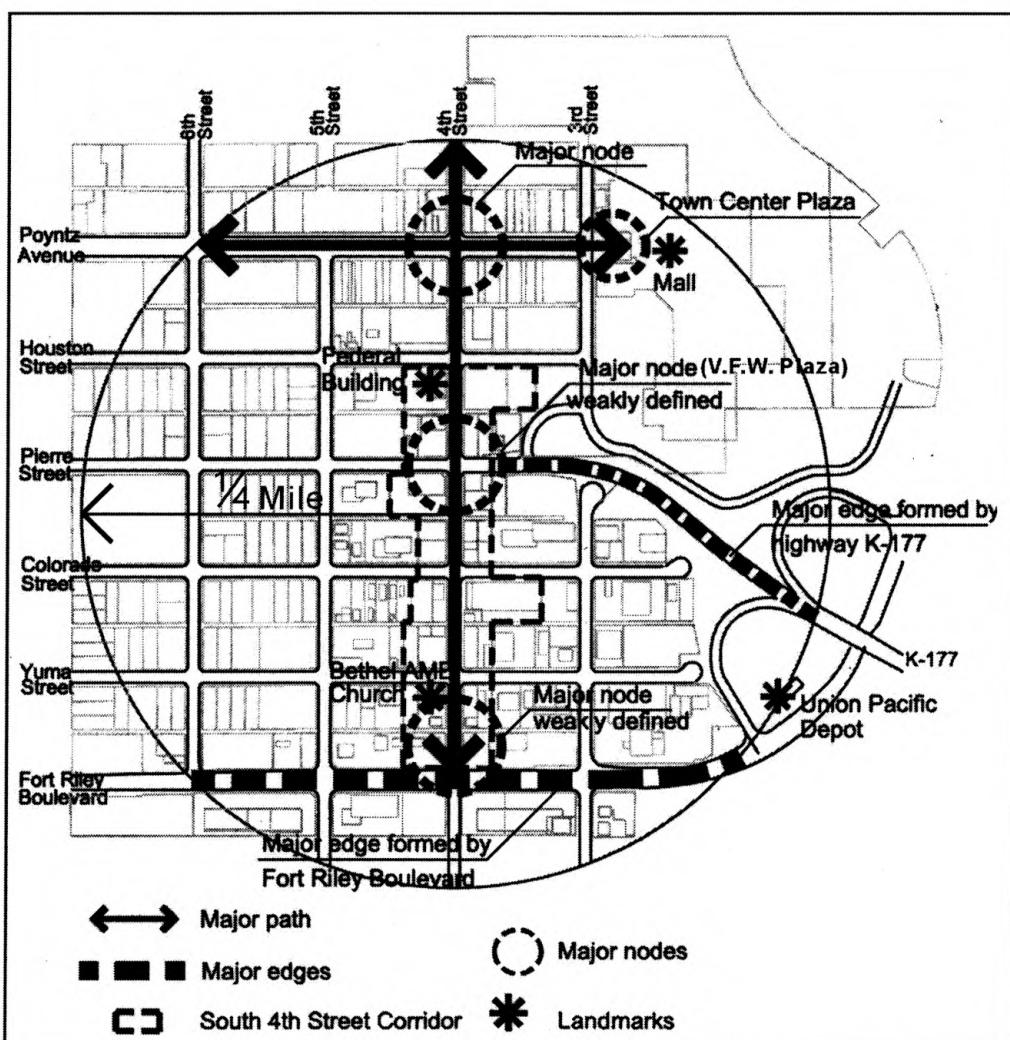


Figure 4.19 The key physical features of South 4th Street Neighborhood
(Based on the author's own mental map)

elements: paths, nodes, edges, landmarks and districts to analyze the physical legibility of a place. Figure 4.19 shows the key physical features of the South 4th Street Neighborhood in terms of these five elements. As illustrated, as one of the major paths in South Downtown Manhattan, South 4th Street is given character not only by its own form, but by the nodes it passes through and the landmarks distributed along its length. Therefore, in the following discussion, I examine the physical form of the South 4th Street Corridor in terms of its own identity, the major nodes it encounters and the immediate landmarks it passes by.

1. Path identity

A path's identity is mainly affected by its own proportion: the ratio of the width of street (usually including pavement plus building setback) to the height of enclosure buildings. As discussed in Chapter 2, a ratio between 1:1 and 1:2 is considered ideal and most often preferred. Streets falling between 1:4 and 1:3 seem weakly enclosed, but still acceptable. Beyond 1:5, the space loses a sense of enclosure. Figure 4.20 and Figure 4.21 show the section, plan and vista of the South 4th

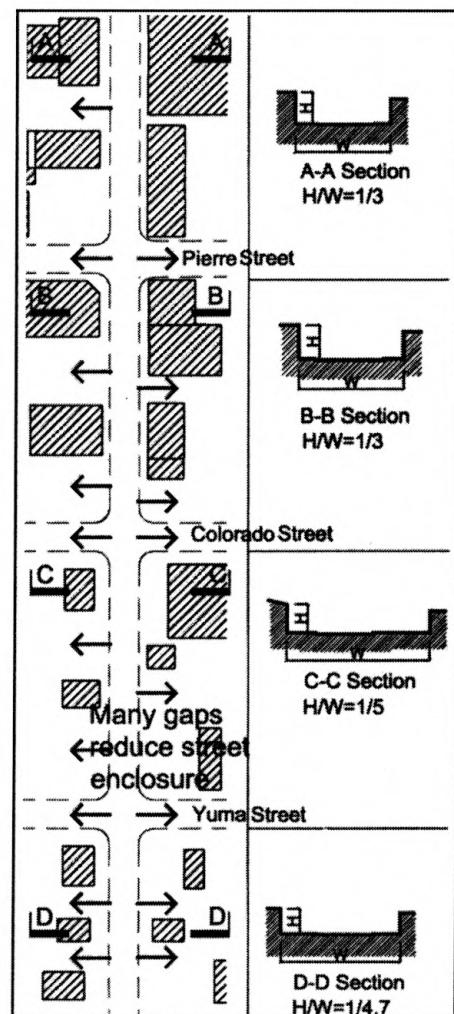


Figure 4.20 The section and plan of the South 4th Street Corridor

Street Corridor. As illustrated, with an H/W ratio between 1/3-1/5, the South 4th Street Corridor has a weak sense of enclosure. Further, when more and more gaps occur at its south part, it correspondingly becomes less and less identifiable and unsuitable for people to stay.

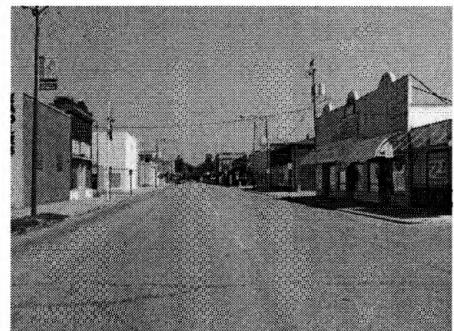
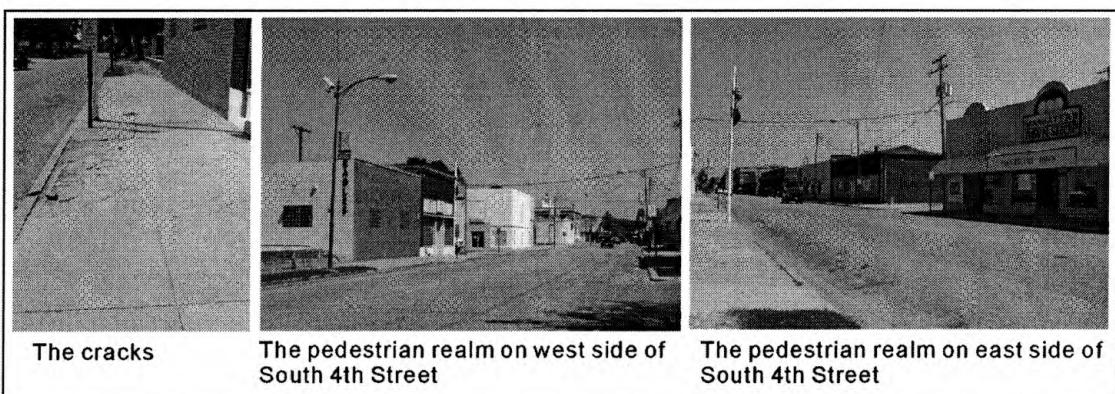


Figure 4.21 The vista of South 4th Street Corridor

According to Lynch, scale and proportion are by no means the only considerations in street design. Other factors may of necessity be of greater significance. One such consideration conditioning street identity is the pedestrian realm. Defined by building frontages, it functions as public space in the city. To attract large numbers of pedestrians, it needs active building fronts, an agreeable street façade and a well-designed sidewalk. Since the building fronts and street façade have implications for Robustness and Visual appropriateness, they will be considered later, in Chapter 5. For now, the sidewalk, a critical element for pedestrian movement, is examined.



The cracks

The pedestrian realm on west side of South 4th Street

The pedestrian realm on east side of South 4th Street

Figure 4.22 The sidewalks on South 4th Street Corridor

As Figure 4.22 illustrates, the sidewalks on both sides of South 4th Street, cracked in several places, are not in good condition. Containing no trees, nor street furniture such as benches, planting tubs or trash baskets, the sidewalks are neither comfortable nor humane. Distributed unevenly along the street, the street lights also lack aesthetic appeal.

Moreover, as shown in Figure 4.23, the sidewalks are frequently interrupted by

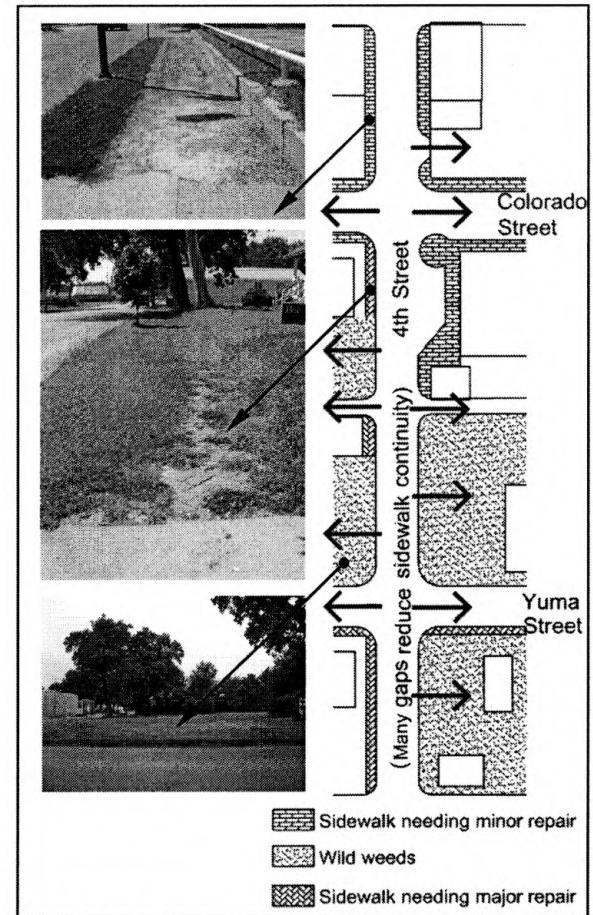


Figure 4.23 Sidewalks on South end of 4th Street

the intersections of streets and alleyways. At the south end of 4th Street, they gradually fade and finally disappear as more and more lands become vacant.

Thus, with the lack of continuity and the quality that creates a mood for enjoyment, the sidewalk loses its power to support and encourage free pedestrian movement along the South 4th Street Corridor.

Evidently, with a very weak sense of enclosure and a poor pedestrian environment, the South 4th street Corridor does not possess a strong character to distinguish itself from others.

2. Nodes

Node is one of the most important elements which give the city legibility or a strong image (Lynch, 1960). A node may be a traffic junction or a public square. According to Bentley et al., a node's legibility is mainly affected by its enclosure in plan and section. The maximum harmonious H/W ratio is 1:4. When beyond 1:5, the node loses its identity and will not be memorable. Moreover, besides the spatial quality, the node is also likely remembered if it contains concentration of special uses or activities at its edge place.

As shown in Figure 4.19, along the South 4th Street Corridor, there are two major traffic junctions: V.F.W. Plaza and the intersection of 4th Street and Fort Riley Boulevard. Both of them have compelling importance for local residents and tourists. People get a sense of arrival and departure in downtown Manhattan at these two break-points. Associated with concentration of commercial

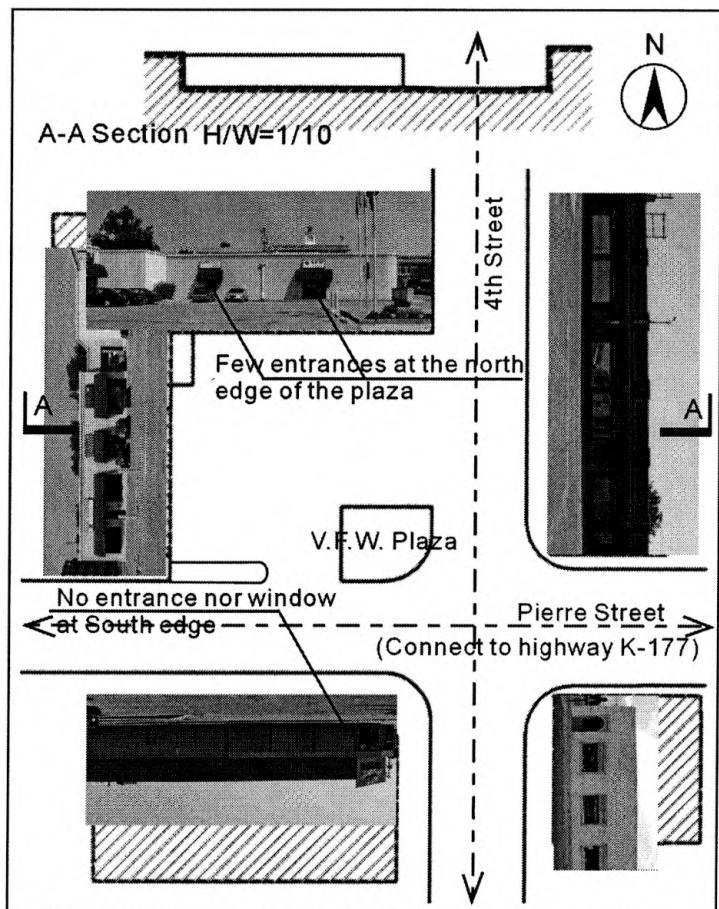


Figure 4.24 V.F.W. Plaza

activities, the V.F.W Plaza is also recognized as the public square--the center of South 4th Street Corridor --both for shopping and civic activities.

Figure 4.24 shows the plan, section and elevation of V.F.W. Plaza. As illustrated, with an H/W ratio of 1/10, the plaza has a very weak sense of enclosure. On its South and North edges, the building fronts contain too few entrances and windows, contributing no activity to the public space. Moreover, with no trees or street furniture, this empty windswept place is not comfortable for people to stay and relax.

In terms of the South end junction of 4th Street, as Figure 4.25 Shows, it is also weakly defined by the scattered surrounding buildings. Without a clear physical form, it is quite confusing and can not show users a sense of arrival. Although it is adjacent to

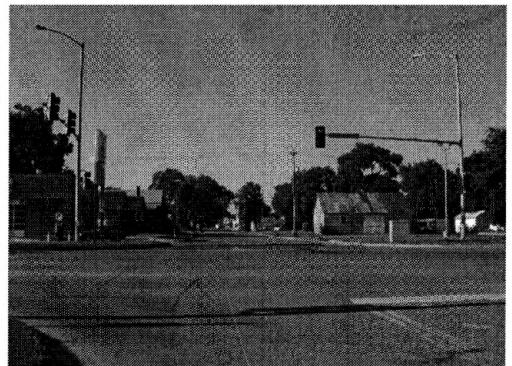


Figure 4.25 View of 4th Street from Fort Riley Boulevard

the Bethel AME Church, one of most important historical landmarks in downtown Manhattan, it does not make the best positive use of that. It loses its power as a dominant element at the South end of 4th Street and in turn prevents 4th Street from being as strong a feature as it might otherwise have been.

Evidently, both the V.F.W Plaza and the South End Junction have a weak character. As the major nodes on the South 4th Street Corridor, they need to be

perceived as strong elements distinct from their surroundings to help users locate themselves within the street as a whole.

3. *Landmarks*

As discussed in Chapter 2, landmarks help users recognize where they are along the path concerned and have a sense of getting somewhere.

As Figure 4.19 shows, there are two landmarks on the South 4th Street Corridor: the Federal Building (Figure 3.13) and the Bethel AME Church (Figure 3.8). Both of them are visible from all directions and associated with history. While the former is in good shape, the latter is not well maintained and need to be carefully preserved.

Design Concepts in Terms of Legibility

Based on the above discussion, it is evident that the South 4th Street Corridor has a very low degree of legibility. It lacks a sense of enclosure and memorable nodes to make it easily distinguishable from others. Nevertheless, as Figure 4.26 shows, according to the recent *Downtown Redevelopment Master Plan*, its immediate adjacent neighbor--3rd Street--is planned as another major path in the South Downtown District. To be legible, South 4th Street Corridor needs to have a strong character to make itself distinct from adjoining areas, especially 3rd Street.

While, according to *Downtown Tomorrow* (2000), the commercial/office and civic/institutional uses may be dominant on 3rd Street in the future, as

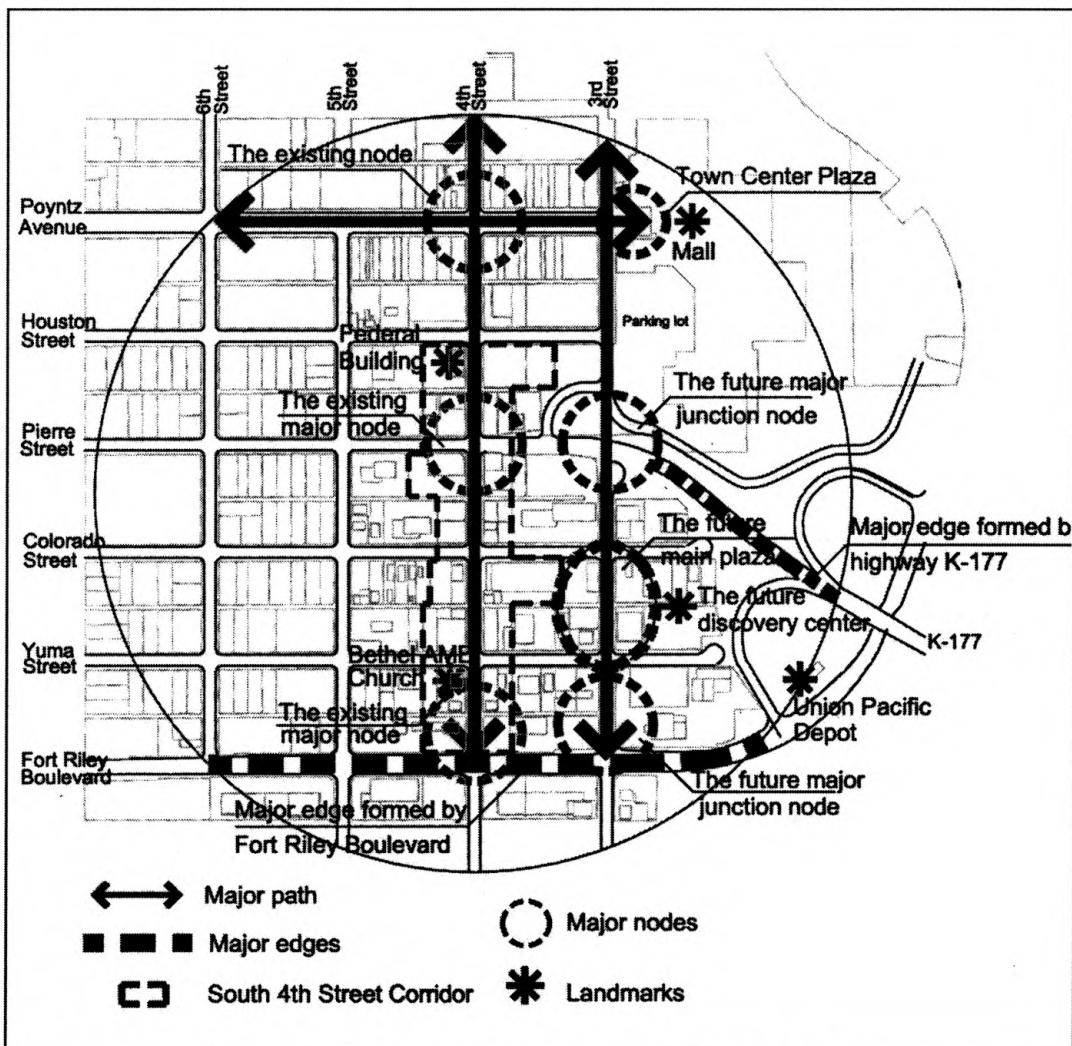


Figure 4.26 The key physical features of South 4th Street Neighborhood (after considering the recent Downtown Redevelopment Plan)

discussed in the section on variety, the mixed-use pattern of residential/commercial is suggested in the future redevelopment of the South 4th Street Corridor. This implies that 4th Street has the potential to be unique from 3rd Street in terms of different activity patterns.

Moreover as Bentley et al. remind us, besides activity patterns, the physical form of a place is also important for an outsider to grasp a place quickly.

To achieve a greater legibility, the South 4th Street Corridor needs to have appropriate proportions both in plan and section to provide a sense of enclosure; a comfortable pedestrian environment to offer a variety of attractions; memorable nodes and landmarks to strengthen its presence. And these may be achieved by the following strategies:

- (1) To increase its space enclosure, a Height/Width ratio about 1/2 is suggested on the South 4th Street Corridor. As the street width (including the sidewalk pavement) is 61 feet, it is suggested that new infill buildings be about 30 feet high to achieve this goal. (Figure 4.27)

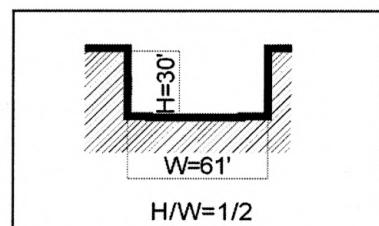


Figure 4.27 The suggested proportion of South 4th Street Corridor

- (2) Consider infill development at the gap

beside 345-323 Colorado Street. Figure 4.28 provides an example showing how this may be done.

- (3) Provide street furniture including benches, planting tubs, trash baskets, street lamps on South 4th Street Corridor to contribute to a pleasant pedestrian environment. (See example in Figure

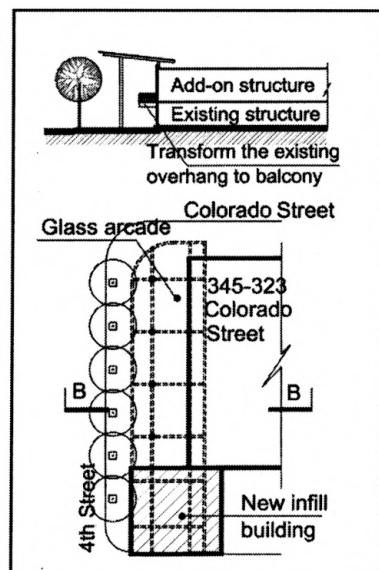


Figure 4.28 345-323 Colorado Street

(4) Plant trees on both sides of South 4th Street. The spacing of the trees should be as tight as possible to create a wonderful pedestrian canopy. (See example in Figure 4.30)

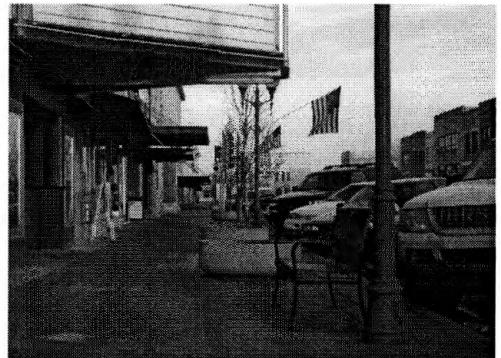


Figure 4.29 The street furniture on Poyntz Avenue. Manhattan, Kansas.

(5) Pay considerable attention to the ground texture of the sidewalk. It needs to be properly designed and constructed. Consider using brick as paving material. (See example in Figure 4.30)

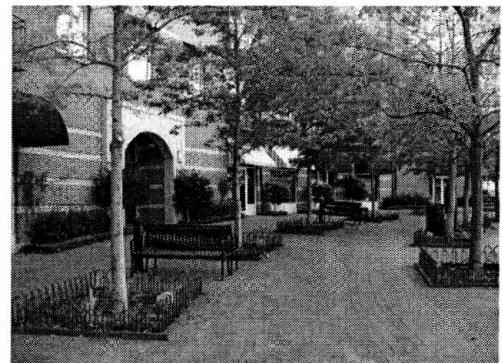


Figure 4.30 The Street landscape in Addison Circle, TX. It creates a positive pedestrian environment.

(6) Use splayed corners at the junctions to focus the buildings on the center of the space and simultaneously give the junction a great sense of enclosure. (See example in Figure 4.31)

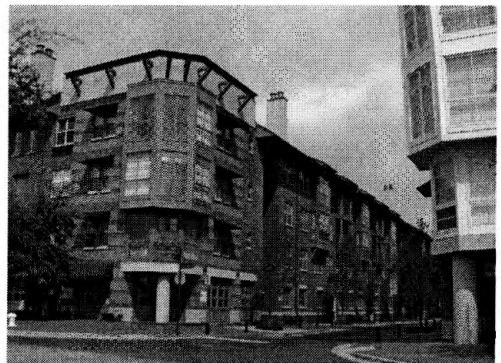


Figure 4.31 The corner buildings in Addison Circle, TX.

(7) Consider increasing the sense of enclosure of V.F.W. Plaza by large-scale tree planting. High-crowned evergreens are preferred. They

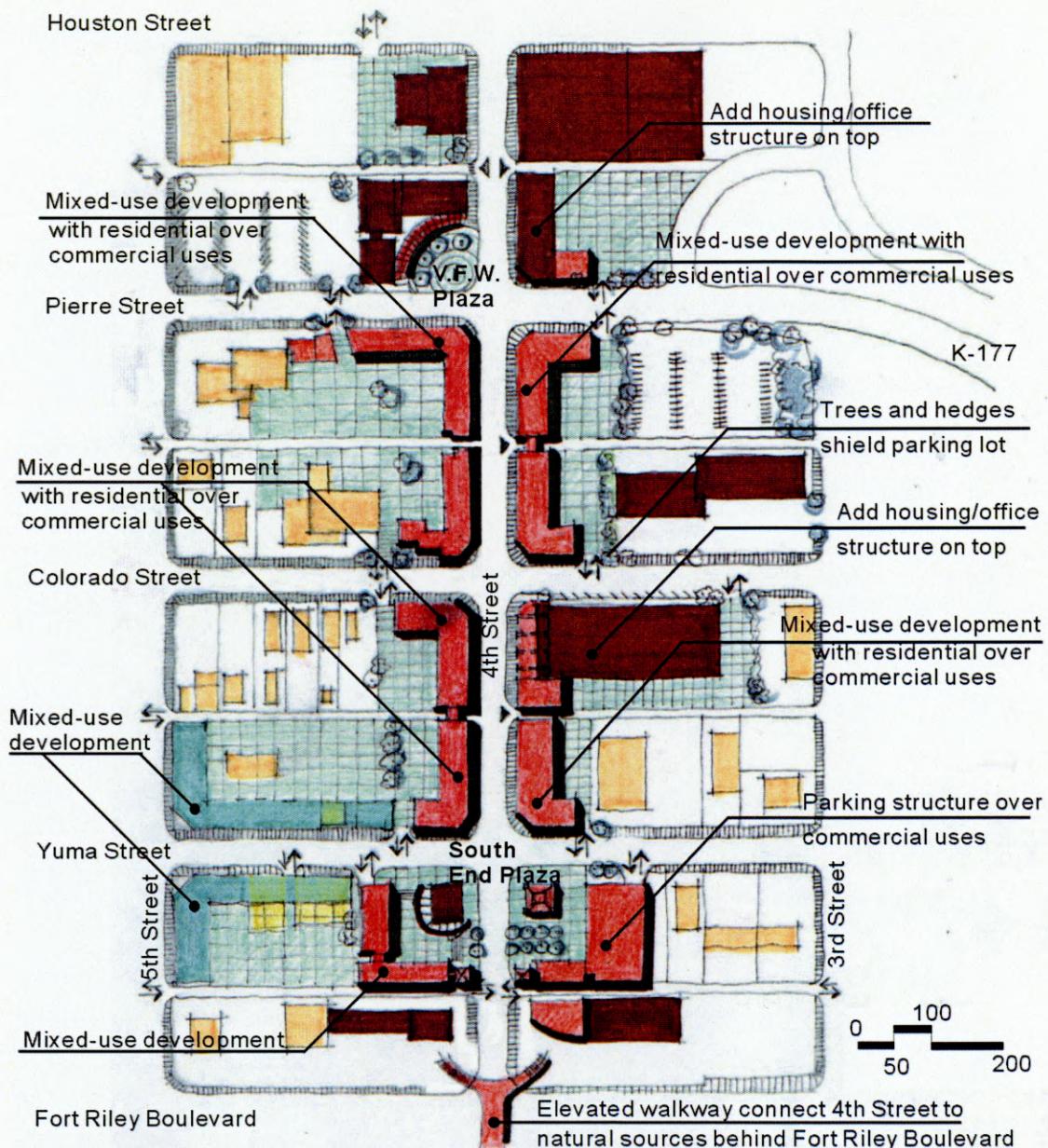
can define the space and simultaneously let the sunshine in. Design sheet 4.5 provides an example of how this may be done.

- (8) Consider creating two symmetrical plazas at the south end of 4th Street to give the major junction node a strong character. Design sheet 4.3-4.5 provides an example of how this may be done.
- (9) Consider constructing an elevated walkway at the South end of 4th Street. It provides pedestrian access to the natural sources behind Fort Riley Boulevard.

Design Statement after Considering Permeability, Variety and Legibility.

By now, the overall structure of the South 4th Street Corridor has been determined. Design sheet 4.3, 4.4 and 4.5 summarize the design decisions made so far.

Design sheet 4.3 -- Summary layout adjusted to achieve legibility



New infill buildings

Existing buildings

Surrounding buildings

Proposed secondary phase development

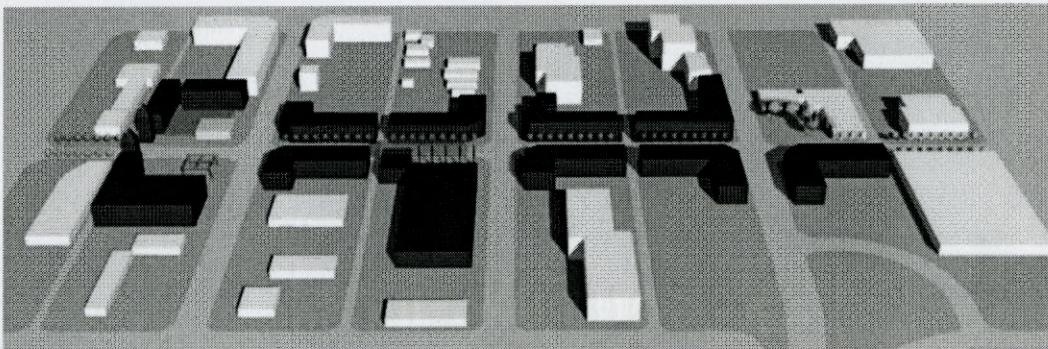
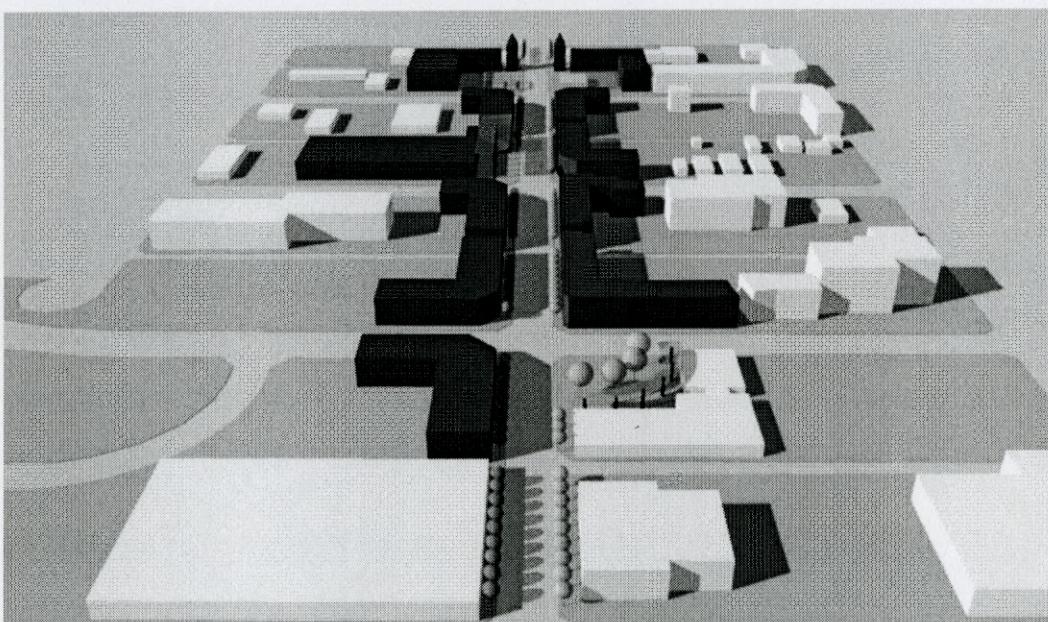
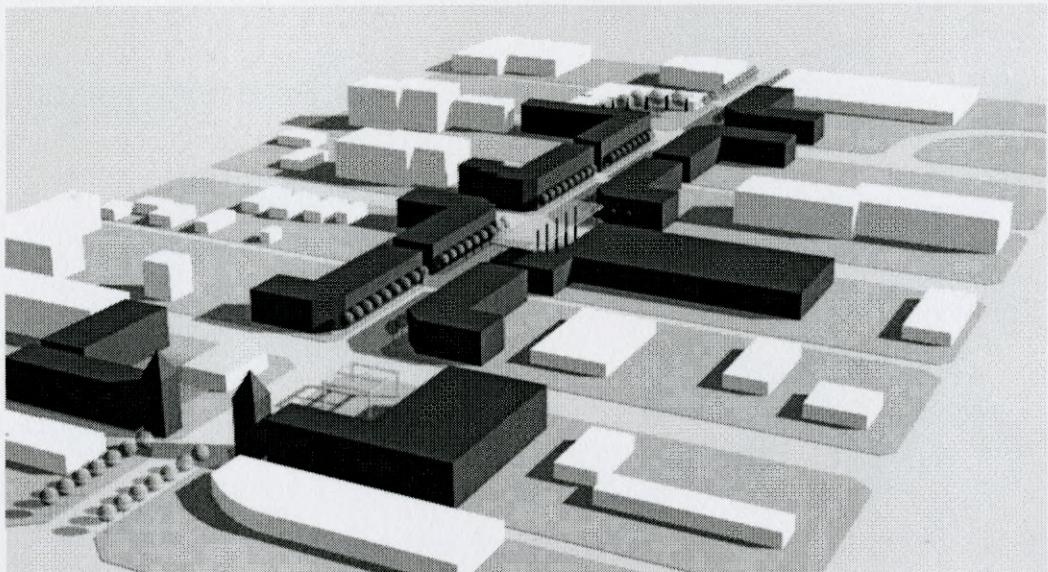
 Automobile access

 Pedestrian and fire engine access

Courtyard as community plaza, play space and car spaces

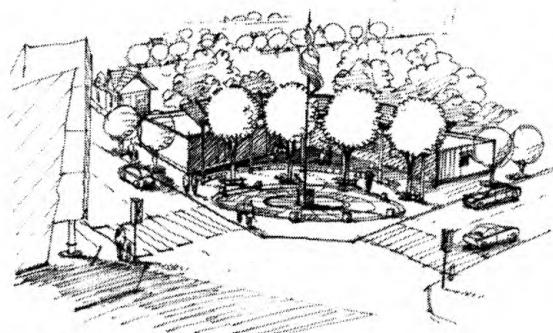


Design sheet 4.4 -- Digital models showing the redevelopment of South 4th Street Corridor after considering permeability, variety and legibility.

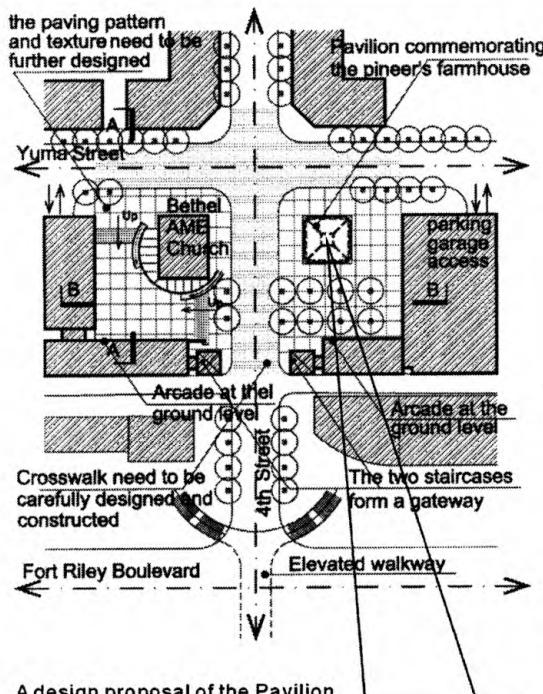
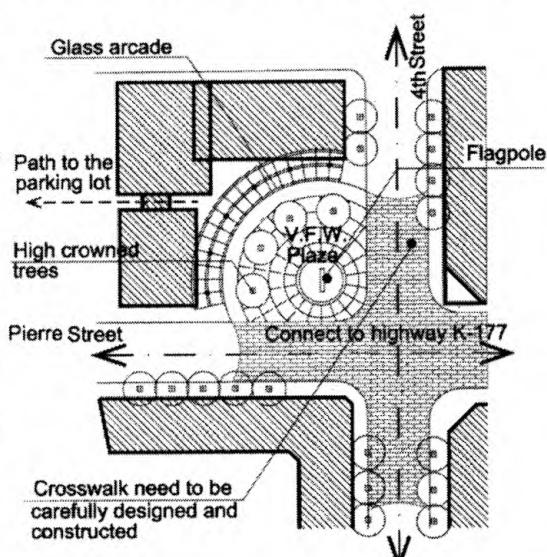


Design sheet 4.5 -- a preliminary design of the two major nodes on South 4th Street Corridor

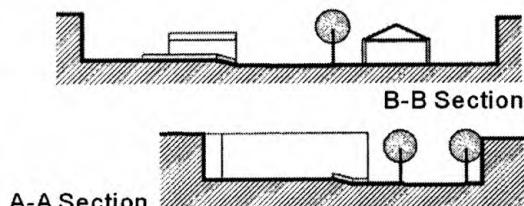
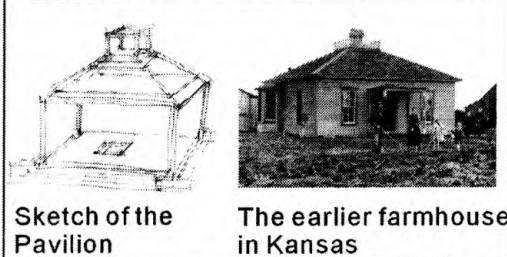
The arcade and high crowned trees increase the sense of enclosure of V.F.W. Plaza.



V.F.W. Plaza



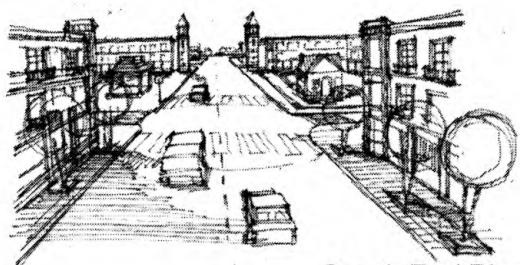
A design proposal of the Pavilion



Bethel AME Church

To make the best use of the Bethel AME Church, the west part of the plaza is raised up to achieve the same level with the ground floor of the church.

The Pavilion at the east part of the plaza commemorates the early farmhouse of the pioneers, who first came to Kansas. It is meaningful for the local residents.



South End Plaza

Chapter 5

ANALYZING AND DESIGNING THE SOUTH 4TH STREET CORRIDOR IN TERMS OF SMALL-SCALE ISSUES: ROBUSTNESS, VISUAL APPROPRIATENESS, RICHNESS AND PERSONALIZATION

While Chapter 4 focuses on the overall aspects of the layout and image of the South 4th Street Corridor, this chapter pays attention to the detail issues of the study area. It examines how to improve the site further in terms of the quality of robustness, visual appropriateness, richness, and personalization on the basis of the structure we have developed so far in Chapter 4. For convenience and clarity, each quality is presented in the same format. First, the existing conditions are examined in terms of each given quality. Then the design concepts are presented to provide solutions to the problems stated in the first step and further to offer ideas for the new infill developments in the future. At the end of this chapter, a detailed design of an individual building on a specific site on the South 4th Street Corridor is presented to show an example of how the design concepts discussed above could be transformed into an actual design and how the existing physical environment could be improved through interventions of new infill buildings.

Robustness and Personalization on the South 4th Street Corridor

At this stage, we begin to focus in detail on individual buildings and outdoor spaces. As discussed in Chapter 2, robustness is the quality of a place that has a flexible use, not limited to a single fixed use. It aims to make both the indoor and

the outdoor spatial organization suitable for the widest possible range of activities and uses. Yet in such a robust environment where uses may change over time, the legibility issue becomes critical: how to make each use explicit and legible? To solve this problem, Bentley et al. point out that to help people read the patterns of uses it contains, a place needs to have the quality of personalization. They argue that by stamping the environment with their own tastes and values, users could dress the place differently and therefore make it more legible.

Arguments for robust public outdoor spaces often focus attention on the edge places where people move from public to private. According to Bentley et al., it is at these edge places--the semi-public and semi-private spaces--that most activities take place. These transitional places, such as the spaces under verandas and the terraces of restaurants, are marginal zones where public and private meanings interpenetrate and where interior and exterior overlap. By providing a sense of belonging and not belonging, they encourage the social communication to happen naturally. However, not all the edge places can support public life. The extent to which it can hold activities depends on its physical condition. In Alexander et al. (1977)'s view, for an edge space to be alive, it requires settings such as coverings, benches, flowers and corners to support various public activities, offering opportunities for people to watch, chat, and wait.

As discussed in Chapter 2, the arguments about robustness in edge places are also concerned with what goes on in the parts of the building

immediately next to them. According to Bentley et al., uses that benefit from interaction with the public spaces and can contribute to the life of the public space should be located on the ground floor to activate the edge places. For example, when a coffee shop is provided on the ground floor with a terrace opening to the street, it always attracts people. People enjoy sitting on the terrace with a cup of coffee, mixing in public. And simultaneously this activity itself is on display. It draws other people's view and enriches the city life (Figure 5.1).

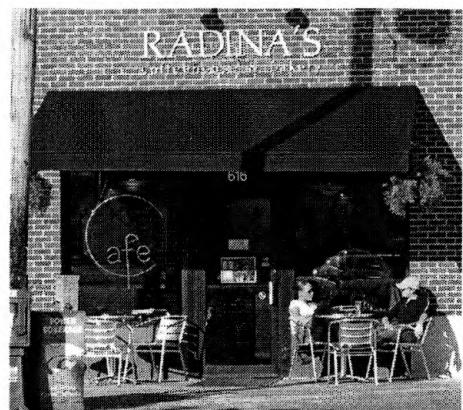


Figure 5.1 A coffee shop in Aggieville, Manhattan, Kansas

Figure 5.2 shows the edge spaces on the South 4th Street Corridor. As illustrated, most buildings have awnings at their edges. However, since there is no provision of places for people to sit or lean, the awnings are simply not enough to invite free loitering. People don't feel intimately connected with the building.

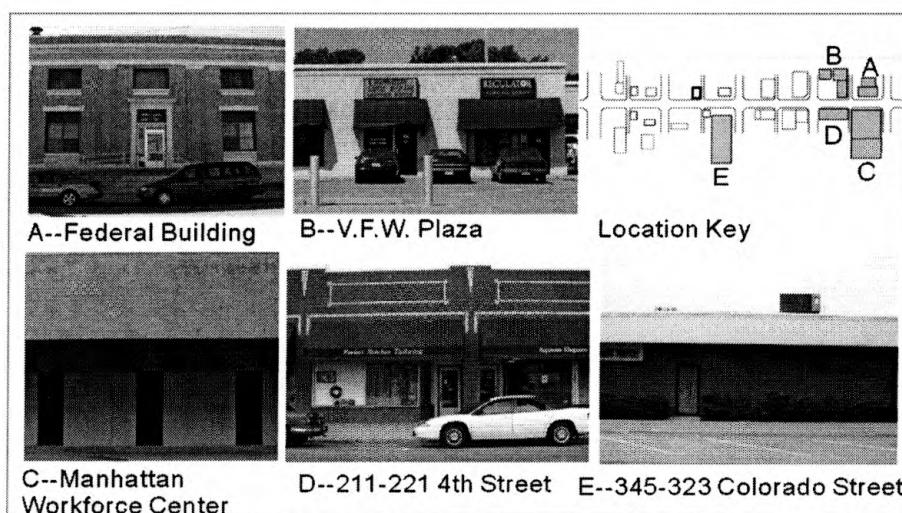


Figure 5.2 The edge spaces and ground floor uses on South 4th Street Corridor

Unless intending to enter or making a special motion toward it, they usually just pass by the building without stopping.

Figure 5. 2 also shows the ground floor uses on the South 4th Street Corridor. As illustrated, containing retail uses, the 211-221 South 4th Street building has a large area of display windows. The inside activities can easily be seen from outside, which makes the edge of the building more interesting for spectators. Indeed, most people would turn and look in or even stop to read a notice when they pass by. However, not all of the retail uses on the site could activate the edges of their buildings. For example, although housing retail activity, the 345-323 Colorado Street building has few openings onto 4th Street. Pedestrians have hardly any visual contact with activities inside.

Besides retail, office use is another major activity on the ground floor of the South 4th Street Corridor. As shown in Figure 5.2, both the Federal Building and Manhattan Workforce Center contain office uses on the ground floor. While the former provides ramps and open stairs to activate its edge, the latter uses small windows to protect its privacy. Since there is no architectural or landscape element to compensate for the lack of visual contact, the edge of Manhattan Workforce Center is negative and discourages street life.

From the above discussion, it is evident that the quality of robustness on the South 4th Street Corridor is weak. It needs to be improved both indoors and outdoors.

Design Concepts in Terms of Robustness and Personalization

1. Outdoor robustness and Personalization

As one of the major public open spaces in downtown Manhattan, the South 4th Street Corridor needs to be robust to support different activities. It requires preferred building configurations to accommodate a wide range of uses, which we have discussed in Chapter 4; active patterns of events at the ground floor to attract people; and positive edge places to support these activities. Moreover, according to the analysis of Chapter 4, along with encouraging a mixed-use pattern of housing/office above commercial on the site, special attention needs to be paid to the inside of the street blocks. The issues of residential parking, access to dwellings, social interaction, units' outdoor space and their personalization should be carefully considered. And this may be achieved by the following strategies.

(1) Increase the visual contact of 345-323 Colorado Street by adding more windows on its west facade, or make the wall facing 4th Street actually open to the public with sliding walls or shutters.

(2) Landscape the edge of Manhattan Workforce Center, making it a positive place, where people could



Figure 5.3 A positive edge--the landscape and furniture outside office uses. Addison circle, TX.

enjoy themselves. (See example in Figure 5.3)

- (3) Consider offering places to sit, such as benches, stair seats, and even column bases at the edge places of the 4th Street Corridor to support a range of public activities. (See example in Figure 5.4)

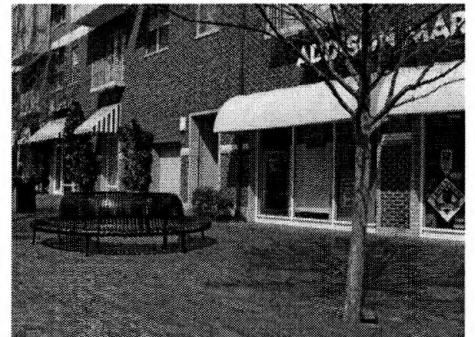


Figure 5.4 The street furniture in Addison circle, TX.. This simple seat contributes to a positive experience of the street.

- (4) Activate the edge spaces of the street in such a way that they can enable a range of private activities to co-exist with a range of outdoor public activities. (See example in Figure 5.5)



Figure 5.5 Positive building edges in Addison circle; TX. The arcade and balconies help the inside and outside interpenetrate, making social communication happen naturally.

Figure 5.6 Sidewalk coffee shops and restaurants on Lincoln road. Miami, FL.

- (5) Locate active uses such as restaurants, coffee shops, workshops, and retail on the ground floor to animate the public place, attracting people to come to the site. (See example in Figure 5.6)

- (6) When designing an entrance into a block, make a gateway to mark the entrance. This physical change could create a psychological transition

in people's minds, noting which is inside and which is outside. (See example in Figure 5. 7)



Figure 5.7 The entrance to the inside courtyard. The pointe at Lincoln park, Chicago.

(7) In terms of the mixed-use block of housing above commercial uses, access to the above housing units

need to be located at the rear of 4th Street rather than at the front.

(8) Integrate parking lots with landscape elements inside the block. When the places are empty of vehicles, they may be interesting for viewing.

(9) Design the outdoor space within the block on a residential scale. It can be subdivided into different types of gathering space--from the most intimate gathering spaces to the most public. (Figure 5.8)

(10) Provide furniture such as picnic tables and benches in local gathering spaces to foster social communication.

(11) Provide children's play areas inside the block. These areas could also encourage social interaction.

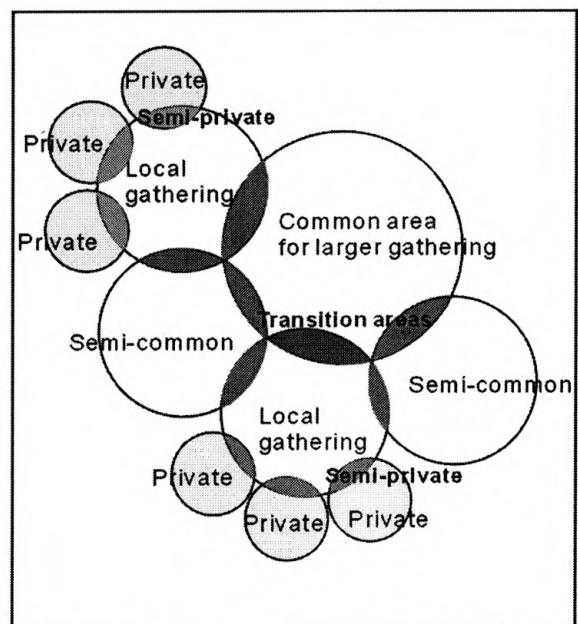


Figure 5.8 Transitions from private-public area

(12) Provide porches, patios, or private gardens at the edges between the individual dwellings and the common area. Allow people to set out tables and chairs there. These semi-private spaces can define individual an unit's territory, provide opportunities for personalization and foster casual socialization. (See example in Figure 5.9)

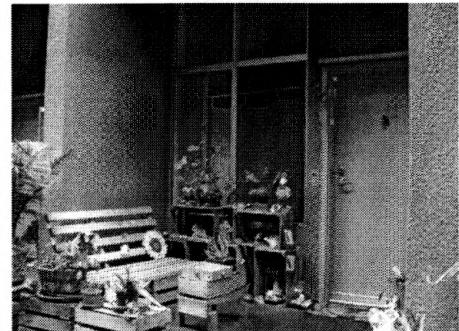


Figure 5.9 A threshold space for personalization. Little Italy, San Diego

2. Indoor robustness and Personalization

The quality of robustness is equally important outdoors and indoors, according to Bentley *et al.* To increase the indoor robustness on the South 4th Street Corridor, we need to pay considerable attention to the issue of housing robustness. According to Housing Manhattan (2000), housing demand in the city of Manhattan is expected to increase for persons in the age categories 19-34 and 65 and older, whose positions in the housing market are characterized as "transition" in relation to education, trading, employment and family structure. To attract these people to reside on the site, the residential units need to be more flexible and less specifiable. They need to be open-ended and functionally non-determined to offer various possibilities to rearrange the space. This may be achieved by the following design strategies and design implications:

- (1) Housing units should maximize the opportunities for alternative layouts.

- a. Concentrate service space in peripheral functional strips to free the rest of the spaces. (Figure 5.10)
- b. Position fixed elements in such a way as to allow renters to partition the interior of their home freely. (Figure 5.11)
- c. Use movable partitions to subdivide the unit. (Figure 5.12)

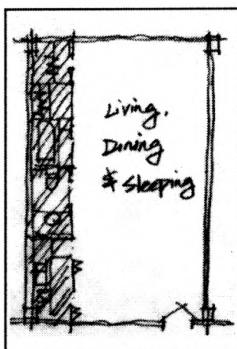


Figure 5.10
Empty out rather than partitioned-off

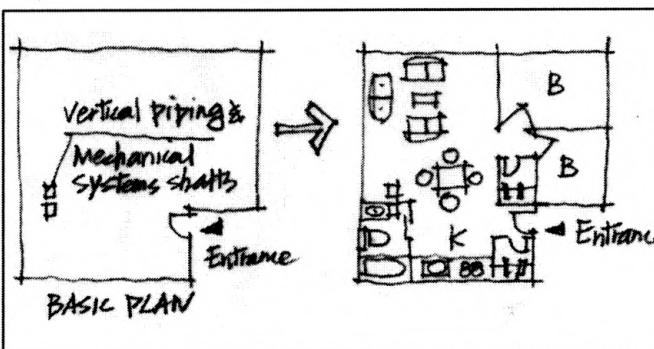


Figure 5.11
Diversity rather than repetition

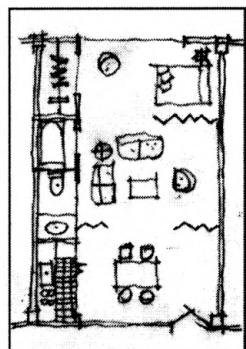


Figure 5.12
Flexibility rather than speculation

(2) Incorporate built-in storage in housing units and locate them under stairs, window seats and partitions, etc.

(3) Kitchens need to have windows facing directly to the outdoor play areas, so that parents can watch their children playing from inside.

(4) Consider designing windows with window seats facing the street, or make the sills of the windows as low as possible so that people can easily see the street.

Visual Appropriateness and Richness on the South 4th Street Corridor

While the earlier qualities determine the general appearance of the South 4th Street Corridor, the qualities of visual appropriateness and richness focus on

the street's detailed appearance, which could strongly affect people's interpretation of a place.

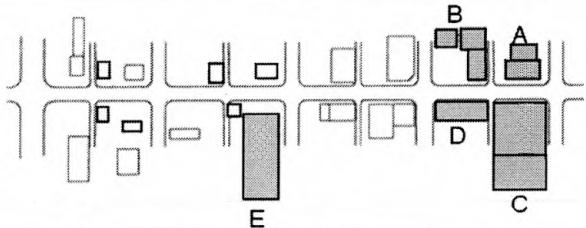
As discussed in Chapter 2, the quality of visual appropriateness affects whether the detailed appearance of a place could make people aware of the choices offered by the previous qualities we have already discussed: legibility, variety and robustness. And based on that, the quality of visual richness, which mainly depends on visual contrasts, further introduces a variety of delicate visual experiences for viewers to strengthen their reading of a place. By visual contrast, Bentley et al. point out that it could be achieved by the differences of elements such as windows, wall details, and ground-level details; the differences of their relationships, such as the vertical or horizontal rhythms and skyline relationship; the variation of building materials, their color and texture; and finally the light and shadow on the building's surfaces.

Table 5.1 shows the author's own evaluation of the detailed appearance on the South 4th Street Corridor. Based on the discussion in Chapter 4, I examine only buildings which are recommended to be kept.

As illustrated, the detailed appearance of the South 4th Street Corridor is not strong enough to support its legibility, variety and robustness. Lacking a proper proportion, visual unity and compatible visual contrast, it is not interesting or pleasant for viewers. To improve it, therefore, the qualities of visual

appropriateness and richness need be enhanced on the site to offer users a more delightful aesthetic experience.

Table 5.1 Visual appropriateness and richness on South 4th Street Corridor

objectives Buildings	Seem appropriate as office use	Seem appropriate as commercial use	Support the legibility of 4th Street	Conclusion
A--Federal Building	Yes. The classical window patterns support interpretation as office use.	N/A	The visual richness in its middle section and roof zone make it pleasing and memorable.	Having an pleasant visual appearance, it acts as a landmark on South 4th Street Corridor.
B--V.F.W.Plaaza	N/A	Yes. Show windows support interpretation as shops.	No, the plaza does not provide a sense of enclosure, nor to support public activities on the street.	Need landscape elements to animate the plaza and adjust its proportion. And this has been discussed in Chapter 4.
C-- Manhattan Workforce Center	Yes. Small vertical windows support interpretation as office use.	N/A	No, the roof zone is too simple to provide visual pleasure.	The visual quality needs be improved, especially the roof zone.
D-- 211-221 4th Street	N/A	Yes. Show windows support interpretation as shops.	No, the building is not high enough to provide a sense of enclosure for the opposite V.F.W Plaza.	Need adding new structures on its top to support both the variety and legibility of 4th street. And this has been discussed in Chapter 4.
E-- 345-323 Colorado Street	N/A	No. The openings to the street are not large enough to support retail use.	No, the facade is not memorable.	The visual quality need to be improved.
 <p>Location Key</p>				

Design Concepts in Terms of Visual Appropriateness and Richness

As discussed in Chapter 4, the South 4th Street Corridor is a multi-functional street with two main uses: commercial and residential. To make its detailed appearance appropriate to support the uses concerned, we need first to refer to the framework of basic street types outlined by Vitruvius (1960).

In Vitruvius's view, there are three kinds of street scenes for use as theater backdrops: tragic, comic and satyric. Each street scene has a very unique decorative effect. As illustrated in Figure 5.13, the tragic scene is decorated with columns, pediments, and statues, used for state and public rituals in the drama. The comic scene is decorated with balconies, rows of windows and dwellings, appropriate to support the flourishing commercial activities and intimate residential life. Finally, the satyric scene is delineated with trees, mountains and other landscape elements suggesting a setting for life in the country.

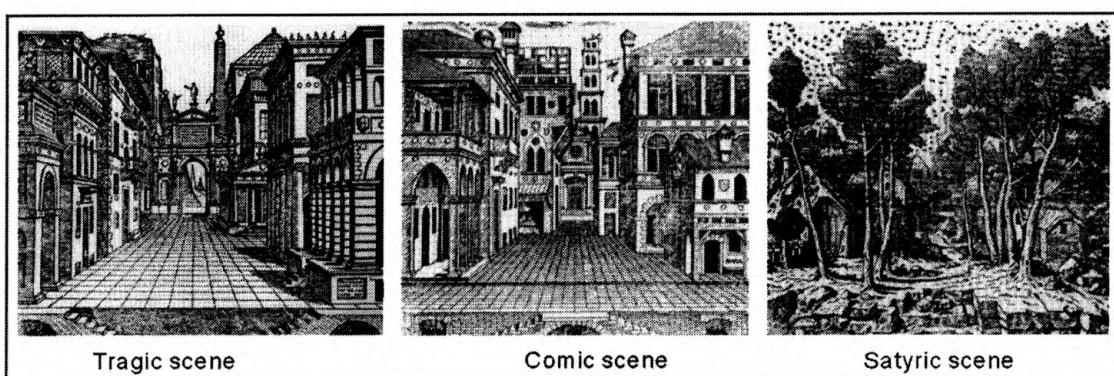


Figure 5.13 The three basic street scenes described by Vitruvius

Although these three scenes were originally proposed for theatrical use, they manifest the actual street life with regard to different functions. In terms of the South 4th Street Corridor, based on its mixed-use pattern of commercial with

residential functions, it may take on the spirit of the Vitruvian comic scene, which is intimate, delightful and exciting. And building facades need be designed or redesigned to support this objective.

Besides supporting variety and robustness, it is also important that the detailed appearance of a place should support its legibility. This objective has two implications for the South 4th Street Corridor. First, it needs to look like an appropriate part in downtown Manhattan, contributing to the legibility of downtown as a whole. Second, as it is located at the transition between the future South 3rd Street District to the east, with predominant civic/office uses (Figure 5.14), and the traditional single family neighborhood to the west (Figure 5.15), it requires a strong identity to distinguish itself from these two areas and so enhance its attraction for citizens and visitors.

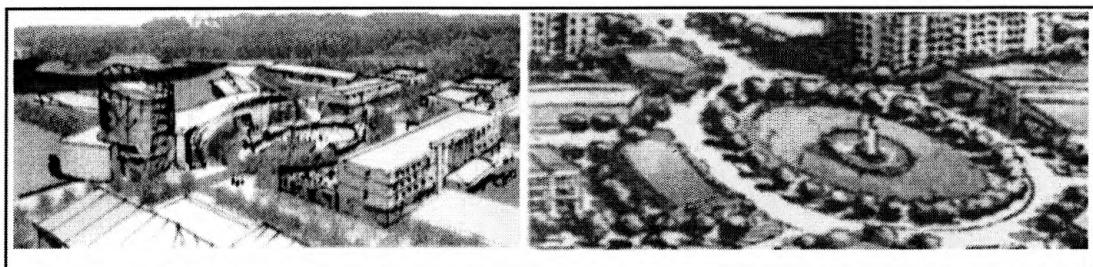


Figure 5.14 The future South 3rd Street District. Concept drawings courtesy of Brent Bowman & Associates



Figure 5.15 A typical residential street in downtown, Manhattan---Colorado Street, south side.

Overall, in order to achieve the quality of visual appropriateness and richness, the South 4th Street Corridor needs to provide users with a distinctive and pleasant visual experience to support its variety, legibility and robustness.

This may be achieved by the following design strategies.

(1) Before starting to design or redesign the building façades on the South 4th Street Corridor, first find visual cues in related contexts. According to Bentley et al., there are two kinds of cues: contextual cues and use cues. While the former support legibility, the latter support variety and robustness. Creatively adapt these cues, making the South 4th Street Corridor not only an appropriate part of the downtown commercial area but also a place with its own distinct identity.

(2) Figure 5.16 shows the minimum viewing distance from which the building on South 4th Street Corridor can be seen. As illustrated, from the opposite

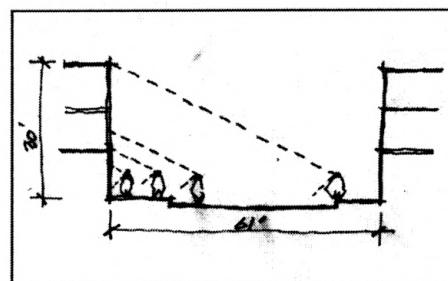


Figure 5.16 Viewing distance on 4th Street

sidewalk, people can easily take in the whole composition of the façade: the foundation, middle section and roof zone. This implies that we need to pay the same considerable attention to each section of the building.

- (3) Preserve the Federal Building with its historical character.
- (4) As discussed in Chapter 3, before its current monotonous appearance (Figure 3.9), the V.F.W. building was initially covered by brick with ribbon windows on the facade. To restore its historic value and improve its current visual quality, uncover it, showing off the original brick façade, and add openings as necessary.
- (5) Improve the visual appearance of 345-323 Colorado Street by adding more windows and ornament on its west façade.
- (6) To make a building's middle zone visually rich and appropriate, it is important to pay considerable attention to the detailed appearance of small architectural elements such as windows, balconies, and awnings.
- (7) Shop fronts are continuously changing features in terms of different tenants. Leave them for individual personalization. Since the ground floor is the part of a façade most often noticed by pedestrians, it is important to encourage users to maximize the decoration of their shop windows, entrance doors and signs. And to avoid visual chaos, consider using arcades, plantings, building color or material to achieve a unifying effect.
- (8) Pay attention to the corners of buildings, particularly if the corner is at the junction of streets. Design them in detail to enhance the building's legibility. (See example in Figure 5.17)

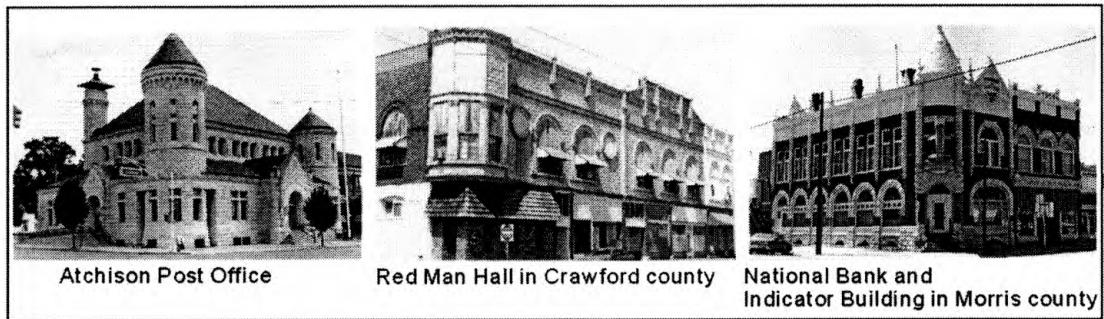


Figure 5.17 Some pleasant street corners in the state of Kansas.

(9) Avoid monotony in long street frontage. This may be achieved by a change in roof line, vertical rhythms and architectural elements such as windows, balconies and awnings.

(See example in Figure 5.18)

(10) Street furniture such as the railings, signs, seats, street lights, and planters should be visually attractive and physically comfortable to support the legibility of the street. (See example in Figure 5.19)



Figure 5.18 A pleasure appearance with appropriate vertical rhythms. Addison circle, TX.

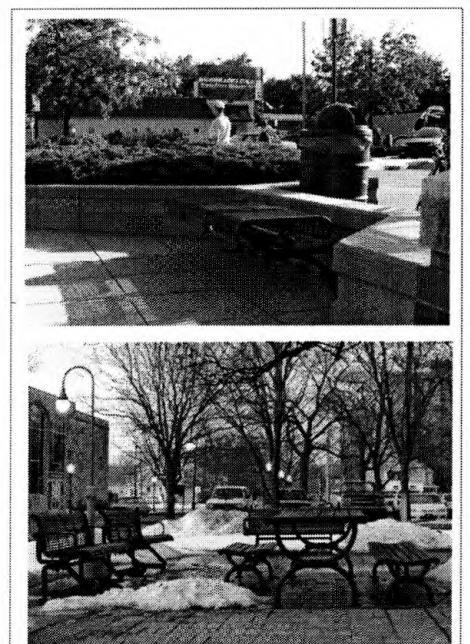


Figure 5.19 The street seats in Manhattan, Kansas

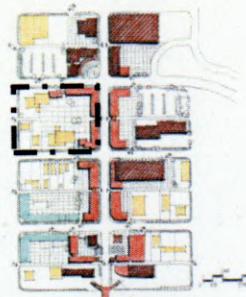
The Final Design Statement

At this point, based on the summary design statement in Chapter 4, in which the South 4th Street Corridor has been redeveloped in terms of the qualities of permeability, variety and legibility, we have further improved the site

in terms of the remaining qualities of responsive environments: robustness, visual appropriateness, richness and personalization. The following design sheets show an example of how the above design strategies made to support robustness, visual appropriateness, richness and personalization could applied in the designing of a mixed-use block defined by 4th Street, 5th Street, Pierre Street and Colorado Street on the study site. This design does not argue for the final form of the street, but rather stands as a proposal for the future responsive environment on the South 4th Street Corridor. For reasons of time and practicality, I design only the new infill building to be located at the east corner of the block fronting Pierre Street in detail.

Design sheet 5.1-- a robust block

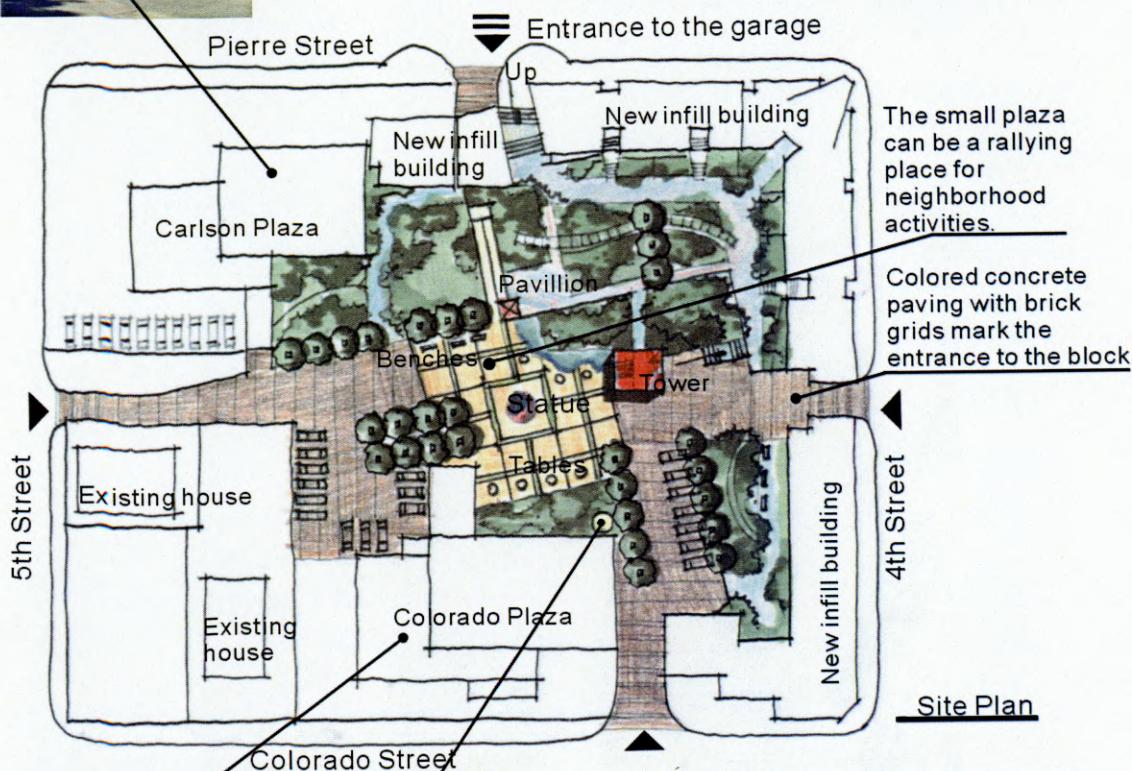
This sheet shows the decisions made to support outdoor robustness, in the design of the mixed-use block bounded by 4th Street, 5th Street , Pierre Street and Colorado Street.



Carlson Plaza
-view from southeast



Location Key

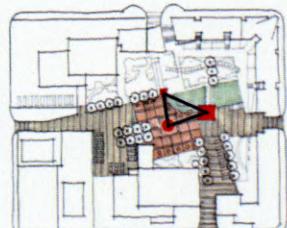


Colorado Plaza
-view from north

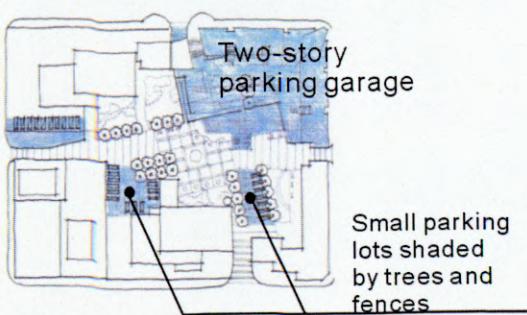


The pavilion at the back of Colorado Plaza

The tower, statue and the little pavilion give a strong and steady pulse to the plaza, drawing people in toward the center.

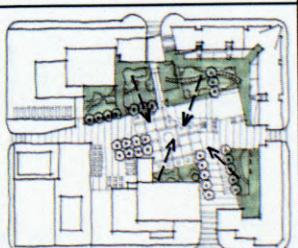


Semi-common areas & public plaza



Parking spaces (95 cars)

Each gathering space provides a back for people to rely and views to larger areas.



Local gathering spaces

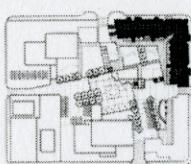
The hierarchy of open space

Design sheet 5. 2--a robust building

This sheet shows the design of a mixed-use building (residential above commercial) located at the east corner of the block fronting Pierre Street. The design locates arcade and active uses on the ground floor to activate the building edges and to help flourish street life.

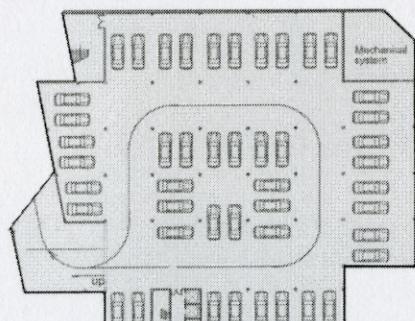


Conceptual sketches- view from northeast



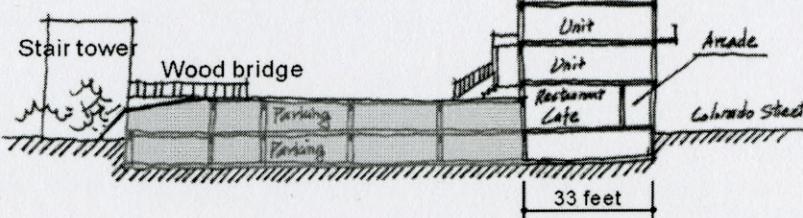
Location key

21 parking spaces for:
--Senior residents
who live in Colorado
Plaza and Carlson Plaza
--Guests



46 parking spaces for:
-- Employees and patrons
-- Residents who live in this building and
the other new infill building of the block.

Underground floor plan

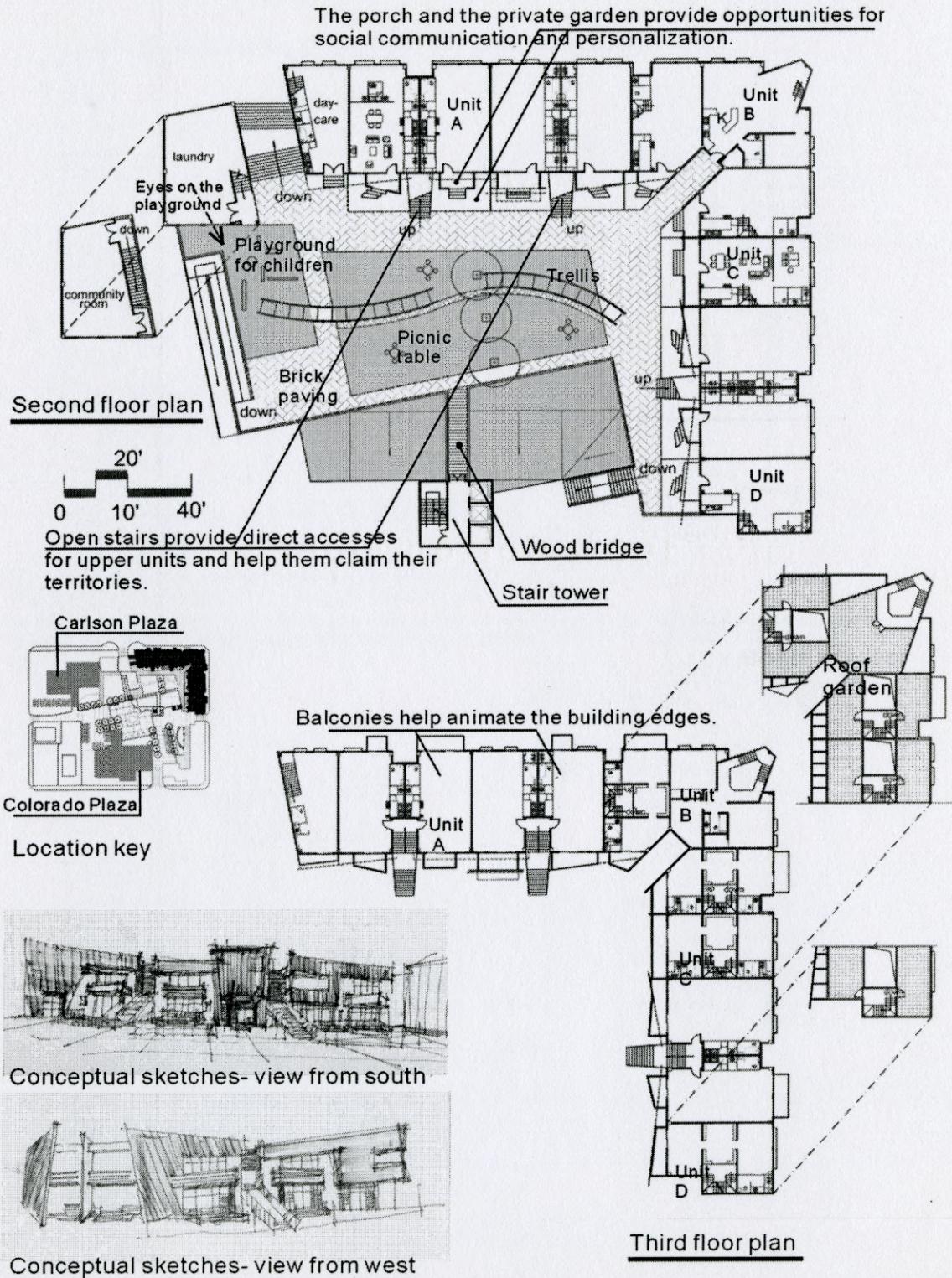


To support large-scale robustness, the building is designed into 33 feet deep. It provides adequate natural light and ventilation and makes possible the space can be subdivided easily.

A-A Section

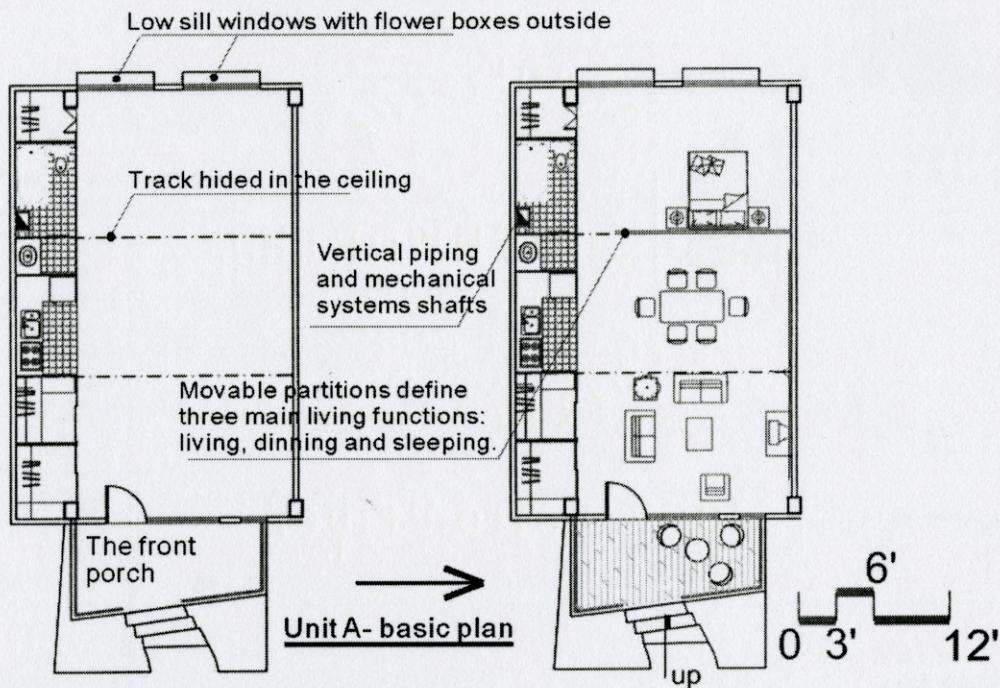
Design sheet 5.3--a robust building (continued)

As there are two senior housing projects already existing on the site: Colorado Plaza and Carlson Plaza, to achieve the pattern of a diversity of people living together, the residential units of Pierre Street building are designed for people in age category from 19 to 34 years, including singles and young families.



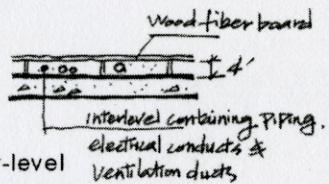
Design sheet 5.4-- housing robustness

This sheet shows the decision made to support indoor robustness, in the design of the housing units of Pierre Street building. As these units are designed for young people, who keep moving in and moving out, they need be flexible and structurally adaptable to meet the many possible demands of the users.

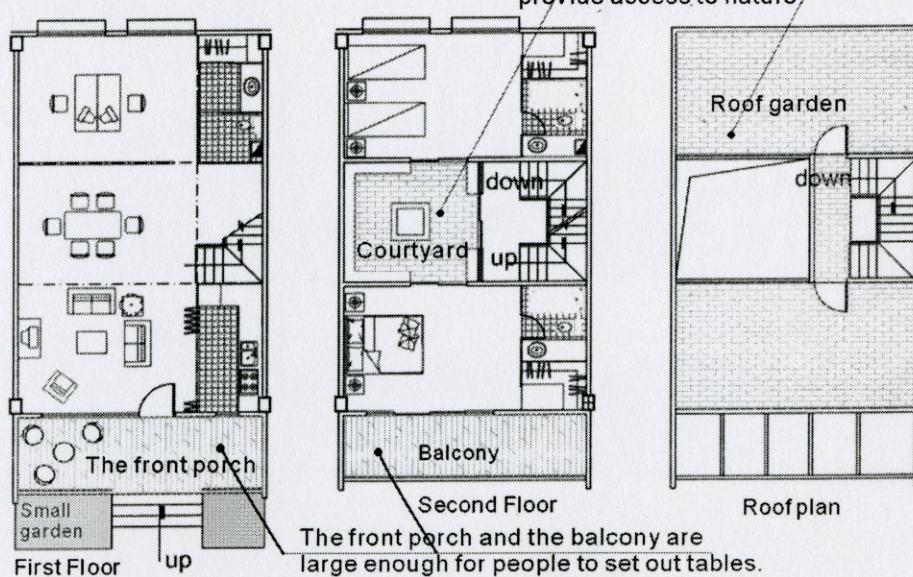


Service spaces are concentrated on peripheral strips. The vertical shafts and horizontal inter-level make possible that the location of these service spaces can be changed along the strip according to the need of the tenants.

Diagram of the inter-level



Unit C



Design sheet 5.5-- visual appropriateness and richness

During the designing of the detailed appearance of the Pierre Street building, the designer first set out the detailed objectives to support the quality of variety, legibility and robustness and then find the necessary vocabulary of contextual cues and use cues to help achieve these objectives.

Objective to support variety:

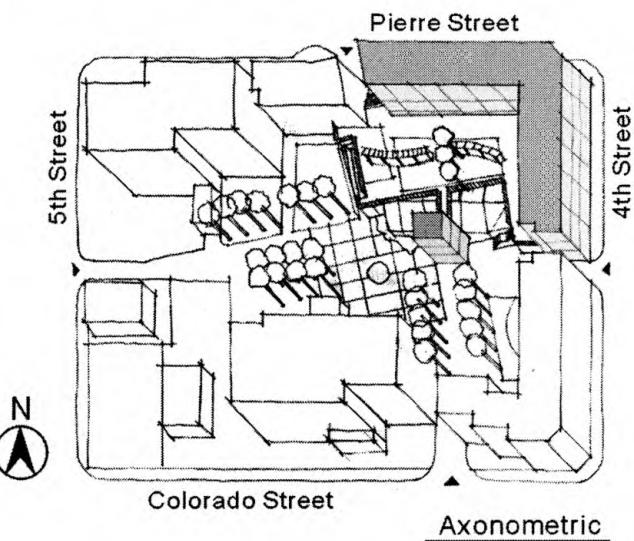
- to be interpreted, by the widest possible public, as commercial/residential uses.

Objectives to support legibility:

- to be interpreted as an appropriate part in downtown Manhattan.
- to be interpreted as different from civic buildings and traditional single family housing.

Objective to support robustness:

- to be interpreted as housing to the widest possible range of single people and young families.



Large-scale cues and the design implications

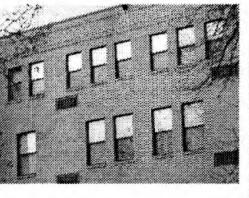
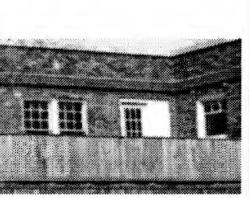
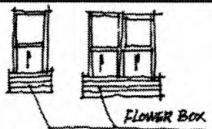
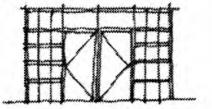
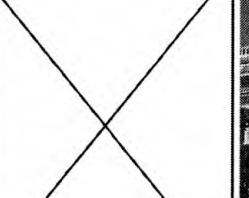
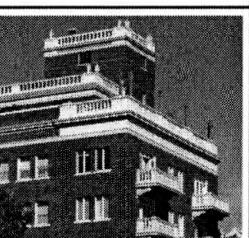
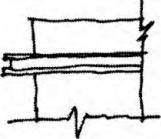
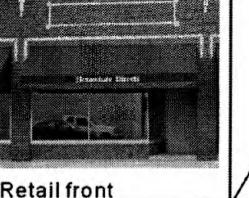
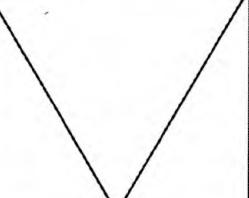
	To be interpreted, by the widest possible public, as a part of Downtown commercial area	The ground floor to be interpreted as an appropriate base by potential office, retail, coffee shop and restaurant tenants	The above floors to be interpreted as residential/office use	Design implications
Vertical rhythms And Skylines		X		 Break up street facade into several sections vertically to avoid visual monotony.
Horizontal rhythms	 	 	 	 In terms of the street facade, emphasize its middle sections. Divide the facades facing interior horizontally. This will help express individual units.

Legend:

- The upper floor is emphasized
- The ground floor is emphasized
- The middle floors are emphasized

Design sheet 5.6-- visual appropriateness and richness (continued)

Small-scale cues and the design implications

	To be interpreted, by the widest possible public, as a part of Downtown commercial area	The ground floor to be interpreted as an appropriate base by potential office, retail, coffee shop and restaurant tenants	The above floors to be interpreted as residential/office use	Design implications
Windows	<p>To be interpreted, by the widest possible public, as a part of Downtown commercial area</p>  	<p>The ground floor to be interpreted as an appropriate base by potential office, retail, coffee shop and restaurant tenants</p>	<p>The above floors to be interpreted as residential/office use</p>  	 <p>On the street facade, windows are vertical sliders.</p>  <p>On the facades facing the interior, large glazing with intermediate glazing bars are used to avoid being too classic or too modern.</p>
Wall details	<p>Horizontally-striped yellow brick</p> 		 <p>Horizontally-striped red brick</p>	 <p>On the street facade, make walls of red-colored brick with white stone trims.</p>
Door and Ground level details	 	 <p>Coffee shop front</p>  <p>Retail front</p>		<p>Use large glazing at the ground floor to support the retail and restaurant activities. Leave shop fronts for personalization</p>

The above cues are local and regional. They give Manhattan much of its special character and charm. Based on the design implications derived from these cues, in the following design sheets 5.7-5.8, the elevations of Pierre Street building are further developed to achieve the quality of visual appropriateness and richness.

Design sheet 5.7-- visual appropriateness and richness (continued)



Rendering showing the facade fronting Pierre Street and 4th Street



The present image

---Based on the visual cues illustrated in design sheet 5.5-5.6, the street facades are now designed to seem appropriate as a part of downtown Manhattan. To make it legible as a landmark at V.F.W. Plaza, the greatest expressive effort is concentrated at the corner with large glazing and corrugated metal cladding.

---The facade facing the interior, treated with green corrugated metal sheet and white stucco, strikes a contrast with the red brick wall that closes the outside.



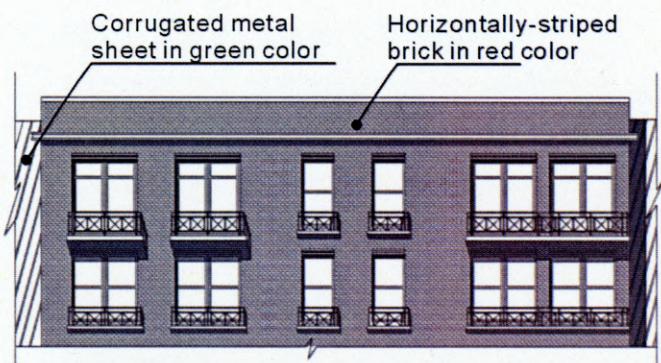
Rendering showing the west facade facing the interior

Design sheet 5.8-- visual appropriateness and richness (continued)



Rendering showing the south facade

- Inside the block, the building is broken into several small parts to reduce the mass and help express individual units.
- Corrugated metal sheets tilt, weave in and out, providing a stimulating visual experience for young residents.
- To communicate with the brick wall that closes the outside, small elements such as the benches, flower pots, steps and the stair tower are treated with brick. The brick paving further strengthen this relationship.
- The right drawing shows a part of the street facade viewed from Pierre Street. Elements on the facade are subdivided into 7 groups, providing plenty of choices for people to look.



The visual richness on Pierre Street facade

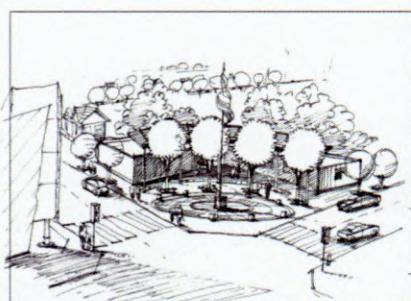
Chapter 6

SUMMARIZING THE DESIGN OUTCOME AND EXAMINING THE VALUE OF *RESPONSIVE ENVIRONMENTS*

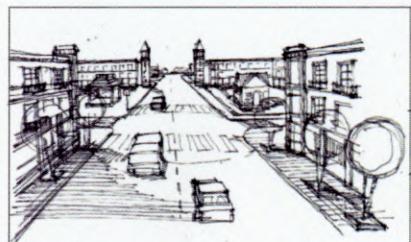
In Chapter 4 and Chapter 5, the seven qualities of *Responsive Environments*: *permeability, variety, legibility, robustness, visual appropriateness, richness and personalization* have been applied to guide the redevelopment of the South 4th Street Corridor. During the process, the specific site has first been analyzed in terms of each quality. Then the result of the analysis, which shows the strengths and weaknesses of the site in terms of each given quality, leads to the redesign process, which again follows the seven qualities step by step. The design result is summarized in Figure 6.1.

In this chapter, I use the design proposal described above to evaluate how effective these seven qualities in *Responsive Environments* are in creating a sense of place as applied to South 4th Street Corridor, a declining downtown commercial area in the city of Manhattan, Kansas. First, I review the design process and the resulting design proposal. Then I evaluate *Responsive Environments* based on the comparison of the final design proposal and the initial vision of the redevelopment of the South 4th Street Corridor according to *Downtown Tomorrow* (2000) and *Housing Manhattan* (2000).

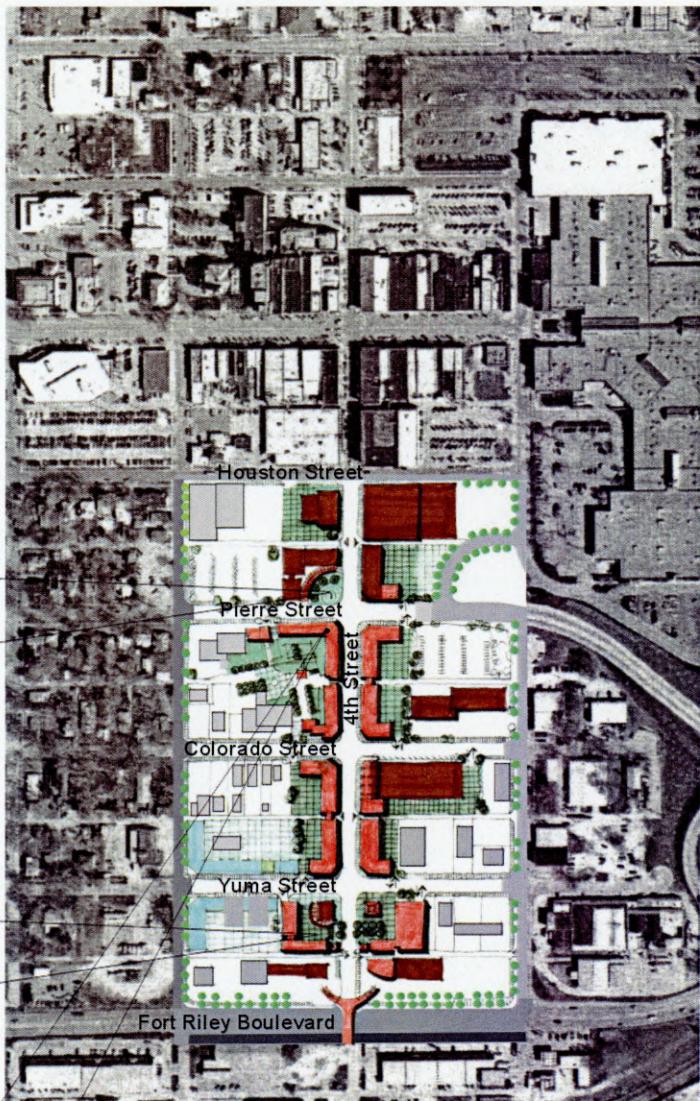
- New infill mixed-use buildings
- Existing buildings appropriate to be kept
- Surrounding buildings
- Proposed secondary phase development



Rendering showing the future V.F.W. Plaza



Rendering showing the future South End Plaza



Master Plan of South 4th Street Corridor



The present building at the corner of 4th Street and Pierre Street



Rendering showing the street facade of the future Pierre street building

Figure 6.1 The final design proposal of South 4th Street Corridor

Table 6.1 The design steps from Responsive environment and the application on South 4th Street Corridor (to be continued)

Design steps from Responsive Environments	Design steps on the South 4th Street Corridor by applying Responsive Environments
Step1. Analyze the layout of routes onto the site.	<p>Step1 ---Study the pathway system of the whole downtown area, analyzing how the site is connected to its surroundings.</p> <p>--- Refer to the <i>Downtown Redevelopment Mater Plan</i> to find out the permeability potential of the site and its surroundings.</p> <p>--- Examine the permeability between private and public interface on the site.</p>
Step2. Based on the data, design the preliminary system of streets and blocks.	<p>Step 2 ---Based on the above data, encourage maintenance and strengthening of existing alleyways.</p> <p>---The perimeter-block development is introduced on the site.</p>
Step3. Consult local authorities, real estate agents, policy makers and other sources to find both social and economic demands on the site. List possible uses.	<p>Step3--- Analyze the site in terms of its density, interactions between different uses, building conditions and parking issues.</p> <p>---Attend the Downtown Redevelopment public meetings from September 2003 to January 2004, getting the first hand information about the local demands and the requirements of local authorities.</p> <p>--- Survey other local sources, such as <i>Downtown Tomorrow</i> (April, 2000) <i>Housing Manhattan</i> (2000) and <i>City of Manhattan</i> website.</p> <p>---Establish a range of uses on the site.</p>
Step4---Allocate different uses on the site strategically. ---Make different uses interact positively to foster pedestrian flow. ---Check financial feasibility of the proposal.	<p>Step4 ---Suggest a higher density on the site.</p> <p>---Encourage mixed-use development on the site, especially the mixed-use pattern of residential(office) above commercial.</p> <p>---Determine which are appropriate to be kept.</p> <p>--- Different uses are roughly allocated on the site.</p>
Step5. Develop a rough schematic design for the site in terms of permeability and variety.	Step5. A design proposal is provided to summarize the design decisions made so far.

Table 6.1 The design steps from Responsive environment and the application on South 4th Street Corridor (continued)

Design steps from Responsive Environments	Design steps on South 4th Street Corridor by applying Responsive Environments
<p>Step6---Analyze the existing legibility of site, by using the urban elements of Lynch.</p> <p>---Check the above assessment against the views of a wider public.</p>	<p>Step6 ---Use the idea of Lynch to analyze the legibility of South 4th Street Corridor and its surroundings.</p> <p>--- By attending the Downtown Redevelopment public meeting, the designer have the opportunities to consult with local residents about their impressions of the study site.</p>
<p>Step7. Use the information got from step6, adjust the layout worked out in step5, make the site as legible as possible.</p>	<p>Step7 ---Based on the layout from step5, the designer adjust the proportion of the corridor, refine the nodes and landmarks it passes through.</p>
<p>Step8. Use a working model to evaluate the design result from a variety of viewing distance.</p>	<p>Step8 ---A set of computer 3D models are used to evaluate the design result so far.</p>
<p>Step9. By this stage, the design begins to focus on individual buildings and the outdoor rooms.</p> <p>--- Determine the appropriate building configuration.</p> <p>---Locate active uses on the ground floor.</p> <p>---Design small-scale robustness inside the building.</p> <p>---Design the building edges.</p> <p>--- Design public spaces in detail.</p>	<p>Step9--- Examine the weakness and the physical potential of the site in terms of the quality of robustness, visual appropriateness, richness and personalization.</p> <p>---Set out objectives to achieve these four qualities on the site.</p> <p>Step10---Provide design concepts to achieve the above objectives.</p> <p>---Present a detailed design of an individual building on a specific site to illustrate how the above design concepts could be achieved in an actual design.</p> <p>During the process, the issues of building configurations, active edge spaces, housing robustness, positive outdoor spaces, pleasant visual experience, personalization and so forth are paid highly attention.</p>
<p>Step10 ---Start with the design result from step9, set out objectives to achieve visual appropriateness</p> <p>---Look for the necessary vocabulary of contextual cues and uses cues to achieve the above objectives.</p> <p>---Use the above cues in the design.</p>	
<p>Step11--- Identify the potential areas to be treated for the quality of richness and personalization.</p> <p>---Design for these two qualities.</p>	

The South 4th Street Corridor and the Seven Qualities

Table 6.1 summarizes the design process of the South 4th Street Corridor.

To get a better understanding of how the actual design is guided by the concepts of *Responsive Environments*, the various steps in implementing the design and the design implications from *Responsive Environments* are juxtaposed.

As shown in table 6.1, following the structure of *Responsive Environments*, the 10 steps in implementing the design of the South 4th Street Corridor can be mainly organized into 4 phases: (1) permeability, (2) variety, (3) legibility, (4) detailed design. Each follows another in sequence, helping shape the site as a whole. Each phase has two steps: the first is studying and analyzing the site in terms of each given quality, and the second is designing for that quality.

1. Permeability

The aim of the quality of permeability is to provide easy access for people from one place to another. It has fundamental layout implications for urban design, since if you can't reach a place, you can't use it. Therefore, the first design phase (step1&step2) focuses on the quality of permeability. The major objective is to make the Corridor well integrated both with its surroundings and with the city as a whole.

In step1, the street network of the Corridor and its surroundings are first examined. The result of this analysis indicates that although the Corridor is well

integrated with the surrounding grid structure to its west, it is poorly accessible in relation to its surroundings to the east. However, according to *Downtown Redevelopment Plan* (2004), this problem has the potential to be solved in the future. As shown in Figure 6.2, along with the 3rd Street redevelopment as a major street in the city, the linkages between the 4th Street Corridor and the east part of the city would be automatically improved.

The analysis in step1 also shows that the permeability between public and private interface is very low on the site. To improve it therefore, in step2, the perimeter-block development with clearly distinguishable public and private sides is introduced. At this stage, a decision is also made to maintain and strengthen the existing alleyway systems. Running east to west, these alleyways subdivide the blocks along 4th Street, providing more alternative choices for pedestrians, enhancing the degree of permeability on the South 4th Street Corridor.

Figure 6.2 examines the final design proposal in terms of the quality of permeability. As shown, the South 4th Street Corridor is well integrated with the surroundings and the city as a whole. With many other pathways and the users on these pathways feed into it, it has the potential to be a well-used route along which many people travel.

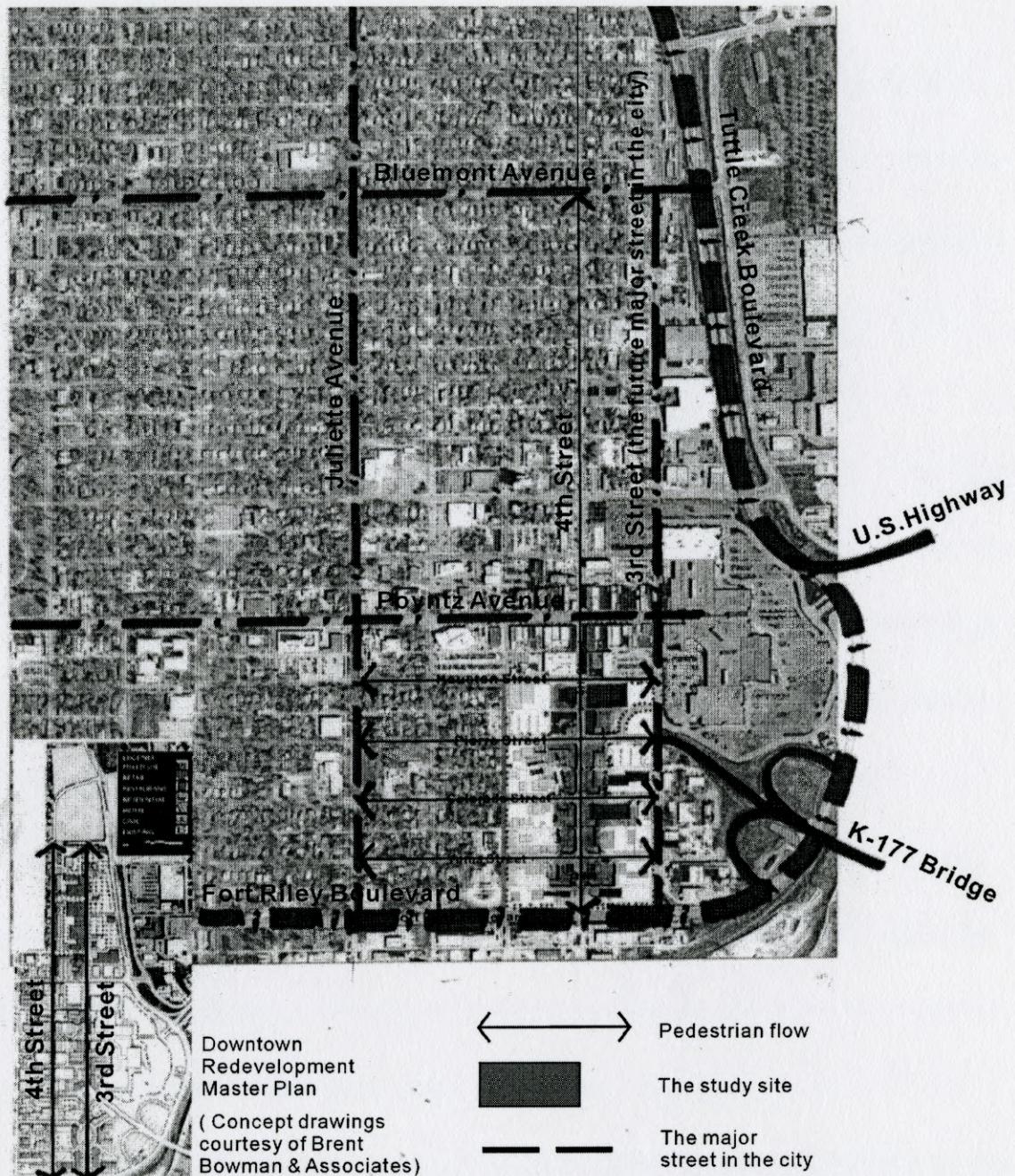


Figure 6.2 The redesigned South 4th Street Corridor and its surroundings in terms of the quality of Permeability

2. Variety

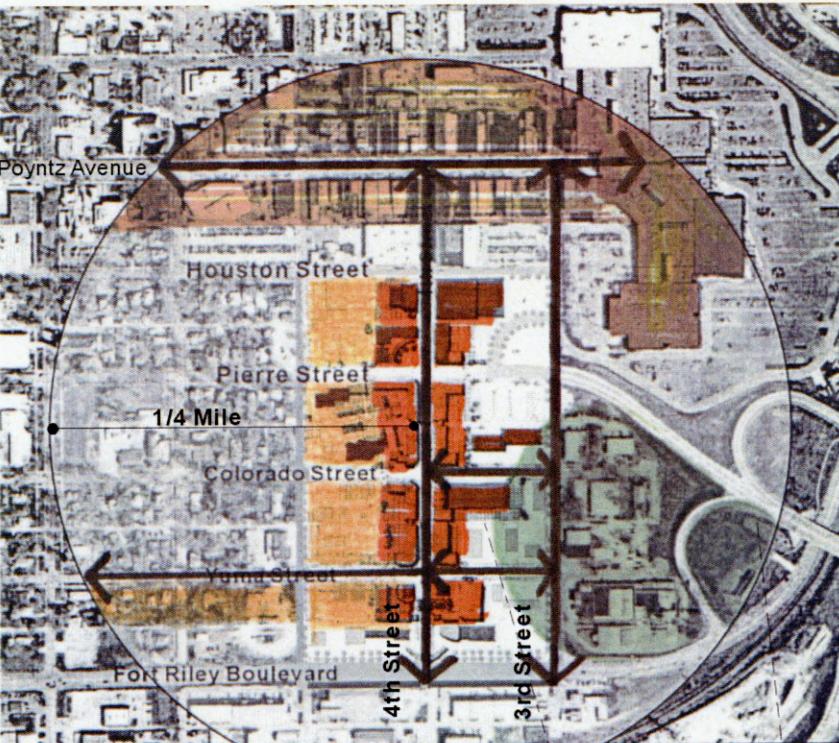
Once a place is easily accessible, to make it alive, the next concern is how to make it attractive so that people in large numbers have reasons to come and stay. Therefore, the second design phase (step 3 & step 4) considers the quality of variety. The aim is to give the Corridor an appropriate mix of uses capable of attracting different people at different times of day and night.

In step3, the site is first analyzed in terms of density, interaction between different uses, building conditions and so forth. The result of this analysis shows that due mainly to its lower density, the South 4th Street Corridor has a very low degree of variety. To improve it, therefore, following the design implications from *Responsive Environments*, I first investigate a combination of different local sources to find out the potential social demands for the site. The investigation result indicates that there is a strong demand for higher density housing on the site and its surroundings to the west, which has the potential to be achieved by public/private partnership (*Downtown Tomorrow*, 2000).

Thus, in step4, a net density of 10-25 dwelling units per acre with a variety of housing types and prices is introduced on the site. This density is determined according to Lynch's (1962) discussion of the residential densities. In Lynch's view, in normal practice, the net density of 10-12 dwelling units per acre is considered reasonable for the two-family house; 16-19 is considered practicable

for the row house; and 25-30 is reasonable for the combined flats and row house. He suggests “each building type has its own appropriate density, and the choice of density should therefore depend upon the building types which are most appropriate to the situation” (p.147). In terms of the South 4th Street Corridor, as most of the structures on the site would be 2-3 story mixed-use buildings with residential above commercial in the future, a net density of 10-25 dwelling units per acre is reasonable. And this has been demonstrated by the architectural design in Chapter 5. As illustrated in design sheet 5.1-5.8, with retails, restaurants and coffee shops located at the ground floor and housing units above, the Pierre Street Building has achieved a net density of 25 dwelling units per acre with various unit types.

Although according to Jane Jacobs, who suggests that the medium to high residential densities of between 100-200 dwelling units to the net acre are necessary to maintain vitality in cities, this net density of 10-25 dwelling units per acre is still very low, it is relatively high in the city of Manhattan. Specifically, it brings community and security to the South 4th Street Corridor. As a primary use, the concentration of residential uses generates a critical mass of demand, contributing to flourishing street diversity.



Commercial/office use
on Poyntz Avenue



The future Discovery
Center (Designed by
Brent Bowman
& Associates)



Existing higher
density apartment
complexes



The future higher
density residential
use proposed by
Downtown Manhattan
(2000)



Higher density mixed-
use development on
redesigned South 4th
Street Corridor



Pedestrian flow



Downtown
Redevelopment
Master Plan
(Concept drawings
courtesy of Brent
Bowman &
Associates)

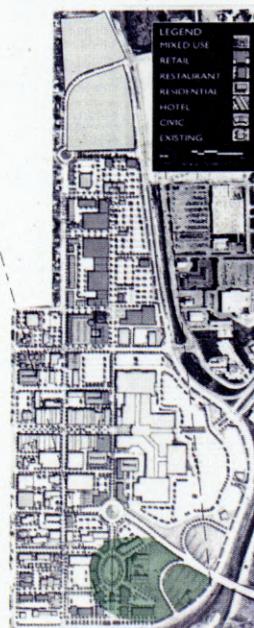


Figure 6.3 Primary uses on redesigned South 4th Street Corridor and its surroundings

Both Bentley et al. and Jane Jacobs make the point that any primary use by itself can not support successful community life. It needs to be effectively combined with other primary uses to attract people at different times and for different purposes. Therefore, Figure 6.3 examines the final design proposal in terms of the interaction between different primary uses on the site and its surroundings. As shown, the proposed higher density mixed-use development on the South 4th Street Corridor, together with the future higher density residential development to its west (*Downtown Tomorrow 2000*), and the existing higher density apartment complexes, provides a concentration of dwellings at the center of the South 4th Street Corridor neighborhood. Acting as a primary use, these dwellings work well with the other two primary uses: the commercial/office uses on Poyntz Avenue and the future discovery center on 3rd Street. While the former ensure the presence of people in the evenings and on weekends, the latter two draw people during the daytime and weekends. They work together to ensure a 24-hour presence of people on the site, stimulating a fertile environment for secondary uses, such as retail, restaurants, coffee shops, offices, car parking and so forth, which are also badly needed on the site according to the social demand survey in step 3.

So far, we have decided on different uses for the site; the next concern is how to make them appropriately mixed and supportive of each other. By this

stage, Bentley et al. suggest that designers need to work with developers and builders to determine how much of each of these uses is needed on the site and how to allocate them so that the project can be both financially and functionally feasible. In terms of this design on the South 4th Street Corridor, however, as it is only a conceptual exercise in a hypothetical format and with no actual agents or developers to work with, it is not possible to check its economic value or its cost. Thus, in step 4, different uses are only roughly allocated on the site in terms of their functional issue. The physical layout may need to be refined when it comes to the real-world evaluation: local residents, developers, local authorities and agents.

3. Legibility

In the previous two design phases, the South 4th Street Corridor has been redeveloped in terms of the quality of permeability and variety. The degree of choice it could offer has been increased. However, as Bentley et al. remind us, people could take advantage of the choices a place offers only if they can easily understand the layout of the place (p.42). Therefore, the third design phase (step6-step8) examines the legibility of the South 4th Street Corridor. The aim is to give the Corridor a strong identity so that it can be attractive and easily graspable.

As shown in Table 6.1, the analysis in step 6 indicates that the site has a

very low degree of legibility. As a public space, it lacks a sense of enclosure. Its poor pedestrian environment can not support street activities. And the weakly defined nodes along its length even further weaken its identity.

Thus, in step 7, new 30-foot-high infill buildings are introduced on the site to make the W/H ratio (the width of the street/ height of enclosure buildings) of the street reach 1:2. Such a ratio can provide a strong sense of enclosure and make the corridor distinct from its immediate neighbor, 3rd Street, which, according to *Downtown Redevelopment Plan*, will be characterized with a series of plazas along its length in the future. Also at this stage, dense planting, street furniture and properly designed sidewalk paving are suggested for the site to improve the pedestrian environment. Finally, the two major nodes, the V.F.W. Plaza and the South end junction of 4th Street, are carefully redeveloped to strengthen the presence of the Corridor. While the former is redesigned as an important public gathering space at the heart of the Corridor, the latter is redesigned as a gateway, giving the Corridor a clear destination at its south end.

Figure 6.4 illustrates the redesigned South 4th Street Corridor in terms of the spatial quality. As shown, as a major path in the city, the Corridor now has a strong sense of enclosure, a clear destination and definite nodes along its length, all of which, according to Lynch (1960), make it memorable. Further, as mentioned above, besides acting as a major path in the city, the South 4th Street

Corridor also functions as an important outdoor public space in downtown Manhattan. As Alexander (1977) reminds us, for an outdoor space to make people feel comfortable, there is a need for the quality of figure/ground reversal. He explains:

If you look at the plan of an environment where outdoor spaces are negative, you see the buildings as figure, and the outdoor space as ground. There is no reversal. It is impossible to see the outdoor space as ground. If you look at the plan of an environment where outdoor spaces are positive, you may see buildings as figure, and outdoor spaces as ground---and, you also see the outdoor space as figure against the ground of the building. The plans have figure-ground reversal.

(p.518)

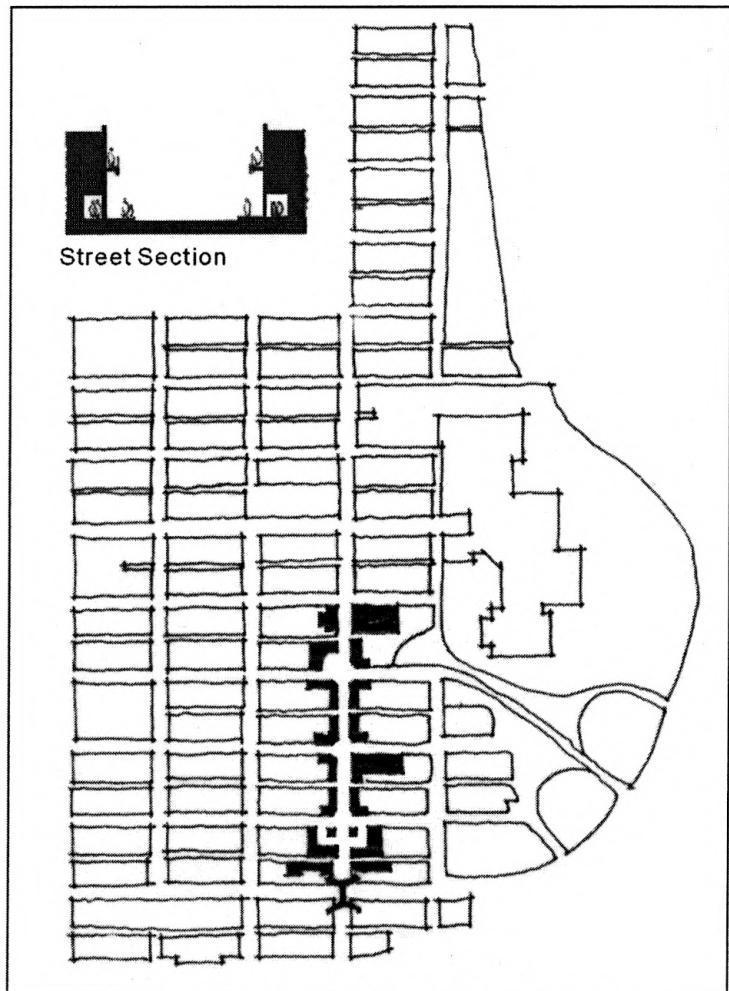


Figure 6.4 The spatial quality of the redesigned South 4th Street Corridor

In terms of the final design proposal for 4th Street, as shown in Figure 6.4, it can be perceived as ground and buildings along its both sides as figure. Simultaneously, it also can be seen as a positive element with three-dimensional properties and buildings as two-dimensional facades framing the space. As both a positive outdoor space and a memorable path, the redesigned South 4th Street Corridor is attractive and legible, capable of supporting the various choices it offers.

4. Detailed Design

In the previous three design phases, the overall structure of the South 4th Street Corridor has been redesigned to provide users more choices so that the environment has the potential to elicit positive responses from its end-users. However, a built environment can not exist in a vacuum. It is inseparable from the buildings and the outdoor spaces between them. Guided by the last four qualities of *Responsive Environments*, robustness, visual appropriateness, richness and personalization, therefore, the fourth design phase (step 9 & step 10) pays special attention to the detailed design of individual buildings and their immediate outdoor spaces. The primary concern of this stage is to give each individual building its own proper identity and establish harmony among the buildings to help define the corridor as a responsive whole.

As shown in Table 6.1, the analysis result in step 9 indicates that most of

the existing buildings on the site can not provide pleasant experiences for the end-users, nor support the corridor as a whole. To reduce this deficiency, in step 10, design concepts and a detailed design of Pierre Street Building, a new-infill building at the corner of Pierre Street and 4th Street, are provided.

During the process, as shown in Table 6.1, the architectural design of the Pierre Street Building does not strictly follow the design implications from *Responsive Environments*. Here, *Responsive Environments* presents the architectural design as a process of assembling (step 9-step 11). First, a robust building plan is worked out. Based on that, visual appropriateness is developed. Finally the quality of richness and personalization are added to complete the design. The design approach is a process of analysis and less involved with the designer's intuitive awareness and his own background experience. Although Bentley et al. do give attention to people's awareness of architectural forms in the quality of visual appropriateness, they do not pay much attention to spatial experience, which is essential for a building to evoke people's deep participation.

In spite of this weakness, however, *Responsive Environments* is very useful for designing the individual buildings and their immediate outdoor rooms in that the four qualities--robustness, visual appropriateness, richness and personalization--provide general guidance for design decisions. As indicated above, the primary goal of the architectural design on the South 4th Street

Corridor is to give each individual building its own proper identity and together help define the corridor as a responsive whole. In terms of the Pierre Street Building, this objective is achieved by the designing of active building fronts, robust housing units, positive outdoor spaces, pleasant visual experience and finally user's personalization, all of which lend the building its own identity and simultaneously contribute to the responsiveness of the corridor as a whole.

Evaluating Responsive Environments

As mentioned in chapter 3, two local sources, *Downtown Tomorrow* (2000) and *Housing Manhattan* (2000), have together provided an initial vision of the redevelopment of the South 4th Street Corridor. The Corridor is envisioned as a safe, well-managed place with higher-density and mixed-use development. To examine whether the South 4th Street Corridor has achieved the above initial vision through applying the design approach of *Responsive Environments*, especially how effective the seven qualities may be in guiding an actual design, a comparison between the resulting design proposal and the initial vision is provided (Table 6.2).

Table 6.2 The comparison of the initial vision of the South 4th street Corridor and the final design proposal

The initial vision of the South 4th street Corridor	The final design proposal
Higher density Multifamily development preferred	A net density of 10-25 dwelling units per acre is introduced on the site through the means of mixed-use development with residential above commercial. With a net density of 25 Dwelling units/acre, the Pierre Street Building further demonstrates the feasibility of the proposed density.
Mixed-use development: residential, commercial and office	A variety of uses are introduced on the site: residential, retail, restaurants, coffee shops, small offices, car parking and so forth. The mixed-use pattern of residential above commercial is highly encouraged on the site both for increasing density and adding variety.
Strong identity	The redesigned South 4th Street Corridor achieves a higher degree of legibility by providing the users a sense of enclosure and a pleasant visual experience while further encouraging the users put their own stamps on the site.
Compatible with the adjacent residential neighborhood character and simultaneously harmonious with the commercial office buildings of downtown Manhattan.	The designing of the Pierre Street building provides an example of how visual appropriateness can be achieved by creatively employing local contextual and use cues in the design. The designing of the Pierre Street Building also illustrates how to restructure the outdoor spaces in the existing mixed use block into a robust environment.
A friendly pedestrian environment	The well-designed sidewalk, active building fronts and the agreeable street facade all contribute to a pedestrian-friendly realm.

As shown in table 6.2, all the initial visions have been satisfied in the final design proposal through the means described in *Responsive Environments*. The aims of the higher density and mixed-use developments are achieved by increasing the quality of variety on the site. The objective of a strong identity is satisfied by improving the quality of legibility, visual appropriateness, richness and personalization on the corridor, all of which are good means for making the corridor unique and identifiable. To make the corridor fit in both with the character of the downtown commercial area and the adjacent residential neighborhoods, the quality of visual appropriateness and richness are essential. Finally, the objective of making the area pedestrian-friendly is satisfied by improving the quality of permeability, variety, robustness and visual appropriateness on the site.

In short, through the means of the seven qualities of *Responsive Environments*, the South 4th Street Corridor has been redesigned as a 24-hour live/ work/ play environment, offering a variety of choices to a multitude of users at different times of the day and night. In this regard, the seven qualities are very valuable for designing built environments. At the same time, through the efforts to revitalize the site into a more humane environment, I have gained a comprehensive understanding of the needs of the South 4th Street Corridor and developed the various design foci in light of the seven qualities. In this regard,

Responsive Environments is also a very powerful design approach in that it provides one means for grasping quickly the essential aims and purpose of the study site and acts as a significant tool to facilitate a sensitive design.

Chapter 7

CONCLUSIONS

At the end of this thesis, it would be appropriate to review briefly the theory of *Responsive Environments* and then provide conclusions about the value of this theory as applied to the South 4th Street Corridor.

As an alternative urban design approach, *Responsive Environments* (Bentley et al., 1985) aims to build a positive relationship between the built environments and their end-users. Bentley et al. argue that a built environment should maximize the degree of choice available to its end-users, so that the users could respond positively to this environment, thus evoking the “spirit of place.” Bentley et al. develop seven design qualities: *permeability, variety, legibility, robustness, visual appropriateness, richness and personalization* to help foster such environments, which they call “responsive.”

The idea that a positive person-environment relationship is essential for a humane place is by no means new. Many socially-conscious designers have discussed this issue, although from different perspectives. For example, Hillier and Hanson (1984) in *The Social Logic of Space* argue that it is the pathway structure that plays an essential role in sustaining active urban life. Jane Jacobs (1961) in *The Death and Life of Great American Cities* makes the point that the key to what makes a place alive is the intimate and close-grained diversity of uses

on the street. Deriving from these ideas, *Responsive Environments* aims to offer one practical means for translating environmental concern into environmental design.

By applying the architectural and urban design ideas of *Responsive Environments* to an actual design proposal for the South 4th Street Corridor, the design experience in this thesis indicates that *Responsive Environments* is a powerful concept tool in creating a sense of place as applied to the study site. The seven qualities clearly delineate the character of a physical environment which is alive and responsive. There are at least three advantages in particular to applying the ideas set out in *Responsive Environments*. First, as a design approach derived from the theories of Bill Hillier, Jane Jacobs, Kevin Lynch and even Christopher Alexander, it provides one useful means to transform theory to practice, research to design. Second, it helps designers identify the underlying elements and relationships of a built environment and keep general aims in mind as actualizing design details. Third, it fosters a great sensibility for environmental concerns, both at a local and regional level. The greatest strength of *Responsive Environments* lies in its first three qualities: permeability, variety and legibility. Focusing on the overall structure of the built environment, these three qualities provide a design means for revitalizing the study site into a more livable place as a whole.

Further, with its lower density, deferred building maintenance and increased vacancies, the South 4th Street Corridor has a representative quality in regard to many declining downtown commercial districts in the Midwest towns in the United States. Based on the above discussion, it is reasonable to conclude that *Responsive Environments* could be very useful for helping revitalize the declining downtown commercial districts in the Midwest medium-sized towns. This indicates opportunity for further studies.

At the same time, under the guidance of *Responsive Environments*, the final design proposal of South 4th Street Corridor provides one real-world illustration of how *Responsive Environments* might guide an actual design. The proposal also provides an alternative vision of the future downtown commercial district in a Midwest medium-sized town. It is worth noting here that as a conceptual exercise in a hypothetical format, the final design proposal may need to be refined when facing a real-world evaluation. It even may encounter some difficulties when being actualized in the future. For example, one problem is the nation's preference for lower-density and car-dependent suburbs, which is especially strong in the Midwestern region. With a very lower density, many downtown commercial districts in this region, such as that in Manhattan, are suffering from a decline in the number of businesses and a rapid rise in vacant lands. It is hoped that, at least, with its higher density and various attractions on a

pedestrian scale, the design proposal in this study will open up a dialogue about the redevelopment of the declining downtown commercial area in the Midwest region to a vision of new possibilities. As Hall et al. (2001) said: "True communities do not just occur; they are born of vision. Where no vision for growth exists, sprawl results (p. xxi-xxii)."

APPENDIX A: MANHATTAN MAINSTREET PROGRAM

Established by the National Trust for Historic Preservation in 1977, Main Street Program is one of the best approaches to revitalize aging downtown of cities with populations under 50,000. By stimulating downtown economic development while preserving its historic nature, Main Street Program encourages reuse of older buildings and stresses economic and retailing revitalization.

Together with Lawrence, Hutchinson, Independence and Winfield, the city of Manhattan was selected to participate the Main Street Program in late 1985. There are no actual funds provided directly to the Manhattan Main Street Program through the State or National Main Street Center. Membership allows the city to receive training and technical assistance for downtown redevelopment from the organization's office in Washington, D.C. The four points approach toward revitalizing downtown--organization, promotion, design, and economic restructuring--has worked successfully since Manhattan Main Street Program (MMSP) was launched.

According to statistics collected by Manhattan Main Street officials, during the first year since the MMSP was initiated, the reinvestment in Manhattan's central business district crossed the \$1 million mark (The Manhattan Mercury, Sept 23, 1986). And one of MMSP's most important achievements was

coordinating downtown and the shopping mall (Manhattan Town Center), which is located at the east end of the downtown area and adjacent to the South 4th Street Corridor. Taking advantages of the anticipated increase in shoppers, the program manager works with Town Center officials on promotions and other activities that would benefit the entire downtown businesses.

APPENDIX B: TAX INCREMENT FINANCING

In 1996, the City of Manhattan created a second Tax Increment Financing District on the southern edge of the downtown, where the South 4th Street Corridor is located. The Tax Increment Financing (TIF) is a very useful financing tool created by State Statute to assist in redevelopment activities. According to Tyler (2000), TIF districts work like this:

1. The city determines the initial assessed value of all taxable real estate within a defined downtown district.
2. Thereafter, every year, the municipal treasurer transmits to the Downtown Development Authorities (DDA) all monies that exceed this base amount.
3. Any increase in the base amount created by the new development within the district is allocated to DDA for use on various redevelopment projects, such as the improvements of streetscape, sidewalks, and public utilities.

Being in the TIF district and benefiting from the public improvements, the South 4th Street Corridor attracts private investments. Along with its further development, it will in turn create a base for TIF, supporting the revitalization of the TIF district.

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