REDESIGNING KANSAS CITY'S GOVERNMENT DISTRICT USING THE URBAN-DESIGN APPROACH OF *RESPONSIVE ENVIRONMENTS*

by

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Abstract

This thesis presents a redesign of Kansas City's downtown Government District, making use of the conceptual approach provided by *Responsive Environments* (1985), a manual for urban design written by architects Ian Bentley and Alan Alcock, urban designers Sue McGlynn and Graham Smith, and landscape architect Paul Murrain. "Responsive environments" are those urban places, the physical settings of which maximize usability and social value by offering a wide range of day-to-day user choices within close proximity. The authors of *Responsive Environments* identify seven hierarchical qualities—*permeability, variety, legibility, robustness, visual appropriateness, richness,* and *personalization*—that are said to be vital in creating responsive environments within the city.

Through a literature review and critique, chapters 1 and 2 of the thesis overview *Responsive Environments* in terms of several major theorists of urban place making, including urban theorist Bill Hillier (1984), urban critic Jane Jacobs (1961), and urban designer William Whyte (1980). In turn, chapters 3, 4, 5, and 6 investigate the practicability of *Responsive Environments* as an urban design approach by applying its three larger-scale qualities of permeability, variety, and legibility to the Government District, an existing urban area in downtown Kansas City, Missouri, presently underdeveloped in terms of environmental responsiveness and a strong sense of urban place. As a means to identify strengths and weaknesses of *Responsive Environments,* the last chapter of the thesis critiques the resulting Government District design. The thesis concludes that *Responsive Environments* is a valuable design approach that offers much for strengthening the quality of urban life and urban sustainability.

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Dedication

I dedicate this research to all my teachers in India, who have contributed the most to who I am today.

Chapter 1

Introducing Responsive Environments

The early 1960s can be said to mark the beginning of what is now called the "philosophy of place making." Back then it was a realization that cities are dynamic places and that they work in their own ways and not as per the aesthetic and formalistic approaches of most modern designers. During this period, thinkers like Kevin Lynch (1960), Jane Jacobs (1961), Oscar Newman (1973, 1980) Christopher Alexander (1977), William H Whyte (1980) and Bill Hillier (1984) put forth the idea that designers must give heed to the needs of urban users attempting to understand the manner in which urban spaces work before designing them. These thinkers laid the foundation for educating design professionals as well as the lay public about the intricacies of human behavior and urban life. These thinkers had different points of views and their works took different conceptual routes to arrive at the fact that much of urban design was nothing less than catastrophic.

One of the major criticisms of the modernist urban design approach was presented by Jane Jacobs (1961) in her seminal work *The Death and Life of Great American Cities.* In this book, she identifies the problem of modernist designers to be the preoccupation with urban form and a neglect of the understanding of urban life. She describes cities as an entity with a body and a soul, and presents her argument that modern urban designers, planners and policy makers spend a great deal of time in focusing on the body, neglecting the soul, thereby leaving behind cities that are dead bodies with no urban life. She strongly disagrees with what had been taught by professional giants like Le Corbusier, Ebenezer Howard and the modern city planners regarding city design. She writes, "No matter how vulgarized or clumsy the design, how dreary and useless the open space, how dull the close up view, an imitation of Le Corbusier shouts, 'Look what I made!' Like a great, visible ego it tells of someone's achievement. But as to how a city works, it tells, like the Garden City, nothing but lies" (Jacobs, 1961, p. 23).

Of all the works on urban design, the 1985 *Responsive Environments, A Manual for Designers*, by Ian Bently, Alan Alcock, Sue McGlynn, Paul Murrain, and Graham Smith, holds special value due to its conceptual thoroughness and its simple and well-organized layout. Like other works on urban design, this book is a product of the realization that modernist architecture and planning principles are insufficient when it comes to understanding human needs and

making lively urban places. This work has a major focus on understanding the concept of urban life, and the authors attempt to develop a practical design approach that can be used as a manual to design urban places that respond to the social, behavioral and sensory needs of the users.

This thesis builds its foundation on understanding *Responsive Environments* (hence forth *RE*) and identifying it to be a valuable, practical and appropriate design approach to make cities that are humane and a delight to live in. The thesis applies the approach of *RE* to revitalize one existing urban area and thereby to demonstrate *RE*'s value for urban design. For this process, a site which currently does not conform to the qualities of a responsive environment has been chosen—Kansas City's Civic/Government District, a multi-block area in the city's downtown. The thesis focuses on the larger-scale qualities of *RE* and presents a conceptual urban-design proposal for the Government District, arising from the application of the larger-scale qualities of *RE*. Then critiquing the resulting design, the thesis discusses the strengths and weaknesses of the *RE* approach. The thesis concludes by arguing that *RE* is an important venue for urban sustainability. The argument is that sustainability involves more than wise use of natural resources and energy reserves in that good urban design should also aim at sustaining the quality of human life, which in turn might make urban places more sustainable because people take care of things they love and find of benefit.

An Overview of *Responsive Environments*

The crux of *RE* is identifying the idea of "responsiveness" as an attribute of any urban built environment. According to the authors, "responsiveness" is primarily the ability of a place to offer a democratic setting to its users by maximizing the degree of choices available to them (Bentley, et al., 1985, p. 9). The degree of choices is maximized when there are a wide range of readily accessible choices at close proximity, for example, choices of locations where one can or cannot go; choices of different routes one may take; choices of activities one may perform; and choices of sensory experiences within an urban place. The degree of "responsiveness" therefore can be viewed as a function of "how many" choices are available and "how close" these are to the users in an urban place. Hence, *RE* aims at designing places on a pedestrian scale, which offer a wide range of social, behavioral, experiential, and functional choices within a walkable distance.

The pivotal argument made by the *RE* authors is that "responsiveness" of a place is dependent on the physical design of the environment and that, for a place to be "responsive," the physical design should be such that the accessibility and proximity to a wide range of choices is not hampered. The value of this argument becomes evident when one considers modern cities where planners and policy makers tend to segregate various uses in a way that limits the choice of access, functions, and experiences that one can have. As a result, although modern urban places are typically planned and designed, they typically fail to draw people due to a lack of proximity and accessibility and therefore remain monotonous and empty physical spaces lacking such basic qualities of urban life as vibrancy, street ballet, chance meeting, and liveliness as described by urban critic Jane Jacobs (1961). In her argument for diversity, Jacobs (ibid) identifies this crisis of segregation of uses in modern urban design and writes, "To understand cities, we have to deal outright with combinations or mixtures of uses, not separate uses, as essential phenomena" (ibid., p. 144).

As a starting point, the authors of *RE* identify what they consider to be the tragedy of modern design—i.e. that designers never made a concerted effort to work out the form implications of their social and political ideals (Bentley, et al., 1985 p. 9). Even though many thinkers have developed social and political ideals for urban design in the past, modern design fails to achieve urban environments that conform to these ideals. Hence, *RE* develops a link between these ideals and design process by identifying seven qualities that contribute to the "responsiveness" of an urban environment. These qualities are argued to enhance the choices offered to users at different scales and in different ways to make a place "responsive." Here I first briefly define these seven qualities and then discuss each in detail.

1) Permeability (offering the choice of visual and physical access to a place);
2) Variety (offering experiential choice in a place with the availability of a range of uses);
3) Legibility (providing choices to make a place mentally graspable);
4) Robustness (offering choices to use a place for different purposes);
5) Visual appropriateness (the ability of the physical appearance of a place to make people aware of the choices available);
6) Richness (offering sensory choices in a place);
7) Personalization (offering choices of personal intervention in a place).

In order to use these seven qualities as dimensions of a design process, the *RE* authors draw from the "whole to part" concept—i.e., from larger scale to smaller scale as first developed by Christopher Alexander, in *A Pattern Language* (Alexander, 1977). The first three qualities of permeability, variety and legibility deal with the design of the urban site as a whole, whereas the remaining four qualities—robustness visual appropriateness, richness and personalization—contribute to the design of individual buildings. The sequence of these seven qualities is also based on the importance of each quality with respect to "responsiveness," a relationship which means that permeability is the most important quality required for a place to be "responsive" followed by variety, legibility and then the smaller-scaled qualities of robustness, visual appropriateness, richness, and personalization. The next section of this chapter describes each of these seven qualities in greater detail.

Permeability

RE derives its first quality of permeability from the ideas of Jane Jacobs (1961) and Bill Hillier (1984). According to the *RE* authors, permeability is the key measure of responsiveness of a place. It is the extent to which an environment allows the choice of through movement from one place to another, thereby offering a choice of alternative routes. Hence permeability is required as the first step to design a responsive environment.

A good design for permeability is to make a place permeable by designing a layout of pathway structure that provides essential connections, both physical and visual, within the urban place as well as with its surrounding urban context. This quality is largely derived from Bill Hiller's *The Social Logic of Space* (1984), which identifies the role of street structure and layout of pathways in enhancing or retarding the pedestrian life within an urban place. *RE* suggests that pathways should be such that they connect users to the uses both visually and physically, so that there is maximum ease in movement. For this purpose, one of the key design features is small block development (Jacobs, 1961, chapter 9), because small blocks offer more choices of routes compared to large blocks. (See Figure 1-1)

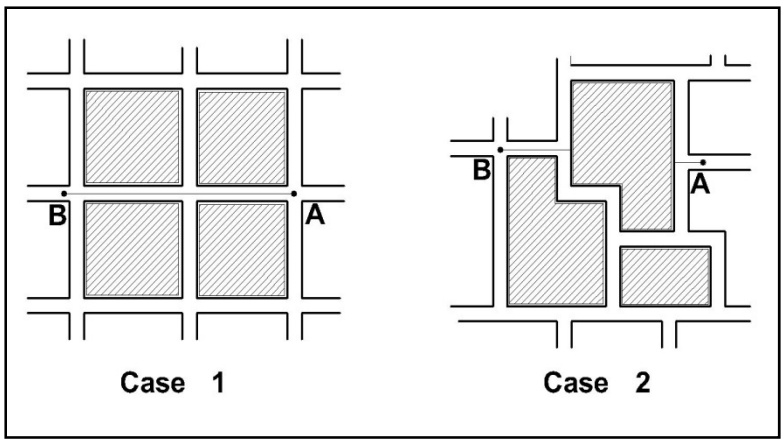

Figure 1-1. Design of pathway structure should offer both visual as well as physical permeability; In Case-1 destination A, and B are visually permeable unlike in Case-2 (Source: Drawn by author).

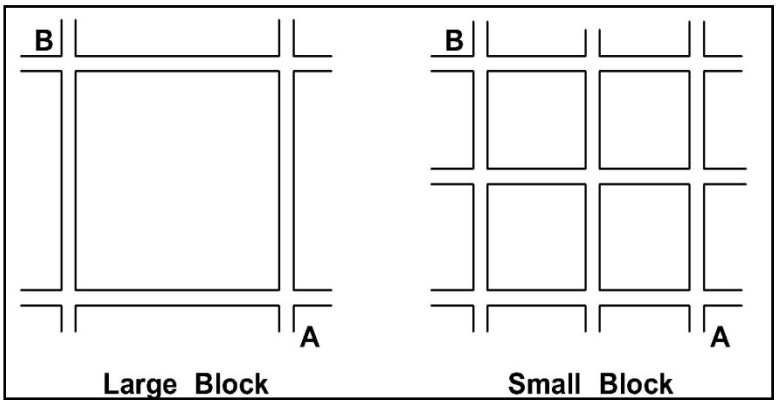

Figure 1-2. Small block development offers more choices of routes. In the example above, large-block layout offers only two alternative routes between A and B where as the small block layout offers six alternative routes between A and B without backtracking (Source: Drawn by author).

However, *RE* also identifies the need for a limit to accessibility and suggests that, if everywhere were equally accessible to everybody, physically or visually, there would be no privacy (Bentley, et al., 1985, p.12). This is in accordance with Jacobs, who argues that "Privacy is precious in cities. It is indispensable" (Jacobs, 1961, p. 58). Therefore, *RE* proposes a clear distinction of the private and public realms through designing buildings with fronts that face the public realm and backs devoted to more private activities so as to achieve a visually permeable interface. When consistently applied throughout the block, this arrangement produces *perimeter block development*, which is said to contribute to street vibrancy. (See Figure 1-3)

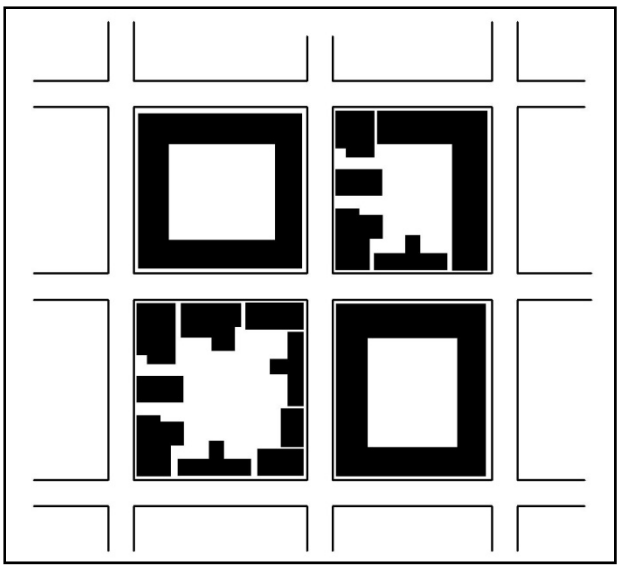

Figure 1-3. Perimeter-block development resulting in a private/public interface (Source: Drawn by author).

While designing for permeability on an urban site, *RE* recommends identification of its connections to the city as a whole and the main street systems as the first and foremost step which in turn would help in establishing connections to the immediate local surroundings. Once all major connections are laid out, the street and block system should be designed considering small block development as the primary goal. The final step required by *RE* is designing the street and junction details. The authors identify the increasing scale of development, hierarchical layouts of pathway structure, and the segregation of vehicular and pedestrian routes as major threats to permeability. A good design for permeability ensures the presence of choices of access and routes from one location to another and lays a foundation for the placement of functions and activities—what *RE* calls *variety.*

Variety

High accessibility achieved in a place by designing for permeability would be meaningless without the presence of functional and experiential choices. Therefore, variety—which aims at offering a range of uses and activities—is the second key quality contributing towards "responsiveness." This quality is a synonym to what Jacobs (1961) calls *diversity*—which she says is natural to big cities (Jacobs, 1961, p. 143). Diversity is important, she argues because nobody walks from sameness to sameness. Regarding diversity of uses, she writes, "a neighborhood or district perfectly calculated, to fill one function, whether work or any other, and

with everything ostensibly necessary to that function, cannot actually provide what is necessary if it is confined to that one function" (Jacobs, 1961, p. 160).

The *RE* authors see variety at different levels and suggest that urban diversity exists as an intricate matrix of uses, forms, people, and meanings. They argue that variety of uses is a key to promote variety as a whole because it increases experiential choices by promoting other levels of variety in a place (Bentley, et al., 1985 p. 27). The presence of a variety of use leads to the presence of varied building types and forms; presence of varied people at varied time; and the resultant perceptual mix achieved by the presence of varied people further generates varied meanings for the place. Hence, *RE* proposes the placement of a variety of uses within the site as the second step to achieve "responsiveness."

According to modernist planning and design approaches, uses are typically segregated into specialized zones for economic performance and easy management, thereby reducing variety within city districts. Zoning of single use and a tendency to create big blocks are identified as a major threat to variety in a place. The *RE* authors criticize this approach because it offers choices largely to people who are highly mobile and leaves out people such as children, disabled or sick people, senior citizens, and women with young children. Therefore, according to the *RE* authors, it is important to provide a close-grained variety of uses, which essentially means the presence of variety of uses in close proximity. This ensures the availability of experiential choices to a wider range of people, including the less able and disadvantaged.

Figure 1-4. A variety of uses fosters other forms of variety. Designing close-grained variety of uses ensures the availability of experiential choices to a wide range of people, including the less able and disadvantaged (Source: Photograph copyright Kayodeyok retrieved from www.flickr.com).

Although variety of uses is the key to achieving variety as a whole, a random arrangement of various uses in an urban site may not necessarily support variety (Bentley, et al., 1985 p. 30). *RE* identifies three governing factors that affect the variety of uses a place can afford: first, the range of activities that a place *demands*; second, the availability of *affordable spaces* to accommodate these activities, and, third, the extent to which design can encourage *positive interaction* among these activities (ibid., p. 28). Hence, it becomes mandatory to identify the demands of a place and availability of affordable spaces to accommodate them prior to laying out various uses. *RE* proposes avoiding total redevelopment and maintaining a mix of new and old buildings as a design implication to support the availability of affordable spaces and to widen the range of possible activities because this can give rise to a wide range of rent.

The design parameter prescribed by *RE* for a viable and valuable mix of uses is based on Jacobs' (1961) concept of *primary uses* and *secondary uses.* She defines primary uses as "those which in themselves bring people to a specific place because they are anchorages" (Jacobs, 1961, p. 161). These uses are associated to places where people necessarily have to go—e.g., home and work. Secondary uses are those enterprises that grow in response to primary uses (ibid., p. 161) and are dependent on the people drawn by the primary uses for survival—e.g., restaurants, pubs, theatres, churches and small businesses. According to *RE,* any urban design should enhance the mutual support between primary and secondary uses, for which the primary uses should be located in such a way to provide the necessary pedestrian flow for the surrounding secondary uses. *RE* also accepts Jacobs' (1961) argument that there has to be a good mix of primary uses to provide the required pedestrian flow to support the secondary uses over longer periods of time by allowing the presence of different people in the same district at different times. In other words, it is not the sheer number that contributes to the economy of a place but that number of people spread over time in that place (ibid).

In order to achieve a positive interaction between primary and secondary uses, the mixture of primary uses should be such that it creates a concentration of pedestrian flow which can act as the lifeline for secondary uses. According to *RE,* concentration of pedestrian flow created by the primary uses—which act as a people-drawing magnet—largely depends on the distance between those uses. *RE* identifies the effective range of a primary use in generating a concentrated pedestrian flow to be 90m to 120m (295ft to 394 ft) (Bentley, et al., 1985 p. 33). Therefore the primary uses should be laid out considering this effective range and the secondary

uses should be arranged within this range to facilitate an effective design for variety of uses. (See Figure 1-5)

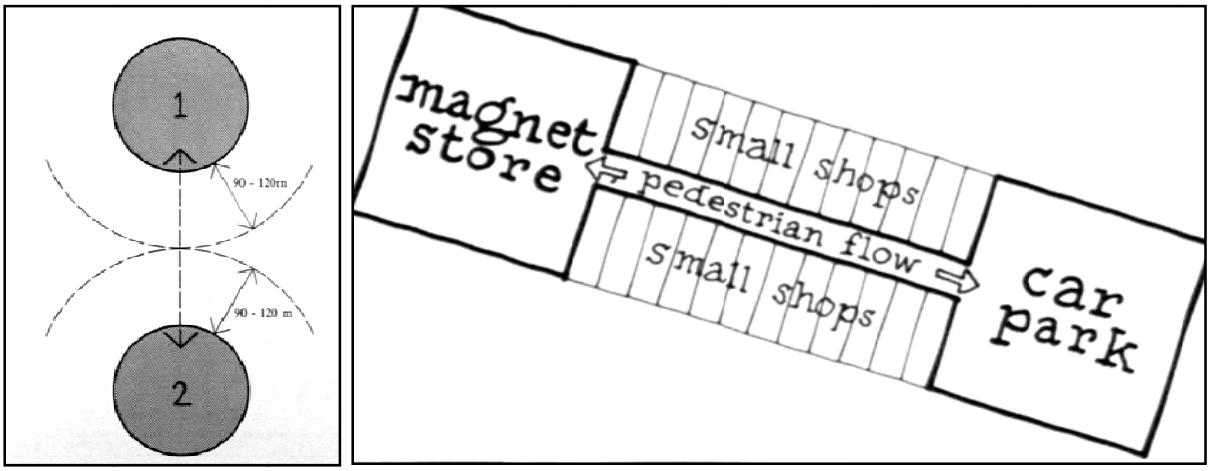

Figure 1-5. Effective range of primary uses in generating pedestrian flow. Photograph copyright Elsevier 1985 (Bentley, et al., 1985, p. 30).

Legibility

The choices for access and experiential choices offered by permeability and variety would remain unattended if the users were not able to mentally comprehend the layout of the urban place. Therefore, the *RE* authors identify *legibility*—the quality that makes a place mentally graspable—as the third quality that aids in making a place "responsive." According to the authors, it is important to have legibility at two levels—physical form and activity patterns. They argue that, although legibility in a place may exist at either level separately, it is important that awareness and a clear sense of both physical form and activity patterns are complimentary to achieve maximum "responsiveness." This is particularly of value to outsiders because it enables them to comprehend the place quickly and be aware of all the available choices (Bentley, et al., 1985 p. 42).

It is a common sight in modern cities to see strangers and sometimes even the regular users of an urban place getting totally confused and directionless with no clue as to orientation. This predominantly happens due to a lack of legibility. The *RE* authors identify two reasons for this: first, the tendency to design every project with equal visual and formalistic importance; and second, the segregation of pedestrian and vehicular paths. Compared to traditional cities—where places that looked important physically were important publicly and could be easily identified—

the *RE* authors write that, in modern cities, the confusion is made worse by designing important public buildings and publicly-irrelevant buildings that look alike (ibid., p. 42). Segregation of pedestrians in modern cities also dilutes legibility because it reduces the scope for a user to create a mental image of the place, as these pathways are generally laid along the monotonous, visually dead private backs of houses.

The *RE* authors draw on Kevin Lynch's *The Image of the City*, (Lynch 1960) to understand what it takes to make a place legible. Lynch argues that in any given city, a public image exists which is an overlap of many individual images (Lynch, 1960, p. 46). Lynch identifies five key physical elements that aid people to understand and remember a place by enabling them to create a mental image of that place. These elements are *paths*, *nodes*, *landmarks*, *edges*, and *districts*. (See Figure 1-6)

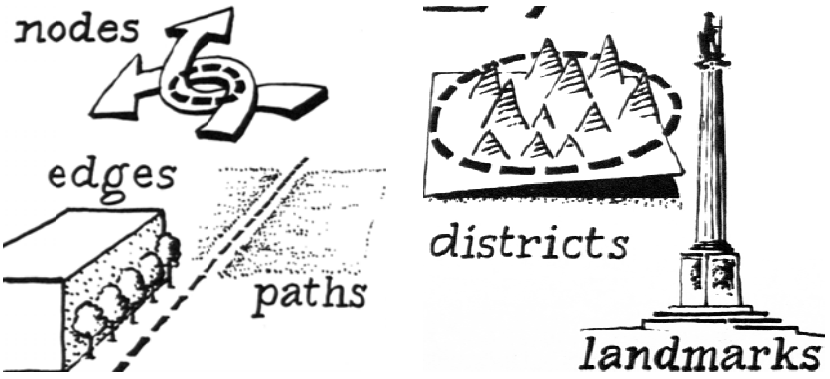

Figure 1-6. Illustration describing the five elements of Legibility as defined by Kevin Lynch in "The Image of the City." Photograph copyright Elsevier 1985 (Bentley, et al., 1985, p. 43).

Paths are the channel of movement within a city comprising streets, alleys, motorways, and the like. Paths are the most important element in contributing to legibility because people perceive the city while moving through it by observing everything arranged along it (ibid., p. 47).

Nodes are defined as those strategic intersections in a city into which an observer can physically enter while moving around within a city. Nodes play an important role in aiding people to remember a place because they act as significant points in an observer's journey by offering them, a concentration of some experience, use, or certain physical character. Nodes may

be generated by the junction of two paths, places of break in transportation, a street corner hangout, or an enclosed square (ibid., p. 47).

Landmarks are the points of reference in urban places which, unlike nodes, cannot be entered physically as a part of the journey within the city, thereby making them external reference points—e.g., significant buildings and building elements; natural features like hills or mountains; or other elements and features that are well known within the place. Landmarks generally possess a clear physical form that contrasts with the immediate surroundings. Most often, landmarks are those elements that have a prominent location or are visible from different positions. The quality of a landmark is strengthened if located at a junction involving path decisions (ibid., p. 48).

Edges are linear elements in a city which are not used or considered as paths by the observer. They are often the linear boundaries or linear breaks in continuity between two districts or regions such as river banks, edges of certain development, or railroads. Edges may act as barriers or be more or less penetrable and aid people in distinguishing generalized areas within a city (ibid., p. 47).

Districts are medium-to-large sized two-dimensional expanses in a city perceived to have a unique character. Districts are identifiable from the inside because of their common defining character and can be often used as an external reference by the observer if visible from outside. Districts enable the observer to enter into them mentally without necessarily physically entering them to understand them as entities with certain identity (ibid).

It is important to be aware of these elements because “research suggests that familiarity with these concepts enables reasonably accurate prediction of the features of a place which are likely to form key parts of its users’ image” (ibid., p. 144). According to the *RE* authors, the first step in designing for legibility is to identify the existing elements on site and combining them effectively with the new designed elements. Since paths are the most important element, the second step is to reinforce path legibility by giving each path a strong character according to the relative importance of these paths. This should be followed by steps to reinforce the legibility of each node depending on the function served by the adjacent buildings and the relative public relevance of these nodes. According to the *RE* authors, it is important to note that, while designing each path and node, uniform spatial emphasis and uniform significance to all paths and nodes can potentially erode the quality of legibility.

To achieve a high level of legibility, the design of paths and nodes should also be in accordance to the overall theme and character of the district within which the paths and nodes are located. The *RE* authors also claim that the legibility of a path is crucially dependent on the enclosure formed by the path in plan and section. Hence, they propose a minimum height/width ratio of 1:3 to provide sufficient path enclosure and suggest planting trees where this ratio may not be achieved (Bentley, et al., 1985 p. 52). During designing the landmark elements on the site, placing them to form a continuous visual chain of markers to provide enough reference points for movement can enhance the overall legibility of the streets. Since paths are a common feature to both permeability and legibility, they are very much interrelated. Therefore, legibility and permeability work together, and design for legibility should aid in enhancing permeability and vice versa.

Robustness

The *RE* authors identify *robustness* as the fourth quality that aids in making a place "responsive." The *RE* authors define robustness as the quality of a place to offer choices for many different purposes rather than a fixed single use. According to the authors, the quality of robustness can be attributed to both indoor and outdoor spaces. A robust indoor space would be one that can readily accommodate more than one function and easily allow a change in use when required. The quality of robustness is attributed to an outdoor space when the physical design of the place facilitates co-existence of different activities such as buying/selling, sitting/relaxing, sitting/reading, and so forth. (See Figure 1-7) Robustness is necessary because different users may use a space differently and the user or the owner of a space may change with time.

Figure 1-7. Piazza at Treviso, Italy where co-existence of various activities in an outdoor space makes it robust (Source: http://en.wikipedia.org/wiki/File:20050528-024-treviso-signori.jpg).

The RE authors explain that buildings cannot be designed in isolation but must be integrated into the urban design process because many of the activities in the outdoor places are strongly influenced by what goes on in the buildings and; around the edges (ibid., p. 56). Therefore, *RE* argues that achieving the quality of robustness in an urban place requires design considerations at three different levels—building level, outdoor level, and building/outdoor interface level. The *RE* authors broadly classify robustness for buildings as a whole as *large-scale robustness*—which is the ability of a building as a whole to be put to different uses; and *small-scale robustness*—which is the scope in a particular space of a building to be used for varied purposes. Although large-scale robustness may not readily offer benefits to users, it proves to be beneficial in the long run because when buildings with such a quality get older, they can become financially feasible choices to accommodate uses for which they were not originally considered (ibid., p. 57). Unlike large-scale robustness, the user is directly benefited by the presence of small-scale robustness because it affects day-to-day choices (ibid., p. 57). The design for large-scale robustness needs to be considered early on because it is generated by the overall design of buildings, whereas small-scale robustness can be achieved by the careful design of the details of buildings, later on.

RE discusses the design implications for residences and other building types separately. When designing family houses, the most important factor that contributes to robustness is the area of space provided in the house. Therefore, the design of a family house should be such that it provides maximum area of space at a given cost. Other prescriptions for house design to support robustness are: (1) the design and construction of the attic should be such that it allows easy conversion to usable space; and (2) dwelling frontage should be wide enough to allow extension of spaces without hampering the access to sun and wind to the existing spaces (ibid., p. 61).

For other building types, *RE* identifies three factors that support long-term robustness: (1) building depth; (2) access; and (3) building height. The authors argue that the most preferred configuration for a building to achieve large-scale robustness is with a shallow plan, limited height, and many points of access. According to the *RE* authors, the depth of an ideal robust plan should be 9m to 13m because this helps in easy sub-division of the internal space and also allows sunlight and wind into the building (ibid., p.62). The prescribed height for buildings is 4 floors because the variety of uses that can be accommodated above four floors is considerably reduced

(ibid., p. 62). Presence of different access points can add to the robustness of a building by enhancing the ease with which a building can adapt to various uses (ibid., p. 63).

According to the *RE* authors, buildings can be considered to comprise *hard* and *soft* areas (ibid., p. 58). Shared facilities like staircase, lifts, and other vertical service ducts are considered to be hard areas whose functions are less likely to change with time. The areas containing other functions are soft areas, and these may change with time. As a design guideline, *RE* prescribes grouping the hard zones together and leaving the rest of the space uninterrupted when the building frontage is less than 15m. This would facilitate easy subdivision when required of spaces with equal access to sun and wind. For buildings with frontage more than 15m, the hard zones may be repeated with the distance between them not exceeding 20m (ibid., p. 65).

Small-scale robustness is largely achieved by design details such as room size, room shape, circulation space, and placement of doors and windows. The *RE* authors suggest 14 square meters with plan proportions between 1:1 and 1:2 as the average size of a room in which most common activities can fit (ibid., p. 66). *RE* also emphasizes designing interior spaces with a scope for easy internal alterations that will enable users to easily alter interior spaces according to changing needs. Small-scale robustness is also enhanced by provision of sub-spaces within a room in relation to the main activity such as bay windows, and window seats. This provides varying choices of activities within the same space, thereby enhancing robustness. Robustness in the interior is also affected by furniture layout, and *RE* suggests that the room design should maximize the possibility for alternative furniture layout and specifically avoid fixed furniture.

Figure 1-8. Developing an indoor/outdoor interaction by locating potential active indoor areas on the first floor results in active building fronts which is an attribute of a robust outdoor space (Source: Photograph by author).

The *RE* authors identify the edge between the buildings and the public place as a major factor that defines the overall public realm. This edge forms the interface between private indoor spaces and public outdoor activities. According to the authors, the co-existence of a range of private and public outdoor activities can enhance robustness. In urban places, some indoor activities have the potential to benefit from as well as contribute to outdoor activities. Such indoor activities contribute to outdoor activities either by establishing a visual contact between inside and outside or by extending the activity into an adjacent outdoor space, e.g., the outdoor seating of a restaurant or bar. (See figure-1-8). The *RE* authors call such indoor areas active and suggest locating such areas on the first floor of the building so that robustness can be enhanced by achieving an indoor-outdoor interaction (ibid., p. 58). The presence of a refuge from harsh weather conditions by using arcades or other architectural devices can also contribute to robustness (ibid., p. 70). When designing such edges, it is important to provide privacy by using level changes, horizontal distances, or their combination (ibid., p. 69)

The design implications for robustness in outdoor spaces include designing streets and other pedestrian spaces to promote usability choices. The *RE* authors suggest that street spaces be designed so as to promote shared use by both pedestrian and vehicular traffic. Robustness is also increased by designing street elements to make pedestrian movement convenient, especially for the handicapped. Plazas inset into buildings along streets with high pedestrian flow can contribute to robustness by enhancing the usability choices of pedestrians. Another major design implication is the provision of a minimum of 300 linear mm of seating for each 3 square meters of open space in outdoor spaces with high pedestrian use. These outdoor spaces achieve multiple usability choices when the seating designs allow multiple seating arrangements.

Figure 1-9. Paley Park, New York; a plaza inset into buildings along streets with high pedestrian flow, thereby contributes to robustness by enhancing the usability choices of pedestrians (Photograph copyright 2007 Stephen H. Yuhan).

In their discussion, the *RE* authors establish robustness as an important quality with design implications required at various levels and different scales. Although robustness can be easy to achieve, the current patronage system doesn't allow much scope. Therefore, the *RE* authors suggest that urban designers must find a way to incorporate robustness in spite of the client's requirement of a single fixed function: "Designers cannot change the way patronage works but they do not need to make the problem worse by the way they design" (Bentley, et al., 1985 p. 56).

Visual Appropriateness

The qualities of permeability, variety, legibility, and robustness define urban places only in general physical terms. But the built-up parts of urban places for a user are visual as well. Therefore, having laid the foundation for "responsive environments" with the first four qualities, the *RE* authors next discuss the quality of urban "responsiveness" at a visual level by identifying *visual appropriateness*, which is the quality of a place associated with its visual and architectural appearance. The *RE* authors explain that people interpret places in their own ways with associated meanings. According to the *RE* authors, a place has the quality of visual appropriateness when these meanings support responsiveness (ibid).

The *RE* authors suggest that the detailed appearance of a place must help people read and interpret the patterns of use and the character of a place. These interpretations are valuable because they reinforce "responsiveness" at three different levels: variety, legibility, and robustness (ibid., p. 76). The coexistence of various activities achieved by the design for variety becomes visible and comprehensible for users when it is reinforced by visually appropriate design of the buildings accommodating these uses. On the contrary, the value of certain functions and activities is reduced considerably if the building design doesn't support those functions and activities—e.g., the presence of a town hall does not offer the full visual potential if users interpret it as a factory building. The legibility of a place is reinforced in terms of form and use. The design details of elements contributing to legibility must support this objective because it is the detailed design of elements that enables people to identify landmarks and districts, a failure of which may adversely affect legibility. The potential of a place to be used for different functions contributing to large-scale and small-scale robustness is enhanced when visually reinforced by appropriate design details.

Designing visually appropriate buildings, however, is a complicated process because it involves a wide variety of people with different backgrounds and different perspectives (ibid., p. 77). Different user groups may interpret a given building differently based on their own social background and past environmental experiences. This happens predominantly because past environmental experiences of people force them to associate certain building elements with particular functions, thereby supposing a building having those elements to be catering to that particular function. To address this problem, *RE* identifies two broad categories of visual cues to develop designs facilitating visual appropriateness: first, *contextual cues*, which support legibility; and, second, *use cues* which support variety and robustness.

Contextual cues are visual cues offered by building elements that enables users to relate the building to the overall context by either integrating it with or contrasting it from the surrounding paths, nodes, landmarks, edges and districts. *Use cues* are visual cues offered by building elements that enable users to comprehend the functional choices offered by the building. These cues are predominantly read from the building's façade, and the *RE* authors suggest that building elevations have a crucial task to perform and hence shouldn't be designed with aesthetic delight as the only concern. Therefore, the *RE* authors propose identifying contextual and use cues pertaining to the project and applying a maximum number of these cues to the building's design details (ibid., p.78).

Based on their study from various cultures, the *RE* authors list various architectural elements that can achieve visual appropriateness (See Figure 1-10). These elements include vertical and horizontal rhythms, skylines, wall details, windows, doors, and other first-floor-level details. The *RE* authors suggest that maximizing these architectural cues is vital for achieving visual appropriateness. Although visual appropriateness comes towards the end of the hierarchy of responsive qualities, it plays a major role in the design process by defining the character of a place in a complimenting way to variety, legibility and robustness.

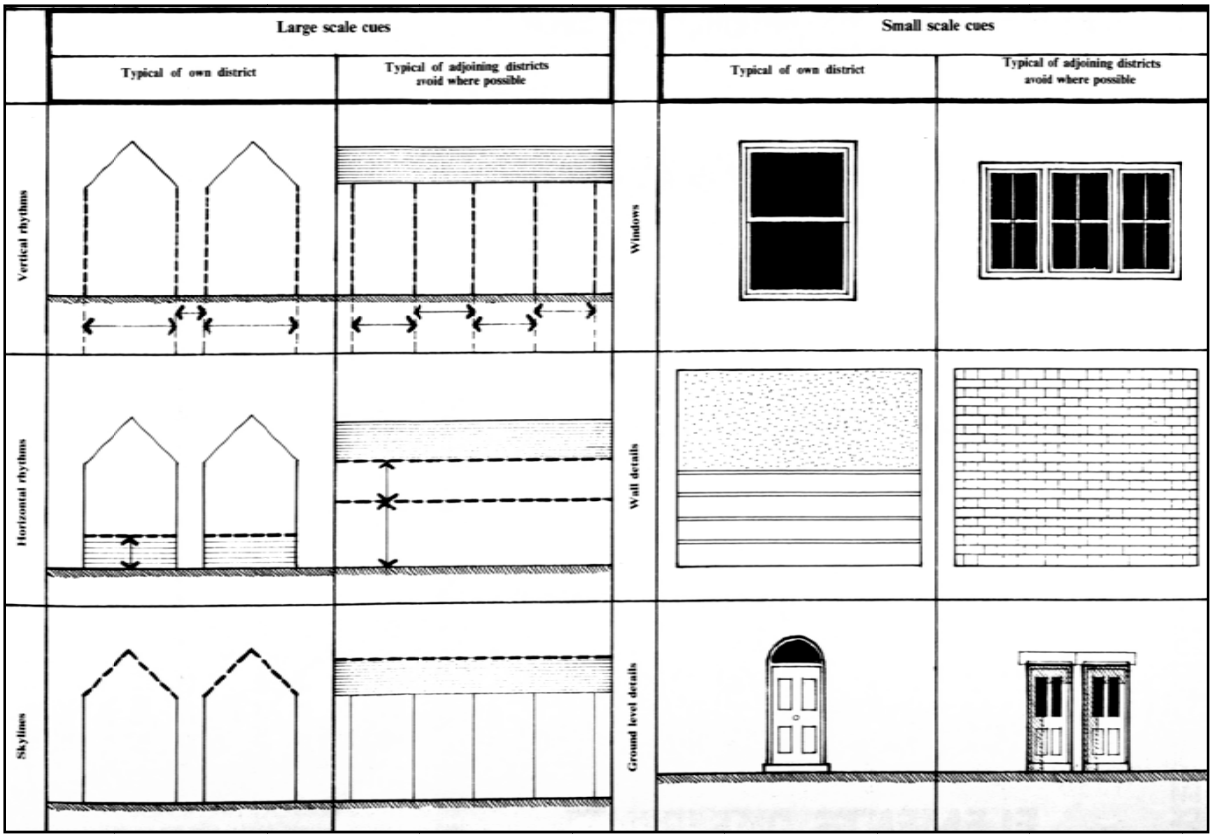

Figure 1-10. Illustration showing a matrix of large and small-scale visual cues present in two adjoining districts; an understanding of which is necessary in designing visually appropriate buildings within the district. Photograph copyright Elsevier 1985 (Bentley, et al., 1985, p. 81).

Richness

Urban places do not exist in a vacuum, and the involvement of the user's senses is inevitable. The *RE authors* suggest that increasing choices in sensuous experiences can add to the urban "responsiveness" contributed by the first five qualities already discussed. Hence, the *RE* authors identify *richness,* which is the quality of an urban place to give its users a wide range of sensuous experiences as the sixth quality. Richness is predominantly a visual quality but is also related to other senses like smell, hearing, touch, and the sense of motion. The *RE* authors argue that vision is the most dominant sense because it contributes most information to urban users. In addition, visual experience is predominantly under the urban user's control (Bentley, et al., 1985 p. 89).

According to the *RE* authors, the quality of an urban place to be visually rich largely depends on the presence of contrasting elements or features in that place (ibid., p. 90). The *RE* authors also prescribe that the design of such contrasts should be based on the orientation of

surfaces and the most likely positions from which surfaces can be viewed. The elements acting as the visual cues in designing for visual appropriateness can be further developed to gain richness by carefully arranging and designing these elements to achieve contrast. The *RE* authors argue that richness increases with the increase in number of visual elements on a surface. When these visual elements on surfaces increase to a certain limit, however, these elements are read together as one single element, thereby reducing the richness of visual experience.

The proposed solution for this problem is the provision of large-scale subdivisions of these elements with intermediate contrasting elements. The *RE* authors also suggest that surfaces must have a hierarchy of large- and small-scale elements providing richness in visual experience to users present in different viewing distances (See Figure 1-11). For surfaces which have a longer viewing time, the richness offered must be consistently prolonged as long as a viewer is seeing, and hence those surfaces should possess the visual complexity that can keep the viewer occupied in the visual experience of that surface for a longer time.

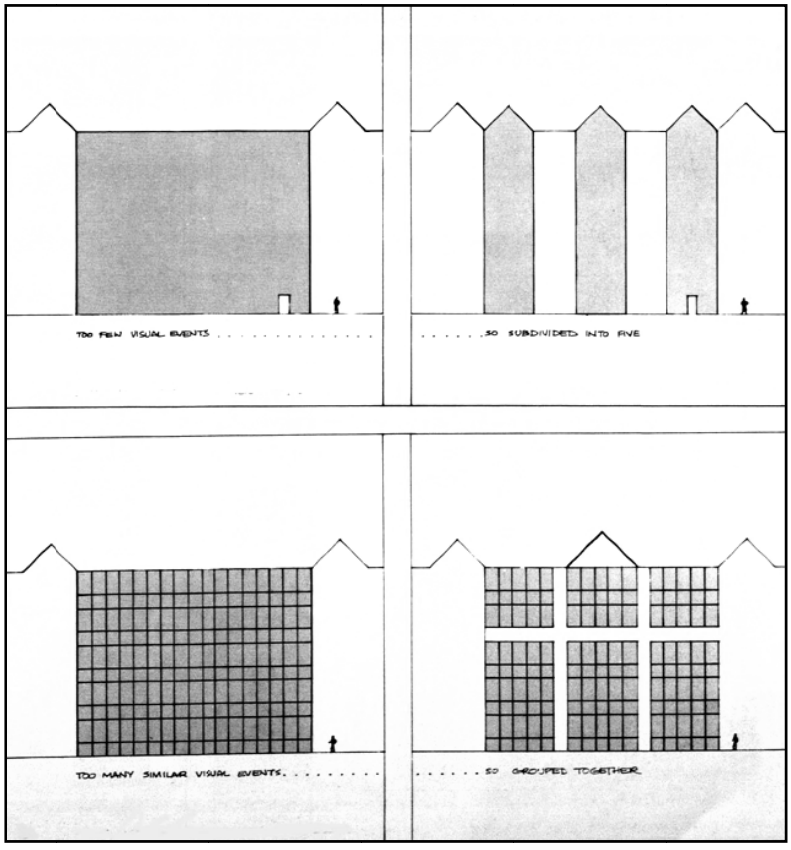

Figure 1-11. The major design implication to achieve richness is to maximize visual elements that can be seen from various viewing positions. Photograph copyright Elsevier 1985 (Bentley, et al., 1985, p. 91).

Traditional cities and buildings offered visual richness in different ways at varying scales and this can be witnessed in the intricate details of most buildings from the past. This trend was largely eradicated by the quest of modern designers to achieve geometric order at all levels. The *RE* authors point out that designers and clients often fear that designing elements contributing to richness may cost more than the sparse geometries achieved through modern design (ibid., p. 90). The *RE* authors suggest that, although this is not always true, designers must find different ways to achieve visual richness using techniques and materials that are more cost-effective so that richness in visual experience can be financially viable.

Personalization

The final quality contributing to "responsiveness" is *personalization*, which is the quality of an urban place that allows users to make it their own according to their individual tastes and interests. Users personalize their spaces either to improve practical facilities or to improve the image of the place according to personal likes and dislikes. Even though personalization is generally associated with building interiors, it also has an effect on the surrounding urban space when expressed at the private/public interface. Personalization particularly complements variety and legibility because varied attempts to personalize the private/public interface in a building gives rise to variety in the physical appearance of buildings and also gives a better understanding of the place's pattern of activities—i.e., its variety.

The *RE* authors argue that urban users ultimately live and work in environments designed by others (Bentley, et al., 1985 p.99), and such spaces typically require personalization to fit specific users' needs, tastes, and aspirations. There are several constraints that can hinder personalization. The *RE* authors identify these major constraints of personalization: (1) tenure for which the building is used for a particular purpose; (2) type of building; and (3) user technologies (ibid., p. 100). According to the *RE* authors, people choose to personalize a place not only to affirm their personal tastes and values but also to communicate those tastes and values to others. In doing so, personalization may occur at two levels: first, *private personalization*; second, *public personalization*.

Private personalization, largely involves changing internal surfaces according to the taste of the user—e.g., using internal walls for display settings and for decorating surfaces. The *RE* authors suggest that materials and wall details should allow easy appropriation of various props

important for users' personalization. *Public personalization* is visible to the world beyond the users' personal realm and generally happens at the thresholds of a building—windows, entrances, porches, and external wall surfaces. The *RE* authors suggest that the design of thresholds should encourage and permit personalization—e.g., provision of projected window sills that are accessible from the inside, entrance porches, front gardens, and provision for planter beds at wall edges.

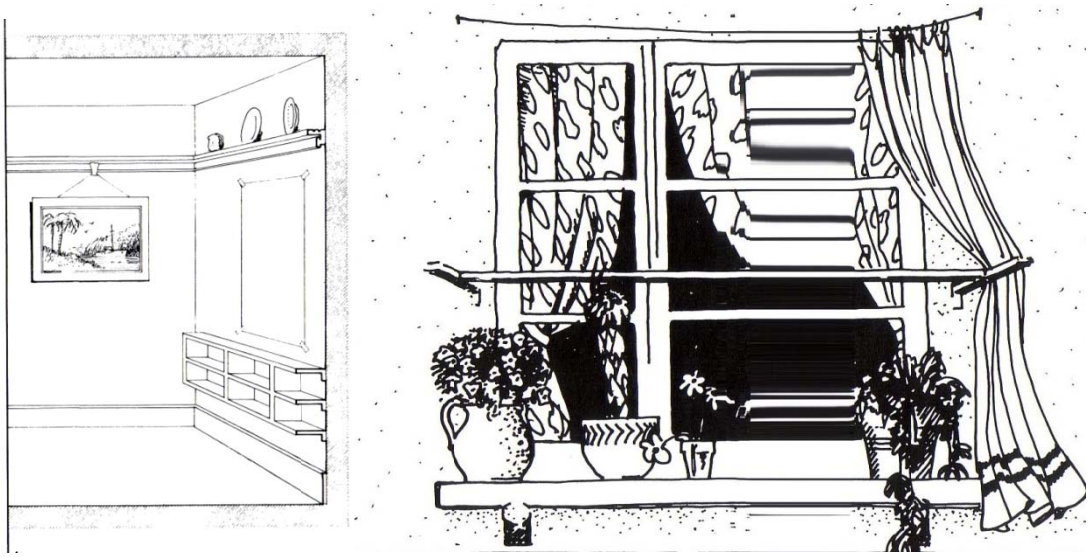

Figure 1-12. Design implications for private personalization largely consists of provisions to use walls as display setting for decoration and that for public personalization which happens at the threshold between the public and private realm Photograph copyright Elsevier 1985 (Bentley, et al., 1985, p. 101,102).

Although personalization is a desirable quality, it may interfere with other responsive qualities such as visual appropriateness and richness. The *RE* authors conclude that the design of buildings must offer external spaces for personalization in such a way that the act of personalization does not negatively affect other responsive qualities—e.g., limiting external personalization of elements that may weaken visual appropriateness or richness.

Applying Responsive Environments

In the final chapter of their book, the *RE* authors demonstrate practical application of the seven qualities of "responsiveness" by developing an urban site measuring approximately 5.6 hectares (13.8 acres), located in close proximity to a central-city area of Reading, England, approximately 30 miles south of London. The boundary of the site is marked by Castle Street to

the west, Minister Street to the north, Duke Street to the east, and a major inner distribution road to the south. The site is bisected into two halves by the Bridge Street. The River Kennet, flowing close to the south-eastern edge of the site, is the only prominent natural feature (see figure 1-13). Originally, the marshland adjoining the river was occupied by a brewery which was later moved to another site on the outskirts of Reading, leaving the location available for redevelopment.

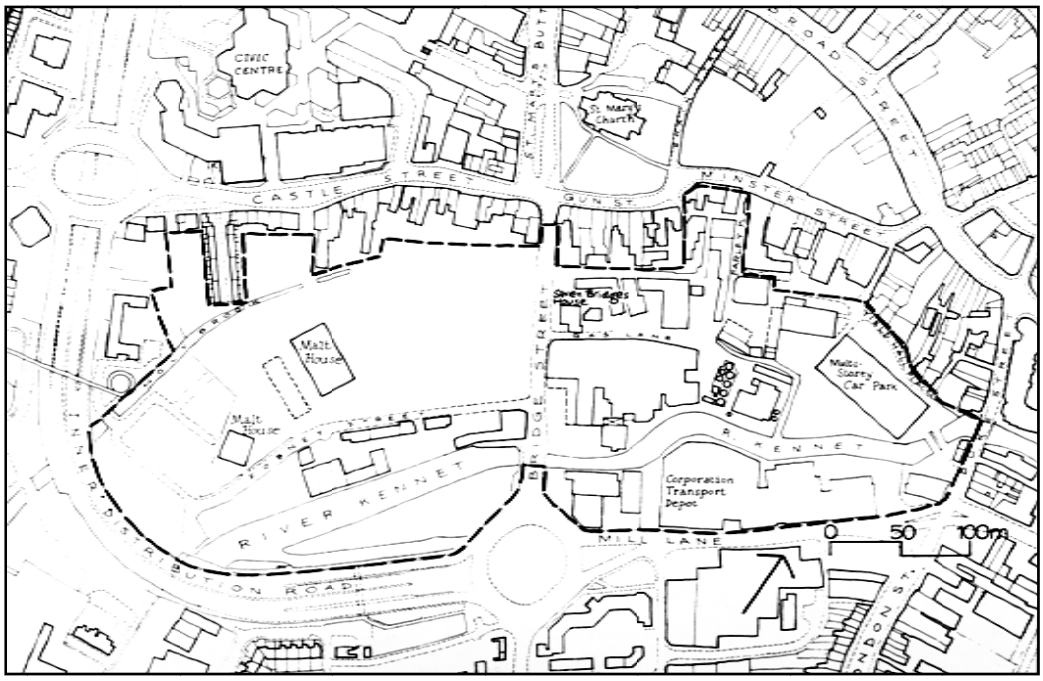

Figure 1-13. Reading site. Photograph copyright Elsevier 1985 (Bentley, et al., 1985, p. 107).

Even though the brewery was moved, the site has continued to house some of the old brewery buildings, mostly from the nineteenth century. Of all the structures on site, three buildings—a brewery malt house, a stable block, and a house attributed to renowned architect Sir John Soane—hold architectural and historical importance. Other existing structures include a multi-storey car park and a corporation transport-depot building. Since the site is road-locked, it is fed with various streets and roads, giving the site a potential connectivity to the surrounding city. The location of the Reading site within an already functioning urban context, its potential links with the surrounding city area, and a manageable size make the site an appropriate context for the application of the seven qualities of "responsiveness."

Designing for Permeability

In their quest to design the Reading site to be a "responsive environment," the *RE* design team developed a phase-by-phase strategic design process to incorporate each of the seven qualities of "responsiveness." First, the Reading site was designed to incorporate the three large-scale qualities—permeability, variety, and legibility, followed by a design focus on the four small-scale qualities—robustness, visual appropriateness, richness and personalization.

As the starting point for a permeable design, the *RE* design team identified and analyzed the existing system of links into and through the site. Each physical linkage in the form of streets and roads was evaluated to understand the degree of connectivity offered by these links in terms of *city links* and *local connections*.

The study of *city links* pertains to visual permeability and deals with understanding the visual connections between the site and the larger city surrounding it. The strength of a city link depends on its directness, which in turn depends on the number of turns required to reach a site. Therefore, a pathway would offer the most direct visual link between the site and larger city when the connection is direct without the need to take any turns to reach the site from the city. On the other hand, connections involving multiple turns give rise to less direct city links. For the Reading site, as shown in figure 1-14 (left), we see that pathways **A**, **F**, and **I** were identified as the most direct links and **G**, **L** were the least direct city links.

Evaluating the local connections of a site helps in designing a site to be physically permeable. One way to measure the strength of local connectivity of a pathway is to count the number of streets and pathways that feed into it. Therefore, the most connected local connection would be the pathway that is fed with many other streets and pathways, thus probably being used by larger number of users. In the case of the Reading site as shown in figure 1-14 (right), pathways **E**, **M** were identified as the most connected and pathways **C**, **D** least connected.

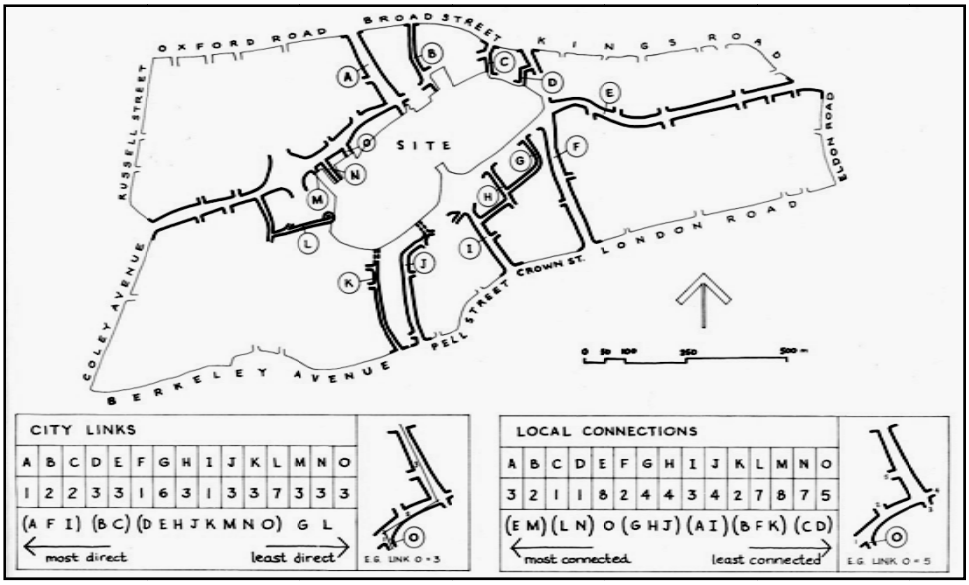

Figure 1-14. Analysis of the existing Links to the surrounding city. Photograph: copyright Elsevier 1985 (Bentley, et al., 1985, p. 109).

Using this understanding of various important physical and visual links, the *RE* design team connected these various strong linkages to achieve a preliminary street-block system as shown in figure 1-15. This can be seen as the first layer of permeability which ensured that the street system corresponds to the existing physical and visual links to the city, thereby facilitating easy, permeable movement. It is important to note that establishing details of the street-block system such as street widths, junction designs, and block sizes was not possible at this stage, because these details are mostly dependent on the uses that relate to variety.

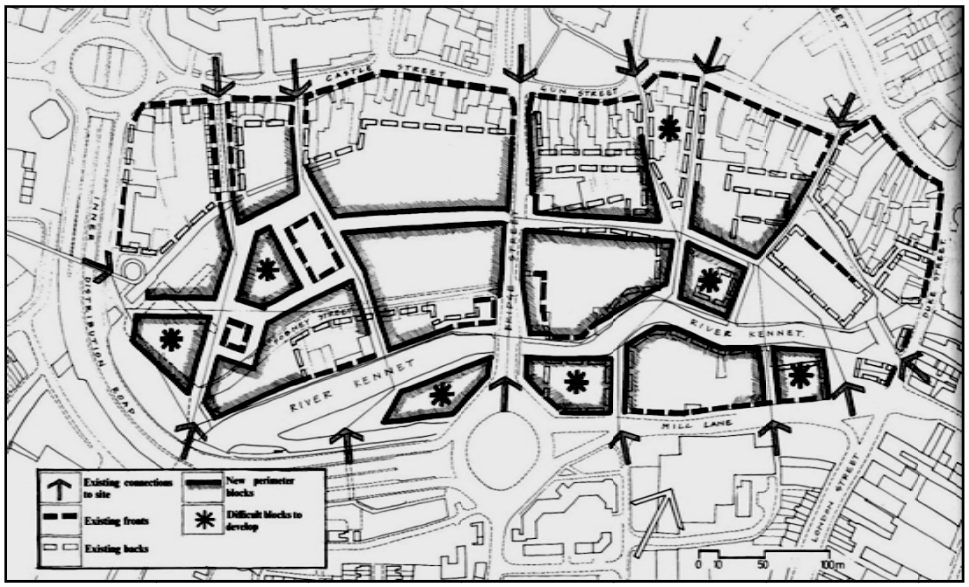

Figure 1-15. Preliminary street-block system. Photograph: copyright Elsevier 1985 (Bentley, et al., 1985, p. 112).

Designing for Variety

Having established a preliminary street-block system, the *RE* design team considers the variety of uses to be incorporated in the scheme. For this purpose, the *RE* design team consulted and interviewed local real-estate agents, authorities, and organizations to identify the demand of various functions and uses for the Reading site. Based on the information gathered from these interviews, the *RE* design team established several uses—13.7% housing, 14% pubs/shopping, 6% indoor leisure/TV studio, 35% offices, and 30% parking (Bentley, et al., 1985 p. 118).

An appropriate design for variety requires strategic placing of various activities so as to achieve a meaningful relation between the use and its location on site—e.g. for the Reading site, the office area was placed on a major access route for convenient access, while the riverfront properties were identified as the most appropriate location for a mix of offices, housing and public promenade. As shown in figure 1-16, the *RE* design team analyzed the site to identify and establish strategic locations for each of the uses proposed in the scheme. The allocation of strategic locations for uses did not intend to regimentize various uses and activities; instead, it attempted to locate the uses based on the understanding of likely interactions among these uses. The design for variety was further enhanced by establishing strategic locations for primary uses to develop a positive interaction between primary and secondary uses.

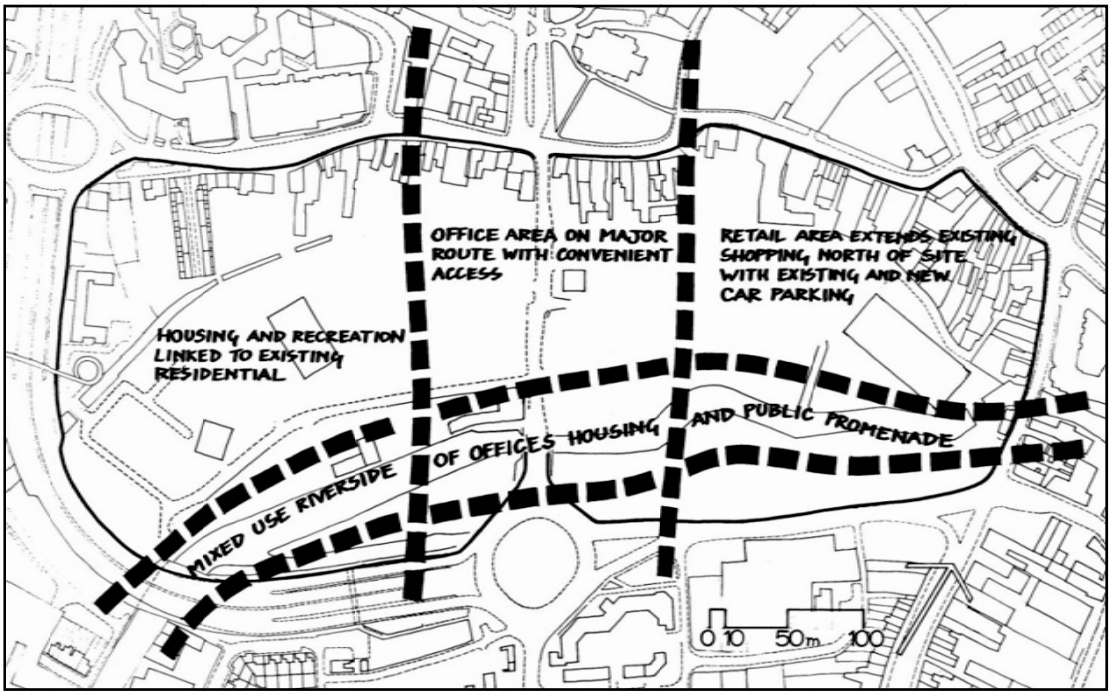

Figure 1-16. Allocation of uses on the Reading site. Photograph copyright Elsevier 1985 (Bentley, et al., 1985, p. 43).

Having designed a layout supporting variety, the *RE* design team checked the financial viability of the proposal based on builders' price books and price information from estate agents. This stage was followed by designing details pertaining to permeability such as street classification, carriageway width, junction spacing, and design of a pedestrian network based on the traffic generated by proposed activities. Even though the preliminary block design maintained small-block size to support permeability, the *RE* design team checked whether the block size would be adequate to house the proposed uses. Therefore, one must understand that there is a level of interplay between permeability and variety. In the design process, permeability and variety must be considered back and forth, as certain design decisions are mutually dependent because of the fact that the presence of one is required for the fruitful fulfillment of the other. As shown in figure 1-17, after considering the design for permeability and variety, the *RE* design team achieved a design scheme for the Reading site.

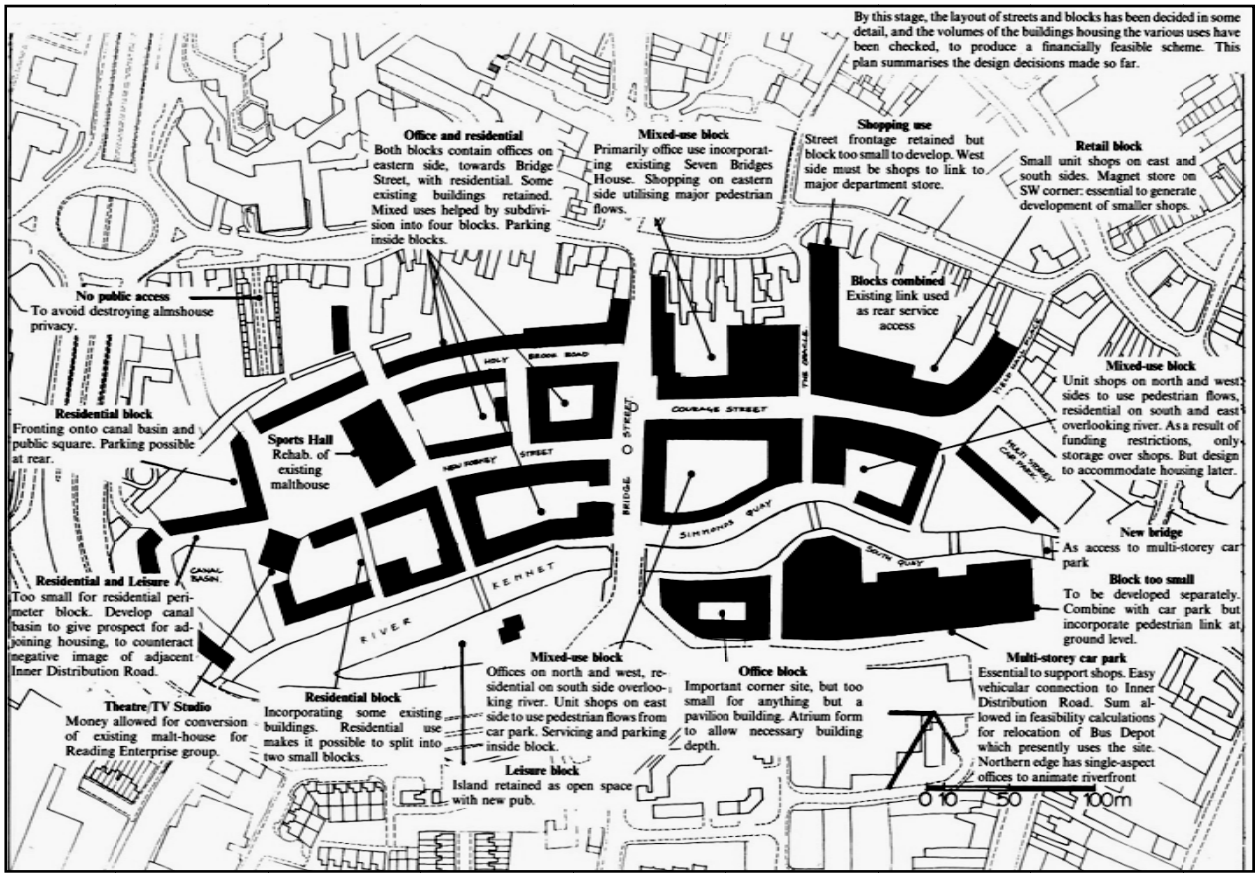

Figure 1-17. Design scheme for the Reading site after considering permeability and variety. Photograph copyright Elsevier 1985 (Bentley, et al., 1985, p. 119).

Designing for Legibility

The design for legibility began with the analysis of the legibility of the site and the surroundings as they existed. A list of all potential elements of legibility such as Bridge Street, the River Kennet, the malt house, multi-storey car park, and St Giles Church was checked against the perceptions of people in the locality. The *RE* design team identified the need for shaping the western part of the site as a new district, since it was cut off from the eastern and southern surroundings with uses different from the district to the north. The team realized that the eastern part of the site required a link to the already established commercial district so that the newly proposed shops in this part of the site could benefit from having a character associated with the commercial district. The major design device to link the eastern part of the site to the commercial district was to develop a vocabulary of "street form" based on the analysis of the "path themes" that already existed in the central commercial district.

One of the most important steps contributing to the design of legibility in the Reading site was to identify various nodes in the site and to design them as relevant public spaces possessing qualities of a node. For example, the Maltings Place square in front of the leisure center on New Fobney Street was identified as a potential node that was weakly enclosed by two-story housing on two sides. The square's sense of enclosure was increased by providing large-scale tree planting; to increase the public relevance of the space, entrances to the main buildings were directly focused into the space, and a landmark statue was placed in the square. On the other hand, the triangular open space in front of the multi-story car park was an over-large space in relation to its limited public relevance. Therefore, the RE design team subdivided the space with paths and the larger section of the space was animated by locating a café facing the space. As shown in figure 1-18, a series of similar design decisions resulted in a design scheme offering maximum legibility. Using a working model, this scheme was further evaluated from various viewing positions.

For any urban design project, incorporation of legibility requires identification of the elements already existing on site; enhancing the elements of legibility generated in the design scheme; designing new elements if need be; and, finally, evaluating all these elements from various viewing positions as the design proceeds. The design for legibility is closely linked to the qualities of permeability and variety because, together, these three qualities form the large-scale qualities of a "responsive environment" and are required for the site to work as a whole in giving

users a wide range of choices. Legibility also plays an important role in the fruitful fulfillment of permeability and variety because these qualities of place would make no sense to users if the place is not legible.

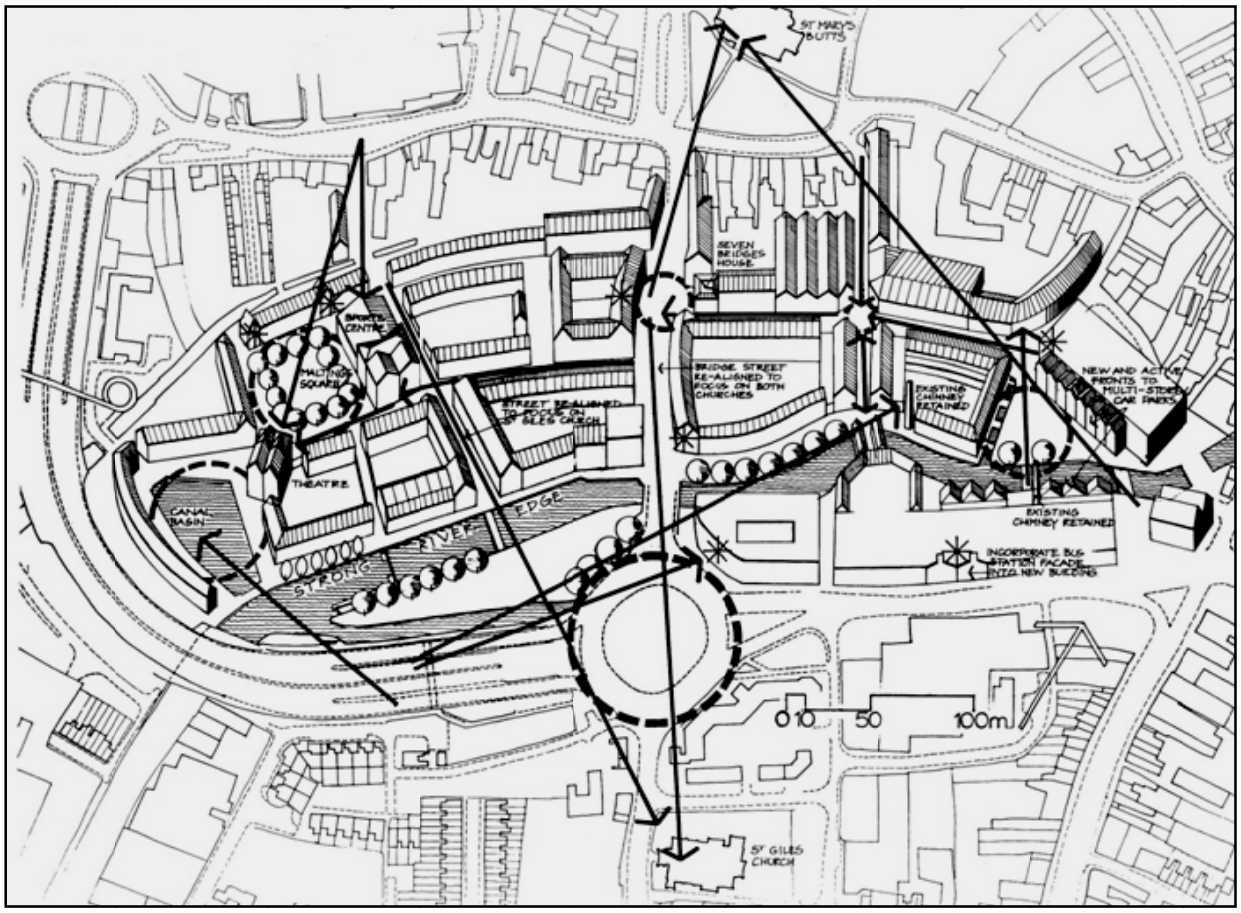

Figure 1-18. The layout of Reading site after being adjusted to achieve legibility. Photograph copyright Elsevier 1985 (Bentley, et al., 1985, p. 124).

Designing for Robustness

Having tentatively designed the Reading site to achieve the large-scale qualities of permeability, variety, and legibility, the *RE* design team next worked to incorporate the quality of robustness in regard to buildings on the site. The design needs for robustness are different for residential buildings than for mixed-use buildings. Design elements for the terraced houses proposed for the south side of Maltings Place to support robustness included allowing future use of roof space by providing space for a future stair to the roof space and strategic design of purlins and ridge height to allow headroom in roof space. The rear gardens for these houses were

designed to maintain maximum privacy, while providing physical access and allowing winter sun so that the garden space could be used for private activities even during winter. The mixed-use block fronting Bridge Street to the south of Courage Street was designed to provide maximum access to the buildings from the street and with a maximum height of four stories. The internal layout of the office spaces in this block was designed to provide a flexible use of internal spaces, thereby supporting robustness. The *RE* design team also animated the multi-story car park by adding one block of small flats to make it a visually lively multi-use building. The interface between these flats and the public space was also designed to support a variety of outdoor activities.

One of the major steps taken by the RE design team to incorporate robustness into public outdoor spaces was to design for a balance between pedestrian and vehicular uses. The outdoor spaces were designed to support robustness by achieving a right balance of pedestrian and vehicular use, both at public and residential scale. For example, the design of Maltings Place—the largest public square in the project—integrated vehicular and pedestrian use by providing parking for the adjoining Malthouse sports center building within the square; and by connecting the two adjoining public building entrances by a pedestrian path passing through the square. The sense of enclosure provided by the surrounding buildings was enhanced by planting trees around the square. The possible pedestrian movement within the square was further reinforced by visually linking the entrances to the square to the landmark John Courage statue by connecting them using contrasting paving material. At a residential scale, the immediate public realm of the residential blocks was designed to integrate pedestrian and vehicular use and incorporated pedestrian pathway and vehicular pathways separated by a buffer parking lane.

Designing for Visual Appropriateness, Richness and Personalization

The next phase in designing the Reading site involved designing buildings to be responsive by incorporating the qualities of visual appropriateness and richness followed by designing for personalization. The main objective of designing visually appropriate buildings is to support variety, legibility and robustness by enabling users to visually interpret these qualities through architectural and place elements. To achieve visual appropriateness in the Reading project, the *RE* design team identified several large- and small-scale visual cues that could be

incorporated in buildings' design based on their objectives to support variety, legibility and robustness.

For example, the large-scale visual cues used in designing the mixed-use block fronting Bridge Street were: (1) vertical rhythm, achieved by designing vertical bays with 6 meter centers; (2) horizontal rhythm, achieved by designing a first floor largely glazed and providing continuous horizontal division between floors; and (3) skylines, with dormers as the prominent design feature. These large-scale visual cues were derived from architectural elements of older buildings present in buildings in the Reading locality. For example, most older buildings in the commercial area had prominent vertical bays, with largely glazed shops on the first floor and dormers as the prominent skyline. Using these cues in the mixed-use block would enable the building to be interpreted as part of Reading's established commercial area. Similarly, certain small-scale visual cues pertaining to windows, walls and ground-level details were identified and incorporated in the elevation of the new mixed-use building. Figure 1-19 illustrates the final elevation design for this mixed-use block generated by strategic application of small- and large-scale visual cues associated to the Reading site.

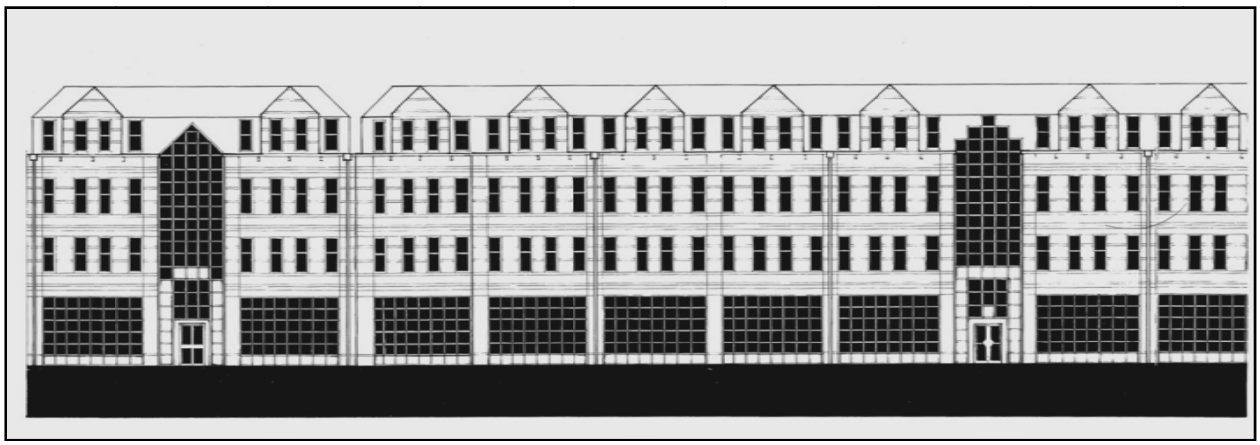

Figure 1-19. Final elevation of the Bridge street offices. Photograph copyright Elsevier 1985 (Bentley, et al., 1985, p. 43).

The design for visual appropriateness was followed by the design for richness, which began by analyzing the likely positions from which visual elements of a particular building could be viewed. For example, the Bridge Street elevation of the mixed-use block was analyzed to understand the visibility of various elements in the elevation from various viewing distances. The views from these likely viewing positions were simulated as drawings to verify whether the design possessed the required contrast to promote visual richness. The design was further

developed to incorporate contrasting elements in the elevation where required, based on the analysis.

The final quality needed for a "responsive environment" is personalization. A building is said to possess the quality of personalization if the design of the building's interior and exterior allows the user to personalize the space according to his or her needs, tastes, and interests. For example, some of the common design features that fostered internal personalization within Maltings Place houses were fireplace with shelves and niches for display, spaces above windows, alcoves in brick walls, and high-level shelves. The exterior walls of these houses were designed to accommodate lamps, nameplates, displaying ledges, and climbing plants, all potential elements for exterior personalization.

Responsive Environments as Place Making

The design process in developing the Reading site served as a tool to understand the application of the seven qualities of responsiveness. The entire design process is a phase-by-phase implementation of each of the seven qualities. The design steps for each quality are preceded by a study and analysis for that given quality. These different design steps can be broadly categorized in terms of three phases—(1) street-block development; (2) design for legibility; and (3) building design.

The first phase seeks to achieve a responsive street-block system and incorporates decisions required for permeability and variety. This phase can be said to be the initiation phase in that this phase prepares the foundation for a "responsive environment" and a strong sense of place. This design phase also requires working together with other professionals (e.g., real-estate agents and traffic engineers), since permeability and variety require consideration of user demands, traffic patterns, and the project's economic feasibility.

The second phase—design for legibility—aims at incorporating imageability in the permeable layout devised in the first phase. Here, the design team may require the involvement of people from the locality to analyze and identify potential elements of legibility.

The third design phase—the design of buildings—works to create structures and spaces that are responsive by incorporating robustness, visual appropriateness, richness and

personalization. This phase includes design details pertaining to the layout and elements of buildings, especially in regard to visual appropriateness and personalization.

Rather that redesigning the Government District in terms of all seven *RE* qualities, this thesis focuses only on the three larger-scale qualities of permeability, variety, and legibility. I narrow my focus to the three large-scale qualities because these qualities, according to the *RE* authors are the most significant in facilitating urban robustness and a "responsive environment."

Chapter 2

Literature Review: Research in Urban Design

This chapter reviews the urban design literature on urban placemaking to enable a better understanding of the theoretical basis for *Responsive Environments (RE)* as an urban design tool. The study of urban design has evolved from being predominantly an aesthetic concern, typified by the city beautiful movement, to become primarily concerned with the physical and socio-cultural quality of the public realm (Carmona, et al., 2003 p. 3). Even though much of modern urban design fails to address the socio-cultural needs of the public realm, a wide range of research argues that urban design must work to transform urban spaces into places that support a range of socio-cultural interactions.

This review begins with a broad portrait of urban design as described by Mathew Carmona, Tim Heath, Taner Oc, and Steve Tiesdell in their *Public Places, Urban Spaces—The Dimensions of Urban Design* (Carmona, et al., 2003). This book is an attempt to establish urban design as a process of making better places for people than would otherwise be produced (Carmona, et al., 2003 p. 3). The authors assimilate, conjoin, and synthesize ideas and theories from a wide range of sources to identify six inter-related dimensions of urban design—*morphological, perceptual, social, visual, functional, and temporal* dimensions. The authors argue that a holistic urban design approach requires simultaneous consideration of all these dimensions, which can be defined as follows:

1. The *morphological* dimension relates to the physical layout and configuration of urban form and urban space, comprising of land uses, building structures, plot pattern and street pattern.
2. The *perceptual* dimension relates to people's perception and sensory experience of a place.
3. The *social* dimension of urban design relates to the mutual relationship between people and place—i.e. the manner in which people and place affect each other.
4. The *visual* dimension relates to the aesthetic aspects of urban design which are conceived and appreciated visually.
5. The *functional* dimension relates to various private and public functional usages of urban spaces.

6. The *temporal* dimension relates to the effect of time on urban spaces, considering urban life as a function of time.

1. The Morphological Dimension

Urban morphology is the study of the form and shape of settlements (Carmona, et al., 2003 p. 61). Morphologist Michael Conzen (1960) considers land uses, building structures, plot pattern and street pattern to be the most important elements of urban morphology. According to Carmona and colleagues, out of all the elements of urban morphology, the street pattern establishes an important urban design quality that is *permeability*—the extent to which an environment allows ease in movement and choice of routes. Bill Hillier (1984) a key figure studying permeability, theorized the relation between movement and the evolution of the urban grid. He argues that movement largely dictates the configuration of urban space, and is itself largely determined by the spatial configuration of streets and pathways (ibid., p. 64).

The street pattern also plays a major role in establishing an urban area's *public- space network*— the public spaces' movement channels (ibid., p. 63). The morphological structure of the public space network not only defines the urban space system physically but also determines an urban area's potential to support social, cultural and economic transactions. According to Carmona and colleagues, such social and cultural character of the public-space network has changed over the course of urban design history, primarily due to the change in modes of transport. Change in the primary mode of transport from walking to cars resulted in the separation of social space and movement space which were previously integrated. This change resulted in exclusive movement spaces—*roads* accommodating high-speed cars and exclusive pedestrian social spaces, thereby hampering the social and cultural character of the public space network.

According to Carmona and colleagues, the onset of modernist functionalist ideas transformed the morphological structure of the public-space network from "buildings defining spaces" to "buildings in space." In contrast to traditional urban spaces where buildings were constituent elements in urban blocks that defined streets and squares, the modernist urban design preference shifted to buildings that stood as free-standing pavilions in amorphous space (Carmona, et al., 2003 p. 67). This transformation was largely triggered by the ideas of providing healthier living conditions, aesthetic preference, and the need to accommodate cars in urban

areas (ibid., p. 63). This trend resulted in large numbers of freestanding, distinctive buildings insulated from the local context and separated from public space. In his strong views on the problems of twentieth century urbanism Von Meiss (1990) argues that "There are too many buildings which present themselves as objects, indifferent to the public or hierarchical role they play in the values of our society." He also identifies the fundamental problem of twentieth-century urbanism to be the multiplication of "objects" and a neglect of "fabrics."

According to Carmona and colleagues, another major transformation in the morphological structure of the public-space network was from finely meshed grids to road networks surrounding super blocks and segregated enclaves. This was a product of the need to accommodate fast-moving vehicular traffic and resulted in large parts of the public space network being reserved for vehicular traffic (Carmona, et al., 2003 p. 72). By the early twentieth century, modern planners and designers began advocating the hierarchical road system as the most effective solution for accommodating vehicular traffic; the introduction of which resulted in arterials for fast-moving traffic surrounded by super blocks.

One particular problem faced by this transformation was the tendency for the major roads to prevent movement across them, thus acting as barriers to pedestrian flow and creating district fragments within the urban environment (ibid., p. 75). This again resulted in the severance of social space from movement space. For e.g., Appleyard and Lintell (1972), compared three San Francisco streets that were similar in many ways but differed in the amount of traffic flow. They found that the social interaction was minimal on the street with high traffic, while the streets with less traffic volume offered a more robust social life. People considered the high-volume streets to be less friendly places to live than the lightly trafficked street.

The damage to the social character of public-space network has been aggravated further by a recent urban design trend popularly known as *pod development.* Pod development emphasizes specialized and segregated zones planned for different uses. This has transformed the morphological structure of urban areas from urban blocks opening outwards to the public to segregated complexes of buildings, commonly referred to as *pods* (Carmona, et al., 2003 p. 75). Pod development has encouraged the design of cul-de-sacs, which serve as another disruption of the interconnectedness of the urban environment.

The damaging effects of these morphological transformations, has led to appreciation of the positive qualities of the traditional urban spaces (ibid). Thinkers like Bill Hillier (1984) and

Andres Duany (2000) emphasize learning from traditional urban spaces to understand what works best for people. Carmona and colleagues suggest "one source of evidently durable morphological types is the historic city itself" (Carmona, et al., 2003 p. 71). There is a need to reinforce the social qualities of the public-space network, and thus it is important to integrate movement spaces with the social spaces of modern urban environments. As suggested by advocates of placemaking, a way of achieving this integration is to develop urban blocks that support pedestrian permeability and whose physical dimensions make them robust and enduring.

According to Carmona and colleagues, block size also has a major impact on an urban environment's character and therefore block design requires careful attention. All discussions on preferred block size unanimously conclude that large blocks retard pedestrian permeability. Jane Jacobs (1961) argues that small block size is an essential condition which supports diversity and place vitality by providing frequent opportunities to turn corners. Leon Krier (1990) also advocates small blocks as they support intense social, cultural, and economic exchanges. The authors of *RE* (Bentley, et al., 1985) suggest that block sizes can be derived by considering existing linkages and connections within the local context. This idea also brings to notice the holistic nature of urban environments and the need for inter-connectedness as suggested by Bill Hillier (1984), who argues that, in order to facilitate an active street life, urban designers should proceed from larger to smaller scale because it is the overall nature of the pathway structure that supports the degree of pedestrian activity.

In short, Carmona and colleagues argue that urban morphology should support social, cultural, and economic interactions for better quality of life. These authors also suggest that it is important to incorporate permeability within public-space networks and to strike a balance between the value given to pedestrian and vehicular traffic by not compromising one over the other.

2. The Perceptual Dimension

Urban environments offer a wide range of sensory experiences that are stimulated by sight, sound, smell, and touch. These experiences enable urban users to comprehend and perceive their environment in totality. Carmona and colleagues (2003) suggest that appreciation of perception and experience of place is an essential dimension of urban design, which they call the *perceptual dimension* (Carmona, et al., 2003 p. 87). The value of this dimension is the

emphasis on people-place sensory interactions that develop an exchange of values and meanings between people and place. In discussing the perceptual dimension of urban design, Carmona and colleagues (2003) focus on peoples' perception of their environment and the construction of place.

The study of environmental perception began in the early 1960s as an interdisciplinary field and now offers a significant amount of research on peoples' perception of their environment and the experiential sense of place. Carmona and colleagues (2003) argue that perception is a complex process in which people assimilate, organize, and generate information and meanings about their environment based on various sensory stimuli. Dr Paul A. Bell and colleagues (Bell, et al., 1990) identify four simultaneously operating dimensions of peoples' perception, which can be defined as follows:

1. A *cognitive dimension*, which relates to comprehending a place mentally and intellectually;
2. An *affective dimension*, which relates to the mutual impact of feelings and perception in regard to place;
3. An *interpretative dimension*, which relates to the association to and derivation of meanings from the environment;
4. An *evaluative dimension* which relates to the association of value to an environment, by judging it as valuable or not.

Carmona and colleagues (2003) argue that the involvement of individual personal values and experiences in people's perception of their environment leads to distinct and different environmental images—all unique in their contents and values. In his argument about environmental images, Relph (1976) writes that "Environmental images are not just selective abstractions of an objective reality but are intentional interpretations of what is or what is not believed to be." This idea helps one to understand that environmental perception is much more than mere a psychological or biological process of cognition in that it is also socially and culturally influenced. Knox and Pinch (2000) point out that, in spite of the variation in individual environmental images, groups sharing common social and experiential background tend to hold common imagery aspects in their environmental perception.

One of the key works in the field of environmental imagery is *The Image of the City* by Kevin Lynch (1960) (Carmona, et al., 2003 p. 88). Lynch uses cognitive mapping techniques and

interviews urban users of Boston, Jersey City and Los Angeles to investigate legibility, which is the quality of an urban environment that makes it physically and mentally comprehensible and thereby allows easy navigation. Lynch argues that "a clear image enables one to move about easily and quickly" and that "an ordered environment can serve as a broad frame of reference" (Lynch, 1960, p. 4). Lynch also introduces the idea of *imageability* which he defines as "the quality of a physical object which gives it a high probability of evoking a strong image in any given observer" (ibid., p. 9).

Based on the idea of imageability and the use of cognitive mapping exercises, Lynch identified five key physical elements that generate a strong image in the observers' minds. These elements—namely, paths, edges, districts, nodes, and landmarks—have already been discussed in detail in chapter one. One of the major criticisms of Lynch's work is that his research neglects observer variation, which is the existence of people with different cultural background and experience because of which the city image could change. For example, in his study of Ciudad Guyana, Appleyard (1976) established that people's city images varied depending on social class and habitual use. Another criticism with Lynch's work relates to the value of legible environments, which was questioned by Lynch himself in his later work *Good City Form* (Lynch 1981), where he argued that way finding was a secondary concern for most people. Finally, Lynch's study is also criticized for neglecting the specific symbolic meanings and values that users associate with environments (Carmona, et al., 2003 p. 92).

According to Carmona and colleagues, the understanding of the perceptual dimension of urban design should culminate in designing urban environments that possess a "*sense of place.*" Even though sense of place has been defined in numerous ways, it is often understood as people's attachment to the spirit of place. Phenomenology, which is the careful study, analysis, and interpretation of human experiences, has proven to be one of the best tools to understand people's association to a place and the concept of sense of place. One of the earliest attempts to draw on phenomenology is *Place and Placelessness* by Edward Relph (1976). He largely focused on psychological and experiential sense of place and believed places to be centers of meanings constructed out of lived experiences (Carmona, et al., 2003 p. 87). According to Relph (1976), although the meanings of places are a part of the physical environment, they are largely derivative of human intentions and experiences.

The concept of place often emphasizes the importance of peoples' sense of belonging and rootedness (ibid., p. 97). Crang (1998) suggests that "places provide an anchor of shared experiences between people and continuity over time." Relph (1976) provides an understanding of rootedness and peoples' sense of belonging in terms of *insideness* and *outsideness*, which relates to peoples' psychological attachment to or detachment from a place. This gives way to Relph's concept of *placelessness*, which he defines as the "casual eradication of distinctive places" and the "making of standardized landscapes" (Relph., 1976, p. ii). Carmona and colleagues suggest that placelessness tends to signify absence or loss of meaning. They claim that market and regulatory approaches, along with events such as globalization, mass culture, and loss of social and cultural relations embedded in place, are some of the reasons responsible for the phenomenon of placelessness in contemporary urban environments (Carmona, et al., 2003 p. 101).

Much urban design research draws from the concept of place to understand urban design actions that can enhance the sense of place, for example, Canter (1977) suggests that places are a function of activities, physical attributes, and meanings. This idea was later developed by John Punter (1991) and John Montgomery (1998) to identify urban-design actions required in achieving a sense of place (Carmona, et al., 2003 p. 101). Jane Jacobs (1961) argued that urban place vitality and animation is achieved by the presence of many people on city streets and is a measure of success of an urban place. The Project for Public Spaces (2001) suggests that successful public places are always characterized by the presence of people, a situation which can be achieved by the presence of four key attributes, namely, comfort and image, access and linkage, uses and activities, and sociability.

Thus understanding the perceptual dimension of urban design is of great value in creating places for people. Urban design must cater to peoples' perceptions and establish people-place relationships with much scope for exchange of meanings and values.

3. The Social Dimension

The inevitable presence of people and society within urban environments adds a social dimension to urban design. Carmona and colleagues argue that "it is difficult to conceive of space without social content and equally, to conceive society without a spatial component" (Carmona, et al., 2003 p. 106). Understanding the social dimension of urban design is important

because urban designers can affect activity and social life patterns by the way they shape urban environments (ibid., p. 106). In discussing the social dimension of urban design, Carmona and colleagues focus on the relationship between people and space, inter-related concepts of public realm and public life, the notion of neighborhood, and issues of safety, security and accessibility.

Carmona and colleagues argue that the relationship between people and spaces can be best explained as a two-way process, wherein people continuously create and modify spaces and, while doing so, also are influenced by them in various ways (ibid., p. 106). At the same time, it is also important to understand that this relationship is not absolute because the ways in which spaces affect people's behavior are influenced by users' individual situations, characteristics, and socio-cultural values. Gans H.J. (1968) considers environments that provide a wide range of environmental opportunities as *"potential"* environments and distinguishes them from *"effective"* or *"resultant"* environments, which are created by what people actually do in that setting. This idea reveals the value of people and society as an important factor in placemaking.

In regard to placemaking, Carmona and colleagues argue that urban designers should focus on creating more *"place potential"* rather than embracing a deterministic attitude of limiting environmental choices by designing spaces for certain specific function. In his attempt to study the relationship between people and public spaces, Jan Gehl (1996) broadly divides outdoor activities in public spaces into three categories, which are:

1) Necessary activities, which users have to perform compulsorily irrespective of the physical setting, such as going to school or work.
2) Optional activities, which are performed voluntarily if permitted by the physical setting, such as visiting a coffee shop or strolling in a park.
3) Social activities, which depends largely on the presence of other people in public spaces, such as greetings and conversations and other communal activities.

Gehl argues that in a good quality public space, all three types of activities occur in almost the same frequency unlike poor quality public spaces where only necessary activities occur. Therefore, urban design should aim at providing people with choices for a wide range of activities, especially social activities.

The inter-related concepts of *public realm* and *public life* are very important in understanding the social dimension of urban design. Public realm can be defined as the physical settings that support public life and social interactions in an urban environment. According to

Carmona and colleagues, the public realm comprises a physical element which is the physical space that supports social interactions and a socio-cultural element which is the activities and events occurring in those spaces (Carmona, et al., 2003 p. 109). In contemporary urban environments, there has been a considerable decline in the significance of the public realm. There are various social, political and economic factors contributing to this decline. For example, Nan Ellin (1996) observes that many civic and social functions such as leisure activities, entertainment, and gaining information that traditionally took place in public spaces have moved to the private realm (ibid., p. 110). Richard Sennett (1977), in *The Fall of Public Man*, documented various social, political and economic factors that led to the decline of the public realm (ibid., p. 110).

Works of Jane Jacobs (1961), William H. Whyte (1980), and Bill Hillier (1984) are major contributions to the study of public life and the social aspects of urban design. Jane Jacobs emphasized the value of sidewalks and diversity of uses in achieving healthy public life and thereby proper functioning of cities. William H. Whyte's study inquired into the quality of "*sociability,*" which according to him is the measure of success of urban plazas. Based on his observations, Whyte enlisted various design considerations that could make a plaza sociable. Bill Hillier's work, popularly known as space syntax, attempted to empirically understand the relationship between physical space and social life—i.e., the effect of building placement and pathway structure on human movements and activities.

The idea of neighborhood design has also become an integral part of the urban design process and has a strong influence on the social aspects of urban environments. According to Carmona and colleagues, the idea of neighborhood has strong relevance to the social dimension of urban design because ideally the physical design and layout of neighborhood incorporates social objectives such as neighborhood interactions, creation of a sense of community, neighborhood identity, and social balance (Carmona, et al., 2003 p. 114). Clarence Perry's neighborhood unit design developed in the 1920s with an objective of systematically organizing and developing city areas, and was a significant idea in neighborhood design. According to Perry each neighborhood unit should contain four basic elements—(1) an elementary school; (2) small parks and playgrounds; (3) small stores; and (4) a configuration of all buildings and streets that allowed public facilities to be at a safe pedestrian access (ibid., p. 114).

Carmona and colleagues also discuss neighborhood design in terms of size, boundaries, social relevance and social mix. Neighborhood size is often determined based on population and/or school's catchment area. In this regard, Jacobs (1961) argues that neighborhood size should be understood in terms of density and that it is difficult to establish a threshold population because the inter-connectedness achieved by similar populations would vary in a large city versus a small town. According to her, only three kinds of neighborhoods are useful for the proper functioning of a city—(1) the city as a whole; (2) city districts that are large enough to be politically significant; and (3) street neighborhoods. Neighborhoods are commonly understood as a distinct territory with defined boundaries. However, Jacobs' observations suggest that neighborhoods that work best are overlapping and interwoven without clear boundaries.

In regard to the social relevance of neighborhood design, Carmona and colleagues argue that, even though the provision of proximate platforms for social interaction may seem irrelevant in today's age of high mobility, it is important that people have opportunities for both proximate and diffused platforms for social interactions. Recent developments regarding the concept of neighborhood design (such as the "new urbanist theory") emphasize mixed-use development and pedestrian friendliness as a means to improve social characteristics of urban neighborhoods. The new urbanist ideas are drawn from traditional neighborhood patterns and are often criticized for failing to understand the wholeness of traditional urban places and achieving mere spatial mimicry. According to Carmona and colleagues, one of the problems with neighborhood design is the application of overly rigid principles; and they write: "rather than dogma, neighborhoods are merely a set of generally desirable design principles to be adapted in the light of local context and prevailing social, economic and political realities" (Carmona, et al., 2003 p. 119).

An important issue related to the public realm is safety and security. Carmona and colleagues argue that lack of security can affect proper use of the public realm and therefore hinder the healthy functioning of urban environments. Therefore, a sense of safety and security is a necessity for successful urban environments. Many contemporary neighborhoods and other urban environments apply gating, prohibitions, patrolling and other such means to achieve safety and security. However, the fact is that even though these means aid in achieving safety and security, they actually disrupt the social quality of a place. Jacobs (1961) argues that a clear demarcation of private and public space along with natural surveillance, which she calls "eyes on the street" (achieved by diversity of uses), aids in achieving security within urban neighborhoods

without damaging the social quality of the place. Jacobs' idea of natural surveillance was further developed by Oscar Newman (1973) in *Defensible Space* which argued for territories of increasingly hierarchical perceived private zones. This idea of secluded defensible enclaves was criticized by Bill Hiller (1988) for preventing the natural movement of people, especially outsiders. According to Hillier, mutually integrated spaces that encourage pedestrian movement and visual permeability are important to achieve a safe and secure environment.

In regard to the social dimension of urban design, Carmona and colleagues conclude that, in spite of a wide range of contrasting ideas and difficult choices about public realm and public life, it is important that urban designers aim at providing "accessible, safe, secure, equitable public realm for all" (Carmona, et al., 2003 p. 129).

4. The Visual Dimension

Apart from being used physically and socially, urban environments also offer a visual experience to users. A wide range of people visually witness and experience the aesthetic values of their environment on a regular basis, thereby giving urban design a visual dimension. In discussing the visual dimension of urban design, Carmona and colleagues focus on aesthetic preferences, appreciation of aesthetic qualities of spaces and townscapes, and the design elements defining urban space such as architecture and landscaping.

Regarding aesthetic preferences of people, Carmona and colleagues argue that appreciation of an urban environment is primarily visual and kinesthetic (Carmona, et al., 2003 p. 130). According to them, aesthetic appreciation of an environment can also be influenced by socially and culturally learnt values. They also argue that people's appreciation of a space can involve motivations broader than mere aesthetics. Jack Nasar (1998) identified five qualities of places that are generally appreciated by people. These qualities are:

1) *Naturalness,* which is attributed to environments that have more natural elements than built elements.
2) *Upkeep/civilities,* which is attributed to environments that appear to be maintained well.
3) *Openness and defined space,* which is attributed to environments offering a blend of openness and interesting views and vistas.

4) *Historical significance*, which is attributed to environments which ignite favorable associations.
5) *Order,* which is associated with environments that are well organized with respect to coherence, legibility, congruity and clarity.

In his study on urban aesthetics, P.F Smith (1980) argues that there are four distinct components that structure peoples' intuitive capacity for visual aesthetic appreciation: (1) sense of rhyme and pattern; (2) appreciation of rhythm; (3) recognition of balance; (4) sensitivity to harmonic relationships. According to Carmona and colleagues, kinesthetic experience of moving through a space is also an important aspect of the visual dimension of urban design. Gordon Cullen (1961) introduced the idea of *"serial vision"* as an attempt to explain visual aspects of townscapes. He argued that the visual experience of a townscape is comprised of a series of overlapping visuals that derive delight and interest by what he calls "the drama of juxtaposition." According to Cullen, the visual characteristics of urban environments should be designed to provide an array of visuals with elements of delight, interest, and contrast. He writes "the whole city becomes a plastic experience, a journey through pressures and vacuums, a sequence of exposures and enclosures, of constraint and relief" (Cullen, 1961, p.12).

Carmona and colleagues distinguish outdoor spaces in terms of *"positive"* and *"negative"* spaces. Positive spaces are relatively enclosed outdoor spaces that have a distinctive shape with a definite boundary such as traditional piazzas. On the other hand, negative spaces are shapeless, formless outdoor spaces without conceivable edges such as residual spaces left over around buildings. As an attempt to enhance the visual quality of urban environments, Carmona and colleagues are interested in creating positive outdoor spaces. They broadly classify positive outdoor space into two types, namely, "streets" and "squares." They also argue that the visual experience generated by positive outdoor spaces is governed by the degree of enclosure and spatial containment horizontally in plan and vertically in section. Two key figures in studying the visual aesthetic effects generated within outdoor spaces are Camillo Sitte (1889) and Paul Zucker (1959). While Sitte advocated a "picturesque" approach to urban space design, Zucker largely discussed various squares that were artistically relevant such as Piazza San Pietro, Rome and Piazza San Marco, Venice.

A large portion of the visual-aesthetic qualities of the urban environment is also governed by the details of urban architecture, which is understood as architecture that contributes to

definition of an urban area's public realm and responds to the context (Carmona, et al., 2003 p. 130). Carmona and colleagues also point out the importance of hard and soft landscape in defining the visual character of an urban environment. They suggest that it is important that urban architecture and landscape are designed in harmony with the overall urban context. They also argue that visual considerations in architectural design are essential ingredients in creating successful urban spaces, but these considerations alone don't make up for visual dimension of urban design. They propose that "buildings, streets, and spaces, hard and soft landscaping and street furniture should be considered together, to create drama and visual interest and to reinforce or enhance the sense of place" (ibid., p. 164).

5. The Functional Dimension

The functional dimension of urban design aims at understanding how places work and how urban designers can make better places in terms of functional usage. In discussing the functional dimension, Carmona and colleagues largely focus on the use of public spaces, mixed uses, density considerations, and environmental design.

In their study on the use of public spaces, Stephen Carr and colleagues (1992) argue that public spaces should not only be socially and perceptually meaningful but also be responsive in serving various user needs (Carmona, et al., 2003 p. 165). They identified five primary needs that people seek in a public space:

(1) Comfort: Physiological, psychological, and social comfort.

(2) Relaxation: A developed state of comfort, with body and mind at rest.

(3) Passive engagement with the environment: Possibility of being a part of the setting without direct involvement; e.g., people-watching.

(4) Active engagement with the environment: Possibility of being able to have a direct involvement and experience with people and place, e.g., talking, and mingling with people.

(5) Discovery: Need to be able to witness new spectacles and experiences.

Social use of public spaces is an important aspect of the functional dimension of urban design. One of the most valuable resources to help in understanding the social use of public spaces is William Whyte's (1980) *The Social Life of Small Urban Spaces.* Whyte used time-lapse studies to identify and analyze the reasons for the use and non-use of urban plazas. His

observations inquired into various user preferences in terms of social usage of plazas to develop guidelines for the design of sociable urban plazas. According to Whyte, the location of the plaza and its relation to the street, efficient sitting spaces, and the presence of elements of triangulation are the prime elements to be considered in designing urban plazas.

Carmona and colleagues argue that movement through public places is a vital part of the urban experience and also a generator of urban life and vibrancy (Carmona, et al., 2003 p. 169). According to them, an understanding of pedestrian movement within urban spaces is essential in designing successful public spaces. Movement through urban spaces is not exclusively for commuting but is also responsible for other optional activities such as buying a newspaper, talking to a friend, or enjoying a view—all activities which Bill Hillier (1996) terms as "by-products" of movement. This concept leads to the understanding of how land use patterns and locations of various functions are a derivative of natural movement, rather than the other way round. Even though Hillier's work is more relevant to urban morphology, it is also relevant to the understanding of functional aspects of urban design because it deals with peoples' use of urban spaces. Hillier's study propagates the value of permeability, both visual and physical, in designing urban environments and suggests that permeable, well-connected places facilitate better pedestrian movement and support a wide range of uses (ibid., p. 172).

Carmona and colleagues discuss the influence of spatial configuration of space on the use of public space, and argue that it is important to consider design features that support urban use and activities. They suggest that the design of shape, center, and edge of public spaces has a determining influence on the use of public spaces, social use in particular. According to Hillier (1996), the over emphasis on sense of enclosure and neglect of visual permeability can affect the usability of urban places; he points out that exposed space often tend to perform better than enclosed ones (ibid., p. 173). Hillier argues that spaces that are not integrated and well-connected and where the natural pedestrian movement is interrupted tend to be underused because places are not local things. In his influential work, *A Pattern Language,* Christopher Alexander (1977) relates the use of public spaces in terms of the design of center and edges. Alexander recommends the design of a distinct center with elements such as a tree, fountain, or a statue in order to enhance the usability of a public space. According to him the design of the edge is the most important element in making a public space usable and lively. He argues that much of

public life begins at the edges and that if the edges fail to be usable, the space fails in terms of usability and ability to support public life.

Carmona and colleagues also discuss the influence of building façades and frontages on the usability of urban spaces. They emphasize the design of an interactive interface between the indoor private spaces and the outdoor public spaces. Buildings with doors and windows open to the public realm can contribute positively to the public life and the use of public life. In this regard, Whyte (1988) strongly criticizes the tendency of modern designers to create blank frontages and façades because they repel public life and breed undesirables. Having endorsed the design of active frontages, Carmona and colleagues also suggest that active frontages should not be achieved at the cost of privacy.

Consideration and organization of uses and activities is very important in developing the functional aspects of urban design. The over-emphasis of functional zoning in urban design has been criticized by various thinkers for its inability to foster urban buzz and place vitality. Jane Jacobs (1961) argues that any urban district must possess a mix of various primary and secondary uses to achieve place vitality. According to Jacobs, the presence of a diversity of uses leads to other forms of diversity and provides enhanced choices in terms of usability. New-urbanist thinkers associate mixed use development with other benefits such as reduced car dependence, socially diverse communities, convenient access to various facilities, and safety. The fruitfulness of the provision of a mix of uses in an urban area largely depends on its residential density. Even though a compact city with high density is considered appropriate because of the high quality of social life it offers, Carmona and colleagues suggest that density must be considered in terms of the configuration of urban forms. They discuss three types of urban forms: high-rise development standing in open space; traditional layout with two- or three-storey houses; and urban perimeter blocks. They consider perimeter-block development to be beneficial in terms of urban placemaking.

Other aspects of functional dimension according to Carmona and colleagues are environmental design and design of the urban infrastructure such as road and street systems, parking, and public open spaces. They argue that experience of public spaces can be made pleasant and its functional usage enhanced by better microclimate design and by providing better urban infrastructure.

6. The Temporal Dimension

According to Carmona and colleagues, although urban design is considered to be working in three dimensions, it is four-dimensional with time as the fourth dimension. Time and space are inseparable, as urban environments are created, modified, and made meaningful on a constantly passing scale of time. Kevin Lynch's (1972) *What Time Is This Place*? presents a thorough overview of the relationship between time and place. Lynch argues that time and space act as the framework within which users order their experiences. According to Lynch, the passage of time in urban environments is experienced through *rhythmic repetitions* such as waking/sleeping, breathing, and cycles of sun and moon and through *progressive and irreversible change*s.

Carmona and colleagues identify three key aspects of the temporal dimension of urban design. The first aspect is to understand urban activities as a factor of time—in other words, urban environments are used differently at different times. Therefore, urban designers need to be aware of the ways in which activities in any urban setting might change, depending on time cycle. The second aspect deals with the timelessness or continuity of a place. Even though urban environments continuously change with time, certain meaningful spaces may tend to remain the same—untouched by the passage of time. Therefore, it is important for urban designers to know the ways in which urban environments change or remain the same and be able to incorporate the inevitability of time cycles. Third, an important aspect of the temporal dimension of urban design is to understand the fact that urban environments are created and developed over long periods of time. Hence, urban designers must have foresight into the potential temporal considerations required in design and policy making.

According to Carmona and colleagues, the understanding of the temporal dimension of urban design should lead designers into creating urban places and architecture that are capable of changing with time and that are also flexible enough to accommodate new values and meanings offered by the passage of time. With respect to placemaking and place vitality, Carmona and colleagues remind us of Jacobs' (1961) argument of having people present at different times to achieve safe and vibrant street life. This can be achieved by providing venues that offer activities within the public realm during day as well as night. Therefore, urban environments can become efficient places by understanding the implications and influence of time on places (Carmona, et al., 2003 p. 210).

In discussing the six dimensions of urban design, Carmona and colleagues present a wide range of research works on urban design. Out of these, Jane Jacobs' (1961) *The Life and Death of Great American Cities*, Bill Hillier's (1984) *The Social Logic of Space*, popularly known as "*space syntax,"* and William Whyte's (1980) *The social Life of Small Urban Spaces* have greatest relevance to the research and design of this thesis. These works are considered to be classic works in urban design and offer valuable information regarding various dimensions of urban design. The following sections of this chapter present briefly an overview of these works.

The Death and Life of Great American Cities (1961)

The Death and Life of Great American Cities is an implicit phenomenological description of city and city life. In this work, Jacobs presents her critical outlook on contemporary city planning principles based on her observations of ordinary events that make cities work. The central argument made by Jacobs is that cities need an intricate and close-grained diversity of uses which constantly support each other socially and economically. According to her, a lack of this mutually supporting diversity of uses leads to the failure of cities.

The book is written in four parts. The first part emphasizes the social behavior of people in cities. Jacobs describes the economic behavior of cities in the second part, which she says is the most important part of the book. The third part examines the aspects of decay and regeneration of cities in the light of human behavior and use of cities in real life. The fourth part is set apart for suggested changes in housing design, traffic design, planning and administrative processes.

Jacobs begins by considering streets and sidewalks to be the vital organs of a city and suggests that if the streets are safe, so is the city. According to her, people seek safety wherever they go because cities, unlike small towns, are a mix of both acquaintances and strangers. She points out that people use sidewalks that are safe and, therefore, sidewalks that are used are safe. She refers to the unconscious phenomenon of voluntary vigilance of the streets by the users as *"eyes upon the street,"* which she says play an important role in consoling the safety seeking users. From Jacobs' point of view, a safe street should have three qualities:

1) Clear segregation of private from public;
2) Eyes upon the street;

3) Continuous users, which means users using sidewalks at all times.

As a design guideline, Jacobs proposes sprinkling of stores, bars, and other public spaces around streets to make them safe, as these diverse activity pockets give the streets both acquaintances as well as strangers, thereby facilitating eyes upon the streets. She observes that once a street is safe from the strangers, with eyes upon the street and by having a clear demarcation of public and private, then the city streets are merrier and more vibrant. This result in what she calls *"street ballet."*

Next, Jacobs is keen on the intangible social qualities of *"trust, togetherness, privacy, and public*." She presents her argument that sidewalk activities play a crucial role in developing casual contacts between people and thereby enhancing trust and togetherness within the users, which is important in the proper working of cities. She again points out the complexity of the togetherness aspect of cities and says that it cannot be forced on to the users, as it is an intricate phenomenon that has to happen all by itself, informally and casually. According to her perspective, even formal public activities require a layer of informal contacts through a network of sidewalk activities. This informal sidewalk contact is enhanced by the presence of what she calls the *'public characters'* in the form of storekeepers and other users for the very fact that they are public. This again proposes the addition of stores, bars, and public spaces around the sidewalks to facilitate the casual and informal street drama. Considering modern cities and city development, Jane Jacobs' biggest fear is that the users have to live either with no togetherness at all or with togetherness at the cost of their privacy. She writes, "When an area of a city lacks sidewalk life, people must enlarge their private lives if they are to have anything approaching equivalent contact with their neighbors. They must settle for some form of togetherness, in which more is shared than in the life of sidewalks or they must settle for lack of contact" (Jacobs, 1961, p. 62).

According to Jacobs, neighborhood parks and plazas do not work in isolation as is conventionally thought. Rather she argues that such public spaces are creatures of its surroundings. Based on her observations she identifies four elements that are crucial in making a park work.

1) Intricacy: Reasons for which people go to a park.
2) Centering: The presence of a center to the park, rather than an unending undefined stretch of open space.

3) Sun: Letting the sun in.

4) Enclosure: An enclosure of buildings and activities to define the park as well as facilitate continuous users taking care of the safety aspect and keeping it lively; as people attract people.

Jacobs discusses the demand goods for a park, and concludes that carnival-like activities like kite flying, theater, and music are big drawing agents. According to Jacobs, a diversity of uses and lively streets around the park can keep it from being empty, thus making it safe and acceptable. She also argues that parks ought to be designed with utmost care because a failed park is more than just a failure—they potentially become places of crime and vandalism.

According to Jacobs, diversity helps to make cities economically and functionally vibrant. She argues that, although cities are natural diversity generators and effective economic pools, wholesome diversity within a city can be lost due to many reasons, inappropriate planning policies being one of them. She makes an important point that diversity can be seen as a chain reaction and writes: "City diversity itself permits and stimulates diversity" (ibid., p. 145).

Jacobs identifies *four conditions* necessary to generate and maintain diversity within cities:

1) Districts serving more than one (preferably more than two) primary uses;
2) Short blocks facilitating frequent turns;
3) Buildings with variety in age and conditions;
4) Dense concentration of people.

According to Jacobs, mix of uses refers to *primary* and *secondary* uses. Primary uses are defined as those uses that act as anchorages and draw people—for example, offices, residences, and educational institutes. *Secondary* uses are those that function with the support of primary uses and include uses like restaurants, bars, and shops. Economic as well as social interaction and growth is not possible unless there is a provision for cross-use achieved by small block sizes. Long and isolated streets with no frequent scope for cross use are a big hindrance for the initiation of diversity within a district and cities. This point is quite vital, as long streets keep different activities away from different groups of people based on the design, thereby having negative impacts on both the social and the economic structure of a city.

In regard to the need for diversity in the age and types of buildings, Jacobs proposes that a district must have buildings varying in age and condition in a good proportion so as to facilitate

diversity. Here she presents the intricate relationship between economic diversity and the buildings that house the commercial activities. If there have to be diverse economic activities in a district, the presence of a mix of aged as well as new buildings is vital, as all of these diverse activities can never afford new buildings as a shelter; so a series of new buildings will house only similar commercial activities. She writes, "Time makes certain structures obsolete for some enterprises and they become available to others" (Jacobs, 1961, p. 189). The presence of aged buildings along with new ones provides choices to the enterprises and helps create a physical infrastructure inviting diversity in terms of commercial activities.

Jacobs argues that there is a very complex relationship between the density of dwellings and the presence of diversity as well as other conditions required for diversity. She finds it difficult to establish a number as the required appropriate human density but suggests: "As a general rule, I think 100 dwellings per acre will be found to be too low" as the requirement varies with different cities (Jacobs, 1961, p. 212). The vital point is that all the talk on diversity and all efforts to achieve social and economic diversity are wasted if there are not enough people. The intricacy of dwelling density is revealed when she mentions that high density can be risky when standardization (in terms of arrangement of the dwellings) creeps into the neighborhood, usually due to inefficient use of land as seen in the elevator buildings.

Theory of Space Syntax (1984)

The theory of space syntax is grounded in the work by Bill Hillier and Julienne Hanson. This work was published as *The Social Logic of Space* in 1984. Space syntax is an attempt to derive an empirical relationship between physical space and social life, i.e., how the placement of the buildings and the pathway structure of a place can affect human movement and activities on streets and other pathways. According to Hillier, the approach aims at identifying "the social content of spatial patterning and the spatial content of social patterning" (Hillier, et al., 1984 p.10, 11).

It was the effective functioning of the medieval trade towns that encouraged Hillier to inquire into whether these villages and towns had any internal organized spatial and structural order that made them function the way they functioned. Hillier considered Gassin, a village in France as an example to explain his study, in which he first considered cities to be a matrix of:

a) Buildings as a whole;
b) Secondary built elements such as courtyards and private gardens;
c) Open spaces within the settlement such as streets, plazas and parks;
d) Spaces surrounding the settlement built up or open.

Close observation and analysis showed that there existed a *'beady ring structure'* within the layout. He called it the '*beady ring structure'* (see figure 2-1) because, although it is irregular, the layout was such that the open space of the settlement widened and narrowed continuously like beads in a ring. This pattern was achieved due to the fact that the entrance of all buildings faced an open space, and these open spaces were mutually linked and continuous to form rings. As a result, there is a high level of permeability (ease of movement) within the settlement with two or even more number of paths to reach a building from any other building. Further research showed that many towns and cities in other parts of the world also showed such a structure.

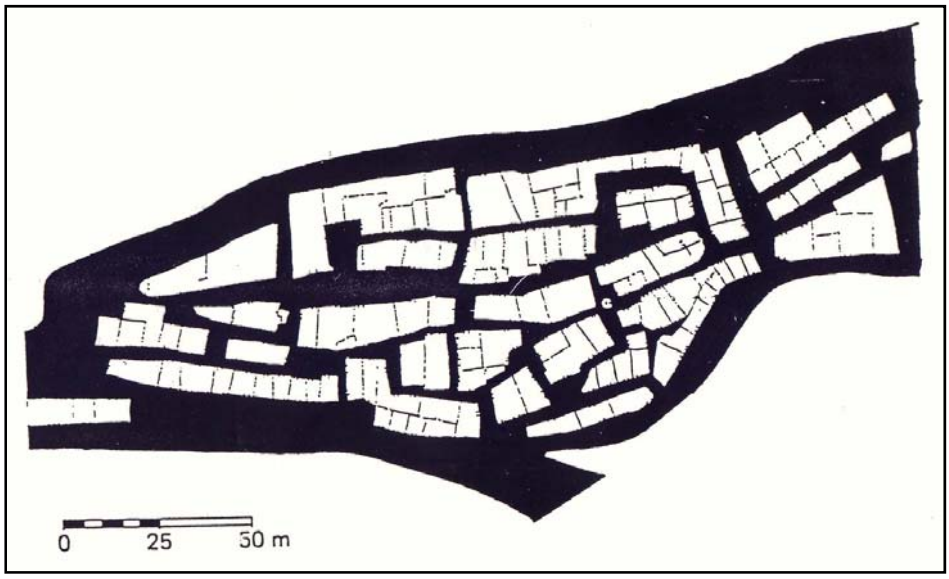

Figure 2-1. Beady ring structure in the layout of Gassin. Photograph: copyright Cambridge University Press 1984 (Hillier, et al., 1984).

In his quest to enquire whether any geometric rule guides the beady ring pattern in those traditional settlements, Hillier did a computer simulation in which he considered a single door building with the entrance attached to an equal sized open space as the basic unit (see figure 2-2). When the simulation program randomly accumulated these units with a condition that each unit would attach either to a building side or an open side, the beady ring began to appear at the

fourth stage of accumulation. Hillier uses the word "*morphology"* to describe this relation between the geometric and spatial connection.

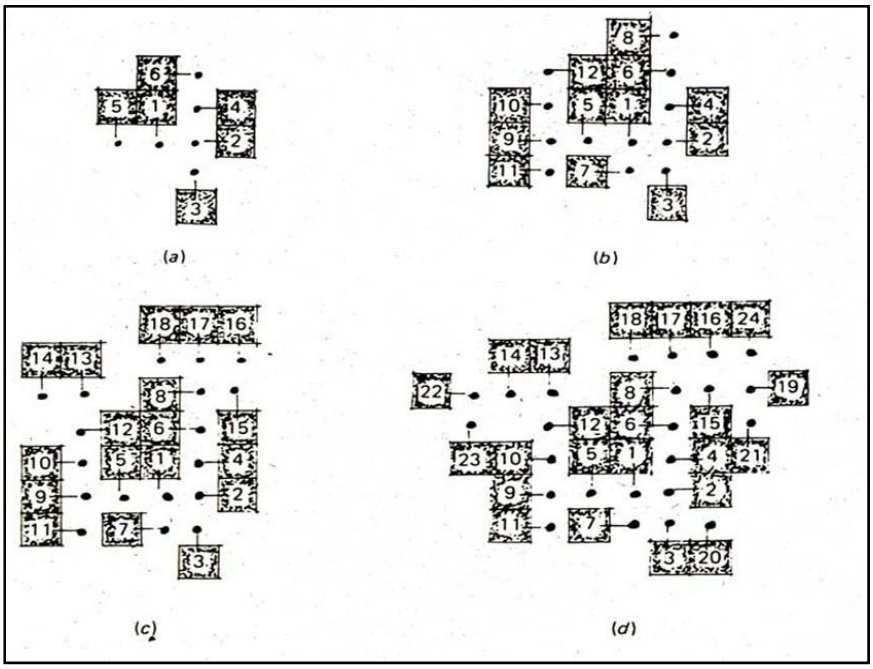

Figure 2-2. First four stages of the random organization of units in the computer simulation. Photograph: copyright Cambridge University Press 1984 (Hillier, et al., 1984 p.60).

Hillier identified two kinds of spaces—*convex* and *axial*—to measure the regular spatial organization of the street structure. He defined *convex spaces* as those spaces that have two dimensional qualities and in which all points can be seen from all other points. This space acts as the beads in the beady ring structure. Hillier interprets convex space geometrically as those spaces within the area of which the line drawn between any two points doesn't go outside the area for example plazas, parks and squares (see figure 2-3). He defines axial spaces as those spaces that have a one-dimensional quality and are generally used as pathways—e.g., narrow streets or pathway. These spaces act as the strings of the beady ring structure. Axial spaces are geometrically interpreted as the longest line that could be drawn before intersected by any obstruction such as a building or a wall. The axial spaces are considered to be "global" (i.e., settlement-wide) in character as they have a long extended stretch as far as the sight goes and is an aid to know where one is going.

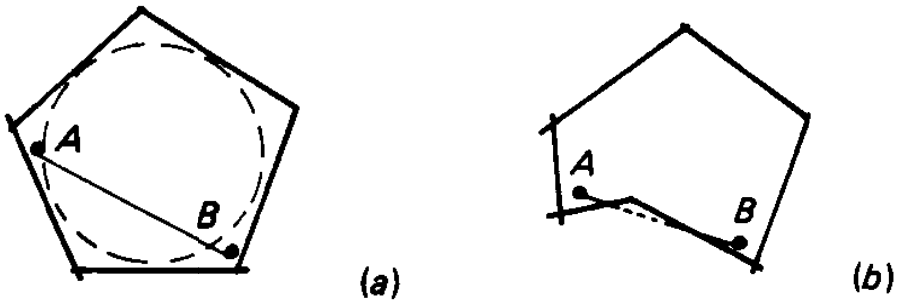

Figure 2-3. Geometrical understanding of convex spaces. (a) is a convex space and (b) is not. (Photograph: copyright Cambridge University Press 1984 (Hillier, et al., 1984).

Axial space is an important concept because it is the axial spaces that enhance the movement pattern within a settlement particularly that of strangers. On the contrary, the convex spaces are more local in nature as they extend only within the range of points physically as well as visually accessible to every other point. Convex space relays information as to where one is located within the settlement. Although it's evident that most spaces have convex as well as axial character, it is the global nature of the axial spaces that has an impact on the movement pattern, which in turn affects the way the urban environment works. Hillier used *interface map*, (see Figure 2-4), in which he used filled dots denoting building entrances and unfilled dots denoting convex spaces to establish the relationship between building entrances and convex spaces.

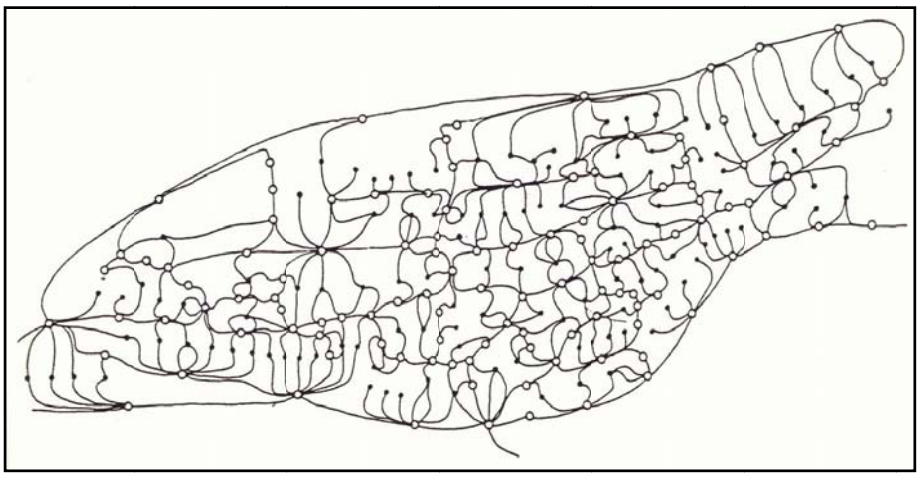

Figure 2-4. Interface map for Gassin. Photograph: copyright Cambridge University Press 1984 (Hillier, et al., 1984 p.104).

Another important idea developed in space syntax research is that of *integrated* and *segregated* pathways. Integrated pathways are accessible from other pathways just as a main arterial path to which many other pathways join, whereas segregated pathways are not accessible to other pathways of the settlement with very few or no pathway connected to them. The notion of integrated and segregated pathways enabled Hillier to derive two distinct characteristics of pathways. He calls them *shallowness*, which is related to integrated pathways; and *depth*, which is related to segregated pathways. In simple words, shallowness and depth is about the ease of access. A pathway is deep when more turns are required to reach it from other pathways and shallowness is associated with very few turns.

Establishing different terminologies in understanding the character of pathway structures helped in breaking up the study matter into comprehensible elements as well as in empirically analyzing permeability within the settlement using permeability graph and a measure of integration. The permeability graph is a representation of the relative integration of the settlement and the measure of *integration value* theoretically obtained by an empirical formula shows how shallow or deep a pathway is from any point in the settlement (figure 2-5).

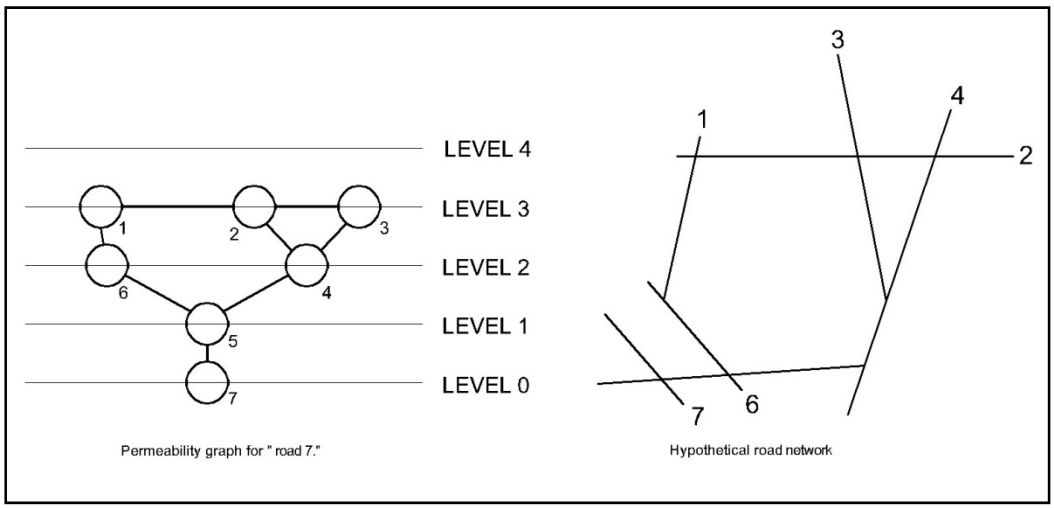

Figure 2-5. Permeability graph for pathway 7 (Source: Generated by the author).

The idea of deriving integration values to understand depth and shallowness is meaningful in analyzing the relationship between pathway structure and pedestrian movement. The space syntax team in further research compared the obtained integration value of a pathway with the head counts of people using the pathway to check whether the most integrated pathway

was the most used or not. They found that in most cases the most integrated pathways were the most used.

The culmination of the understanding of integration and segregation and shallowness and depth is in what Hillier called the *deformed wheel* (figure 2-6). If one carefully observed the axial map of the most integrated pathways, they roughly took the shape of a deformed wheel in which the rim, spokes, and the hub of the wheel are the major routes of entry to the settlement with most of the business activities and major convex spaces along these pathways. All the segregated pathways with generally residential units along them lie between the spokes of the deformed wheel which represent the integrated pathways. This establishes the importance of a matrix of structured pathways which possess an interplay of integrated and segregated pathways following a geometric pattern affecting the social life in a spatial realm.

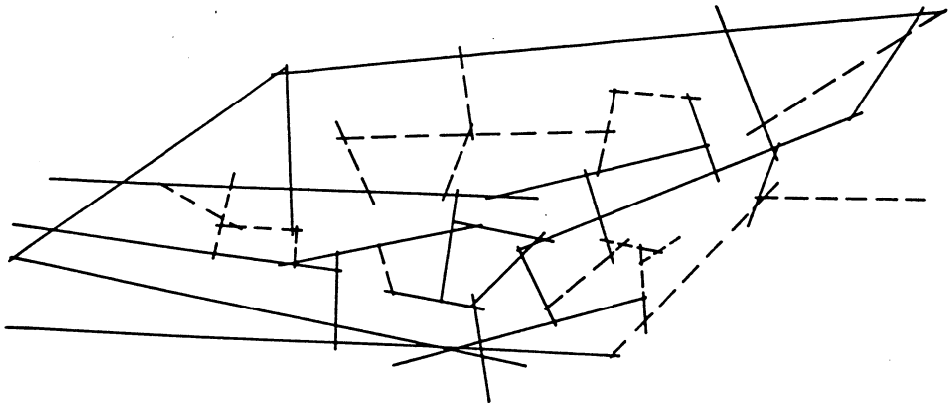

Figure 2-6. Axial map for Gassin shoeing the Deformed wheel structure Photograph: copyright Cambridge University Press 1984 (Hillier, et al., 1984 p.117).

The theory of space syntax criticizes conventional design approaches that make much in designing local spaces but largely ignore the larger pathway system that shapes up the physical environment and its social life. It is a painful fact that the modern planning and design professionals have picked up a notion that privacy is needed at all levels, and have secluded not only individuals and families but also local groups, and neighborhoods, killing integrated pathways which has been proved by space syntax empirically as the backbone of any urban district. This theory points out the fact that the design process should start from the whole (global) and move towards the part (local).

In his writings, David Seamon (1994) establishes links between the theory of space syntax and phenomenology. This is a very valuable insight as space syntax research seems to provide empirical evidence for what Jane Jacobs claims in *The Death and Life of Great American Cities*. Her major claim is that streets are the most vital organ of any city and that they should be full of life. She emphasized the fact that possibility for people to meet each other on the streets and opportunities for people to use the streets as a pedestrian makes the place lively because differences and diversity give the place an identity.

Therefore, when it comes to social dynamics or the social liveliness, it is hard to decide which of the two factors contribute the most—permeability as space syntax suggests or diversity as Jacobs suggests. Although it can be argued that permeability would increase the chances for people to meet people because of high use, Jacobs points out that nobody travels willingly from sameness to sameness. So there is a big tension between diversity and permeability when it comes to defining what leads to a lively city. Although it is a mere speculation, I personally feel that the deformed wheel structure of a city with the rim, spokes and the hub of the wheel as the major routes of entry to the city with most of the business activities and major convex spaces along these pathways and the segregated pathways with generally the residential units along them lying between the spokes of the deformed wheel which are the integrated pathways is a promoter of diversity, both in terms of activities and appearance. It still remains as a complex knot yet to be untied.

The Social Life of Small Urban Spaces (1970)

The Social life of Small Urban Spaces by William Whyte (1970) is considered to be one of the most valuable resources in the field of urban design and environment-behavior studies. About the book, Whyte says, “This book is about city spaces, why some work for people and some do not, and what the practical lessons may be. It is a by-product of first hand observation” (Whyte 1970, p 10). The book is a collection of observations and prescriptions compiled by ‘The Street life Project,’ a small research group formed by Whyte in 1970, to study the functioning of plazas in New York City. The book documents the research, putting forward Whyte’s point of view regarding successful plaza design, and unfolding various elements of plaza design that play a big role in making a plaza either vibrant or dumb.

Whyte's approach regarding making a plaza design successful is to make it sociable. All of his prescriptions in the book lead to one overarching aim—*sociability*, achieved by instinctive public participation. He argues that plazas should be designed to be used with a lot of hustle bustle and not to keep people away. A plaza should have the potential to draw people into it and then keep them in. Whyte enlists sitting space, natural elements (sun, wind, water, trees), food, plaza's relationship with the street, the undesirables, and triangulation (elements that can gather a crowd) as elements that can accelerate or retard the use of a plaza with one chapter for each of the element.

An interesting finding of his research is *effective capacity*, which is the number of people who by free will sit in a plaza during peak use. Whyte concludes that people instinctively know how much is too crowded. One of the major concerns in plaza design according to Whyte is the danger of concourses and mega structures being disconnected from the public spaces, making them a different world, one which is cut off from the pedestrian flow around reducing the probability of them being used as a socializing arena instinctively.

According to Whyte, the relationship of the plaza to the street is the most critical factor determining the success of a plaza design because much of the instinctive participation of people passing by depends on the street-plaza relationship. Efficient sitting spaces providing physical and social comfort to users would be the element that would hold the users in the plaza.

Having discussed important literatures that offer a broad understanding regarding urban design and the theoretical basis for RE, the next chapter discusses a study of the site to be redesigned.

Chapter 3

Site Selection Process and Site Details

This chapter discusses the site-selection process for conceptual application of the larger-scale qualities of *Responsive Environments (RE)*—permeability, variety, and legibility. As explained in chapter 1, the thesis uses *RE* as a design tool to conceptually revitalize the civic/government district located within Kansas City's downtown loop. This effort first involved a process of observation and research to select a site within a larger urban context and having potential to accommodate relatively high density.

This process starts by assuming that the site needs to be an urban space in close proximity to the researcher's location. The site also needs to be of a manageable size to assure application of the RE design approach as well as to accomplish the research within a stipulated time period. These prerequisites led to considering a site in Kansas City, Missouri, as the most appropriate option. Colloquially referred to as the heart of America for its geographic location, Kansas City has an urban land area of 584.4 sq miles (The City of Kansas City, Missouri). According to the 2006 census, Kansas City has a population density of 1,406.6/sq mi and a city population of 447,306. The site-selection process involved consideration of the three following themes which are discussed further in the following sections:

- The history of Kansas City metropolitan area;
- An overview of the Kansas City downtown area;
- A designation of the site.

The History of Kansas City Metropolitan Area

An awareness of the history of a place can provide valuable perspective for designing the place as a contemporary responsive environment. Most importantly, the *RE* approach gives much value to the incorporation of contextual cues in the design at various levels, thus making it important to understand the history of the site and its surrounding.

The presence of the Missouri River as an efficient waterway acted as the magnet that drew the initial settlements to the Kansas City area (Ehrlich 1979, p 3). In the year 1821, the admission of Missouri to the Union marked the beginning of Kansas City. A Frenchman,

Francois Chouteau, from St Louis, established a trading post about three miles below the great bend in the Missouri River (which is the present northeast industrial district) and later rebuilt the post on higher ground on the present Troost Avenue in 1826 due to flooding problems in the previous location. Another important person in the history of Kansas City was John Calvin McCoy, who in 1833 established the settlement of Westport along the Santa Fe Trail, about three miles from the river. He identified a rock ledge on the south shore of the Missouri River and established the Westport Landing for convenience of shipping because, until then, Independence, MO had been considered as the best location for transferring goods from river to land route. By 1845, Westport replaced the Independence Landing because of a more convenient river landing and also closer location to the west. This shift was an important event in the development of the KC area (The City of Kansas City, Missouri).

Another landmark event in the history of Kansas City was the purchase of Gabriel Prudhomme's farm by investors under an organization named 'Town of Kansas Company' in 1838, followed by the renaming of the area outside Westport as 'Town of Kansas' in 1839. In the 1840's, Kansas City area emerged as a vital portal to the west, as it was one of the most substantially populated areas between St Louis and California, which led to the first railroad in the town of Kansas in 1847. Two important events of the 1850's were the incorporation of the Town of Kansas into Jackson County in 1850, and the change of name to Kansas City after the settlement officially became part of Missouri on March 28, 1853. The initial incorporated area was about ten blocks east to west and five blocks north to south, spanning today's Interstate 35 on the west, Holmes Street on the east, the Missouri River on the north, and Independence Avenue on the south (what is today the River Market area) (figure 3-1).

Figure 3-1. Bird's eye view of Kansas City, Missouri, Jan 1869. Drawn by A. Ruger. Merchants Lith. Co. Published by Madison, Wis., Ruger & Stoner (Source: *http://en.wikipedia.org/wiki/File:Kansas_city_mo_1869.gif* Last accessed 10/10/2009).

The 1850's were a period of disturbance for the Kansas City area due to a border war and the American Civil War. The border war was a result of a split in the population caused by debate on slavery status in the Kansas City area. The pro-slavery Missourians elected a pro-slavery Kansas territorial legislature, in response to which the abolitionists in 1855 declared the legislature bogus and formed their own territorial legislature government in Lawrence, Kansas. What led to a border war was the sacking and burning of Lawrence in 1856 by slavery advocates which was followed by abolitionist John Brown riding through Kansas City freeing slaves and burning farmsteads. This was followed by the Civil War, which included the Lawrence Massacre and Westport war, thereby prolonging an agitated state until the end of 1864.

In spite of the conflict, Kansas City continued to grow rapidly in this period with development of a courthouse, city market, and chamber of commerce. According to historians, the major event which led to making Kansas City what it is now was the opening in 1869 of the Hannibal Bridge spanning the Missouri River (figure 3-2), which led to a tremendous increase in

population. The West Bottoms (which is the present industrial area at the confluence of the Missouri River and Kansas River), became an important location due to the livestock boom in 1871 and because of the site's central location and proximity to the railroad. These stockyards gave Kansas City an identity, as the city was identified with Kansas City steaks (Answers Corporation).

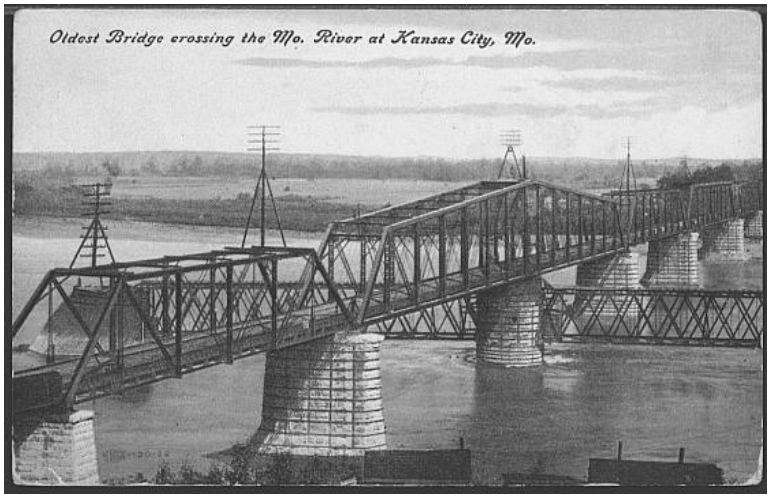

Figure 3-2. A 1908 postcard with an image of the Hannibal Bridge (Retrieved from *http://commons.wikimedia.org/wiki/File:Hannibal-bridge.jpg* Last accessed 10/10/2009).

The period between the 1890's and 1940 is marked as the Pendergast era under Democrat "big city bosses" James Pendergast and later Tom Pendergast. Even though this era involved corruption and crime, the city witnessed the rise of eminent personalities who shaped the city and country. This was the era when tremendous development took place throughout the Kansas City area. The city's culture witnessed the blooming of the Negro League, and 18th and Vine in Kansas City became the cradle for Jazz music. Kansas City played an important role in the flourishing of Jazz. Most of the buildings in downtown were built in this era and Kansas City became famous for its livestock and Kansas City style barbeque in this era.

Two eminent personalities of this era whose contributions were vital were J. C. Nichols and George Kessler. Nichols was a developer who in 1906 developed a planned upscale community, the 'Country Club District,' south of Bush Creek. This included a Spanish-style shopping district accommodating automobiles (figure 3-3). The Plaza, as it is often referred to, is listed today as one of the top sixty best places in the world by "Project for Public Places"

(Answers Corporation). Today, Kansas City has 132 miles of boulevards and parkways, 214 urban parks, and forty-nine ornamental fountains as a result of the "City Beautiful" efforts of architect George Kessler.

Figure 3-3. General views of "The Country Club Plaza" (Retrieved from http://en.wikipedia.org/wiki/Country_Club_Plaza. Last accessed 10/9/2009).

The period of the 1960s and 1970s witnessed some major building projects in the Kansas City area such as the Kansas City International Airport, Crown Center, and the Truman Sports Complex. This period was coupled with rapid urban decay of many inner neighborhoods. In response to the urban decay, Kansas City witnessed attempts of renewal in the form of large housing development projects and demolition of many historic buildings to make way for parking lots. During this period, Kansas City was transforming from a place for everyday life to a place primarily for business. A glimpse of this crisis is still visible in today's Kansas City downtown area, and efforts are being made to revitalize urban life and community living by various Kansas City based organizations such as the Kansas City Missouri Planning Commission (KCMO), Kansas City FOCUS Group; a committee of volunteers committed to the urban preservation and development of Kansas City, and the Downtown Council. (Answers Corporation).

An Overview of the Kansas City Downtown Area

The Kansas City area has developed from a small trader's settlement struggling for an identity in the 1820s, to today's metropolis with a distinct identity and character. The Kansas City Missouri Planning Commission (KCMO) divides the entire Kansas City area into six city

council districts. The central downtown area (figure 3-4) is comprised of the River Market District, the Downtown Loop, and the Crossroads Arts District. The River Market District (formerly known as Westport Landing) stretches from the downtown loop of Interstate 70 to the Missouri River. This district has significant historic value and today is comprised of residential lofts, single-family dwellings, business firms, restaurants, and a large farmer's market called the City Market (figure 3-5). Kansas City promotes the River Market District as a lively neighborhood with mixed-use development and opportunities for shopping, entertainment, and encounter with nature. According to the Downtown Council, the River Market District today has 1865 residential units with a population of 3,078. Recently, this area has also become a prime location for several architecture, graphic design, and advertising firms. With major attractions like the City Market, the Berkley Riverfront Park, the Riverfront Heritage Trail, and the Steamboat Arabia Museum, this district draws around 558,000 visitors annually (Kansas City Downtown Council).

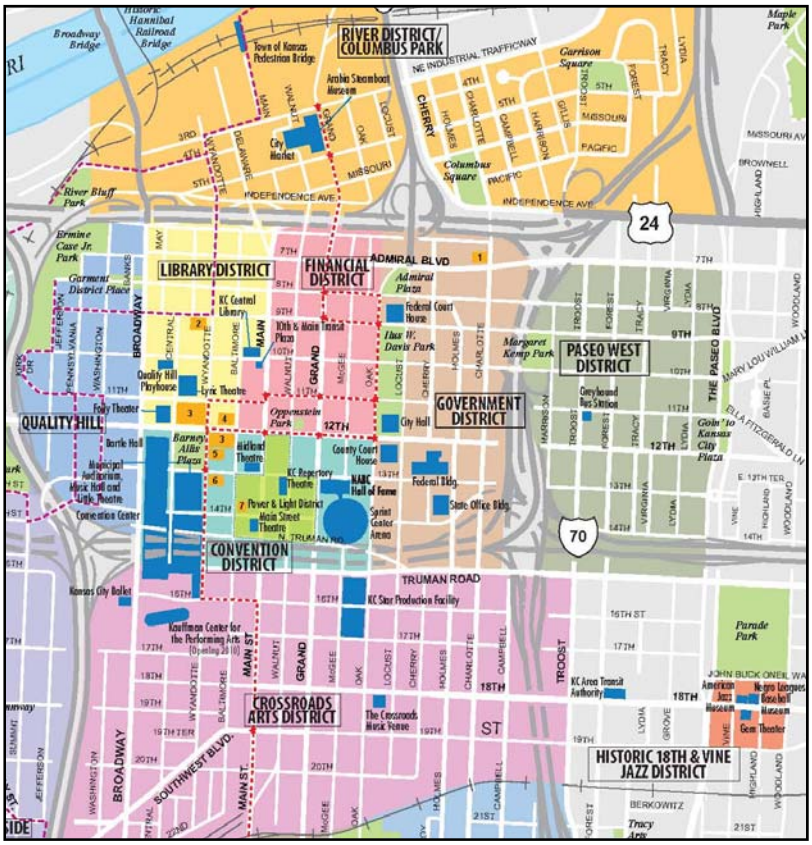

Figure 3-4. KC Downtown map showing various districts in and around KC downtown loop (Photograph: copyright 2007 Gallup Map Company. Retrieved from www.downtownkc.org/content.aspx?pgID=882, Last accessed 10/13/3009).

Figure 3-5. (Left) Entrance gate to the city market, in the River Market District (Retrieved from http://en.wikipedia.org/wiki/File:City_Market_Kansas_City_MO.jpg); (Right) Residential area within River Market district (Source: Photograph by author).

The Downtown loop is the central business district of Kansas City between the River Market District and the Crossroads Arts District, confined within a system of Interstate 30, 70, 670 forming a loop. This district houses several historic buildings as well as modern office and residential buildings. Most of this central core was developed in the 1880's with buildings expressing the Renaissance Revival, Art Deco, and Chicago Styles. The Kansas City downtown loop can be divided into Quality Hill, the Library District, the Financial District, the Government District, and the Power & Light District (figure 3-4). Some of the major new developments in the downtown loop are Kansas City Live Entertainment District, the Sprint Center, the Kansas City Convention Center expansion, the Kansas City Public Library, and the Metropolitan Kansas City Performing Arts Center. All these districts together form the downtown central core defined by the interstate-loop.

Quality Hill (figure 3-4), listed on the National Register of Historic Places, is located at the western edge of the downtown loop and is predominantly a residential area characterized by row houses and apartments with beautiful streetscapes. This area also houses some historic churches and corporate headquarters (figure 3-6). On the eastern edge of this district, along Broadway are bars, nightclubs, and restaurants. According to Kansas City's Downtown Council, this area has 1,591 residential units supporting 2,066 residential population.

Figure 3-6. (Left) "Church of Immaculate Conception" with golden dome in the Quality Hill District at 10th and Broadway; (Right) Residential row houses in the Quality Hill area (Source: Photograph by author).

Once a center of various abandoned offices, the Library District (figure 3-4) has evolved in the past few years into one of the most vital downtown neighborhoods. Most of the old abandoned offices have been converted to condominiums and apartments. This district boasts Kansas City's new Central Library, and houses three live theatre venues and several architecturally significant buildings such as the New York Life building, the New England building, and the Central Library building. According to the Downtown Council, this district has some 700 residential units supporting 1,100 residential population. (figure 3-7)

The Financial District (figure 3-4), is the main corporate area of Kansas City with several headquarters and subsidiary offices such as Bank of America, Bank Midwest, Ernst and Young, Great Plains Energy, and UMB Financial Corporation. This area has a residential population of 1,557 people living in high rise residential lofts and apartments (figure 3-8).

Figure 3-7. (Left), Central Library and Commerce bank building at 10th and Main; (Right) New and old buildings around Central library (Source: Photograph by author).

Figure 3-8. (Left) Commercial buildings along Walnut Street in the Financial District; (Right) UMB headquarter building on the Grand Blvd. (source: Photograph by author).

The Government District (figure 3-4) is adjacent to the Financial District located along the eastern edge of the downtown loop and is the least developed district area in terms of urban life. Presently, this district houses major government offices such as the Police Department, Federal government agencies, the City Hall, the US Courthouse, and the Jackson County Courthouse. This district has very little residential population other than a few recently developed residential lofts and apartments (figure 3-9).

Figure 3-9. City Hall (left) and US Courthouse (right) in Government District. (Source: Photograph by author).

The newly developed Power and Light District located on the southern edge of the downtown loop is the liveliest part of downtown today and is a hub for shopping, entertainment,

and leisure activities (figure 3-11). This area has been developed as a mixed-use area with an emphasis on shopping and entertainment. The Power and Light District houses bars, restaurants, offices, and theaters closely connected with intermediate courts and plaza areas. The streetscape and architecture of this area makes it strikingly different from the rest of the downtown. The Power and Light District involves continuous pedestrian movement due to the presence of a wide range of uses and activities. This area has a vibrant night life with entertainment venues and a wide range of restaurants and pubs. To the east of the Power and Light District is the newly developed Sprint Center, a large multi-use indoor arena (figure 3-10).

Figure 3-10. Newly developed Sprint Center (Source: Photograph by author).

Figure 3-11. (Left) Entrance to the Power and Light District; (right) Eastern edge of the Power and Light District. (Source: Photograph by author).

Lying south of the downtown loop, the Crossroads Art District, is a center for visual arts and houses some sixty studios and art galleries and several boutiques and restaurants (figure 3-4, 12). New residential lofts have been developed as a part of revitalization of the old warehouses and unused industrial buildings. According to the Downtown Council, today Crossroads Art District consists of 605 residential units with a residential population of 1,191. This area possesses anchor offices such as 360 Architecture, Barkley, Kansas City Star, and Tension Envelope Corporation.

Figure 3-12. Views of businesses at the Crossroads Arts district (Source: Photograph by author).

Although Kansas City's downtown has experienced some revitalization in the last decade, above mentioned areas are in need of further revitalization. The KCMO planning commission identifies the Downtown Loop as the area in Kansas City that is still most in need of more urban life and streetscape revitalization.The KC Downtown Streetscape Master Plan suggests that "Today the revitalization of Kansas City is at an upswing and the preservation and adaptive reuse of some of our most notable landmarks is complete. Furthermore, there is inadequate relationship between our buildings and streetscape. We need a pedestrian friendly atmosphere that encourages city life. We need a city that is again urbane" (Department of City Planning and Development).

Visiting the Kansas City area, one realizes that, although the River Market area and the Crossroads Art District are not perfect examples of a responsive environment or a highly sociable place, both have some sense of place with a certain amount of mixed use and closely knit buildings. Also, there are various policies and design implementations to revitalize these areas.

The situation, however is quite different in the case of the eastern stretch of the Downtown Loop (figure 3-13), including parts of the Financial District and the entire Government District. Although a need for revitalization has been identified, most of the planning efforts are focusing on streetscapes, and no holistic design efforts have been offered to incorporate day-to-day living into this part of the Downtown Loop, which is predominantly composed of business centers with many high-rise buildings and a sea of parking lots. My observations of the downtown area have led me to consider the Government District and parts of the Financial District as an apt location for the conceptual application of a Responsive Environment approach, with the larger Downtown loop and surrounding districts serving as the larger context for this chosen site.

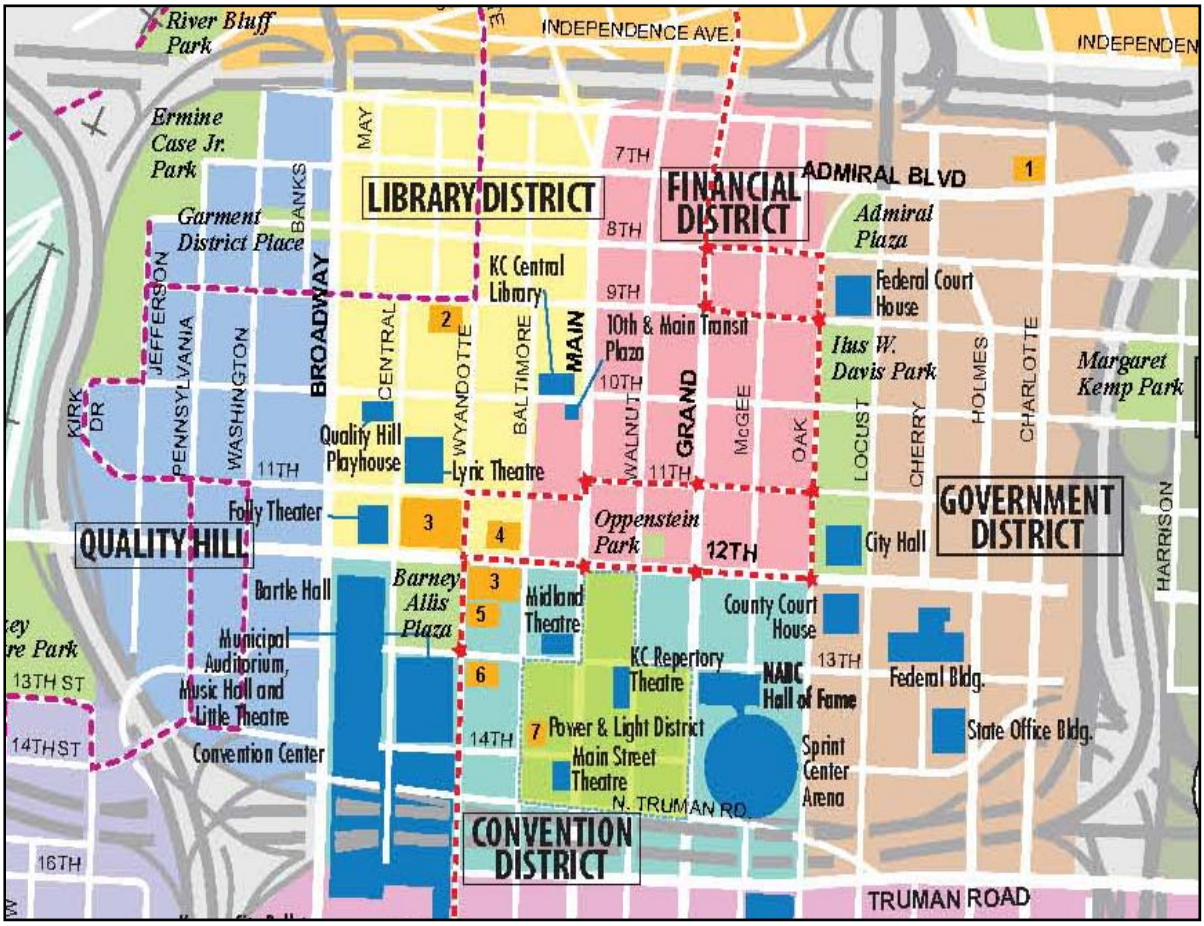

Figure 3-13. Map of the downtown loop (Photograph: copyright 2007 Gallup Map Company. Retrieved from www.downtownkc.org/content.aspx?pgID=882, Last accessed 10/13/3009).

A Designation of the Site

The site to be redesigned according to *RE* principles consists of the Government District and some portions of the Financial District marked by Grand Boulevard (the major north-south street in the downtown loop) as the western boundary and the Interstate 70 on the northern, southern, and eastern sides (figure 3-14). Even though the blocks between Grand Boulevard and Oak Street, north of 12th Street are a part of the Financial District, these blocks are included in the site location so that Grand Boulevard will make a distinct boundary for the western side of the design site. Even though the design site includes a small portion of the present Financial District, I will call it "the Government District."

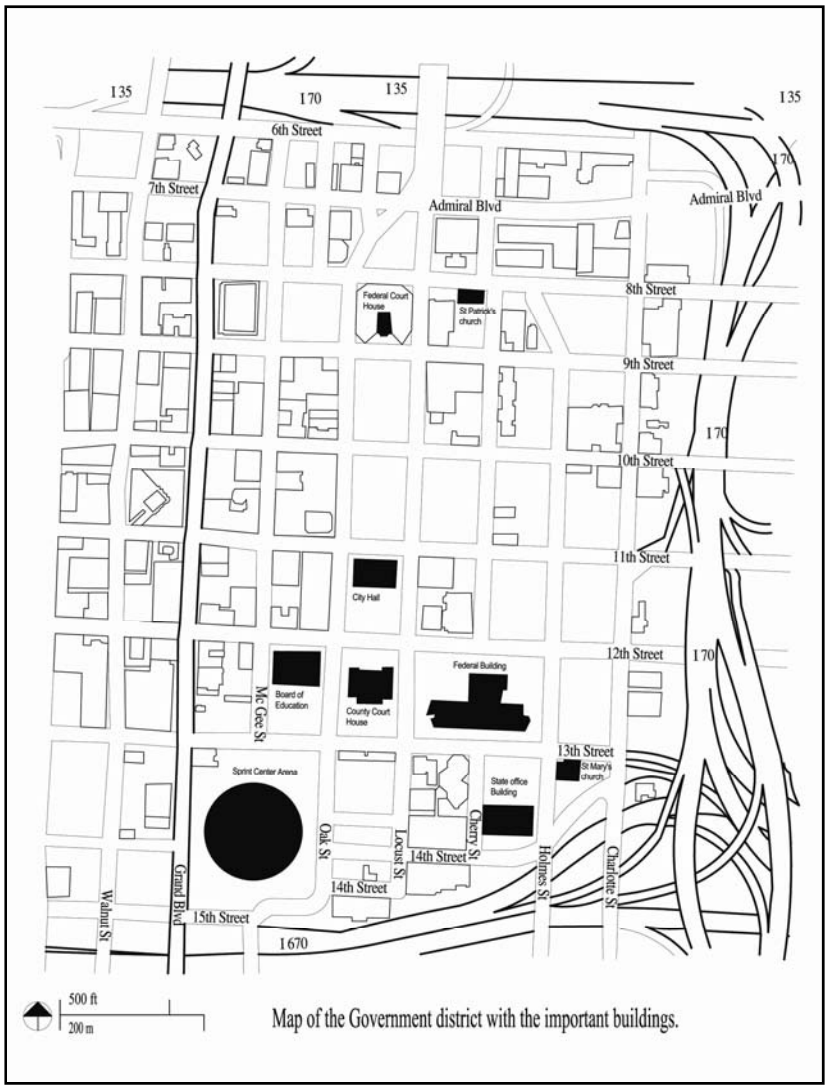

Figure 3-14. Map of the Government District, the site to be designed (Source: Drawn by author).

As this label suggests, the Government District accommodates the offices of several important corporate, federal, state, and local government units that include the State of Missouri, the City of Kansas City, the Jackson County, Kansas City Police Department, the Federal Government Office, the J.E. Dunn Construction Company, and the Ozark National Life Insurance building. According to the Downtown Council's estimates, the Government District supports 12,655 employees, of which 9000 are government employees. In addition, the Government District has 1,023 residential units with a 2,139 residential population. The Government District is characterized by the Art Deco City Hall of Kansas City and the Jackson County Courthouse buildings at its center, and the new Charles Evans Whittaker US Federal Courthouse anchoring the northern edge of the district (figure 3-15).. The Sprint Center is the major new development in the southern-most block of the Government District. St Mary's Episcopal Church on Cherry Street, Public Library Building on 9th Street and St Patrick's Church on Cherry Street are some buildings of historical value (figure 3-16).

Figure 3-15. (Left) Charles Evans Whittaker US Federal Courthouse; (Right) City Hall (Source: Photograph by author).

Figure 3-16. (Left) St Mary's Episcopal Church; (Right) St Patrick's Cathedral (Source: Photograph by author).

With respect to land use (figure 3-17), a large number of blocks at the center of the Government District are dedicated to governmental offices and surrounding green areas, surface parking, and parking garages. Some of the blocks at the eastern and southern edge accommodate the offices of companies like AT&T, Commerce Bank, and J.E. Dunn Construction Company. A few blocks at the northeastern edge of the Government District are residential, including three apartment lofts and one motel. On the district's northern edge there are few residential apartment buildings along the 6th Street. Most of the blocks within the part of Financial District included in the site, accommodates parking spaces, and some parts of certain blocks have office buildings. There are only two residential condominiums in this part of the site (figure 3-17).

An examination of Government District's land uses reveals an overwhelming amount of parking in the form of both surface parking as well as parking structures (figure 3-17, 18, 19). My personal observations as well as studies conducted by the Kansas City's FOCUS Group reveal the presence of excess of parking in Government District. In their strategic policy plan of 1997 for improving the urban quality of the downtown loop, the FOCUS Group along with BNIM Architects identified many of these parking blocks as potential venues for redevelopment and revitalization. Due to these randomly located large blocks of open surface parking and buildings lacking integration with the streets and surroundings, the Government District appears less urbane and lacking in sociability, sense of place, and pedestrian life. Another reason for

having no pedestrian activities within the Government District is the lack of a proper mix of various function types at the street level. The result is functions and activities separated from each other by large blocks of open parking spaces and a lack of sufficient functions to support a continuous presence of pedestrians (figure 3-17). Considering the commercial value and urban potential of the site, this situation is a sign of urban weakness and calls for revitalization.

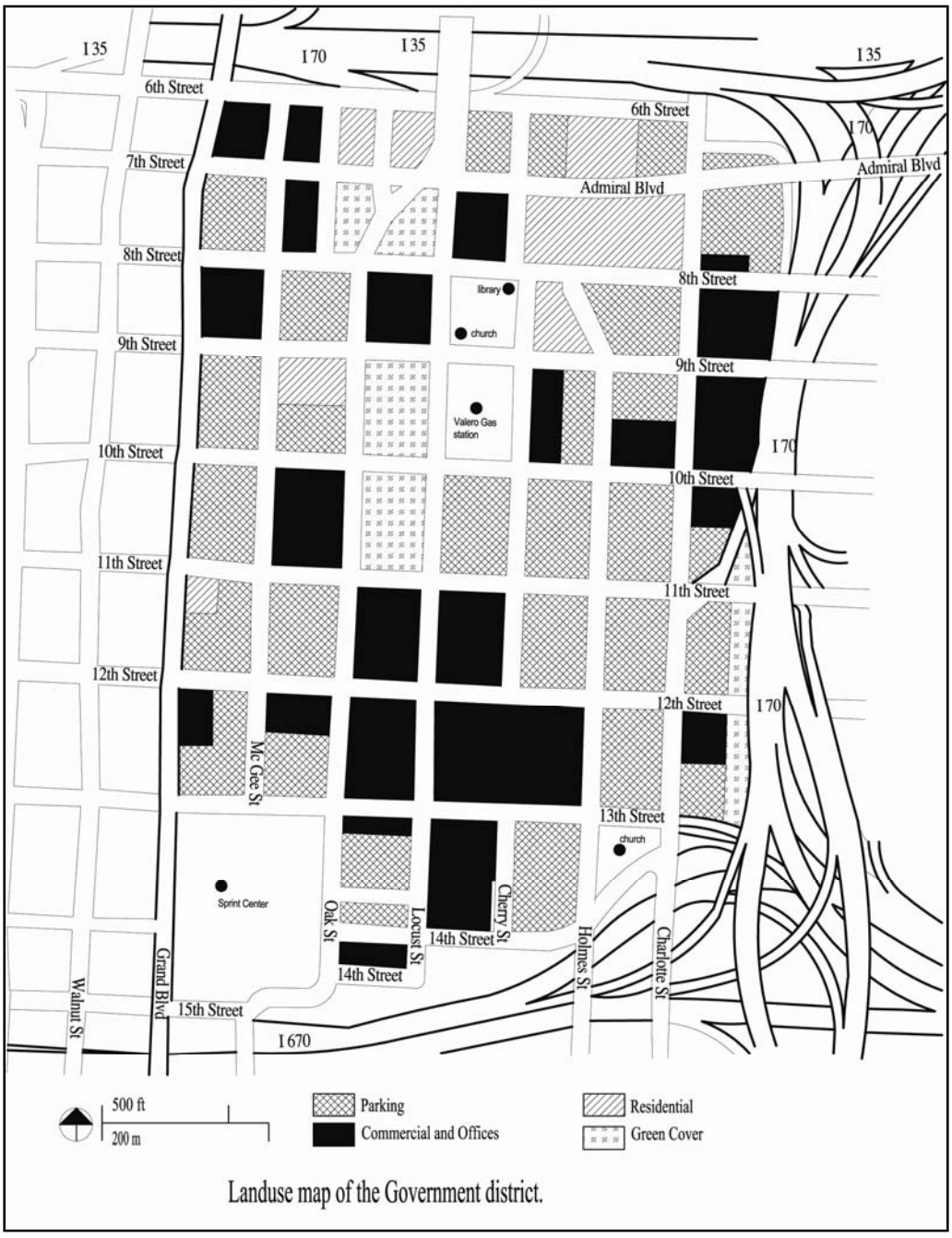

Figure 3-17. Land use map of the Government District (Source: Drawn by author).

Figure 3-18. Parking lots within the Government District location during office hours (Source: Photograph by author).

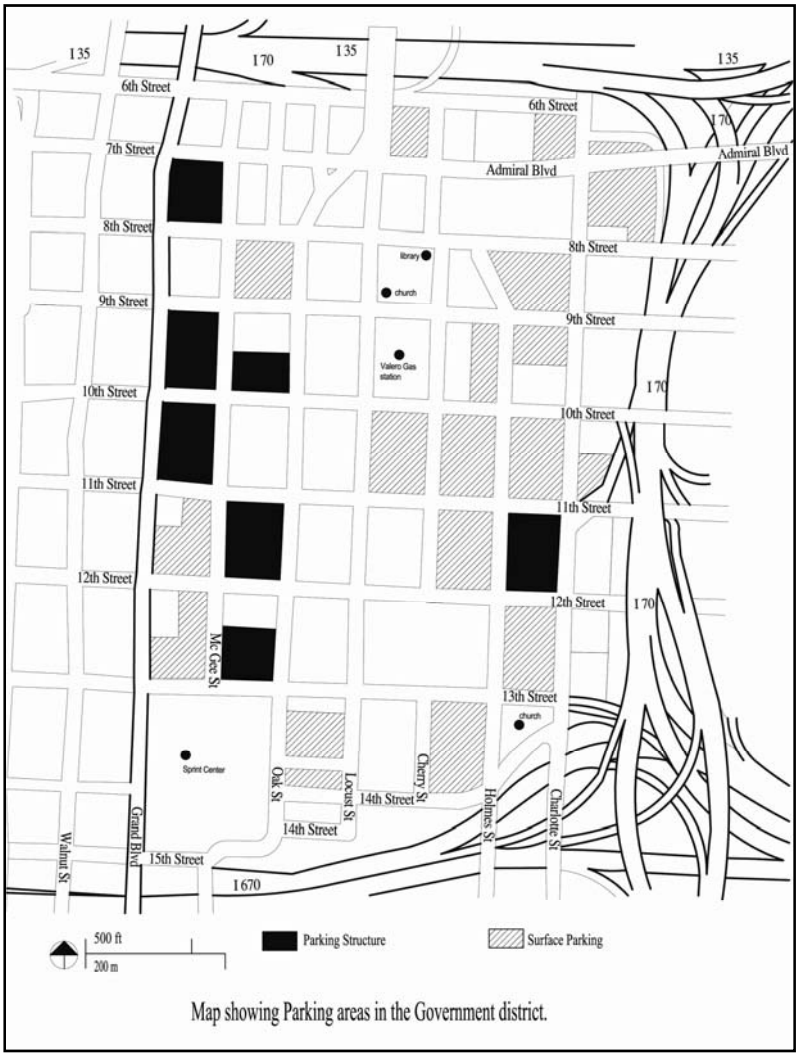

Figure 3-19. Map showing blocks serving as parking space in the Government District (Source: Drawn by author).

The need for the Government District's revitalization has been emphasized by the Kansas City Missouri Planning Commission and other Kansas City based organizations, specifically the Downtown Council and the FOCUS Group. Discussing the development opportunities within the Government District, the Downtown Council of Kansas City suggest the need for incorporating residential communities and establishing more retail and office spaces that are pedestrian-friendly. In an attempt to make the Government District pedestrian-friendly, the Downtown Council propose the "East Village Community," which would revitalize 12 blocks by including 800 residential units as well as 80,000 square feet of retail and office spaces. There have been other master plans in the last few decades proposing similar design solutions for the Government District. (FOCUS Kansas City, 1997). These master plans highlight the following revitalization concerns:

- Investment to draw people to specific locations;
- Creating a sense of place;
- Creating a proactive area of mixed uses;
- Increasing the density of development and activity;
- Creating connections among green spaces, activity centers and districts.
- Creating public amenities as transition or linkage elements with other districts;
- Preparing guidelines that identify appropriately-scaled uses along different corridors.
- Generating streetscape guidelines to improve aesthetic quality and the pedestrian environment
- Creating visual and spatial continuity of the 12th street corridor, which is a major street running east-west along which there are several important buildings and functions within the entire Downtown Loop.

The deteriorated urban life and vacant urban blocks of the Government District is a recent problem which was triggered by several socio-economic transformations that resulted in major changes in the district's architecture and urban design. One central factor was the construction of Interstates 670, 70, and 35, which had a great impact on the layout and urban life of the Government District. These interstates severed the connection and spatial flow between the Government District and districts immediately north, east, and south of it, affecting social, cultural, and economic interactions among these districts (figure 3-20).

Figure 3-20. Interstate at the northern boundary of the site location restricting the spatial flow and thereby impacting connectivity between the site and the River Market District (Source: Photograph by author).

Apart from the segregation of the Government District on its north, east, and south sides, several other changes over the years have also contributed to the decay of the district's urban life. A common trend in the urban transformation of the downtown area was demolishing old structures and replacing them with either parking garages or surface parking. The section of Grand Boulevard, Mc Gee Street, Oak Street, Locust Street, Holmes Street, and 12th Street within the Government District changed from being the center for various establishments serving as hubs for social interactions and human presence to becoming either headquarters of large commercial establishments devoid of public interactions or parking spaces. In terms of public life, therefore the Government District changed drastically over the years by losing its mix of function types because of parking and a heavy concentration of governmental buildings. One sees this shift by comparing photographs of the past with the photographs of the same location in the present.

For example, the southern section of Grand Boulevard within the Government District, which is the western edge of the chosen site, was an important commercial corridor, in the 1870s, and was lined with lumber dealers, repairmen, butchers, and grocers. During the 1920s, this stretch was one of the busiest streets of the Kansas City area, lined with small businesses like art supplies, groceries, electric supplies, shoes, furniture, and lodging. The shoulder-to-shoulder businesses and the presence of a street-car system kept the street teaming with people. By the year 2000, this section of the Grand Boulevard had deteriorated and only few commercial

structures, separated by surface parking lots, remained. Today, this area is considerably lively especially during the afternoons and late nights, due to the presence of the Sprint Center covering four blocks east of Grand and the Power and Light district on its west.

Photographs taken during the 1900's show that the entire stretch of Grand Boulevard through the Government District was a busy pedestrian street, especially south of 8th Street. In the year 1900, the federal government occupied a large domed building at the south of Grand and 8th, which was also well known for the Midland Hotel, and a Methodist Church with a spire like tower (figure 3-21). The domed federal government building was replaced in 1938 by a modern office building and, later, the Methodist church was replaced by another office building. By 2000, many commercial high-rise structures were constructed south of Grand and 8th, hampering the sociability of this area.

Figure 3-21. View along the south of Grand Boulevard and 8th Street showing the domed Federal Government building, Midland Hotel and the Methodist Church (Photograph: copyright Missouri Valley Special Collections Department, KC public Library, Kansas City, Missouri).

The northeastern corner of Grand and 12th had a two-story building with small retail on the first floor during the 1900s. In 1960 this building was replaced by the "Traders on Grand" building which was a high-rise building with bank on the first floor and office spaces on the upper floors. Today the building still stands and functions as a bank and may be considered as a landmark building because of its name and location. The Bonfils Building at 12th and Grand which was built in 1925 had various small retail businesses open to the street, out of which the most famous was "The Wonderland Arcade" known for its pin-ball machines. This building was

renovated in 1988 and today houses the National Association of Inter-collegiate Athletics office, which is an athletic association of small colleges. The transformations along the Grand Boulevard have weakened its pedestrian life by replacing small businesses with large enterprises that involve lesser street life (figure 3-22). During the 1900s, between Grand and Mc Gee stood the 12th Street Hotel and the 12th Street Theater operated by the Standard Amusement Co. This section of the 12th Street used to be a venue for colorful display of posters, and pop banners. Today, these structures have been razed and the street is lived with parking lots.

Figure 3-22. Photo comparison of pedestrian life around the Bonfils Building located at the corner of 12th Street and Grand Boulevard intersection in the years 1950 and 2009 (Photograph: (left) copyright Missouri Valley Special Collections Department, KC public Library, Kansas City, Missouri; (right) photograph by author.

Oak Street had wide sidewalks during the 1920s and included a mix of uses including residences, hotels, garages, and various small stores contributing to the presence of people on the streets (figure 3-23). Today, Oak Street is a wide road accommodating two-way vehicular traffic housing few businesses. The residences and garages of the 1920s between 11th and 12th along Oak are now replaced by the City Hall covering the entire block. To the south across 12th Street is the Jackson County Courthouse. In the 1910s, along the 11th Street to the west from Oak Street, the street was dominated by a Jewish temple later occupied by Salvation Army, a house and some garages. By 1919, a skyscraper with office spaces replaced the house and garages, and a parking garage replaced the temple building in 2003.

Figure 3-23. (Left) View along Oak Street south of 11th street during 1920s (Photograph: copyright Missouri Valley Special Collections Department, KC public Library, Kansas City, Missouri); (Right) Today's Oak Street (Source: Photograph by author).

In terms of recreation in the Government District, the Warden Grand Opera House opened in 1887 at the northeastern corner of 9th and Holmes Street, was one of the city's three leading theatres. In 1897, it was destroyed by fire but was rebuilt the next year. During the late 1910s, the theater was converted to a movie house. A portion of this building was demolished in 1945, and in 1960; the remaining structure was completely destroyed by fire. Another theater within today's Government District was the Garden Theater, which opened in 1912 at the southeastern corner of Mc Gee and 13th Street, but by 1930, there was a severe decline in patronage and the establishment closed. Today, this site is a rarely used parking lot. During the 1940s, 12th and Holmes was famous for Marquette Hotel and Paramount Tavern, which today have been replaced by a parking lot.

Figure 3-24. (Left) a night view of 12th and Holmes intersection in the year 1945 (Photograph: copyright Missouri Valley Special Collections Department, KC public Library, Kansas City, Missouri); (Right) 12th and Holmes intersection today (Source: Photograph by author).

Another important building within the Government District was the five-story Studio Building at Locust and 9th Street, which in the early 20th century was a studio for musicians, artists, and actors. This building was razed in 1972 and replaced by Charles Evans Whittaker US Courthouse. The Public Library building at the northeastern corner of 9th and Locust and the Kansas City Junior College building at the southeastern corner of 11th and Locust were two important landmark buildings of the early nineteenth century. When the public library relocated, the building was used as an art gallery and later taken by the Ozark National Life Insurance. Co. as its headquarter. The Junior College building was demolished in 1953 and its site eventually became part of the Kansas City Municipal Court building in1970.

In the past, Walnut Street, running north-south adjacent to the western boundary of the Government District has had an important contribution to the public life of the Government District, especially the Walnut and 12th intersection. During the 1900s, much of the pedestrian life on Walnut Street was contributed by the Emery Bird, Thayer Dry goods Co which was the biggest departmental store at that time. Boley Clothing Co's office building which was a landmark (figure 3-25), located at the northeastern corner of Walnut and 12th supported certain amount of public interaction, especially after 1931 when it was replaced by a drugstore. During the 1960s the section of Walnut Street between 11th and 12th Street offered a wide range of merchandise with three jewelers, two womenswear, a cafeteria, a bank, and a drug-store along with separate stores selling candies, menswear, fur, groceries, sewing machines, flowers. Today much of the appearance and character of Walnut and 12th has changed to become a busy vehicular street with almost no pedestrian activities. A rarely used park has replaced many stores on the east side of the block and the west side is occupied by a skyscraper built in 1980s. In terms of public life, today Walnut offers nothing at the street-level except Kinko's Copies and Firstar Bank, the only enterprises open to walk-in (figure 3-25).

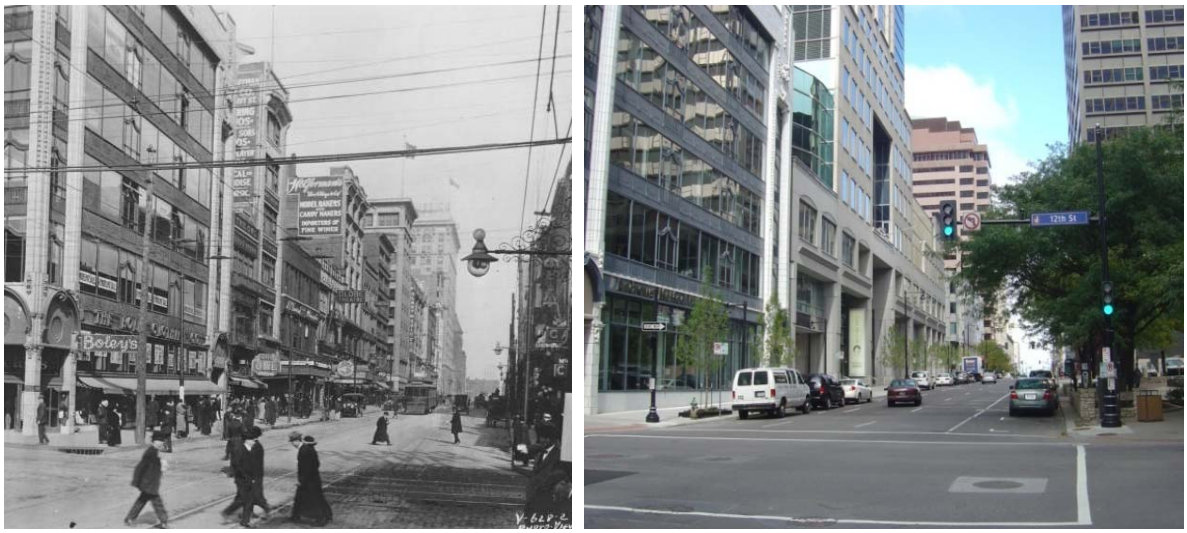

*Figure 3-25. (Left)*View north along Walnut Street from 12th Street with the Boley Clothing Co's office in 1910. (Photograph: Copyright Missouri Valley Special Collections Department, KC public Library, Kansas City, Missouri); (*Right)* View north along Walnut Street from 12th Street in 2009 (Source: Photograph by author).

Having discussed relevant site details, the concluding section of this chapter makes way for the design chapters by providing a list of major site concerns pertaining to the conceptual application of the larger-scale *RE* qualities. These concerns shall be addressed in the next three chapters that discuss conceptual design suggestions for the site to achieve the larger-scale *RE* qualities—permeability, variety, and legibility.

Site-concerns related to permeability:

- The *RE* authors emphasize the importance of connecting the site with the overall context but the interstate loop system on three sides of the Government District limits possible connections between the site and the city as a whole.
- According to the *RE* authors, design for permeability begins by designing a street-block system within the site by connecting the existing physical and visual linkages, but the Government District already has a grid-iron street-block system, thereby posing a challenge of achieving permeability within an existing street network.
- The existing blocks in the Government District are larger than the block-size recommended by the *RE* to support permeability.

- The *RE* authors advocate “perimeter block development” to achieve distinct private and public spaces, but none of the blocks of the Government District is designed as “perimeter block development.”
- Vacant blocks in the Government District, presently serving as surface parking, need to be well-integrated and designed in ways to achieve better permeability.

Site-concerns related to variety:

- The Government District lacks a mix of primary and secondary functions which is important to generate pedestrian activities. Therefore, design for variety within the Government District calls for identifying and locating economically and socially viable functions, which along with existing functions can achieve the right mix of primary and secondary uses required for a responsive environment.
- In order to achieve a substantial population density required for a responsive environment within the Government District, it is important to add more residential blocks as a part of design for variety.
- The Government District lacks facilities like large stores and markets, which attract large numbers of pedestrians. Such facilities connected by permeable streets result in concentrated pedestrian flows which is beneficial for small businesses located in between them.

Site-concerns related to legibility:

- The interstate loop system forms the major edge along the northern, eastern, and southern side of the Government District.
- The existing grid-iron street network of the Government District results in various major paths, none of which possess a strong character to be distinguished by users. Although Grand Boulevard is an important commercial corridor, it is characterized by parking structures and banks. Moreover, none of the major paths in the district possess desirable path enclosure required to achieve legibility.
- Even though there are few important nodes within the Government District, all of them are weakly defined and most of these nodes lack public relevance in terms of the activities in the adjacent buildings.

- Government District houses several landmark buildings such as the City Hall of Kansas City, Charles Whittaker US Court House, Jackson County Courthouse, St Mary's Episcopal Church, Public Library Building, and St Patrick's Church, but a design for legibility will require incorporation of landmark markers along paths as well as nodes.
- The Government District does not possess any district-like quality in terms of path-theme, neither as a whole nor any part of it. Therefore design for legibility needs to identify potential district areas and incorporate distinct path themes.

The following chapters offer design solutions for the Government District addressing the above discussed site concerns in terms of permeability, variety, and legibility.

Chapter 4

Permeability in the Government District

Design for permeability aims at enhancing people's freedom of movement by providing several alternative routes and achieving physical and visual connectivity within the site and between the site and the surrounding city. According to the *RE* authors, the design for permeability begins by identifying the existing system of links into the site and analyzing them to determine the strength of these links in terms of visual connectivity and physical connectedness. A permeable street-block system is then designed by joining the access points of links that facilitate relatively strong visual and physical connections. Finally this street-block system is further developed by designing details such as block-sizes, street-widths, and junction design to enhance permeability. This chapter first studies the degree of permeability offered by the existing linkage system and street-block system of the Government District and then presents conceptual design inputs that might invigorate permeability within the Government District.

The existing street-network system of the Government District facilitates several physical and visual links to the surrounding city. As demonstrated in figure 4-1, along the northern boundary, Grand Boulevard (J), Locust Street (K), and Charlotte Street (L) connect the Government District to 3rd Street, which is an important thoroughfare within the River Market District. Along the southern boundary, Grand Boulevard (W), Oak (V), Locust (U), Holmes (T), and Charlotte (S) Streets connect the Government District to 18th Street—an important thoroughfare within the Crossroads Arts District. 6th (I), 7th (H), 8th (G), 9th (F), 10th (E), 11th (D), 12th (C), 13th (B), and 14th (A) Streets link the Government District to the rest of the downtown loop on the western side and connect to Broadway Boulevard. The links to the eastern side are established by Admiral Boulevard (M), 8th (N), 9th (O), 10th (P), 11th (Q), and 12th (R) Streets, which connect to Troost Avenue. The following two sections analyze these city links and local connections to understand their relative design possibilities in terms of "visual" and "physical" permeability.

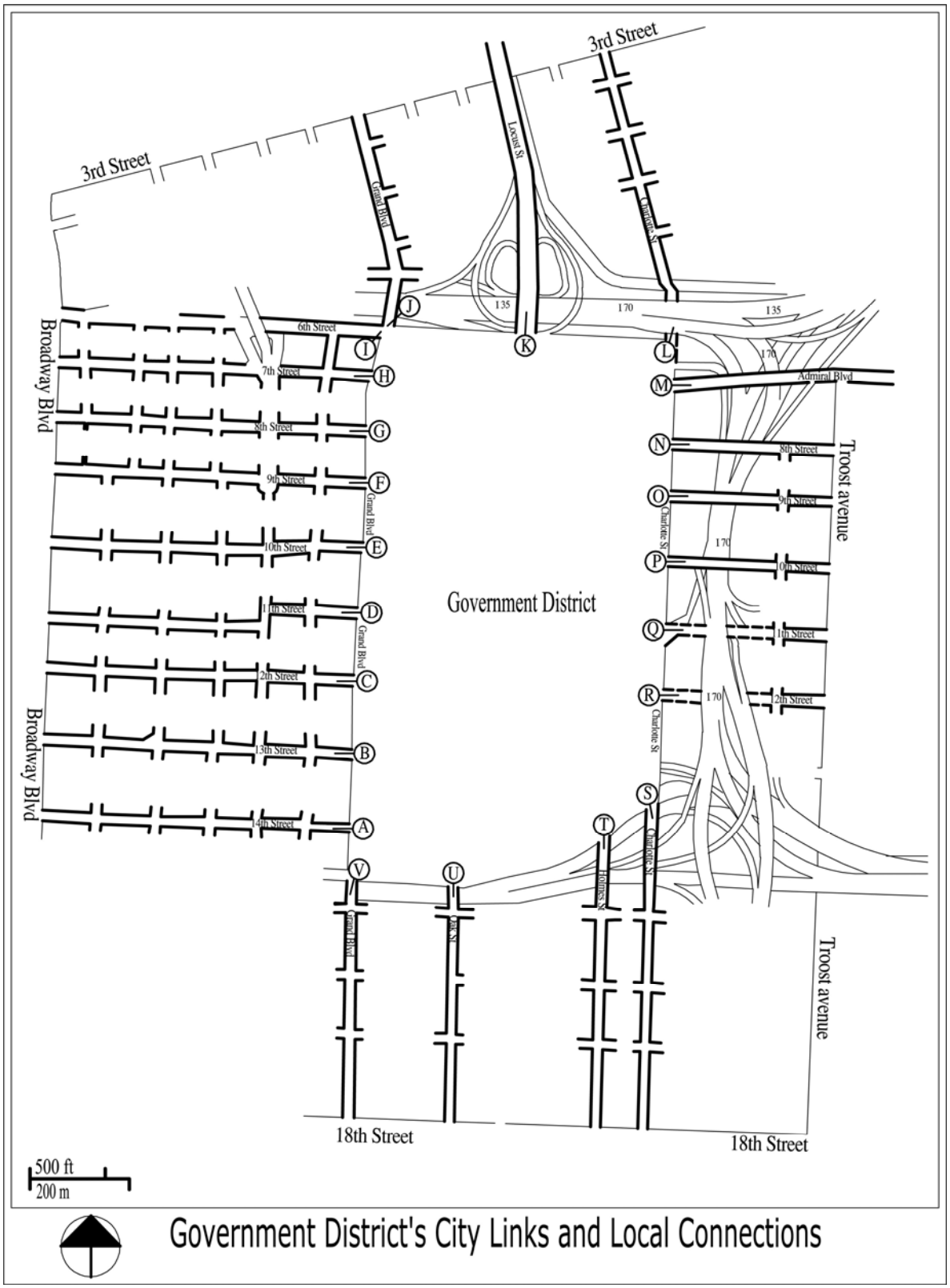

Figure 4-1. Map showing the location of the city links and local connections into the Government District (Source: Drawn by author).

Visual Permeability offered by city links

As laid out by the *RE* authors, visual permeability offered by city links relates to the presence of a visual connection, between the site and the main street-system, to make the surrounding city visually accessible from the site. The *RE* approach understands visual permeability in terms of "sight-line directness"—a factor of the number of changes in viewing point or turns involved in travelling from the site to the city's main-street system. In analyzing the relative directness of city links, each link is assigned a value equal to the number of changes in viewing points or turns involved in reaching the main-street system from the site. Since direct visual connection along a link is interrupted by a change in viewing point, directness of a city link reduces with every change in viewing point. Therefore, smaller values in the analysis suggest a more direct link between the site and the main-street system, with "1" indicating a direct sight-line from outside the site in.

Figure 4-2 demonstrates the analysis to determine relative directness of the Government District's city links in terms of visual permeability. In this analysis, the directness measures for 14^{th}, 13^{th}, 12^{th}, 9^{th}, 8^{th}, 7^{th}, and 6^{th} Streets (links A, B, C, F, G, H, and I in figure 4-2); all measure 1, thereby suggesting maximum possible visual directness along these streets on the western edge. All the links to the eastern and southern side of the Government District, including Admiral Boulevard, Grand Boulevard, 8^{th}, 9^{th}, 10^{th}, 11^{th}, 12^{th}, Charlotte, Holmes, Locust, and Oak Streets (M, W, N, O, P, Q, R, S, T, U, and V in figure 4-2), also possess maximum possible directness with 1 as the measure of directness. Grand Boulevard, Locust, and Charlotte Streets (J, K, and L in figure 4-2) on the northern edge and 10^{th} Street (link E in figure 4-2) measure relatively lesser directness, measuring 2 in the analysis. Of all the links, 11^{th} Street (link D in figure 4-2) on the western edge measuring 3 in the analysis is the least direct link. Therefore, based on the analysis for relative directness as indicated in the boxes at the bottom of fig 4-2, we have links A, B, C, F, G, H, I, M, N, O, P, Q, R, S, T, U, V, and W as the most direct city links to the Government District.

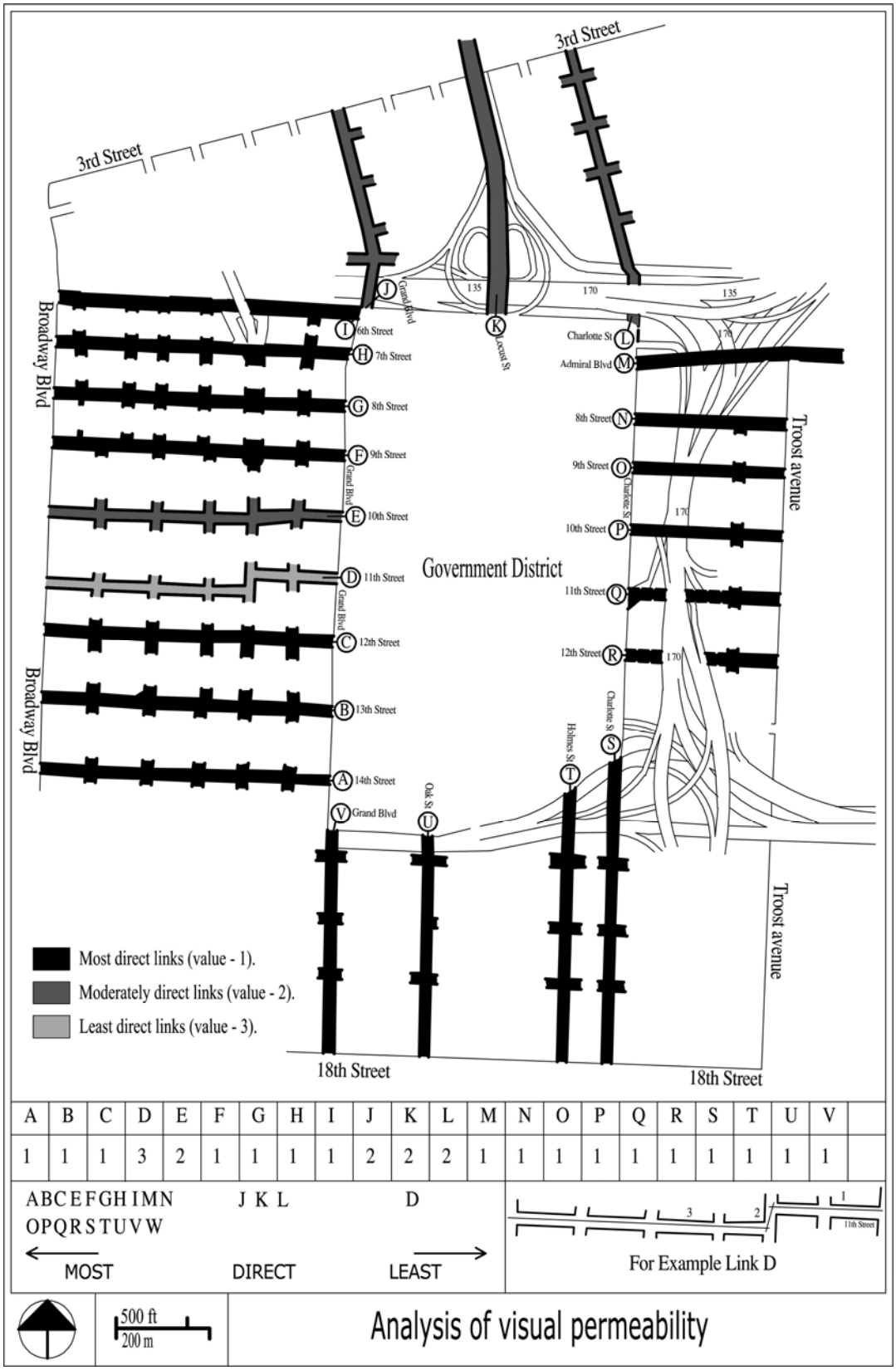

Figure 4-2. Analysis of the city links to determine relative directness (Source: Drawn by author).

Even though the analysis for relative directness establishes links A, B, C, F, G, H, I, M, N, O, P, Q, R, S, T, U, V, and W in figure 4-2 as the most direct city links, visual permeability offered by links A, B, I, N, P, and S in figure 4-2 is reduced by factors such as unfavorable slope and building elements that obstruct linear view along these streets. On the western side, 14th (A) and 13th (B) Streets run under the Convention Center building, which acts as a visual barrier immediately east of Broadway Boulevard (figure 4-3). The presence of this building limits the view along 14th and 13th streets to five blocks west of Grand Boulevard, thereby reducing overall visual permeability along them.

Figure 4-3. (Left) Location of Convention Center acting as a visual barrier along 14th and 13th Street (Source: Drawn by author). (Right) View along 13th Street from Grand Boulevard showing Convention Center as a barrier (Source: Photograph by author).

Even though no turn is required to reach Broadway Boulevard from the site along 6th Street (I), direct visual connection offered by this link is reduced by its steep slope and a visual obstruction created by Delaware Street forming an overhead bridge across 6th Street, two blocks west of Grand Boulevard. Figure 4-4 demonstrates how direct visual connection along 6th Street is affected by the nature of slope and the presence of Delaware Street as an overhead bridge. As a result of these visual interferences, a direct view along this street is restricted to four blocks. The bridge running over the interstate highway along 8th and 10th Streets on the eastern side of the site is raised above the level of the surrounding districts and slopes down on either side. This results in a lack of visual connection between the site and the neighboring district, in spite of these streets being direct links. Similarly, the visual permeability along Charlotte Street on the southern side is reduced due to its unfavorable slope (figure 4-5).

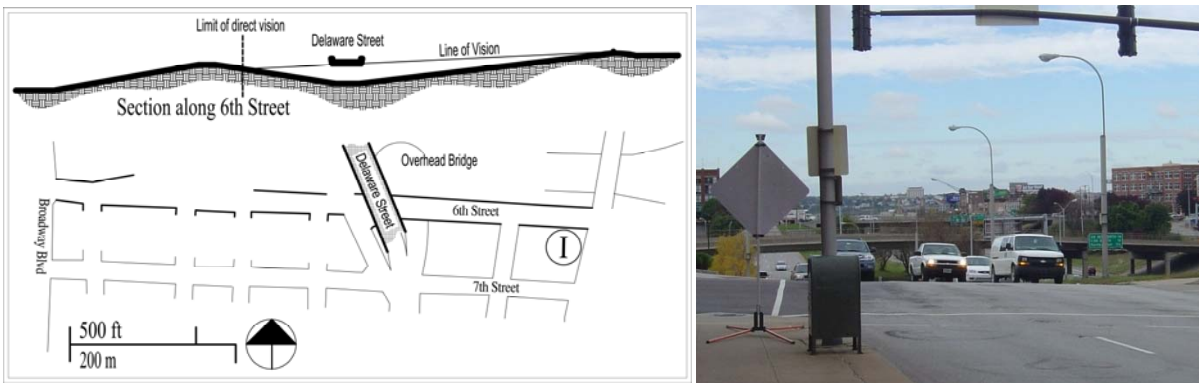

Figure 4-4. Direct visual connection along 6th Street is reduced due to the presence of slope along it and overhead bridge (Source: Photograph and drawing by author).

Figure 4-5, Bridges running over highways can act as a visual barrier e.g., Charlotte Street on the southern side (Source: Photograph by author).

Summarizing the analysis for directness and considering the other major concerns pertaining to visual permeability just discussed, we can conclude, as shown in fig 4-6, that 12th (C), 9th (F), 8th (G), and 7th (H) Streets on the western side, Admiral Boulevard (M), 9th (O), 11th (Q), and 12th (R) Streets on eastern side, and Holmes (T), Locust (U), Oak (V), and Grand boulevard (W) on the southern side are the most direct city links and most contributing to visual permeability

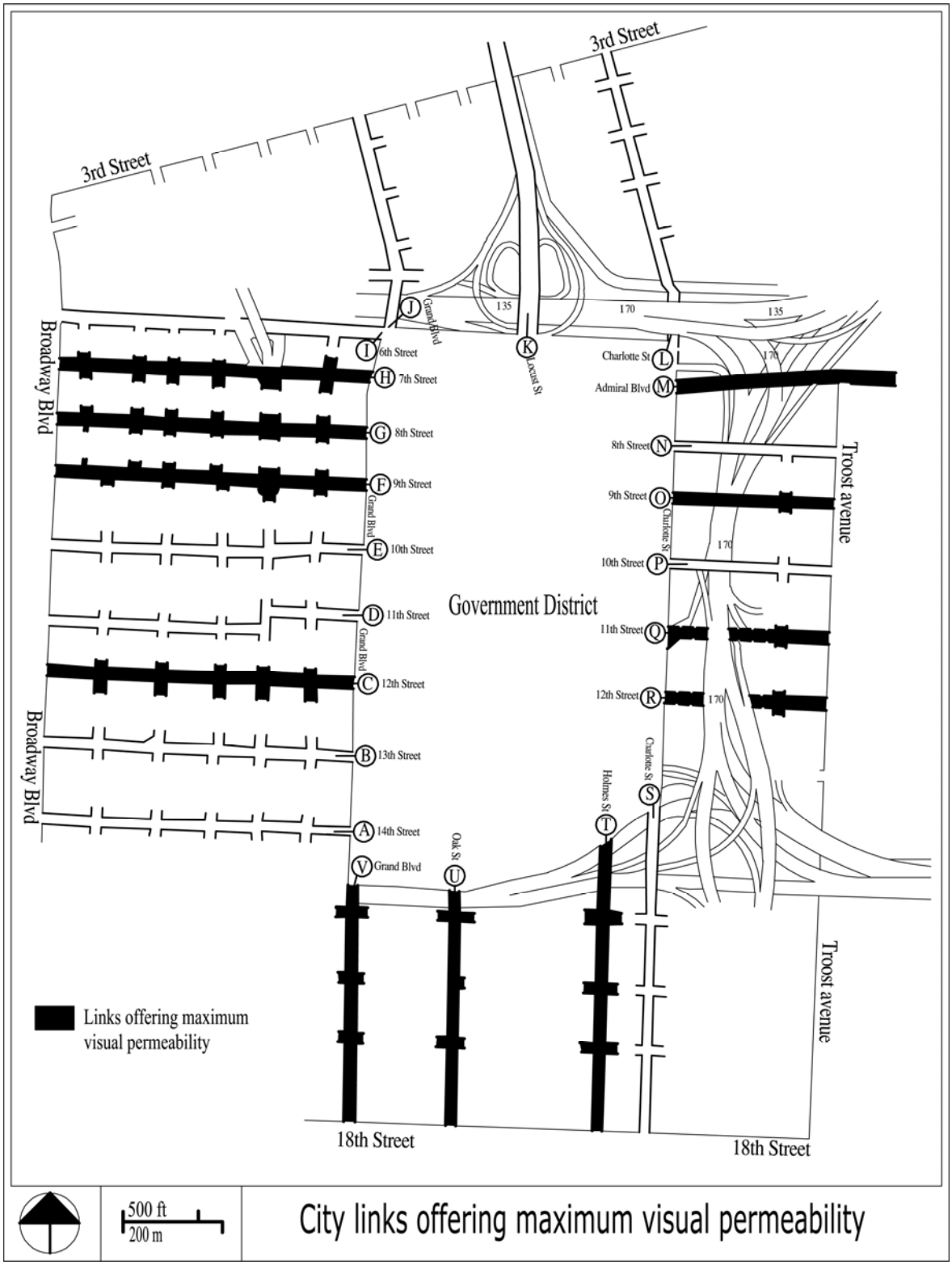

Figure 4-6. City links to Government District offering maximum visual permeability (Source: Drawn by author)

Physical Permeability offered by city links

According to the *RE* authors, physical permeability offered by city links relates to their potential to facilitate pedestrian movement between the site and the surrounding city as defined by the main pathway system. The *RE* approach understands physical permeability in terms of "connectedness"—a factor of the number of streets in the immediate vicinity feeding into each of the city links. In analyzing the relative connectedness of city links, the researcher assigns each link a value equal to the number of streets feeding into it. More feeder streets represent more potential pedestrian users for the city link to which the feeder streets connect. Therefore, city links with higher values in the analysis connect the site and surrounding city more strongly than city links with smaller values—for example "0" indicates the weakest connection with no connecting feeder streets.

Figure 4-7 illustrates the analysis used to determine the relative connectedness of the Government District's city links in terms of physical permeability. In this analysis, 8th Street (link G in figure 4-7) along the western edge is the most strongly connected city link with a measure of 12 followed by 7th (H) and 9th (F) Streets, measuring 11, on the western side. Measuring 10 in the analysis, 10th, 11th, 12th, 13th, and 14th Streets (link E, D, C, B, and A in figure 4-7) are relatively weaker connections along this boundary. Charlotte Street (link L in figure 4-7) on the northern side, measuring 7, is relatively stronger compared to Grand Boulevard (link J in figure 4-7) on the northern side and 6th Street (link I in figure 4-7) on the western side, both measuring 5. In terms of connectedness, Grand Boulevard, Holmes, and Charlotte Streets (links V, T, and S in figure 4-7) on the southern edge are next in the hierarchy with a measure of 4, followed by Oak Street (link U in figure 4-7), along the same edge, measuring 2. The eastern edge of the Government District is the most weakly connected edge, with 9th, 10th, 11th, and 12th Streets (links O, P, Q, and R in figure 4-7) measuring 2; and 8th Street (link N in figure 4-7) measuring 1. Out of all the links, Locust Street on the northern side (link K in figure 4-7) and Admiral Boulevard on the eastern side (link M in figure 4-7) are the weakest with connections measuring 0 (they are vehicular roadways with no streets feeding into them).

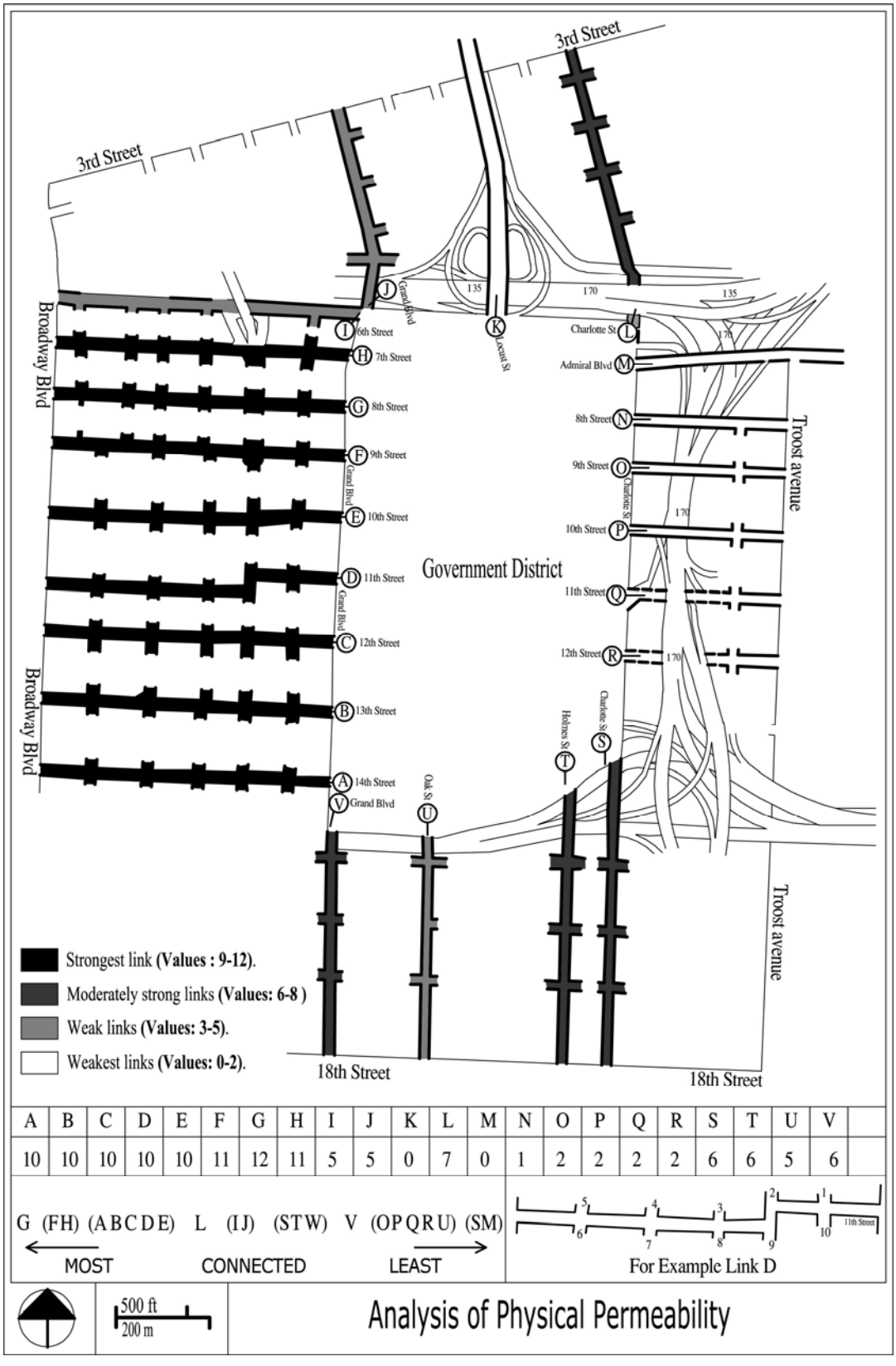

Figure 4-7. Analysis of city links to determine relative connectedness (Source: Drawn by author).

Based on this analysis for relative connectedness, we have links A, B, C, D, E, F, G, and H strongly connecting the site to the immediate surroundings, out of which link G is the strongest connection. In terms of connectedness offered by the rest of the links, we see that links L, S, T, V are moderately strong; links I, J, and U are weakly connected; and links K, M, N, O, P, Q, and R are the weakest connections, of which links K and M, measuring "0," offer the least connectedness.

Having analyzed the city links in terms of relative connectedness, it is important to discuss other concerns related to physical permeability offered by these links. The presence of the interstate loop system on the northern, eastern, and southern sides of the Government District is the most important factor affecting the physical permeability of the various city links. The presence of the interstate highway makes the city links on the northern, eastern, and southern boundaries different from those on the western boundary in terms of their potential to facilitate cross-pedestrian movement (figure 4-8). The western boundary of the Government District is spatially integrated with the adjacent districts by a directly connected street-block system and, therefore, provides better connectivity and greater potential for cross-pedestrian movement. For example, 6th, 7th, 8th, 9th, 10th, and 11th Streets connect the Government District to the adjacent Financial District by forming an interconnected street-block system merging with the existing street-block system of the Government District along Grand Boulevard. Similarly, 12th, 13th, and 14th Streets connect the Government District to the adjacent Power and Light District. Due to this unified street-block system and the absence of any distinct spatial transition, these connections along the western edge of the Government District are more favorable for cross-pedestrian movement (figure 4-8).

In great contrast, the interstate loop-system marks the northern, eastern, and southern boundaries of the Government District. City links to these three sides (links J, K, L, M, N, O, P, Q, R, S, T, U, V, and W) run over and under the interstate highway but, even so, the overall impact is that the interstate spatially disconnects the Government District from its surrounding context on these three sides (figure 4-8). The presence of the interstate highway generates what might be called a "span of nothingness" in terms of the city links that run over and under the interstate highways. This "span of nothingness" relates to the lack of desirable, engaging activities and sights along the city links, thereby forming an environmental and spatial vacuum

for pedestrians. Such an enormous separation between the Government District and the surrounding city retards cross-pedestrian movement on these three sides.

Figure 4-9 demonstrates how the "span of nothingness" varies along each of the city links on the northern, eastern, and southern sides. As indicated in figure 4-9, the shortest "span of nothingness" is along Grand Boulevard (J) on the northern side and along Grand Boulevard (V) and Oak Street (U) on the southern side. These shortest spans imply that pedestrian movement along these streets is least affected by the presence of the interstate. As shown in figure 4-9, Charlotte Street (L) on the northern side and 8th (N), 9th (O), 10th (P), 11th (Q), and 12th (R) Streets on the eastern side have longer "spans of nothingness" that demand strong design measures to activate pedestrian movement along them. Holmes (T) and Charlotte (S) Streets on the southern side, Admiral Boulevard (M) on the eastern side, and Locust Street (K) on the northern side have very large "spans of nothingness," thereby making these links almost impermeable in terms of pedestrian movement.

Apart from the "span of nothingness," the pedestrian movement along these links also depends on whether these streets pass under or over the highway. Streets forming a bridge over the highway lose a sense of enclosure and can reinforce the feeling of spatial disconnect and nothingness even more than compared to the streets passing under the highway for which a sense of enclosure is not completely lost. These streets, therefore, provide a potentially larger scope to reinforce a sense of pathway enclosure and connectedness. Links through the southern boundary—namely, Grand Boulevard, Oak, Holmes, and Charlotte Streets—pass over the interstate. On the eastern side, 11th and 12th Streets pass under, whereas Admiral Boulevard, 8th, 9th, and 10th Streets pass over the interstate highway; on the northern side, Grand Boulevard and Locust Street pass over the highway, while Charlotte Street passes under it. Another important factor that determines the pedestrian traffic on the links under or over the interstate is the functions and activities located immediately adjacent to the interstate on either side. Presently, these boundaries do not house any function types that can promote pedestrian activities and generate a concentrated pedestrian flow, thus leaving these links rarely used for pedestrian movement. In spite of the weakness of these links in terms of physical permeability, the fact that these streets are physical connections to the eastern, northern and southern sides of the Government District means that the interstate highway is not a completely impermeable edge.

With these patterns of relative connectedness in mind, it is important to develop design strategies to reinforce permeability and enhance pedestrian movement across the interstates, even though this pedestrian movement will not be as intense as it might be if the interstates were not present. These potential links of connectedness are important because they link the Government District with some of the most lively and important districts of Kansas City. Along the northern boundary, Grand Boulevard, Locust, and Charlotte Streets connect the Government District to the River Market District. Along the eastern boundary, Admiral Boulevard as well as 8th, 9th, 10th, 11th, and 12th Streets connect the Government District to the Paseo West District which houses residential buildings and warehouses. In addition along the southern side, Grand Boulevard, Charlotte, Holmes, and Oak Streets establish connections with the Crossroads Arts District, which includes museums, commercial, and residential buildings.

Summarizing the analysis for connectedness and considering other major concerns pertaining to physical permeability just discussed, we can conclude, as shown in figure 4-10, that 14th (A), 13th (B), 12th (C), 11th (D), 10th (E), 9th (F), 8th (G), and 7th (H) Streets on the western side are the strongest city links in terms of physical permeability. Grand Boulevard (V) on the southern side is a moderately strong city link and 6th (I) Street on the western side forms a weak link. Charlotte Street (L) on the northern side and Oak Street on the southern side are weak city links that are in need of measures to reinforce pedestrian movement along them. 8th (N), 9th (O), 10th (P), 11th (Q), and 12th (R) Streets are not strong city links in terms of physical permeability because they lack connectedness due to the presence of the interstate and are also affected by "large spans of nothingness." Even though Locust Street (K) on the northern side, and Admiral Boulevard (M) on the eastern side, are physical connections to the surrounding city area, analysis for physical permeability shows that these links have no value in facilitating pedestrian movement along them and thereby cannot contribute to physical permeability.

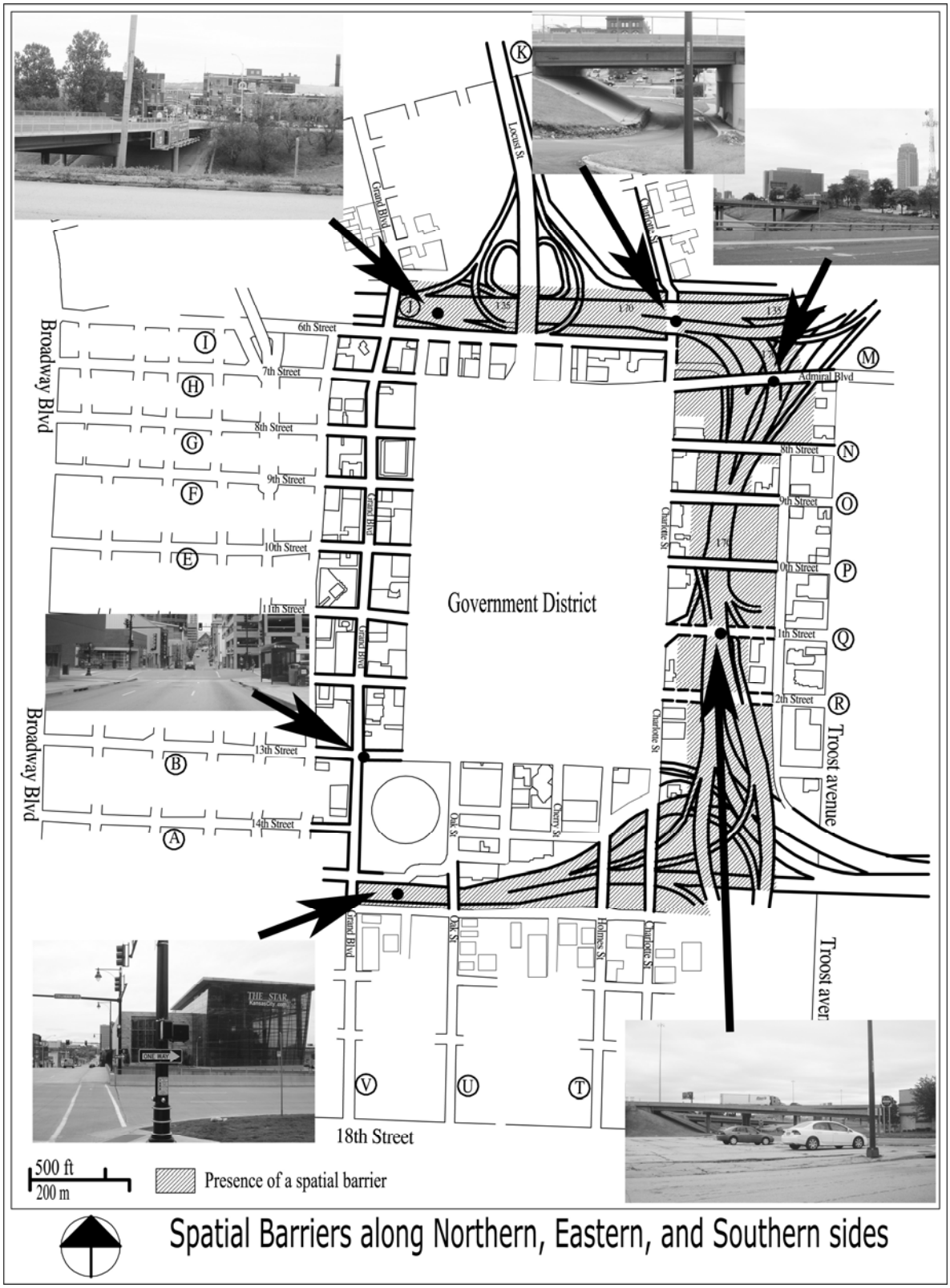

Figure 4-8. The interstate highway acts as a spatial barrier on the northern, eastern, and southern edges of the Government District (Source: Drawn by author).

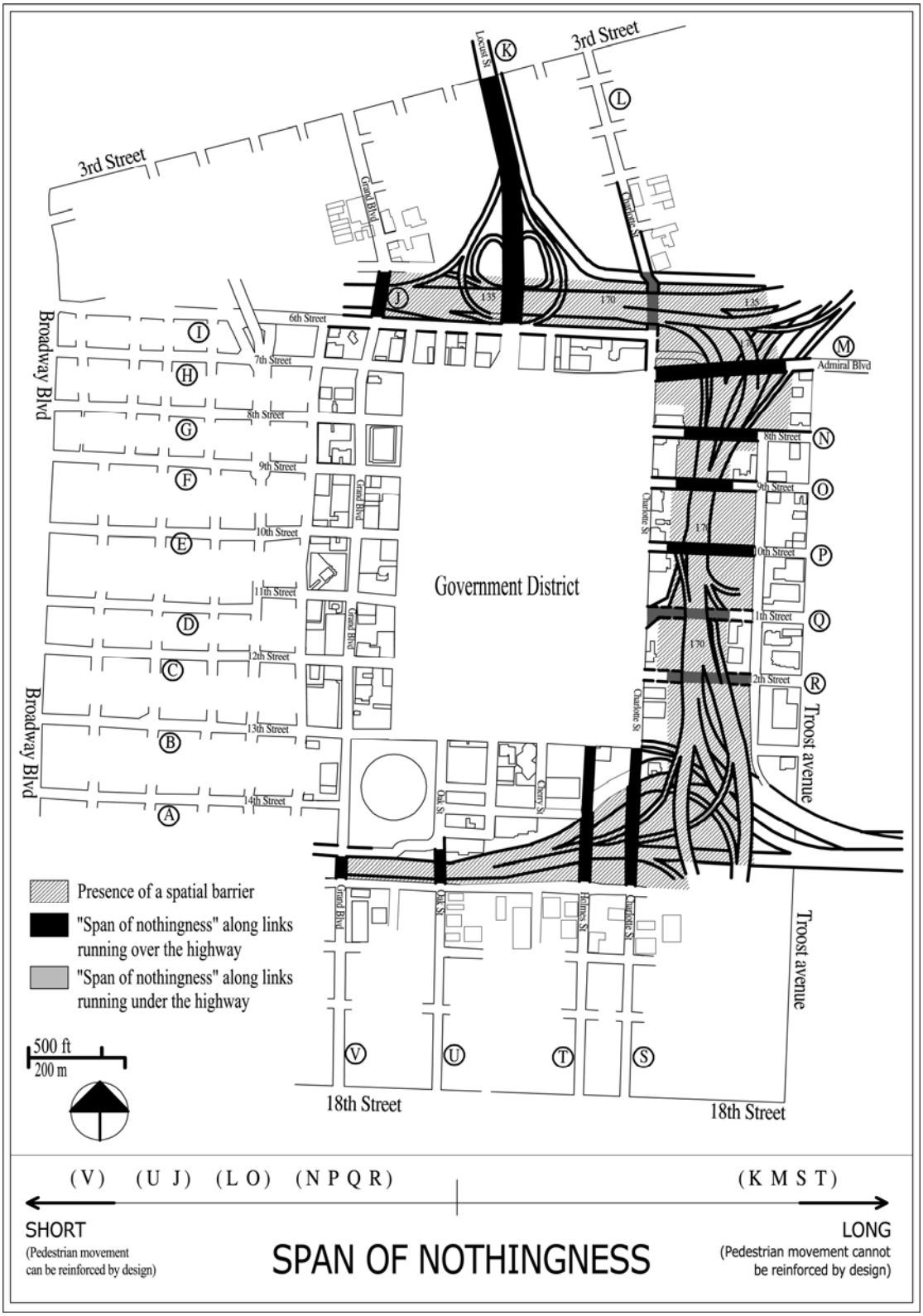

Figure 4-9. Comparative analysis of the "span of nothingness" along links on the northern, eastern, and southern side of the Government district (Source: Drawn by author)

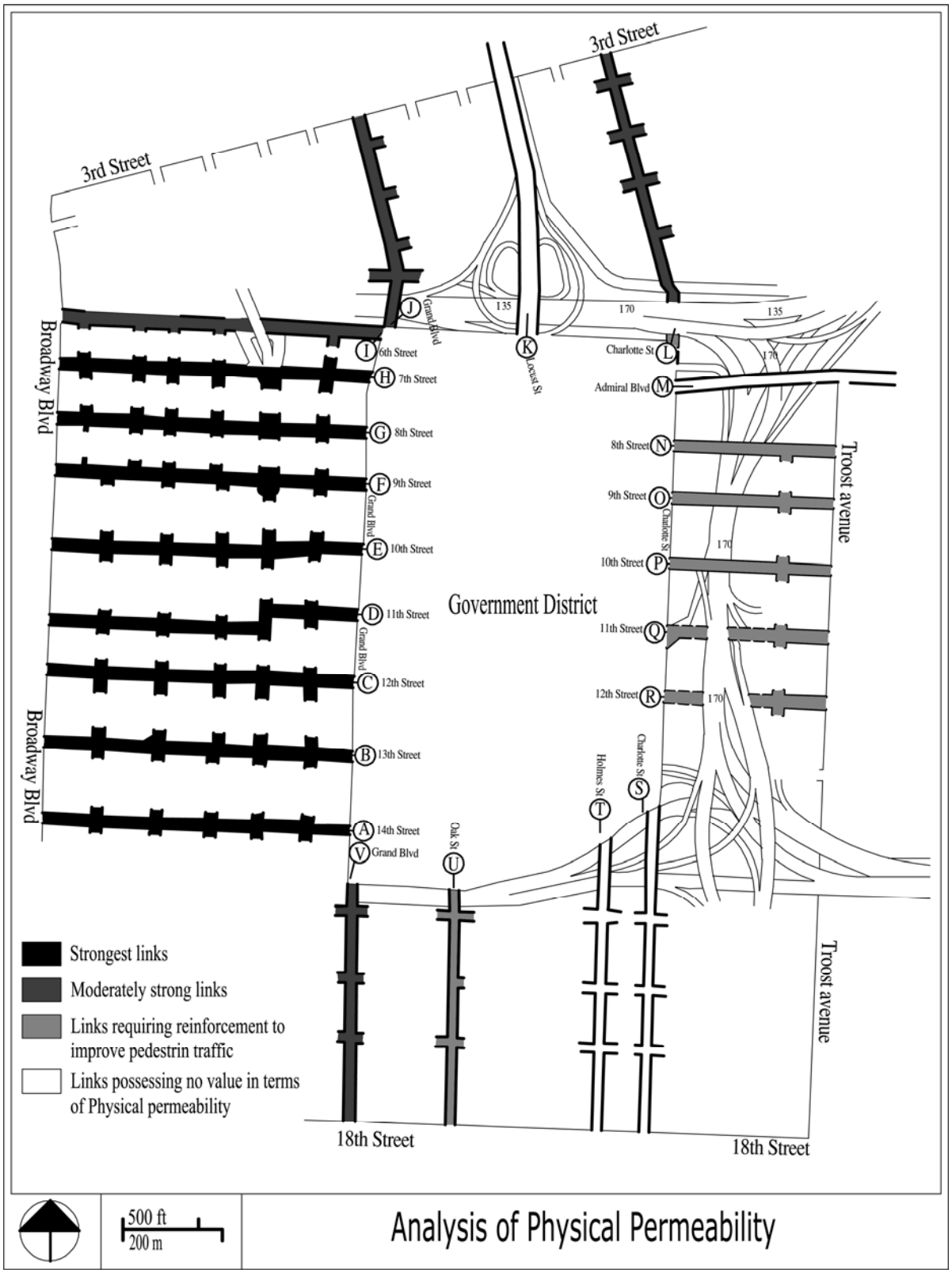

Figure 4-10. Summarizing the analysis for physical permeability (Source: Drawn by author).

Permeability and Government District's existing street-block structure

Having analyzed city links in terms of visual and physical permeability, the next step in designing for permeability, according to the *RE* authors, is to develop a preliminary permeable street-block structure by joining city links that are strongest in terms of permeability. However, unlike the Reading, England site in *RE,* the Government District is not abandoned but houses a functioning street-block structure laid out in a grid-iron pattern (figure 4-11). Therefore, prior to designing a permeable street-block structure for the Government District, it is important to study the existing street-block structure in terms of permeability.

Figure 4-11. Government district's existing street-block structure (Source: Drawn by author).

The Government District's existing street-network system is a part of Kansas City's larger grid-iron street-network system. Therefore, as shown in figure 4-12, the Government District's existing street-block structure is largely formed by extension of city links into the district. These links are further connected by internal connecting-streets that do not extend beyond the boundaries of the Government District.

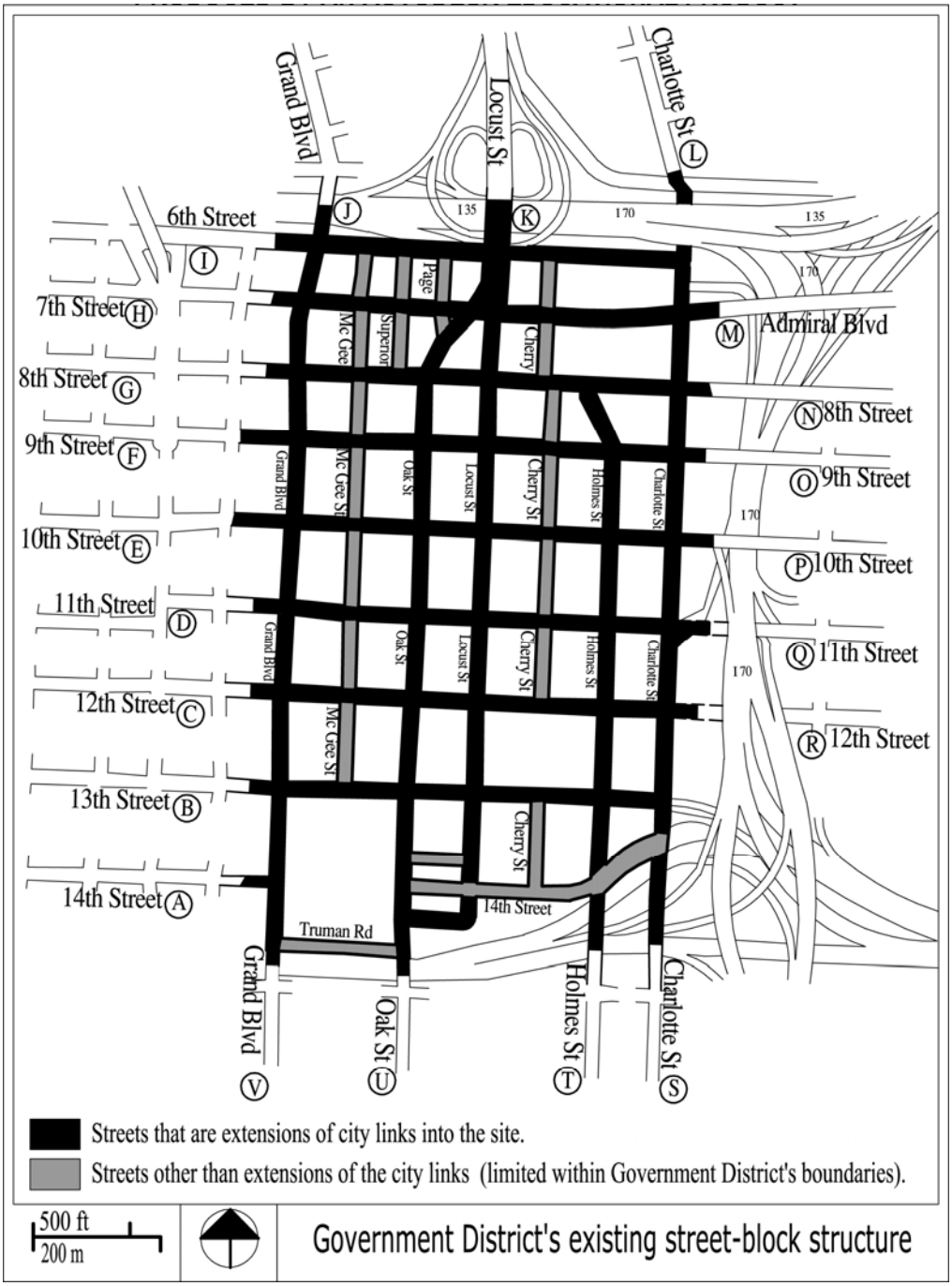

Figure 4-12. Street layout in Government District's existing street-block structure (Source: Drawn by author)

The Government District's existing street-block structure is characterized by blocks formed by the intersection of streets running in the north-south and east-west directions. As shown in figure 4-12, the streets running in the east-west direction are 6th, 7th, 8th, 9th, 10th, 11th, 12th, 13th, and 14th Streets. Out of these streets, 6th, 7th, 8th, 9th, 10th, 11th, 12th, and 13th Streets are extensions of city links from the eastern and western sides of the Government District to form continuous streets within the district (figure 4-12). 14th Street is a connecting street limited within the Government District because it is not connected to any city link. Streets running in the north-south direction are Grand Boulevard, Mc Gee, Superior, Page, Oak, Locust, Cherry, Holmes, and Charlotte Streets. Out of these streets, Grand Boulevard, Oak, Locust, Holmes, and Charlotte Streets are extensions of city links to the northern and southern side of the Government District to form continuous streets within the district (figure 4-12). McGee, Superior, Page, and Cherry Streets are connecting links limited to the Government District because they are not connected to any wider city link.

Permeability offered by the Government District's existing street-block structure can be understood in terms of: (a) the potential pedestrian users on the streets; and (b) design of blocks formed by the street-system. Pedestrian users in the Government District are contributed by city links that act as feeder streets generating pedestrian users into the district from the surrounding city. The number of pedestrian users fed by the city links depends on the visual and physical permeability offered by city links because better permeability, all other things being equal, supports more pedestrian users. Since the major streets in the existing street-block structure—6th, 7th, 8th, 9th, 10th, 11th, 12th, 13th, Grand Boulevard, Oak, Locust, Holmes, and Charlotte Streets—are formed by the extension or joining of city links, potential pedestrian users on these streets is a factor of the overall permeability offered by the city links that form these streets. Therefore, potential pedestrian users on these streets can be projected based on the visual and physical permeability analysis (described in the previous sections) which identifies city links that are strong, moderately strong, and weak in terms of linkage with the Government District (figure 4-2, 4-6, and 4-10). An understanding of potential pedestrian users within the existing street-block structure is important as it will serve as a key indicator for designing a permeable street-block structure as well as work as an aid in designing for the Government District in terms of variety.

To approximately estimate the flow of potential pedestrian users within the existing street-block structure, first, each of the city links is assigned a total of two arbitrary *permeability*

values—one corresponding to visual permeability and the other to physical permeability—based on the visual and physical permeability analysis of the city links described in the previous sections. A higher value is assigned to strong links; an intermediate value to moderately strong links; a least value to the weak links; and a permeability value of zero assigned to completely impermeable city links. For ease in calculation, the assigned values are 3, 2, and 1 for strong, moderately strong, and weak links, respectively. For example, 11th Street (D), which is a city link on the western side of the Government District, offers weak visual permeability and strong physical permeability. Therefore, link D is assigned 1 for visual permeability and 3 for physical permeability. Similarly, Locust Street (K), which is a city link on the northern side, offers a moderately strong visual link and has no value in terms of physical permeability. Therefore, link K is assigned 2 for visual permeability and 0 for physical permeability. Figure 4-13 shows permeability values assigned to each of the Government District's city links.

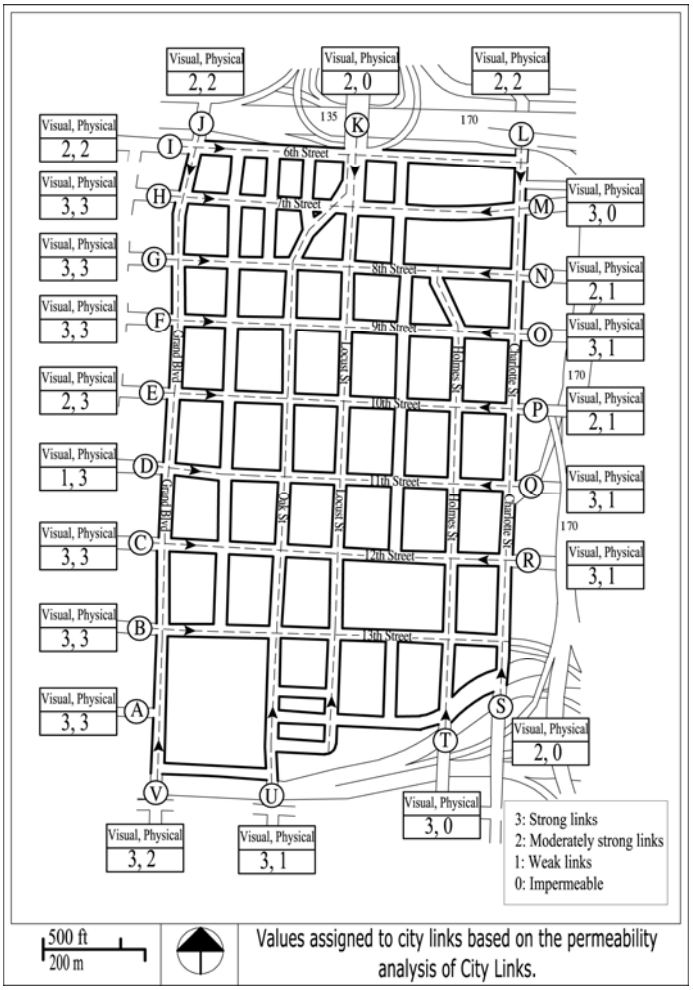

Figure 4-13. Permeability values assigned to each of the city links (Source: Drawn by author).

The next step is to determine the permeability value for each of the major streets in the existing street-block structure by adding the permeability values of city links that form these streets. For example, 10th Street is formed by joining link E (2 for visual permeability, 3 for physical permeability) and link P (2 for visual permeability, 1 for physical permeability). Since potential pedestrian users on this street are a resultant of both these feeder streets, the permeability value for this street can be determined by adding the permeability values of these links (2+3+2+1=8). Having determined the permeability value for every street in a similar manner, these values can be interpreted in terms of strong, moderately strong, and weak pedestrian flow as shown in table 4-1. Based on this analysis, we can determine, as shown in figure 4-14, that potential pedestrian flow is strong along Grand Boulevard, 7th, 8th, and 9th Streets; moderately strong along 10th, 11th, and 12th Streets; and weak along 6th, 13th, Oak, Locust, Holmes, and Charlotte Streets.

Analysis of streets in terms of potential pedestrian flow

Name of the Street formed by extension of city links		City links forming the street		Permeability values for Link 1		Permeability values for Link 1		Addition of permeability values and interpretation	
		Link 1	Link 2	Visual	Physical	Visual	Physical	Total	Interpretation
a)	6th Street	I	-	3	2	0	0	**5**	Weak
b)	7th Street	H	M	3	3	3	0	**9**	Strong
c)	8th Street	G	N	3	3	3	1	**10**	Strong
d)	9th Street	F	O	3	3	3	1	**10**	Strong
e)	10th Street	E	P	2	3	3	1	**9**	Strong
f)	11th Street	D	Q	2	3	3	1	**8**	Moderately strong
g)	12th Street	C	R	3	3	3	1	**7**	Moderately strong
h)	13th Street	B	-	3	3	0	0	**6**	Weak
i)	Grand Boulevard	J	V	2	2	3	2	**9**	Strong
j)	Oak Street	U	-	3	1	0	0	**4**	Weak
k)	Locust Street	K	-	2	0	0	0	**2**	Weak
l)	Holmes Street	T	-	3	0	0	0	**3**	Weak
m)	Charlotte Street	S	L	3	0	2	2	**7**	Moderately strong

Interpretation

9-10 : Strong pedestrian flow	7-8 : Moderately strong pedestrian flow	Less than 7 : Weak pedestrian flow

Table 4-1. Analysis of streets in terms of pedestrian flow (Source: Drawn by author).

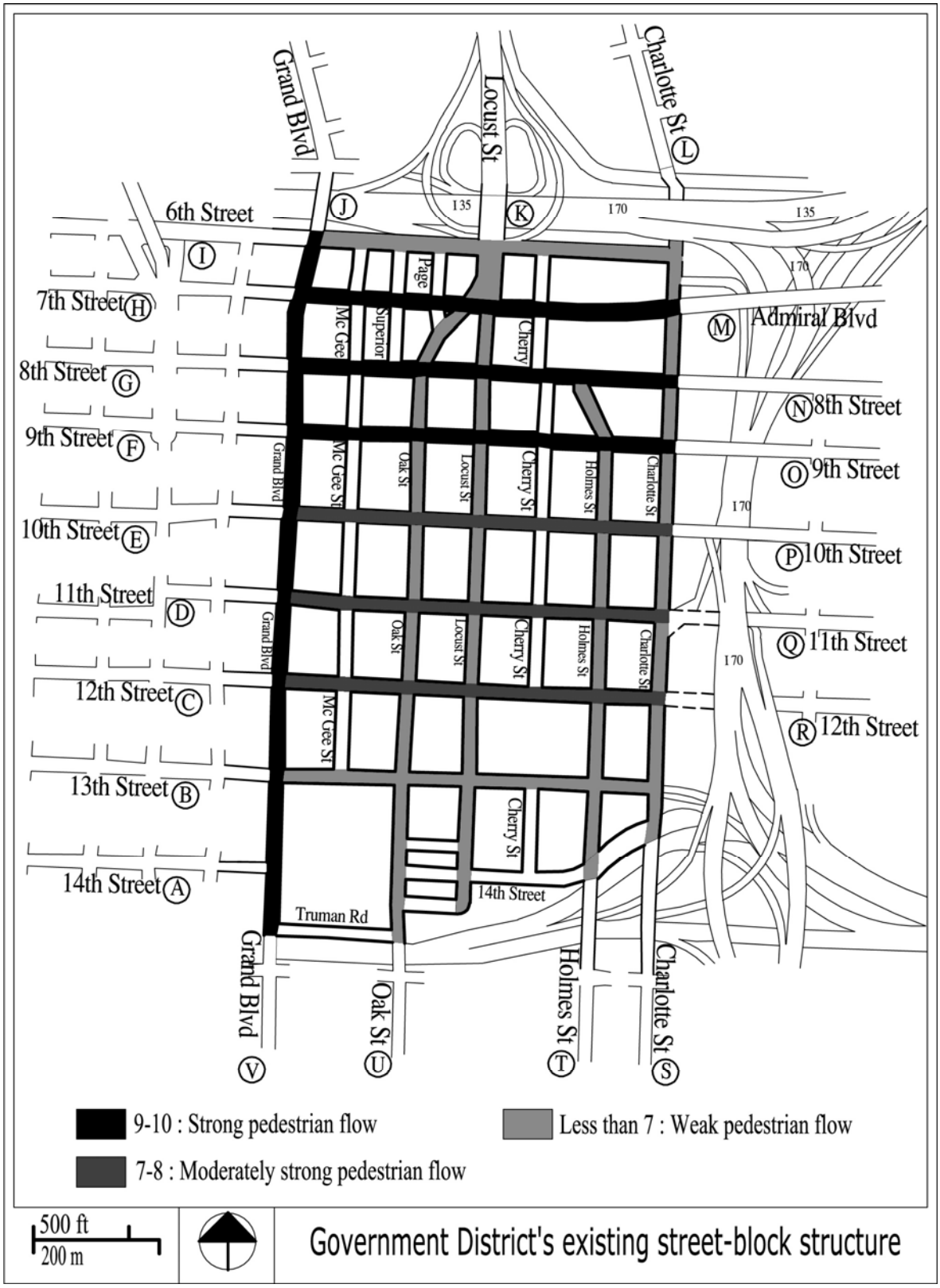

Figure 4-14. Map illustrating intensity of pedestrian flow within the existing street-block structure (Drawn by author).

Permeability and the Government District's Block Design

The permeability of the Government District is further affected by its block design, which the *RE* authors discuss in terms of block sizes and block development. For designing a permeable street-block structure, they suggest small blocks and perimeter block development. Small blocks are essential for cross-use within an urban space and they contribute to permeability by offering a greater number of alternative routes and by facilitating better visual access between junctions. Perimeter-block development enhances permeability by facilitating a public-private interface which enriches the public realm with a higher level of activities along the edges as a result of a private-public interaction.

With respect to block sizes and block development, the Government District's existing street-block structure largely fails to contribute to the overall permeability within the district due to the presence of large blocks and a lack of perimeter-block development. According to the *RE* authors, appropriate block size depends on the building's function, height, outdoor areas, and parking requirements. In designing the Reading site, the authors propose average block sizes ranging from 65 feet to 100 feet depending on the functional use of buildings. The average block-size is calculated by using a graph that considers the building's floor-area, height, and parking requirements. The average block-sizes in the Government District's existing street-block structure range from 160 feet to 560 feet, which is large in comparison to the block sizes applied in the Reading site. Most of the Government District's blocks are very large with average block sizes more than 300 feet, thereby drastically reducing permeability with fewer alternative routes within the district and a weaker visual connectivity between junctions (figure 4-15).

Some of the Government District's large blocks are a combination of two or more grids of the grid-iron street pattern. With respect to their sizes, these blocks act as super-blocks. These super-blocks, housing large buildings, interrupt the continuity of streets in the grid-iron pattern by obstructing visual and physical access along these streets, thereby reducing overall district permeability. Figure 4-16 identifies super-blocks in the Government District that interrupt the continuity of streets within the existing street-block structure. For example, the large block on the south of the Government District housing the Sprint Center (figure 4-16) obstructs visual and physical connectivity along McGee and 14th Streets. This super-block could have been divided into four blocks if development proceeded otherwise. Similarly, the large block formed by 12th,

13th, Locust, and Holmes Street housing Federal Police Headquarters (figure 4-16) interrupts visual and physical access along Cherry Street.

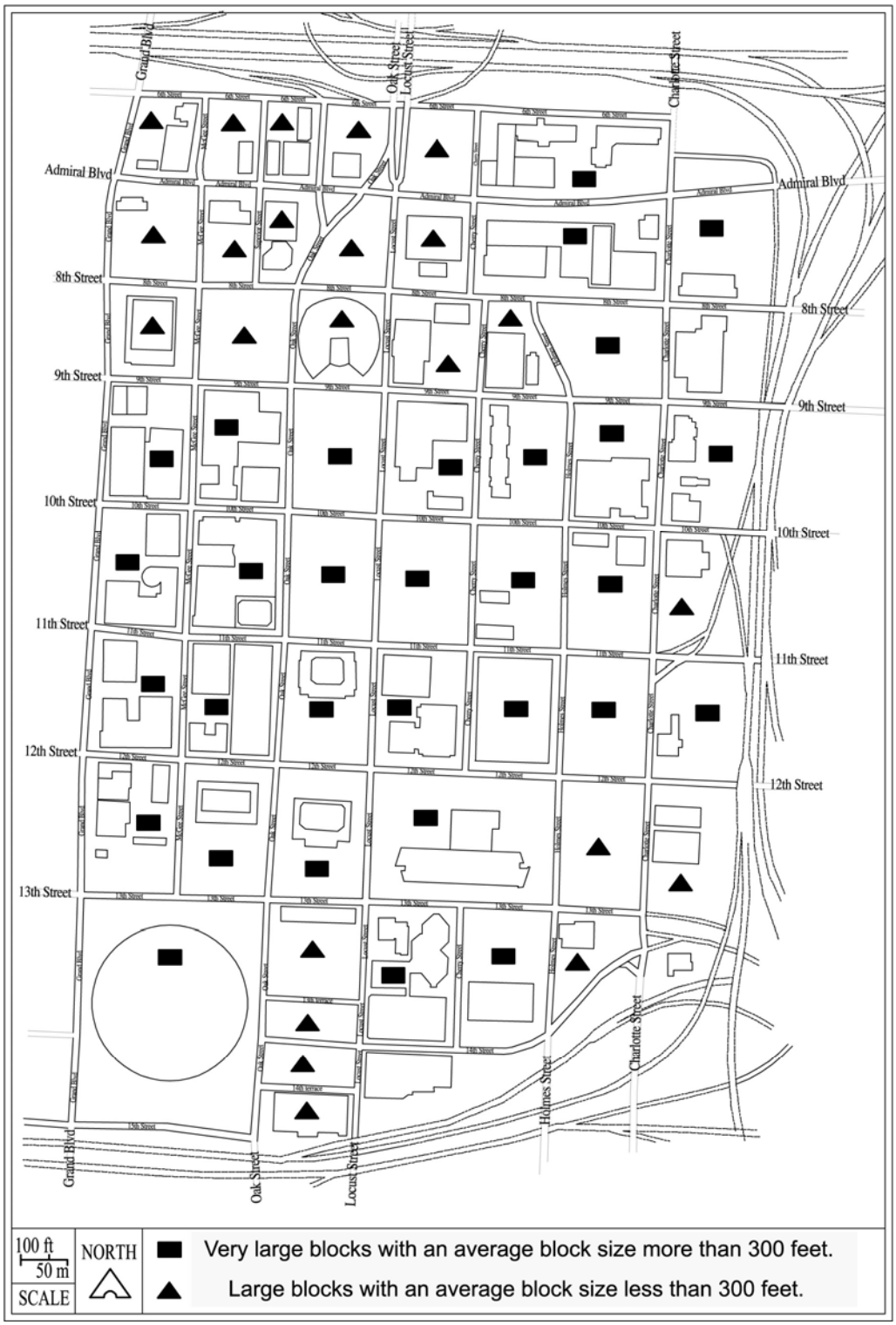

Figure 4-15. Identifying blocks with average block size below and above 300 feet (Source: Drawn by author).

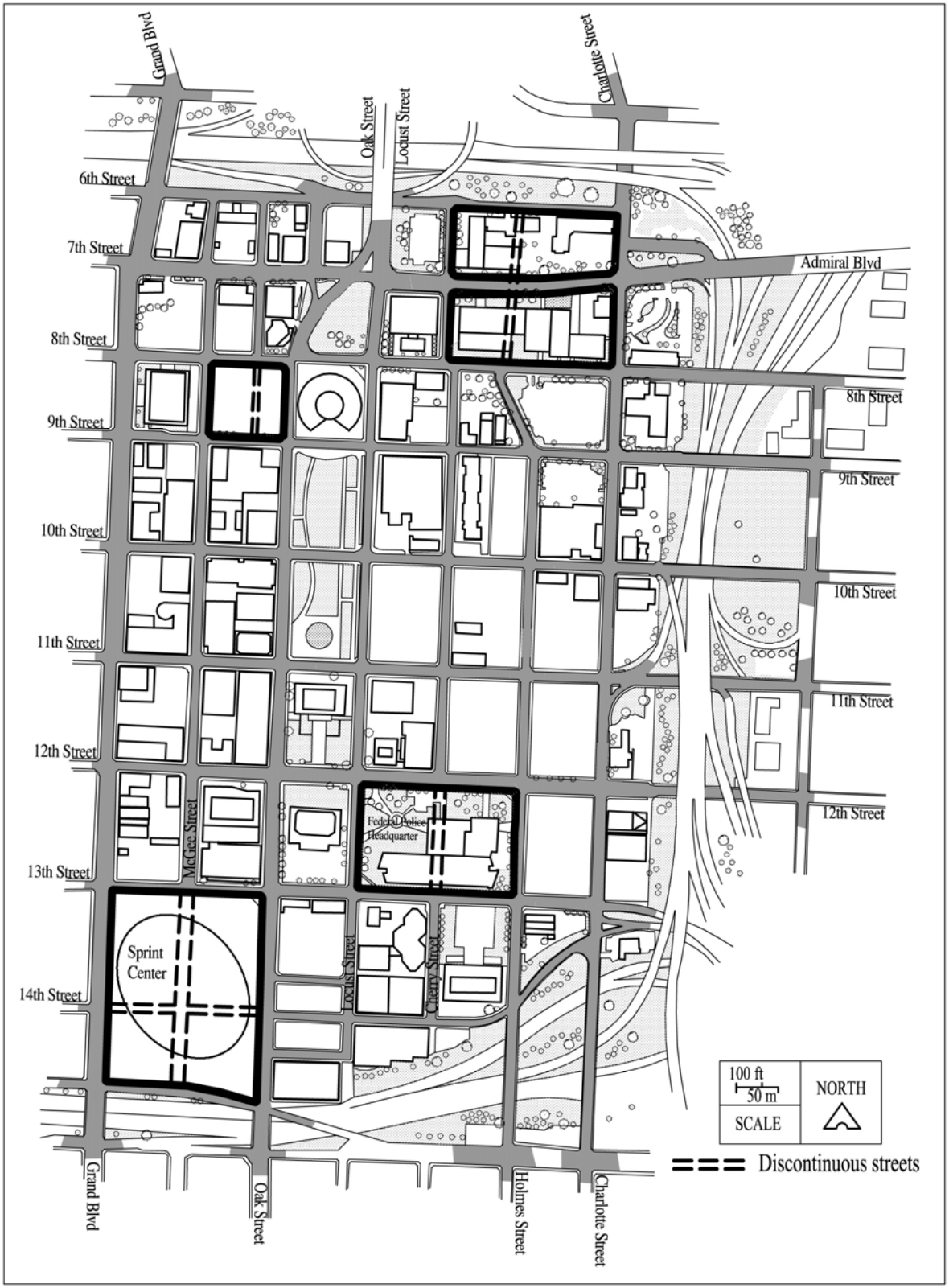

Figure 4-16. Large blocks in the Government District that interrupt the continuity of streets within the existing street-block structure (Source: Drawn by author).

Large blocks of the Government District's existing street-block structure further fail in contributing to the overall permeability because of the manner in which they are developed. None of these blocks follow perimeter-block development and therefore, the design of these blocks does not achieve the benefits of buildings abutting the street. In terms of permeability, the major drawback in the Government District's block development pattern is the lack of a public-private interface along the edges. Figure 4-17 illustrates the patterns of block development applied in the Government District. Blocks in the government District's street-block structure follow one of the following patterns:

- Blocks serving as surface parking areas;
- Blocks serving as open green areas;
- Blocks serving predominantly as parking mixed with a few small buildings;
- Blocks housing commercial buildings and their parking areas abutting the streets;
- Super blocks housing buildings isolated from the streets by large open-space frontages.

All these block-development patterns invariably weaken permeability within the district. Large, frequent blocks predominantly serving as parking areas create an urban emptiness with little scope for urbanite interaction, thereby adversely affecting possible pedestrian movements along streets abutting these blocks (figure 4-18). Blocks serving as open green areas deter possible pedestrian movement by acting as urban barriers within the district; they fail in terms of usability because of large size and lack of supporting uses and function types (figure 4-19). Blocks housing commercial buildings and their parking areas abutting the streets possess some value in terms of a public-private interaction which is nullified by the large block size and building scale. Moreover, the buildings located in blocks following this pattern are mostly large parking garages and offices with little scope for public-private interaction, which makes pedestrian movement along these blocks uninteresting and therefore minimal (figure 4-20 left). Super-blocks with buildings isolated from the streets widen the public-private interface as a result of which it offers little in terms of public activity for pedestrians along its edges, thereby deterring possible pedestrian movement along streets abutting these blocks (figure 4-20 right).

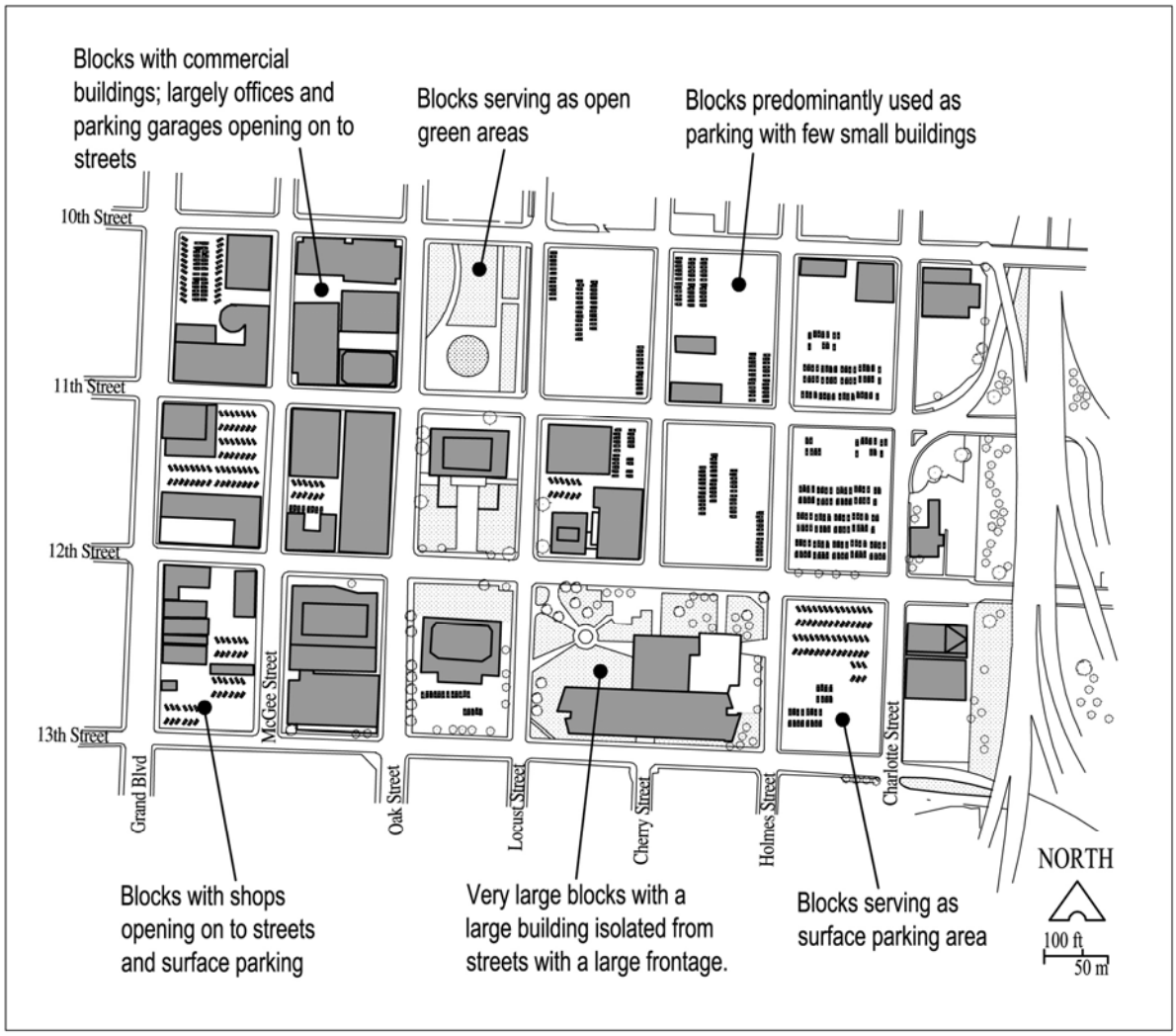

Figure 4-17. Block development patterns in the Government District (Source: Drawn by author)

Figure 4-18. Blocks serving predominantly as parking areas create an urban emptiness with little scope for urbanite interaction (Source: Photograph by author).

Figure 4-19. Blocks serving as open green areas fail in terms of their usability because of its large size and lack of supporting functions (source: photograph by author).

Figure 4-20. Blocks with commercial buildings abutting the streets (left), Super blocks with large frontages (right) (Source: photograph by author).

The analysis of city links and an understanding of the Government District's existing street-block structure in terms of permeability provide the premise for conceptual design implications required for a more permeable Government District. This issue is discussed in the next section.

Conceptual Design Suggestions for Permeability

The above analysis of the Government District's existing street-block structure suggests that incorporating permeability would involve two major tasks: (a) developing a permeable

street-block structure within the Government District; and (b) reinforcing pedestrian flow into and through the Government District by strengthening city links on the northern, eastern, and southern sides. Even though reinforcing pedestrian movement along city links is an issue related to permeability, the required improvements also involve variety and legibility; thus, they will be elaborated in the next two chapters. Here, I emphasize design measures required to develop a permeable street-block structure within the Government District.

The key to developing a permeable street-block structure within the Government District is to divide its large blocks into smaller ones of appropriate sizes by laying out streets supporting vehicular and pedestrian movement. However, all large blocks in the Government District cannot be divided into smaller blocks because some of the existing blocks do not provide sufficient space to lay out streets within them without demolishing existing buildings. Therefore, developing a permeable street-block structure begins with identifying blocks that can be redesigned by introducing new streets and then by deciding where these new streets might be placed. As a means to discuss the process of identifying blocks that can be divided into smaller blocks of appropriate sizes, figure 4-21 shows a part of the Government District's existing street-block structure.

As shown in this figure, large blocks with buildings covering most of the block (represented by blocks A, B, and C in figure 4-21) cannot be divided because proposing new streets in these blocks would either require demolishing buildings within these blocks or would result in inappropriate block sizes. Some blocks housing commercial buildings may require demolishing certain parts of existing block design, mainly buildings, to achieve small blocks. Such blocks (represented by blocks D and E in figure 4-21), can be divided by adding pedestrian alleyways to minimize the impact on the existing building. Blocks with large buildings closely abutting each other or blocks with centrally located buildings may be divided into smaller blocks; but none of such blocks provide sufficient space to incorporate vehicular streets. In such cases (represented by blocks F, G, H, I, J, and K in figure 4-21), large blocks can be divided by proposing pedestrian alleyways. Large blocks in the Government District that are predominantly open areas, serving as parking lots, green open spaces, or blocks with few small buildings (represented by blocks L, M, N, O, and P in figure 4-21), can be easily divided into smaller blocks of appropriate sizes. Very large blocks and an absence of large buildings within those

blocks offer sufficient area to allow the addition of new streets supporting both vehicular and pedestrian movement.

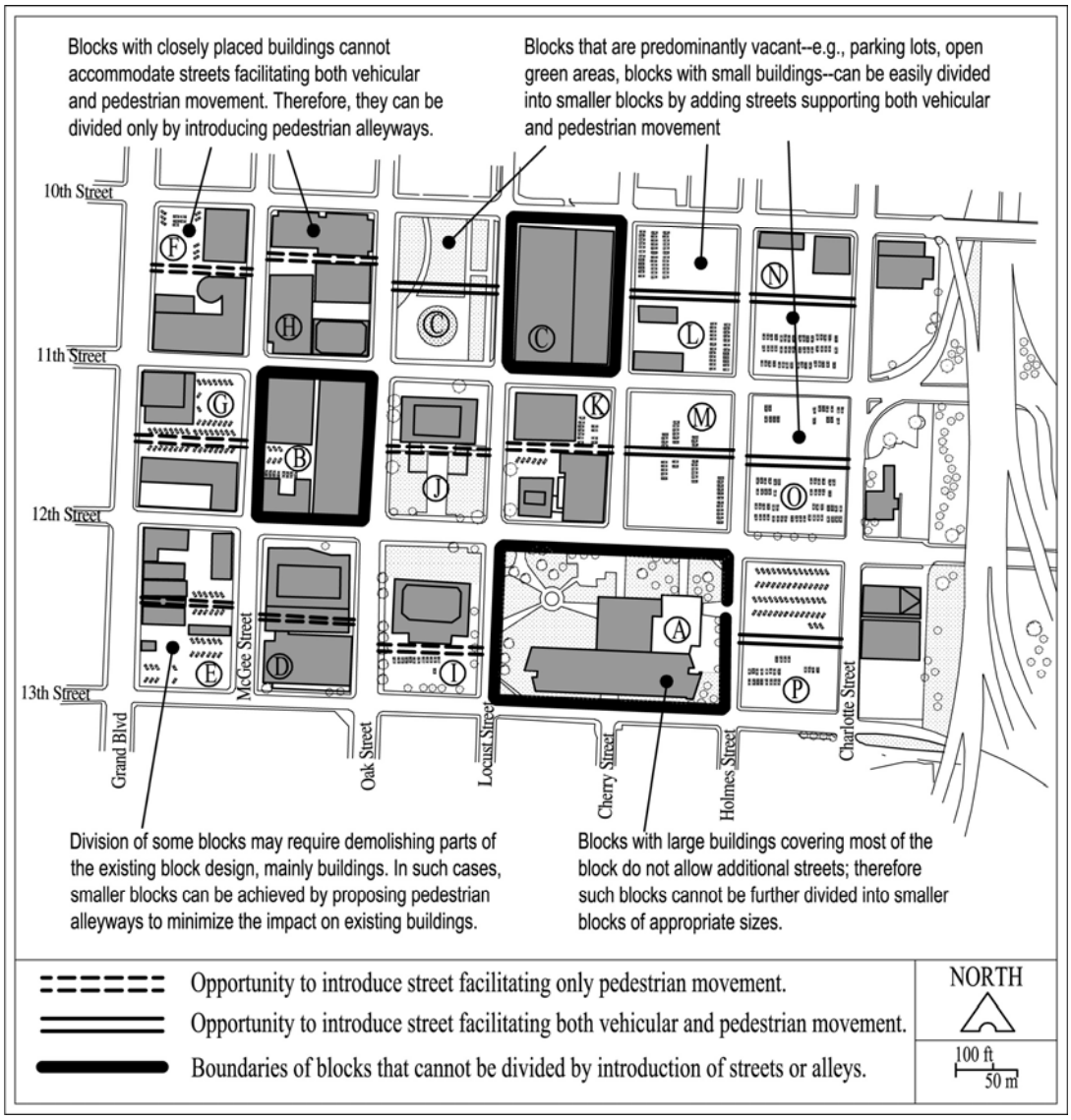

Figure 4-21. Identifying large blocks that can be divided into smaller blocks of appropriate sizes (Source: Drawn by author).

Analysis of potential pedestrian flow along existing streets in the previous section (figure 4-14) has shown that the Government District's existing streets possess varying strength in terms of potential pedestrian flow, depending on the visual and physical permeability offered by the city links connecting these streets. Streets connected to city links that are weak in terms of permeability and streets that are not connected to any city links have a weaker potential for pedestrian flow along them. Pedestrian flow along these streets is largely dependent on its

connection to the streets offering stronger potential for pedestrian movement. Therefore, to achieve better pedestrian movement within the entire district, it is important that any new pedestrian streets connect stronger to weaker streets. In this way, the entire street-block structure achieves greater potential for pedestrian movement, thereby enhancing overall permeability of the district because of better connectivity between the existing streets.

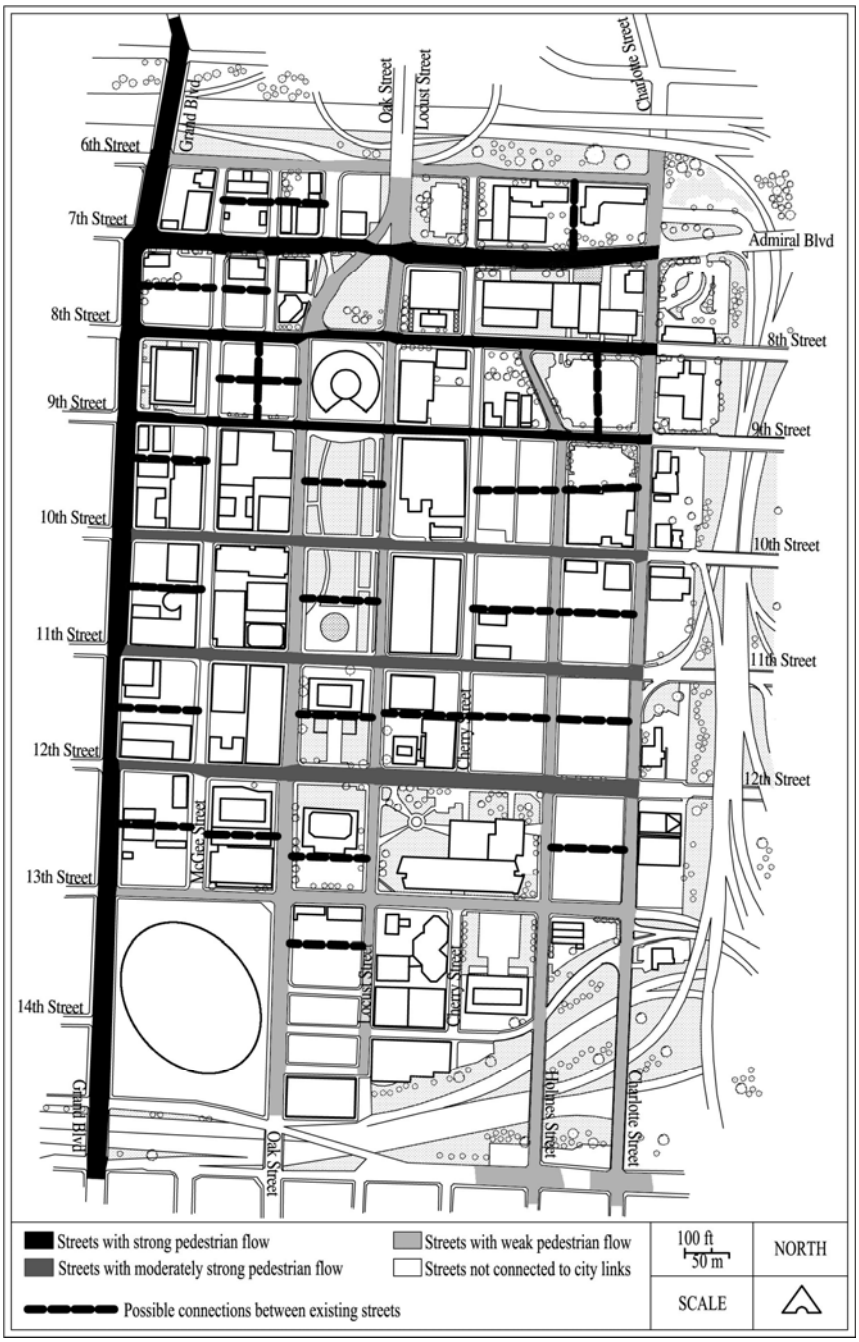

Figure 4-22. Identification of larger blocks that can be divided into smaller blocks and possible connections between existing streets (Source: Drawn by author).

Figure 4-22 shows connections that can be established between the existing streets through proposing new pedestrian streets. As shown in this figure, McGee and Cherry Streets are the weakest of all existing streets in terms of potential pedestrian movement. Therefore, the process of dividing large into smaller blocks by proposing new streets should aim at connecting these two streets to the adjacent streets that offer better potential for pedestrian movement. For example, five connections can be established between Grand Boulevard (which is a strong street in terms of pedestrian flow) and McGee Street (see figure 4-22). Moreover, to achieve better cross-movement and better distribution of pedestrians drawn into the district by feeder streets, new streets should guarantee the maximum number of pedestrian connections between the existing streets. For example, as shown in figure 4-22, five connections can be established between Oak and Locust Streets.

Figure 4-28 presents the preliminary permeable street-block structure for the Government District based on the above analysis. The major highlights of the design measures used to achieve this permeable street-block structure are as follows:

- Using streets facilitating vehicular as well pedestrian movement to divide large blocks into smaller blocks and to establish connections between existing streets (figure 4-23);
- Proposing pedestrian alleyways within blocks that present space constraints (figure 4-24);
- Proposing minimal demolitions where necessary to achieve smaller blocks (figure 4-25);
- Changing the course of Oak Street to achieve a better block layout (figure 4-26);
- Maintaining visual permeability along new streets as much as possible (figure 4-27).

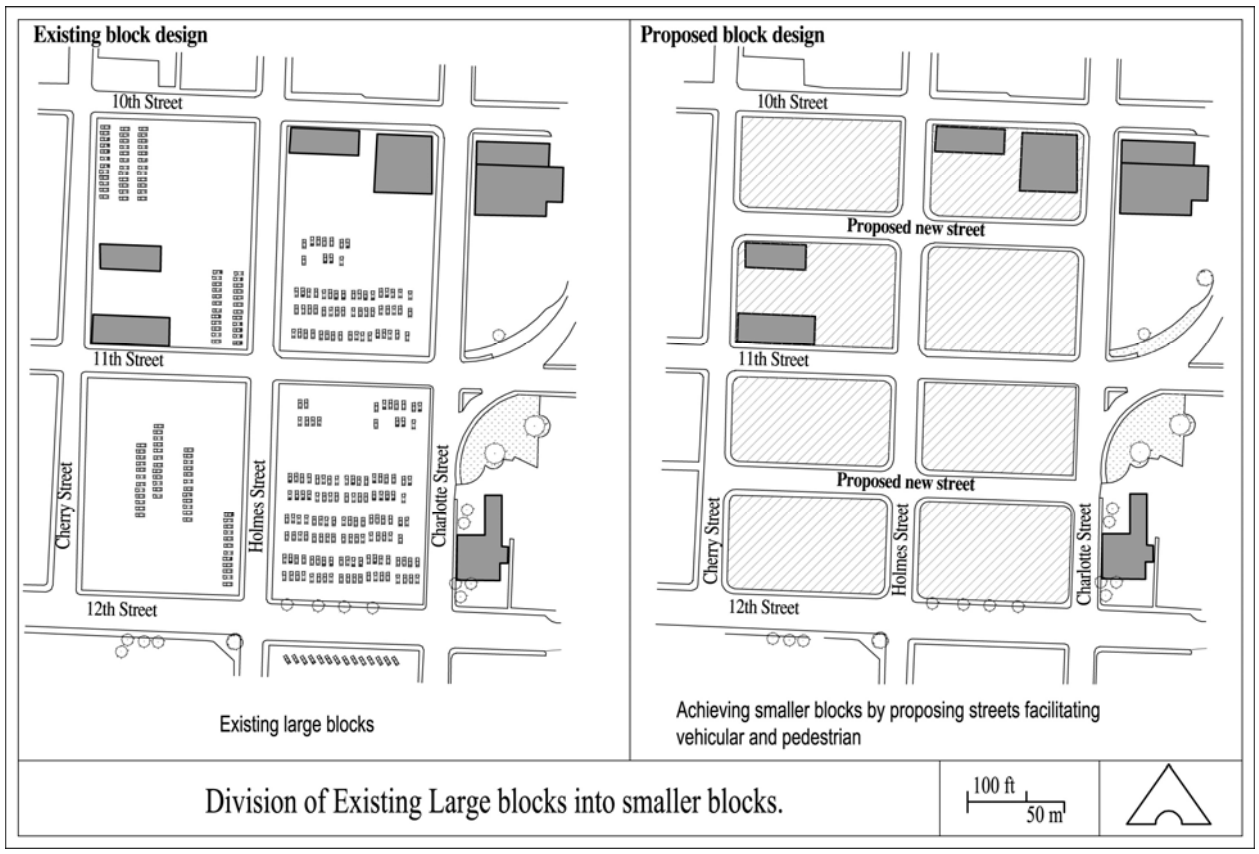

Figure 4-23. Dividing large blocks into smaller ones through streets facilitating vehicular as well as pedestrian movement (Source: Drawn by author).

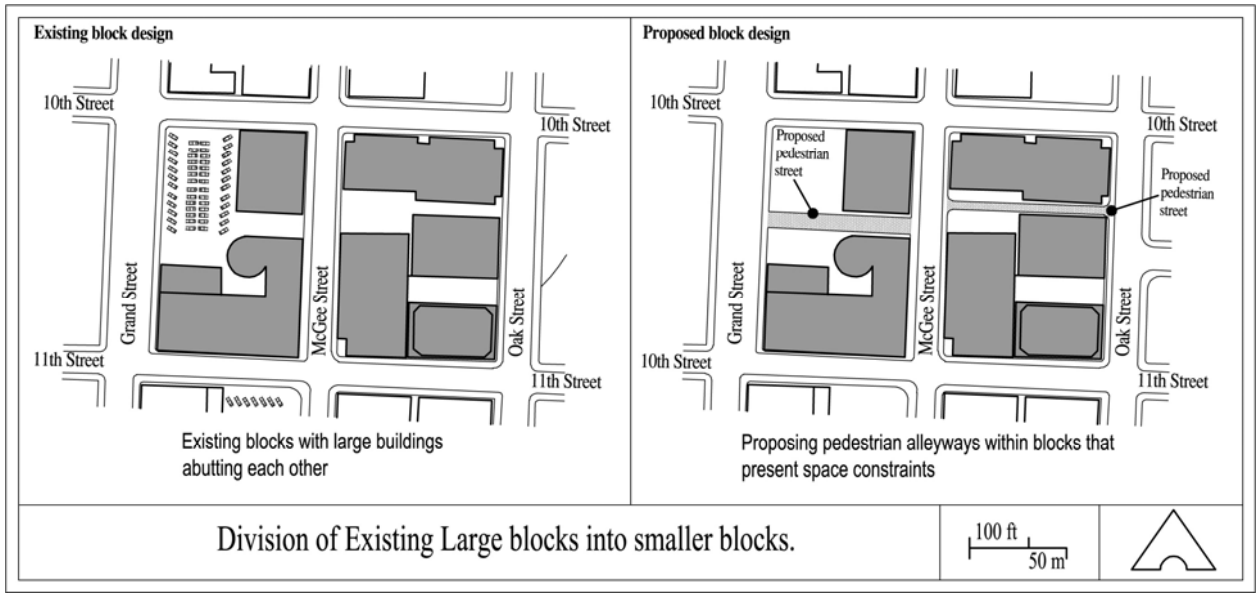

Figure 4-24. Proposing pedestrian alleyways within blocks that present space constraints (Source: Drawn by author).

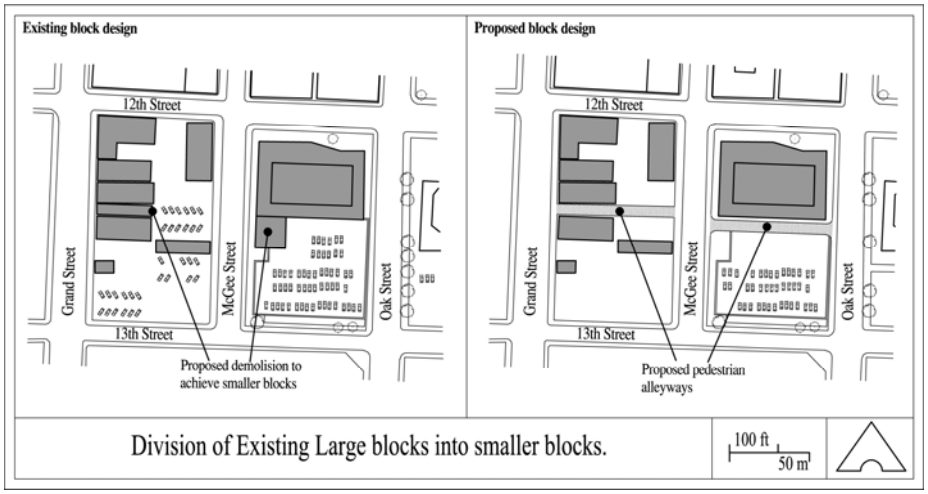

Figure 4-25. Proposing minimal demolitions where necessary to achieve small blocks (Source: Drawn by author).

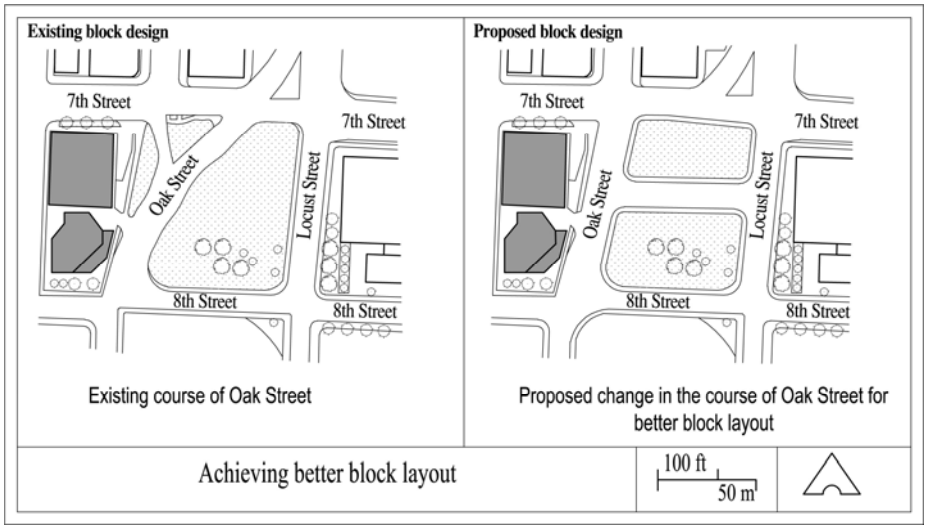

Figure 4-26. Changing the course of Oak Street to achieve better block layout (Source: Drawn by author).

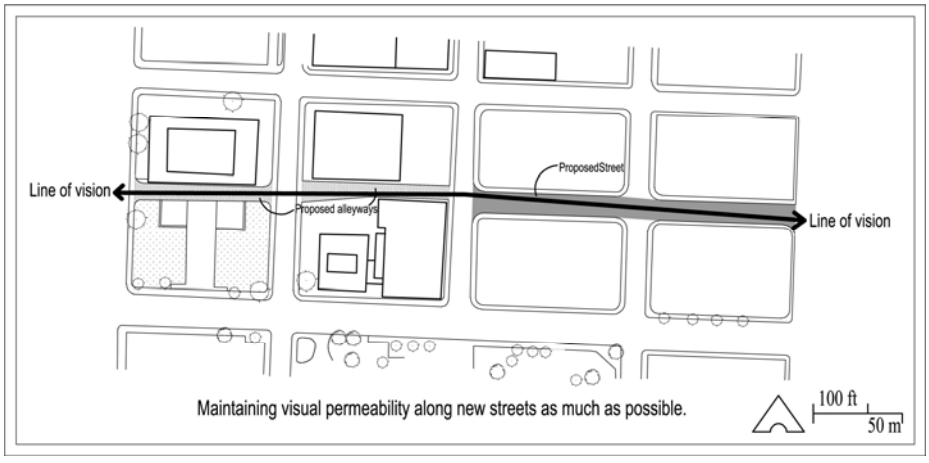

Figure 4-27. Maintaining visual permeability along new streets as much as possible (Source: Drawn by author).

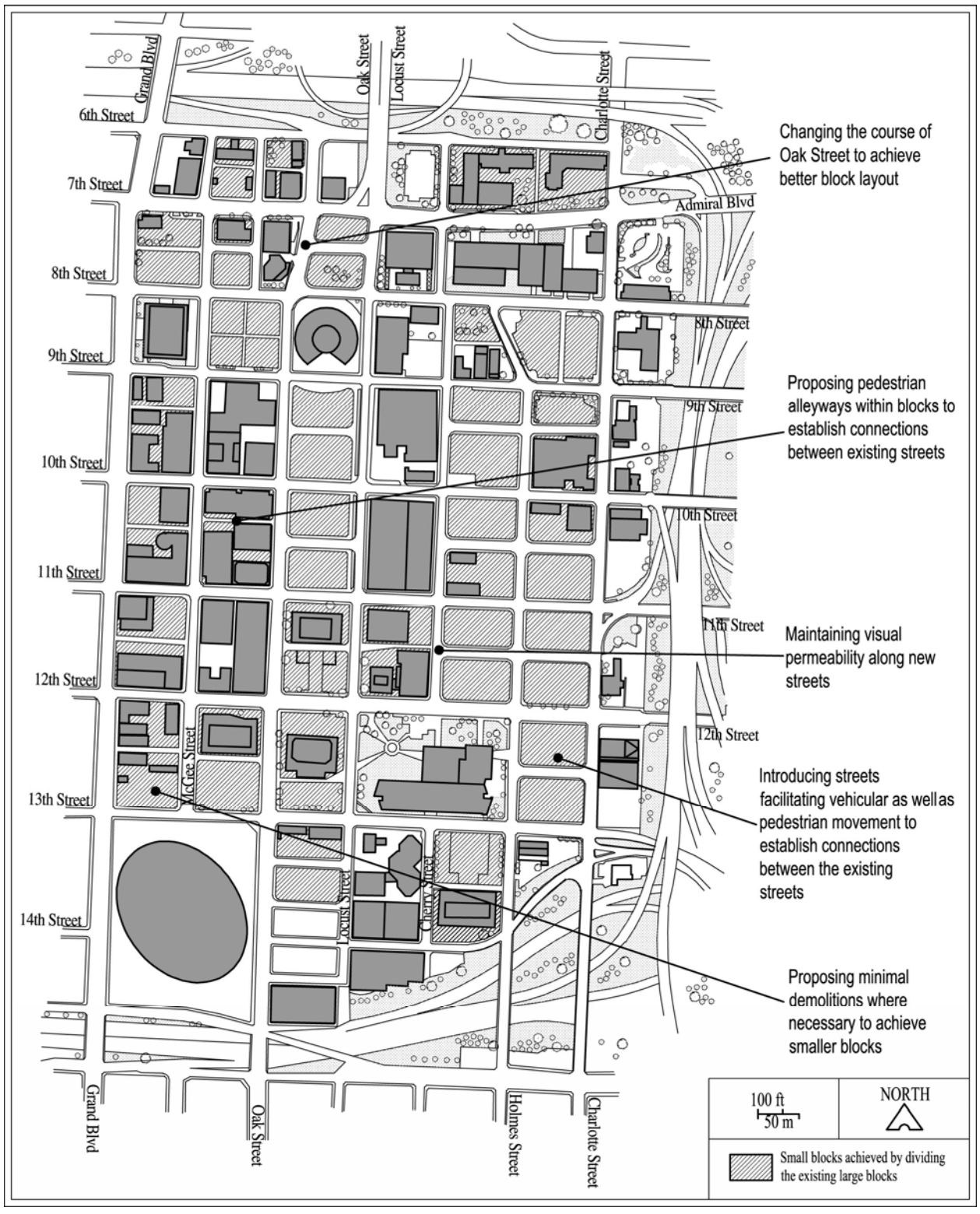

Figure 4-28. Preliminary permeable street-block structure for the Government District and a summary of major design measures (Source: Drawn by author).

According to the *RE* authors, the final step in designing for permeability is considering carriageway-width for streets and their junction-types depending on the kind of traffic they allow. For the Government District's proposed street-block structure, this issue does not require a detailed discussion, since the existing vehicular streets provide sufficient carriage-way width for two-way traffic, and any new vehicular streets can follow similar dimensions. In the case of pedestrian walkways along vehicular streets and pedestrian alleyways connecting existing streets, their width can be based on the potential pedestrian-flow along the streets that they connect.

Having delineated possibilities for a permeable street-block structure in the Government District, the design process proceeds to variety, the second crucial dimension of a "responsive environment." Since permeability and variety cannot be understood separately, the next chapter largely discusses design measures relating to variety that will also further enhance the Government District's permeability.

Chapter 5

Variety in the Government District

Design for variety aims at offering experiential choices to urban users by providing a wide range of user functions and activities. According to the *RE* authors, a permeable street-block structure is the starting point in designing for variety. They suggest that permeability and variety are mutually dependent in creating responsive environments because the presence of one without the other is meaningless, since there is no point in having many different functions if spatial connectivity is poor. Design for variety mainly involves identifying a wide range of appropriate primary and secondary uses based on the site's social and economic demands. These uses are then strategically placed on the site in such a way that they mutually support each other, in that, primary uses which act as magnets in drawing pedestrians can create a concentrated pedestrian cross-flow to benefit the secondary uses. The key aim is a "close grain of variety" that can potentially maximize the number of various user-functions within a certain location (Bentley, et al., 1985 p. 27). This chapter discusses the Government District's existing land use pattern in terms of variety and presents conceptual design elements necessary to encourage variety within the district.

Variety and the Government District's existing land use pattern

As already discussed in chapter 3, the historical course of the Government District's development has changed the district from being a center for a variety of small-scale establishments to a commercial zone dominated by large-scale offices, parking garages, and open-surface parking areas. Figure 5-1 offers a glimpse of the large-scale offices and parking facilities—the Federal Police headquarters, the open surface parking area on its adjacent block, and a recently constructed large-scale parking garage. Today, the Government District is a mix of several old and newly constructed single and multi-story buildings accommodating several user functions (figure 5-2). What remain functional of the older buildings are government and private offices, parking garages, two churches, shops, and studio apartments. Recently constructed buildings in the Government District are mostly multi-story offices and parking

garages but also include two gas stations, a motel, the Sprint Center (a multi-use indoor arena), an elementary school, and residential condominium lofts (figure 5-3). The Government District houses a few shops and eateries which are mostly accommodated in the first floor of some of the multistory buildings. Figure 5-4 shows Jimmy John's restaurant on the first floor of a residential loft at the intersection of Grand Boulevard and 11th Street and Dunk's Deli on the first floor of the parking structure along 12th Street between Grand Boulevard and McGee Street. Therefore, in terms of user-functions, the Government District presently houses offices, parking garages, residential condominiums, studio apartments, eateries, churches, several shops, gas stations, an elementary school, and a multi-use indoor arena.

Figure 5-1. The Government District is largely dominated by large-scale offices, parking garages, and open surface parking areas (Source: Photographs by author).

Figure 5-2. Presently, the Government District is a mix of old and newly constructed buildings housing several user-functions. Old and new office buildings along 10th Street (left); Church, vacant old buildings, newly constructed office buildings along Cherry Street (right) (Source: Photographs by author).

Figure 5-3. Government District's office buildings (left); a mix of uses and building types in the northeastern corner of the Government District (right) (Source: Photographs by author).

Figure 5-4. Shops within the government District are largely accommodated on the first floor of some of the office buildings and parking garages (Source: Photographs by author).

In spite of these various user-functions, the Government District's existing land use pattern (figure 5-5) largely fails in achieving a sufficient mix of uses necessary to encourage variety. As indicated by figure 5-5, the district's functions and activities available are insufficient both in number and in type. To study the Government District's existing land use pattern in terms of variety, it is important to understand the location of the existing user-functions within the district. Figure 5-5 shows the location of the district's existing commercial buildings, parking structures, and residential buildings. The existing land use pattern suggests that the Government District is largely comprised of commercial buildings and parking facilities and offers very few

residential buildings. In terms of their location, most of the user-functions, apart from offices, are concentrated within blocks along the northern and western edge of the Government District.

In addition, the Government District supports only a small number of commercial establishments which include shops, eateries, and motel, mostly located between Grand Boulevard and Oak Street along the eastern boundary and between 6th Street and 8th Street along the district's northern boundary. With respect to residential buildings within the Government District, there are one block of old studio apartments along 6th street, one residential loft along Grand Boulevard, and recently developed condominium lofts at the district's northeastern corner between 6th and 8th Streets (figure 5-5).

In short, many of the user-functions that could potentially contribute to variety (residential buildings, shops, and eateries) are presently concentrated between 6th and 8th Streets along the district's northern boundary and between Grand Boulevard and Oak Street along the district's western boundary. The rest of the Government District is mostly offices, parking facilities, and empty lots (see figure 5-6). This situation points towards a lack of close-grained variety within the Government District. The key reason for this failure is the Government District's block design, which restricts closely-knit, small-scale establishments. Moreover, as shown in figure 5-6, a large part of the Government District houses large-scale offices with supporting parking garages; other function-types are much more limited.

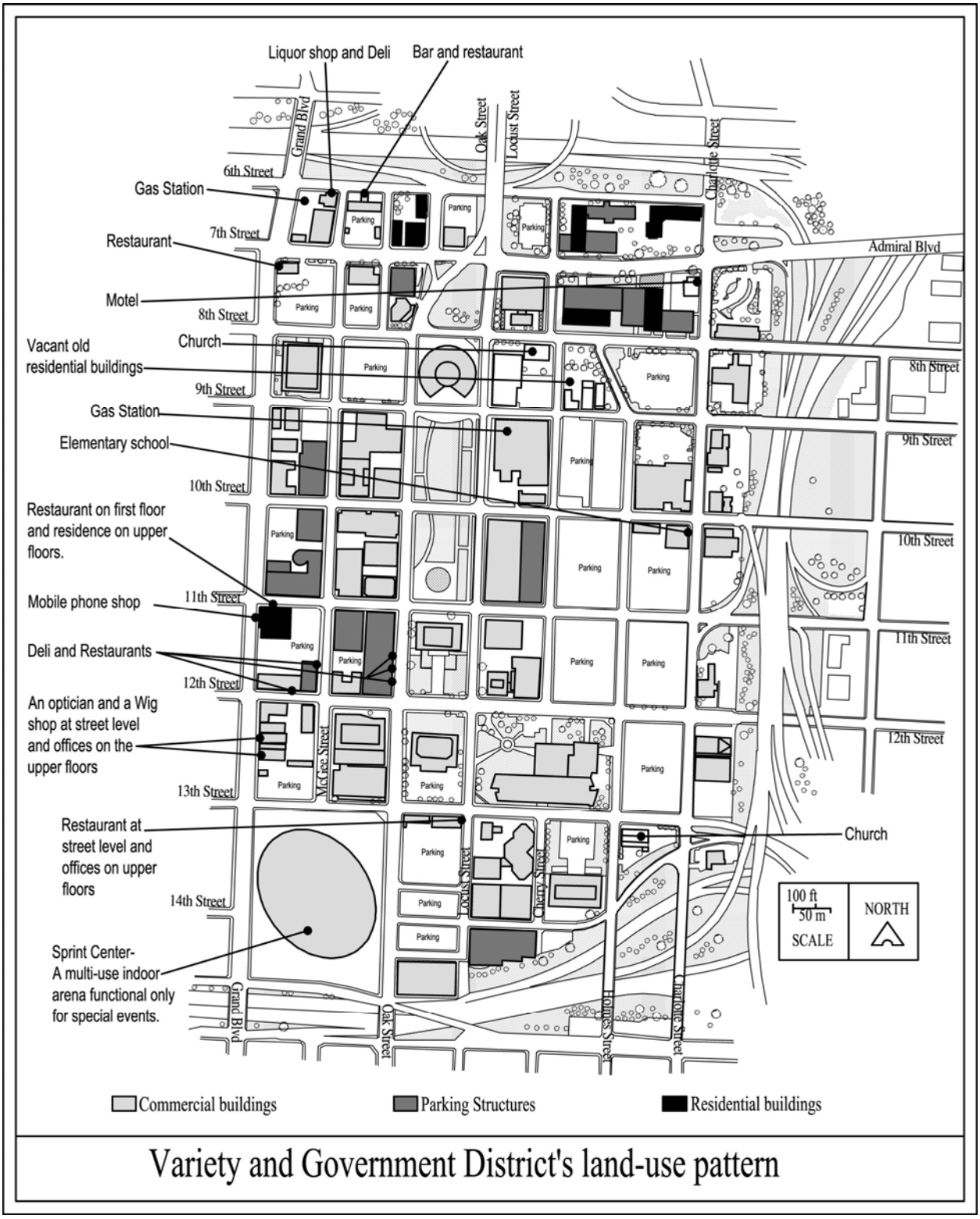

Figure 5-5. Map showing location of various functional and activity types within the Government District (Source: Drawn by author).

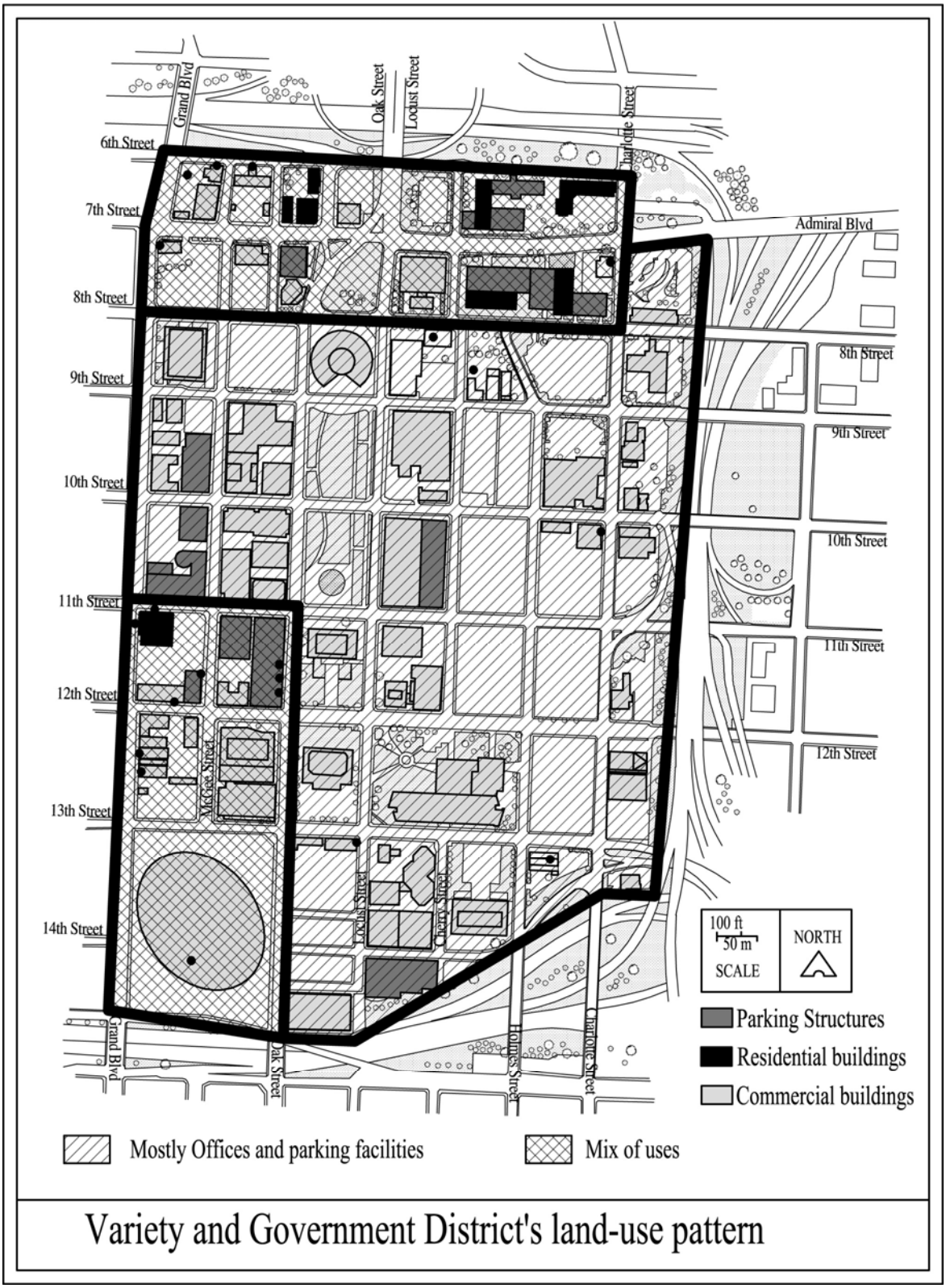

Figure 5-6. Map showing concentration of different function types within the Government District (Source: Drawn by author).

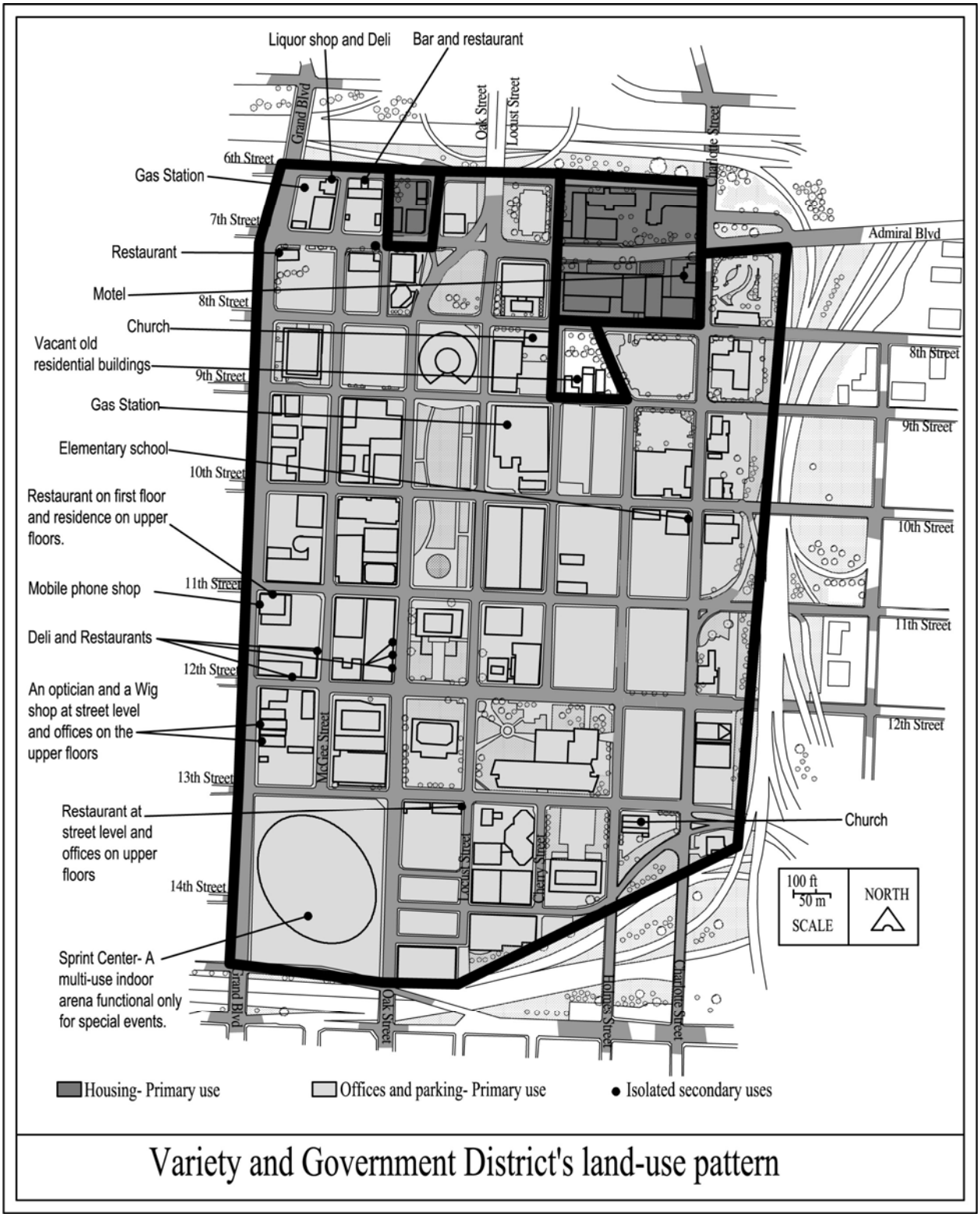

Figure 5-7. Map showing the location of primary and secondary uses within the Government District (Source: Drawn by author).

Issues relating to primary and secondary uses

Prior to designing the Government District in terms of variety, it is important to understand critical issues pertaining to the district's existing primary and secondary uses. Office buildings (work places) and residential buildings (dwellings) serve as the Government District's primary uses. The Sprint Center at the southwestern corner of the Government District might be considered as primary use of a special kind in that it is an arena for sports and entertainment and is functional only on certain days for a limited time during special events such as a game or a concert. All other uses (eateries, churches, various shops, gas stations, and the elementary school) serve as the district's secondary uses. Figure 5-7 shows the location of the Government District's primary and secondary uses. Major concerns regarding primary and secondary uses which reduce the Government District's overall variety can be listed as follows:

- Absence of an appropriate mix of primary uses;
- Lack of sufficient number and types of secondary uses;
- Lack of a mutual support between primary and secondary uses.

In designing for variety, the RE authors suggest a mixture of primary uses that can draw people into the site at different times throughout the day and night. This is achieved by having an appropriate mix of work-places and dwellings. Such a mixture is essential because people drawn by a mixture of work places and dwelling are valuable in supporting secondary uses. With respect to its primary uses, as has already been explained, the Government District houses mostly work-places and offers minimal dwellings, thereby making the district less efficient in offering a presence of people within the district at different times of the day than it would be if it also housed a large residential population. As a result, the presence of a large number of people in the district is achieved mostly during office hours but leaving the district mostly deserted during other times. A low number of dwellings also reduces the district's density, thereby reducing the district's potential for a more vibrant social life. In addition, a limited number of dwelling units and a lack of variety in housing types mean that the Government District's residential units are insufficient for providing potential residences for employees. As a result, a continuous pedestrian life within the district is impossible because most of the employees in these offices live outside the Government District and similarly, most of the residents work outside the Government District.

Secondary uses in an urban district offer a wide range of activities to people drawn by primary uses. According to the RE authors, secondary uses should be maximized because they are vital in achieving variety within urban sites. The land use pattern, as shown in figure 5-7, demonstrates that the Government District lacks a sufficient number and range of secondary uses necessary for variety, especially in regard to everyday functions like parks, grocery stores, restaurants, and bars. Moreover, the Government district's existing secondary uses do not offer much in terms of variety because their proper functioning is dependent on the pedestrian flow created by an appropriate mix of primary uses, which, as already pointed out, are mostly absent.

According to the RE authors, achieving a sufficient number of primary and secondary uses within an urban district cannot guarantee variety. For an urban site to work in terms of variety, the primary and secondary uses must mutually support each other. The secondary uses must be arranged along streets connecting a mix of primary uses so that the concentrated pedestrian flow created by the primary uses can support the secondary uses. In doing so, these secondary uses can offer a wide range of activities to support overall variety. The combined effect of all the above issues relating to variety—absence of a permeable street-block structure, absence of a close-grained variety, lack of an appropriate mix of primary uses, and a lack of sufficient secondary uses—leads to an absence of a concentrated pedestrian flow within the Government District, thereby minimizing the possibility for mutual support among the existing primary and secondary uses.

Identifying uses and activities for variety in the Government District

Having discussed several major issues that relate to variety in the Government District, I next present the first step in designing for variety—i.e., identifying the range and type of uses that can be included in the new scheme for the district. For this purpose, the *RE* authors suggest relying on the site's social and economic needs as understood by interviewing local residents and organizations. To identify the Government District's social and economic needs, I shall largely depend on an understanding of the district and surrounding areas' existing land use patterns. Also, I will include uses and activities that might achieve a close-grained variety. In providing this solution, I need to deal with the two problems identified in the above section: (a) absence of

an appropriate mix of primary uses; and (b) lack of a sufficient number and range of secondary uses.

The Government District lacks an appropriate mix of primary uses largely because of a large number of work places in comparison to a small number of dwellings. As already discussed, the number of dwellings within the district is insufficient to support adequate pedestrian density required for proper functioning of a wide range of secondary uses. Therefore, in terms of primary uses, the most important function-type required to achieve variety in the Government District is a sufficient number of dwelling units, which can do much to generate the concentrated pedestrian cross-flow required to support a wider mix of uses and activities within the district.

The social and economic need for more dwellings in the Government District is quite evident, considering the Kansas City area's growth as a center for various types of employment. A growing number of workplaces within an urban area implies a larger demand for dwellings in and around that area. In this respect, compared to its surrounding districts (River Market District to the north and Crossroads Arts District to the south), the downtown loop presently has a lesser concentration of dwellings in spite of its being the commercial center for Kansas City (figure 5-8). Within the downtown loop, Quality Hill, on the western part of the loop, has the highest concentration of dwellings, followed by the Library and Financial Districts. The eastern side of the downtown loop, which is the Government District, offers the least number of dwellings. Therefore, to achieve a considerably uniform concentration of dwelling within the downtown loop, it is important to include a greater number and range of dwellings within the Government District.

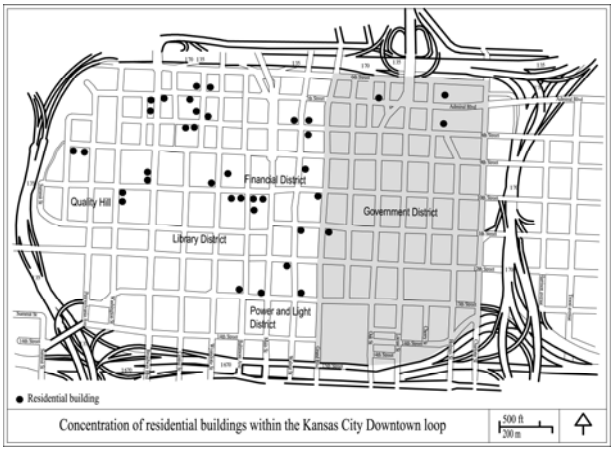

Figure 5-8. Map of the Kansas City Downtown loop showing residential concentration (Source: Drawn by author).

In terms of primary uses, the Government District also lacks establishments such as a large grocery store or a farmers' market, which when combined with dwellings and workplaces has the potential to constantly draw pedestrians. Hence, inclusion of such establishments in the district's new scheme is crucial for enhancing variety. Presently, the Government District does not offer any venue for daily shopping needs (most of these activities are only available outside the district). Inclusion of such primary uses in the Government District's new scheme will therefore cater to the district's social need for daily shopping activities and also benefit the entire city area economically by supporting city-based businesses.

Having identified primary uses for the Government District, it becomes important to identify smaller enterprises that may act as secondary uses, which along with the primary uses can potentially offer a wider range of activities in the Government District. Presently, the Government District offers a minimal number and range of secondary uses that are largely limited to eateries and a few shops, therefore adversely affecting variety. However, by achieving a greater mix of primary uses, the Government District would be in need of a greater number and range of secondary uses that would enhance variety.

For a new scheme for the Government District that supports variety, a wide range of secondary uses can be identified based on the socio-economic needs of the district. Some secondary uses appropriate for the Government District are as follows:

- Small retail stores;
- Other small shops (bookstores, souvenir shops, grocery stores, antique shops etc);
- Eateries;
- Services for residential users (hair salons, laundromats, clinics, etc);
- Entertainment venues (bars and game parlors);
- Hotels and other lodging facilities.
- Parks and playgrounds.

The socio-economic need for these secondary uses can be understood as a function of the Government District's land use patterns and the urban user-types of the district and surrounding neighborhood. The urban users within the Kansas City downtown area are mostly office employees and residents, with the Government District presently catering largely to office employees. The Kansas City area, especially the neighboring districts of the Government District, also offers various tourist attractions such as parks, museums, and heritage trail in the

River Market District; studios and art galleries in the Crossroads Arts District; historic sites in Quality Hill; and the recently developed Power and Light District, thereby introducing another urban user-type—tourists and visitors. The major potential urban users for the Government District's new scheme are residents, office employees and visitors, resulting from the proposed increase in residential uses, the large number of existing offices, and a permeable street-block structure strongly connected to the surrounding city achieved through permeability design. Therefore, the secondary uses for the Government District's new scheme listed above must largely aim at offering a variety of activity-choices for these various urban users.

The above listed secondary uses can collectively support variety in the Government District and offer different activity-choices for each of the above mentioned urban user-types. Some of these secondary uses are important to all types of urban users, even though they may be used more often by one type of user than the other. For example, secondary uses like eateries, entertainment venues, retail stores, and certain shops like bookstores offer goods and services for employees, residents, and visitors with a varying intensity of use for each of these user-types. On the other hand, the usability of some of these secondary uses is specific to a particular type of urban-user. For example, secondary uses like hair salons, Laundromats, small grocery stores, clinics, and playgrounds mostly cater to residents, and while uses such as hotels, lodging facilities, and souvenir shops cater much more to visitors and tourists.

In summary, residences and large stores are identified as primary uses, while services for the district's residents and visitors (e.g., small shops, eateries, hair salons, and Laundromats) are identified as secondary uses. Having identified the primary and secondary uses necessary to support variety in the Government District, design process proceeds to incorporating variety within the permeable street-block structure generated in chapter 4.

Designing for variety

In this section, I discuss a conceptual process for developing the Government District in terms of variety, which involves: (a) strategically placing the Government District's proposed user-functions within the proposed permeable street-block structure; and (b) proposing design inputs related to variety. Presence of a wide range of uses in an urban district can ensure variety only if they are located in such a manner that they mutually support each other and thus facilitate

cross use. Therefore, for the Government District's proposed primary and secondary uses to contribute to the district's variety, it is important that these uses be well located in terms of their usability and compatibility. Once optimal locations are determined, it is then important to propose design inputs that encourage variety as well as contribute to the district's overall responsiveness.

The Government District's existing land use pattern does not follow any strategy in locating various uses to achieve mutual support between them. Presently, the Government District's blocks are devoted to house offices, parking structures, open-surface parking areas and a few blocks of residential lofts. The presence of open-surface parking areas, vacant lots, and blocks with small buildings offer much scope for proposing new buildings as perimeter-block development.

The proposed permeable street-block structure achieved in chapter 3 offers several vacant blocks and open spaces for redevelopment throughout the district (figure 5-9). However, as shown in figure 5-9, opportunities for redevelopment are optimal between Oak, 8th, Charlotte, and 13th Streets because this area houses a comparatively lesser number of existing buildings and a larger number of vacant blocks. The major challenge in developing the district in terms of variety is the high concentration and fixed location of the district's office buildings. Since relocating these already existing, work-places is not economically viable; hence, the design choices in terms of locating work places within the district are limited.

Locating Residential Uses

The first step in the design process for variety is to identify appropriate locations for residential uses—studio apartments, condominium lofts, and row houses. A sufficient number of residential uses within the Government District can offer a higher residential density that would contribute to supporting a more robust pedestrian life. Therefore, in order to have sufficient people-density spread throughout the district, it is important that residential uses be concentrated in different parts of the district rather than focused in only one sub-zone within the district.

Figure 5-10 shows locations within the Government District that are most suitable for residential uses—blocks at the northwestern, northeastern, and southeastern corner of the district. These locations can be justified based on the district's existing land use pattern and the analysis of existing streets in terms of their potential pedestrian-flow (fig 4-15 in chapter 4). The vacant

blocks between Grand Boulevard, 6th, Oak, and 9th Streets at the north western corner (location A in figure 5-10) and the area between 6th, Charlotte, 9th, and Cherry Streets at the northeastern corner (location B in figure 5-10) offer opportunities to link proposed and existing residential buildings. Analysis of existing streets in the Government District in chapter 4 also shows that the section of streets in the southeastern part of the district (area between Locust, Charlotte, 9th, and 13th Streets) is considerably weak in terms of pedestrian flow. Moreover, this area does not house enough uses that support people-presence (location C in figure 5-10), thereby requiring a considerable number of additional residential uses to achieve sufficient people-density.

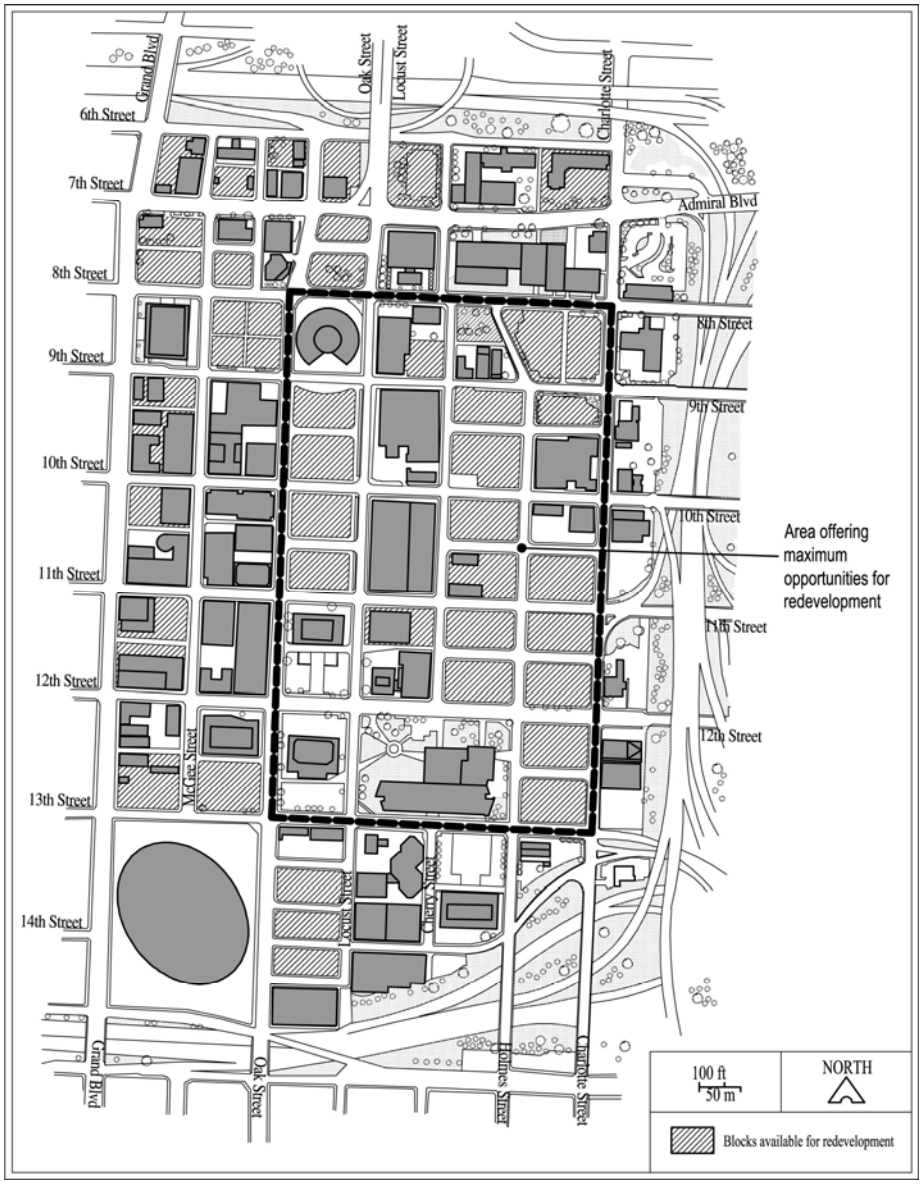

Figure 5-9. Map of Government District illustrating vacant blocks and open areas in the permeable street-block structure available for redevelopment (Source: Drawn by author).

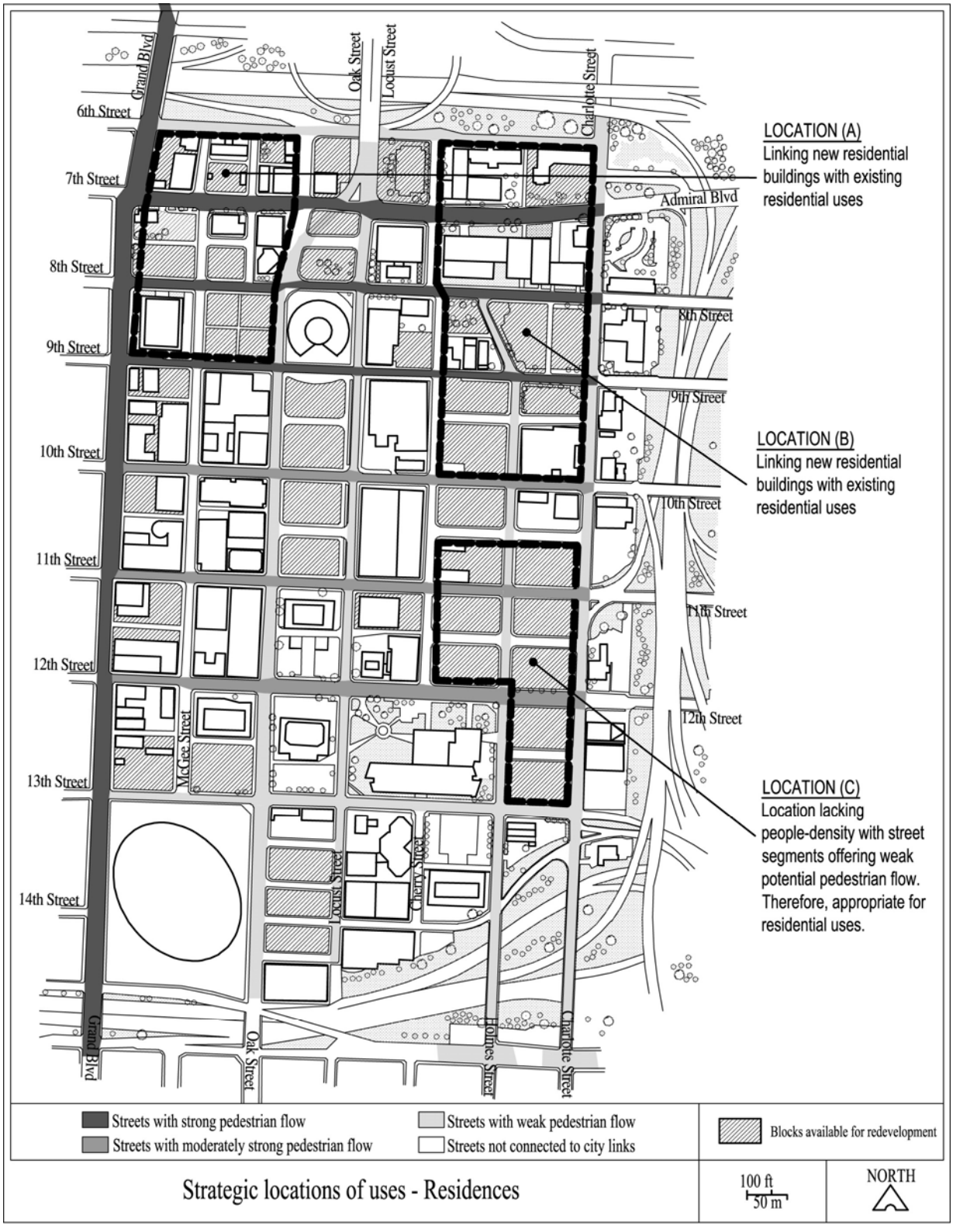

Figure 5-10. Map illustrating strategic locations for residential uses within the proposed permeable street-block structure (Source: Drawn by author).

Locating Magnet Stores

The next step is to locate large stores that can potentially act as magnets that generate a lively pedestrian flow between them. These stores can be large departmental stores that potentially draw people regularly; e.g., Whole Foods, Barnes and Noble, Target, CVS Pharmacy, and Walgreens. However, it is also important to note that these stores should not be designed as typical "big box" structures, offering nothing at street level. Presently, neither the Government District nor its neighboring districts house any such stores that serve as primary uses, thereby making the location of such stores a crucial issue in developing the district in terms of variety. The *RE* authors suggest that these magnet-stores be placed along streets with weak pedestrian flow that would then intensify. However, the proposed magnet-stores for the Government District are placed in such a manner that they generate pedestrian cross-flow within the district as well as prove useful in drawing people from surrounding residential neighborhoods. Moreover, the strength of pedestrian-flow along the Government District's existing streets can be further enhanced by the addition of such magnet-stores along them, considering that even the streets offering strong pedestrian flow within the district are currently lacking in pedestrian exuberance.

Figure 5-11 illustrates desirable locations for four magnet-stores and their potential pedestrian cross-flows. Of these five stores, three (A, B, and C in figure 5-11) are placed close to the Government District's northern, western, and eastern boundaries respectively, along streets with the highest potential pedestrian-flow (Admiral Boulevard and 8th Street), so that these streets can draw residents from neighboring districts as well. A fourth magnet-store (D in figure 5-11) is centrally placed to mostly draw resident and employees of the Government District. The fifth store (E in figure 5-11) is placed at the southeastern corner of the district, an area that is presently lacking in terms of people-presence. This store can potentially strengthen the pedestrian flow along segments of streets in this area and also draw people from surrounding neighborhoods. In addition to these magnet-stores, some of the existing large multi-storied parking garages, the locations of which are shown in figure 5-11, also contribute to concentrated pedestrian cross-flow.

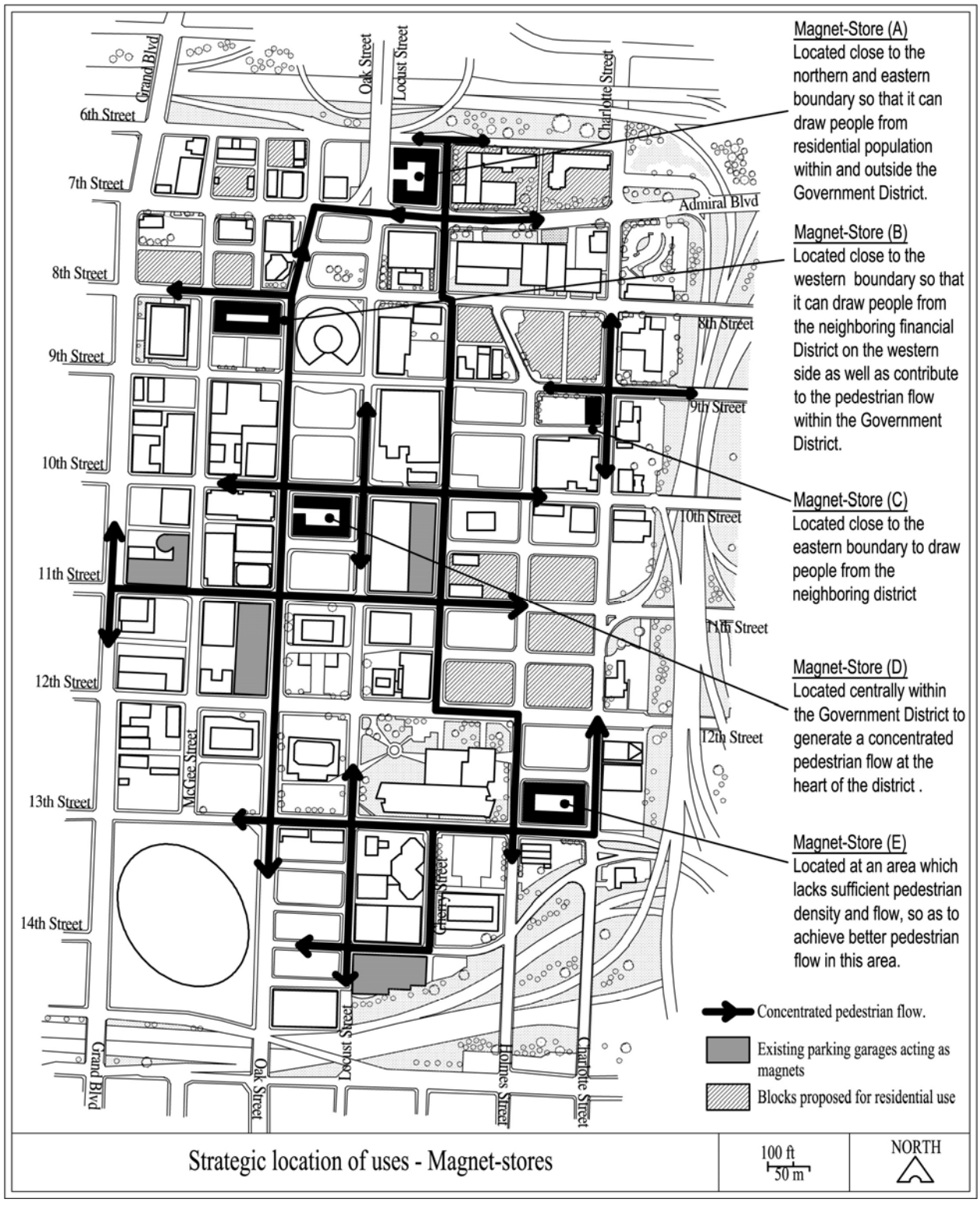

Figure 5-11. Map illustrating the location of Magnet-stores and the resultant pedestrian cross-flow (Source: Drawn by author).

Locating Secondary Uses

Having located various magnet-stores, the next step is to place various secondary uses within the Government District considering their usability and compatibility. According to the *RE* authors, secondary uses largely depend on primary uses for pedestrian users; therefore, the enhanced pedestrian flows resulting from the locations of already proposed primary uses act as a guideline for placing secondary uses. It is also important to consider concentration of different urban-user types in locating these secondary uses, so that the proposed secondary uses can successfully offer choices to various urban user-types. For example, enterprises that largely depend on a residential population should be placed in close proximity to residential uses. Similarly, enterprises depending on visitors should be placed at locations that offer a high concentration of visitors. Figure 5-12 illustrates strategic locations for various secondary uses within the Government District.

Secondary uses that are largely services for residential users, such as hair salons, laundromats, small clinics, and smaller retail stores need to be placed in close connection to residences. Similarly, parks and playgrounds are most beneficial to residents; hence they also should be placed in close connection with the proposed residential blocks. The most suitable location for secondary uses that largely cater to workers and visitors (eateries, antique shops, souvenir shops, bookstores, some retail stores, hotels, and lodging facilities) would be blocks between Grand Boulevard and Oak Street as this area has a high concentration of offices. Moreover, since Grand Boulevard is an important street connecting various places of interest (e.g., venues within the Crossroads Art District and the River Market), it should be able to support the presence of a large number of visitors. The southwestern corner of the Government District (figure 5-12) may be identified as the most suitable location for secondary uses serving as venues for entertainment because this area is adjacent to the Power and Light District, which predominantly houses entertainment venues such as pubs, bars, restaurants, and live entertainment venues, thereby attracting large numbers of visitors. Locating entertainment venues in close connection to the Power and Light District facilitates pedestrian cross-flow between the two districts, a link which is presently absent due to a lack of related and compatible function types in this location. The presence of the Sprint Center and the adjacent Power and Light District can also support hotels and lodging facilities, since visitors participating in activities offered by these entertainment venues often require extended stays.

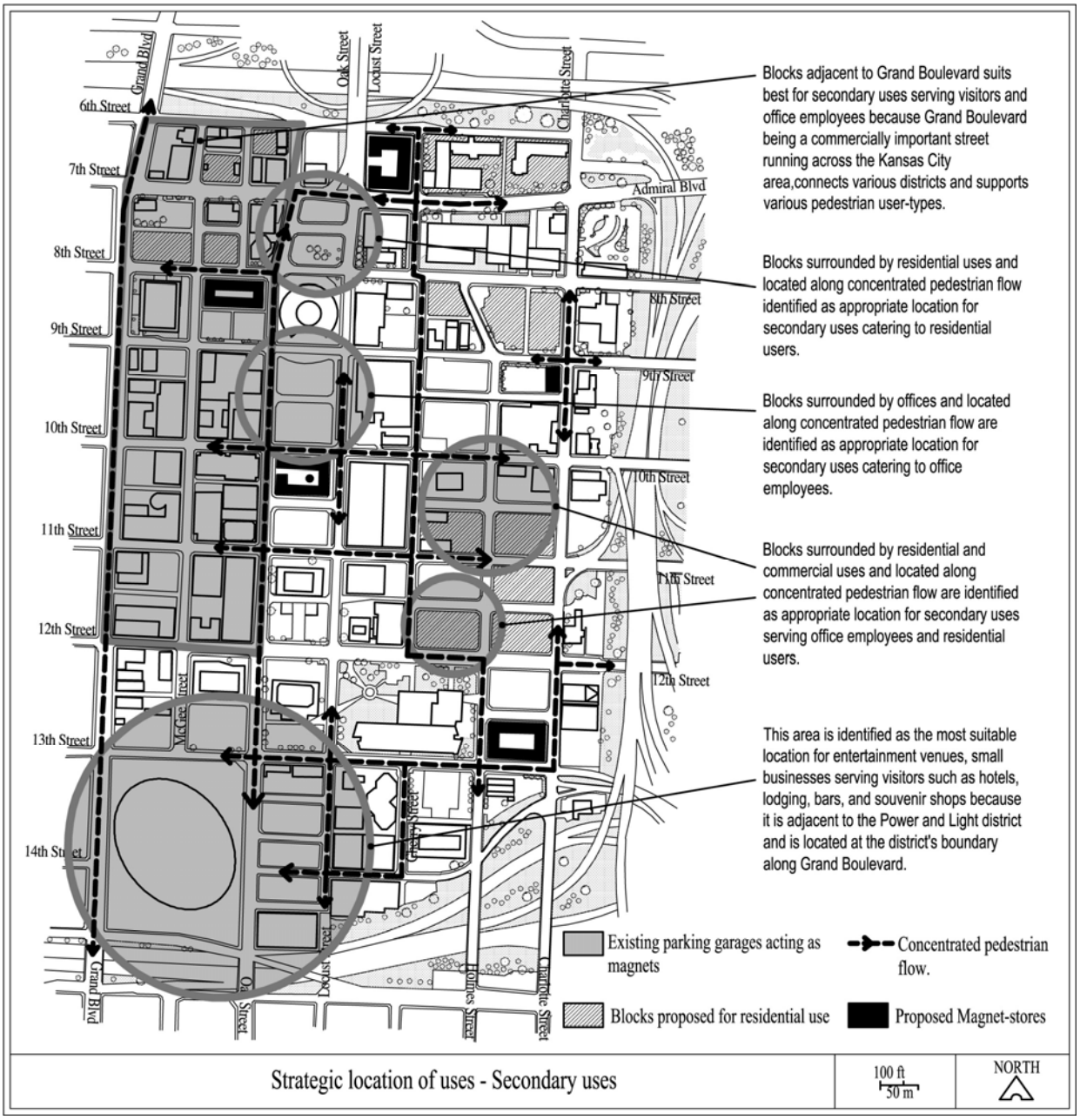

Figure 5-12. Map illustrating strategic locations for secondary uses within the Government District's proposed permeable street-block structure (Source: Drawn by author).

Conceptual design inputs for variety

Having identified strategic locations for various uses, I next present several design guidelines for developing the Government District's block-design in terms of variety. These guidelines include design interventions within the existing blocks' design as well as strategies to

be applied while designing blocks housing newly proposed function-types. These proposals are as follows:

- Using variety to strengthen pedestrian movement through existing city links on the district's northern, eastern and southern sides to enhance permeability (figure 5-13);
- Incorporating small-scale offices on the first floor of existing residential lofts located at the district's northeastern corner (figure 5-14);
- Adding secondary uses on the first floors of existing office buildings and parking garages (figure 5-15);
- Adding secondary uses along newly proposed pedestrian alleyways (figure 5-16);
- Incorporating new offices along existing streets (figure 5-17);
- Designing for a mix of residences and related secondary uses between Cherry, 10th, Charlotte, and 13th Street (figure 5-17);
- Envisioning a central plaza and development of the Sprint Center's peripheral open area as a usable plaza for better urban social life (figure 5-18).

As already discussed in chapter 4, city links on the northern, eastern, and southern sides of the Government District offer limited pedestrian flow because of a "span of nothingness" created by the presence of the interstate. The possibilities for a better pedestrian flow through these links can be achieved by locating appropriate function-types along these boundaries on both sides. Since the blocks along the northern and eastern boundaries of the Government District are assigned for residential buildings and already house several offices, a similar block-design that achieves a mix of dwellings and work places for blocks abutting the interstate barrier within neighboring districts on the northern and eastern side, may generate a more intense cross pedestrian-flow (figure 5-13). In addition to the proposal of a mix of primary uses along the boundaries of the neighboring districts, the proposed magnet-stores (A and D in figure 5-11) close to these city links should also help in attracting pedestrian and vehicular users from the neighboring districts. Blocks along the southern boundary are proposed to house largely entertainment venues such as bars, pubs, and night clubs. Proposing similar secondary uses for blocks abutting the interstate in the neighboring district can link these districts in terms of its uses, thereby generating better pedestrian flow along the city links on this side.

Blocks along 7th and 8th Streets, the strongest in terms of potential pedestrian flow, presently house several residential lofts. However, according to the *RE* authors, major routes that connect the site to the entire city are most suitable for offices because of convenient access. Therefore, the first floor of these residential lofts can house small-scale offices for architects, lawyers, artists, and other professionals. The result will be a mix of primary uses within these blocks which is necessary to promote better pedestrian movement through corresponding city links (figure 5-14).

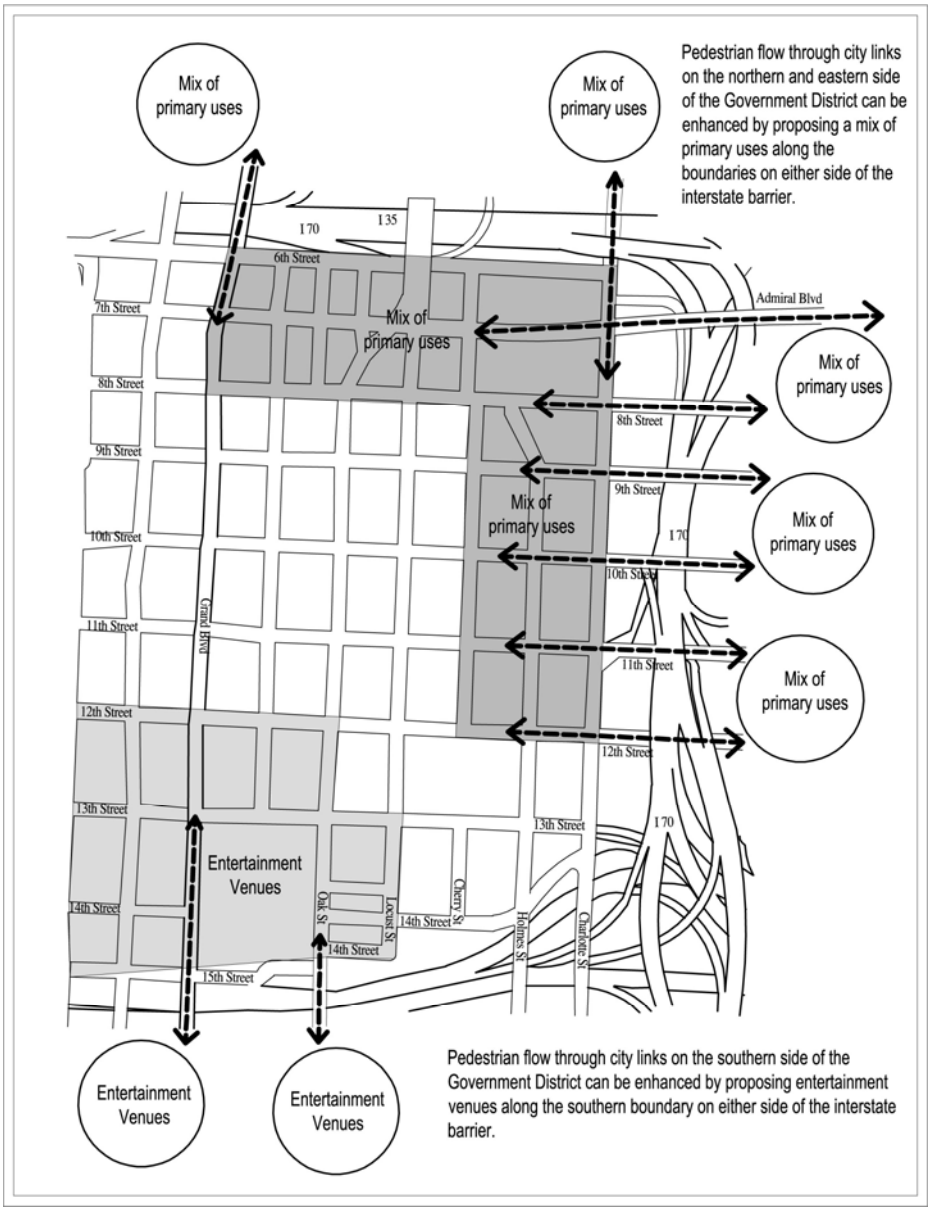

Figure 5-13. Illustration showing use of variety to strengthen pedestrian movement through existing city links on the district's northern, eastern and southern sides to enhance permeability.

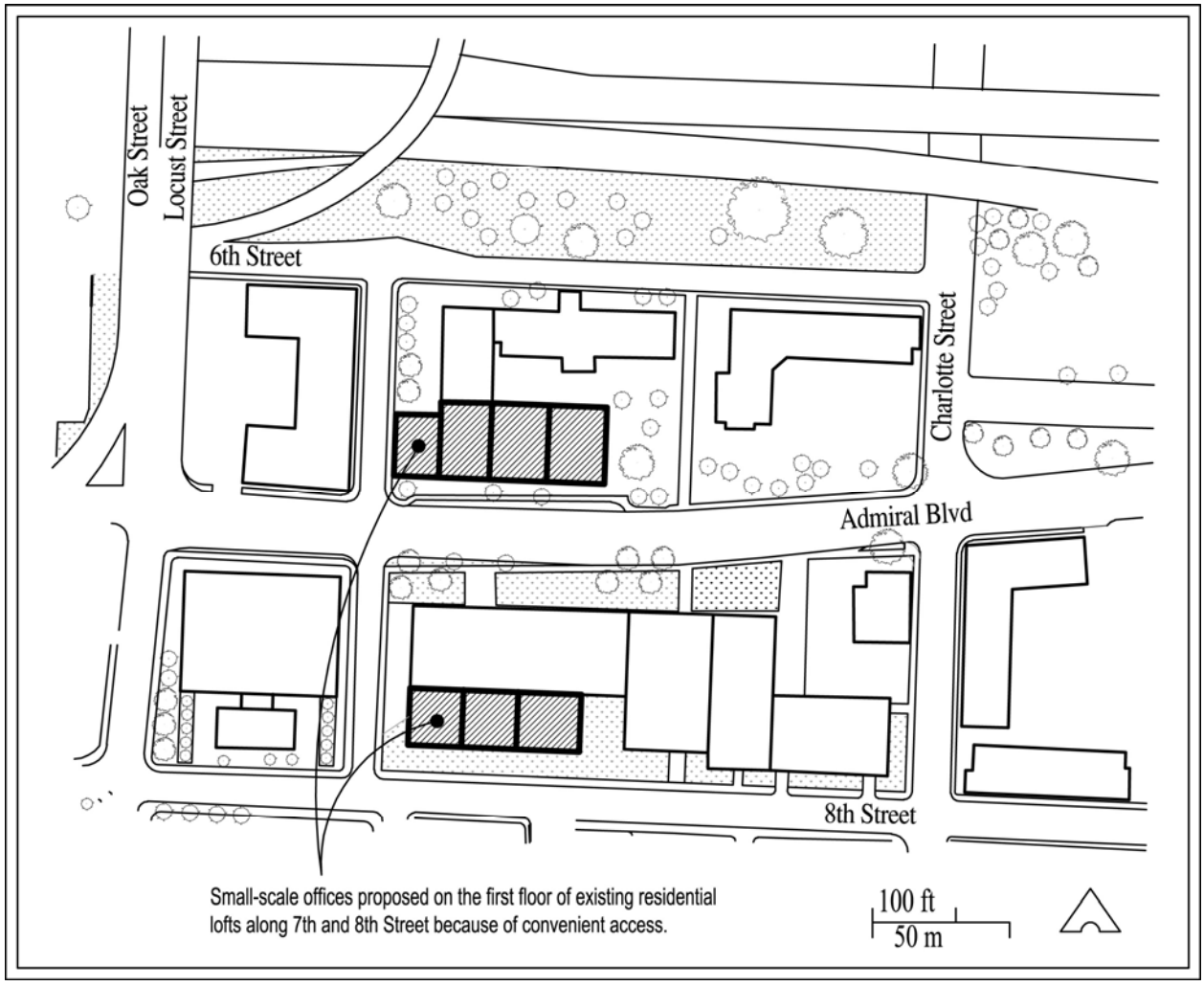

Figure 5-14. Incorporating small-scale offices on the first floor of existing condominium lofts along 7th and 8th Streets (Source: Drawn by author).

Most of the Government District's existing buildings, especially those located between Grand Boulevard and Oak Street, house large-scale offices and parking garages that offer minimal activities at street level. As an attempt to enhance variety, portions of the first floors of these existing office buildings and parking garages might be converted to small-scale secondary uses that are appropriate for the location in terms of their usability and compatibility (figure 5-15). This would provide better choices of activities at street level.

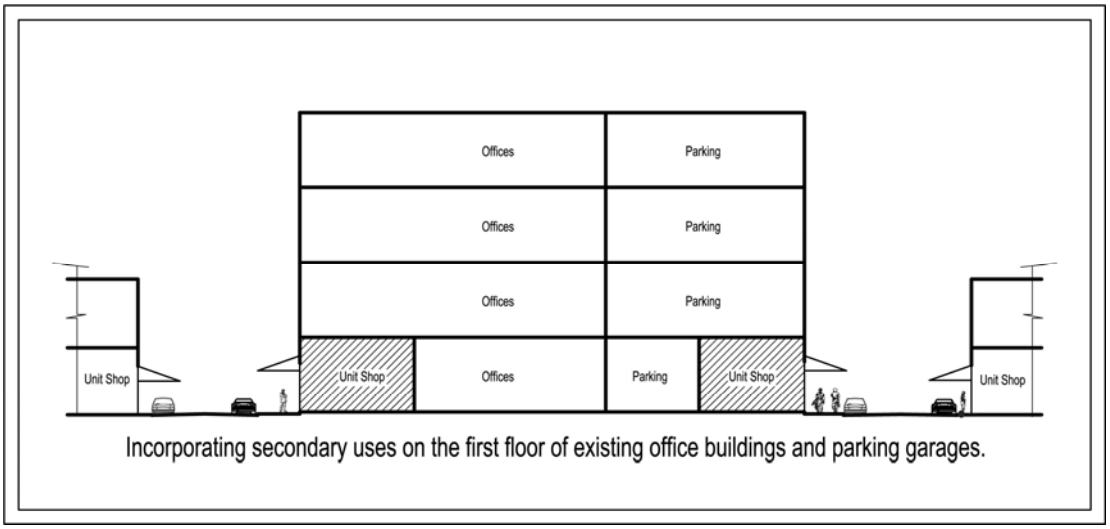

Figure 5-15. Conceptual section illustrating incorporation of secondary uses within existing offices and parking garages at ground level (Source: Drawn by author).

Pedestrian alleyways proposed for better permeability are vital in achieving responsiveness within the Government District. However, absence of appropriate uses along these alleyways can keep them unused. Presently, these alleyways pass through backs of various buildings; they therefore require a sufficient amount of secondary uses that can readily offer user-choices at street level—e.g., book stores, eateries, and souvenir shops (figure 5-16).

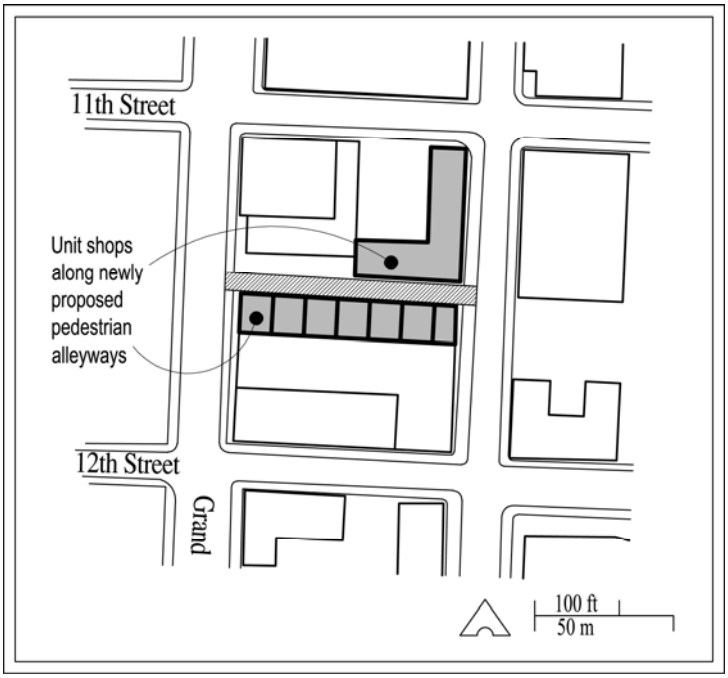

Figure 5-16. Map illustrating incorporation of secondary uses along newly proposed pedestrian alleyways (Source: Drawn by author).

Having proposed secondary uses on the first floors of existing buildings, it becomes important to maintain an appropriate number of office spaces within the district. Therefore, some vacant blocks along 9th and 10th Streets (strong pathways with respect to potential pedestrian flow) can house office buildings, which would provide a right mix of work places coupled with the proposing of secondary uses within various existing office buildings.

Locations identified for residential uses between Cherry, 10th, Charlotte, and 13th Streets (location C in figure 5-10) are on pathways whose potential pedestrian movement is maximized by the proposed magnet-stores. To achieve sufficient variety, blocks in this location can be developed as a mix of residential uses on the upper floors and related secondary uses (e.g., hair salons, laundromats, clinics, and small grocery shops) at ground level (figure 5-17). In designing residential locations within the Government District, it is also important to place parks and playgrounds in such a way that these are surrounded by residences or related secondary uses (Jacobs, 1961).

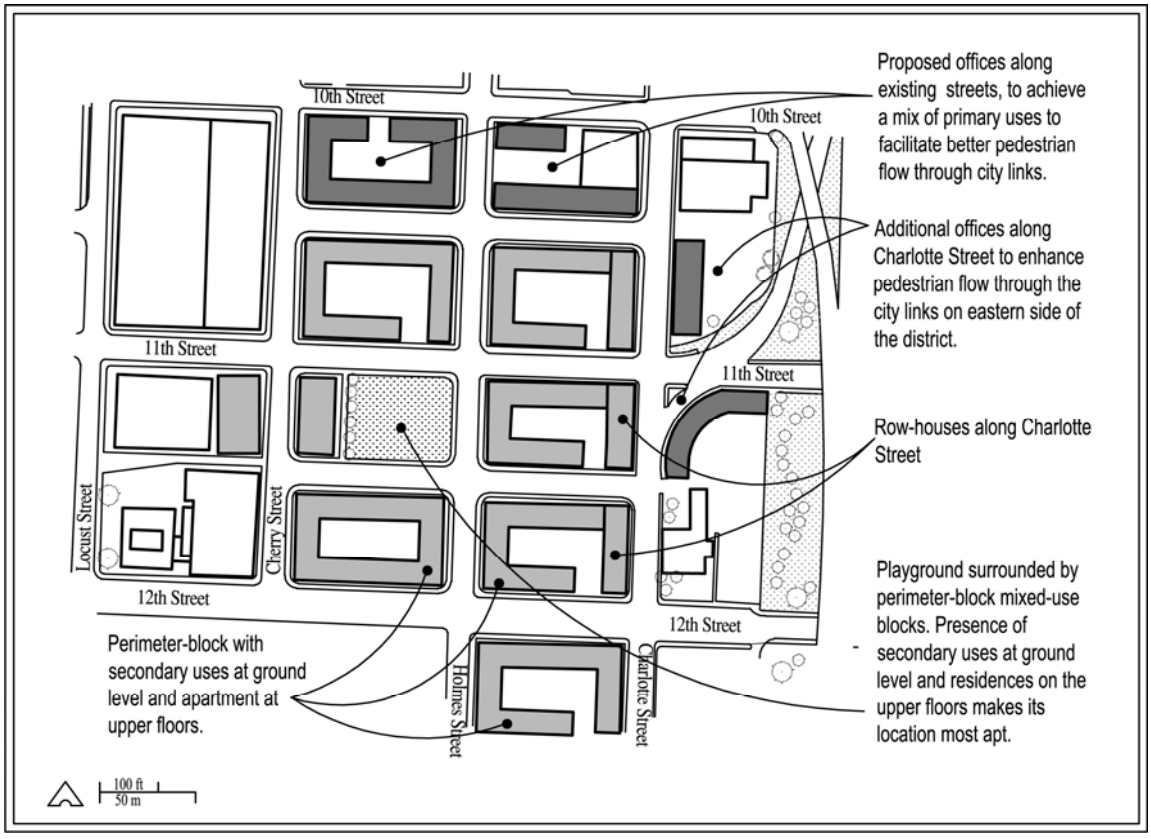

Figure 5-17. Layout of a mix of residential functions and other related uses between Cherry, 10th, Charlotte, and 13th Streets (Source: Drawn by author).

The Government District presently offers two blocks of green open areas that, because of poor design, fails to work as an efficient plaza. Therefore, proposing a central plaza area that would generate sociability is vital in achieving a more active urban social life within the district. In addition, the peripheral open area of the Sprint Center can be conceived as a plaza area because it is located along Grand Boulevard and surrounded by other entertainment venues. The design for these proposed plazas can be based on the design principles presented by William Whyte (1980), already discussed in chapter 2. Figure 5-19 summarizes the above discussed design possibilities and presents the Government District's street-block structure, as it incorporates permeability and variety.

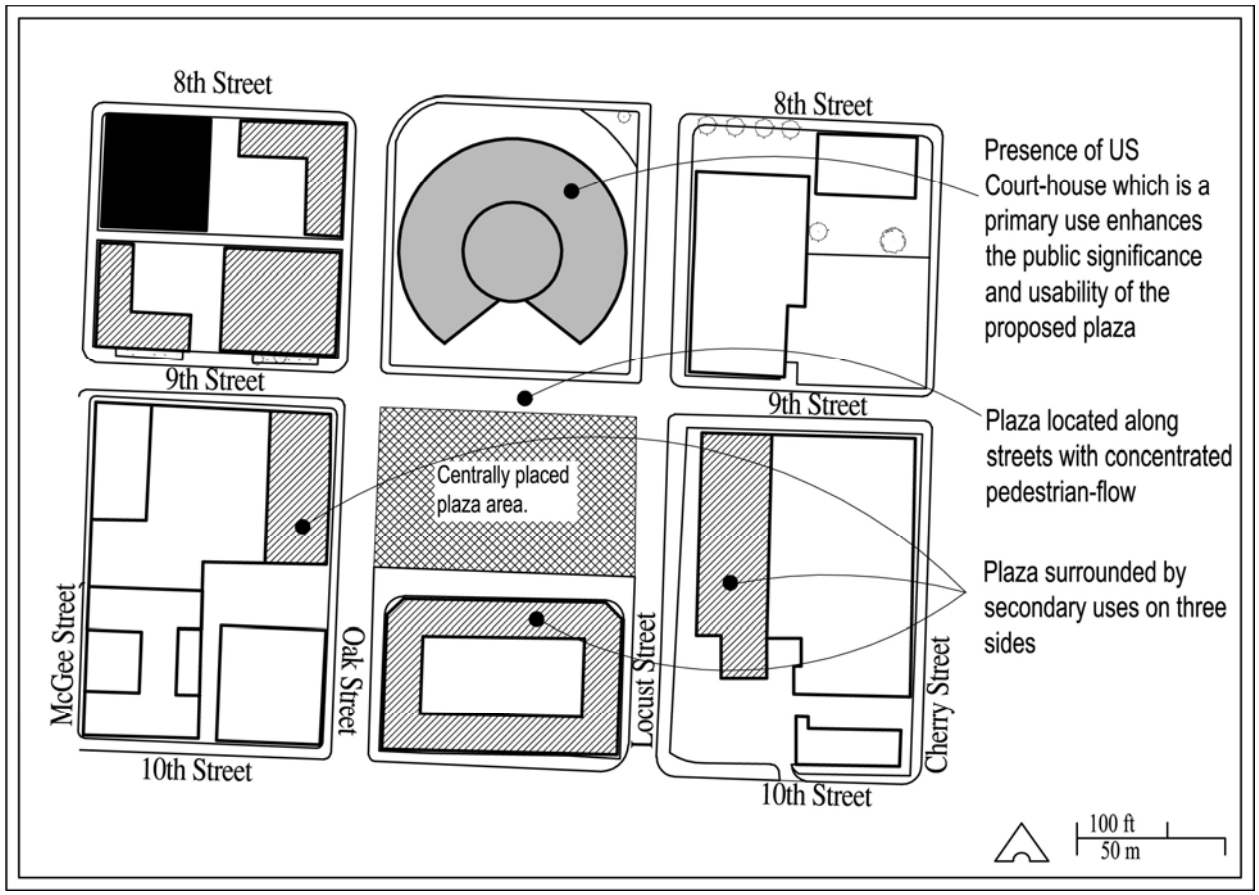

Figure 5-18. Location of a central plaza to enhance variety (Source: Drawn by author).

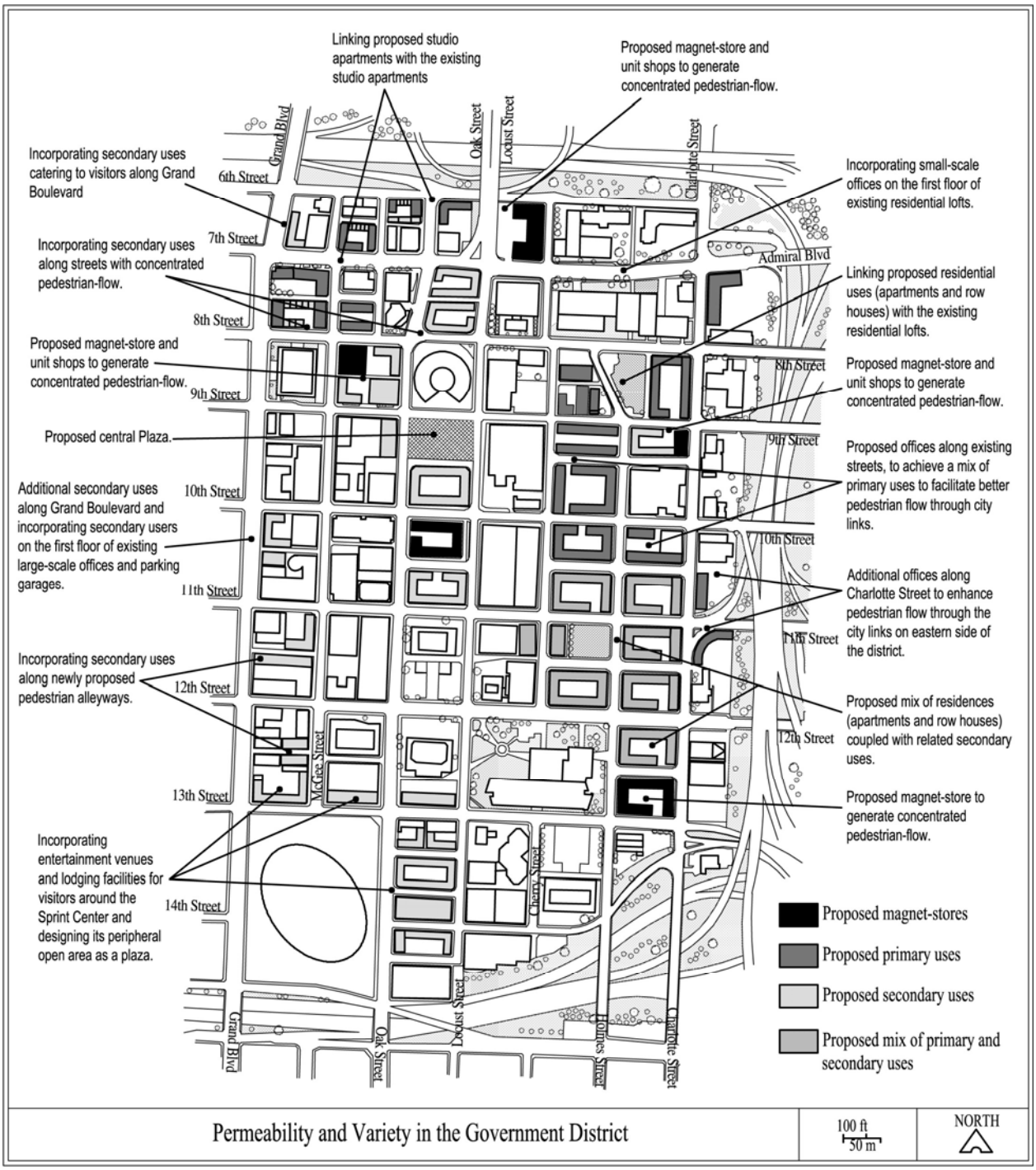

Figure 5-19. Government District's Street-block structure as it incorporates permeability and variety (Source: Drawn by author).

Chapter 6
Legibility in the Government District

Design for legibility aims at enabling urban users to mentally comprehend the physical and functional layout of an urban place. This, according to the *RE* authors, is largely achieved by designing key physical elements of a place in such a manner that they collectively enable people to create a mental image of that place. The *RE* authors suggest that in doing so, analyzing and designing the site in terms of five key elements identified by Lynch (1960)—paths, nodes, landmarks, edges, and districts—can prove helpful. Design for legibility within a place mainly involves identifying existing elements that offer imageability, developing new potential imageable elements, and finally, combining these existing and new elements to maximize overall legibility. Having discussed design possibilities to achieve permeability and variety in chapter 4 and 5, in this chapter, I present a legibility analysis for the Government District followed by design possibilities to maximize the district's legibility.

Legibility analysis for the Government District

According to the *RE* authors, no place can be completely illegible, therefore the first step in designing the Government District in terms of legibility is to understand the district's potential to offer legibility as it exists. For this, the *RE* authors suggest identifying and recording existing elements within the district that can potentially maximize district-legibility. In designing the Reading, England site, the *RE* authors conduct their own initial analysis for legibility based on personal observations, which are further checked against general views of other district users. In the case of the Government District, I shall largely depend on personal research observations to analyze the district's legibility as it exists. The legibility analysis for the Government District, summarized in figure 6-10 can be discussed as follows.

Paths

According to the *RE* authors, for urban users to distinguish and remember various paths, their physical design must offer strong path character and clearly express the path's relative importance in the larger path grid. This is largely achieved by designing appropriate path

enclosure—in other words, more path enclosure leads to better path legibility. The Government District's existing grid-iron street network system incorporates the paths of Grand Boulevard, McGee, Oak, Locust, Cherry, Holmes, and Charlotte Streets running in the north-south direction; and 6th, 7th, 8th, 9th, 10th, 11th, 12th, 13th, and 14th Streets running in the east-west direction.

The Government District's existing block-design does not support sufficient number of buildings offering activities at street-level, thereby leading to minimal path enclosure, both in plan and section (figure 6-1). A lack of sufficient path enclosure deprives these paths of any distinct visual or functional character, hence failing to be easily distinguished by users. Of all the streets, Grand Boulevard and McGee Street possess relatively better path enclosure, thereby stronger path legibility because of a larger number of buildings along them (figure 6-2). Even though the path enclosure for certain segments of streets within the district is enhanced by presence of trees, this effort doesn't contribute adequately to the overall path legibility. Therefore, we can conclude that the Government District's existing street network system largely fails in offering path legibility, suggesting a need to reinforce paths within the district according to their relative functional importance resulting from designing for variety.

Figure 6-1. Path enclosure along Grand Boulevard (left); path enclosure along Cherry Street (right) (Source: Photograph by author).

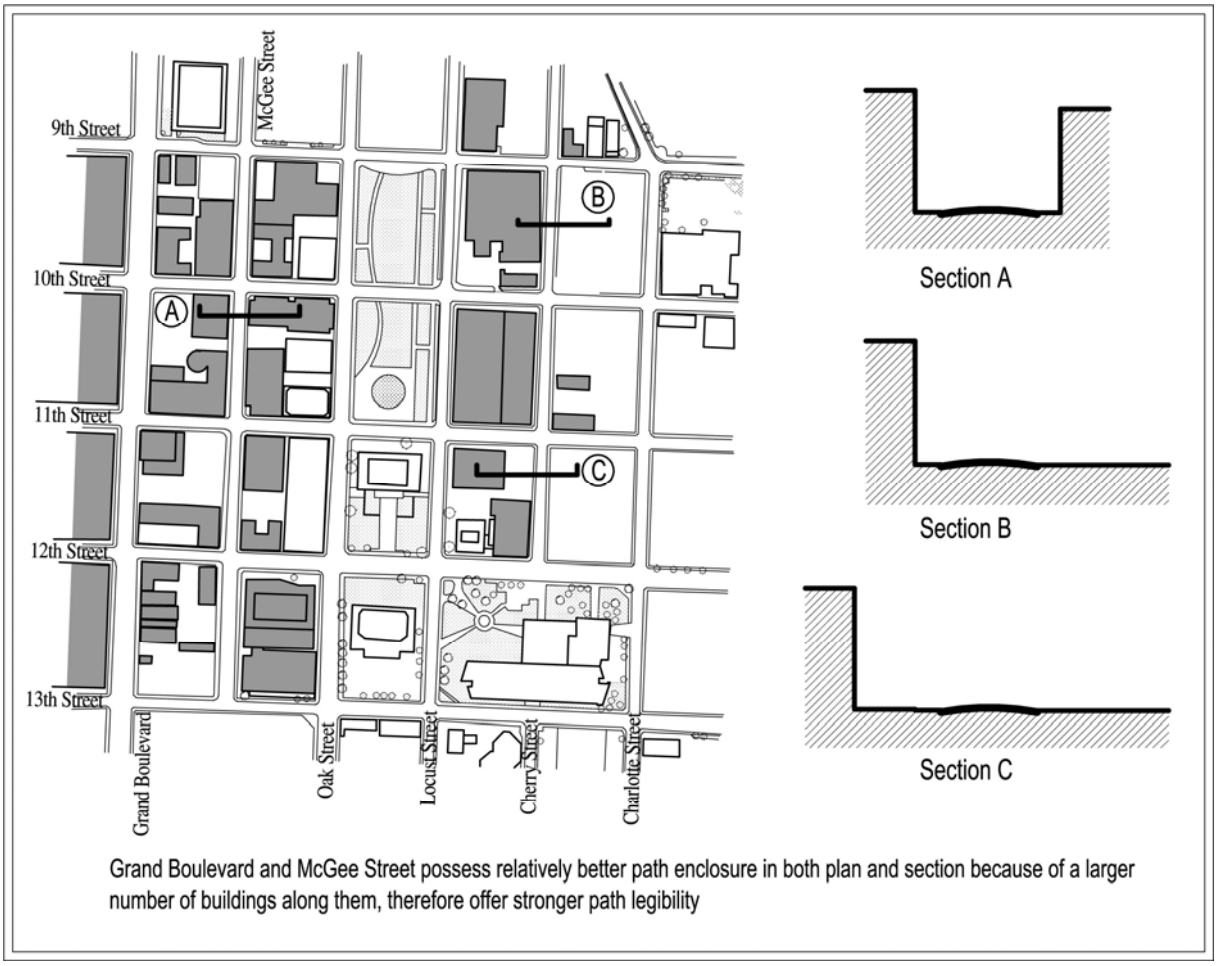

Figure 6-2. Comparison of path enclosure along McGee Street and Cherry Street in plan and section; Grand boulevard and McGee Street possess more path enclosure in comparison to other streets (Source: Drawn by author).

Nodes

According to the *RE* authors, nodes that work best are mostly junctions that are formed by functionally important paths and which possess sufficient spatial significance. The Government District's existing grid-iron street network system offers many junctions as potential nodes. However, very few junctions within the district can be presently considered as nodes because, poor block-design in terms of activities at street level leads to a lack of functionally strong streets and strong junction-design, both of which are vital in the functioning of nodes. Presently, there are three nodes in the Government District; the junctions of 14th Street and Grand Boulevard; 12th Street and Grand Boulevard; and 11th Street and Grand Boulevard (figure 6-3, 6-4, and 6-5).

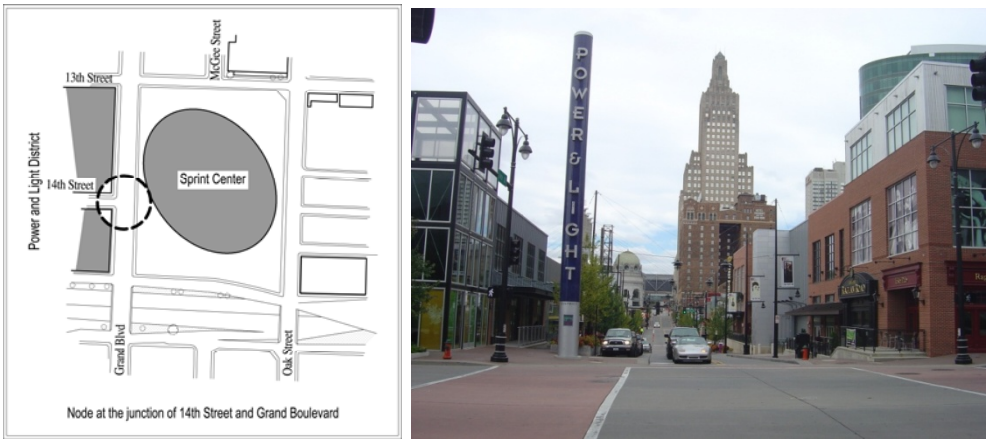

Figure 6-3. Node at the junction of 14th Street and Grand Boulevard (Source: Drawing and photograph by author).

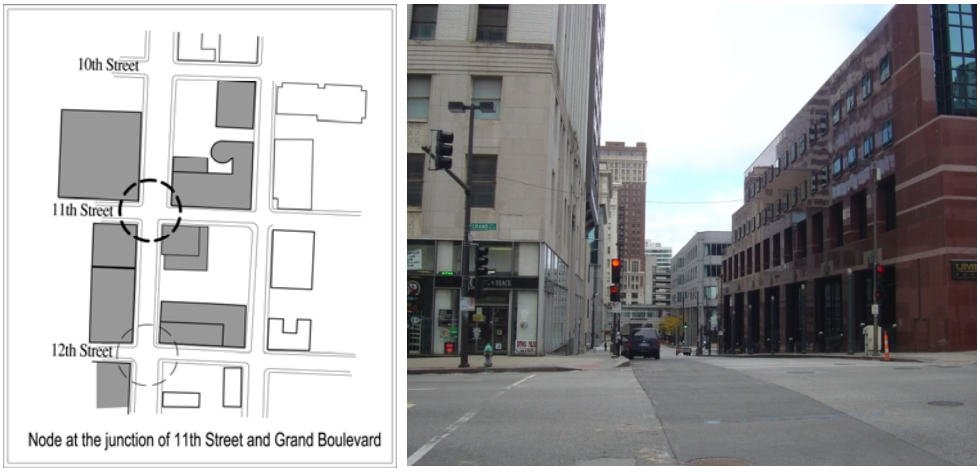

Figure 6-4. Node at the junction of 11th Street and Grand Boulevard (Source: Drawing and photograph by author).

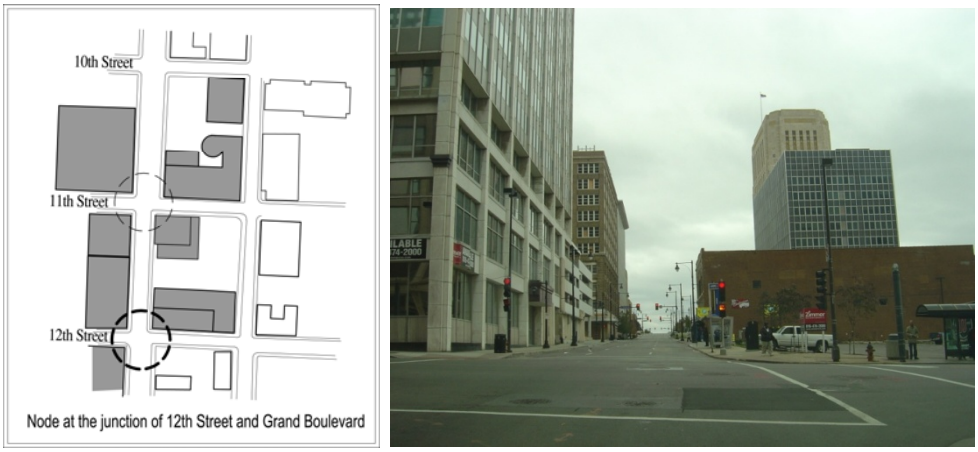

Figure 6-5. Node at junction of 12th Street and Grand Boulevard (Source: Drawing and photograph by author).

For the Government District, the junction formed by 14th Street and Grand Boulevard (figure 6-3) is the most important node, Grand Boulevard being a commercially important street and 14th Street being a part of the Power and Light District. This node is also well organized spatially to be identified as an entrance to the Power and Light District. The Junction of 11th Street and Grand Boulevard (figure 6-4) also generates a sense of node because of the presence of important buildings at corners housing offices, shops, and a residential loft. However, this node lacks sufficient spatial emphasis required to be imageable as a node. The third node, at the junction of 12th Street and Grand Boulevard (figure 6-5), is weakest in terms of spatial emphasis, since it includes one vacant corner. However, this junction offers high potential to work as a node because 12th Street and Grand Boulevard are functionally important streets and the junction houses bus stops and buildings of historic value. All other junctions within the Government District fail to serve as a strong node largely because of poor junction-design in terms of spatial quality and functional importance. Hence, there is a need to develop other potential nodes resulting from design for permeability and variety in order to enhance the district's overall legibility.

Landmarks

The Government District houses several publicly-relevant buildings and physical elements which due to their physical prominence and functional importance serve as points of reference for users and therefore act as landmarks. The Important landmark buildings within the Government District are the US Federal Courthouse, City Hall, Jackson County Courthouse, Federal Police Headquarters, St Mary's Church, St Patrick's Church, and the Sprint Center (figure 6-6, 6-7, and 6-8). The Government buildings within the district serve as landmarks by dominating the Government District's skyline and incorporating distinct architectural character which makes them easily distinguishable. The two churches are historically significant and possess older architectural character thereby making them very important reference points in the district (figure 6-7). Apart from the landmark buildings, there are three statues within the district that act as important landmarks —a statue of Charles Whittaker, located in the open green area along 12th Street; a statue of Andrew Jackson, located in front of the Jackson County Courthouse; and a statue of Abraham Lincoln and his son in front of the City Hall building. In

terms of design implications, there is a need to provide the Government District with additional landmark elements that can act as a marker sequence to make the district more legible.

Figure 6-6. Important buildings serving as landmarks: City Hall (left); Jackson County Courthouse (right) (Source: Photographs by author).

Figure 6-7. Important buildings serving as landmarks: St Mary's Church (left); St Patrick's church (right) (Source: Photographs by author).

Figure 6-8. Important buildings serving as landmarks: Federal Police Headquarters (left); Us Federal Courthouse (right) (Source: Photographs by author)

Edges

The downtown interstate-loop running along the northern, eastern, and southern boundaries of the Government District serves as a strong edge. Even though the interstates are channels of movement, they are largely perceived as barriers because they do not support pedestrian movement. Even though the presence of the interstate-loop as an edge contributes much to the district's imageability and enhances overall legibility, as discussed in chapter 4, the edge weakens the Government District's overall permeability (figure 6-9). Hence, there is a need to identify design measures that can make these edges more permeable in spite of maintaining their edge-like character.

Figure 6-9. Interstates along northern, eastern, and southern sides serve as edge but also weaken permeability (Source: Photographs by author).

Districts

The Government District largely fails in terms of offering imageability as a district or in terms of sub-districts because the Government District does not possess strong district-like qualities, either as a whole or in parts. The Government District gets its name from the presence of important government buildings concentrated at the district's center between, 8th, Oak, 13th, and Holmes Streets. Apart from the functional significance and architectural expression of these buildings, the Government District does not evoke a district-like character. Also, since most parts of the Government District exists as vacant lots, the district presents a sense of urban decay, which affects its district imageability. A lack of strong path themes, distinct architectural character, and concentrated functions makes the Government District weak in terms of district identification. This problem is largely a result of developing the Government District as isolated

blocks that each has a lackluster streetscape and thus a fragmented architectural character. Therefore, design for legibility should aim at developing the Government District's path themes and overall urban character to enable people to perceive it as a distinct geographic entity within the Kansas City Downtown. In addition, the design process should consider possibilities of developing sub-districts within the Government District for example, the southwestern part of the district which is proposed to house entertainment venues can be considered to be a sub-district, the streetscape and architectural character of which may be designed to match that of the adjacent Power and Light District.

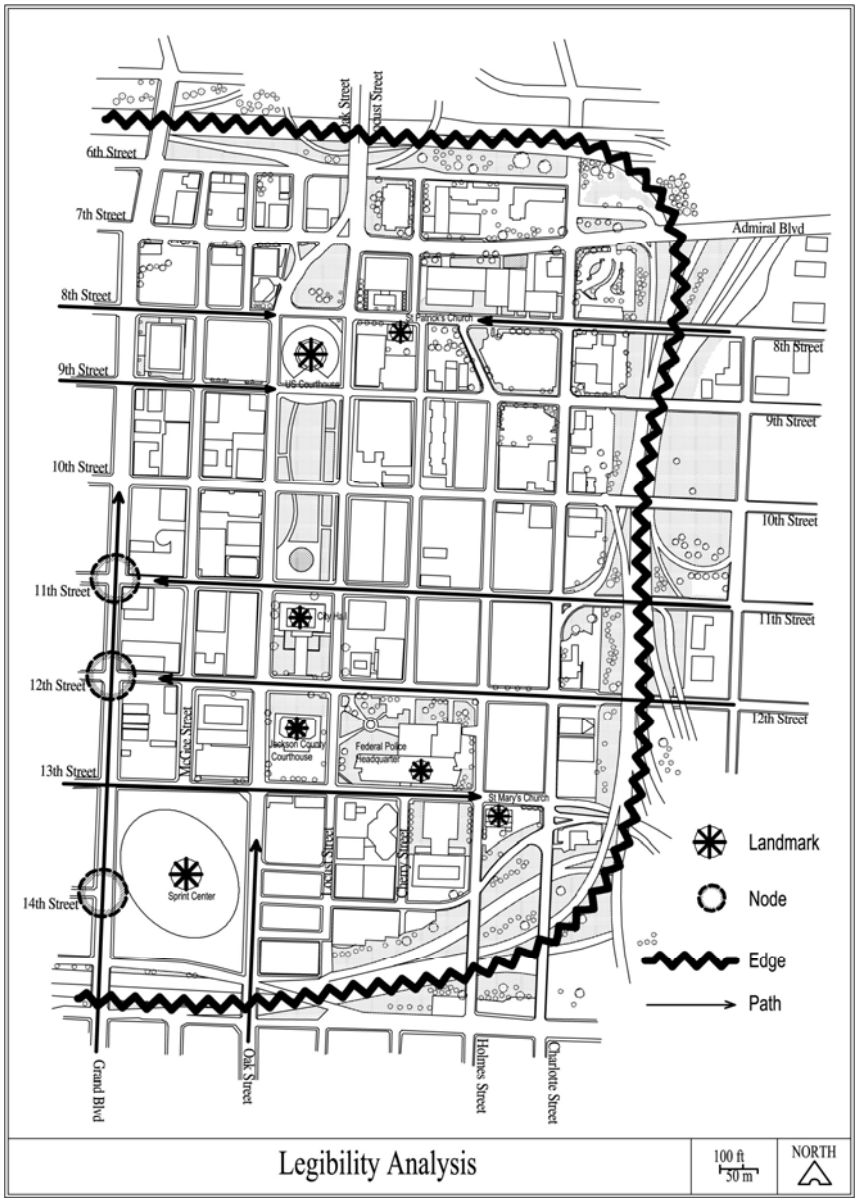

Figure 6-10. Summary of Government District's Legibility analysis (Source: Drawn by author).

Designing for Legibility

Having analyzed the Government District in terms of legibility, I now discuss a design process that can be applied to achieve legibility within the district's new scheme after considering permeability and variety. The Government District's legibility analysis suggests that the district offers minimal legibility as it exists, thereby requiring several design changes to maximize legibility by reinforcing the district's paths, nodes, landmarks, edges, and district-character. However, possibilities of adjusting the district's layout to achieve legibility are limited by the presence of an already built street-block structure. Therefore, the design presented here aims to maximize legibility through reinforcing existing elements for better imageability and developing new elements offering imageability. The design to develop legibility within the Government District follows a five-step process, which is as follows:

a) Repairing the existing edges;
b) Identifying sub-districts in the new scheme;
c) Reinforcing paths;
d) Reinforcing existing and proposing new nodes;
e) Locating new landmarks to achieve a marker sequence.

Repairing the existing edge

The interstate highways along the Government District's northern, eastern, and southern boundaries, as already discussed, serve as a strong edge but also weaken permeability in terms of the district's larger urban context. This edge is not completely impermeable because several streets run over and under, providing physical connections between the Government District and neighboring districts on the northern, eastern, and southern sides, and thus allowing some pedestrian through-movement. However, the large-scale structure of the interstate edge, devoid of any human activity or attractive views, makes it visually perceived as a strong barrier, thereby weakening permeability. Hence, attempting to reinforce this edge should aim at enhancing legibility by maintaining its edge-like character and also by reducing its perceptual impact as a barrier.

One of the design possibilities to achieve this is to plant trees along the edge which can obscure its dominating barrier-like appearance thereby reducing its impact as a barrier. However, some portions may require a visual connection across the edge: for example, a view of the River

Market District from the section of 6th Street between Grand Boulevard and Locust Street is desirable in terms of visual permeability. In designing for this change, it is important to choose trees that have foliage high enough to be seen. In addition, the permeability through the edge can further be enhanced by proposing path enclosure for the streets running over and under the interstates. By having sufficient enclosure, these paths would potentially offer a sense of refuge, thereby making them more used. Path enclosure for these streets can be achieved by: (a) designing provisions to plant trees; (b) providing artistically designed walls along the paths; (c) providing canopies over these paths; and (d) developing some combination of these possibilities. Figure 6-11, 6-12, and 6-13 illustrate the above discussed design suggestions to repair the existing edge.

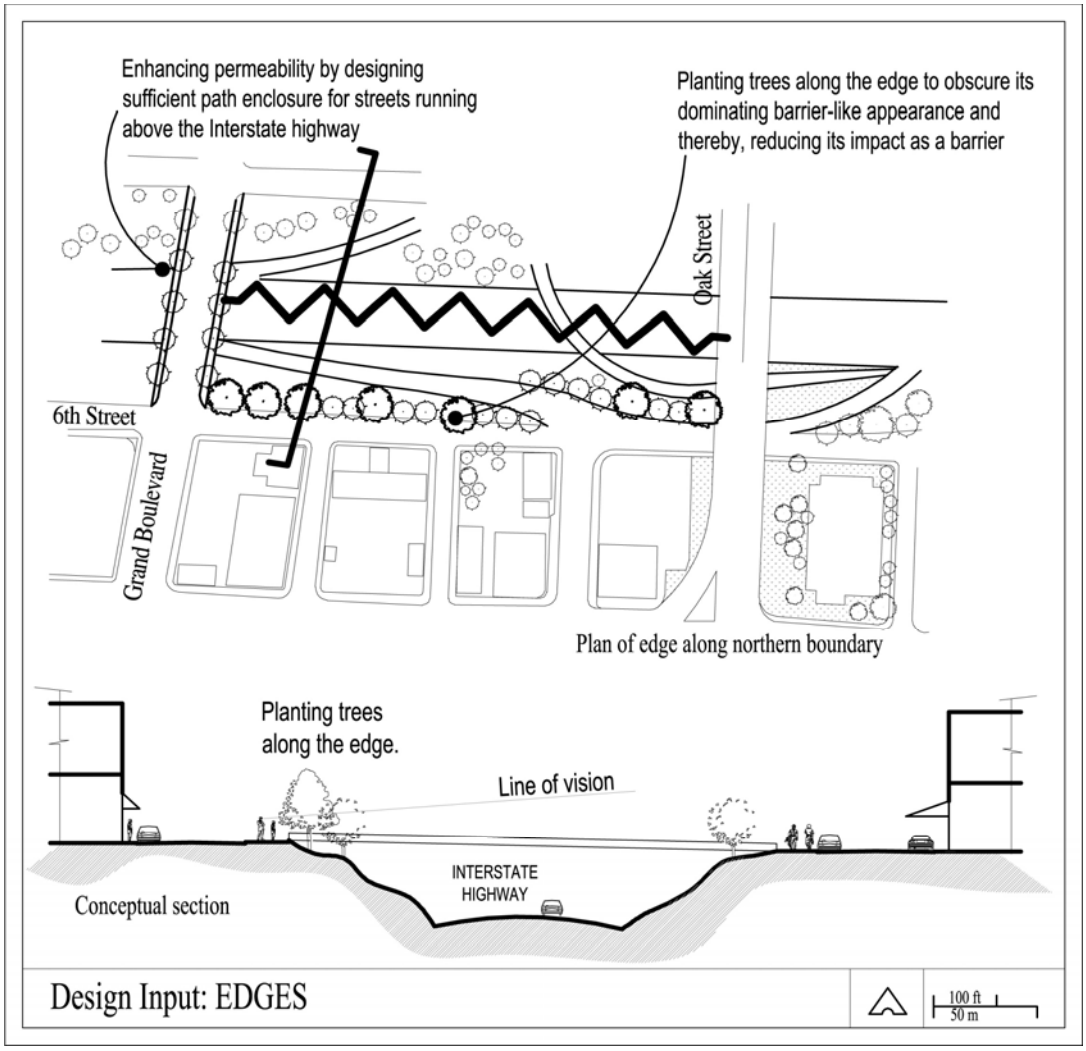

Figure 6-11. Edge along the northern boundary in plan and conceptual section to illustrate design inputs to strengthen permeability through the edge (Source: Drawn by author).

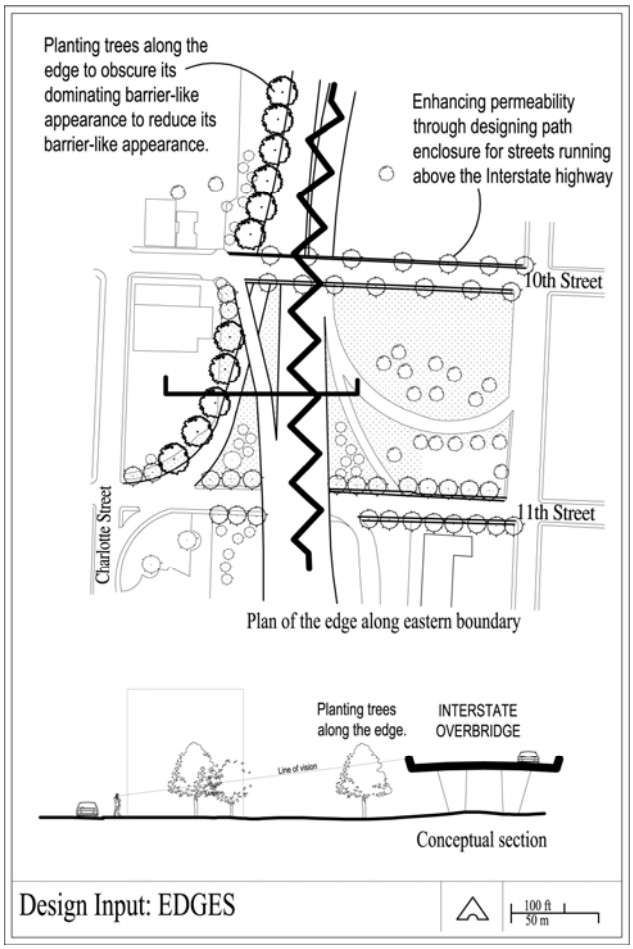

Figure 6-12. Plan of edge along the eastern boundary and conceptual section to illustrate design inputs to strengthen permeability through the edge (Source: Drawn by author).

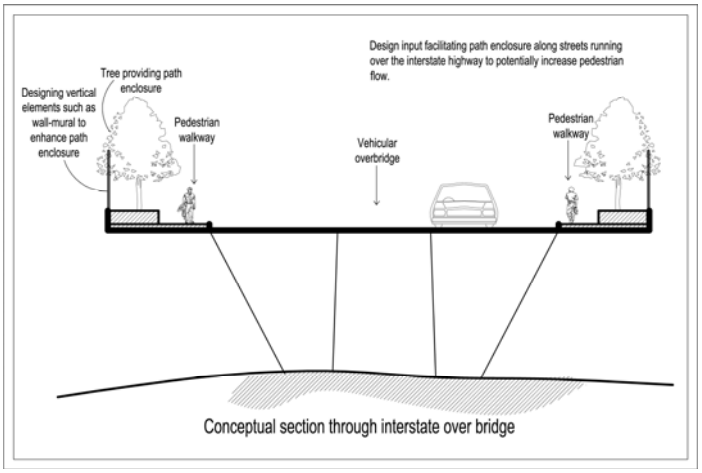

Figure 6-13. Design inputs to achieve path enclosure to streets running over the interstate highways (Source: Drawn by author).

Identifying sub-districts

The next step in the design process is to identify potential sub-districts within the Government District which presently neither evoke strong district nor sub-district character. Based on the functional layout proposed in chapter 5, three sub-districts can be identified within the Government District: (a) the concentration of residential uses along the northern boundary between 6th and 8th Streets; (b) the mixed-use blocks housing residences and other secondary uses along the eastern boundary between Cherry, 10th, Charlotte, and 13th Streets; and (c) blocks at the district's southeastern corner housing various entertainment venues (figure 6-14). These sub-districts can be reinforced through designing streetscapes and path themes that give them a distinct district character.

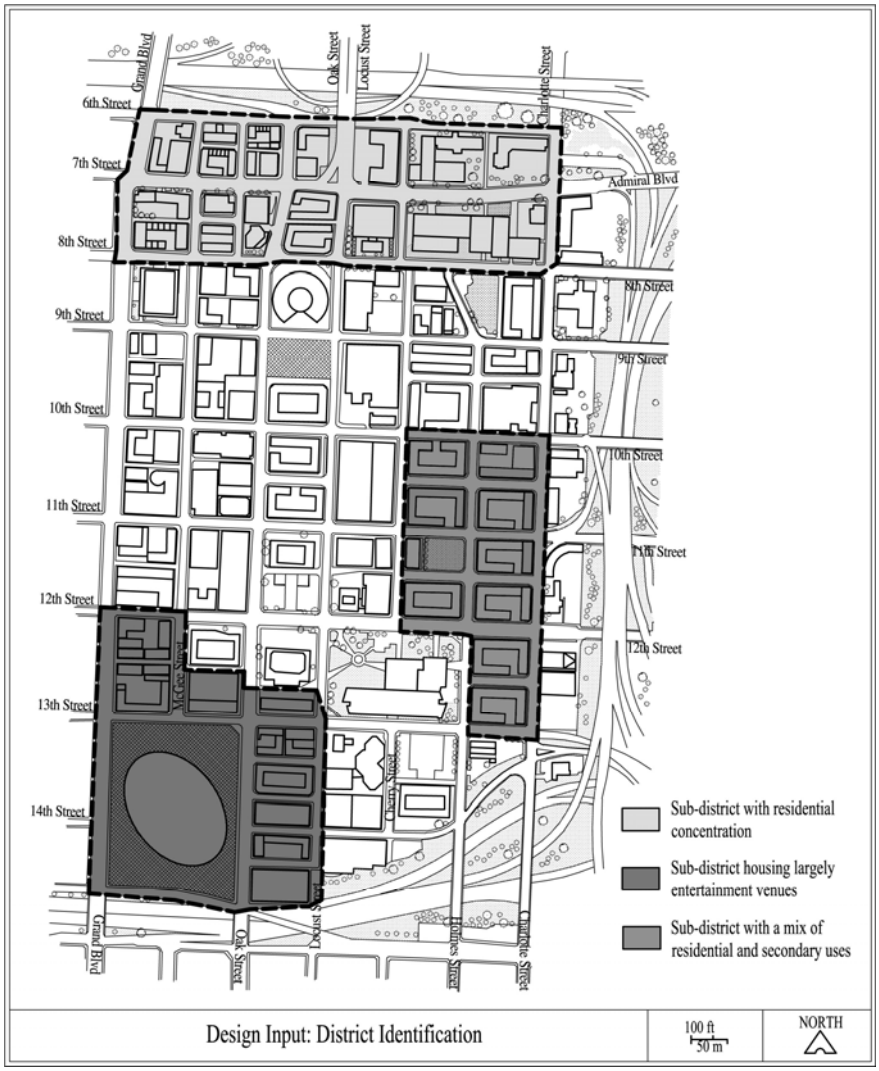

Figure 6-14. Identifying sub-districts within the Government District. (Source: Drawn by author).

Reinforcing paths

Paths and path themes play a major role in enhancing overall district legibility and in creating distinct sub-district character. The Government District's legibility analysis suggests a lack of strong path legibility partly because of the absence of sufficient path enclosure. To ensure sufficient path enclosure, proposed building heights need to be considered in such a way that height-width ratio is more than 1:3.

Path themes, which are largely related to streetscape design, contribute immensely towards legibility by generating distinct functional and visual character, which is vital to the imageability of sub-districts. The predominant existing path theme within the Government District, as illustrated in figure 6-13, involves pedestrian walkways on both sides of the vehicular roads with trees and lamp posts visually separating the vehicular and pedestrian streets. Also, some parts of the Government District have benches along pedestrian walkways. This path theme is maintained mostly along blocks housing offices and important government buildings.

The existing residential area located at the northeastern corner of the district follows a slightly different path theme which is illustrated in figure 6-15. Here, the pedestrian walkways accommodate a strip of grass and shrubs on both sides in addition to trees, thereby making these walkways relatively narrow. Segments of pedestrian walkways abutting buildings with large frontages have dense trees along side. These path themes should be maintained and reinforced within respective sub-districts in that the existing path theme can be maintained within the newly identified sub-district at the northwestern corner, and the existing path theme of areas with a concentration of offices can be maintained and reinforced within areas largely proposed to house offices.

Apart from the residential sub-district along the northern boundary, two other sub-districts can be identified: (a) the entertainment sub-district linked to the Power and Light District at the southwestern corner; and (b) a sub-district supporting a mix of residences and supporting secondary uses in the central eastern portion of the Government District.

To reinforce path legibility in these sub-districts, it is important to draw on some distinct path themes that can potentially emphasize paths' functional importance. The entertainment sub-district should follow the Power and Light District's path theme so as to be visually perceived as a connecting part. The key elements in the Power and Light District's path theme are the outdoor spaces between buildings and sidewalks and use of planter beds with trees and shrubs between

vehicular streets and pedestrian walkways. Following this path theme would potentially offer this sub-district better path legibility and district identification. For the new east-central mixed-use sub-district to be perceived as a sub-district within the larger Government District, it is important that the path theme for this district be designed in such a manner that it possesses a distinct character of its own, yet be perceived as a part of the Government District. For this possibility, one aim would be to combine mimic the path theme of the area with residential concentration at the northeastern sub-district which is also residential.

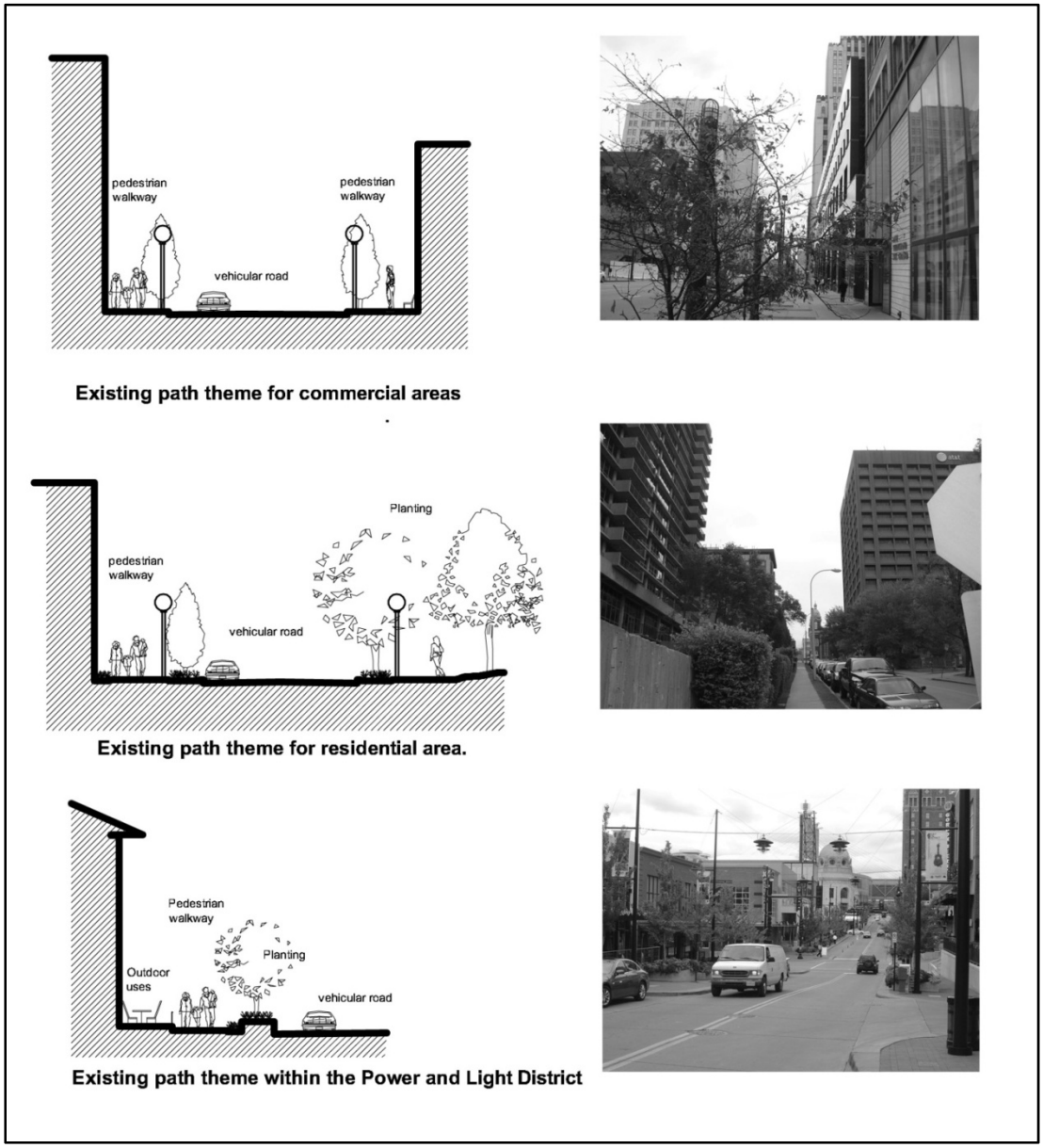

Figure 6-15. Existing path themes in the Government District (Drawn by author).

Reinforcing existing and new nodes

The Government District's legibility analysis identifies three junctions presently working as nodes, all of which are located along Grand Boulevard. To enhance district legibility, it is important to reinforce these nodes and also identify any other potential nodes within the district's proposed street-block design. The current design scheme, having achieved permeability and variety, offers three potential nodes: (a) the junction of Grand Boulevard and 7th Street; (b) the centrally located plaza between 9th, Locust, Oak, and 10th Streets; and (c) the playground between 11th, Holmes, and Cherry Streets.

Of all the existing nodes, the junction of 14th Street and Grand Boulevard is the strongest because of the functional importance of the streets forming this node. In this sense, its design does not require major design intervention. However, its character as a node can be enhanced by developing the Sprint Center's peripheral area through using some particular path theme as discussed above and by adding a landmark element such as a fountain or statue visible from 14th Street. Design implications in terms of path themes in combination with design inputs related to variety would reinforce the other two existing nodes in terms of functional and spatial significance. However, their node-like character can be further reinforced by opening up the corner buildings to the junction. Similarly, sufficient node-like character is achieved at the junction of 7th Street and Grand Boulevard (which is a proposed node) by designing for variety and reinforcing path themes along these streets.

The proposed design inputs for the Government District's other three new nodes are illustrated in figure 6-16 and 6-17. The centrally located plaza is one strong potential node because of its functional relevance and importance of surrounding streets. This plaza and playground within the mixed-use sub-district could work efficiently as a node only if it supports continuous use by drawing and holding users. To achieve this possibility, a detailed design could be based on the *RE* quality of robustness, William Whyte's concepts of plaza design, and related patterns suggested by Christopher Alexander (1977). Key inputs in designing these nodes would include defining the edges of these spaces and providing seating, adding a strong central element such as a statue or fountain to create a sense of centering; and offering activity pockets such as small eateries (figure 6-16 and 6-17).

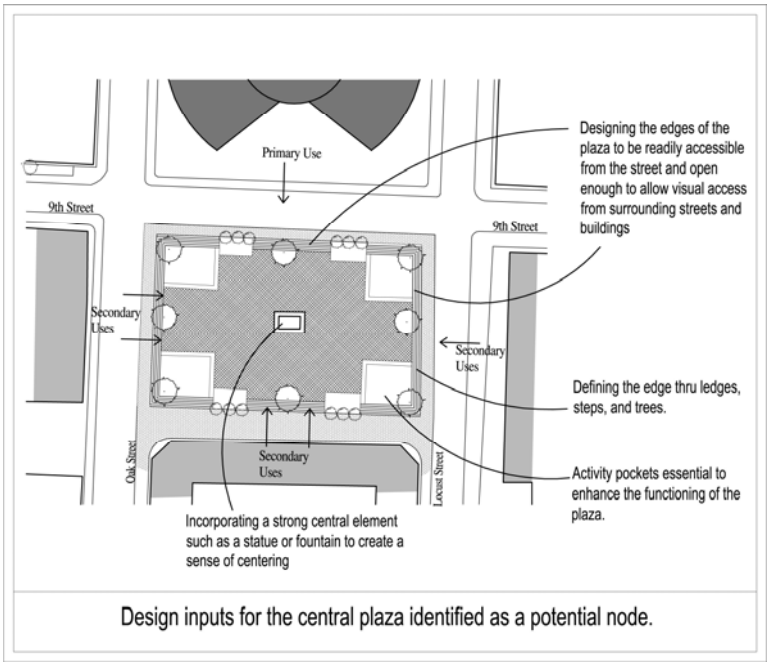

Figure 6-16. Design inputs to develop the centrally located plaza as a node (Source: Drawn by author).

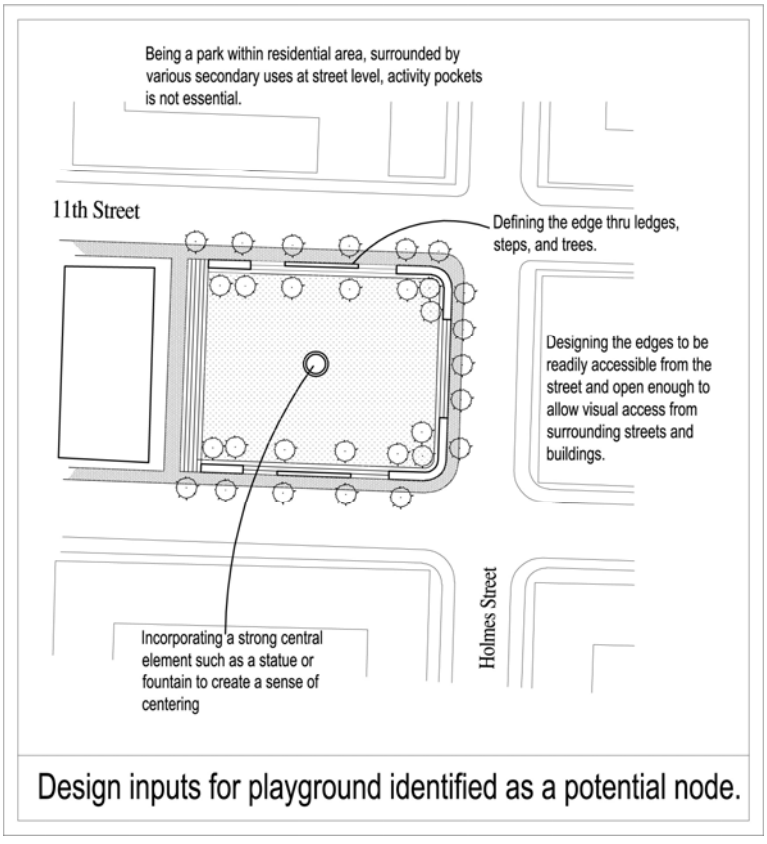

Figure 6-17. Design inputs to the playground as a node (Source: Drawn by author)

The junction of 12th and Locust Streets presently does not function as a node because it does not potentially draw people into it. However, this location is of much functional importance to the district due to the presence of three important landmark buildings—City Hall, Jackson County Courthouse, and the Federal Police Headquarters. Therefore, any possibility for developing this junction as a node can greatly contribute to the overall legibility. One possibility is to propose a terminal bus stop combined with a kiosk at this location similar to the one along 10th Street in the Library District (figure 6-18). Presently, the Government District does not house a bus stop, thereby making such a proposal functionally viable. By having a terminal bus stop at this location, the junction would potentially draw large number of people at regular intervals thereby functioning as a strong node, reinforced by surrounding landmarks. Another possibility would be to relocate the landmark statues in front of the City Hall and Jackson County Courthouse to the junction corners and designing a traffic island housing a kiosk at the corner of the block housing the Federal Police headquarters (figure 6-19).

Figure 6-18. The bus stop along 10th Street in the Library District (Source: Photograph by author).

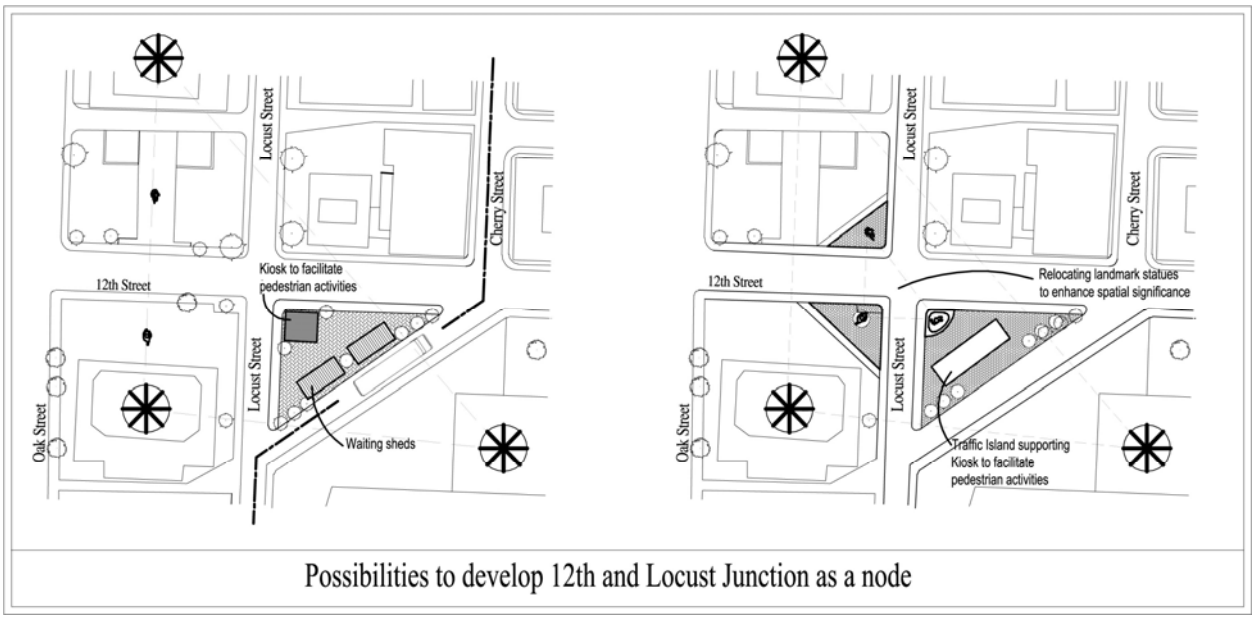

Figure 6-19. Possibilities to develop 12th and Locust Street junction as a node (Source: Drawn by author).

Locating new landmarks to achieve a marker sequence.

The Government District offers several landmark buildings and elements as discussed in the legibility analysis. However, according to the *RE* authors, it is important that urban places offer a marker sequence providing a larger number of reference points. For the Government District, additional landmarks must be located at various locations throughout the district because, presently, most existing landmarks are concentrated in the southern part of the district. Therefore, one of the possibilities is to design the magnet stores to function as landmarks because these buildings in addition to the existing landmarks could create a uniformly distributed marker sequence.

Having considered the design possibilities to enhance legibility of the Government District, figure 6-14 illustrates the district's proposed scheme incorporating the three larger-scale qualities of *RE*—permeability, variety, and legibility. This resultant design scheme can potentially offer sufficient value in terms of responsiveness and support better urban life.

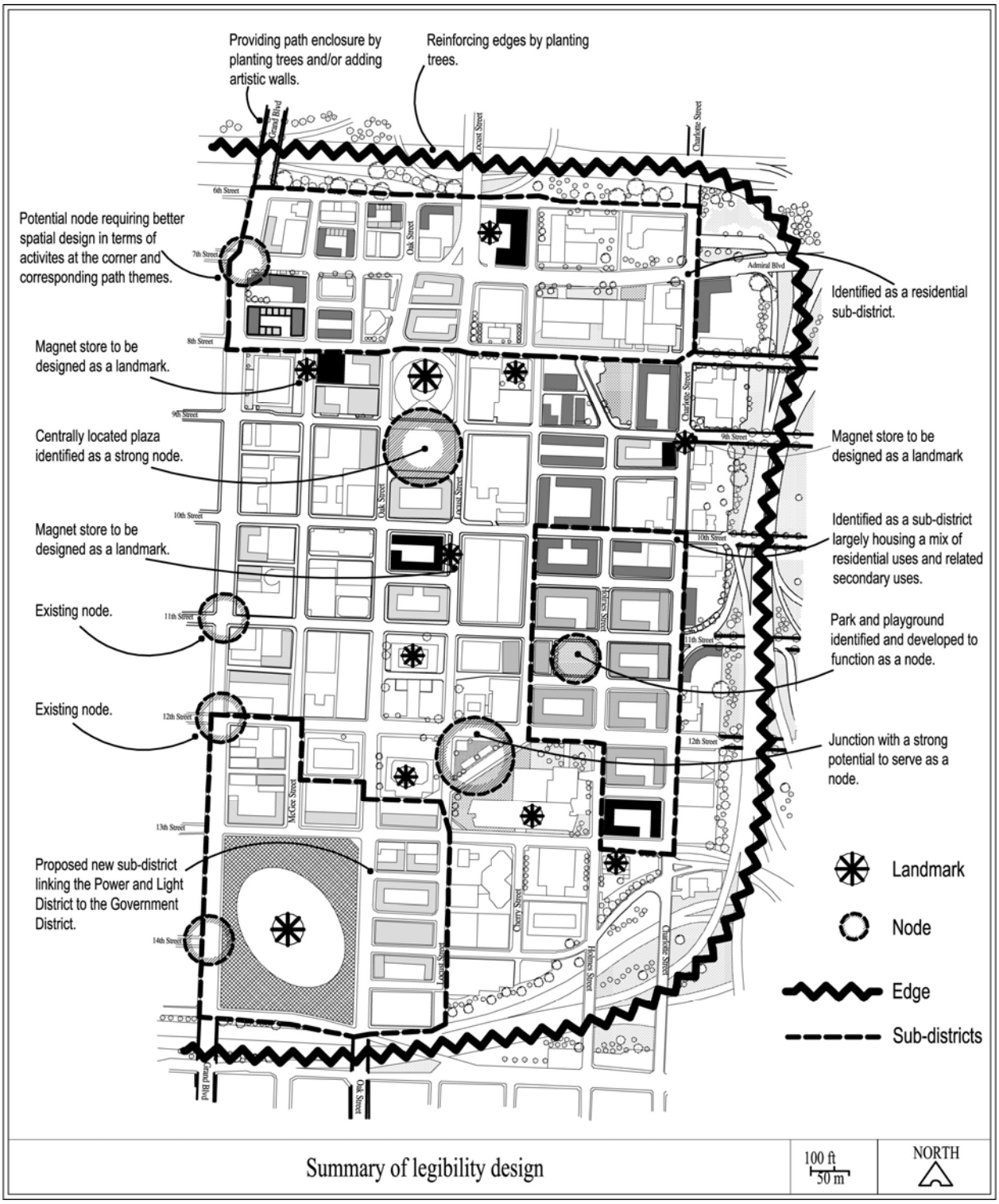

Figure 6-20. Summary of legibility design for the Government District (Source: Drawn by author).

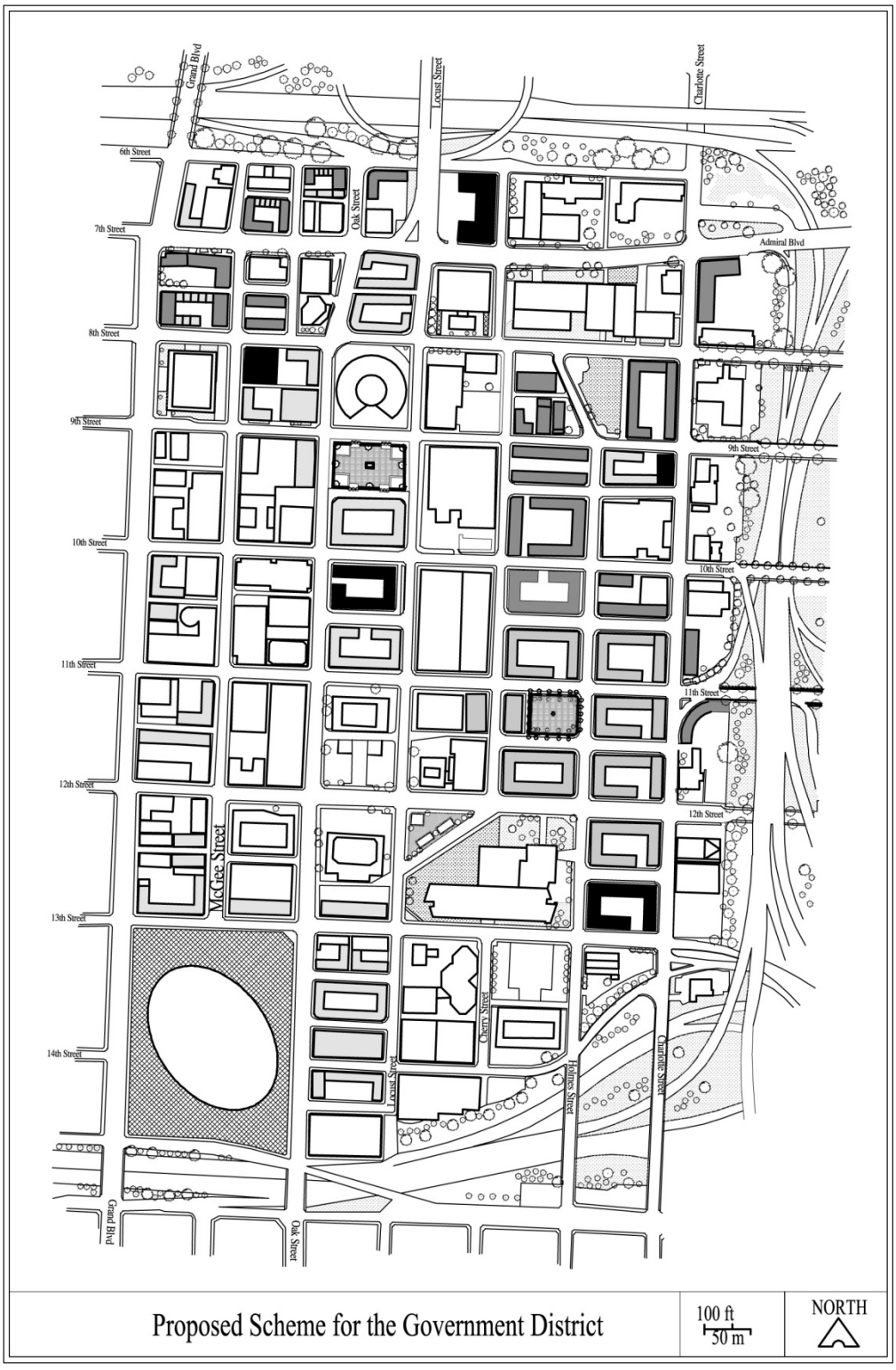

Figure 6-21. Final Scheme for the Government District, having considered permeability, variety, and legibility (Source: Drawn by author).

Chapter 7
Conclusion

Using the *RE* approach to redesign the Government District might contribute to its revitalization in several ways. First, designing for permeability might potentially enhance the district's connection with surrounding neighborhoods and make the district walkable and well connected through a sufficient number of small-sized perimeter-blocks, thereby enhancing the district's pedestrian possibilities. Second, designing for variety might potentially increase choices of various uses and activities available within the district at street-level, thereby revitalizing the district's street life. Third, designing for legibility might potentially enhance way-finding and cognition within the Government District, which is crucial for a downtown district that serves both insiders and outsiders. Therefore, the application of the three large-scale RE qualities—permeability, variety, and legibility—might potentially enhance the Government District's urban character and urban life, thereby strengthening its sense of place.

The conceptual effort of this thesis to revitalize the Government District provides one context in which to assess *RE* as an urban design approach. In this chapter, I discuss three possible evaluative routes that can be taken to consider the value of RE as an urban design approach:

(1) Identifying RE approach's strengths and weaknesses as evident from the process of redesigning the Government District;
(2) Comparing the redesign process and scheme developed in this thesis with the Kansas City's Downtown Council's proposed design scheme and policies;
(3) Discussing the value of a RE design approach in contributing to the concept of urban sustainability as developed by urban designer Paul Murrain in his essay, "Urban Expansion: Look Back and Learn" (Murrain 1994).

Strengths and weaknesses of *RE*

In the early stages of this thesis, I doubted my chances of achieving a sufficient level of responsiveness within the Government District because, as it exists, the district included several obstacles for achieving the three large-scale *RE* qualities. However, a thorough conceptual

understanding of *RE* enabled me to realize several design implementations that could potentially impart responsiveness. In turn, the process of redesigning the Government District offered a critical understanding of *RE* as a design manual by revealing some of its strengths and weaknesses. In this section, I discuss the strengths and weakness of the *RE* design approach as evident from my thesis experience and results.

One of the greatest strengths of *RE* is the analytic tools and methods provided to study a site in terms of the larger-scale qualities. The *RE* approach towards design is to completely analyze the site to obtain comprehensive design inputs. For example, the authors provide the visual and physical permeability analysis method (generated from space syntax) to study city links in terms of their directness and connectivity. The results of this analysis are used to design a site's preliminary street-block structure. Similarly, the *RE* authors provide such tools as graphs, matrices, and calculations to analyze a site in terms of variety and legibility. Had these analysis tools been missing, a thorough understanding of the Government District in terms of permeability, variety, and legibility would not have been possible, thereby lessening the chances of a practical design scheme.

The *RE* design approach is often criticized as being a "cookbook" method that limits a designer's creativity. However, using the *RE* approach to redesign the Government District reveals its value to be beyond a mere step-by-step guide in that it offers sufficient conceptual depth allowing a designer to generate ideas relevant to each quality. Therefore, in spite of its being a step-by-step design manual, the *RE* approach offers flexibility to incorporate additional analysis or design implications arising from specific site situations. This makes it an effective design approach for a range of urban sites. This aspect is clearly evident from the design for the Government District, where the permeability analysis of city links was extended to analyze existing pathway factors other than directness and connectivity. Similarly, design implications related to both variety and legibility were generated to potentially enhance permeability in spite of the interstate highways bounding the site.

RE also offers value in clarifying the interplay among the *RE* qualities of permeability, variety, and legibility. The *RE* design process is laid out hierarchically in terms of the three larger-scale qualities—permeability followed by variety and then legibility—but does not present this hierarchy as absolute. The *RE* authors emphasize the importance of considering these qualities reciprocally while designing a place, thereby activating an interplay. This strength is

revealed in the process of redesigning the Government District, where the design for permeability extends to the design for variety and legibility, and design implications for each quality is dependent on the other two qualities. For example, attempts to enhance permeability offered by city links through the interstate boundaries of the Government District largely depend on design implications relating to variety and legibility.

On the other hand, the *RE* authors fail to clearly demonstrate the relative importance of the qualities of permeability and variety. As discussed in chapter 2, it is difficult to establish which of these two qualities is more important in achieving a vibrant pedestrian life. Even though the RE authors identify permeability as the quality to be considered first in the design process, all the smaller-scale qualities—robustness, visual appropriateness, richness, and personalization—seem to be part of variety, thereby creating confusion as to which of the two is more significant. In this regard, the redesign of the Government District suggests that, in terms of social dynamics and social life, variety alone cannot be of value and that a permeable street network system is of prime importance to make the variety of uses and activities accessible. It also must be emphasized that a permeable street-block structure is itself a promoter of variety and diversity when one considers the natural growth of cities.

The greatest weakness of the *RE* approach is that, even though it identifies the importance of density in creating responsive environments, it fails to provide any valuable design guidelines for achieving a right density required to support responsiveness within an urban place. The *RE* approach depends on social and economic needs to propose uses and activities which may not result in the right amount of residential use facilitating an appropriate density. Therefore, even if all *RE* qualities were achieved in an urban site, the place may fail to work as a responsive environment if it doesn't incorporate and support sufficient density. Any attempt to enhance *RE* should address this issue because, as suggested by many other eminent scholars such as Jane Jacobs (1961, Chapter 11), density is a key element distinguishing urban sites from smaller settlements, both in terms of character and functioning.

Having discussed some of *RE's* strengths and weaknesses, it is also important to emphasize the strength of RE as a design approach in that it assimilates various theories and concepts of placemaking and simplifies them in the form of easily applicable design templates. It is also important to note that the *RE* authors do not compromise on the conceptual depth of these

various qualities. Therefore, one can conclude that this approach offers much value as an analytic and design manual for placemaking.

The *RE* design scheme in comparison to the Downtown council's proposal

The Downtown Council of Kansas City (DTC) is a private nonprofit organization, representing more than 280 Kansas City businesses and property owners as well as entrepreneurial companies and nonprofit organizations. The DTC is committed to creating a vibrant, diverse, and economically sustainable Downtown Kansas City through various development plans and proposals. The DTC aims to showcase Kansas City's downtown as a center for arts and culture, energetic work places, residential neighborhoods, and a setting for entrepreneurial creativity (Downtown Council, Kansas City).

As just explained, the DTC's mission includes maintaining Downtown Kansas City as an interesting, vibrant, diverse, synergetic, accessible, walkable, and livable place. In other words it can be said that the DTC is keen on achieving a responsive environment within downtown Kansas City because the RE design approach also aims at creating urban places that are vibrant, diverse, accessible, walkable, and livable. Since the DTC and this thesis share a common goal with respect to developing the Government District, in this section I compare and contrast the redesign process and conceptual scheme proposed in this thesis with the DTC's proposed development.

As an attempt to identify the need for revitalization, the DTC performed two major studies for the entire downtown Kansas City—a "Downtown Housing Study" in 2004; and a "Downtown Kansas City Employee Survey" in 2005. The 2004 Downtown Housing Study evaluated downtown Kansas City as a residential neighborhood and focused on residential demography; market growth and demand; and a survey of residents' satisfaction in terms of various amenities available in Downtown Kansas City. The 2005 Downtown Kansas City Employee Survey largely aimed at studying employee satisfaction with respect to downtown amenities. In both studies, the DTC studied the entire downtown area through survey participation and other modes of gathering market information.

Major conclusions from these studies were as follows:

- Regarding housing needs, there is a rising demand for affordable housing within downtown;
- Regarding amenities within downtown, there is a need such functions as grocery stores, convenient stores, eateries, parks, and dry cleaners in all downtown neighborhoods. Also 92% of downtown employees are satisfied with parking facilities and consider them to be presently adequate.
- Regarding downtown living, a very small segment of downtown employees currently lives downtown and of all the employees who participated in the survey, 19% were interested in moving downtown, 5% currently live downtown, and 7% did not respond;
- Regarding walkability within downtown, only 3% or the employees who participated in the survey reported walking to work;
- Regarding safety, a majority of the employees do not consider downtown to be safe at night and identify parking facilities to be most unsafe during dark hours;

These studies employed by the DTC, apart from being a general overview of the entire downtown area, are largely insufficient in providing a complete understanding of the Government District's existing urban scenario in that all the issues identified above are related to the functional aspect of the downtown area as a whole. In contrast, this thesis specifically analysed the Government District in terms of permeability, variety, and legibility to understand the district's existing situation with respect to its connectivity with surrounding neighborhoods, its walkability and pedestrian movement, its street life and place vitality, and image possibilities.

Analysis of the Government District suggests that the issues identified by the DTC relating to urban life in Downtown Kansas City are equally valid in the Government District and mostly relate to the *RE* quality of variety. For example, the study of variety in the Government District identified the need for residential uses to achieve a right mix of primary uses and the need for secondary uses such as grocery stores, eateries, laundromats, and parks for livelier street-life. Findings also suggested that the existing number of dwellings do not sufficiently accommodate the working population of the district, resulting in a large number of employees living outside the district. In addition, the study revealed an absence of uses that function during night hours to facilitate presence of people on streets, thereby offering a sense of safety during night hours.

It is important to emphasize that the DTC's studies consider these issues to be the problem leading to a weak downtown street life, whereas the RE approach considers them to be the by-products of a faulty spatial and functional layout. In other words, the DTC mistakes symptoms of the ailing downtown for the ailment, whereas the RE approach suggests that it is the spatial and functional layout that is the major problem. This, I would say, is the fundamental difference between a RE approach and conventional approaches used to develop urban places. This is better understood through a closer look at the DTC's proposed development scheme.

As an effort to revitalize the Government District, the DTC proposes an East Village neighborhood, which is an 8-12 block, pedestrian-friendly neighborhood including 800 residential units and 80,000 square-feet of retail, office spaces, and parking garages. In addition, the DTC proposes McCownGordon headquarters, an office building along the northern boundary of the district; JE Dunn headquarters, another office building already built between Locust, 10th, Cherry, and 11th Streets; and an Interstate-bridge enhancement along the Government District's southern boundary. The DTC also proposes a phased revitalization of the downtown's streetscapes to enhance aesthetic value.

The design elements in the DTC's scheme are large-scale, financially-driven projects attempting to superficially develop certain parts of the Government District. The DTC largely depends on the East Village Neighborhood project to revitalize the Government District's pedestrian life without realizing that such large-scale mega-structure developments with a concentration of primary uses (dwellings and work places) cannot generate a lively street life alone. The DTC's proposal reveals misunderstanding regarding the impact of spatial and functional organization on an urban place's social life. The DTC's failure to deal with the weak spatial and functional layout of the Government District makes all other design efforts beside the point in terms of achieving a lively urban life. For example, the proposal to revive the district's streetscape is of value and appreciated by users only when there is already sufficient pedestrian movement. Therefore, it can be concluded that the DTC offers a piecemeal approach in revitalizing the Government District by focusing exclusively on the less significant dimensions of the district's urban character such as separate functions and streetscape design; the plan fails to envision the district as a whole in terms of an effective spatial and functional layout. The weakness of the DTC's proposal can be summarized as follows:

- The proposal does not consider connecting the Government District with its surrounding neighborhoods; the result is limited pedestrian flow within the district;
- The proposal does not address the issue of existing large-block development in the Government District, which reduces the district's permeability and walkability;
- The uses and functions proposed fail to achieve a mix of primary and secondary uses needed to generate continuous pedestrian flow and a lively street life;
- The proposal offers no considerations regarding legibility, which is needed for easy way-finding and cognition within the Government District.

In contrast, this thesis offers a more holistic approach in redesigning the Government District by analyzing and designing the larger spatial and functional layout of the district to achieve a workable street-block structure, land use pattern, streetscape, and other building and landscape elements that promote better connectivity, enhanced walkability, more active street life, and heightened imageability, thereby potentially transforming the district into a responsive environment with a strong sense of place.

RE and Paul Murrain's concept of urban sustainability

In his essay, "*Urban Expansion: Look Back and Learn," RE* author Paul Murrain (1993) presents the concepts of urbanism and city placemaking through a somewhat different perspective than the original *RE* conception. He emphasizes the need for an "interactive urbanism" in inner cities, edge cities, urban fringes, and suburbs. As he defines it, interactive urbanism is an attitude to support place exchange and interaction, which he argues is important because, in spite of advancements in transportation and communication, peoples' social need to physically meet other people for exchange and interaction remain crucial to human life. With respect to present cities, he writes that "Our primary concern should be arresting the retreat from interactive urbanism in both the existing inner city and the suburb" (ibid., p. 83). He argues that, in an attempt to accommodate growing urban populations, conventional urban design retreats from interactive urbanism by depending on sprawling development that isolates urban users and inhibits pedestrian movement through segregation of uses and activities.

According to Murrain, interactive urbanism can be a basis for understanding the concept of urban sustainability. He emphasizes that, even though sustainability largely relates to energy,

resources, and ecosystem, it is equally applicable to fundamental concerns of social equity. He argues that a thorough urban sustainability should aim to maximize human interaction and exchange, alongside achieving ecological sustenance, thereby striking a balance between the biotic and human aspects of sustainability. In this regard, he writes:

> Sustainability also addresses the need to ensure that what we do now does not negatively affect what future generations may wish to do. No less important, but perhaps at a smaller scale and more pertinent to the role the urban designer can play, sustainability is about structuring town form such that the individual has choice but never at the expense of the collective, thus empowering as many of the citizens as possible to successfully determine the outcome of their daily lives in so far as the layout of the town and the location of uses can assist (ibid., p. 85).

Murrain argues that the most vital factor contributing to a sustainable, interactive urban place is achieving a "fine-grain mix of uses" (ibid., p. 85). He points out that a "fine-grain mix of uses" (ibid., p. 85) is difficult to define precisely but can be largely achieved through vital qualities that relate to the spatial and functional layout of a place, most importantly permeability and variety. A permeable pathway structure offering inter-city and local connections forms the basis for an intelligent mix of uses achieved through variety. In turn, for a variety of uses to be of value in terms of interaction, it is important that these uses cater to a sufficient density of people and are available to pedestrians within close proximity. In addition to permeability and variety for achieving a fine-grain mix of uses, Murrain suggests the need for sufficient legibility and buildings that are robust in the sense that they be adapted to a wide range of uses.

In regard to Murrain's ideas, the *RE* approach can prove to be a valuable tool in achieving urban sustainability. In conventional urban design practices, sustainability is often reduced to such issues as water conservation, green areas, rainwater, and wastewater management. With an emphasis on designing for permeability, variety and legibility, however, a *RE* approach can potentially promote interactive urbanism and generate places more meaningful in terms of urban sustainability.

This value of a *RE* approach in contributing to urban sustainability can be better understood through discussing the case of the Government District; which, as it exists is an urban place devoid of social exchange and interaction because it is segregated functionally. This existing situation in which the district is losing users, evident in the many vacant lots and

buildings, points towards urban decay and calls into questioning the district's ability to sustain itself socially and economically. In this situation, making the Government District sustainable through the conventional approach of considering ecological aspects of sustainability such as green areas, wastewater management, and energy, would be of less value because such an approach would result in the district being a biotic setting largely devoid of human presence. To be a sustainable urban district, the primary need is to make the Government District a *center for people*—humanly habitable, usable and valuable. Once achieved, the district would be much better prepared for further development in terms of economic and ecological sustainability. The value of a *RE* approach is in achieving this first step towards urban sustainability—transforming urban districts to be centers for people through interactive urbanism.

This thesis began with a larger vision of achieving urban sustainability within the Government District through ecological, social, and economic considerations. However, an early study of the district revealed its very existence to be in jeopardy, thereby pointing towards a much more immediate need: transforming a dying district into a place conducive for urban life. Conceptual design efforts in this thesis suggests that, with an emphasis on permeability, variety, and legibility, the *RE* approach is an efficient tool for reviving the Government District's urban life and its possibilities for urban sustainability. Therefore, based on Murrain's ideas about sustainability and the value of *RE* in enhancing urban life, we can establish the possibility of *RE* as an important venue for urban sustainability.

In summarizing this thesis, I conclude that the *RE* approach to design is a practical, holistic solution to urban placemaking with much value in terms of achieving a vibrant pedestrian life and an invigorated urban place. This research also offers a conceptual base for applying the *RE* approach practically to deteriorating American downtown districts and jumpstarting their transformation into exuberant urban places.

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