

MOVEMENT AS EXPERIENCE THROUGH MIND. BODY. SPIRIT.

by

ELISE HUBBARD

A REPORT

submitted in partial fulfillment of the requirements for the degree

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Manhattan, Kansas

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Approved by:

Major Professor
MELANIE KLEIN

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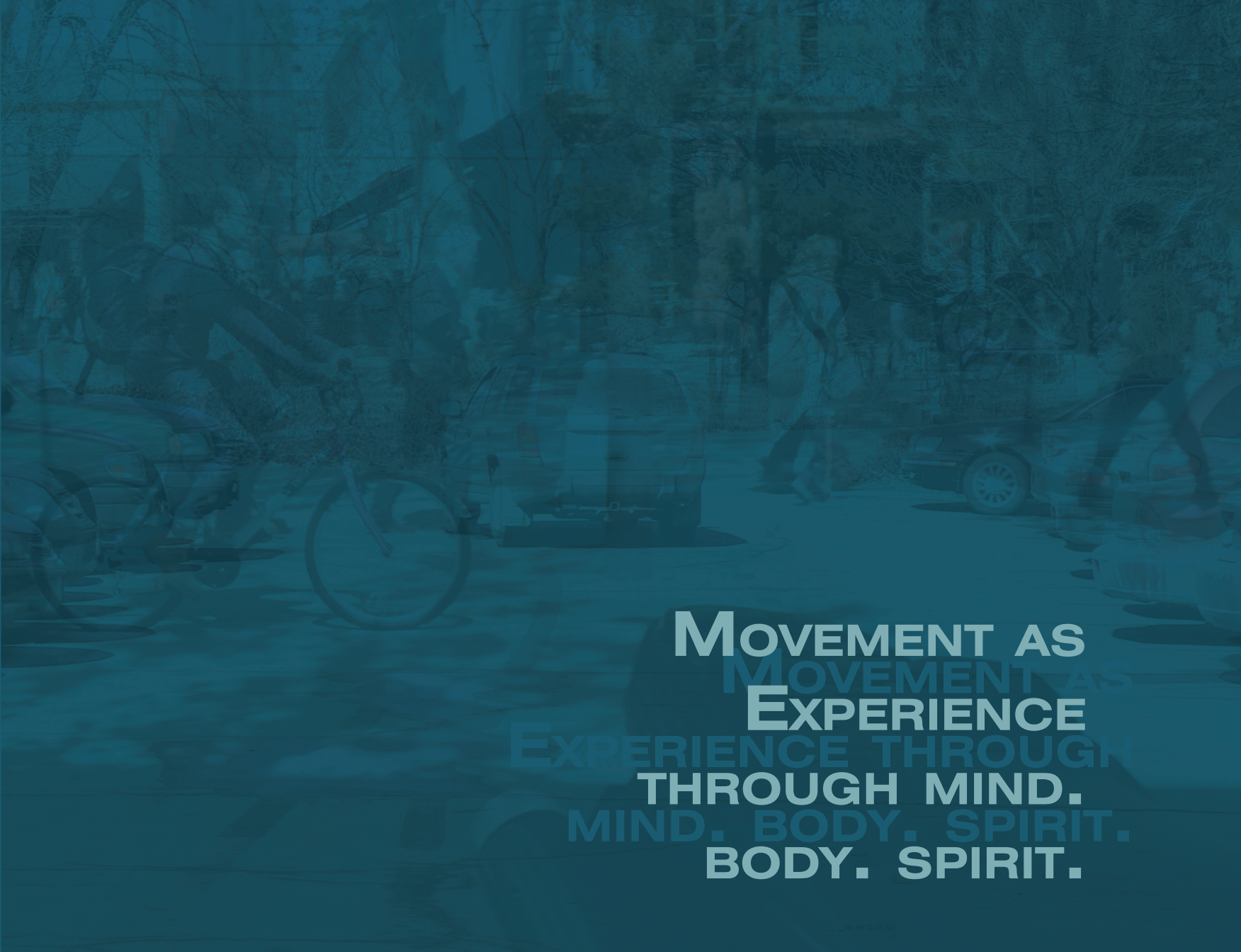
2010

Abstract

In a nation of speedy and convenient technologies, the default pace of life has become “fast.” For many American cities, the primary mode of transportation is the private automobile. Daily life is conveniently seen through the car window: we drive to, drive-thru, and drive home. Auto-dependent growth patterns have evolved into sprawling networks of streets and low density, single land-use development. With few pedestrian amenities or destinations, long travel distances, and dominating automobile infrastructure, this development pattern decreases pedestrian and bicycle circulation as a viable and enjoyable mode of transportation. Transportation growth centered around the private automobile compromises compact development, physical activity, safety of pedestrians and bicyclists, interaction with nature, social exchange, and social equity in street corridors.

Automobile circulation dominates the transportation system of Manhattan, Kansas. The result is low-density development, sprawling into the surrounding tall-grass prairie and flint hills of the region. Despite several City documents stating goals for multi-modal transportation and accommodation of all users, the existing built environment remains heavily dominated by automobile circulation. The current transportation system inhibits safe and enjoyable pedestrian and bicyclist transit. Inspired by Allan Jacobs’s Greet Streets vision and structured around the Institute of Transportation Engineers’ Context Sensitive Solutions, street networks can be public places for community: “people acting and interacting to achieve in concert what they might not achieve alone” (Jacobs 1993).

Movement corridors should be public spaces that encourage physical activity and time to experience a healthier body, mind, and spirit. With priority for bicycle and pedestrian circulation, movement corridors support a more sustainable development pattern and foster meaningful time in transit through more natural speeds of engagement and active presence. Great streets for all users, and a means to integrate improvements in the planning and design of movement corridors will activate progressive growth. The action framework presented here emphasizes important elements concerning the vision for Manhattan’s movement corridors, shows how district development reinforces attributes for walkable communities, and demonstrates guidelines for integrating improvements in Manhattan’s transportation planning and design.



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Movement as Experience Through Mind. Body. Spirit.

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Master of Landscape Architecture

Department of Landscape Architecture, Regional and Community Planning
College of Architecture, Planning, and Design
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Approved by: Melanie Klein

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BODY. SPIRIT.**

Elise Hubbard :: Masters Report :: 2010

TO JONATHAN

A Dieu qui a le pouvoir de faire infiniment plus que tout ce que nous demandons ou même imaginons, par la puissance qui agit en nous, à lui soit la gloire dans l'Église et par Jésus-Christ, dans tous les temps et pour toujours!

Éphésiens 3:20-21

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ABSTRACT

In a nation of speedy and convenient technologies, the default pace of life has become “fast.” For many American cities, the primary mode of transportation is the private automobile. Daily life is conveniently seen through the car window: we drive to, drive-thru, and drive home. Auto-dependent growth patterns have evolved into sprawling networks of streets and low density, single land-use development. With few pedestrian amenities or destinations, long travel distances, and dominating automobile infrastructure, this development pattern decreases pedestrian and bicycle circulation as a viable and enjoyable mode of transportation. Transportation growth centered around the private automobile compromises compact development, physical activity, safety of pedestrians and bicyclists, interaction with nature, social exchange, and social equity in street corridors.

Automobile circulation dominates the transportation system of Manhattan, Kansas. The result is low-density development, sprawling into the surrounding tall-grass prairie and flint hills of the region. Despite several City documents stating goals for multi-modal transportation and accommodation of all users, the existing built environment remains heavily dominated by automobile circulation. The current transportation system inhibits safe and enjoyable pedestrian and bicyclist transit. Inspired by Allan Jacobs’s Greet Streets vision and structured around the Institute of Transportation Engineers’ Context Sensitive Solutions, street networks can be public places for community: “people acting and interacting to achieve in concert what they might not achieve alone” (Jacobs 1993).

Movement corridors should be public spaces that encourage physical activity and time to experience a healthier body, mind, and spirit. With priority for bicycle and pedestrian circulation, movement corridors support a more sustainable development pattern and foster meaningful time in transit through more natural speeds of engagement and active presence. Great streets for all users, and a means to integrate improvements in the planning and design of movement corridors will activate progressive growth. The action framework presented here emphasizes important elements concerning the vision for Manhattan’s movement corridors, shows how district development reinforces attributes for walkable communities, and demonstrates guidelines for integrating improvements in Manhattan’s transportation planning and design.

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1 | INTRODUCTION

“Why we’ve been saddled with love of bigness as people perhaps comes down to the matter of geography, the vastness of richness that the landscape offered for the taking from the moment of European settlement. Size was our birthright, our conditioning, the justification for our exceptionalism, bigness our manifest destiny, and for a long time, whole centuries, it worked. The free land and timber and animals to be hunted down and coal and oil and ore to be dug out of the ground made us very wealthy very fast, taught us that growth-mania was the norm, the shape of progress, the American way.”

(Ketcham 2010,17)

BACKGROUND

Manhattan is a university community (Figure 1.2) located in Riley County, Kansas. It was founded in the Flint Hills Upland physiographic region at the confluence of the Big Blue and Kansas Rivers in 1855. According to the community profile put together by the area chamber of commerce, the city of Manhattan has a population of 51,707 inhabitants as of 2009 (Area Chamber of Commerce 2009). Two major facilities affecting the population of Manhattan is Kansas State University and Fort Riley army base. K-State's 2009 enrollment was 23,581. Fort Riley has over 10,000 troops.

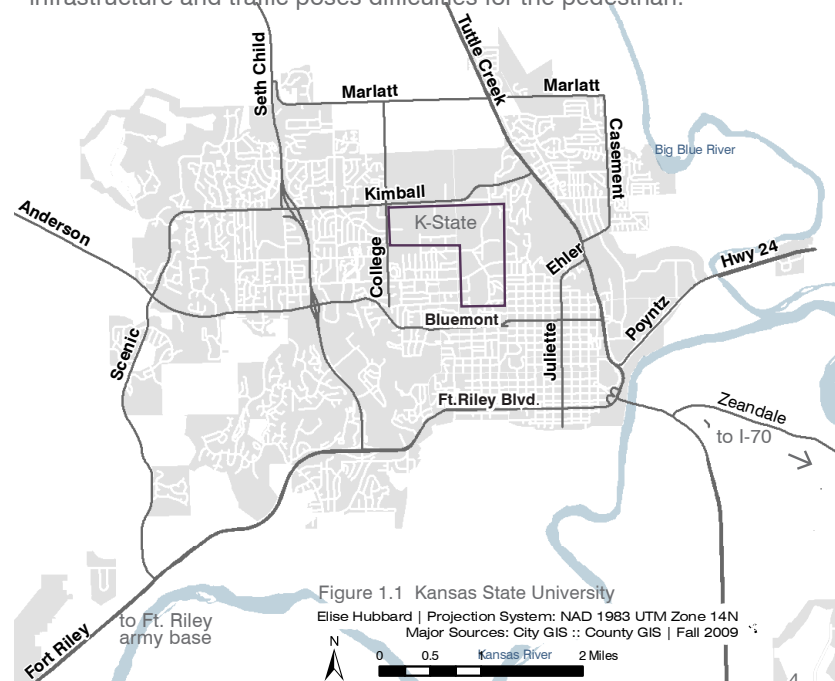
The population profile of age group is (Area Chamber of Commerce 2009):

- 26.3% age 0-19
- 42.8% age 20-34
- 18.6% age 35-54
- 4.6% age 55-64
- 7.8% age 65+

The high percentage of young adults is influenced by Kansas State University and neighboring Fort Riley army base.

Manhattan has four distinct seasons. January is usually the coldest winter month with an average daily temperature of 28 degrees F. The last spring frost usually occurs in April. Spring temperatures in April average 55 degrees F. The hottest days are generally in July. Summer temperatures in July average at 80 degrees F. Fall temperatures in October average at 57 degrees F. The climate of Manhattan is generally conducive to biking or walking at least nine months of the year (Area Chamber of Commerce 2009)

Manhattan has access to air, truck and rail transportation. The Manhattan Regional Airport can support commercial aircraft as large as a B-757. The Union Pacific freight line serves Manhattan from the East Manhattan Industrial Park. Truck transportation includes 15 common carriers with two local terminals. Manhattan is eight miles from Interstate 70 (Area Chamber of Commerce 2009). The three largest arterial roads that encompass most of the city are Tuttle Creek Blvd., Ft. Riley Blvd. and Seth Child. These roads are nearly impossible for the pedestrian to cross. Anderson/Bluemont is a high traffic street running through the city. The dominating vehicular infrastructure and traffic poses difficulties for the pedestrian.



LACK OF BICYCLE NETWORK

The existing bike lane infrastructure is nearly nonexistent (Figure 1.2). With the 1986 passage of the “Quality of Life Bond Issue,” the City of Manhattan initiated the Linear Park Greenway and Trail System. Linear Trail, the most extensive bike path, is approximately ten miles in length, generally established along the periphery of the city. The trail is located on the Kansas River Levee from the eastern side of downtown south, then west near South Manhattan Avenue. The trail then progresses westward through Wildcat Creek Corridor, then swings north - using a portion of the abandoned Rock Island Railroad right-of-way - to a point on Anderson Avenue just west of Seth Child Road. The trail is generally constructed of crushed limestone and is approximately ten feet wide (Landplan Engineering and Bicycles & Inc.1998).

The only other designated bike routes are portions of on-street bike lanes on Manhattan Ave, Amherst Ave and Grand Mere Parkway.



Figure 1.2 Lack of Bicycle Network

is this what we desire?

driving is the social norm.

monday through friday

rush

drive to work

produce

go home

rest

it's speedy

convenient

what do we gain? what do we lose?



Figure 1.3 Streets for Speed and Convenience

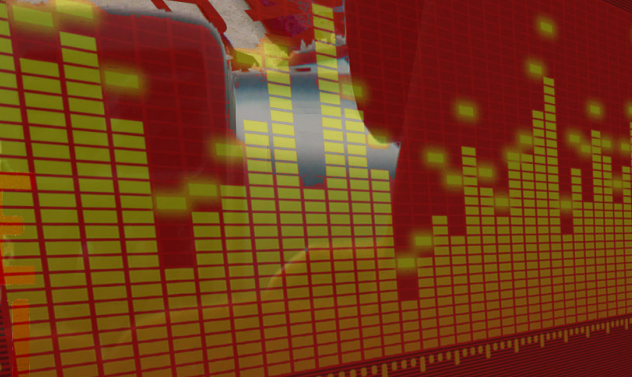
COOKING GREAT SINCE 1958
Grinder
Breakfast Lunch & Dinner

SPR

FRIDAY
THURSDAY
WEDNESDAY
TUESDAY
MONDAY
SUNDAY
FRIDAY
THURSDAY
WEDNESDAY
TUESDAY
MONDAY
SUNDAY



**DRIVE
THRU**



DILEMMA

The primary mode of transportation in Manhattan, KS is the private automobile. Daily transit is conveniently experienced through the car window: we drive to, drive-thru, and drive home. Auto dependent growth patterns have evolved into sprawling networks of streets and low density, single land-use development. With few pedestrian amenities or destinations, long travel distances, and dominating automobile infrastructure, this development pattern decreases pedestrian and bicycle circulation as a viable and enjoyable mode of transportation. Transportation growth centered around the private automobile compromises compact development, physical activity, safety of pedestrians and bicyclists, interaction with nature, social exchange, and social equity in street corridors.

How can the network of streets in Manhattan become streets that support sustainable development patterns and foster meaningful and enjoyable experiences in transit for all users, including pedestrians and bicyclists?

THESIS

Street networks with priority for bicycle and pedestrian circulation require slower speeds of engagement than the default fast-paced life. Proposed bicycle and pedestrian circulation in Manhattan can promote meaningful time in transit through more natural speeds of engagement and active presence. Bicycle and pedestrian circulation has potential to become daily movement that facilitates our body, mind and spirit to move closer to living life healthier and more aware of the world outside ourselves. Movement corridors with priority for bicycle and pedestrian circulation support a framework of sustainable land development patterns, higher levels of physical activity, social exchange, awareness and interaction with nature, and social equity in street corridors.

how much of our life is daily routine?

are we missing active presence,
participation, and experience?

driving doesn't have to be the social norm.

changing seasons

physical activity

stimulated senses

arrive at work

calm and slow-paced

spontaneous social exchange

transition home

reflection and contemplation

what is community?

“people acting and interacting to
achieve in concert what they might
not achieve alone”

(Jacobs 1993)





Figure 1.4 Streets for Active Presence, Participation, and Experience

STREETS FOR ALL MODES OF TRANSPORTATION

Many cities and federal agencies are beginning to see the value of streets designed for everyone, not just speedy and convenient automobiles. In March 2010 the United States Department of Transportation (DOT) issued a policy statement to reflect DOT's support of fully integrated active transportation networks. The policy encourages walking and bicycling transportation networks because they, "foster safer, more livable, family-friendly communities; promote physical activity and health; and reduce vehicle emissions and fuel use" (DOT 2010).

Recently, DOT has officially recognized the need for streets integrated with all modes of transportation, but many other organizations and authors have written about the roles of streets in urban settings. The National Complete Streets Coalition documents three reasons why streets should be designed and operated to enable safe access for all users [pedestrians, bicyclists, motorists and transit riders of all ages and abilities] (Complete Streets 2009).

Streets designed to enable all users improve [health and] safety.

"A Federal Highways Administration safety review found that streets designed with sidewalks, raised medians, better bus stop placement, traffic-calming measures, and treatments for disabled travelers improve pedestrian safety. Some features, such as medians, improve safety for all users: they enable pedestrians to cross busy roads in two stages, reduce left-turning motorist crashes to zero, and improve bicycle safety. Complete streets encourage walking and bicycling for health. The National Institutes of Medicine recommends fighting childhood obesity by establishing ordinances to encourage construction of sidewalks, bikeways, and other places for physical activity. One study found that 43% of people with safe places to walk within 10 minutes of home met recommended activity levels; among individuals without safe place to walk, just 27% were active enough" (Complete Streets 2009).

Streets designed to enable all users address climate change and oil dependence.

"The potential to reduce carbon emissions by shifting trips to lower-carbon modes is undeniable. The 2001 National Household Transportation Survey found 50% of all trips in metropolitan areas are three miles or less and 28% of all metropolitan trips are one mile or less – distances easy to walk, bike, or hop a bus or train. Yet 65% of the shortest trips are now made by automobile, in part because of incomplete streets that make it dangerous or unpleasant for other modes of travel. Complete streets would help convert many of these short automobile trips to multi-modal travel. Simply increasing bicycling from 1% to 1.5% of all trips in the U.S. would save 462 million gallons of gasoline each year. Using transit has already helped the United States save 1.4 billion gallons of fuel each year, which is a savings of 3.9 million gallons of gasoline every day" (Complete Streets 2009).

Streets designed to enable all users foster strong communities.

"Complete streets play an important role in livable communities, where all people – regardless of age, ability or mode of transportation – feel safe and welcome on the roadways. A safe walking and bicycling environment is an essential part of improving public transportation and creating friendly, walkable communities" (Complete Streets 2009).

STREETS FOR EFFICIENT MOBILITY + LAND USE

Timothy Beatley has written a wealth of knowledge concerning what it means for urban environments to be functioning in a sustainable way. In his book *Green Urbanism Learning from European Cities*, he points out that many European cities have recognized the environmental problems and limitations of heavy reliance on the automobile. **In many European cities, strong priority is given to active transport and public transportation as a way of enhancing mobility in an environmentally friendly way** (Beatley 2000). Figure 1.5, which was prepared

by the city of Munster, illustrates the implications of space and efficiency concerning the choice of mobility (Beatley 2000). **Comparing a constant number of people but in different modes of transportation clearly shows that the private automobile takes up the most amount of space compared to bicyclists and public buses.** Consequently, the infrastructure built to support automobiles is much more expansive than the alternatives.

The role of many streets in American cities has evolved to be a conduit for automobiles. These types of streets

facilitate speedy transportation and easy traveling in inclement weather, but is it efficient in terms of land use, mobility, and financial cost?

The amount of infrastructure required for mobility is not a small issue in urban environments, especially in the United States. Allan Jacobs states that, “In the United States, from 25 to 35 percent of a city’s developed land is likely to be in public right-of-ways” (Jacobs 1993). This percent does not even include the huge amount of surface parking that is often found within urban environments. Jacobs goes on to say that if, “we can develop and design streets so that they are wonderful, fulfilling places to be, community-building places, attractive public places for all people of cities and neighborhoods, then we will have successfully designed about one-third of the city directly and will have had an immense impact on the rest” (Jacobs 1993).

If facilitating automobile transportation uses substantially more infrastructure than bicycle, pedestrian, and public transportation-- maybe efficient mobility does not mean supporting the traffic capacity of automobiles.

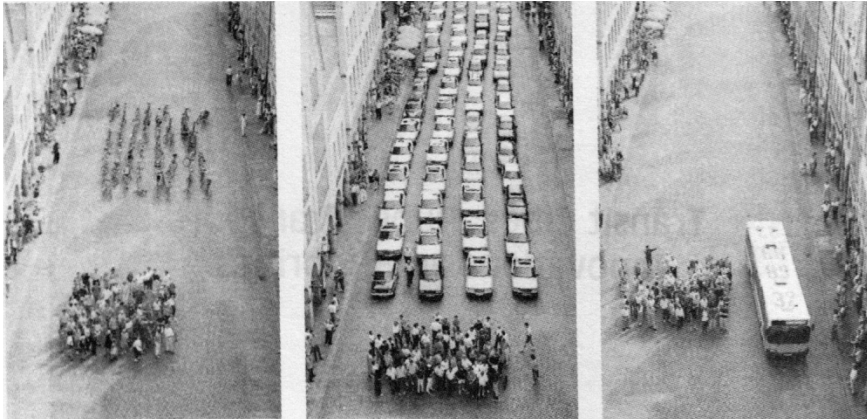


Figure 1.5 Comparison of Bicycles, Cars, and Buses

“Shown is a creative visual comparison of the alternative modes of mobility available in cities. Prepared by the German city of Munster, these photographs show how the same number of people might be accommodated by bicycle, auto, or bus” (Beatley 2000).

GREAT STREETS

In Allan Jacobs's book *Great Streets*, he compiles comparable information about the physical qualities of the best streets from around the world. Jacobs's suggests five criteria of what great streets should do:

"First and foremost, a great street should help **make community**: should facilitate people acting and interacting to achieve in concert what they might not achieve alone."

"A great street is physically **comfortable and safe**."

"The best streets **encourage participation**."

"The best streets are those that **can be remembered**."

"Finally, the truly great street is **one that is representative**: it is the epitome of a type; it can stand for others; it is the best."
(Jacobs 1993)

Jacobs says that all great urban streets should fulfill the above criteria, despite their varying physical qualities. So what are the physical qualities of streets that support and facilitate these criteria? It's difficult to address all the physical qualities of a street, but Jacobs explains eight required qualities, and thirteen qualities that contribute to great streets. The requirements for great urban streets are:

"Places for people to walk with some leisure"

"The best streets are comfortable, at least as comfortable as they can be in their settings."

"Great Streets have definition."

"Qualities that engage the eyes"

"The best streets have about them a quality of transparency at their edges, where the public realm of the streets and the less public, often private realm of property and buildings meet."

"Complementarity. Overwhelmingly, the buildings on the best streets get along with each other. They are not the same but they express respect for one another, most particularly in height and in the way they look."

"Maintenance . . . Care of trees, materials, buildings, and all other parts that make up a street are essential."

"Quality of construction and design. . . Mostly, it has to do with workmanship and materials and how they are used."

(Jacobs 1993)

These qualities do not assure a great street, but are a necessity. Jacobs says the final ingredient to the requirements of a great street is the "magic." He explains this as "all of the parts, all of the requirements have to be put together into a whole street, and the ways of doing that, at least in detail, are infinite" (Jacobs 1993).

Jacobs describes thirteen other qualities that contribute to great streets as "other variables that are so intimately related to the physical place that they cry out for discussion" (Jacobs 1993). These qualities are trees, beginnings and endings, many buildings rather than few, special design features, places (like plazas, parks, widenings, or open spaces), accessibility, density, diverse uses, lengths that sustain visual interest, changes in elevation, a chance to park, contrast in design, flexibility through time (Jacobs 1993).

LIFE BETWEEN BUILDINGS

It is in the daily situations that communities and cities must function and provide enjoyment (Gehl 1987). Jan Gehl writes about human activities in the man-made environment of our cities. Gehl's book *Life Between Buildings Using Public Space* is an excellent source for deepening understanding of how architecture can serve people well. In one chapter, Gehl speaks about the requirements imposed by the limited range of human vision. He says that human movement is by nature limited to predominately horizontal motion at a speed of approximately 3 mph (4 kilometers per hour), and the "sensory apparatus is finely adapted to this condition" (Gehl 1987). He goes on to explain how this phenomenon plays out in the automobile scale city versus the pedestrian scale city. The automobile city must be very big and bold to be seen. Billboards and signs are a good example of this scale. At this scale buildings are large and poor in detail because they cannot be seen. Faces and facial expressions are too small, and cannot be seen at all. In contrast to the automobile scale, the pedestrian scale is much smaller.

Gehl writes that life takes place on foot. "Only 'on foot' does a situation function as a meaningful opportunity for contact and information in which the individual is at ease and able to take time to experience, pause, or become involved" (Gehl 1987).

Cities designed for life "on foot" are designed for the pedestrian scale, and also for a slow speed of traffic. Gehl articulates the importance of slow traffic making lively cities because the reduction of speed means each person will be within visual range longer. For example, if the speed of movement is reduced from 35 mph to 3.5 mph, the number of people on the streets will appear to be ten times greater. This is because each person is in visual range ten times longer. In a positive light, slow speeds of movement allow a greater number of people on the streets, which in turn brings more people: "Something happens because something happens because something happens" (Gehl 1987). In contrast to life activating more life, it also works in a negative direction: "nothing happens because nothing happens" (Gehl 1987). This explains why so many streets in the

United States have actually contributed to the decreasing number of people and events. "The natural activity level in the streets, that is, the activities related to the daily life of the inhabitants, falls because the number of inhabitants is decreased, and the street environment deteriorates. The street assumes the character of a deserted no-man's land, where nobody wants to be" (Gehl 1987).

MANHATTAN'S EXISTING TRANSPORTATION DEVELOPMENT AND GROWTH

The city of Manhattan has three documents that specifically address the vision for Manhattan's transportation growth: the Manhattan Comprehensive Plan (MCP), the Manhattan Area Transportation Strategy (MATS), and the 1998 Bicycle Master Plan (BMP).

The Manhattan Comprehensive Plan (MCP) addresses current and future mobility needs with the goal of ensuring "new development patterns facilitating safety, connectivity and mobility for all modes of transportation in established and developing areas of the community" (City of Manhattan, and Riley County 2003). This is a great goal, but almost no new or existing development supports viable pedestrian and bicycle transportation. Distance between destinations is a huge problem for both pedestrians and bicyclists. Lack of designated bicycle lanes in the streets also impedes people from biking. Grand Mere development is the only new development that has implemented bike paths. While this is a great step in the right direction, the isolation of these paths render them functional for recreation and exercise, not daily transportation. Mobility in

is Manhattan's vision for transportation development supporting

all modes of transportation

efficient mobility + land use

great streets

life between the buildings 

Manhattan is dominated by infrastructure built to accommodate the automobile. **The MCP’s vision of “development patterns facilitating all modes of transportation” is not evident in Manhattan’s built environment.**

In addition to the Comprehensive Plan, The Manhattan Area Transportation Strategy (MATS) documents the first comprehensive transportation plan developed as a long-range strategy connecting to 2020 (2000). MATS documents many goals related to all modes of travel and users supported by the optimum combination of facilities and services to meet the needs of the community. However, MATS describes the basic function of the street network “for vehicular flow--movement or mobility and access to property” (City of Manhattan 2000). **According to MATS, the evaluation of existing street network uses functional classification, level of service, and accident locations as a means to make decisions about future transportation development. This evaluation does not consider pedestrian and bicycle infrastructure as a determining factor in the design of streets.** It is no surprise that the resulting built environment

does not support safe or enjoyable pedestrian and bicycle experiences.

For future considerations and development, MATS focuses on solving for public transportation. While public transportation would be a great way to decrease dependence on the private automobile, bicycle and pedestrian circulation would be a less expensive means to decreasing the dependence of the private automobile. A development pattern supporting people walking and biking could be a primer for successful public transportation.

MATS references the 1998 Bicycle Master Plan (BMP) for bicycle facility development. The Bicycle Master Plan presents recommendations in four major areas. The first priority is the completion of Linear Park Trail. Second, the development of internal city bicycle facilities. Third, the implementation of bicycle parking. And finally, the development of policies for future growth (Landplan Engineering 1998). Approximately half of linear trail is completed. However, there is only one bike lane (on Manhattan Ave) within the city limits of Manhattan. Although the BMP suggests all streets in the city be accessible to bicycle travel, it lacks

specific recommendations on how each bicycle route will be provided. **The built transportation infrastructure facilitates city-periphery bicycle circulation primarily as recreational. The vision for bicycle transportation and the planning for vehicular mobility are not used in concert for the planning and design of Manhattan’s movement corridors.**

Auto dependent growth patterns evolve into sprawling networks of streets and low density, single land-use development. Although unnoticed by many, transportation growth centered around the private automobile compromises physical activity, safety of pedestrians and bicyclists, time spent in transit, interaction with nature, the vibrancy of social exchange, and social equity in street corridors. Current community growth lacks the implementation of compact development patterns promoting pedestrian and bicyclist transportation.

Manhattan has continued to grow in population and built development over the past ten years since the Comprehensive Plan, Transportation Strategy and Bicycle Master Plan were adopted. Yet the built environment accommodates an auto-dependent transportation network.

ACTION FRAMEWORK

Project Scope Overview

This Master's Report presents an action framework which organizes and depicts the content of this report (Figure 1.6). The action framework emphasizes important elements concerning the vision for a community's movement corridors, establishes and demonstrates a process for district selection within a city, and suggests guidelines for integrating improvements in transportation planning and design.

The first part of the action framework, "building vision," inspires possibilities for a more holistic vision of transportation planning and design. The observations and analysis of Aix-en-Provence, France reveal how both the context and corridor are important designable qualities in transportation planning and design. Literature in combination with the Aix-en-Provence precedent study informs the project vision. The vision for Manhattan is that movement corridors function as a multi-modal circulation network, accommodate bicycle and pedestrian circulation, support sustainable land development patterns, and foster meaningful experience in transit.

The second part of the action framework, "supporting attributes," is a strategy for prioritizing community growth and development through supporting attributes within a district. The concept of district development is shaped by Lawrence Frank's ideas on people's preference for a particular mode plus the costs of the different modes relative to one another. There must be significant changes in each component of the built environment: the transportation system, land use patterns and urban design characteristics (Frank 2003). The actual district selection is a process designed for the selection of all districts within the community. The selection process is driven by the city-wide vision, which is presented in the first section of the action framework. The process of district selection is demonstrated by the selection of Manhattan's first district: the City Center District.

The third part of the action framework, "integrating improvements," presents a process of approach for integrating improvements in transportation planning and design.

Using the City Center District, specific deficiencies in corridor design and context are presented through narratives, recording the experience of a bicyclist in the streets of Manhattan. The analysis of the narratives call for improvements that address both the context and movement corridor design. Context Sensitive Solutions (CSS), written by the Institute of Transportation Engineers, is presented as a sound method for initiating positive improvements in Manhattan's transportation planning and design. CSS specifically provides this project with guidelines for developing context zones, movement corridor types, and acceptable dimensions for designable elements related to the streetscape. Context zones, movement corridor types, and possible solutions for streetscape design are applied to three streets within the City-Center District of Manhattan. Emphasizing the range of design possibilities, multiple corridor designs are presented as acceptable ways to reconfigure the corridor and context infrastructure.

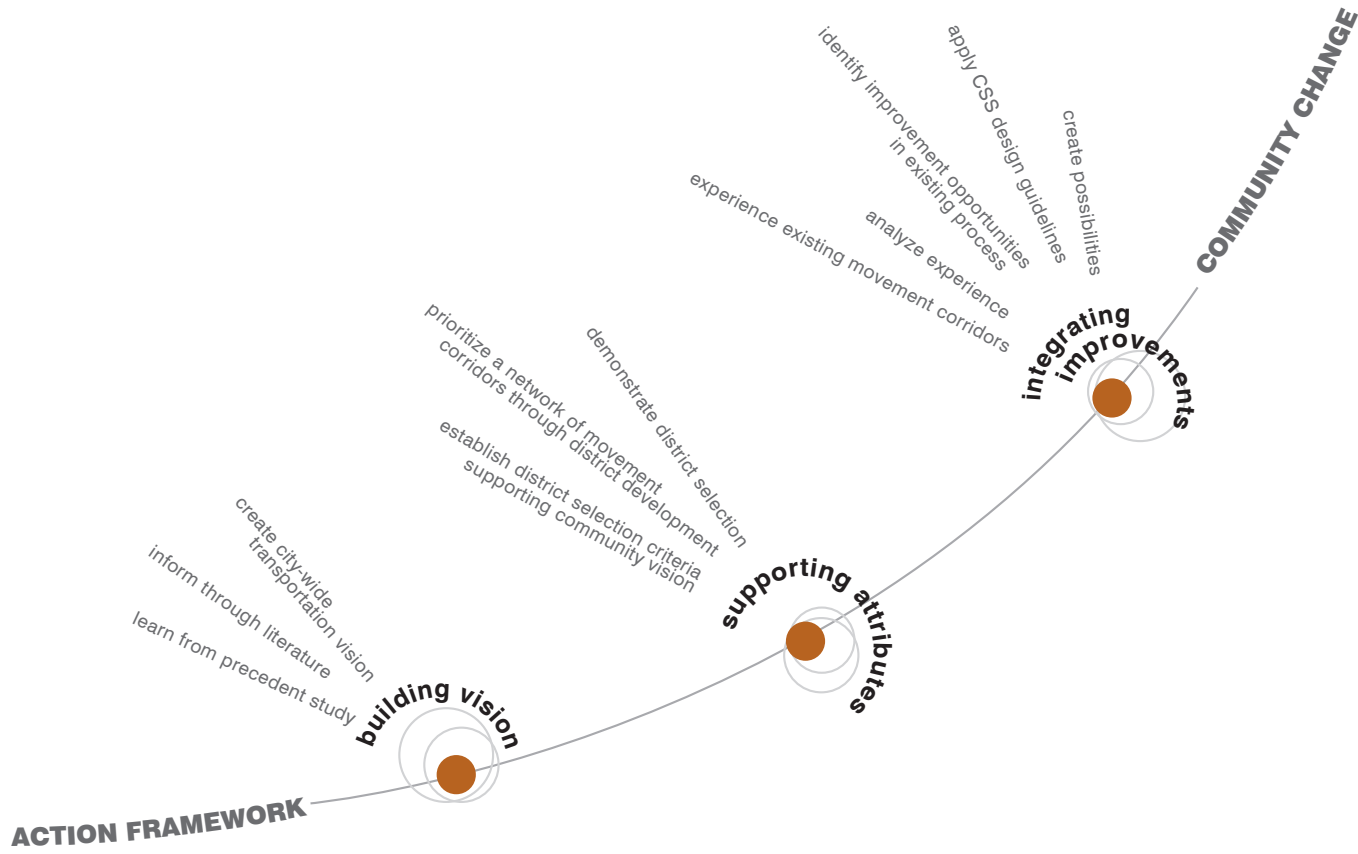


Figure 1.6 Action Framework: Overview





2 | BUILDING VISION

“While humankind collectively has increased its material powers a thousandfold, it has not advanced very far in terms of improving the content of experience”

(Osikszentmihalyi 1990, 16)

ACTION FRAMEWORK

Building Vision

As shown in Figure 2.1, the first part of the action framework inspires possibilities for a more holistic vision of transportation planning and design. A precedent study of streets in Aix-en-Provence, France is presented as a means to discover how street infrastructure can support people as public places for them to live, to work, to move, to encounter, and to rest. The observed and recorded designable qualities of streets in Aix-en-Provence are not solely elements in the street. The context is also an important element affecting the activities and life in the street. The observations and analysis of Aix-en-Provence reveal how both the context and corridor are important designable qualities in transportation planning and design.

Literature in combination with the Aix-en-Provence precedent study informs the project vision. The vision for Manhattan is that movement corridors function as a multi-modal circulation network, accommodate bicycle and pedestrian circulation, support sustainable land development patterns, and foster meaningful experience in transit.

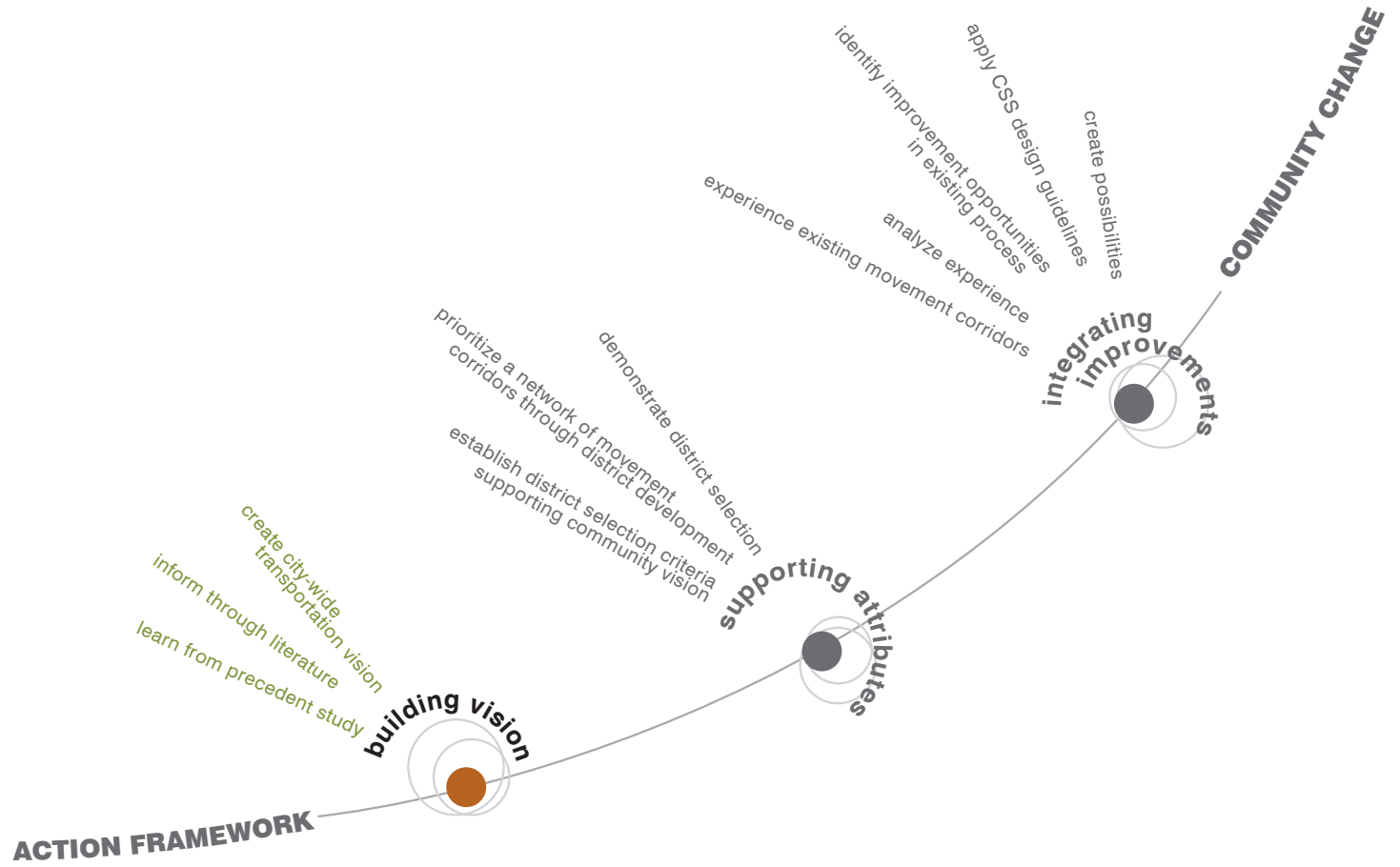


Figure 2.1 Action Framework: Building Vision

what is community?

“people acting and interacting to achieve in concert what they might not achieve alone” (Jacobs 1993)

Jacobs writes that streets in the United States take up about 25 to 35 percent of a city’s developed land (Jacobs 1993). Streets are a large part of the public space network in a city, and are used by almost everyone. They connect destination to destination and are used daily. Streets should be settings for interactions that bring people together.

One street that Jacobs writes about as a great street is the Cours Mirabeau in Aix-en-Provence, France. It is a grand street of approximately 150 feet in width. Jacobs’s describes it as being “built for its own sake, a large attractive and attracting presence in its own right, as much so as any plaza, square, park, or public building” (Jacobs 1993). I had the opportunity to spend a semester immersed in the culture, people, language and community of Aix-en-Provence for five months. My experience of the Cours Mirabeau lives as a delightful memory. The Cours Mirabeau is a street that speaks of characteristics described by Allan Jacobs in *Great Streets*, by Timothy Beatley in *Green Urbanism*, by the

National Complete Streets Coalition in their philosophy, and by Jan Gehl in *Life Between Buildings using Public Space*.

The Cours Mirabeau embodies Allan Jacobs’s description of a “great street.” This street helps make community by facilitating people interaction, is comfortable and safe in character, encourages participation through the exchange of goods, services, and social interactions, can be easily remembered by its grandeur, and is representative of its type because it is put together artfully.

The Cours Mirabeau embodies Timothy Beatley’s concept of efficient mobility and land use—efficient mobility meaning the modes of transportation used on the Cours Mirabeau facilitate large numbers of people with a relatively small amount of space. This is done effectively by limited capacity of the private automobile (much space per person) and using public bus transit (minimal space per person), and pedestrian and bicycle transportation (very minimal space per person). The Cours Mirabeau is a part of a city where the use of land is developed efficiently.

Building and street development is compact and supports live-work-play adjacencies.

The Cours Mirabeau embodies the National Complete Streets Coalition’s philosophy by enabling all users through infrastructure and slower speeds of vehicular traffic. The limited automobile use and slow speeds of public transportation improves safety of all users. The street is heavily used by pedestrians and bicyclists, but also allows for vehicular transportation. The infrastructure is designed for all users which reduces carbon emissions and decreases dependence on oil. This street also plays an important role in the livability where all people feel safe and welcome in the roadways.

The Cours Mirabeau embodies Jan Gehl’s concept that slow traffic means a lively city. Not only is the design speed of vehicular traffic slow, but the pedestrian circulation fosters “meaningful opportunity for contact and information in which the individual is at ease and able to take time to experience, pause, or become involved” (Gehl 1987).

Figure 2.2 illustrates how literature drives the following precedent study, which developed from personal experience in the movement corridors of Aix-en-Provence, France.

Literature

Allan Jacobs, Great Streets

describes the Cours Mirabeau as being "built for its own sake, a large attractive and attracting presence in its own right, as much so as any plaza, square, park, or public building" (Jacobs 1993).

Cours Mirabeau



personal experience, 5 months living in Aix-en-Provence

recorded urban life experience through written narratives + streetscape analysis through section drawings

Cours Mirabeau
Rue Marechal Foch
Cours Saint Louis



precedent study of Aix-en-Provence as an example of :

ALLAN JACOBS
great streets

TIMOTHY BEATLEY
embody efficient mobility and land use

NATIONAL COMPLETE STREETS COALITION
enable all users

JAN GEHL
activate life between buildings



The designable qualities of a street are not just elements in the street. The setting is an important part of the whole. Transportation planning and design should include a process relating to both context and corridor development.

conclusion

Figure 2.2 Grounding Literature

PRECEDENT STUDY :: AIX-EN-PROVENCE

Streets can be exceptional places of life and social activity. They connect destination to destination and are used by people daily. The street and its context should be designed to support the intended activity and life. The following study articulates community life in the street corridors of one city. The narratives and street sections suggest the spectrum of possibilities for community life and activities in streets as public places for people. The street sections show how those activities are accommodated in the built environment. The tables summarize the infrastructure and character of each street.

This precedent study takes place in Aix-en-Provence, France, where I spent a semester immersed in culture, people, language, and community activities. Characteristics of the context and corridor infrastructure are recorded and compared to see differences and similarities of how infrastructure supports community life and activity in the streets. Characteristics described

by Allan Jacobs in *Great Streets*, by Timothy Beatley in *Green Urbanism*, by the National Complete Streets Coalition in their philosophy, and by Jan Gehl in *Life Between Buildings using Public Space* are present in the built environment of Aix-en-Provence. It is my hope that the examples from Aix-en-Provence inspire possibilities and contribute to people's vision for making their city a better place to live life.

The relationship between streets in the south of France and streets in Manhattan, Kansas is people living in community. "People acting and interacting to achieve in concert what they might not achieve alone" (Jacobs 1993). **Regardless of continent or culture, people need places that are built for them to live, to work, to encounter, to move, and to rest. Streets should be public places built to sustain the daily lives of people by making community, being a safe and comfortable place and encouraging participation.**

Comparing my experiences in the streets of Aix-en-Provence to my experiences in Manhattan, Kansas, I have noticed a pattern in how streets accommodate certain uses through the built environment, and the activities that take place in that environment. The width of pedestrian and vehicle infrastructure in a street either inhibits or encourages socialization and participation of people in a community. When there is more space designated for pedestrian use than for vehicle use, people feel the place is safe, comfortable and accommodating to their activities. It seems that people attract people. On the other hand, when a street corridor is designed so that the total width of vehicular infrastructure is greater than the total width of pedestrian infrastructure, the street attracts less people and more vehicles. For the pedestrian, this causes the street to feel less safe, less comfortable and less accommodating to their activities.

The conclusion of this study is that the designable qualities of a street are not just elements in the street. The setting is an important part of the whole. Transportation planning and design should include a process relating to both context and corridor development. In addition to personal observation of this phenomenon, extensive research, as represented in this report, documents this phenomenon.

In the U.S., streets take up vast amounts of land. Jacobs says that, "If we can develop and design streets so that they are wonderful, fulfilling places to be, community building places, attractive public places for all people of cities and neighborhoods, then we will have successfully designed about one-third of the city directly and will have had an immense impact on the rest" (Jacobs 1993).

EXPERIENCE MAIN STREET

making community + encouraging participation

Essence :: Cours Mirabeau

friday :: 05.08.09

As I turn the corner from Rue d'Italie, I am once again struck by the magnificent Cours Mirabeau. The buildings part into a wide streetscape, and the rows of Plane Trees bow in respect to the ensemble of parts in the street corridor. My first thought is to head to "Les Deux Garçons" to awaken my foggy thoughts with a "café crème." I cross one lane of traffic and continue through a middle pedestrian space past the fountain of Roi René. Pausing, I wait to squeeze through the opposing lane of traffic and find a seat at one of the small café tables. I'm enjoying the warmth of the spring sun soaking my clothes with light. At the cafés, one can sit outside comfortably throughout all seasons in Aix. Even in the winter morning sunlight breaks

above the roofline on the opposite side of the street, beginning the daily cycle of warming café chairs. When the air is frosty, the cafés entice the "regulars" to stay with overhead heat lamps. In the spring, birds sing and leaves of the Plane Trees emerge, reassuring us that the winter wind will soon quiet down. The leaves soon complete a green canopy roof, protecting shoppers from the burning summer rays. The vibrancy of life in the street changes with the seasons.

It's May now, and the Cours is bustling with people. The cafés roll out tables that spill into the activity of the street. The wide sidewalks allow pedestrian traffic to weave through the double row of trees. One could easily pass an entire afternoon sipping coffee and being completely content watching all the people and activities cycle through the day.

I finish the foam of the café crème, and transition from a café sitter to a passer-by. I cross through the main flow of pedestrian traffic, tree trunks, and parked motorcycles to the less crowded sidewalk. Although the two lanes of traffic are noisy, the ambiance of the street is accompanied by the rhythms of voices of all ages. I can even hear a tiny bit of running water as I pass one of the three roundabout fountains at the vehicle intersections. As I near the end of the café-lined street, the huge fountain on center axis of the Cours Mirabeau comes into full view. Its size and form make it a majestic focal point of this street. Functionally, the fountain serves as the center for a roundabout which connects the main city street to secondary streets leading out of the city center. I admire the fountain as I wait for a break in the traffic to cross the street. There are fewer pedestrians on the other side of the street. One reason



is probably that there are mostly banks with only a few small shops at the street edge. Without all the café tables, the sidewalk seems much wider.

As I walk adjacent to the vehicle lane, I am struck by how the double rows of Plane Trees from each side of the street delineate unique outdoor rooms. The first rows of trees create a room containing the flow of vehicles and adjacent pedestrians. My view, influenced by the strong linear axis of the street and the Plane Trees, rests on the building façade straight ahead that terminates the street as the lanes of traffic continue around either side. When I pass through the first row of trees into what is simply a continuation of the pedestrian sidewalk, I feel as though I'm entering into a different room. The canopies of the trees now conceal the axis that was directing my

view down the center of the street. My eyes bounce from canopy to building to people. The canopies do not frame a visual focal point; rather the leaves dapple the atmosphere as if there is no specific termination of the street. I feel a heightened sense of comfort walking between the two rows of Plane Trees with the sidewalk extending a bit further on either side of me. I feel free to move about as I please. As I cross the second row of Plane Trees, again I feel as though I am entering into another room. Now as I walk on the rough cobblestone between one row of trees and the building facades, I feel a strong presence of the architecture I had not felt before. The stones glow with an intense earth color. The facades are three stories with recessed windows. Tall and curved at the top, the windows are grounded at

the base with a protruding ledge. From the ledge grows a lace of iron balcony. As my eye follows the architecture up, I notice the reflection of color from the curved overhanging roof ledge onto the stone façade. Above the varying height of rooflines, the green canopies reach high. The backdrop of the clear blue sky sets off this palette of colors. Circling back to the ground, my eyes follow the light tree bark down the trunk and back to eye level. I veer off the cobblestone and return to the smoother cut stone sidewalk. I approach the top of the Cours where I began my walk. The traffic lanes split as they go around the terminating building, making the transition from this magnificent street to the typical one-lane city street. I continue my stroll, turning the corner onto Rue d'Italy.



photos by Elise Hubbard



CELEBRATE ON MAIN STREET

making community + encouraging participation

Celebrate :: Cours Mirabeau

Sunday :: 04.05.09

Not candy, but confetti floating through the air. Laughter and silly string thrown in all directions. Kids in costume. Parents with cameras. Grandparents with proud smiles as they stroll in their Sunday clothes with hands formally placed behind their backs. The Cours Mirabeau is transformed into a parade of all ages. All ages enjoying people. Enjoying music and dancing. Energy in the ambiance of people, place, and culture. The two lane street is

narrow enough that the parade takes on a dialog between performers and spectators. Kids come dressed in costume to watch the parade and throw confetti at the performers. Lined up and down the double-step curb, kids scoop used confetti from the street to refill their small bags. Behind the seated spectators confetti rolls through the feet of standing parents and teens. Benches between the magnificent Plane Trees are packed with standing photographers capturing moments above the crowd. The afternoon sun warms the steady flow of café drinkers

who sit behind all the action, secretly enjoying the occasional silly string that is shot from laughing knights in plastic armor and giggling bumble bees and princesses. I sit here enjoying the promenading people through the street and sidewalks of the Cours Mirabeau. The street is still packed with costumes and confetti throwers even two hours after the last of the parade performers. It's nice to see people of all ages participating and interacting in the city. What a lovely way to spend a Sunday afternoon.



photos by Elise Hubbard

MAIN STREET INFRASTRUCTURE

DESIGNABLE QUALITIES:

STREET		Cours Mirabeau
INFRASTRUCTURE CHARACTERISTICS	average building height	18 m (59 ft)
	street width (building to building)	50 m (150 ft)
	building height to street width ratio	1: 2.7
	total width of vehicular traffic lanes	8 m (26.2 ft)
	total width of parking	none
	total width of walkable pedestrian spaces	34 m (111.5 ft)
	total width of bike lanes	none (bike in travel lanes)
	total width of amenity zones (trees, benches, trash cans, signs, lights, ect.)	8 m (26.2 ft)
street trees	many	

CONCLUSIONS BASED ON OBSERVATIONS:

provides shade, overhead enclosure, space for pedestrian amenities like signs, lighting, benches, trash cans

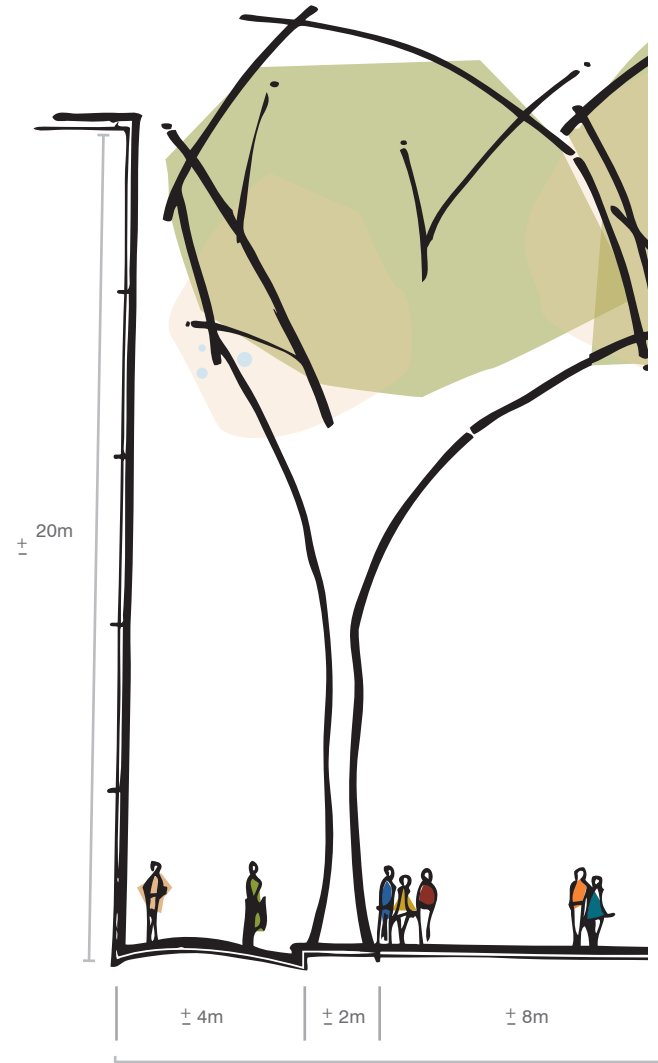
supports walking, sitting, eating, watching, reading, shopping, working, painting, sketching, community events

supports vehicular access and biking in travel lanes, but limits vehicular capacity and parking

influences the scale relationship between people and the built environment

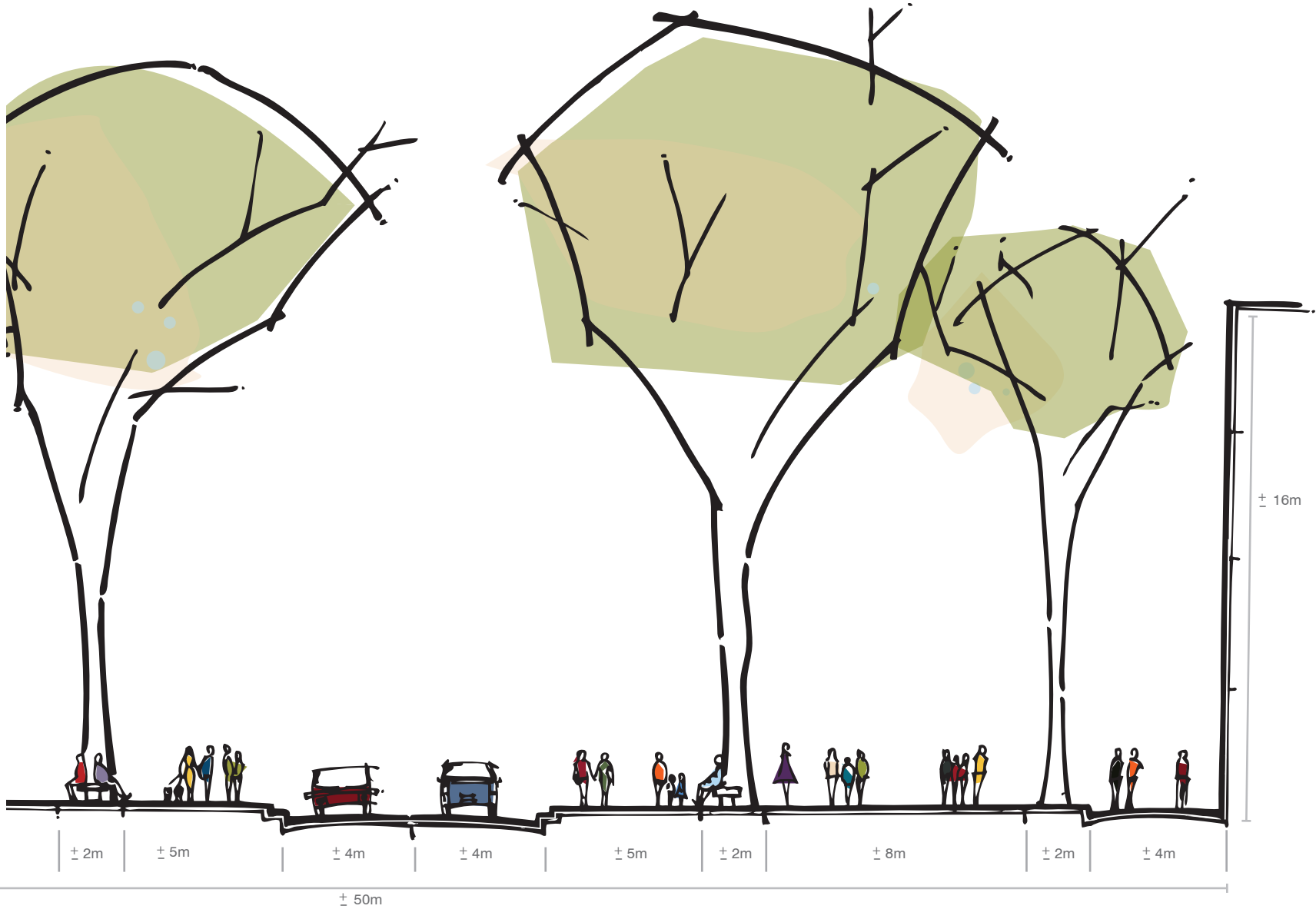
influences the character and "feel" of the street

supports compact development, people living and working, short distances between destinations



Cours Mirabeau Typical Street Section

Figure 2.3 Main-Street Street Section



EXPERIENCE A NEIGHBORHOOD STREET

making community + encouraging participation

Quality :: Rue Marechal Foch

saturday :: 05.09.09

Rue Marechal Foch meets four other streets at one intersection. I stop to understand how these five streets are intersecting at one point. The buildings curve and shape streets seemingly haphazardly, widening at the intersections. Bollards line the one-way streets limiting the access of cars. Pedestrians, however, roam freely weaving through the bollards using both the sidewalk and vehicle lane. It is most convenient to walk in the vehicle lane because people use the small sidewalks to file in and out of the shops. The asphalt ground plane slopes down to the center of the street where a single concrete gutter guides the rainfall down through the zigzagged streets. The irregularity of the street does not seem to inhibit people and their dogs from enjoying the activities of the day. Even a biker pedals past me, weaving in and out of the pedestrians. After the next street intersection, one side of the street unfolds into the plaza "Place Richelme." I can see the bell tower of the town hall terminating my line of sight. The street extends through the arched

portal at the base of the tower. As I continue up the incline, tall buildings with small shops on the ground floor define the edge of the street. On the other side, the street's gutter is all that separates the cobblestone street from the cut stone plaza. Two rows of six plane trees span across the plaza. Now the plaza is full of people who have found a comfortable shady spot under the rustling leaves. The smooth ground plane is still shining from the morning wash after the morning fruit and vegetable market. The shops that line the exterior streets are bustling with shoppers and hungry ice-cream buyers. The occasional "click-clack" of heels and the snippets of French conversations float through the breeze. The plaza ends as a large building re-establishes the containment of the narrow street. I walk only about thirty-five strides through the narrow street corridor before the street unfolds into another plaza called "Place de L'Hotel de Ville." The grand Town Hall, the post office, and rows of unique shops and cafés delineate the edges of this plaza. Although few cars pass through the plaza, street circulation is open on

all four sides of the plaza adjacent to the buildings. The buildings shape this plaza into an irregular polygon, with a fountain on axis to the entrance of the town hall. Men in suits and women in spring dresses are gathered at the entrance of the Town Hall around a decorated 'just married' car. The wedding party shares this plaza with all kinds of other users: coffee drinkers, children chasing pigeons, people sitting on the fountain edge, and even a five-man band of street performers! The playful rhythms serenade this perfectly chaotic life on the plaza.



Photos by Elise Hubbard



NEIGHBORHOOD STREET INFRASTRUCTURE

Rue Marechal Foch

STREET		
INFRASTRUCTURE CHARACTERISTICS	average building height	18 m (59 ft)
	street width (building to building)	6 m (19.7 ft)
	building height to street width ratio	1: 0.3
	total width of vehicular traffic lanes	3 m (9.8 ft)
	total width of parking	none
	total width of walkable pedestrian spaces	3 m (9.8 ft)
	total width of bike lanes	none
	total width of amenity zones (trees, benches, trash cans, signs, lights, ect.)	none
	street trees	none

CONCLUSIONS BASED ON OBSERVATIONS:

supports no room for amenities in this narrow corridor.
however, a corridor like this often opens up into a plaza

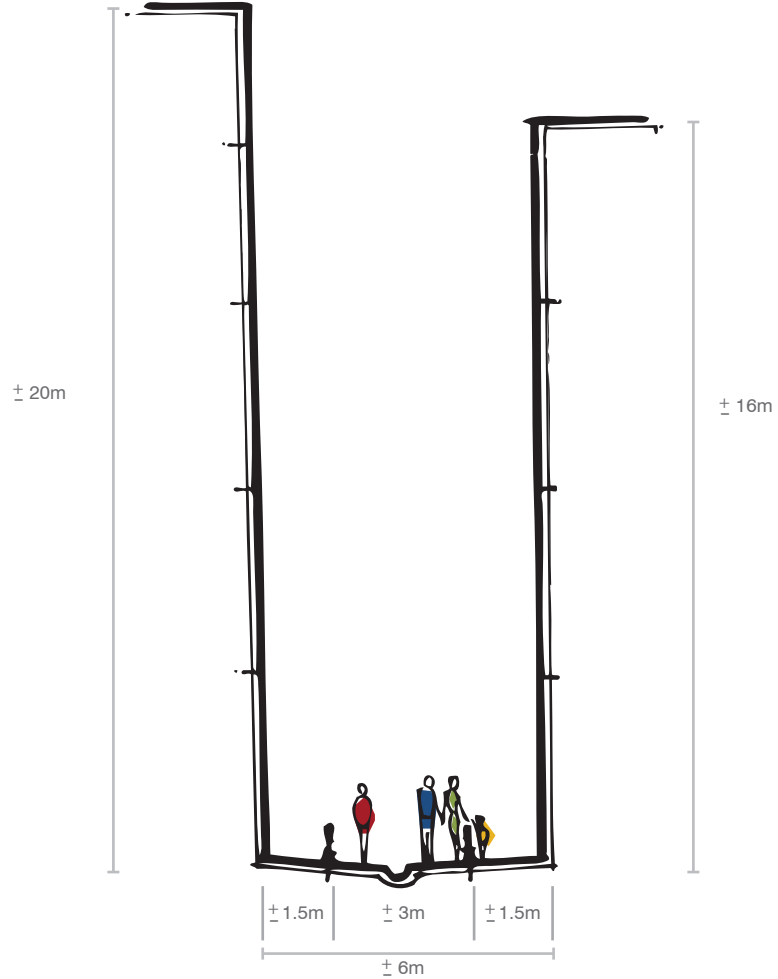
supports walking, shopping, working

supports one-way vehicular travel with very low capacity

influences the scale relationship between
people and the built environment

influences the character and "feel" of the street

supports compact development, people living and working,
short distances between destinations, shade in the corridor



Rue Marechal Foch Typical Street Section
Figure 2.4 Neighborhood Street Section

EXPERIENCE A VEHICULAR PRIORITY STREET

making community + encouraging participation

Character :: Cours Saint Louis

monday :: 05.04.09

The illuminated person symbol changes from red to green. As I cross the street to Cours Saint Louis, the cars also have a green light. Two lanes of traffic roar past me. I notice a green VW Bug in the line of vehicles. I smile to myself noticing how different the scale of cars are in France compared to the United States. Here, the bug looks oddly large compared to the majority of the other cars. Unfortunately all the cars still make quite a bit of traffic noise. The sound is unpleasant and too loud for me, especially when the trash trucks and city buses pass.

My eyes attempt to dominate my senses, compelling me to see beauty in the green canopy of Plane Trees. I enjoy the perspective and rhythm the trees give to the street corridor. As far as I can see, the green canopies extend with their trunks like magnificent pillars lining the path of an important architectural masterpiece. Even several birds enjoy the web of branches and dappling of sunlight through the leaves. The trunks of the trees are so large that each is allowed a whole parking space.

I wonder how the trees got to be so large because the asphalt of the street and adjacent parking gives absolutely no room to breathe and grow. The base of each trunk knots up and extends less than a foot before the asphalt encroaches and inhibits surface growth. Cars park on both sides of the tree, contributing to major compaction on the tree roots. Somehow, these urban conditions do not seem to inhibit their growth one bit.

I continue my walk between the trees and parked vehicles on one side, and the continuous row of buildings on the other. In contrast to the seemingly uniform overhead canopy of the pruned Plane Trees, the row of residential buildings has a lovely variety in roofline heights. Most of the buildings are two to four stories high. The variety of building height is emphasized by the extraordinary roof that caps each building about one foot past the building facades. Except for the occasional alley, there are no spaces between buildings. The only hints of separation between each building façade are the subtle changes in the golden-yellow stucco. The hues of the

window shutters also vary slightly to be a complementary bluish-violet accent for each façade. I feel secure as I walk on the asphalt sidewalk between the buildings, parked cars and overhead canopies of the trees. The traffic noise is loud, but I do feel a safe sense of separation from the one-way rush of vehicles. The one thing you do have to watch for on the sidewalks is dog poop! Sometimes I catch myself walking with my eyes glued to the ground. The people in this city seem to take their dogs everywhere; even in stores and sitting in cafes!

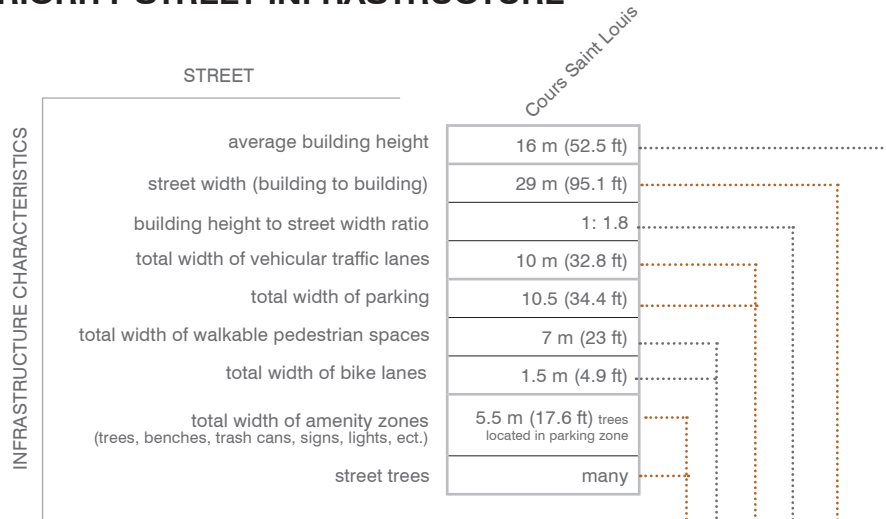
I approach the end of this section of the periphery road and wait at the crosswalk. It does not surprise me that there is only one other person waiting on the other side to cross. There has been a lot more passing cars than passing people on my morning walk. There were a few people waiting at the bus stops, only for a few minutes before the bus came to sweep them away to another part of the city. The row of cars domino to a stop, and the small illuminated crosswalk light turns from a little red person, to an illuminated green person. I cross the street and head home.





photos by Elise Hubbard

VEHICULAR-PRIORITY STREET INFRASTRUCTURE



CONCLUSIONS BASED ON OBSERVATIONS:

provides shade, overhead enclosure, some space for pedestrian amenities like signs, lighting, benches, trash cans

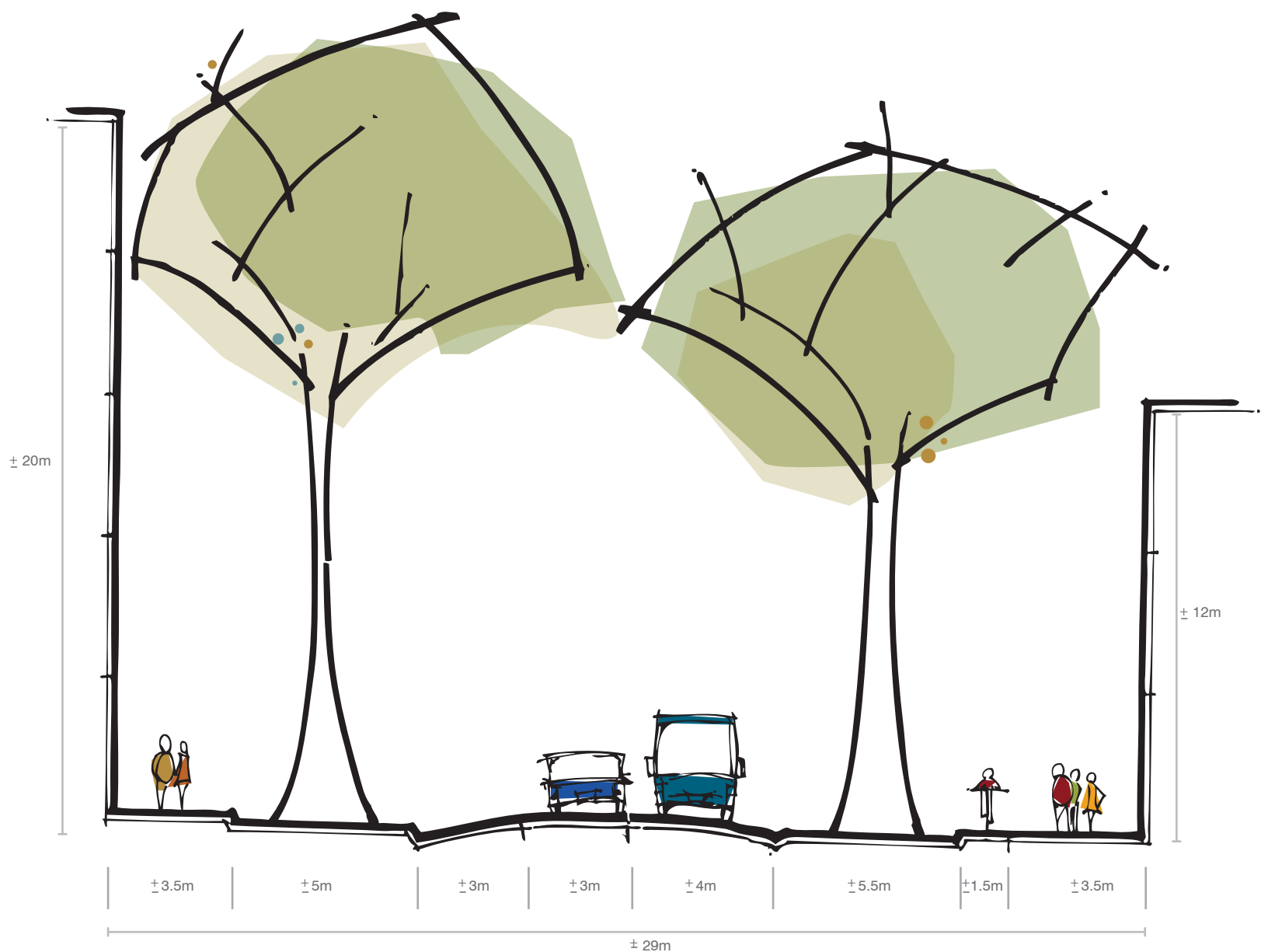
supports walking, sitting, biking

supports one-way heavy capacity vehicular traffic and angled parking

influences the scale relationship between people and the built environment

influences the character and “feel” of the street

supports compact development, people living and working, short distances between destinations



Cours Saint Louis Typical Street Section
 Figure 2.5 Vehicular-Priority Street

COMPARISONS

Streets of Aix-en-Provence:

		STREET		
		Main Street Cours Mirabeau	Neighborhood Street Rue Marechal Foch	Vehicle Priority Street Cours Saint Louis
INFRASTRUCTURE CHARACTERISTICS	average building height	18 m (59 ft)	18 m (59 ft)	16 m (52.5 ft)
	street width	50 m (150 ft)	6 m (19.7 ft)	29 m (95.1 ft)
	height (building) to width (street) ratio	1: 2.7	1: 0.3	1: 1.8
	total width of vehicular traffic lanes	8 m (26.2 ft)	3 m (9.8 ft)	10 m (32.8 ft)
	total width of parking	none	none	10.5 m (34.4 ft)
	total width of walkable pedestrian spaces	34 m (111.5 ft)	3 m (9.8 ft)	7 m (23 ft)
	total width of bike lanes	none	none	1.5 m (4.9 ft)
	total width of amenity zones (vegetation planters, benches, trash cans, signs, lights, ect.)	8 m (26.2 ft)	none	trees are located in parking zone
	street trees	many	none	many

Figure 2.6 Street Infrastructure Comparisons

CONCLUSIONS

How are the streets of Aix-en-Provence applicable to Manhattan?

People are in the street to live

- to work
- to move
- to encounter
- and to rest

in the streets of Aix-en-Provence.

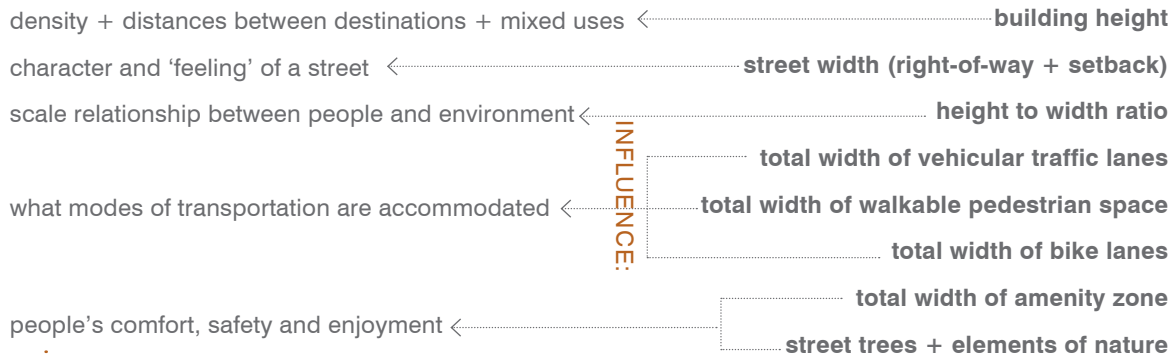
This urban community is one example of a city where priority has been given for:

- “great streets”
- streets that embody “efficient mobility and land use”
- streets that “enable all users”
- streets that foster meaningful time in transit allowing time to “experience, pause, or become involved”

literature

ALLAN JACOBS
TIMOTHY BEATLEY
NATIONAL COMPLETE STREETS COALITION
JAN GEHL

what designable qualities of a street affect the people and activities that take place in that environment?



→ **The designable qualities of a street are not just elements in the street. The setting is an important part of the whole. Transportation planning and design should include a process relating to both context and corridor development.**

**HOW DO THE
DEVELOPMENT PATTERNS
[SETBACKS, RIGHT-OF-
WAYS, DENSITY, PRIORITY
OF INFRASTRUCTURE] IN
MANHATTAN INFLUENCE
THE TRANSPORTATION
PLANNING AND DESIGN
VISION?**

THE VISION

As Manhattan continues to grow and change through time, the vision is that the streets become wonderful and fulfilling places to be. Proposed bicycle and pedestrian circulation in Manhattan promotes meaningful experience in transit and supports a framework of sustainable land development patterns through higher levels of physical activity, awareness and interaction with nature, social exchange in street corridors, and social equity.

CITY-WIDE VISION [MASTER'S REPORT VISION]

The following goals and supporting strategies represent this Master's report vision.

1. function as a multi-modal circulation network
 - safety and awareness: change infrastructure to accommodate the safety and awareness of all transportation modes, including bicycle and pedestrian
 - social equity: accommodate multi-modal transportation especially transportation modes requiring little monetary commitment.
 - traffic capacity: balance automobile capacity with street use and context priorities
2. accommodate bicycle and pedestrian circulation
 - short distances: promote and accommodate the fact that bicycling is competitive with the automobile for trips less than two miles in length (Landplan Engineering 1998)
 - high density and mixed-use: plan for a dense, mixed-use context to support and reinforce bicycle and pedestrian circulation (Frank 2003)
 - desirable urban design characteristics: provide human amenities and development for the human scale that increase desirability of walking and bicycling
 - convenience: use convenient routes as priority for bicycle circulation, but accommodating automobile circulation as the less-preferred route.
3. support sustainable land development patterns
 - compact development: facilitate compact development and infill in existing and new development
 - work-live-play adjacencies: strive towards local self-sufficiency supporting local economy
 - reduce ecological footprint: decrease carbon emissions of transportation and avoid sprawling development that damages natural ecosystems
4. foster meaningful experience in transit
 - healthier lifestyles: active movement increasing physical activity and time for restorative experiences of mind and spirit
 - expanded awareness: slower speeds of engagement allowing experiences that provoke awareness of the world outside ourselves
 - social exchange: encourage street interactions through people's movement, encounter and rest





3 | SUPPORTING ATTRIBUTES

“the catalyst that converts any physical location—any environment if you will—into a place, is the process of experiencing deeply. A place is a piece of the whole environment that has been claimed by feelings”

(Allan Bussow cited in Relph 1976, 141)

ACTION FRAMEWORK

Reinforcing Attributes Strategy

The previous section pointed out how important it is to understand the vision for community life and activity. This section, as shown in Figure 3.1, offers a strategy for prioritizing community growth and development through supporting attributes within a district.

First, the reasoning behind the district concept is explained and supported. Then, the district selection process is presented. This process is designed for the selection of districts throughout the entire city. Finally, the process of selection for Manhattan's first district is demonstrated. The vision for the first district is to create a city center district in which multiple attributes reinforce the safety and attractiveness of bicycle and pedestrian circulation as a desirable transportation mode.

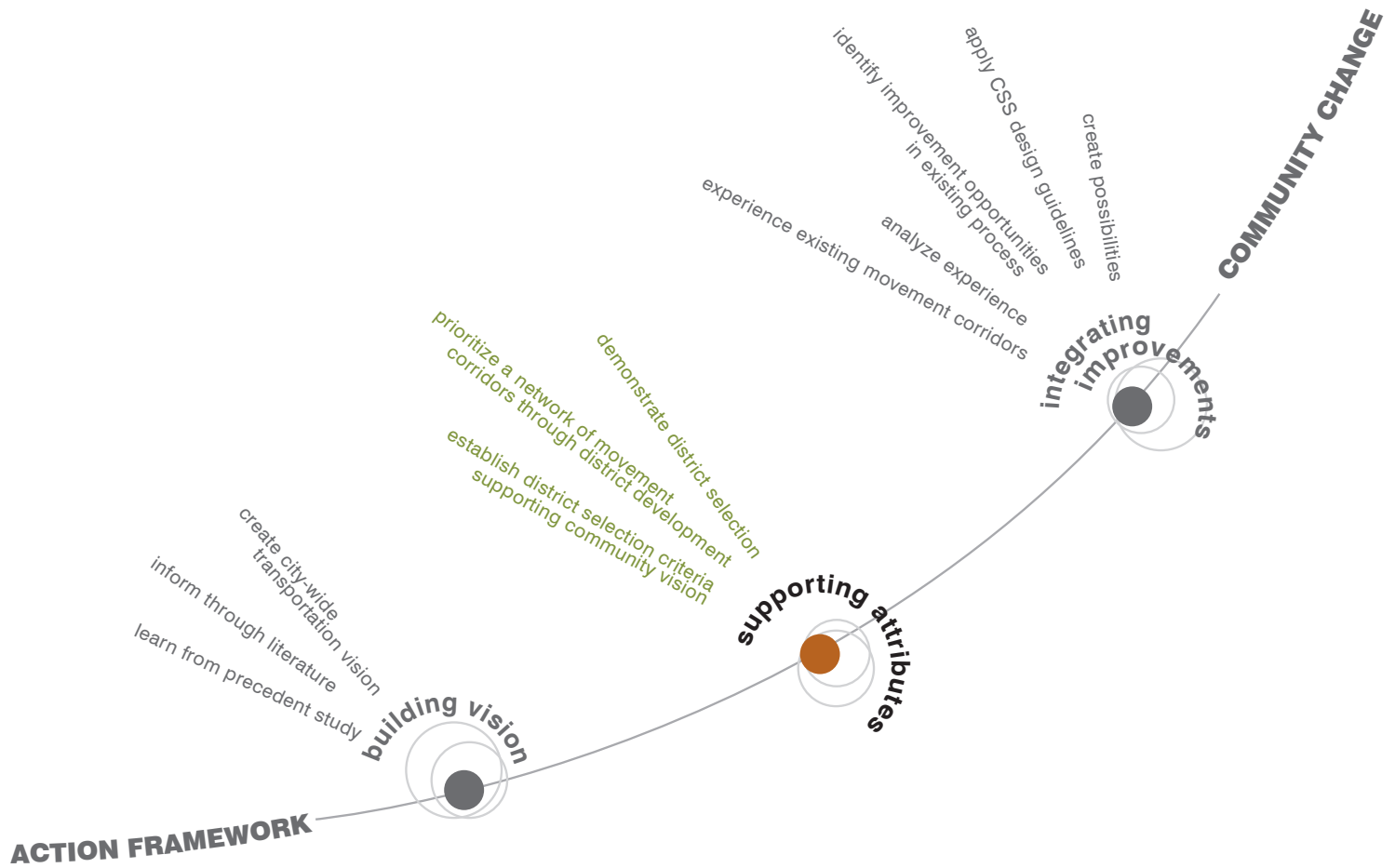


Figure 3.1 Action Framework: Supporting Attributes

DEVELOPMENT PRIORITY :: THE DISTRICT SOLUTION

Increasing the amount of walking and biking in a city dominated by automobile infrastructure does not have a simple answer. Lawrence Frank and his coauthors, in *Health and Community Design*, break down the built environment into three basic components: transportation systems, land-use patterns and urban design characteristics. Within each of these components, the authors point out patterns which increase the likelihood of walking, bicycling and transit. First, a transportation system that has more street connectivity and a continuous network of infrastructure encourages alternative modes of transportation like walking and biking. Second, a land use pattern that is characterized by density and a mixture of uses results in more people walking and bicycling. Third, urban design characteristics influence how an individual perceives the built environment. In making a decision about whether or not to walk or bicycle, the authors point out that, “people will factor into their decision not only considerations related to distance and accessibility--how close destinations are to each other as well as how easy it is to reach them by

a particular mode--but also a slew of intangibles as well, including safety and attractiveness” (Frank 2003). **For pedestrian and bicycle circulation to function and become a primary mode of transportation in Manhattan, it is necessary to have a safe, connected, and continuous network of accommodating transportation infrastructure, dense and mixed-use development, and attractive urban design features.** These components of the built environment play an essential role in shifting the primary mode of transportation away from the private automobile to a more pedestrian and cycle oriented community.

But how can this shift occur in a city where the existing pedestrian and bicycle infrastructure is fragmented or nonexistent, and the land development pattern is low-density single-use?

The answer lies in creating a city-center district solution. One cannot expect the behavior and attitudes of the suburban population to change dramatically with subtle changes in the built environment such as a few major streets with added pedestrian and bicycle infrastructure. **People’s**

preference for a particular mode plus the costs of the different modes relative to one another must be considered. There must be significant changes in each component of the built environment: the transportation system, land use patterns and urban design characteristics (Frank 2003). Within the city-center district solution, walking and biking is implemented throughout each circulation corridor as a seamless network.

It is clear that a pedestrian and bicycle oriented community must have multiple reinforcing attributes (Frank 2003). Development improvements in a city-center district support the concept of multiple reinforcing attributes. Within a city-center district, time, money, and energy must be directed to making a shift in development patterns and giving priority to pedestrian and bicycle circulation as a viable means of transportation. Selecting a district not more than approximately 2 miles in length makes the distance one travels on bicycle competitive to motor vehicles (Landplan Engineering 1998). In addition, infill, mixed-use, and positive urban design characteristics

can be targeted to a specific area where people's expectations and cultural norms begin to shift as the built environment changes to support the creation of a highly livable district of people and quality places.

The built environment plays a significant role in shaping thought patterns, preferences, expectations, and behavior in the environment. "Admittedly, culture changes slowly, so it is reasonable to believe that alterations to the built environment will change attitudes and behaviors across a wide spectrum of the population only over the longer term. . . It can be done and, in fact, has been done once already in the history of this country-people used to walk, bike, and take transit in droves before the world was rebuilt to make driving as convenient as possible" (Frank 2003). **Travel behavior in Manhattan, Kansas can change to improve the experience in transit ultimately improving the health of body, mind and spirit. The development and growth of Manhattan's movement corridors as public space that facilitate pedestrian and bicycle circulation is best**

implemented through a city-center district solution because the city-center district will support the vision of community life and activity through multiple reinforcing attributes in the built environment.

DISTRICT SELECTION PROCESS

As previously stated, it is clear a pedestrian and bicycle oriented community must have multiple reinforcing attributes. One cannot expect the behavior and attitudes of the suburban population to change dramatically with subtle changes in the built environment such as a couple major streets with added pedestrian and bicycle infrastructure (Frank 2003). Development improvements that are focused in a district support the concept of multiple reinforcing attributes, which will contribute to the success of shifting development patterns and reliability of pedestrian and bicycle circulation.

The process of district selection through site inventory and analysis is grounded in city-wide vision. Preliminary ideas about what the vision is for the district, and approximately where it is located is important as the process begins. Questioning how the city-wide vision can be fulfilled leads to mapping as a means to understand the site more thoroughly, thus enabling informed decisions. Each question relates to a map. Each map and its attributes are shown in Figure 3.2.



Questions must be answered specific to the preliminary district vision. The answers to the questions through mapping will facilitate delineation of district boundaries, and will ultimately serve as the district goals. District goals must support the city-wide vision, but can vary from district to district according to the context and community vision.

CITY-WIDE VISION FOR REINFORCING ATTRIBUTES

QUESTIONS

MAPS

project goals

1 function as a circulation network

- increase safety and awareness of all transportation modes
- provide for multi-modal transportation
- support social equity in transportation
- balance traffic capacity with street and context priorities

2 accommodate bicycle and pedestrian circulation

- create short distances between trips
- implement high density + mixed-use
- provide desirable urban design characteristics
- increase comfort for bicycling and walking
- support convenient routes for bicycle and pedestrian circulation

3 support sustainable land development pattern

- encourage compact development
- support local economy through pedestrian and bicycle connections
- reduce carbon emissions from transportation

4 foster meaningful experience in transit

- increase physical activity and time for restorative experiences of mind and spirit
- expand state of awareness for the world outside of ourselves through slower speeds of engagement
- encourage social exchange in street life
- provide places for outdoor recreation
- emphasize unique spatial perspectives and views



- ? what is the connectivity index? what should it be?
- ? what are the important destinations/connections?
- ? how big should the district be? what is a reasonable distance for people to travel?
- ? where are clusters of density? how dense should the district be?
- ? what barriers or hazardous streets are there between residential, commercial, and green space? how should they be addressed?
- ? where are the natural and urban ecosystems? is there opportunity for connection and intersection with social routine?
- ? where are the highest and lowest areas of elevation? are there places with unique views? is there opportunity for connection?
- ? where are there opportunities for outdoor recreation? is there opportunity for connection?

STREET NETWORK MAP
arterials
collectors
local
connectivity index (segments divided by nodes)

DESTINATIONS + DISTANCE MAP
parks
schools
grocery stores
public destinations
churches
major employers
primary people streets
existing bike lanes
2-mile radius circles

DENSITY OF PEOPLE MAP
census pop. by parcel
parks

LAND USE RELATED TO CIRCULATION NETWORK MAP
major automobile dominated streets
land use
arterials
collectors
locals

NATURAL ECOSYSTEMS
rivers + streams
flood plains
minimally developed land
parks
points of hydrologic convergence

URBAN ECOSYSTEMS
street corridors
stormdrains
curb inlets
wide ROW
direction of flow

UNIQUE SPATIAL PERSPECTIVES AND VIEWS
highest points
elevated landforms
open fields
lowest points
parks

OUTDOOR RECREATION
parks
public playgrounds
sport facilities and fields
bike trails
existing bike lanes

ANSWERS TO QUESTIONS BECOME DISTRICT GOALS

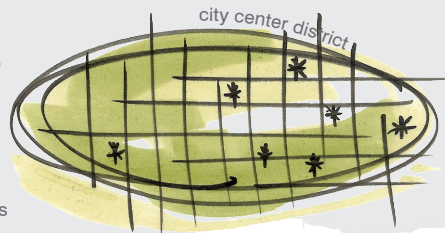
Figure 3.2 District Selection Process

DISTRICT CONCEPT THROUGH TIME

project scope

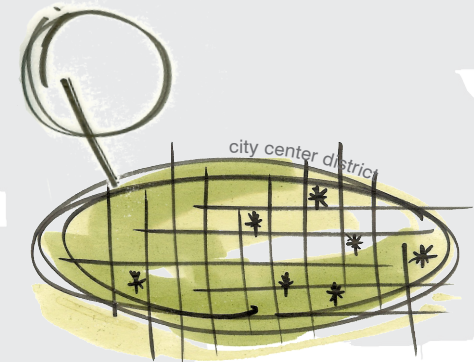
City-Center District goals for community life and activity ::

Bicycle and pedestrian circulation is primary mode of daily transit that facilitates meaningful experience in transit through slower speeds of engagement and active movement. The City-Center District is one of the most dense areas of the city, has the largest number of civic destinations, has no major circulation barriers for pedestrians and bicyclists, the majority of destinations are reachable within two miles, emphasizes both urban and natural ecosystems, has a high mix of uses, and has many opportunities for outdoor recreation. The district is a "safe-haven" for pedestrian and bicyclists.



city-center district

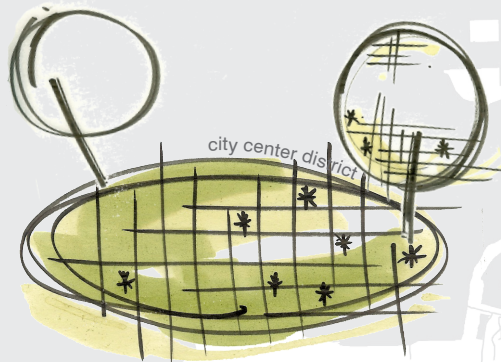
All districts should grow and develop to support the city-wide vision for community life and activity. The city vision, as described in this project has four main points: first, to function as a circulation network, second, to accommodate bicycle and pedestrian circulation, third, to support sustainable land development patterns, and fourth



connection to city-center district

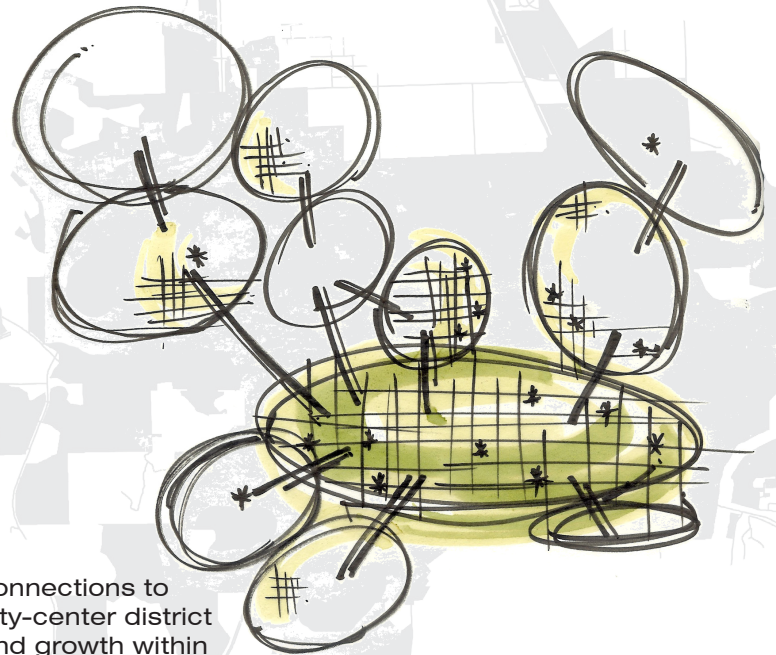
subsequent districts might be best served through a strong bicycle and pedestrian connection to the city-center district

to foster meaningful experience in transit. Supporting the city-wide vision, each district will have district goals that relate specifically to the context of that district. The district goals of the City Center District, are described below. As subsequent districts are delineated, the vision and priorities should be articulated as it relates specifically to that district context.



continued growth within subsequent districts and connections to city-center district

subsequent districts might be best served through a seamless network of bicycle and pedestrian circulation within the district



connections to city-center district and growth within subsequent districts should support the city-wide vision for community life and activity

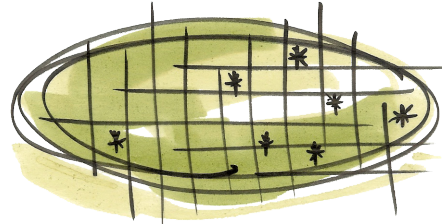
Figure 3.3 District Concept Through Time

MANHATTAN'S CITY-CENTER DISTRICT SELECTION

This diagram shows the process for selecting a district, but is specific to answering the questions about the City-Center District goals (Figure 3.4). The goals for the City-Center District are to be a highly connected network of walkable movement corridors, one of the most dense areas of the city, have the largest number of civic destinations, have no major circulation barriers for pedestrians and bicyclists, the majority of destinations are reachable within two miles, emphasize both urban and natural ecosystems, have a high mix of uses, and have many opportunities for outdoor recreation. Through this selection process, the first district is set up to be the City-Center District. District delineation is organized in this way to have the greatest amount of reinforcing attributes in the first district.

As previously described, there must be significant changes in each component of the built environment (the transportation system, land use patterns and urban design characteristics) for people's preference of a particular transportation mode to change (Frank 2003). The City-Center District goals support the vision for multiple attributes reinforcing a district accommodating all modes of transportation, especially bicycle and pedestrian movement.

where is Manhattan's City-Center District?



SITE INVENTORY + ANALYSIS
PROCESS DIAGRAM

For this Master's Report, the first district selected is the City-Center District. After the first district is delineated, the process is to be repeated for each subsequent district. Subsequent districts might have varying goals based on existing characteristics and the community vision. Therefore, the second district selected will have a dense population (but possibly not as dense as the first district), possibly fewer civic destinations, opportunity for safe pedestrian and bicycle

circulation without major barriers, mix of uses, recognition of urban or natural ecosystems, and provide opportunities for outdoor recreation. Again, questions about how the district can fulfill and be a part of the city-wide vision must be answered specific to the preliminary district vision. The answers to the questions surface through mapping, and facilitate delineation of the district boundaries. The answers become the reinforcing attributes within the district that support the city-wide vision.

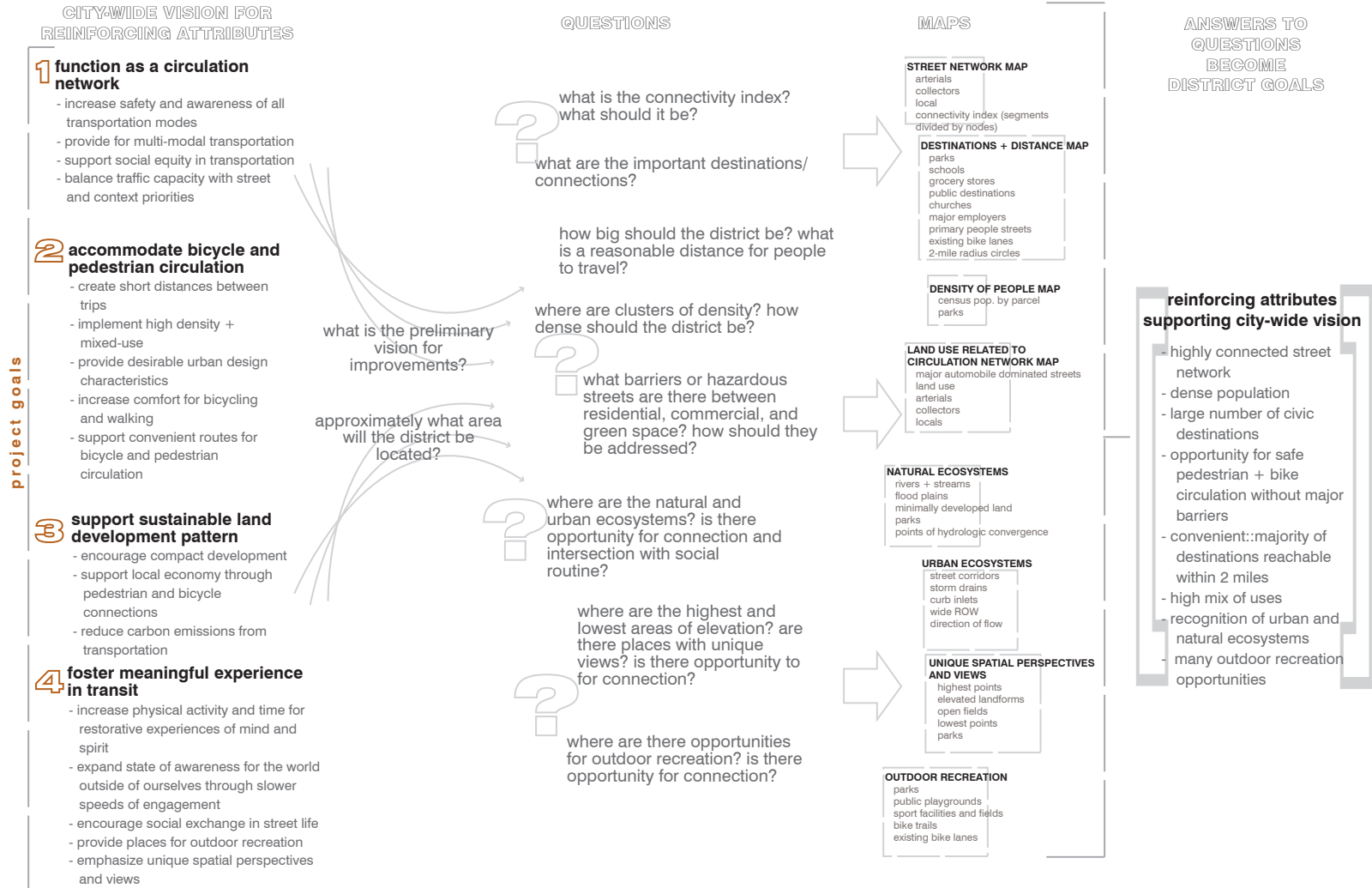


Figure 3.4 City-Center District Selection

MANHATTAN'S CITY-CENTER DISTRICT SELECTION :: INVENTORY + ANALYSIS

District Goal: highly connected network of walkable movement corridors

Street Network Map

A high degree of street connectivity improves the directness of routes and provides more route options for automobiles, pedestrians and bicycles. According to the Institute of Transportation Engineers (ITE), the minimum connectivity index (roadways divided by the number of nodes) in a walkable community should be 1.4 to 1.6 (ITE 2010). A low connectivity index number like 1.2, has good connectivity compared to a high connectivity index number like 1.9 which does not meet the minimum connectivity index for walkable communities.

This map (Figure 3.5) shows the street network in Manhattan. The connectivity index of the typical suburban street pattern grid (delineated by the orange box) is 1.8 (41 roadways divided by 23 nodes). This does not meet the minimum connectivity index according to ITE. The connectivity index of the typical grid street pattern is 1.6 (48 roadways divided by 30 nodes). This meets the minimum connectivity index for walkable communities.

Legend





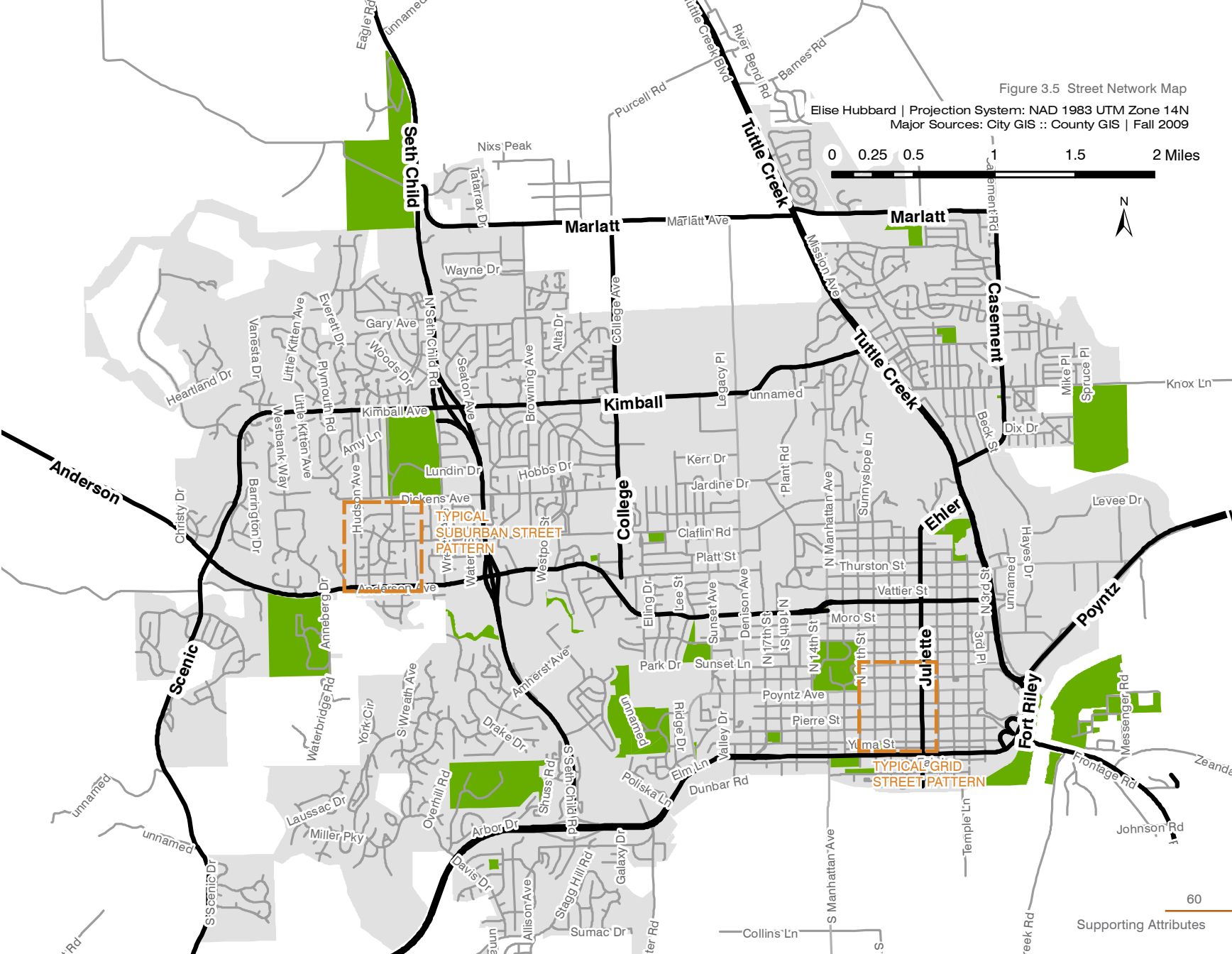
-  arterial street
-  collector or local street
-  park
-  manhattan city limit

Figure 3.5 Street Network Map

Elise Hubbard | Projection System: NAD 1983 UTM Zone 14N
Major Sources: City GIS :: County GIS | Fall 2009



MANHATTAN'S CITY-CENTER DISTRICT SELECTION :: INVENTORY + ANALYSIS

District Goal: large number of civic destinations

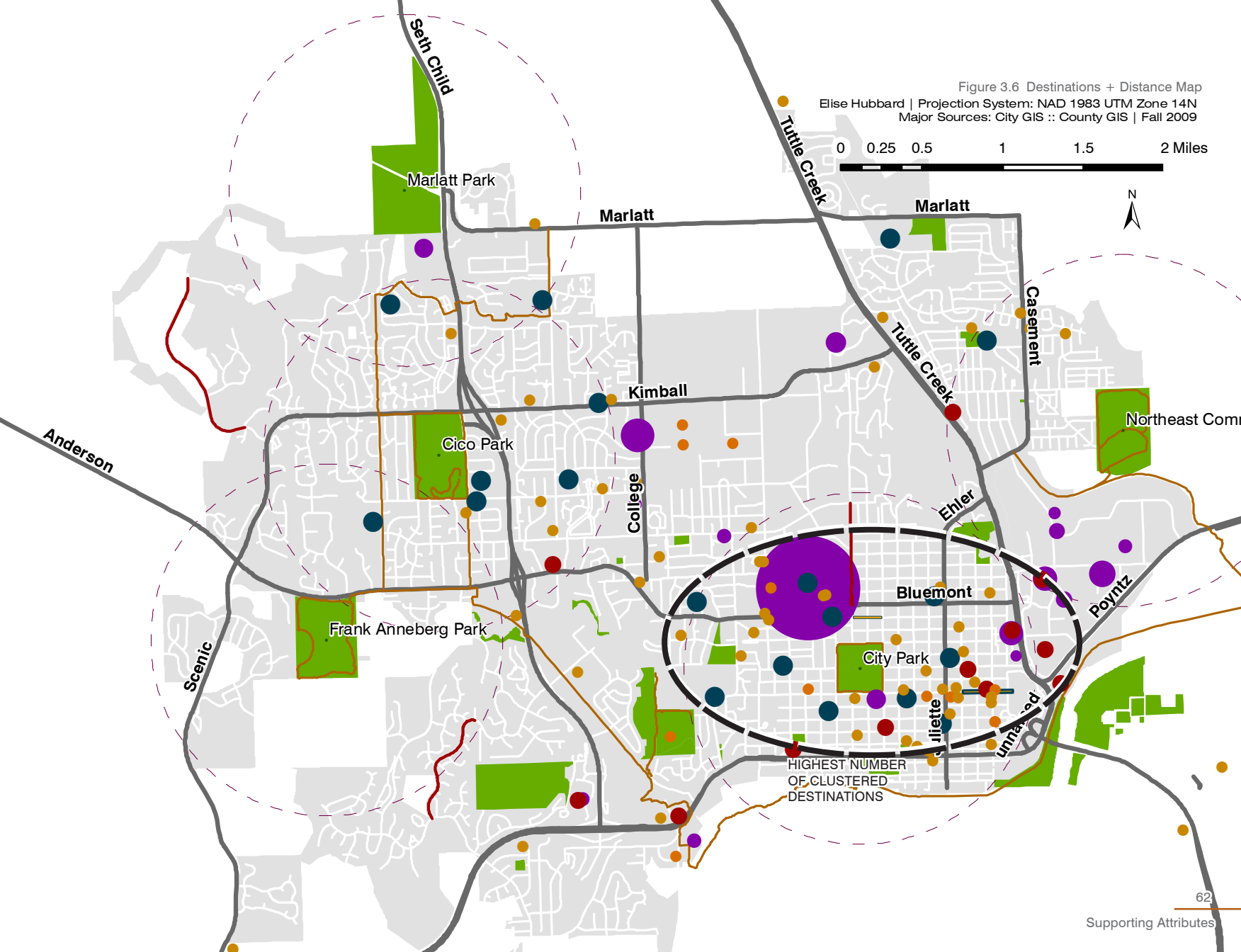
Destinations + Distance

This map (Figure 3.6) shows a variety of public destinations, as well as 2-mile (diameter) distance circles originating from the center of major parks within the city limits. Kansas State University is the largest employer with 6,028 employees. Mercy Regional Health Center is the next largest employer shown on this map with 834 employees. GTM Sportswear, Super Wal-Mart, Hy-Vee, Meadowlark Hills Retirement Community and the City of Manhattan each have between 300-500 employees. Other businesses and industries have between 125-295 employees each. The highest number of clustered schools, grocery stores, churches and civic destinations is the downtown area around City Park.

Legend

-  highest number of clustered destinations
-  major employers [17] proportional to employees
-  school
-  grocery store
-  church
-  civic destination
-  2-mile diameter circles
-  park
-  linear trail
-  existing bike lane
-  manhattan city limit

Figure 3.6 Destinations + Distance Map
Elise Hubbard | Projection System: NAD 1983 UTM Zone 14N
Major Sources: City GIS :: County GIS | Fall 2009



MANHATTAN'S CITY-CENTER DISTRICT SELECTION :: INVENTORY + ANALYSIS

District Goal: dense population

Density of Population

The densest population is clustered around the Kansas State University (Figure 3.7). The dorms and greek houses have the most amount of people per parcel. The three major clusters of dense population are emphasized in this map.

Legend






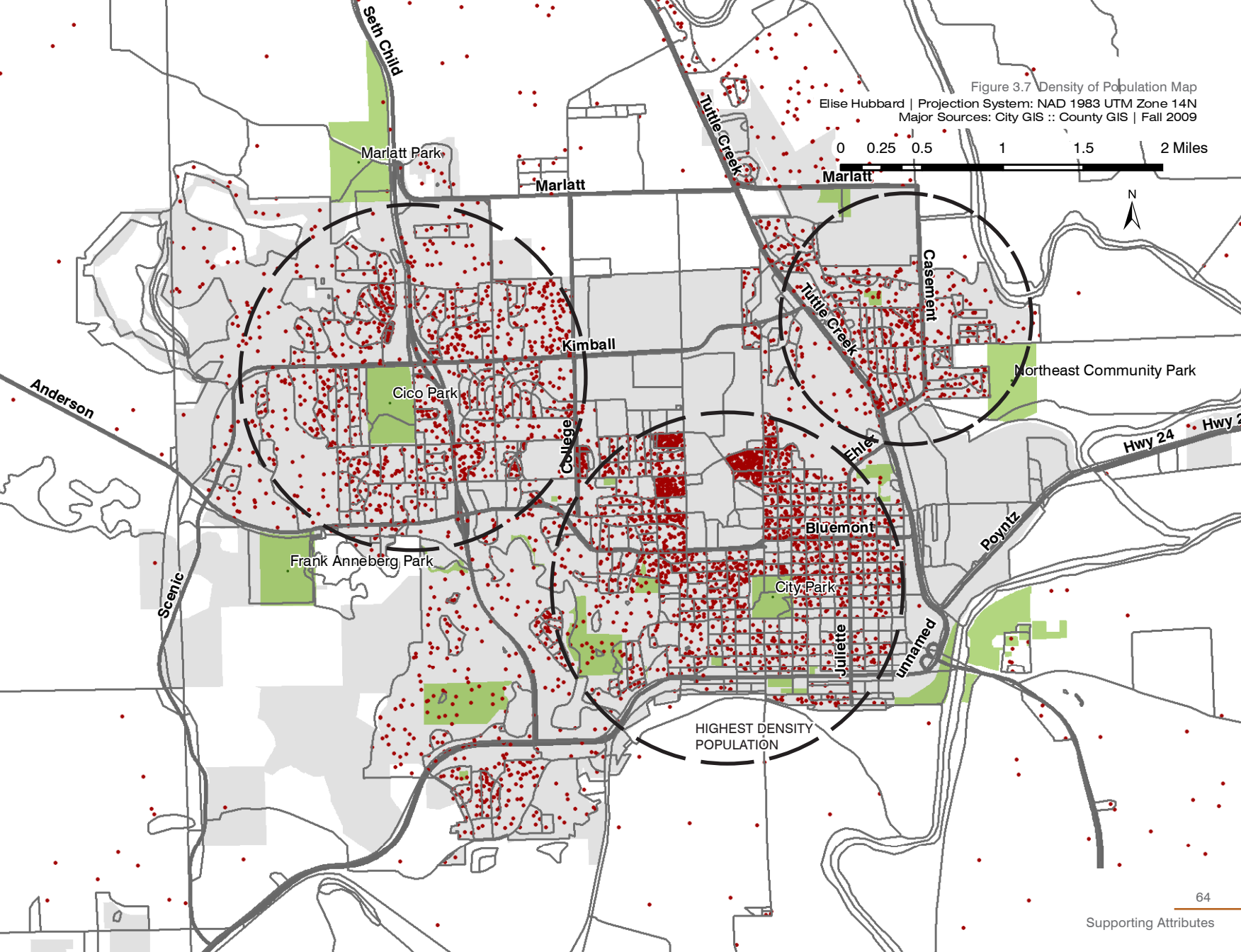
-  cluster of population
-  1 dot =10 people
-  parcels
-  major road
-  park
-  manhattan city limit

Figure 3.7 Density of Population Map
Elise Hubbard | Projection System: NAD 1983 UTM Zone 14N
Major Sources: City GIS :: County GIS | Fall 2009

0 0.25 0.5 1 1.5 2 Miles



HIGHEST DENSITY POPULATION

MANHATTAN'S CITY-CENTER DISTRICT SELECTION :: INVENTORY + ANALYSIS

District Goal: support local economy by minimizing major barriers for pedestrians and bicyclists between commercial and residential land use

Land Use related to the Circulation Network

This map, (Figure 3.8), illustrates the hazardous streets that separate major residential areas from services and goods. Tuttle Creek is generally a five-lane arterial (plus a center median) separating many businesses such as Wal-mart, Dillons, Hobby Lobby, Staples, East Side Market (and many others) from residential land use. This is a very hazardous street for pedestrians and bicyclists. Anderson is generally a four-lane arterial bisecting the city of Manhattan with heavy automobile circulation. Anderson separates the Poyntz and Aggieville business districts from lots of residential development and from Kansas State University. Anderson is a hazardous street for pedestrians and bicyclists. Seth Child is generally a four-lanes arterial (plus a center median) separating many residential developments from commercial uses. Seth Child is very hazardous for pedestrians and bicyclists.

Legend



















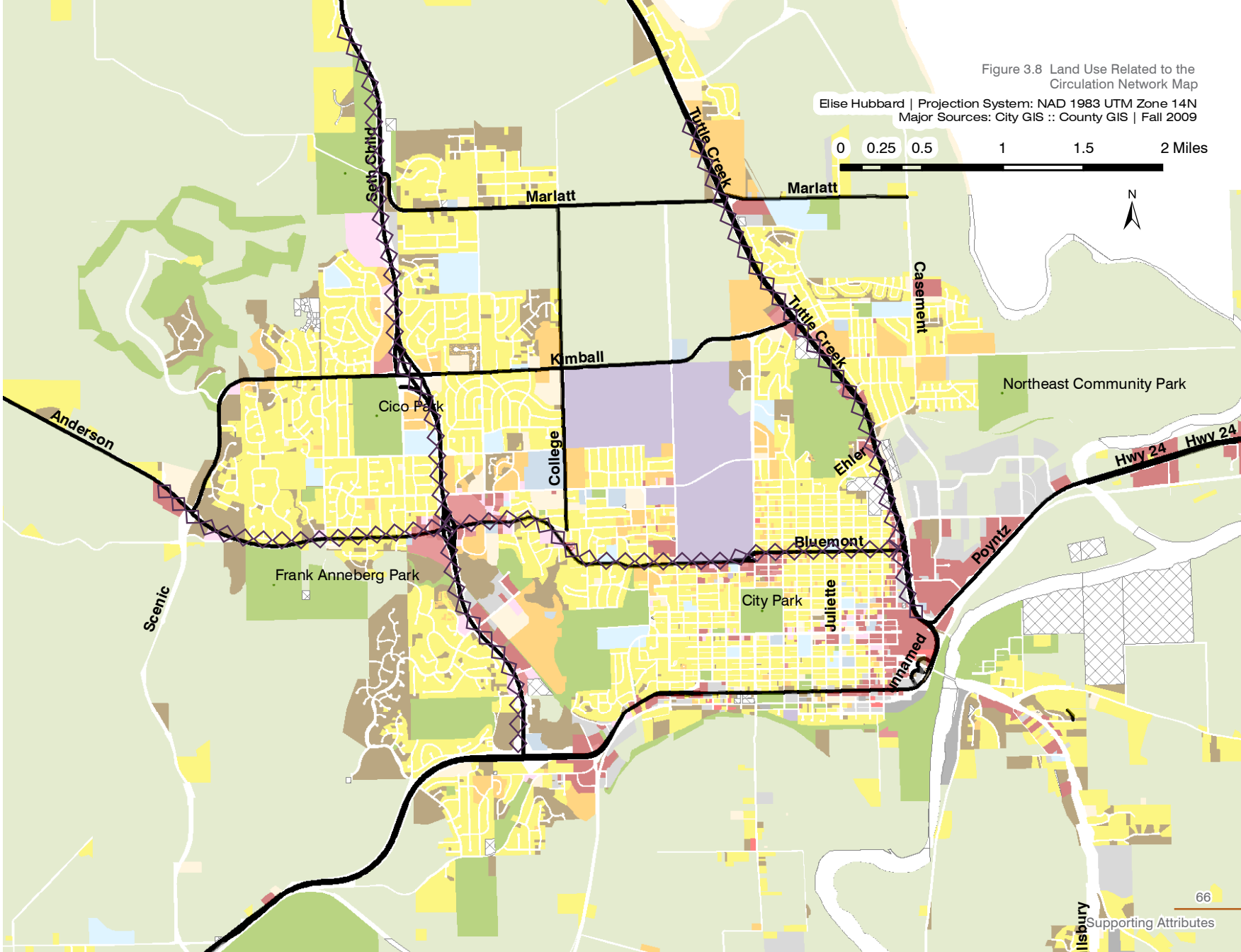
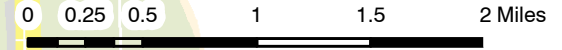
	street barrier between residential and commercial uses		public
	hazardous street		school
	street network		kansas state university
	agriculture		heavy industrial
	central core		light industrial
	general commercial		utilities
	high density residential		vacant
	low/medium density residential		office
	institutional		park

Figure 3.8 Land Use Related to the Circulation Network Map

Elise Hubbard | Projection System: NAD 1983 UTM Zone 14N
Major Sources: City GIS :: County GIS | Fall 2009



MANHATTAN'S CITY-CENTER DISTRICT SELECTION :: INVENTORY + ANALYSIS

District Goal: heighten awareness of natural resources and systems by intersecting social routine and natural ecosystems

Natural Ecosystems

Elizabeth Meyer writes about the importance of ecology in the social realm when she says the “intermingling of ecological and social temporal cycles - seasonal floods and human activities such as holiday festivals or sports - links the activities of everyday life and the unique events of a particular city to the experience of the dynamic bio-physical aspects of the environment” (Meyer 2008).

Minimally developed land, parks, points of hydrologic convergence where streams intersect, and wooded stream corridors are places with opportunity to preserve natural ecosystems and emphasize them as public amenities (Figure 3.9).

Legend








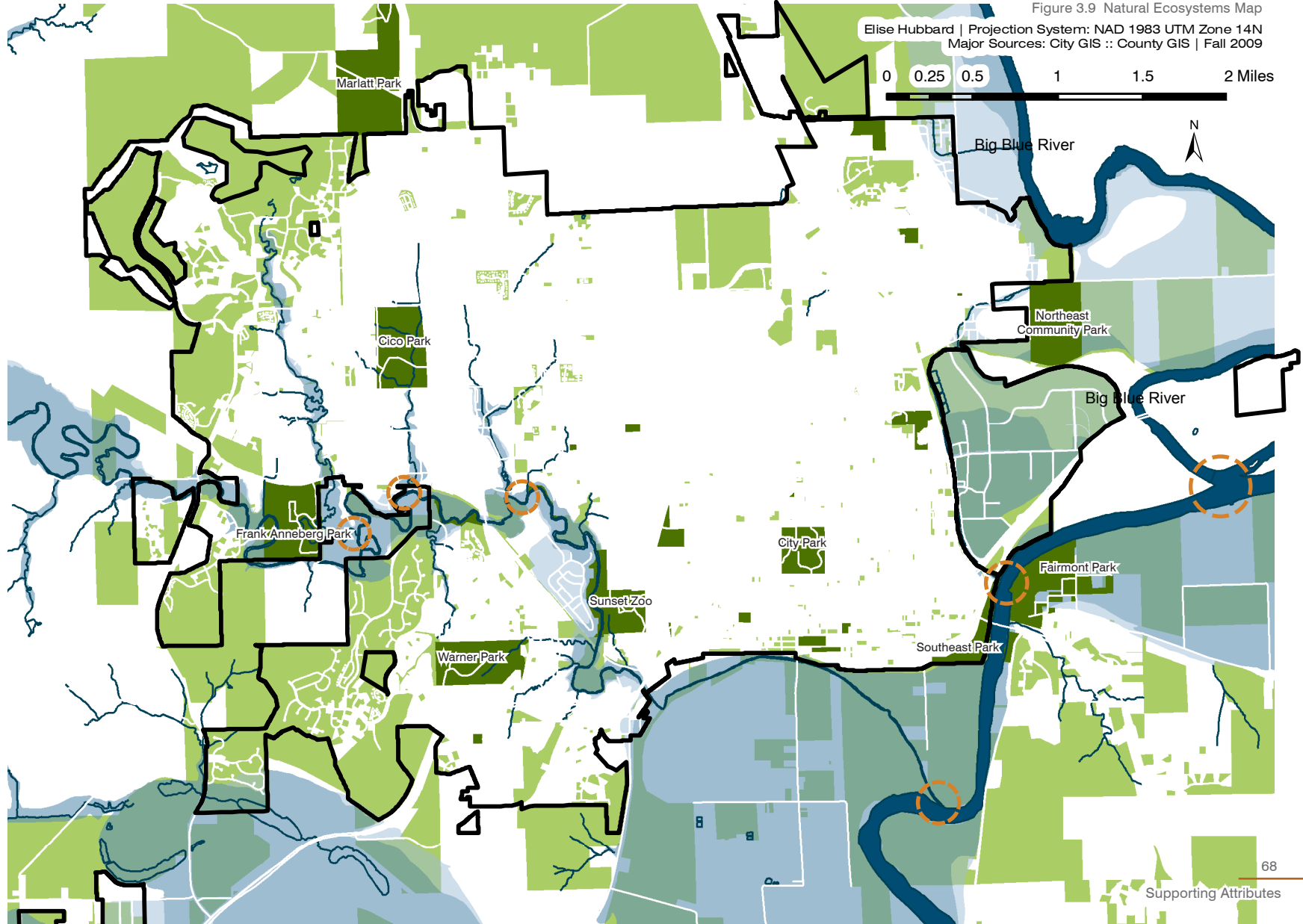
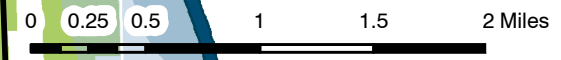
-  minimally developed land (parcels with building value of zero)
-  park
-  points of hydrologic convergence
-  river or drainage way
-  100 year flood plain
-  500 year flood plain
-  manhattan city limit

Figure 3.9 Natural Ecosystems Map

Elise Hubbard | Projection System: NAD 1983 UTM Zone 14N
Major Sources: City GIS :: County GIS | Fall 2009



MANHATTAN'S CITY-CENTER DISTRICT SELECTION :: INVENTORY + ANALYSIS

District Goal: heighten awareness of natural resources and systems by intersecting social routine and urban ecosystems

Urban Ecosystems

Elizabeth Meyer writes about how landscape design can “reveal natural cycles such as seasonal floods, and regenerate natural processes - by cleaning and filtering rain water or replenishing soils through arrested erosion and deposition - and do so while intersecting with social routines and spatial practices” (Meyer 2008).

This map (Figure 3.10) illustrates areas where opportunity exists to emphasize natural systems in the urban environment. Street right-of-ways (ROW) are places of opportunity to implement stormwater management through the use of urban bioswales, where water is cleansed as it infiltrates into the ground. Stormwater pipes and the direction of flow reveal how and where water flows and collects.

Legend






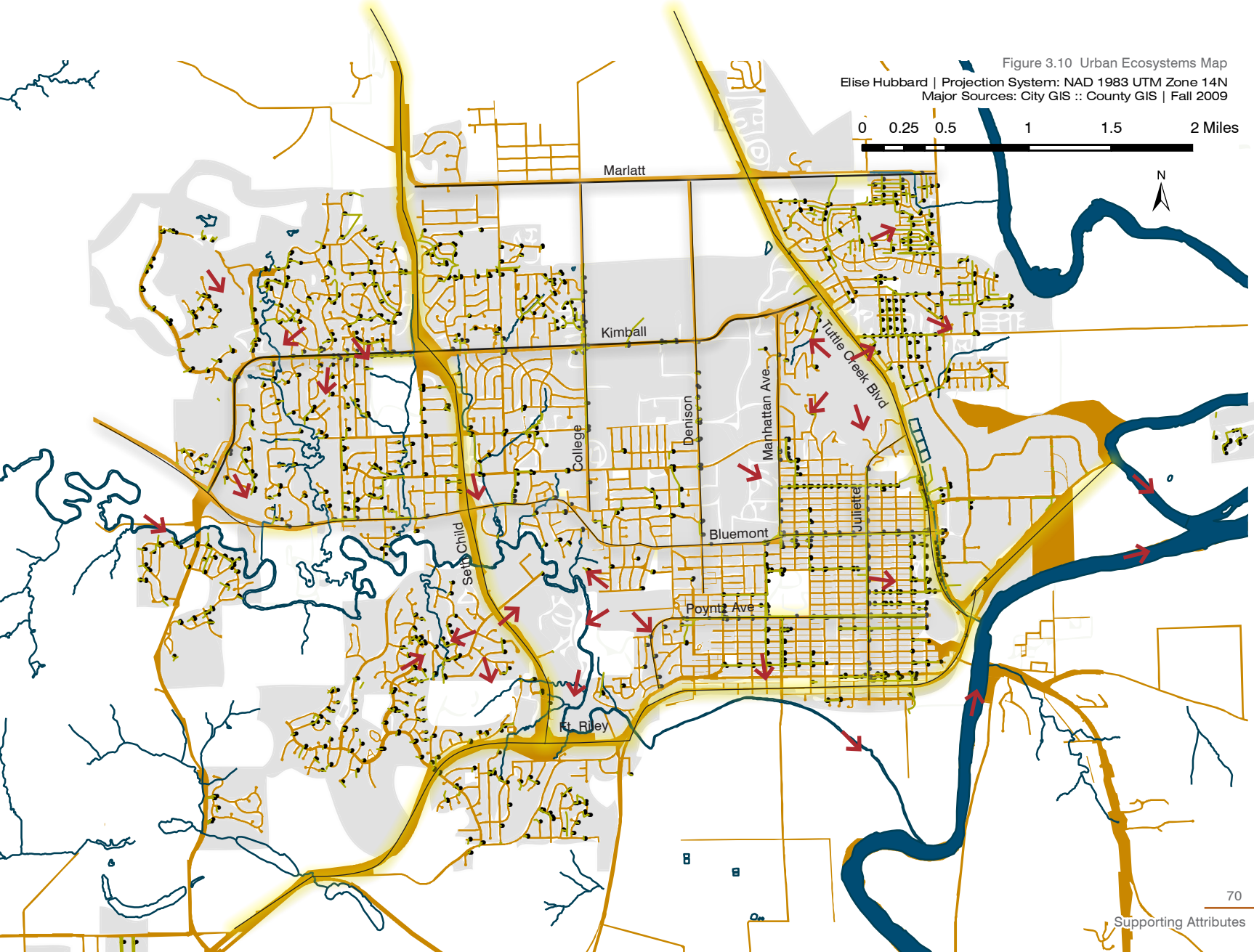
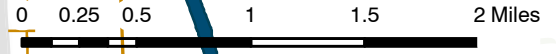
-  street right-of-ways [from non-parcels]
-  wide street right-of-ways
-  direction of water flow
-  stormwater pipes
-  curb inlets

Figure 3.10 Urban Ecosystems Map
Elise Hubbard | Projection System: NAD 1983 UTM Zone 14N
Major Sources: City GIS :: County GIS | Fall 2009



MANHATTAN'S CITY-CENTER DISTRICT SELECTION :: INVENTORY + ANALYSIS

District Goal: foster meaningful experience through places where people experience a natural setting that fills the mind and enhances restoration

Spatial Perspectives and Views

Spaces with views of nature can be places where people experience quiet fascination of a natural setting that fills the mind and enhances restoration from mental fatigue. Rachel Kaplan and Stephen Kaplan write that quiet fascination can come from people activities (like gardening or fishing) and from the setting itself (sound patterns, the motion, the intensity of forms and color) (Kaplan 1998).

This map (Figure 3.11) illustrates the highest and lowest areas that intersect public places. Places of high and low elevation are places with opportunity to provide unique views and spatial perspectives. The intersection of places with unique views and parks is an excellent opportunity for emphasizing this precious resource.

Legend





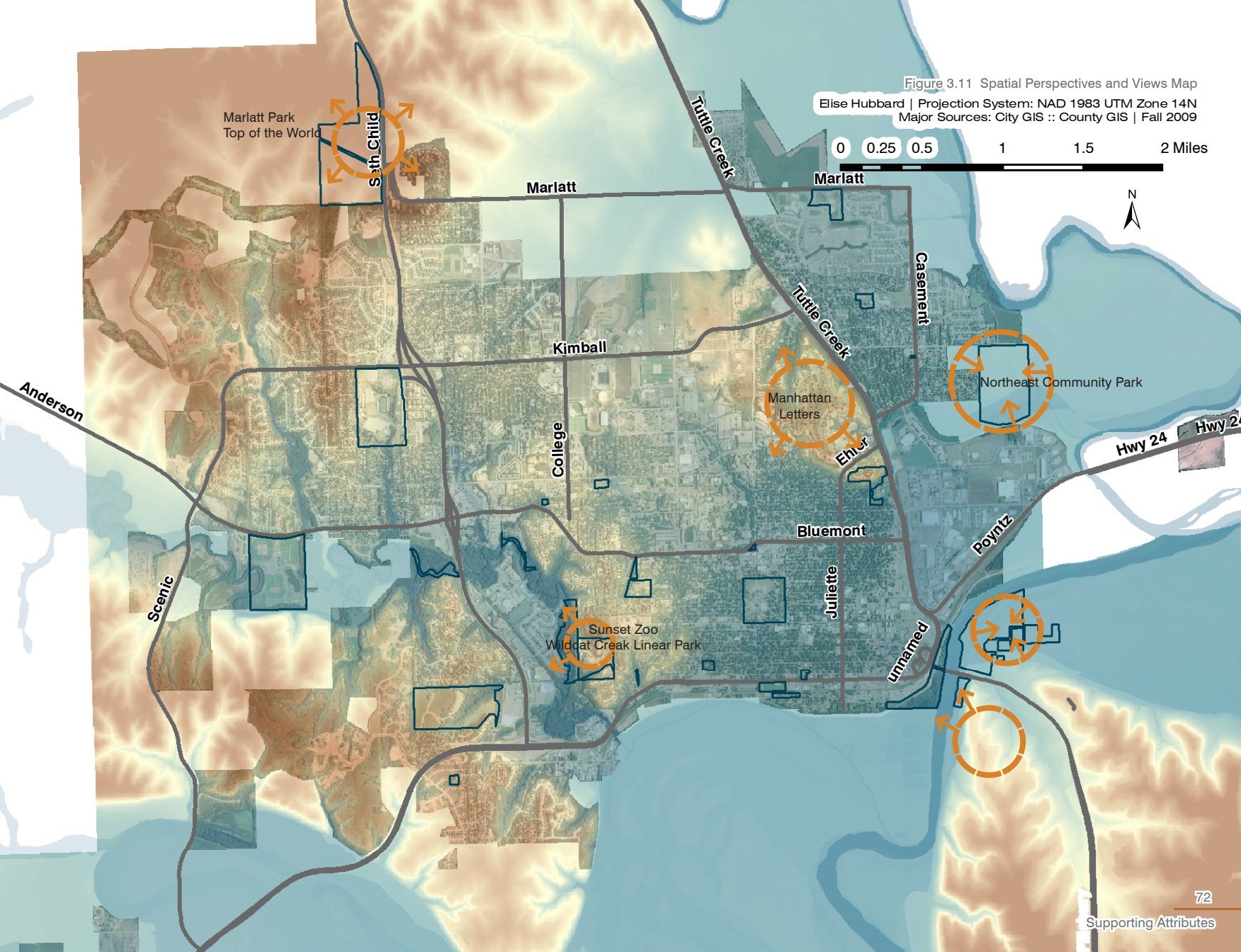
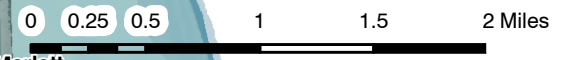
-  highest areas with outward view
-  lowest areas with inward view
-  parks
-  elevation
 - high = 427
 - low = 300

Figure 3.11 Spatial Perspectives and Views Map

Elise Hubbard | Projection System: NAD 1983 UTM Zone 14N
Major Sources: City GIS :: County GIS | Fall 2009



MANHATTAN'S DISTRICT SELECTION :: INVENTORY + ANALYSIS

District Goal: provide many opportunities for outdoor recreation

Outdoor Recreation

This map (Figure 3.12) illustrates existing places that support outdoor recreation. Parks provide opportunity and facilities for outdoor recreation. Linear trail is multi-use trail that should be more interconnected with non-motorized transportation and outdoor recreation opportunities in Manhattan.

Legend







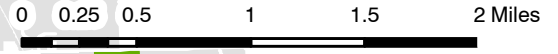
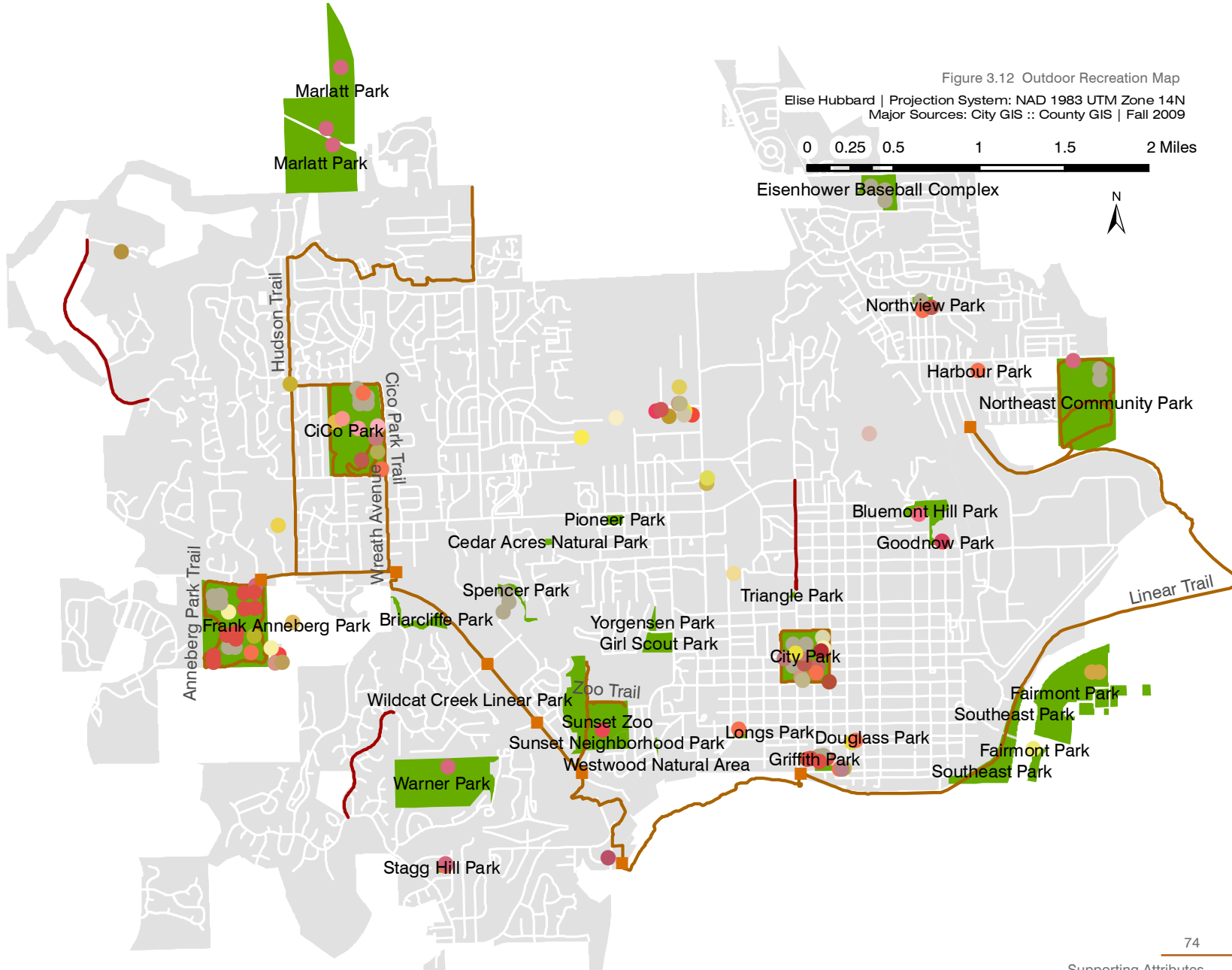
-  linear trail
-  trail access points
-  existing bike lanes
-  parks
-  recreational activity nodes
-  manhattan city limits

Figure 3.12 Outdoor Recreation Map

Elise Hubbard | Projection System: NAD 1983 UTM Zone 14N
Major Sources: City GIS :: County GIS | Fall 2009



Eisenhower Baseball Complex



MANHATTAN'S CITY-CENTER DISTRICT SELECTION :: INVENTORY + ANALYSIS

Composite Analysis

This map (Figure 3.13) combines the analysis of each map into a composite map showing how each element overlaps with other elements. As previously shown in the selection process diagram, the district selection is grounded in the city-wide vision. From there, questions ask how the district-to-be-selected will support the city-wide vision. Answering the questions through mapping leads to district goals. The main vision for the first district is that it becomes the City-Center District in which the most reinforcing attributes exist. The district goals help dictate what specific elements of the site delineate the district boundaries.

District Goals:

- highly connected network of walkable movement corridors
- large number of civic destinations
- dense population
- support local economy by minimizing major barriers for pedestrians and bicyclists between commercial and residential land use
- heighten awareness of natural resources and systems by intersecting social routine and natural ecosystems
- heighten awareness of natural resources and systems by intersecting social routine and urban ecosystems
- foster meaningful experience through places where people experience a natural setting that fills the mind and enhances restoration
- provide many opportunities for outdoor recreation

Legend

- ◇◇ street barrier between residential and commercial services
- areas of densest population
- destinations and largest employers
- wide street ROW
- ➔ direction of water flow
- ⊙ points of hydrologic convergence along stream corridors
- ⤴ highest areas with outward views
- ⤵ lowest areas with inward views

CITY-WIDE VISION

- 1 function as a safe and convenient network of circulation which increases safety and awareness of all transportation modes, promotes social equity, and balances traffic capacity and context priorities
- 2 accommodate bicycle and pedestrian circulation through a highly connected network and reasonable distances between destinations, high density and mixed use, and desirable urban design characteristics
- 3 support sustainable land development patterns through compact development, local economy, and decreasing carbon emissions from transportation
- 4 foster meaningful experience in transit through active movement, slower speeds of engagement, and social exchange

Figure 3.13 Composite Analysis Map
 Elise Hubbard | Projection System: NAD 1983 UTM Zone 14N
 Major Sources: City GIS :: County GIS | Fall 2009



DISTRICT GOALS:

- QUESTIONING
- ? what elements would contribute to people making a shift in transportation habits from auto-dominated to bicycle and pedestrian circulation?
 - ? how can the city support local economy?
 - ? how can people be more aware of lifestyle choices facilitating better stewardship of the land?
 - ? how can the city emphasize unique views that might alter one's consciousness of the environment?
 - ? how can a city contribute to the physical and mental health of its community members?



MANHATTAN'S CITY-CENTER DISTRICT SELECTION :: SYNTHESIS OF ANALYSIS

The City Center-District edges are Bluemont Avenue to the north, Tuttle Creek Blvd to the east, Ft. Riley to the south, and Seth Child to the west (Figure 3.14).

District Goals:

- highly connected network of walkable movement corridors
- large number of civic destinations
- dense population
- support local economy by minimizing major barriers for pedestrians and bicyclists between commercial and residential land use
- heighten awareness of natural resources and systems by intersecting social routine and natural ecosystems
- heighten awareness of natural resources and systems by intersecting social routine and urban ecosystems
- foster meaningful experience through places where people experience a natural setting that fills the mind and enhances restoration
- provide many opportunities for outdoor recreation

HIGH CONNECTIVITY: the selected district is mostly the grid street pattern, which has a higher connectivity index than the suburban street pattern.

CONVENIENT: the time traveled via bike within the district is competitive to the time traveled via automobile. the site is approximately 2-miles east-west, by 1-mile north-south

LIVE-WORK-PLAY: the selected district encompasses the largest density of residential development, places of employment, schools, grocery stores, parks and other community destinations.

SUPPORTS LOCAL ECONOMY: walking and biking brings people out into the streets which encourages exchange of services and goods. the aggieville business district, poyntz business district, ray's apple market and several local businesses are within the district boundaries.

SAFE ROUTES FOR ALL TRANSPORTATION MODES: the district is not bisected by heavy traffic on automobile dominated streets (Anderson/Bluemont, Tuttle Creek, and Seth Child).

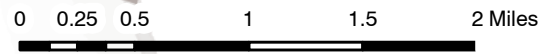
VARIOUS NATURAL ECOSYSTEMS: the district has many opportunities for social routine to intersect natural ecosystems and systems. wildcat creek, spencer park, wildcat creek linear park, girlscout park, sunset neighborhood park, sunset cemetery, sunset zoo, yorgensen park, long's park, and douglass park are within the district boundaries. the site is also adjacent to the kansas river on the southeast corner of the site.

URBAN ECOSYSTEMS: poyntz, juliette, and 17th are movement corridors with wide right-of-ways which would make it easier to add stormwater management elements within the corridor. poyntz avenue is particularly desirable because the existing social activity presents opportunity for heightened awareness of natural systems within the urban context

UNIQUE VIEWS: the district includes some variation in landform. on the western side of the district there is a large change in topography. some existing residential areas have a great view from the highest points. sunset zoo and sunset neighborhood park are nearby public spaces. linear trail extends on the west side of the site along the lower valley of wildcat creek.

Reasons for Selection

Figure 3.14 Selected City-Center District Map
Elise Hubbard | Projection System: NAD 1983 UTM Zone 14N
Major Sources: City GIS :: County GIS | Fall 2009







4 | INTEGRATING IMPROVEMENTS

“I’m in my mid fifties, so I can testify that biking as a way of getting around is not something only for the young and energetic . . . It’s the liberating feeling—the physical and psychological sensation—that is more persuasive than any practical argument. Seeing things from a point of view that is close enough to pedestrians, vendors, and storefronts combined with getting around in a way that doesn’t feel completely divorced from the life that occurs on the streets is pure pleasure. Observing and

engaging in a city’s life—even for a reticent and often shy person like me—is one of life’s great joys. Being a social creature—it’s part of what it means to be human”

(David Byrne 2009, 292)

ACTION FRAMEWORK

Integrating Improvements

The first section pointed out how important it is to understand the vision for community life and activity. The previous section offered a strategy for prioritizing community growth and development through reinforcing attributes within a district. The strategy supports the vision that streets become wonderful and fulfilling places to be—contributing socially, economically, and environmentally. This section is about integrating improvements for positive change (Figure 4.1).

First, it is suggested that the current process of transportation planning and design in Manhattan be improved. Current processes emphasize vehicular mobility and vehicular access to property. There is a lack of emphasis on the context and adjacent land uses. Specific deficiencies in corridor design and context are presented through narratives, recording the experience of a bicyclist in the streets of Manhattan. The analysis of the narratives call for improvements that address both the context and movement corridor design.

Context Sensitive Solutions (CSS), written by the Institute of Transportation Engineers (ITE), is presented as a sound method for initiating positive improvements in Manhattan's transportation planning and design. CSS specifically provides this project with guidelines for developing context zones, movement corridor types, and acceptable dimensions for designable elements related to the streetscape. Finally, context zones, movement corridor types, and possible solutions for streetscape design are applied to three streets within the City-Center District of Manhattan. In the end, two corridor designs are presented for each of the three streets. Emphasizing the range of possibilities, multiple corridor designs are presented as acceptable ways to reconfigure the corridor and context infrastructure.



Figure 4.1 Action Framework: Integrating Improvements

CURRENT PROCESSES OF APPROACH

The process of planning and designing transportation facilities varies greatly depending upon the objectives of the project. In the 20th century, the design of streets began to focus heavily on mobility. Streets separated the mobility function from the economic and social function (ITE 2010). Transportation facilities with a primary focus on mobility result in streets facilitating speeding automobile traffic. Auto-dependent growth patterns evolve into sprawling networks of streets and low density, single land-use development. Although unnoticed by many, transportation growth centered around the private automobile compromises physical activity, safety of pedestrians and bicyclists, time spent in transit, interaction with nature, social exchange, and social equity in street corridors.

Although the Manhattan Area Transportation Strategy (MATS) articulates goals about transportation addressing all modes of travel and users, it is not evident in the built environment ten years later. Manhattan's primary mode of transportation is the private automobile.

Manhattan's Area Transportation Strategy (MATS) describes the basic function of the street network as being "for vehicular flow--movement or mobility and access to property" (City of Manhattan 2000). **According to MATS, the evaluation of existing street network uses functional classification, level of service, and accident locations as a means to make decisions about future development (City of Manhattan 2000).** This evaluation does not consider pedestrian and bicycle infrastructure as a determining factor for the design of the movement corridors. Changes to development ordinances and land use policies must be implemented to support the vision for pedestrian, bicycle and vehicular mobility.

can the current processes of approach for community planning and development be improved?

MOVEMENT CORRIDORS AND THEIR RELATIONSHIP TO THE CONTEXT

There are many ways to go about planning and designing movement corridors within a community. The main focus of this Master's report is how the daily life and community infrastructure supports movement corridors being wonderful and fulfilling places to be. Movement corridors should support pedestrian and bicycle transportation in addition to the existing vehicular transportation. Movement corridors facilitating bicycle and pedestrian circulation support a framework of sustainable land development patterns, higher levels of physical activity, interaction with nature, vibrant social exchange, and social equity in street corridors.

Movement corridors do not function independently in the built environment, and therefore should not be designed independently from their context. Movement corridors are related to how the aforementioned network of transportation operates, the land use and density of development, and urban design characteristics. The Institute of Transportation Engineers (ITE) advances the planning and design of movement corridors especially for places where community objectives

support walkable communities. The term "movement corridor" is used in this project instead of the term "thoroughfare," as used in ITE's report. ITE's principles and guidelines for the planning and design of movement corridors are called Context Sensitive Solutions (CSS). CSS inspired corridor design begins with an emphasis on identifying critical factors and issues before establishing design criteria. Prioritizing critical factors aids in developing a spectrum of alternatives to reach consensus on the best solution.

CSS respects design objectives for safety, efficiency, capacity and maintenance while integrating community objectives and values relating to compatibility, livability, sense of place, urban design, cost and environmental impacts.

Conventional corridor design is a mobility-focused process that typically determines functional classification and number of lanes as one of the first design elements. The outcome of this conventional mobility-focused process may not be compatible with concerns of the community, environmental responsibility and economic development (ITE 2006).

CSS provides a flexible framework for transportation projects that serve all users and are compatible with the community and environment.

CSS is applicable to this project because CSS's principles support the qualities found in urban places where development pattern, intensity and design character combine to make frequent bicycling, walking and transit use attractive and efficient choices for many people, as well as provide for the private automobile (ITE 2006).

CSS specifically provides this project with a framework for developing context zones, movement corridor types (identified by CSS as thoroughfare type), and design guidelines for the "traveled way", "roadside" and intersection designs.

KEY TERMS + NEW CONCEPTS [CONTEXT SENSITIVE SOLUTIONS APPROACH]

Avenue

Walkable, low-to-medium speed urban arterial or collector movement corridor, generally shorter in length than boulevards, serving access to abutting land. Avenues serve as primary pedestrian and bicycle routes and may serve local transit routes. Avenues do not exceed 4 lanes, and access to land is a primary function. Goods movement is typically limited to local routes and deliveries. Some avenues feature a raised landscaped median. Avenues may serve commercial or mixed-use sectors and usually provide curb parking (ITE 2006, 2010).

Context

The nature of the natural or built environment created by the land, topography, natural features, buildings and associated features, land use types, and activities on property adjacent to streets and on sidewalks and a broader area created by the surrounding neighborhood, district, or community. Context also refers to the diversity of users of the environment (ITE 2006, 2010).

Context Sensitive Solutions (SCC)

Collaborative, interdisciplinary process that involves all stakeholders to design a transportation facility that fits its applicable setting and preserves scenic, aesthetic, historic and environmental resources while maintaining safety and mobility. CSS respects design objectives for safety, efficiency, capacity and maintenance while integrating community objectives and values relating to compatibility, livability, sense of place, urban design, cost and environmental impacts (ITE 2006, 2010).

Context Zone

One of a set of categories used to describe the overall character of the built and natural environment. There are six context zones ranging from the natural to the highly urbanized built environment (ITE 2006, 2010).

Functional Classification

A system in which streets and highways are grouped into classes according to the character of service they intended to provide. Traditional functional classifications are arterial, collector and local (adapted from ITE 2006, 2010).

Institute of Transportation Engineers (ITE)

ITE is an international educational and scientific association of transportation professionals who are responsible for meeting mobility and safety needs. Founded in 1930, ITE serves as a gateway to knowledge and advancement through meetings, seminars, and publications and through its network of nearly 17,000 members working in more than 92 countries (ITE 2006, 2010).

Movement Corridor

As defined in this report, streets (and right-of-ways, including improvements between the pavement edge and right-of-way line) in urban areas that fall under the conventional functional classes of arterials, collectors and locals. Movement corridors are multimodal in nature and are designed to integrate with and serve the functions of the adjacent land uses. The term “movement corridor” was chosen for this project as a descriptive term emphasizing the street as a transportation pathway including bicyclists and pedestrians (adapted from ITE 2006, 2010).

Movement Corridor Type

Movement corridor type governs the selection of the corridor’s design criteria and, along with the surrounding context, is used to determine the physical configuration of the movement corridor. Movement corridor type and context zones are used to develop designs for the streetside, traveled way, and intersections. Three movement corridor types are defined for walkable communities in ITE’s Context Sensitive Solution approach: Boulevard, Avenue, and Street. Road, as defined by ITE is a movement corridor type in rural areas. In this Master’s report, the movement corridor type “road” will also be used to differentiate the low speed, single-land use corridors which primarily serve abutting property (adapted from ITE 2006, 2010).

Road

Low speed corridor primarily serving single-land use abutting property. (adapted from ITE 2006, 2010).

Roadside

The public right-of-way, which typically includes the planting area and sidewalk, from the back of the curb to the front property line of adjoining parcels. Transportation facilities including bus shelters, waiting areas and bicycle parking may be part of the roadside (ITE 2006, 2010)

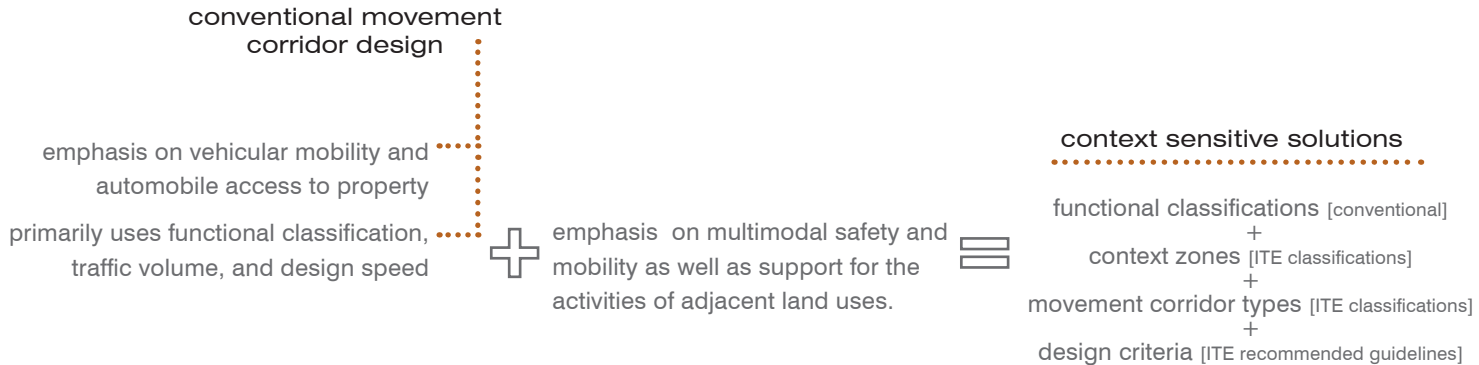
Street

Walkable, low speed corridor in urban areas primarily serving abutting property. A street is designed to connect residential neighborhoods with each other, connect neighborhoods with commercial and other districts, and connect local streets to arterials (ITE 2006, 2010).

Traveled way

The public right-of-way between curbs, including parking lanes, and the travel lanes for private vehicles, goods movement, transit vehicles and bicycles. Medians, turn lanes, transit stops, curb and gutters are included in the traveled way (ITE 2006, 2010).

HOW DOES THE PROCESS OF APPROACH CHANGE?



Functional classification defines a thoroughfare's function and role in the network, in addition to governing the selection of certain design controls. Functional classification determines continuity, purpose and length of trips, level of land access, type of freight service, and types of public transit services (ITE 2010). Context Zones and Movement corridor types as defined by ITE include boulevard, avenue, street, and road. These corridor types are ITE classifications that support pedestrian-oriented areas serving compact, walkable, mixed-use environments.

Movement corridor type governs the "selection of the corridor's design criteria and, along with the surrounding context, is used to determine the physical configuration of the corridor" (ITE 2010). The context zone and movement corridor type directly affect the design criteria of the corridor. The planning of street networks in Manhattan should use functional classification, context zones, and movement corridor types to facilitate the planning and design for multi-modal transportation as a safe, convenient and enjoyable mode of transportation. The process for integrating improvements is visually summarized in Figure 4.2.

INTEGRATING IMPROVEMENTS :: PROCESS OVERVIEW

PROCESS

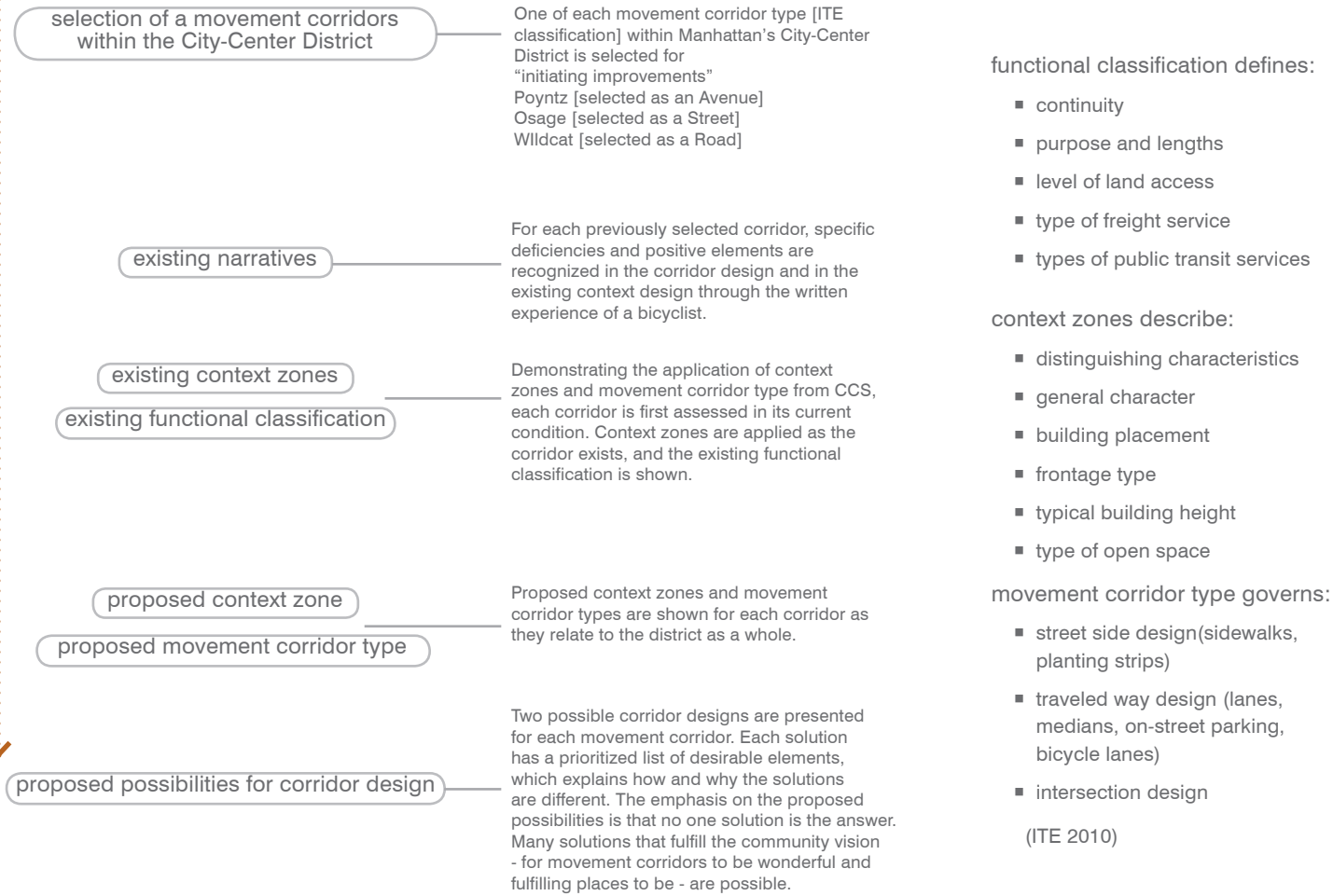


Figure 4.2 Integrating Improvements Process Summary

POYNTZ

Observations Applied to Process of Approach

The existing experience narrative on Poyntz expresses how the environment can influence bicyclists. The corridor design, context design and natural environment intricately influences the experience of the user. This existing experience narrative is analyzed to show the positive and negative elements concerning the existing environment and its affect on people's experience. The positive and negative elements are categorized as it relates to the corridor, context, natural environment, or human perception affecting body, mind and spirit. These elements of the environment serve as a starting point for making changes to improve community development patterns.

BODY:MIND:SPIRIT :: physical movement awakens the body



33° . February 17. 2010. morning

The cold winter air pricks my lungs as I gulp breaths of oxygen. My brain tingles as the cold wakes it up from its warm slumber. After only a few minutes of peddling, my legs have built up heat. My whole body is alive in the movement. Propelling forward I pull out into the lanes of vehicles on Poyntz Avenue.

BODY:MIND:SPIRIT :: automobiles decrease social connection because there are less people on the street



In contrast to my working body, there is an emptiness of life in the streets. Glass shields any connection with people through their car windows, the only exchanges are the groaning of cold engines. The four-lane ribbon of asphalt is still hosting the stragglers from the eight o'clock rush to work. I stay to the right of the outside lane, although there doesn't seem to be a good place for me. The auto travel lanes are wide, and the parallel parking to my right makes me feel like I'm

MOVEMENT CORRIDOR :: lack of designated bicycle facilities decreases comfort safety of the user



swimming somewhere in the middle. I coast into a stop light pulling up behind a RAC Rent-a-Center truck. I can smell the exhaust as it clouds my feet.

BODY:MIND:SPIRIT :: traffic pollution decreases enjoyable experience of non-motorists



I'm feeling quite small as cars surround me in the vastness of pavement. I wonder how many of them even see me through their glazed over looks.

MOVEMENT CORRIDOR :: stop light without bicycle facilities decrease motorists' awareness of bicyclists at intersections



The truck's engine responds loudly to the green light and my attention is brought back to my pedals. Not wanting to hold up the line of cars behind me, my whole body pushes energy into my legs. I ride as close to the curb as possible.

MOVEMENT CORRIDOR :: wide street corridor decreases non-motorists comfort and safety, and inhibits motorists visibility of bicyclists to in the movement corridor



The inconvenienced drivers swerve around me; the frustrated ones roaring their engines as if telling me I should get a car. I'm relieved as they speed forward leaving me to the quiet cadence of peddling. My shoulders relax as my focus rests from the rush of traffic. I pass City Park, noticing the presence of a few people walking alongside the street.

BODY:MIND:SPIRIT :: corridors dominated by automobile traffic without providing marked bicycle facilities decreases non-motorists comfort and safety

Unexpectedly I'm suddenly aware of the gradual shift in my surroundings. The vastness of pavement has shifted to be more contained by the buildings.

As I approach the Poyntz business district, the buildings frame the street and provide more enclosure along the street edge. I notice the



CONTEXT :: closer spacing between buildings and higher building height make people feel more comfortable in the movement corridor because the scale fits a "pedestrian scale"

increase in building height as I stop at another red light. Lamp posts and American flags line the sidewalks with texture and color. My focus returns to the movement of vehicles as I watch for cars



MOVEMENT CORRIDOR :: back out angled parking stalls decrease non-motorists comfort and safety

backing out of the angled parking stalls. There's little movement in the street, and it's hard to make out any activity on the sidewalk behind the parked cars. Almost all the vehicular parking is full. I scan for a place to park my bike, but see no bike racks.



MOVEMENT CORRIDOR :: lack of visual connection between the traveled way and the roadside because of parking



MOVEMENT CORRIDOR :: lack of bicycle parking facilities

I dismount and head for the nearest lamppost. As I lock up my bike, I take a few more deep breaths of cold air and look around. How can there be such beauty in the emptiness of the pastel sky?



BODY:MIND:SPIRIT :: greater safety and comfort allows time and energy to be more aware of things outside ourselves



NATURAL ENVIRONMENT :: awareness and experience of beauty positively influences people, but awareness is inhibited by speedy and unsafe conditions

POYNTZ

Existing :: Context Zones Applied

How existing conditions fit into ITE's established context zones are shown here (Figure 4.3). Context zones describe distinguishing characteristics, general character, building placement, frontage type, typical building height, and type of open space. Conclusions from the existing narrative experience present challenges for context improvements.



primary single family . dominate landscape character

detached buildings with landscaped yards

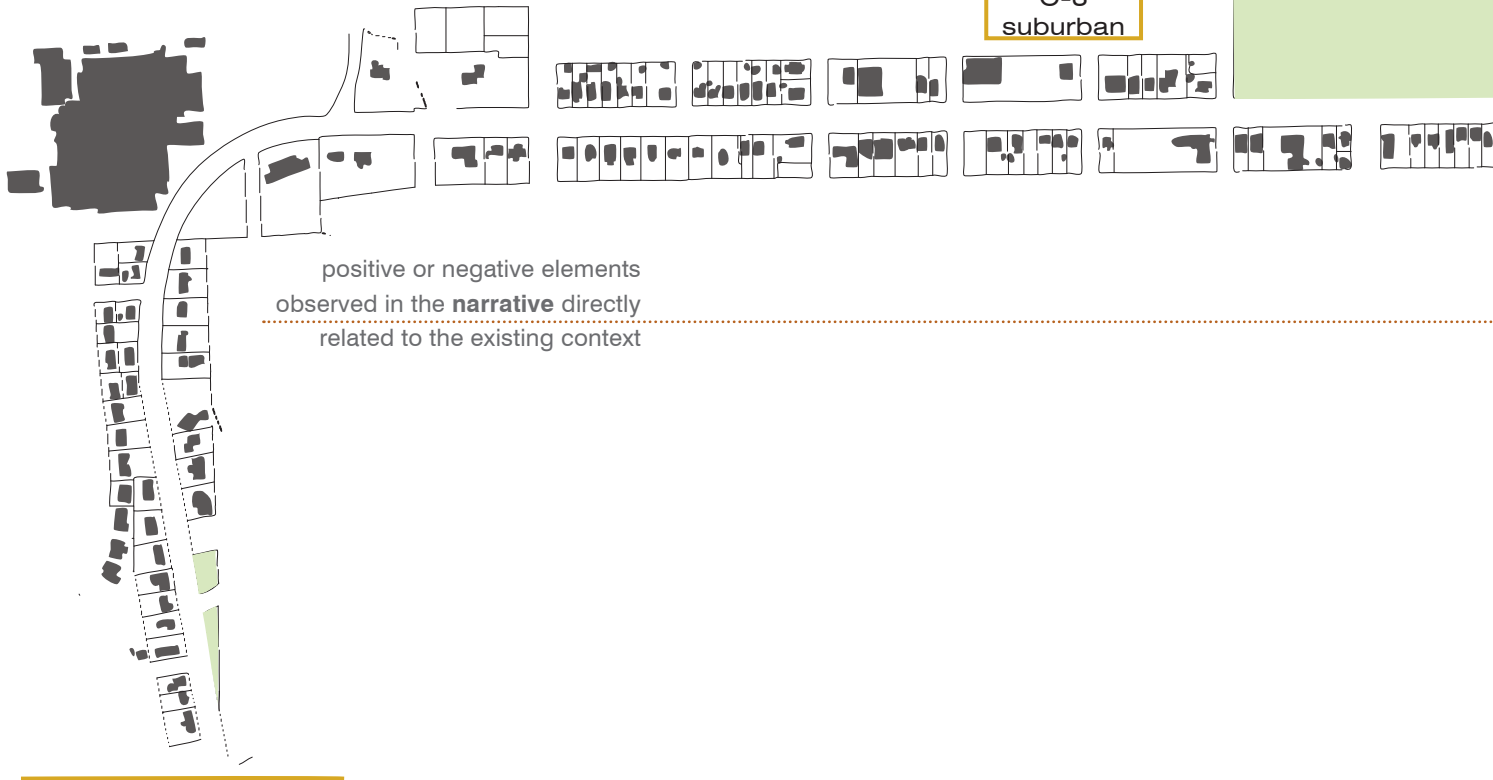
varying front and side yard setbacks

lawns . porches . fences . naturalistic tree planting

1 . 2 . some 3 story

parks . greenbelts

C-3 suburban



positive or negative elements observed in the **narrative** directly related to the existing context

Figure 4.3 Poyntz Existing Context



mix of housing types . range of commercial + civic activity

predominately detached buildings . balance between landscape and buildings

shallow to medium front and side yard setbacks

porches . fences

2 to 3 story

parks . greenbelts



attached housing types mixed with retail, workspace, and civic activities

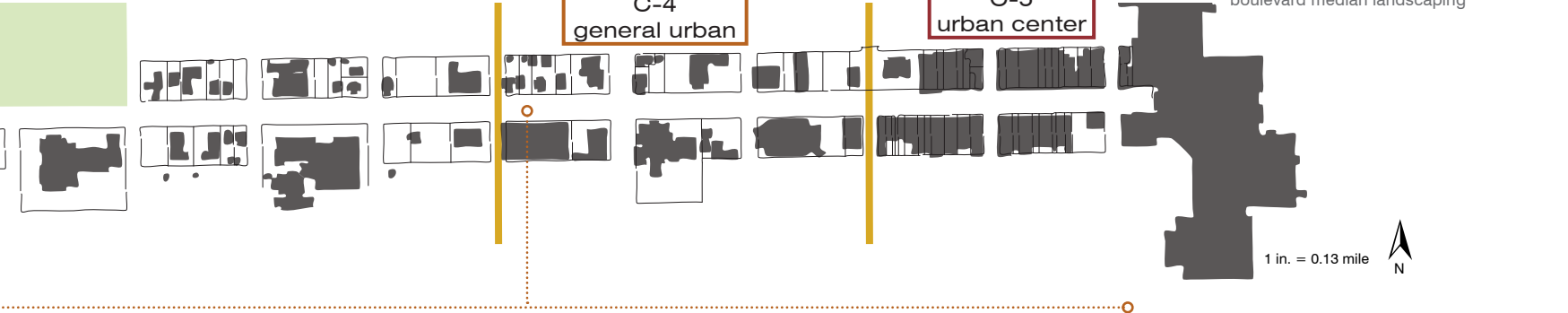
predominately attached buildings . substantial pedestrian activity

small or no setbacks . definition of street wall

stoops . dooryards . storefronts . arcaded walkways

3 to 5 story with some variation

parks . plazas . squares . boulevard median landscaping



+ “ As I approach the Poyntz business district, the buildings frame the street and provide more enclosure along the street edge. I notice the increase in building height as I stop at another red light. ”



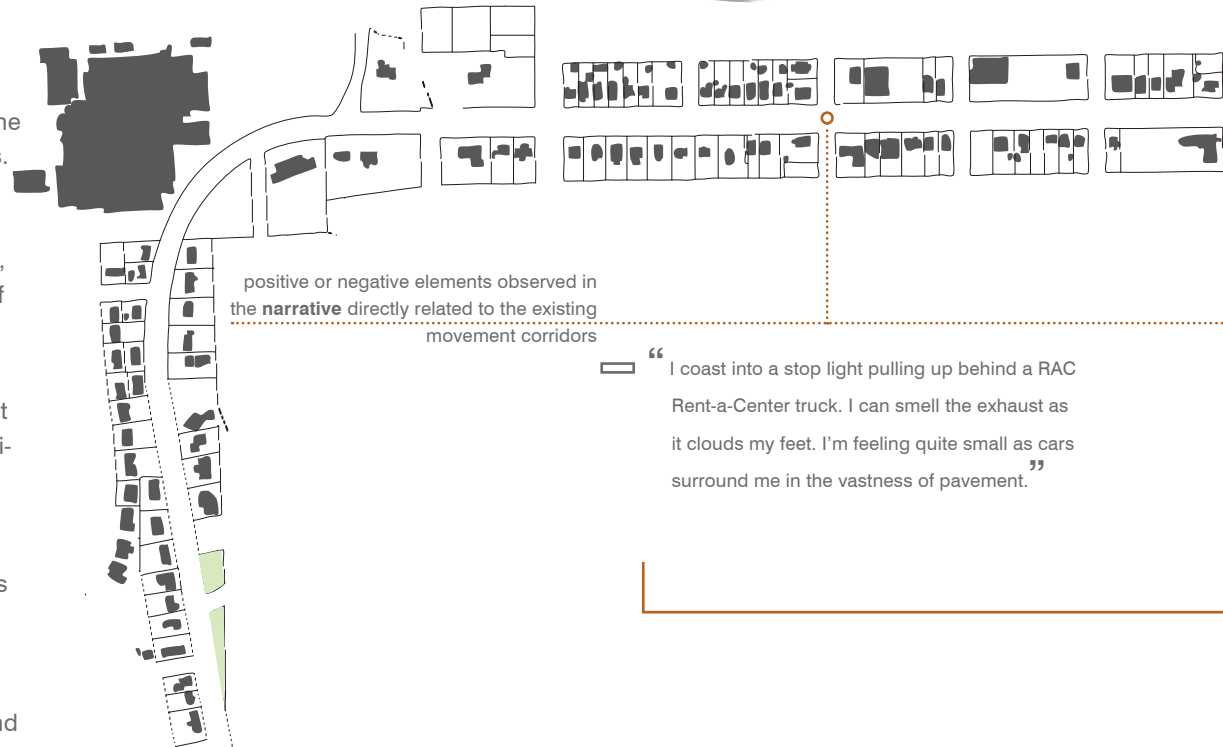
CONCLUSIONS: large setbacks, low building height, wide vehicular lanes, and single land uses weaken the main street character of Poyntz. dominance of vehicular traffic and infrastructure decreases the number of people in the corridor, and limits bicycle and pedestrian transportation and a safe and enjoyable mode of transit.

POYNTZ

Existing Functional Classification

The City classifies Poyntz as a “collector” for its functionality in the street network (Figure 4.4). According to the Manhattan Area Transportation Strategy, a collector provides for the movement of vehicles between arterial and local streets with some direct land access. (City of Manhattan 2000). Functional classification defines a corridor’s function and role in the network, in addition to governing the selection of certain design controls. Functional classification can determine continuity, purpose and length of trips, level of land access, type of freight service, and types of public transit services (ITE 2010).

In Manhattan’s City-Center District, the vision is that movement corridors and context support multi-modal transportation as a safe, convenient and enjoyable mode of transportation. The experience as recorded in the narrative concludes that the lack of designated bicycle lanes and parking, no bicycle accommodation at intersections, lots of on-street vehicle parking, and wide vehicular lanes compromises safety and discourages bicycle use.



positive or negative elements observed in the **narrative** directly related to the existing movement corridors

“ I coast into a stop light pulling up behind a RAC Rent-a-Center truck. I can smell the exhaust as it clouds my feet. I’m feeling quite small as cars surround me in the vastness of pavement.”

Figure 4.4 Poyntz Existing Functional Classification



“ I stay to the right of the outside lane, although there doesn't seem to be a good place for me. The travel lanes are wide, and the parallel parking to my right makes me feel like I'm swimming somewhere in the middle. ”

“ My focus returns to the movement of vehicles as I watch for cars backing out of the angled parking stalls. ”

“ There's little movement in the street, and it's hard to make out any activity on the sidewalk behind the parked cars. ”

“ Almost all the vehicular parking is full. I scan for a place to park my bike, but see no bike racks. ”



CONCLUSIONS: lack of designated bicycle lanes and parking, no bicycle accommodation at intersections, lots of on-street vehicle parking, and wide vehicular lanes compromises safety and discourages bicycle use

POYNTZ

Proposed Context Zones

C-3 Suburban
primary single family
. dominate landscape
character ; detached
buildings with landscaped
yards ; varying front and
side yard setbacks ;
lawns . porches . fences .
naturalistics tree planting
; 1 . 2. some 3 story ;
parks . green belts

C-4 General Urban
mix of housing types
. range of commercial
+ civic activity ;
predominately detached
buildings . balance
between landscape and
buildings ; shallow to
medium front and side
yard setbacks ; porches
. fences ; 2 to 3 story ;
parks . greenbelts

C-5 Urban Center
attached housing
types mixed with retail,
workspace, and civic
activities ; predominately
attached buildings .
substantial pedestrian
activity ; small or no
setbacks . definition of
street wall ; stoops .
dooryards . storefronts .
arcaded walkways ; 3 to 5
story with some variation
; parks . plazas . squares
. boulevards median
landscaping





Figure 4.5-Poyntz Proposed Context

POYNTZ

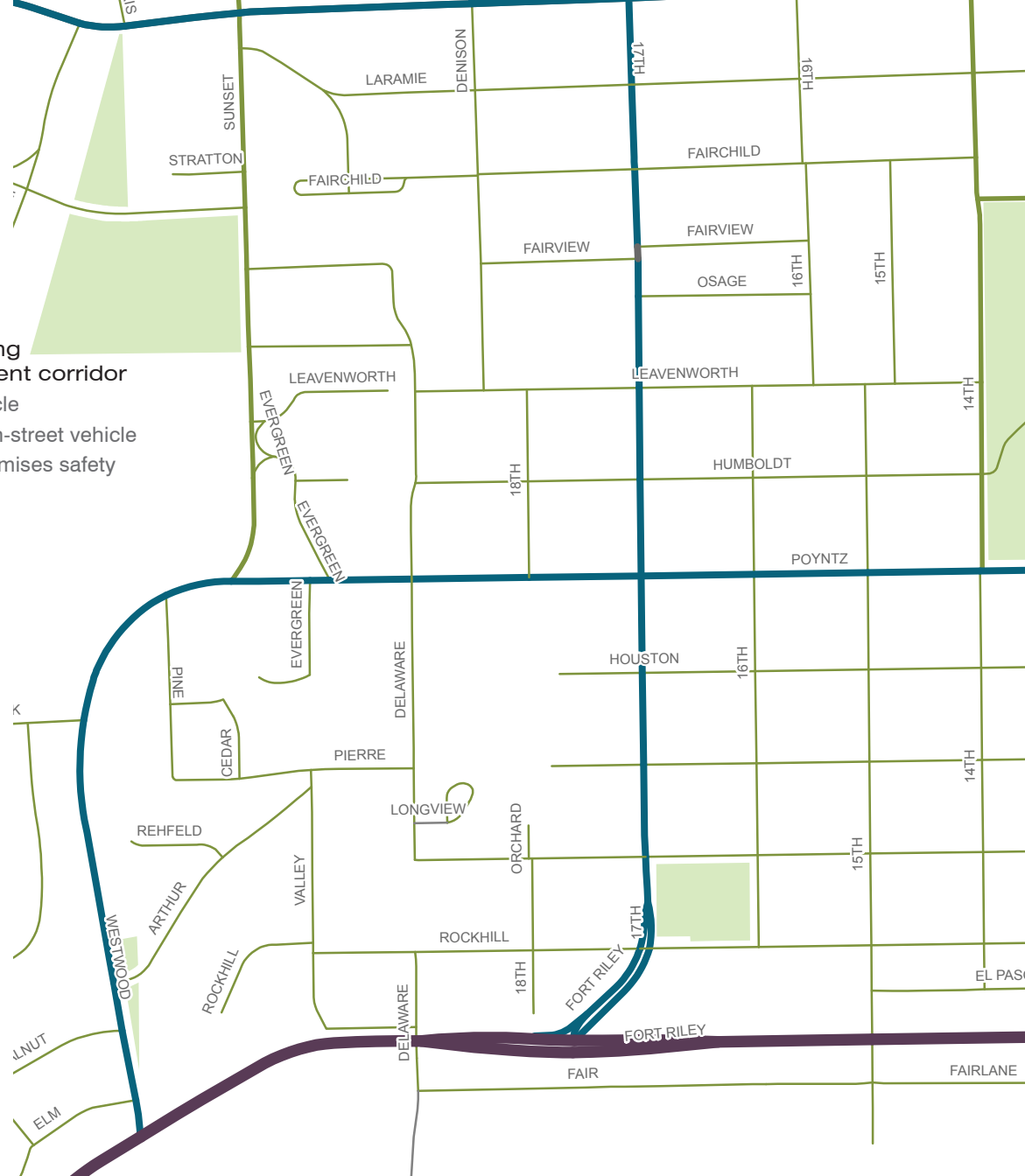
Proposed Movement Corridor Type

- boulevard
- avenue
- street

conclusions from narrative of existing experience concerning the movement corridor

Lack of designated bicycle lanes, no bicycle accommodation at intersections, lots of on-street vehicle parking, and wide vehicular lanes compromises safety and discourages bicycle use.

The proposed ITE-defined movement corridor type for Poyntz is avenue. Movement corridor type governs the “selection of the corridor’s design criteria and, along with the surrounding context, is used to determine the physical configuration of the corridor” (ITE 2010). Classifying Poyntz as an avenue means that it should be a walkable, low to medium speed urban movement corridor. Generally, this means the planning and design of the corridor will give more priority to pedestrian and bicycle infrastructure. CSS states that “avenues serve as primary pedestrian and bicycle routes and many serve local transit routes (ITE 2006).



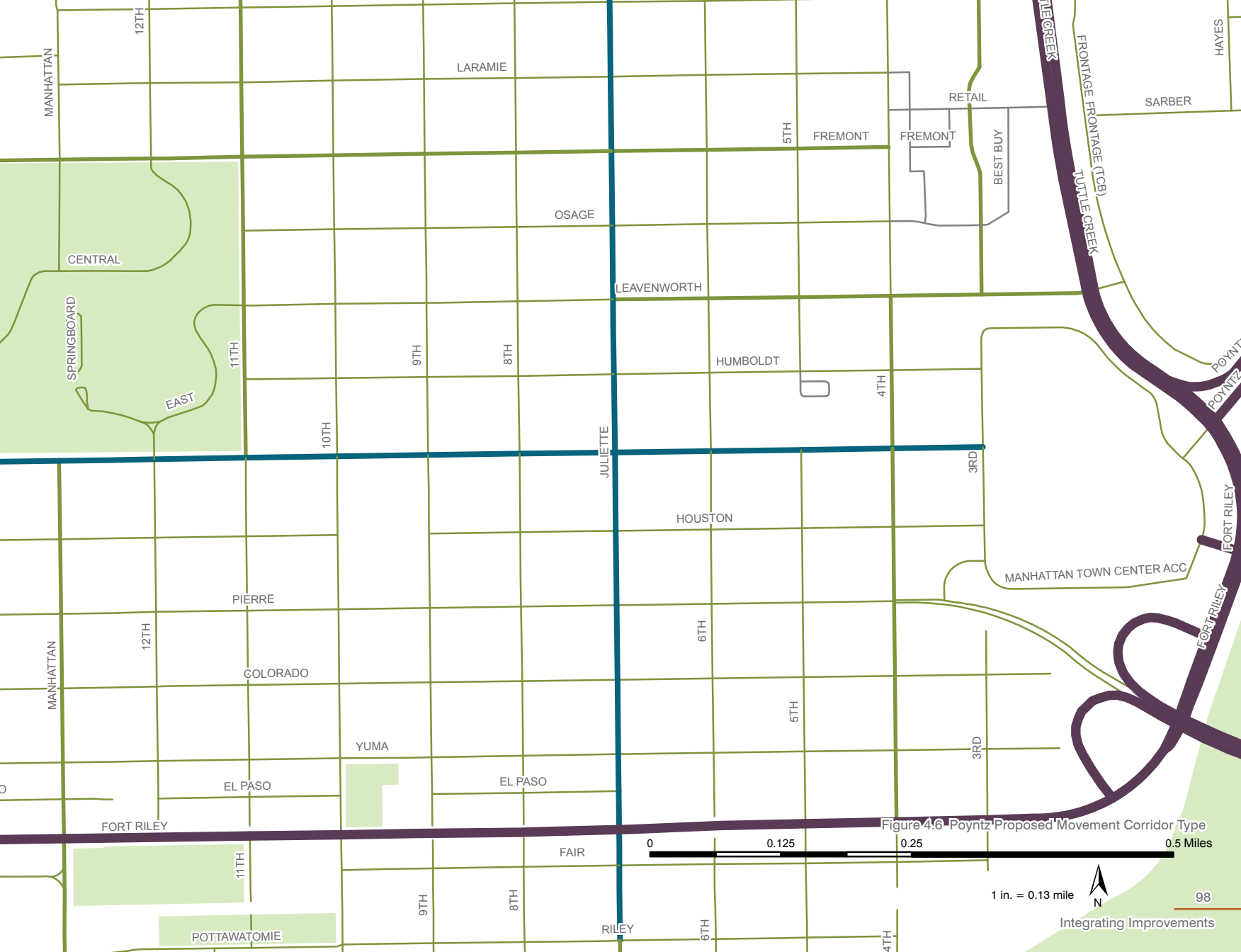
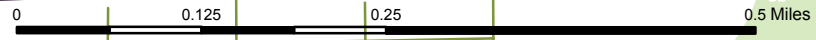


Figure 4.6 Poyntz Proposed Movement Corridor Type



1 in. = 0.13 mile
 N

how does the proposed context zone and movement corridor type change the design characteristics of the street corridor?

functional classification defines:

- continuity
- purpose and lengths
- level of land access
- type of freight service
- types of public transit services (ITE 2010)

context zones describe:

- distinguishing characteristics
- general character
- building placement
- frontage type
- typical building height
- type of open space (ITE 2010)

movement corridor type governs:

- street side design (sidewalks, planting strips)
- traveled way design (lanes, medians, on-street parking, bicycle lanes)
- intersection design (ITE 2010)

POYNTZ

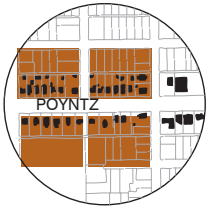
Existing Corridor Section

emphasizes vehicular capacity by four travel lanes, center turn lane, and parallel parking (Figure 4.7)

EXISTING

collector

C-4 general urban



existing characteristics

existing context zone: C-3 suburban

functional classification: collector

speed limit: 30 mph

right-of-way: 100 ft.

setback: 0 - 20 ft

center turn lane: yes

total width of vehicle lanes: 40 ft

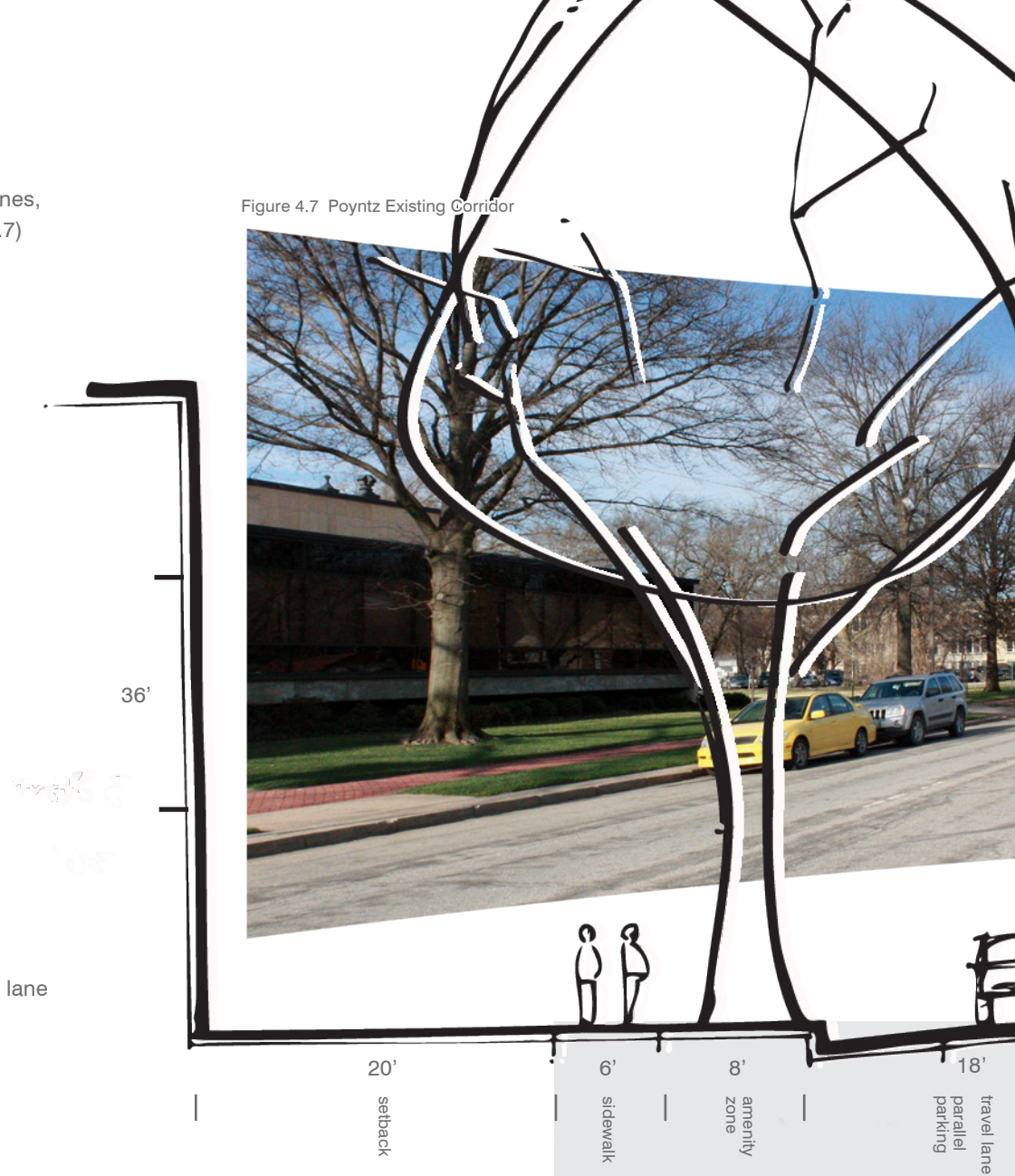
total width of bike lanes: not a designated bike lane

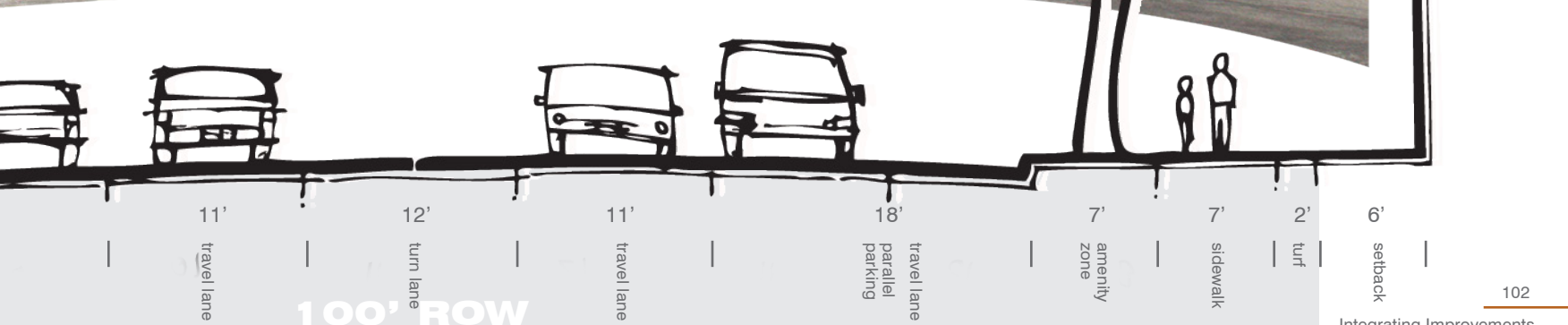
total width of sidewalks: 10 ft

total width of amenity zones: 17 ft

landscaping: street trees + turf

Figure 4.7 Poyntz Existing Corridor



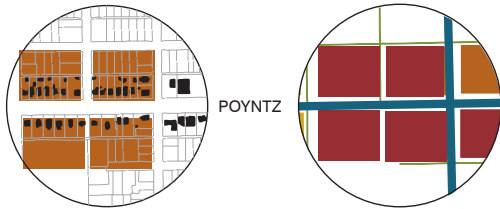


24'

POYNTZ

Improved Corridor Design Possibilities

EXISTING → PROPOSED
Collector Avenue
C-4 General Urban C-5 Urban Center



Two corridor designs for Poyntz (Figures 4.8 and 4.9) illustrate a few design possibilities for a streetscape avenue in a C-5 context. Each solution has a prioritized list of desirable elements, which explains how and why the solutions are different. The emphasis on the proposed possibilities is that no one solution is the answer. Many solutions that fulfill the community vision are possible.

Proposed Poyntz C-5 Avenue

prioritized list of desirable elements

- 1) vehicular capacity
- 2) bike lanes
- 3) wide sidewalks
- 4) amenity zones
- 5) lower operating speed
- 6) parking

Proposed Poyntz C-5 Avenue

prioritized list of desirable elements

- 1) on-street parking
- 2) bike lanes
- 3) wide sidewalks
- 4) amenity zones
- 5) vehicular capacity
- 6) lower operating speed

Proposed Poyntz C-5
Vehicle + Pedestrian Section

emphasizes vehicular capacity and wide sidewalks by a twelve foot center turn lane and eliminating on-street parking

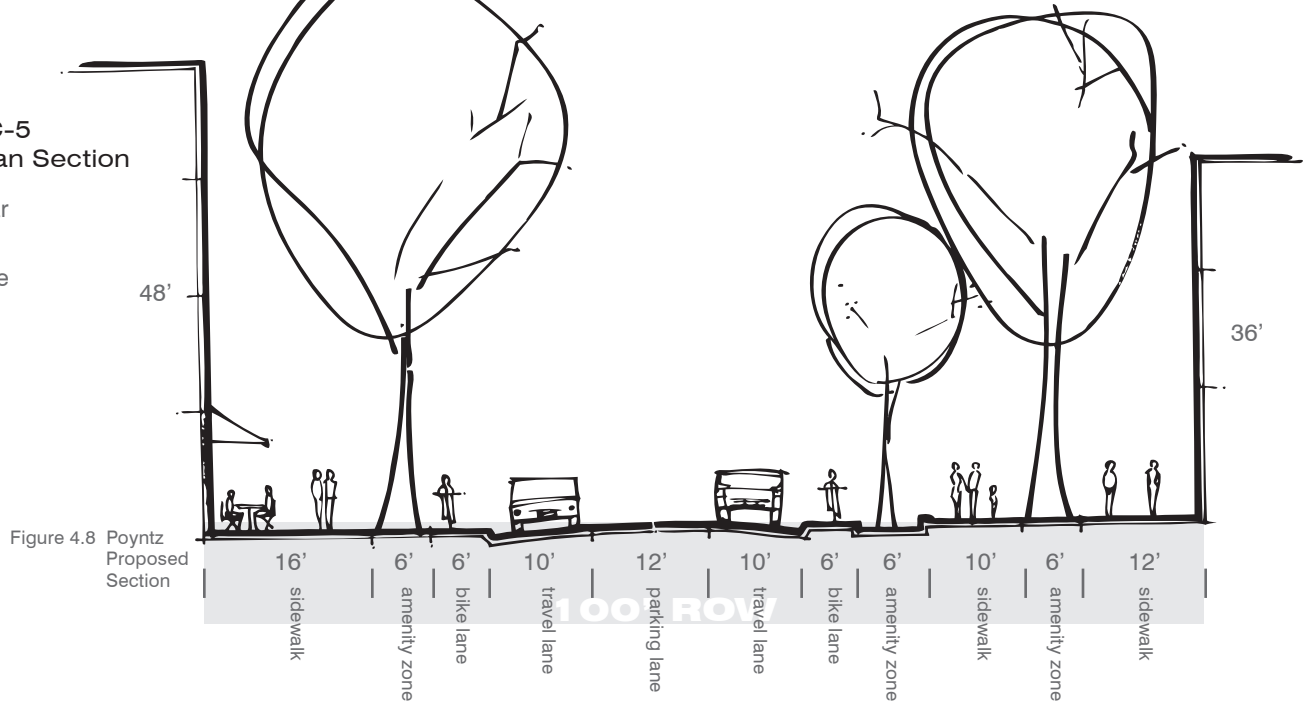


Figure 4.8 Poyntz Proposed Section

Proposed Poyntz C-5
Back-in Parking + Bike Section

emphasizes parking and bike lanes by reducing the number of travel lanes

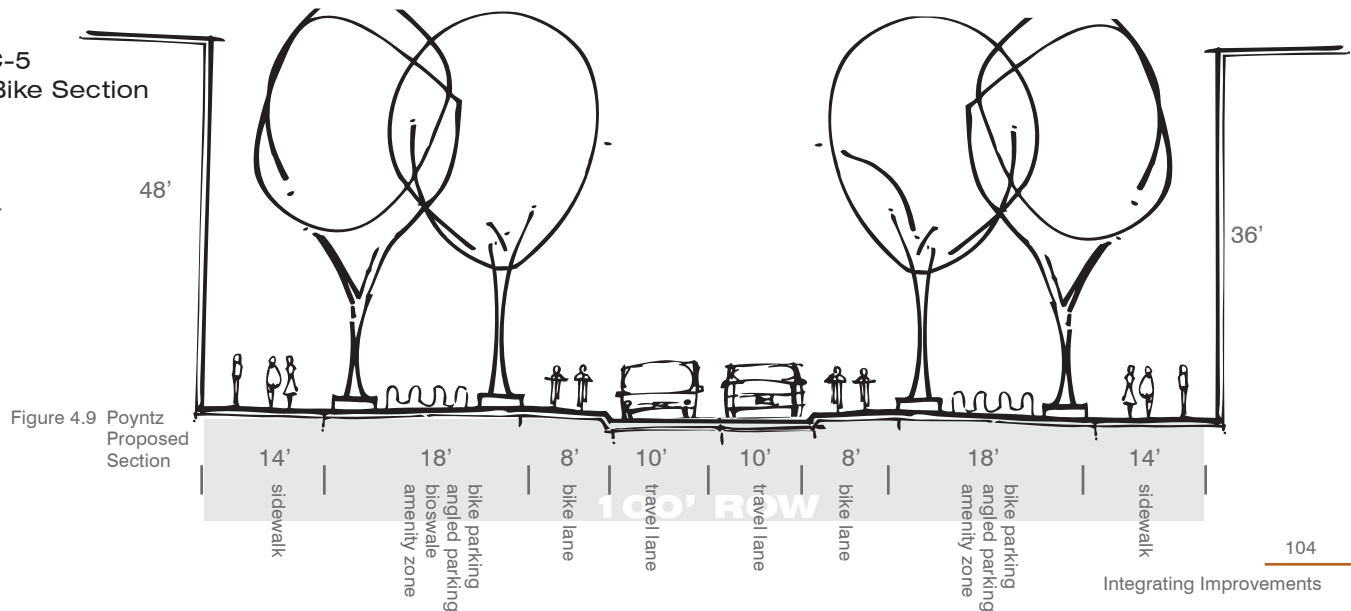


Figure 4.9 Poyntz Proposed Section

POYNTZ

Proposed Back-In Parking + Bike Section

observations from existing narrative:

CONTEXT

large setbacks, low building height, wide vehicular lanes, and single land uses weaken the main street character of Poyntz. dominance of vehicular traffic and infrastructure decreases the number of people in the corridor, and limits bicycle and pedestrian transportation and a safe and enjoyable mode of transit.

CORRIDOR

lack of designated bicycle lanes and parking, no bicycle accommodation at intersections, lots of on-street vehicle parking, and wide vehicular lanes compromises safety and discourages bicycle use.



Figure 4.10 illustrates one of the previously shown corridor designs for Poyntz as an avenue in a C-5 urban center context zone. The mixed-use buildings range from 3 to 4 stories high. The movement corridor features angled back-in parking, raised bike lanes, 14-ft wide sidewalks, stormwater management through urban bioswales, bike parking with nearby seating, and narrow traffic lanes reducing operating speed (for more information on back-in parking see Appendix 2 “On-Street Parking”).



setback 0'

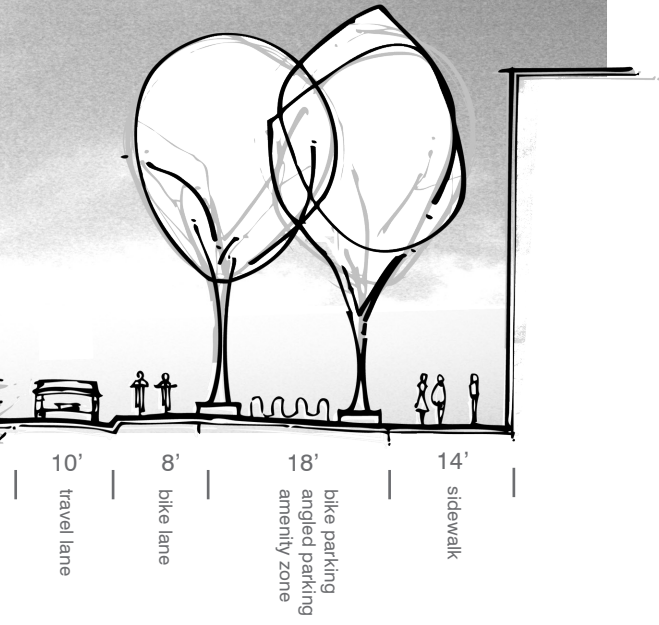
sidewalk 14'

back-in angled parking
bike parking
amenity zone
(bioswales, seating, trees) 18'

raised bike lane 8'



Figure 4.10 Poyntz Design Graphic: Back-In Parking+ Bike



10'
travel lane

OSAGE

Observations Applied to Process of Approach

The existing experience narrative on Osage expresses some effects the environment has on bicyclists. The corridor design, context design and natural environment intricately influences the experience of the user. This existing experience narrative is analyzed to show the positive and negative elements concerning the existing environment and its affect on people's experience. The positive and negative elements are categorized as it relates to the corridor, context, natural environment, or human perception affecting body, mind and spirit. These elements of the environment serve as a starting point for making changes to improve community development patterns.

MOVEMENT CORRIDOR :: large street trees shade and provide overhead enclosure



MOVEMENT CORRIDOR :: yield signs at intersections can be dangerous for opposing traffic



MOVEMENT CORRIDOR :: parallel parking near intersections make it difficult to see oncoming traffic



CONTEXT :: schools positively influence the character and perceived safety of the neighborhood



BODY:MIND:SPIRIT :: lack of bicycle awareness, especially at intersections, makes the movement corridors seem dangerous for non-motorized transportation modes



CONTEXT :: unique details and residential designs contribute to the neighborhood character



36° . February 17. 2010. mid-morning

I pedal through the grid of neighborhood streets, making a turn onto Osage. Immediately I feel the comfortable enclosure of the large tree canopies, and the narrowing of space from the parallel parking on either side of the street. A few cars speed by me as I approach the first intersection.

In too much of a hurry to care, the cars barely slow down at the yield sign. I creep out into the intersection straining my eyes to see approaching cars between the rows of parked cars along the intersecting curb. I think it's clear, so I push into the circular motion of peddling. Safely through the intersection, my sight rests over the linear corridor. I hear the energizing shouts of kids on the playground ahead.

Approaching another intersection I hesitate to keep my pace, not knowing if the intersecting car sees the stop sign or me. Wobbling to a stop, I finally get eye contact with the driver and the idling engine confirms that he sees me. I push through the intersection and once again enjoy the overhead canopy and rhythm of the passing trees. Bits of the neighborhood houses stand out from the blur: a yellow door, a red porch swing, and even a tire swing over an apartment parking lot. Most of the houses are unique shapes and sizes. Some even have porches. It looks like a community, except there's no people out. I wonder if the

people know their neighbors. There is quite a bit of space between each house. Not only between, but around each side of the houses. I wonder if these in-between spaces bring the people together.

CONTEXT :: large front setbacks and side yards make the character feel less urban, and decreases the amount of people that use that corridor on a daily basis.

Hopefully it's not just extra grass to mow. I'm struck by the predominate amount of personal space that exists throughout the neighborhood.

CONTEXT :: low density, single use residential development makes travel distances between destinations longer. longer distances generally inhibits bicycle and pedestrian circulation as a viable mode of transportation

Each person has a large amount of private space. Their house. Their yard. And one short walk away is their private automobile--facilitating transportation anywhere at any time.

CONTEXT + MOVEMENT CORRIDOR :: vehicular mobility is supported by multiple elements in the movement corridors and their context. this causes the "costs" of other modes to be high, making it unlikely that many people would choose a transportation mode other than the motorized vehicle

A car door swings open unexpectedly, interrupting my thoughts. I am reminded to pay close attention; most people don't expect cyclists in the street.

MOVEMENT CORRIDOR :: lack of bicycle facilities cause the awareness of non-motorized traffic to be very low.

OSAGE

Existing :: Context Zones Applied

How existing conditions fit into ITE's established context zones is shown here. The whole length of the corridor generally meets the C-3 suburban context zone. The distinguishing characteristic of Osage is primary single family residential with walkable development pattern and pedestrian facilities. The general character is embodied by detached buildings with landscaped yards. Building placement is generally 30 feet back from the ROW, and front and side yards vary. The typical building height is 1 to 2 stories. Nearby types of open space are parks.

In Manhattan's City-Center District, the vision is that movement corridors and context support multi-modal transportation as a safe, convenient and enjoyable mode of transportation. The experience as recorded in the narrative concludes that large setbacks and side yards result in low density. Low density makes travel distances longer which generally inhibits bicycle and pedestrian circulation as a viable mode of transportation.





primary single family . dominate landscape character

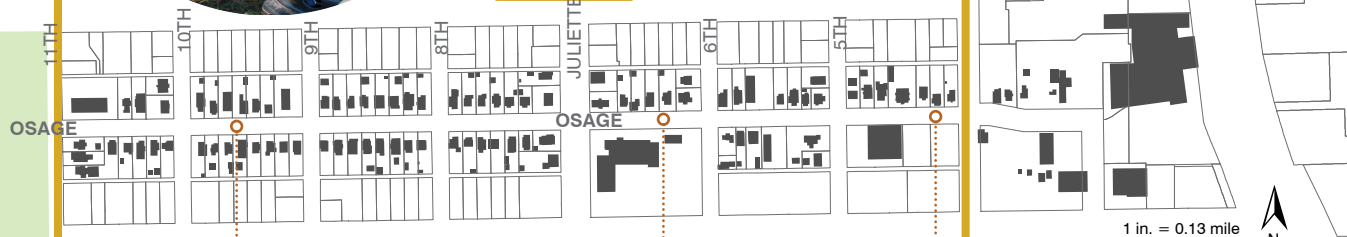
detached buildings with landscaped yards

varying front and side yard setbacks

lawnes . porches . fences . naturalistic tree planting

1 . 2 . some 3 story parks . greenbelts

C-3 suburban



positive and negative elements observed in the narrative directly related to the existing movement corridors

“ There is quite a bit of space between each house. Not only between, but around each side of the houses. I wonder if these in-between spaces bring the people together. ”

“ Bits of the neighborhood houses stand out from the blurr: a yellow door, a red porch swing, and even a tire swing over an apartment parking lot. Most of the houses are unique shapes and sizes. ”

“ I’m struck by the predominate amount of personal space that exists throughout the neighborhood. Each person has a large amount of private space. Their house. Their yard. And one short walk away is their private automobile-facilitating transportation anywhere at any time. ”



CONCLUSIONS: large setbacks and side yards result in low density, which decreases the amount of people that use the corridor on a daily basis. low density makes travel distances longer which generally inhibits bicycle and pedestrian circulation as a viable mode of transportation

Figure 4.11 Osage Existing Context

OSAGE

Existing Functional Classification

Osage is classified by the City as “local” for its functionality in the street network. Functional classification defines a thoroughfare’s function and role in the network, in addition to governing the selection of certain design controls. Functional classification can determine continuity, purpose and length of trips, level of land access, type of freight service, and types of public transit services (ITE 2010).

In Manhattan’s City-Center District, the vision is that movement corridors and context support multi-modal transportation as a safe, convenient and enjoyable mode of transportation. The experience as recorded in the narrative concludes that the lack of designated bicycle lanes, dangerous intersections (one corridor of traffic yields), and parallel parking makes the cost of pedestrian and bicycle transportation high, meaning it is not convenient. It is unlikely that many people would choose a transportation mode other than the vehicle.



City Park

positive and negative elements observed in the narrative directly related to the existing movement corridors



“ I creep out into the intersection straining my eyes to see approaching cars between the rows of parked cars along the intersecting curb. ”

“ A car door swings open unexpectedly, interrupting my thoughts. I am reminded to pay close attention; most people don't expect cyclists in the street. ”

“ In too much of a hurry to care, the cars barely slow down at the yield sign. ”

“ Immediately I feel the comfortable enclosure of the large tree canopies . . . ”



CONCLUSIONS: lack of designated bicycle lanes, dangerous intersections, and parallel parking (making it hard to see) makes the “cost” of bicycle transportation high, making it unlikely that many people would choose a transportation mode other than the vehicle

Figure 4.12 Osage Existing Functional Classification

OSAGE

Proposed Context Zones

C-3 Suburban
primary single family
. dominate landscape character ; detached buildings with landscaped yards ; varying front and side yard setbacks ; lawns . porches . fences . naturalistics tree planting ; 1 . 2. some 3 story ; parks . green belts

C-4 General Urban
mix of housing types
. range of commercial + civic activity ; predominately detached buildings . balance between landscape and buildings ; shallow to medium front and side yard setbacks ; porches . fences ; 2 to 3 story ; parks . greenbelts

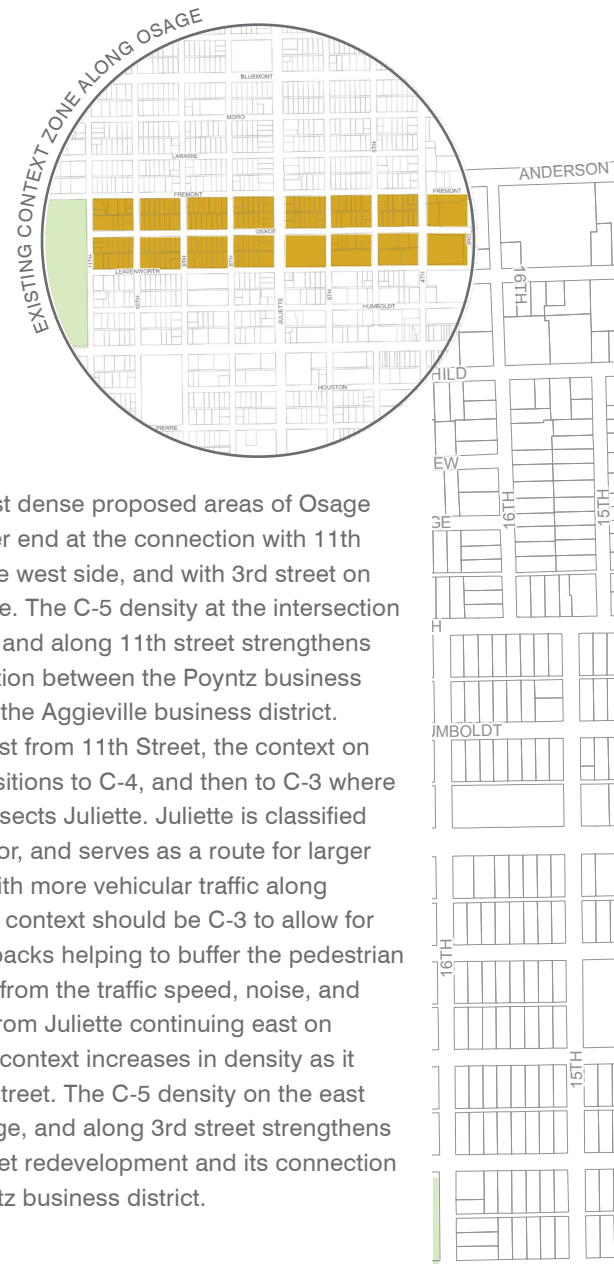
C-5 Urban Center
attached housing types mixed with retail, workspace, and civic activities ; predominately attached buildings . substantial pedestrian activity ; small or no setbacks . definition of street wall ; stoops . dooryards . storefronts . arcaded walkways ; 3 to 5 story with some variation ; parks . plazas . squares . boulevards median landscaping

conclusions from narrative of existing experience concerning context:

Large setbacks and side yards result in low density, which decreases the amount of people that use the corridor on a daily basis. Low density makes travel distances longer which generally inhibits bicycle and pedestrian circulation as a viable mode of transportation.

Context zones, as defined by ITE, on Osage should transition from being solely C-3 suburban, to a more dense C-4 general urban and C-5 urban center (Figure 4.13). Instead of the street being solely for transportation, the street can become a public space for people. Osage can maintain, and even enrich, its neighborhood character by making the street more accessible to a range of users. In general, shortening the front setback would help define the street and help bring more people into the street. Shortening the side yards would also help define the street, as well as increase the density. With increased density, there are more destinations along the street, which results in distances from place to place becoming shorter. Shorter distances make walking and biking a much more viable transportation option.

The most dense proposed areas of Osage are on either end at the connection with 11th street on the west side, and with 3rd street on the east side. The C-5 density at the intersection with Osage and along 11th street strengthens the connection between the Poyntz business district and the Aggieville business district. Heading east from 11th Street, the context on Osage transitions to C-4, and then to C-3 where Osage intersects Juliette. Juliette is classified as a collector, and serves as a route for larger vehicles. With more vehicular traffic along Juliette, the context should be C-3 to allow for deeper setbacks helping to buffer the pedestrian experience from the traffic speed, noise, and pollution. From Juliette continuing east on Osage, the context increases in density as it meets 3rd street. The C-5 density on the east end of Osage, and along 3rd street strengthens the 3rd street redevelopment and its connection to the Poyntz business district.



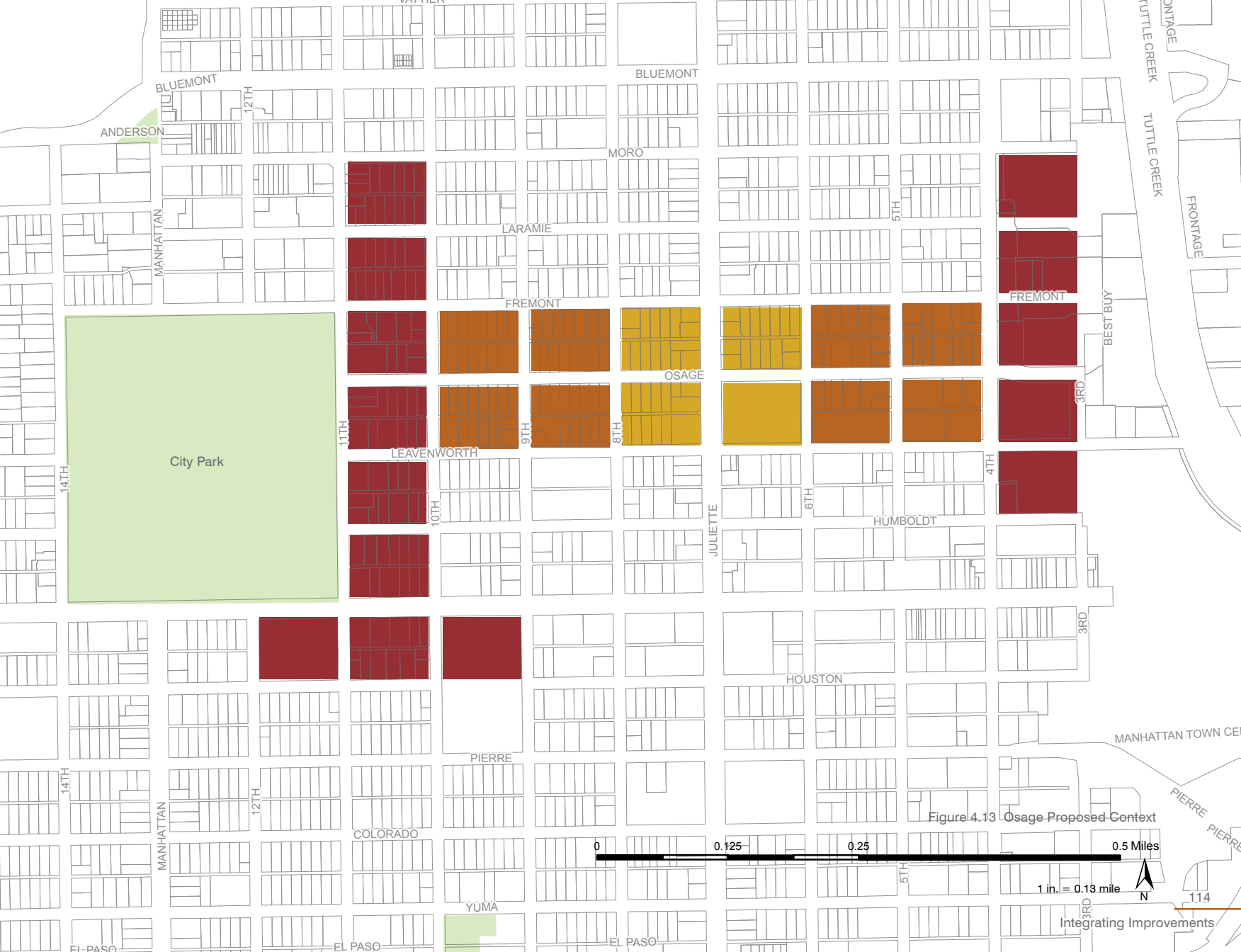


Figure 4.13 Osage Proposed Context

OSAGE

Proposed Movement Corridor Type

- boulevard
- avenue
- street

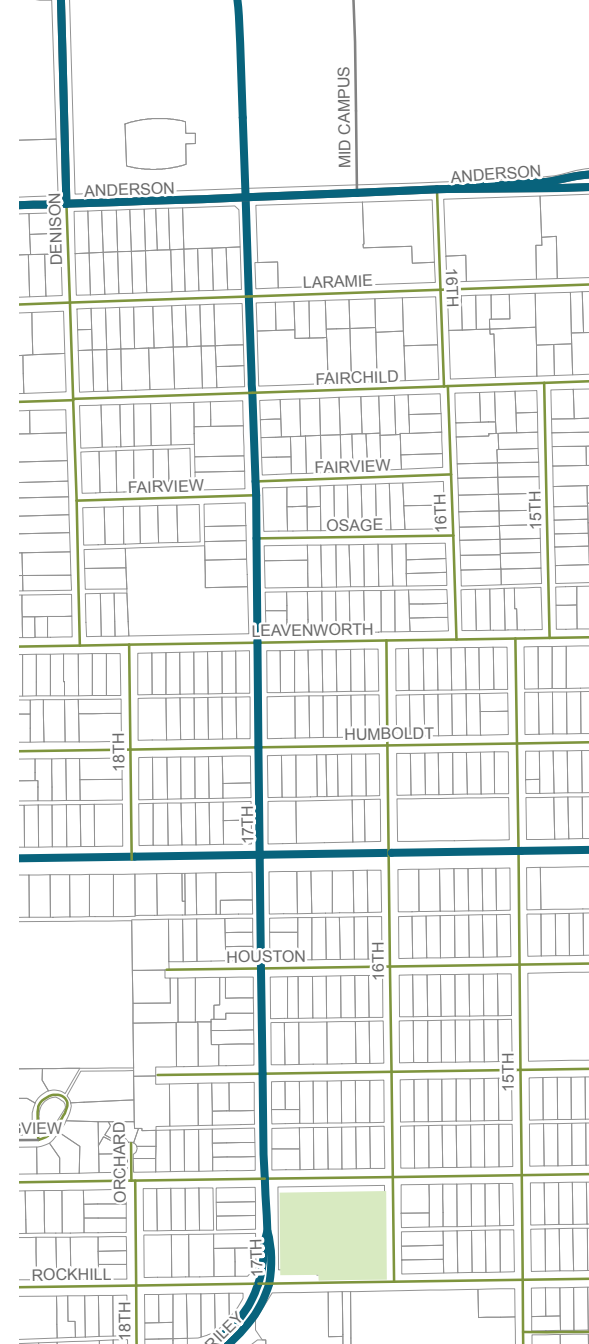
conclusions from narrative of existing experience concerning the movement corridor

Lack of designated bicycle lanes, dangerous intersections, and parallel parking (making it hard to see) makes the “cost” of bicycle transportation high, making it unlikely that many people would choose a transportation mode other than the vehicle.

The proposed ITE-defined movement corridor type for Osage is a street (Figure 4.14). Movement corridor type governs the “selection of the corridor’s design criteria and, along with the surrounding context, is used to determine the physical configuration of the corridor” (ITE 2010). Classifying Osage as a street means that it should be a walkable, low speed (25mph or less) corridor generally serving abutting property. Generally, this means the planning and design of the corridor will give more priority to pedestrian and bicycle infrastructure. CSS states that a street,

“is designed to connect residential neighborhoods with each other, connect neighborhoods with commercial and other districts, and connect local streets to arterials” (ITE 2006).

The context zone and movement corridor type directly affect the design criteria of the corridor. The planning of street networks in Manhattan should use functional classification, context zones, and movement corridor types to facilitate the planning and design for multi-modal transportation as a safe, convenient and enjoyable mode of transportation.



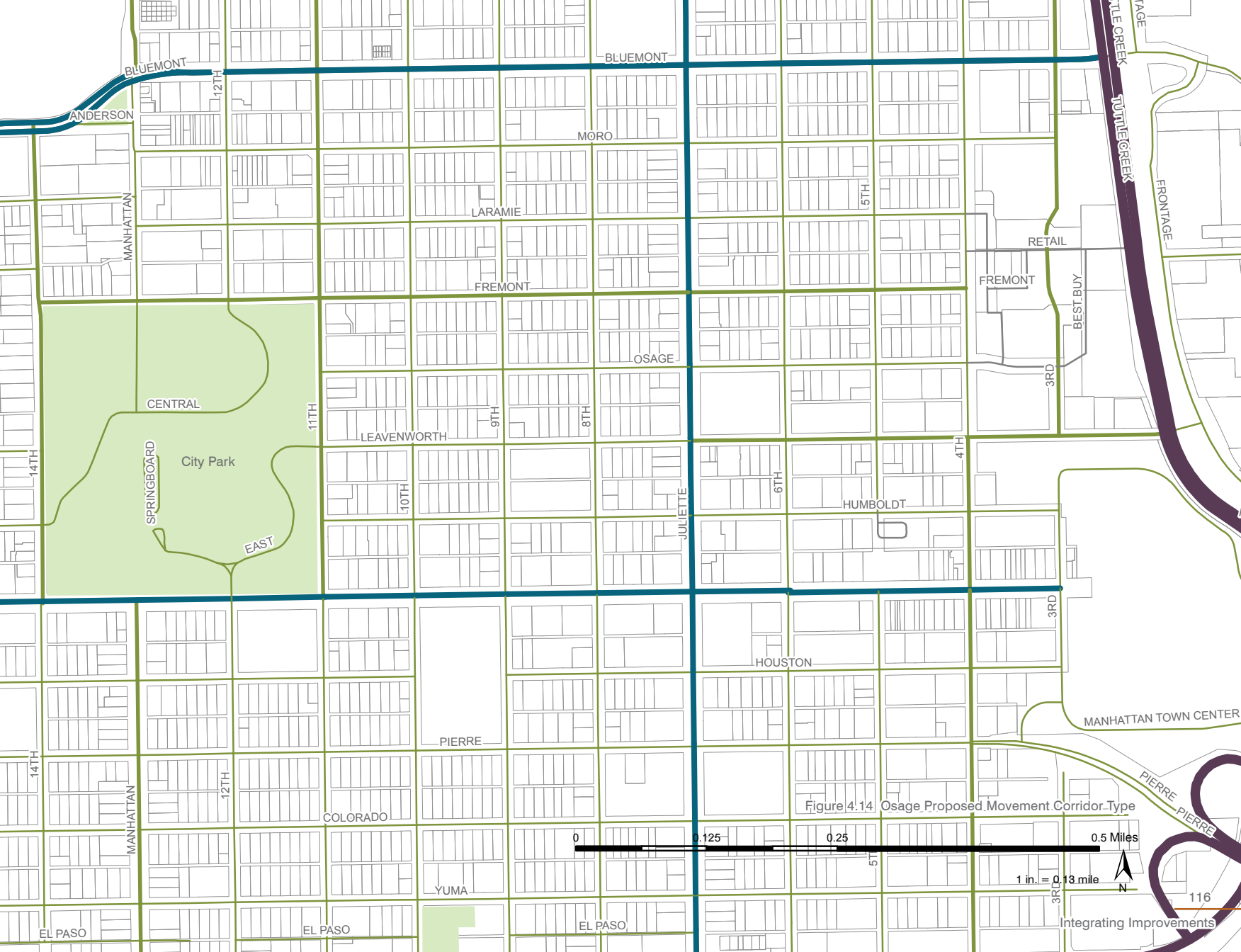


Figure 4.14 Osage Proposed Movement Corridor Type



how does the proposed context zone and movement corridor type change the design characteristics of the street corridor?

functional classification defines:

- continuity
- purpose and lengths
- level of land access
- type of freight service
- types of public transit services (ITE 2010)

context zones describe:

- distinguishing characteristics
- general character
- building placement
- frontage type
- typical building height
- type of open space (ITE 2010)

movement corridor type governs:

- street side design (sidewalks, planting strips)
- traveled way design (lanes, medians, on-street parking, bicycle lanes)
- intersection design (ITE 2010)

OSAGE

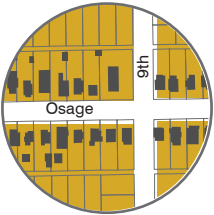
Existing Corridor Section

emphasizes accommodation of large vehicles, parking, and single-use residential by 15' travel lanes and large setbacks and side yards.

EXISTING

local

C-3 suburban



existing characteristics

existing context zone: C-3 suburban

functional classification: local

speed limit: 30 mph

right-of-way: 60 ft.

setback: 30 ft

center turn lane: no

total width of vehicle lanes: 30 ft

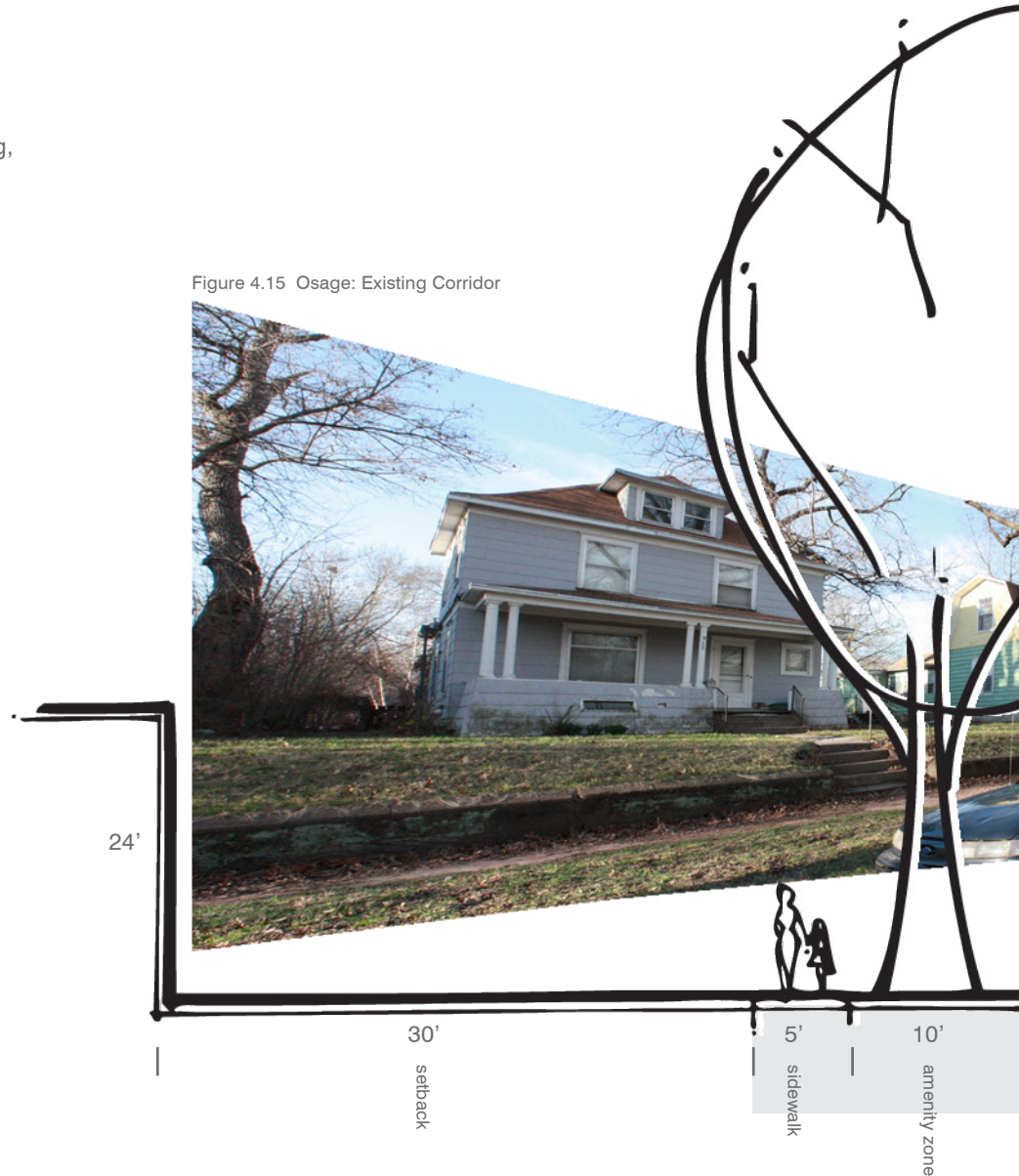
total width of bike lanes: not a designated bike lane

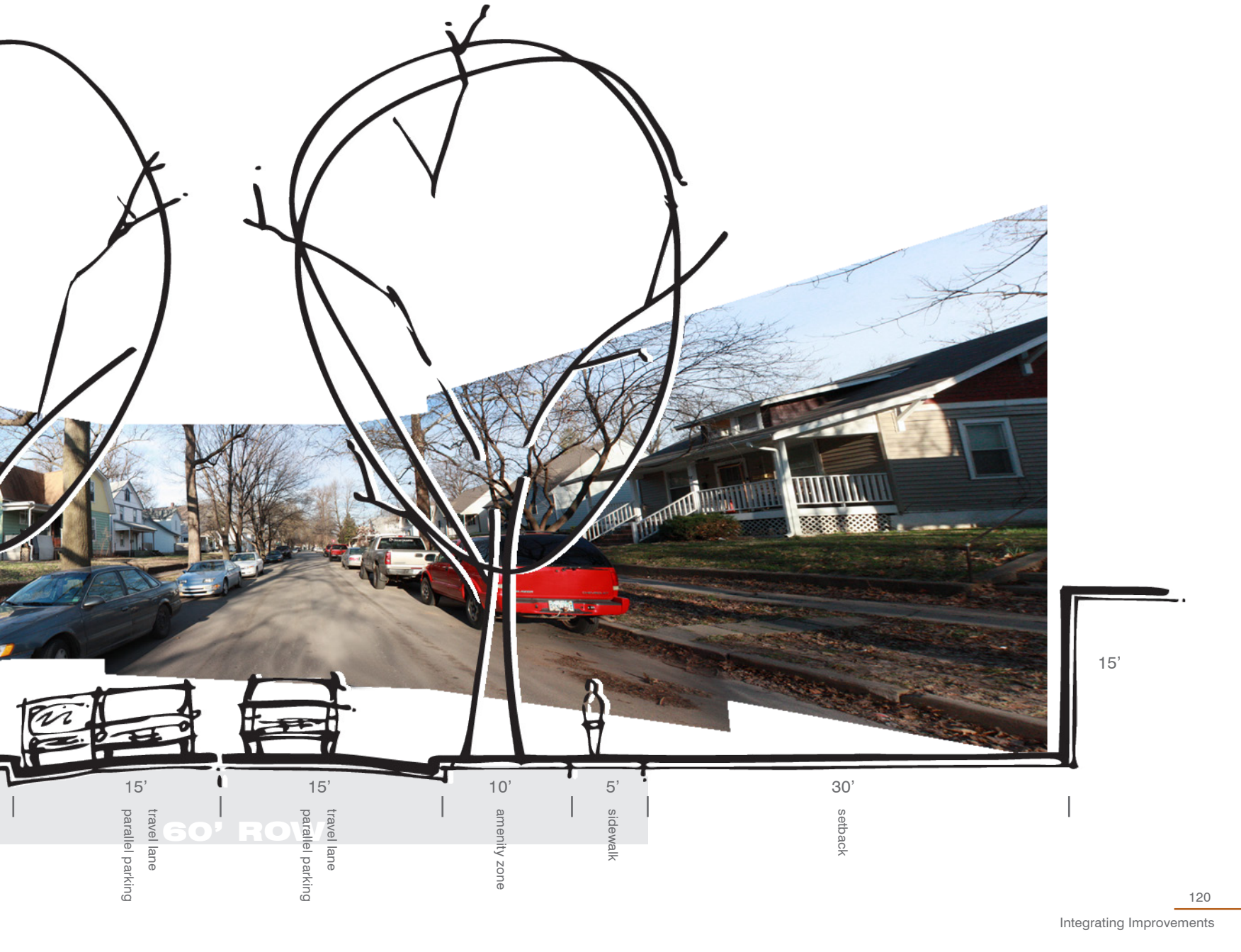
total width of sidewalks: 10 ft

total width of amenity zones: 20 ft

landscaping: large street trees + turf

Figure 4.15 Osage: Existing Corridor





60' ROW

15'

travel lane
parallel parking

15'

travel lane
parallel parking

10'

amenity zone

5'

sidewalk

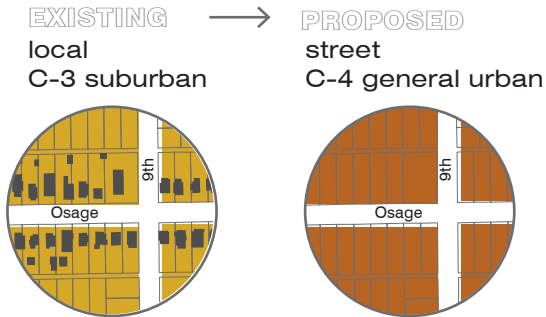
30'

setback

15'

OSAGE

Improved Corridor Design Possibilities



Two corridor designs for Osage (Figures 4.16 and 4.17) illustrate a few design possibilities for a movement corridor type of street in a C-4 context. Each solution has a prioritized list of desirable elements, which explains how and why the solutions are different. The emphasis on the proposed possibilities is that no one solution is the answer. Many solutions that fulfill the community vision are possible.

Proposed Osage C-4 Street

prioritized list of desirable elements

- 1) lower operating speeds
- 2) wider sidewalks
- 3) bike lanes
- 4) on-street parking
- 5) amenity zones
- 6) vehicular capacity

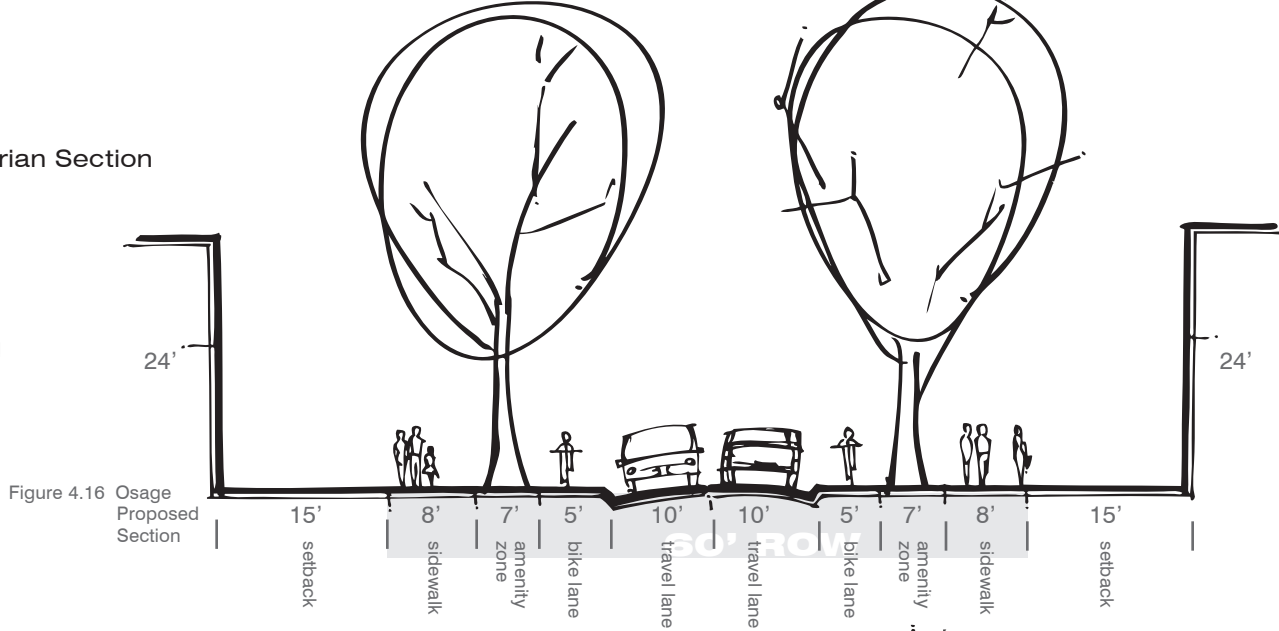
Proposed Osage C-4 Street

prioritized list of desirable elements

- 1) lower operating speeds
- 2) bike lanes
- 3) parking
- 4) sidewalks
- 5) amenity zones
- 6) vehicular capacity

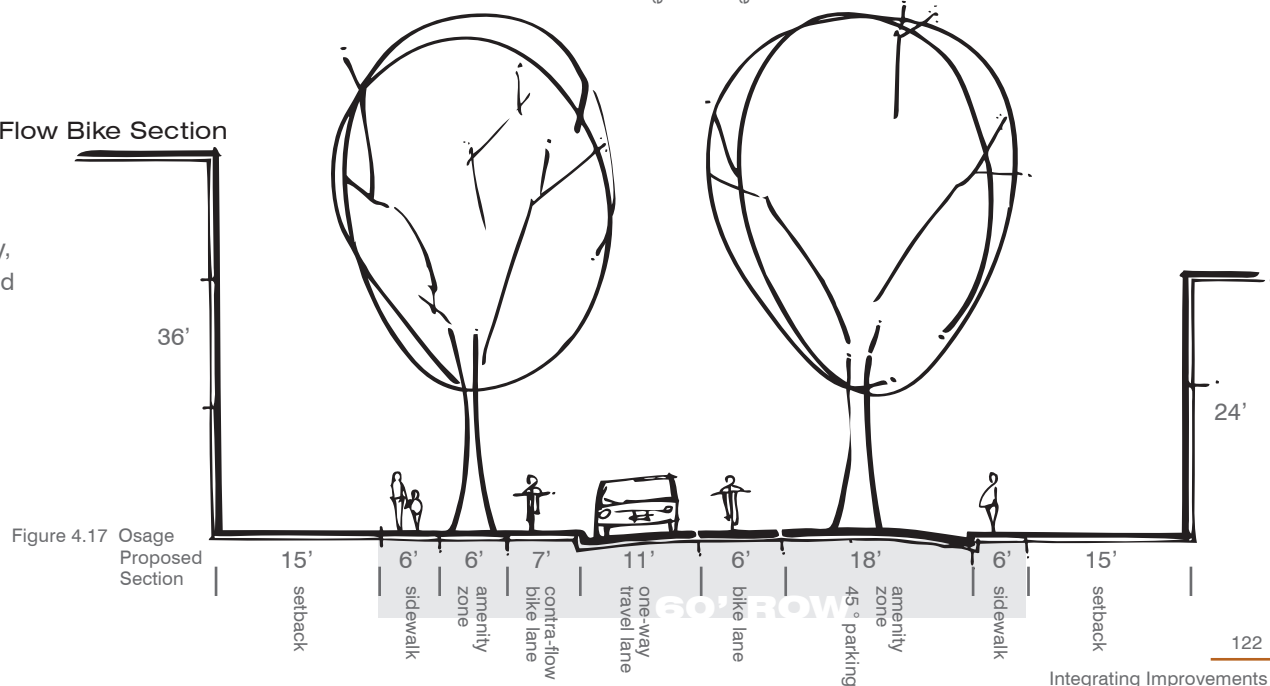
**Proposed Osage C-4
Low Speeds + Pedestrian Section**

emphasizes lower operating speeds and sidewalks by narrowing vehicular traffic lanes to 10 ft wide and increasing width of sidewalks to 8 ft wide



**Proposed Osage C-4
Low Speeds + Contra-Flow Bike Section**

emphasizes bike lanes and parking by limiting vehicle access to one-way, two-way bicycle traffic, and 45 degree angled parking (parking alternates with amenity zone)



OSAGE

Proposed Low Speed + Contra-Flow Bike Section

observations from existing narrative:

CONTEXT

large setbacks and side yards result in low density, which decreases the amount of people that use the corridor on a daily basis. low density makes travel distances longer which generally inhibits bicycle and pedestrian circulation as a viable mode of transportation.

CORRIDOR

lack of designated bicycle lanes, dangerous intersections, and parallel parking (making it hard to see) makes the "cost" of bicycle transportation high, making it unlikely that many people would choose a transportation mode other than the vehicle



Figure 4.18 illustrates one of the previously shown corridor designs for Osage as a street in a C-3 suburban context zone. This primarily residential street transitions through time from the existing 30-ft setbacks to 15-ft setbacks. With shortened front setbacks and shortened side yards, the corridor design encourages active presence and participation within the public space of the corridor. The movement corridor features one-way automobile traffic, and two-way bicycle movement. The contra-flow bike lane is raised and separated from automobile traffic by a small curb. The University of Wisconsin has built contraflow bike lanes (see Appendix 2). The corridor design also supports 45 degree angled parking on one side of the corridor, and amenity zones for trees and any other street furniture.



Figure 4.18 Osage Design Graphic: Low Speed+Contra-Flow Bike Lane



WILDCAT

Observations Applied to Process of Approach

The existing experience narrative on Wildcat expresses how the environment can influence bicyclists. The corridor design, context design and natural environment intricately influences the experience of the user. This existing experience narrative is analyzed to show the positive and negative elements concerning the existing environment and its affect on people's experience. The positive and negative elements are categorized as it relates to the corridor, context, natural environment, or human perception affecting body, mind and spirit. These elements of the environment serve as a starting point for making changes to improve community development patterns.

MOVEMENT CORRIDOR :: uphill bicycling makes it hard to keep straight, especially on an uphill turn. lack of bicycle facilities makes its more dangerous for a bicyclist to be sharing the road with unaware motorists

CONTEXT + MOVEMENT CORRIDOR :: segregated residential neighborhoods with no direct bicycle connections to services and goods makes the "cost" of bicycle circulation high, thus decreasing the likelihood that people will choose to bike

MOVEMENT CORRIDOR :: neighborhood traffic roundabout slows down vehicular traffic

MOVEMENT CORRIDOR :: hazardous streets decrease the likelihood of people choosing to bike or walk

30° . February 18. 2010. morning

My legs are burning as they push up the hill on Poyntz Avenue. I glance behind me before I take a wobbly right turn onto Sunset. I continue uphill hoping there's still nobody behind me who might come around the turn too fast. My legs are screaming at me--waiting for a downhill coast. Between the hilly topography, busy vehicular streets and lack of any bicycle infrastructure there's no easy way to get to the neighborhoods just south of Anderson around the K-State Alumni Center. I coast downhill and back up to a small neighborhood roundabout. An oncoming car slows down to make the tight circular maneuver. I'm happy not to slow my momentum through the intersection. There are no moving cars in sight as I proceed up and down a few more hills and around a few more circular neighborhood intersections. I've cut through the winding neighborhood streets, and now my only option for getting to Wildcat Road is to travel down Anderson Avenue. I pause at the stop sign thinking about the best plan of attack. My numbing fingers grip the handlebars as I think for a moment about cutting into the right lane of traffic. Technically, it's illegal for me to ride on the sidewalk, but the thought of trying to maneuver up a small hill with speedy cars pushing me to the gutter does not make me happy. I turn to check out the sidewalk options. It's a really small sidewalk

covered in snow and ice, and cutting through several driveways--but at this point I've decided that's the safer option. Propelling forward, paying full attention to my surroundings, I slowly make my way down the slippery concrete path. Finally, I turn off Anderson to one of the little neighborhood streets. The not-so-little neighborhood street is actually very wide. I think the street is wide enough to accommodate four lanes of automobile traffic. There are random cars parked along the street, but other than that there's no signs of activity. In the distance I see a man walking his dog in the street. There aren't any sidewalks, but he seems comfortable enough walking in the street. I continue through the quiet corridor, with only the birds discussing the coming of spring. With freezing fingers gripping the handlebars, I'm not convinced that spring is coming soon enough. The rows of little houses set back from the wide asphalt ribbon seem far away--connecting street and house by concrete driveways. Through the trees, I can begin to make out businesses and houses beyond the rocky drop-off in topography behind the houses. I could do for a warm up at Panera Bread about now. Unfortunately, there's no connection unless I want to face the rushing stream of cars on Anderson Avenue. Winding through the curvy streets, I know it's going to be almost ten minutes before I can get to the closest coffee shop. My legs are burning and the rest of me is icing over.



MOVEMENT CORRIDOR :: wide movement corridors generally increase speeds of vehicular traffic



MOVEMENT CORRIDOR :: lack of pedestrian infrastructure doesn't encourage pedestrian use and activity



CONTEXT :: large front setbacks give little definition to the street edge, and also makes the houses seem disconnected from the street. this disconnect facilitates little social exchange



NATURAL ENVIRONMENT :: unique view, looking over the west side of manhattan



CONTEXT :: no nearby commercial services, and no direct connection to get to the commercial services makes the "cost" of bicycle and pedestrian circulation high

WILDCAT

Existing :: Context Zones Applied

How existing conditions fit into ITE's established context zones is shown in Figure 4.19. Wildcat best fits into the C-3 context zone. The distinguishing characteristic of Wildcat is primary single family residential. Wildcat does not have pedestrian facilities. The general character is defined by detached buildings with landscaped yards. Building placement is generally 30 to 50 feet back from the ROW, and front and side yards vary. The typical building height is 1 story. Nearby types of open space are parks.

The experience as recorded in the narrative concludes that large front setbacks give little definition to the street edge, and also make the houses seem disconnected from the street. This disconnect does little to facilitate social exchange. Also, lack of commercial services and indirect routes make bicycle and pedestrian circulation inconvenient.



C-3 suburban

primary single family . dominate
landscape character

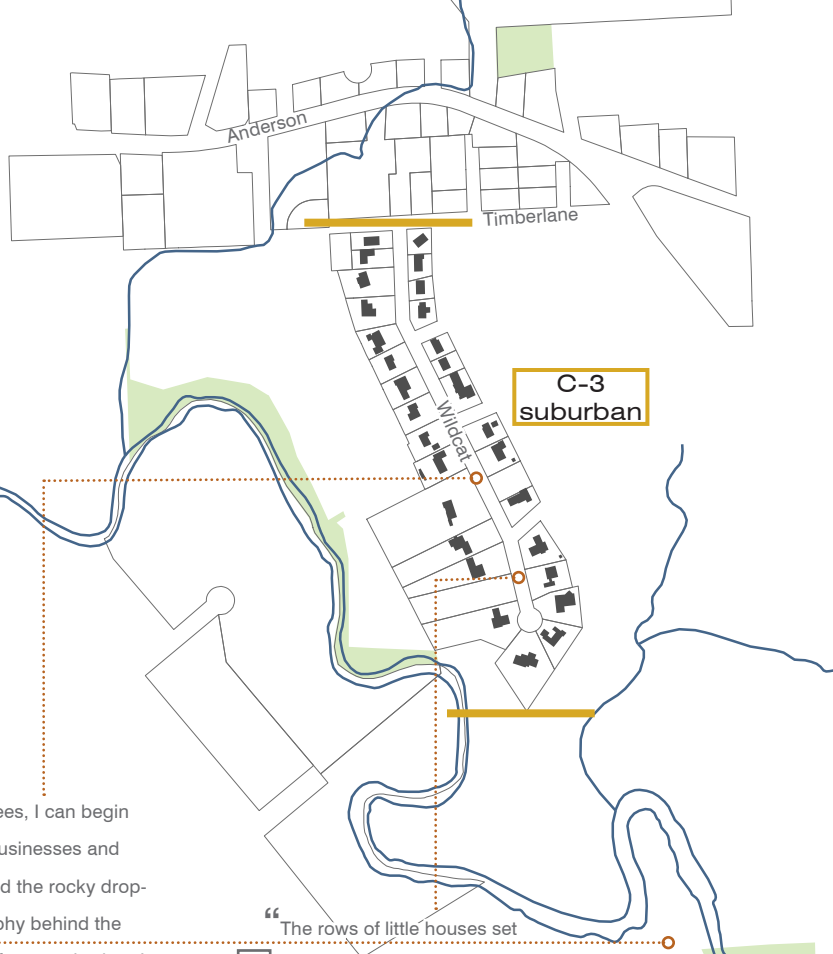
detached buildings with
landscaped yards

varying front and side
yard setbacks

lawns . porches . fences .
naturalistic tree planting

1 . 2 . some 3 story

parks . greenbelts



positive or negative elements observed in the **narrative** directly related to the existing movement corridors

“ Through the trees, I can begin to make out businesses and houses beyond the rocky drop-off in topography behind the houses. . . Unfortunately, there’s no connection unless I want to face the rushing stream of cars on Anderson Avenue. ”

“ The rows of little houses set back from the wide asphalt ribbon seem far away--connecting street and house by concrete driveways. ”



CONCLUSIONS: large front setbacks give little definition to the street edge, and also make the houses seem disconnected from the street. this disconnect does little to facilitate social exchange. also, lack of commercial services and indirect routes make bicycle and pedestrian circulation inconvenient

Figure 4.19 Wildcat Existing Context
1 in. = 0.13 mile
N

WILDCAT

Existing Functional Classification

Wildcat is classified by the City as “local” for its functionality in the street network (Figure 4.20). Functional classification defines a movement corridor’s function and role in the network, in addition to governing the selection of certain design controls. Functional classification can determine continuity, purpose and length of trips, level of land access, type of freight service, and types of public transit services (ITE 2010).

In Manhattan’s City-Center District, the vision is that movement corridors and context support multi-modal transportation as a safe, convenient and enjoyable mode of transportation. The experience as recorded in the narrative concludes that lack of pedestrian and bicycle infrastructure decreases comfort and safety for non-motorized transportation. Segregated residential neighborhoods with no direct pedestrian and bicycle connections to services and goods makes the “cost” of bicycle circulation high, thus decreasing the likelihood that people will choose to bike or walk. With the existing movement corridor design, it is unlikely that many people would choose a transportation mode other than the motorized vehicle.



positive or negative elements observed in the **narrative** directly related to the existing movement corridors

“ I continue uphill hoping there’s still nobody behind me who might come around the turn too fast. ”

“ Between the hilly topography, busy vehicular streets and lack of any bicycle infrastructure there’s no easy way to get to the neighborhoods just south of Anderson around the K-State Alumni Center. ”

“ I coast downhill and back up to a small neighborhood roundabout. An oncoming car slows down to make the tight circular maneuver. ”

“ The not-so-little neighborhood street is actually very wide. I think the street is wide enough to accommodate four lanes of automobile traffic. ”

“ There are random cars parked along the street, but other than that there are no signs of activity. In the distance I see a man walking his dog in the street. There aren’t any sidewalks, but he seems comfortable enough walking in the street. ”

CONCLUSIONS:

lack of pedestrian and bicycle infrastructure decreases comfort and safety for non-motorized transportation. segregated residential neighborhoods with no direct pedestrian and bicycle connections to services and goods makes the “cost” of bicycle circulation high, thus decreasing the likelihood that people will choose to bike or walk.

Figure 4.20 Wildcat Existing Functional Classification

1 in. = 0.13 mile
N

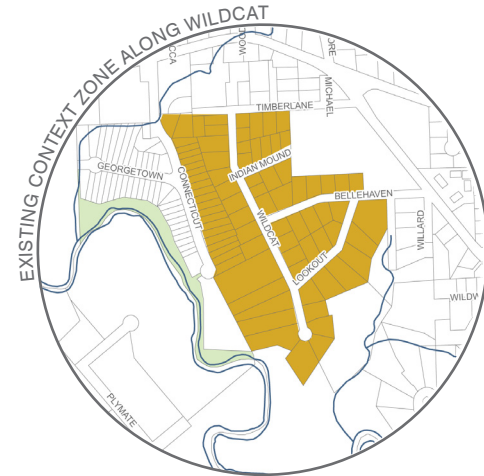
WILDCAT

Proposed Context Zones

- C-3 Suburban**
 - primary single family
 - dominate landscape character ; detached buildings with landscaped yards ; varying front and side yard setbacks ; lawns . porches . fences . naturalistics tree planting ;
 - 1 . 2. some 3 story ; parks . green belts

conclusions from narrative of existing experience concerning context:

Large front setbacks give little definition to the street edge, and also make the houses seem disconnected from the street. This disconnect facilitates little social exchange. Also, lack of commercial services and indirect routes make bicycle and pedestrian circulation inconvenient because long distances between destinations.



Proposed context zones on Wildcat do not end up changing context zones from the existing context zone (Figure 4.21). However, changes and improvements of development patterns must be made in implementing context zones from ITE's Context Sensitive Solutions approach.

For Wildcat to apply the true characteristics of the C-3 suburban zone, setback distances in the front and side yards should be shortened. In general, shortening the front setback would help define the street and help bring more people into the street.

Shortening the side yards would also help define the street, as well as increase the density while maintaining the primarily 1 or 2 story residential houses. Increasing the density by shortening setbacks is important for creating shorter trip distances that accommodate pedestrians and bicyclists. The topography in this area is challenging in terms of making connections from this primarily residential context to more dense and mixed use contexts. Nonetheless, it is important to create direct pedestrian and bicyclist connections from single use contexts to mixed use contexts.

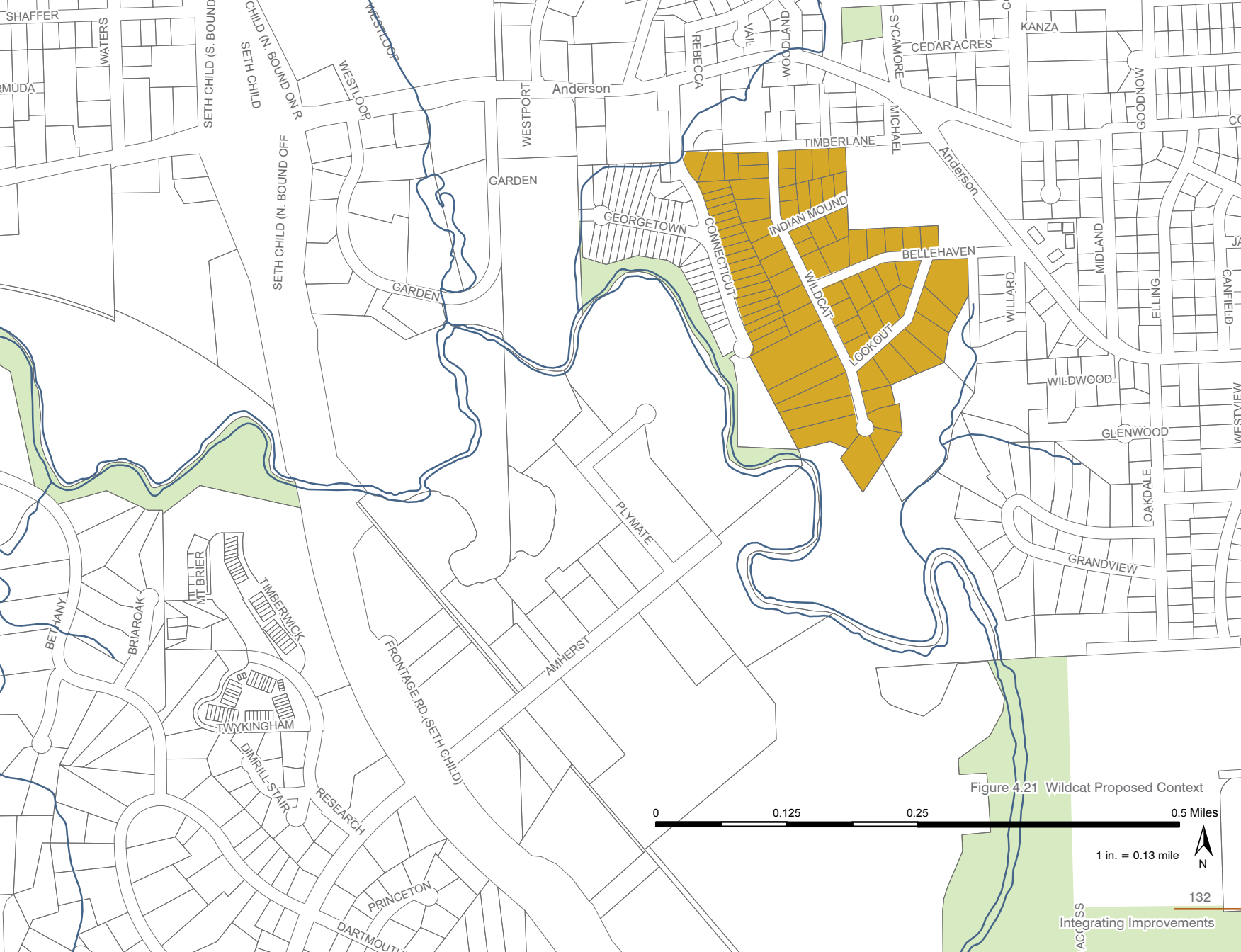


Figure 4.21 Wildcat Proposed Context

0 0.125 0.25 0.5 Miles

1 in. = 0.13 mile



WILDCAT

Proposed Movement Corridor Type

■ boulevard	conclusions from narrative of existing experience concerning context: Lack of pedestrian and bicycle infrastructure decreases comfort and safety for non-motorized transportation. Segregated residential neighborhoods with no direct pedestrian and bicycle connections to services and goods makes the “cost” of bicycle circulation high, thus decreasing the likelihood that people will choose to bike or walk.
■ avenue	
■ street	
— road	

The proposed movement corridor type for Wildcat is a road (Figure 4.22). Movement corridor type governs the “selection of the corridor’s design criteria and, along with the surrounding context, is used to determine the physical configuration of the corridor” (ITE 2010). Classifying Wildcat as a road means that it should be a walkable, low speed (25mph or less) corridor generally serving abutting property. Wildcat is classified as a road instead of a street because of its single use residential, and it’s curvilinear suburban layout. The movement corridor should support slower traffic

than a street, and serve as a public space for all types of movement including recreational. In theory, the movement corridor type should help govern the planning and design of the corridor to give more priority to pedestrian and bicycle infrastructure.

The context zone and movement corridor type directly affect the design criteria of the corridor. The planning of street networks in Manhattan should use functional classification, context zones, and movement corridor types to facilitate the planning and design for multi-modal transportation as a safe, convenient and enjoyable mode of transportation.

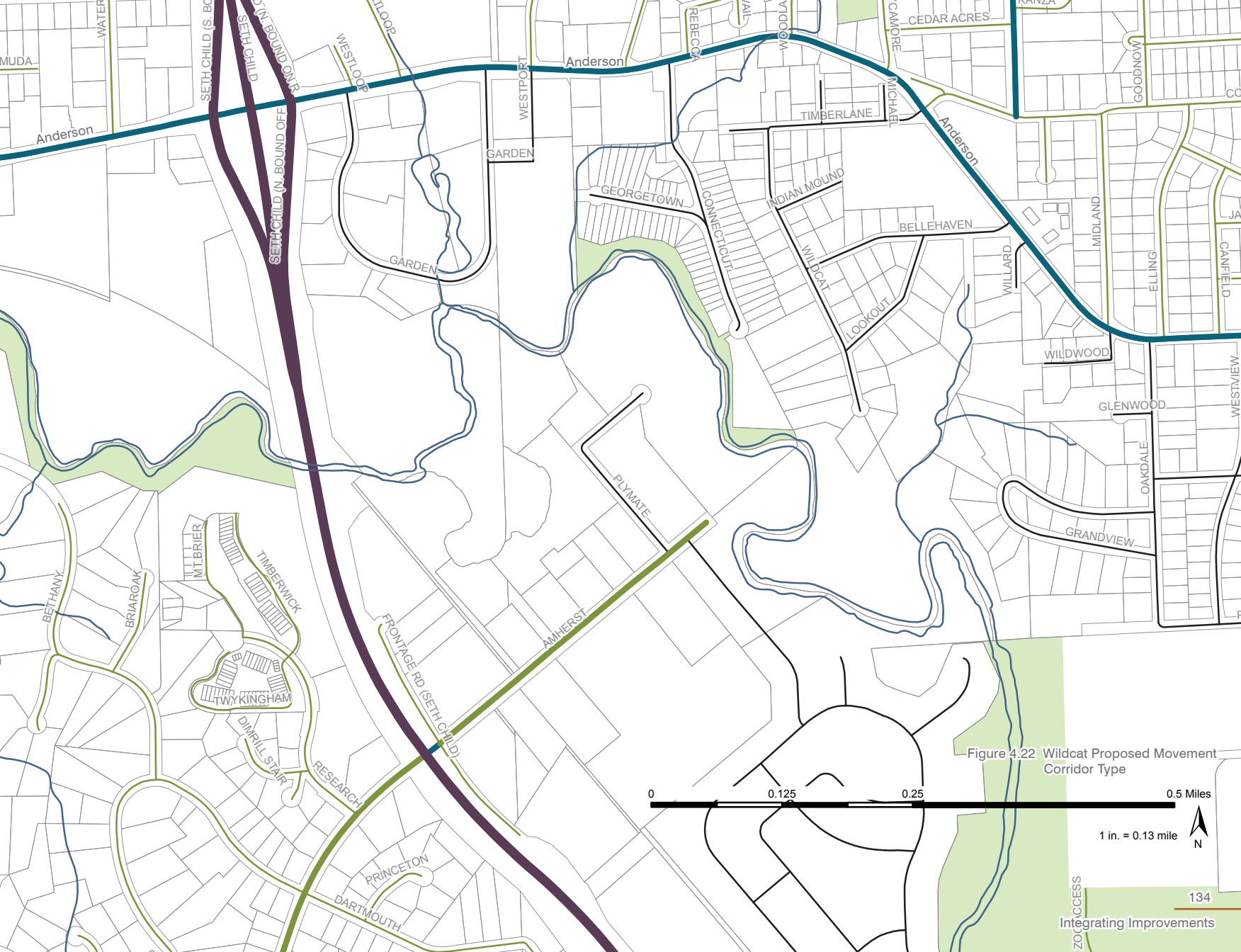


Figure 4.22 Wildcat Proposed Movement Corridor Type



how does the proposed context zone and movement corridor type change the design characteristics of the street corridor?

functional classification defines:

- continuity
- purpose and lengths
- level of land access
- type of freight service
- types of public transit services (ITE 2010)

context zones describe:

- distinguishing characteristics
- general character
- building placement
- frontage type
- typical building height
- type of open space (ITE 2010)

movement corridor type governs:

- street side design (sidewalks, planting strips)
- traveled way design (lanes, medians, on-street parking, bicycle lanes)
- intersection design (ITE 2010)

WILDCAT

Existing Corridor Section

emphasizes accommodation of large vehicles, parking, and single-use residential by 15' travel lanes and large setbacks and side yards.

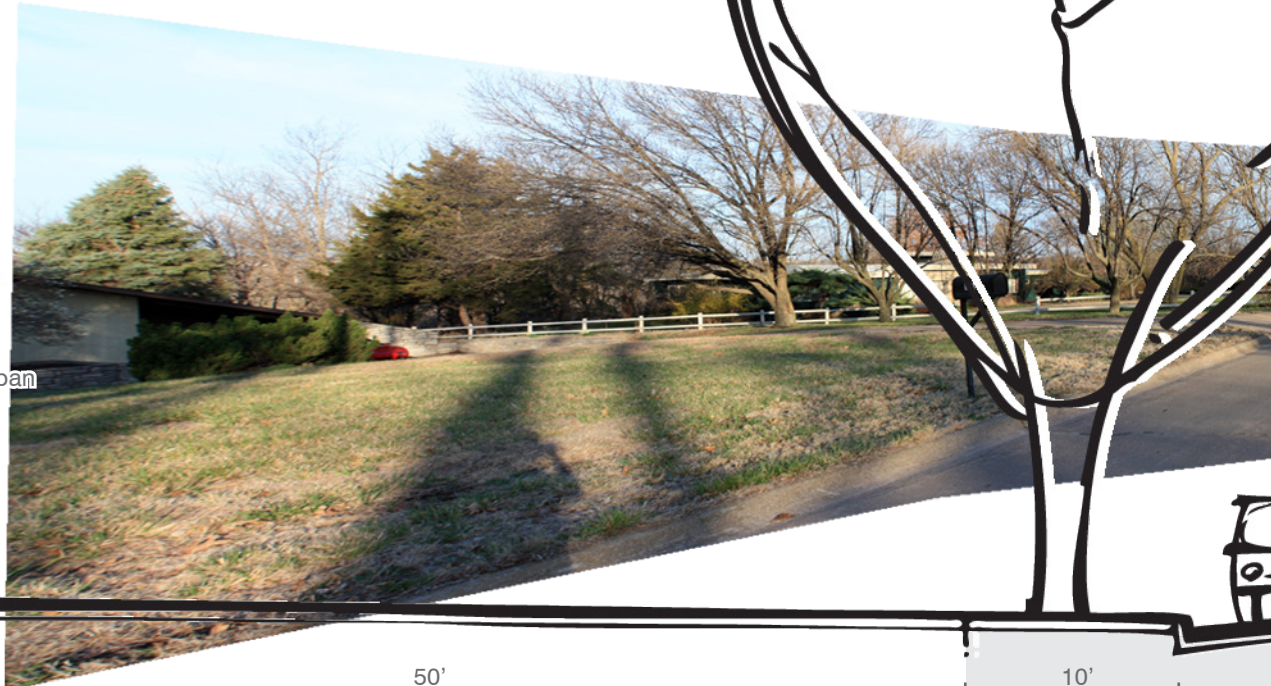
EXISTING

local

C-3 suburban



Figure 4.23 Wildcat: Existing Corridor



existing characteristics

existing context zone: C-3 suburban

functional classification: local

speed limit: 30 mph

right-of-way: 50 ft.

setback: 50 ft

center turn lane: no

total width of vehicle lanes: 30 ft

total width of bike lanes: not a designated bike lane

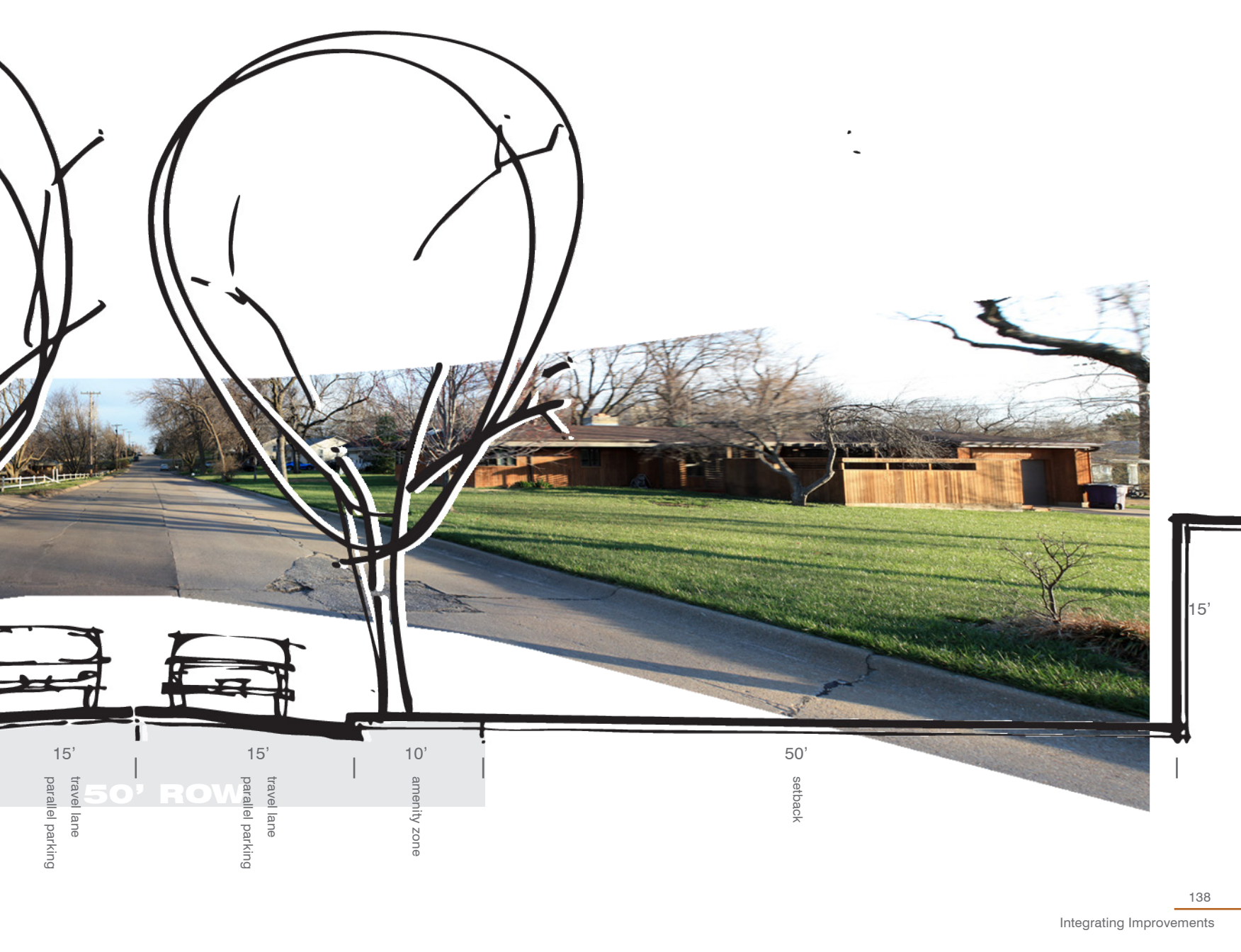
total width of sidewalks: no sidewalks

total width of amenity zones: 20 ft

landscaping: some street trees + turf

50'
setback

10'
amenity zone



15'

parallel parking

50' ROW

15'

travel lane

10'

amenity zone

50'

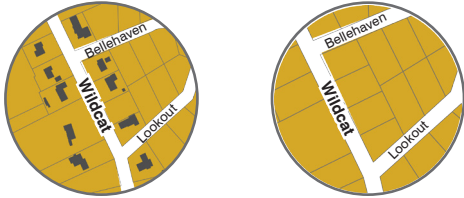
setback

15'

WILDCAT

Improved Corridor Design Possibilities

EXISTING → PROPOSED
local road C-3 suburban
C-3 suburban road C-3 suburban



Two corridor designs for Wildcat (Figures 4.24 and 4.25) illustrate a few design possibilities for a movement corridor type of road in a C-3 context. Each solution has a prioritized list of desirable elements, which explains how and why the solutions are different. The emphasis on the proposed possibilities is that no one solution is the answer. Many solutions that fulfill the community vision are possible.

Proposed Wildcat C-3 Road

prioritized list of desirable elements

- 1) bike lanes
- 2) sidewalks
- 3) amenity zones
- 4) on-street parking
- 5) lower operating speeds
- 6) vehicular capacity

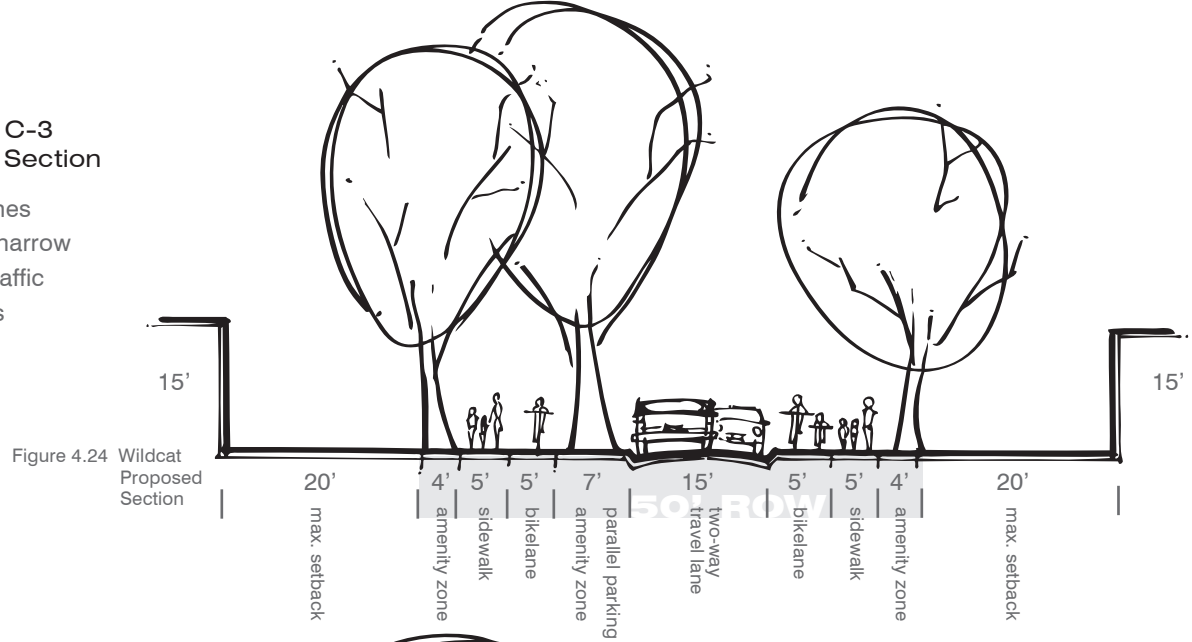
Proposed Wildcat C-3 Road

prioritized list of desirable elements

- 1) sidewalks
- 2) bike lanes
- 3) parking
- 4) amenity zones
- 5) lower operating speeds
- 6) vehicular capacity

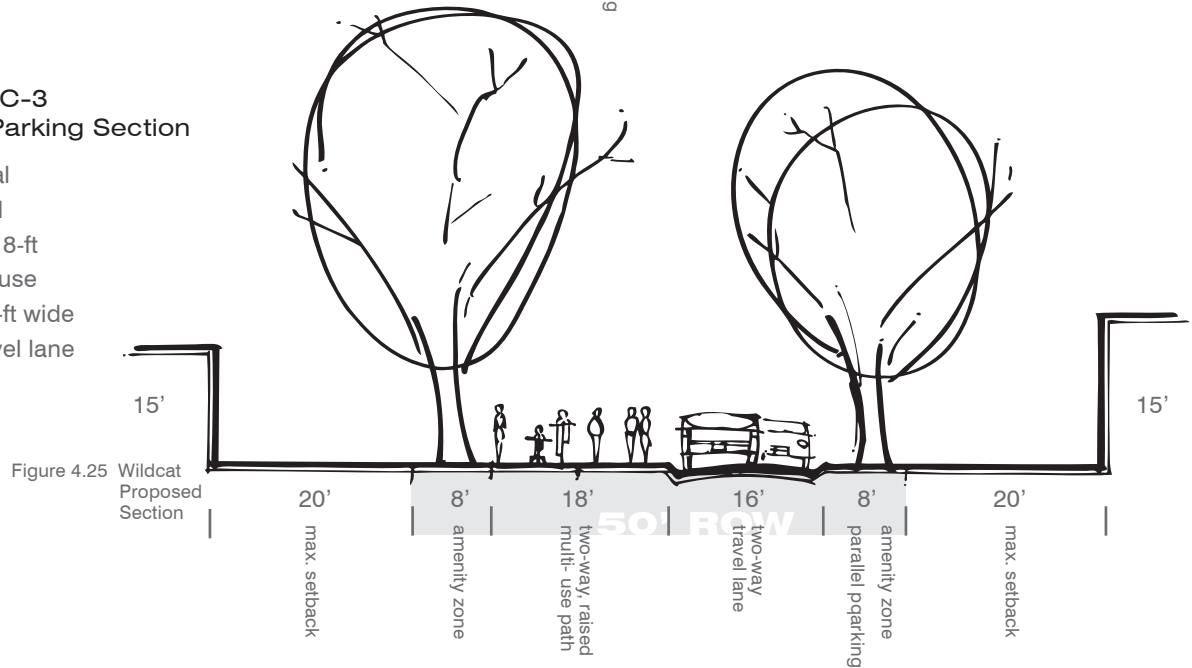
**Proposed Wildcat C-3
Bike + Pedestrian Section**

emphasizes bike lanes and sidewalks with narrow two-way vehicular traffic lane and many trees



**Proposed Wildcat C-3
Multi-Use Path + Parking Section**

emphasizes physical activity in residential neighborhoods by 18-ft wide two-way multi-use path and narrow 16-ft wide two-way vehicle travel lane



WILDCAT

Proposed Multi-Use Path + Parking Section

observations from existing narrative:

CONTEXT

large front setbacks give little definition to the street edge, and also make the houses seem disconnected from the street. this disconnect does little to facilitate social exchange. also, lack of commercial services and indirect routes make bicycle and pedestrian circulation inconvenient.

CORRIDOR

lack of pedestrian and bicycle infrastructure decreases comfort and safety for non-motorized transportation. segregated residential neighborhoods with no direct pedestrian and bicycle connections to services and goods makes the "cost" of bicycle circulation high, thus decreasing the likelihood that people will choose to bike or walk.



Figure 4.26 illustrates one of the previously shown corridor designs for Wildcat as a road in a C-3 suburban context zone. This primarily residential street is located in an area of the City-Center District which has a naturalistic feel because of Wildcat Creek and the hilly topography. The naturalistic character can be maintained, while enriching the possibility for participation and active presence in public space of corridors by creating a more defined movement corridor and infrastructure that supports pedestrian and bicycle movement as a viable and enjoyable transportation mode. Shortened existing 50-ft setbacks to 20-ft setbacks with shortened side yards helps connect people to the street, and gives definition to the corridor. The movement corridor features a narrow 15-ft wide two-way vehicular lane, and parallel parking on one side of the corridor. The parallel parking is located in the amenity zone space and would alternate with street trees. An 18-ft wide multi-use path supports pedestrian and bicycle movement especially as a safe and recreational public place for families (see Appendix 2 for more information on shared-use paths).



Figure 4.26 Wildcat Design Graphic: Multi-Use Path+Parking



two-way 16'
travel lane

8'
amenity zone
parallel parking

20'
max. setback





5 | RECOMMENDED ACTIONS + CONCLUSIONS

“But deep experience of the world — meaningful and revealing relationships with the people, places and things we interact with — requires many speeds of engagement, and especially the slower ones ”

-SlowLab



Figure 5.1 Action Framework: Project Scope Summary

ACTION FRAMEWORK

Project Scope Summary

This Master's Report presents an action framework which organizes and depicts the content of this report (Figure 5.1). The action framework emphasizes important elements concerning the vision for a community's movement corridors, establishes and demonstrates a process for district selection within a city, and suggests guidelines for integrating improvements in transportation planning and design.

The first part of the action framework inspires possibilities for a more holistic vision of transportation planning and design. The observations and analysis of Aix-en-Provence reveal how both the context and corridor are important designable qualities in transportation planning and design. Literature in combination with the Aix-en-Provence precedent study inform the project vision. The vision for Manhattan is that movement corridors function as a multi-modal circulation network, accommodate bicycle and pedestrian circulation, support sustainable land development patterns, and foster meaningful experience in transit.

The second part of the action framework is a strategy for prioritizing community growth and development through supporting attributes within a district. The concept of district development is shaped by Lawrence Frank's ideas on people's preference for a particular mode plus the costs of the different modes relative to one another. There must be significant changes in each component of the built environment: the transportation system, land use patterns and urban design characteristics (Frank 2003). The actual district selection is a process designed for the selection of all districts within the community. The selection process is driven by the city-wide vision, which is presented in the first section of the action framework. The process of district selection is demonstrated by the selection of Manhattan's first district: the City Center District.

The third part of the action framework presents a process of approach for integrating improvements in transportation planning and design. Using the City Center District, specific

deficiencies in corridor design and context are presented through narratives, recording the experience of a bicyclist in the streets of Manhattan. The analysis of the narratives call for improvements that address both the context and movement corridor design. Context Sensitive Solutions (CSS), written by the Institute of Transportation Engineers, is presented as a sound method for initiating positive improvements in Manhattan's transportation planning and design. CSS specifically provides this Master's report with guidelines for developing context zones, movement corridor types, and acceptable dimensions for designable elements related to the streetscape. Context zones, movement corridor types, and possible solutions for streetscape design are applied to three streets within the City-Center District of Manhattan. Emphasizing the range of design possibilities, multiple corridor designs are presented as acceptable ways to reconfigure the corridor and context infrastructure.

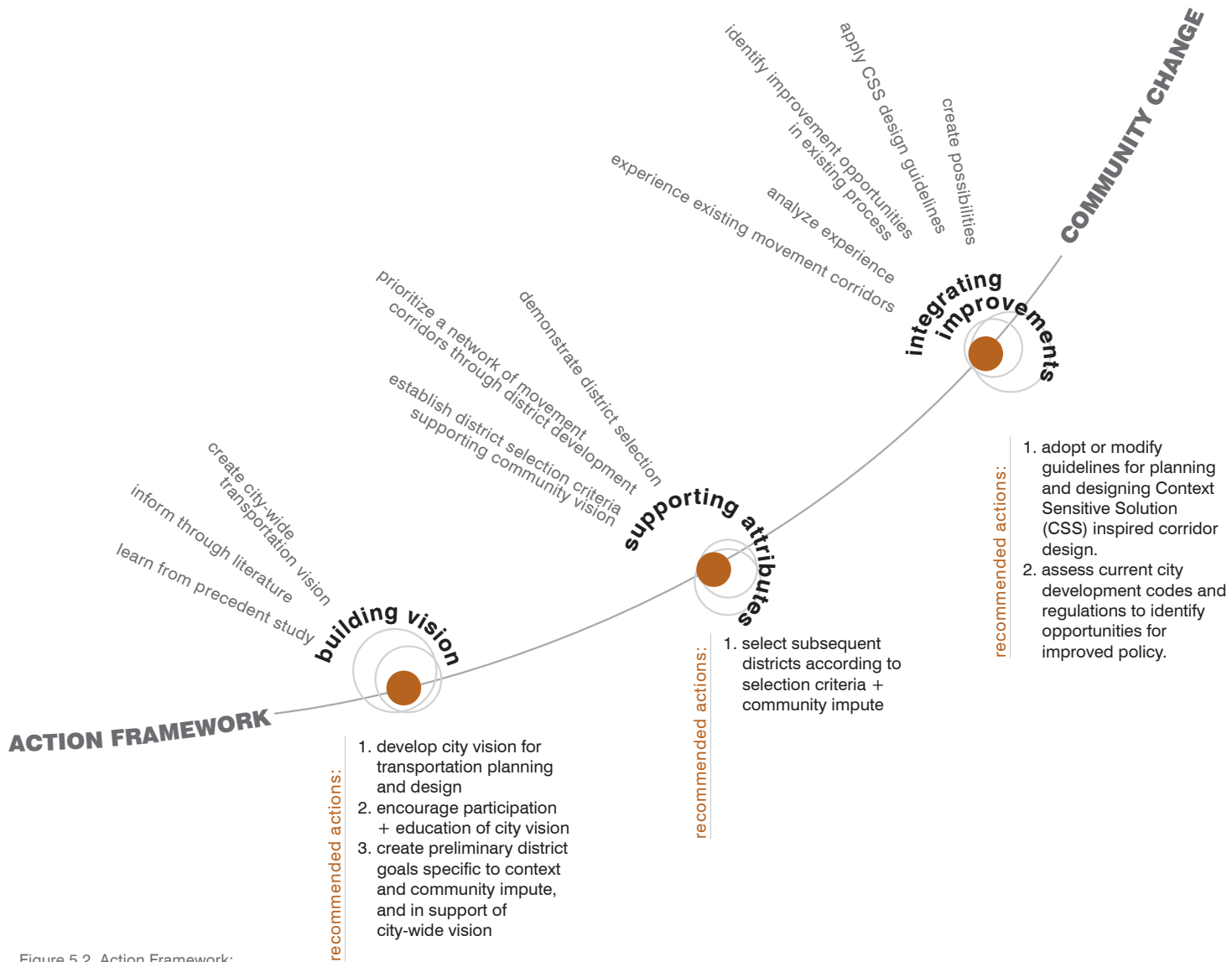


Figure 5.2 Action Framework: Recommended Actions

RECOMMENDED ACTIONS

The action framework organizes the scope of this Master’s report, as well as opportunities for future recommended actions (Figure 5.2).

Building Vision

1. Take action to develop a city-wide vision for transportation planning and design: Experiencing other cities, even in different cultures, is an opportunity to gain a more holistic vision of how context and corridor relate to the designable qualities in transportation planning and design. The vision should be about community, how people act and interact to “achieve in concert what they might not achieve alone” (Jacobs 1993). Recommended sources for reference include Allan Jacobs’s *Great Streets*, The National Complete Streets Coalition’s website, Timothy Beatley’s *Green Urbanism*, Jan Gehl’s *Life Between Buildings Using Public Space*, and the Institute of Transportation Engineers’s *Designing Walkable Urban Thoroughfares: A Context Sensitive Approach*. In addition to these sources, The United States Department of Transportation (DOT) announced new regulations and recommendations in March of 2010. The DOT policy says that every transportation agency, including DOT, has the responsibility to “improve conditions and opportunities for walking and bicycling and to integrate walking and bicycling into their transportation system” (DOT 2010). The recommendations in this policy statement applicable to a transportation planning and design vision include the following:

- “Considering walking and bicycling as equals with other transportation modes: The primary goal of a transportation system is to safely and efficiently move people and goods. Walking and bicycling are efficient transportation modes for most short trips and, where convenient intermodal systems

exist, these non-motorized trips can easily be linked with transit to significantly decrease trip distance. Because of the benefits they provide, transportation agencies should give the same priority to walking and bicycling as is given to other transportation modes. Walking and bicycling should not be an afterthought in roadway design” (DOT 2010).

- “Ensuring that there are transportation choices for people of all ages and abilities, especially children: Pedestrian and bicycle facilities should meet accessibility requirements and provide safe, convenient, and interconnected transportation networks. For example, children should have safe and convenient options for walking or bicycling to school and parks. People who cannot or prefer not to drive should have safe and efficient transportation choices” (DOT 2010).

2. Encourage participation and education of the established city-wide vision for transportation planning and design: Empowering community members to take ownership of the city transportation vision is a vital component in the success of walking and bicycling as an equally viable transportation mode. City events, education in schools and community centers, and incentives for businesses and civic destinations promoting active transport would help community members take ownership of the city-wide transportation vision.

3. Create preliminary district goals specific to context and community impute: Creating preliminary district goals is another opportunity for community participation and impute. The preliminary goals for a district should be specific to the context and unique characteristics of that area. The goals should also reflect the needs and wants of community members. Having a preliminary idea about the district goals and the general location of the area facilitates district selection in the “supporting attributes” section of the action framework.

Supporting Attributes

1. Select subsequent districts according to the selection criteria and community input: After the preliminary district goals and location are established as described in the “building vision” section of the action framework, the process for delineating district boundaries should proceed. Mapping should include the street network, destinations and distances, density of people, land use related to the circulation network map, natural ecosystems, urban ecosystems, unique spatial perspectives and views, and outdoor recreation. Specific elements to be displayed in each map are described in the district selection process diagram. The maps relate back to the city-wide vision to function as a circulation network, accommodate bicycle and pedestrian circulation, support sustainable land development patterns, and foster meaningful experience in transit.

Integrating Improvements

1. Adopt or modify guidelines for planning and designing Context Sensitive Solution (CSS) inspired design: CSS is an approach for designing movement corridors in walkable communities. The CSS approach serves all users and is designed to be compatible with the community and environment. CSS is applicable to transportation planning and design in Manhattan because their principles support the qualities found in urban places where development patterns, intensity and design character combine to make frequent bicycling, walking and transit use attractive and efficient choices for many people, as well as provide for the private automobile (ITE 2006).

There are recommendations in the United States DOT policy statement, released March 2010, applicable to the approach of transportation planning and design. The CSS approach supports and provides guidelines for going beyond minimum design standards in pedestrian and bicycle facilities. The DOT recommendations are as follows:

- Going beyond minimum design standards: Transportation agencies are encouraged, when possible, to avoid designing walking and bicycling facilities to the minimum standards. For example, shared-use paths that have been designed to minimum width requirements will need retrofits as more people use them. It is more effective to plan for increased usage than to retrofit an older facility. Planning projects for the long-term should anticipate likely future demand for bicycling and walking facilities and not preclude the provision of future improvements.
- Collecting data on walking and biking trips: The best way to improve transportation networks for any mode is to collect and analyze trip data to optimize investments. Walking and bicycling trip data for many communities are lacking. This

data gap can be overcome by establishing routine collection of nonmotorized trip information. Communities that routinely collect walking and bicycling data are able to track trends and prioritize investments to ensure the success of new facilities. These data are also valuable in linking walking and bicycling with transit.

- Setting mode share targets for walking and bicycling and tracking them over time: A byproduct of improved data collection is that communities can establish targets for increasing the percentage of trips made by walking and bicycling.

2. Assess current city development codes and regulations to identify opportunities for improved policies: The current built environment is influenced heavily by the development codes and regulations. If desired qualities for the built environment are different than that of the existing qualities, it is highly likely that some development codes and regulations need to change to support the desired vision for the built environment. Codes and regulations for buildings(context) should support the codes and regulations for the desired movement corridor type. The United States DOT policy recognizes that “safe and convenient walking and bicycling facilities may look different depending on the context — appropriate facilities in a rural community may be different from a dense, urban area. However, regardless of regional, climate, and population density differences, it is important that pedestrian and bicycle facilities be integrated into transportation systems. While DOT leads the effort to provide safe and convenient accommodations for pedestrians and bicyclists, success will ultimately depend on transportation agencies across the country embracing and implementing this policy” (DOT 2010).

CONCLUSIONS

In a nation of speedy and convenient technologies, the primary mode of transportation in many American cities is the private automobile. The default pace of life has become “fast.”

is this what we desire?

A word cloud where the most prominent text is "driving as the social norm." Other visible words include "monday through friday", "drive to work", "go home", "produce", "it's speedy", "convenient", and "what do we gain? what do we lose?".

how much of our life is daily routine?

are we missing active presence, participation, and experience?

A word cloud where the most prominent text is "driving doesn't have to be the social norm." Other visible words include "changing seasons", "stimulated senses", "physical activity", "arrive at work", "calm and slow-paced", "spontaneous", "social exchange", "transition home", and "reflection and contemplation".

Much is written about the role of streets in urban life. It is widely recognized that the design, organization, and operation of streets play a large role in urban life. Literature from Complete Streets, Allan Jacobs, Jan Gehl, Timothy Beatley, Institute of Transportation Engineers (ITE), and even the United States Department of Transportation (DOT) supports the importance of fully integrated active transportation networks which establish well-connected walking and bicycling.

Other literature influencing this report relates to enhancing people's ability to function with awareness and with meaning. Rachel Kaplan and Stephen Kaplan write about the importance of restorative settings and experiences. They say that mental fatigue is a fact of life in a world overflowing with information. Kaplan and Kaplan stress the importance of nature, which fosters well-being and restoration. SlowLab is another source that writes about meaningful experiences. SlowLab is grounded in 'slow design' as a process that supports, “an expanded state of awareness, accountability for daily

actions, and the potential for a richer spectrum of experience for individuals and communities” (SlowLab). Jan Gehl affirms human speeds of meaningful engagement require a slower pace. He says that the human sensory apparatus is finely adapted to human movement, which is limited to predominately horizontal motion at a speed of approximately 3 mph (Gehl 1987). These sources suggest the importance of the environment as it relates to human experience and perception. The scale and pace of the environment affect people’s interaction with natural settings, and the function of human senses and communication.

Streets are influential public spaces that hold potential to positively affect people’s daily routines. This Master’s report couples the two groups of literature previously stated: literature supporting streets for fully integrated active transportation networks facilitating safe and enjoyable bicycle and pedestrian transit, and literature supporting a slower-pace environment that increases human restoration and the function of human senses and communication. I believe

bicycle and pedestrian circulation is a slower-pace transportation mode that allows for deeper, more meaningful human experience and perception of the world outside ourselves. For these qualities to surface in human experience, bicycle and pedestrian infrastructure must be an integral part of the transportation network. As integral parts of the transportation network, safe and enjoyable bicycle and pedestrian circulation can foster meaningful time in transit through more natural speeds of engagement and active presence.

It is my hope that Landscape Architects and other Planning and Design Professionals can continue to strengthen meaningful experience in transit. Elizabeth Meyer says, “I do not believe that design can change society, I do believe it can alter an individual’s consciousness and perhaps assist in restructuring her priorities and values” (Meyer 2008). Movement corridors should be wonderfully designed landscapes because they are public places used by people everyday. I believe the design of these public places holds great potential to positively influence people’s mind, body and spirit.

Although I do believe design can inhibit or assist in positively impacting people’s lives, improving the quality of people’s lives ultimately comes down to being aware of the world outside ourselves. As we become more aware of the world outside ourselves, we begin to meet the needs of people and improve the quality of life around us. I appreciate how Allan Jacobs describes community: “people acting and interacting to achieve in concert what they might not achieve alone” (Jacobs 1993). We should strive to live in greater community, engaging with and serving people around us. I believe that landscape architects, as a body of designers who love, respect and care for the environment, have the power and responsibility to assist in re-centering human consciousness to see, hear, taste and feel the beauty of life within and around us.





6 | APPENDICES

APPENDIX 1 :: PRECEDENT STUDY

Freiburg, Germany

Freiburg has developed a growing and successful bike community. Freiburg is an example of a city that supports centralized pedestrian and bicycle circulation within a car-free city center, and combines that with linear corridors of pedestrian, bicycle, public transit, and auto circulation which extend into the surrounding

city. The center city district is restricted to pedestrian and bicycle circulation only. Linear corridors of bicycle and public transportation extend into the surrounding city. In addition to Freiburg's car-free city center, one of its suburbs named Vauban is a car-free community district.



(Rosenthal 2009)



sources: www.pedbikeimages.org - photos by Ryan Snyder :: <http://www.nytimes.com> - photos by Martin Specht :: Freiburg Green City - www.freiburg.de/greencity

BACKGROUND:

- population 217,547
- summer months get hot and sticky, while snow falls in the winter
- average temperatures in Freiburg range from 27 degrees F to 73 degrees F
- Rainfall varies from 6 in. to 16.5 in. per month

LESSONS LEARNED:

- NOT EVERYONE OWNS A CAR :: “Freiburg has a low motor vehicle density with 423 motor vehicles per 1,000 people. It’s traffic and transportation policy gives preference to pedestrian, cycling and local public transport” (Freiburg Green City 2008).
- CENTRALIZED DEVELOPMENT ENFORCED :: “Preventive Traffic Avoidance Objective: All major urban development follows the concept of designing a compact city that can be crossed quickly and includes strong neighborhood centers. Priority is given to centralized development over peripheral growth” (Freiburg Green City 2008).
- CAR-FREE CITY CENTER :: “Large parts of the city center are designated as pedestrian zones and have been entirely reconstructed” (Freiburg Green City 2008).
- SLOW TRAFFIC SPEEDS :: “Pedestrians and cyclists benefit from the expansive traffic calming measures in residential areas. Currently 90% of residents live in 30 km/h (18 mile/h) zones” (Freiburg Green City 2008).
- MODES OF DAILY TRANSPORTATION SHIFT :: “In Freiburg, bicycle use accounts for 28 percent of all trips (an increase from 18 percent in 1976)” (Beatley 2000).
- SELF SUFFICIENT & CAR-FREE DISTRICTS :: “In Vauban, one of Freiburg’s suburbs, streets are completely car free except the main thoroughfare which supports the tram to downtown Freiburg. Vauban is the home of 5,500 people within a rectangular square mile” (Rosenthal 2009).

- PAY TO PARK :: “Vauban car owners must pay to park their car in a large garage at the edge of the development. As a result, 70 percent of Vauban’s families do not own cars, and 57 percent sold a car to move there” (Rosenthal 2009).
- PEOPLE SHARE CARS :: “For trips to stores like IKEA or the ski slopes, Vauban families buy cars together or use communal cars rented out by Vauban’s car-sharing club” (Rosenthal 2009).
- CYCLE TRAFFIC RELIEVES AUTO CONGESTION :: “One main finding to emerge from 20 years of traffic planning in Freiburg is that the role of cycle traffic in reducing individual traffic in urban areas is being under estimated. On a well laid cycle path network, for distances under five kilometers, cycles are a serious competitor to cars” (Beatley 2000).
- STUDENT POPULATION SUPPORTS CYCLING :: “And there is no question that the large college student populations in cities such as Munster and Freiburg have made it easier to bring about higher levels of bicycle use because students are more likely to use bicycles and to support political candidates who support cycle investments” (Beatley 2000).

SOURCES:

Beatley, Timothy. 2000. Green urbanism learning from european cities. Washington, D.C.: Island Press.
Freiburg green city. 2008. Freiburg Wirtschaft Touristik und Messe, , www.freiburg.de/greencity (accessed December 15, 2009).
Rosenthal, Elisabeth. 2009. In german suburb, life goes on without cars. New York Times, May 11, 2009, 2009, sec A1. http://www.nytimes.com/2009/05/12/science/earth/12suburb.html?_r=1 (accessed November 18, 2009).

APPENDIX 2 :: PROGRAM CONSIDERATIONS

"A PORTION OF THE ROADWAY WHICH HAS BEEN DESIGNATED BY STRIPING, SIGNING AND PAVEMENT MARKING FOR THE PREFERENTIAL OR EXCLUSIVE USE BY BICYCLISTS" (bicyclinginfo.org).

GENERAL CONSIDERATIONS:

- A wider bicycle lane is more beneficial on uphill steep grades
- Designated bicycle facilities adjacent to angled parking are discouraged because of the lack of visibility between bicyclists and drivers backing out of spaces. Converting from angled to parallel parking provides width for bicycle lanes.
- On one-way corridors, angled parking can be implemented on the left side of the street while the bicycle lane remains adjacent to parallel parking on the right side of the corridor.

CRITICAL DIMENSIONS:

- 4-ft. (1.2m) : min width of bike lane not including curb and gutter. 6-ft recommended.
- 5 ft. (1.5m) : min width of bike lane when adjacent to parking
- 12-ft. (3.7m) : min. width for shared bike lane and parking area not including curb and gutter. 13-ft recommended (bicyclinginfo.org - from AASHTO Guide, p22-24)

INNOVATIVE BIKE LANE DESIGNS:

- **contraflow bike lanes** : bikes travel in both directions on a one-way street. University of Wisconsin has a road built with a bus lane, bike lane and three travel lanes in one direction and a bike lane only separated by a raised median in the other direction.
- **colored bike lanes** : usually red, blue, or green. Portland uses blue bike lanes at critical intersections.
- **shared bike and bus lanes** : often lanes are also able to be used by taxis and right-turning vehicles. Madison uses 16 foot lanes to allow a clear three feet of separation between the bicyclists and a passing bus. Examples currently include Tucson, AZ; Madison, WI; Toronto, Ontario; Vancouver, BC; and Philadelphia, PA.(bicyclinginfo.org)
- **raised bike lanes**
- **no curb and gutter - continuous roadway and walkway**

= BIKE LANES



Portland, OR 2006



Madison, WI 2006



Las Vegas, NE

Dan Burden

Copenhagen, Denmark 2008
 pedbikeimages.org :: photos by Ryan Snyder

Vancouver, British Columbia 2008
 pedbikeimages.org :: photos by Carl Sundstrom

various bike lanes :: pedbikeimages.org



Boulder, CO 2008 :: Dan Burden

Portland, PA:: John Pope

USA 2006 :: Dan Burden

St. Helena, CA 2006 :: Dan Burden

Santa Cruz, CA 2008 :: Bill Daly

APPENDIX 2 :: PROGRAM CONSIDERATIONS

Most places do not designate or mark their paved shoulders as bikeways, but in rural areas adding or improving paved shoulders can be a viable option (bicyclinginfo.org)

CRITICAL DIMENSIONS:

- Less than 4 feet (1.2m) : any additional width of paved shoulder is better than none at all, but below 4 feet a shoulder should not be designated or marked as a bicycle facility.
- 4 feet (1.2m) : min width to accommodate bicycle travel. This width does not include gutter pan or any area treated with rumble strips
- 5 feet(1.5m) or more : mininum width recommended from the face of guardrail, curb or other barrier (bicyclinginfo.org)
- widths should be increased if there are higher levels of bicycle usage, motor vehicle speeds above 50mph, or there is a higher percentage of truck and bus traffic (bicyclinginfo.org)

= PAVED SHOULDER



Nebraska 2009 :: Bob Boyce

A wider outside lane allows a motorist to safely pass a cyclists while remaining in the same lane. (bicyclinginfo.org)

CRITICAL DIMENSIONS:

- 14 feet (4.2m) : recommended width for wide outside lane width must be usable and measurement should be from the edge line or joint of the gutter pan to the lane line.
- 15 feet (4.5m) : preferred where extra space required for maneuvering or to keep clear of on-street parking or other obstacles.
- Continuous stretches of lanes wider than 15 feet may encourage the undesirable operation of two motor vehicles trying to squeeze into one lane (bicyclinginfo.org)

= WIDE OUTSIDE LANE



Chapel Hill, NC 2004 :: Austin Brown

Routes identified by signing as preferred bike routes due to preferable conditions for cyclists (bicyclinginfo.org)

CRITICAL CONSIDERATIONS FOR SIGNED ROUTES:

- AASHTO recommends signing every 1/4 mile (500m) and at every turn
- the route provides a through and direct travel
- connects discontinuous segments of shared use paths or bike lanes
- greater priority to cyclists than on the alternative route
- street parking has been removed or limited to provide more width
- smooth surface
- regular street sweeping and maintenance is assured
- wider curb lanes are provided compared to alternative routes
- shoulders are at least 4 feet (bicyclinginfo.org)

= SIGNED SHARED ROADWAYS



Chapel Hill, NC 2004 :: Austin Brown

Shared use paths can provide many valuable benefits including transportation links, recreation ares, habitat corridors, economic development attractors and outdoor fitness (bicyclinginfo.org)

PATHS OR TRAILS [SHARED USE]

PRINCIPLES OF SHARED USE PATHS:

- shared use paths are an addition, and complimentary, to the roadway network
- shared use paths function best in their own right of way
- shared use paths are used by a wide variety of uses traveling both directions
- shared use paths need to be connected to the transportation system
- intersections between shared use paths and roadways should be considered carefully (bicyclinginfo.org)

CRITICAL DIMENSIONS:

- 10ft or 3m is the recommended minimum width for a two-way shared use path
- 12ft is recommended where substantial use by bicyclists, joggers, skaters, and pedestrians is expected, and where grades are steep.
- 2ft of graded area should be maintained adjacent to both sides of the path
- 3ft of clear distance should be maintained between the edge of the trail and trees, poles walls, fences, guardrails or other lateral obstructions.
- 8ft of vertical clearance to obstructions should be maintained; rising to 10ft in tunnels and where maintenance and emergency vehicles must operate (bicyclinginfo.org)



Wayzata, MN 2009 :: Danny McCullough



Aspen, CO 2006 :: Dan Burden



Scheveningen, Netherlands 2008 :: Laura Sandt



Tuscon, AZ 2009 :: Sree Gajula



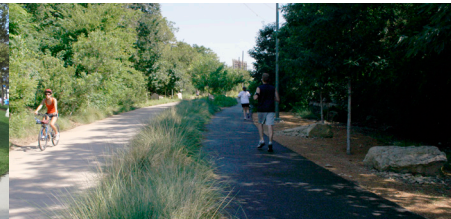
San Luis Obispo, CA 2006 :: Dan Burden



Budapest, Hungary 2009 :: Elise Hubbard



Chicago, IL 2009 :: Elise Hubbard



Houston, TX 2009 :: Elise Hubbard

APPENDIX 2 :: PROGRAM CONSIDERATIONS

AUTOMOBILE LANE WIDTH (Institute of Transportation Engineers 2006)

GENERAL CONSIDERATIONS

- Modern buses are 10.5-ft wide from mirror to mirror and require a minimum of 11-ft. wide lane on roadways with 30 to 35 mph design speeds.
- Balance the total width of movement corridors by narrowing turn lanes or medians.
- Wider travel lanes only marginally increase traffic capacity. According to the Highway Capacity manual an 11-ft. wide lane reduces the saturation flow rate by 3 percent when compared to a 12-ft lane, while a 10-ft. wide lane reduces the saturation flow rate by about 7 percent. Consider other means of capacity enhancement such as access management (when, where, and how access is provided) or signal synchronization before using wider lanes.
- Consider converting two parallel streets into a pair of one-way streets to increase capacity before widening movement corridors.

(Institute of Transportation Engineers 2006)

BEFORE :: AFTER



Petersburg, Florida. General travel lanes were narrowed to 10-ft. to provide space for bike lanes :: photos by Michael Fredrick :: pedbikeimages.org

MEDIAN = center portion of a street that separates opposing directions of travel for uses such as access management, accommodation of turning traffic, safety, pedestrian refuge, landscaping focal points, bio-filtration swales and lighting and utilities. (Institute of Transportation Engineers 2006)

GENERAL CONSIDERATIONS

- Avoid changes in median width along the corridor if possible.
- Avoid overly wide medians
- Medians are important to aid pedestrians on multi-lane movement corridors. Even a narrow median of 6 to 8 feet can be desirable.
- Narrow medians (4-ft. or less) should only be used to restrict turning movements, separate opposing directions of traffic, and to provide space for traffic control devices.
- Vegetation should not obstruct sight distance. In general plants should not exceed 2.5-ft maximum height, while trees should have no branches in sight lines lower than 8-ft. Small caliper trees (less than 4-in.) must be 50-ft back from the median nose. A 6-ft. wide median is adequate to support small caliper trees (less than 4-in.). For larger caliper trees a minimum of 10-ft wide should be used. Avoid trees in medians where speeds are greater than 45 mph.

(Institute of Transportation Engineers 2006)

Thoroughfare Type	Minimum Width	Recommended Width
Median for access control		
Arterial boulevards and avenues	4 ft.	6 ft. [1]
Collector avenues and streets		
Median for pedestrian refuge		
Arterial boulevards and avenues	6 ft.	8 ft.
Collector avenues and streets		
Median for street trees and lighting		
Arterial boulevards and avenues	6 ft. [2]	10 ft. [3]
Collector avenues and streets		
Median for single left-turn lane		
Collector avenues and streets	10 ft. [4]	14 ft.
Arterial boulevards and avenues	12 ft.	16-18 ft.
Median for dual left turn lane		
Arterial boulevards and avenues	20 ft.	22 ft.

(INSTITUTE OF TRANSPORTATION ENGINEERS 2006).

ON-STREET PARKING (Institute Of Transportation Engineers 2006)



GENERAL CONSIDERATIONS:

- consider shared parking structures
- on-street parking can result in a 3 to 30 percent decrease in the capacity of the adjacent travel lane.
- Minimize the impact of parking maneuvers on traffic flow by a parallel parking configuration that consists of a repeated sequence of two parking spaces at 20-ft by 8-ft. with an 8-ft maneuvering area between the spaces. This reduces the number of parking spaces that can be provided within a given length, but minimizes interruption of traffic flow.
- Provide a min. 1.5-ft wide operational offset between face of curb and edge of potential obstructions such as trees and poles.
- Parking is prohibited within 20-ft of either side of fire hydrants, at least 20 to 50-ft from midblock crosswalks and at least 20-ft. from the curb return of intersections (30-ft from an approach to a signalized intersection). Curb extensions can be used to reduce this distance while maintaining sight triangles.
- Reverse angled parking requires a wider edge zone in the roadside due to the longer overhang at the rear of most vehicles. This extra width can be compensated by the narrow travel lane needed adjacent to parking for maneuvering.

(Institute of Transportation Engineers 2006)

Angle	Stall Width	Stall Depth (Perpendicular to Curb)	Min. Width of Adjacent Lane	Curb Overhang
45°	8.5 ft. - 9.0 ft.	17 ft., 8 in.	12 ft., 8 in.	1 ft., 9 in.
50°	8.5 ft. - 9.0 ft.	18 ft., 3 in.	13 ft., 3 in.	1 ft., 11 in.
55°	8.5 ft. - 9.0 ft.	18 ft., 8 in.	13 ft., 8 in.	2 ft., 1 in.
60°	8.5 ft. - 9.0 ft.	19 ft., 0 in.	14 ft., 6 in.	2 ft., 2 in.
65°	8.5 ft. - 9.0 ft.	19 ft., 2 in.	15 ft., 5 in.	2 ft., 3 in.
70°	8.5 ft. - 9.0 ft.	19 ft., 3 in.	16 ft., 6 in.	2 ft., 4 in.
90°	8.5 ft. - 9.0 ft.	18 ft., 0 in.	24 ft., 0 in.	2 ft., 6 in.

Typical design vehicle dimensions: 6 ft., 7 in. by 17 ft., 0 in. Use 9.0-foot wide stall in commercial areas with moderate to high parking turnover.

Source: Adapted from *Dimensions of Parking*, 4th Edition, Urban Land Institute

(Institute of Transportation Engineers 2006)



United States 2006 :: Dan Burden



Salt Lake City, UT 2006 :: Dan Burden

PEDESTRIAN REFUGE ISLAND (Institute of Transportation Engineers 2006)



GENERAL CONSIDERATIONS:

- Minimum dimensions of 6-ft wide and 20-ft long.
- Refuge islands should be at least 6 to 8-ft wide when they will be used by bicyclists, or at least 10-ft wide for bicycles with trailers.

(Institute of Transportation Engineers 2006)



Lansing, MI 2006 :: Dan Burden



Bellevue, WA 2006 :: Dan Burden

APPENDIX 2 :: PROGRAM CONSIDERATIONS

MIDBLOCK CROSSINGS (Institute of Transportation Engineers 2006)

GENERAL CONSIDERATIONS

- Midblock crosswalks can: 1) help channel crossing pedestrians to the safest midblock location, 2) provide visual cues to allow approaching motorists to anticipate pedestrian activity and unexpected stopped vehicles and 3) provide pedestrians with reasonable opportunities to cross during heavy traffic periods. (Institute of Transportation Engineers 2006)

General
<ul style="list-style-type: none"> The decision to locate a midblock crosswalk will be based on numerous factors. Generally, however, consider providing a marked midblock crossing when protected intersection crossings are spaced greater than 400 ft., or so that crosswalks are located no greater than 200 to 300 ft. apart in high pedestrian volume locations, and meets the criteria below. Midblock crossings may be considered when there is significant pedestrian demand to cross a street between intersections, such as connecting to major generators or transit stops. Midblock crosswalks should be located at least 100 ft. from the nearest side street or driveway so that drivers turning onto the major street have a chance to notice pedestrians and properly yield to pedestrians who are crossing the street.
Criteria
<ul style="list-style-type: none"> Streets with an average daily traffic volume of 12,000 vehicles per day or less. Multi-lane streets carrying less than 15,000 ADT if a raised pedestrian refuge median is provided. Prevailing speeds less than 40 mph. A minimum pedestrian crossing volume of 25 pedestrians per hour for at least four hours of a typical day. Adequate sight distance is available for pedestrians and motorists.
Recommendations
<ul style="list-style-type: none"> Unsignalized midblock crosswalks should not be provided on streets where traffic volumes do not have gaps in the traffic stream long enough for a pedestrian to walk to the other side or to a median refuge. At locations with inadequate gaps that also meet MUTCD signalization warrants, consider a signalized midblock crossing. Consider a signalized midblock crosswalk where pedestrians must wait more than an average of 60 seconds for an appropriate gap in the traffic stream. When average wait times exceed 60 seconds, pedestrians tend to become impatient and cross during inadequate gaps in traffic. On streets with continuous two-way left-turn lanes, provide a raised median pedestrian refuge with a minimum refuge length of 20 ft. and a minimum width of 6 ft. Provide overhead safety lighting on both ends of midblock crosswalks. Provide wheelchair ramps or at-grade channels at midblock crosswalks with curbs and medians. Provide raised median pedestrian refuge at midblock crossings where the total crossing width is greater than 60 ft. Use high-visibility (ladder-style) crosswalk markings to increase visibility longitudinally. Provide advance stop or yield lines to reduce multiple threat crashes. Provide advance crosswalk warning signs for vehicle traffic. Provide curb extensions at midblock crosswalks with illumination and signing to increase pedestrian and driver visibility. "Z" crossing configurations should be used for midblock crossings with medians wherever possible (see Figure 9.16). Provide an at-grade channel in median at a 45-degree angle toward advancing traffic to encourage pedestrians to look for oncoming traffic.
Other Considerations
<ul style="list-style-type: none"> A strategy to calm traffic speeds in advance of and at a midblock crossing is to raise the pavement to meet the sidewalk elevation by use of gentle ramps (see Figure 9.17). Consider use of overhead flashing beacons.

Adapted from:

Safety Effects of Marked versus Unmarked Crosswalks at Uncontrolled Locations, FHWA, 2002

Manual of Uniform Traffic Control Devices, FHWA, 2003 Edition

Guide for the Planning, Design and Operation of Pedestrian Facilities, AASHTO, 2004

(Institute of Transportation Engineers 2006)

CURB EXTENSIONS

Curb extensions extend the line of the curb into the traveled way reducing the width of the street. Curb extensions can be used at intersections and mid-block crossings. (Institute of Transportation Engineers 2006)

GENERAL CONSIDERATIONS

- The design of the curb extension should create an additional pedestrian area in the driver's field of vision, thereby increasing the visibility of pedestrians and they wait to cross the street.
- Curb extensions are used only where there is on-street parking and only a small percentage of turning vehicles that are larger than the design vehicle. Not to be used at intersections with exclusive right-turn lanes adjacent to the curb, or intersections with a high volume of right-turning trucks or buses turning into narrow cross streets.
- Reduce crossing width at intersections by extending the curb line into the street by 6 or 7 ft. for parallel parking and to within 1 ft. of stall depth with angled parking. Ensure that the curb extension does not extend into travel or bicycle lanes.

(Institute of Transportation Engineers 2006)

(pedbikeimages.org)



WA, 2006 :: Dan Burden

Bellingham, WA 2006 :: Dan Burden

New Haven, CN 2009 :: Tom Harned

BICYCLE LANE TREATMENT AT INTERSECTIONS

GENERAL CONSIDERATIONS

- Bicycle lanes should be striped through the intersection approach and up to the stop line or crosswalk
- On intersection approaches that have an exclusive right-turn lane, the bicycle lane should be positioned to the left of the right-turn lane. Drivers of right-turning motor vehicles moving into the turn lane have an obligation to yield to any present bicyclists.
- Where there are numerous left-turning bicyclists, a left-turn bicycle lane may be provided on an intersection approach. This lane is located between the vehicular left-turn lane and the adjacent through lane so that bicyclists can keep the outside as they turn left.

(Institute of Transportation Engineers 2006)

With pedestrian crosswalks
<ul style="list-style-type: none"> • Bike lane striping should not be installed across any pedestrian crosswalks, and, in most cases, should not continue through any street intersections.
With no pedestrian crosswalks
<ul style="list-style-type: none"> • Bike lane striping should stop at the intersection stop line, or the near side cross street right of way line projection, and then resume at the far side right-of-way line projection. • Bike lane striping may be extended through complex intersections with the use of dotted or skip lines.
Parking considerations
<ul style="list-style-type: none"> • The same bike lane striping criteria apply whether parking is permitted or prohibited in the vicinity of the intersection.
Bus stop on near side of intersection or high right-turn volume at unsignalized minor intersections with no stop controls
<ul style="list-style-type: none"> • 6-in. solid line should be replaced with a broken line with 2-ft. dashes and 6-ft. spaces for the length of the bus stop. Bike lane striping should resume at the outside line of the crosswalk on the far side of the intersection.
Bus stop located on far side of the intersection
<ul style="list-style-type: none"> • Solid white line should be replaced with a broken line for a distance of at least 80 ft. from the crosswalk on the far side of the intersection.
T-intersections with no painted crosswalks
<ul style="list-style-type: none"> • Bike lane striping on the far side across from the T-intersection should continue through the intersection area with no break. If there are painted crosswalks, bike lane striping on the side across from the T-intersection should be discontinued at the crosswalks.
Pavement markings
<ul style="list-style-type: none"> • Bike lane markings should be installed according to the provisions of Chapter 9C of the MUTCD. • The standard pavement symbols are one of two bicycle symbols (or the words "BIKE LANE") and a directional arrow as specified in the MUTCD. Symbols should be painted on the far side of each intersection. Pavement markings should be white and reflectorized.
Signs
<ul style="list-style-type: none"> • Bike lanes should be accompanied by appropriate signing at intersections to warn of conflicts (see Chapter 9B of the MUTCD).

(Institute of Transportation Engineers 2006)

APPENDIX 2 :: PROGRAM CONSIDERATIONS

INTERSECTIONS (Institute of Transportation Engineers 2006)



IMPROVING SAFETY

- Addition of left turn lanes at intersections. In walkable urban areas, turn lanes should be limited to a single left-turn lane.
- Increase the size of signal lenses from 8 to 12-in. to increase their visibility. Consider protected left-turn phasing as a strategy to reduce vehicle-pedestrian conflicts.
- Non-traditional intersection design. Modern roundabouts reduce speed, eliminate certain types of crashes and lessen the severity of other types of crashes.

(Institute of Transportation Engineers 2006)

- Upgrade pavement quality to improve drainage and resist skidding.
- Improve drivers feet sign distance by restricting parking near intersections, properly trimming vegetation and moving stop lines back from crosswalks by 4-ft.
- Upgrade and supplement signs and enforce traffic laws.

(Institute of Transportation Engineers 2006)

(pedbikeimages.org)



Grass Valley, CA 2006 :: Dan Burden



Bird Rock, United States 2006 :: Dan Burden

CURB RETURN RADII = the curved connection of curbs in the corners formed by the intersections of two streets (Institute of Transportation Engineers 2006)



GENERAL CONSIDERATIONS

- Curb return radii should be designed to accommodate the largest vehicle type that will frequently turn the corner (control vehicle).
- In urban centers, and urban cores where pedestrian activity is intensive, curb return radii should be as small as possible.
- If large vehicles need to encroach into an opposing travel lane, consider placing the stop line for opposing traffic further from the intersection.
- Typical minimum curb return radius of 10 to 15-ft should be used where there are 1) high pedestrian traffic, 2) bicycle and parking lanes which create additional space for motor vehicles turning.
- Curb radii will need to be larger where: 1) occasional encroachment is not acceptable, 2) curb extensions are proposed or might be added, 3) receiving movement corridor does not have parking or bicycle lanes and the receiving lane is less than 12-ft in width.
- Radii designed to accommodate the occasional large vehicle will allow passenger cars to turn at high speeds. In CSS, the selection of curb returns ranging from 5 to 25-ft in radius is preferable to shorten pedestrian crossings and slow vehicle turning speeds to increase safety for all users.

(Institute of Transportation Engineers 2006)

MODERN ROUNDABOUTS



In the appropriate circumstances, significant benefits can be realized by converting stop-controlled and signalized intersections into modern roundabouts. These benefits include improved safety, speed reduction, aesthetics and operational functionality and capacity. (Institute of Transportation Engineers 2006)

GENERAL CONSIDERATIONS:

- Roundabouts are not always the appropriate solution.
- Intersections with more than four legs, and are good candidates for the conversion to modern roundabouts
- Locate pedestrian crossings at least 25-ft. from the roundabout entry point.
- Bicyclists can be accommodated by: 1) mixing with the flow of vehicular traffic (but without pavement markings delineating a bicycle lane), or 2) use of a slip ramp from the street to the sidewalk proceeding around the intersection along separate paths, which is usually combined with pedestrian facilities. Good design and signage is necessary. To accommodate different ability levels of bicyclists, both options could be implemented at the same roundabout.
- Single-lane roundabouts may typically accommodate up to 20,000 entering vehicles per day. A double-lane typically accommodates up to 40,000 vehicles per day.
- Sight distance for drivers entering the roundabout should be maintained to the left so that drivers are aware of vehicles and bicycles in the circle. Visibility across the center of the circle is not necessary.
- Consideration should be given to the use of a “yield line” where appropriate.

(Institute of Transportation Engineers 2006)

Parameter	Minimum “Mini-Roundabout”	Urban Compact Roundabout	Urban Single-Lane Roundabout	Urban Double-Lane Roundabout
Maximum entry speed (mph)	15	15	20	25
Design vehicle	Bus and single-unit truck drive over apron	Bus and single-unit truck	WB-50	WB-67 with lane encroachment on truck apron
Inscribed circle diameter (ft.)	45 To 80	80 To 100	100 To 130	150 To 180
Maximum number of entering lanes	1	1	1	2
Typical capacity (vehicles per day entering from all approaches)	10,000	15,000	20,000	40,000
Applicability by thoroughfare type:				
Boulevard	Not applicable	Not applicable	Not applicable	Applicable
Arterial avenue	Not applicable	Not applicable	Applicable	Applicable
Collector avenue	Applicable	Not applicable	Applicable	Not applicable
Street	Applicable	Applicable	Applicable	Not applicable

(Institute of Transportation Engineers 2006)



Institute of Transportation Engineers 2006



Olympia, WA 2006 :: Dan Burden

pedbikeimages.org



Olympia, WA 2006 :: Dan Burden

pedbikeimages.org



High Point, WA 2008 :: Carl Sundstrom

pedbikeimages.org

APPENDIX 3 :: CONTEXT SENSITIVE SOLUTIONS (CSS) QUICK REFERENCES

Context Zone Characteristics from CSS (ITE 2006, 47)

Context Zone	Distinguishing Characteristics	General Character	Building Placement	Frontage Types	Typical Building Height	Type of Public Open Space
C-1 Natural	Natural landscape	Natural features	Not applicable	Not applicable	Not applicable	Natural open space
C-2 Rural	Agricultural with scattered development	Agricultural activity and natural features	Large setbacks	Not applicable	Not applicable	Agricultural and natural
C-3 Suburban	Primarily single family residential with walkable development pattern and pedestrian facilities, dominant landscape character	Detached buildings with landscaped yards	Varying front and side yard setbacks	Lawns, porches, fences, naturalistic tree planting	1 to 2 story with some 3 story	Parks, greenbelts
C-4 General Urban	Mix of housing types including attached units, with a range of commercial and civic activity at the neighborhood and community scale	Predominantly detached buildings, balance between landscape and buildings, presence of pedestrians	Shallow to medium front and side yard setbacks	Porches, fences	2 to 3 story with some variation and few taller workplace buildings	Parks, greenbelts
C-5 Urban Center	Attached housing types such as townhouses and apartments mixed with retail, workplace, and civic activities at the community or sub-regional scale.	Predominantly attached buildings landscaping within the public right-of-way, substantial pedestrian activity	Small or no setbacks, buildings oriented to street with placement and character defining a street wall	Stoops, dooryards, storefronts, arcaded walkways	3 to 5 story with some variation	Parks, plazas and squares, boulevard median landscaping
C-6 Urban Core	Highest-intensity areas in sub-region or region, with high-density residential and workplace uses, entertainment, civic and cultural uses	Attached buildings forming sense of enclosure and continuous street wall landscaping within the public right-of-way, highest pedestrian and transit activity	Small or no setbacks, building oriented to street, placed at front property line	Stoops, dooryards, forecourts, storefronts, arcaded walkways	4+ story with a few shorter buildings	Parks, plazas, and squares, boulevard median landscaping
Districts	To be designated and described locally, districts are areas that are single-use or multi-use with low-density development pattern and vehicle mobility priority thoroughfares. These may be large facilities such as airports, business parks and industrial areas.					

(Based on transect zone descriptions in SmartCode V-6.5, Spring 2005 Credit: Duany Plater-Zyberk & Company.)

Shaded cells represent context zones that are not addressed in this report.

APPENDIX 3 :: CONTEXT SENSITIVE SOLUTIONS (CSS) QUICK REFERENCES

Urban Movement Corridor Characteristics Adapted from CSS (ITE 2006, 51)

note: movement corridor type is used in this project instead of thoroughfare type

Urban Thoroughfare Type	Number of Through Lanes	Design Speed (mph)	Operating Speed (mph)	Intersection Spacing [1]	Transit Service Emphasis	Median	Driveway Access	Curb Parking	Pedestrian Facilities [2]	Bicycle Facilities	Freight Mvmt. [3]
FREEWAY	4 to 6+	50-70	45-65	1 to 2 miles	Express	Required	No	No	No	Optional Separated Pathway	Regional Truck Route
EXPRESSWAY/PARKWAY	4 to 6	50-60	45-55	1/2 to 1 mile	Express	Required	No	No	Optional Separated Pathway	Optional Separated Pathway	Regional Truck Route
BOULEVARD	4 to 6	35-40	30-35	660 to 1,320 ft.	Express and Local	Required	Limited	Optional	Sidewalk	Bike Lanes or Parallel Route	Regional Truck Route
MULTIWAY BOULEVARD	4 to 6	30-40 (20 in access lanes)	25-35	660 to 1,320 ft. (400 to 660 ft. for access lanes)	Express and Local	Required	Yes from access lane	Yes on access roadway	Sidewalk		Regional Route/Local deliveries only on access roadway
AVENUE	2 to 4	30-35	25-30	300 to 660 ft.	Local	Optional	Yes	Yes	Sidewalk		Local Truck Route
STREET	2	30	25	300 to 660 ft.	Local	Optional	Yes	Yes	Sidewalk		Local Deliveries Only
ALLEY/REAR LANE	1	10	5	Not Applicable	None	No	Yes	No	Shared	Shared	Local Deliveries Only

Shaded cells represent thoroughfare types that are not addressed in this report.

Notes:

[1] Spacing for freeways and expressways/parkways reflect grade-separated interchanges or major at-grade intersection spacing. Spacing for boulevards, multiway boulevards, avenues and streets depends on the context zone. Spacing shown represents signalized intersection spacing. Spacing for streets reflect driveway spacing.

[2] Boulevard, avenue and street thoroughfare types have sidewalks on both sides. Sidewalk width varies as a function of context zone, fronting land use and other factors.

[3] Freight movement is divided into three categories: 1) regional truck route, 2) local truck route and 3) local deliveries only. Cells show highest order of truck movement allowed.

APPENDIX 3 :: CONTEXT SENSITIVE SOLUTIONS (CSS) QUICK REFERENCES

General Parameters for Arterial Movement Corridors (ITE 2006, 66)

note: movement corridor type is used in this project instead of thoroughfare type

Context	Suburban (C-3)				General Urban (C-4)				Urban Center/Core (C-5/6)			
	Residential		Commercial		Residential		Commercial		Residential		Commercial	
	Boulevard	Avenue	Boulevard	Avenue	Boulevard	Avenue	Boulevard	Avenue	Boulevard	Avenue	Boulevard	Avenue
Building Orientation (entrance orientation)	front, side	front, side	front, side	front, side	front	front	front	front	front	front	front	front
Maximum Setback [1]	20 ft.	20 ft.	5 ft.	5 ft.	15 ft.	15 ft.	0 ft.	0 ft.	10 ft.	10 ft.	0 ft.	0 ft.
Off-Street Parking Access/Location	rear, side	rear, side	rear, side	rear, side	rear, side	rear, side	rear, side	rear, side	rear	rear	rear	rear
Roadside												
Recommended Roadside Width [2]	14.5 ft.	12.5 ft.	16 ft.	15 ft.	16.5 ft.	12.5 ft.	19 ft.	16 ft.	21.5 ft.	19.5 ft.	21.5 ft.	19.5 ft.
Pedestrian Buffers (planting strip exclusive of travel way width) [2]	8 ft. planting strip	6-8 ft. planting strip	7 ft. tree well	6 ft. tree well	8 ft. planting strip	6-8 ft. planting strip	7 ft. tree well	6 ft. tree well	7 ft. tree well	6 ft. tree well	7 ft. tree well	6 ft. tree well
Street Lighting	For all arterial thoroughfares in all context zones, intersection safety lighting, basic street lighting and pedestrian-scaled lighting is recommended. See Chapter 8 (Roadside Design Guidelines) and Chapter 10 (Intersection Design Guidelines).											
Traveled Way												
Target Speed (mph)	35	25-30	35	35	35	25-30	35	25-30 [3]	35	25-30	30	25-30 [3]
Design Speed	Design speed should be a maximum of 5 mph over the operating speed. Design speed is used as a control for certain geometric design elements including sight distance and horizontal and vertical curvature.											
Number of Through Lanes [4]	4-6	2-4	4-6	2-4	4-6	2-4	4-6	2-4	4-6	2-4	4-6	2-4
Lane Width [5]	10-11 ft.	10-11 ft.	10-12 ft.	10-11 ft.	10-11 ft.	10-11 ft.	10-12 ft.	10-11 ft.	10-11 ft.	10-11 ft.	10-11 ft.	10-11 ft.
Parallel On-Street Parking Width [6]	7 ft.	7 ft.	8 ft.	8 ft.	7 ft.	7 ft.	8 ft.	8 ft.	7 ft.	7 ft.	8 ft.	8 ft.
Min. Combined Parking/Bike Lane Width	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.
Horizontal Radius (per AASHTO) [7]	762 ft.	510 ft.	762 ft.	762 ft.	762 ft.	510 ft.	762 ft.	510 ft.	762 ft.	510 ft.	510 ft.	510 ft.
Vertical Alignment	Use AASHTO minimums as a target, but consider combinations of horizontal and vertical per AASHTO Green Book.											
Medians (which will accommodate single left-turn lanes at intersections) [8]	14-16 ft.	Optional 14 ft.	14-16 ft.	Optional 14 ft.	14-16 ft.	Optional 14 ft.	14-16 ft.	Optional 14 ft.	14-16 ft.	Optional 14 ft.	14-16 ft.	Optional 14 ft.
Bike Lanes (min./preferred width)	5 ft./6 ft.	5 ft./6 ft.	5 ft./6 ft.	5 ft./6 ft.	5 ft./6 ft.	5 ft./6 ft.	5 ft./6 ft.	5 ft./6 ft.	5 ft./6 ft.	5 ft./6 ft.	5 ft./6 ft.	5 ft./6 ft.
Access Management [9]	Moderate	Low	High	Moderate	Moderate	Low	High	Low	Moderate	Low	High	Low
Typical Traffic Volume Range (vpd)	20,000-35,000	15,000-25,000	20,000-50,000	10,000-35,000	10,000-30,000	10,000-20,000	15,000-40,000	5,000-30,000	15,000-30,000	10,000-20,000	15,000-40,000	5,000-30,000
Intersections												
Roundabout	Consider urban single-lane roundabouts at intersections on arterial avenues with less than 20,000 entering vehicles per day, and urban double-lane roundabouts at intersections on Boulevards and Avenues with less than 40,000 entering vehicles per day.											
Curb Return Radii	Refer to Chapter 10 (Intersection Design Guidelines) for details											

Table Notes:

[1] For all context zones with predominantly commercial frontage, this table shows the maximum setback for buildings with ground floor retail. In suburban contexts, office buildings are typically set back 5 ft. further than retail buildings to provide a privacy buffer. In general urban and urban center/core areas, office buildings are set back 0-5 ft. Setback exceptions may be granted for important buildings or unique designs.

[2] Roadside width includes edge, furnishing/planting strip, clear travel way and frontage zones. Refer to Chapter 8 (Roadside Design Guidelines) for detailed description of sidewalk zones and widths in different context zones and on different thoroughfare types. Dimensions in this table reflect widths in unconstrained conditions. In constrained conditions roadside width can be reduced to 12 ft. in commercial areas and 9 ft. in residential areas (see Chapter 5 on designing within constrained rights-of-way).

[3] Desired operating speeds on collector avenues serving C-4 and C-5/6 commercial main streets with high pedestrian activity should be 25 mph.

[4] Six lane facilities are generally undesirable for residential streets because of concerns related to neighborhood livability (i.e., noise, speeds, traffic volume) and perceptions as a barrier to crossing. Consider a maximum of four lanes within residential neighborhoods.

[5] Lane width (turning, through and curb) can vary. Most thoroughfare types can effectively operate with 10-11 ft. wide lanes, with 12 ft. lanes desirable on higher speed transit and freight facilities. Chapter 9 (Traveled Way Design Guidelines) (lane width section) identifies the considerations used in selecting lane widths.

[6] An 8 ft. wide parking lane is recommended in any commercial area with a high turnover of parking.

[7] For guidance on horizontal radius - see AASHTO's section on "Minimum Radii for Low Speed Urban Streets - Sharpest Curve Without Superelevation." Dimensions shown above are for noted design speeds and are found in Exhibits 3-16 (Page 151) in *A Policy on Geometric Design of Highways and Streets* (2004), assuming a superelevation of -2.0 reflecting typical cross slope.

[8] These median widths can accommodate a single-left turn lane at intersections. The boulevard median width (16 ft.) can accommodate a minimum 6-foot wide pedestrian refuge adjacent to the turn lane. In constrained conditions, raised medians on arterial thoroughfares can be reduced to a minimum of 10 ft. and accommodate a single left-turn lane.

[9] Access management involves providing (in other words, managing) access to land development in such a way as to preserve safety and reasonable traffic flow on public streets. Low, moderate and high designations are used for the level of access restrictions. A high level of access management uses medians to restrict mid-block turns, consolidates driveways and controls the spacing of intersections. A low level of access management limits full access at some intersections.

APPENDIX 3 :: CONTEXT SENSITIVE SOLUTIONS (CSS) QUICK REFERENCES

General Parameters for Collector Movement Corridors (ITE 2006, 67)

note: movement corridor type is used in this project instead of thoroughfare type

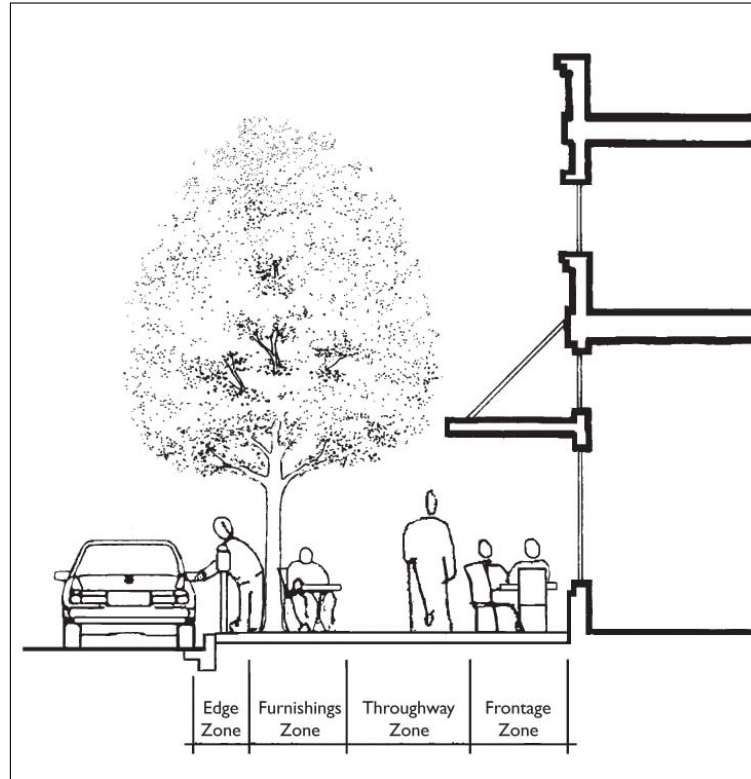
Context	Suburban (C-3)				General Urban (C-4)				Urban Center/Core (C-5/6)			
	Residential		Commercial		Residential		Commercial		Residential		Commercial	
	Avenue	Street	Avenue	Street	Avenue	Street	Avenue	Street	Avenue	Street	Avenue	Street
Building Orientation (entrance orientation)	front, side	front, side	front, side	front, side	front	front	front	front	front	front	front	front
Maximum Setback [1]	20 ft.	20 ft.	5 ft.	5 ft.	15 ft.	15 ft.	0 ft.	0 ft.	10 ft.	10 ft.	0 ft.	0 ft.
Off-Street Parking Access/Location	rear, side	rear, side	rear, side	rear, side	rear, side	rear, side	rear, side	rear, side	rear	rear, side	rear, side	rear, side
Roadside												
Recommended Roadside Width [2]	12.5 ft.	10.5 ft.	15 ft.	14 ft.	12.5 ft.	10.5 ft.	16 ft.	14 ft.	19.5 ft.	16 ft.	19.5 ft.	16 ft.
Pedestrian Buffers (planting strip exclusive of travel way width) [2]	6-8 ft. planting strip	5-8 ft. planting strip	6 ft. tree well	5-6 ft. tree well	6-8 ft. planting strip	5-8 ft. planting strip	6 ft. tree well	5-6 ft. tree well	6 ft. tree well	6 ft. tree well	6 ft. tree well	6 ft. tree well
Street Lighting	For all collector thoroughfares in all context zones, intersection safety lighting, basic street lighting, and retail pedestrian-scaled lighting is recommended. See Chapter 8 (Roadside Design Guidelines) and Chapter 10 (Intersection Design Guidelines).											
Traveled Way												
Desired Operating Speed (mph)	30	25	30	25	30	25	25-30 [3]	25	25-30	25	25-30 [3]	25
Design Speed	Design speed should be a maximum of 5 mph over the operating speed. Design speed is used as a control for certain geometric design elements including sight distance, and horizontal and vertical curvature.											
Number of Through Lanes	2-4	2	2-4	2	2-4	2	2-4	2-4	4	2-4	4	2-4
Lane Width [4]	10-11 ft.	10-11 ft.	10-11 ft.	10-11 ft.	10-11 ft.	10-11 ft.	10-11 ft.	10-11 ft.	10-11 ft.	10-11 ft.	10-11 ft.	10-11 ft.
Parallel On-Street Parking Width	7 ft.	7 ft.	7-8 ft.	7-8 ft.	7 ft.	7 ft.	7-8 ft.	7-8 ft.	7 ft.	7 ft.	7-8 ft.	7-8 ft.
Min. Combined Parking/Bike Lane Width	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.
Horizontal Radius (per AASHTO) [5]	510 ft.	333 ft.	510 ft.	333 ft.	510 ft.	333 ft.	510 ft.	333 ft.	510 ft.	333 ft.	510 ft.	333 ft.
Vertical Alignment	Use AASHTO minimums as a target, but consider combinations of horizontal and vertical per AASHTO Green Book.											
Medians which will accommodate single left-turn lanes at intersections [6]	Optional 14 ft.	None	Optional 14 ft.	None	Optional 14 ft.	None	Optional 14 ft.	None	Optional 14 ft.	None	Optional 14 ft.	None
Bike Lanes	On collector Avenues, bike lanes may be provided (6 ft.-5 ft. wide adjacent to 7-8 ft. parking lanes respectively).											
Access Management [7]	Provide low to moderate levels of access management on collector Avenues and Streets											
Typical Traffic Volume Range (vpd)	1,500-10,000	500-5,000	1,500-15,000	1,000-10,000	1,500-10,000	500-5,000	1,500-15,000	1,000-10,000	1,500-10,000	500-5,000	1,500-15,000	1,000-10,000
Intersections												
Roundabout	Consider urban single lane roundabouts at intersections on collector avenues and streets with less than 20,000 entering vehicles per day											
Curb Return Radii	Refer to Chapter 10 on Intersection Design Guidelines for details											

Table Notes:

- [1] In all context zones with predominantly commercial frontage, this table shows the maximum setback for buildings with ground floor retail. In suburban contexts, office buildings are typically set back 5 ft. further than retail buildings to provide a privacy buffer. In general urban and urban center/core areas, office buildings are set back 0-5 ft. Setback exceptions may be granted for important buildings or unique designs.
- [2] Roadside width includes edge, furnishing/planting strip, clear travel way and frontage zones. Refer to Chapter 8 (Roadside Design Guidelines) for detailed description of sidewalk zones and widths in different context zones and on different thoroughfare types. Dimensions in this table reflect widths in unconstrained conditions. In constrained conditions roadside width can be reduced to 12 ft. in commercial areas and 9 ft. in residential areas (see Chapter 5 on designing within constrained rights-of-way).
- [3] Desired operating speeds on collector avenues serving C-4 and C-5/6 commercial main streets with high pedestrian activity should be 25 mph.
- [4] Lane width (turning, through, and curb) can vary depending on a number of factors. Chapter 9 (Traveled Way Design Guidelines) (lane width section) provides a range of lane widths for thoroughfares with various functions and design vehicle conditions.
- [5] For guidance on horizontal radius - see AASHTO's section on "Minimum Radii for Low Speed Urban Streets - Sharpest Curve Without Superelevation." Dimensions shown above are for noted design speeds and are found in Exhibits 3-16 (Page 151) in *A Policy on Geometric Design of Highways and Streets* (2004), assuming a superelevation of -2.0 reflecting typical cross slope.
- [6] The optional median width can accommodate a single left-turn lane at intersections. The avenue median width (14 ft.) does not provide enough width for a pedestrian refuge. A minimum 6-foot wide pedestrian refuge adjacent to the turn lane would require a 15-16 ft. wide median. In constrained conditions, raised medians on collector thoroughfares can be reduced to a minimum of 10 ft. at intersections to allow a striped 9 or 10 foot wide left-turn lane.
- [7] Access management involves providing (in other words, managing) access to land development in such a way as to preserve safety and reasonable traffic flow on public streets. Low, moderate and high designations are used for the level of access restrictions. A high level of access management uses medians to restrict mid-block turns, consolidates driveways, and controls the spacing of intersections. A low level of access management limits full access at some intersections.

APPENDIX 3 :: CONTEXT SENSITIVE SOLUTIONS (CSS) QUICK REFERENCES

Roadside Zones Diagram (ITE 2006, 96)



APPENDIX 3 :: CONTEXT SENSITIVE SOLUTIONS (CSS) QUICK REFERENCES

Recommended Roadside Zone Dimensions (ITE 2006, 107)

CONTEXT ZONE AND PREDOMINANT GROUND FLOOR LAND USE OR FRONTAGE																
Sidewalk Zone [1]		C-6 and C-5		C-4 w/ Predominantly Commercial Ground Floor Use		C-4 w/ Predominantly Residential Frontage		C-3 w/ Predominantly Commercial Ground Floor Use		C-3 w/ Predominantly Residential Frontage						
Boulevard	Edge	1.5 ft. 2.5 ft. at diagonal parking		1.5 ft. 2.5 ft. at diagonal parking		0.5 ft.		1.5 ft. 2.5 ft. at diagonal parking		0.5 ft.						
	Furnishings	7 ft. (trees in tree wells)	21.5 foot (recommended) 12 foot (constrained)	7 ft. (trees in tree wells)	19 foot (recommended) 12 foot (constrained)	8 ft. (landscape strip w/ trees and grasses, or groundcovers)	16.5 foot (recommended) 9 foot (constrained)	7 ft. (trees in tree wells)	16 foot (recommended) 12 foot (constrained)	8 ft. (landscape strip w/ trees and grasses, or groundcovers)	14.5 foot (recommended) 9 foot (constrained)					
	Throughway	10 ft.		8 ft.		8 ft.		6 ft.		6 ft.						
	Frontage	3 ft.		2.5 ft.		0 ft. along lawn and groundcover 1 foot along low walls, fences and hedges 1.5 ft. along facades, tall walls and fences		1.5 ft.		0 ft. along lawn and groundcover 1 foot along low walls, fences and hedges 1.5 ft. along facades, tall walls and fences						
Boulevard Without Parking	Edge	THIS THOROUGHFARE TYPE NOT APPLICABLE TO THE PREDOMINANTLY COMMERCIAL GROUND FLOOR LAND USES FOUND IN C-4 THROUGH C-6 CONTEXT ZONES				0.5 ft.	18.5 foot (recommended) 9 foot (constrained)	THIS THOROUGHFARE TYPE NOT APPLICABLE TO THE PREDOMINANTLY COMMERCIAL GROUND FLOOR LAND USES		0.5 ft.	16.5 foot (recommended) 9 foot (constrained)					
	Furnishings					10 ft. (landscape strip w/ trees and groundcovers, or low shrubs)				10 ft. (landscape strip w/ trees and groundcovers, or low shrubs)						
	Throughway					8 ft.				6 ft.						
	Frontage					0 ft. along lawn and groundcover 1 foot along low walls, fences and hedges 1.5 ft. along facades, tall walls and fences				0 ft. along lawn and groundcover 1 foot along low walls, fences and hedges 1.5 ft. along facades, tall walls and fences						
Avenue	Edge	1.5 ft. 2.5 ft. at diagonal parking	19.5 foot (recommended) 12.0 foot (constrained)	1.5 ft. 2.5 ft. at diagonal parking	16 foot (recommended) 12 foot (constrained)	0.5 ft.	14.5 foot (recommended) 9 foot (constrained)	1.5 ft. 2.5 ft. at diagonal parking	16 foot (recommended) 12 foot (constrained)	0.5 ft.	14.5 foot (recommended) 9 foot (constrained)					
	Furnishings	With Parking		6 ft. trees in tree wells		6 ft. (trees in tree wells)		8 ft. (landscape strip w/ trees and grasses, or groundcovers)		6 ft. (trees in tree wells)						
		Without Parking		8 ft. with buffer landscaping		8 ft. with buffer landscaping		8 ft. with buffer landscaping		8 ft. with buffer landscaping						
	Throughway	9 ft.				6 ft.				6 ft.			6 ft.		6 ft.	
	Frontage	3 ft.				2.5 ft.				0 ft. along lawn and groundcover 1 foot along low walls, fences and hedges 1.5 ft. along facades, tall walls and fences			2.5 ft.		0 ft. along lawn and groundcover 1 foot along low walls, fences and hedges 1.5 ft. along facades, tall walls and fences	
Street	Edge	1.5 ft. 2.5 ft. at diagonal parking	16 foot (recommended) 12.0 foot (constrained)	1.5 ft. 2.5 ft. at diagonal parking	16 foot (recommended) 12 foot (constrained)	0.5 ft.	11.5 foot (recommended) 9 foot (constrained)	1.5 ft. 2.5 ft. at diagonal parking	15 foot (recommended) 12 foot (constrained)	0.5 ft.	11.5 foot (recommended) 9 foot (constrained)					
	Furnishings	6 ft. (trees in tree wells)		6 ft. (trees in tree wells)		5 ft. (landscape strip w/ trees and grasses, or groundcovers)		6 ft. (trees in tree wells)								
	Throughway	6 ft.		6 ft.		6 ft.		6 ft.								
	Frontage	2.5 ft.		2.5 ft.		0 ft. along lawn and groundcover 1 foot along low walls, fences and hedges 1.5 ft. along facades, tall walls and fences		1.5 ft.		0 ft. along lawn and groundcover 1 foot along low walls, fences and hedges 1.5 ft. along facades, tall walls and fences						

NOTES: Recommended dimensions for the throughway zone may be wider in active commercial areas.
See Table 5.2 in Chapter 5 for discussion of minimum roadside zone widths in constrained conditions.

[1] In AASHTO's *Guide for the Planning, Design, and Operation of Pedestrian Facilities*, the furnishing zone is termed the "buffer" zone, and the frontage zone is termed the "shy distance."

APPENDIX 3 :: LITERATURE MAP

"I'm in my mid fifties, so I can testify that biking as a way of getting around is not something only for the young and energetic. . . It's the liberating feeling--the physical and psychological sensation--that is more persuasive than any practical argument. Seeing things from a point of view that is close enough to pedestrians, vendors, and storefronts combined with getting around in a way that doesn't feel completely divorced from the life that occurs on the streets is pure pleasure. Observing and engaging in a city's life--even for a reticent and often shy person like me--is one of life's great joys. Being a social creature--it is part of what it means to be human" (David Byrne 1952, 292).

The landscape is therefore the settings of our lives, the sensual-intellectual perception of which constitutes meaning and value [Corner pg 127].

They argue [Howett and Spirn] that the act of experiencing designed landscapes poly-sensually, over time, through and with the body, is not simply an act of pleasure, but possibly, one of transformation [Meyer 2008, 8].

- See the patterns in *With People in Mind*.
1. The importance of understanding
 2. the need for exploration
 3. having a restful and enjoyable environment
 4. opportunities for meaningful participation [Kaplan 1998, pg 163]

Mental fatigue is a fact of life in a world overflowing with info. Finding ways to recover is greatly helped by the availability of restorative settings and experiences [Kaplan 1998, pg 22].

In what ways can the environment foster well-being and enhance people's ability to function effectively?

what is a main reason for needing restoration?

"The major components of the identity of place do not apply solely to places, but are to be found in some forms in all geographies, landscapes, cities, and homes. The essence of place lies not so much in these as in the experience of an 'inside' that is distinct from an 'outside'; more than anything else this is what sets places apart in space and defines a particular system of physical features, activities, and meanings. To be inside a place is to belong to it and to identify with it, and the more profoundly inside you are the stronger is this identity with the place" [Relph 1976, pg 49]

what is place?

Alan Gussow declared, "the catalyst that converts any physical location--any environment if you will--into a place, is the process of experiencing deeply. A place is a piece of the whole environment that has been claimed by feelings" [cited in Relph 1976, pg 141]

"Places are fusions of human and natural order and are the significant centers of our immediate experiences of the world. They are defined less by unique locations, landscape, and communities than by the focusing of experiences and intentions onto particular settings: [Relph 1976, pg 141].

"Phenomenological ecology [term coined by Riegner] is an interdisciplinary field that explores and describes the ways that things, living forms, people, events, situations and worlds come together environmentally. A key focus is how all these entities belong together in place, why they might not belong, and how they might better belong through more sensitive understanding, design and policy-making."

what is a good use for phenomenology?

Dr. Seamon goes on to say, "Phenomenological ecology supposes that beneath the seeming disorder and chaos of our world and daily life are a series of underlying patterns, structures, relationships and processes that can be described qualitatively through heartfelt concern, sustained effort, and moments of inspired seeing and interpretation. Phenomenological ecology, therefore, not only widens and deepens our knowledge of the world outside ourselves but also facilitates our own growth as individuals whose abilities to see and understand can become keener and more refined. We become more awake to the world, and see things in a more perceptive, multi-dimensional way" [ed. Seamon 1993, pg16].

In simplest terms phenomenology is the study of human experience. Dr. David Seamon summarizes the ultimate significance of phenomenology is the test of trustworthiness for the study's "relative power to draw the reader into the researcher's discoveries, allowing the reader to see his or her own world or the worlds of others in a new, deeper way. The best phenomenological work breaks people free from their usual recognitions and moves them along new paths of understanding" (Seamon 2000, pg 172).

HERMENEUTICS :: The second working assumption is that primary knowledge is that which comes from direct experience. We live in a corporeal and phenomenal world, amongst real things, in specific places, and it is only through the perception of this primary realm--rocks, rivers, solar cycles, seasonal change, human encounters, and so on--that different cultures have understood and found access to the idea. Humans make perception out of things perceived [Corner pg 127].

How can "experiential circulation" impact people?

BICYCLE LANES
-lane width ideal 4'min
-next to curb 5'min
-next to parking lane: 5'min
-combined bike/parking 12'min

DRAINAGE GRATES:
-no parallel bar grates
-advance pavement marking
-ideally one-way
-lane stripe width 6" solid
-white line separating from ca
What are some basic guidelines for bicycles within the city?

BICYCLE PATHS
-Path width typ: 10'

PAVED SHOULDERS
-shoulder width 4' min @35mph or less
-increase width @35mph+ -5' recommended

RAILROAD CROSSINGS
-crossing angle ideally at 95% angle
-warning signs 315' min before crossing
-pavement markings -250' min. before crossing

BICYCLE INFRASTRUCTURE

Quick Reference Guide

BICYCLE DIARIES

SUSTAINING THE ART...
A DISCOURSE ON THEORY II: ... ALTERNATIVE OF HERMENEUTICS

AASHTO + MUTCD
1998 BICYCLE MASTER PLAN
BICYCLINGINFO.ORG

JAMES CORNER
ELIZABETH MEYER
DAVID BYRNE

WITH PEOPLE IN MIND
RACHEL KAPLAN
STEPHEN KAPLAN
ROBERT RYAN

EDWARD RELPH

RESTORATIVE ENVIRONMENTS

PLACE+PLACELESSNESS

PHENOMENOLOGY

A WAY OF SEEING PEOPLE AND PLACE DWELLING, SEEING, AND DESIGNING

DAVID SEAMON

dilemma

Despite our nation's existing dependence on automobiles, how can movement corridors within communities become places designed to intertwine natural systems and human restoration?

thesis

Bicycle and pedestrian circulation has potential to impact people's perceptions and awareness of natural systems, as well as provide time for reflection and personal restoration.

Movement corridors can be a setting for the designed environment to foster human restoration and be the setting for natural systems intersecting social routine.

interest

enjoy each day + everyday spaces
be healthy + used by everyone
inspiration+respect for environment + the destination is the journey

WIDE OUTSIDE LANES
-14' outside lane width
recommended

PAVED SHOULDERS
-4' min. width
-5' recommended

COLORED BIKE LANES
-ex. Portland's Blue Bike Lanes

SHARED BIKE AND BUS LANES
-ex. Tucson, AZ
-often lanes can be used by taxis and right-turning vehicles.
-Madison uses 16' lanes to allow a clear three feet of separation b/t bicyclists and passing bus
-14' width ok

- CONTRA-FLOW BIKE LANES**
-ex. three travel lanes in one direction, and a bike lane only separated by a raised median in the other direction
- SHARED USE PATH**
-an addition to the roadway network-not a substitute
-work best with their own ROW
-12' recommended
-3' clear distance b/t edge of trail and other lateral obstructions
-8' vertical clearance or 10' in tunnels
1. Cities that strive to live within their ecological limits, fundamentally reduce their ecological footprints, and acknowledge their connections with and impacts on other cities and communities and the larger planet.
 2. Cities that are green and that are designed for and function in ways analogous to nature
 3. Cities that strive to achieve a circular rather than a linear metabolism, which nurtures and develops positive symbiotic relationships with and between its hinterland.
 4. Cities that strive toward local and regional self-sufficiency and take full advantage of and nurture local/regional food production, economy, power production, and many other activities that sustain and support their populations.
 5. Cities that facilitate and encourage more sustainable healthful lifestyles.
 6. Cities that emphasize a high quality of life and the creation of highly livable neighborhoods and communities [Beatley 2000, 6-8]

"A beautiful landscape works on our psyche, affording the chance to ponder on a world outside ourselves. Through this experience, we are decentered, restored, renewed and reconnected to the biophysical world. The haptic, somatic experience of beauty can inculcate environmental values" [Meyer 2008, 17]

What are the principles of green urbanism?
Why should cities practice Green Urbanism?
What inspires people to act on environmental stewardship?

captures both urban and environmental dimensions of sustainability with ecological limits at its core [Beatley 2000]

"Messy Ecosystems, Orderly Frames" -Joan Nassauer

"This intermingling of ecological and social temporal cycles- seasonal floods and human activities such as holiday festivals or sports - links the activities of everyday life and the unique events of a particular city to the experience of the dynamic bio-physical aspects of the environment. Nature is not out there but in here, interwoven in the human urban condition. Hydrology, ecology and human life are intertwined" [Meyer 2008, 16].

What ordinances or codes need to change to affect the design of streets?

What should the city's priorities be concerning transportation?

In American cities and metropolitan areas, the amount of land consumed by urban growth and development far exceeds the rate of population growth. The impacts are clear: loss of sensitive habitat, destruction of productive farmland and forestlands, and high economic and infrastructural costs. The low-density auto-dependent American landscape makes more sustainable living--such as walking, bicycling, or public transit--difficult. American cities consequently have high carbon dioxide emissions, produce large amounts of waste, and draw in large amounts of energy and resources [Beatley 2000, 4].

When certain types of land use patterns and urban design characteristics are coupled with certain types of transportation networks, moreover, the effect on walking, bicycling, and other forms of physical activity can be enormous [Frank, Engelke, Schmid 2003, 136].

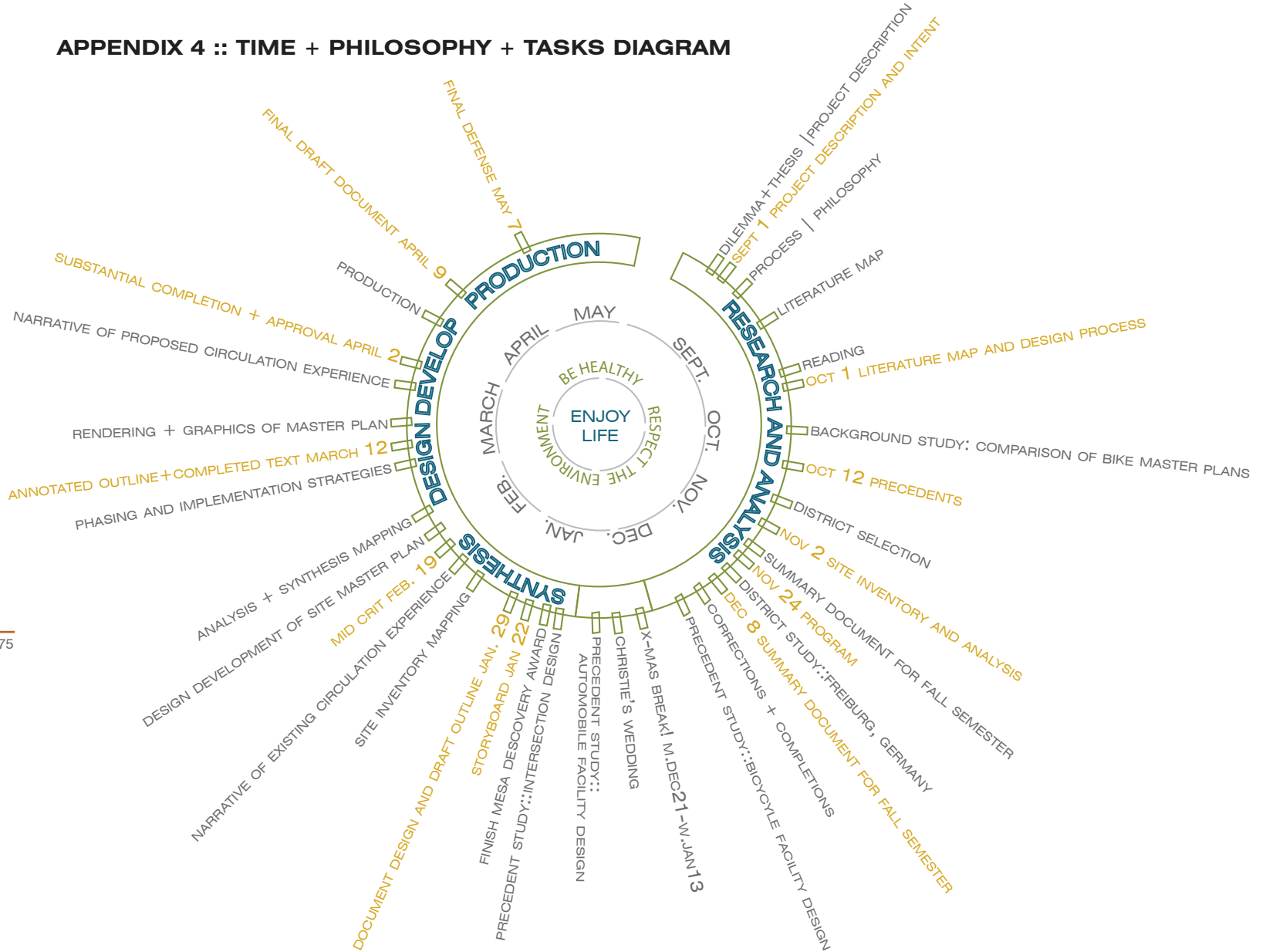
Transportation networks shape how people can move about in the built environment, through their influence on the level of access to a range of activities or destinations as well as the amount of mobility [Frank, Engelke, Schmid 2003, 135]

Sustaining a framework of Healthy Land Development

No other type of transportation system can begin to approach the comprehensiveness of a city's street network. Additionally, because streets are so ubiquitous, they are an important dimension of the urban fabric in their own right, contributing to a city's sense of place, or lack thereof [Frank, Engelke, Schmid 2003, 117]

GREEN URBANISM FROM EUROPE
TIMOTHY BEATLEY SUSTAINING BEAUTY...
LIZABETH MEYER MESSY ECOSYSTEMS
JOAN NAUSSAUER ORDERLY FRAMES
SLIM DOWNTOWN
MANHATTAN, KS
MANHATTAN AREA TRANSPORTATION STRATEGY: CONNECTING TO 2020
COMPREHENSIVE PLAN: CHAPTER 8 TRANSPORTATION
AUTHORS

APPENDIX 4 :: TIME + PHILOSOPHY + TASKS DIAGRAM



APPENDIX 5 :: PROJECT PATH DIAGRAM







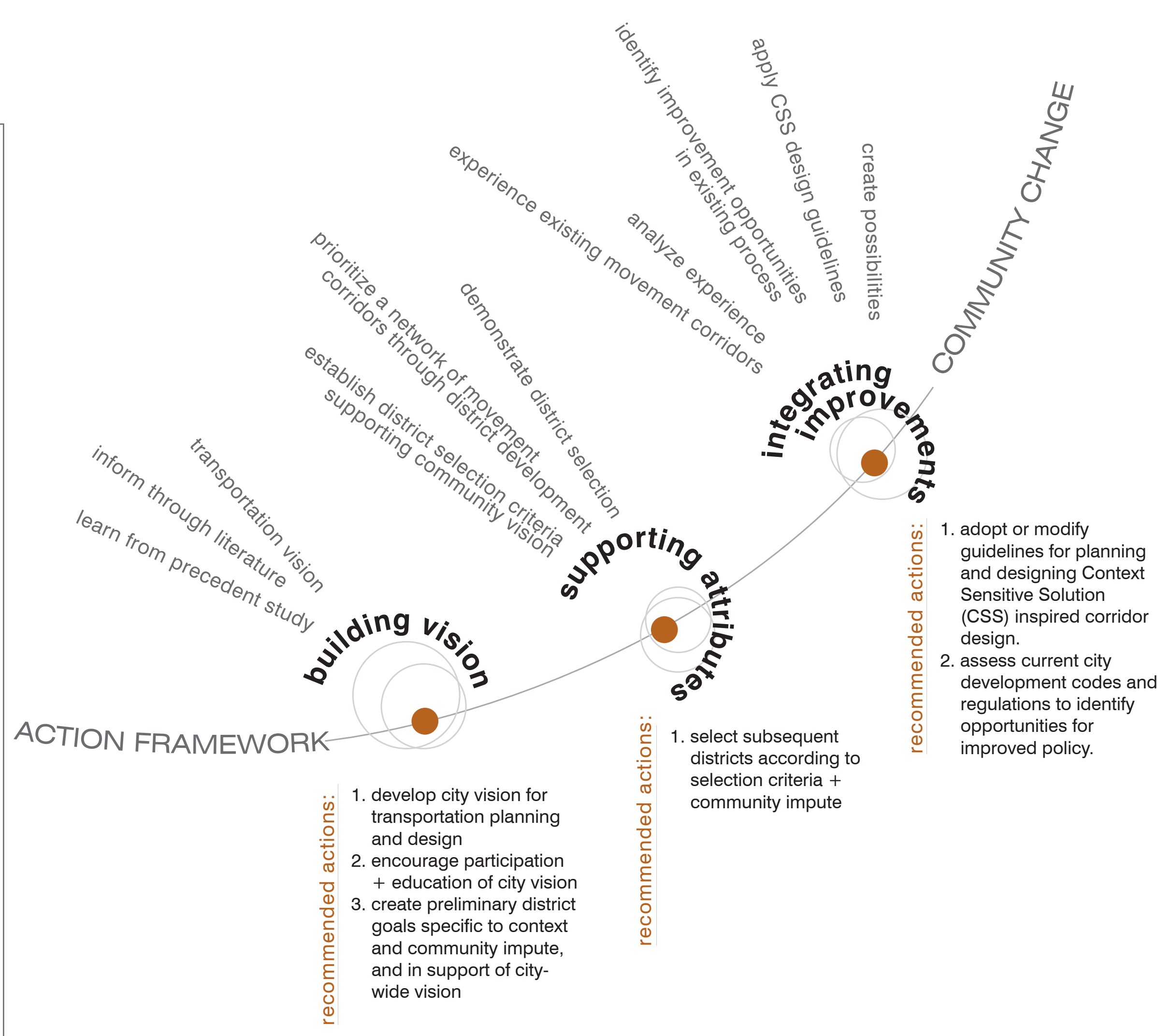
7 | REFERENCES

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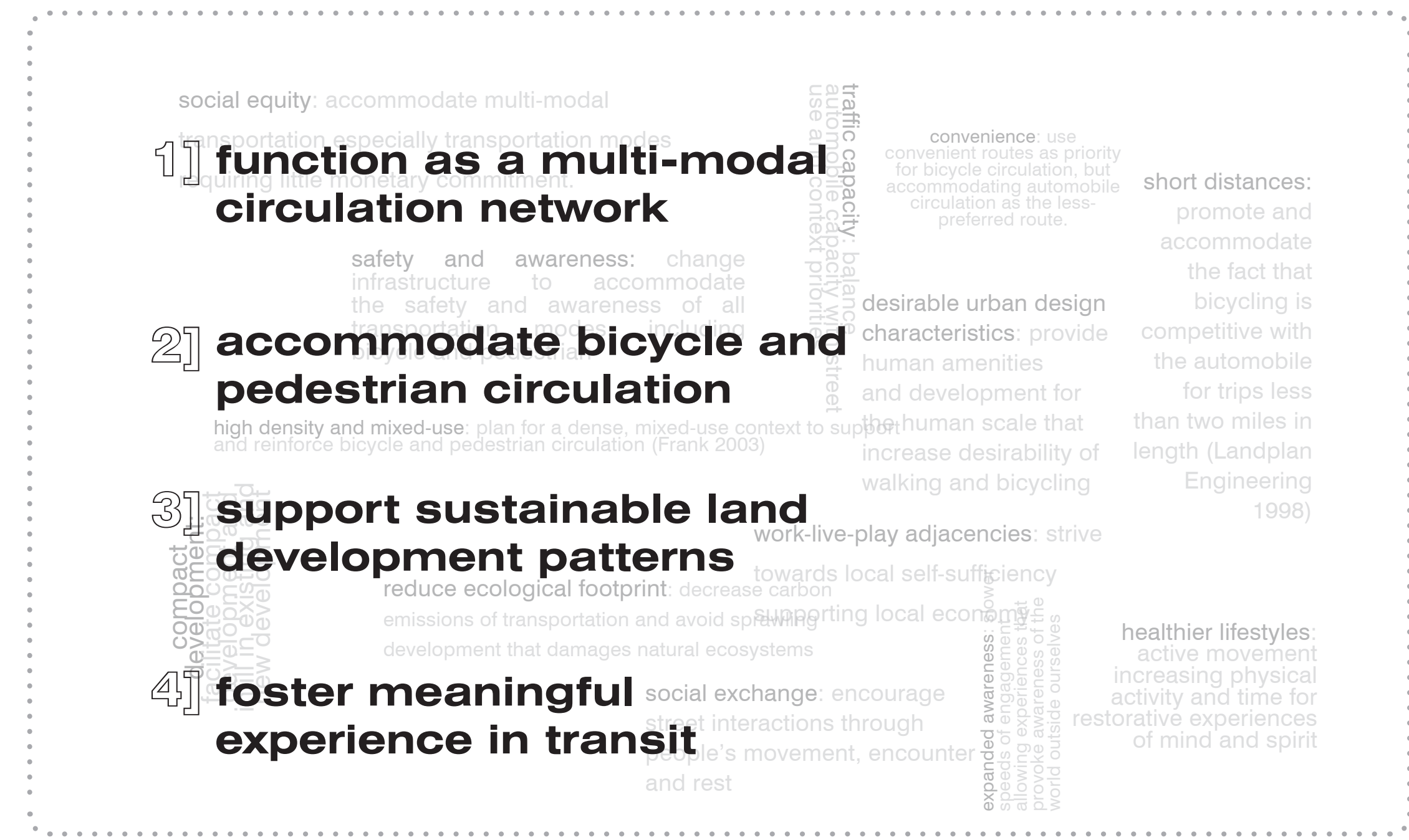
- Freiburg green city. 2008. Freiburg Wirtschaft Touristik und Messe, , www.freiburg.de/greencity (accessed December 15, 2009).
- slowLab. Available from <http://www.slowlab.net/ideas.html> (accessed 12.02.09).
- Area Chamber of Commerce. 2009. Community profile manhattan, KS. Manhattan Chamber of Commerce, , <http://www.manhattaned.org/Search.aspx?SearchString=community+profile&Action.x=0&Action.y=0> (accessed December 01, 2009).
- Beatley, Timothy. 2000. Green urbanism learning from european cities. Washington, D.C.: Island Press.
- Bunger, Chad. 2008. 2008 bicycle master plan update, city of manhattan, kansas. Masters of Regional and Community Planning., Kansas State University.
- Byrne, David. 2009. Bicycle diaries. New York: Viking.
- City of Manhattan. 2000. Manhattan area transportation strategy: Connecting to 2020. Final Report.
- City of Manhattan, and Riley County. 2003. Chapter 8: Mobility and transportation options. In Manhattan urban area comprehensive plan., 8-1, <http://www.ci.manhattan.ks.us/DocumentCenterii.aspx?Folder=Community%20Development\Long-Range%20Planning\Manhattan%20Urban%20Area%20Comprehensive%20Plan> (accessed September 28, 2009).
- Complete Streets, National Complete Streets Coalition. Let's complete america's streets. 2009 [cited April 3 2010]. Available from <http://www.completestreets.org/>.
- Csikszentmihalyi, Mihaly. 1990. Flow: The psychology of optimal experience. New York: Harper & Row.
- DOT, United States Department of Transportation. Policy statement on bicycle and pedestrian accommodation regulations and recommendations. 2010 [cited April 3 2010]. Available from <http://www.dot.gov/affairs/2010/bicycle-ped.html>.
- Frank, Lawrence D., Peter O. Engelke, and Thomas L. Schmid. 2003. Health and community design: The impact of the built environment on physical activity. Washington, D.C.: Island Press.
- Gehl, Jan. 1987. Life between buildings using public space. Trans. Jo Koch. New York: Van Nostrand Reinhold Company.
- (ITE) Institute of Transportation Engineers. 2010. Designing walkable urban thoroughfares: A context sensitive approach. NP-036A, <http://www.ite.org/css/default.asp> (accessed March).
- . 2006. Context sensitive solutions in designing major urban thoroughfares for walkable communities. 500/GP/JS/0306, <http://www.ite.org/css/default.asp> (accessed 12.29.09).

- Jacobs, Allan B. 1993. *Greet streets*. Cambridge, Massachusetts: Massachusetts Institute of Technology.
- Kaplan, Rachel, Stephen Kaplan, and Robert L. Ryan. 1998. *With people in mind design and management of everyday nature*. Washington D.C.: Island Press.
- Katcham, Christopher. 2010. *The curse of bigness*. Orion. March.
- Landplan Engineering, and Bicycles & Inc. 1998. 1998 bicycle master plan. , <http://www.ci.manhattan.ks.us/index.aspx?NID=1070> (accessed November 28, 2009).
- Meyer, Elizabeth K. 2008. Sustaining beauty. the performance of appearance A manifesto in three parts. *JoLA Spring*, : 6,7-23.
- National Complete Streets Coalition. Complete streets. in WordPress [database online]. 2009 [cited December 08,2009 2009]. Available from <http://www.completestreets.org/>.
- Pedestrian and Bicycle Information Center. [cited December 08, 2009 2009]. Available from <http://www.bicyclinginfo.org/index.cfm>.
- Relph, E. C. 1976. *Place and placelessness*. London: Pion.
- Rosenthal, Elisabeth. 2009. In german suburb, life goes on without cars. *New York Times*, May 11, 2009, 2009, sec A1. http://www.nytimes.com/2009/05/12/science/earth/12suburb.html?_r=1 (accessed November 18, 2009).
- Seamon, David. 2000. A way of seeing people and place. *Theoretical Perspectives in Environment-Behavior Research: Phenomenology in Environment-Behavior Research*: 157178.

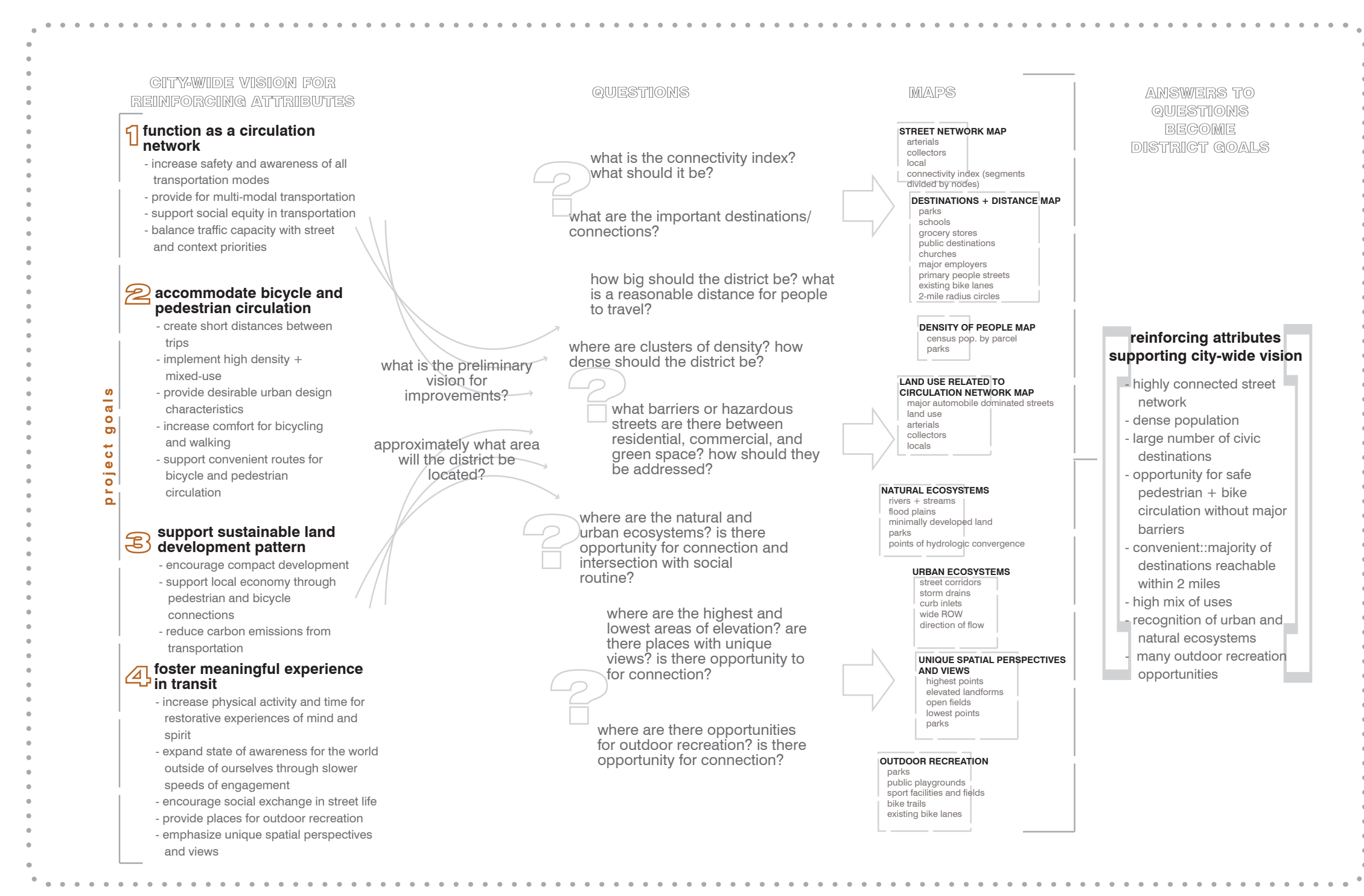
Action Framework



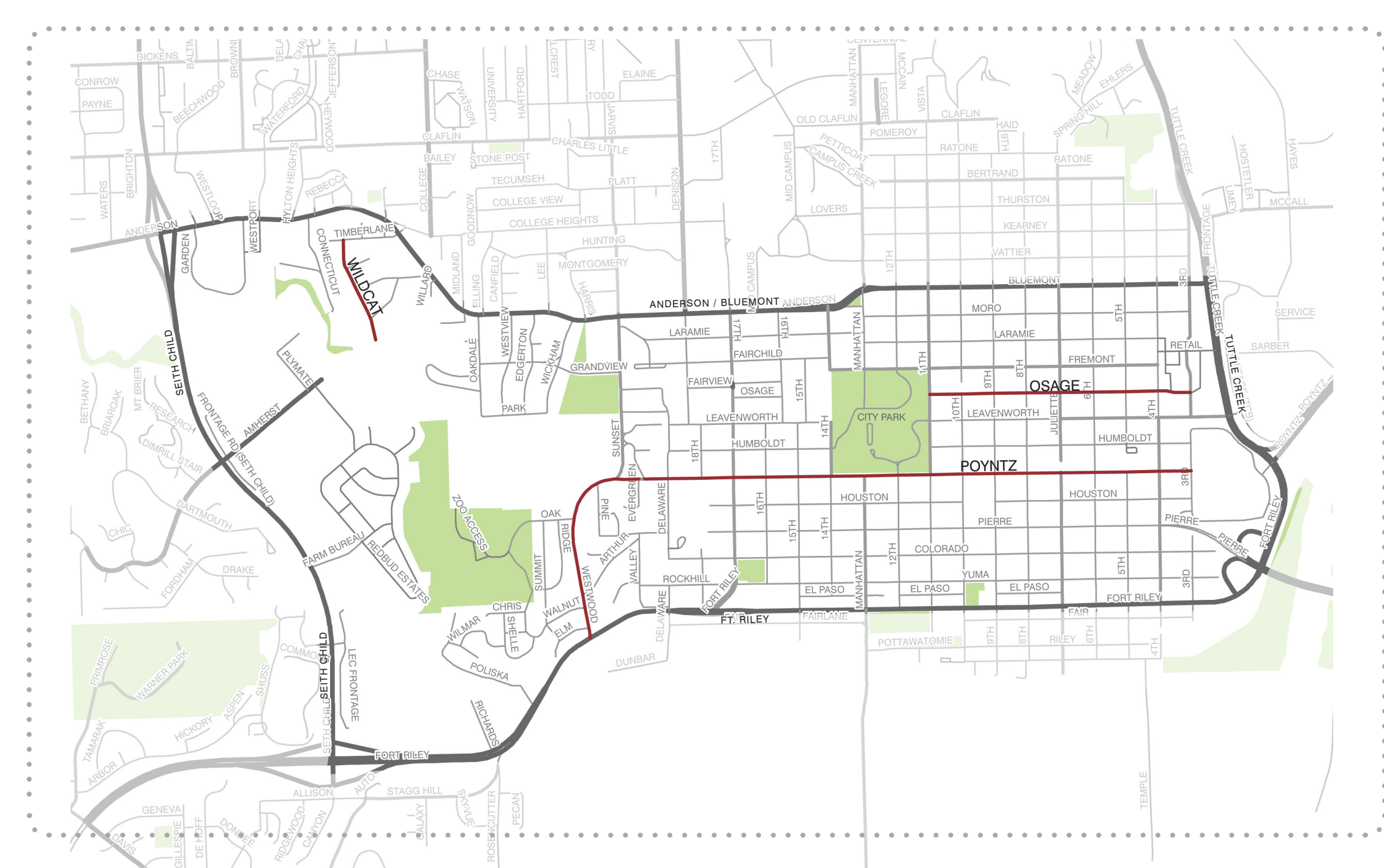
Movement Corridor Vision



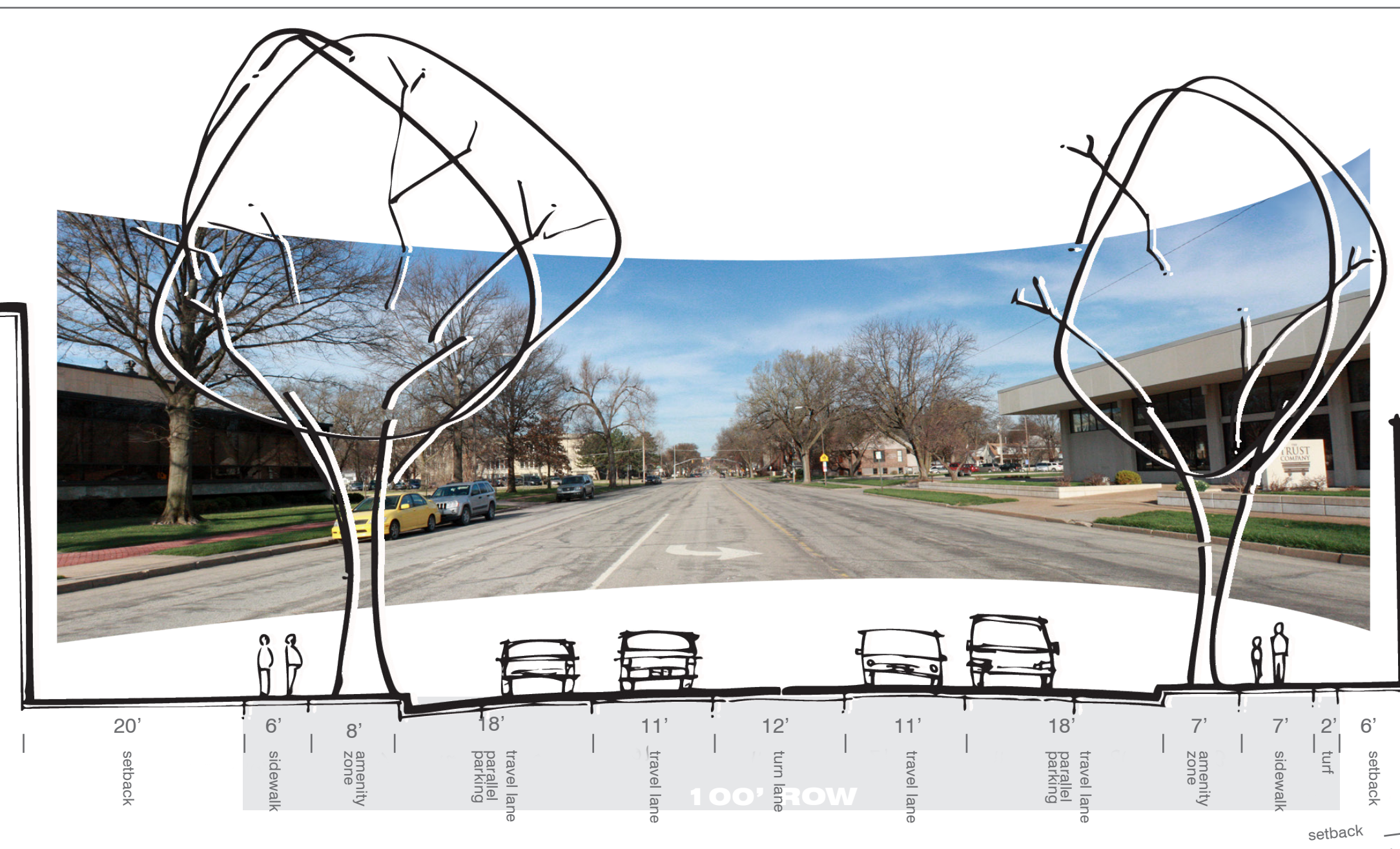
District Selection Process



City-Center District



Poyntz

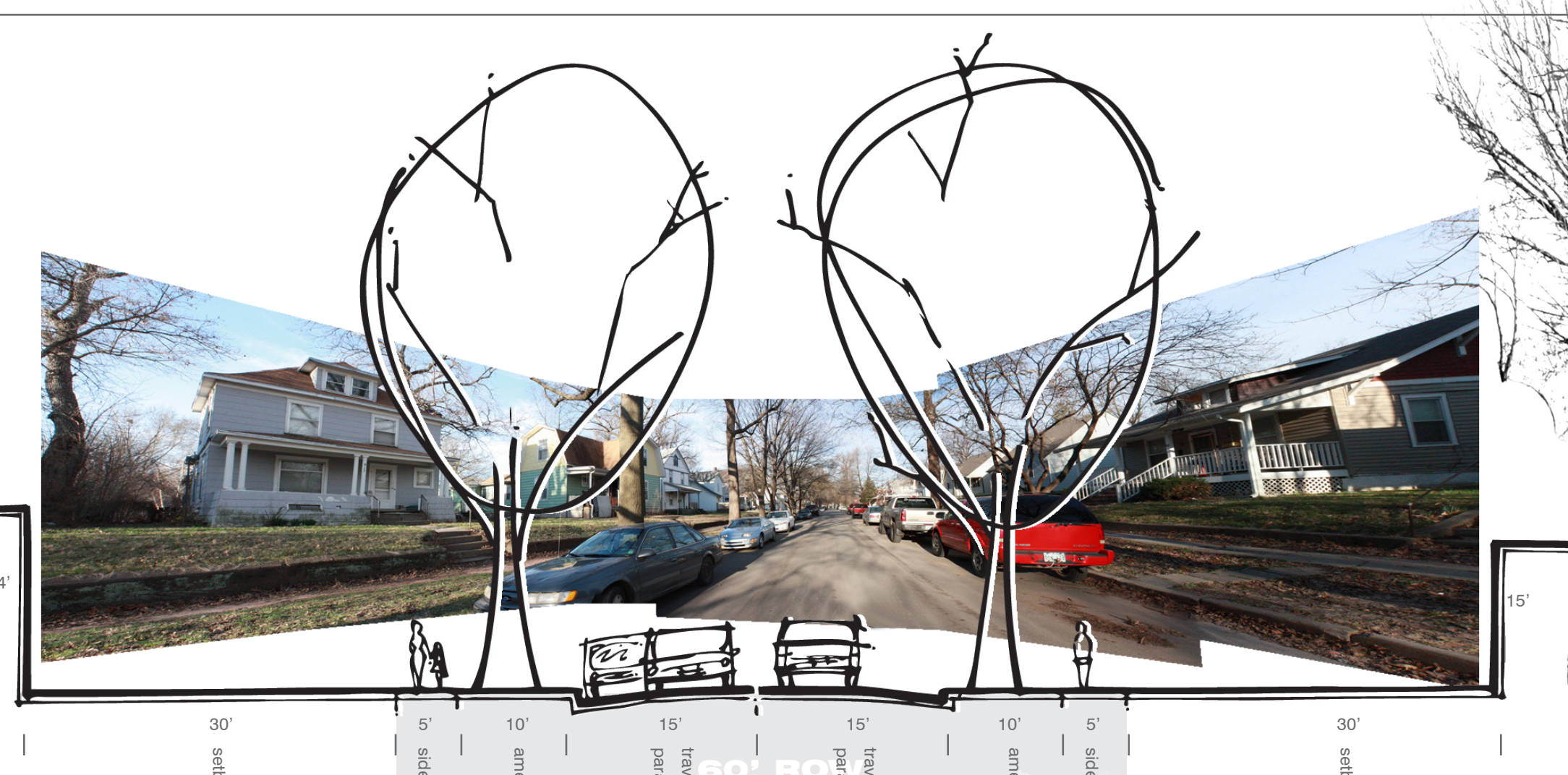


Existing Poyntz Section
emphasizes vehicular capacity by four travel lanes, center turn lane, and parallel parking



Proposed Back-In Parking + Bike Section
emphasizes parking and bike lanes by reducing the number of travel lanes

Osage

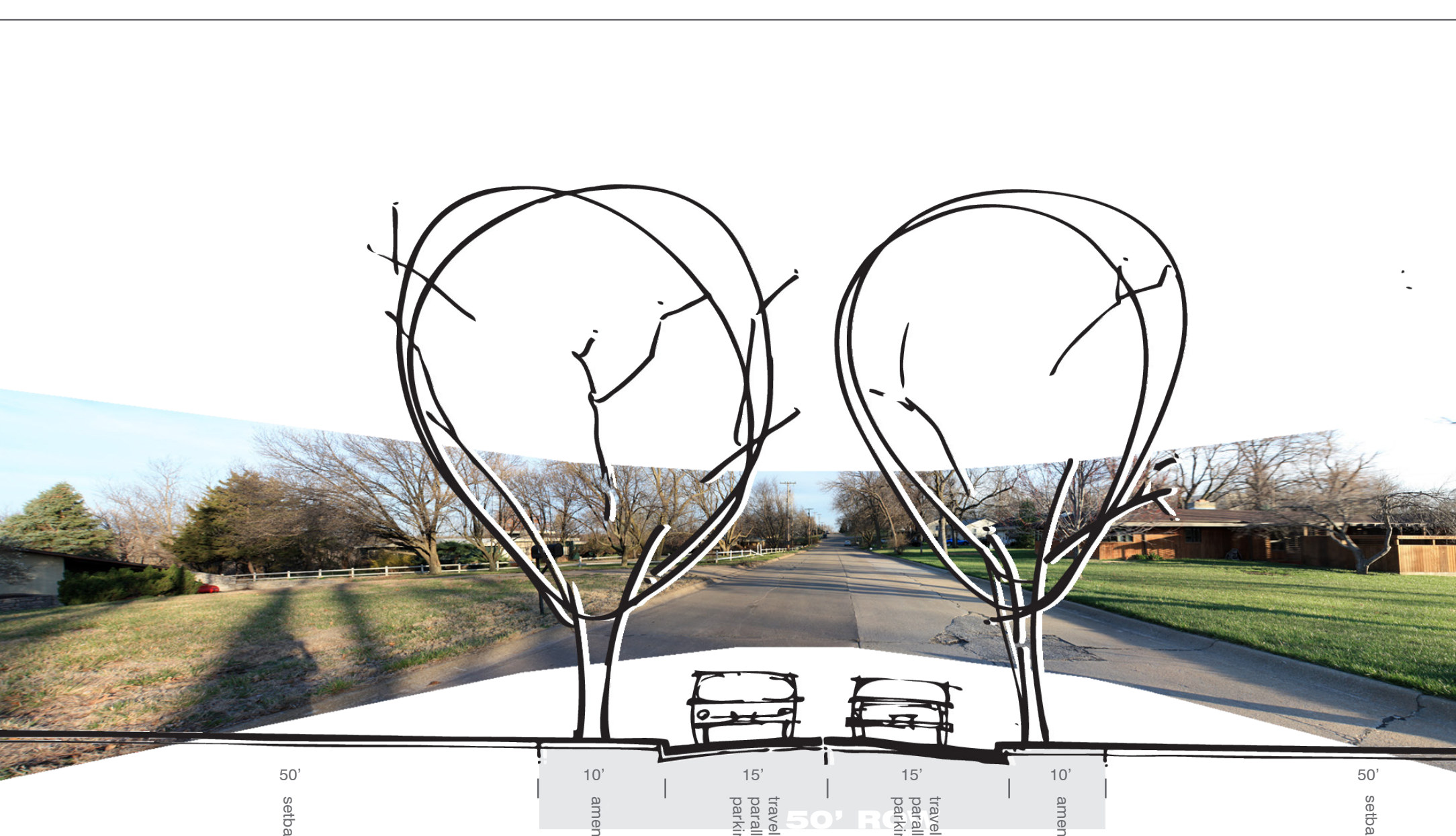


Existing Osage Section
emphasizes accommodation of large vehicles, parking, and single-use residential by 15' travel lanes and large setbacks and side yards.



Proposed Low Speed + Contra-Flow Bike Section
emphasizes bike lanes and parking by limiting vehicle access to one-way, two-way bicycle traffic, and 45 degree angled parking (parking alternates with amenity zone)

Wildcat



Existing Wildcat Section
emphasizes accommodation of large vehicles, parking, and single-use residential by 15' travel lanes and large setbacks and side yards.



Multi-Use Path + Parking Section
emphasizes physical activity in residential neighborhoods by 18-ft wide two-way multi-use path and narrow 16-ft wide two-way vehicle travel lane