



# BICYCLE MASTER PLAN



**PREPARED FOR**

**Kansas State University  
And  
The City of Manhattan, Kansas**





# BICYCLE MASTER PLAN



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And  
The City of Manhattan, Kansas

October, 199



# Bicycle Master Plan

## Kansas State University and Manhattan, Kansas

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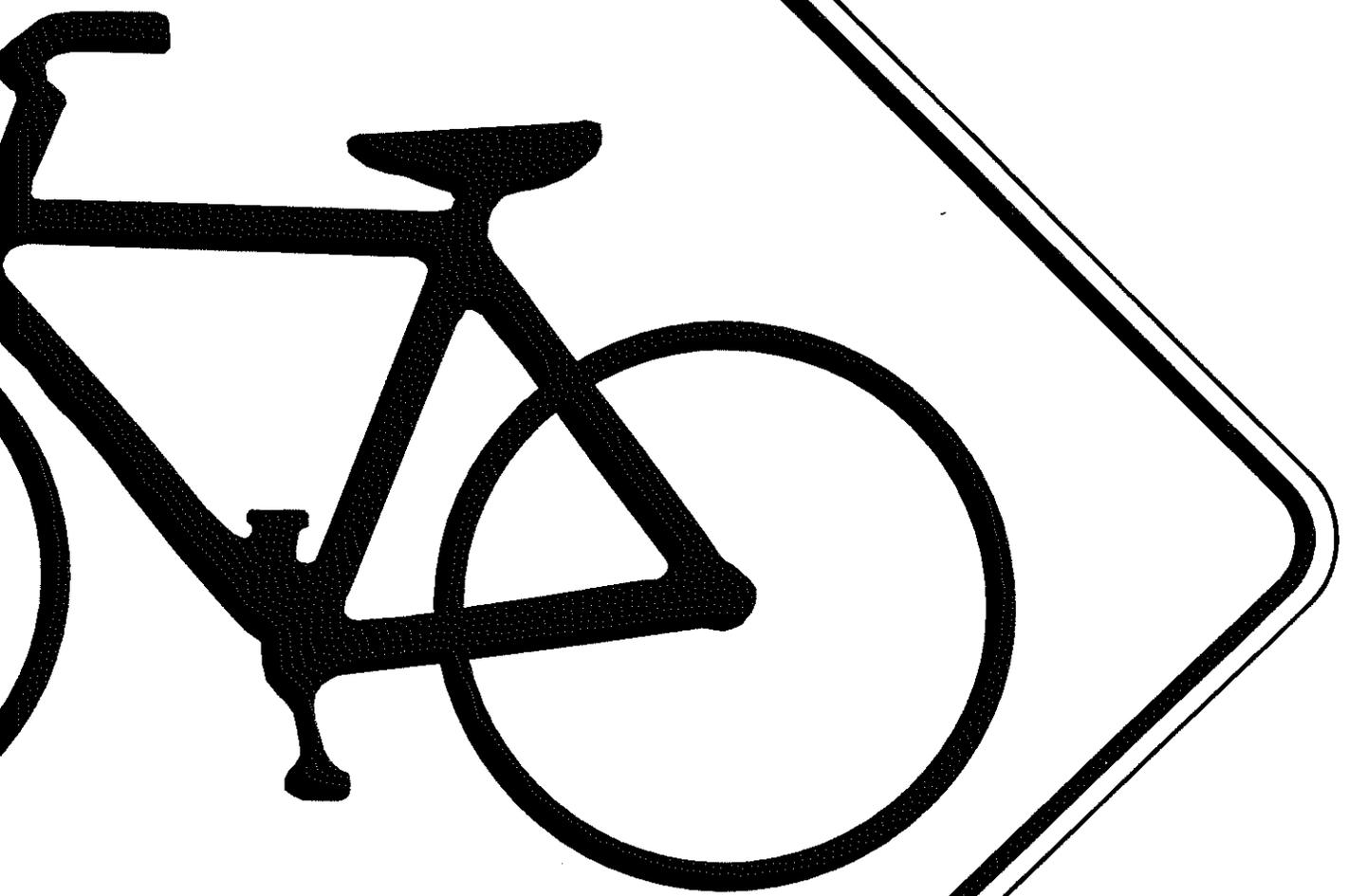
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# CHAPTER 1



## Introduction

Kansas State University and the City of Manhattan consist of a diverse and intricate collection of architecture, space, and people. This gathering is connected by a complex system of transportation infrastructure, serving almost 50,000 people per day, which has been primarily designed to accommodate cars, trucks, and other motorized vehicles.

The *Bicycle Master Plan* seeks to integrate bicycle use into this transportation infrastructure in a manner that will safely and efficiently accommodate cyclists. Bicycles have always been a significant source of transportation for the University population, and are continuing to enjoy increased popularity among the general public. Bicycles can provide door-to-door travel, accessibility to various areas, require minimal space for parking with free lock-up facilities, and are quiet, clean and efficient. In addition, they offer a way to improve personal health while saving both money and the environment.

The purpose of the *Master Plan* is to create a structure for future development of bicycle facilities to respond to both short- and long-term needs. This "guideplan" responds to existing bicycling conditions, to future growth and development patterns, and to physical characteristics of the community. Recommendations range from the general to the specific, and may be used or modified as necessary to best accommodate the specific condition.

## Master Plan Process

The *Bicycle Master Plan* for Manhattan and Kansas State University was developed through a joint effort of consultants, University staff, and City personnel. The consultant team, comprised of representatives from Landplan Engineering and Bicycles &, Inc., worked with City staff from the Office of the City Manager, Parks and Recreation Department, Public Works Department, and the Fire Department. The University was represented by staff from the Facilities Planning Office, Student Housing and Dining Services, and Public Safety Departments, as well as the State of Kansas Division of Architectural Services.

The process was designed to respond to the physical characteristics of the study area, the existing conditions for bicycling, input from the public, and policy decisions which impact bicycling.

Project base maps were compiled from City and University maps and computer files, which were then used for all future phases of design and planning. The programming portion of the project - establishing of priorities and goals - was initiated with a work session between all of the *Plan's* participants as mentioned above. Discussions centered on existing constraints and opportunities for cycling, as well as existing policy which impact bicyclists. A public information meeting was held the same day to solicit input from the community, with a bicycle tour around the University and city the following day.

The examination of current bicycling conditions resulted in mapping of existing bicycle facilities both in the city and on-campus, an analysis of the opportunities and constraints of these facilities, and primary objectives for the *Plan's* consideration. The University staff also conducted an on-campus survey to gain information regarding bicycling from a cross-section of the University population.

From this perspective, the consultant team then developed a series of preliminary recommendations for bicycle routes throughout the study area, which was then reviewed in another work session with the core planning team. Revisions, modifications, and additions to the *Plan* recommendations resulted in a final draft report, which was then finalized after a public hearing and review comments from the City and the University.

## Why Plan?

In Manhattan and within the university community, persons who bicycle are not a special interest group, but represent a large segment of the overall population. For those who cannot drive or do not have access to a car, which includes the community's youth and many KSU students, many must rely on bicycling as their primary form of personal transportation. Many who can drive still desire to have the option to bike for some of their trips, as well as for recreational activity.

A national poll conducted in 1992 by Louis Harris and again in 1995 by Rodale Press demonstrates these preferences toward bicycling and

walking activities (see following page). This survey provides insight into what measures communities should undertake to promote increased levels of bicycling. Providing designated bicycle lanes and paths, bike parking, and work place incentives demonstrates how bicycling can become an integral component of community life.

### Summary of 1995 Rodale Press Poll

- > 37% of all respondents had *ridden a bicycle* in the past year.
  - 26% of the cyclists had used their bikes for shopping, running errands, and commuting to work.
  - 39% said they would commute by bike more often if there were safe bike lanes on roads and highways.
  - 40% said they would commute more often if there were safe, separate designated bike paths.
  - 36% said they would commute more often if there were showers, lockers and bike storage at work.
  - 36% said they would commute more often if there were financial incentives from employers.
- > 56% of all respondents would like their government to *devote more funds* for safe paths.
- > 70% of all respondents would like to see their town or locale adopt an overall planning structure that would *make walking, running and bicycling a safe and integral part of the area's transportation system.*

It is significant that a comprehensive approach to transportation planning – one that not only addresses automobile needs, but also bicycle and pedestrian needs – is supported by 70% of the general population. Such an approach is often referred to "*transportation planning for liveable communities*," a concept that builds off of the principle that communities should be designed for the people who live there. People drive cars. People ride bikes. And people walk. The transportation system should therefore be balanced to provide people with an opportunity to choose how they would like to get around for different trips.

The liveable communities concept also addresses the way that land is used and developed. A lack of adequate lane width on streets with heavier traffic volumes discourages people from bicycling, as does the distance that the suburb is located from key destinations such as schools and the grocery store. If a major arterial street without bicycle accommodations is the only option to reach such destinations from

that suburb, then driving is likely to be the only transportation option that most residents will consider.

Many cities nationwide gauge their "quality of life" by the levels of bicycling and walking enjoyed in their community, and the flexibility of lifestyles which these activities offer to their residents. Manhattan should strive to do the same and should fund bicycling accommodations as a routine part of infrastructure development and land use planning.

#### Who Benefits?

Another recent national survey, this one targeting more than 2,300 homebuyers, confirms the quality of life provided by bicycle-friendly neighborhoods. Out of 39 community features which survey respondents were asked to rank as influencing their decision to buy a home, amenities which influence the quality of bicycling were rated as five of the top ten. Features in the top ten are considered to have "universal consensus" regardless of type of purchaser. By comparison, features ranking below 20th place, such as tennis courts and golf courses, tend to serve a niche market.

Community features that promote and encourage increased levels of bicycling and walking, and their importance to home buyers, are summarized following.

According to *The National Bicycling and Walking Study: Transportation Choices for a Changing America* mandated by Congress in 1991, bicycling and walking offer additional benefits to communities and society in terms of transportation and environment.

Everyday use of these transportation modes can reduce roadway congestion and lessen the need for expansive and expensive automobile parking lots at destinations. Roadway improvements to increase the safety of bicyclists can also enhance safety for motorists by reducing run-off-road, head-on and side-swipe motor vehicle crashes.

Paving shoulders and bicycle lanes, which are viewed as bicycle-friendly improvements, can increase the overall carrying capacity of a roadway, and reduce roadway maintenance costs by decreasing the rate of normal roadway edge degradation.

Bicycling does not consume petroleum products and is a non-polluting modes of transportation. Bike trips replace short-distance

automobile trips, which are the least fuel efficient and generate the most pollution per mile travelled. Additional benefits to the environment are realized when trail facilities to accommodate these activities result in the preservation of open space or greenway corridors along rivers, streams, and abandoned railroad lines. Such environmental corridors can preserve wildlife, protect water quality, manage storm water, preserve vegetation, protect wetlands and buffer competing land uses.

Bicycling also benefits individuals. These activities offer health and fitness benefits by reducing the number of adults who are almost completely sedentary (currently 40 percent), helping children to develop healthy lifestyles, combating heart disease, which is the nation's number one killer, and changing the social norms related to health care and associated costs.

# The Vision

To create an environment where it is safe, convenient and fun to bicycle for personal transportation and recreation within Manhattan, Kansas.

## Goals and Strategies

The following is a summary of public and Steering Committee input into why Manhattan needs a *Bicycle Master Plan*. The following goals represent what the community would like to see happen; the supporting strategies outline how this plan proposes to accomplish those goals.

### Goal 1. Send the Message that Bikes Belong

- ◆ Sign and stripe bicycle lanes on collector and arterial streets.
- ◆ Provide appropriate bicycle parking at all destinations.
- ◆ Make bicycle facilities a prominent part of the campus landscape.
- ◆ Eliminate policies that limit bicycle access or discourage bicyclists from using the street system.
- ◆ Educate bicyclists and motorists on their rights and responsibilities toward each other.

### Goal 2. Shift Mode Use for Daily Trips

- ◆ Out of the national average of twenty trips made per person per week, encourage individuals to make three of these on bike or foot in an effort to meet the national goal of doubling the percentage of trips made by bicycling and walking.
- ◆ Promote the fact that bicycling is competitive with the automobile for trips less than two miles in length.
- ◆ Offer incentives for employees to commute by bike.
- ◆ Make it easier for customers to park near Downtown, Aggieville and suburban businesses by providing bicycle parking.
- ◆ Minimize the need for KSU students to have a car.

### Goal 3. Improve Access

- ◆ Improve circulation on campus to minimize conflicts between bicyclists and pedestrians.

- ◆ Construct bike paths on campus to provide enhanced access for both cyclists and emergency vehicles.
- ◆ Provide a means to cross topographical and man-made barriers within the community.
- ◆ Develop safe routes for children to bike to school.
- ◆ Provide additional access points to the Linear Park Trail.
- ◆ Provide bicycle/pedestrian accessways between commercial developments and adjacent neighborhoods.

**Goal 4. Improve Safety**

- ◆ Promote use of bicycle helmets and headlights. Remove hazards to bicycle travel by providing bicycle-friendly drainage grates, railroad crossings, and maintenance practices.
- ◆ Change infrastructure development practices to accommodate bicyclists on-road rather than on parallel sidepaths that increase bicycle/motor vehicle conflicts at intersections.
- ◆ Allow adequate signal timing and adjust traffic-actuated signal loop sensitivity to permit cyclists to safely cross major streets and roadways.
- ◆ Educate young cyclists that they may ride on sidewalks if they travel slowly and stop at all streets and driveways.
- ◆ Educate older cyclists on effectively riding in traffic and behaving as operators of vehicles.
- ◆ Educate motorists to share the road with cyclists.
- ◆ Promote use of bicycle helmets and headlights.

**Goal 5. Enhance Recreational Opportunities**

- ◆ Complete the northern portion of the Linear Park Greenway Trail loop.
- ◆ Develop designated north/south and east/west cross-town connections that link to the Linear Park Trail loop.
- ◆ Encourage residents to combine recreational and fitness time with commute and errand-running time by accomplishing both on bike.
- ◆ Plan and secure land for the development of additional spur trails into Riley County along designated open space corridors.

- ◆ Program roadway improvements at the fringes of the community to provide safer access to lightly-traveled rural bike routes within the outlying County.

**Goal 6. Maximize Funding Opportunities**

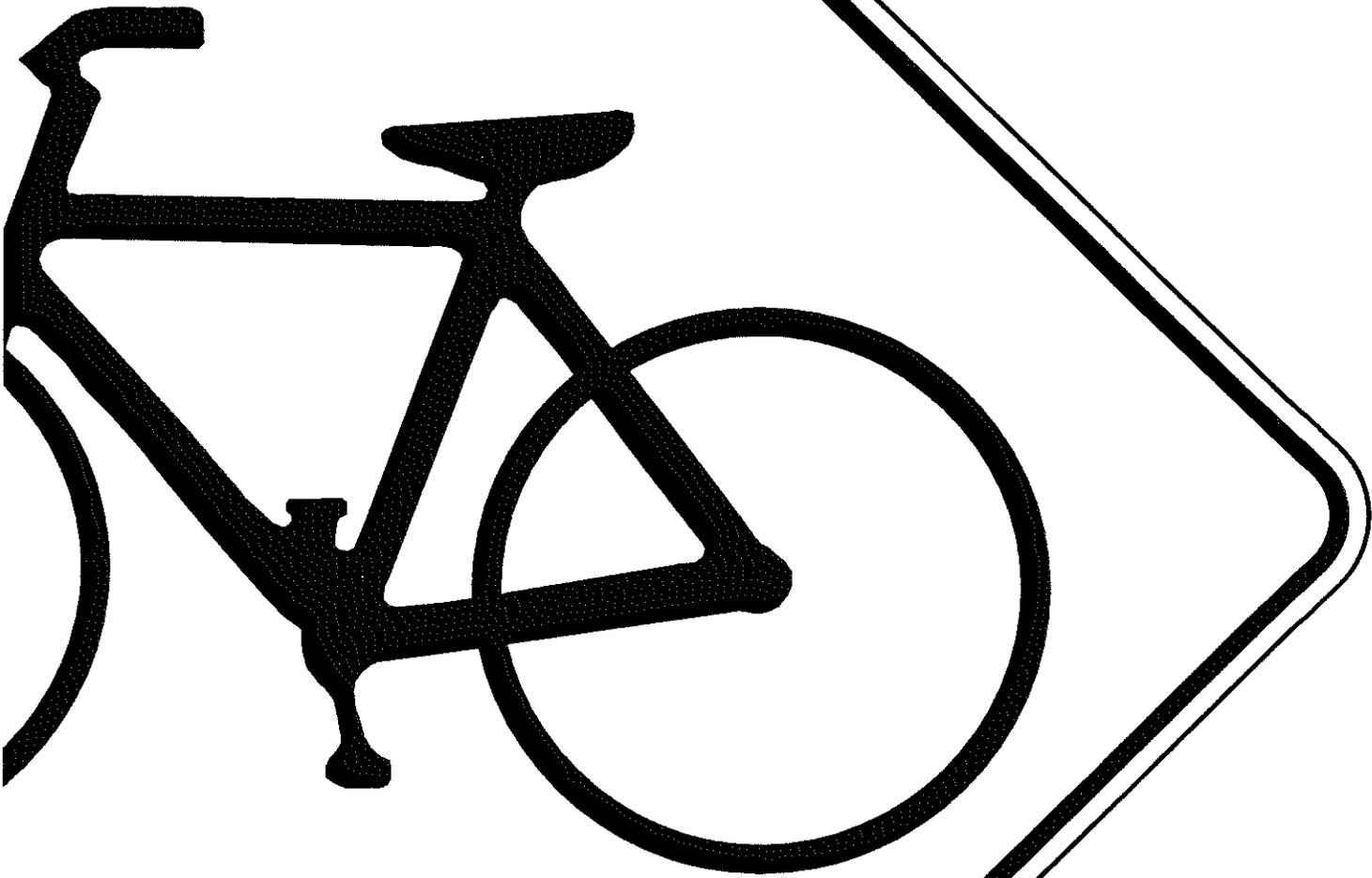
- ◆ Use general Surface Transportation Program (STP) funds and local transportation funds to provide bicycle accommodations as a routine part of overall roadway development.
- ◆ Leverage local dollars to provide matching funds for state and federal grant programs such as the ISTEA Enhancements program.
- ◆ Adopt standards for wider collector and arterial streets that include bicycle accommodations as an incidental project cost.
- ◆ Adopt standards for narrower neighborhood streets that calm traffic, while reallocating funds to construct wider collectors and arterials.
- ◆ Adopt subdivision ordinances that provide incentives for land developers to fund bicycle facility development.
- ◆ Encourage private-sector funding through group bicycle parking installation programs and Adopt-a-Trail programs.
- ◆ Reduce the need to construct expensive automobile parking facilities on campus and throughout the community by providing convenient and secure bicycle parking.
- ◆ Target KSU alumni for donations to develop a bicycle-friendly campus that includes an improved internal circulation system and prominent campus gateways.

**Sources:**

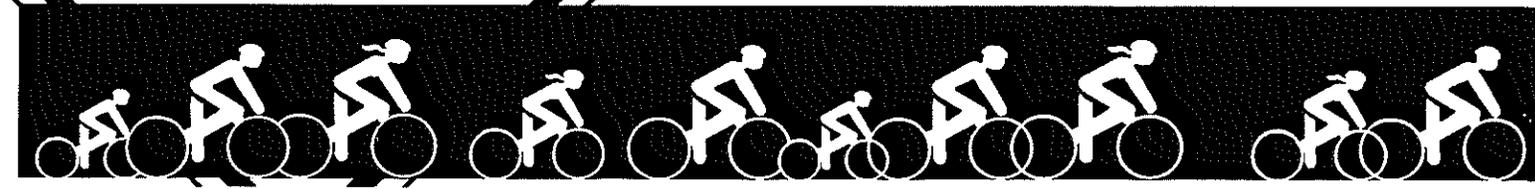
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*Final Report, National Bicycling and Walking Study: Transportation Choices for a Changing America.* 1994. U.S. Department of Transportation, Federal Highway Administration, Washington, D.C.

"1994 Shopper and Homeowner Study: Community Features Home Buyers Pay For," 1995. American Lives and InterCommunications Inc., San Francisco, CA. As reported in *Pro Bike News*, Vol. 15, No. 7, July 1995.



**CHAPTER 2**  
**Current Conditions**



## Overview

The population of Manhattan and Kansas State University frequently use the bicycle as a mode of transportation. Factors contributing to this include...

- ◆ the presence of the University and Manhattan Christian College,
- ◆ the relatively small geographic area of the City,
- ◆ a climate conducive to cycling at least nine months of the year, and
- ◆ the general societal trend for fitness-related activities.

Formal bicycle planning has been practiced in Manhattan for at least twenty years, as evidenced by the City's 1974 "Manhattan Bikeway Plan" and the 1992 "Comprehensive Parks Master Plan". The University has also had several bicycle planning studies over the years, including the 1973 "Kansas State University Circulation Plan" and the 1979 "KSU Bicycle Use On Campus" study. Various components of all these plans have been either implemented or not, and some have been implemented and subsequently abandoned. The end results of these planning efforts have been a commitment to keep bicycle planning in the forefront of community transportation planning, as well as implementation of a somewhat disjointed system of facilities and improvements.

## Facilities Definitions

### ◆ Bicycle Lanes

Bike lanes defined as a separate lane space within a roadway, designated for exclusive use by bicycles through signing and pavement stencils.

### ◆ Bicycle Path

Facilities defined as a shared-use trail, usually hard-surfaced, which accommodates bicyclists, pedestrians, and other users including joggers, skaters, and other non-motorized modes of transportation.

These may be adjacent to streets or rights-of-way in certain circumstances, but most often are separated from the motor vehicle right-of-way and are located along streams, utility corridors, or abandoned railroad rights-of-way.

### ◆ Paved Shoulder

Facilities which are a 8'-10' wide paved shoulder, usually on a rural roadway. These are recommended to be signed as bike routes,

and frequently can accommodate the recreational or inter-regional commuter riders.

◆ **Rail-Trail**

Similar to "bicycle path" in user types, these facilities are built on abandoned railroad rights-of-way. These routes generally feature flat grades, allow the use of existing railroad ballast (rock) for a base, and do not require extensive clearing or grading.

◆ **Wide Curb Lanes**

When the right-hand, through-traffic lanes are 14 feet or wider (excluding curb and gutter), a street or roadway is said to have wide curb lanes. These are most often implemented where designating facilities may not be advisable, but where cyclists travel due to the directness of the route or lack of alternatives.

◆ **Route Signing**

Similar to "wide curb lanes", route signs may be placed on streets or roadways where cyclists travel for directness or necessity. These signs can be information signs to guide cyclists, as well as "awareness" signs to alert motorists to the probable presence of bicycles.

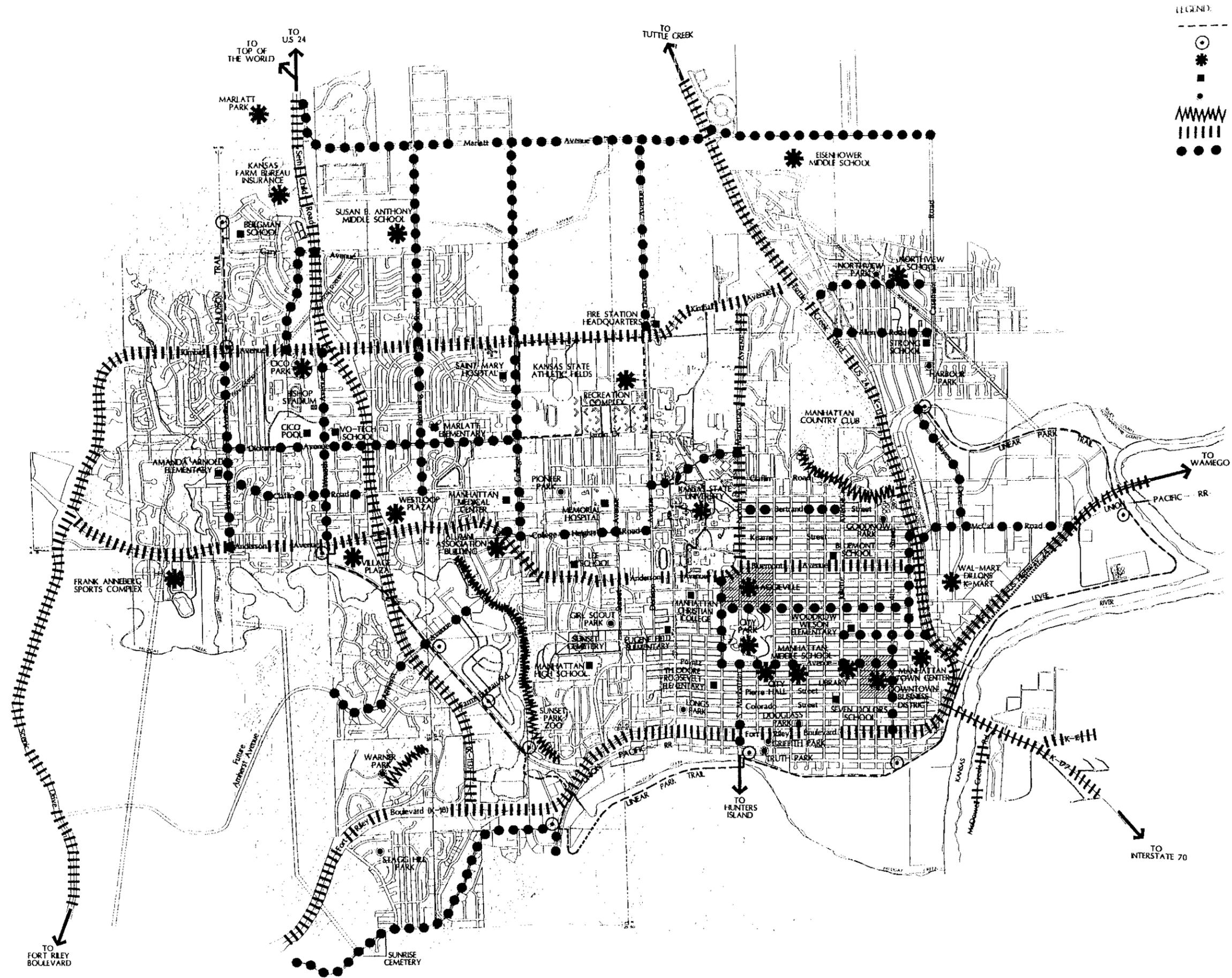
## **Current Conditions - City of Manhattan**

With the 1986 passage of the "Quality of Life Bond Issue", the City of Manhattan initiated the Linear Park Greenway and Trail System. Currently comprising approximately ten (10) miles of multi-use trail, this system is generally located on the Kansas River Levee from the eastern side of downtown (near Casement Road) south, then west to near South Manhattan Avenue. The trail then progresses westward through the 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 Childs Road (see Figure 1. City Existing Conditions, page 10). This trail is generally constructed of limestone screenings and is approximately ten (10) feet wide. A major constraint with regard to the Linear Park Trail is the absence of safe crossings of primary roadways to access the trail - such as east of downtown across Tuttle Creek Boulevard and the levee south of Fort Riley Boulevard.

The Hudson Trail is an approximately 3,500 foot multi-use trail, constructed of limestone screenings, from Kimball Avenue north in alignment with Hudson Avenue on the city's west side. The "Comprehensive Parks Master Plan" identified both of these facilities

as a part of the Linear Park Greenway and Trail system, as well as various conceptual alignments for its' future completion.

No on-street bicycle facilities are currently in-place within the City of Manhattan, and no current policies exist to accommodate bicycles in future transportation planning. The provision of bicycle parking is not required by current City policies or ordinances.



- LEGEND:
- - - Existing Bicycle Path
  - Existing Trail Access Points
  - ★ Major Destinations
  - Secondary Destinations
  - Parks
  - ▬ Topographic Barrier
  - ▬ Major Streets
  - Collector Streets

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# BICYCLE MASTER PLAN

## Manhattan, Kansas

Bicycle Master Plan  
for  
Kansas State  
University  
&  
Manhattan, Kansas

FIGURE 1:  
EXISTING  
CITY  
CONDITIONS

REVISIONS

NO.	DATE	DESCRIPTION
1	8/27/98	DATE
2	8/27/98	PROJECT NO. 860300
3	8/27/98	DESIGNED BY: RAM CAR
4	8/27/98	DRAWN BY: RAM CAR
5	8/27/98	CHECKED BY: MDM
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Other existing conditions which have an impact on bicycling in Manhattan include...

- ◆ various areas of the City are extremely hilly, posing severe topographical constraints to cycling.
- ◆ several parts of the City are isolated from the central area by major roadways (including Northview, Stagg Hill, and near Cico Park).
- ◆ near campus, streets are often heavily used for parking, decreasing the available street width.
- ◆ primary streets which could provide the most direct access for cyclists also are the most heavily traveled by motor vehicles, mostly with inadequate street width for bicycle facilities (ex.: Anderson/Bluemont, Manhattan Avenue, Kimball Avenue).
- ◆ Manhattan has experienced significant westward growth in the recent past, with no signs of abatement. These new street and growth patterns offer potential for the inclusion of bicycle-friendly improvements.

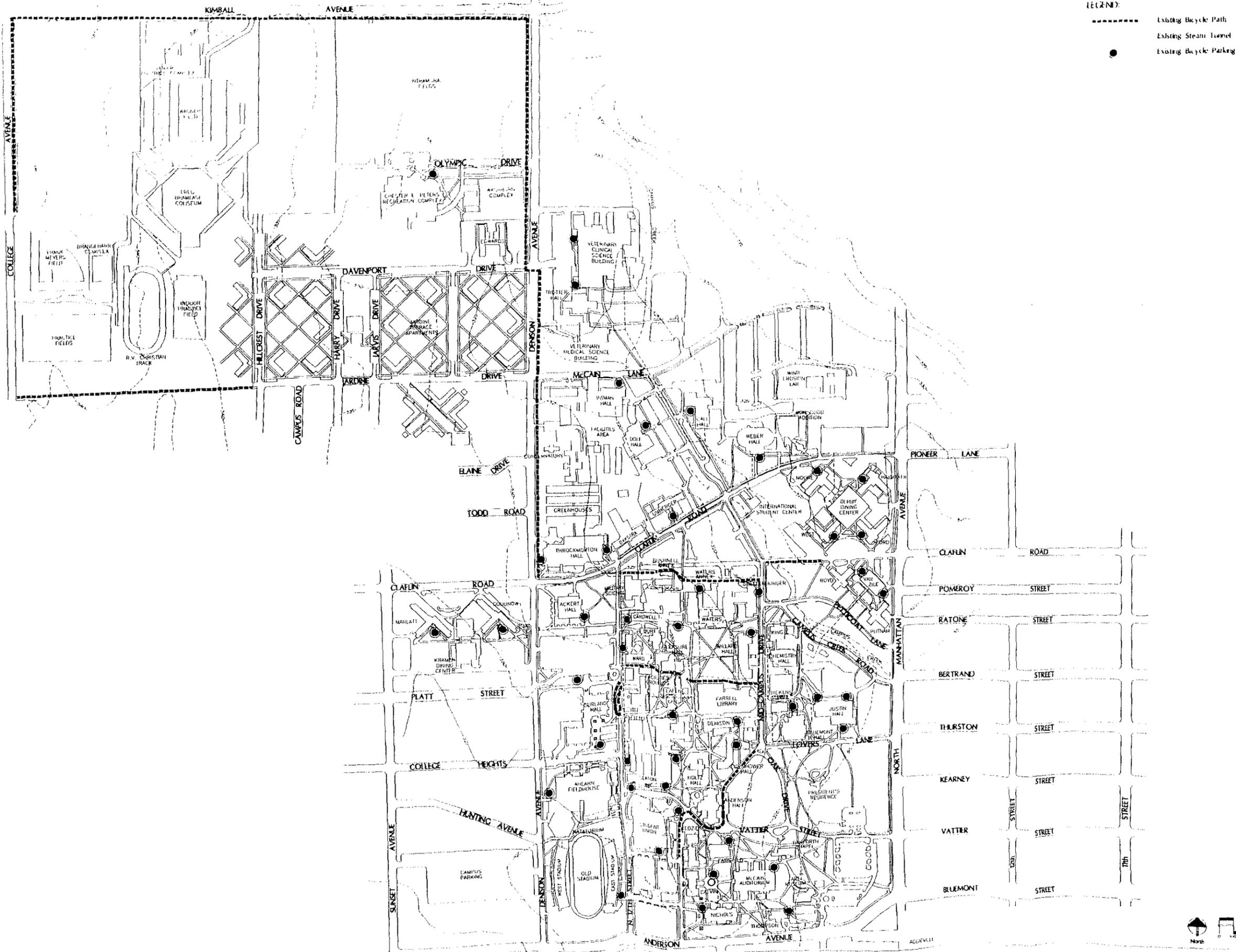
## **Current Conditions - Kansas State University**

Kansas State University has both facilities and policies which have direct impacts on bicycle use on-campus. Existing bicycle facilities are shown on the following Figure 2. Campus Existing Facilities (page 12), and include...

- ◆ an approximately 1,200 foot striped bicycle lane, located on Mid -Campus Drive in front of Anderson Hall. This lane is striped for southbound bicycle traffic, with north-bound users following the one-way motor vehicle route.
- ◆ a bicycle facility consisting of two, approximately four foot wide bicycle paths located to the east of Durland Hall.
- ◆ an approximately 500' long bicycle path located north of Bushnell Annex, just southeast of the intersection of 17th Street and Claflin Road.
- ◆ a recently-constructed, 8' wide concrete "sidepath" located along Denison Avenue north from Claflin to Kimball Avenue, then west along the south side of Kimball to College Avenue, then south to the practice football fields, totaling approximately 9,000 linear feet.
- ◆ a multi-use trail which connects Jardine Drive west to College Avenue.
- ◆ a current project which will, when completed, provide a path dedicated to bicycles only through the central campus area,

from 17th Street near Ward Hall to Mid-Campus Drive between Farrell Library and Willard Hall.

- ◆ bicycle parking is currently located in many locations on-campus, typically near building entrances as shown on Figure 2.



LEGEND:  
 - - - - - Existing Bicycle Path  
 - - - - - Existing Steam Tunnel  
 ● Existing Bicycle Parking

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# BICYCLE MASTER PLAN

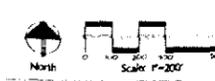
## Manhattan, Kansas

■ Bicycle Master Plan for Kansas State University & Manhattan, Kansas

■ FIGURE 2: EXISTING CAMPUS CONDITIONS

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 PROJECT NO: 840300  
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 DRAWN BY: RAW/CAR  
 CHECKED BY: NCM

SHEET NO: 2 OF 4 SHEETS



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These facilities vary from one or two bike racks to large concentrations of bicycle parking. However, some of the current rack styles do not always permit the secure locking of bicycles.

The University currently has a policy in-place which prohibits bicycles on most campus walks between 7:30 a.m. and 6:00 p.m. while school is in session. Riders are to generally use existing roadways and bicycle facilities, and dismount when entering "core" areas of campus. This policy has been only moderately successful, due in probably equal parts of mere disregard or ignorance of the policy, as well as the location of existing bike parking. Frequently, bike parking is located in areas which are off-limits to bicycles, thereby creating a situation where the cyclist breaks the policy simply to access the parking area.

The end result of these facilities is a dis-connected system which tends to confuse and frustrate many University cyclists. Many users simply ignore the policies and ride bicycles directly to destinations, while others may not even ride.

## User Profile

A concept of a "design cyclist" is often used to define three (3) basic types of bicycle riders (FHWA-RD-92-073)...

### ◆ Group A: Advanced Bicyclist

This group includes experienced adult riders who operate under most traffic conditions, typically riding on collector and arterial streets. These users generally prefer direct access to destinations via the street system, desire the opportunity to operate at maximum speed with minimal delays, and are best served by sufficient operating space on roadway shoulders, on streets with wide curb lanes, or bicycle lanes.

### ◆ Group B: Basic Bicyclist

These cyclists are generally casual riders or new adult/teenage riders who are less confident and capable of operating in traffic without special provisions for bicycles. They usually prefer comfortable access to destinations, either on low-speed, low-volume streets or on designated bicycle facilities.

### ◆ Group C: Child Bicyclist

This user group includes pre-teen riders who do not yet have a driver's license and whose roadway use is limited to residential streets with low motor vehicle speed limits and volumes. They generally require comfortable access to key destinations that surround residential areas, including schools, parks, and shopping areas.

Some other characteristics of cyclists - nationally as well as in the region - include...

- ◆ The "Pedestrian and Bicycle Statistics" report from the Kansas Department of Transportation (June 28, 1994) indicate that 1.9% of commuter trips in the City of Manhattan were by cyclists, and another 12% of those trips were by pedestrians.
- ◆ Previous bicycle studies in other cities typically indicate that more men than women ride bicycles. Percentages range from just over 55% male to 45% female, to a significant 80% male versus 20% female. These ratios are considered independent of recreational or utilitarian usage.
- ◆ As might be expected, bicycle ridership declines with age. Most studies indicate that two-thirds of bicyclists are under the age of 45, with a peak in popularity for those in their mid-twenties. Further analysis of age and sex of bicycle users indicates that female cyclists shy away from riding bicycles as they become older at a greater ratio than males.
- ◆ Bicycle studies typically indicate that lower income groups (less than \$25,000 annually) bicycle more than their higher-income counterparts. However, certain high income groups (over \$50,000 annually) show a sizeable ridership. With this said, however, some other studies show almost no relationship between ridership and income levels. It should be noted, though, that typically as income decreases, the lack of automobile availability decreases and other modes of transportation play a more important role.
- ◆ Probably the most significant factor contributing to high levels of bicycling in a community is the presence of a university. University towns have 10 times the rate of commuter cycling that medium-sized cities do, which in turn have 1½ times the commuter cycling that large cities have. In fact, Manhattan currently has the highest percentage of non-motorized commuting (14.4%) than any other city in Kansas (state average is 4.1%).

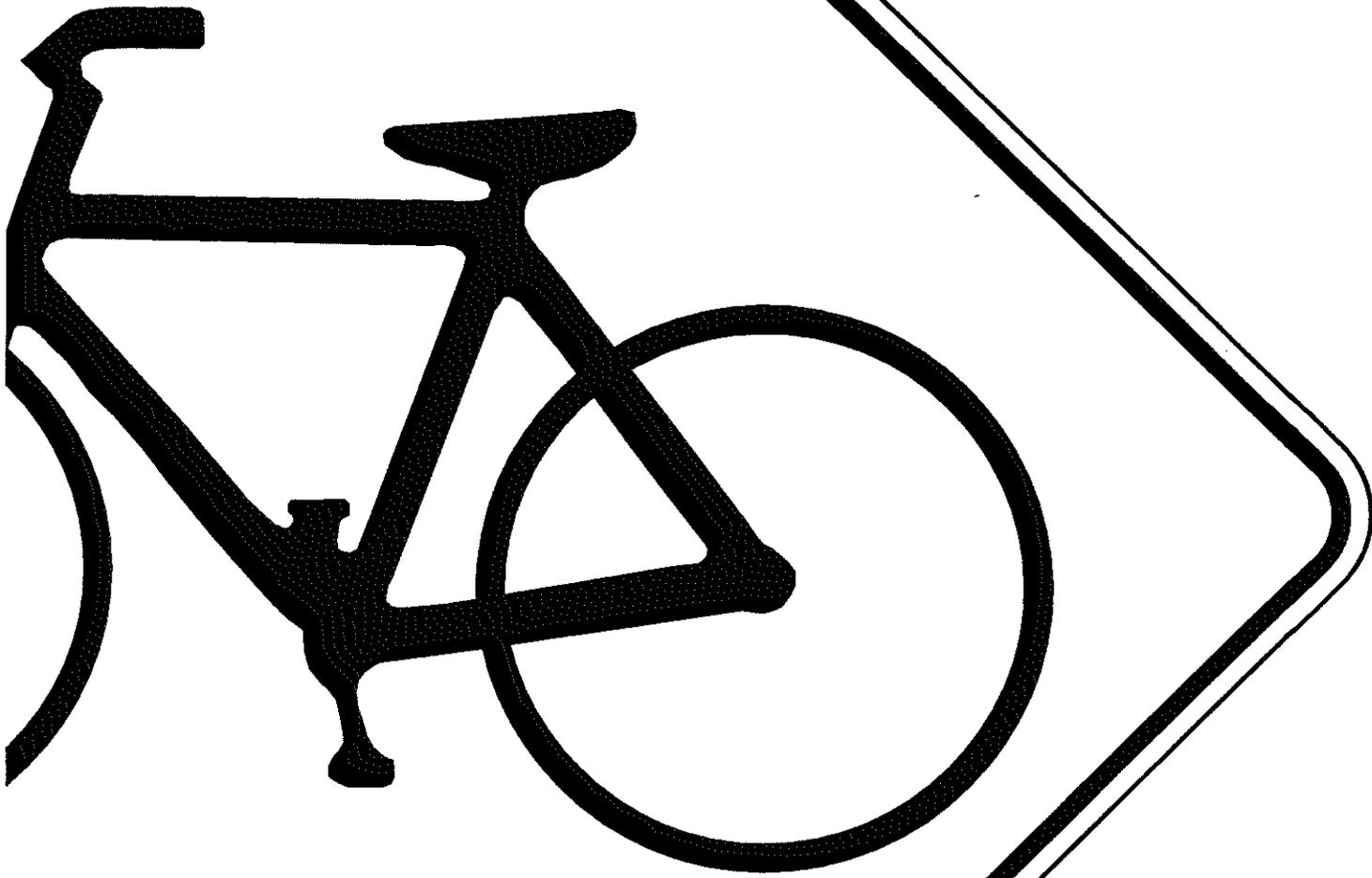
#### University User Survey

In May and June of 1996, the Facilities Planning Office staff prepared and distributed a Bicycle Survey on the Kansas State University campus. Sixty-three participants were asked their opinions and ideas regarding bicycle habits and concerns. A complete copy of the Bike

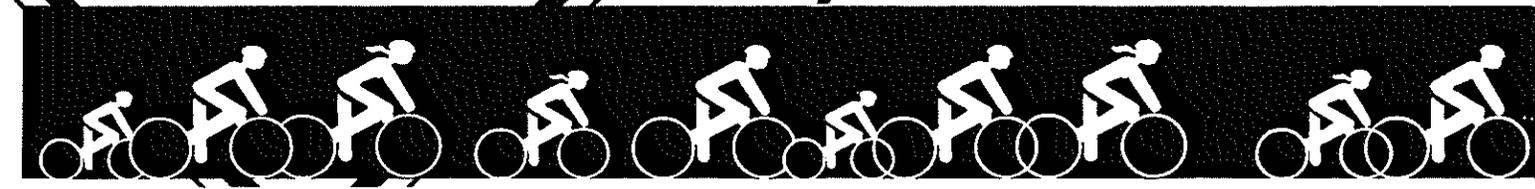
Survey Results and Summary is attached in the Appendix of this *Master Plan*.

Some specific items of note regarding the user survey include...

- ◆ Campus cyclists are confused about the bicycle regulations and policies. In fact, only about 20% of the survey respondents had actually registered their bicycle, and other concerns included the cost and relative benefits.
- ◆ Cyclists expressed disagreement with the current policy of "dismount zones" in certain areas of campus. Their general comments indicated that they feel "shut off" from areas of campus, and would rather see facilities that allow them similar access as pedestrians.
- ◆ Inadequate lighting for nighttime riding was cited as a safety concern by survey participants, with specific locations provided.
- ◆ The scarcity of safe crossings of streets adjacent to campus is a major area of concern for cyclists. In particular, Manhattan Avenue and Anderson/Bluemont cause severe problems.
- ◆ Bicycle parking was also identified as an area of concern, citing lighting, accessibility, rack design, and efficient locations as priorities.



**CHAPTER 3**  
**Bicycle Master Plan**



## Overview

The goal of the *Bicycle Master Plan* is to provide a clear, cohesive guideplan to structure the future implementation of bicycle transportation facilities at Kansas State University and in Manhattan. This *Plan* envisions a coordinated, interconnected system of bicycle lanes, routes, pathways, and ancillary facilities which provide safe and convenient access for cyclists to various destinations.

Additional goals of the *Bicycle Master Plan* are to help reach the national transportation goals of...

1. Doubling the percentage of total trips made by bicycling
2. Simultaneously reducing by 10% the number of bicyclists killed or injured in traffic crashes

The *Plan* can also contribute toward making the Kansas State University and Manhattan communities more liveable by...

1. Providing vision for quality community growth and development
2. Making recommendations for retro-fitting existing infrastructure and constructing new projects to better accommodate bicycles

An examination of "Current Conditions" for cycling raised several issues which are central to the following discussion of Plan Recommendations. With regard to the City of Manhattan, key areas for the *Plan's* consideration include...

1. A recommended route to facilitate the completion of the City's Linear Park trail.
2. The recognition of topographical constraints in various areas which impact bicycle travel.
3. Recommendations for bicycle routes and facilities improvements which will effectively and safely link residents with the University, primary and secondary schools, employment centers, retail/entertainment venues, and various other destinations.
4. Consideration of City policy or standards revisions/ additions which can improve cycling conditions in both developing and older areas of Manhattan.
5. Bicycle parking standards, including location and design issues

Kansas State University's critical issues for the *Plan* to examine include...

1. Development of safe and convenient north-south and east-west bicycle access through central campus. This access must recognize the inherent conflict present on campus between pedestrians and cyclists, as well as existing policies restricting bicycles from some areas of campus.
2. Recommendations for new standards for bicycle parking, including locations, design, and educational programs.
3. Safe ingress and egress from the surrounding community and residential areas to central campus.
4. Maintaining access for emergency vehicles.
5. Consideration of policies and standards to promote the safe operation of bicycles on campus.

## Needs Assessment

### **Kansas State University**

The University currently confines bicycle use to certain, defined routes as discussed in Chapter Two: "Current Conditions". While this policy is designed to and does, in fact, decrease conflicts between pedestrians and bicyclists, it is also true that some cyclists disregard the policy due to its somewhat restrictive nature, and others simply do not know the policy exists. A significant portion of the University population wants to ride their bicycle directly to their destination, park, and walk into the building - even though bicycles may be prohibited from that area or walk, and though no bicycle parking may exist at that location.

Critical bicycling needs for the Plan's attention include...

1. Safe and efficient north-south access on the west side of central campus, and on the east side. There is currently an incomplete bicycle route along the closed portion of 17th Street (east of Durland Hall). The natural extension of this route is 17th Street, although it has no special or designated provisions for bicycle transportation either north or south of this route. An existing bicycle lane is located on Mid-Campus Drive from south of the Student Union to the intersection with Lover's Lane, with its' natural extension continuing north on Mid-Campus Drive. This street should be considered for improvements to provide designated facilities for bicyclists. A bicycle side-path has been constructed along Denison Avenue to Kimball, west along Kimball to College, and south along College.

2. East-west bicycle facilities on-campus currently consist of a partial bicycle path north of Bushnell Annex and a bicycle path through central campus - between 17th and Mid-Campus, through a corridor just south of Ward Hall and north of Farrell Library. In the southern portion of campus, a sidewalk south of McCain Auditorium is designated a bicycle path, and Vattier Street is heavily used by cyclists.
3. Access from the surrounding streets onto campus is of critical importance. The streets bordering campus are typically collector streets, with Average Daily Traffic counts ranging from approximately 7,500 to 18,000. Signalized intersections at 17th & Anderson, Mid-Campus Drive & Anderson, 14th & Anderson, Manhattan & Bluemont, Pioneer & Manhattan, and Claflin & 17th provide safe crossing points for cyclists. However, crossing locations of concern include Manhattan Avenue at Vattier and near Bertrand Street, Denison at McCain Lane, and Denison near College Heights and Hunting.
4. Bicycle parking was identified as a concern in the User Survey conducted on-campus. Locations, type of bicycle rack used, shelter, and lighting are all issues for consideration. Bicycle parking is currently scattered throughout campus, even in some areas where bicycle use is prohibited, thus contributing to disregard of policies. The University Facilities staff has recently began fabricating a bicycle rack which provides better security than the previous type typically found on-campus. This new "inverted-U" rack provides a secure place to lock both wheels and the University is putting rubber coating on the racks to avoid scratching and scarring bicycles. No bicycle parking areas on-campus are currently covered, nighttime illumination is oftentimes (not always) provided by ambient light, and cyclists frequently lock bicycles to railings, trees, or even take them inside buildings.

#### **City of Manhattan**

Through the Parks and Recreation Department, the City has constructed approximately ten (10) miles of hike/bike trail through its Linear Park, with a primary emphasis on the recreational rider. This trail is generally constructed of limestone screenings, and runs from Anderson Avenue (at Wreath Avenue) south, east, and then north to Casement Road. The western portion consists of approximately five miles of trail constructed along Wildcat Creek and along the abandoned Rock Island Railroad right-of-way, while the eastern

portion is constructed on top of the flood levee system. The Hudson Trail is an approximately 3,500 linear foot, limestone screenings hike and bike trail constructed from Kimball Avenue north, aligned with Hudson Avenue. The City's 1992 "Comprehensive Parks Master Plan" shows conceptual alignments for the continuation and completion of the linear park and its' trails. It should be noted, that Plan's recommendations were designed primarily for preservation of greenspace and drainage courses, with bicycle transportation considered as a primarily recreational use. The City Parks and Recreation Department is currently in the process of completing a new Master Plan for the Linear Park system. This *Bicycle Master Plan* examined those issues as well as the everyday transportation needs of the residents of Manhattan, resulting in additional recommendations for the completion of the Linear Park trail.

1. Additional access points to the Trail, especially from downtown Manhattan and southern portions of the city
2. Completion of the "loop" through the western and north/northeast areas of Manhattan

Various areas of the City are extremely hilly, when considered in the light of bicycle transportation. These topographical constraints create bicycle linkage problems for several areas, including...

1. from the Northview area southwest toward campus and downtown,
2. from the Stag Hill and Warner Park areas northeast toward campus,
3. and from the northwest (Cico Park area) southeast toward campus.

Of course, the *Plan* does not recommend mass earthmoving to reduce topographic constraints, but does seek to find acceptable routes for reasonable bicycle transportation through and around these areas.

Within the loop of the Linear Park trail, routes or facilities should be developed which provide safe and efficient access within, across, and through the community, linking various destinations with residential areas. These "spokes" (of the Linear Park "wheel") will serve to connect the extremely popular recreational rides of the Linear Park trail with residential areas, and will connect those residential areas with major destinations including...

1. the University and Aggieville
2. City parks and schools, especially Middle Schools which typically have a high percentage of bicycle ridership

3. the Downtown area, as well as both east- and west-side businesses

These spokes are anticipated to consist of a combination of bicycle lanes on streets, shared-use roadways, designated bicycle paths, and other similar bicycle transportation corridors.

Manhattan has experienced substantial growth in the past several years, especially in the north and western portions of the City. Residential and some commercial/office development is anticipated to continue in those areas for the foreseeable future. As new street patterns emerge, the City has an opportunity to plan for bicycle transportation before infrastructure is built. This can and should include issues such as...

1. Adequate street widths to accommodate both bicycles and vehicles, especially on collectors and arterials
2. Minimization of dead-end streets which could prohibit bicycle and pedestrian access
3. Designation of certain streets or thoroughfares for bicycle transportation corridors
4. Traffic calming techniques which slow down vehicular traffic and prevent cross-traffic through residential areas
5. Signalization at critical street crossings to accommodate bicycles
6. Sidewalks and crossings at schools

Improvements can be implemented in the developed areas of the City as well, which can greatly improve bicycle transportation. These may include...

1. Retro-fitting selected streets to accommodate bicycle transportation - via parking restrictions, bicycle lanes, or signed shared-use roadways
2. Hazard removal, such as storm drainage structures that may "catch" bicycle tires, overhead obstructions like tree branches and signs, traffic signal actuation devices that are not sensitive to bicycles, unsafe railroad crossings, inadequate maintenance of bicycle facilities, and similar impediments to safe bicycle travel
3. Incorporation of bicycle transportation improvements into street projects identified in the Capital Improvements Plan
4. Increased bicycle parking facilities at key areas throughout the City

5. Safe crossings of or routes around arterial streets or other major thoroughfares, in particular Seth Childs Road, Tuttle Creek Boulevard, Anderson Avenue, and Ft. Riley Boulevard
6. Sidewalks and crossings at schools

## Facilities Recommendations

### City of Manhattan

The recommendations of the *Bicycle Master Plan* are designed to meet the goals and objectives of the study, while providing facilities to solve identified needs. This *Plan* should guide the City in directing resources towards the development of bicycle improvements, should be considered whenever decisions are contemplated which could impact bicycle transportation (such as budget discussions, plat review, review of Subdivision Regulations or Zoning Ordinance, Capital Improvement Plan, etc.).

As with any master plan, this document provides general design and implementation guidelines. As improvements are implemented, changed conditions or previously unknown issues may require revision to the elements of the *Master Plan*. Recommendations contained herein are considered flexible, and able to change to meet specific project conditions. The following "Figure 3. City Route Map" (page 22) illustrates both the existing bicycle facilities and those proposed as a part of this *Plan*.

Major *Plan* recommendations for the City of Manhattan can be categorized into four (4) major areas:

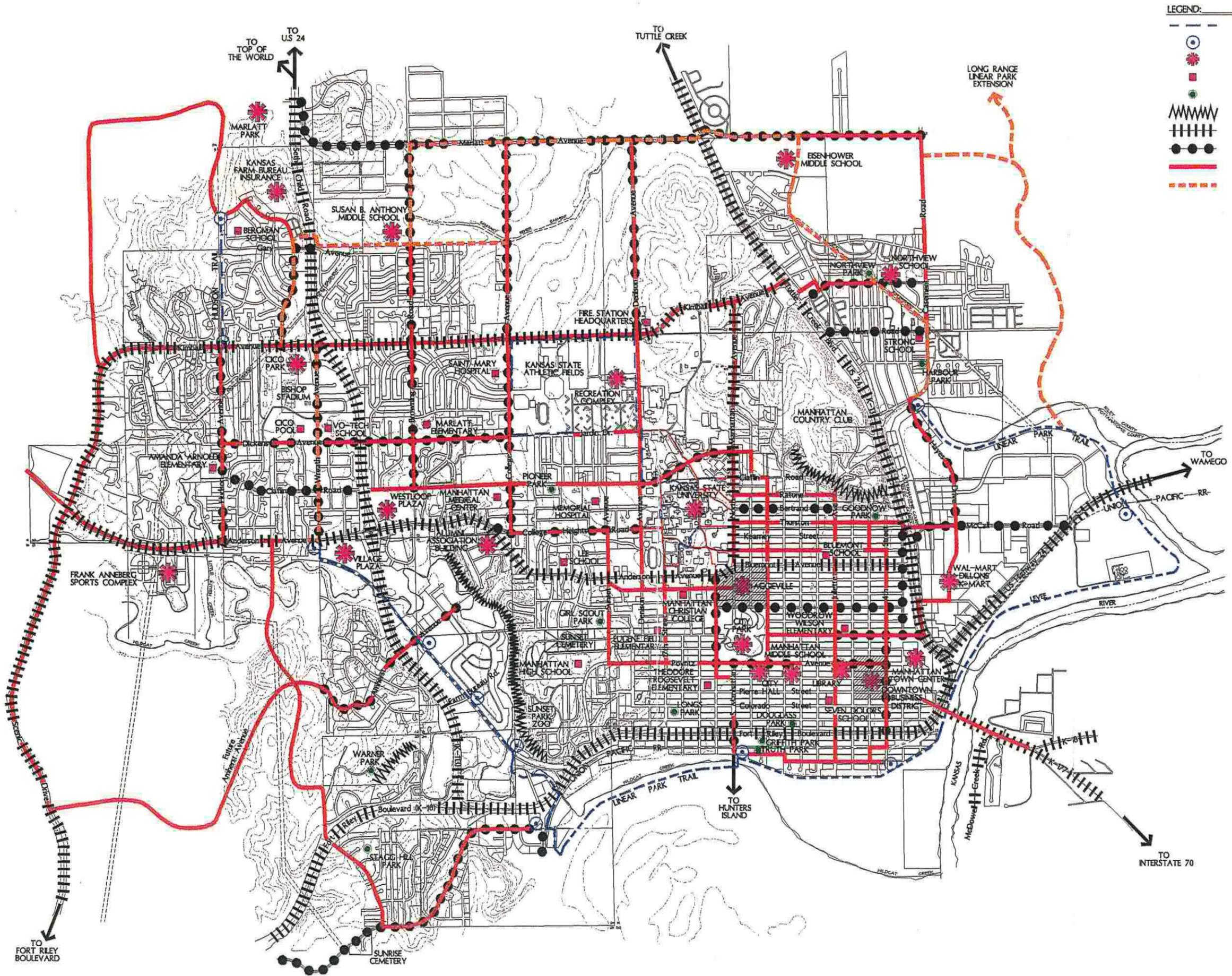
1. **Completion of the Linear Park Trail.**
2. **Development of inter-City bicycle facilities.**
3. **Bicycle Parking.**
4. **Policies for Future Growth.**

### Linear Park Trail

The City of Manhattan should continue to budget for and implement phases of the Linear Park Trail. For the purposes of this study, recommendations are limited to the "inner loop" of the proposed Linear Park project. Future corridors such as the Little Kitten Creek Project, the Eureka Lake Oxbow Project, and the Long-Range Trail Extension Project (to Tuttle Creek Lake) should continue to be pursued.

The *Bicycle Master Plan* focuses on three linkage areas of the Linear Park Trail. These recommendations are summarized as follows.

1. From the existing north trailhead of the linear park trail at Anderson Avenue, the *Plan* recommends the consideration of designating Wreath Avenue as a trail connection with signage. This route could either connect directly to Kimball Avenue, or users could travel through Cico Park. North of Kimball, Candlewood Drive to Gary Avenue is recommended to be designated for bicycles as a wide curb lane facility.
2. The Kansas Department of Transportation has agreed to fund a pedestrian/bicycle underpass approximately 600' north of the intersection of Gary and Seth Child. Cyclists should be routed from Candlewood through this underpass, then along a designated multi-use (cyclists and pedestrians) trail located north of Gary Avenue. This route will provide safe and effective access for Linear Park Trail users, as well as schoolchildren living west of Seth Childs to the new "Susan B. Anthony Middle School". This trail would then connect to Browning Avenue and eventually to College Avenue, which are recommended to be signed for cyclist accommodation. The *Master Plan* recommends the completion of the Linear Park Trail from Browning Avenue east to Tuttle Creek Boulevard. This would connect Browning Avenue to Marlatt with bicycle lanes or paved shoulders located on Marlatt from Browning to east of Tuttle Creek Boulevard. Linkages from Kansas State University on College and Denison Avenues are recommended to connect to the Marlatt Avenue facility. In addition, an extension of a multi-use trail is recommended from Browning Avenue east to College Avenue along the south edge of the KSU Agronomy Farm and adjacent to the City limit boundary.
3. The eastern leg of the Linear Park Trail is recommended for the long-term to follow the conceptual alignment as set forth in the City's "Comprehensive Parks System Master Plan". This *Plan*



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# BICYCLE MASTER PLAN

## Manhattan, Kansas

■ Bicycle Master Plan for Kansas State University & Manhattan, Kansas

■ FIGURE 3: CITY ROUTE MAP

REVISION:	
DATE:	
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	

DATE: 9/27/98  
 PROJECT NO.: 8809.00  
 DESIGNED BY: RAW/GAR  
 DRAWN BY: RAW/GAR  
 CHECKED BY: MDM



also recommends that the City pursue either wide curb lanes or designated bicycle lanes on Casement Road, north from the current terminus of the Linear Park Trail to Marlatt. A spur route should also be considered along an existing KPL easement to connect through Northview Park to the new Eisenhower Middle School.

### **Inter-City Bicycle Facilities**

Conceived as the "spokes" within the Linear Park Trail "wheel", this combination of trails, shared-use roadways, and bicycle lanes will serve to transport bicycle users from the community to the Linear Park Trail, as well as between various origins and destinations within the City.

Bicycle transportation plans often design the system to "connect the dots" - that is, origins and destinations are defined, and then routes are planned to link them. In some ways, the proposed improvements of this *Plan* follow that design concept, however, important additions to that are recommended, as well. The connect-the-dots design concept falls short in that every residence is an origin. Bicycle routes simply cannot be planned to reach every single origin or destination. Also, in the context of Manhattan, Kansas the "connect the dot" concept has some shortcomings. Manhattan is a relatively small geographic area, and a well-planned, inter-connected comprehensive system will naturally accommodate the primary origins and destinations. The existing street network, coupled with the relatively few major destinations combine to dictate a unique design concept for the *Bicycle Master Plan*, appropriate to the City of Manhattan.

This design concept can be expressed through two basic concepts:

1. **All streets in the City of Manhattan should be accessible to bicycle travel.**
2. **An inter-connected network of designated bicycle routes - spokes - should be developed throughout the City.**

### **General Street Improvements**

The first step in making Manhattan a more bicycle-friendly area is to embrace the concept that every street is a bicycling street. The AASHTO Guide for the Development of Bicycle Facilities says:

- ◆ "To varying extents, bicycles will be ridden on all highways where they are permitted. All new highways, except those where

bicyclists will be legally prohibited, should be designed and constructed under the assumption that they will be used by bicyclists".

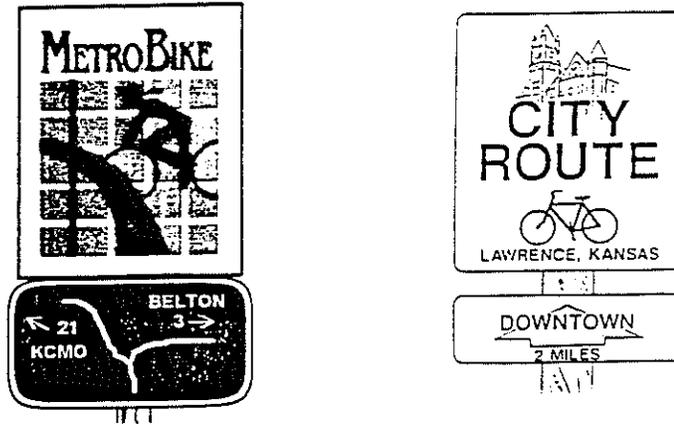
Bicycles are vehicles and, as such, are entitled to the shared use of our streets and roadways. These streets should be retro-fitted to be made safe and convenient for cyclists wherever possible, and construction of new roads should make accommodations for cyclists in the original design.

One exception should be noted to this statement, however. The child cyclist - under 15 years of age - is ill-equipped to operate a bicycle on the street. Lack of knowledge regarding traffic rules, lack of understanding of the severity of situations, not-yet-developed depth perception, and the shorter heights of these riders all pose substantial problems for this classification of riders. As a community, the safety of our children should be of paramount concern and, for these reasons, these cyclists should be encouraged to use sidewalks wherever possible. In areas of elementary schools, street design should take into account the child cyclist riding to school by providing safe crossings and sidewalks on the same side of the street as the school.

This design concept can be summarized by four (4) major steps...

1. The first thrust of such an effort must be **Education** - the cyclist must know their rules and restrictions, the motorist must know the same and also be made more aware of cyclists, and increased understanding and acceptance of each other must be accomplished. Chapter Four of this *Plan* contains an "Education and Encouragement Resource Guide", outlining many programs and materials available for such education.
2. The second level of improvements should be **Signage**. Suitable routes should be clearly signed for bicyclists, allowing them to easily and efficiently choose their routes and to alert motorists of the presence of bicycles. This signage would, preferably, contain both the standard symbol for bicycles and directional signage - indicating distance and direction to major destinations, and could also include a design unique to Manhattan and KSU. Less suitable routes should be improved with bicycle lanes, wide curb lanes, or paved shoulders.

Examples of bicycle signage under consideration in Kansas City and Lawrence are shown below.



3. **Hazard Removal** on existing streets is important to allow safe and convenient use by bicycles. This will include...
  - The replacement of parallel drainage grates with bicycle-friendly grates. Wherever possible, grates should be replaced with curb inlets.
  - Crossings at railroad intersections should occur as nearly as possible at right angles to maximize visibility for the cyclist.
  - At traffic signals, timing of the signals and the actuation devices should be sensitive to bicycles.
  - Abrupt changes in the pavement width of the right travel lane or shoulder should be discouraged. Also, special transition treatments may be required at bridges (for instance, when a wide roadway narrows to cross a bridge).
  - Maintenance procedures should be sensitive to bicyclists. This may include paving issues such as gaps in longitudinal paving joints, potholes, bumps, or other surface irregularities, and also includes regular maintenance such as sweeping of glass, gravel, sand or other debris from the bicycle travel lane.
  
4. The fourth piece of this strategy is **New Construction and Planning**. As new street patterns and developments are planned, and as existing streets are retrofitted and re-surfaced, accommodation of bicycles and pedestrians should be considered. This may include treatments such as bicycle lanes, multi-use trails, shared roadway applications, or other types of bicycle facilities planning.

A more detailed explanation of hazard removal and retro-fit of existing streets can be found in Chapter Four.

An inter-connected system of designated bicycle transportation facilities is recommended to be developed throughout the City of Manhattan. This network of streets, lanes, and trails will allow cyclists to choose routes which will provide maximum flexibility and access to all areas of the community.

This *Bicycle Master Plan* is designed to accommodate transportation needs, as well as provide recreational riding facilities. The proposed bicycle network, in conjunction with a program to make every street accessible to bicycles, will allow users to safely and conveniently access -from their neighborhood - a transportation network which will carry them to their destinations.

The primary routes as shown in Figure 3 are those which carry cyclists to various areas of the community, linking destinations and providing access across barriers. This system is characterized as...

1. Ideally, a rough grid of approximately  $\frac{1}{4}$  -  $\frac{1}{2}$  mile spacing
2. Containing routes suitable for medium- to long-range recreational riding
3. Having potential for existing or future multi-modal connections - to buses, transit, car pools, etc.
4. A mixture of facility types, including shared-use roadways, paved shoulders, bike lanes, and multi-use off-road paths

Specific recommendations for the physical design of these different facility types can be found in Chapter Four of the *Master Plan*. In general, however, design of bicycle facilities should include the following items or criteria.

1. Wherever possible and practical, the design guidelines contained within the AASHTO Guide for the Development of Bicycle Facilities and the Federal Highway Administration's Manual on Uniform Traffic Control Devices (MUTCD) should be followed.
2. The safety of the bicycle user should be the primary consideration in all design decisions.
3. Bicycle facilities should be designed to a consistent, high standard of materials and construction techniques to provide long-term stability and low maintenance.

4. Consistent design treatments of typical situations should be developed and used - such as bike lane approaches to intersections; intersections of lanes with streets, walks, and each other; intersections of bicycle facilities with arterials or freeways; and along multi-use trails - to facilitate safe and efficient bicycle use.
5. Design and budget preparation of bicycle facilities should also include the proper maintenance of these facilities.
6. When a roadway application, the design of the street or road should adequately plan for the bicycle user, including items such as wide curb lanes, paved shoulders on County roads, actuation of traffic signals by bicycles, bicycle-friendly drainage grates, avoidance of impediments to bicycle travel (slick or loose surfaces, obstructions, bumps, etc.), and appropriate maintenance of streets to remove surface defects and removal of debris.

In addition to adequate physical design standards of the facilities, the bicycle network should be consistently and clearly marked with signs identifying the system and routes. These signs should be designed following criteria as outlined in the MUTCD, however, they should also be of a distinctive design readily recognizable as the City of Manhattan's (see sample illustrations, page 25). This type of concept will not only ensure the functionality of the signage program, it will also begin to create an identity for the system, thus promoting bicycle usage. In other areas with well-established, well-used bicycle facilities, business communities have found direct economic benefits to being located along one of these bicycle routes. Signs should also be used along the bicycle network for regulatory and warning purposes as established in the national recommendations of the MUTCD. These are signs that give notice of traffic laws or regulations that bicyclists, pedestrians, or motorists must follow. Examples include signs for bicycle lane designations, no parking signs, stop signs and yield signs. Warning signs are those which call attention to conditions on, or adjacent to, the bikeway which may be potentially dangerous to users. The use of these warning signs, which are typically yellow in color, should be kept to a minimum so as not to minimize their effectiveness.

#### City Route Recommendations

As shown in Figure 3. City Route Map (page 26), a series of interconnected bicycle routes are recommended to be implemented. These

routes, combinations of on-street lanes, shared-use routes on streets, and multi-use trails are designed to safely and conveniently transport cyclists to various destinations.

Figure 3 illustrates the recommended bicycle transportation network, including the Linear Park Trail as discussed earlier in the *Bicycle Master Plan*. Some of the primary recommended routes include...

1. To provide access to the University, designate Thurston and Vattier on the campus' east side as bicycle routes by signage. Parking restrictions may also be considered. These routes would align with routes being recommended for the University as a part of this *Plan*. Access to the south side of campus should be via Mid-Campus Drive, 14th and 17th Streets - all signalized intersections - with a bicycle route continuing south on these streets. Dickens Avenue is recommended to be striped to include designated bicycle lanes, and Claflin Avenue designated a shared-use (or wide curb lane) facility to provide access to the campus' west and north sides, as well as to College Heights Road.
2. In the western portion of Manhattan, Collee and Browning are recommended for designated bicycle routes to provide efficient north-south access. If possible, bicycle lanes should be considered for these streets at time of re-construction or re-surfacing. West of Seth Childs Road, Kimball should continue to function as designated bicycle route, linking to Scenic Drive. Amherst - with a traffic signal at Seth Childs - is recommended as a primary bicycle link, specifically to provide access from residential areas west of Seth Childs to the Linear Park Trail. Anderson Avenue should be signed as a shared-use bicycle route west of the Linear Park Trail, including the popular recreational ride to Keats.
3. Poyntz Avenue could be designated a bicycle route to provide access to City Park, downtown, and other destinations located in the southeast part of Manhattan. 14th Street is recommended as a route as mentioned above to provide access to the University, but also to connect to South Manhattan Avenue, which provides access to the Linear Park Trail. 4th Street is also recommended as a north-south route, as is Juliette Avenue (even with its rough, brick pavement).
4. Access across Tuttle Creek Boulevard to the Northview area has been identified as a critical issue for the *Plan* to address.

Consideration should be given to creating a bicycle/pedestrian access and crossing of Tuttle Creek at McCall Road. Currently a three way intersection (north, south, and east), a walk/bicycle path could be constructed from Tuttle Creek to 3rd Street, which then would allow cyclists to access other planned routes such as Thurston. This improvement will require the concurrence of KDOT, as well as traffic signal modifications.

The *Bicycle Master Plan*, as illustrated in Figure 3, recommends many routes be designated for bicycle transportation in Manhattan. In the near term, it is probably most feasible to designate shared-use roadways with signage, markings, and appropriate speed limits. However, as roadways are re-constructed, overlaid, or otherwise considered for renovation, the *Plan* strongly encourages the creation of on-street bicycle lanes, in addition to sidewalks for children, wherever possible. This may be accomplished through wider streets, parking restrictions, re-striping of lane widths and turning lanes, and other retro-fit improvements (see Chapter Four: "Resource Guide"). As a general rule, striped bicycle lanes or wider curb lanes should be considered when streets have over 2,000 average daily traffic counts with speeds 30 mph or higher. Shared use routes are most appropriate for streets with lower volumes and speeds.

## Bicycle Parking

In many communities, secure bicycle parking is recognized as one of the first and most important facility improvements necessary to improve the viability of bicycle transportation.

Many community's Central Business Districts depend on their ability to provide more parking spaces in limited space by accommodating bicyclists, and actively encourage employees to bike to work to reserve additional auto parking spaces for customers. For example, Jackson Hole, Wyoming created a Save-a-Space program after determining that they were 1,500 parking spaces short of demand, which resulted in \$10.8 million not entering the local economy because potential customers couldn't find a place to park. So they developed a program to reward participants who bike or use other alternatives to get to work. Similarly, universities around the country are re-assessing the need to spend millions of dollars to construct new parking structures, or to develop programs to encourage student/faculty/staff commuting.

For reasons such as these, this *Bicycle Master Plan* emphasizes the need to provide secure and convenient bicycle parking throughout the community and on the KSU campus.

### **General Requirements**

Bicycle parking areas should be located...

1. Convenient to shops, offices, schools, and other destinations
2. No further than 50 feet from a building entrance, or no further away than the closest non-accessible parking stall
3. On paved surfaces
4. In well-lit and highly visible areas
5. Adjacent to high-pedestrian traffic to help avoid vandalism and theft
6. So that bike parking will not interfere with pedestrian or vehicular movements
7. Under a roof or overhang to provide protection from the weather, wherever possible

With numerous types of parking facilities commercially available, it is important that each, at a minimum, included the following characteristics...

1. Easy to use
2. Durable and attractive
3. Includes a secure means of locking the bike frame

Substandard racks that do not qualify are the old schoolyard racks, paper clip-style racks, or any similar model which supports the bicycle by the front wheel only. Such stands do not allow users to secure the bike frame, are difficult to use with high-security U-locks, and are not suited to hold fat-tire hybrid and mountain bikes, or models with quick-release wheels.

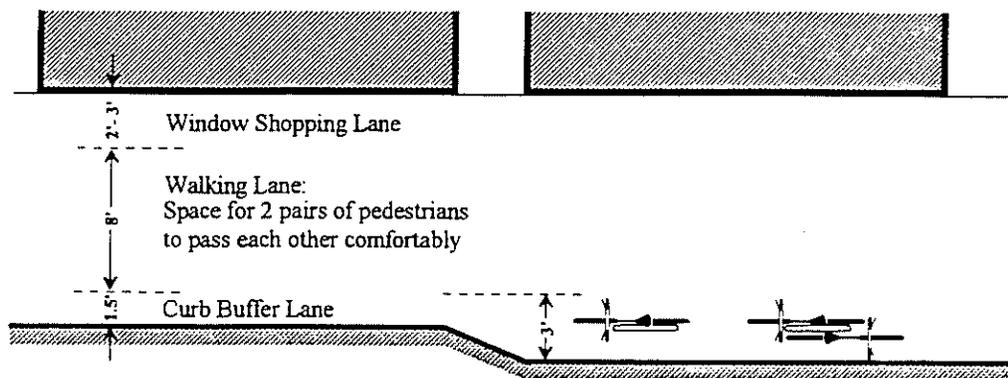
### **Downtown and Aggieville**

A Downtown Parking Plan has been prepared by the Downtown business organization to encourage downtown employees to park in designated spaces, reserving automobile spaces closest to businesses for customer use. To further convenience both employees and customers, downtown Manhattan needs to expand their parking plan to also provide bicycle parking facilities.

Larger spaces that can accommodate clusters of bicycle parking are available at the Mall and in small pockets throughout the downtown area. Wide sidewalks in the CBD offer opportunity for installation of "inverted-U" bicycle racks near the front door of every business establishment. The Aggieville area has similar potential.

Bicycle parking installed in such traditional shopping areas must be sited so as not to interfere with pedestrian travel. Where there is 13 feet or more between the curb and building face, there is space to accommodate an "inverted-U" rack for two bicycles. To discourage cyclists from riding on sidewalks to access these facilities, it is recommended to place them near intersections and to provide sidewalk curb cuts, if not already present. Especially in the Aggieville area, alleyways may offer opportunities to create access and mid-block bicycle parking areas if service and vehicular access is not impeded.

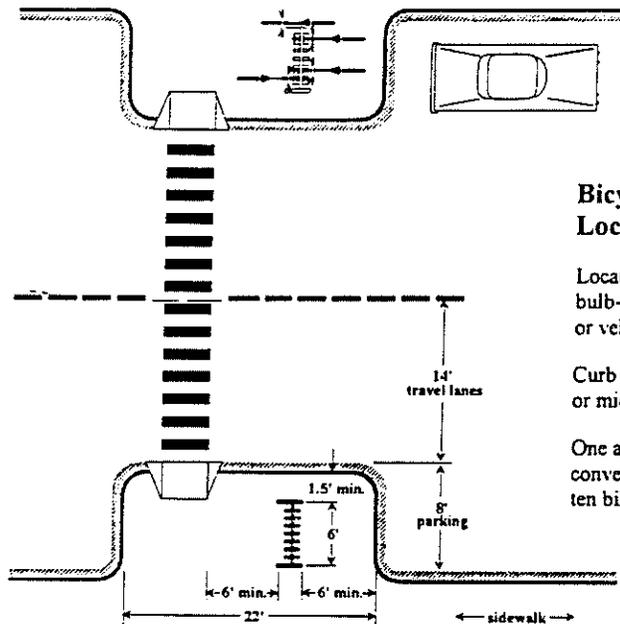
It is recommended that distinct styles or colors of parking racks be used within the downtown and Aggieville areas, to contribute to the unique sense of place of each area, yet provide continuity throughout the shopping district. Ideally, the bicycle parking will coordinate with other streetscape amenities.



### Sidewalk Bicycle Parking For Downtown and Aggieville

Sidewalk "lanes" as researched and defined by the Project for Public Spaces. Inverted U parking may be located on sidewalk, as above, if curb buffer lane is > 3 feet. Bicycle parking facilities should not be located so as to interfere with pedestrian traffic.

If traffic calming or streetscape improvements are also implemented in these areas, curb "bulbs" present another opportunity for siting multi-bike parking units. Bicycle parking on the bulb-out eliminates conflicts with pedestrian and vehicular movements, and allows the parking units to be fully integrated with the design of the streetscape improvements.



### Bicycle Parking Located On Curb Bulbs

Locating bicycle parking facilities on curb bulb-out does not interfere with pedestrian or vehicular movements.

Curb bulbs may be located at intersections or mid-block for traffic calming.

One automobile parking space can be converted into space for a rack holding ten bikes, plus curb access ramp.

### Strip Development Areas

Suburban commercial areas and major employers also generate bicycle trips and therefore need to provide bicycle parking. Several communities nationwide have added language to their zoning ordinances to require bicycle parking as a part of all new development. As an example...

*"All non-residential uses shall provide bicycle parking facilities consisting of not less than one (1) bicycle parking space for every ten (10) required automobile parking space, with a minimum of two (2) bicycle parking spaces for any use."*

Depending on the anticipated duration of parking, medium-security stands or racks and/or high-security bicycle lockers should be required. Automobile spaces may be retro-fitted to accommodate the required bicycle parking. If provided on sidewalks or within open spaces, pedestrian circulations needs must be considered, and curb cuts and paved surfaces must be provided to access the racks.

## Policies for Future Growth

While this *Bicycle Master Plan* identifies desired bicycle improvements for short-term implementation, it cannot predict exactly how and where Manhattan will develop over time. For this reason, some general bike-friendly policies are needed to guide future growth and development within the community and at its fringes.

### Streets

It is important to identify the potential needs of bicyclists in the initial planning and design of all new streets and roadways, and all reconstruction projects - regardless of whether or not they are on the current bicycle routing plan. Adopting such a policy will ensure that cross-access needs are being met and may identify opportunities for future alternate travel routes.

The following checklist should be used to gauge potential bicyclist needs for a given project..

### Assess the Need for Bicycle Travel

1. Are there travel generators within the project vicinity?
  - a. Identify and map residential areas, parks, recreation areas, churches, schools, libraries, shopping areas, employment centers, businesses, and other bicycle facilities within one mile of the project. Consideration should also be given to the type of rider (e.g.: children) that these generators may attract.
  - b. Are there plans for future trip generators that could affect this project or generate additional travel in the project corridor?
2. Where would bicyclists cross the project?
  - a. Does the project intersect with existing or planned bicycle facilities or critical routes?
  - b. Will cyclists be able to safely cross at these locations?
3. Where would bicyclists need to ride within the project corridor?
  - a. Does the project provide unique or primary access...
    1. across a creek/river, railroad, highway corridor, or other natural or man-made barrier?
    2. into or out of a residential or commercial development?
    3. to the University, downtown, recreational area, or adjacent community?
  - b. Are there any secondary roads parallel to the project (within one mile) that could reasonably be used by cyclists as alternate routes to these destinations?

c. Would directing cyclists onto the alternate route still provide access to destinations located along the corridor?

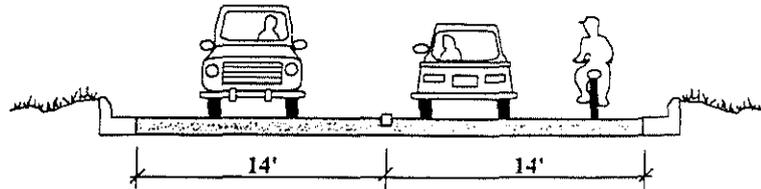
### Adopt New Street Standards

Manhattan's current street standards, like those of most American communities, are based upon engineering practices for accommodating motor vehicle travel. Over the past decades, such an approach has created communities that favor cars over people, and often overlooks the desire or need for many residents to travel on foot or on bicycle to reach close-to-home destinations. By modifying the cross-section standards used to define the functional classification system of Manhattan's streets, bicycle accommodations may be cost effectively added to new development within those corridors where most needed. Such standards for on-street bicycle accommodations will eliminate the current practice to retro-fit automobile-dominated corridors by constructing parallel sidepaths, which can create user safety conflicts at intersecting streets and driveways.

1► **Arterial streets** typically have over 10,000 ADT, which means that only experienced cyclists generally feel comfortable on such routes. However, arterials often are the only options across topographically constrained areas and often provide the only access to major destinations, thus necessitating bicycle accommodations.

Wide curb lanes or paved shoulders are recommended for implementation on arterials. For a typical 4-lane arterial street with no on-street parking, this design requires a minimum pavement width of 52', excluding curb-and-gutter for urban area cross-sections, or 56' for cross-sections with shoulders. The additional pavement width will improve safety and operating characteristics for both motorists and cyclists. Due to the heavier traffic volumes and higher speeds on most arterials, signing these corridors as bicycle facilities is not recommended so as to encourage less experienced cyclists to ride in conditions beyond their ability.

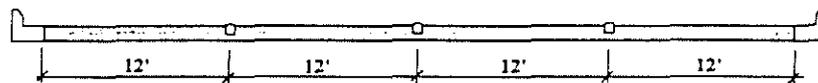
## Wide Curb Lanes



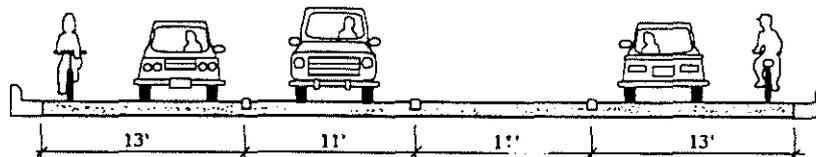
When the right-most through lane is 14 feet wide, cars are able to pass bicycles without having to cross the center line, thereby improving capacity. Bicyclists appreciate the extra space, even though such streets usually are not designated as bicycle facilities.

## Shifting Stripes to Widen Curb Lanes

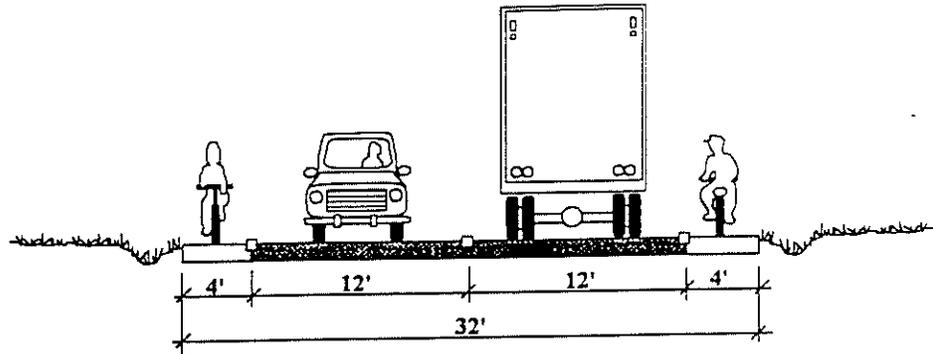
Before:



Shifting striping on multi-lane streets to provide 13'-14' in the curb lane allows motorists to pass bicyclists without having to change lanes.



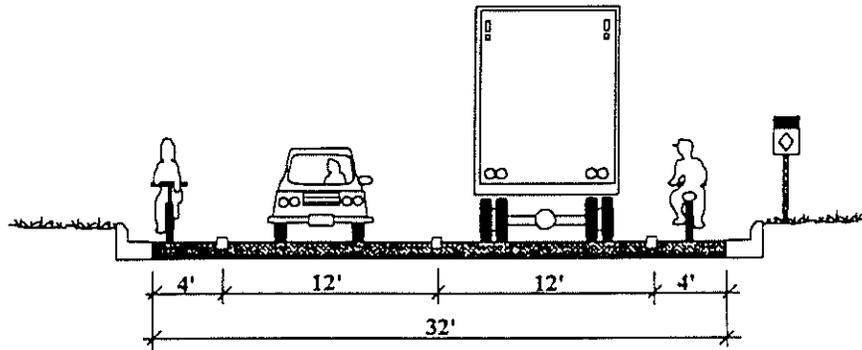
# Paved Shoulders



Paved shoulders, a minimum of 4 feet wide, are the recommended method of accommodating bicycles on highways at the community's fringes.

2>Collector streets typically have 2,000 - 10,000 ADT and are usually the most attractive routes for bicycling due to a combination of less traffic than arterials and greater connectivity than local streets.

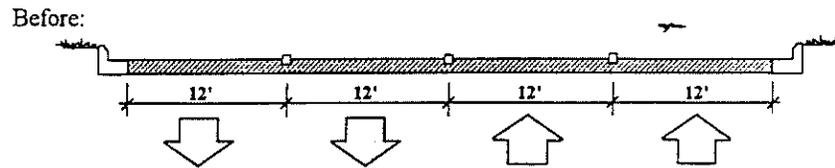
# Bicycle Lanes



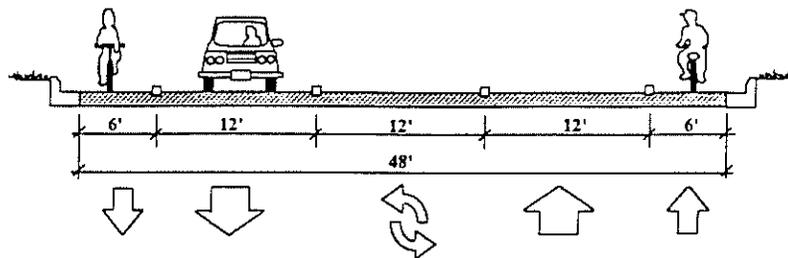
Signed and striped bike lanes on arterial and collector streets encourage people to make every day trips by bike instead of by car.

To best meet the mobility and access needs of cyclists of varying skill levels, signed and striped on-street bicycle lanes are recommended to be included in a modified standard for all collector streets. A two-lane collector would thus be a minimum of 32' wide, excluding curb-and-gutter, or 40' wide with parking permitted on one side. Existing four-lane collector streets may be re-configured to re-allocate less space for vehicular turning movements by providing a center turn lane with one through travel lane in each direction. The resulting extra roadway space may then accommodate bicycle lanes.

## Restriping Arterials to Improve Flow



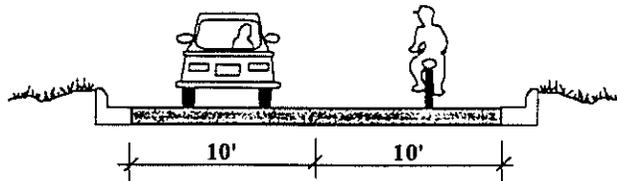
Restriping 4-lane arterials to provide a center lane can improve motor vehicle flow and create space to stripe bike lanes, further increasing roadway capacity.



- 3> **Local streets** typically have less than 2,000 ADT. When travel speeds are low, bicyclists can easily share the street with such low volumes of traffic with no special accommodation. However, wide local streets, or those that appear very wide when no cars are parked on the street, encourage faster vehicular travel.

A consideration for implementation may be the traffic calming strategy of narrow streets within residential neighborhoods that feed onto collectors. Reducing local street widths to 20' with parking on one side, or 26' with parking on both sides, is recommended (see the following illustration, based on standards in Portland, Oregon). Such design discourages fast through-traffic, allows adequate clearance for emergency vehicles, and lowers construction costs, which can make resources available to widen a development's collector/arterial streets to accommodate bicycle lanes. Narrow streets also increase density

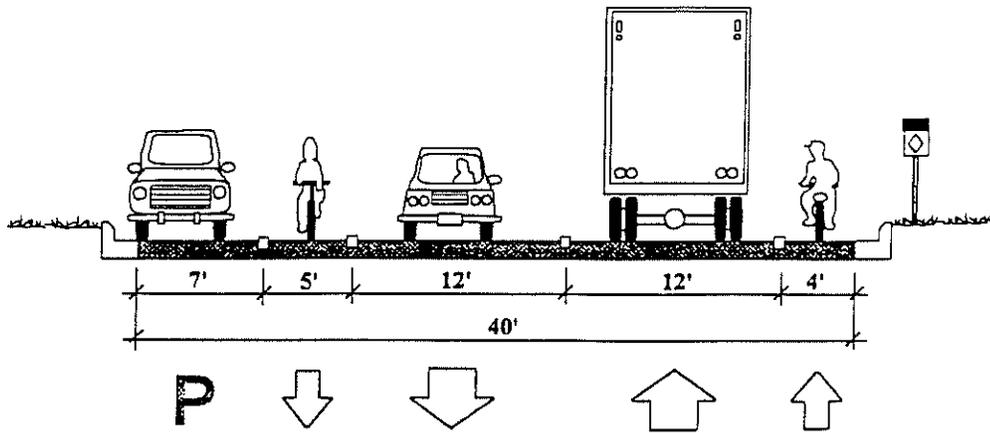
## Skinny Neighborhood Streets



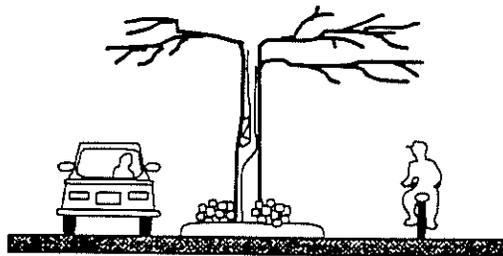
Local streets that are 20 feet wide with no on-street parking, or 26 feet wide with parking on one side, are used in many communities to encourage slow travel speeds, at which bicycles and motor vehicles can most effectively share the road.

and shorten trip distances, important characteristics for communities striving to be pedestrian- and bicycle-friendly. Calming traffic on existing or neighborhood streets may also be accomplished by the addition of traffic circles - small, round islands centered in an intersection around which traffic must travel. Traffic circles slow traffic at intersections or local streets and add areas for community landscaping, both of which improve the attractiveness of routes for bicycle travel.

Re-examining the need for parking often provides space for bicycle lanes, while allowing parking to remain on one side of the street.



## Traffic Calming along Routes



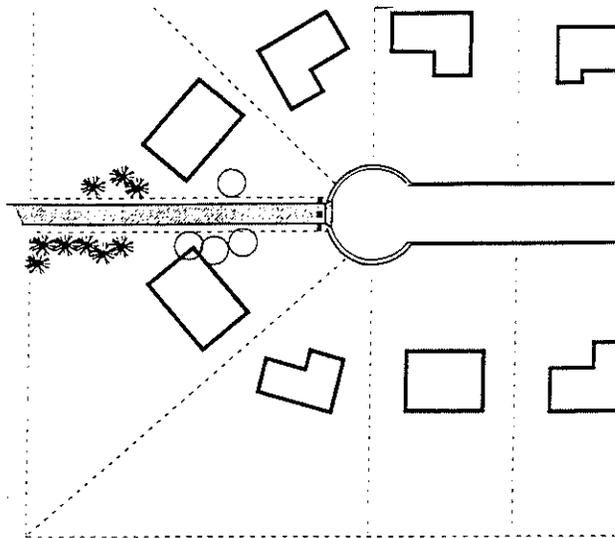
Traffic circles or small planted medians within residential intersections and other traffic calming devices such as curb bulbs, chicanes and speed tables slow traffic, enhance neighborhoods and make streets more suitable for shared bicycle/motor vehicle use.

## Development Patterns

Land use and transportation are intrinsically linked. Thus, the *Bicycle Master Plan* offers suggestions on how the City of Manhattan can make small changes to development ordinances and land use policies to benefit the way that residents travel throughout the community.

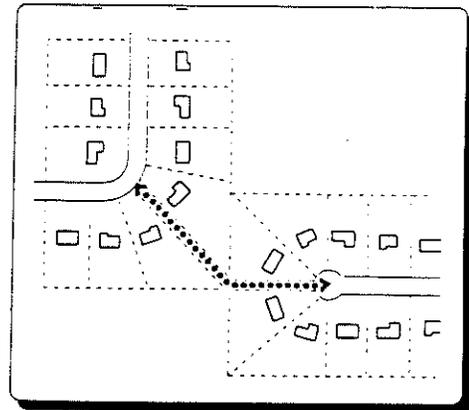
- 1> **Mixing land uses** to provide a diverse layout of uses and zoning types across the community should strive to result in "build-out" conditions where over 70% of the population resides within one mile of neighborhood retail opportunities, such as grocery stores, dry cleaners, and similar establishments. This goal will minimize suburban sprawl and prevent total dependency on the automobile by creating trips of short length, thereby making bicycling and walking viable alternatives.
- 2> **Densities and lot sizes** play an important role in shaping the transportation needs of a community. Large lots with few structures placed further apart result in longer trip distances and greater dependence on the automobile. In contrast, residential lot sizes in traditional and neo-traditional developments are typically 8,000 - 15,000 square feet (3-6 lots per acre). Ordinances and overlay districts specifying high density development near retail and transit routes should be encouraged.
- 3> **Cul-de-sac development**, while minimizing traffic impacts within neighborhoods, results in an inefficient transportation system with few travel alternatives. Some communities elect to require that developments provide alternative "back routes" for secondary access/egress in addition to feeding all of their traffic onto an adjacent arterial street. Such routes can also be utilized for emergency vehicles, and should be designed with appropriate widths and materials.

An alternative that prohibits through-automobile traffic, yet affords bicyclists and pedestrians with short, convenient travel routes is the bicycle/pedestrian accessway that links cul-de-sacs with adjacent streets. Such linkages create more of a grid system than is typically provided in suburban development, thereby shortening trip distances and increasing bicycle routing options.



Bike path connection increases mobility for non-motorized users.  
 Allows bicyclists to move across town on low-volume, low-speed residential streets.  
 Offers pedestrians alternative routes, shorter travel distances and an aesthetic walking environment.  
 Trail entrance includes curb cuts the entire width of trail and access control for motorized vehicles.

**An Example of  
 Using Bicycle/Pedestrian  
 Accessways to Link  
 Adjacent Residential  
 Subdivisions**



4➤ **Commercial areas** are often designed with only the driving customer in mind. Secure and convenient bicycle parking facilities at all commercial establishments is a must if the community hopes to encourage increased bike-to-retail trips (see the previous "Bicycle Parking" section). Traditional strip development site layouts should be modified to invite walking and cycling customers. Reducing



Zoning codes also typically require buffering between commercial and residential land uses. Such buffers become barriers to persons desiring to access nearby shopping, restaurants, and other businesses. Bicycle/pedestrian accessways to adjacent residential development and other businesses should be implemented to provide breaks in these barriers.

5> **Development incentives** may be offered to encourage the private sector to assist with the development of bicycle facilities. The following example, from Bloomington, Indiana demonstrates how developers may be encouraged to make bicycle and pedestrian linkages...

*"Every bicycle/pedestrian accessway or trail developed to City standards shall warrant one (1) additional dwelling unit for every 25 linear feet of trail, provided that the trail helps to complete the City's Linear Park Trail, links directly to it, or otherwise provides linkage between local streets and destinations such as parks, schools, shopping areas, or other streets.*

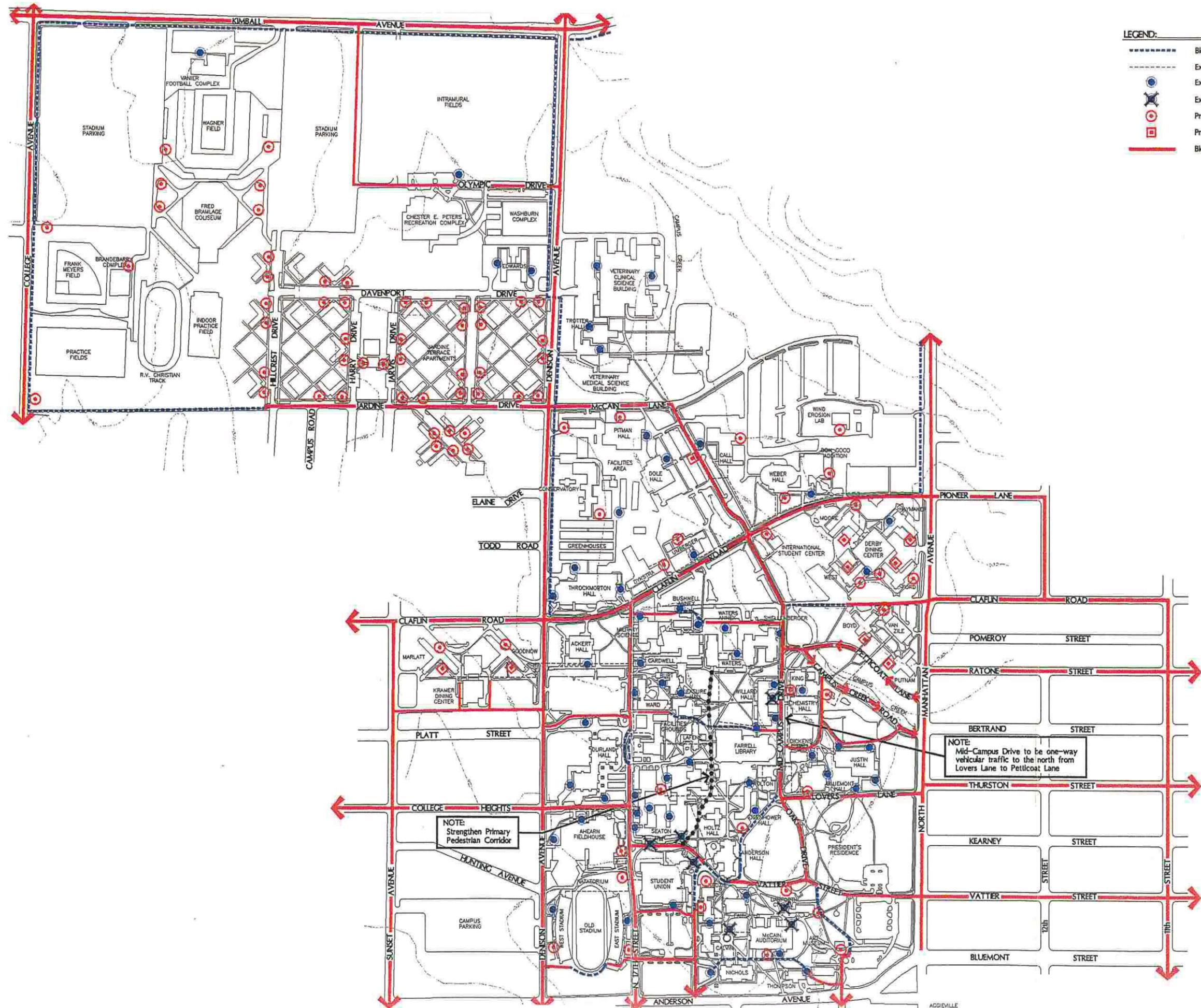
*If no such link is provided or if such link is not possible, but a bicycle trail is provided for recreational use by the development's residents, additional density warranted shall be one (1) dwelling unit for every 50 of trail."*

A maximum density bonus for the provision of trails may also be desired to be established for the City's various residential zoning categories. Similar incentives for modified building-to-parking ratios for commercial development should also be considered.

### **Kansas State University**

The *Bicycle Master Plan's* "Need Assessment" indicated four (4) primary issues regarding bicycle transportation on-campus...

1. Easily identifiable north-south bicycle routes, on both the east and west sides of campus
2. Easily identifiable east-west routes, especially in the southern areas of campus
3. Safe and convenient access from the University, across bordering streets, and into adjacent neighborhoods
4. Improved bicycle parking on-campus, including location and design



- LEGEND:**
- Bicycle Path
  - Existing Steam Tunnel
  - Existing Bicycle Rack(s) to Remain
  - ⊗ Existing Bicycle Rack(s) to be Removed
  - Proposed Bicycle Rack(s)
  - Proposed Bicycle Lockers
  - Bicycle Route (On-Street)

**landplan engineering**  
 LANDSCAPE ARCHITECTURE  
 CIVIL ENGINEERING  
 COMMUNITY PLANNING  
 SURVEYING

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 LAWRENCE, KANSAS 66044  
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 FAX 913-843-5416

4048 POWERS VILLA, SUITE 200  
 KANSAS CITY, MISSOURI 64111  
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**Bicycles &**

871 FORTSMITH  
 BOURBONVILLE, MISSOURI 65448  
 PHONE/FAX 1866 333-8716

# BICYCLE MASTER PLAN

## Manhattan, Kansas

Bicycle Master Plan  
 for  
 Kansas State  
 University  
 &  
 Manhattan, Kansas

**FIGURE 4:**  
 CAMPUS  
 ROUTE MAP

REVISION:	
DATE:	
BY:	

DATE: 9/27/98  
 PROJECT NO.: 96006.00  
 DESIGNED BY: RAW/GAR  
 DRAWN BY: RAW/GAR  
 CHECKED BY: MDM

Figure 4. Campus Route Map (page 48) illustrates the following recommended bicycle routes through campus, as well as bicycle parking improvements. It is important that these "routes" across campus have the recommended physical improvements completed so as to offer definitive benefits over riding on other campus walkways where bicycle use is not desired. Merely posting bike route signs throughout campus will not have this effect. With an annual influx of new students, the bicycle routes need to be easily identifiable and recognized as an important part of the campus circulation system that is reserved for bicycle use.

#### North-South Routes

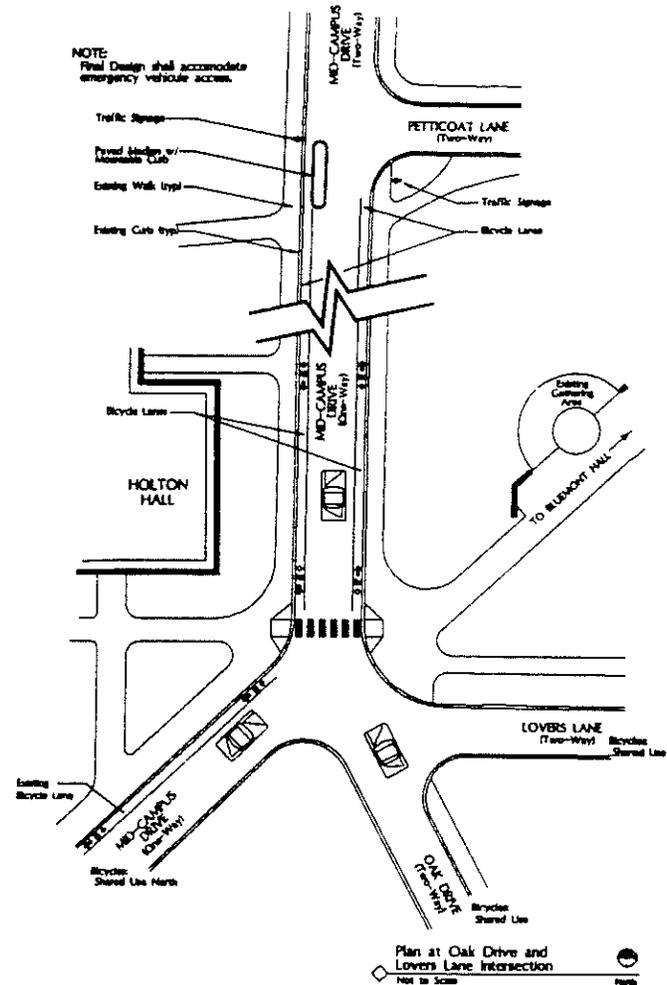
This *Plan* makes two recommendations to provide efficient north-south bicycle access across central campus. On the west side, designate 17th Street as a bicycle route. This could be accomplished through bicycle lanes on the portion between Anderson and College Heights where a minimum of 32' of street width exists, and through signage and markings on the remainder. This route would connect to the existing bicycle paths east of Durland, and then to Claflin Road by the Military Science Building. 17th Street would then connect to other proposed bicycle routes, namely, College Heights, Claflin, and the "central campus bike path".

In the center of campus, no effective north-south bicycle route currently exists. In this area, the *Bicycle Master Plan* recommends the modification of Mid-Campus Drive by restriping to restrict vehicular traffic to one-way north from Lover's Lane to Petticoat Lane, with striped bicycle lanes both north- and south-bound. This bicycle route would connect to the existing route in front of Anderson Hall, and to Vattier Street via Oak. This recommendation realizes the vehicular impacts of such a decision, namely...

1. Vehicular traffic from the Anderson Hall/Vattier parking lots will have an efficient traffic movement north to Campus Creek Road or Claflin Road, then west or east.
2. Vehicular traffic coming from the west to those areas will have only right turns, from either Claflin or Kimball onto Manhattan Avenue, then right turns (west) onto Vattier.
3. Vehicular traffic movements around the Anderson Hall lawn area will remain as exists, as will Vattier Street.

As this renovation of Mid-Campus Drive occurs, opportunities to integrate bicycle improvements into the overall campus design

program should be considered. Design concepts, materials, detailing, and similar issues involved in the implementation of bicycle improvements should coordinate with other campus site improvements. At Mid-Campus Drive's intersection with Petticoat Lane, these improvements should include a traffic island with bollards and/or signage to restrict south-bound vehicular traffic, while creating a south-bound bicycle lane and accommodating emergency vehicle access.



Lastly, the *Master Plan* makes recommendations regarding improvements to Manhattan Avenue to accommodate cyclists on the campus' east side. These recommendations are outlined in greater detail beginning on page 51, under "Access".

### East-West Routes

As previously mentioned, the University has implemented an east-west bicycle route through the center of campus, just north of the Library. Combined with a shared-use route on Claflin and the existing route north of Waters Hall, this will provide good bicycle access across the northern portion of campus. This *Plan* also recommends that the University undertake projects to strengthen and improve this central north-south pedestrian way in conjunction with the bicycle project, possible including re-alignment of portions of the walk and renovation including paving, lighting, and site furnishings. With these two inter-connected projects, both bicycle and pedestrian transportation can be improved in central campus while creating a powerful design feature for the University grounds.

In the southern portion of campus, Vattier Street should be designated an on-street, shared-use bicycle facility through the use of signs and markings. This route will connect to the bicycle lanes at Mid-Campus Drive and to Vattier Street east of Manhattan Avenue, also recommended to be a shared-use bicycle facility. A multi-use path should be implemented south of the Vattier/Oak Drive intersection, just east of the Art Museum to connect to the signalized 14th Street crossing of Anderson Avenue.

The University has also implemented a multi-use path south of McCain Auditorium, increasing east-west access across the southern portion of campus. This route now provides access from the 14th Street route to the Mid-Campus Drive bicycle route.

Other campus routes recommended to be designated as on-street bicycle routes include Campus Creek Road (to provide a connection with Bertrand Street), Claflin Road, College Heights, and McCain Lane to connect with Mid-Campus Drive. In addition, Jardine Drive should be designated a bicycle facility to connect from Denison Avenue to the existing bicycle path which runs west from Hillcrest Drive. This existing path should be upgraded to meet current AASHTO standards for bicycle paths.

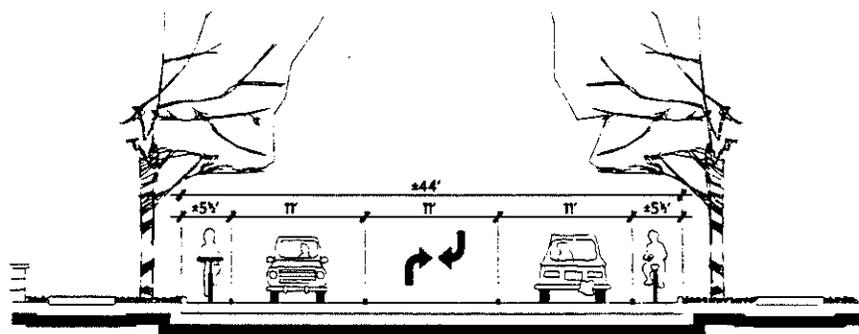
### Access

Figure 4. Campus Route Map (page 48) illustrates the recommended primary bicycle routes through the Kansas State University campus. These are planned to provide access across bordering streets at

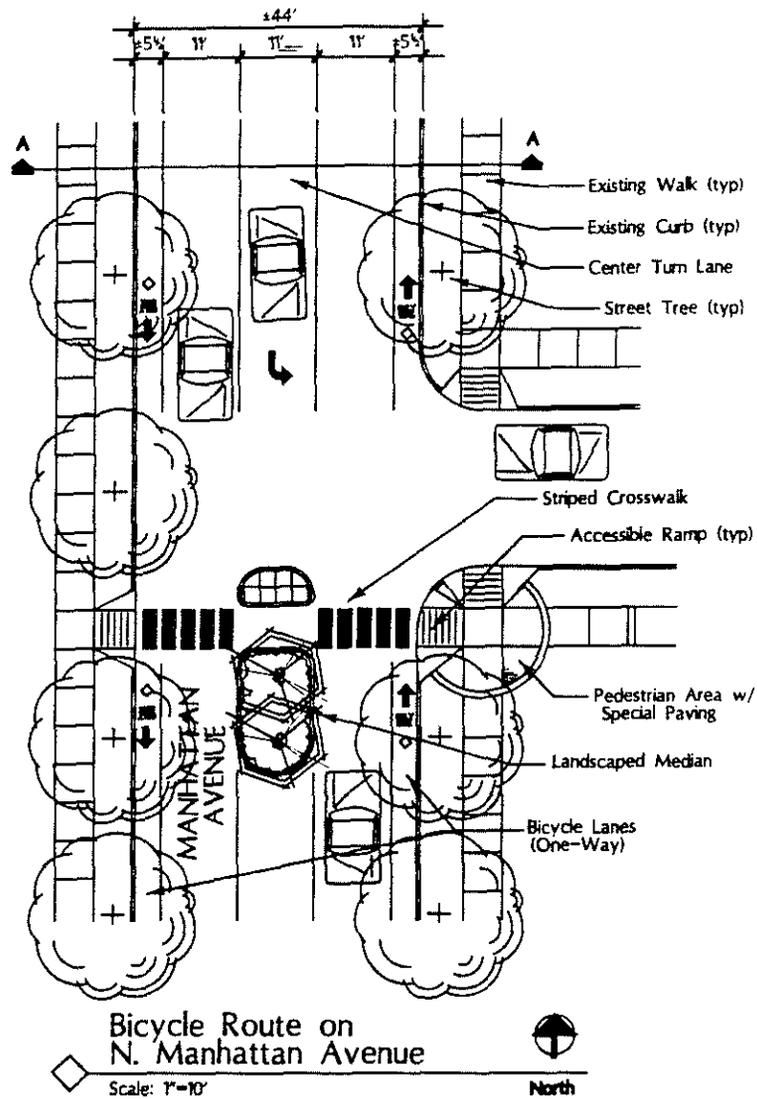
locations which provide a safe crossing and connect to planned City bicycle facilities and routes. These locations include...

1. Crossing of Anderson Avenue at 17th, Mid-Campus Drive, and 14th Streets, all signalized intersections.
2. The primary crossing locations of Manhattan Avenue at Vattier and Thurston Streets, both of which are recommended as City bicycle routes. While a signalized crossing location would be desirable at Manhattan, such an intersection is not likely given traffic counts between Bluemont Avenue and Claflin Road. Routes are also planned which will cross Manhattan Avenue at Pioneer Lane, Claflin Road, and Ratone Street.
3. Cyclists should cross Denison Avenue at College Heights and Claflin Road, as well as Jardine Street and Kimball Avenue.

North Manhattan Avenue creates obstacles to both east-west and north-south bicycle travel. The above crossings are recommended to solve the east-west access issue, and further recommendations may be considered to increase North Manhattan Avenue's ability to safely provide north-south bicycle access between the high concentration of housing in the Claflin Road area and the Aggieville area. As shown in the following illustrations, the *Plan* recommends the consideration of re-striping North Manhattan to provide one each north- and south-bound vehicle travel lane, while providing one left turn lane in the center of the street. The resulting additional space could then be striped as bicycle lanes.



◇ Cross-Section Through N. Manhattan Avenue (A-A)  
Not to Scale



This improvement project could also include the creation of pedestrian/bicycle "refuge" islands at crossings, and could increase the streetscape and landscape opportunities on North Manhattan. Care must be taken during final design to carefully consider the improvements at the Anderson/Bluemont intersection, to safely accommodate the cyclist while both entering and exiting Aggieville.

Some general recommendations to be considered during planning and construction of campus bicycle facilities include...

1. Whenever possible, on-street bicycle facilities should be in the form of designated, four-foot wide bicycle lanes on both sides of the street.
2. Shared-use routes on streets must be clearly marked and signed.
3. A unique, readily-identifiable campus bicycle signage system should be developed. This unifying element can not only increase safety, but increase use by its' promotional aspects.
4. Consideration should be given to constructing bicycle paths in a pavement of a contrasting color to pedestrian walks. This will increase awareness of the different transportation modes, also increasing safety.
5. All improvements should meet the requirements of the American with Disabilities Act.
6. Where emergency vehicle access to campus coincides with bicycle improvements, design treatments must also accommodate these vehicles (pavement design, turning radius, etc.).
7. Some two-way campus streets are extremely narrow - as narrow as 18'. In the absence of street widening projects, if bicycle routes are to be considered on these streets an extensive signage and educational program is recommended. In general, bicycle lanes are recommended at a minimum of four (4) feet in width, and "wide curb lane" applications are recommended for a minimum of 14' wide driving lanes.
8. Multi-use paths are recommended to be constructed to a minimum width of ten (10) feet.

### **Bicycle Parking**

Since the goal of providing bicycle parking on-campus is to encourage students, faculty, and staff to ride to the University instead of driving, the bicycle parking facilities need to be significant elements in the campus landscape. The proximity of parking to the entrance of every building is less important, since it is University policy to discourage bicycle riding on the core-area pedestrian walkways during peak pedestrian periods.

#### Location Criteria

The following policies and design recommendations are to be considered in establishing locations for bicycle parking on-campus...

1. Bicycle parking areas should be decentralized, located in close proximity to bicycle routes as well as campus destinations (see Figure 4, page 48 for recommended locations), should provide a minimum of one bicycle rack per building.
2. Removal of bicycle parking areas is recommended for areas where bicycle access is restricted.
3. Locations should be evaluated for security (visibility, patrol, etc.) issues, as well as to minimize conflicts with pedestrians
4. If possible, located bicycle parking areas where expansion capabilities are available.
5. Bicycle parking areas should be located to protect significant architectural and landscape elements.

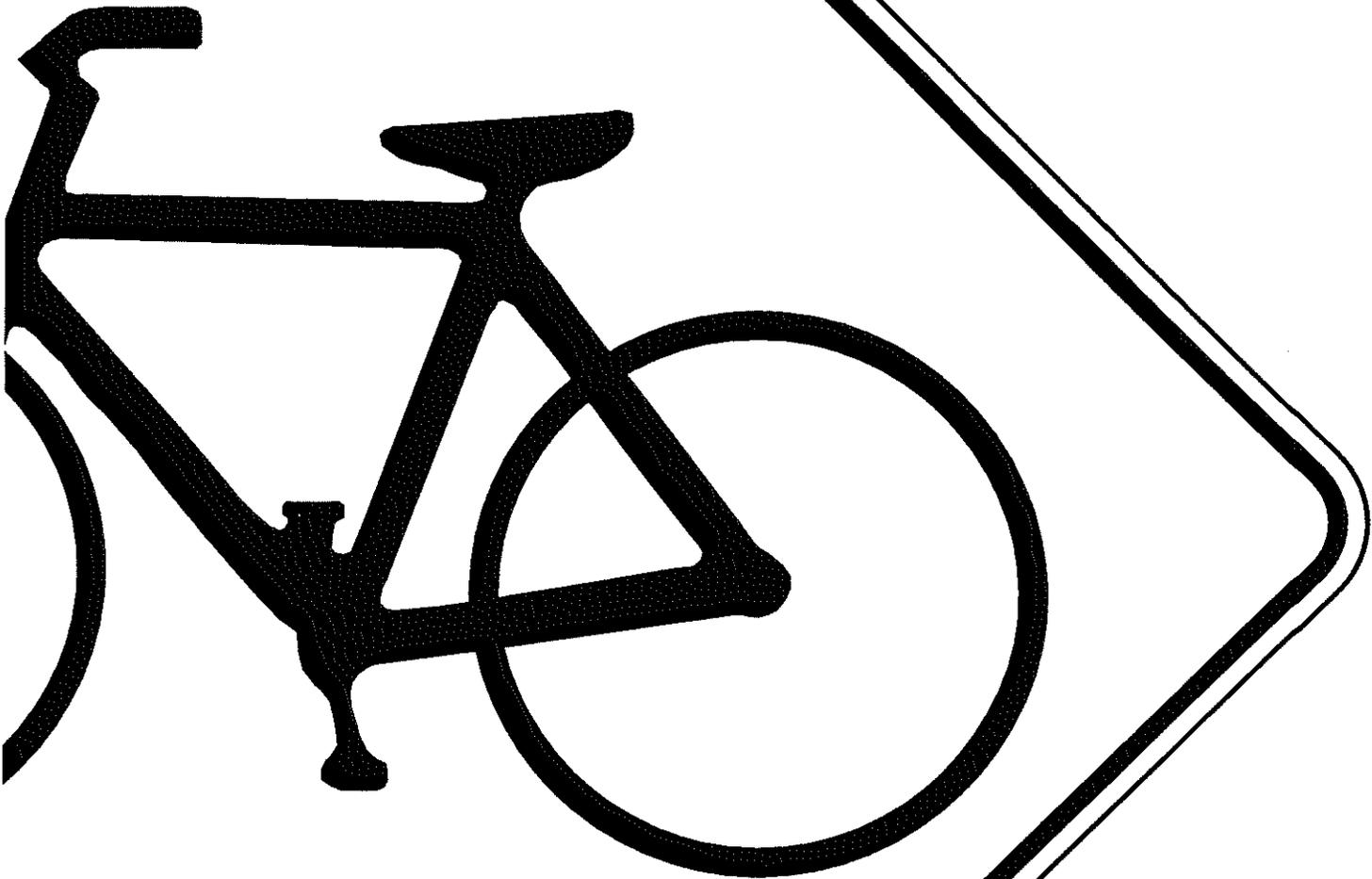
Design of proposed bicycle parking areas (see page 48) should strive to incorporate the following principles...

1. Use bicycle parking centers to enhance campus identity, using consistent design treatment to create a "unifying site element", and landscape elements should be utilized to "soften" the parking area.
2. Materials and design details should complement the existing campus architecture. The materials, colors, and details could also be applied to other campus site improvement projects.
3. Each location should provide no more than 120 bicycle parking spaces, should be well lighted, and should include air stations at primary locations.

#### Dormitories and Other Buildings

Bicycle parking should also be provided at residence halls, fraternities, sororities, and apartment buildings - with covered parking and/or lockers strongly encouraged for residential halls. Bicycle parking location and design guidelines previously discussed for the City of Manhattan should apply to these locations as well.

1. For residential units, parking is recommended to be provided at a rate of one (1) space per three (3) rooms.
2. For other locations on campus where parking is desired at the building entrance, it is recommended to provide one (1) space per four (4) employees, plus one (1) space per four (4) students.



**CHAPTER 4**  
**Resource Guide**



## Overview

In order to effectively and efficiently implement the recommendations of this *Bicycle Master Plan*, the City of Manhattan and Kansas State University should undertake a joint, comprehensive effort to include bicycle planning and implementation in all civic projects or improvements. The following recommendations include those for long-range planning, criteria for project evaluation, funding options, and implementation - such as ordinances, preservation of corridors, bridge improvements, maintenance strategies, education-enforcement-encouragement programs, institutionalizing of bicycle planning, and bicycle-friendly planning policies.

## Project Evaluation Criteria

As annual budgets are prepared by various parties, choices are continually being made regarding the "worthiness" of specific proposals and projects. To fairly and accurately judge the benefit of a proposed bicycle project, a policy of judging project proposals on a specific set of criteria should be developed by both the City and the University. This will assist in setting priorities for projects and should be useful during evaluation of grant applications or other budgetary reviews.

These criteria should be developed through review and discussion between all applicable agencies and departments, utilizing the input of staff. Some applicable criteria may include the following.

### 1. Serves a defined need.

- Is Part of a Plan
- Serves Origins/Destinations
- Demonstrated Local Demand (meetings, letters, advocacy, etc.)

### 2. Project Readiness.

- Right-of-Way is Acquired or Available.
- Linked to a Planned Roadway or Transit Project.
- If Grant Application, Local Match is Available within Specified Time Period.

### 3. Follows Adequate Planning and Design Guidelines.

- Project Design can follow requirements of AASHTO Guide for the Development of Bicycle Facilities, 1990.
- Project Design can follow requirements of *Bicycle Master Plan* and applicable City/University standards.

## Funding Options

As with most communities, bicycle projects are generally difficult to fund in the City of Manhattan and at Kansas State University. Competing needs for a finite budget usually result in a limited pool of funds available for projects such as bicycle facilities. However, there are options for increasing funding for bicycle projects, some of which should be carefully considered. Some of these options include...

**1. Incorporate bicycle improvements as a routine part of scheduled roadway construction and retro-fit projects.**

Such *incidental* bicycle improvements can often be implemented at little, if any, additional costs over that of traditional roadway construction. Striping bike lanes and shifting lane striping to provide wide curb lanes are examples of cost-effective incidental roadway improvements.

**2. Budget bicycle projects into Capital Improvement Plans.**

On a regular, annual basis, incorporate *independent* bicycle projects as a line item in Capital Improvement Plans. Long-term implementation of a bicycle plan is dependent upon regular investment of local funds, both for matching State and federal funding, and to implement projects beyond those incorporated as an incidental part of street improvements. This commitment of funds will assure plan implementation and readiness to seek State and federal funding for bicycle projects, as well as funding local projects, and easing implementation of smaller projects without the administrative requirements associated with grants.

**3. Submit local applications to obtain ISTEA Enhancement Funds for the development of bicycle projects that fulfill a transportation function.**

The Enhancement Funds are a set-aside of the State of Kansas' Surface Transportation Program (STP) funds at the State level for projects that augment traditional transportation activities. Bicycle projects may compete for funds with other eligible categories as itemized within the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA). These can facilitate project development with 20% local and 80% federal funding, allows for the use of ISTEA funds for many types of bicycle facilities, and for acquisition and development of rails-to-trails conversions.

4. **Use National Highway System funds to construct bicycle transportation facilities specified in the *Bicycle Master Plan*, where the facility may be adjacent to or within the right-of-way of the National Highway System.**

ISTEA allows the use of National Highway System funds for the construction of such facilities. It is cost-effective and efficient to construct elements of the *Bicycle Master Plan* in conjunction with National Highway System projects where planned and appropriate. In Manhattan, such funding will probably be most applicable to facilitate safe crossings of U.S. & State Highways, such as the bicycle\pedestrian underpass at Seth Child Road, and other crossings of Seth Child, Fort Riley Boulevard, and Tuttle Creek Boulevard.

5. **Follow the status of the National Recreational Trails Act (NRTA) and, as funds are made available, submit local applications for the development of recreational trails projects.**

NRTA, or the Simms Act, was created by ISTEA to fund recreational trails for motorized and non-motorized uses from the Highway Trust Fund. However, no funds were federally appropriated in FY94 or FY95. Some funding is available this year, but program status is pending for future years. These funds could help to meet recreational bicycling needs, and may facilitate off-road trail development with up to 100% federal funding. Completion of the Linear Park loop trail would be an example of a qualifying recreational project.

6. **Submit local applications to receive Land and Water Conservation Funds (LWCF) for the development of recreational trail projects.**

LWCF aids in the purchase of development of public outdoor recreation facilities, and establishing trail systems is one of several priorities of LWCF. This will help to meet recreational bicycling needs, preserve corridors for future development, and will facilitate project development with 50% local and 50% federal funding. Once again, this may be most appropriate for the Linear Park and its future land acquisition requirements.

7. **Consider the possibility of using park land dedications (or payments in lieu of) for bicycle trails.**

Many communities currently require dedications of (or payments in lieu of) land for recreation or open space purposes. The City of

Manhattan could consider using such land or fees for the development of bicycle trails. Land may be more readily available in linear corridors, such as stream and river flood plains or edges of properties, and trails are a generally good use for such land. Bicycle trails serve large numbers of residents with relatively small total land dedication or cost. However, trails are not recommended to be constructed as sidepaths parallel to roadways in lieu of on-street bicycle access.

**8. Seek grants from private charitable foundations and businesses to help fund capital improvements and/or educational programs relating to bicycling.**

Charitable foundation trusts may offer support for such activities as building funds, community development, capital campaigns, land acquisition, youth programs, and educational programs. These funds can help create public-private partnerships to support bicycling projects and programs, and will supplement current level of available governmental funding.

## **Implementation Planning Guidance**

"Bicycle facility planning is commonly thought of as the effort undertaken to develop a separated bikeway system composed completely of bicycle paths and lanes all interconnected and spaced closely enough to satisfy the needs of all bicyclists. In fact, such systems can be unnecessarily expensive and do not provide for the vast majority of bicycle travel. Existing highways, often with relatively inexpensive improvements, must serve as the base system to provide for the travel needs of bicyclists. Bicycle paths and lanes can augment this existing system in scenic corridors or places where access is limited. Thus, bicycle transportation planning is more than planning for bikeways and is an effort that should consider many alternatives to provide for safe and efficient bicycle travel."

-AASHTO, Guide for the Development of Bicycle Facilities

Much of the following information can be examined in greater detail in the American Planning Association's (APA) Planning Advisory Service (PAS) Report Number 459, "Bicycle Facility Planning", which was co-authored by Terri Musser, a principal consultant on this *Bicycle Master Plan*.

### **Bicycle-Friendly Planning**

The *Bicycle Master Plan* recommends a comprehensive network of bicycle routes and facilities for the area - intended to cross barriers and connect neighborhoods and various areas of the City and University. This portion of the report is intended to provide the tools needed to implement the bicycle transportation network and create a more "bicycle friendly" community. The successful integration of bicycles as a viable transportation alternative depends upon the recognition that many local planning and regulatory functions affect the use of bicycles.

Bicycles and bicycle facility decisions are impacted by the planning and programming decisions of multiple departments of city government, the University, and State and County agencies. For this reason, bicycle planning requires an unusual degree of intra- and inter-governmental coordination.

Implementation will be greatly facilitated by what has come to be called "institutionalization". Institutionalizing bicycle planning requires the coordination of local planning functions as well as the development of an implementable program of improvements. Three elements that greatly facilitate bicycle planning are:

- ◆ Bicycle Advisory Committee
- ◆ Bicycle Coordinator
- ◆ Committed Public Officials

The process of institutionalizing bicycle planning involves the public in an on-going way by the establishment of a citizen-based Bicycle Advisory Committee. Either a new committee may be formed, or the committee function can be carried out by a subcommittee or other standing committee, for instance a transportation task force or an environment committee. Its' primary importance lies in providing on-going public involvement and support.

The designation of one staff person as the Bicycle Coordinator provides a pivotal and essential coordinating function - to organize inter-departmental efforts and integrate bicycle planning objectives into other community activities. This Coordinator function may be carried out by an existing staff member, perferrably in the City Planning or Public Works Department.

The third aspect of institutionalizing bicycle planning is the commitment of public officials. Sometimes leadership for bicycle improvements comes from public officials and, even where there may not be great personal enthusiasm, officials can be supportive if they know their constituency wants a more bicycle friendly community. Manhattan's bicycle master plan will be of limited value, however, if it is not part of an active and on-going planning process that continually seeks to integrate bicycle considerations into all areas of local planning and has the support of community residents and elected officials.

### **Integration with Other Plans and Programs**

The recommendations of this *Bicycle Master Plan* should be incorporated into existing land use and zoning, street design, open space and park plans.

Transportation plans offer opportunities for many low cost improvements for bicyclists. Local street plans and policies can be augmented by various design and operations options that slow traffic and "reclaim" street space in neighborhoods.

Park and open space planning is integral to bicycle planning and offers opportunities for local governments to acquire greenways and build bicycle paths and multi-use trail systems. Park land dedication and fees in lieu of dedication may be an applicable form of local strategies to acquire trail and bicycle path right-of-way.

Site plan review offers additional opportunities through which suggestion or regulation can assure better accommodation for bicycles.

Sometimes the addition of bike lanes and parking facilities can be added to developments at little cost. Also, the provision of better access and connections between developments for bicyclists and pedestrians might be provided at little cost if the need is understood.

While the focus of this study is on infrastructure improvements, education and encouragement are important elements of a comprehensive approach to bicycle planning (see the "Education and Encouragement Resource Guide", contained herein). Schools and school districts, police departments, local employers, and private groups can all play a part in providing bicycle safety education and encouragement. School transportation access plans and parking policies offer opportunities for improving the bicycle access option. Traffic law enforcement can affect the bicycling environment as well,

and offers an opportunity for bicycle safety education. Many additional venues exist for education and encouragement, including school curriculum and employer-based transportation coordination.

#### **Routine Removal of Bicycle Hazards**

Designing, constructing and retrofitting roadways to better accommodate bicycle use means eliminating basic hazards to bicycle travel. These include wheel-eating drainage grates, dangerous railroad crossings, un-responsive traffic signals, general spot improvements and enhanced maintenance practices. For the most part, the removal of hazards is inexpensive and can be accomplished within routine maintenance and improvement schedules and budgets.

Hazard removal and roadway maintenance practices are addressed in the 1991 AASHTO Guide for the Development of Bicycle Facilities on pages 11-12 and page 41 (see also, the "Quick Reference Guide" contained herein). The following supplemental guidance is offered to assist in the elimination of the most common bicycle hazards.

#### **Drainage Grates**

Drainage grate inlets are potential problems to bicyclists. Most states and municipalities have eliminated use of parallel bar drainage grates and instead substitute bicycle-friendly and hydraulically efficient inlets. On new construction, curb inlets are preferred to grate inlets whenever possible. When grate inlets are installed, they should not be of the parallel-bar design.

#### **Traffic Control Devices**

AASHTO discusses clearance intervals for traffic signal timing, and states that traffic-actuated signals should be sensitive to bicycles. In addition, a 1985 study completed by the City of San Diego examined various loop detectors for their bicycle sensitivity. Recommendations from this report, summarized in the APA's PAS report, include...

#### ◆ *Diagonal Quadrupole Loop*

Due to the sensitivity over the entire width of the loop, the diagonal quadrupole is the preferred option for shared roadway situations where the exact location of the bicycle cannot be easily predicted.

◆ *Quadrupole Loop*

The recommended loop type for use within bicycle lanes is the quadrupole. This design detects most strongly over the center wires and is relatively insensitive to vehicles in adjacent lanes.

◆ *Standard Loop*

Standard loops are least desirable for detecting bicycles because they are most sensitive over the wires that form the outer edge of the loop. Unless bicyclists know exactly where to position themselves over the loop they will not be detected.

Alternatives to pavement loops include use of video cameras to detect bicycle and other traffic and use of microwave sensors. Video systems use cameras mounted on signal arms and "virtual loops" drawn on a computer screen. The computer system is capable of sensing up to 60 different detection zones within a single intersection for a cost comparable to loop detectors buried within the pavement. Microwave systems are more expensive than standard loops, but are highly reliable for remote traffic sensing and bicycle detection.

Fine-tuning existing traffic detection systems may also improve bicycling conditions. Signal timing should include a minimum green time that allows cyclists to remount their bikes and travel across the intersection, and a yellow/red time that provides a safe bicycle clearance interval. Generally, 2-3 seconds added to the minimum automobile green time is appropriate; a yellow interval of 3.0 seconds offers sufficient time for a cyclist to come to a complete stop or enter the intersection legally; and an all-red clearance interval greater than 2.0 seconds is needed to clear bicycles from most intersections.

Such improvements to traffic signals are recommended to be implemented on a routine basis as a regular part of all roadway construction and as special retro-fit projects for all signalized intersections where bicycle routes cross major arterials and collector streets.

### **Maintenance**

Bicyclists participating in the development of the Manhattan/KSU *Bicycle Master Plan* indicated that improving and maintaining area streets with a smooth riding surface and free of debris should be the highest priority for improving local bicycling conditions. Such improvements are relatively low-cost, and many can be undertaken as a part of routine street maintenance practices by shifting attention

from the path of motor vehicle travel to the edges and shoulders of roadways where bicyclists ride. Off-road trails and sidepaths will require additional maintenance to keep facilities rideable, and to minimize liability for the managing governmental agencies.

#### Roadway Maintenance...

1. Provide a smooth surface, free of potholes and debris, on all streets.
2. Mill all new surfaces to a smooth and even grade (within ¼" of the pavement surface) with no recessed drainage grates or manhole covers, or vertical changes between pavement and gutter pan.
3. Maintain uniform pavement edges and prevent the edge of a repair from running through a bike lane or shoulder. Ideally, overlay the entire roadway surface to avoid leaving an abrupt edge.
4. Regularly sweep designated bicycle routes since glass, debris, and sand tend to accumulate near the right edge where most bicyclists ride. Shift focus of the sweeping of such routes to pay more attention to clearing all debris out of the gutter pan and off of paved shoulders to provide a smooth riding surface.
5. Schedule more frequent sweeping of routes in the fall to remove leaves and pine cones. Schedule an early spring sweeping as soon as the weather warms and area cyclists are out riding to remove sand remaining from snow removal activities.
6. Pave a 10- to 15-foot apron on gravel driveway approaches to reduce loose gravel on paved roadway shoulders and paved paths.
7. Clear vegetation to provide a minimum 8-foot vertical and 3-foot horizontal clearance.
8. Regularly inspect and replace bicycle signs and pavement markings to keep them highly visible.

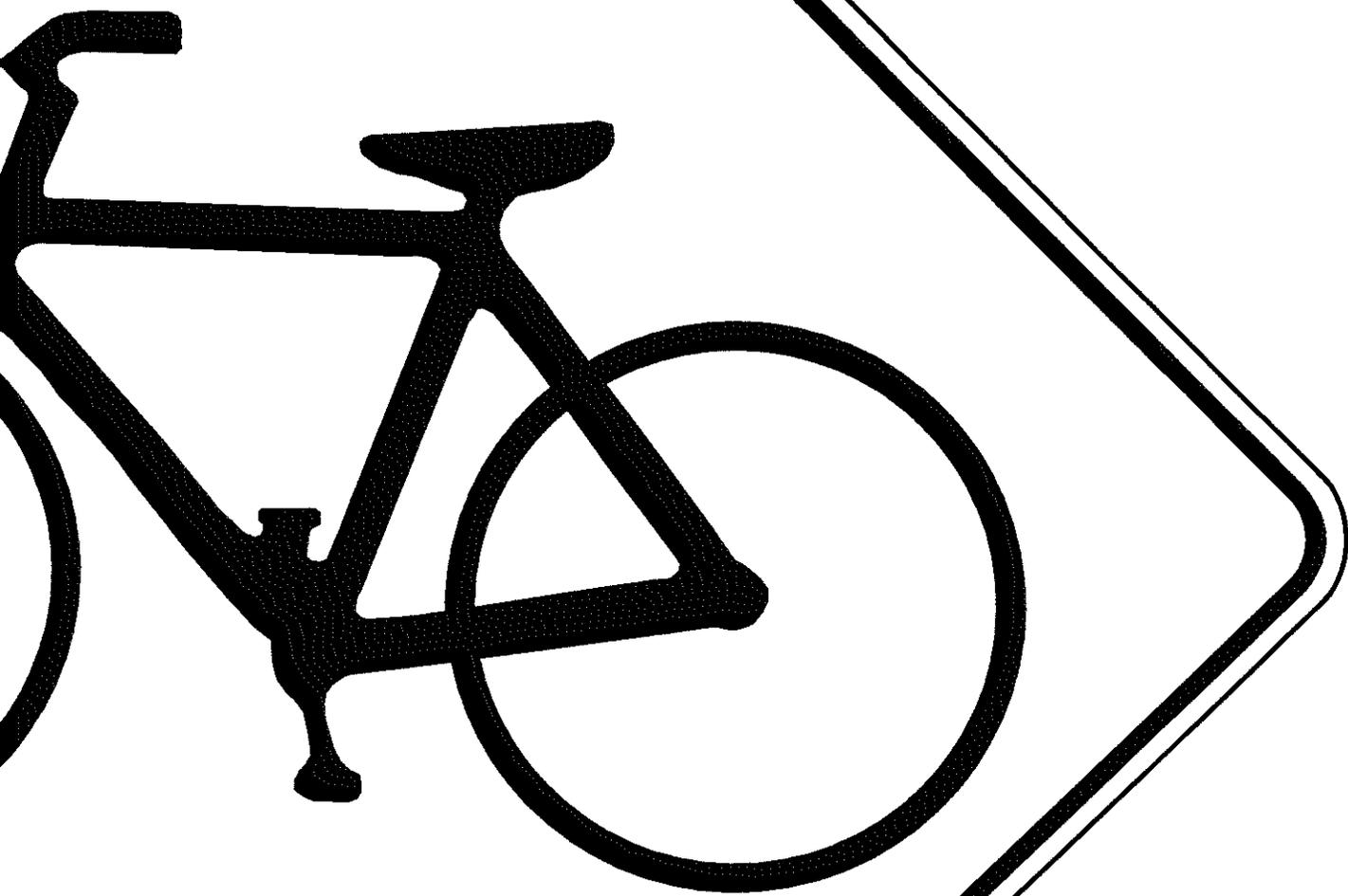
#### Trail Maintenance...

1. Follow the standards set forth in the AASHTO *Guide for the Development of Bicycle Facilities* to minimize maintenance requirements.
2. Design trail cross sections to withstand loading equivalent to the weight of a small maintenance truck or ambulance. Design trail widths so that maintenance and emergency truck wheels do not drive on and deteriorate trail edges.

3. Develop a complete maintenance program for the Linear Park Trail and all existing sidepath bicycle facilities.
4. Sweep debris and remove snow regularly, especially on existing sidepaths.
5. Regularly overlay unpaved trail surfaces and maintain the full width of the path to prevent deterioration of path edges.
6. Inspect for flood damage after each major storm and repair problems as soon as possible. In the interim, prominently use warning signs and markings to identify hazards.
7. Keep vegetation cleared to provide a minimum 8-foot vertical and 3-foot horizontal clearance. Selectively remove underbrush and prune lower tree branches to improve sight distances through curves, at intersections, and in any areas where personal safety and security is a concern.

#### Funding and Administration...

1. Annually inspect bicycle facilities to identify any areas in need of major improvements.
2. Program major repairs to bikeways into local Capital Improvements Programs or State Transportation Improvement Programs.
3. Program bikeway maintenance into the regular maintenance schedules of the City street crews, park department, and University grounds crews.
4. Encourage private sector assistance in facility maintenance and beautification by developing an Adopt-a-Trail or Adopt-a-Bikeway program.
5. Develop a Bicycle Spot Improvement Program to reduce the amount of staff time required for comprehensive problem identification. Provide reporting forms at bicycle shops and major destinations throughout the community to allow citizens to report improvements and repairs that they would like to see made to City street and multi-use trails. Also, supply City and utility company maintenance vehicles with similar forms so that employees can accurately record problems while in the field.



# APPENDIX



## Interpretation, Application and Liability

Most of the information presented in this document, as well as the AASHTO and FHWA manuals, represents planning guidance and does not constitute a standard, specification or regulation. As clarified by AASHTO, the intent is not to set forth strict standards, but, rather "to present sound guidelines that will be valuable in attaining good design sensitive to the needs of both bicyclists and other highway users."

The Manual on Uniform Traffic Control Devices (MUTCD) does, however, regulate the uniform use of national standards for traffic control devices. Requirements for their design and application is further guided by the Manual's use of the words "shall," "should" and "may," in that "shall" represents a mandatory condition, "should" an advisory condition, and "may" a permissive condition.

In a similar manner, the AASHTO Guide for the Development of Bicycle Facilities contains minimum design criteria which should be followed for certain project elements. These minimums have been established in instances where further deviation from desirable values would result in unacceptable safety compromises.

The literal interpretation and site specific application of bicycle facility planning and design guidelines is therefore ultimately left to the individual facility designer or administrating agency, who is advised to use sound engineering judgment in making implementation decisions.

### Liability

Applying sound engineering judgment includes a basic understanding of bikeway liability. The lawsuits that have arisen from bicycling accidents typically allege "negligence" on the part of one or more of the parties. If a transportation or recreation agency is found negligent, it is because someone failed to exercise ordinary, reasonable care in their actions.

The determination of negligence is generally understood to depend on five basic principles:

1. *Did a potentially dangerous defect exist?*

To determine if a bikeway was "defective" in its design, lawyers typically refer to the standards and current state of the practice in effect at the time the facility was built.

2. *Was the defect a proximate cause of the accident?*

The defect must be shown to have been a substantial factor in the cause of the accident.

3. *Was there any contributory negligence on the part of the bicyclist?*

Many factors may contribute to an accident, including negligence on the part of the bicyclist. If a cyclist made an error in judgment or was riding carelessly he may be guilty of contributory negligence.

Most states follow a policy of "comparative" negligence to determine who was at fault, which means that the amount of recovery is determined by comparing the degree of negligence of the plaintiff to that of the defendant.

4. *Did the governmental agency have knowledge of the allegedly hazardous condition?*

Negligence is predicated on a knowledge of the dangerous condition. Government agencies have generally not been held liable for hazards unless they knew of the condition long enough to make repairs or post warnings.

In addition to "actual" notice - where an agency is directly told of a problem - agencies may be held liable for "constructive" notice - where they should have known about the hazard depending on the passage of a certain amount of time.

5. *Was the agency's action discretionary or ministerial in nature?*

Discretionary actions generally involve higher policy-level decision making than ministerial actions. Planning and design functions which involve considering alternatives and exercising independent judgment are generally considered to be discretionary and may be immune from liability, as long as a good faith effort has been made. However, abuse of discretion does not receive this immunity; nor does a failure to exercise discretion.

Construction and maintenance practices, on the other hand, are ministerial functions which involve clearly defined

implementation tasks with little discretionary leeway. Such tasks may result in liability if negligently performed.

#### **Potential Problem Areas**

The bicycle facility area is relatively new and few case precedents have been set in the appellate courts. However, there are some specific aspects of bicycle facility design that have led, or could easily lead to liability problems. Bikeway planners and designers in the Manhattan area should be aware of such potentially dangerous defects as:

1. routinely constructing sidepaths when State and national guidelines do not recommend to do so
2. lack of maintenance
3. steep downgrade slopes
4. inadequate curve radii
5. sight obstructions
6. too narrow of a bike path
7. lack of warning signs
8. misuse of bike route signs
9. poor handling of bicycle lanes with right-turning vehicular lanes.

While potential hazards may not always be avoidable, use of sound engineering judgment and common sense will usually result in the acceptable development of bicycle facilities. For example, if cyclists on a planned bicycle path have potential to reach speeds of 25-30 mph on a steep downgrade and there is a tight curve at the bottom of the hill, examining other routing alternatives would be advisable. If, however, the tight curve was located on a relatively flat grade with adequate sight distances, the smaller curve radius may be mitigated through appropriate use of warning signs, similar to the practice used in roadway design.

In summary, those planning and implementing bikeway projects should understand their rights and responsibilities and make a good faith effort toward improved decision-making and development of safe facilities.

# Quick Reference Guide for the Design of Bicycle Facility Elements

The following quick-reference guide has been assembled to assist in the planning and designing of bicycle facilities. This listing is intended to serve as a convenient reference point for applicable standards and guidelines pertaining to various elements of bicycle projects. For comprehensive guidance and specific interpretation, the user is referred to detailed discussions located within the other publications, as identified below.

## Drainage Grates

- Do not use a parallel bar grate AASHTO, pg.12
- Advance pavement marking MUTCD, pg. 9C-6

## Railroad Crossings

- Crossing angle - ideally, cross at 95% angle AASHTO, pg. 12
- Warning signs - 315' min. before crossing MUTCD, pg. 9C-4
- Pavement markings - 250' min. before crossing MUTCD, pg. 9C-4

## Traffic Control Devices

- Clearance interval - bicycle speed of 10 mph  
with 2.5 seconds brake time AASHTO, pg. 12

## Signage

- Lateral placement - 2'min./12'max. MUTCD, pg. 2A-8
- Height - 5' min. MUTCD, pg. 2A-14

## Maintenance

- Bikeway standards - same or greater than  
vehicular roadway AASHTO, pg. 41

## Paved Shoulders

- Shoulder width - 4' min. @ 35 mph or less  
- increase width @ 35 mph +  
- as dependent on vehicular  
volumes and speeds  
AASHTO, pg. 14  
AASHTO, pg. 14  
FHWA, pg. 16-21

## Wide Curb Lanes

- Lane width - 14' min.  
- as dependent on vehicular  
volumes and speeds  
AASHTO, pg. 15  
FHWA, pg. 16-21

## Bicycle Lanes

- Lane width - ideal conditions: 4' min.  
- next to curb: 5' min.  
- next to parking lane: 5' min.  
- combined bike/parking: 12' min.  
- as dependent on vehicular  
volumes and speeds  
AASHTO, pg. 18  
FHWA, pg. 16-21

- Lane placement AASHTO, pg. 18
- Intersections - pavement markings AASHTO, pg. 18
- pavement markings MUTCD, pg. 9C-2
- Designated Bicycle Routes**
- Signage MUTCD, pg. 9B-10, 13
- Bicycle Paths**
- Path width - typical: 10' min. AASHTO, pg. 23
- Clearances - 2' min. shoulder AASHTO, pg. 24
- Grades - longitudinal: 5% max. desired AASHTO, pg. 27
- cross-slope: 2% min. AASHTO, pg. 35
- Design speed - typical: 20 mph AASHTO, pg. 25
- w/ grade >4%: 30 mph AASHTO, pg. 25
- Curves - radius: 95' min. AASHTO, pg. 26
- superelevation: 2%-5% AASHTO, pg. 26
- Stopping distance - grade and speed dependent AASHTO, pg. 28
- 125' min. AASHTO, pg. 28
- Pavement - based on site conditions AASHTO, pg. 32
- Lighting - 0.5 - 2 footcandles AASHTO, pg. 36
- Structures - min. clear width = approach width AASHTO, pg. 33
- desired clear width =  
approach width +2' ea. side AASHTO, pg. 33
- Vertical clearance - 10' min. AASHTO, pg. 33
- Railings - 4.5' height AASHTO, pg. 33
- smooth rub rails @ 3.5' AASHTO, pg. 33
- Intersections - crosswalk markings MUTCD, pg. 3B-23
- signalized crossings MUTCD, pg. 4C-4
- Bike Xing signs: 750' before  
crossing - rural MUTCD, pg. 9B-6
- Bike Xing signs: 250' before  
crossing - urban MUTCD, pg. 9B-6
- limited vehicular access: 5' min.  
between posts or bollards AASHTO, pg. 36
- with gravel drives: add 10'  
paved apron AASHTO, pg. 33
- Path pavement marking - center striping: 4" yellow line AASHTO, pg. 32
- gap ratio: 3' line w/ 9' gap MUTCD, pg. 9C-1
- Path signage - lateral: 3' min. - 6' max. MUTCD, pg. 9B-1
- height: 4' min. - 5' max. MUTCD, pg. 9B-1
- longitudinal: regulatory as req'd. MUTCD, pg. 9B-6
- longitudinal: hazard 50' before MUTCD, pg. 9B-6
- longitudinal: RR Xing 315' before MUTCD, pg. 9C-4

AASHTO Guide for the Development of Bicycle Facilities

Published by the American Association of State Highway and Transportation Officials, 1991 edition. Available for \$13 from AASHTO, 444 N. Capitol Street NW, Suite 249, Washington, D.C. 20001 (telephone: 202-624-5800).

MUTCD Manual on Uniform Traffic Control Devices

Published by the U.S. Department of Transportation, Federal Highway Administration, 1988 edition. Available for \$22 from the U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954 (telephone: 202-783-3238, FAX: 202-512-2250).

FHWA Selecting Roadway Design Treatments to Accommodate Bicycles

Published by the Federal Highway Administration, 1994 edition. Document #FHWA-RD-92-073 is available for no cost from the National Bicycle and Pedestrian Clearinghouse. Contact the Bicycle Federation of America, 1506 21st Street NW, Suite 200, Washington, D.C. 20036 (telephone: 800-760-6272, FAX: 202-463-6625)

# Education and Encouragement Resource Guide

Each year, approximately 900 bicyclists of all ages are killed and another 580,000 are treated in emergency rooms across the country. Children ages 0-14 represent approximately 70 percent of the bicycle-related injuries nationwide. Children also represent approximately one-third of the bicycle-related deaths, with 90 percent of these resulting from collisions with motor vehicles. Children in urbanized areas are at particular risk.

For reasons such as these, bicycle safety education is identified as a primary need to be addressed in the *Bicycle Master Plan*. This resource guide, although by no means an exhaustive listing, provides references for some available materials.

## Available Education Resources

### Film and Video

The following is a partial listing of films and videotapes available for purchase. Interested groups are also encouraged to contact their State AAA Safety Department to see if some videos are available on loan.

- *Otto the Auto - Series F* \$ 30  
An animated video that features three segments: Bicycle Border Patrol, Dream Bike, and Bikes Go With the Flow. The content and message is very good for young children, however since the film was made in 1981, the cyclists are not wearing helmets.
- *Otto the Auto - Series H* \$ 40  
An up-dated 1994 film featuring four segments: Basic Riding Rules, Picking the Right Bike, Fitting Your Helmet, and Drive Your Bike Like a Car.
- *ADVOKIDS - Kids Advocating Change: The passage of the Nation's First Bicycle Helmet Law* \$ 35  
Focuses on Maryland school students who responded to a fatal bicycle accident by organizing support for bicycle helmet use.
- *Biking: Get the Big Picture* \$ 30  
This fast-paced presentation emphasizes visual skills needed to ride a bicycle safely. Produced in 1994 for 6th to 8th grade.
- *Only One Road - The Bike/Car Traffic Mix* \$ 35  
While this 1975 film is fairly dated, the message is still appropriate for the adult audience. Stresses understanding

and cooperation between bicyclists and motorists to safely share the roadways.

**Contact:**

AAA Foundation for Traffic Safety  
1440 New York Avenue NW, Suite 201  
Washington, DC 20005  
1-800-305-SAFE

Other educational videos are available for purchase from Coronet/MTI Film and Video. Each of these may also be rented for \$75, or may be purchased in video or 16mm film format.

➤ *I'm No Fool on a Bicycle* \$280  
Jiminy Cricket, Gepetto and Pinocchio stress bicycle safety rules in this Disney educational video.

➤ *I'm No Fool on Wheels*  
A new film that expands Disney's "I'm No Fool" series to include bicycling, skateboarding and roller skating.

➤ *Bicycle Safety* \$250  
The second edition of this film addresses safe riding and rules of the road for busy streets, quiet roads, stunt riding and bike trails.

➤ *Safe Bicycling in Traffic* \$21.  
This program presents a proven method of riding based on traffic laws and the unique capabilities of the bicycle for the more advanced rider; includes maneuvers for heavy traffic and intersections.

**Contact:**

Coronet/MTI Film & Video  
108 Wilmot Road, Deerfield, IL 60015  
1-800-621-2131

Several of the above videos are available for purchase through Ride Safe, Inc., a non-profit organization dedicated to promoting bicycle safety and helmet use. Some of the videos are also free through Ride Safe if a school or similar

organization participates in their group helmet purchase program:

➤ *Before the Fall* \$ 14.99  
An excellent video for parents on the importance of wearing bicycle helmets.

➤ *Bicycle Safety Camp* \$ 9  
Set to rap music, this film delivers important safety tips for grade school children ages 6-12.

➤ *Elephants Never Forget* \$ 7  
A short, animated safety video designed for children with limited attention spans in Kindergarten through Grade 3.

➤ *The Ride Safe Way to Fit a Bicycle Helmet* \$ 14.99  
Demonstrates how to size, fit and wear a bicycle helmet properly.

Also available from Ride Safe are a number of educational videos targeted to various adult audiences:

➤ *Effective Cycling* \$29.99  
The video version of John Forester's popular book Effective Cycling. The 41-minute video offers older kids and adults detailed instruction on how to confidently ride in heavy traffic and other conditions.

➤ *A Kid's Eye View* \$7.50  
Targeted to adults interested in teaching children bicycle safety, this video addresses many of the high-risk situations involving children on bikes.

➤ *Bill's Bicycle* \$7.50  
Filmed in 1939, this silent movie may be the first bicycle safety film made. The video features "Bill" on his bicycle adventures and misadventures. It is recommended to show to older children, accompanied with a discussion the importance of following all the rules of the road.

➤ *Trucks and Bicycles Sharing the Road* \$24.99

A two-part video designed to provide bicyclists with an overview of riding safely on the roads, and to help sensitize drivers of motor vehicles, especially truckers, to the needs and rights by law of bicyclists.

**Contact:**

Ride Safe, Inc.  
30W260 Butterfield Road, Warrenville, IL 60555  
1-800-285-RIDE Fax: (708) 393-4905

➤ *Bike Safety First* \$23.95

An excellent, overview of the same topics covered in Effective Cycling, only in a shorter 13-minute video. The film demonstrates aspects of bicycle safety ranging from becoming physically fit and riding in traffic, to how to dress and eat on a ride. It's a great introduction for adults and teens who are potential utilitarian and/or recreational riders.

**Contact:**

Tim Kneeland & Associates  
200 Lake Washington Blvd., Seattle, WA 98122  
1-800-433-0528

**Brochures**

➤ *Safe Cycling for Bicyclists of All Ages*

A fold-out, two-color brochure for adult cyclists. Includes the Kansas bicycle safety code, traffic laws and a quiz to test riding knowledge. Free.

**Contact:**

Kansas Department of Transportation  
Office of Traffic Safety, attn: Judy Smith  
217 SE Fourth Street, Topeka, KS 66603-3504  
(913) 296-3756

➤ *10 Tips for Fun and Safe Biking*

A small, two-color brochure covering ten things to remember while bicycling. Free.

**Contact:**

KDOT Office of Traffic Safety (see above)

➤ *AAA Bicycle Safety File*

A folder containing safety brochures and how-to information for groups interested in conducting a bicycle safety program. For the event, the AAA Auto Club will provide copies of *Bicycling is Great Fun* folders, bicycle rider's licenses, skill test cards, safety check stickers and bicycle inspection check cards. Also available free of charge are six 12" x 16" bicycle safety posters.

**Contact:**

AAA of Missouri, Illinois, Arkansas and Kansas

Mike Right, Public Affairs

12901 N. Forty Drive, St. Louis, MO 63141

(314) 523-7350 extn. #6300

➤ *Bicycle Safety: A Message to Parents, Teachers and Motorists*

A fact sheet from the U.S. Department of Transportation, National Highway Traffic Safety Administration on roles that adults can play in educating children on safe bicycling behavior. Free.

**Contact:**

National Highway Traffic Safety Administration

(NHTSA) Region VII

P.O. Box 412515, Kansas City, MO 64141

(816) 822-7233

➤ *10 Smart Routes to Bicycle Safety*

A small booklet/handle bar hang-tag for adult or young adult riders. Addresses 10 tips for safer riding. Brochure is designed to be customized with local organization name. Free.

**Contact:**

NHTSA Region VII (see above)

➤ *Bicycle Safety: What Every Parent Should Know*

An excellent four-page guide for parents concerned with their child's safety. Explains common accident types involving

children and presents simple activities and lessons for parent/child interaction. Available for bulk purchase: 25 for \$35, 100 for \$90, 500 for \$140, plus shipping/handling. Can add local organization logo information.

**Contact:**

Adventure Cycling Association  
150 E. Pine Street  
P.O. Box 8308, Missoula, MT 59807-8308  
(406) 721-1776

➤ *Street Smarts: Bicycling's Traffic Survival Guide*

A 39-page booklet for the adult/commuter bicyclist. An excellent, illustrated reference for basics such as bicycle maintenance and where to ride on the road, as well as getting through intersections, riding in groups, dealing with tough situations, and riding in rain and darkness. Available for \$0.30 each, prepaid by check to Rodale Press.

**Contact:**

Bicycling Magazine  
33 E. Minor Street, Emmaus, PA 18098  
1-800-848-4735, extn. #8291 or (610) 967-5171

➤ *Way To Ride! Parents' Guide and Kid's Guide*

The National PTA, Sports Illustrated for Kids, and Cycle Products Company have teamed to produce two bicycle safety resources for PTA use. *A Kid's Guide to Cycle Safety* is an exciting four-color booklet that features a panel of young cycling experts telling about rough spots they've been in and games that test kids' knowledge of bike safety. The second publication is a *Parents' Guide* full of crash statistics and tips on how to size a helmet, stage a bicycle rodeo, fix a bike and create bicycle-friendly changes in your community.

Cycle Products Company makes quantities of the brochures available for the cost of shipping handling: \$0.12 for each *Parents' Guide* and \$0.15 for each *Kids' Guide*. Also available are *Kid's Bike Safety Tip Cards*, which cost \$1.00 for each order of 25.

**Contact:**

WAY TO RIDE! BIKE SAFETY

P.O. Box 280, Babylon, NY 11702

attn: Wanda Villodas (312) 670-6782 extn #371

➤ *The Ride Safe Take Home Bicycle Rodeo Guide*

More than a brochure, this 18-page booklet is actually a take-home "Bicycle Rodeo" for parents and children to do together. The guide provides step-by-step instructions on how to conduct a take-home rodeo, contains the actual rodeo lessons, and offers sample letters, awards, statistics and other information to assist teachers in implementing the program. Each of the four lessons includes instructions for parents, background information on the skill to be learned and a parent/child activity.

This copyrighted guide may be purchased individually for \$9.99 plus shipping costs, or may be obtained with permission to copy the take-home lessons for school groups or other organizations as part of Ride Safe's group helmet purchase/promotion program.

**Contact:**

Ride Safe, Inc.

30W260 Butterfield Road, Warrenville, IL 60555

1-800-285-RIDE Fax: (708) 393-4905

➤ *1996 Kansas Bicycle Guide*

A map depicting recommended bicycle routes in the State of Kansas, traffic volumes to be expected on State and U.S. Highways, and bicycle safety tips.

**Contact:**

Bicycle and Pedestrian Coordinator, Kansas Department of  
Transportation

217 SE 4th Street

Topeka, KS 66604

(913) 296-7448

or, obtain a copy at Kansas Tourist Information Centers

### Special Events

A popular event to promote bicycle safety and education is the bicycle rodeo. Costs to put on a half-day rodeo are minimal as the events are often sponsored by civic organizations with the aid of private donations and in-kind contributions. The bicycle rodeo may be customized to fit the needs of a local community or a specific age group by using the following resources:

➤ *A Guide to Bicycle Rodeos*

This is the best bicycle rodeo resource available. The 48-page guide provides all the information needed to plan, fund, set up and operate a successful rodeo based on safety and accident prevention. Cost: \$5.00 + \$2.00 shipping and handling.

**Contact:**

Adventure Cycling Association  
150 E. Pine Street  
P.O. Box 8308, Missoula, MT 59807-8308  
(406) 721-1776

➤ *Bicycle Rodeo Kit*

This kit contains the above rodeo guide, station posters and test rulers to check kids' braking reaction times, as well as enough materials for 100 rodeo participants – including take-home workbooks, brochures, bicycle check cards, certificates of achievement and bicycle driver's licenses. Kits are available for \$185; and refills of 100 each of the six take-home materials are \$125.

Individual books and brochures may also be purchased separately, as well as orange traffic cones. Prices depend on quantity ordered. Booklet covers may be customized with local organization name and contact information. Publication selection includes:

.....	<i>Best Bicyclist on Earth</i>	\$0.75-\$0.99
.....	<i>Bicycle Driver's Guide</i>	\$0.75-\$0.99
.....	<i>Bicyclist's Guide</i>	\$0.67-\$0.89
.....	<i>Team Helmet Bike Safety Book</i>	\$0.33-\$0.59
.....	<i>Safe Feet Coloring Book</i>	\$0.51-\$0.69
.....	<i>Guide to Bicycle Rodeos</i>	\$4.25-\$5.00
.....	<i>Ten Little Bike Riders brochure</i>	\$0.17-\$0.22

..... <i>Ten Little Pedestrians brochure</i>	\$0.17-\$0.22
..... <i>Helmet Habit brochure</i>	\$0.17-\$0.22

**Contact:**

Outdoor Empire Publishing, Inc.  
 Melanie Rudnick, Publications Consultant  
 511 Eastlake Avenue East, Seattle, WA 98109  
 (206) 624-3845 Fax: (206) 430-9816

**Helmet Promotion Campaigns**

➤ *Kansas City Safe Kids Coalition / Safety and Health Council*

These two western Missouri/Kansas organizations have teamed with helmet manufacturers to inexpensively offer protective head gear for the whole family – less than half of most retail prices. The organizations can also help with organizing a group helmet program, recommending educational resources, or scheduling speakers.

**Contact:**

The Safety and Health Council of Western MO and KS  
 901 Charlotte, Kansas City, MO 64106  
 (816) 842-5223

The following are available through the National Safe Kids Campaign. Prices reflect member/non-member prices respectively:

➤ *Bike Helmet and Bike Safety Awareness Strategy* \$15/\$30

A comprehensive, step-by-step guide for implementing a community-based bike helmet and bike safety program.

➤ *Bike Helmet Injury Prevention Kit for Medical Professionals* \$19.99

A kit specifically designed for medical professionals to encourage the use of bicycle helmets by their patients. Contains posters, brochures, "prescription pads," pledge cards and helmet discount coupons.

➤ *Bike Helmet Teachers Guide* 50 for \$20/\$25  
Two-color, eight-page guide for elementary school teachers including a take-home section for parents and a bike safety game for kids.

➤ *TV Public Service Announcements* \$21 each/members only  
Two PSAs are available: "Michael Wears His Helmet" for parents and "This Bike is Missing" for kids.

**Contact:**

The National Safe Kids Campaign  
Children's National Medical Center  
111 Michigan Avenue, NW, Washington, DC 20010  
(202) 939-4993

➤ *Use Your Head and Wear a Helmet*

From Snell, the organization dedicated to public safety testing, a four-color brochure on helmet safety. Available in English, French and Spanish. Quantities up to 500 are free; \$10 shipping and handling charge for 500-1000 copies. Also available are "Wear Your Helmet" pins. First 50 are free; \$5 charge for each additional 50.

**Contact:** Snell Memorial Foundation, Inc.  
P.O. Box 493, St. James, NY 11780  
(516) 862-6440

## Curriculum

➤ *The Basics of Bicycling*

This curriculum is designed to give upper elementary school students a foundation of knowledge and skills in traffic-wise bicycling. It features on-bike riding lessons and skills testing in a simulated traffic environment. Program can be conducted as part of regular classes, or as an extra-curricular event.

Highlights include:

- Targeted to the 4th Grade level.
- Requires seven 40-minute class periods: two in-class video lessons combined with five on-bike sessions.
- Works most effectively with 12-20 students on bicycles.

- Includes a 20-minute teacher training segment. The Bicycle Federation of America can also be contracted to provide group training workshops for teachers.
- Costs are: \$99.00 per video and lesson book. Additional costs may include student bicycles, helmets and other supplies.

**Contact:** Bicycle Federation of America  
 1506 21st Street NW, Washington, DC 20036  
 (202) 463-6622

➤ *Effective Cycling Program*

This adult bicycle education course, originally developed by John Forester, is sponsored nationwide by the League of American Bicyclists. Was originally designed as a comprehensive series of 11 three-hour sessions on equipment, riding skills, operating in traffic and different cycling techniques. Due to the extensive level of commitment involved in taking this course, scaled-down workshops and one-day short courses are now taught for various skill levels, including individual sessions for kids, commuters, and recreational riders.

The League of American Bicyclists maintains a list of qualified instructors within Kansas, and can provide information on how interested persons may become certified instructors.

**Contact:** League of American Bicyclists  
 190 W. Ostend Street, Suite 120  
 Baltimore, MD 21230-3755  
 (410) 539-3399 Fax: (410) 539-3496

## **Bicycle Education for Professionals/Public Officials**

### **Workshops and Short Courses**

➤ *Bicycle Planning and Facility Design*

This two- to three-day course covers the basics of bicycle planning with an emphasis on facility selection and design and an understanding of bicyclists needs. It is directed toward both planners and engineers. The course is offered annually at the Traffic Institute, at a cost of \$450. It can be scheduled at other locations as well, in which case the fee would be negotiable. The instructor is one of the

best known expert witnesses in the field of bikeway liability, and can also be scheduled to provide training on this issue. For upcoming course locations, schedules and costs contact Alex Sorton at

The Traffic Institute of Northwestern University  
405 Church Street, Evanston, IL 60201  
(708) 491-5040

➤ *Bicycle Planning and Design*

This course is directed toward professionals as well as advocates and covers the basics of planning and design of facilities, bicycle accident types and the institutionalization of bicycle planning. It is offered upon request to government as well as private audiences. Both content and workshop length vary according to client needs. Usually a two-day format is used. The cost averages \$4,000 - \$5,000 for the two-day workshop which covers materials and two instructors. For details contact:

The Bicycle Federation of America  
1506 21st Street, NW, Suite 200, Washington, DC 20036  
(202) 463-6622

## Video Resources

➤ *Bicycle Friendly Communities*

A three-part video series celebrating bicycle-friendly communities, available for \$ 20. Part I provides an introduction and overview of bike-friendly communities that is ideal to show to elected officials, council meetings, public workshops, and similar events. Parts II & III provide more in-depth coverage on day-to-day applications. Contact:

The Bicycle Federation of America (see above)

➤ *North Carolina Bicycle Facilities Planning and Design Guidelines*

Following the successful development of a planning and design manual for the North Carolina Department of Transportation, the NCDOT is now developing an accompanying video to demonstrate good and bad design elements of bicycle facilities. The NCDOT facilities design manual is based on AASHTO design guidelines, therefore the 20-minute video will have application in all states.

Currently in production, the video is expected to be available late spring of 1995. For details contact:

NCDOT Office of Bicycle and Pedestrian Transportation

P.O. Box 25201, Raleigh, NC 27611  
(919) 733-2804

### Available Tools to Promote and Encourage Bicycle Use

#### ➤ *How To . . . Commute by Bicycle*

Two brochures have been developed by the League of American Bicyclists (formerly L.A.W.) for local groups and individuals to use to encourage riding to work. One is an employer's guide; the other an employee's guide. Available in bulk quantities, costs are \$1 each, from:

League of American Bicyclists National Office  
190 W. Ostend Street, Suite 120, Baltimore, MD 21230-3755  
(410) 539-3399

#### ➤ *Bicycling to Work*

This 1970s cycling video to encourage potential bicycle commuters is available on loan, or free copies may be received by sending a blank tape to the Environmental Protection Agency:

Ross Ruske, EPA Bicycle Coordinator  
U.S. EPA, 401 M Street SW, Washington, DC 20460  
(202) 382-2671

The 15-minute video is also available commercially for \$22.95.  
Reference Order #LS17:

Films for Educators  
420 East 55th Street, Suite 6U, New York, NY 10022  
(212) 486-6577

#### ➤ *Commute for Life*

An updated 1990s bicycling to work video produced by the Colorado Department of Transportation. While created in Colorado, the message is applicable anywhere. Copies of the 15-minute tape are available for \$10 each while supplies last, or a tape may be borrowed and copied free of charge by contacting:

Colorado DOT Bicycle/Pedestrian Program  
4201 E. Arkansas Avenue, Room 225, Denver CO 80220

(303) 757-9982

➤ *National Bike Month Organizer's Kit*

Each year May is proclaimed as National Bike Month. To assist local communities in sponsoring activities, an organizer's kit has been developed that contains ideas and planning advice on commuting events, bicycle rodeos, helmet promotions, charity rides, trail maintenance projects, and events designed to get local politicians and decision-makers out on bikes. Tips for working with the media, recruiting volunteers and evaluating programs are also included.

To order a copy of the kit, complete with sample posters, send \$8.00 plus \$2.75 shipping and handling to:

League of American Bicyclists National Office  
190 W. Ostend Street, Suite 120, Baltimore, MD 21230-3755  
(410) 539-3399

➤ *TV Spots*

The AAA Foundation for Traffic Safety has produced Public Service Announcements or PSAs to promote bicycle safety reminders and encourage bicycle use by the general public. \$40 per set from:

AAA Foundation for Traffic Safety  
1440 New York Avenue NW, Suite 201, Washington, DC 20005  
(202) 638-5944 or (800) 305-SAFE

➤ *Multi-Modal Accommodations*

Combining short bicycle trips with longer mass transit trips has proven to be very a successful form of encouragement in several U.S. communities that have implemented pilot bikes-on-buses programs. A two-bike rack that is installed on the front of buses has since been commercially developed that offers several convenient features for bicycle users, bus operators and maintenance personnel.

For product specifications and a demonstration video contact:

Lisa Robinson, Product Manager, Sportworks NW, Inc.  
15500 Wood-Red Road, NE #C-600, Woodinville, WA 98072

(206) 483-7000

As a final means of encouraging increased bicycle use, Manhattan may achieve a "bicycle friendly" distinction through the following program:

➤ *Bicycle Friendly Communities Program*

Sponsored by the League of American Bicyclists, this program requires communities to undertake four activities to qualify:

1. Institute a written policy for developing and maintaining bicycle-safe streets, facilities and trails.
2. Budget \$1 per capita per year on bicycle facilities and events.
3. Observe National Bike Month and National Bike to Work Day.
4. Designate a bicycle coordinator on staff and convene a citizen's Bicycle Advisory Committee.

In addition, award-winning communities must also focus on safety education, pro-bike publicity, improved bicycle parking and/or grassroots advocacy. The program is similar to the "Tree City USA" program, whereby communities receive "Bicycle Friendly Community" road signs and other recognition.

**Contact:** League of American Bicyclists  
190 W. Ostend Street, Suite 120, Baltimore, MD  
21230  
(410) 539-3399 e-mail: BikeLeague@aol.com

**Available Tools to Assist in Enforcement Efforts**

➤ *The Law Is for All*

This 11-minute video for law enforcement officials was recently developed by the League of Michigan Bicyclists to demonstrate the need to enforce and teach safe bicycling practices, especially for children. The video conveys the importance of enforcing laws equally on bicyclists and motorists, and focuses on common causes of bicycle crashes. Accompanying the video is a brochure *The Law's for All: The Case for Bicycle Enforcement* which answers questions on why police don't always enforce bicycle laws and provides crash statistics and bicycling enforcement start-up strategies.

Cost is \$14.95 plus \$3.25 shipping and handling for one video tape and 50 copies of the police officer's brochure. L.A.B. will

also provide additional brochures for \$5/100 or camera ready slicks for \$10/set. Orders may be placed by calling toll free 1-800-288-BIKE or sending a check to:

League of American Bicyclists  
190 W. Ostend Street, Suite 120, Baltimore, MD 21230-3755

➤ *International Police Mountain Bike Association (IPMBA)*

For officers seeking training to become a cop-on-bike, the International Police Mountain Bike Association has developed a program to assist police departments in using bicycles for patrol purposes. A standardized 4-day training course exists for bicycle patrol officers, based on the *Effective Cycling* program. It is taught by certified police cyclist instructors who cover all aspects of equipment, cycling techniques and on-bike procedures.

Or, for additional details or information on IMPBA membership contact Jennifer Horan at:

League of American Bicyclists National Office  
190 W. Ostend Street, Suite 120, Baltimore, MD 21230-3755  
(410) 539-3399

➤ *College Campus and Community*

*Bicycle/Pedestrian Safety Development Team Workshop*

This course is intended for campus and college community law enforcement and public safety professionals. A two-day workshop covers the basics of pedestrian and bicyclist needs, accident counter measures, education strategies, law enforcement and legal aspects of bicycle and pedestrian safety. It also offers guidance on establishing an effective safety program.

Sponsored by the Florida Department of Transportation, registration is free and open to out-of-state participants, but the course is limited to 75 people. For dates and additional information:

Center for Professional Development, Florida State  
University  
555 W. Pensacola, Tallahassee, FL 32306-3037  
(904) 644-2925

➤ *Focused Enforcement Programs*

Acknowledging that police officers have a multitude of responsibilities, a focused bicycle enforcement program allows officers to concentrate on those select violations which frequently lead to accidents.

Recommended bicyclist infractions to focus on should include:

1. Running stop signs and traffic signals
2. Riding on the wrong side of the road
3. Riding on sidewalks where prohibited
4. Riding at night without a headlight
5. Failing to yield right-of-way.

Recommended motorist infractions to focus on include:

1. Speeding
2. Failing to yield when turning
3. Running stop signs and traffic signals
4. Exhibiting aggressive behavior towards bicyclists
5. Improper passing
6. Operating under the influence.

## Construction Cost Information

The following information is provided to assist the University and City in making *preliminary* bicycle facility construction cost estimates.

For each item, a range-of-costs per mile is provided, recognizing that costs can vary widely depending on site conditions, availability of materials, and fluctuation in the construction industry.

Costs are provided based on the type of construction most commonly used when implementing that type of facility. For example, on-road bicycle accommodations reflect costs that are incidental to the cost of a larger roadway construction project since these improvements are most likely to occur when roadways are being re-surfaced and/or widened. If bike lanes or paved shoulder improvements should be undertaken independently, their cost will likely be higher and must be based on a site-specific evaluation of existing conditions. Trail costs reflect project construction occurring independently of another project.

Costs are based on minimum facility widths as set in the 1991 AASHTO Guide for the Development of Bicycle Facilities.

The opinions of probable construction costs presented are *typical* project costs for the trail proper and do not include land acquisition, special facilities, or trail amenity items which vary from project to project, and may significantly influence final costs. These opinions are also based on a competitive or negotiated bid process, with the work being performed by an independent contractor - not by City or University staff.

Special facilities and project costs that will need to be added to each estimate based on site-specific feasibility studies include such items as bridges, pedestrian underpasses, utility relocations, traffic signalization, removal of railroad ties/track, landscape improvements, retaining walls, fencing, and other similar trail amenities. Other project costs to be added may include right-of-way acquisition, design and construction engineering, contract administration, site inspection, and contractor contingencies.

Based on the infinite number of variables that can influence the exact project cost on any given project, the following opinions of probable costs are recommended to be used only for initial planning purposes. Project construction budgets and grant applications should be based on a more detailed, site-specific

evaluation of each project. Likewise, annual updates and modifications to these 1996 figures will be required.

**Opinions of Probable Construction Cost:  
On-Road Bicycle Facilities**

- **4' Bike Lanes**  
Construct an additional 8' of roadway, incidental to roadway construction.  
\$125 - \$140,000/mile
  
- **4' Paved Shoulders**  
Paving of existing shoulders, both sides of rural roadway.
  - Paving, incidental: \$30 - \$35,000/mile
  - Paving, independent: \$35 - \$45,000/mile
  - Costs to widen shoulders, and modify drainage ditches: \$35 - \$40,000/mile
  - \$1 - \$2,000/driveway
  
- **Striping Bike Lanes**  
Thermoplastic markings, both sides: \$6 - \$7,000/mile
  
- **Signing Bike Routes**  
Ten route and/or regulatory signs: \$1 - \$2,000/mile

**Opinions of Probable Construction Cost:  
Off-Road Bicycle Trail Facilities**

- **10' Wide Multi-Use Trail**
  - Limestone screenings on ex. RR bed: \$25 - \$35,000/mile
  - Paving on ex. RR bed: \$70 - \$90,000/mile
  - Other sites without ex. base: \$110 - \$160,000/mile
  
- **Striping and Pavement Markings**  
Centerline and markings: \$2 - \$3,000/mile
  
- **Signing Bike Trails**  
Ten route and/or regulatory signs: \$1 - \$2,000/mile
  
- **Bicycle Bridges**  
Vary significantly per site requirements, length, aesthetics, & structural design: \$50 - \$75/s.f.

## Priorities Recommendations

This plan was designed to be implemented. The recommendations provided are achievable, both physically and politically. The community should strive to implement the recommendations of the *Bicycle Master Plan* within ten to fifteen years.

Any recommendations of priority projects should be viewed as a guideplan, and must remain flexible. Fluctuations in funding levels and sources, as well as project-specific opportunities and constraints may dictate re-organization of project priorities. For example, if another project comes forth which could implement some bicycle facilities, those projects should certainly go forward at that time.

The priorities recommendations of this *Plan* are designed around those projects which will result in the greatest benefits to the cycling community in the shortest amount of time with the most cost-effective solutions. Projects which improve safety for cyclists are Priority I.

Specific criteria used in the development of priorities recommendations include...

### City of Manhattan

- Projects which assist in the completion of the Linear Park "Interior Bicycle Loop".
- Projects which assist in improving bicycle safety and access, especially to the University campus.
- Projects which assist in improving access between various areas of the community, especially those which provide crossings of significant barriers.

### Kansas State University

- Projects which assist in improving bicycle safety and access around campus' central core.
- Projects which assist in improving understanding of campus bicycle regulations (ex.: removal of bicycle parking in restricted areas).
- Projects which assist in improving safety and access at campus boundaries.
- Projects that improve bicycle parking.

The following diagrams, Figures 5 & 6, indicate the recommended relative priorities of city and campus, respectively, bicycle projects. Priority I projects are those to be undertaken first, in an approximately

five year timeframe. Priority II projects are the next level of priorities, and Priority III projects are those which are long-term or which should wait for a companion project (such as a future roadway). These diagrams are also accompanied by a Summary of Priorities Recommendations for both the city and the University.

## Summary of Priorities Recommendations City of Manhattan

### Priority I Projects

- Linear Park Section (Browning Avenue west under Seth Child Road connecting to Hudson Trail - Access to Susan B. Anthony Middle School)
- Anderson Avenue (Wreath Avenue to Anneberg Park)
- North Manhattan Avenue (Moro Street to Kimball Avenue)
- Kimball Avenue (North Manhattan Avenue to Denison Avenue)
- Denison Avenue (Laramie Street to Kimball Avenue)
- Laramie Street (North Manhattan Avenue to Sunset Avenue)
- McCall Road/Thurston Street (Hayes Drive to North Manhattan Avenue)
- Hayes Drive (Casement Road to McCall Road)
- Vattier Street (North Manhattan Avenue to 4<sup>th</sup> Street)
- Ratone Street (North Manhattan Avenue to Juliette Avenue)
- 17<sup>th</sup> Street (Anderson Avenue to Poyntz Avenue)
- South Manhattan Avenue (Linear Park Trail to Houston Street to 14th Street to Anderson Avenue)
- College Heights Road (College Avenue to Denison Avenue)
- Claflin Road (Seth Child Road to Denison Avenue)
- Dickens Avenue (Hudson Avenue to College Avenue)
- College Avenue (Kimball Avenue to College Heights Road)
- Browning Avenue (Marlatt Avenue to Claflin Road)
- Linear Park Section (Browning Avenue at Lawrence Road to College Avenue)

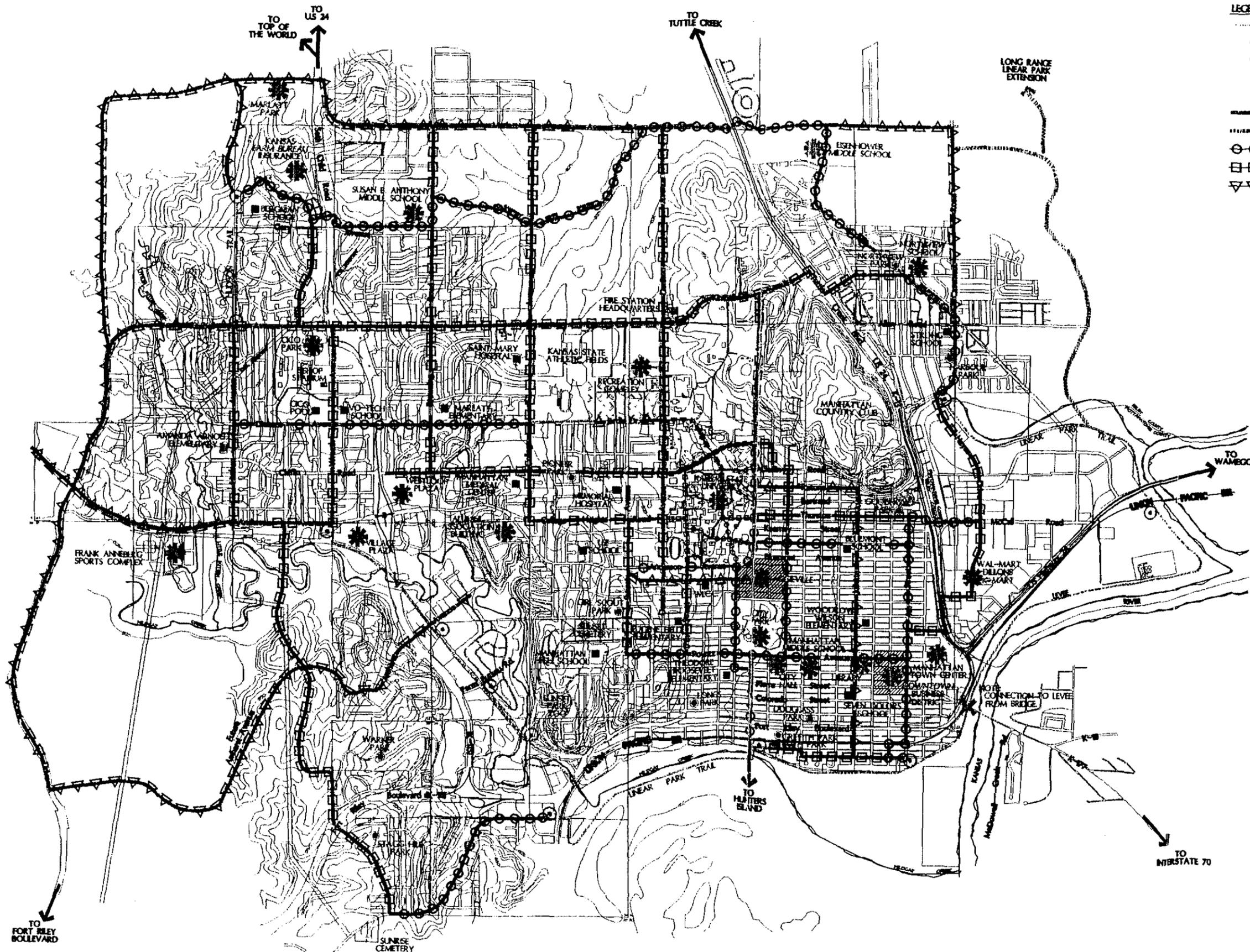
### Priority II Projects

- 11<sup>th</sup> Street (Claflin Road to Poyntz Avenue)
- Claflin Road (11<sup>th</sup> Street to North Manhattan Avenue)
- McCain Lane (Claflin Road to Pioneer Lane)
- Pioneer Lane (McCain Lane to North Manhattan Avenue)
- Leavenworth Street (Tuttle Creek Boulevard to 11<sup>th</sup> Street)
- Tuttle Creek Boulevard Frontage (Sarber Lane to Leavenworth Street)
- Sarber Lane (Hayes Drive to Tuttle Creek Boulevard Frontage)
- Hayes Drive (McCall Road to Sarber Lane)
- 4<sup>th</sup> Street (Thurston Street to Riley Street to Pottawatomie Linear Park Entrance)
- Poyntz Avenue (Manhattan High School to the Mall)
- Sunset Avenue (Poyntz Avenue to Claflin Road)
- Stagg Hill Road (Davis Drive to Linear Park Trail)
- Amherst Avenue (Linear Park to Fairman Drive)

- Claflin Road (Hudson Avenue to Seth Child Road)
- Wreath Avenue (Anderson Avenue to Kimball Avenue)
- Hudson Avenue (Kimball Avenue to Anderson Avenue)
- Kimball Avenue (Hudson Avenue to Denison Avenue)
- Candlewood Drive (Kimball Avenue to Gary Avenue)
- College Avenue (Marlatt Avenue to Kimball Avenue)
- Denison Avenue (Kimball Avenue to Marlatt Avenue)
- Kimball Avenue (North Manhattan Avenue to Tuttle Creek Boulevard)
- Griffith Drive (R/W Easement to Brockman Street)
- Brockman Street (Griffith Drive to Ewing Road)
- Ewing Road (Brockman Street to Tuttle Creek Boulevard)
- Casement Road to Marlatt Avenue via R/W Easement from Linear Park to Eisenhower Middle School
- Marlatt Avenue (Eisenhower Middle School to Browning Avenue)

### **Priority III Projects**

- Juliette Avenue (Ratone Street to Pottawatomie Avenue)
- Pottawatomie Avenue (5<sup>th</sup> Street to South Manhattan Avenue)
- East on K-177 to K-18 and McDowell Creek Road
- Casement Road (Utility Easement to Marlatt Avenue)
- Marlatt Avenue (Eisenhower Middle School to Casement Road)
- Anderson Avenue (Anneberg Park to Scenic Drive)
- Anderson Avenue (Scenic Drive to the West)
- Kimball Avenue (Hudson Avenue to Anderson Avenue)
- Future Hudson North Trail
- Northwest Trails
- Fairman Drive (Anderson Avenue to Warner Park Road)
- Scenic Drive (Anderson Avenue to Future Amherst Avenue)
- Future Amherst Avenue



- LEGEND:**
- ⊙ Existing Bicycle Path
  - ⊙ Existing Trail Access Points
  - ★ Major Destinations
  - Secondary Destinations
  - ⊙ Parks
  - ⊙ Proposed Bicycle Route
  - ⊙ Proposed Linear Park Trail
  - ⊙ Priority I Projects
  - ⊙ Priority II Projects
  - ⊙ Priority III Projects

**landmark engineering**  
 LANDMARK ARCHITECTURE  
 & CIVIL ENGINEERING  
 COMMUNITY PLANNING  
 & SURVEYING  
 1001 W. WAGGAMAN, SUITE 200  
 LAWRENCE, KANSAS 66044  
 PHONE: 785-843-7300  
 FAX: 785-843-8407

**Bicycles &**  
 877 FORTSMITH  
 COLLEENWOOD, MISSOURI 64044  
 PHONE: 781-381-8100  
 FAX: 781-381-8100

# BICYCLE MASTER PLAN

## Manhattan, Kansas

Bicycle Master Plan  
 for Kansas State  
 University  
 & Manhattan, Kansas

**FIGURE 5:**  
 Recommended  
 Project Priorities  
 Manhattan, Kansas

**SYMBOLS**

⊙	Existing Bicycle Path
⊙	Existing Trail Access Points
★	Major Destinations
■	Secondary Destinations
⊙	Parks
⊙	Proposed Bicycle Route
⊙	Proposed Linear Park Trail
⊙	Priority I Projects
⊙	Priority II Projects
⊙	Priority III Projects

DATE: 5/25/90  
 PROJECT NO: 0305-00  
 DESIGNED BY: SAU/GAR  
 DRAWN BY: SAU/GAR  
 CHECKED BY: NEM



# Summary of Priorities Recommendations

## Kansas State University

### **Priority I Projects**

---

- Vattier Street (North Manhattan Avenue to 17th Street)
- Mid-Campus Drive (Lovers Lane to Petticoat Lane)
- Oak Drive (Lovers Lane to Vattier Street)
- Oak Drive Extension (Vattier Street to Anderson Avenue)
- 17th Street ( Anderson Avenue to Durland & Durland to Claflin Road)
- Claflin Road (Sunset Avenue to North Manhattan Avenue)
- College Heights Road (17th Street to Denison Avenue)
- Lovers Lane (Oak Drive to North Manhattan Avenue)
- Petticoat Lane & Campus Creek Road
- Mid-Campus Drive (Petticoat Lane to McCain Lane)
- Jardine Drive /McClain Lane (to Mid-Campus Drive)
- South Mid-Campus Drive & Road Between Union Parking Lots
- Street Between Derby and Van Zile (to North Manhattan Avenue)
- Bicycle Parking east of Bushnell Hall
- Bicycle Parking south of Farrell Library
- Bicycle Parking north of Kedzie Hall
- Bicycle Parking along Oak Drive Extension
- Bicycle Parking at Holton Hall
- Bicycle Parking at Bluemont Hall
- Bicycle Parking west of King Hall
- Bicycle Parking at Moore, Ford, West, and Haymaker Residence Halls
- Bicycle Parking at Van Zile
- Bicycle Parking at Marlatt and Goodnow Hall
- Bicycle Parking South of Seaton Hall
- Bicycle Parking southeast of Durland Hall
- Bicycle Parking between Dole Hall and Call Hall
- Provide air pumps at bicycle parking areas (20)
- Light bicycle parking areas
- Provide parking lockers for Residence Halls (40)

### **Priority II Projects**

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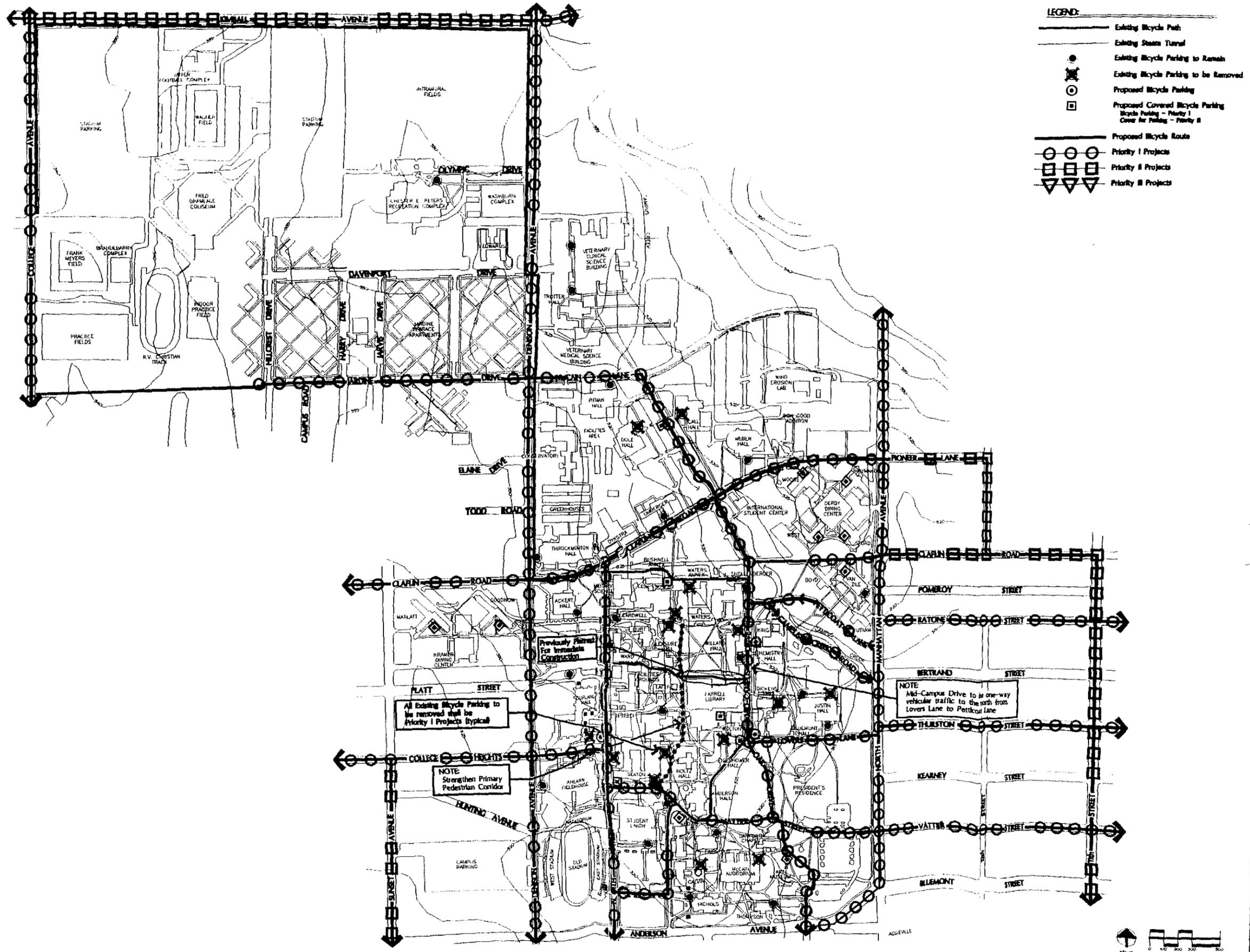
- Remove remaining old racks with new style racks

### **Priority III Projects**

---

- Add hard surface to all remaining parking areas
- Covered Bicycle Parking east of Bushnell Hall
- Covered Bicycle Parking south of Farrell Library
- Covered Bicycle Parking north of Kedzie Hall
- Covered Bicycle Parking along Oak Drive Extension

- Covered Bicycle Parking at Moore, Ford, West, and Haymaker Residence Halls
- Covered Bicycle Parking at Van Zile
- Covered Bicycle Parking at Marlatt and Goodnow Hall
- Covered Bicycle Parking South of Seaton Hall



- LEGEND:**
- Existing Bicycle Path
  - Existing State Tunnel
  - Existing Bicycle Parking to Remain
  - ⊗ Existing Bicycle Parking to be Removed
  - Proposed Bicycle Parking
  - Proposed Covered Bicycle Parking
  - Proposed Bicycle Route
  - Priority I Projects
  - Priority II Projects
  - ▽ Priority III Projects

All Existing Bicycle Parking to be removed shall be Priority I Projects (typical)

NOTE: Strengthen Primary Pedestrian Corridor

Previously Planned For Immediate Construction

NOTE: Mid-Campus Drive to be one-way vehicular traffic to the south from Lovers Lane to Petticoat Lane

MANHATTAN ARCHITECTURE  
 2000 UNIVERSITY AVENUE  
 MANHATTAN, KANSAS 66506  
 PHONE: 785-243-4400  
 FAX: 785-243-4400

**Bicycles &**  
 871 POSTERITE  
 MANHATTAN, KANSAS 66506  
 PHONE: 785-243-4400

# BICYCLE MASTER PLAN

## Manhattan, Kansas

Bicycle Master Plan for Kansas State University & Manhattan, Kansas

FIGURE 6: Recommended Project Priorities Kansas State University

DATE: 02/27/06  
 PROJECT NO.: 0400000  
 DESIGNED BY: KAW/CAR  
 DRAWN BY: KAW/CAR  
 CHECKED BY: KAW  
 SHEET NO.: 6 OF 6

## Kansas State University

Dykstra Hall  
Office of Facilities Planning  
Manhattan, Kansas 66506

Post-It* Fax Note	7671	Date	6/13/96	# of Pages	11
To	Mark Moore	From	Mark Taussig		
Co./Dept.		Co.			
Phone #		Phone #			
Fax #	816 931 4213	Fax #			

### Bike Survey Results and Summary

The enclosed Bicycle Survey was administered to 63 participants. The survey is designed to focus on current Bicycle safety concerns, riding habits, and to identify areas for future expansion / improvements. The survey was administered on May 15, June 7, 10, and 11 1996. The survey was administered on campus, to random student participants (51 Undergraduate, 12 Graduate). The sample size was 63 participants, of which 37 were male and 26 were female. The survey results included raw data collected from prepared questions, and a closing question offering participants the opportunity for further comments.

The sample participants bicycled to work, school, local parks / recreation, and for general recreation. General concerns when bicycling were : Too many vehicles on roads, roads are narrow, motorist aggressiveness, unsafe crossing at intersections, trails and sidewalks are too congested, the lack of bicycle lanes and routes, potential theft on campus, and the availability of bicycle parking. Bicyclists cited several improvements that could encourage bicycling on and to campus : Designated bike lanes / routes, safe crossings at intersections, better road surfaces, visible bicycle route signage, and educating motorists to be aware of fellow bicyclists on local roads.

### Campus Concerns

The survey exposed several concern areas. Participants in campus bike riding in general are confused on the campus bicycle regulations and local safety issues. The survey discovered that only about 20 % of the survey participants have registered their bicycles with the university. Currently, the university does not charge a fee for bicycle registration. Participants expressed concerns about the possibility for paying registration fees, and the benefits of registering.

Access through and around campus was a major concern. Survey participants expressed confusion on regulations governing bicycle access to campus sidewalks. Several areas of campus that experience high rates of pedestrian traffic and bicycle traffic are governed under a Dismount Zone regulation, between the hours of 7:30 am - 5:30 pm Monday - Friday. Bicyclists are in direct discord with this regulation. Bicyclists preferred setting a standard for campus walkways; either pedestrian dedicated walkways or shared access to walkways. Bicyclists surveyed preferred having designated paths and routes dedicated to their campus access. This approach separates bicyclists and pedestrians, reducing the opportunity for pedestrian injury and offers unobstructed traffic flow across campus for

bicyclists. Paths and routes should offer direct access to centrally located buildings on campus.

Several safety issues were emphasized by the sample participants. Several campus areas were identified as being inadequately lit for dusk or evening riding. The following areas were identified as being inadequately lit : Mid Campus Drive in front of Anderson Hall, Manhattan Avenue, the path near the Presidents house and Lovers Lane, Denison, and areas around the library. Riders expressed interest in storing bicycles in well lit and easily accessible locations, next to educational buildings. Bicycle racks should be designed not to damage the bicycle. Well lit storage areas would promote personal safety, ease of locating racks, and lower the potential threat for bicycle theft.

## **Community Concerns**

The survey sample was collected during Summer Intersession, therefore included students who live Off Campus. The survey sample contained an even distribution of participants who lived less than five blocks from campus, and participants who lived more than five blocks from campus.

Survey participants who commuted to campus expressed safety issues traveling on local roads. Narrow roads and aggressive motorists minimize the travel area for bicyclists. Roads that contribute to East and West travel around campus need improvements to encourage bicycle traffic. These roads are used by bicyclists to cross the city of Manhattan. Survey participants stated that they travel on secondary roads to avoid vehicular traffic.

Students who access the adjacent roads to the campus, expressed interest in designating bike lanes / routes for travel. Several students suggested improving the road surfaces for better travel and safety. Safety concerns force bicyclists to route around potential traffic problem areas. If safe routes were available, survey participants expressed interest in bicycling on main access roads , such as Fort Riley Boulevard and Tuttle Creek Boulevard, to reach their destinations.

**The following are quotes of interest from the survey participants :**

"There should be a concerted effort to follow the vision of the campus master plan and make this a pedestrian campus, with vehicle traffic being kept on the fringes of campus. Two lane roads are at times of heavy traffic, too small for both bike and car, creating a big need for a good bike lane system."

"The lack of designated bike trails forces most bicyclists to ride on sidewalks and other high traveled pedestrian paths. Areas around the Union are especially dangerous - as there are no signs or organization to pedestrian / bicycle paths. Do not ticket cyclists riding on empty sidewalks even if within Dismount Zones."

"If there were separate lanes for biking and walking I would definately consider riding a bike on campus. Right now, its just too congested for me, and I am afraid of hitting people."

"I would really like to see safe crossings off campus, such as at the corner of College Avenue and Dickens Avenue. I would like to see more campus routes, ... would like to see some campus roads closed to vehicular traffic."

"This is the first Summer that I've been riding but I do not like the fact that you can't ride on the sidewalks. If you are careful, bikers and walkers should not have to be separate."

"Bike cops have harassed me for minor things like no light, while drunks in 2000 pound cars sped by -- seems like a misplaced priority."

"More bike paths on campus, so that one can make a "loop" around campus. What will happen with Mid Campus Drive by Farrell Library? It needs a bike path."

"I should not have to register my bike. We do not register our cars unless purchasing a permit."

"Do not ticket cyclists riding on an empty or lightly peopled wide sidewalk."

"I think an important concern is the location of storage and the possibility of theft seats, tires, - entire bike."

"I would ride, but I am concerned with hitting pedestrians."

"I usually only ride my bike to Campus in the Summer because I live close, wanted the exercise, and it was convenient."

"If there was not a cost for bike permits and storage areas, more people will ride and not drive."

"In general not enough bike paths. The path by Durland Hall floods quite often."

# Kansas State University

Dykstra Hall  
Office of Facilities Planning  
Manhattan, Kansas 66506



## Bicycle Survey

The Office of Facilities Planning will use your help to improve safety, access, and bicycle storage on campus. Thank you for your time and help in completing this survey.

### 1) You are an :

51 Undergraduate Student    12 Graduate Student    0 Faculty  
0 Staff    5 Manhattan Resident  
37 Male    26 Female

### 2) Your local address is :

7 On Campus    24 Within 5 Blocks of Campus  
33 More than 5 blocks from campus

### 3) Are you a Bicyclist on Campus ?

35 Yes    28 No

If Yes, for what major purpose do you ride ?

28 Commuter    13 On road recreation    12 Off road recreation

If No, why not ?

7 Choose not to bicycle    9 Drive to Campus    11 Walk to Campus  
8 Do not own a bicycle    0 Safety    3 Weather  
7 Distance       Other \_\_\_\_\_

4) Where would you like to ride a bicycle if safe routes were available ?

- |                                   |  |
|-----------------------------------|--|
| <u>21</u> Commute to work         | <u>47</u> Commute to school (in general) |
| <u>32</u> Commute between classes | <u>7</u> General shopping                |
| <u>23</u> Visit friends           | <u>38</u> Recreational ride on campus    |
| <u>29</u> Recreation Center       | <u>15</u> Errands                        |
| <u>24</u> Library                 | <u>7</u> Sporting events on campus       |
| <u>34</u> Local parks/recreation  | <u>   </u> Other _____                   |

DATA FROM DRAFT 3  
10 PARTICIPANTS

5) What would encourage you to ride more often ?

DATA FROM DRAFT 4  
53 PARTICIPANTS

Please rank the following list, from  
1 (Most Important) to 12 (Least Important).

# of #

	1	2	3	4	5	6	7	8	9	10	11	12		
37	9	3	1	1	0	2	0	0	0	0	0	0	Designated bike lanes/routes	7
6	17	7	3	5	6	0	3	0	0	2	0	0	Safe crossings at intersections	5
0	4	8	8	6	5	7	3	4	1	0	1	0	Better road surfaces	6
2	5	6	0	8	2	9	4	4	0	1	0	0	More convenient bicycle storage areas	7
2	5	10	5	5	4	6	5	5	1	0	0	0	Visible bicycle route signage	5
0	0	0	0	0	1	3	5	8	11	10	1	0	Campus bicycle safety education	1
2	1	3	6	8	7	3	6	4	3	4	0	0	Limit some walks to pedestrian only	3
1	2	2	4	2	6	4	4	9	8	5	0	0	Enforce bicycle/automobile laws	2
0	4	3	7	6	10	5	5	2	4	1	0	0	More bike storage	2
3	0	5	5	3	1	3	5	11	4	6	1	0	Weather protected parking	7
2	2	2	2	2	0	5	5	3	13	14	2	0	Improved campus maps (for routes and storage) and education	2
													Other _____	

6) Please assign a category number from the following list, expressing your opinion / concern with the following cycling topics :

DATA FROM DRAFT  
13 PARTICIPANTS

DATA FROM DRAFT 4  
53 PARTICIPANTS

- (1) Not concerned  
(2) Some concern  
(3) Moderate Concern  
(4) Very Concerned  
(5) Stops me from bicycling

	1	2	3	4	5		NOT WORRIED	SOME CONCERN	STOPS ME FROM BICYCLING
3	12	20	17	2		Too many vehicles on most roads	2	6	2
6	8	12	19	7		Roads are narrow/no shoulders	1	6	3
1	5	17	24	7		Lack of bicycle lanes/routes	1	8	1
2	18	11	22	1		Potential bicycle theft on campus	3	4	3
13	15	19	8	0		Long term (all day) storage on campus	3	7	0
10	13	25	5	2		Availability of bicycle parking	3	6	0
7	14	25	8	2		Convenience of bicycle parking	2	8	0
15	16	16	6	2		Weather is unpredictable/unpleasant	5	4	2
9	18	15	11	1		Road surfaces poor/not maintained	4	4	1
1	13	17	17	5		Motorists are aggressive towards cyclists	2	8	0
3	7	19	22	3		Unsafe crossing at intersections	4	5	1
18	12	12	10	2		Personal safety when bicycling alone	8	2	0
9	13	11	16	6		Trails/sidewalks too congested	5	4	1
22	14	13	5	0		Uncomfortable hilly routes	5	3	3
44	7	2	0	0		Too much physical effort to bicycle	9	1	0
40	11	1	1	0		No showers/lockers at destination	7	3	0
32	14	4	2	1		Inconvenient to ride	5	5	0
34	12	4	0	3		Travel distance is too far	4	6	0
51	1	1	0	0		I do not like bicycling	10	0	0

7) How often do you ride your bicycle ?

- 12 Several times per day      15 Several times per week  
10 Several times per month      20 Occasionally

8) What periods of the day do you most often ride ?

Please rank order the following list, from 1 (Most Traveled) to 5 (Least Traveled)

- \_\_\_ Morning    \_\_\_ Afternoon    \_\_\_ Early Evening  
\_\_\_ Night      \_\_\_ Weekends

	1	2	3	4	5
MORNING	26	5	7	3	8
AFTERNOON	3	15	12	8	2
EARLY EVENING	13	14	9	10	1
NIGHT	3	4	6	11	20
WEEKENDS	8	10	8	10	10

9) During what seasons of the year do you ride ?

- 50 Spring    50 Summer    44 Fall    12 Winter

10) What is the average distance of your bicycle trip ?

For On Campus Address :

<u>3</u> Campus boundary	<u>4</u> <1 mile
<u>4</u> 1-5 blocks off campus	<u>2</u> 1-2 miles
<u>2</u> > 5 blocks	<u>1</u> 2-5 miles
	<u>0</u> > 5 miles

For Off Campus Address :

<u>3</u> Campus boundary	<u>5</u> < 1 mile
<u>5</u> Within 1 - 5 blocks of home	<u>11</u> 1-2 Miles
<u>10</u> >5 blocks	<u>12</u> 2-5 miles
	<u>4</u> > 5 miles

11) How long is your typical ride ?

<u>16</u> < 15 minutes	<u>11</u> 30-60 minutes
<u>22</u> 15-30 minutes	<u>5</u> More than 1 hour

12) Approximately how many trips do you take per day ?

<u>30</u> Less than 1	<u>1</u> 5-10 trips
<u>23</u> 2-5 trips	<u>0</u> 10 or more

13) With whom do you usually ride ?

<u>32</u> Alone	<u>25</u> 1-2 people
<u>0</u> 3 or more people	<u>0</u> Organized Ride

14) What is the destination of your bicycle ride ?

<u>34</u> Commute to school (in general)	<u>5</u> General shopping
<u>13</u> Commute to work	<u>8</u> Errands
<u>19</u> Recreational ride on campus	<u>15</u> Recreation Center
<u>3</u> Sporting events on campus	<u>19</u> Visit friends
<u>22</u> Local parks/recreation	<u>7</u> Library
<u>0</u> Organized rides	<u>    </u> Other _____

15) Upon reaching campus, where do you secure your bicycle ?

47 Bicycle rack      4 Railing  
3 To pole / tree      8 Other secure place

If you use the University bicycle racks, which do you prefer :

23       27       3      F

If you do not use the University racks, why not?

3 Not in convenient locations      3 Potential damage to bicycle  
0 Racks are not secure      2 Not enough adequate storage spaces  
2 Other \_\_\_\_\_

16) Have you registered your bicycle with the university ?

9 Yes      44 No

If No, why didn't you register :

8 Was not aware of the registration process  
10 Inconvenient to register  
11 Was not aware of benefits to registering  
4 Was uncertain of any registration fees  
14 Chose not to register  
2 Other \_\_\_\_\_

17) Do you have a current copy of the University Bicycle Regulations ?

10 Yes      36 No

If No, do you know where to obtain a current copy ?

9 Yes      29 No

18) Do you wear a helmet when riding ?

11 Yes      42 No

If No, Why not ?

16 Helmet is uncomfortable      6 Cost prohibitive  
6 Not stylish or attractive      3 Other \_\_\_\_\_

19) If you bicycle at night :

Do you use a light on your bicycle ? 15 Yes 31 No

Do you wear reflective clothing ? 13 Yes 28 No

Do you travel only on university paths ? 17 Yes 24 No

Are the present paths and streets lit adequately for dusk and evening bicycling ? 15 Yes 25 No

If No, where is the most dangerous travel section ?

ANDERSON HALL, RESIDENTIAL AREAS, EDGE OF CAMPUS, BIKE ROUTE BY DURLAND

20) When bicycling you :

(Please check all that apply)

35 Stay on the main roads

12 Pick direct routes (across parking lots, open lawn areas, et cetera)

29 Route around potential traffic problem areas

7 Stay on campus

21 Bicycle during off peak times of vehicular commute

14 Bicycle during on peak times of vehicular commute

10 Frequently stop at many locations during one trip

21) Have you been involved in a bicycle related accident ?

4 Yes 51 No

If yes, the accident involved a :

   Pedestrian 2 Motor vehicle 1 Cyclist 1 Yourself

To what extent was medical treatment necessary ?

   None 3 First Aid    Emergency Room 1 Hospital admission

Was it reported to a Campus or City Police department ?

   Yes 4 No

22) As a bicyclist do you obey traffic laws ?

5/ Yes      5 No

23) Other helpful comments or concerns on bicycling on campus :

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**CITY COMMISSION AGENDA MEMO**  
**December 11, 1997**

**FROM:** Ron R. Fehr, Assistant City Manager

**MEETING:** December 16, 1997

**SUBJECT:** Bicycle Master Plan Adoption

**PRESENTERS:** Ron R. Fehr, Assistant City Manager

**BACKGROUND**

The City annexed the Kansas State University campus into the city limits in 1994. As part of the annexation agreement, the City/University Projects Fund was created to provide funding for projects that are deemed mutually beneficial to both the City and the University. Sales taxes and franchise fees collected on campus are eligible to be transferred into this fund. The projects are reviewed by the City/University Special Projects Fund Committee and ultimately reviewed and approved by the City Commission.

In 1996, the City Commission approved a contract with the University to provide \$84,000 in funding for bicycle and emergency vehicle related improvements on campus. As a part of that allocation, approximately \$26,000 was earmarked to develop a comprehensive City/University Bicycle Master Plan. University Administration, in conjunction with City Administration, hired the consulting firms of Landplan Engineering, of Lawrence and Overland Park, Kansas, along with Bicycles &, Inc., a Chicago-based bicycle consultant, to prepare a Bicycle Master Plan for the Kansas State University campus and the City of Manhattan. In addition to numerous meetings with University and City staff, the Consultants held public meetings at the K-State Student Union on April 30, 1996, and again on September 12, 1996. As a part of their review, the Consultants performed a bicycle tour of the campus and community and have made several recommendations in the proposed Plan.

The Manhattan Urban Area Planning Board reviewed the Bicycle Master Plan on August 18, 1997, and although they took no formal action, the Board encouraged the Plan to be adopted by the City Commission and implemented by all appropriate staff and boards. They also encouraged the assignment of a Bicycle Coordinator position within City staff. Likewise, the Parks and Recreation Advisory Board reviewed the Bicycle Master Plan on September 8, 1997, and also recommends adoption and implementation. The minutes of both board meetings are attached.

The City Commission reviewed the Bicycle Master Plan at its October 28, 1997, Policy Session. At that time, the Commission requested additional demographic information regarding bicyclists in Manhattan and other national data.

## DISCUSSION

Although we know the vast amount of bicycle riders in the community are centered around Kansas State University, very little data existed locally concerning bicycling in Manhattan. Some limited information was gathered by the Consultants in developing the proposed plan. (See pages 9-15 of the Bicycle Master Plan previously provided.) Thus, City Administration developed a non-scientific survey designed to gather information primarily from bicyclists, but also sought opinions from non-bicyclists. Survey ads were published in the Manhattan Mercury, the Kansas State Collegian, and on the City's Home Page (a copy is attached). Public Service Announcements were also accomplished on radio and television. As of Wednesday, December 10, 1997, a total of 418 surveys have been returned. These surveys represent 870 individuals and family members who own and utilize bicycles in Manhattan for some purpose. Attached is a complete report of the results of the survey for your review. In summary, 59% of the respondents commute to work by bicycle, 53% bicycle to and from school, 64% use their bicycles for some other form of transportation, and 88% bicycle for recreation and exercise. 81% of the bicyclists indicated they would ride more if conditions were made safer for them to ride. Bicyclists were asked to suggest what type of improvements would encourage them to ride more. A complete listing of their responses is attached.

Bike lanes were consistently mentioned as a needed improvement, along with adding separate paths, more bicycle parking, and increased educational efforts for everyone.

Responses were also received from 35 non-bicyclists, with 51% of those respondents supporting improvements for bicycle safety. A copy of those comments are attached, as well.

### K-12

In addition, a letter was mailed to the Manhattan schools regarding this issue. Responses indicate that, on a normal good weather day, there are 400-450 students bicycling, with over half of those occurring at the middle schools. It was noted that current District policy restricts those below third grade from riding bicycles to school.

Also attached, for the Commission's review, is information gathered from national sources. I am also aware that Commissioners have received considerable correspondence regarding this issue.

## **ALTERNATIVES**

It appears the City Commission has the following alternatives concerning the issue at hand. The Commission may:

1. Adopt the Bicycle Master Plan to use as a guide for implementing bicycle related improvements.
2. Reject the Bicycle Master Plan.
3. Modify portions of the Bicycle Master Plan to meet the needs of the Commission.
4. Table the issue.

## **RECOMMENDATION**

City Administration recommends adopting the Bicycle Master Plan. Adopting the guidelines in the Plan will make bicycling in our community safer. It will also send a message that bicycling is welcome not only for the thousands of students attending Kansas State University, but also for our children who ride to and from our schools, parks, and recreation facilities. Improvements will also assist motorists by more clearly defining and delineating routes and lanes. Implementation is feasible as opportunities to establish various aspects for the Plan arise through normal maintenance provisions and other aspects.

## **POSSIBLE MOTION**

Adopt the Bicycle Master Plan for the City of Manhattan.

RRF/wrs  
97267

Attachments:

1. Minutes of the August 18, 1997, Manhattan Urban Area Planning Board
2. Minutes of the September 8, 1997, Parks and Recreation Advisory Board
3. Bicycle survey from the City's Home Page
4. Complete report of the results of the survey
5. Bicyclists' comments
6. Non-bicyclists' comments
7. Information gathered from national sources

# DO YOU BICYCLE?

The City of Manhattan would like to know.

In order to determine whether or not designated bicycle routes and related improvements should be established, please complete this questionnaire and send it to the address below. If you have questions, contact the City Manager's Office at (785) 587-2404.

**1. Do you or members of your family own or ride a bicycle?**

\_\_\_ Yes \_\_\_ No

If yes, answer all that apply. How many in your family bicycle? \_\_\_\_\_

I (we) use bicycle(s) for:

A. Commuting to and from work.

\_\_\_ Often \_\_\_ Occasionally \_\_\_ Seldom \_\_\_ Never

B. Transportation to and from school (college, K-12)

\_\_\_ Often \_\_\_ Occasionally \_\_\_ Seldom \_\_\_ Never

C. Other transportation (i.e. paper route, personal business/shopping, ball practice, movie, etc.)

\_\_\_ Often \_\_\_ Occasionally \_\_\_ Seldom \_\_\_ Never

D. Recreation/Health and physical fitness benefits

\_\_\_ Often \_\_\_ Occasionally \_\_\_ Seldom \_\_\_ Never

E. Would you likely increase your frequency of riding if improvements were made to make bicycling safer?

\_\_\_ Yes \_\_\_ No \_\_\_ Uncertain

**2. What type of improvements would encourage you to begin or increase your bicycle riding?**

\_\_\_\_\_  
\_\_\_\_\_

**3. If you or your family members do not own or ride bicycles, do you believe improvements such as bicycle lanes/shoulders should be developed to improve safety?**

\_\_\_ Yes \_\_\_ No \_\_\_ Uncertain

Other comments: \_\_\_\_\_  
\_\_\_\_\_

**Thank you for taking time to complete this survey!**

**Mail to: City of Manhattan**

**ATTN: City Manager's Office**

**Results of the bicycle survey as of Wednesday, December 10, 1997.  
As of this time, there have been 418 surveys received.**

	<b>Number</b>	<b>Percent</b>
Number in family that bike	870	
Commute to and from work: Often	97	23%
Commute to and from work: Occasionally	84	20%
Commute to and from work: Seldom	66	16%
Commute to and from work: Never	173	41%
Transportation to and from school (college, K-12): Often	91	22%
Transportation to and from school (college, K-12): Occasionally	76	18%
Transportation to and from school (college, K-12): Seldom	55	13%
Transportation to and from school (college, K-12): Never	197	47%
Other transportation: Often	64	15%
Other transportation: Occasionally	126	30%
Other transportation: Seldom	80	19%
Other transportation: Never	151	36%
Recreation/health and physical fitness benefits: Often	199	46%
Recreation/health and physical fitness benefits: Occasionally	141	33%
Recreation/health and physical fitness benefits: Seldom	38	9%
Recreation/health and physical fitness benefits: Never	51	12%
Increase frequency if safer: Yes	311	81%
Increase frequency if safer: No	39	10%
Increase frequency if safer: Uncertain	35	9%

**Non-bicycle owners/riders responding who believe  
bicycle improvements should be developed to improve safety.  
35 respondents are in this category.**

Non-bikers - Safety improvements developed: Yes	18	51%
Non-bikers - Safety improvements developed: No	9	26%
Non-bikers - Safety improvements developed: Uncertain	8	35%

## Bicyclists' Comments

Connected routes instead of gaps at heavy intersections; more rugged trails.  
Bike lanes separate from roadways; extend Trail to Tuttle Creek Lake.  
Bike paths help w. safety and keeps bicycles away from vehicles: Need improvements.  
Bike lanes on streets and trails for recreation; Bicycling is healthy & good for the environment  
Need bike lanes, crossings & parking; Best use of CIP would be to add bike lanes yearly.  
Establish bike lanes & trails; complete linear park & spokes of the existing trail.  
Covered, hanging bike racks for parking, painted bike lanes on K177 bridge & in city.  
Safer bike routes/lanes for commuters; tried to commute from Northeast & gave up.  
Marked bike lanes; more lockable bike racks; spoke system from LP: Educate kids.  
Separate bike lanes or paths; We know persons who rely on bikes for transportation.  
I would ride my bicycle to work if there were safe bicycling areas.  
Educate car drivers on the rights of bicyclists; drain gates on new K-177 bridge are bad.  
Circle city w. LP; Add bike lanes on designated streets; Ft. Riley Blvd. Underpass is great.  
Complete & maintain LP; connect spokes across town; develop safe routes.  
Separate lanes for bicycles & stiff fines for vehicles who drive or park in bike lanes.  
Need bike lanes on E-W Streets; Bike improvements will help attract small high tech business.  
Need safe bike lanes & paths, more bike racks, please sweep streets.  
Safe streets: bike lanes, more vigilant police pres., and enforcement of speed limits for autos.  
Bike lanes, parking facilities, vehicle driver education, bike zones (posted).  
Linear Trail!  
Safe bike lanes, esp. routes to city and campus. Connector routes to Linear Park.  
Designated non-gutter bike lanes. More biking education for bikers & motorists. More parking.  
Trails that are marked, specifically for bikes.  
Off-street paths, links between Westloop and KSU, lack of barriers on paths.  
Bicycle lanes, paving Linear Trail.  
Bike sidewalks along TCB and FRB, crosswalk at TCB & Casement.  
Extend Trail from Anthony along Marlatt to Casement.  
A path/lane for bikes only.  
Bike lanes.  
Ads educating the public that bicyclists have rights on the road as they do in cars.  
Stop lights sensitive enough to register bicyclist, bike lanes, smoother streets along curb.  
Bike lanes on major streets.  
Interconnected bike lanes to allow safe access to all areas of town. Driver education.  
Safe areas and routes for bicycles only.  
Designated bike trails leading into the KSU and downtown areas. Safer areas to ride.  
Increased safety - bike lanes, more bike paths.  
Bike paths, more places to park a bike.  
Instead of routing around the school, need a better, safer way to get to class.  
Better bicycle routes.  
Safety, lanes.  
Safety from vehicular traffic, smooth riding surface. Developing bicycle routes.  
Distinct bike paths and public's education of bicyclists' rights to the road.  
Improve on-campus and shopping areas cycling facilities. Complete Linear Trail.  
Bike lanes on streets and bike paths around the City.  
More bike paths and lanes.  
Bike lanes on streets and surrounding roadways.

Designated bike only lanes or sidewalks. Bike racks around town.  
More bike lanes, greater public awareness of bikes.  
Marked bicycle paths.  
Improved street surfaces, required bike licensing, bike lanes on major streets only.  
City & Campus routes should take priority over trail improvements.  
Finishing the Linear Trail.  
Bike lanes and more bike trails in Manhattan.  
More trails around the City and metropolitan area.  
Bicycle paths and dedicated bicycle lanes.  
Well-marked paths and signs alerting drivers to bicyclists.  
Bike lanes/paths where kids could ride more safely/protected from auto traffic.  
Money should be spent on streets in need of repairs. Bicycle paths benefit to few people.  
Designated bicycle routes. Bicycle lanes, appropriate signage.<sup>2</sup>  
Connected trails for cyclists/pedestrians.  
A trail to avoid riding on Kimball Avenue.  
Safe shoulder on rural roads in Manhattan/Wamego/Junction City area.  
It would help if the streets were widened.  
Bike lanes, crossings, and signs.  
Marked bicycle paths.  
Bike lanes/paths.  
Dedicated bike lanes/routes; enforcement of traffic laws; education/awareness programs.  
There's no problem now, what's the big deal? Are bicyclists willing to pay for upgrades?  
Integrated system of bike lanes.  
Routes from the perimeter into and about the center of town. Complete Linear Trail.  
Bicycle paths parallel to many heavy traffic routes.  
Designated bike lanes. Create better access from west side to campus & downtown.  
Bike lanes with enforcement, bike only routes.  
Bike lanes. Drivers need to show greater courtesy & cyclists need to obey traffic laws.  
None.  
More bike lanes on major streets. Bike racks at Aggieville and Downtown.  
Timing of traffic lights.  
Bike routes/lanes set up in a functional pattern-leading to shopping areas & schools.  
A class to show how to and the safe of cycling to the community.  
Wider sidewalks with lines marked for bikes & pedestrians. Increased pub. of bike rules.  
Bike lanes/attention to paving problems which affect bikes, but not cars.  
More bike lanes.  
Bicycle lanes or trails.  
Bike paths intertwined throughout most neighborhoods in town.  
Bike awareness signs, bike lanes.  
Sand pickup ASAP in spring. Alternate paths in heavy auto traffic areas.  
Safety - bicycle paths.  
Stronger legs. Stop wasting our money.  
Live in Northview - access to KSU is limited.  
Safe bike paths to places we want to go-Downtown & Aggieville. Bike racks needed.  
Ways to safely reach locations in town (Wal-Mart, Westloop).  
Complete the bicycle trails.  
Street area designated for bicycle use. Traffic signals to detect bicyclists.

Fix potholes, etc. in pavement.  
Would ride more if didn't have to use major streets from west side. LT is out of way.  
Safer bike paths, more bike paths.  
Bike lanes on regular routes.  
Bike racks at more buildings, stores, and Post Office. Designated bike lanes.  
Safe, easily accessible bike path and/or sidewalks in neighborhood.  
Safer lanes for kids to bike.  
More trails for bikes only in town and elsewhere.  
Safer crossing across TCB, esp. at north end near Ehlers and Kimball.  
Bike lanes on shoulders that are kept clean & free of wide grate drains.  
Signage, lanes on busy streets & steep hills. Traffic lights that "sense" bikes.  
More dedicated lanes on busy streets.  
Train drivers to respect bikes as another vehicle. Bike lanes, if possible.  
More bike lanes/paths - better traffic control in existing areas.  
Bike lanes and Linear Park loops with access to other areas in town.  
A safe bike path.  
More trails/areas designated.  
More bike paths/trails - better lighting.  
More bike paths/trails - more convenient lighting.  
Well lighted pathways.  
Bike paths, eliminated unregulated intersections, driver & biker education.  
Traffic lights sensitive to bikes, bike lanes, routes to keep out of car traffic, safety improvements.  
More designated/protected lanes & paths. More parking areas for bikes. Incr. awareness.  
Bike lanes on high traveled roads.  
Drivers of cars are aggressive to bike riders. What can you do about this?  
Need more areas to ride that are not on streets such as trails and cement tracks.  
Bike lanes. Incr. awareness. Add BMX track or bike/skate ramps for children as a hobby.  
More bike lanes and recreation trails. BMX track.  
More recreation riding promotions. More trails. BMX track.  
Bike lanes on busy streets or bike paths to and from places in town.  
Bike paths.  
Easier access to Linear Trail. At least some lanes on main streets.  
Better signs for riding safety, better sidewalks & trails. Lanes near & around campus.  
Finish Linear Trail. Bike lanes or bike "town" routes.  
I'd rather pay taxes for bike paths than the useless traffic circles.  
Widened roads and paths/lanes that connect throughout the city-not just circle it.  
Bike lanes.  
A BMX track.  
Bike lanes on major streets.  
More bike racks. Better bike racks in Aggieville.  
Bike lanes, bike racks, more bike friendly town.  
Bike racks, lanes, more bike friendly community.  
Bike lanes, more bike racks.  
Auto awareness. Bike lanes, more bike parking.  
How will the bike paths be paid for?  
Connecting Anneberg Park with Linear Park trail.  
Complete Linear Park loop; finish leg to Anneberg Park.

Bike lanes, crossing at Holiday Inn on FRB for Linear Park  
Bike lanes throughout town or sidewalks to ride a bike on.  
Bike lanes along busy roads; coordinate bike policy with KSU.  
Safe crossing for TCB.  
Safer routes to campus and businesses.  
Bike paths away from city.  
More bike paths or bike lanes.  
Need safe place to ride bikes.  
More bike lanes along major roads.  
More sidewalks, bike paths.  
Bike lanes on the streets.  
Increased trails.  
Gross area is full of ditches and are dangerous. Bikers do not follow rules.  
More bike lanes.  
City pays too much money on bike routes. Work on Anderson Avenue instead.  
Bike paths and bike lanes.  
This would make people more aware that bikers have a place on the streets.  
Safe pedestrian & bike crossings on major streets & highways.  
Safe routes on major streets & residential areas.  
Would ride more if had more pathways.  
Bike pathways or large sidewalks around KSU Rec.  
Bike lanes, improve/additions to Linear Trail, better attitudes toward bikers from motorists.  
Designated bike lanes or paths.  
Bike lanes/paths to KSU from Northview & from east to west side.  
Easier, safer routes through town - especially Kimball Avenue.  
Bike lanes on streets and in parks; should build a route along the Kansas River.  
Bike lanes.  
Numerous bike lanes in downtown streets, as well as residential areas.  
If it was safer for kids to ride to and from places.  
Adding bike lanes would help us feel more safe.  
Create more bike lanes.  
Bike lanes marked on Kimball Avenue.  
We would love to have more off-road trails to ride on.  
Painted bike lanes, shoulders on roads, extending Linear Park.  
Bike paths or bike lanes.  
Wider streets to allow both cars & bikes to easily pass each other. Smoother streets.  
Bike paths at street side. Commuters pathway road side to Fort Riley from Manhattan.  
Slower cars-more aware, considerate drivers, a space protected to ride in.  
Bike lanes, overall awareness of bicyclers by drivers.  
Making roads safer for bicycles.  
Installation and maintenance of bike lanes.  
Awareness and ability to share the road are definite needs.  
Improved bike lanes throughout Manhattan.  
Sidewalk on west side of Denison  
More bike paths.  
Bike paths along major thoroughfares.  
More bike trails.

Bike lanes out of traffic - possibly bike trails in a park somewhere.  
Better lighting and adequate bike racks.  
More signs & better markings for bike paths on KSU campus and around town.  
More bike trails. Off-road trails.  
Bicycle paths along many streets.  
Better bicycle routes at K-State would help out a lot.  
Bicycle Master Plan improvements on North Manhattan Avenue.  
Maybe laws about wearing helmets or specifically marked bike paths.  
Safer roads and more bike paths - biking is dangerous in Manhattan.  
Fixing of paths, marking of paths.  
Teach drivers how to drive with respect to bicycles.  
Extension of Linear, more access points to Linear. Specified and marked routes in town.  
I do not live in Manhattan.  
Safer conditions for bikers. Dedicated lanes or trails.  
More and safer route for bicycle, better surfaces.  
Bike lanes.  
Trails/paths. Be aware most bikers are children, age exempt.  
Marked routes with signs & pavement markings on commonly used streets. Better lighting.  
Any improvement that reduces the competition to vehicular traffic would be great.  
Bike routes keeping bikes on streets. Bike signage, etc.  
More defined trails.  
Safety, visibility, convenience, connections to various places.  
Lighting along Denison/Manhattan/Anderson. Designated bike lanes.  
Bike lanes on the streets.  
Bike lanes off streets, i.e. away from cars; safer street crossings/intersections.  
More bike paths &/or routes to Linear Trail. Traffic awareness. Safe places to ride.  
More designated bike paths in city/campus, better lighting along routes & major crossings.  
Bike lanes along city streets and parking for bikes at destinations.  
Bike routes for safe biking. Funds for Anderson project should be spent on bike routes.  
More designated trails for biking. Traffic signs making motorists more aware of bicyclists.  
Safe pathways to major areas/clusters/destinations, safe areas to secure bike.  
Add more miles to Linear Trail.  
Bike friendly street crossings (lights), expand Linear Park, marked lanes on busy streets.  
A few major bike lanes.  
A separate bike lane should be implemented on all major roads.  
More in town paths, get rid of KSU bike cops.  
Bike routes through Manhattan.  
Better roads.  
Cheaper bicycle prices.  
Safer riding conditions.  
Bike trails.  
Traffic lanes for biking, lights, etc.  
Wider sidewalks w/lanes marked for bikes or wider streets w/bike lanes.  
Bikes are a main transportation and should be treated as such.  
Would like to be able to get to shopping areas and Linear Park safely.  
Bike lane routes to allow safe rides to & from all business districts and KSU.  
A way to get to Linear Trail more safely.

Safe routes to Mall & Downtown areas.  
Bike lanes leading to KSU & easy access from Northview to Bluemont Ave. & west.  
Bike lanes & make bike "rules of the road" known to all.  
Auto driver training, bike lanes, storm sewer grates, streets free from glass.  
Designated bike routes where don't have to fight traffic.  
Bike paths.  
Bike lanes.  
Designated paths.  
Create bike lanes on some existing streets.  
Off street lanes.  
More "off-road" trails; more bike trails; more bike lanes; more bike racks.  
Bike lanes, esp. on Anderson Avenue. Ideally clear to Keats.  
Protected lanes, especially to go Downtown.  
Making Wal-Mart/Dillon's area more accessible, traffic signal buttons accessible to bikers.  
Better awareness of cyclists and bike lanes on busier streets.  
Sidewalks with ramp-like edges. Wide bike lanes on roads-only for bikers.  
Bike lanes on Anderson or on main streets.  
Make designated existing streets into bike only. Make biking safer in Manhattan.  
Upgrading & maintaining bike paths. More reasonable rules & less restrictions on campus.  
Bike lanes physically separated from thoroughfares.  
Complete paving of Linear Trail. Also marked bike routes on city streets.  
Safety is most important. Sidewalks along busy streets-fast traffic.  
Routes that aren't dangerous for women & girls. Mandatory helmet law would be nice.  
Easy access, a safe place to ride in parks & quiet place like Linear Trail.  
More awareness that there are children riding bikes in the area.  
Bike routes through major roads as in European cities, nature trails.  
Stop light sensors more sensitive for weights of bicycles.  
Safer riding conditions within the city.  
Bike lanes on major thoroughfares.  
Increased equipment available for locking & leaving bikes, traffic lights activated by bikes.  
Safer routes to and from the University.  
Pathways across city, not just on streets.  
Bike lanes, improved sidewalks, allow bikes on City sidewalks, more bike routes.  
Safety-separation of bikes & cars. Completion of LT w/trails leading to high use areas.  
Training riders in the proper usage of roadways and the law.  
Bike lanes on major streets, a northern connection to Linear Trail.  
Have an off ramp on the Linear Trail near the Mall.  
Our neighborhood connected to others without crossing a highway.  
Safer roads.  
Thorns off trail, safety for children.  
Bike lanes.  
Designated lanes & awareness of bikers by other drivers (know the law).  
Bike routes.  
Bike lanes on roadways. Overpasses for bikers as well as pedestrians.  
Bike routes especially around KSU. Bikers are hard to see at night because of lighting.  
Delineated bike lanes on major streets.  
Bike paths.

Bike path/lane. Streets are too narrow for bikes and cars.  
Fix street corner ramps. Repave potholes in streets and sidewalks.  
Bike lanes, a BMX track would be a nice addition.  
Designated lanes on existing roads, more bike crossing signs. education of traffic laws.  
Bike lanes.  
More trails or sidewalks. BMX track.  
Expand Linear Park Trail, have bike parking in Downtown.  
Bike paths and accommodations on current roads and highways.  
Bike lanes.  
Bike lanes, more bike paths and trails (single track, etc.).  
Bike routes throughout City, safety education stressed.  
Continuous bike paths or sidewalks across town.  
Bike lanes.  
Enforcing traffic rules consistently would help.  
Slowly 1 street at a time, add bike lanes. This is not a top priority.  
Improvements on Linear Trail are great.  
Safety improvements and more paths.  
Bike lanes-real ones. Bike riding now very dangerous.  
Safe place to ride.  
Improved bike paths.  
Designated areas away from high volume traffic streets or marked lanes on busier streets.  
Better paths.  
Bike lanes.  
Self-motivation.  
More trails, especially like a loop around Manhattan.  
Bike lanes away from auto traffic.  
Smoother paths or roadways. Public awareness of traffic rules by drivers and bikers.  
Protected crosses at inters., bike paths to major parts of town, i.e. campus, Downtown, etc.  
Trails are a good idea, but cost too much. Roads need improved first.  
Bike path-Marlatt Avenue-would link LT. It's tough to ride beside highways w/no shoulder.  
Safer routes throughout the City.  
Safer routes to school and shopping areas.  
Bike lanes, bike trails (my first choice!).  
Safer bike lanes on major roads.  
Bike lanes.  
Pavement or cement.  
Bike paths - trails.  
Bikers should ride single file and observe traffic laws.  
Bike lanes.  
Bike lanes on major streets (i.e. Anderson, Claffin, Tuttle Creek Boulevard).  
Lights around park perimeter.  
Bike lanes.  
Bike lanes, bike racks in Downtown and Aggieville.  
Interconnected bike paths. Walk (mall) on Moro from 11th to Manhattan-no car/truck/bike traffic.  
Bike lanes.  
Real bike lanes/routes/trails-not lines along busy roads. Places to cross congested areas.  
Bike routes (pronounced).

More summertime trips.

More recreational bike courses, safer road areas for riding through town.

Bike lanes. Educating the public to yield to bikers.

Bike lanes on major roads, more (lots more) bike racks.

More street lights, more bike racks.

Safe bike lanes, more accessible routes.

Better paths, safer streets.

### **Non-bicyclists' Comments**

Money spent for bicycle lanes, etc. is an idiotic waste of money.

More commuter bicycle paths.

Don't be foolish as to spend \$1 million on bicycle lanes and trails. Need more imp. improvements.

Be a responsible government for a change.

Bikes routes are a good idea, but only in areas most frequently used by bikers.

Think of how many tax dollars will be assessed to people who do not ride bikes!

Would like to see something done about (adult) bike riders riding on the sidewalks.

Have cyclists pay for bike lanes w/licenses, tags & taxes.

Space set aside for bikes-either separate paths or along streets. Need more attention to bikes.

Would like to see sidewalks built to get bikers off the road. Continuous sidewalks.

Bike paths, safer crossings on major streets.

Bicyclists need to follow traffic & safety practices to a higher degree.

Trails.

Tax money could be better spent on turn lanes or arrows on lights systems.

**MINUTES**  
**MANHATTAN URBAN AREA PLANNING BOARD**  
**Work Session**  
**City Commission Room, City Hall**  
**Monday August 18, 1997**  
**7:00 p.m.**

MEMBERS PRESENT: Tom Phillips, Chairperson; Linda Morse, Jerry Reynard, Brad Fenwick

MEMBERS ABSENT: Carol Peak, Robert Stokes, Ray Weisenburger

STAFF PRESENT: Ron Fehr, Assistant City Manager; Eric Cattell, AICP, Senior Planner; Steve Zilkie, Planner

**CONSIDER THE MINUTES OF THE JULY 21, 1997, MEETING.**

Morse moved to approve the Minutes of the July 21, 1997 meeting as submitted. Reynard seconded the motion which passed (3-0-1), with Phillips abstaining because he was not at that meeting.

 **PRESENTATION AND DISCUSSION OF THE BICYCLE MASTER PLAN FOR KANSAS STATE UNIVERSITY AND THE CITY OF MANHATTAN**

Ron Fehr, Assistant City Manager, introduced the item, indicating that this was an opportunity for the Planning Board to review and comment on the *draft* Bicycle Master Plan which had been developed over the past year and a half. He said the comments will be forwarded to the City Commission when they consider the plan for adoption in approximately one month. He said the Bicycle Master Plan was funded through the University Project Fund as a joint effort of Kansas State University and the City of Manhattan. He introduced the consultant on the plan, Mark Moore, LandPlan Engineering.

Mr. Moore indicated that Manhattan had good start on a Bicycle Master Plan and that it has a large ridership within the community, due to Kansas State University. He indicated that the plan also benefited from the cooperative effort of the University and the City. He went over an outline of important factors to remember regarding bicycle plans. It is important to turn visions into reality and bike plans are not trail plans, because bicycles need to be viewed as another mode of transportation. He continued by giving an overview of the project process and the major recommendations in the plan.

During discussion the Board made the following comments. Reynard indicated that it appeared that more bicycle use occurs closer to the KSU Campus and that younger adults and children seem to use bikes less as a mode of transportation than when he was growing up. He suggested that it might be more important to place higher priority improvements closer to KSU. Mark Moore agreed generally, but cautioned that the City should also take advantage of providing bicycle friendly improvements with new developments throughout the City. Ron Fehr indicated that ridership is relatively high along the Linear Trail and around the various school sites.

Fenwick indicated that Eisenhower Middle School started out with two (2) bike racks and now has ten (10) to fifteen (15) bicycle racks, to keep up with demand and it appeared that most of the Northview students attending Eisenhower used bicycle transportation. Fenwick also identified the barriers that Tuttle Creek Boulevard poses to school children trying to access school locations.

Morse asked about the potential use of the old railroad right-of-way in the Northview area as a north/south bicycle route through the neighborhood. She felt it would help overcome some of the east/west barriers to accessing the Eisenhower Middle School. She also mentioned the importance of insuring that new developments provide bicycle and pedestrian improvements to connect them with other areas.

Phillips said he thought that the Bike Plan was a good combination of vision and good bike planning, and it also contained a lot of technical guidelines as well. He questioned which Board would be responsible for implementing the Plan.

Fehr indicated that the funding source for this project was in the University Project's Fund and that there had been two (2) years of improvements on campus for combination bicycle trails and emergency vehicle access. He said the Plan's recommended improvements would start on campus and then work their way out along the access nodes into the community. He said some of the improvements would be done through the University Project's Fund, as well as in the City's CIP. He said both the Park Board and the Planning Board would be involved with implementation through various park improvements and through potential modifications to the Subdivision and Zoning Regulations.

Phillips said that several Boards would need to be involved, particularly the Planning Board, which works with developers on new developments, providing the opportunity to accommodate bike lanes and other improvements. He thought both the Planning Board and Park Board needed to implement portions of the Plan, and wondered who would need to adopt the Plan. Fehr agreed that some thought would need to be given in that area and mentioned that the upcoming Comprehensive Transportation Plan would also tie together much of the transportation issues involving bike and pedestrian access, and implementation processes. Phillips asked if the Subdivision Regulations would be modified to contain some of the Design Standards and if Street Design Standards would be modified as well.

Fehr said that the City Commission would ultimately have to adopt revised regulations and street standards, and that is the reason behind forwarding the Planning Board's comments and suggestions on the proposed Bike Plan. Phillips said it was important for the Bike Plan to help facilitate more convenient and safe bicycle access for neighborhood residents throughout the City.

Fenwick suggested that the City Commission needs to provide direction on implementation of the Plan and which tasks should be addressed by which Board. He recommended that if somebody doesn't insure implementation of the project, nothing will get done. He mentioned Davis, California which is a "bicycle friendly community" and suggested that promoting bicycling can help make Manhattan unique and attractive to various forms economic development. He suggested the Commission needs to direct the Boards on specific tasks to address, such as the Planning Board addressing modifications to the Subdivision Regulations. He suggested the City needed to have the same sensitivity to bicycle transportation as it does for ADA issues. He recommended that the City needs to have bicycle coordinator on Staff, as a focus person for the various Boards and the Commission to turn to. He was skeptical that the Plan could be implemented to its fullest, without having a focus person. He said that the proposal to modify North Manhattan Avenue to blend the bike access into the street design was a good start in providing better access between Kansas State and the rest of the community. He suggested that the Aggieville Business District should be in strong support of the idea, because it would improve access to Aggieville as well. He felt the Plan was a good start and that the Planning Board had a big part to play in implementing the outcome. He questioned if the Board needed to wait until it got more direction from Commission before it began to implement some of the ideas. He was concerned that every Subdivision plat that is approved is a lost opportunity, until the ideas are implemented.

Phillips requested that Staff provide an update to the Board in November on the progress of adopting the Bike Plan. Fenwick asked if the Board needed to wait for the City Commission's direction before considering some of the ideas. Cattell indicated that the Board could look at some of those concepts as a part of its current review and redraft of the Subdivision Regulations. He said some of the other recommendations in the Plan, such as bicycle parking requirements, would involve amending the Zoning Regulations.

Fehr indicated that the City is already getting voluntary compliance to some of the ideas, such in the Meadowland Subdivision, which includes a segment of the Linear Trail to access the Eisenhower Middle School.

The Board took a five-minute ADA break.

**RECEIVE AND DISCUSS FINDINGS REGARDING HOW OTHER CITIES' PLANNING BOARDS APPROACH PROCEDURAL ISSUES SUCH AS TABLING, TIME LIMITS AND OPEN COMMENTS.**

Phillips indicated that he had to leave the meeting early and asked the Board if it would like to discuss the process by which it conducts the public hearing scheduled for

### BICYCLE MASTER PLAN

Mr. Fehr, Assistant City Manager, gave an update on the Bicycle Master Plan and explained that any comments made by the Board would be forwarded to the City Commission. He explained that this project was funded through the University Project Fund as a joint effort of the City of Manhattan and Kansas State University. Mr. Fehr introduced Mr. Mark Moore, from Landplan Engineering who was the consultant on the Bicycle Master Plan, to the Board.

Mr. Moore explained that the Bicycle Master Plan has been worked on for approximately one year. He stated that a bicycle plan needs to have a vision where the vision can become a reality. A bicycle plan is not a trail plan, because bicycles need to be viewed as another mode of transportation. Mr. Moore continued by giving an overview of the project process and the major recommendations in the plan.

Mr. Reeck stated that the community needs to be made aware of the Bicycle Master Plan.

Discussion was held on the time frame of this project. Mr. Fehr explained that this is a priority project with the main focus on campus and then linkage of the City.

Mr. Penrod explained that the plan looks fine, but expressed concern about not providing incentives for developers. He also stated that the Bicycle Master Plan and other plans need to be tied together as one plan.

Ms. Nuss explained that safety for children was very important.

It was moved by Mr. Penrod, seconded by Mr. Toy to recommend endorsement of the Bicycle Master Plan and to pass along the comment of not providing incentives for the developers. Mrs. Steichen made an amendment to the motion to include public education be provided through Kansas State University/Riley County Police Department on bike helmet safety, as a priority of the community. Mr. Penrod accepted the amendment. On vote, motion carried 6-0.

### CEMETERY ADVISORY BOARD BYLAWS

Mr. DeWeese explained that the Cemetery Advisory Board created a set of Bylaws, as requested by the City Commission, because the Board did not have any Bylaws. It was moved by Mr. Toy, seconded by Mrs. Steichen to accept the Cemetery Advisory Board's Bylaws. On vote, motion carried 6-0.

### NORTHEAST PARK

Mr. Allen explained that the Northeast Park issue has a long history; discussion on a Northeast Park began in 1992.

Hollywood-Pompano Beach (7.7) and Orlando (7.1) (Table 2). Four of the five metropolitan areas with the highest fatality rates for bicyclists were in Florida. The metropolitan areas with the highest bicycling fatality rates tend to be newer, sprawling, southern and western communities, where transportation systems are for now biased towards the car<sup>3</sup>.



## Recommendations

We can have safer roads for bicycling — if transportation planners and engineers, bicycle riders, and drivers accept appropriate responsibilities for making communities safer. The Bicycle Federation of America has developed a four point plan to make our communities bicycle friendly — four points aimed at making roads better and drivers and bicyclists smarter.

- *Good roads.* Streets and highways are designed and built to accommodate all users — bicycle riders, pedestrians, and motor vehicles. Bicycle lanes are provided on many streets. Traffic calming techniques are used to ensure that motor vehicles operate at the appropriate speed.
- *More trails.* Multi-use trails are developed on rights-of-way, and have few, if any, at grade crossing of streets. Abandoned railroad rights-of-way are

used extensively to provide good trails. Children and casual adult riders have good places to develop riding skills and to ride together socially.

- *Better drivers* Motor vehicle operators act responsibly and with due care and respect for other users of the streets and highways. Speeding, running red lights, and other forms of aggressive driving are minimal. Traffic laws are routinely enforced and our courts hold drivers strictly accountable for the consequences of their actions.
- *Better bicyclists.* Bicyclists understand how to operate on streets and in traffic as vehicles (bicycles are defined as vehicles in all 50 states). They obey traffic laws and law enforcement activities are used to ensure compliance. Children get bicycle safety education and training in school. All bicyclists use appropriate safety gear.

Each of the elements of this four point plan can be addressed, in part, by improvements in ISTEA. ISTEA has provided vital support for bicycle use and bicycle safety and our findings indicate that improvements to the law can make our streets and highways better for bicyclists. To ensure that these goals are met, in the reauthorization of ISTEA Congress must:

the first time that federal "highway" funds were dedicated to bicycling. But ISTEA provided more than new funding sources: it mapped out a new orientation for transportation policy. In the post-ISTEA era, more decisions are to be made at the local and regional levels. Now, communities have the right to develop transportation plans that are compatible with their transportation needs and reflect the concerns of their neighborhoods. Communities are investing in improvements like transit, sidewalks, traffic calming, and better accommodations for bicycles. This marks a vast improvement from the days when U.S. transportation policy consisted solely of giving taxpayers' money to state highway departments to build wider and faster roads, with virtually no input from the public.

Slowly but surely, ISTEA is making our communities more bicycle-friendly. Although ISTEA's new planning requirements and funding programs have only been in existence for five years, hundreds of miles of bicycle lanes and trails have already been added to our communities, and are almost certainly a factor in the increased number of people riding bicycles. But there is still a lot of room for improve-

ment. Our analysis indicates that preserving and strengthening the pro-bicycling features of ISTEA can encourage more bicycle use and make bicycling even safer. Indeed, with some modest improvements to ISTEA to expand the development of safer communities hundreds of lives could be saved.

### **Millions of Americans — Children and Adults — Ride Bicycles**



Bicycling is a vital part of our lives. This year, more than 100 million Americans — more than one in three — will go for a bicycle ride. Almost one half of these riders are children under 16. Approximately 5 million Americans commute to work by bicycle (BFA 1997). And according to bicycle industry figures, almost 60 million bicycles have been sold in the last 5 years, and over 30 million of those have been sold for children (Bicycle Manufacturers Association 1997). In fact, more new bicycles than new cars are sold every year in the United States. And bicycling continues to grow more popular. Since the passage of ISTEA in 1991, the number of bicyclists has increased by more than 10%, from 96 million to 105 million.

partment of Transportation established goals for both increasing bicycling and walking and making travel by these modes safer. The US DOT's specific goals were to double the percentage of trips made by bicycling and walking, while decreasing the number of injuries and fatalities by 10 percent (US DOT 1994). With appropriate support and improvements in federal transportation legislation, we can build "good roads" and reach these goals.

Numerous polls and studies, as well as experience around the nation has shown that investments intended to make communities more bicycle-friendly are strongly supported by the general public as a good use of transportation funds to improve bicycle safety and provide for more balanced transportation choices. A 1997 poll found that 64% of voters supported using transportation money to build bike facilities, and more than 75 percent of voters agreed with the common-sense statement that, roads on which bicycles are allowed to operate should have appropriate accommodations for them (Lake Research 1997).

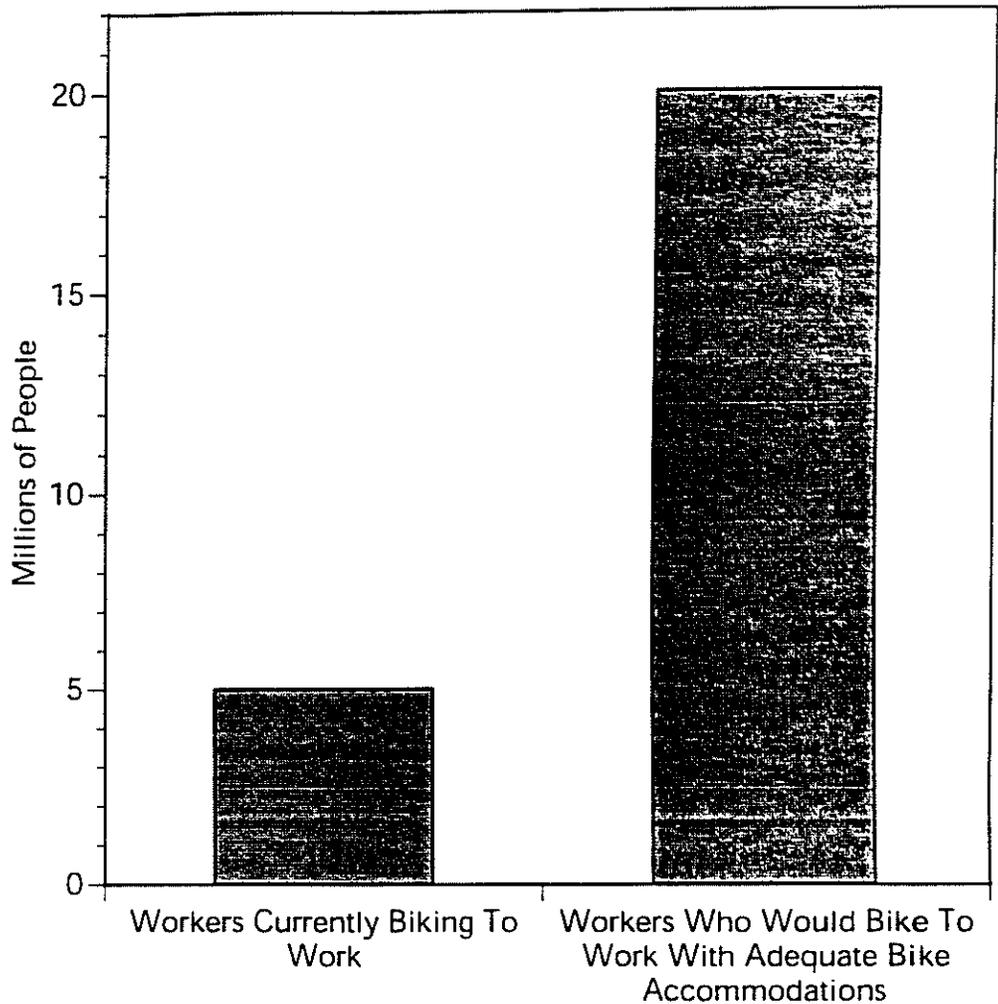
Indeed, if we build it they will come. In many communities, the only thing preventing more people from bicycling is the lack of adequate facilities. When streets are designed to serve bicycles and motor vehicles, more people will bike. Twenty-one million people — approximately 17 percent of the

workforce — say they would commute by bike if they had access to appropriate on- and off-road facilities in their community (Figure 2). There is tremendous latent demand for bicycling. The Bicycle Federation of America estimates that more than 120 million Americans own bikes. For many, it will take nothing more than a quick tune-up and good places to ride to get them riding more (BFA 1997). Wherever communities have provided bike facilities, especially multi-use trails, the number of bicyclists has dramatically increased.

Nationally, approximately seven percent of all trips are made on foot or by bicycle. But in communities where bicycling has been supported and encouraged, this percentage has increased significantly, to between 10 and 25 percent.

Davis, California, perhaps America's most bicycle friendly community, provides an example of how bicycle friendly communities can be created. The city has more miles of bike lanes and off-road bike paths per mile of roadway than any community in the U.S. — the equivalent of one-third of the city's street network. All major thoroughfares in the community have bike lanes paved shoulders, or wide outside curb lanes, and other facilities, such as bicycle parking, are provided to make riding safer and easier. The community has also aggressively acted to reduce risks. In one notable case, at a dangerous intersection that had

**Figure 2. Building more and better bicycle facilities will increase the number of bicycle riders.**



Source: *Bicycle Federation of America, "Bicycle Facts and Figures." 1997. Rodale Press. "Pathway for People." 1995.*

been the site of 16 car-bike collisions, the city changed the timing of the traffic signal (adding a "bikes only" phase to the signal). Since then, there have been no additional crashes. As a result of these kinds of efforts, 41 percent of Davis residents consider the bicycle their primary mode of transportation. Since 1986, FHWA data indicate that there has not been a single bicyclist killed by a car in Davis.

And bicycle friendly communities are livable communities. Among the many advantages of making our communities safer for cycling are that:

- Children and adults will have increased mobility, auto-independence, and increased transportation choices. Today, in too many communities, children are dependent upon

adults for transportation — forced to take the bus to schools only blocks away, and “needing a ride” to virtually every kind of activity. Making our streets safe for children on bicycles will reduce the burden on soccer moms and dads forced to play the role of chauffeur.

- Bicycling reduces traffic congestion. Bicycle trips can replace many short automobile trips — one more bike on the road often means one fewer car on the road. Forty percent of automobile trips are less than two miles in length (US DOT 1990.). If even a small percentage of these trips could be converted to bicycle trips, it would eliminate most traffic congestion.
- Bicycling conserves energy and improves air quality. Some estimates indicate that increased investment in bicycle-friendly communities could reduce total U.S. air emissions from automobiles by four percent, and save as much as three billion gallons of gasoline each year (US DOT 1993).

- Bicycle friendly communities are safe communities. In many communities, neighborhoods are being destroyed and children are being endangered as local streets are overrun by more and more cars operating at higher and higher speeds. Well-designed streets that are safe for children on bikes are safer for all of us — adults and children, bicycle riders, walkers and even drivers.
- Bicycle friendly communities are healthy communities. For the past several years, we’ve been hearing of a serious decline in physical activity and public health — especially among children. Children spend more time in front of the television set than playing outside, and adults lead more and more sedentary lives. Making communities bicycle-friendly will have important public health benefits as bicycle riding and walking — lifelong, low-impact, aerobic activities — increases. The Surgeon General and the Centers For Disease Control and Prevention actively promote bicycling as a form of exercise (CDC 1996).

## MAKING BICYCLING BETTER AND SAFER

We know that more, not less, bicycling can help make America a better place to live.

From the community livability and fitness benefits to cleaner air, less traffic congestion, and energy independence that increased bicycling usage can bring, we all benefit. However, a greater public investment in bicycling education and safety programs is needed — programs such as the Effective Cycling program of the League of American Bicyclists (LAB) that go beyond helmet promotion for injury reduction and focus on crash prevention and improving operational skills.

Congressman Martin Sabo (D-MN), calling the development of “an aggressive bicycle education and safety program” a high priority, said at a March, 1997, hearing of the U.S. House Transportation Appropriations subcommittee, “Congress has for years been involved in promoting bicycle use and

coordination with other transportation programs, but we have more fatalities from bicycle crashes than we do in aviation, railroad, or maritime crashes. It is a growing problem, and a number of them involve young people... Frankly, the air bag question is very important, but in terms of number of young folks involved, the whole biking issue has substantially greater impact on both fatalities and injuries.”

Bicycles are legally classified as vehicles in all 50 states, and teaching basic traffic principles to children as bicyclists offers a valuable opportunity to improve road safety for all users. That is why the League’s *Effective Cycling* program is based on the “Same Roads, Same Rights, Same Rules” principle that bicyclists fare best when they act and are treated as operators of vehicles — a principle that helps improve cycling safety for adults and children.

Of course, children and bikes go together, from the early sense of discovery and freedom to the

aerobic conditioning so important to a healthy lifestyle. But handing our children helmets and taking off the training wheels are not enough. We do not expect automobile drivers to drive without instruction, and we should not expect cyclists to ride without instruction. While the League's Effective Cycling program includes courses for novice to experienced cyclists and specialties like bike commuting and off-road riding, teaching the basics to kids may be the most important component.

Children enjoy being taught about "adult" rules that help making cycling safer. Examples of these rules include:

- 1 Stop at the end of every driveway, sidewalk, or path to Stop, Look, and Listen.
2. Be predictable when you ride, without swerving or hitching a ride on another moving vehicle.
3. Yield the right-of-way — cars have to stop

for pedestrians, and so do you.

4. Be seen — wear light colored clothes and a bright helmet, and use lights at dusk and nighttime.
5. Obey traffic laws, signal when turning, and always ride on the right side of the road.

As Rep. Sabo said at that March 1997 hearing, "I think the growth of and the use of the bicycle is not only good transportation policy but also good recreation policy. It serves both roles." It is everyone's responsibility to help keep bicycling safe, too.

The League's Effective Cycling program has certified instructors throughout the country. To receive contact information for instructors in their state or area, readers may send a self-addressed, stamped envelope to LAB/E.C., 190 W. Ostend Street, Suite. 120, Baltimore, MD 21230-3755 (or check the Internet at <http://www.bikeleague.org>).

## ACCIDENTS WANE WITH BIKE LANES

Bicycle accidents dropped by more than half in the year since Corvallis installed 13 miles of on-street cycling lanes, according to city engineers. Complaints about the system are also down, Traffic Engineer Brian Fodness said today.

"Every once in a while we hear some rumbling," Fodness said, "but many more comments are of a positive than negative nature—I think the community has adjusted".

Fifteen more miles of bike lanes are on the drawing board and will be installed when money is available, he said.

When the first lane-striping program started in mid-1981, the City Council asked for a one-year progress report. This report was to go to the council today. It shows:

- Sixteen bicycle accidents were reported between October 1981 and September 1982, down from 40 the year before.
- Of those 16 accidents, only five occurred on streets with bike lanes and those all involved bikes being ridden after dark without lights.
- Bicyclists are for the most part using the lanes, except when the lanes are blocked by fallen leaves, debris, or illegally parked cars.

- Ghosts of old pavement markings still show through in some places, but addition of extra reflection markings has helped solve that problem.
- As their budget allows, police are ticketing cyclists who break traffic laws, such as requirements to ride on the right and stay off downtown sidewalks.
- Where the new lanes took parking spaces, most motorists have found other places to park.

Only five houses were left without any parking, on or off the street and city engineers have helped owners solve that problem, Fodness said.

"What we've tried to do is identify ways owners could make improvements to their own property" Fodness said. "Most of them were pretty easy to satisfy. A couple were a little bit more difficult".

It took a while, Fodness said, but both cyclists and motorists seem to be getting used to the lanes. Education programs sponsored by the city, schools and local cycling groups have helped, he said, and those programs will continue.

*Reprinted from the Corvallis Gazette-Times, Dec. 4 1982*

## THE BENEFITS OF BIKE LANES

Like Davis, CA, the city of Corvallis, Oregon made a significant effort to make their community bicycle friendly even before ISTEA went into effect. This effort paid off in terms of increased bicycling and safer streets for bicyclists.

### **Bike Lanes as an Encouragement To Bike**

If we are to promote bicycling as an alternative to the automobile for short trips around town, newcomers to bicycling must feel welcome on the streets. Bike lanes are inviting and act as a host. They tell would-be cyclists that it is OK to use the streets you've been driving on all these years. Wide outside lanes do not have the same effect!

Oregon has had poor results with signing routes that have not been modified to make bicycling easier. Indeed, the bikeway program is proposing to drop the use of the white-on-green Bike Route sign altogether.

In Corvallis, Ore., over 90% of the arterial and collector streets have striped bike lanes. This leads to an unparalleled feeling of ease: whether riding a bike or driving a car, the behavior of others is predictable. When riding on the few major streets yet to be striped with bike lanes, one can "share the road" with confidence as most local drivers know how to pass bicyclists prudently.

— By Michael Ronkin, Bikeway Specialist, Oregon D.O.T.

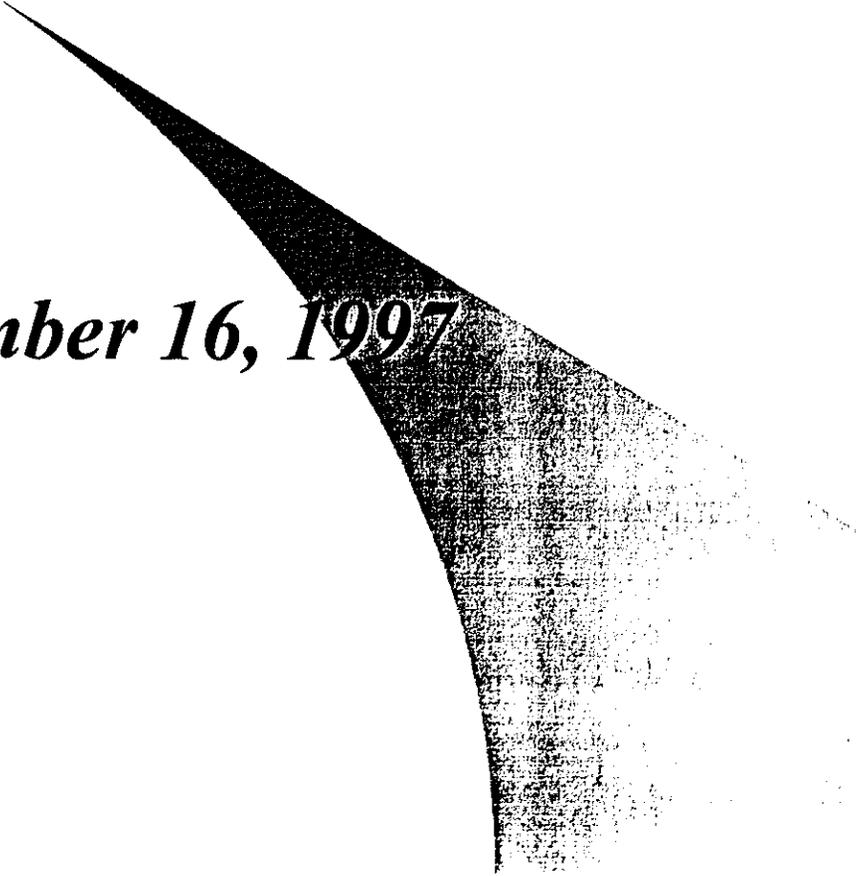
*Reprinted From Pro Bike News. March 1993.*

destrian projects in ISTEA programs, and expanding dedicated funding programs. The Enhancements program, the largest source of funds for bicycle projects, should be expanded from 2 percent of the total federal transportation budget to 3 percent. Proposals that would allow states to transfer this funding to non-Enhancements activities such as new highways must be rejected. Funding for the CMAQ program should also be expanded.

- Ensure appropriate treatment of bicyclists and pedestrians in transportation projects by requiring that all highway and transit projects provide appropriate accommodations for bicycle riders and pedestrians. While ISTEA allows funding of roadway improvements such as bike lanes and wide curb lanes, many highway projects fail to include any accommodations for bicycles and pedestrians. ISTEA's new provisions must ensure "good roadway design"

# **Bicycle Master Plan**

*December 16, 1997*



# Background

- ⊙ In 1996, K-State and the City selected the firm of Landplan and Associates in conjunction with Bicycles &, Inc. to develop a community and campus bicycle master plan.
- ⊙ The consultants held two public meetings to gather input and feedback

# **Background**

- ⊙ **The Manhattan Urban Area Planning Board Reviewed the plan on August 18**
- ⊙ **The Parks and Recreation Advisory Board reviewed the plan on September 8**
- ⊙ **The consultant presented the plan to the City Commission on October 28**

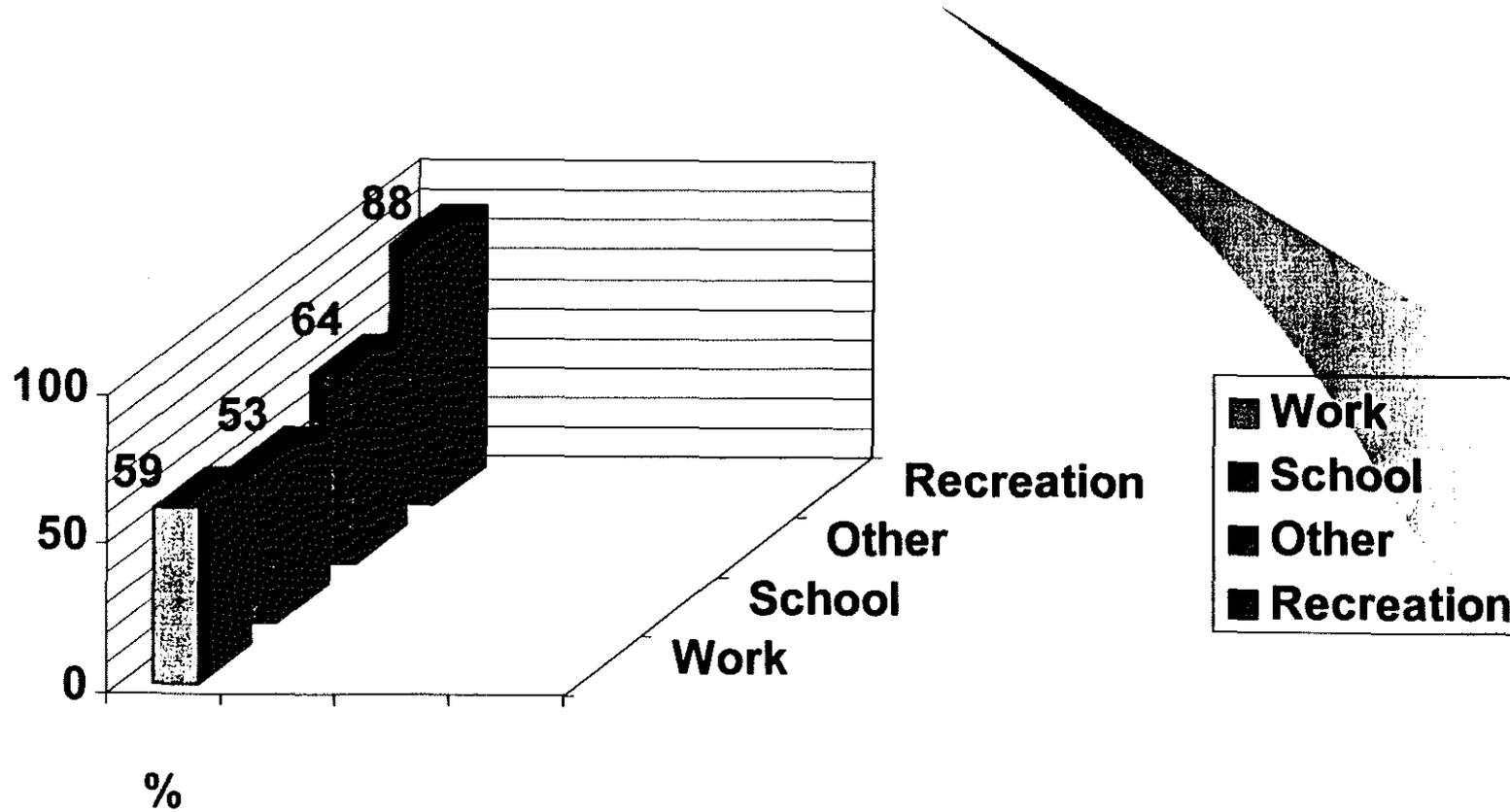
# Background

- ⊙ **The Commission asked City Administration to collect more demographic information**
- ⊙ **City Administration conducted a non-scientific survey in the Manhattan Mercury, K-State Collegian, the City's Home Page, radio and television PSA's, and mailed letters to school principals**

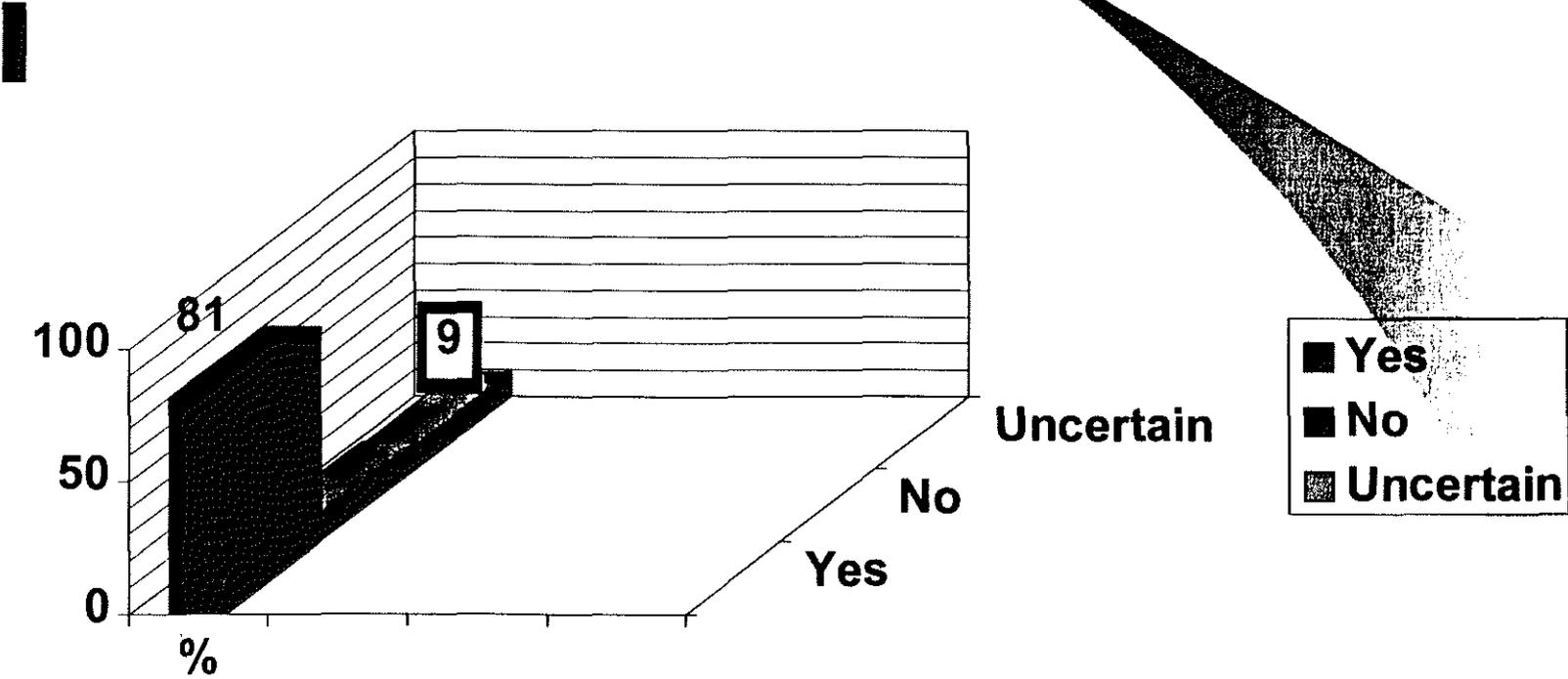
# Results

- ⊙ **As of December 10: 418 surveys were received representing 870 individuals and family members.**

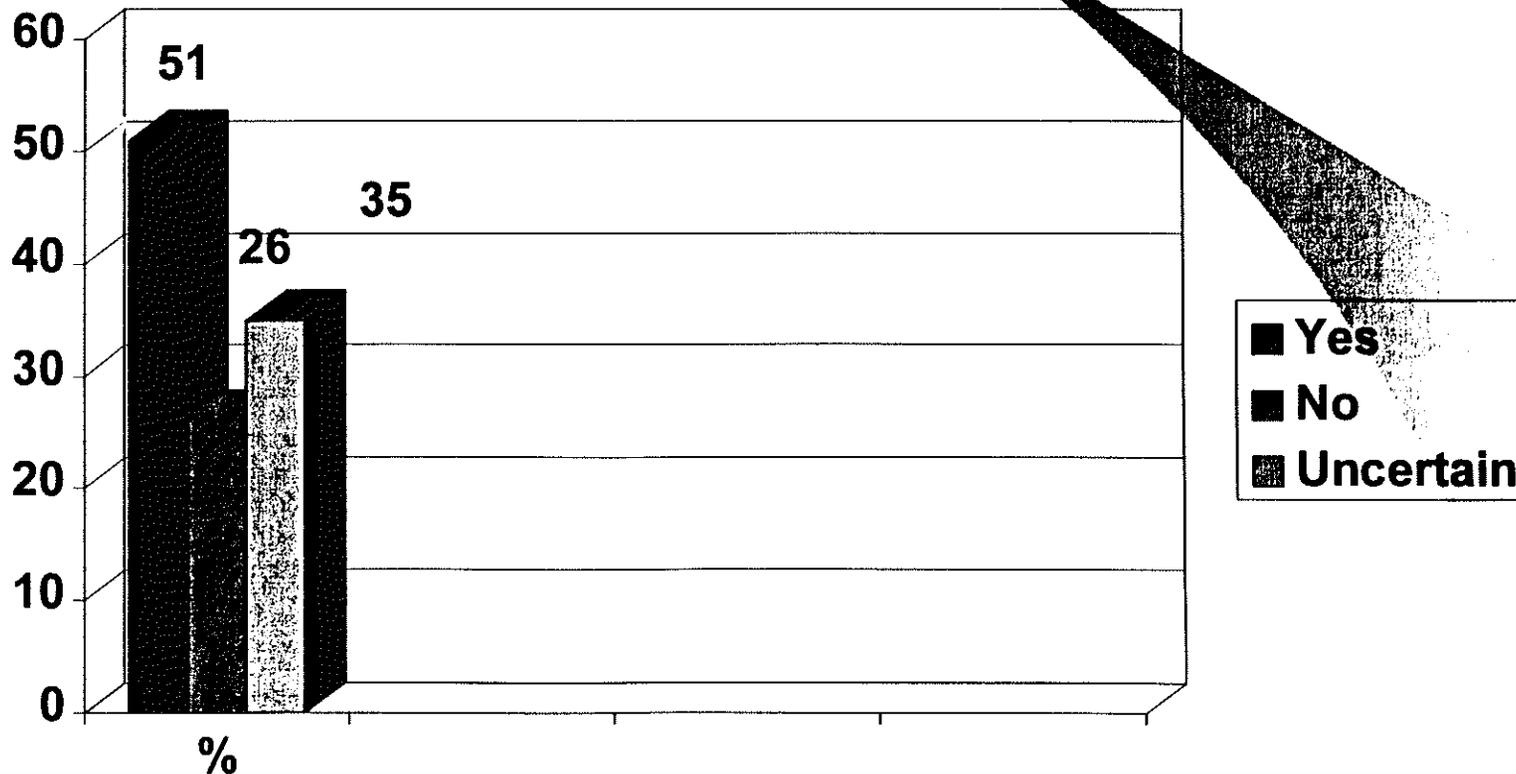
# Survey Results



# Would Increase Riding With Safety Improvements



# Non-Bicyclists Who Support Safety Improvements



# Schools

- ⊙ On any good weather day 400 to 450 students ride their bicycles to and from school.
- ⊙ Over half of these students attend the middle schools.

# Goals of Master Plan

- ⊙ Bicycles are a part of the transportation scheme.
- ⊙ Improve access.
- ⊙ Improve safety.
- ⊙ Enhance recreational opportunities.
- ⊙ Maximize funding opportunities

# Recommendation

- ⊙ City Administration recommends adoption of the Bicycle Master Plan to use as a guide in future planning and engineering endeavors.
- ⊙ Elements of the plan can be introduced as routine maintenance projects occur at little additional expense.

# Recommendation

- ⊙ As improvements occur on campus, corresponding improvements can be made adjacent to the campus utilizing the City/University Projects Fund.
- ⊙ Design criteria can be incorporated into subdivision regulations to encourage connectivity of cul-de-sacs that will enhance fire suppression response as well.

# Questions?

