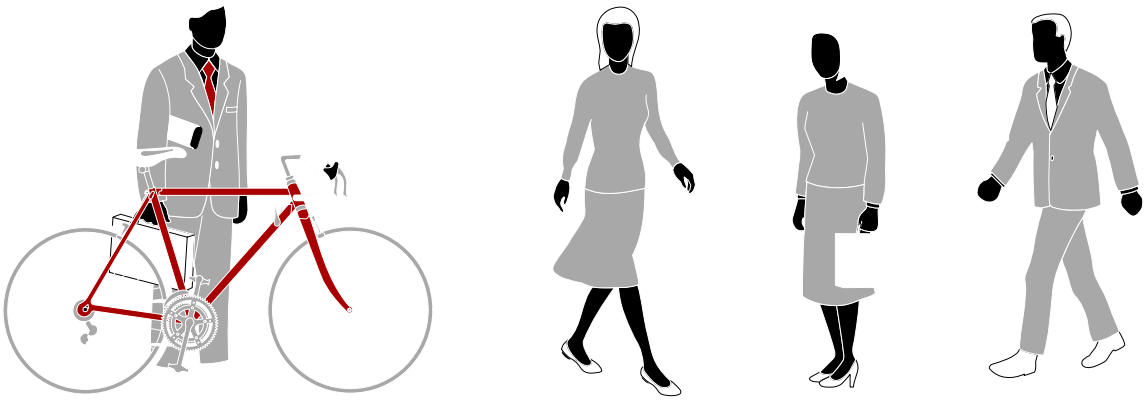
Kansas
Bicycle and Pedestrian Transportation Plan



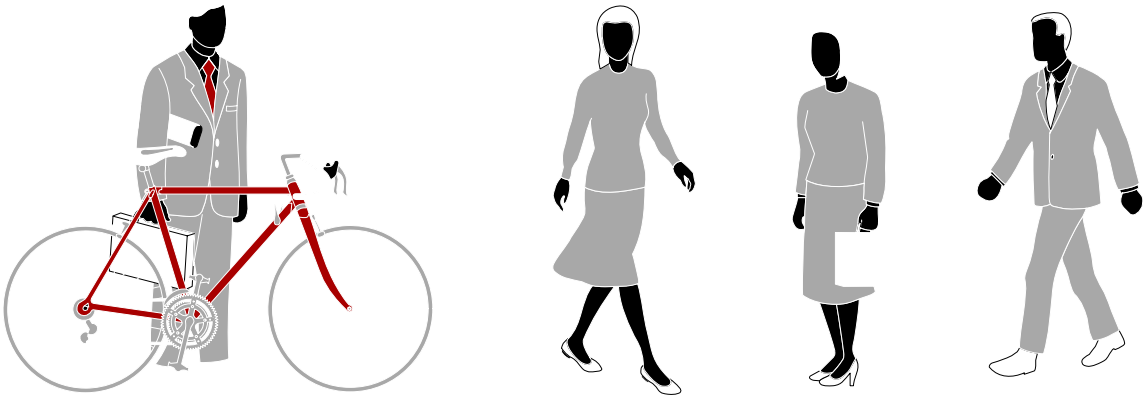
Kansas Department of Transportation
Bureau of Transportation Planning

September 1995

Purpose

Kansas is at a good starting point in an effort to attain a future where bicycling and walking are safe and convenient modes of transportation. An ongoing goal of the Kansas Department of Transportation (KDOT) is to provide a statewide intermodal transportation system which includes the opportunity for safe and convenient bicycle and pedestrian transportation.

The purpose of the Kansas Bicycle and Pedestrian Transportation Plan is to introduce and discuss ways to provide Kansans with expanded opportunities to travel by bicycling or walking as part of their everyday lives. Secondly, the Plan supports the view that bicycling or walking are mode choices that are practical, safe, and desirable.



Executive Summary

The Kansas Bicycle and Pedestrian Transportation Plan is a broad based policy document that serves as a guide for the Kansas Department of Transportation's (KDOT) bicycle and pedestrian transportation planning process, and which will guide future bicycle and pedestrian transportation program development in Kansas.

At the federal level, the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) recognized bicycle and pedestrian transportation as important components of the nation's overall transportation system. Kansas likewise recognizes the importance of pedestrian and bicycle transportation and has taken steps recently to enhance bicycle and pedestrian transportation. During the past year alone, KDOT published the first-ever Kansas Bicycle Guide (map) and revised the design of concrete shoulder rumble strips to make them more bicycle friendly.

Bicycling and walking will continue to be important elements of Kansas' transportation system as the State moves forward into the 21st Century. In order to encourage proper planning for these two transportation modes, the Department has developed this Plan. The primary purpose of this document, which is an element of the Kansas Long-Range Transportation Plan, is to provide for the continued inclusion of bicycle and pedestrian transportation facilities as components of the Kansas statewide transportation system.

Chapters One through Four explore bicycle and pedestrian transportation as part of everyday life. These chapters point out that even though bicycling has been a means of transportation and recreation since the 1890s, and virtually everyone is a pedestrian on a daily basis, both bicycling and walking remain as minor transportation modes in the United States and in Kansas. Recently, however, with increased traffic congestion, pollution, fuel costs, and public demand for outdoor recreation opportunities, bicycling and walking have been "rediscovered" as popular forms of exercise and favorable modes of transportation.

Chapter Five examines current bicycle and pedestrian transportation activity in Kansas while Chapter Six addresses considerations for future bicycle and pedestrian transportation planning.

It should be understood that while bicycle and pedestrian transportation modes are addressed jointly in the Plan, they are separate transportation modes. The Plan addresses them jointly primarily because more times than not, the two modes can coexist in one facility, though bridge design standards often apply separately to each mode. With the publication of the "Guide for the Development of Bicycle Facilities, 1991", by the American Association of State Highway and Transportation Officials (AASHTO), planners and engineers have become more aware of the differences between the facility needs of bicyclists and pedestrians. In addition to AASHTO's Guide, the Kansas Department of Transportation plans to publish a Kansas Bicycle and Pedestrian Facilities Handbook in 1996. The intent of the Handbook will be to provide guidance to the Kansas Department of Transportation, Kansas communities, and the citizens of Kansas in the design and construction of bicycle and pedestrian facilities.

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Chapters

Chapter 1

"New Directions"

"The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), signed into law by President Bush in December 1991, establishes a new vision for surface transportation in America."

- Samuel K. Skinner, Secretary of Transportation, 1992

Intermodal Surface Transportation Efficiency Act of 1991

Under the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), the emphasis on intermodalism has resulted in non-traditional modes of transportation, including bicycling and walking, being given more attention. Furthermore, ISTEA requires that states and metropolitan planning organizations (MPOs) develop bicycle and pedestrian elements for their long range transportation plans. According to 23 CFR 450.214 "The statewide transportation plan shall contain as an element, a plan for bicycle transportation, pedestrian walkways, and trails which is appropriately interconnected with other modes."

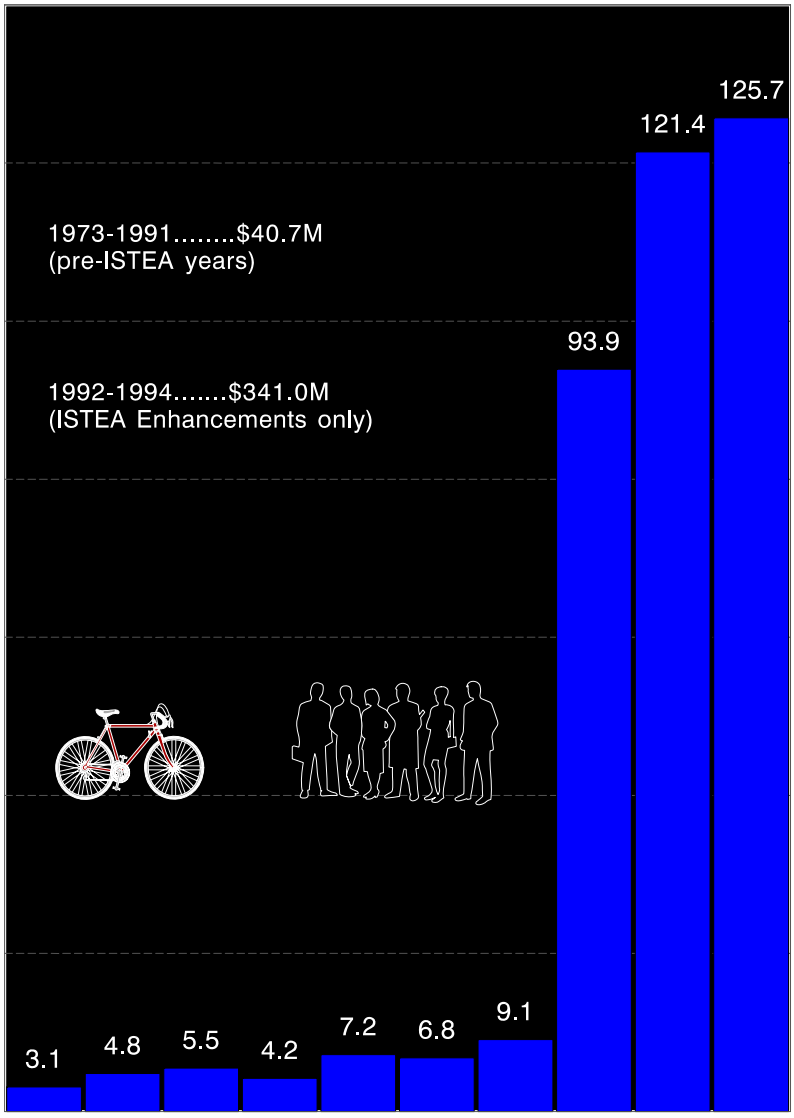
In addition to requiring the development and adoption of a bicycle and pedestrian element as part of the statewide transportation plan, ISTEA requires each state to appoint a bicycle and pedestrian coordinator. The Bicycle and Pedestrian Coordinator in Kansas is a part-time assignment within the Kansas Department of Transportation's Bureau of Transportation Planning.

In regard to bicycle and pedestrian transportation, it is important to note that ISTEA created a greater opportunity for bicycle/pedestrian projects to compete for available funding as viable transportation projects. However, ISTEA does not guarantee the funding of bicycle and pedestrian projects, and decisions on transportation projects, including bicycle and pedestrian projects, are determined at the state and local levels.

Because of this opportunity, ISTEA has had a significant impact on the attention given to bicycling and walking by State and local transportation agencies. Eligibility under ISTEA's major highway funding programs, particularly the Transportation Enhancement program, has substantially increased levels of federal funding available for bicycle and pedestrian transportation projects and increased the amounts of federal-aid expenditures for bicycle and pedestrian facilities. The chart on page 1-2 shows the large increase in federal-aid spending for bicycle/pedestrian transportation following ISTEA's passage in 1991.

Federal-aid Highway Expenditures for Bicycle/Pedestrian Facilities

Millions of Dollars



Source: FHWA data supplied to Rails-to-Trails Conservancy, 1994

The statistics presented on federal-aid expenditures for bicycle and pedestrian facilities are for the first three years, 1992-1994, of ISTEA. Further spending for such facilities at similar levels is anticipated to continue for the remaining years (1995-1997) of ISTEA. Beyond 1997, which is the final year of ISTEA, the Kansas Department of Transportation anticipates that the Federal Highway Administration will continue to include bicycle and pedestrian transportation as an important element of intermodal transportation.

National Walking and Bicycling Statistics

According to the National Personal Transportation Study of 1990 (NPTS), Americans collectively make over 250 billion "person trips" per year. The purpose of each trip and its contribution to the respective percentage of the total is shown in Table 1 below.

TABLE 1

Trip Purposes: All "Person Trips", All Modes

Purpose of Trip	Percent of Total Trips
Personal/Family	41.5
Social/Recreational	24.8
Work Commute	21.6
Civic/Educational	11.4
Other	0.7
TOTAL	**100.0**

Source: National Personal Transportation Survey, 1991.

This same survey found that of the more than 250 billion total trips made by all modes annually, 1.8 billion are bicycle trips and 18.0 billion are pedestrian trips. The average bicycle trip length is 2.0 miles, while the average pedestrian trip distance is 0.6 miles. This data is reflected in Table 2 below.

TABLE 2

Trip Characteristics: Bicycling and Walking

Characteristic	Bicycle Trips	Pedestrian Trips
Average Trip Length (in miles)	2.0	0.6
Number of Trips (in billions)	1.8	18.0
Percent of All Trips (all modes)	0.7	7.2

Source: National Personal Transportation Survey, 1991.

The NPTS additionally found that 27.5 percent of all trips, regardless of travel mode, are one mile or less in length, and that 39.6 percent of all trips, regardless of travel mode, are two miles or less. The specific breakdown by trip distance for all modes is shown in Table 3 below.

TABLE 3

Daily Trip Distances : All Modes

Daily Trip Distances:	Percent of Total Trips
1 mile or less	27.5
2 miles or less	39.6
3 miles or less	48.8
5 miles or less	62.7

Source: National Personal Transportation Survey, 1991

Those trips less than one mile have potential for walking or bicycling and those trips up to two miles have potential for bicycling. However, while the potential exists for more of these short trips to be taken by bicycle or by walking, the provision of safe facilities for bicycling or walking is often needed before many persons will seriously consider these modes of transportation for even such relatively short distances.

The average American makes 20 trips per week of which only 1.5 are by walking or bicycling. One goal of the "National Bicycling and Walking Study" recently published by the Federal Highway Administration (FHWA) is to double the number of such trips from 1.5 to three trips out of 20 per week. A second goal of the study and of FHWA is to reduce by 10 percent the annual number of injuries and fatalities to bicyclists and pedestrians.

In considering the above stated goals, it is important to consider for whom the planning is being done. In other words, it must be understood who the potential "customers" wishing to walk or bike short distances are. In addition to those who regularly walk or bicycle, the necessities of the potential pedestrians and bicyclists who want safer facilities including exclusive bike lanes and paths needs to be addressed. Finally, greater education, promotion, and enforcement efforts must be provided, as well as facilities, to attract new bicyclists and walkers.

Traditionally, bicycle and pedestrian transportation are used more extensively by those underserved (the population that cannot drive due to age or lack of financial means) by the motor vehicle transportation system. In some states up to one-third of the population is too young or too old to drive. Bicycling and walking are travel modes that allow the underserved population to travel independently.

Chapter 2

"The Pedestrian Environment"

"Of course, virtually everyone is a pedestrian during some part of every day."
Federal Highway Administration, 1994

An Overview of Pedestrian Transportation

Walking is often taken for granted even though virtually everyone is a pedestrian at some time during every day. Because walking trips are often so short, most people often do not think of them as trips. Therefore, the true number of walking trips is not known.

In general, information regarding pedestrians is more scarce than most other modes, however the Nationwide Personal Transportation Study (NPTS) collected a good deal of pertinent data. The NPTS found that 7.2 percent of all travel trips are currently made by walking, yet the large majority of these trips, as discussed in Chapter 1, are for distances that average only 0.6 miles.

Both walking and bicycling are modes used to a greater degree in areas where there are higher population densities. The NPTS observed that in central cities more than 11 percent of all trips were by bicycling or walking, and that with more aggressive bicycle and pedestrian friendly planning schemes, these numbers would likely increase. "Great walking cities are those with destinations within a 15-to-20 minute walk of each other...varied architecture, diverse neighborhoods, and a lively street life energized by sidewalk vendors, entertainers, and window shoppers...filled with open spaces and parks...widened sidewalks, auto-restricted zones, and amenities such as benches, signs and fountains." [i] Several studies also indicate that pedestrian facilities are particularly vital for safe neighborhood traffic circulation.

Many pedestrians walk purely for exercise. "Exercise walking" drew 71.3 million participants in 1990, making it one of the fastest growing forms of recreation in the United States. Additionally, a Harris Poll conducted in December 1991 found that 73 percent of adults had walked outdoors in the last year specifically for exercise, and over half had walked on at least ten occasions during the last mild weather month. Seventeen percent had walked on 30 or more occasions.

Pedestrians as Commuters

The decennial U.S. Census reported that in 1990 an estimated 4.5 million persons commuted to work by walking, representing four percent of all commuters. It should be noted that the U.S. Census surveyed only those persons age 16 years of age and older who travelled to workplaces. Utilitarian trips for shopping, recreational trips, and trips to schools including those of grade school and high school age (who for the most part are younger than age 16) were not counted by the Census.

Health Benefits of Being a Pedestrian

Besides providing for an alternate mode of transportation free of pollution and the use of fossil fuels, walking also provides health benefits. The 1985 National Health Interview Survey found that 40 percent of all adults are almost completely sedentary and that less than eight percent of persons over the age of 18 reach appropriate physical activity levels. The National Bicycling and Walking Study reported that the physical activity and fitness objectives of the "Healthy People 2000" organization include increasing moderate daily physical activity to at least 30 percent of the population and reducing sedentary lifestyles to no more than 15 percent of the population.

Facility Improvements to Promote Pedestrian Transportation

Facility improvements for pedestrians can improve the safety of those currently walking and encourage more frequent walking. Eliminating "disconnects," defined as locations where sidewalks end thus forcing pedestrians to negotiate unimproved distances to where sidewalks are again available is a frequently recommended technique for improvement. Insufficient and unsafe pedestrian access over bridges restricts pedestrian travel (and bicycle transportation) from one region or area to another and therefore pedestrian access to bridges is cited as a key component for a comprehensive pedestrian transportation program. Grade-separated crossings of high-speed roadways can also help by providing safe access from residential neighborhoods to shopping areas, schools, and recreational areas.

Many pedestrian facility improvements are related to traffic calming techniques aimed at slowing motor vehicle operators and making drivers more aware of pedestrians, bicyclists, and other drivers. In order to promote pedestrian friendly intersections and crossings, especially at popular crossings, measures such as reduced-radius corners, removing vehicle parking spaces near corners, and sidewalk "bulbs" (extensions of the sidewalk into the traffic lane at intersections which reduces crossing distance) should be considered. Pedestrian safety can also be enhanced by improving crosswalk design and signaling, providing sidewalks, and improving awareness of the involved dangers.

Specific roadway improvements must be carefully selected after considering all aspects of the site conditions in question since intersections are the most common place of pedestrian/motor vehicle accidents. Measures such as longer crosswalk time intervals, pedestrian safety islands, and curb cuts can help to reduce pedestrian/motor vehicle accidents.

Sidewalks are another means that can help to reduce pedestrian accidents. Besides providing a safe area for walking which is usually not directly adjacent to the roadway, sidewalks also provide a paved area for children who might otherwise play in the street. In one national study, the use of sidewalks along streets was associated with reducing pedestrian accidents by approximately 50 percent when compared to streets with no sidewalks.

i. "Planning for Pedestrians in An Urban Environment", *Walking Magazine*, August 1991.

Chapter 3

"The Bicycling Environment"

"Without question, bicycling is an efficient, economical and environmentally sound form of transportation and recreation. Bicycling is a great activity for families, recreational riders, and commuters.

President Bill Clinton, Bicycling Magazine, 1992

A Brief Overview of Bicycle Use

From its introduction in 1886, the bicycle has been an important part of American life. Although bicycle use has wavered during several cycles of "booms and busts," it has remained a popular form of transportation, recreation, and sport. A brief history of bicycle use in this country supports its importance as a transportation alternative and provides a better understanding of the factors involved in planning for bicycle facilities and programs.

The bicycle was originally developed as a transportation alternative to horse power in the late 1880s. In the 1890s, improved mass production techniques dropped bicycle prices into a range affordable for many people, including those in the working class. During this period bicycling also represented a major recreational activity since most modern-day participant sports were not popular. Bicycle clubs and organizations flourished, and a principal activity of these groups was soliciting for improved road conditions for their outings. However, as automobile mass production was established, roadways were constructed for the automobile, not the bicycle. The bicycle craze of the 1890s faded and automobiles dominated America's roadways. Consequently, the bicycle quickly lost its status as a viable form of transportation. Many, particularly the upper and middle class, began to regard it as a "toy" used only for sport and recreation. For many years, the bicycle along with mass transit functioned as a mode of transportation mainly for the working class.

In the 1930s and early 1940s, the United States experienced its second wave of bicycle popularity. The inexpensive transportation provided by bicycles was vital during the Depression and continued to be so through the gasoline rationing of World War II. However, the largest bicycle sales boom in American history came in the early 1970s. In fact, from 1971 to 1974 more new bicycles were sold than new cars. [i] Whereas bicycles had previously appealed mostly to children as "toys," the 1970s' boom consisted primarily of increased sales to the 18 and older age group. Adult cyclists cited exercise, environmental awareness, and the rapid increase in gasoline prices from the Arab oil embargo as incentives to bicycle.

A Resurgence in Bicycling

Worldwide, bicycle sales have grown more rapidly than automobile sales in the past two decades to the extent that currently the number of new bicycles produced is now three times the number of new automobiles. More than 33 million new bikes were purchased between 1989 and 1991. [ii] Since the late 1980s, the United States has also experienced a resurgence in bicycling activities which further reinforces the potential usefulness of bicycling for transportation. The NPTS found that in 1990, Americans made approximately 1.8 billion bicycle trips accounting for 0.7 percent of all trips. This number represents an increase in total bicycle trips of 39 percent between 1977 and 1990. During this same time period, the number of bicycle trips per 1,000 population increased by 22 percent to a rate of 7,200 trips per 1,000 population per year. The average trip length for these trips was 2.0 miles and the average trip time was 15 minutes.

As shown in Table 4 below, a total of approximately 99 million Americans rode a bicycle for some purpose in 1992. It is estimated by the United States Department of Transportation (USDOT) that on a typical work day, over 2 million persons ride a bicycle to work or to school. The 1990 U.S. Census reported that nearly one-half million people used a bicycle to commute strictly to work in 1990, representing 0.4 percent of all commuters. The emphasis herein is the use of bicycles as a viable form of transportation; however, it is important to note that bicycling is also one of the nation's most popular forms of recreation, ranking number two overall. [iii]

TABLE 4

1992 U.S. National Bicycling Statistics

Bicyclist Category	Number of Bicyclists
Adult Cyclists (over age 16)	55 million
Children/Youth Cyclists (under age 16)	44 million
Total Cyclists in the United States	**99 million**

Courtesy of the Bicycle Federation of America, May, 1993

Table 5 below further breaks down American bicyclists into several varied categories. Of course, a cyclist may enjoy more than one type of bicycle-related activity and therefore may appear in more than one category.

TABLE 5

Categories of American Bicyclists

Category of Use	Number of Cyclists Per Category
Adults Cycling at least once per week	31.0 million
Adult Commuters	4.3 million
Adults Riding in Competitions	0.2 million
Off-Road Cyclists	25.0 million
Riders Touring/Vacationing	1.7 million
Recreation Event Participants	3.8 million

Facility Improvements to Promote Bicycle Transportation

There are a number of sources for guidance on the construction of bicycling facilities including the guidelines provided by the American Association of State Highway and Transportation Officials (AASHTO) and the Federal Highway Administration (FHWA), and traffic engineering guidelines provided in the Manual of Uniform Traffic Control Devices (MUTCD). In addition, there are several general principles regarding bicycle facilities discussed in the National Bicycling and Walking Study. These principles include the following:

- Corridors identified for bicycle trips need to have direct destinations that are popular and will attract bicyclists. Arterials, particularly those identified having potential for significant bicycle traffic, need to have a 14 foot-wide curb (outside) lane.

- Off-road multiple use paths need to safely accommodate mixed transportation and recreation uses. Particular attention needs to be given to the intersections of paths with the street system. Grade-separated intersections are preferred as traffic on both the path and the street is not interrupted.

- Bicycle lanes should only be delineated where short connections to the off-road bicycle path system are required on the street system or where very high levels of bike use, particularly bicycle commuter use, are occurring. Bicycle lanes should always be one-way facilities and should carry traffic in the same direction as adjacent motor vehicle traffic.

Reasons Why Bicycling Is Not Used More As A Travel Mode

"Faced with riding a fixed distance, under time constraints and work requirements, with road conditions far from ideal for the majority, most riders opt out of bicycle commuting."

Case Study Number One,
National Bicycling and Walking Study, FHWA, 1993.

In addition to the National Bicycling and Walking Study report, 24 case studies concerning walking and bicycling as modes of transportation were released in 1991 by the Federal Highway Administration. Case Study Number One, "Why Bicycling Is Not More Extensively Used As A Travel Mode," explored various factors which affect the use of a bicycle for transportation purposes.

Case Study One claims that even if bicycle transportation facilities exist, many potential bicyclists will choose driving over bicycling due to the advantages of travel by motor vehicle that bicycling cannot match under current conditions in many communities. The following major factors impact individuals when deciding to ride a bicycle for transportation purposes even under "bicycle friendly" conditions;

- **There is a Psychological "Need" for A Car.** The "need" for a car and the "need" to drive are not easily overcome through public policies. Traveling substantial distances for ordinary activities has become a fundamental part of American life. Individuals are often willing to commute over long distances by car and tolerate both excessive commute time and traffic congestion.

- **The Bicycle is Inconvenient.** Particularly, when travel time is important to the destination, travelling by bicycle can be thought of as being too slow. This perception is also not easily overcome through public policies. Research shows that most persons will consider travel by bicycle for only those trips less than seven miles one-way. It will be very difficult to change mode choice for those persons traveling by automobile for distances greater than seven miles one-way.

- **There is a lack of Ancillary Facilities.** The lack of parking, shower, and changing facilities at destinations, particularly workplaces, will reduce in some degree the potential for bicycle transportation. The installation of ancillary facilities is often conditional on the cooperation of employers. However, the provision of such facilities is not as vital to the promotion of bicycle transportation as is a linked network of safe bicycle facilities.

- **The Bicycle is for Recreation not Transportation.** Recreation, exercise, and enjoyment are the primary reasons people bicycle. Many adults consider bicycles as toys they used as children. In addition to recreation, bicycles are used for physical fitness purposes by many adults. However, many recreational bicyclists have not considered using the bicycle for transportation purposes.

- **Bicycling is not Safe.** Studies have shown that disincentives for general bicycle use, including recreational use, are bicyclists' concerns over traffic safety, lack of direct routes, and weather. It is important to note that bicycle commuting is for the experienced adult bicyclist who has extensive knowledge and skill to handle riding in heavily traveled urban streets and rural highways. Beginning or recreational adult bicyclists should not immediately begin to commute in such conditions. Rather, casual bicyclists need to first improve their bicycling skills and become familiar with safety factors associated with riding in traffic.

Factors That Influence the Decision to Bicycle Commute

When people do choose to commute by bicycle, characteristics of the existing environmental and infrastructure conditions all come into play in the final decision of whether or not to use the bicycle as a transportation vehicle. Distance is identified by bicyclists as the major deterrent to bicycling more frequently. However, autos are also used for many short trips which could be done by bicycling or walking, but such choices are often hindered due to the lack of a safe transportation system for bicyclists and pedestrians. Levels of bicycling vary by city; however, those cities with higher frequencies of bicycle commuting have some or all of the following characteristics:

- **Higher proportions of the work force which commute five miles or less.** Research shows that cities with less than 20 percent of the population commuting five miles or less are unlikely to produce levels of bicycle commuting comparable to cities where 35 percent or higher of the population commutes less than five miles.

- **Bicycle facilities include bikeways and bike lanes.** Where bicycle facilities are more extensive and, specifically, when bike lanes are incorporated into a city's transportation system, utilitarian and bicycle commuting are more popular.

- **The climate is favorable for bicycling for much of the year.** Personal discomfort and unsafe road conditions caused by inclement weather discourage bicycle travel.

- **The population is younger with a large number of university students.** The age of an individual is very significant in regard to bicycling and bicycle commuting. Bicycling, especially bicycle commuting, becomes less popular with increasing age. Two thirds of all bicyclists are under the age of 45. After age 45 the number of bicycle commuters declines dramatically. Data collected from 20 cities across the United States showed the most significant positive correlation variable for bicycle commuting was the presence of a university.

- **Income has an impact on bicycle transportation potential.** Higher costs for motor vehicle operation translates to segments of the population, particularly, the lower and fixed income segments to use alternate modes of transportation Bicycling is one mode which is used more frequently if safe conditions exist and distances to destinations are within the commuters' capabilities.

To most people, the advantages of the auto for commutes and errands outweigh the benefits associated with bicycling. However, when driving becomes less convenient and more expensive, bicycling (and walking for short trips) may occur more frequently if transportation facilities allow safe bicycling and walking.

Children and Bicycle Transportation

Perhaps the largest group of bicyclists are children who use bicycles heavily for recreation and transportation to school. Typically, child bicyclists do not have the experience, training, and judgment to safely handle on-street traffic. Therefore, children will usually limit their riding to lower-use residential streets or sidewalks. Bicycle paths with grade separated intersections with roadways that provide direct access to schools or parks will promote safe bicycling for children. **Under no circumstance should children be expected to ride on heavily traveled streets and be expected to have the ability of experienced adult bicyclists.**

i. *Cycling: Topeka's Bicycle Program*. Topeka-Shawnee County Metropolitan Planning Commission, March, 1979, page 1.

ii. "Improving Local Conditions for Bicycles", from Bikecentennial's Bicycle Forum, as quoted on page 5 of the *Florida Bicycle Sketch Plan*, Florida DOT, 1992.

iii. Ibid.

Chapter 4

"The Advantages of Bicycling and Walking"

"Increased levels of bicycling and walking transportation would result in significant benefits in terms of health and physical fitness, the environment, and transportation-related effects. "

The National Bicycling and Walking Study, FHWA, 1994.

There are many reasons why the State of Kansas and the Kansas Department of Transportation should promote bicycling and walking. Bicycling and walking are healthy, non-polluting forms of personalized, human powered transportation. Neither of these modes of transportation consumes limited natural resources, nor do they require a costly infrastructure to support, since both modes can largely use the existing infrastructure if it is modified to meet their needs. Walking and bicycling are available to all segments of society and to people of all ages and socio-economic levels. Increased use of these modes will promote less traffic congestion and less air and noise pollution and will produce tangible health and economic benefits.

Traffic Congestion Benefits

The current level of mobility of the United States population is the highest in our nation's history.[i] While expanding transportation systems have allowed us greater freedom regarding choice of destination, there is a growing concern with the level of traffic congestion, particularly the "gridlock" often occurring in urban areas. Recent statistics released by the Federal Highway Administration showed that between 1985 and 1988, overall traffic delays from congestion grew by 57 percent. By 1987, two thirds of urban interstates had traffic delays and 70 percent of rush hour traffic travelled slower than 35 miles per hour.

Pedestrians can travel in very high densities, especially when compared to drivers of single occupant cars. Adequate sidewalks, safe roadway crossings, and other pedestrian provisions can encourage walking for short trips and as a result, reduce the congestion caused by motor vehicle travel.

Bicyclists likewise take up very little road space. Physically, a bicycle is approximately six feet long and two feet wide, accounting for approximately ten percent of the space required for a passenger car.

Bicycles are not expected to have any impact on flow where the outside curb-lane widths exceed 14 feet. Also where bicycle volumes are less than 50 per hour, impacts are also believed to be negligible, except where lanes are narrow (less than 11 feet in width). [ii]

There are several statistics which support the concept of larger numbers of Kansans riding bikes or walking for more of their everyday transportation, particularly, for commuting. As discussed in Chapter 2, approximately 40 percent of all trips are two miles or less which is the average bicycle trip length. Approximately 27.5 percent of all trips are one mile or less which is slightly longer than the average walking trip of 0.6 miles. Statistics also show that one half of American workers live less than five miles from their work place, and a study has found that bicycling is often the fastest mode of travel in urban areas for trips up to four miles in length. The FHWA states that over 60 percent of all trips are five miles or less in length, equating to a bike ride averaging 25 minutes or less.

Therefore, bicycling and walking can be instrumental in the reduction of urban traffic congestion making it an attractive transportation alternative, especially upon consideration of the following facts.

- According to the 1990 Nationwide Personal Transportation Survey, there was a 22 percent increase between 1969 and 1990 in daily household vehicle miles travelled.

- Average trip lengths, which had decreased from 8.9 miles in 1969 to 7.9 miles in 1983, showed an increase to 9.0 miles in 1990. The largest increase in trip length was in work trips, shooting upward from an average of 8.5 miles in 1983 to 11.0 miles in 1990.

Economic Benefits

According to the "Minnesota Plan B: Bicycle Plan," published by the Minnesota Department of Transportation (MnDOT), the benefits of bicycling can also be translated into economic benefits and tax savings. The Plan states that "monetary savings to the general public have been calculated to be at least $.05 to $.22 for every mile travelled--from reductions in air pollution, oil imports, and congestion." It was estimated by the Minnesota Department of Transportation that bicycling transportation saved Minnesotans over $24 million in "out of pocket" costs. Additional savings (for which it is difficult to give a monetary value) accrue from such things as a reduction of motor vehicle transportation leading to a decreased amount of pollutants being released into the atmosphere, thereby lessening the "greenhouse" effect.

The following facts further support the cost benefits of bicycling.

- A survey of bicycle commuters by the California Department of Transportation (CALTRANS) District 11 showed that respondents saved an average of $750 per year by commuting three to four days per week by bicycle.

- Participation in bicycle touring has been growing at over 10 percent, per year in the United States. In 1989, over 1.1 million people spent an average of $20-$60 per day on bicycle touring vacations. Bicycle touring causes only minimal additional traffic congestion or pollution in communities along touring routes.

- Multiple use paths and "rail trails" are increasingly popular forms of bicycle and pedestrian recreation and tourism. According to the Rails-To-Trails Conservancy, there are currently more than 500 rail-trail projects in operation across the country and another 650 are being developed.

- Households are keeping their vehicles for longer periods of time. The percent of household automobiles that were 10 or more years old equalled 30 percent in 1990 up from 6.2 percent in 1969. Therefore, households faced with extensive repair or replacement of vehicles may consider the less expensive bicycle or walking to serve part of their transportation needs.

Environmental Benefits

Everyday the public concern over the environment seems to grow. The potential benefits to the environment as a result of bicycling and walking instead of driving are staggering. Public savings from reduced pollution, reduced oil imports, and reduced congestion costs alone have been estimated at between five and 22 cents for every automobile mile displaced by bicycling or walking. For every 100 miles travelled on a bike instead of in a car, the burden on the Earth's atmosphere is reduced by 94.0 pounds of carbon dioxide, 4.2 pounds of carbon monoxide, 0.4 pounds of nitrogen oxides, and 0.3 pounds of hydrocarbons. [iii] That's nearly a pound of pollutants avoided for each mile travelled.

Additional environmental benefits can be realized through the increased use of bicycle and pedestrian transportation.

- The U.S. Department of Energy projects U.S. net oil imports in the range of 9 to 10 million barrels a day between mid 1992 and the year 2000. This is at least half of the total U.S. oil consumption. The Department estimates that three-fourths of the domestic oil used in the year 2000 will come from oil fields as yet undiscovered.

- The Eno Foundation for Transportation, Inc. reported that between 1965 and 1989 Americans increased their fuel use by 86 percent. American cars and trucks consume more than three billion barrels of fuel each year.

- According to the Environmental Protection Agency, every 2.4 percent shift in ridership from cars to bicycles or walking would reduce smog by five percent.

In light of these facts, it is not surprising that the Mid-America Regional Council (MARC), the MPO for the Kansas City area chose the theme "Leave your car at home. Walk or ride a bike", as their number one tip to help avoid or reduce air pollutants during the summer of 1992. [iv]

Health Benefits

A number of national surveys confirm that bicycling and walking are popular activities among Americans. An estimated 130 million regularly bicycle or walk for exercise, sport, recreation, or simply for the enjoyment of the outdoors.

Bicycling is the second most popular form of recreation. The "mountain" bicycle, a new type of bicycle built primarily for recreational, including trail use, has recently become very popular. In 1992, the Bicycle Institute of America estimated there were 25 million "mountain" bicycle riders in the United States, an increase of 5 million over 1991. Furthermore, of the 11.6 million bicycles sold in 1992, 6.7 million were "mountain" bikes.

Besides recreation and the use of the bicycle for pure enjoyment, there are also significant health benefits to consider. Low to moderate levels of exercise, which includes bicycling and walking, have been shown to have a positive health effect in terms of avoiding or minimizing the effects of strokes, cancer, and arthritis. Bicycling also burns calories. [v] Health advocates and physicians describe bicycling as a perfect exercise. The cardiovascular system can be strenuously exercised without the blisters, jolting, and joint impaction associated with jogging.

To summarize, bicycling and walking provide economical and energy efficient transportation, exercise and recreation. Quiet, relaxed travel on a bicycle permits investigation and appreciation of the environment. Air and noise pollution are not problematic with increased walking and bicycling activity, and substituting a bicycle for a car often provides an easily parked and frequently less time consuming means of transportation that can significantly minimize traffic congestion. Overall, the general quality of life in Kansas could be improved with a larger, more active bicycling and walking population.

Achieving the Advantages of Bicycling and Walking

In conclusion, bicycling and walking as alternative modes of transportation can give economic benefits to society as a whole and at the same time provide monetary savings to the individual bicycle and pedestrian commuter. However, if bicycling and walking are to be a safe and effective means of transportation which are compatible with the goals of the Kansas Department of Transportation and of local communities, the overall impacts of bicycle and pedestrian facilities should be analyzed.

KDOT encourages all Kansans to participate in the intermodal transportation planning process, of which bicycle and pedestrian facilities are included. To even begin to approach the bicycling participation levels commonly achieved in Europe, the "idea" of bicycling as an alternative transportation mode must be sold to more Kansans. Similarly, to increase the participation rates of pedestrian transportation, walking as an alternative form of transportation for short distances needs to be promoted. In order to do this, bicycle and pedestrian transportation need to be convenient, reliable, and safe.

Much work needs to be done since estimates are that only 1 in 40 bicycles is used for commuting. The other 39 are ridden for fitness and recreation, or they are collecting dust in garages and basements.

"All you have to do is make it easier to ride a bike than drive a car. People will take it from there."

Ellen Fletcher
Palo Alto City Council

i. National Personal Transportation Survey (NPTS), Volume 1, FHWA, November, 1993.

ii. *Highway Capacity Manual*, Transportation Research Board, 1985, pp.14-3.

iii. *Plan B: The Minnesota Comprehensive State Bicycle Plan*, Minnesota DOT, 1992, page 4.

iv. *The Commuter*, Volume XII, MARC, May, 1992.

v. *Plan B*, Minnesota DOT, page 14.

Chapter 5

"Bicycle and Pedestrian Transportation in Kansas"

"This is the land of grass. Native species include blue grama and buffalo grass, plus big and little bluestem. Where the short grass prairie once stood, today there is wheat, particularly winter wheat. And no matter where you go, there are always the special people of Kansas - legendary among cyclists for their kindness and generosity."

"TransAmerica Bicycle Trail Map," BikeCentennial, 1992

Recent survey results show that overall, Kansans are supportive of bicycle and pedestrian transportation. Kansans are particularly in support of bicycle and pedestrian facilities along major roadways, the conversion of abandoned railroad rights-of-way to recreational trails, and the restriction of land use to allow alternate modes of transportation including bicycle and pedestrian transportation. There is also support for the premise that Kansas should maintain the existing highway system rather than expand or increase the capacity of the system.

The degree to which bicycle and pedestrian transportation are viable and meaningful modes of transportation within Kansas communities varies considerably. Bicycle and pedestrian transportation planning has a "longer track record" of being a significant part of the overall transportation planning in university communities such as Lawrence and Manhattan and in several urban areas including the Kansas City metropolitan area, Topeka, and Wichita. However, similar to the "newness" of the emphasis regarding nontraditional transportation modes under ISTEA, for many communities in Kansas, bicycle and pedestrian transportation are "new" or "rediscovered" modes of transportation. Therefore, the Kansas Department of Transportation along with the Federal Highway Administration has and will continue to act as resource agencies. In that role, KDOT and FHWA provide and will continue to provide guidance to many communities striving to incorporate effective bicycle and pedestrian transportation planning within their overall transportation system.

Kansas Bicycling and Pedestrian Statistics

According to the 1990 Census, there were 3,181 bicycle commuters in Kansas, a very small number when compared to the overall number of commuters. However, the number of Kansas bicycle commuters was higher than several other states with larger populations. Overall, walking and bicycling commuters accounted for a total of 48,527 commuters (bicyclists = 3,181; walkers = 45,346) out of a grand total of 1,178,931 commuters. This number represented approximately four percent of all commuters in Kansas in 1990.

According to the "National Bicycling and Walking Study," a separate study published by the Federal Highway Administration in April 1994, the average American makes 20 trips per week, yet only 1.5 trips, or an average of less than eight percent of all trips per week, are by walking or bicycling.

Survey of Local Communities: Inventory of Bicycle/Pedestrian Facilities, Funding Levels, Issues

A total of 34 Kansas communities were surveyed in the summer of 1994 in regard to their bicycle and multiple-use bicycle and pedestrian transportation planning efforts. (Specific pedestrian planning efforts were not surveyed.) Responses were received from 25 communities. The information shown in the Table 6 below is derived from this survey in combination with other data from the Transportation Enhancement program and from KDOT files:

TABLE 6
Current and Projected Bicycle/Pedestrian Facilities
State of Kansas, 1994

TYPE OF FACILITY	EXISTING MILEAGE	PROJECTED YEAR 2020 NEW MILEAGE	TOTAL EXISTING AND PROJECTED MILEAGE
Bicycle Routes	150.0	92.0	242.0
Bicycle Lanes	1.3	37.0	38.3
Bicycle/Pedestrian Paths	77.6	247.0	324.6
Rail Trails	3.0	74.0	77.0
TOTAL	**231.9**	**450.0**	**681.9**

Kansas communities plan to almost triple the mileage of bicycle and bike/pedestrian facilities by the year 2020. Currently, bike route facilities are the most available type of bicycle facility in Kansas. The off-road "bike/pedestrian path" however, is the type of facility that is most often planned for construction. In addition, there are sizable gains projected for the "bicycle lane" facilities.

Substantial financing of bicycle and pedestrian facilities is planned by those communities which responded to the KDOT survey. These communities reported that more than $3.1 million is planned to be spent in 1994, over $3.7 million is to be spent in 1995, and nearly $10.5 million is planned to be spent over the next ten years.

Table 7 shows that substantial financing of bicycle and pedestrian facilities is planned by those communities responding to the survey. Funding totals for 1994 and 1995 include Transportation Enhancement funding.

TABLE 7

Anticipated Expenditures for Bicycle/Pedestrian Facilities
State of Kansas, 1994

Bicycle and Pedestrian Facilities	1994	1995
	$3,113,000	$3,736,000

Respondents to the survey cited the State's generally flat terrain as an advantage for bicycle transportation in Kansas. Also, several communities stated that their wide streets and low traffic volumes were favorable for bicycling. The lack of public awareness of the benefits of bicycling, motorists not conditioned and even hostile to bicyclists, and the need for off-road bicycle paths and storage facilities were cited as impediments to increased bicycle transportation.

Survey respondents mentioned that the Kansas Department of Transportation should continue to provide: funds for bicycle and pedestrian transportation including funds for studies and plan development; technical assistance including surveys, studies, concepts, and standards; and case study examples. There was also a response stating that KDOT should provide adequate paved shoulders on state highways void of rumble strips.

Bicycle and Pedestrian Commuting in Kansas

Kansans are generally receptive to the idea of bicycle transportation. While developing the Long-Range Transportation Plan, The Kansas Department of Transportation surveyed a diverse segment of the State's population interested in the future of Kansas transportation. A formal questionnaire was distributed during 1994 to various statewide conferences and meetings of which five questions pertained specifically to bicycle and pedestrian transportation. The questionnaire results showed that two-thirds agreed or strongly agreed that "pedestrian and bicycle facilities should be built on or along roads where there is a demonstrated need for them," even though the number of Kansans actually choosing the bicycle as a transportation mode lags far behind stated preferences as evidenced by very small number of bicycle commuters counted by the 1990 U.S. Census. Additionally, nearly half of the respondents agreed or strongly agreed that "bicycle facilities should be built to encourage commuting." For a more in-depth analysis, please see Appendix D where the questionnaire's total results are contained.

In a national study, data collected from 20 cities across the U.S. showed the most significant positive correlation variable for bicycle commuting was the dominating presence of a university. Other factors with positive correlations affecting bicycle commuting are short commute distances and the existence of bicycling facilities. 1990 Census data confirms the university variable correlation concerning bicycling and walking for Kansas communities. Cities in Kansas that had a higher percentage of non-motorized commuting than the statewide percentage of 4.1 percent included Manhattan (14.4%), Lawrence (10.3%), Emporia (9.0%), Pittsburgh (6.3%), and Hays (5.3%). Each of these cities has a state university which is a significant factor in non-motorized commuting as stated previously. The highest percentages of bicycling as a mode of transportation occurred in Manhattan and Lawrence which are the locations for Kansas State University and the University of Kansas respectively.

The presence of a university does not by itself insure large numbers of bicyclists. Research from Case Study Number One shows that those "university towns" having high levels of student and non-student bicycle users were due to: (1) construction of an extensive, linked network of bicycle lanes, (2) bicycle registration, (3) active enforcement of bicycle and motor vehicle laws, (4) high parking fees, and (5) development which enhances access to bicycling facilities.

To achieve higher levels of bicycle and pedestrian commuting in Kansas, it may be necessary to first "sell the idea" of bicycling or walking as alternative transportation modes to more Kansans. In particular, there may be a need to target specific demographic groups and, particularly, "university towns" in Kansas to promote bicycling and walking. It is very important that the "products," bicycle and pedestrian transportation, be reliable, convenient, and, above all, safe means of transportation.

Kansas Transportation Enhancement Program

Ten percent of the Surface Transportation Program (STP), a major highway funding element of ISTEA, must, by law, be spent on projects which are specified as Transportation Enhancements. These are defined as: "...provisions of facilities for pedestrians and bicycles, acquisition of scenic easements...or historic sites, scenic or historic highway programs, landscaping and other scenic beautification, historic preservation, rehabilitation and operation of historic transportation buildings, structures, or facilities (including railroad facilities), preservation of abandoned railway corridors (including the conversion and use thereof for pedestrian or bicycle trails), control and removal of outdoor advertising, archaeological planning and research, and mitigation of water pollution due to highway runoff."

For the Kansas Transportation Enhancement Program, KDOT has made enhancements open to eligible applicants on a competitive basis. For this program, KDOT defines eligible applicants as any municipal, county, or state agency. Applications for Transportation Enhancement funding are distributed using an extensive mailing list which includes all city and county governments. For each program year, beginning in 1992, the application packets are distributed in June and are due in the early part of September.

The Kansas program has been divided into three broad categories: historic; scenic and environmental; and bicycle and pedestrian. The historic applications are reviewed by the Kansas State Historical Society; scenic and environmental applications by KDOT's Landscape Architect; and bicycle and pedestrian applications by KDOT's Bicycle and Pedestrian Coordinator. Following review, project selections are announced during April of the following year.

KDOT has developed broad criteria which are required of all transportation enhancement projects. Examples are: all federal, state and local laws and requirements must be met, the applicant must manage the project, including a plan for maintenance, and the project must be constructed to all applicable standards and guidelines, such as those of the American Association of State Highway and Transportation Officials (AASHTO). In addition, appreciable demonstration of public support should be shown by the applicant.

Nationwide, 50 percent of all funds spent on Transportation Enhancement projects have been used for bicycle, pedestrian, and/or trail projects. As of September 1993, 514 non-motorized projects had received a total of $235.9 million in ISTEA Transportation Enhancement funds. (In the 18 years prior to ISTEA, only $41 million of federal-aid highway funds was used for bicycle and pedestrian facilities.)

The response to the Kansas Transportation Enhancement Program shows a demand for bicycle and pedestrian projects. For Federal Fiscal Year (FFY) 1992-1996 funding, 119 applications for bicycle and pedestrian projects were received by KDOT with a requested total funding amount of $35.7 million. Of the 119 applications, 26 were selected by KDOT and awarded funding at a total project cost of $13.1 million. Of this

amount, federal Transportation Enhancement funds equalled $10.3 million and were matched by $2.8 million of local funds. This program has provided for the construction of an estimated 104 miles of bicycle and pedestrian facilities in Kansas under the FFY 1992-1996 Transportation Enhancement program.

A workshop for potential project applicants held in Salina in July 1994 for the FFY 1997 funding year was well-attended primarily by representatives from local communities across the state. It is anticipated that interest in this program will continue.

Beyond FFY 1997 it is not known if the Transportation Enhancement program will be reauthorized in the next federal transportation program. In future years it is projected that the demand for such funding for bicycle and pedestrian projects will greatly exceed available funds. Competition for Transportation Enhancement funding which is already severe will escalate in the future. Communities, therefore, should not rely exclusively on Transportation Enhancement funding for the construction of bicycle and pedestrian facilities. Communities are encouraged to seek alternative funding including the use of local funds. Two communities in western Kansas, Phillipsburg and Elkhart, have already succeeded in designating alternative funding for their bicycle/pedestrian path projects. In addition, Johnson and Wyandotte counties contracted with a consultant to develop a bicycle transportation plan for the two county area. Funding for this study in the Kansas City metropolitan area includes federal Planning and Surface Transportation Program (STP) funds in addition to local funding.

In regard to Transportation Enhancement applications, maintenance is frequently an overlooked expense. Communities need to budget for sufficient maintenance to ensure that bicycle and pedestrian facilities will remain in usable condition.

TABLE 8

Approved Bicycle and Pedestrian Transportation Enhancement Projects, Fiscal Years 1992 - 1996

CITY/COUNTY	LOCATION	FACILITY TYPE	MILES
Anderson and Franklin Cos.	Abandoned railroad ROW from Richmond to Welda	Bicycle/Pedestrian Path ("Rails to Trails")	18.0
Oberlin	Oberlin Community Center to junction of US-36 and US-83	Pedestrian Facility	0.27
Douglas Co.	South Lawrence Trafficway: Clinton Parkway to Louisiana	Bicycle/Pedestrian Path	7.20
Douglas Co.	South Lawrence Trafficway: Louisiana to Douglas Co. Route 442	Bicycle/Pedestrian Path	4.50
Lenexa	95th Street/Widmer Road to Pflumm Road/Marshall	Bicycle/Pedestrian Path	0.76
Olathe	Indian Creek Trail from 155th Street to Blackbob Road	Bicycle/Pedestrian Path	5.85
Olathe	From Lakeshore Drive to Blackbob Road on Dennis, Sheridan, and 143rd St.	Roadway Rehabilitation for Bicycle Lane	6.25
Shawnee	From Little Mill Creek Trail in Lenexa to Blackfish Parkway	Bicycle/Pedestrian Path	3.40
Coffeyville	Along city streets and abandoned railroad ROW north of US-166	Bicycle/Pedestrian Path and "Rails to Trails"	3.00
Council Grove	Riverfront area northwest of junction of US-56 and K-177	Bicycle/Pedestrian Path and levee improvements	0.50
Manhattan	Fort Riley Blvd. and Wildcat Creek	Bicycle/Pedestrian Underpass	0.08
Manhattan	Kansas State University: Kimball, College, and Denison Avenues	Bicycle/Pedestrian Path	1.61
Salina	On levee from Magnolia Road to Bill Burke Park	Bicycle/Pedestrian Path	2.00
Wichita	Gypsum Creek from Douglas Road to Cessna Park	Bicycle/Pedestrian Path	3.50
Topeka	Shunganunga Creek from Washburn Avenue to Kansas Avenue	Bicycle/Pedestrian Path	2.03
Douglas Co.	On US-40 east of the South Lawrence Trafficway	Bicycle/Pedestrian Underpass	0.05
Allen County	On new US-169 alignment 1.1 mile south of Allen-Anderson County Line	Bicycle/Pedestrian Underpass	0.05

TABLE 8 (Continued)

Approved Bicycle and Pedestrian Transportation Enhancement Projects, Fiscal Years 1992 - 1996

CITY/COUNTY	LOCATION	FACILITY TYPE	MILES
Franklin Co.	Abandoned railroad ROW from Ottawa to Richmond	Bicycle/Pedestrian Path ("Rails to Trails")	15.00
Johnson Co.	Mill Creek North: 95th St. and Mill Creek to Shawnee Mission Parkway	Bicycle/Pedestrian Path	2.55
Derby	Garrett Park to Zollinger Park, Derby High School and 71st Street	Bicycle/Pedestrian Path	4.00
Hutchinson	Along Cow Creek, Harsha Canal, and Arkansas River from Rice Park to Carey Park	Bicycle/Pedestrian Path	3.20
Lawrence	Along creek between Iowa St. and Kasold Drive from 15th St. to Clinton Pkway	Bicycle/Pedestrian Path and Bridge	1.00
Leavenworth	Abandoned railroad from 12th and Osage Streets to north of Limit Street	Bicycle/Pedestrian Path ("Rails to Trails")	3.00
Ottawa	Abandoned railroad ROW from 5th Street to 23rd Street	Bicycle/Pedestrian Path ("Rails to Trails")	2.25
Wichita	Along K-96 Bypass from Oliver Street to east city limits	Bicycle/Pedestrian Path	4.00
Wichita	Along Gypsum Creek from Cessna Park to Turnpike Drive	Bicycle/Pedestrian Path	2.50

Kansas State Highway System

"Kansas is legendary among cyclists - not only for its winds and summer heat, but also for the slow unfolding of its scenery....But most of all, Kansas is people. People who've seen many cyclists before but still have time to talk to one more. People who honk as they pass and give big, friendly waves."

Free-Wheelin', A Solo Journey Across America," R. A. Lovett, 1992

To many touring bicyclists, Kansas is well known for the hospitality and generous nature of its inhabitants. Thus, Kansas has a good starting basis in its efforts to attain a "bicycle friendly" environment for Kansans and visitors who wish to bicycle within or across Kansas. An ongoing goal of the Kansas Department of Transportation is to continue its efforts in providing an intermodal state transportation system which includes safe and convenient bicycle transportation.

An important element of the state transportation system for which KDOT has direct responsibility is the Kansas State Highway System. Since the adoption of ISTEA, KDOT has increased its level of awareness of the need for improving bicycle transportation access to the state highway system. Two developments occurring in 1994, the publication of the Kansas Bicycle Guide and the adoption of the revised highway rumble strip design, illustrate this increased awareness and responsiveness.

Kansas Bicycle Guide

In order to provide guidance to touring bicyclists, the Kansas Department of Transportation published the "Kansas Bicycle Guide" in 1994. Previously, the Department had responded to requests from bicyclists for travel information by sending the official State Transportation Map, safety brochures, and addresses for bicyclists to contact for mostly local bicycle route information. In following the spirit of ISTEA to promote intermodal transportation, the Department in 1993 decided to develop a guide specifically for bicyclists.

An initial printing of 10,000 copies of the Guide occurred in May of 1994. The Guide is available at Kansas Tourist Information Centers and has been distributed to municipalities and bicycle clubs across the state. During 1994, KDOT's Bureau of Transportation Planning responded to over 150 requests from bicyclists for information regarding bicycling in Kansas.

In developing the Guide, criteria including total traffic volume, truck traffic volume and availability of paved shoulders were used to rate each section of the Kansas State Highway system as to its appropriateness for bicycle travel. Suggested roadway sections for bicycling were determined to be those which have less than 1,000 daily vehicles and less than 100 daily trucks or sections which have daily traffic of less than or equal to 2,000 daily vehicles with paved shoulders equal to or greater than three feet in width. Those sections of the state highway system which met these criteria were identified in the "Kansas Bicycle Guide." In addition, cross state routes were identified based on the frequency of sections

along the routes which met bicycling criteria.

It should be noted that any inclusion of a suggested route on the "Kansas Bicycle Guide" does not certify it to be a safe bicycle route. Also, only those experienced bicyclists defined as being 16 years or older, having a valid driver's license and having several years of bicycling experience should ride on the Kansas State Highway System. In regard to touring bicyclists riding on the Kansas State Highway System, it needs to be stressed that bicyclists are required to follow the same rules of the road as motorists. Touring bicyclists should always ride a well-maintained bicycle and know their riding limitations.

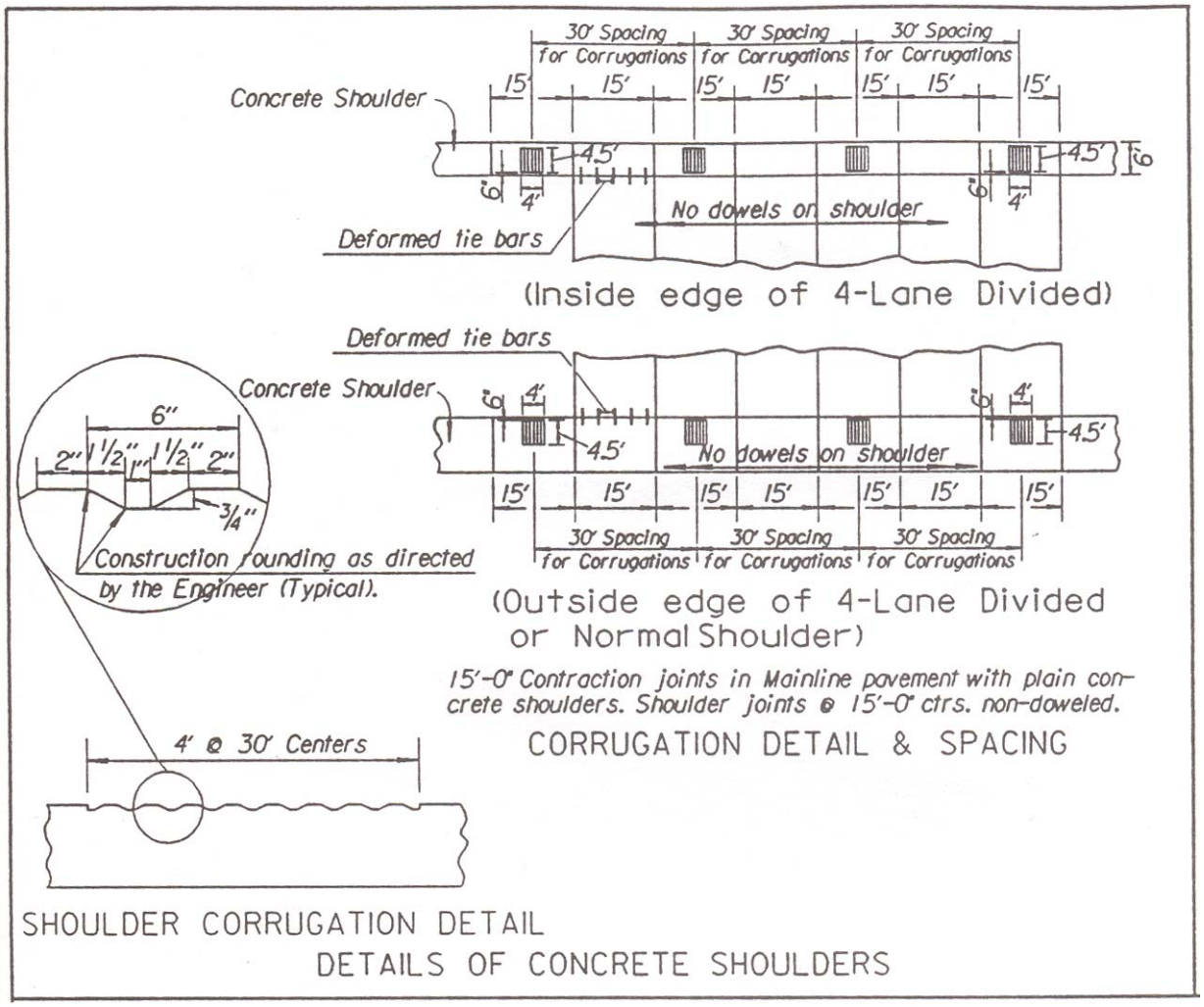
New Rumble Strip Design: Concrete Shoulders

At the beginning of 1994, touring bicyclists registered complaints with KDOT regarding the construction of rumble strips across the full width of concrete shoulders. Bicyclists protested that the occurrence of rumble strips every 90 feet across the entire width of the shoulder restricted their riding on the shoulder and forced them ride in the lane of travel. Bicyclists not wishing to be jarred every 90 feet by rumble strips were then forced to share driving lanes with motor vehicles traveling at highway speeds.

Touring bicyclists requested that KDOT redesign the rumble strips on concrete shoulders to allow safe riding on the shoulders. Several bicyclists referenced the "bicycle friendly" design of rumble strips on asphalt shoulders which are a continuous strip, three feet in width, adjacent to the joint between the lane and shoulder. The asphalt rumble strip design provided a smooth surface to the right of the rumble strip for bicyclists to ride. In addition, bicyclists stated that they felt better protected with the continuous rumble strip design.

In order to accommodate the needs of touring bicyclists and provide safer riding conditions, KDOT researched alternative rumble strip designs for concrete shoulders which were judged to be "bike friendly" and also meet motor vehicle safety, maintenance, and cost considerations. Effective August 1994, the Kansas Department of Transportation adopted a new design policy for rumble strips constructed on concrete pavement shoulders. This new design, as diagrammed on page 5-11, was a result of continuing research and efforts by the Department to construct rumble strip facilities that will continue to function as a safety device for motorists and also allow safe riding conditions for bicyclists. It should be emphasized that this new policy applies only to the construction of new concrete shoulders or when shoulders are re-constructed. The new rumble strip design will not be retro-fitted on existing concrete shoulders constructed prior to August 1994.

State Highway Rumble Strip Design for Concrete Shoulders,
Kansas Department of Transportation



The new rumble strip design will provide a smooth riding space of five feet in width to the right of rumble strips on ten foot wide concrete shoulders. A riding space of three feet in width will be available on eight foot wide concrete shoulders. It should be noted that the new rumble strip design applies only to the **concrete** shoulders of highways under the jurisdiction of the Kansas Department of Transportation. There is no change to the design of rumble strips on asphalt shoulders. Overall, KDOT believes it was responsive to the need to provide "bicycle friendly" highways for touring bicyclists and believes this new rumble strip design represents a good example of cooperation between a state agency and citizens working towards a beneficial solution of a problem.

Chapter 6

"The Future of Bicycle and Pedestrian Transportation in Kansas"

"The ISTEA requires the development of statewide and metropolitan transportation plans. The inclusion of bicycle and pedestrian elements in these transportation plans is essential."

Rodney E. Slater, Federal Highway Administrator, 1992

Pedestrian transportation is a transportation mode choice often overlooked as an important and viable part of the Kansas transportation system. Similarly, bicycling traditionally has often been viewed by government officials and a majority of the public as a recreational activity that is primarily reserved for children. However, several national surveys indicate that increasing numbers of adults are bicycling for transportation purposes. The purpose of the Kansas Bicycle and Pedestrian Transportation Plan is to promote and continue to incorporate walking and bicycling as a component of the State's intermodal transportation system. The mission statement which follows is designed to encourage and provide guidance for bicycle and pedestrian transportation in Kansas.

Mission Statement

"To serve the transportation and recreation needs of Kansans by supporting and promoting walking and bicycling as viable modes of transportation and as recreation resources that enhance our State's quality of life."

Framework for Bicycle and Pedestrian Transportation in Kansas

It is important to fulfill the potential of bicycling and walking in contributing to the health, safety, and welfare of Kansans and our out-of-state visitors. The Kansas Department of Transportation (KDOT) should act as a positive "role model" for bicycle and pedestrian transportation. KDOT's support of bicycle and pedestrian projects will encourage communities and citizens to support these modes of transportation.

The Kansas Long-Range Transportation Plan, which addresses all modes of transportation and encompasses all areas of the State, includes three recommendations regarding bicycle and pedestrian transportation:

- **In the KDOT design process, bicycle and pedestrian needs should be considered whenever feasible.**

- **KDOT should continue to be a strong advocate for bicycling and pedestrian interests. The agency should continue its efforts to assure that bicycle and pedestrian-friendly transportation facilities are constructed whenever feasible.**

- **A Bicycle and Pedestrian Facilities Handbook, demonstrating accepted design standards for bicycle and pedestrian facilities, should be developed by KDOT to assist state and local officials in planning and constructing bicycle and pedestrian facilities.**

In addition to the Long Range Transportation Plan's statements, the Kansas Department of Transportation also presents the following recommendations for bicycle and pedestrian transportation. For clarity and cohesiveness, these recommendations have been grouped into five categories: **Policy Considerations, Design Considerations, Funding Considerations, Safety Considerations, and Promotion Considerations.**

Policy Considerations

Integration, as opposed to separation, of bicycle and pedestrian transportation programs within government agencies is in the long-term best interests of bicycling and walking. KDOT has a responsibility to manage its own intermodal transportation system and to assist development of bicycling and pedestrian transportation by local government agencies.

KDOT will be responsive to demonstrated needs for making Kansas more "bicycle and pedestrian friendly" while still retaining highway safety and cost- effectiveness. KDOT staff will continue to be receptive to public comments and suggestions for improving pedestrian and bicycle access.

With these thoughts in mind, the following recommendations are made.

1. **In accordance with provisions of the ISTEA, KDOT will continue to encourage the incorporation of bicycling and walking as legitimate transportation modes within the existing and future transportation system of the State of Kansas.**

2. **Under the provisions of ISTEA's Enhancement funding categories, KDOT will continue to provide technical and funding support for pedestrian and bicycle transportation projects.**

3. KDOT will continue to support the point of view that bicycling and walking are practicable transportation options, and that these modes should be considered whenever existing or new governmental policies, procedures, or programs are evaluated.

Design Considerations

KDOT's goal is to always consider the needs of bicyclists and pedestrians when designing any transportation facility, whether it be a highway or bike path. Design guidance from the American Association of State Highway and Transportation Officials (AASHTO), the Federal Highway Administration (FHWA), and the Americans With Disabilities Act Accessibility Guidelines (ADAAG) should be referred to and utilized when designing any transportation facility. The use of these guides will promote the development of safe and convenient bicycle and pedestrian facilities which will in turn encourage bicycle and pedestrian transportation and recreation. In addition, KDOT will also consider the local community's objectives in regard to such facilities.

Because of the limited range of bicycles relative to cars, extra measures may need to be taken by the public and private sectors to achieve equal access opportunities. Measures may include the development of facilities such as exclusive bikeways, roadway improvements for bicyclists, and secure bicycle parking and storage facilities. Employers should be encouraged to provide facilities for employees commuting by bicycle.

In order to enhance bicycle safety and to encourage people to consider bicycling as an alternative to other modes of transportation, designating exclusive or preferential space for bicycle travel is especially desirable in heavily travelled transportation corridors. These types of spaces can take the form of paved shoulders, striped bike lanes, bike paths, or special alternate bike routes; depending on the individual transportation situation. In order to justify the provision of striped bike lanes which removes lane width for motorists, it is important that current or, more importantly, projected numbers of bicyclists be significant. Traffic engineering studies should be made prior to the designation of bike lanes.

In sparsely populated areas the designation of bike routes should primarily be determined by tourism and touring considerations. Incidental or low-volume bicycle use in sparsely populated areas should generally be accommodated through cooperative use of available roadway and shoulder areas.

With these thoughts in mind, the following recommendations are made.

4. KDOT's Bicycle and Pedestrian Coordinator, and other KDOT staff as necessary, will continue to be available to provide technical assistance to local communities and to the general public in the planning, design, construction, and maintenance of pedestrian and bicycle facilities.

5. KDOT's Bicycle and Pedestrian Coordinator will continue to stay apprised of new pedestrian and bicycle planning information. Particular emphasis will be

given to gaining the perspective of active bicyclists and pedestrians. KDOT's Bicycle and Pedestrian Coordinator will continue to act as a clearinghouse for bicycle and pedestrian transportation information to Kansas communities.

6. KDOT encourages the development and adoption of maintenance standards and practices by both state and local governments which maintain pedestrian and bicycle facilities in a safe operating condition.

7. KDOT will continue to advocate for bicycle and pedestrian access to commercial/work place locations and recreation attractions that is sufficient to accommodate and hopefully encourage use by those modes.

8. KDOT will continue to advocate for pedestrian and bicycle facilities that have connectivity, not "dead ends" or "gaps" where pedestrians and bicyclists are forced to negotiate unsafe or hazardous conditions.

9. KDOT will continue to advocate traffic operation measures and traffic control devices that meet the standards set forth in the Manual of Uniform Traffic Control Devices (MUTCD) that support and accommodate pedestrian and bicycle use.

Funding Considerations

The Kansas Department of Transportation encourages the Federal Highway Administration and the U.S. Congress to reauthorize ISTEA and its intermodal intent. KDOT has been impressed with local Kansas communities' response to the Kansas Transportation Enhancement program and sees a positive benefit to Kansas if the Enhancement program is reauthorized.

Research shows that the most successful bicycle and pedestrian transportation planning begins at the local level. Therefore, in addition to federal and state funding, a long-term commitment by local governments to provide sources of local funding is often necessary for the construction and maintenance of bicycle and pedestrian facilities.

With these thoughts in mind, the following recommendations are made.

10. KDOT will continue to maintain the view that funding sources and levels of funding for bicycle and pedestrian facilities and programs should be reflective of the demand for bicycle and pedestrian transportation.

11. KDOT will continue to solicit and fund pedestrian and bicycle facility projects under ISTEA, specifically through the Transportation Enhancement program. The KDOT Bicycle and Pedestrian Coordinator will continue to be available to provide assistance in the Transportation Enhancement application process.

12. KDOT believes that bicycle and pedestrian transportation opportunities are generally best addressed by the level of government closest to the people affected. Regional, county, and city governments have the greatest responsibility to assure the realization of the full potential of bicycling and walking.

Safety Considerations

Kansans expect safe travel by all modes of transportation including bicycle and pedestrian. Cooperation from agencies at all levels is vital to make sure that bicycling and walking are as safe as possible. KDOT staff and planners, engineers, motorists, bicyclists, pedestrians, and the general public in Kansas have critical input in accommodating non-motorized travel.

Children and adults need to be knowledgeable on how to safely bicycle on separated bicycle facilities, on separated mixed-use bicycle and pedestrian facilities, and on motor vehicle traffic lanes. Children and adults also need to know how to safely negotiate traffic when walking. Community based programs including the participation of schools are necessary to ensure effective bicycle and pedestrian safety training. KDOT advocates the development of bicycle and pedestrian safety programs for persons of all ages, particularly those of elementary school age and encourages the inclusion of bicycle and pedestrian safety in motor vehicle driver education programs.

Enforcement of bicycling and walking laws and regulations should be consistent with the enforcement of other modes of transportation. Proper ongoing law enforcement activity is necessary to promote safe bicycling and walking behaviors and should be vigorously pursued. Bicyclists and pedestrians are especially vulnerable to assault or attack when compared to a person in a vehicle. Therefore, measures should be taken in the design and operation of bikeways and pedestrian facilities to minimize such risks. Regular police patrols of bikeways and pedestrian facilities are encouraged.

The Bureau of Traffic Safety of the Kansas Department of Transportation acts as a resource in the development of bicycle and pedestrian safety programs. The office also makes available bicycle and pedestrian safety brochures, and has provided funding for the distribution of bicycle helmets for children in Kansas at reduced cost.

With these thoughts in mind, the following recommendations are made.

13. KDOT supports the view that where legally allowed, people should expect safe, non-motorized transportation including bicycling and walking, and that the bicycle's status on public streets and highways where legally allowed be maintained.

14. KDOT encourages bicycle and pedestrian safety education programs.

15. KDOT supports designation of exclusive/preferential space (such as bicycle lanes) for bicycle and pedestrian travel on heavily travelled arterials that include significant numbers of bicyclists and walkers.

16. KDOT believes that safe and legal bicycling and walking practices should be protected and reinforced through consistent and appropriate law enforcement.

17. KDOT will continue to advocate the use of bicycle helmets by persons of all ages for all bicycle transportation and recreation.

18. Accident and injury data will continue to be collected by KDOT, and analyses of these data will be used to improve the safety of pedestrians and bicyclists in Kansas.

Promotion Considerations

Given the wide range of benefits associated with increased levels of bicycle use and walking, Kansas' intermodal transportation system should be managed in a manner that makes bicycling and walking a convenient and safe means of fulfilling many transportation needs. The public should be made aware that walking and, particularly, bicycling beyond the short distances in their neighborhoods is possible. Commuting by bicycle or by walking should be promoted for those workers who travel very short distances to their workplaces.

Although walking and, particularly, bicycling are suitable as primary means of transportation for many kinds of trips, these two modes of transportation suffer from a perceived lack of social status. Where walking and bicycling are safe modes of transportation, they should be promoted as modes of transportation with social status at least equal to that claimed for automobiles.

Recreational bicycling and walking also promotes physical fitness and mental health. In addition, recreational bicycling is valuable as a means by which Kansas communities can develop low-impact, high-yield tourism economies.

With these thoughts in mind, the following recommendations are made.

19. KDOT encourages the promotion of publicity campaigns to encourage bicycling and walking as legitimate transportation modes.

20. KDOT encourages the promotion of the economic, environmental, and health benefits of pedestrian and bicycle commuting.

21. KDOT supports the view that consideration should be given to developing and maintaining the aesthetic attractiveness and environmental quality of bikeways and walkways to encourage their use.

Appendices

Appendix A
ISTEA Analysis

ISTEA Principles Related to Bicycle and Pedestrian Transportation

The Intermodal Surface Transportation Efficiency Act (ISTEA) offers opportunities for state and local bicycle and pedestrian programs. Several programs under ISTEA allow for the construction of bicycle facilities. Under ISTEA, generally states are to determine how their share of federal funds are to be spent.

Section 1006: National Highway System (NHS) Funds

Section 1006 funds may be used to construct bicycle transportation facilities on land adjacent to any highway of the National Highway System, other than the Interstate System. Such facilities must be primarily for transportation, not recreation.

Section 1007: Surface Transportation Program (STP) Funds

Section 1007 funds may be used for the construction of bicycle transportation facilities or non-construction projects such as brochures, public service announcements and bicycle route maps. Such projects must be transportation, not recreation oriented.

Ten percent of each state's annual STP funds are to be allocated for Transportation Enhancement Activities. Of the ten enhancement activities, two are bicycle and pedestrian related: bicycle facilities and preservation and conversion of abandoned railway corridors to trails. The Kansas Department of Transportation initiated the Kansas Transportation Enhancement Program in April 1992. For more information on this program, please see the "Kansas Transportation Enhancement Program" in the Appendix.

Section 1008: Congestion Mitigation and Air Quality Improvement (CMAQ) Program

Section 1008 funds may be used for the construction of bicycle transportation facilities or non-construction projects (brochures, announcements, route maps). Such bicycle projects under the CMAQ category must be located and designed according to an overall plan developed by each Metropolitan Planning Organization (MPO) and the state.

Section 1032: Federal Lands Highway Funds

Section 1032 funds may be used to construct bicycle transportation facilities in conjunction with roads, highways, and parkways at the discretion of the department charged with the administration of such funds. Such funds must be located and designed according to an overall plan developed by each MPO and the state.

Section 1047: Scenic Byways Program Funds

Section 1047 funds may be used to construct facilities along the highway for the use of pedestrians and bicyclists. This program is administered by the Kansas Department of Transportation.

Section 1302: National Recreational Trails Fund

As mandated by the Governor, this program is administered by the Kansas Department of Wildlife and Parks. Section 1302 funds may be used for a variety of recreational trails programs that would benefit bicyclists, pedestrians, and other non-motorized and motorized users. Section 1302 projects must be consistent with a Statewide Comprehensive Outdoor Recreation Plan (SCORP). One half of the annual appropriation is distributed equally among the states, and the other half is based on the amount of non-highway recreational fuel used in each state.

Section 402: Pedestrian and Bicyclist Safety Program

Title II, Section 2002 of ISTEA addresses state and community highway safety grant program funds. The Office of Traffic Safety of the Kansas Department of Transportation administers this program. For more information on bicycle safety programs call the Office of Traffic Safety at (913) 296-3756.

Additional Provisions of ISTEA

Metropolitan Planning Requirements

Metropolitan planning organizations (MPOs) are required to develop transportation plans and programs in cooperation with the state of Kansas. Such plans and programs must provide for the development of transportation facilities, including bicycle and pedestrian transportation facilities, which will function as an intermodal transportation system for the metropolitan area and the state. MPOs must also develop long-range plans for bicycle and pedestrian transportation which must be incorporated into the long-range transportation plan for the MPO.

The state of Kansas is required to develop, for all areas of the state, transportation plans and programs which provide for the development of transportation facilities, including bicycle and pedestrian transportation facilities. The development of these plans and programs will enable Kansas to achieve a state intermodal transportation system. A long-range plan for bicycle and pedestrian transportation must be incorporated into the long-range transportation plan for the state of Kansas.

Bridges

When a highway bridge deck where bicycles and pedestrians are permitted is being replaced or rehabilitated with federal funds, the design study of the new bridge should include bicycle and pedestrian transportation accommodations. The Secretary of Transportation also needs to determine that safe accommodation of bicyclists and pedestrians on replaced or rehabilitated bridges can be obtained at a reasonable cost.

State Bicycle and Pedestrian Coordinator

ISTEA requires each state to establish and fund a Bicycle and Pedestrian Coordinator position in the state's Department of Transportation. The Coordinator is to promote and facilitate the increased use of non-motorized modes of transportation, including developing facilities for the use of pedestrians and bicyclists, public education, promotions, and safety programs. The Federal Highway Administration anticipates that the Coordinator position will be a full-time position in most states.

To contact the Kansas Bicycle and Pedestrian Coordinator, please direct correspondence to:

Bicycle and Pedestrian Coordinator
Kansas Department of Transportation
Bureau of Transportation Planning
700 SW Harrison Street, 2nd Floor Tower
Topeka, Kansas 66603-3754
(785) 296-7448
(785) 296-3585 VOICE/TTY

Appendix B
Kansas Bicycle Statutes

KSA 8-1405

Bicycle defined.

KSA 8-1586

Traffic laws must be obeyed by children (parental responsibility).

KSA 8-1587

All traffic laws apply to bicyclists.

KSA 8-1588

Limitations specified on the number of riders per bicycle.

KSA 8-1589

Bicyclists cannot cling to motor vehicles.

KSA 8-1590

Bicyclists must ride to the right.

KSA 8-1591

One hand must always be on the bicycle handlebars.

KSA 8-1592

Light/lamp visibility specifications.

KSA 8-2002

Allows municipalities the right to require bicycle registration.

Appendix C
Kansas Pedestrian Statutes

KSA 8-1508

a. Pedestrian responsibilities in accordance to green indication of traffic-control signal legend.

b. Pedestrian responsibilities in accordance to steady yellow indication of traffic-control signal legend.

c. Pedestrian responsibilities in accordance to steady red indication of traffic-control signal legend.

KSA 8-1509

a. Pedestrian control walk signal defined.

b. Pedestrian control don't walk signal defined.

KSA 8-1510

Flashing traffic signals defined.

KSA 8-1532

Pedestrian obedience to official traffic-control devices required.

KSA 8-1533

a. Pedestrian responsibilities at crosswalk defined.

b. Pedestrian shall not suddenly walk or run into path of vehicle.

c. Driver responsibilities at crosswalk defined.

KSA 8-1534

a. Pedestrian responsibilities for crossing roadway at locations other than crosswalks defined.

b. Pedestrian responsibilities for crossing roadway at pedestrian tunnel or overhead crossing defined.

c. Pedestrians shall not cross at any place except in marked crosswalks between adjacent intersections at which traffic-control signals are in operation.

d. Pedestrian diagonal crossings of intersections defined.

KSA 8-1535

Driver is to exercise due care to avoid colliding with any pedestrian and give warning by sounding horn when necessary.

KSA 8-1536

Pedestrian shall move, whenever practicable, upon the right-half of the crosswalks.

KSA 8-1537

a. Where sidewalk is provided, it is unlawful for pedestrians to walk along or upon adjacent roadway.

b. Where sidewalk not provided, pedestrians shall walk only on a shoulder, as far as practicable from the roadway edge.

c. Where neither sidewalk or shoulder is provided, pedestrians shall walk along the outside edge of roadway, and if on two-way roadway, shall walk only on the left side of the roadway.

d. Except as otherwise noted, any pedestrian upon a roadway shall yield right-of-way to all vehicles upon the roadway.

KSA 8-1538

a. No person shall stand in a roadway for purpose of soliciting a ride.

b. No person shall stand in highway for soliciting employment, business, or contributions from occupants of any vehicle.

KSA 8-1539

No vehicle shall at any time be driven through or within a safety zone.

KSA 8-1540

The driver of a vehicle shall yield the right-of-way to any pedestrian on a sidewalk.

KSA 8-1541

a. Pedestrians shall yield right-of-way to authorized emergency vehicles.

b. Drivers of emergency vehicles shall drive with caution and avoid colliding with any pedestrian.

KSA 8-1542

Drivers shall yield the right-of-way to any blind pedestrian carrying a clearly visible white cane or accompanied by a guide dog.

KSA 8-1543

A Pedestrian under influence of alcohol or drugs is a misdemeanor offense if such pedestrian is walking on a highway.

KSA 8-1544

a. Pedestrian obedience is required to bridge operation signals.

b. Pedestrian obedience is required to railroad operation signals.

KSA 8-2006

Restrictions on pedestrian crossings by local authorities, and the Secretary of Transportation to prohibit pedestrians from crossing any roadway in a business district or any designated highways except in crosswalks are defined.

KSA 8-2007

Restrictions on pedestrian crossings by local authorities, and the Secretary of Transportation after engineering and traffic investigations to prohibit pedestrians from crossing any roadway in unmarked crosswalk locations.

KSA 12-687

City governing powers for improving trafficways and connections, including pedestrian improvements defined.

KSA 19-27, 182

County governing powers for special assessments for improvements including vehicle and pedestrian bridges, overpasses, and tunnels defined.

KSA 74-2110

It is the duty of any driver, pedestrian or rider of any animal traveling upon the highways of the state to stop on signal by any member of the patrol.

Appendix D:
Transportation Questionnaire Results

Transportation Engineering Conference, Manhattan, March 30-31, 1994 - 276 surveys
Public Budgeting Class, Kansas State University, March 31 - 15 surveys
APWA Spring Conference, Hutchinson, April 13-15, 1994 - 16 surveys
Transportation Engineering Class, Kansas State University, April 20, 1994 - 6 surveys
County Highway Engineers Conference, Great Bend, April 25-27, 1994 - 45 surveys
Kansas Annual MPO Meeting, Topeka, May 26, 1994 - 13 surveys
Economic Development Education Workshop, Rolla, June 15, 1994 - 23 surveys

Total Completed Questionnaires = 394
Strongly Disagree (SD) Disagree (D) Neutral / No Opinion (N)
Agree (A) Strongly Agree (SA)

SD	D	N	A	SA	
3%	40%	18%	37%	2%	1. The existing highway system is being adequately maintained.
5	***13***	***16***	***47***	***19***	***2. Pedestrian and bicycle facilities should be built on or along roads where there is a demonstrated need for them.***
1	7	7	43	42	3. Governments should restrict driveways onto main roads to reduce congestion, preserve capacity and promote safety.
9	27	24	28	11	4. To provide statewide access, the State should make every effort to maintain rail service, even if state acquisition of rail lines from the private sector is required.
45	38	7	6	4	5. Rest areas are not needed on Kansas' Interstate highways because local businesses can meet the needs of the traveling public.
17	36	13	24	10	6. Rest areas are not needed on Kansas' non-interstate highways because local businesses can meet the needs of the traveling public.
4	24	18	39	15	7. The effects of transportation on the physical or natural environment (air, water, land, plants and animals) are a serious concern.
5	16	22	43	14	8. There should be tax breaks for alternative fuels to encourage their use as a method to address environmental and energy dependence issues.
15	46	22	13	3	9. More Kansas cities should have scheduled air service, even if public subsidy of private airlines may be necessary.
3	14	20	54	9	10. Economic development considerations should be a major factor in the selection of transportation projects.

SD	D	N	A	SA	
4%	***22%***	***14%***	***44%***	***16%***	***11. More emphasis should be placed on maintaining the existing highway system rather than expanding or increasing the capacity of the system.***
1	12	18	48	21	12. Pavements should be constructed to a higher standard, as they are in Europe, to last longer and require less maintenance, even though this practice would mean fewer statewide projects.
3	24	23	36	13	13. Policies to shift long distance freight traffic from truck to rail should be encouraged, even if this would require subsidizing private rail companies.
3	20	34	36	7	14. Since the State's population is aging, more funds should be spent on providing public transportation services for older adults.
7	26	29	30	8	15. The Kansas Department of Transportation should take an active role in the promotion of tourism in Kansas.
1	10	17	50	22	16. Rights of way for future transportation use should be preserved, even if it means purchasing right of way years in advance of construction.
15	33	13	32	6	17. Adding tolls to existing highways would be a viable method to increase revenues to pay for highway expansions.
8	36	22	26	9	18. More major freeways need to be built in Kansas.
2	8	9	66	16	19. State fuel taxes and registration fees are the most equitable ways to provide state funds for transportation improvements.
22	46	17	13	2	20. A basic level of intercity transit service should be available everywhere in the State regardless of public cost and ridership.
7	33	25	27	8	21. It is better to finance transportation projects on a pay-as-you-go basis, rather than using bonds to accelerate construction.
7	***14***	***23***	***44***	***12***	***22. Abandoned railroad corridors should be developed for public use as recreational trails.***
7	***23***	***26***	***32***	***11***	***23. Bicycle facilities should be built to encourage commuting.***
1	6	9	50	34	24. New real estate developments should provide funding for transportation improvements related to their development.
8	***17***	***28***	***37***	***9***	***25. Land use provisions should restrict development to encourage alternative modes of transportation including public transportation, bicycle and pedestrian travel.***